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Harmonization with the United Nations Recommendations, International Maritime Dangerous Goods Code, and International Civil Aviation Organization's Technical Instructions; Final Rule

DEPARTMENT OF TRANSPORTATION

Research and Special Programs Administration

49 CFR Parts 171, 172, 173, 175, 176, 177, 178, 179 and 180

[Docket No. RSPA–2000–7702 (HM–215D)]

RIN 2137–AD41

Harmonization with the United Nations Recommendations,International Maritime Dangerous Goods Code, and International Civil Aviation Organization's Technical Instructions

AGENCY: Research and Special Programs Administration (RSPA), DOT.

ACTION: Final rule.

SUMMARY: This final rule amends the Hazardous Materials Regulations (HMR) to maintain alignment with international standards by incorporating various changes to proper shipping names, hazard classes, packing groups, special provisions, packaging authorizations, air transport quantity limitations and vessel stowage requirements. In addition, this final rule revises the requirements for intermediate bulk containers and UN portable tanks for alignment with international requirements. Because of recent changes to the International Maritime Dangerous Goods Code (IMDG Code), the International Civil Aviation Organization's Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Technical Instructions), and the United Nations Recommendations on the Transport of Dangerous Goods (UN Recommendations), these revisions are necessary to facilitate the transport of hazardous materials in international commerce.

DATES: *Effective Date:* The effective date of these amendments is October 1, 2001.

Voluntary Compliance Date: With the exceptions of the ICAO Technical Instructions, 2001–2002 Edition and the International Atomic Energy Agency's (IAEA) Regulations for the Safe Transport of Radioactive Material, No. TS–R–1, which are authorized for use on July 1, 2001, RSPA is authorizing immediate voluntary compliance. However, persons voluntarily complying with these regulations should be aware that petitions for reconsideration may be received and as a result of RSPA's evaluation of those petitions, the amendments adopted in this final rule could be subject to further revision.

Delayed Compliance Date: Unless otherwise specified, compliance with the amendments adopted in this final rule is required beginning on October 1, 2002.

Incorporation by Reference Date: The incorporation by reference of publications listed in these amendments in § 171.7 has been approved by the Director of the Federal Register as of October 1, 2001.

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SUPPLEMENTARY INFORMATION:

I. Background

On October 23, 2000, the Research and Special Programs Administration (RSPA) (hereafter, ''we'' and ''our'' means ''RSPA'') published a notice of proposed rulemaking (NPRM) (65 FR 63294) under Docket HM–215D. The NPRM proposed changing the Hazardous Materials Regulations (HMR), 49 CFR parts 171–180, based on the UN Recommendations, the IMDG Code and the ICAO Technical Instructions with respect to hazard communication, classification, and packaging requirements. The intended effect of the rule was to facilitate the international transportation of hazardous materials by ensuring a basic consistency between the HMR and international regulations, while at the same time ensuring the safe transportation of hazardous materials.

On February 1, 2001, we published a final rule under Docket HM–215D (66 FR 8644) authorizing the use of the updated editions of the IMDG Code, the UN Recommendations and the UN Recommendations Manual of Tests and Criteria as proposed in the October 23, 2000 NPRM. This final rule addresses all other proposals published in the NPRM.

The UN Recommendations are not regulations, but are recommendations issued by the UN Committee of Experts on the Transport of Dangerous Goods. These recommendations are amended and updated biennially by the UN Committee of Experts. They serve as the basis for national, regional, and international modal regulations (specifically, the IMDG Code, issued by the International Maritime Organization (IMO), and the ICAO Technical Instructions, issued by the ICAO Dangerous Goods Panel). In 49 CFR 171.12, the HMR authorize hazardous materials shipments prepared in accordance with the IMDG Code if all or part of the transportation is by vessel, subject to certain conditions and limitations. In § 171.11, subject to certain conditions and limitations, the HMR authorizes the offering, acceptance and transport of hazardous materials by aircraft, in conformance with the ICAO Technical Instructions, and by motor vehicle either before or after being transported by aircraft.

On December 21, 1990, we published a final rule based on the UN Recommendations (Docket HM–181; 55 FR 52402) which comprehensively revised the Hazardous Materials Regulations (HMR), 49 CFR parts 171 to 180, for harmonization with international standards. Since publication of the 1990 final rule, we have issued three additional international harmonization final rules, (Dockets HM–215A, 59 FR 67390; HM–215B, 62 FR 24690; and HM–215C, 64 FR 10742). The rules provided additional harmonization with international air and sea transportation requirements by more fully aligning the HMR with the corresponding biennial updates of the UN Recommendations, the IMDG Code and the ICAO Technical Instructions.

The continually increasing amount of hazardous materials transported in international commerce warrants the harmonization of domestic and international requirements to the greatest extent possible. According to the American Chemistry Council, exports of chemicals totaled almost $80 billion in the year 2000, while imports totaled nearly $74 billion. Harmonization serves to facilitate international transportation and at the same time ensures the safety of people, property and the environment.

While the intent of the harmonization rulemakings is to align the HMR with international standards, we review and consider each amendment on its own merit. Each amendment is considered on the basis of the overall impact on transportation safety and the economic implications associated with its adoption into the HMR. Our goal is to harmonize without sacrificing the current HMR level of safety and without imposing undue burdens on the regulated public.

In our efforts to continue the alignment of the HMR with international requirements, this final rule makes changes to the HMR based on the eleventh revised edition of the UN Recommendations, Amendment 30 to the IMDG Code, which became effective January 1, 2001; and, the 2001–2002 ICAO Technical Instructions

which becomes effective July 1, 2001. Petitions for rulemaking pertinent to harmonization with international standards and the facilitation of international transportation are also addressed in this final rule and serve as the basis of certain amendments. Other amendments are based on feedback from the regulated industry, other DOT modal administrations and our initiative. Included are a few editorial clarifications. Certain commenters raised nonregulatory issues, issues that are beyond the scope of this rulemaking or suggested revisions that are now impractical (such as correcting the spelling of an entry that we removed). Such comments will not be addressed. Unless otherwise stated, the revisions are for harmonization with international standards.

II. Overview of Changes in This Final Rule

(See specific section for discussion of comments.)

Amendments to the HMR in this final rule include:

—Incorporation by reference of the updated ICAO Technical Instructions and addition of incorporation by reference of five current standards which include an International Atomic Energy Agency (IAEA) safety standard, three International Organization for Standardization (ISO) standards and one American Society for Testing Materials (ASTM) standard.
—Amendments to the Hazardous Materials Table (HMT) which add, revise or remove certain proper shipping names, hazard classes, packing groups, special provisions, packaging authorizations, bulk packaging requirements, and passenger and cargo aircraft maximum quantity limitations. Proper shipping name amendments include replacing the word ''inhibited'' with ''stabilized.'' Entry removals include certain domestic entries for which corresponding UN entries are currently included in the HMT.
—Revision of vessel stowage category definitions and codes for Class 1 (explosive) materials.
—Revision of shipping paper requirements for sea transport.
—Addition, removal and revision of certain entries to the List of Marine Pollutants.
—Addition, removal and revision of special provisions, including removal of current T codes and IBC bulk provisions, and addition of UN portable tank codes and IBC special packing provisions consistent with those in the UN Recommendations.
—Removal of the requirement to distinguish between primary and subsidiary risk labels and placards.
—Addition and revision to the list of organic peroxides and the list of self-reactive substances.
—Revision of the requirements pertaining to the transportation of samples.
—Revision of intermediate bulk container (IBC) requirements including amendments to the IBC commodity sections in §§ 173.240, 173.241, 173.242, 173.243 and 173.247, and addition of UN IBC packing instructions and special IBC packing provisions in part 172.
—Incorporation of the design, construction and use requirements for UN portable tanks.
—Consolidation of current portable tank maintenance, approval and use requirements.
—Inclusion of flexible grandfather provisions for the continued use of IM 101, IM 102, DOT 51, DOT 57 and DOT 60 portable tanks.
—Removal of specifications for DOT 52 and 53 portable tanks and the provisions for their continued use.
—Incorporation of a provision for the use of the ''W'' mark for IBCs.
—Revision of minimum thickness requirements for metal IBCs.
—Revision of several explosive packing methods to allow a broader selection of authorized packagings.
—Revision of provisions for cigarette lighters and alcoholic beverages carried aboard aircraft.
—Revision of the segregation table for hazardous materials stowed on aircraft.
—Allowance of the display of only one placard when certain explosive compatibility groups are transported together.
—Revision of lithium battery requirements.

III. Summary of Regulatory Changes by Section

Part 171

Section 171.7. We are updating the incorporation by reference for the ICAO Technical Instructions, and adding an ASTM standard, the current edition of the IAEA safety standard and three ISO standards as specified below. Amendment 30 to the IMDG Code, the eleventh revised edition of the UN Recommendations and the third revised edition of the UN Recommendations Manual of Tests and Criteria were incorporated into the HMR in a final rule under Docket HM–215D published February 1, 2001 (66 FR 8644) with a voluntary compliance date authorized as of January 1, 2001. One commenter opposed incorporation by reference of ASTM's E–112–96 Standard for Test Methods for Determining Average Grain Size,'' and ISO's 1496–3 ''Series 1 freight containers—Specification and testing,'' 1996 edition; 4126–1 ''Safety valves-Part 1: General Requirements,'' 1991 edition, and 6892 ''Metallic materials—Tensile testing,'' 1984 edition. According to the commenter, the industry supports the use of voluntary consensus standards in commercial applications, however, because of the ''frequency of change'' and because industry does not adopt the standards verbatim, the commenter suggests that these standards be used as guidance. We disagree. The ''National Technology Transfer and Advancement Act of 1995'' directs agencies to use voluntary consensus standards. According to the Office of Management and Budget (OMB), Circular A–119, ''Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities,'' government agencies must use voluntary consensus standards wherever practical in the development of regulations. Agency adoption of industry standards promotes productivity and efficiency in government and industry, expands opportunities for international trade, conserves resources, improves health and safety and protects the environment. Furthermore, requirements in the industry consensus standards are not required to be applied on a mandatory basis unless specifically referenced as such. When incorporating standards in the HMR, we typically specify the specific requirements in the standard that must be met. Requirements that are not mandated in adopted standards are rarely imposed on a mandatory basis in RSPA rulemaking initiatives. On this basis, we are incorporating the standards as proposed.

For international shipments of radioactive material, we are adopting the International Atomic Energy Agency (IAEA) safety standards, ''Regulations for the Safe Transport of Radioactive Material, No. TS–R–1'' with restrictions for its use for the domestic portion of the transport. Additionally, we are retaining Safety Series No. 6 with the same restrictions. As explained previously, TS–R–1 is the updated edition of the current Safety Series No. 6. Under this final rule, domestic shipments remain subject to the HMR requirements which are based on Safety Series No. 6. For domestic use, a proposal to adopt some or all of the TS–

R–1 standards will be addressed under a separate rulemaking, Docket HM–230, which will provide discussion and opportunity for comment.

As discussed in the final rule under Docket HM–215D published on February 1, 2001, we received comments supporting and opposing the incorporation by reference of TS–R–1 into the HMR. We received several comments from industry supporting the incorporation of TS–R–1 including requests for expedited publication of this final rule. Shippers will be required to comply with the TS–R–1 standards for export shipments and failure to comply would result in foreign authorities refusing to accept hazardous materials shipments prepared in accordance with the HMR. Several commenters stressed the importance of a timely compliance date to allow for a reasonable period to implement the TS–R–1 standards and the ICAO Technical Instructions, which both become effective on July 1, 2001. One commenter pointed out that not only does the time element greatly inhibit the preparation of packagings when nearing the July 1, 2001 effective date, but it will also have an impact on packagings already in transit. One commenter stated that failure to adopt TS–R–1 for international shipments will result in serious health treatment implications because radioisotope pharmaceutical products that are necessary for such treatment would be frustrated in transportation.

As discussed in the February 1, 2001 final rule, we received many comments from private citizens and local citizen groups opposing the incorporation of TS–R–1. Some of these commenters also opposed the adoption of the updated editions of the IMDG Code and the ICAO Technical Instructions because both incorporate TS–R–1. (The IMDG Code was adopted in the February 1, 2001 final rule.) Most of the commenters stated that TS–R–1 lowers the level of safety for the transportation of radioactive materials and thereby poses hazards to the public, however many of these commenters did not provide any technical basis for their opposition. The comments included claims that the TS–R–1 standards for Type B packagings are ''weakened.'' As discussed in the February 1, 2001 final rule, the commenters are incorrect. The TS–R–1 standards strengthen Type B packagings by adding immersion and crush testing to the previously required performance tests. Furthermore, the standards also add limits on the contents of Type B packaging when being transported by aircraft. Some commenters claimed that uranium hexafluoride packaging requirements are ''weakened'' in TS–R–1. These commenters are also incorrect. The criticality requirements for packages containing uranium hexafluoride did not change.

Many of the commenters stated that TS–R–1's revised definition of radioactive material lowers the level of safety by changing the 70Bq/g activity concentration threshold. The revised radioactive material definition will be addressed under Docket HM–230 and is not adopted in this final rule. We are adding a paragraph to §§ 171.11 and 171.12 to clarify that only the current definition of radioactive material applies. In addition, we are maintaining the current provisions in §§ 171.11 and 171.12, including the values for Type A packaging contents. Shippers using TS–R–1 under the ICAO Technical Instructions or the IMDG Code must conform to the provisions and restrictions as set forth in §§ 171.11 and 171.12, respectively.

Based on the above, the incorporation by reference materials adopted in this final rule are as follows:

—The ICAO Technical Instructions—2001–2002 edition.

—ASTM's ''E 112–96 Standard for Test Methods for Determining Average Grain Size'' is added to define ''fine grain steel'' as included in the proposed incorporation of the UN portable tank specifications in § 178.274.

—IAEA's current ''Regulations for the Safe Transport of Radioactive Material, No. TS–R–1,'' 1996 edition is added while retaining the previous edition entitled, ''Regulations for the Safe Transport of Radioactive Material, Safety Series No. 6.'' The TS–R–1 requirements were incorporated into the IMDG Code which became effective on a voluntary basis on January 1, 2001 and the ICAO Technical Instructions which will be effective July 1, 2001.

—Finally, we are adding three ISO standards to coincide with the incorporation of the UN portable tank requirements. The standards are as follows: ''ISO 1496–3 Series 1 freight containers—Specification and testing,'' 199 edition; ''ISO 4126–1 Safety valves–Part 1: General Requirements,'' 1991 edition; and, ''ISO 6892 Metallic materials—Tensile testing,'' 1984 edition.

In the NPRM, we proposed to add IMO'S current ''International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes on Board Ships' (INF Code). Because the IMO Maritime Safety Committee adopted the INF Code for incorporation into the 2000 edition of the IMDG Code, which we authorized under Docket HM–215D (66 FR 8644) on February 1, 2001, we are not adding the INF Code separately under § 171.7. Also see §§ 176.2 and 176.720.

Section 171.8. We are adding four new definitions to § 171.8. ''Large packaging'' is added to correspond with the addition of an approval provision that allows the use of large packagings which comply with requirements in the UN Recommendations (see § 178.801(i)). Large packagings are UN-marked bulk packagings which are very similar to IBCs, with the exception that they contain inner packagings. In the NPRM, we proposed to add a definition for ''Liner.'' After reconsideration, we believe that this definition is overly restrictive because it would preclude the use of liners such as those used in portable tanks, (for example, lead or rubber liner materials), bulk bins, IBCs and other types of packagings and the proposed definition would limit liners to bags and tubes. Plastic sheeting, rotationally molded rubber lining and other types of liners that are not bags or tubes would be excluded because the proposed definition limited liners to bags and tubes. On this basis, we are not incorporating the definition for ''Liner.'' ''Stabilized'' is added in conjunction with the proposal to replace the word ''inhibited'' with ''stabilized'' in proper shipping names (see § 172.101). Finally, ''UN portable tank'' is added in conjunction with the requirements for the design, construction and use of UN portable tanks (see §§ 178.274, 178.275, 178.276 and 178.277).

Section 171.10. To correspond with the incorporation of the UN portable tank specifications, we are adding the unit of measure for ''Newton'' into the Table of Conversion Factors in paragraph (c)(2).

Section 171.11. We are adding a new paragraph (d)(6)(vi) to limit the radioactive material definition to § 173.403. We are also adding a new paragraph (d)(17) to ensure conformance with the current approval provision in § 173.128(d) which requires an approval from the Associate Administrator for the offering for transportation or transport of organic peroxides that are not identified by technical name in the § 173.225(b) Organic Peroxide Table.

Section 171.12. In the NPRM, we proposed to revise paragraph(b)(3) by adding a limitation to the use of the IMDG Code, 2000 edition that became effective January 1, 2001. The limitation which regulates certain viscous flammable liquids that are excepted from the IMDG Code was incorporated

into the HMR on February 1, 2001 (66 FR 8646). One commenter stated that we should revise paragraph (b)(5) by removing the reference to Section 26 of the General Introduction to the IMDG Code because it will become obsolete January 1, 2002 (66 FR 8645) due to the extensive reformatting. We agree and are making the revision accordingly. We are also revising the paragraph to allow for the use of IBCs and UN portable tanks intended for liquids and solids that conform to the requirements of the IMDG Code. We are adding a new paragraph (b)(19) to ensure conformance with the current approval provision in § 173.128(d), which requires an approval from the Associate Administrator for the offering for transportation or transport of organic peroxides that are not identified by technical name in the § 173.225(b) Organic Peroxide Table. In addition, we are revising paragraph (d) to reflect the addition of the current edition of the IAEA ''Regulations for the Safe Transport of Radioactive Material, No. TS–R–1,'' 1996 edition. (See § 171.7 for discussion concerning the addition of the updated TS–R–1 standards) to ensure that radioactive material is defined in accordance with § 173.403.

Section 171.12a. We are adding a new paragraph (b)(18) to ensure conformance with the current approval provision in § 173.128(d) which requires an approval from the Associate Administrator for the offering for transportation or transport of organic peroxides that are not identified by technical name in the § 173.225(b) Organic Peroxide Table.

Section 171.14. We are revising paragraphs (d) and (d)(1) to authorize a delayed implementation date for the amendments adopted in the HM–215D final rule. The effective date of this final rule is October 1, 2001. However, we are authorizing immediate voluntary compliance. This authorization will allow shippers to prepare their international shipments in accordance with the new ICAO Technical Instructions, the IMDG Code and the HMR provisions. We also are authorizing a delayed mandatory compliance date of October 1, 2002 which is comparable to the transition provision provided in the final rule under Docket HM–215C. The delayed mandatory compliance date will offer sufficient time to implement the new provisions and deplete current stocks of shipping papers, labels, placards and packagings affected by the new requirements.

We are revising paragraph (d)(2) to permit intermixing of old and new (HM–215D) hazard communication requirements until October 1, 2002.

We are adding a new paragraph (d)(4) to allow the use of the T code special provisions (assigned to certain hazardous materials in Column (7) of the HMT) in effect on December 31, 2000 until January 1, 2010 for hazardous materials offered for transportation in IM, DOT Specification 51 and IMO portable tanks. This amendment is consistent with the IMDG Code grandfather provisions for portable tank requirements and will minimize any undue regulatory burden.

We are adding a new paragraph (d)(5) to allow continued display of proper shipping names with the word ''inhibited'' on packagings until October 1, 2005. (See § 172.101, HMT for further discussion.)

Part 172

Section 172.101. Paragraph (b)(1) is being revised for clarification of the use of the plus (+) sign. (See preamble discussion later in this section under the Hazardous Materials Table (HMT). We are revising paragraph (c)(11) for materials transported as samples which are assigned a tentative proper shipping name, hazard class, identification number and packing group. We are adding provisions based on the eleventh revised edition of the UN Recommendations to include requiring the word ''SAMPLE'' to appear in the proper shipping name, requiring a combination packaging, limiting the packaging size to 2.5 kg and allowing an exception from including the technical name when the constituents are not known. We also are adding a new paragraph (c)(16) to allow for the inclusion of the qualifying words ''liquid,'' ''solid'' or ''molten,'' as applicable, to a proper shipping name.

We received several comments concerning our proposal to revise hazardous materials transported as samples. Some commenters stated that prohibiting samples from being packed together with other hazardous materials would be overly restrictive and impose an undue burden. Commenters presented examples to demonstrate their argument, including one scenario in which a hazardous material is transported on dry ice. Our intention for revising this paragraph is to prevent the dangerous mixing of materials as prohibited in § 173.24 and to prevent the production of a mixture that would result in violation of § 173.21. Because the HMR requires samples to meet the requirements in §§ 173.21, 173.24, 173.24a and 173.24b, we agree that it is not necessary to prohibit samples from being shipped in the same packaging with other hazardous materials and are revising the paragraph accordingly. We are also removing proposed paragraph (c)(11)(i) in response to commenters' objections to the proposal prohibiting an explosive, infectious substance or radioactive material from being shipped as a sample. Provisions for transporting samples of such materials are currently authorized in the HMR and we agree that incorporation of the proposed paragraph (c)(11)(i) would be contrary to the current provisions. It was not our intention to remove the authorization to transport these materials as samples. As a result of these changes, certain proposed paragraphs are renumbered.

One commenter requested that the word ''SAMPLE'' be allowed to be shown on the shipping paper in association with the basic description. That is our intent, and although we proposed to require the word ''SAMPLE'' to appear in association with the basic description in the NPRM's preamble, the regulatory text wording required the ''SAMPLE'' to be shown before the basic description. The commenter is correct and we are revising the regulatory text accordingly.

One commenter requested that we change the term ''hazardous waste'' to ''waste'' because in accordance with § 171.8 the term ''hazardous waste'' applies only to those materials subject to the EPA manifest requirements under 40 CFR part 262. The commenter is concerned that generators of waste not subject to the EPA manifest requirements would be restricted from transporting their materials as samples. The commenter is incorrect by misapplying the use of the term ''generators of waste'' and ''hazardous waste.'' Under the CFR, the term ''hazardous waste'' does not apply to hazardous materials that are not subject to the EPA manifest requirements. Such materials are considered ''a sample of material'' in the context of paragraph (c)(11) and are not considered ''waste'' under the 49 CFR.

Finally, based on comments recommending various revisions to clarify the intent of the paragraph (c)(11), we made certain editorial amendments, including clarifying that technical descriptions do not apply when the primary constituents for which the tentative classification is based are not known.

In paragraph (k) for vessel stowage requirements in Column (10) of the HMT, we are adding new paragraphs (k)(6) through (k)(20) to include the IMDG Code vessel stowage category definitions for Class 1 (explosive) materials. This action is consistent with the new stowage categories and terminology contained in Amendment 30 of the IMDG Code. (Also see

preamble discussion under ''The Hazardous Materials Table'' and § 176.63.)

The Hazardous Materials Table (HMT). Amendments to the HMT include the following:

—Several commenters noted minor editorial errors in the HMT and we made the appropriate changes to correct these entries.

—For the entries, ''Other regulated substances, liquid, n.o.s.'' and ''Other regulated substances, solid, n.o.s.,'' we are adding the letter ''G'' to Column (1). The letter ''G,'' which denotes the n.o.s. and generic proper shipping names which are required to be supplemented with the technical names of the hazardous material (in parentheses and in association with the basic description), was inadvertently omitted in Docket HM–215C (64 FR 10742).

One commenter requested that we allow marine pollutants to alternatively be described using the proper shipping names ''Other regulated substances, liquid, n.o.s.'' or ''Other regulated substances, solid, n.o.s,'' as appropriate. We are not adopting this requested amendment because the shipping names ''Environmentally hazardous substances, liquid, n.o.s.'' and ''Environmentally hazardous substances, solid, n.o.s'' more accurately describe marine pollutants as posing an environmental risk and are, therefore, more appropriate proper shipping names as required by the HMR.

—We are adding the following new entries: ''Nitroglycerin mixture, desensitized, liquid, n.o.s. *with not more than 30% nitroglycerin by mass*,'' UN3357; ''Propellant, solid,'' UN0501; ''Refrigerating machines *containing flammable, non-toxic, liquefied gas*,'' UN3358; ''Rockets *with inert head*,'' UN0502; and ''1H–Tetrazole,'' UN0504.

—We are revising the entry, ''Dangerous Goods in Machinery *or* Dangerous Goods in Apparatus'' by replacing the identification number NA8001 with UN3363, designating a Class 9 assignment and revising Special Provision 136 (see § 172.102). These changes reflect the adoption of the entry by the UN Committee of Experts and amendments agreed to by the ICAO Dangerous Goods Panel. The entry was added to the HMT under Docket HM–215C as NA8001 and assigned Special Provision 136 to prescribe the appropriate hazard class assignment. As explained in HM–215C, the entry was adopted in the ICAO Technical Instructions to provide an exception from the UN packaging performance tests for equipment, machinery or apparatus containing small quantities of hazardous materials. For machinery or apparatus not specifically listed in the HMT, the entry provides a practical means of describing and transporting machinery or apparatus containing small quantities of hazardous materials. In HM–215C, we stated that upon the assignment of a UN identification number, we would revise the entry accordingly. This was accomplished in the eleventh revised edition of the UN Recommendations in which UN3363 was assigned and this entry was assigned to Class 9. The ICAO Technical Instructions were amended consistent with this UN decision. Therefore, based on the above discussion, we are revising the entry, ''Dangerous Goods in Machinery *or* Dangerous Goods in Apparatus'' by assigning it to Class 9, replacing the domestic identification number with an international identification number, and revising Special Provision 136.

—We are adding the entry ''Air bag inflators, *pyrotechnic or* Air bag modules, pyrotechnic *or* seat-belt pretensioners, *pyrotechnic*,'' UN0503 for air bags that are classified as Division 1.4G. We inadvertently omitted this entry in the NPRM. While we are not considering changing our policy or procedures for the classification of air bags as articles of Class 9, on the basis of the UN Manual of Tests and Criteria, 6c test, we believe that other competent authorities may assign a classification of 1.4G for some air bags. Incorporation of this entry is necessary to preclude the potential for frustrated shipments, the need to re-mark certain packagings or to change shipping papers for these air bags, when they are classified as 1.4G by other competent authorities and are being transported to or from the United States.

—We are revising all proper shipping names containing the word ''inhibited'' by replacing ''inhibited'' with the word ''stabilized.'' (Also, see the added definition for ''stabilized'' in § 171.8.) One commenter opposed the proposal to replace the word ''inhibited'' with ''stabilized'' and suggested that, instead, we clarify that monomers can be properly inhibited through means other than the addition of an inhibitor. The commenter stated that the words ''inhibited'' and ''stabilized'' have the same meaning for the purpose of transportation and expressed concern that we do not understand the distinction between the two words. The commenter also requested that we add several generic n.o.s. entries that include the word ''inhibited'' in the proper shipping names. We are not convinced of the merits of either request. The word ''stabilized'' introduces internationally accepted and standardized hazard communication wording and conveys that the addition of a stabilizing compound *or* other means of stabilization such as temperature control measures, have been implemented to prevent an unwanted reaction of a hazardous material. The word ''stabilized'' conveys a broader meaning of inhibiting uncontrolled reaction of a hazardous material (see § 171.8) by different methods. The continued use of the word ''inhibited'' would lead to a dual system of hazard communication that would be burdensome to shippers and carriers. In addition, the word ''stabilized'' is more adequately descriptive from the emergency responders' perspective. Adopting the word ''stabilized'' will also alleviate the necessity of issuing numerous exemptions for the variety of methods or combination of methods used to inhibit uncontrolled reactions without the use of inhibiting chemicals. Based on these reasons, we are adopting the amendment as proposed.

One commenter requested that we extend the proposed transition period for this amendment to provide sufficient relief from remarking all affected bulk packagings. The commenter stated that an extended transition period would allow the remarking to be accomplished during routine maintenance and periodic inspection cycles. In the NPRM, we proposed a transition period until October, 2002. We agree that a longer transition period for domestic transportation would help relieve any undue burden associated with this amendment without having a significant impact on safety. We are including a transitional provision in § 171.14 to allow the use of the word ''inhibited'' to be shown on packagings until October 1, 2005.

The allowance of additional means of stabilization and the removal of certain domestic entries from the HMT (see domestic entry removals later in this section) also addresses a petition for rulemaking (P–1304) requesting that we add a new domestic entry, ''Methyl methacrylate monomer, uninhibited,'' Class 3, NA1247, PG II to the HMT. As we stated, with respect to the request that we add generic n.o.s. entries that include the word ''inhibited,'' such an

action would also be contrary to the intent of global harmonization and would be beyond the scope of this rule. We are not adopting the request. Commenters having an interest in developing generic names for inclusion into the UN Recommendations should provide more specific information and examples of materials that require stabilization and are not covered by existing entries.

—We are revising the following proper shipping names: ''Lithium hypochlorite, dry *or* Lithium hypochlorite mixtures, dry,'' UN1471; ''Printing ink, flammable,'' UN1210; and ''Nitrocellulose membrane filters,'' UN3270.

—For the entry, ''Methacrylic acid, stabilized,'' UN2531, we are replacing Packing Group III with Packing Group II.

—We are removing various domestic entries that have ''NA'' identification number assignments. As discussed in the NPRM, after reviewing the domestic entries, we determined that the HMR includes ''UN'' identification numbers assigned to entries that are equally appropriate in a number of instances, and in these instances the NA numbers are no longer necessary. In the NPRM, the revision of ''Diesel fuel'' with the identification number NA1883 was a printing error which we are correcting in this final rule. ''Diesel fuel,'' NA1993 is retained and we are adding ''Diesel fuel, UN1202.'' This amendment will allow flexibility of choice in the use of proper shipping names for domestic transportation. In addition, for the convenience of the HMT users, we are separating the entry ''Gas oil *or* Diesel fuel *or* Heating oil, light'' by giving each name a separate line entry in appropriate alphabetical order. In response to comments requesting that we reconsider the proposed removal of ''Gasohol,'' we are not removing the entry from the HMT.

One commenter recommended that we provide T codes and IBC codes (see § 172.102, Special Provisions) for the entry ''Combustible liquid, n.o.s.,'' NA 1993. We agree with the commenter and are adding portable tank instruction T1, portable tank Special Provision TP1 and IBC code IB3. However, we did not assign IB6 to this entry, as requested by the commenter, because § 173.150(f) currently allows for the use of non-specification bulk packagings.

Included in the proposed removals are seven domestic pesticide proper shipping names identified by the pesticide industry as no longer being used. These entries are: ''Aldrin, *liquid*,'' NA2762; ''Aldrin, *solid*,'' NA2761; ''Dieldrin,'' NA2761; ''Methyl parathion *liquid*,'' NA3018; ''Methyl parathion *solid*, NA2783; ''Parathion,'' NA2783 and ''Tetraethyl pyrophosphate *solid*,'' NA3018.

—We are adding radioactive material (Class 7) entries consistent with new entries introduced in the UN Recommendations and IAEA's ''Regulations for the Safe Transport of Radioactive Material, No. TS–R–1.'' In addition, we are revising the current radioactive material entries in the HMR to indicate that these entries may be used for domestic shipments, but may be inappropriate for international transportation.

—For Class 1 (explosive) entries, we are revising Columns (10A) and (10B) to reflect the vessel stowage codes as they are presented in Amendment 30 to the IMDG Code. (See § 172.101(k) and § 176.63.)

—For the international entry ''Methanol,'' we proposed adding a plus sign (+) in Column (1) of the HMT to indicate that this entry is classified with a subsidiary hazard of Class 6.1 on the basis of human experience consistent with the UN Recommendations. One commenter objected to this proposal by stating that the action would unnecessarily restrict the shipment of dilute solutions of methanol. The commenter presented diluted methanol meeting the criteria for PG III as an example. In previous preamble discussions (see HM–215C Final Rule—**Federal Register:** March 5, 1999 (Volume 64, Number 43)) we indicated that a mixture or solution containing a hazardous material where the hazard is significantly different from that of the pure material should be evaluated on the basis of classification criteria. If such a mixture or solution does not meet the corresponding hazard class, a different proper shipping name may be used. Our position remains that when a mixture or solution of a material that is assigned a plus sign in column 1 of the HMT, no longer exhibits a hazard to humans, the material need not be described using a proper shipping name with a plus sign assignment. We recognize the need to clarify the intent of the plus sign in paragraph (b)(1). We are adding a sentence to paragraph (b)(1) to clarify the applicable requirements when the plus (+) sign is assigned to a proper shipping name.

—We are removing the entry ''Isobutyric anhydride,'' UN2530.

—For the entry ''Morpholine,'' UN2054, we are replacing Class 3 with Class 8, replacing Packing Group III with Packing Group I , and adding Class 3 as the subsidiary hazard.

—For ''Organic peroxide type F, solid, temperature controlled,'' (UN3120), we are removing the Packing Group III entry that was due to a printing error in 49 CFR. The PG II entry remains.

—For approximately 14 Zone A and B toxic-by-inhalation entries, we are revising the quantity limits for transport by air to ''forbidden.'' These revisions are consistent with other toxic-by-inhalation entries in the HMT and with the requirements of the ICAO Technical Instructions.

—For the entry ''Fire extinguishers *containing compressed or liquefied gas*'' we are adding Special Provision 110 to Column (7).

—We received a comment stating that our proposal to add Special Provisions 128 and B115 to the entry, ''Magnesium granules, coated, *particle size not less than 149 microns*,'' UN2950 (PG III only) was not reflected in the HMT and should also apply to ''Water-reactive solid, n.o.s,'' UN2813. After re-evaluation, we do not consider that it is appropriate to apply Special Provision 128 to ''Magnesium granules, coated,'' UN2950, because we are not convinced that these materials pose a Class 8 risk. As explained in the NPRM, this action is based on a petition for rulemaking (P–1338) that we received from the Aluminum Company of America (Alcoa). Special Provision 128 allows material meeting the Class 8 definition to be classed as a Division 4.3 with a Class 8 subsidiary hazard. Special Provision B115 authorizes the use of certain non-specification sift-proof bulk packagings when the material is loaded dry, precautions are taken to prevent liquid from reaching the hazardous materials and the bulk packagings are appropriately vented. However, UN2950 is assigned to bulk packaging § 173.240 which already allows non-specification bulk packagings and, therefore, we are not applying Special Provision 128 or B115 to UN2950 in this final rule. In response to the comment that Special Provisions 128 and B115 should apply to ''Water-reactive solid, n.o.s.'' UN2813, we note that exemption DOT E–11602 only applies to one specific material containing magnesium or magnesium nitrides that is described using a technical name in association with ''Water reactive solid, n.o.s.'' We do not agree that broad application of Special Provisions 128 and B115 to all

PG II or III water-reactive solids is appropriate or necessary.

—We received a comment stating that we did not include IBC and portable tank assignments for the PG II entry for ''Extracts, flavoring, liquid,'' UN1197. The oversight is corrected in this final rule.

—Several commenters noted minor editorial errors in the HMT and we made the changes as appropriate.

—For approximately 1,600 entries, we are revising Column (7) by harmonizing the HMR authorizations for IBCs with those contained in the UN Recommendations. As dicussed in the NPRM, in most cases the UN Recommendations provide for greater flexibility in the use of different types of IBCs. However, for certain hazardous materials, the incorporation of the UN IBC requirements further restricts the types of IBCs that were authorized prior to this final rule for certain hazardous materials. For example, some Packing Group II liquid hazardous materials of Class 3, Division 6.1 and Class 8 that were previously authorized to be transported in composite IBCs with flexible inner receptacles (such as 31HZ2) are no longer authorized. For the benefit of the reader and to facilitate a review of the proposed amendments, in the NPRM, we included a table identifying all of the affected hazardous materials and indicated the current bulk assignments and the proposed IBC assignments.

The IBC packaging requirements are included in a newly-created IBC Table under the Special Provisions section in § 172.102(c)(4). The table consists of IBC Codes (using the designations IB1–IB99) corresponding to the UN IBC packing instructions, and BB Codes corresponding to the UN IBC special packing provisions. We assigned the IBC packing instructions and the BB codes to specific hazardous materials in Column (7) of the § 172.101 HMT consistent with assignments in the UN Recommendations. In addition, we believe that consolidating the IBC requirements into one table makes it easier for readers to identify the authorized IBCs for specific hazardous materials. As a result of this amendment, we are revising the bulk special provisions in § 172.102(c)(3) to remove the previously authorized bulk codes relevant to the use of IBCs. We are also revising the current IBC packaging authorizations under §§ 173.240(d), 173.241(d), 173.242(d) and 173.243(d).

This revision also addresses a petition we received from the Rigid Intermediate Bulk Container Association (RIBCA) (P–1395) requesting that we amend the HMR to expand the use of IBCs consistent with new UN provisions. Specifically, the petitioner requested that we allow the use of rigid plastic IBCs and composite IBCs with a rigid plastic inner receptacle for certain liquids. We agree with RIBCA's request, however, as discussed in the NPRM, in the interest of harmonization, we believe it is more beneficial to adopt the UN Recommendations' IBC packing instructions in totality, and, as such, are amending the HMR accordingly.

One commenter stated that under the new IBC packing instructions, sodium cyanide and potassium cyanide would no longer be permitted in fiberboard or flexible IBCs. The commenter states that they are currently shipped this way according to B69. Although the UN Recommendations do not allow these types of IBCs for such materials, we are maintaining authorization for the use of fiberboard IBCs in domestic transportation. We will pursue the amendment to IB7 to allow the use of fiberboard (11G) IBCs through a proposal to the UN Transport Committee. However, we do not agree that flexible IBCs should be authorized for these hazardous materials.

The commenter also stated that large packagings should be authorized for sodium cyanide and potassium cyanide. Assignment of large packaging authorizations to specific substances is beyond the scope of this final rule. Currently, the UN Recommendations do not authorize large packagings for these substances. Large packagings are limited primarily to Packing Group III hazardous materials in the UN Recommendations. We plan to work through the UN Transport Subcommittee to address the commenter's concerns and depending on the outcome, we will address this issue in a future rulemaking.

Appendix B to § 172.101. In Appendix B to 172.101, List of Marine Pollutants, we are revising paragraph ''1'' by referencing § 171.4, which contains the applicability and exceptions for offering for transportation or transporting marine pollutants. We are revising paragraph ''2'' to reflect the IMDG Code's provision for the use of two Class 9 proper shipping names when a marine pollutant is not listed by name in the HMT and does not meet the definitions of Class 1 through 8. In addition, a number of materials are added, removed or amended in the List of Marine Pollutants. The entry ''EPTC (ISO)'' is removed. The entry was also the subject of a petition for rulemaking (P–1360) requesting removal of the entry based on its removal from the IMDG Code. Various other entries no longer identified as marine pollutants are also removed. Consistent with the proper shipping name revisions to replace the word ''inhibited'' with ''stabilized,'' we are making the change to five entries in the List of Marine Pollutants. All of the amendments to the List of Marine Pollutants are consistent with the marine pollutants provided in Amendment 30 of the IMDG Code. (Also see § 172.101, HMT for comment on use of proper shipping names for certain marine pollutants.)

One commenter stated that the proposal to remove the entry ''Dichlorobenzenes (meta, ortho and para)'' from Appendix B and replace it with the entry ''Dichlorobenzene (para)'' will result in an inappropriate listing of entries in Appendix B of the HMT for dichlorobenzene isomers. The commenter stated that the changes in Amendment 30 of the IMDG Code only delist ''1,2 Dichlorobenzene (ortho)'' as a marine pollutant and that the appropriate dichlorobenzene entry, in addition to existing ''1,3 Dichlorobenzene,'' and ''1,4 Dichlorobenzene,'' should be ''Dichlorobenzene (meta; para).'' We agree with the commenter and are revising the entry accordingly.

Section 172.102. We are revising, adding and removing special provisions as follows:

—Special Provision 43 is revised to include a provision which excepts ''Nitrocellulose membrane filters,'' UN3270 from the HMR requirements if shown not to meet the criteria for a Division 4.1 hazardous material, according to burn rate tests in Subsection 33.2.1. of the UN Manual of Tests and Criteria, Part III.

—Special Provision 110 is revised to more fully identify fire extinguishers that may be assigned to certain proper shipping names. The revision also provides for harmonization with the ICAO Technical Instructions. (We also are adding the special provision to the entry, ''Fire extinguishers *containing compressed or liquefied gas*.'' See § 172.101 HMT amendments.)

—Special Provision 128 is revised based on the amendment to assign it to ''Magnesium granules, coated, *particle size not less than 149 microns*.'' (See § 172.101 HMT changes.)

—Special Provision 136 is revised to reflect the changes adopted by the UN Committee of Experts and the ICAO Dangerous Goods Panel for the entry ''Dangerous Goods in Machinery *or* Dangerous Goods in Apparatus.'' (Also see § 172.101 HMT changes.)

We are revising the special provision by removing the text specific to the determination of the hazard class based on the UN Committee of Experts' decision that items under this entry should be assigned to Class 9.

—A new Special Provision 139 is added for two new entries, ''Radioactive material, transported under special arrangement, fissile'' and ''Radioactive material, transported under special arrangement *non-fissile or fissile-excepted*.'' The special provision requires international shipments using the two entries to be made under an IAEA Certificate of Competent Authority to be issued by the U.S. Competent Authority. Domestic shipments transported under the two entries would be allowed only under a DOT exemption.

—A new Special Provision 142 is assigned for the new entry ''Nitroglycerin mixture, desensitized, liquid, n.o.s.'' The special provision requires the material to be approved by the Associate Administrator.

—A new Special Provision 143 is added for the entry ''Life-saving appliances, not self-inflating, *containing dangerous goods as equipment*.'' The special provision clarifies which articles may be transported under this entry.

—A new Special Provision A53 is added for the entry ''Refrigerating machines,'' UN2857 and contains the exceptions from the HMR for certain refrigerating machines. The exceptions are currently in § 173.307.

—In conjunction with the amendment to revise and consolidate the IBC requirements (see § 172.101, Column (7) changes), we are adopting the following changes: revising the special provisions for bulk packagings in paragraph (c)(3) to exclude IBCs by revising Special Provisions B53 and B69 and removing Special Provisions B100, B101, B103 through B106 and B108 through B110, adding a new paragraph (c)(4) for special provisions specific to IBCs (IP Codes). IP codes are used to describe the IBC packing instructions. We redesignated the term ''BB'' Codes, as named in the NPRM, to ''IP'' Codes in this final rule in order to make it easier for the HMR user to locate the Special Provisions. By redesignating the ''BB'' Codes, the IB the IP Codes will be listed together in alphabetical order in § 172.102.

—The current T codes in paragraph (c)(7) are revised to reflect the incorporation of requirements for UN portable tanks and apply to hazardous materials of Classes 2 through 9. The revised T codes are consistent with those in the UN Recommendations and the IMDG Code and supersede the current HMR IM portable tank T codes. The T code provisions are required in addition to the requirements in part 178. The codes specify the types of authorized portable tanks according to the specific hazardous material transported in the portable tank. Portable tank assignments for Zone A and Zone B toxic-by-inhalation liquids remain consistent with their current assignments in the HMR. In instances where the UN requires a competent authority approval for transportation in portable tanks (such as when TP9 is assigned in the UN Recommendations), we have removed the approval provision. A transition period is provided for the continued use of the existing T codes for IM and DOT 51 portable tanks (see § 171.14(d)(5)).

One commenter stated that we did not provide for filling limits for portable tanks used to transport refrigerated liquefied gases. To correct this oversight, we are including filling limits that are similar to those applicable to cryogenic cargo tanks authorized under the HMR to transport refrigerated liquified gases. The filling limits will be contained in new Special Provision TP5 which was previously reserved. TP5 is assigned to all refrigerated liquified gases with a tank code T75 assignment.

A commenter stated that fittings were not defined for TP22 which states that lubricants for portable tank fittings must be oxygen compatible. We do not believe that it is necessary to define ''fittings'' other than to require that they must be oxygen compatible. Our basic intent is that no incompatible materials or lubricants be used on fittings such as fasteners, valves, gauges, pipe thread or other fittings that may come into contact with the oxygen and cause an unsafe condition in transport.

— We are removing proposed TP47 because it is not currently necessary. It is not assigned to any entries and the present requirements are addressed in the applicable packaging sections.

— In paragraph (c)(7)(iv), we are adding definitions for ''small,'' bare,'' ''sunshield'' and ''insulated'' as they apply to T50.

—A new Special Provision W7 is added for seven new Class 7 entries and assigned the vessel stowage category ''D,'' as defined in § 172.101(k)(4), to uranyl nitrate hexahydrate solution.

— A new Special Provision W8 is added for four new Class 7 entries and assigned the vessel stowage category ''D,'' as defined in § 172.101(k)(4), to pyrophoric thorium metal or pyrophoric uranium metal.

— Finally, a new Special Provision W9 is added for assignment to the entries, ''Calcium hypochlorite, dry or Calcium hypochlorite mixtures dry *with more than 39 percent available chlorine (8.8 percent available oxygen,''* UN1748; ''Calcium hypochlorite, hydrated *or* Calcium hypochlorite, hydrated mixtures *with not less than 5.5 percent but not more than 10 percent water,''* UN2880; and ''Calcium hypochlorite mixtures, dry, *with more than 10 percent but not more than 39 percent available chlorine.''* UN2208. This action aligns the packaging requirements for these entries with those contained in Amendment 30 to the IMDG Code by authorizing certain packagings only when approved by the Associate Administrator.

Section 172.202. We are revising paragraph (a)(4) based on a comment requesting that we eliminate the shipping paper requirement for inclusion of the packing group (PG II) for Class 1 (explosives) because the requirement conflicts with the UN Recommendations, the ICAO Technical Instructions and the IMDG Code, all of which do not require the inclusion of PG II on shipping papers. We agree with the commenter. The packing group does not indicate the degree of risk for explosives and does not aid emergency responders and we are providing an exception from this requirement. Based on the same reasoning, we are including in paragraph (a)(4) an exception from the packing group notation for organic peroxides and self-reactive materials.

Section 172.203. We are revising paragraphs(d)(11), (i) and (n). In paragraph (d)(11), we are allowing an exception from the requirement to add the appropriate group notation to the shipping description for a shipment of low specific activity material or surface contaminated objects provided the group notation is contained in the proper shipping name. Based on a commenter's request for clarification, we are making editorial revisions to this paragraph to improve the clarity of the additional description requirements applicable to low specific activity (LSA) materials and surface contaminated objects (SCO). We are changing the wording ''unless these symbols are'' to ''unless the group notation is,'' and adding the wording ''as described in the § 172.101 Hazardous Materials Table'' after the wording ''proper shipping name.''

In paragraph (i), we are adding two shipping paper description requirements for transportation by vessel. The first amendment is added as new paragraph (i)(5) and requires the flash point for a liquid hazardous material with a flash point of 61 °C or below to be included on shipping papers when transported by water.

One commenter objected to the proposed requirement that for materials having a flash point of 61 °C or less (closed cup c.c.), the flash point must be included on shipping papers. The commenter questioned the value of this requirement. We submit that knowledge of the flash point of a material is a requirement for vessel operators under the requirements of SOLAS Chapter II–2, Regulation 54. The SOLAS requirement imposes cargo hold, electrical, ventilation, fire protection and bilge pump requirements on hazard classes 3, 6.1 and 8, having a flash point of 61 °C or less. In order to ensure that vessel operators have this information, the IMDG Code requires a shipper to include the flash point of such materials on shipping papers. Although for most hazardous materials this information may be derived from the classification and packing group, for some hazardous materials this is not possible. To ensure that the flash point information is readily available, and to harmonize the HMR with the IMDG Code, we are adopting the requirement as proposed.

As discussed in the NPRM, we received a petition (P–1402) from the Vessel Operators Hazardous Materials Association (VOHMA) requesting that we add an additional shipping paper description requirement to include the minimum flash point in degrees Celsius for Class 3 (flammable) or combustible liquid hazardous materials. VOHMA stated that the amendment would help support compliance with the current stowage requirements in § 176.305(c) and the segregation requirements (Code 22 and 23, see § 176.84) as designated in Column (10B) of the § 172.101 Hazardous Materials Table. We agree with the petitioner's reasoning, however, for consistency with the IMDG Code, we are adding the requirement to specify the flash point when it is 61 °C or below for all such liquid hazardous materials whether or not the primary hazard is Class 3. The second amendment to the shipping paper description requirements for transportation by vessel is added as new paragraph (i)(6) and is based on comments from the USCG regarding further harmonization with the IMDG Code. The amendment requires subsidiary risks of a hazardous material that are not reflected in the proper shipping name to be included on shipping papers.

In paragraph (n), we are clarfiying that the shipping paper requirement for the word ''HOT'' to be placed immediately preceding the proper shipping names of hazardous materials that are transported as elevated temperature materials, is not required for proper shipping names containing the words ''Molten'' or ''Elevated temperature.''

Section 172.330. Consistent with the proper shipping name revisions that replace the word ''inhibited'' with ''stabilized'' (see § 172.101), we are revising three such proper shipping names in paragraph (a)(1)(ii).

Sections 172.402, 172.405 and 172.411. We received several comments concerning the proposal to remove the requirement to differentiate between primary and subsidiary labels. One commenter opposed the requirement with no elaboration. A second commenter stated that it would lower the level of safety. A third commenter opposed the adoption of the requirement stating that as an emergency responder, vital information necessary to respond to an incident would be lost. We disagree with this commenter. When a hazardous material has two or more hazards, each hazard must be considered in determining the appropriate response to an incident. The commenter also pointed out that the subsidiary risk is not required on shipping papers which would be another method for emergency responders to obtain the information. Under a separate rulemaking and consistent with the 12th edition of the UN Recommendations, we plan to propose a requirement to identify the subsidiary risks on shipping papers for all modes. In addition, for vessel only, we are adopting a requirement in this final rule for mandatory notation of subsidiary hazards on shipping papers, unless the subsidiary hazard is reflected in the proper shipping name. Consistent with the eleventh revised edition of the UN Recommendations, we are removing the requirement to differentiate between primary and subsidiary labels. Prior to this final rule, primary labels were required to display the hazard class or division number in the lower corner of the label, while subsidiary labels could not display these numbers. We believe the display of the hazard class and division on all labels will enhance safety and hazard communication. We are amending the requirement which provides for two label specifications (one for primary hazards and one for subsidiary hazards) by removing the subsidiary hazard label specification. This change also provides relief by eliminating the need for shippers to stock two sets of labels.

Another commenter stated that the proposed 5 year transition period for continued use of subsidiary risk label requirements in effect prior to this final rule, is too lengthy and could cause problems in domestic transportation for multimodal shipments. The commenter stated that the proposed transition period is not necessary because the ICAO Technical Instructions and the IMDG Code have much shorter transition periods in place, and that it seems unlikely that shippers would stock 5 year supplies of subsidiary risk labels. Based on feedback from industry, we believe that a 5 year transition period is warranted to allow sufficient time for filled packagings that are pre-labeled to complete their cycle out of transportation. We are not convinced that the 5 year transition period will cause problems in domestic transportation. Also, based on feedback from industry, we maintain that many shippers stock 5 year supplies of subsidiary risk labels. Therefore, in order to provide a reasonable transition period, we are allowing labels meeting the label specifications in place prior to this final rule to continue to be displayed until October 1, 2005, at which time labels used to convey both primary and subsidiary hazards must display the appropriate hazard class or division number at the bottom of the label. (See § 171.14 for transition provisions.) The same amendment also applies to placards (see § 172.519).

Section 172.502. In paragraph (b), we are correcting an error that was published in the February 1, 2001 final rule under Docket HM–215D. Based on a request from the **Federal Register**, we added a reference to ''see § 171.7.'' During the typesetting process, the ICAO Technical Instructions were mistakenly added and the TDG Regulations were mistakenly omitted. We are correcting this error by removing the ICAO Technical Instructions and reinstating the TDG Regulations.

Section 172.504. Based on comments and our own initiative, we are revising paragraph (g) by allowing the display of only one placard bearing one compatibility letter when certain Class 1 materials (explosives) of different compatibility groups are transported together in a single transport vehicle or container. This amendment is consistent with the mixed packaging provisions in § 173.61.

Section 172.519. Consistent with the amendment to eliminate the distinction between primary and subsidiary labels, we are revising paragraph (b)(4) to eliminate the requirement to distinguish

between primary and subsidiary placards. In addition, we are incorporating a new paragraph (b)(4)(i) to permit subsidiary placards meeting the current placarding specifications (such as placards without the hazard class or division number displayed in the lower corner of the placard) to continue to be displayed in domestic transportation provided they were permanently affixed before October 1, 2001. Non-permanently affixed subsidiary placards meeting the current placarding specifications are allowed to be displayed until October 1, 2005. (See § 171.14 for transition provisions.)

Part 173

Section 173.2a. Consistent with the eleventh revised edition of the UN Recommendations, in the paragraph (b) Precedence of Hazard Table, we are revising Footnote 2 to exclude liquid and solid desensitized explosives. In addition, we are adding the revised Footnote 2 to Class 3, PG I, II and III in the paragraph (b) Precedence of Hazard Table.

Section 173.4. Based on a request for clarification, we are revising paragraph (a) to clarify that the small quantity exceptions apply to packagings containing articles, as well as inner receptacles.

Section 173.24b. We are adding a new paragraph (e) to address acceptance of foreign manufactured UN portable tanks that conform to the applicable provisions in the UN Recommendations on the Transport of Dangerous Goods and are manufactured in countries that provide reciprocal treatment for UN portable tanks manufactured in the United States.

Section 173.29. One commenter requested that two petitions for rulemaking be addressed in this final rule. The petitions request that IBCs meeting the Environmental Protection Agency's empty container rule in 40 CFR 261.7 be allowed to be transported without vehicle placarding and shipping papers. We are not addressing this issue under HM–215D because it is beyond the scope of this rulemaking.

Section 173.31. Consistent with the proper shipping name revisions that replace the word ''inhibited'' with ''stabilized'' (see § 172.101), we are revising one such proper shipping name in § 173.31(b)(2)(ii).

Section 173.32. One commenter stated that the consolidation of §§ 173.32, 173.32b and 173.32c would impose requirements for DOT Specification 57 portable tanks that previously did not apply. The commenter provided specific recommendations for ensuring that new requirements for the maintenance and continued use of DOT Specification 57 portable tanks are not introduced. We did not intend to impose new requirements for DOT Specification 57 portable tanks. We considered the recommendations of the commenter and revised § 173.32(d), (f) and (h) to address these recommendations.

One commenter suggested that we incorporate certain editorial changes in § 173.32 and part 180, subpart G, to clarify that not all portable tanks have a maximum allowable working pressure (MAWP) and that some requirements do not apply to all portable tanks, such as DOT Specification 56 and 57 portable tanks. The commenter stated that DOT Specification 57 portable tanks, for example, have a design pressure, but not a MAWP. The commenter also noted that when we consolidated the repair, inspection, test and maintenance requirements for portable tanks in the NPRM, we applied requirements to DOT Specification portable tanks that currently are not applicable under the HMR. We agree with the commenter's suggestions and are incorporating the suggested editorial corrections.

One commenter stated that one of its members maintains and operates a large fleet of ICC Specification portable tanks and they requested that we maintain the current grandfather provisions for these portable tanks. As stated in the NPRM, our intent with removing the provisions was based on whether these portable tanks were being used. With receipt of this comment, we are retaining the provisions currently in 173.32(b) and (c) of the HMR by incorporating them into § 173.32(c)(4) and (c)(5) in this final rule.

The commenter also stated that DOT Specification 60 and marine portable tanks were not addressed in the NPRM and requested that these portable tanks be authorized for continued use. We did not propose any changes in the NPRM that would prevent continued use of these portable tanks.

Another commenter expressed concern regarding our proposal to allow UN portable tanks to be designed and constructed to pressure vessel design codes other than the ASME Code. The commenter asked which codes would be acceptable and expressed concern that we would allow codes that are ''less stringent'' than the ASME Code. In response to this comment, we wish to advise the commenter that codes other than ASME will only be authorized if approved by the Associate Administrator for Hazardous Materials Safety, and only for UN portable tanks intended for the transport of liquid and solid hazardous materials. No approval provision was proposed for use of alternative design codes for portable tanks intended for the transport of liquefied gases. Because alternative codes are only allowed if approved by the Associate Administrator, applications for use of other design codes will be reviewed on a case by case basis. It is not our intention to allow the use of design codes that will not provide an equivalent level of safety as afforded in the ASME Code. We did not include a list of potential alternative codes because we have not considered which codes we will accept and because other factors, in addition to the design code, will be considered in each case.

One commenter stated that it is unclear whether the grandfather provision for DOT Specification 56 and 57 portable tanks manufactured after October 1, 1996 provides for such portable tanks to continue in service. We note that DOT Specification 56 and 57 portable tanks were not authorized to be manufactured after October 1, 1996. On October 1, 1996, the UN IBC requirements were introduced which replaced DOT Specification 56 and 57 portable tanks.

Because paragraphs (c)(3) and (g) concerning pressure relief valves for DOT specification portable tanks are duplicative, we are removing paragraph (g). With this action the paragraphs following the removed paragraph (g) are renumbered.

As proposed in the NPRM, we are revising § 173.32 to provide requirements for all portable tanks by consolidating the requirements for the use of IM portable tanks currently in § 173.32c into a single section and moving them to part 180, subpart G, with the qualification and maintenance requirements for IBCs, cargo tanks and tank cars. We are also including a grandfather clause in § 173.32 to allow IM 101, 102 and DOT 51 portable tanks to continue to be constructed in accordance with the HMR until January 1, 2003. IM 101, 102 and DOT 51 portable tanks which are certified and approved prior to this date are authorized for continued use provided they meet the applicable periodic inspection and test requirements in part 180, subpart G. These requirements were previously in § 173.32b. On January 1, 2003, all newly manufactured portable tanks will be required to conform to the requirements for the design, construction and approval of UN portable tanks (see §§ 178.274, 178.275, 178.276 and 178.277). Finally, we are removing the provisions for the continued use of DOT Specification 52 and 53 portable tanks based on our view that these portable tanks are no longer

in use and the lack of comments to the contrary.

Section 173.32a. We are removing § 173.32a and moving its approval requirements for specification portable tanks to § 178.273. We believe that part 178 is a more appropriate location for these requirements and that the new section will prove to be more convenient for users of the HMR. We also are including similar requirements for the incorporation of requirements for UN portable tanks.

Section 173.32b. We are removing § 173.32b and relocating the test requirements to part 180, subpart G, as discussed in § 173.32.

Section 173.32c. We are removing § 173.32c. The requirements for the use of all specification portable tanks are now included in § 173.32, thereby precluding the need for § 173.32c.

Section 173.34. Consistent with the proper shipping name revisions that replace the word ''inhibited'' with ''stabilized'' (see § 172.101), we are revising two such proper shipping names in § 173.34(e)(13).

Section 173.61. Based on our own initiative, for Class 1 (explosives) mixed packaging requirements, we are revising paragraph (e)(3) to allow explosives of compatibility group S that are allowed to be packaged with explosives of all other compatibility groups, except A and L, to be treated as belonging to any of the packaged compatibility groups except S. In addition, we are adding a new paragraph (e)(8) to allow explosive articles in compatibility group G, except for fireworks and articles requiring special packaging, to be packaged with articles of compatibility groups C, D and E, and the combined package may be treated as belonging to compatibility group E. This revision corresponds with the previous allowance contained in § 177.848(g).

Section 173.62. Consistent with adding the entries ''Rockets *with inert head,*'' UN0502 and ''1H-Tetrazole,'' UN0504 to the § 172.101 Table, we are adding them to the paragraph (b) Explosives Table which specifies the Packing Instructions assigned to each explosive. In paragraph (c), we are revising the Explosives Packing Instructions Table to authorize additional types of outer packagings in the following packing instructions: 112(a), 112(b), 112(c), 113, 115, 116, 130, 131, 134, 135, 136, 138, 140, 141,142 and 144.

Section 173.150. We are revising paragraph (d) by clarifying that alcoholic beverages containing over 24% alcohol by volume are not excepted from regulation when transported by a passenger or crewmember on passenger-carrying aircraft except as provided in § 175.10(a)(17). (See preamble discussion under § 175.10.)

Section 173.162. We are revising paragraph (a)(1) by clarifying that the types of packagings specified in the paragraph are combination packagings and that the glass, earthenware or rigid plastic packagings are authorized as inner packagings only. In addition, for these packagings, we are increasing the net mass of 10 kg (22 pounds) for each packaging to15 kg (33 pounds). This is consistent with Packing Instruction 800 in the UN Recommendations.

Section 173.185. We are revising § 173.185 to include a definition for equivalent lithium content for lithium ion cells and batteries and to provide the applicable aggregate lithium quantities relevant to excepting lithium ion cells and batteries from the requirements of the HMR consistent with the eleventh edition of the UN Recommendations. The definition of lithium content was revised in this final rule to make it consistent with a minor editorial clarification adopted by the Committee of Experts in its report of the 21st session (see section 38.3.2.2 in the amendments to the UN Manual of Tests and Criteria, report number ST/SG/AC.10/27/Add.2). This clarification was included based on a comment that we received. We adopted this clarification in order to prevent possible confusion about the lithium-equivalent content of lithium-ion battery packs that are currently used in many portable devices. For the readers' information, we plan to issue an NPRM under a separate rulemaking initiative to address the 12th edition amendments to the UN Recommendations that require all lithium batteries, regardless of the lithium content, to be subject to the lithium battery tests in Section 38 of the UN Manual of Tests and Criteria. The lithium battery amendments and revised test methods are available in the report of the UN Committee of Experts and may be downloaded at *http://www.unece.org/trans/main/dgdb/dgcomm/ac10rep.html.*

Several commenters stated that we did not include the revised requirements applicable to large lithium batteries used for electric and hybrid vehicles and requested that we make the correction in the final rule. Although we discussed the amendment in the NPRM's preamble, the revised requirements were inadvertently omitted from the regulatory text. This error is corrected in this final rule.

Section 173.224. Consistent with the UN Recommendations, we are adding the entry ''2,2'-Azodi(isobutyronitrile) as a water-based paste'' to the Self-Reactive Substances Table for substances that are not subject to the approval provisions of § 173.124(a)(2)(iii), provided all applicable provisions in the table are met. Finally, we are revising paragraph (b)(4) and removing paragraph (d) to allow Type F self-reactive substances to be transported in portable tanks under conditions specified in § 173.225(e) (see preamble discussion under § 173.225).

Section 173.225. We are amending the paragraph (b) Organic Peroxide Table by making various changes, such as revising several technical names, packing method authorizations and control temperatures. These changes are consistent with the UN Recommendations. We are removing Notes ''7'' and ''10'' consistent with the adoption of UN IBC 520 and adding Note ''26'' to specify the available oxygen content limitation for certain new organic peroxide formulations. We are revising paragraph (e) to incorporate the requirements from the eleventh revised edition of the UN Recommendations relevant to the emergency venting devices for portable tanks and IBCs used for the transportation of organic peroxides and self-reactive substances. This responds to NTSB recommendation (I–92–2) that asked us to ''revise the requirements for pressure relief venting on DOT Specification 57 portable tanks used to transport dicumyl peroxides and other products with similar rapid decomposition characteristics to ensure that the pressure relief systems prevent overpressure rupture of tanks from a rapid product decomposition reaction.'' We are applying the recommended venting requirements to all portable tanks and IBCs, rather than just DOT Specification portable tanks. Additionally, the types of portable tanks authorized for type F organic peroxide and self-reactive substances are expanded to include UN portable tanks. We are adopting the requirements in Portable Tank Instruction T23 and IBC Special Provision, IBC 520.

A commenter brought to our attention that Note 26 as proposed would conflict with the § 173.21 restriction for ketone peroxides which limits oxygen content to 9% or less. We agree and are removing the proposed Note 26 text and renumbering the proposed Note 27 to Note 26. In addition, based on a comment, we are adding an organic peroxide formulation for 2,5 Dimethyl 2,5 di-2-ethylhex anoylperoxy hexane, UN3113. The entry was adopted in the UN Recommendations and inadvertently omitted in the NPRM.

We understand that the current Organic Peroxide Table includes a number of formulations that are no longer used. We encourage users of the Organic Peroxide Table to provide us with comments in this regard, as well as suggestions for improving the Organic Peroxide Table.

Sections 173.240, 173.241, 173.242 and 173.243. In each section's paragraph (c), we are removing Specification DOT 52 and 53 portable tanks as authorized packagings (see § 173.32) because we believe that these portable tanks are no longer used. In addition, we are authorizing UN portable tanks. In conjunction with the revision to the requirements for IBCs, for alignment with international standards, we are revising paragraph (d) which specifies authorized IBCs in §§ 173.240, 173.241, 173.242 and 173.243 to reflect the proposed incorporation of IBC packing instructions and IP codes (see § 172.101, Column (7)). Based on a comment that we received, we are not requiring temperature sensing devices or reclosing pressure relief devices for DOT Specification 57 portable tanks. We agree with the commenter that such portable tanks have limited use and are very similar to IBCs.

We also received a comment stating that § 173.240 should be amended to allow the use of non-specification flexible (''supersacks'') IBCs for hazardous materials such as ''Environmentally hazardous substances, solid, n.o.s.'' Specifically, the commenter requested that we authorize the use of non-specification ''supersacks'' in § 173.240. The commenter questioned the omission by asking why we do not authorize non-specification IBCs, yet we provide for the use of other non-specification bulk packagings. While it is our intent at this time to maintain authorization for use of non-specification portable tanks and bulk bins in § 173.240(c), we do not agree that non-specification IBCs should be authorized. The only non-specification bulk packagings authorized in § 173.240 are portable tanks and bulk bins which are rigid packagings of a higher integrity when compared to a 2,000 pound non-specification bag. Neither the current HMR nor the UN Recommendations authorize the use of non-specification IBCs for environmentally hazardous substances. We believe that authorization of the non-specification ''supersacks'' would be detrimental to safety and, therefore, we are not incorporating it into the HMR.

Section 173.247. In paragraph (c), we are removing Specification DOT 52 and 53 portable tanks as authorized packagings (see § 173.32).

Sections 173.301, 173.304, 173.314, 173.315 and 172.330. Consistent with the proper shipping name revisions that replace the word ''inhibited'' with ''stabilized'' (see § 172.101), we are revising all such proper shipping names in these sections.

Section 173.306. Consistent with Packing Instruction P201 in the UN Recommendations, we are amending the paragraph (a)(4)(iii) conditions for transporting flammable, non-pressurized gas samples by revising the inner packagings limit from 2.5 L (0.66 gallons) to 5 L (1.3 gallons).

Sections 173.314 and 173.315. Consistent with the proper shipping name revisions that replace the word ''inhibited'' with ''stabilized'' (see § 172.101), we are revising one such proper shipping name in § 173.314(c) and (g) and two such proper shipping names in § 173.315(a), (b) and (h).

Section 173.315. As proposed in the NPRM, we are revising paragraphs (a) and (i)(1)(iii) to incorporate provisions for the use of UN portable tanks for the transportation of liquefied compressed gases and the requirements for DOT Specification 51 portable tanks. In paragraph (a), we are incorporating a reference to new tank instruction T50 (see UN T Codes under § 172.102) for the transportation of liquefied compressed gases in UN portable tanks. In paragraph (i)(1)(iii), we are including the pressure relief device requirements applicable to UN portable tanks.

We received a comment questioning the intent in paragraph (a)(1)(iii) concerning the insulation requirements. The commenter was concerned that the paragraph prevents the use of mylar, other low melting films and aluminum for jacket materials. We note that the paragraph does not prohibit the use of jackets constructed of materials other than steel, except in the case when the portable tank manufacturer is attempting to lower the required relieving capacity of the relief devices by taking into account the thermal protection afforded by the insulation. The UN portable tank requirements intentionally restrict the jacketing material to steel when using the insulation as a means for reducing the required relieving capacity of the pressure relief devices, because jacket materials with lower melting temperatures, such as aluminum, would not provide adequate fire damage protection for the inner vessel, or for the vacuum insulation in the case of a vacuum insulated tank to justify allowing a lower overall relieving capacity for the pressure relief system. We agree with the UN reasoning for limiting jacket material to steel, and, therefore, we are adopting the paragraph as proposed.

Section 173.320. For transportation by air for cryogenic liquids exceptions, we are making an editorial clarification in paragraph (c) to refer readers to the specific cites in the ICAO Technical Instructions rather than stating ''see § 171.11 of this subchapter.''

Part 175

Section 175.10. For consistency with the ICAO Technical Instructions, we are revising paragraph (a)(10) to clarify that lighters containing ''unabsorbed liquid fuel'' are prohibited on one's person or in checked or carry-on baggage. We are revising exclusions for alcoholic beverages as carry-on and checked baggage to impose a per passenger quantity limit and to restrict the exceptions to alcoholic beverages in retail packagings containing not more than 70% alcohol. We are revising paragraph (a)(16) to exclude alcoholic beverages. Also, we are adding new paragraph (a)(17) to specify that alcoholic beverages containing more than 24% and not more than 70% alcohol by volume, when carried by passengers or crew in checked or carry-on baggage, are not subject to the HMR if in retail packagings not exceeding 5 liters (1.3 gallons) with a total net quantity per person of 5 liters (1.3 gallons). These changes are consistent with the ICAO Technical Instructions.

Section 175.33. For harmonization with the ICAO Technical Instructions, we are revising paragraph (a) introductory text to add a requirement that the written pilot notification must be accurate and legible.

Section 175.78. We are revising this section to update and align segregation requirements with recent changes adopted in the ICAO Technical Instructions which were based on a UN decision to remove the distinction between primary and subsidiary risk labels. Separate rows and columns are provided for Divisions 5.1 and 5.2. We are adding a new provision to clarify that packages with multiple risks do not need to be segregated from other packages bearing the same UN number. The ICAO Technical Instructions currently require segregation of Divisions 5.1 and 4.3 hazardous materials and we have revised the entry to reflect the change.

Section 175.85. Consistent with a new provision adopted in the ICAO Technical Instructions, we are revising paragraph (a) to authorize use of main deck Class C cargo compartments for the transport of hazardous materials. Prior

to this final rule, hazardous materials were allowed to be carried in a main deck cargo compartment of a passenger aircraft provided the compartment was inaccessible to passengers and it met certification requirements for a Class B cargo compartment. (Class C cargo compartments differ from Class B cargo compartments in that Class C compartments are required to have a built-in fire extinguishing system, in addition to smoke or fire detection systems.)

Part 176

Section 176.2. In conjunction with incorporating a requirement for vessel cargo to be in compliance with the INF Code (see § 176.720), we are adding a definition for ''INF cargo'' under the § 176.2 definitions.

Section 176.63. For the stowage of Class 1 (explosive) materials on board a vessel, we are adding a stowage location definition for ''closed cargo transport unit.'' This addition coincides with the addition of the vessel stowage category definitions contained in Amendment 30 to the IMDG Code. (See § 172.101(k).)

Section 176.84. Consistent with the IMDG Code we are revising paragraph (b) Table of provisions and paragraph (c)(2) stowage provisions. In the paragraph (b) Table of provisions, we are adding two new stowage provisions for assignment to the entries: ''Calcium hypochlorite, dry *or* Calcium hypochlorite mixtures dry with more than 39 percent available chlorine (8.8 percent available oxygen),'' ''Calcium hypochlorite, hydrated *or* Calcium hypochlorite, hydrated mixtures, *with not less than 5.5 percent but not more than 10 percent water*,'' and ''Calcium hypochlorite mixtures, dry *with more than 10 percent but not more than 39 percent available chlorine*.'' In the paragraph (c)(2), we are revising the list of notes for the stowage of Class 1 (explosive) material provisions.

Section 176.128. We are making an editorial change in § 176.128(c) by correcting an identification number.

Section 176.136. We are making an editorial change in § 176.136 by removing the word ''portable.''

Section 176.142. Based on a comment from the National Cargo Bureau, Inc., in § 176.142, paragraph (a), we are revising the list of hazardous materials that may not be transported in a vessel carrying Class 1 (explosive) materials to reflect the most current proper shipping names and add one extremely flammable material, ''Methyl phosphonous dichloride, *pyrophoric liquid*,'' NA2845.

Section 176.720. We are adding a new section to require a vessel carrying INF cargo in international transportation to comply with the ''International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes on Board Ships,'' (INF Code, 2000, English edition). The INF Code was adopted by the International Maritime Safety Committee and became effective January 1, 2001 in the IMDG Code.

Part 177

Section 177.848. In paragraph (g)(3)(vi), we inadvertently added the terms ''special stowage'' and ''stowed'' from the corresponding vessel section of the HMR (§ 174.81) under HM–215C (64 FR 10742). We are correcting the wording by removing ''special stowage,'' which is not applicable to this section, and replacing ''stowed'' with ''loaded, transported and stored.'' We received a joint petition from the American Trucking Associations (ATA) and the Institute of Makers of Explosives (IME) (P–1396) requesting additional clarification of this paragraph. Prior to this rule, the paragraph read:

''(vi) ''6'' means explosive articles in compatibility group G, other than fireworks and those requiring special stowage, may be stowed with other explosive articles of compatibility groups C, D and E, provided no explosive substances (for example, those not contained in articles) are carried in the same vehicle.''

In this paragraph and the corresponding paragraph in § 174.81, the petitioners request that the words ''other explosives'' be inserted before the wording ''explosive substances.'' The petitioners are incorrect in their interpretation of the wording of this paragraph. Explosive *articles* in compatibility group G may be stowed with certain other explosive *articles* (C, D and E compatibility groups), provided no explosive *substances* that are not contined within articles are carried in the same vehicle. We point out that there is a distinction between the words ''articles'' and ''substances.'' To take advantage of this paragraph, explosive substances that are not contained in articles may not be carried on the vehicle. We are revising the paragraph to clarify that substances are prohibited when not contained in articles.

Part 178

Section 178.273. We are adding a new section by moving the current requirements for the approval of portable tanks from § 173.32a to § 178.273. This new section will include approval provisions for all portable tanks, including ''UN portable tanks.'' These current approval provisions will precede the requirements for UN portable tanks (§§ 178.274 through 178.277). Approval agencies that have an interest in approving UN portable tanks must send a request to DHM–32, Office of Hazardous Materials Approvals, in accordance with the requirements in part 107, subpart E of this subchapter.

Sections 178.274, 178.275, 178.276 and 178.277. Based on the eleventh revised edition of the UN Recommendations, we are incorporating four new sections into the HMR for the UN portable tank requirements. This action is based on our own initiative and a petition for rulemaking (P–1373) and is consistent with our international harmonization objectives. The requirements apply to the design and construction of portable tanks. The IMO Dangerous Goods, Solid Cargoes and Containers (DSC) Sub-Committee incorporated the new harmonized UN multimodal portable tank requirements into the reformatted IMDG Code, Amendment 30. The reformatted IMDG Code became effective on January 1, 2001. The IMDG Code also includes a provision to allow for the continued use of portable tanks designed and constructed under the current requirements (those in Amendment 29 or previous amendments to the IMDG Code as applicable, depending on the date of construction).

The IMO allows construction under the new requirements on January 1, 2001, on a voluntary compliance basis, with a mandatory compliance date of January 1, 2003. On January 1, 2003, all new portable tanks will be required to be manufactured in accordance with the new requirements. For purposes of harmonization, we are incorporating the corresponding design, construction and use requirements for UN portable tanks in the HMR. In addition, in § 173.32 we are providing for the continued use of IM 101, 102 and DOT Specification 51 portable tanks, which is consistent with the provisions adopted in the IMDG Code.

The design and construction requirements for UN portable tanks do not differ significantly from the previous IM 101 and 102 portable tanks and the DOT Specification 51 requirements. In general, the UN requirements are less restrictive. For example, 6 mm (0.2 inches) minimum thickness is required for most portable tanks, as opposed to the current minimum thickness of 6.35 mm (0.3 inches) for IM 101 and 102 portable tanks. As discussed in the NPRM, while the majority of the changes involve relaxations of the regulatory requirements, there will be implications for portable tank manufacturers,

shippers and operators who transport hazardous materials in portable tanks. For example, we are requiring UN portable tanks used for the transportation of liquefied compressed gases to be approved by a DOT-designated approval agency, and we are requiring all UN portable tanks to meet a 4 g impact test. In addition to portable tanks for liquids and liquefied compressed gases, we are incorporating requirements for portable tanks that are used to transport refrigerated liquified gases (cryogenic liquids). Previous to this final rule, requirements for portable tanks used for refrigerated liquefied gases were not specified in the HMR, and we authorized their use only under DOT exemptions. The differences between UN portable tanks and the previous portable tank requirements include, but are not limited to the following:

—The new definition for portable tank includes multimodal tanks with a capacity of more than 450 liters (118.9 gallons).

—The new design temperature range is defined as –40 °C to 50 °C (–40 °F to 122.0 °F). This final rule includes the requirement that design temperatures must be considered for portable tanks subjected to severe climatic conditions. Previous to this final rule, regulations specified a range of –20 °C to 50 °C (–4.0 °F to 122.0 °F).

—The new UN leakage test for portable tanks intended for the transport of liquids specifies a test pressure not less than 25% of Maximum Allowable Working Pressure (MAWP). The previous HMR requirements specified an internal pressure equivalent to MAWP, but not less than 0.2 bar (20.0 kPa) for liquids.

—The new test requires that the design and construction of portable tanks must take into account the effects of fatigue during normal conditions of transport. Previously, this was not required in the HMR.

—The new requirements specify an absolute minimum thickness of 3 mm (0.1 inches), regardless of the material used and regardless of whether additional protection is provided.

—Under the new requirements, a rail impact test of 4 g is required for all portable tanks meeting the definition of ''Container'' in the International Convention for Safe Containers (CSC).

—The new requirements specify that the test pressure be 1.3 times the design pressure for portable tanks intended for the transport of liquefied gases. Previously, under the HMR, DOT 51 portable tanks used for the transportation of liquefied gases were required to have a test pressure of 1.5 times the design pressure; however, this is based on the vapor pressure of the hazardous material at 115 °F (46.1 °C), whereas the UN calculates the vapor pressure at 65 °C (149 °F). The differences between 1.5 at 46 °C and 1.3 at 65 °C, therefore, would not be significant. (Although one commenter stated that they disagreed with this statement, our view is explained further in the preamble discussion under § 178.274.)

—The new requirements include a figure for thermal conductance for the thermal insulation systems of shells intended for the transport of liquefied compressed gases.

—The new requirements include a definition for ''Holding time'' relevant to portable tanks used for the transportation of refrigerated liquefied gases. This is consistent with current HMR requirements in § 178.338–9 for cargo tanks.

—The new requirements specify the effectiveness of the insulation system (heat influx in watts) based on a test using the portable tank.

—The new requirements allow the specified minimum values of material strength for austenitic steels to be increased by 15% according to recognized material standards when greater values are provided in the material inspection certificates.

—The new requirements allow the combined capacity of all pressure relief devices to be sufficient to limit the pressure to 120% of the MAWP for liquefied compressed gases.

Section 178.274. One commenter stated that the required test pressure for UN portable tanks used for the transportation of propane would increase from 320 psig to 400 psig. We believe that the values cited by the commenter are not accurate. Based on the Fourth Edition of the Compressed Gas Association Handbook of Compressed Gases, the vapor pressure of propane is approximately 220–230 psia at a reference temperature of 115 °F (46.1 °C) and approximately 270–275 psia at 130 °F (54.4 °C). The required MAWP according to § 173.315 is 250 psi. The test pressure for a UN portable tank would be approximately the same as that for a DOT 51 portable tank and in some cases may be slightly less. In this case, it would not be in the interest of harmonization to vary from the internationally agreed design pressure formulas. Based on the above, we are adopting the requirement as proposed.

One commenter stated that aluminum should be authorized as a material for portable tank shell construction. The UN Recommendations allows aluminum only for portable tanks intended for liquid and solid materials when approved by the competent authority. Aluminum is not authorized for portable tank shells intended for non-refrigerated liquefied gases, however, aluminum is authorized for shells of portable tanks intended for the transportation of refrigerated liquefied gases. Based on the merits of these comments and to be consistent with the UN Recommendations, we are amending paragraph (b) accordingly.

Also regarding paragraph (b), some commenters requested background information explaining the justification and application of the proposed –40 °C lower range for the design temperature applicable to UN portable tanks. This lower temperature was adopted because the UN working group recognized that –20 °C was not sufficient to represent temperatures that UN portable tanks may experience in certain parts of the world. One commenter stated that it was not clear whether the requirement was applicable to all portable tank components or only to the shell. In response to this comment, we point out that the design temperature range applies to the shell which is the primary pressure and lading retention component of the portable tank. The general requirements for design and construction state that ''Portable tank materials must be suitable for the external environment where they will be transported taking into account the determined design temperature range.'' This provision requires service equipment to be suitable for the climatic conditions to which it will be exposed. For these reasons, we are not amending the proposed language.

One commenter stated that the change from the very prescriptive relief device location for IM portable tanks in § 178.270–11(b)(1)(i) to the less specific requirement is ''too open to interpretation'' and requested clarification. We do not agree with the commenter. The main safety concern is that when the tank is filled to its maximum filling condition, the relief device is located in the vapor space and will ensure that escaping vapor can be discharged free from any obstruction. The text accomplishes this objective and is more flexible and performance-oriented. Specifically limiting the location by specifying exact tolerances forces us to issue exemptions and approvals when the location varies from these specific parameters. In addition, the text as proposed in this section is consistent with how the HMR specifies pressure relief device location for DOT specification 400 series cargo tanks

(see178.345–10(c)). We are adopting the text as proposed.

One commenter stated that the proposed requirement to group outlet openings in paragraph § 178.274(e)(7) of the NPRM should not apply to portable tanks used for refrigerated liquified gases due to their unique design. The commenter explained that this requirement does not currently apply to exemption cryogenic portable tanks or MC 338 Specification cargo tanks (see § 178.338–7), nor is it a requirement under the UN Recommendations. We agree with this commenter and are amending the paragraph to reflect that the external fitting grouping requirement applies only to portable tanks intended for the transportation of non-refrigerated liquefied gases. This amendment is consistent with the current requirement that applies to DOT Specification 51 portable tanks in § 178.245–1(c). We agree that the additional exceptions applicable to locating openings in other locations in § 178.245–1(d)(1), (2) and (3) should also apply and, therefore, we are revising the text accordingly. Because these requirements are applicable only to portable tanks intended for the transport of non-refrigerated liquified gases, we are moving the text to the more appropriate location of § 178.276.

We received two comments concerning the proposed requirements for the internal valve emergency shut-off device in paragraph (e)(7). One commenter stated that there is no requirement in the UN Recommendations nor the IMDG Code for a thermally activated closure. Our intent with this paragraph is consistency with a requirement that was published under a final rule (Docket HM–166Y; 63 FR 37453) on July 10, 1998, requiring an IM portable tank to be retrofitted if unloaded while it remained on a transport vehicle with the power unit attached. The commenter stated that we proposed to expand the concept by making a thermally activated device part of the service equipment for all UN portable tanks and that the requirement would be contrary to harmonization because UN portable tanks are used worldwide. They suggested that the requirement should first be introduced at the UN Committee of Experts for consideration. Although the requirement is only a condition for unloading IM portable tanks from vehicles while the motor unit is attached, we were informed through meetings with portable tank users and manufacturers that it is not feasible to determine which IM portable tanks would be offloaded in this manner and that all IM portable tanks would need to be retrofitted with thermally activated closure devices (fusible links) in order to comply with the requirement in § 177.834(o). In a request for an interim final rule concerning the retrofitting requirement published in HM–166Y final rule, the Hazardous Materials Advisory Council (HMAC) stated ''For commercial and economic reasons, it is not practical to remove all tanks from service at once to retrofit the bottom outlet valves with thermally activated closure devices. Tanks are either in a transport cycle, in storage, or in repair/maintenance shops. If all of the portable tanks were taken out of service at the same time to complete this retrofit, many industrial operations would be severely disrupted.'' DOT 51 portable tanks are required to be fitted with these closures (see § 178.245–1(d)(iii)) and in the HM–215D NPRM we proposed that UN portable tanks used for non-refrigerated liquified gases be fitted with these devices consistent with paragraph 6.7.3.5.4 of the UN Recommendations. The UN Recommendations require ''quick closing'' shut-off devices that close automatically in the event of fire engulfment and unintended movement of the portable tank for portable tanks used to transport flammable refrigerated and flammable and toxic non-refrigerated liquified gases. We are removing the requirements for these shut-off devices to operate based on unintended movement because we believe it is not practical. We believe that even though this is not a requirement under the UN Recommendations for liquid materials, it is a domestic requirement and from the safety perspective, as discussed under Docket HM–166Y, it should be applied to U.S. manufactured UN portable tanks intended for the transportation of liquid hazardous materials which are flammable, pyrophoric, oxidizing or toxic. We believe it would be in the best interest of safety to fit these portable tanks with thermally activated closures. We estimate that the cost of installing a fusible link will be approximately $40.00 to $70.00 per portable tank based on information provided by tank and tank valve and component manufacturers. Installation at the time of manufacture will avoid downstream retrofitting costs, costs associated with shipping delays and logistical problems at a later date. In previous discussions with the Hazardous Materials Advisory Council and the Tank Container Association, we were informed that retrofitting of portable tanks would cost approximately $200.00 to $250.00 per portable tank. On the basis of these costs, it makes economic sense to install the devices at the time of manufacture. We agree that this requirement should be proposed to the UN Committee of Experts and will follow-up accordingly. On the basis of enhanced safety, minimal cost at the time of manufacture, shipping delays and logistics, we are requiring U.S. manufactured UN portable tanks intended for transporting certain liquids to be fitted with thermally activated closures (fusible links). The internal valve shut-off requirements are revised for consistency in §§ 178.275(d)(3), 178.276(c)(4) and 178.277(d).

Concerning paragraph (i), one commenter stated that markings such as maximum allowable working pressure, test pressure, maximum gross mass and the applicable T Code should be marked on the tanks following the ''UN'' mark in order to convey that the cargo is authorized for that particular portable tank. We agree that a T marking on the tank may be advantageous, however, the UN Recommendations do not require a T mark and imposing such a requirement is beyond the scope of this final rule. Incorporation of a T code marking in this rule could lead to different requirements in domestic and international regulations if such a proposal is not adopted by the UN Transport Subcommittee. With regard to the other markings, the information is marked on a specification plate (see § 178.274(i) of the regulatory text). Finally, we moved the requirements for the initial inspection and test of portable tanks from § 180.605(d), as presented in the NPRM, to the more appropriate location § 178.274(j).

Sections 178.274 and 178.275. One commenter stated that although the term ''fusible elements'' is used in the UN Recommendations, the purpose of the devices and whether they are mandatory service equipment is unclear. The commenter stated that in the final rule it would be helpful to clarify the definition and use of these devices. We agree with the commenter and are adding a definition for ''fusible elements'' in § 178.274(a)(3) and are clarifying the use of ''fusible elements'' in § 178.275(f)(4).

A commenter requested that we allow UN portable tanks used for the transportation of refrigerated liquefied gases to be tested using an inert gas as an alternative to hydrostatic testing with water. The commenter explained that this is a common industry practice and is necessary because the saddle designs for these portable tanks are not designed to hold the associated weight of the water necessary to conduct the

hydrostatic test. The commenter further explained that the alternative method is necessary because it is difficult to entirely remove all of the water in the inner tank after the hydrostatic test is completed. In addition, the UN Recommendations authorize the pressure test using an inert gas. We accept this comment and are amending § 178.274(j)(2) to include a provision to allow, as an alternative to hydrostatic testing with water, testing with an inert gas for portable tanks used for the transportation of refrigerated liquefied gases.

Section 178.275. Regarding paragraph (c), a commenter stated that damage to the liner in a portable tank would be inevitable when welding a blind (blank) flange on the inside and outside of the portable tank shell. The commenter suggested a tamper proof flange as an alternative to the welded flange as proposed in the NPRM. The UN portable tank working group considered a number of alternate configurations or possibilities for closing bottom openings in portable tanks when they are retrofitted to remove bottom opening configurations. The working group was opposed to use of a bolted flange because of the possibility that it may leak during transportation. While inclusion of an alternative to welding is beyond the scope of this rule, a means of authorizing non-welded bottom flange configurations may be considered under the alternative arrangement approval provisions.

Another commenter stated that the presence of a liner in a portable tank should not be justification for authorizing the portable tank to be used without an internal shut-off valve. The commenter stated that internal shut-off valves can be fitted on lined portable tanks and that the proposed exception would result in a decrease in safety. We agree and based on the merits of the comment, we believe that a lined tank should have a internal shut-off and are removing the proposed exception in paragraph (c)(4) which states, ''For a lined shell, the internal stop valve required by paragraph (c)(3)(i) of this section may be replaced by an additional external stop valve.''

One commenter stated that the external design pressure should not be based on the internal pressure because, as proposed, the requirement would impose unrealistic external design pressure requirements. We agree with this commenter and are revising the wording in paragraph (e) to remove the reference to the internal pressure. On this basis, a shell that is to be equipped with a vacuum-relief device must be designed to withstand, without permanent deformation, an external pressure of not less than 0.21 bar.

Section 178.276. See discussion under § 178.274 for discussion concerning the relocation of certain text.

We received a comment stating that § 178.276 should be revised to provide an exception from the internal stop valve requirement for portable tanks used for the transportation of chlorine. The commenter requested alternative wording to clarify whether a threaded cap or pipe plug can be used as the third means of closure on portable tank openings. We agree and are revising the text in § 178.276(c)(1) to state ''* * * and the third being a blank flange, threaded cap, plug or equivalent liquid tight closure device.'' We are also revising § 178.276(c)(3) to indicate that this paragraph only applies to openings below the liquid level of the portable tank. This wording will eliminate the need for portable tanks used to transport chlorine from having to be fitted with internal stop valves because these portable tanks have loading and unloading fittings only at the top of the tank. We are also including a new paragraph (7) to address inlets and discharge outlets, internal excess flow valves on portable tanks used to transport chlorine.

Section 178.277. One commenter stated that the NPRM preamble included a new filling limit for helium, yet it was not contained in the regulatory text in § 178.277. We recognized the oversight and added a new tank provision, TP5 to address the filling limit. (See § 172.102, Special Provisions.)

Another commenter stated that it is not necessary to specify impact test requirements in paragraph § 178.277(b)(4) and that the proposed provision for conducting impact tests at 0 °F on materials to be used for refrigerated liquefied gases are not suitable because such portable tanks operate at much lower temperatures. The commenter went on to say that the ASME Code adequately addresses this issue. We agree with the commenter and have removed the proposed provision.

Another commenter stated that we overlooked the fact that the UN Recommendations do not require portable tanks used for the transportation of refrigerated liquefied gases to have an opening for inspection. The commenter stated that the internal inspection requirements for these portable tanks should be removed because: (1) The portable tanks are not currently fitted with inspection openings, (2) internal corrosion is not a factor for portable tanks used to transport refrigerated liquefied gases, (3) the UN Recommendations do not require internal inspection for these portable tanks, and (4) fitting of inspection openings on these portable tanks does not enhance safety. We agree with the commenter and are including the exceptions for refrigerated liquefied gas portable tanks in paragraphs (d)(7) and § 180.605(e) and (f).

We are including the above discussed amendments and, as proposed in the NPRM, we are adding five new sections (§§ 178.273 through 178.277) to the HMR as follows: § 178.273 is added by moving the current requirements for the approval of Specification portable tanks from § 173.32a and introducing similar requirements for UN portable tanks; § 178.274 is added for the UN portable tank general design and construction requirements; § 178.275 is added for the additional specifications for UN portable tanks intended for the transportation of liquid and solid materials of Classes 3 through 9; § 178.276 is added for the additional requirements for UN portable tanks intended for the transportation of liquefied compressed gases; and § 178.277 is added for the additional requirements for the design, construction, inspection and testing of UN portable tanks intended for the transport of refrigerated liquefied gases.

Section 178.703. Consistent with § 178.3(a)(4), paragraph (a)(1) is revised by including a minimum height of 12 mm (0.5 inches) for IBC markings and by adding a requirement to allow use of the ''W'' mark for approval of equivalent IBC packagings, as provided for in § 178.801(i). Two commenters stated that while they support a minimum marking size of 12 mm for IBCs, it is not clear how this would apply to IBCs manufactured prior to the effective date of this final rule. In response to these commenters, we revised paragraph (a)(1) to clarify that the minimum marking size only applies to IBCs manufactured after the effective date of this final rule (October 1, 2001).

Section 178.705. We are revising the minimum wall thickness requirements to take into account the capacity in the case of metal IBCs.

Section 178.801. In paragraph (i), we are adding an approval provision for the use of large packagings, as defined in § 171.8 of this NPRM, provided the large packagings conform to the construction standards, performance testing and packaging marking as specified in UN Recommendations.

Section 178.812. Based on our initiative, we are revising paragraph (c)(1) and adding a new paragraph (c)(3) to include an alternate method for conducting the top lift test for flexible

IBCs. Prior to this final rule, the alternate method was authorized in several approvals issued by the Associate Administrator.

Part 179

Section 179.102–4. Consistent with the proper shipping name revisions that replace the word ''inhibited'' with ''stabilized'' (see § 172.101), we are revising one such proper shipping name in this section.

Part 180

Sections 180.601, 180.603, 180.605. We are moving the qualification and maintenance requirements for portable tanks from § 173.32(c) to part 180. As discussed in the NPRM, we believe that these requirements are more appropriately placed in part 180 along with the qualification and maintenance requirements for cargo tanks, IBCs and tank cars. Therefore, as proposed, we are adding new subpart G to part 180 for the qualification and maintenance of portable tanks. (Also see § 173.32.) One commenter suggested that we incorporate certain editorial changes to § 173.32 and part 180, subpart G, to clarify that not all portable tanks have a maximum allowable working pressure (MAWP) and that some requirements do not apply to all portable tanks, such as DOT Specification 56 and 57 portable tanks. We agree and have made the clarification revisions accordingly.

Section 180.603. A commenter requested that grandfather provisions be included in § 180.603 to recognize that portable tanks constructed and used in accordance with existing DOT exemptions are authorized for continued use provided they meet the applicable periodic inspection and test requirements. We do not agree with this request because such exemptions remain valid and their continued use are not affected by this final rule.

Section 180.605. Several commenters stated that the periodic inspection requirements for portable tanks proposed in the NPRM are not entirely consistent with those specified in the UN Recommendations. They quoted the UN Recommendations as stating: ''A portable tank filled prior to the date of expiry of the last periodic inspection and test may be transported for a period not to exceed three months beyond the date of expiry of the last periodic test or inspection.'' In addition, a portable tank may be transported after the date of expiry of the last periodic test and inspection after emptying but before cleaning, for purposes of performing the next required test or inspection prior to refilling and unless otherwise approved by the competent authority, for a period not to exceed six months beyond the date of expiry of the last periodic test or inspection, in order to allow the return of dangerous goods for proper disposal or recycling. Reference to this exemption shall be mentioned in the transport document. The commenters requested that we adopt this text from the UN Recommendations in the final rule. We do not agree that the UN Recommendations' text should be included in the HMR. We believe that the UN text imposes arbitrary limits on the length of time that a portable tank may be transported after expiration of the inspection and test date. The HMR text allows a portable tank to continue to be transported after the expiration of the test date while prohibiting filling of a tank once the periodic inspection and test dates have expired. We wish to clarify that the text as proposed was based on existing text for cargo tanks (see 173.33(a)(3)) and for portable tanks (see 173.32(e)(5)). The text in place prior to this final rule, as well as the text adopted in this final rule, allows portable tanks which contain a residue, or are being transported to a cleaning, testing or repair facility, to be transported after the inspection and test date expires. In the NPRM, we simply consolidated this requirement in a more appropriate section and applied it universally to all portable tanks. We are adopting the text as proposed, even though it is less restrictive than the UN Recommendations text, because it is practical and does not impose unnecessary burdens on the regulated public or government. On this basis, we are not adopting the suggestions of the commenters. We also wish to note that the text in § 180.605(b)(3), as proposed and adopted, requires a portable tank that has been out of service for more than one year to be periodically retested.

Several commenters stated that they support our efforts to adopt the UN portable tank requirements. The commenters support the requirement that DOT 51 Specification portable tanks not be allowed to be manufactured after January 1, 2003, however, they do not support the conditions for continued use of existing DOT 51 portable tanks as proposed in the NPRM. We did not introduce new requirements for periodically retesting DOT Specification 51 portable tanks in the NPRM nor was it our intention to do so. The retest provisions for DOT Specification 51 portable tanks are specified in § 180.605(c)(2) and requires that the portable tanks be retested at least once every 5 years.

For paragraphs (e) and (f), see § 178.277(d)(7) discussion regarding an exception from the requirement for portable tanks used for the transportation of refrigerated liquefied gases to have an opening for inspection. We moved the initial inspection and test requirements from § 180.605(d), as proposed in the NPRM, to § 178.274(j) which we believe is a more appropriate location. For a comment on an alternative to hydrostatic testing with water, see § 178.274(j).

We also received a comment stating that we should have included an exception from the requirement for UN portable tanks intended for the transportation of ''Helium refrigerated liquid (*cryogenic liquid*),'' UN1963 and ''Hydrogen, refrigerated liquid (cryogenic liquid),'' UN1966 to be subjected to the 4 G rail impact test as prescribed in § 180.605(d)(6). The commenter reasoned that high thermal performance liquid hydrogen and helium containers are not transported on railroads due to the large impact loads experienced during coupling and that such UN portable tanks are marked with the words ''NOT FOR RAIL TRANSPORTATION.'' We agree with the commenter. When the requirements for UN portable tanks were developed, the UN working group agreed that portable tanks used for the transportation of refrigerated liquefied helium and hydrogen should be excepted from rail impact testing. A special provision was added allowing the transportation of these refrigerated liquefied gases under conditions specified by the competent authority. In this final rule, we are excepting portable tanks intended for the transport of refrigerated liquefied helium and hydrogen from the requirements of a rail impact test. Instead of requiring an approval provision, we are adding a sentence to § 180.605(d)(6) to except portable tanks from the 4 G impact test when the portable tanks are used in dedicated service for the transportation of ''Helium, refrigerated liquid,'' UN1963 and ''Hydrogen, refrigerated liquid,'' UN1966 and are marked ''NOT FOR RAIL TRANSPORT'' in letters of a minimum height of 20 cm (8 inches) on at least two sides of the portable tank.

Another commenter stated that the proposed marking size amendment in § 180.605(l) requires inspection and test markings that are not included on the specification plate of a portable tank to be 32 mm (1.25 inches) high, yet as the commenter points out, currently § 173.32(e)(3) allows markings for DOT Specifications 51, 56, 57 and 60 portable tanks to be a minimum height of 12 mm. We agree with the commenter and after considering the proposed amendment, we do not believe that a marking height

of 32 mm is necessary for these particular portable tanks. Therefore, we are adopting a minimum test and inspection marking height of 3 mm when the markings are on the specification plate, and a marking height of 12 mm when the markings are directly on the portable tank.

IV. Rulemaking Analyses and Notices

A. Executive Order 12866 and DOT Regulatory Policies and Procedures

This final rule is not considered a significant regulatory action under section 3(f) of Executive Order 12866 and, therefore, was not reviewed by the Office of Management and Budget. This final rule is not considered a significant rule under the Regulatory Policies and Procedures of the Department of Transportation (44 FR 11034). Benefits resulting from this final rule include enhanced transportation safety resulting from the consistency of domestic and international hazard communications and continued access to foreign markets by domestic shippers of hazardous materials. Many companies involved in domestic, as well as global operations, will realize economic benefits as a result of the amendments in this rulemaking. The total net increase in costs to businesses in implementing this rulemaking is minimal and we have determined that the intended benefits of harmonizing the HMR with international standards outweigh the minimal increase in costs to industry. For interested parties, a regulatory analysis is available for review in the public docket.

B. Executive Order 13132

This final rule has been analyzed in accordance with the principles and criteria contained in Executive Order 13132 (''Federalism''). This final rule preempts State, local and Indian tribe requirements but does not adopt any regulation that has substantial direct effects on the States, the relationship between the national government and the States, or the distribution of power and responsibilities among the various levels of government. Therefore, the consultation and funding requirements of Executive Order 13132 do not apply.

The Federal hazardous material transportation law, 49 U.S.C. 5101–5127, contains an express preemption provision (49 U.S.C. 5125(b)) that preempts State, local, and Indian tribe requirements on certain covered subjects. Covered subjects are:

(1) The designation, description, and classification of hazardous materials;

(2) The packing, repacking, handling, labeling, marking, and placarding of hazardous materials;

(3) The preparation, execution, and use of shipping documents related to hazardous materials and requirements related to the number, contents, and placement of those documents;

(4) The written notification, recording, and reporting of the unintentional release in transportation of hazardous; or

(5) The design, manufacture, fabrication, marking, maintenance, recondition, repair, or testing of a packaging or container represented, marked, certified, or sold as qualified for use in transporting hazardous material.

This final rule addresses covered subject items (1), (2), (3), and (5) above and would preempt State, local, and Indian tribe requirements not meeting the ''substantively the same'' standard. This final rule is necessary to incorporate changes already adopted in international standards. If the changes in this final rule are not adopted in the HMR, U.S. companies, including numerous small entities competing in foreign markets, would be at an economic disadvantage. These companies would be forced to comply with a dual system of regulation. The changes in this final rule are intended to avoid this result. Federal hazardous materials transportation law provides at section 5125(b)(2) that, if DOT issues a regulation concerning any of the covered subjects, DOT must determine and publish in the **Federal Register** the effective date of Federal preemption. The effective date may not be earlier than the 90th day following the date of issuance of the final rule and not later than two years after the date of issuance. Thus, RSPA lacks discretion in this area. The effective date of Federal preemption will be December 18, 2001.

C. Executive Order 13084

This final rule has been analyzed in accordance with the principles and criteria contained in Executive Order 13084 (''Consultation and Coordination with Indian Tribal Governments''). Because this final rule does not significantly or uniquely affect the communities of the Indian tribal governments and does not impose substantial direct compliance costs, the funding and consultation requirements of Executive Order 13084 do not apply.

D. Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires an agency to review regulations to assess their impact on small entities, unless the agency determines that a rule is not expected to have a significant impact on a substantial number of small entities. This final rule will serve to facilitate the transportation of hazardous materials in international commerce by providing consistency with international standards. This final rule applies to offerors and carriers of hazardous materials, some of whom are small entities, such as, chemical manufacturers, chemical users and suppliers, packaging manufacturers, distributors, battery manufacturers, radiopharmaceutical companies and training companies. Based on our assessment in the regulatory analysis, which is available in the public docket, I hereby certify that this final rule will not have a significant economic impact on a substantial number of small entities.

The majority of amendments in this final rule should result in cost savings and ease the regulatory compliance burden for shippers engaged in domestic and international commerce, including trans-border shipments within North America. For example, cost savings will be realized by shippers and carriers as a result of eliminating the differences between primary and subsidiary labels. As a result of this change, it will no longer be necessary to stock two sets of labels for each hazard class. To ease any burden associated with this change, we are incorporating a reasonable transition period where labels meeting requirements in effect immediately prior to this final rule and the requirements adopted in this final rule may be used.

Other cost savings include providing greater flexibility for the use of IBCs and portable tanks; retaining current IM 101, 102 and DOT Specification 51 portable tank requirements and providing authorizations for their use; deleting numerous entries from the marine pollutant list for consistency with the IMDG Code; authorizing greater flexibility for transporting samples of hazardous materials; authorizing the use of a single explosives placard when explosives of several compatibility groups are transported in a single freight container or vehicle; and revising requirements for large lithium batteries which will simplify the regulatory requirements applicable to batteries used in high energy efficient hybrid vehicles. Finally, we are authorizing immediate voluntary compliance, delayed effective dates and a one-year transition period to allow for training of employees and to ease any burden on entities affected by the amendments.

E. Paperwork Reduction Act

We have current information collection approvals under OMB No. 2137–0018, Inspection and Testing of Portable Tanks and Intermediate Bulk Containers, which expires March 31, 2002, with 51,340 burden hours and $10,235,000 annual costs, and OMB No. 2137–0557, Approvals for Hazardous Materials, which expires March 31, 2002, with 18,302 burden hours and $413,737.40 annual costs. We believe that this final rule may result in minor incremental increases in the annual burden hours and costs. The current approvals has been revised and resubmitted to OMB for extension and reapproval.

OMB No. 2137–0018 contains the information collection and recordkeeping requirements in current §§ 173.32, 173.32a, 173.32b, 178.245 and 178.801 for tests, inspections and related records related to the manufacture, qualification, repair or modification of portable tanks or intermediate bulk containers. This information is used to verify that portable tanks and intermediate bulk containers meet the required manufacturing standards prior to being authorized for initial use, and that once manufactured, the packagings are maintenance in conformance with the applicable HMR requirements. OMB No. 2137–0018 is revised to include UN portable tanks and to revise section references to the portable tank requalification requirements which are being relocated to subpart G in Part 180.

OMB No. 2137–0557 contains the information collection and recordkeeping requirements for packagings and hazardous materials approvals. This information is used to verify that portable tank designs meet the applicable standards. OMB No. 2137–0557 is revised to include UN portable tanks and to revise the section references to the portable tank design approval requirements which are being relocated to Part 178.

We estimate that the adjusted total information collection and recordkeeping burdens are as follows:

OMB No. 2137–0018:

Affected Public: Manufacturers, requalifiers, repairers and modifiers, and owners of certain DOT specification and exemption portable tanks and intermediate bulk containers.

Number of Respondents: 8,770.

Total Annual Responses: 86,100.

Total Annual Burden Hours: 66,390.

Total Annual Burden Cost: $ 7,137,500.

One-time Annual Start Up Burden Hours: 350.

OMB No. 2137–0557:

Number of Respondents: 3,518.

Total Annual Responses: 3,869.

Total Annual Burden Hours: 18,381.

Total Annual Burden Cost: $ 413,737.40.

Requests for a copy of the information collection approvals, requests and data should be directed to Deborah Boothe, Office of Hazardous Materials Standards (DHM–10), Research and Special Programs Administration, Room 8102, 400 Seventh Street, SW, Washington, DC 20590–0001, Telephone (202) 366–8553.

F. Regulation Identifier Number (RIN)

A regulation identifier number (RIN) is assigned to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. The RIN number contained in the heading of this document can be used to cross-reference this action with the Unified Agenda.

G. Unfunded Mandates Reform Act

This final rule does not impose unfunded mandates under the Unfunded Mandates Reform Act of 1995. It does not result in costs of $100 million or more to either State, local or tribal governments, in the aggregate, or to the private sector, and is the least burdensome alternative that achieves the objective of the rule.

H. Environmental Assessment

The National Environmental Policy Act of 1969 (NEPA) requires Federal agencies to consider the consequences of major federal actions and prepare a detailed statement on actions significantly affecting the quality of the human environment. We developed an assessment to determine the effects of these revisions on the environment and whether a more comprehensive environmental impact statement may be required. Our findings conclude that there are no significant environmental impacts associated with this final rule. Consistency in regulations for the transportation of hazardous materials aids in the shipper's understanding of what is required and permits shippers to more easily comply with safety regulations and avoid the potential for environmental damage or contamination. For interested parties, an environmental assessment is available in the public docket.

List of Subjects

49 CFR Part 171

Exports, Hazardous materials transportation, Hazardous waste, Imports, Incorporation by reference, Reporting and recordkeeping requirements.

49 CFR Part 172

Education, Hazardous materials transportation, Hazardous waste, Labeling, Markings, Packaging and containers, Reporting and recordkeeping requirements.

49 CFR Part 173

Hazardous materials transportation, Packaging and containers, Radioactive materials, Reporting and recordkeeping requirements, Uranium.

49 CFR Part 175

Air carriers, Hazardous materials transportation, Radioactive materials, Reporting and recordkeeping requirements.

49 CFR Part 176

Hazardous materials transportation, Maritime carriers, Radioactive materials, Reporting and recordkeeping requirements.

49 CFR Part 177

Hazardous materials transportation, Motor carriers, Radioactive materials, Reporting and recordkeeping requirements.

49 CFR Part 178

Hazardous materials transportation, Motor vehicle safety, Packaging and containers, Reporting and recordkeeping requirements.

49 CFR Part 179

Hazardous materials transportation, Railroad safety, Reporting and recordkeeping requirements.

49 CFR Part 180

Hazardous materials transportation, Motor carriers, Motor vehicle safety, Packaging and containers, Railroad safety, Reporting and recordkeeping requirements.

In consideration of the foregoing, 49 CFR Chapter I is amended as follows:

PART 171—GENERAL INFORMATION, REGULATIONS, AND DEFINITIONS

1. The authority citation for part 171 continues to read as follows:

Authority: 49 U.S.C. 5101–5127; 49 CFR 1.53.

2. In § 171.7, in paragraph (a)(1), the fourth sentence is revised and in the paragraph (a)(3) table:

a. Under the entry ''American Society for Testing and Materials'', a new entry is added in alpha-numeric order;

b. Under the entry ''International Atomic Energy Agency (IAEA)'', a new entry is added in alpha-numeric order;

c. Under the entry ''International Civil Aviation Organization (ICAO)'', the existing entry is revised;

d. Under the entry ''International Maritime Organization (IMO)'', for the entry ''International Maritime Dangerous Goods (IMDG) Code, 2000 edition'', in the second column, add ''; 176.720'' after ''176.30''; and

e. Under the entry ''International Organization for Standardization'', three new entries are added in alpha-numeric order.

The revisions and additions read as follows:

§ 171.7 Reference material.

(a) *Matter incorporated by reference*—(1) * * * The material listed in paragraph (a)(3) has been approved for incorporation by reference by the Director of the Federal Register in accordance with 5 U.S.C 552(a) and 1 CFR part 51. * * *

* * * * *

(3) *Table of material incorporated by reference.* * * *

Source and name of material	49 CFR reference
* * * * * * *	
American Society for Testing and Materials	
* * * * * * *	
ASTM E 112–96 Standard Test Methods for Determining Average Grain Size, 1996 Edition	178.274
* * * * * * *	
International Atomic Energy Agency (IAEA)	
* * * * * * *	
IAEA, Regulations for the Safe Transport of Radioactive Material, No. TS–R–1, 1996 Edition	171.12
* * * * * * *	
International Civil Aviation Organization (ICAO)	
* * * * * * *	
Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Technical Instructions), DOC 9284–AN/905, 2001–2002 Edition.	171.11; 172.202; 172.401; 172.512; 172.602
* * * * * * *	
International Organization for Standardization	
* * * * * * *	
ISO 1496–3 Series 1 freight containers—Specification and testing, Part 3: Tank containers for liquids, gases and pressurized dry bulk, March 1, 1995, Fourth Edition.	178.274
* * * * * * *	
ISO 4126–1 Safety valves—Part 1: General Requirements, December 15, 1991, First Edition	178.274
* * * * * * *	
ISO 6892 Metallic materials—Tensile testing, July 15, 1984, First Edition	178.274
* * * * * * *	

* * * * *

3. In § 171.8, the following definitions are added in appropriate alphabetical order to read as follows:

§ 171.8 Definitions and abbreviations.

* * * * *

Large packaging means a packaging that—

(1) Consists of an outer packaging which contains articles or inner packagings;

(2) Is designated for mechanical handling;

(3) Exceeds 400 kg net mass or 450 liters (118.9 gallons) capacity;

(4) Has a volume of not more than 3 m^3 (see § 178.801(i) of this subchapter); and

(5) Conforms to the requirements for the construction, testing and marking of large packagings as specified in the UN Recommendations.

* * * * *

Stabilized means that the hazardous material is in a condition that precludes uncontrolled reaction. This may be achieved by methods such as adding an inhibiting chemical, degassing the hazardous material to remove dissolved oxygen and inerting the air space in the package, or maintaining the hazardous material under temperature control.

* * * * *

UN portable tank means a intermodal tank having a capacity of more than 450 liters (118.9 gallons). It includes a shell fitted with service equipment and structural equipment, including stabilizing members external to the shell and skids, mountings or accessories to facilitate mechanical handling. A UN portable tank must be capable of being filled and discharged without the removal of its structural equipment and must be capable of being lifted when full. Cargo tanks, rail tank car tanks, non-metallic tanks, non-specification tanks, bulk bins, and IBCs and packagings made to cylinder specifications are not UN portable tanks.

* * * * *

4. In § 171.10, in paragraph (c)(2), the Table of Conversion Factors for SI Units, a unit of measure is added as the last entry, and in the abbreviation notes following the Table, in the (SI)

abbreviations, a new abbreviation ''; Newton, N'' is added after ''mSv'' to read as follows:

§ 171.10 Units of measure.

* * * * *

(c) * * *

TABLE OF CONVERSION FACTORS FOR SI UNITS

Measurement	SI to U.S. standard	U.S. standard to SI
*	*	*
Force	1 Newton = 0.2248 Pound-force	1 Pound-force=4.483 N

* * * * *

5. In § 171.11, the introductory text is revised, the comma at the end of paragraphs (d)(6)(i) and (d)(6)(ii) are removed and a period is added in its place, '', and'' at the end of paragraph (d)(6)(iv) is removed and a period is added in their place, and new paragraphs (d)(6)(vi) and (d)(17) are added to read as follows:

§ 171.11 Use of ICAO Technical Instructions.

Notwithstanding the requirements of parts 172 and 173 of this subchapter, a hazardous material may be transported by aircraft, and by motor vehicle either before or after being transported by aircraft, in accordance with the ICAO Technical Instructions (see § 171.7) if the hazardous material;

* * * * *

(d) * * *

(6) * * *

(vi) The definition for ''radioactive material'' in § 173.403 of this subchapter applies to radioactive materials transported under the provisions of this section.

* * * * *

(17) An organic peroxide that is not identified by technical name in the Organic Peroxide Table in § 173.225(b) of this subchapter must be approved by the Associate Administrator in accordance with the requirements of § 173.128(d) of this subchapter.

6. In § 171.12, paragraph (b)(5) is revised, new paragraph (b)(20) is added, paragraphs (d) heading and introductory text and (d)(4) are revised, ''and'' at the end of paragraph (d)(5) is removed, the period at the end of paragraph (d)(6) is removed and ''; and'' is added in its place, and paragraph (d)(7) is added to read as follows:

§ 171.12 Import and export shipments.

* * * * *

(b) * * *

(5) Except for IBCs and UN portable tanks intended for liquids or solids, hazardous materials that conform to the requirements of the IMDG Code, bulk packagings must conform to the requirements of this subchapter. For UN portable tanks, Special Provisions TP37, TP38, TP44 and TP45 must be met when applicable. Except as specified in paragraph (b)(8) of this section for a material poisonous (toxic) by inhalation (see § 171.8 of this subchapter), the T Codes specified for specific hazardous materials in Column 13 of the Dangerous Goods List of the IMDG Code may be applied to the transportation of those materials in IM, IMO and DOT Specification 51 portable tanks.

* * * * *

(20) An organic peroxide that is not identified by technical name in the Organic Peroxide Table in § 173.225(b) of this subchapter must be approved by the Associate Administrator in accordance with the requirements of § 173.128(d) of this subchapter.

* * * * *

(d) *Use of International Atomic Energy Agency (IAEA) regulations for Class 7 (radioactive) materials.* Class 7 (radioactive) materials being imported into or exported from the United States, or passing through the United States in the course of being shipped between places outside the United States, may be offered and accepted for transportation when packaged, marked, labeled, and otherwise prepared for shipment in accordance with IAEA ''Regulations for the Safe Transport of Radioactive Material,'' Safety Series No. 6, 1985 edition, or TS-R–1, 1996 edition (see § 171.7) , if—

* * * * *

(4) The country of origin for the shipment has adopted the corresponding edition (Safety Series No. 6, 1985 Edition, or TS-R–1, 1996 Edition) of the IAEA ''Regulations for the Safe Transport of Radioactive Material';

* * * * *

(7) The definition for ''radioactive material'' in § 173.403 of this subchapter is applied to radioactive materials transported under the provisions of this section.

7. In § 171.12a, a new paragraph (b)(18) is added to read as follows:

§ 171.12a Canadian shipments and packagings.

* * * * *

(b) * * *

(18) An organic peroxide that is not identified by technical name in the Organic Peroxide Table in § 173.225(b) of this subchapter must be approved by the Associate Administrator in accordance with the requirements of § 173.128(d) of this subchapter.

8. In § 171.14, paragraphs (d) introductory text, (d)(1) and (d)(2) introductory text are revised and new paragraphs (d)(4) and (d)(5) are added to read as follows:

§ 171.14 Transitional provisions for implementing certain requirements.

* * * * *

(d) A final rule published in the **Federal Register** on June 21, 2001, effective October 1, 2001, resulted in revisions to this subchapter. During the transition period, until October 1, 2002, as provided in paragraph (d)(1) of this section, a person may elect to comply with either the applicable requirements of this subchapter in effect on September 30, 2001, or the requirements published in the June 21, 2001 final rule.

(1) *Transition dates.* The effective date of the June 21, 2001 final rule is October 1, 2001. A delayed compliance date of October 1, 2002 is authorized. On October 1, 2002, all applicable regulatory requirements adopted in the June 21, 2001 final rule in effect on October 1, 2001 must be met.

(2) *Intermixing old and new requirements.* Prior to October 1, 2002, it is recommended that the hazard communication requirements be consistent where practicable. Marking, labeling, placarding, and shipping paper descriptions should conform to either the old requirements of this subchapter in effect on September 30, 2001, or the new requirements of this subchapter in the June 21, 2001 final rule without intermixing communication elements. However, intermixing is permitted, during the applicable transition period,

for packaging, hazard communication, and handling provisions, as follows:

* * * * *

(4) Until January 1, 2010, a hazardous material may be transported in an IM or IMO portable tank in accordance with the T Codes (Special Provisions) assigned to a hazardous material in Column (7) of the HMT in effect on September 30, 2001.

(5) Until October 1, 2005, proper shipping names that included the word ''inhibited'' prior to the June 21, 2001 final rule in effect on October 1, 2001, may continue to be shown on packagings in place of ''stabilized.''

PART 172—HAZARDOUS MATERIALS TABLE, SPECIAL PROVISIONS,HAZARDOUS MATERIALS COMMUNICATIONS, EMERGENCY RESPONSE INFORMATION,AND TRAINING REQUIREMENTS

9. The authority citation for part 172 continues to read as follows:

Authority: 49 U.S.C. 5101–5127; 49 CFR 1.53.

10–11. In § 172.101, paragraphs (b)(1) and (c)(11) are revised, new paragraphs (c)(16) and (k)(6) through (k)(20) are added, and the Hazardous Materials Table is revised to read as follows:

§ 172.101 Purpose and use of hazardous materials table.

* * * * *

(b) * * *

(1) The plus (+) sign fixes the proper shipping name, hazard class and packing group for that entry without regard to whether the material meets the definition of that class, packing group or any other hazard class definition. When the plus sign is assigned to a proper shipping name in Column (1) of the § 172.101 Table, it means that the material is known to pose a risk to humans. When a plus sign is assigned to mixtures or solutions containing a material where the hazard to humans is significantly different from that of the pure material or where no hazard to humans is posed, the material may be described using an alternative shipping name that represents the hazards posed by the material. An appropriate alternate proper shipping name and hazard class may be authorized by the Associate Administrator.

* * * * *

(c) * * *

(11) Except for a material subject to or prohibited by §§ 173.21, 173.54, 173.56(d), 173.56(e), 173.224(c) or 173.225(c) of this subchapter, a material that is considered to be a hazardous waste or a sample of a material for which the hazard class is uncertain and must be determined by testing may be assigned a tentative proper shipping name, hazard class, identification number and packing group, if applicable, based on the shipper's tentative determination according to:

(i) Defining criteria in this subchapter;

(ii) The hazard precedence prescribed in § 173.2a of this subchapter;

(iii) The shippers knowledge of the material;

(iv) In addition to paragraphs (c)(11)(i) through (iii) of this section, for a sample of a material, other than a waste, the following must be met:

(A) Except when the word ''Sample'' already appears in the proper shipping name, the word ''Sample'' must appear in association with the basic description of a sample on the shipping paper;

(B) When the proper shipping description for a sample is assigned a ''G'' in Column (1) of the § 172.101 Table, and the primary constituent(s) for which the tentative classification is based are not known, the provisions requiring a technical name for the constituent(s) do not apply; and

(C) A sample must be transported in a combination packaging which conforms to the requirements of this subchapter that are applicable to the tentative packing group assigned, and may not exceed a net mass of 2.5 kg. (5.5 pounds) per package.

Note to Paragraph (c)(11): For the transportation of self-reactive, organic peroxide and explosive samples, see §§ 173.224(c)(3), 173.225(c)(2) and 173.56(d) of this subchapter, respectively.

* * * * *

(16) Unless it is already included in the proper shipping name in the § 172.101 Table, the qualifying words ''liquid'' or ''solid'' may be added in association with the proper shipping name when a hazardous material specifically listed by name in the § 172.101 Table may, due to the differing physical states of the various isomers of the material, be either a liquid or a solid (for example ''Dinitrotoluenes, liquid'' and ''Dinitrotoluenes, solid''). Use of the words ''liquid'' or ''solid'' is subject to the limitations specified for the use of the words ''mixture'' or ''solution'' in paragraph (c)(10) of this section. The qualifying word ''molten'' may be added in association with the proper shipping name when a hazardous material, which is a solid in accordance with the definition in § 171.8 of this subchapter, is offered for transportation in the molten state (for example, ''Alkylphenols, solid, n.o.s., molten'').

* * * * *

(k) * * *

(6) Stowage category ''01'' means the material may be stowed ''on deck'' or ''under deck'' on a cargo vessel (up to 12 passengers) and on a passenger vessel.

(7) Stowage category ''02'' means the material may be stowed ''on deck'' or ''under deck'' on a cargo vessel (up to 12 passengers) and ''on deck'' in closed cargo transport units or ''under deck'' in closed cargo transport units on a passenger vessel.

(8) Stowage category ''03'' means the material may be stowed ''on deck'' or ''under deck'' on a cargo vessel (up to 12 passengers) and ''on deck'' in closed cargo transport units on a passenger vessel.

(9) Stowage category ''04'' means the material may be stowed ''on deck'' or ''under deck'' on a cargo vessel (up to 12 passengers) but the material is prohibited on a passenger vessel.

(10) Stowage category ''05'' means the material may be stowed ''on deck'' in closed cargo transport units or ''under deck'' on a cargo vessel (up to 12 passengers) and on a passenger vessel.

(11) Stowage category ''06'' means the material may be stowed ''on deck'' in closed cargo transport units or ''under deck'' on a cargo vessel (up to 12 passengers) and ''on deck'' in closed cargo transport units or ''under deck'' in closed cargo transport units on a passenger vessel.

(12) Stowage category ''07'' means the material may be stowed ''on deck'' in closed cargo transport units or ''under deck'' on a cargo vessel (up to 12 passengers) and ''on deck'' only in closed cargo transport units on a passenger vessel.

(13) Stowage category ''08'' means the material may be stowed ''on deck'' in closed cargo transport units or ''under deck'' on a cargo vessel (up to 12 passengers) but the material is prohibited on a passenger vessel.

(14) Stowage category ''09'' means the material may be stowed ''on deck only'' in closed cargo transport units or ''under deck'' in closed cargo transport units on a cargo vessel (up to 12 passengers) and on a passenger vessel.

(15) Stowage category ''10'' means the material may be stowed ''on deck'' in closed cargo transport units or ''under deck'' in closed cargo transport units on a cargo vessel (up to 12 passengers) and ''on deck'' only in closed cargo transport units on a passenger vessel.

(16) Stowage category ''11'' means the material may be stowed ''on deck'' in closed cargo transport units or ''under deck'' in magazine stowage type ''c'' on a cargo vessel (up to 12 passengers) and

''on deck'' only in closed cargo transport units on a passenger vessel.

(17) Stowage category ''12'' means the material may be stowed ''on deck'' in closed cargo transport units or ''under deck'' in magazine stowage type ''c'' on a cargo vessel (up to 12 passengers) but the material is prohibited on a passenger vessel.

(18) Stowage category ''13'' means the material may be stowed ''on deck'' in closed cargo transport units or ''under deck'' in magazine stowage type ''A'' on a cargo vessel (up to 12 passengers) and ''on deck'' only in closed cargo transport units on a passenger vessel.

(19) Stowage category ''14'' means the material may be stowed ''on deck'' in closed cargo transport units on a cargo vessel (up to 12 passengers) but the material is prohibited on a passenger vessel.

(20) Stowage category ''15'' means the material may be stowed ''on deck'' in closed cargo transport units or ''under deck'' in closed cargo transport units on a cargo vessel (up to 12 passengers) but the material is prohibited on a passenger vessel.

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BILLING CODE 4910–60–P

§ 172.101 HAZARDOUS MATERIALS TABLE

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Accellerene, see p-Nitrosodimethylaniline.												
	Accumulators, electric, see Batteries, wet *etc.*												
	Acetal	3	UN1088	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	E	
	Acetaldehyde	3	UN1089	I	3	A3, B16, T11, TP2, TP7	None	201	243	Forbidden	30 L	E	
A	Acetaldehyde ammonia	9	UN1841	III	9	IB8, IP6	155	204	240	200 kg	200 kg	A	34
	Acetaldehyde oxime	3	UN2332	III	3	B1, IB3, T4, TP1	150	203	242	60 L	220 L	A	
	Acetic acid, glacial *or* Acetic acid solution, *with more than 80 percent acid, by mass.*	8	UN2789	II	8, 3	A3, A6, A7, A10, B2, IB2, T7, TP2	154	202	243	1 L	30 L	A	
	Acetic acid solution, *not less than 50 percent but not more than 80 percent acid, by mass.*	8	UN2790	II	8	A3, A6, A7, A10, B2, IB2, T7, TP2	154	202	242	1 L	30 L	A	
	Acetic acid solution, *with more than 10 percent and less than 50 percent acid, by mass.*	8	UN2790	III	8	IB3, T4, TP1	154	203	242	5 L	60 L	A	
	Acetic anhydride	8	UN1715	II	8, 3	A3, A6, A7, A10, B2, IB2, T7, TP2	154	202	243	1 L	30 L	A	40
	Acetone	3	UN1090	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Acetone cyanohydrin, stabilized	6.1	UN1541	I	6.1	2, A3, B9, B14, B32, B76, B77, N34, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	25, 40, 49
	Acetone oils	3	UN1091	II	3	IB2, T4, TP1, TP8	150	202	242	5 L	60 L	B	
	Acetonitrile	3	UN1648	II	3	IB2, T7, TP2	150	202	242	5L	60 L	B	40
	Acetyl acetone peroxide with more than 9 percent by mass active oxygen.	Forbidden											
	Acetyl benzoyl peroxide, solid, or with more than 40 percent in solution.	Forbidden											
	Acetyl bromide	8	UN1716	II	8	B2, IB2, T8, TP2, TP12	154	202	242	1 L	30 L	C	40
	Acetyl chloride	3	UN1717	II	3, 8	A3, A6, A7, IB1, N34, T8, TP2, TP12	None	202	243	1 L	5 L	B	40
	Acetyl cyclohexanesulfonyl peroxide, with more than 82 percent wetted with less than 12 percent water.	Forbidden											
	Acetyl iodide	8	UN1898	II	8	B2, IB2, T7, TP2, TP13	154	202	242	1 L	30 L	C	40
	Acetyl methyl carbinol	3	UN2621	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Acetyl peroxide, solid, or with more than 25 percent in solution.	Forbidden											
	Acetylene, dissolved	2.1	UN1001		2.1		None	303	None	Forbidden	15 kg	D	25, 40, 57
	Acetylene (liquefied)	Forbidden											
	Acetylene silver nitrate	Forbidden											
	Acetylene tetrabromide, see Tetrabromoethane.												
	Acid butyl phosphate, see Butyl acid phosphate.												
	Acid, sludge, *see* Sludge acid												
	Acridine	6.1	UN2713	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
	Acrolein dimer, stabilized	3	UN2607	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	40
	Acrolein, stabilized	6.1	UN1092	I	6.1, 3	1, B9, B14, B30, B42, B72, B77, T22, TP2, TP7, TP13, TP38, TP44	None	226	244	Forbidden	Forbidden	D	40
	Acrylamide	6.1	UN2074	III	6.1	IB8, IP3, T4, TP1	153	213	240	100 kg	200 kg	A	12
	Acrylic acid, stabilized	8	UN2218	II	8, 3	B2, IB2, T7, TP2	154	202	243	1 L	30 L	C	25, 40
	Acrylonitrile, stabilized	3	UN1093	I	3, 6.1	B9, T14, TP2, TP13	None	201	243	Forbidden	30 L	E	40
	Actuating cartridge, explosive, see Cartridges, power device.												
	Adhesives, *containing a flammable liquid.*	3	UN1133	I	3	B42, T11, TP1, TP8, TP27	150	201	243	1 L	30 L	B	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	.....	.....		II	3	B52, IB2, T4, TP1, TP8	150	173	242	5 L	60 L	B	.....
	.....	.....		III	3	B1, B52, IB3, T2, TP1	150	173	242	60 L	220 L	A	.....
	Adiponitrile	6.1	UN2205	III	6.1	IB3, T3, TP1	153	203	241	60 L	220 L	A	.....
	Aerosols, *corrosive, Packing Group II or III, (each not exceeding 1 L capacity)*.	2.2	UN1950	.....	2.2, 8	A34	306	None	None	75 kg	150 kg	A	40, 48, 85
	Aerosols, *flammable, (each not exceeding 1 L capacity)*.	2.1	UN1950	.....	2.1	N82	306	None	None	75 kg	150 kg	A	40, 48, 85
	Aerosols, flammable, n.o.s. (*engine starting fluid) (each not exceeding 1 L capacity)*.	2.1	UN1950	.....	2.1	N82	306	None	None	Forbidden	150 kg	A	40, 48, 85
	Aerosols, *non-flammable, (each not exceeding 1 L capacity)*.	2.2	UN1950	.....	2.2		306, 307	None	None	75 kg	150 kg	A	48, 85
	Aerosols, *poison, each not exceeding 1 L capacity*.	2.2	UN1950	.....	2.2		306	None	None	Forbidden	Forbidden	A	40, 48, 85
	Air bag inflators, compressed gas *or* Air bag modules, compressed gas *or* Seat-belt pretensioners, compressed gas.	2.2	UN3353	.....	2.2	133	166	166	166	75 kg	150 kg	A	.....
	Air bag inflators, *pyrotechnic or* Air bag modules, *pyrotechnic or* Seat-belt pretensioner, *pyrotechnic*.	1.4G	UN0503	II	1.4G ...		166	166	166	Forbidden	75 kg	02	24E
	Air bag inflators, *pyrotechnic or* Air bag modules, *pyrotechnic or* Seat-belt pretensioner, *pyrotechnic*.	9	UN3268	III	9		166	166	166	25 kg	100 kg	A	.....
	Air, compressed	2.2	UN1002	.....	2.2	78	306	302	302	75 kg	150 kg	A	.....
	Air, refrigerated liquid, *(cryogenic liquid)*.	2.2	UN1003	.....	2.2, 5.1	T75, TP5, TP22	320	316	318, 319	Forbidden	150 kg	D	51
	Air, refrigerated liquid, *(cryogenic liquid) non-pressurized*.	2.2	UN1003	.....	2.2, 5.1	T75, TP5, TP22	320	316	318, 319	Forbidden	Forbidden	D	51
	Aircraft engines (including turbines), see Engines, internal combustion.	.....			.....		.....	.....	.....	.....	.....		.....
	Aircraft evacuation slides, see Life saving appliances *etc*.	.....			.....		.....	.....	.....	.....	.....		.....
	Aircraft hydraulic power unit fuel tank *(containing a mixture of anhydrous hydrazine and monomethyl hydrazine) (M86 fuel)*.	3	UN3165	I	3, 6.1, 8.		None	172	None	Forbidden	42 L	E	.....
	Aircraft survival kits, see Life saving appliances *etc*.	.....			.....		.....	.....	.....	.....	.....		.....
G	Alcoholates solution, n.o.s., *in alcohol*.	3	UN3274	II	3, 8	IB2	None	202	243	1 L	5 L	B	.....
	Alcoholic beverages	3	UN3065	II	3	24, B1, IB2, T4, TP1	150	202	242	5 L	60 L	A	.....
	.....	.....		III	3	24, B1, IB3, N11, T2, TP1	150	203	242	60 L	220 L	A	.....
	Alcohols, n.o.s.	3	UN1987	I	3	T11, TP1, TP8, TP27	None	201	243	1 L	30 L	E	.....
	.....	.....		II	3	IB2, T7, TP1, TP8, TP28	150	202	242	5 L	60 L	B	.....
	.....	.....		III	3	B1, IB3, T4, TP1, TP29	150	203	242	60 L	220 L	A	.....
G	Alcohols, flammable, toxic, n.o.s.	3	UN1986	I	3, 6.1	T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	E	40
	.....	.....		II	3, 6.1	IB2, T11, TP2, TP27	None	202	243	1 L	60 L	B	40
	.....	.....		III	3, 6.1	B1, IB3, T7, TP1, TP28	None	203	242	60 L	220 L	A	.....
	Aldehydes, n.o.s.	3	UN1989	I	3	T11, TP1, TP27	None	201	243	1 L	30 L	E	.....
	.....	.....		II	3	IB2, T7, TP1, TP8, TP28	150	202	242	5 L	60 L	B	.....
	.....	.....		III	3	B1, IB3, T4, TP1, TP29	150	203	242	60 L	220 L	A	.....
G	Aldehydes, flammable, toxic, n.o.s..	3	UN1988	I	3, 6.1	T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	E	40
	.....	.....		II	3, 6.1	IB2, T11, TP2, TP27	None	202	243	1 L	60 L	B	40
	.....	.....		III	3, 6.1	B1, IB3, T7, TP1, TP28	150	203	242	60 L	220 L	A	.....
	Aldol	6.1	UN2839	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	12
G	Alkali metal alcoholates, self-heating, corrosive, n.o.s..	4.2	UN3206	II	4.2, 8	64, IB5, IP2	None	212	242	15 kg	50 kg	B	.....
	.....	.....		III	4.2, 8	64, IB8, IP3	None	213	242	25 kg	100 kg	B	.....
	Alkali metal alloys, liquid, n.o.s. ...	4.3	UN1421	I	4.3	A2, A3, B48, N34	None	201	244	Forbidden	1 L	D	.....
	Alkali metal amalgam, liquid	4.3	UN1389	I	4.3	A2, A3, N34	None	201	244	Forbidden	1 L	D	40
	Alkali metal amalgam, solid	4.3	UN1389	I	4.3	IB4, IP1, N40	None	211	242	Forbidden	15 kg	D	.....
	Alkali metal amides	4.3	UN1390	II	4.3	A6, A7, A8, A19, A20, IB7, IP2	151	212	241	15 kg	50 kg	E	40
	Alkali metal dispersions, *or* Alkaline earth metal dispersions.	4.3	UN1391	I	4.3	A2, A3	None	201	244	Forbidden	1 L	D	.....

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Alkaline corrosive liquids, n.o.s., see Caustic alkali liquids, n.o.s..												
G	Alkaline earth metal alcoholates, n.o.s..	4.2	UN3205	II	4.2	65, IB6, IP2	None	212	241	15 kg	50 kg	B	
				III	4.2	65, IB8, IP3	None	213	241	25 kg	100 kg	B	
	Alkaline earth metal alloys, n.o.s.	4.3	UN1393	II	4.3	A19, IB7, IP2	151	212	241	15 kg	50 kg	E	
	Alkaline earth metal amalgams	4.3	UN1392	I	4.3	A19, IB4, IP1, N34, N40	None	211	242	Forbidden	15 kg	D	
G	Alkaloids, liquid, n.o.s., *or* Alkaloid salts, liquid, n.o.s..	6.1	UN3140	I	6.1	A4, T14, TP2, TP27	None	201	243	1 L	30 L	A	
				II	6.1	IB2, T11, TP2, TP27	None	202	243	5 L	60 L	A	
				III	6.1	IB3, T7, TP1, TP28	153	203	241	60 L	220 L	A	
G	Alkaloids, solid, n.o.s. *or* Alkaloid salts, solid, n.o.s. *poisonous*.	6.1	UN1544	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	
				II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
				III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
	Alkyl sulfonic acids, liquid *or* Aryl sulfonic acids, liquid *with more than 5 percent free sulfuric acid*.	8	UN2584	II	8	B2, IB2, T8, TP2, TP12, TP13	154	202	242	1 L	30 L	B	
	Alkyl sulfonic acids, liquid *or* Aryl sulfonic acids, liquid *with not more than 5 percent free sulfuric acid*.	8	UN2586	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	B	
	Alkyl sulfonic acids, solid *or* Aryl sulfonic acids, solid, *with more than 5 percent free sulfuric acid*.	8	UN2583	II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	A	
	Alkyl sulfonic acids, solid *or* Aryl sulfonic acids, solid *with not more than 5 percent free sulfuric acid*.	8	UN2585	III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	
	Alkylphenols, liquid, n.o.s. *(including C2-C12 homologues)*.	8	UN3145	I	8	T14, TP2	None	201	243	0.5 L	2.5 L	B	
				II	8	IB2, T11, TP2, TP27	154	202	242	1 L	30 L	B	
				III	8	IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	
	Alkylphenols, solid, n.o.s. *(including C2-C12 homologues)*.	8	UN2430	I	8	IB7, IP1, T10, TP2, TP28	None	211	242	1 kg	25 kg	B	
				II	8	IB8, IP2, IP4, T3, TP2	154	212	240	15 kg	50 kg	B	
				III	8	IB8, IP3, T3, TP1	154	213	240	25 kg	100 kg	A	
	Alkylsulfuric acids	8	UN2571	II	8	B2, IB2, T8, TP2, TP12, TP13	154	202	242	1 L	30 L	C	14
	Allethrin, see Pesticides, liquid, toxic, n.o.s..												
	Allyl acetate	3	UN2333	II	3, 6.1	IB2, T7, TP1, TP13	None	202	243	1 L	60 L	E	40
	Allyl alcohol	6.1	UN1098	I	6.1, 3	2, B9, B14, B32, B74, B77, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Allyl bromide	3	UN1099	I	3, 6.1	T14, TP2, TP13	None	201	243	Forbidden	30 L	B	40
	Allyl chloride	3	UN1100	I	3, 6.1	T14, TP2, TP13	None	201	243	Forbidden	30 L	E	40
	Allyl chlorocarbonate, see Allyl chloroformate.												
	Allyl chloroformate	6.1	UN1722	I	6.1, 3, 8.	2, A3, B9, B14, B32, B74, N41, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Allyl ethyl ether	3	UN2335	II	3, 6.1	IB2, T7, TP1, TP13	None	202	243	1 L	60 L	E	40
	Allyl formate	3	UN2336	I	3, 6.1	T14, TP2, TP13	None	201	243	Forbidden	30 L	E	40
	Allyl glycidyl ether	3	UN2219	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Allyl iodide	3	UN1723	II	3, 8	A3, A6, IB1, N34, T7, TP2, TP13	None	202	243	1 L	5 L	B	40
	Allyl isothiocyanate, stabilized	6.1	UN1545	II	6.1, 3	A3, A7, IB2, T7, TP2	None	202	243	Forbidden	60 L	D	40
	Allylamine	6.1	UN2334	I	6.1, 3	2, B9, B14, B32, B74, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Allyltrichlorosilane, stabilized	8	UN1724	II	8, 3	A7, B2, B6, IB2, N34, T7, TP2, TP13	None	202	243	Forbidden	30 L	C	40
	Aluminum alkyl halides	4.2	UN3052	I	4.2, 4.3	B9, B11, T21, TP2, TP7	None	181	244	Forbidden	Forbidden	D	
	Aluminum alkyl hydrides	4.2	UN3076	I	4.2, 4.3	B9, B11, T21, TP2, TP7	None	181	244	Forbidden	Forbidden	D	
	Aluminum alkyls	4.2	UN3051	I	4.2, 4.3	B9, B11, T21, TP2, TP7	None	181	244	Forbidden	Forbidden	D	
	Aluminum borohydride *or* Aluminum borohydride in devices.	4.2	UN2870	I	4.2, 4.3	B11	None	181	244	Forbidden	Forbidden	D	
	Aluminum bromide, anhydrous	8	UN1725	II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	A	40
	Aluminum bromide, solution	8	UN2580	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Aluminum carbide	4.3	UN1394	II	4.3	A20, IB7, IP2, N41	151	212	242	15 kg	50 kg	A	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Aluminum chloride, anhydrous	8	UN1726	II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	A	40
	Aluminum chloride, solution	8	UN2581	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Aluminum dross, wet or hot	Forbidden											
	Aluminum ferrosilicon powder	4.3	UN1395	II	4.3, 6.1	A19, IB5, IP2	151	212	242	15 kg	50 kg	A	40, 85, 103
				III	4.3, 6.1	A19, A20, IB4	151	213	241	25 kg	100 kg	A	40, 85, 103
	Aluminum hydride	4.3	UN2463	I	4.3	A19, N40	None	211	242	Forbidden	15 kg	E	
D	Aluminum, molten	9	NA9260	III	9	IB3, T1, TP3	None	None	247	Forbidden	Forbidden	D	
	Aluminum nitrate	5.1	UN1438	III	5.1	A1, A29, IB8, IP3	152	213	240	25 kg	100 kg	A	
	Aluminum phosphate solution, see Corrosive liquids, *etc.*												
	Aluminum phosphide	4.3	UN1397	I	4.3, 6.1	A8, A19, N40	None	211	242	Forbidden	15 kg	E	40, 85
	Aluminum phosphide pesticides	6.1	UN3048	I	6.1	A8, IB7, IP1	None	211	242	Forbidden	15 kg	E	40, 85
	Aluminum powder, coated	4.1	UN1309	II	4.1	IB8, IP2, IP4	151	212	240	15 kg	50 kg	A	13, 39, 101
				III	4.1	IB8, IP3	151	213	240	25 kg	100 kg	A	13, 39, 101
	Aluminum powder, uncoated	4.3	UN1396	II	4.3	A19, A20, IB7, IP2	151	212	242	15 kg	50 kg	A	39
				III	4.3	A19, A20, IB8, IP4	151	213	241	25 kg	100 kg	A	39
	Aluminum resinate	4.1	UN2715	III	4.1	IB6	151	213	240	25 kg	100 kg	A	
	Aluminum silicon powder, uncoated.	4.3	UN1398	III	4.3	A1, A19, IB8, IP4	151	213	241	25 kg	100 kg	A	40, 85, 103
	Aluminum smelting by-products *or* Aluminum remelting by-products.	4.3	UN3170	II	4.3	128, B115, IB7, IP2	None	212	242	15 kg	50 kg	B	85, 103
				III	4.3	128, B115, IB8, IP4	None	213	241	25 kg	100 kg	B	85, 103
	Amatols, see Explosives, blasting, type B.												
G	Amines, flammable, corrosive, n.o.s. *or* Polyamines, flammable, corrosive, n.o.s..	3	UN2733	I	3, 8	T14, TP1, TP27	None	201	243	0.5 L	2.5 L	D	40
				II	3, 8	IB2, T11, TP1, TP27	None	202	243	1 L	5 L	B	40
				III	3, 8	B1, IB3, T7, TP1, TP28	150	203	242	5 L	60 L	A	40
G	Amines, liquid, corrosive, flammable, n.o.s. *or* Polyamines, liquid, corrosive, flammable, n.o.s..	8	UN2734	I	8, 3	A3, A6, N34, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	A	
				II	8, 3	IB2, T11, TP2, TP27	None	202	243	1 L	30 L	A	
G	Amines, liquid, corrosive, n.o.s, *or* Polyamines, liquid, corrosive, n.o.s..	8	UN2735	I	8	A3, A6, B10, N34, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	A	
				II	8	B2, IB2, T11, TP1, TP27	154	202	242	1 L	30 L	A	
				III	8	IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	
G	Amines, solid, corrosive, n.o.s., *or* Polyamines, solid, corrosive n.o.s..	8	UN3259	I	8	IB7, IP1	None	211	242	1 kg	25 kg	A	
				II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	A	
				III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	
	2-Amino-4-chlorophenol	6.1	UN2673	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	2-Amino-5-diethylaminopentane	6.1	UN2946	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	2-Amino-4,6-Dinitrophenol, wetted *with not less than 20 percent water by mass.*	4.1	UN3317	I	4.1	23, A8, A19, A20, N41	None	211	None	1 kg	15 kg	E	28, 36
	2-(2-Aminoethoxy) ethanol	8	UN3055	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	N-Aminoethylpiperazine	8	UN2815	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	12
+	Aminophenols (o-; m-; p-)	6.1	UN2512	III	6.1	IB8, IP3, T4, TP1	153	213	240	100 kg	200 kg	A	
	Aminopropyldiethanolamine, see Amines, *etc.*												
	n-Aminopropylmorpholine, see Amines, *etc.*												
	Aminopyridines *(o-; m-; p-)*	6.1	UN2671	II	6.1	IB8, IP2, IP4, T7, TP2	None	212	242	25 kg	100 kg	B	12, 40
I	Ammonia, anhydrous	2.3	UN1005		2.3, 8	4, T50	None	304	314, 315	Forbidden	25 kg	D	40, 57
D	Ammonia, anhydrous	2.2	UN1005		2.2	13, T50	None	304	314, 315	Forbidden	25 kg	D	40, 57
D	Ammonia solution, *relative density less than 0.880 at 15 degrees C in water, with more than 50 percent ammonia.*	2.2	UN3318		2.2	13, T50	None	304	314, 315	Forbidden	25 kg	D	40, 57
I	Ammonia solution, *relative density less than 0.880 at 15 degrees C in water, with more than 50 percent ammonia.*	2.3	UN3318		2.3, 8	4, T50	None	304	314, 315	Forbidden	25 kg	D	40, 57
	Ammonia solutions, *relative density between 0.880 and 0.957 at 15 degrees C in water, with more than 10 percent but not more than 35 percent ammonia.*	8	UN2672	III	8	IB3, T7, TP1	154	203	241	5 L	60 L	A	40, 85

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Ammonia solutions, *relative density less than 0.880 at 15 degrees C in water, with more than 35 percent but not more than 50 percent ammonia*.	2.2	UN2073	.....	2.2		306	304	314, 315	Forbidden	150 kg	E	40, 57
	Ammonium arsenate	6.1	UN1546	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	Ammonium azide	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Ammonium bifluoride, solid, see Ammonium hydrogen difluoride, solid.	.....			.....		.....	.....	.....	.....	.....		.....
	Ammonium bifluoride solution, see Ammonium hydrogen difluoride, solution.	.....			.....		.....	.....	.....	.....	.....		.....
	Ammonium bromate	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Ammonium chlorate	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Ammonium dichromate	5.1	UN1439	II	5.1	IB8, IP2, IP4	152	212	242	5 kg	25 kg	A	.....
	Ammonium dinitro-o-cresolate	6.1	UN1843	II	6.1	IB8, IP2, IP4, T7, TP2	None	212	242	25 kg	100 kg	B	36, 65, 66, 77
	Ammonium fluoride	6.1	UN2505	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	26
	Ammonium fluorosilicate	6.1	UN2854	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	26
	Ammonium fulminate	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Ammonium hydrogen sulfate	8	UN2506	II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	A	40
	Ammonium hydrogendifluoride, solid.	8	UN1727	II	8	IB8, IP2, IP4, N34	154	212	240	15 kg	50 kg	A	25, 26, 40
	Ammonium hydrogendifluoride, solution.	8	UN2817	II	8, 6.1	IB2, N34, T8, TP2, TP12, TP13	None	202	243	1 L	30 L	B	40
	.....	.....		III	8, 6.1	IB3, T4, TP1, TP12, TP13	154	203	241	5 L	60 L	B	40, 95
	Ammonium hydrosulfide, solution, see Ammonium sulfide solution.	.....			.....		.....	.....	.....	.....	.....		.....
D	Ammonium hydroxide, *see* Ammonia solutions, *etc*.	.....			.....		.....	.....	.....	.....	.....		.....
	Ammonium metavanadate	6.1	UN2859	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
D	Ammonium nitrate fertilizers	5.1	NA2072	III	5.1	7, IB8	152	213	240	25 kg	100 kg	B	48, 59, 60, 117
	Ammonium nitrate fertilizers; *uniform non-segregating mixtures of ammonium nitrate with added matter which is inorganic and chemically inert towards ammonium nitrate, with not less than 90 percent ammonium nitrate and not more than 0.2 percent combustible material (including organic material calculated as carbon), or with more than 70 percent but less than 90 percent ammonium nitrate and not more than 0.4 percent total combustible material*.	5.1	UN2067	III	5.1	52, IB8, IP3	152	213	240	25 kg	100 kg	B	48, 59, 60, 117
A W	Ammonium nitrate fertilizers: *uniform non-segregating mixtures of nitrogen/phosphate or nitrogen/postash types or complete fertilizers of nitrogen/phosphate/postash type, with not more than 70 percent ammonium nitrate and not more than 0.4 percent total added combustible material or with not more than 45 percent ammonium nitrate with unrestricted combustible material*.	9	UN2071	III	9	132, IB8	155	213	240	200 kg	200 kg	A	.....
D	Ammonium nitrate-fuel oil mixture *containing only prilled ammonium nitrate and fuel oil*.	1.5D	NA0331	II	1.5D ...		None	62	None	Forbidden	Forbidden	10	19E
	Ammonium nitrate, liquid *(hot concentrated solution)*.	5.1	UN2426	.....	5.1	B5, T7	None	None	243	Forbidden	Forbidden	D	59, 60
D	Ammonium nitrate mixed fertlizers	5.1	NA2069	III	5.1	10, IB8	152	213	240	25 kg	100 kg	B	48, 59, 60, 117
	Ammonium nitrate, *with more than 0.2 percent combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance*.	1.1D	UN0222	II	1.1D ...		None	62	None	Forbidden	Forbidden	10	19E
	Ammonium nitrate, *with not more than 0.2 percent of combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance*.	5.1	UN1942	III	5.1	A1, A29, IB8, IP3	152	213	240	25 kg	100 kg	A	48, 59, 60, 116
	Ammonium nitrite	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Ammonium perchlorate	1.1D	UN0402	II	1.1D ...	107	None	62	None	Forbidden	Forbidden	10	19E
	Ammonium perchlorate	5.1	UN1442	II	5.1	107, A9, IB6, IP2	152	212	242	5 kg	25 kg	E	58, 69, 106

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Ammonium permanganate	Forbidden											
	Ammonium persulfate	5.1	UN1444	III	5.1	A1, A29, IB8, IP3	152	213	240	25 kg	100 kg	A	
	Ammonium picrate, *dry or wetted with less than 10 percent water, by mass*.	1.1D	UN0004	II	1.1D		None	62	None	Forbidden	Forbidden	10	5E, 19E
	Ammonium picrate, wetted *with not less than 10 percent water, by mass*.	4.1	UN1310	I	4.1	23, A2, N41	None	211	None	0.5 kg	0.5 kg	D	28, 36
	Ammonium polysulfide, solution	8	UN2818	II	8, 6.1	IB2, T7, TP2, TP13	None	202	243	1 L	30 L	B	12, 26, 40
				III	8, 6.1	IB3, T4, TP1, TP13	154	203	241	5 L	60 L	B	12, 26, 40
	Ammonium polyvanadate	6.1	UN2861	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Ammonium silicofluoride, see Ammonium fluorosilicate.												
	Ammonium sulfide solution	8	UN2683	II	8, 6.1, 3.	IB1, T7, TP2, TP13	None	202	243	1 L	30 L	B	12, 22, 26, 100
	Ammunition, blank, see Cartridges for weapons, blank.												
	Ammunition, illuminating *with or without burster, expelling charge or propelling charge*.	1.2G	UN0171	II	1.2G			62	None	Forbidden	Forbidden	03	
	Ammunition, illuminating *with or without burster, expelling charge or propelling charge*.	1.3G	UN0254	II	1.3G			62	None	Forbidden	Forbidden	03	
	Ammunition, illuminating *with or without burster, expelling charge or propelling charge*.	1.4G	UN0297	II	1.4G			62	None	Forbidden	75 kg	02	
	Ammunition, incendiary *liquid or gel, with burster, expelling charge or propelling charge*.	1.3J	UN0247	II	1.3J			62	None	Forbidden	Forbidden	04	23E
	Ammunition, incendiary (water-activated contrivances) with burster, expelling charge or propelling charge, see Contrivances, water-activated, etc..												
	Ammunition, incendiary, white phosphorus, *with burster, expelling charge or propelling charge*.	1.2H	UN0243	II	1.2H			62	None	Forbidden	Forbidden	08	8E, 14E, 15E, 17E
	Ammunition, incendiary, white phosphorus, *with burster, expelling charge or propelling charge*.	1.3H	UN0244	II	1.3H			62	None	Forbidden	Forbidden	08	8E, 14E, 15E, 17E
	Ammunition, incendiary *with or without burster, expelling charge, or propelling charge*.	1.2G	UN0009	II	1.2G			62	None	Forbidden	Forbidden	03	
	Ammunition, incendiary *with or without burster, expelling charge, or propelling charge*.	1.3G	UN0010	II	1.3G			62	None	Forbidden	Forbidden	03	
	Ammunition, incendiary *with or without burster, expelling charge or propelling charge*.	1.4G	UN0300	II	1.4G			62	None	Forbidden	75 kg	02	
	Ammunition, practice	1.4G	UN0362	II	1.4G			62	None	Forbidden	75 kg	02	
	Ammunition, practice	1.3G	UN0488	II	1.3G			62	None	Forbidden	Forbidden	03	
	Ammunition, proof	1.4G	UN0363	II	1.4G			62	None	Forbidden	75 kg	02	
	Ammunition, rocket, see Warheads, rocket *etc*.												
	Ammunition, SA (small arms), see Cartridges for weapons, *etc*.												
	Ammunition, smoke (water-activated contrivances), white phosphorus, with burster, expelling charge or propelling charge, see Contrivances, water-activated, *etc. (UN 0248)*.												
	Ammunition, smoke (water-activated contrivances), without white phosphorus or phosphides, with burster, expelling charge or propelling charge, see Contrivances, water-activated, *etc. (UN 0249)*.												
	Ammunition smoke, white phosphorus *with burster,expelling charge, or propelling charge*.	1.2H	UN0245	II	1.2H			62	None	Forbidden	Forbidden	08	8E, 14E, 15E, 17E
	Ammunition, smoke, white phosphorus *with burster, expelling charge, or propelling charge*.	1.3H	UN0246	II	1.3H			62	None	Forbidden	Forbidden	08	8E, 14E, 15E, 17E
	Ammunition, smoke *with or without burster, expelling charge or propelling charge*.	1.2G	UN0015	II	1.2G, 8			62	None	Forbidden	Forbidden		8E, 17E, 20E

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Ammunition, smoke *with or without burster, expelling charge or propelling charge*.	1.3G	UN0016	II	1.3G, 8		.....	62	None	Forbidden	Forbidden		8E, 17E, 20E
	Ammunition, smoke *with or without burster, expelling charge or propelling charge*.	1.4G	UN0303	II	1.4G, 8		.....	62	None	Forbidden	75 kg		7E, 8E, 14E, 15E, 17E
	Ammunition, sporting, see Cartridges for weapons, *etc. (UN 0012; UN 0328; UN 0339)*.	.....			.....		.....	.....	.....	.....	.....		.....
	Ammunition, tear-producing, non-explosive, *without burster or expelling charge, non-fuzed*.	6.1	UN2017	II	6.1, 8		None	212	None	Forbidden	50 kg	E	13, 40
	Ammunition, tear-producing *with burster, expelling charge or propelling charge*.	1.2G	UN0018	II	1.2G, 8, 6.1.		.....	62	None	Forbidden	Forbidden		8E, 17E, 20E
	Ammunition, tear-producing *with burster, expelling charge or propelling charge*.	1.3G	UN0019	II	1.3G, 8, 6.1.		.....	62	None	Forbidden	Forbidden		8E, 17E, 20E
	Ammunition, tear-producing *with burster, expelling charge or propelling charge*.	1.4G	UN0301	II	1.4G, 8, 6.1.		.....	62	None	Forbidden	75 kg		7E, 8E, 14E, 15E, 17E
	Ammunition, toxic, non-explosive, *without burster or expelling charge, non-fuzed*.	6.1	UN2016	II	6.1		None	212	None	Forbidden	100 kg	E	13, 40
	Ammunition, toxic (water-activated contrivances), with burster, expelling charge or propelling charge, see Contrivances, water-activated, *etc*.	.....			.....		.....	.....	.....	.....	.....		.....
G	Ammunition, toxic *with burster, expelling charge, or propelling charge*.	1.2K	UN0020	II	1.2K, 6.1.		.....	62	None	Forbidden	Forbidden	08	8E, 14E, 15E, 17E
G	Ammunition, toxic *with burster, expelling charge, or propelling charge*.	1.3K	UN0021	II	1.3K, 6.1.		.....	62	None	Forbidden	Forbidden	08	8E, 14E, 15E, 17E
	Amyl acetates	3	UN1104	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	Amyl acid phosphate	8	UN2819	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	.....
	Amyl butyrates	3	UN2620	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	Amyl chlorides	3	UN1107	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	.....
	Amyl formates	3	UN1109	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	Amyl mercaptans	3	UN1111	II	3	A3, IB2, T4, TP1	None	202	242	5 L	60 L	B	95, 102
	n-Amyl methyl ketone	3	UN1110	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	Amyl nitrate	3	UN1112	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	40
	Amyl nitrites	3	UN1113	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	E	40
	Amylamines	3	UN1106	II	3, 8	IB2, T7, TP1	None	202	243	1 L	5 L	B	.....
	.....	.....		III	3, 8	B1, IB3, T4, TP1	150	203	242	5 L	60 L	A	.....
	Amyltrichlorosilane	8	UN1728	II	8	A7, B2, B6, IB2, N34, T7, TP2, TP13	None	202	242	Forbidden	30 L	C	40
	Anhydrous ammonia, *see* Ammonia, anhydrous.	.....			.....		.....	.....	.....	.....	.....		.....
	Anhydrous hydrofluoric acid, see Hydrogen fluoride, anhydrous.	.....			.....		.....	.....	.....	.....	.....		.....
+	Aniline	6.1	UN1547	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	40
	Aniline hydrochloride	6.1	UN1548	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	.....
	Aniline oil, see Aniline	.....			.....		.....	.....	.....	.....	.....		.....
	Anisidines	6.1	UN2431	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	.....
	Anisole	3	UN2222	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	Anisoyl chloride	8	UN1729	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	C	40
	Anti-freeze, liquid, see Flammable liquids, n.o.s..	.....			.....		.....	.....	.....	.....	.....		.....
	Antimonous chloride, see Antimony trichloride.	.....			.....		.....	.....	.....	.....	.....		.....
	Antimony compounds, inorganic, liquid, n.o.s..	6.1	UN3141	III	6.1	35, IB3, T7, TP1, TP28	153	203	241	60 L	220 L	A	.....
	Antimony compounds, inorganic, solid, n.o.s..	6.1	UN1549	III	6.1	35, IB8, IP3	153	213	240	100 kg	200 kg	A	.....
	Antimony lactate	6.1	UN1550	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	.....
	Antimony pentachloride, liquid	8	UN1730	II	8	B2, IB2, T7, TP2	None	202	242	1 L	30 L	C	40
	Antimony pentachloride, solutions	8	UN1731	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	C	40
	.....	.....		III	8	IB3, T4, TP1	154	203	241	5 L	60 L	C	40
	Antimony pentafluoride	8	UN1732	II	8, 6.1	A3, A6, A7, A10, IB2, N3, T7, TP2	None	202	243	Forbidden	30 L	D	40
	Antimony potassium tartrate	6.1	UN1551	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	.....
	Antimony powder	6.1	UN2871	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	.....
	Antimony sulfide and a chlorate, mixtures of.	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Antimony sulfide, solid, see Antimony compounds, inorganic, n.o.s..	.....			.....		.....	.....	.....	.....	.....		.....
	Antimony trichloride, liquid	8	UN1733	II	8	B2, IB2	154	202	242	1 L	30 L	C	40
	Antimony trichloride, solid	8	UN1733	II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	A	40

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Aqua ammonia, see Ammonia solution, *etc.*												
	Argon, compressed	2.2	UN1006		2.2		306	302	314, 315	75 kg	150 kg	A	
	Argon, refrigerated liquid *(cryogenic liquid)*.	2.2	UN1951		2.2	T75, TP5	320	316	318	50 kg	500 kg	B	
	Arsenic	6.1	UN1558	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Arsenic acid, liquid	6.1	UN1553	I	6.1	T20, TP2, TP7, TP13	None	201	243	1 L	30 L	B	46
	Arsenic acid, solid	6.1	UN1554	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Arsenic bromide	6.1	UN1555	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	12, 40
	Arsenic chloride, see Arsenic trichloride.												
	Arsenic compounds, liquid, n.o.s. *inorganic, including arsenates, n.o.s.; arsenites, n.o.s.; arsenic sulfides, n.o.s.; and organic compounds of arsenic, n.o.s.*.	6.1	UN1556	I	6.1		None	201	243	1 L	30 L	B	40
				II	6.1	IB2	None	202	243	5 L	60 L	B	40
				III	6.1	IB3	153	203	241	60 L	220 L	B	40
	Arsenic compounds, solid, n.o.s. *inorganic, including arsenates, n.o.s.; arsenites, n.o.s.; arsenic sulfides, n.o.s.; and organic compounds of arsenic, n.o.s.*.	6.1	UN1557	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	
				II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
				III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
	Arsenic pentoxide	6.1	UN1559	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Arsenic sulfide and a chlorate, mixtures of.	Forbidden											
	Arsenic trichloride	6.1	UN1560	I	6.1	2, B9, B14, B32, B74, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	B	40
	Arsenic trioxide	6.1	UN1561	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Arsenic, white, solid, see Arsenic trioxide.												
	Arsenical dust	6.1	UN1562	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Arsenical pesticides, liquid, flammable, toxic, *flash point less than 23 degrees C*.	3	UN2760	I	3, 6.1	T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	B	40
				II	3, 6.1	IB2, T11, TP2, TP13, TP27	None	202	243	1 L	60 L	B	40
	Arsenical pesticides, liquid, toxic	6.1	UN2994	I	6.1	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
				III	6.1	IB3, T7, TP2, TP28	153	203	241	60 L	220 L	A	40
	Arsenical pesticides, liquid, toxic, flammable *flash point not less than 23 degrees C*.	6.1	UN2993	I	6.1, 3	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1, 3	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
				III	6.1, 3	B1, IB3, T7, TP2, TP28	153	203	242	60 L	220 L	A	40
	Arsenical pesticides, solid, toxic	6.1	UN2759	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	40
				II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	40
				III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	40
	Arsenious acid, solid, see Arsenic trioxide.												
	Arsenious and mercuric iodide solution, see Arsenic compounds, liquid, n.o.s..												
	Arsine	2.3	UN2188		2.3, 2.1	1	None	192	245	Forbidden	Forbidden	D	40
	Articles, explosive, extremely insensitive *or* Articles, EEI.	1.6N	UN0486	II	1.6N	101	None	62	None	Forbidden	Forbidden	07	
G	Articles, explosive, n.o.s.	1.4S	UN0349	II	1.4S	101	None	62	None	25 kg	100 kg	05	
G	Articles, explosive, n.o.s.	1.4B	UN0350	II	1.4B	101	None	62	None	Forbidden	Forbidden	06	
G	Articles, explosive, n.o.s.	1.4C	UN0351	II	1.4C	101	None	62	None	Forbidden	75 kg	06	
G	Articles, explosive, n.o.s.	1.4D	UN0352	II	1.4D	101	None	62	None	Forbidden	75 kg	06	
G	Articles, explosive, n.o.s.	1.4G	UN0353	II	1.4G	101	None	62	None	Forbidden	75 kg	06	
G	Articles, explosive, n.o.s.	1.1L	UN0354	II	1.1L	101	None	62	None	Forbidden	Forbidden	08	8E, 14E, 15E, 17E
G	Articles, explosive, n.o.s.	1.2L	UN0355	II	1.2L	101	None	62	None	Forbidden	Forbidden	08	8E, 14E, 15E, 17E
G	Articles, explosive, n.o.s.	1.3L	UN0356	II	1.3L	101	None	62	None	Forbidden	Forbidden	08	8E, 14E, 15E, 17E
G	Articles, explosive, n.o.s.	1.1C	UN0462	II	1.1C	101	None	62	None	Forbidden	Forbidden	07	
G	Articles, explosive, n.o.s.	1.1D	UN0463	II	1.1D	101	None	62	None	Forbidden	Forbidden	07	
G	Articles, explosive, n.o.s.	1.1E	UN0464	II	1.1E	101	None	62	None	Forbidden	Forbidden	07	
G	Articles, explosive, n.o.s.	1.1F	UN0465	II	1.1F	101	None	62	None	Forbidden	Forbidden	08	
G	Articles, explosive, n.o.s.	1.2C	UN0466	II	1.2C	101	None	62	None	Forbidden	Forbidden	07	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
G	Articles, explosive, n.o.s.	1.2D	UN0467	II	1.2D	101	None	62	None	Forbidden	Forbidden	07	
G	Articles, explosive, n.o.s.	1.2E	UN0468	II	1.2E	101	None	62	None	Forbidden	Forbidden	07	
G	Articles, explosive, n.o.s.	1.2F	UN0469	II	1.2F	101	None	62	None	Forbidden	Forbidden	08	
G	Articles, explosive, n.o.s.	1.3C	UN0470	II	1.3C	101	None	62	None	Forbidden	Forbidden	07	
G	Articles, explosive, n.o.s.	1.4E	UN0471	II	1.4E	101	None	62	None	Forbidden	75 kg	06	
G	Articles, explosive, n.o.s.	1.4F	UN0472	II	1.4F	101	None	62	None	Forbidden	Forbidden	08	
	Articles, pressurized pneumatic *or* hydraulic *containing non-flammable gas*.	2.2	UN3164		2.2		306	302, 304	None	No limit	No limit	A	
	Articles, pyrophoric	1.2L	UN0380	II	1.2L		None	62	None	Forbidden	Forbidden	08	8E, 14E, 15E, 17E
	Articles, pyrotechnic *for technical purposes*.	1.1G	UN0428	II	1.1G		None	62	None	Forbidden	Forbidden	07	
	Articles, pyrotechnic *for technical purposes*.	1.2G	UN0429	II	1.2G		None	62	None	Forbidden	Forbidden	07	
	Articles, pyrotechnic *for technical purposes*.	1.3G	UN0430	II	1.3G		None	62	None	Forbidden	Forbidden	07	
	Articles, pyrotechnic *for technical purposes*.	1.4G	UN0431	II	1.4G		None	62	None	Forbidden	75 kg	06	
	Articles, pyrotechnic *for technical purposes*.	1.4S	UN0432	II	1.4S		None	62	None	25 kg	100 kg	05	
D	Asbestos	9	NA2212	III	9	IB8, IP2, IP4	155	216	240	200 kg	200 kg	A	34, 40
	Ascaridole (organic peroxide)	Forbidden											
D	Asphalt, *at or above its flash point*.	3	NA1999	III	3	IB3, T1, TP3	150	203	247	Forbidden	Forbidden	D	
D	Asphalt, cut back, *see* Tars, liquid, *etc*.												
	Automobile, motorcycle, tractor, other self-propelled vehicle, engine, or other mechanical apparatus, see Vehicles *or* Battery *etc*.												
A G	Aviation regulated liquid, n.o.s.	9	UN3334		9	A35	155	204		No limit	No limit	A	
A G	Aviation regulated solid, n.o.s.	9	UN3335		9	A35	155	204		No limit	No limit	A	
	Azaurolic acid (salt of) (dry)	Forbidden											
	Azido guanidine picrate (dry)	Forbidden											
	5-Azido-1-hydroxy tetrazole	Forbidden											
	Azido hydroxy tetrazole (mercury and silver salts).	Forbidden											
	3-Azido-1,2-Propylene glycol dinitrate.	Forbidden											
	Azidodithiocarbonic acid	Forbidden											
	Azidoethyl nitrate	Forbidden											
	1-Aziridinylphosphine oxide-(tris), see Tris-(1-aziridinyl) phosphine oxide, solution.												
	Azodicarbonamide	4.1	UN3242	II	4.1	38, IB8	151	212	240	Forbidden	Forbidden	D	12, 61, 74
	Azotetrazole (dry)	Forbidden											
	Barium	4.3	UN1400	II	4.3	A19, IB7, IP2	151	212	241	15 kg	50 kg	E	
	Barium alloys, pyrophoric	4.2	UN1854	I	4.2		None	181	None	Forbidden	Forbidden	D	
	Barium azide, *dry or wetted with less than 50 percent water, by mass*.	1.1A	UN0224	II	1.1A, 6.1.	111, 117	None	62	None	Forbidden	Forbidden	12	
	Barium azide, wetted *with not less than 50 percent water, by mass*.	4.1	UN1571	I	4.1, 6.1	A2	None	182	None	Forbidden	0.5 kg	D	28
	Barium bromate	5.1	UN2719	II	5.1, 6.1	IB8, IP2, IP4	None	212	242	5 kg	25 kg	A	56, 58, 106
	Barium chlorate	5.1	UN1445	II	5.1, 6.1	A9, IB6, IP2, N34, T4, TP1	None	212	242	5 kg	25 kg	A	56, 58, 106
	Barium compounds, n.o.s.	6.1	UN1564	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
				III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
	Barium cyanide	6.1	UN1565	I	6.1	IB7, IP1, N74, N75	None	211	242	5 kg	50 kg	A	26, 40
	Barium hypochlorite *with more than 22 percent available chlorine*.	5.1	UN2741	II	5.1, 6.1	A7, A9, IB8, IP2, IP4, N34	152	212	None	5 kg	25 kg	B	56, 58, 106
	Barium nitrate	5.1	UN1446	II	5.1, 6.1	IB8, IP2, IP4	None	212	242	5 kg	25 kg	A	
	Barium oxide	6.1	UN1884	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
	Barium perchlorate	5.1	UN1447	II	5.1, 6.1	IB6, IP2, T4, TP1	None	212	242	5 kg	25 kg	A	56, 58, 106
	Barium permanganate	5.1	UN1448	II	5.1, 6.1	IB6, IP2	None	212	242	5 kg	25 kg	D	56, 58, 69, 106, 107
	Barium peroxide	5.1	UN1449	II	5.1, 6.1	IB6, IP2	None	212	242	5 kg	25 kg	A	13, 75, 106
	Barium selenate, see Selenates *or* Selenites.												
	Barium selenite, see Selenates *or* Selenites.												
	Batteries, containing sodium	4.3	UN3292	II	4.3		189	189	189	Forbidden	No limit	A	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Batteries, dry, containing potassium hydroxide solid, *electric, storage*.	8	UN3028	III	8		None	213	None	25 kg gross	230 kg gross	A	
	Batteries, wet, filled with acid, *electric storage*.	8	UN2794	III	8		159	159	159	30 kg gross	No limit	A	
	Batteries, wet, non-spillable, *electric storage*.	8	UN2800	III	8		159	159	159	No Limit	No Limit	A	
	Batteries, dry, *not subject to the requirements of this subchapter*.					130							
	Battery fluid, acid	8	UN2796	II	8	A3, A7, B2, B15, IB2, N6, N34, T8, TP2, TP12	154	202	242	1 L	30 L	B	
	Battery fluid, alkali	8	UN2797	II	8	B2, IB2, N6, T7, TP2	154	202	242	1 L	30 L	A	
	Battery lithium type, see Lithium batteries *etc*.												
	Battery-powered vehicle *or* Battery-powered equipment.	9	UN3171		9	134	220	220	None	No limit	No limit		
	Battery, wet, filled with acid or alkali with vehicle or mechanical equipment containing an internal combustion engine, see Vehicle, *etc. or* Engines, internal combustion, *etc*.												
+	Benzaldehyde	9	UN1990	III	9	IB3, T2, TP1	155	203	241	100 L	220 L	A	
	Benzene	3	UN1114	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	40
	Benzene diazonium chloride (dry)	Forbidden											
	Benzene diazonium nitrate (dry)	Forbidden											
	Benzene phosphorus dichloride, see Phenyl phosphorus dichloride.												
	Benzene phosphorus thiodichloride, see Phenyl phosphorus thiodichloride.												
	Benzene sulfonyl chloride	8	UN2225	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	40
	Benzene triozonide	Forbidden											
	Benzenethiol, see Phenyl mercaptan.												
	Benzidine	6.1	UN1885	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Benzol, see Benzene												
	Benzonitrile	6.1	UN2224	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	26, 40
	Benzoquinone	6.1	UN2587	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Benzotrichloride	8	UN2226	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	A	40
	Benzotrifluoride	3	UN2338	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	40
	Benzoxidiazoles (dry)	Forbidden											
	Benzoyl azide	Forbidden											
	Benzoyl chloride	8	UN1736	II	8	B2, IB2, T8, TP2, TP12, TP13	154	202	242	1 L	30 L	C	40
	Benzyl bromide	6.1	UN1737	II	6.1, 8	A3, A7, IB2, N33, N34, T8, TP2, TP12, TP13	None	202	243	1 L	30 L	D	13, 40
	Benzyl chloride	6.1	UN1738	II	6.1, 8	A3, A7, B70, IB2, N33, N42, T8, TP2, TP12, TP13	None	202	243	1 L	30 L	D	13, 40
	Benzyl chloride *unstabilized*	6.1	UN1738	II	6.1, 8	A3, A7, B8, B11, IB2, N33, N34, N43, T8, TP2, TP12, TP13	None	202	243	1 L	30 L	D	13, 40
	Benzyl chloroformate	8	UN1739	I	8	A3, A6, B4, N41, T10, TP2, TP12, TP13	None	201	243	Forbidden	2.5 L	D	40
	Benzyl iodide	6.1	UN2653	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	B	12, 40
	Benzyldimethylamine	8	UN2619	II	8, 3	B2, IB2, T7, TP2	154	202	243	1 L	30 L	A	40, 48
	Benzylidene chloride	6.1	UN1886	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	D	40
	Beryllium compounds, n.o.s.	6.1	UN1566	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
				III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
	Beryllium nitrate	5.1	UN2464	II	5.1, 6.1	IB8, IP2, IP4	None	212	242	5 kg	25 kg	A	
	Beryllium, powder	6.1	UN1567	II	6.1, 4.1	IB8, IP2, IP4	None	212	242	15 kg	50 kg	A	
	Bicyclo [2,2,1] hepta-2,5-diene, stabilized *or* 2,5-Norbornadiene, stabilized.	3	UN2251	II	3	IB2, T7, TP2	150	202	242	5 L	60 L	D	
	Biphenyl triozonide	Forbidden											
	Bipyridilium pesticides, liquid, flammable, toxic, *flash point less than 23 degrees C*.	3	UN2782	I	3, 6.1	T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	E	
				II	3, 6.1	IB2, T11, TP2, TP13, TP27	None	202	243	1 L	60 L	B	40
	Bipyridilium pesticides, liquid, toxic.	6.1	UN3016	I	6.1	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
				III	6.1	IB3, T7, TP2, TP28	153	203	241	60 L	220 L	A	40
	Bipyridilium pesticides, liquid, toxic, flammable, *flash point not less than 23 degrees C*.	6.1	UN3015	I	6.1, 3	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	21, 40

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	.....	.....		II	6.1, 3	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	21, 40
	.....	.....		III	6.1, 3	B1, IB3, T7, TP2, TP28	153	203	242	60 L	220 L	A	21, 40
	Bipyridilium pesticides, solid, toxic	6.1	UN2781	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	40
	.....	.....		II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	40
	.....	.....		III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	40
	Bis (Aminopropyl) piperazine, see Corrosive liquid, n.o.s..	.....			.....		.....	.....	.....	.....	.....		.....
	Bisulfate, aqueous solution	8	UN2837	II	8	A7, B2, IB2, N34, T7, TP2	154	202	242	1 L	30 L	A	.....
	.....	.....		III	8	A7, IB3, N34, T4, TP1	154	203	241	5 L	60 L	A	.....
	Bisulfites, aqueous solutions, n.o.s..	8	UN2693	III	8	IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	26, 40
	Black powder, compressed *or* Gunpowder, compressed *or* Black powder, in pellets *or* Gunpowder, in pellets.	1.1D	UN0028	II	1.1D ...		None	62	None	Forbidden	Forbidden	10	.....
	Black powder *or* Gunpowder, *granular or as a meal*.	1.1D	UN0027	II	1.1D ...		None	62	None	Forbidden	Forbidden	10	.....
D	Black powder for small arms	4.1	NA0027	I	4.1	70	None	170	None	Forbidden	Forbidden	E	.....
	Blasting agent, n.o.s., see Explosives, blasting *etc*.	.....			.....		.....	.....	.....	.....	.....		.....
	Blasting cap assemblies, see Detonator assemblies, non-electric, *for blasting*.	.....			.....		.....	.....	.....	.....	.....		.....
	Blasting caps, electric, see Detonators, electric *for blasting*.	.....			.....		.....	.....	.....	.....	.....		.....
	Blasting caps, non-electric, see Detonators, non-electric, *for blasting*.	.....			.....		.....	.....	.....	.....	.....		.....
	Bleaching powder, see Calcium hypochlorite mixtures, *etc*.	.....			.....		.....	.....	.....	.....	.....		.....
I	Blue asbestos *(Crocidolite) or* Brown asbestos *(amosite, mysorite)*.	9	UN2212	II	9	IB8, IP2, IP4	155	216	240	Forbidden	Forbidden	A	34, 40
	Bombs, photo-flash	1.1F	UN0037	II	1.1F ...		.....	62	None	Forbidden	Forbidden	08	.....
	Bombs, photo-flash	1.1D	UN0038	II	1.1D ...		.....	62	None	Forbidden	Forbidden	03	.....
	Bombs, photo-flash	1.2G	UN0039	II	1.2G ...		.....	62	None	Forbidden	Forbidden	03	.....
	Bombs, photo-flash	1.3G	UN0299	II	1.3G ...		.....	62	None	Forbidden	Forbidden	03	.....
	Bombs, smoke, non-explosive, *with corrosive liquid, without initiating device*.	8	UN2028	II	8		None	160	None	Forbidden	50 kg	E	40
	Bombs, *with bursting charge*	1.1F	UN0033	II	1.1F ...		.....	62	None	Forbidden	Forbidden	08	.....
	Bombs, *with bursting charge*	1.1D	UN0034	II	1.1D ...		.....	62	None	Forbidden	Forbidden	03	.....
	Bombs, *with bursting charge*	1.2D	UN0035	II	1.2D ...		.....	62	None	Forbidden	Forbidden	03	.....
	Bombs, *with bursting charge*	1.2F	UN0291	II	1.2F ...		.....	62	None	Forbidden	Forbidden	08	.....
	Bombs with flammable liquid, *with bursting charge*.	1.1J	UN0399	II	1.1J		.....	62	None	Forbidden	Forbidden	04	23E
	Bombs with flammable liquid, *with bursting charge*.	1.2J	UN0400	II	1.2J		.....	62	None	Forbidden	Forbidden	04	23E
	Boosters with detonator	1.1B	UN0225	II	1.1B ...		None	62	None	Forbidden	Forbidden	11	.....
	Boosters with detonator	1.2B	UN0268	II	1.2B ...		None	62	None	Forbidden	Forbidden	07	.....
	Boosters, *without detonator*	1.1D	UN0042	II	1.1D ...		None	62	None	Forbidden	Forbidden	07	.....
	Boosters, *without detonator*	1.2D	UN0283	II	1.2D ...		None	62	None	Forbidden	Forbidden	07	.....
	Borate and chlorate mixtures, see Chlorate and borate mixtures.	.....			.....		.....	.....	.....	.....	.....		.....
	Borneol	4.1	UN1312	III	4.1	A1, IB8, IP3	None	213	240	25 kg	100 kg	A	.....
+	Boron tribromide	8	UN2692	I	8, 6.1	2, A3, A7, B9, B14, B32, B74, N34, T20, TP2, TP12, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	C	12
	Boron trichloride	2.3	UN1741	.....	2.3, 8	3, B9, B14	None	304	314	Forbidden	Forbidden	D	25, 40
	Boron trifluoride, compressed	2.3	UN1008	.....	2.3	2, B9, B14	None	302	314, 315	Forbidden	Forbidden	D	40
	Boron trifluoride acetic acid complex.	8	UN1742	II	8	B2, B6, IB2, T8, TP2, TP12	154	202	242	1 L	30 L	A	.....
	Boron trifluoride diethyl etherate ..	8	UN2604	I	8, 3	A19, T10, TP2	None	201	243	0.5 L	2.5 L	D	40
	Boron trifluoride dihydrate	8	UN2851	II	8	IB8, IP2, IP4, T7, TP2	154	212	240	15 kg	50 kg	B	12, 40,
	Boron trifluoride dimethyl etherate	4.3	UN2965	I	4.3, 8, 3.	A19, T10, TP2, TP7	None	201	243	Forbidden	1 L	D	21, 28, 40, 49, 100
	Boron trifluoride propionic acid complex.	8	UN1743	II	8	B2, IB2, T8, TP2, TP12	154	202	242	1 L	30 L	A	.....
	Box toe gum, see Nitrocellulose *etc*.	.....			.....		.....	.....	.....	.....	.....		.....
	Bromates, inorganic, aqueous solution, n.o.s..	5.1	UN3213	II	5.1	IB2, T4, TP1	152	202	242	1 L	5 L	B	56, 58, 106
	Bromates, inorganic, n.o.s.	5.1	UN1450	II	5.1	IB8, IP2, IP4	152	212	242	5 kg	25 kg	A	56, 58, 106
	Bromine azide	Forbidden			.....		.....	.....	.....	.....	.....		.....
+	Bromine *or* Bromine solutions	8	UN1744	I	8, 6.1	1, A3, A6, B9, B64, B85, N34, N43, T22, TP2, TP10, TP12, TP13	None	226	249	Forbidden	Forbidden		12, 40, 66, 74, 89, 90

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Bromine chloride	2.3	UN2901		2.3, 8, 5.1.	2, B9, B14	None	304	314, 315	Forbidden	Forbidden	D	40, 89, 90
+	Bromine pentafluoride	5.1	UN1745	I	5.1, 6.1, 8.	1, B9, B14, B30, B72, T22, TP2, TP12, TP13, TP38, TP44	None	228	244	Forbidden	Forbidden	D	25, 40, 66, 90
+	Bromine trifluoride	5.1	UN1746	I	5.1, 6.1, 8.	2, B9, B14, B32, B74, T22, TP2, TP12, TP13, TP38, TP45	None	228	244	Forbidden	Forbidden	D	25, 40, 66, 90
	4-Bromo-1,2-dinitrobenzene	Forbidden											
	4-Bromo-1,2-dinitrobenzene (unstable at 59 degrees C.).	Forbidden											
	1-Bromo-3-chloropropane	6.1	UN2688	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	1-Bromo-3-methylbutane	3	UN2341	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	1-Bromo-3-nitrobenzene (unstable at 56 degrees C).	Forbidden											
	2-Bromo-2-nitropropane-1,3-diol	4.1	UN3241	III	4.1	46, IB8, IP3	151	213	None	25 kg	50 kg	C	12, 25, 40
	Bromoacetic acid, *solid*	8	UN1938	II	8	A7, IB8, IP2, IP4, N34, T7	154	212	240	15 kg	50 kg	A	
	Bromoacetic acid, *solution*	8	UN1938	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	A	40
+	Bromoacetone	6.1	UN1569	II	6.1, 3	2, T20, TP2, TP13	None	193	245	Forbidden	Forbidden	D	40
	Bromoacetyl bromide	8	UN2513	II	8	B2, IB2, T8, TP2, TP12	154	202	242	1 L	30 L	C	40
	Bromobenzene	3	UN2514	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Bromobenzyl cyanides, *liquid*	6.1	UN1694	I	6.1	T14, TP2, TP13	None	201	243	Forbidden	30 L	D	12, 40
	Bromobenzyl cyanides, *solid*	6.1	UN1694	I	6.1	T14, TP2, TP13	None	211	242	Forbidden	50 kg	D	12, 40
	1-Bromobutane	3	UN1126	II	3	IB2, T4, TP1	150	202	242	5L	60 L	B	40
	2-Bromobutane	3	UN2339	II	3	B1, IB2, T4, TP1	150	202	242	5 L	60 L	B	40
	Bromochloromethane	6.1	UN1887	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	2-Bromoethyl ethyl ether	3	UN2340	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	40
	Bromoform	6.1	UN2515	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	12, 40
	Bromomethylpropanes	3	UN2342	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	2-Bromopentane	3	UN2343	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Bromopropanes	3	UN2344	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	40
				III	3	IB3, T2, TP1	150	203	242	60 L	220 L	A	
	3-Bromopropyne	3	UN2345	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	D	40
	Bromosilane	Forbidden											
	Bromotoluene-alpha, see Benzyl bromide.												
	Bromotrifluoroethylene	2.1	UN2419		2.1		None	304	314, 315	Forbidden	150 kg	B	40
	Bromotrifluoromethane *or* Refrigerant gas, R 13B1..	2.2	UN1009		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	Brucine	6.1	UN1570	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	
	Bursters, *explosive*	1.1D	UN0043	II	1.1D		None	62	None	Forbidden	Forbidden	07	
	Butadienes, stabilized	2.1	UN1010		2.1	T50	306	304	314, 315	Forbidden	150 kg	B	40
	Butane *see also* Petroleum gases, liquefied.	2.1	UN1011		2.1	19, T50	306	304	314, 315	Forbidden	150 kg	E	40
	Butane, butane mixtures and mixtures having similar properties in cartridges each not exceeding 500 grams, see Receptacles, *etc.*												
	Butanedione	3	UN2346	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	1,2,4-Butanetriol trinitrate	Forbidden											
	Butanols	3	UN1120	II	3	IB2, T4, TP1, TP29	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	tert-Butoxycarbonyl azide	Forbidden											
	Butyl acetates	3	UN1123	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Butyl acid phosphate	8	UN1718	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Butyl acrylates, stabilized	3	UN2348	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Butyl alcohols, see Butanols												
	Butyl benzenes	3	UN2709	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	n-Butyl bromide, see 1-Bromobutane.												
	n-Butyl chloride, see Chlorobutanes.												
D	sec-Butyl chloroformate	6.1	NA2742	I	6.1, 3, 8.	2, B9, B14, B32, B74, T20, TP4, TP12, TP13, TP38, TP45	None	227	244	1 L	30 L	A	12, 13, 22, 25, 40, 48, 100
	n-Butyl chloroformate	6.1	UN2743	I	6.1, 8, 3.	2, B9, B14, B32, B74, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	A	12, 13, 21, 25, 40, 100
	Butyl ethers, see Dibutyl ethers												
	Butyl ethyl ether, see Ethyl butyl ether.												
	n-Butyl formate	3	UN1128	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	tert-Butyl hydroperoxide, with more than 90 percent with water.	Forbidden											
	tert-Butyl hypochlorite	4.2	UN3255	I	4.2, 8		None	211	243	Forbidden	Forbidden	D	
	N-n-Butyl imidazole	6.1	UN2690	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	tert-Butyl isocyanate	6.1	UN2484	I	6.1, 3	1, A7, B9, B14, B30, B72, T22, TP2, TP13, TP38, TP44	None	226	244	Forbidden	Forbidden	D	40
	n-Butyl isocyanate	6.1	UN2485	I	6.1, 3	2, A7, B9, B14, B32, B74, B77, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Butyl mercaptans	3	UN2347	II	3	A3, IB2, T4, TP1	150	202	242	5 L	60 L	D	26, 95
	n-Butyl methacrylate, stabilized	3	UN2227	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Butyl methyl ether	3	UN2350	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Butyl nitrites	3	UN2351	I	3	T11, TP1, TP8, TP27	150	201	243	1 L	30 L	E	40
				II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	40
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	40
	tert-Butyl peroxyacetate, with more than 76 percent in solution.	Forbidden											
	n-Butyl peroxydicarbonate, with more than 52 percent in solution.	Forbidden											
	tert-Butyl peroxyisobutyrate, with more than 77 percent in solution.	Forbidden											
	Butyl phosphoric acid, see Butyl acid phosphate.												
	Butyl propionates	3	UN1914	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	5-tert-Butyl-2,4,6-trinitro-m-xylene *or* Musk xylene.	4.1	UN2956	III	4.1		None	214	None	Forbidden	Forbidden	D	12
	Butyl vinyl ether, stabilized	3	UN2352	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	40
	n-Butylamine	3	UN1125	II	3, 8	IB2, T7, TP1	None	202	242	1 L	5 L	B	40
	N-Butylaniline	6.1	UN2738	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	
	tert-Butylcyclohexylchloroformate	6.1	UN2747	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	12, 13, 25
	Butylene *see also* Petroleum gases, liquefied.	2.1	UN1012		2.1	19, T50	None	304	314, 315	Forbidden	150 kg	E	40
	1,2-Butylene oxide, stabilized	3	UN3022	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	49
	Butyltoluenes	6.1	UN2667	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	Butyltrichlorosilane	8	UN1747	II	8, 3	A7, B2, B6, IB2, N34, T7, TP2, TP13	None	202	243	Forbidden	30 L	C	40
	1,4-Butynediol	6.1	UN2716	III	6.1	A1, IB8, IP3	None	213	240	100 kg	200 kg	A	61, 70
	Butyraldehyde	3	UN1129	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Butyraldoxime	3	UN2840	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Butyric acid	8	UN2820	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	12
	Butyric anhydride	8	UN2739	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Butyronitrile	3	UN2411	II	3, 6.1	IB2, T7, TP1, TP13	None	202	243	1 L	60 L	E	40
	Butyryl chloride	3	UN2353	II	3, 8	IB2, T8, TP2, TP12, TP13	None	202	243	1 L	5 L	C	40
	Cacodylic acid	6.1	UN1572	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	E	26
	Cadmium compounds	6.1	UN2570	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	
				II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
				III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
	Caesium hydroxide	8	UN2682	II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	A	
	Caesium hydroxide solution	8	UN2681	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	A	
				III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Calcium	4.3	UN1401	II	4.3	IB7, IP2	151	212	241	15 kg	50 kg	E	
	Calcium arsenate	6.1	UN1573	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Calcium arsenate and calcium arsenite, mixtures, solid.	6.1	UN1574	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Calcium bisulfite solution, see Bisulfites, aqueous solutions, n.o.s..												
	Calcium carbide	4.3	UN1402	I	4.3	A1, A8, B55, B59, IB4, IP1, N34	None	211	242	Forbidden	15 kg	B	
				II	4.3	A1, A8, B55, B59, IB7, IP2, N34	151	212	241	15 kg	50 kg	B	
	Calcium chlorate	5.1	UN1452	II	5.1	IB8, IP2, IP4, N34	152	212	242	5 kg	25 kg	A	56, 58, 106
	Calcium chlorate aqueous solution.	5.1	UN2429	II	5.1	A2, IB2, N41, T4, TP1	152	202	242	1 L	5 L	B	56, 58, 106
				III	5.1	A2, IB2, N41, T4, TP1	152	203	241	2.5 L	30 L	B	56, 68, 106
	Calcium chlorite	5.1	UN1453	II	5.1	A9, IB8, IP2, IP4, N34	152	212	242	5 kg	25 kg	A	56, 58, 106
	Calcium cyanamide *with more than 0.1 percent of calcium carbide*.	4.3	UN1403	III	4.3	A1, A19, IB8, IP4	151	213	241	25 kg	100 kg	A	
	Calcium cyanide	6.1	UN1575	I	6.1	IB7, IP1, N79, N80	None	211	242	5 kg	50 kg	A	26, 40
	Calcium dithionite *or* Calcium hydrosulfite.	4.2	UN1923	II	4.2	A19, A20, IB6, IP2	None	212	241	15 kg	50 kg	E	13
	Calcium hydride	4.3	UN1404	I	4.3	A19, N40	None	211	242	Forbidden	15 kg	E	
	Calcium hydrosulfite, *see* Calcium dithionite.												

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Calcium hypochlorite, dry *or* Calcium hypochlorite mixtures dry *with more than 39 percent available chlorine (8.8 percent available oxygen)*.	5.1	UN1748	II	5.1	A7, A9, IB8, IP2, IP4, N34, W9	152	212	None	5 kg	25 kg	D	4, 5, 25, 48, 56, 58, 69
	Calcium hypochlorite, hydrated *or* Calcium hypochlorite, hydrated mixtures, *with not less than 5.5 percent but not more than 10 percent water*.	5.1	UN2880	II	5.1	IB8, IP2, IP4, W9	152	212	240	5 kg	25 kg	D	4, 5, 25, 48, 56, 58, 69
	Calcium hypochlorite mixtures, dry, *with more than 10 percent but not more than 39 percent available chlorine*.	5.1	UN2208	III	5.1	A1, A29, IB8, IP3, N34, W9	152	213	240	25 kg	100 kg	D	4, 5, 25, 48, 56, 58, 69
	Calcium manganese silicon	4.3	UN2844	III	4.3	A1, A19, IB8, IP2, IP4	151	213	241	25 kg	100 kg	A	85, 103
	Calcium nitrate	5.1	UN1454	III	5.1	34, IB8, IP3	152	213	240	25 kg	100 kg	A	
A	Calcium oxide	8	UN1910	III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	
	Calcium perchlorate	5.1	UN1455	II	5.1	IB6, IP2	152	212	242	5 kg	25 kg	A	56, 58, 106
	Calcium permanganate	5.1	UN1456	II	5.1	IB6, IP2	152	212	242	5 kg	25 kg	D	56, 58, 69, 106, 107
	Calcium peroxide	5.1	UN1457	II	5.1	IB6, IP2	152	212	242	5 kg	25 kg	A	13, 75, 106
	Calcium phosphide	4.3	UN1360	I	4.3, 6.1	A8, A19, N40	None	211	242	Forbidden	15 kg	E	40, 85
	Calcium, pyrophoric *or* Calcium alloys, pyrophoric.	4.2	UN1855	I	4.2		None	187	None	Forbidden	Forbidden	D	
	Calcium resinate	4.1	UN1313	III	4.1	A1, A19, IB6	None	213	240	25 kg	100 kg	A	
	Calcium resinate, fused	4.1	UN1314	III	4.1	A1, A19, IB4	None	213	240	25 kg	100 kg	A	
	Calcium selenate, see Selenates *or* Selenites.												
	Calcium silicide	4.3	UN1405	II	4.3	A19, IB7, IP2	151	212	241	15 kg	50 kg	B	85, 103
				III	4.3	A1, A19, IB8, IP4	151	213	241	25 kg	100 kg	B	85, 103
	Camphor oil	3	UN1130	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Camphor, *synthetic*	4.1	UN2717	III	4.1	A1, IB8, IP3	None	213	240	25 kg	100 kg	A	
	Cannon primers, see Primers, tubular.												
	Caproic acid	8	UN2829	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Caps, blasting, see Detonators, *etc*.												
	Carbamate pesticides, liquid, flammable, toxic, *flash point less than 23 degrees C*.	3	UN2758	I	3, 6.1	T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	B	40
				II	3, 6.1	IB2, T11, TP2, TP13, TP27	None	202	243	1 L	60 L	B	40
	Carbamate pesticides, liquid, toxic.	6.1	UN2992	I	6.1	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
				III	6.1	IB3, T7, TP2, TP28	153	203	241	60 L	220 L	A	40
	Carbamate pesticides, liquid, toxic, flammable, *flash point not less than 23 degrees C*.	6.1	UN2991	I	6.1, 3	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1, 3	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
				III	6.1, 3	B1, IB3, T7, TP2, TP28	153	203	242	60 L	220 L	A	40
	Carbamate pesticides, solid, toxic	6.1	UN2757	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	40
				II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	40
				III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	40
	Carbolic acid, see Phenol, solid *or* Phenol, molten.												
	Carbolic acid solutions, see Phenol solutions.												
I	Carbon, activated	4.2	UN1362	III	4.2	IB8, IP3	None	213	241	0.5 kg	0.5 kg	A	12
I	Carbon, *animal or vegetable origin*.	4.2	UN1361	II	4.2	IB6	None	212	242	Forbidden	Forbidden	A	12
				III	4.2	IB8, IP3	None	213	241	Forbidden	Forbidden	A	12
	Carbon bisulfide, see Carbon disulfide.												
	Carbon dioxide	2.2	UN1013		2.2		306	302, 304	302, 314, 315.	75 kg	150 kg	A	
	Carbon dioxide and nitrous oxide mixtures.	2.2	UN1015		2.2		306	None	314, 315	75 kg	150 kg	A	
	Carbon dioxide and oxygen mixtures, compressed.	2.2	UN1014		2.2, 5.1	77	306	304	314, 315	75 kg	150 kg	A	
	Carbon dioxide, refrigerated liquid	2.2	UN2187		2.2	T75, TP5	306	304	314, 315	50 kg	500 kg	B	
A W	Carbon dioxide, solid *or* Dry ice	9	UN1845	III	None		217	217	240	200 kg	200 kg	C	40
	Carbon disulfide	3	UN1131	I	3, 6.1	B16, T14, TP2, TP7, TP13	None	201	243	Forbidden	Forbidden	D	18, 40, 115
	Carbon monoxide, compressed	2.3	UN1016		2.3, 2.1	4	None	302	314, 315	Forbidden	25 kg	D	40
	Carbon monoxide and hydrogen mixture, compressed.	2.3	UN2600		2.3, 2.1	6	None	302	302	Forbidden	Forbidden	D	40

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
D	Carbon monoxide, refrigerated liquid *(cryogenic liquid)*.	2.3	NA9202	.....	2.3, 2.1	4, T75, TP5	None	316	318	Forbidden	Forbidden	D	.....
	Carbon tetrabromide	6.1	UN2516	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	25
	Carbon tetrachloride	6.1	UN1846	II	6.1	IB2, N36, T7, TP2	None	202	243	5 L	60 L	A	40
	Carbonyl chloride, see Phosgene	.....			.....		.....	.....	.....	.....	.....		.....
	Carbonyl fluoride, compressed	2.3	UN2417	.....	2.3, 8	2	None	302	None	Forbidden	Forbidden	D	40
	Carbonyl sulfide	2.3	UN2204	.....	2.3, 2.1	3, B14	None	304	314, 315	Forbidden	25 kg	D	40
	Cartridge cases, empty primed, see Cases, cartridge, empty, with primer.	.....			.....		.....	.....	.....	.....	.....		.....
	Cartridges, actuating, for aircraft ejector seat catapult, fire extinguisher, canopy removal or apparatus, see Cartridges, power device.	.....			.....		.....	.....	.....	.....	.....		.....
	Cartridges, explosive, see Charges, demolition.	.....			.....		.....	.....	.....	.....	.....		.....
	Cartridges, flash	1.1G	UN0049	II	1.1G ...		None	62	None	Forbidden	Forbidden	07	.....
	Cartridges, flash	1.3G	UN0050	II	1.3G ...		None	62	None	Forbidden	75 kg	07	.....
	Cartridges for weapons, blank	1.1C	UN0326	II	1.1C ...		None	62	None	Forbidden	Forbidden	07	.....
	Cartridges for weapons, blank	1.2C	UN0413	II	1.2C ...		None	62	None	Forbidden	Forbidden	07	.....
	Cartridges for weapons, blank *or* Cartridges, small arms, blank.	1.4S	UN0014	II	None ..		63	62	None	25 kg	100 kg	05	.....
	Cartridges for weapons, blank *or* Cartridges, small arms, blank.	1.3C	UN0327	II	1.3C ...		None	62	None	Forbidden	Forbidden	07	.....
	Cartridges for weapons, blank *or* Cartridges, small arms, blank.	1.4C	UN0338	II	1.4C ...		None	62	None	Forbidden	75 kg	06	.....
	Cartridges for weapons, inert projectile.	1.2C	UN0328	II	1.2C ...		None	62	None	Forbidden	Forbidden	03	.....
	Cartridges for weapons, inert projectile *or* Cartridges, small arms.	1.4S	UN0012	II	None ..		63	62	None	25 kg	100 kg	05	.....
	Cartridges for weapons, inert projectile *or* Cartridges, small arms.	1.4C	UN0339	II	1.4C ...		None	62	None	Forbidden	75 kg	06	.....
	Cartridges for weapons, inert projectile *or* Cartridges, small arms.	1.3C	UN0417	II	1.3C ...		None	62	None	Forbidden	Forbidden	06	.....
	Cartridges for weapons, *with bursting charge*.	1.1F	UN0005	II	1.1F ...		None	62	None	Forbidden	Forbidden	08	.....
	Cartridges for weapons, *with bursting charge*.	1.1E	UN0006	II	1.1E ...		None	62	None	Forbidden	Forbidden	03	.....
	Cartridges for weapons, *with bursting charge*.	1.2F	UN0007	II	1.2F ...		None	62	None	Forbidden	Forbidden	08	.....
	Cartridges for weapons, *with bursting charge*.	1.2E	UN0321	II	1.2E ...		None	62	None	Forbidden	Forbidden	03	.....
	Cartridges for weapons, *with bursting charge*.	1.4F	UN0348	II	1.4F ...		None	62	None	Forbidden	Forbidden	08	.....
	Cartridges for weapons, *with bursting charge*.	1.4E	UN0412	II	1.4E ...		None	62	None	Forbidden	75 kg	02	.....
	Cartridges, oil well	1.3C	UN0277	II	1.3C ...		None	62	None	Forbidden	Forbidden	07	.....
	Cartridges, oil well	1.4C	UN0278	II	1.4C ...		None	62	None	Forbidden	75 kg	06	.....
	Cartridges, power device	1.3C	UN0275	II	1.3C ...		None	62	None	Forbidden	75 kg	07	.....
	Cartridges, power device	1.4C	UN0276	II	1.4C ...	110	None	62	None	Forbidden	75 kg	06	.....
	Cartridges, power device	1.4S	UN0323	II	1.4S ...	110	63	62	None	25 kg	100 kg	05	.....
	Cartridges, power device	1.2C	UN0381	II	1.2C ...		None	62	None	Forbidden	Forbidden	07	.....
	Cartridges, safety, blank, see Cartridges for weapons, blank *(UN 0014)*.	.....			.....		.....	.....	.....	.....	.....		.....
	Cartridges, safety, see Cartridges for weapons, *other than blank or* Cartridges, power device *(UN 0323)*.	.....			.....		.....	.....	.....	.....	.....		.....
	Cartridges, signal	1.3G	UN0054	II	1.3G ...		None	62	None	Forbidden	75 kg	07	.....
	Cartridges, signal	1.4G	UN0312	II	1.4G ...		None	62	None	Forbidden	75 kg	06	.....
	Cartridges, signal	1.4S	UN0405	II	1.4S ...		None	62	None	25 kg	100 kg	05	.....
D	Cartridges, small arms	ORM-D		.....	None ..		63	None	None	30 kg gross	30 kg gross	A	.....
	Cartridges, sporting, see Cartridges for weapons, *other than blank*.	.....			.....		.....	.....	.....	.....	.....		.....
	Cartridges, starter, jet engine, see Cartridges, power device.	.....			.....		.....	.....	.....	.....	.....		.....
	Cases, cartridge, empty with primer.	1.4S	UN0055	II	1.4S ...	50	None	62	None	25 kg	100 kg	05	.....
	Cases, cartridges, empty with primer.	1.4C	UN0379	II	1.4C ...	50	None	62	None	Forbidden	75 kg	06	.....
	Cases, combustible, empty, without primer.	1.4C	UN0446	II	1.4C ...		None	62	None	Forbidden	75 kg	06	.....
	Cases, combustible, empty, without primer.	1.3C	UN0447	II	1.3C ...		None	62	None	Forbidden	Forbidden	07	.....
	Casinghead gasoline see Gasoline.	.....			.....		.....	.....	.....	.....	.....		.....
A W	Castor beans *or* Castor meal *or* Castor pomace *or* Castor flake.	9	UN2969	II	None ..	IB8, IP2, IP4	155	204	240	No limit	No limit	E	34, 40
G	Caustic alkali liquids, n.o.s.	8	UN1719	II	8	B2, IB2, T11, TP2, TP27	154	202	242	1 L	30 L	A	.....
	.....	.....		III	8	IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	.....
	Caustic potash, see Potassium hydroxide *etc*.	.....			.....		.....	.....	.....	.....	.....		.....

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Caustic soda, (etc.) see Sodium hydroxide *etc*.	.....			.....		.....	.....	.....	.....	.....		.....
	Cells, containing sodium	4.3	UN3292	II	4.3		189	189	189	25 kg gross	No limit	A	.....
	Celluloid, *in block, rods, rolls, sheets, tubes, etc., except scrap*.	4.1	UN2000	III	4.1		None	213	240	25 kg	100 kg	A	.....
	Celluloid, scrap	4.2	UN2002	III	4.2	IB8, IP3	None	213	241	Forbidden	Forbidden	D	.....
	Cement, see Adhesives *containing flammable liquid*.	.....			.....		.....	.....	.....	.....	.....		.....
	Cerium, *slabs, ingots, or rods*	4.1	UN1333	II	4.1	IB8, IP2, IP4, N34	None	212	240	15 kg	50 kg	A	74, 91
	Cerium, *turnings or gritty powder*	4.3	UN3078	II	4.3	A1, IB7, IP2	151	212	242	15 kg	50 kg	E	.....
	Cesium *or* Caesium	4.3	UN1407	I	4.3	A19, IB1, IP1, N34, N40	None	211	242	Forbidden	15 kg	D	.....
	Cesium nitrate *or* Caesium nitrate	5.1	UN1451	III	5.1	A1, A29, IB8, IP3	152	213	240	25 kg	100 kg	A	.....
D	Charcoal *briquettes, shell, screenings, wood, etc.*.	4.2	NA1361	III	4.2	IB8	151	213	240	25 kg	100 kg	A	12
	Charges, bursting, plastics bonded.	1.1D	UN0457	II	1.1D		None	62	None	Forbidden	Forbidden	07	.....
	Charges, bursting, plastics bonded.	1.2D	UN0458	II	1.2D		None	62	None	Forbidden	Forbidden	07	.....
	Charges, bursting, plastics bonded.	1.4D	UN0459	II	1.4D		None	62	None	Forbidden	75 kg	06	.....
	Charges, bursting, plastics bonded.	1.4S	UN0460	II	1.4S		None	62	None	25 kg	100 kg	05	.....
	Charges, demolition	1.1D	UN0048	II	1.1D		None	62	None	Forbidden	Forbidden	03	.....
	Charges, depth	1.1D	UN0056	II	1.1D		None	62	None	Forbidden	Forbidden	03	.....
	Charges, expelling, explosive, for fire extinguishers, see Cartridges, power device.	.....			.....		.....	.....	.....	.....	.....		.....
	Charges, explosive, commercial *without detonator*.	1.1D	UN0442	II	1.1D		None	62	None	Forbidden	Forbidden	07	.....
	Charges, explosive, commercial *without detonator*.	1.2D	UN0443	II	1.2D		None	62	None	Forbidden	Forbidden	07	.....
	Charges, explosive, commercial *without detonator*.	1.4D	UN0444	II	1.4D		None	62	None	Forbidden	75 kg	06	.....
	Charges, explosive, commercial *without detonator*.	1.4S	UN0445	II	1.4S		None	62	None	25 kg	100 kg	05	.....
	Charges, propelling	1.1C	UN0271	II	1.1C		None	62	None	Forbidden	Forbidden	07	.....
	Charges, propelling	1.3C	UN0272	II	1.3C		None	62	None	Forbidden	Forbidden	07	.....
	Charges, propelling	1.2C	UN0415	II	1.2C		None	62	None	Forbidden	Forbidden	07	.....
	Charges, propelling	1.4C	UN0491	II	1.4C		None	62	None	Forbidden	75 kg	06	.....
	Charges, propelling, for cannon	1.3C	UN0242	II	1.3C		None	62	None	Forbidden	Forbidden	10	.....
	Charges, propelling, for cannon	1.1C	UN0279	II	1.1C		None	62	None	Forbidden	Forbidden	10	.....
	Charges, propelling, for cannon	1.2C	UN0414	II	1.2C		None	62	None	Forbidden	Forbidden	10	.....
	Charges, shaped, flexible, linear	1.4D	UN0237	II	1.4D		None	62	None	Forbidden	75 kg	06	.....
	Charges, shaped, flexible, linear	1.1D	UN0288	II	1.1D	101	None	62	None	Forbidden	Forbidden	07	.....
	Charges, shaped, *without detonator*.	1.1D	UN0059	II	1.1D		None	62	None	Forbidden	Forbidden	07	.....
	Charges, shaped, *without detonator*.	1.2D	UN0439	II	1.2D		None	62	None	Forbidden	Forbidden	07	.....
	Charges, shaped, *without detonator*.	1.4D	UN0440	II	1.4D		None	62	None	Forbidden	75 kg	06	.....
	Charges, shaped, *without detonator*.	1.4S	UN0441	II	1.4S		None	62	None	25 kg	100 kg	05	.....
	Charges, supplementary explosive.	1.1D	UN0060	II	1.1D		None	62	None	Forbidden	Forbidden	10	.....
D	Chemical kit	8	NA1760	II	8		154	161	None	1 L	30 L	B	40
	Chemical kits	9	UN3316	.....	9	15	None	None	None	10 kg	10 kg	A	.....
	Chloral, anhydrous, stabilized	6.1	UN2075	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	D	40
	Chlorate and borate mixtures	5.1	UN1458	II	5.1	A9, IB8, IP2, IP4, N34	152	212	240	5 kg	25 kg	A	56, 58, 106
	.....	.....		III	5.1	A9, IB8, IP3, N34	152	213	240	25 kg	100 kg	A	56, 58, 106
	Chlorate and magnesium chloride mixtures.	5.1	UN1459	II	5.1	A9, IB8, IP2, IP4, N34, T4, TP1	152	212	240	5 kg	25 kg	A	56, 58, 106
	.....	.....		III	5.1	A9, IB8, IP3, N34, T4, TP1	152	213	240	25 kg	100 kg	A	56, 58, 106
	Chlorate of potash, see Potassium chlorate.	.....			.....		.....	.....	.....	.....	.....		.....
	Chlorate of soda, see Sodium chlorate.	.....			.....		.....	.....	.....	.....	.....		.....
	Chlorates, inorganic, aqueous solution, n.o.s..	5.1	UN3210	II	5.1	IB2, T4, TP1	152	202	242	1 L	5 L	B	56, 58, 106
	Chlorates, inorganic, n.o.s.	5.1	UN1461	II	5.1	A9, IB6, IP2, N34	152	212	242	5 kg	25 kg	A	56, 58, 106
	Chloric acid aqueous solution, *with not more than 10 percent chloric acid*.	5.1	UN2626	II	5.1	IB2	None	229	None	Forbidden	Forbidden	D	56, 58, 106
	Chloride of phosphorus, see Phosphorus trichloride.	.....			.....		.....	.....	.....	.....	.....		.....
	Chloride of sulfur, see Sulfur chloride.	.....			.....		.....	.....	.....	.....	.....		.....
	Chlorinated lime, see Calcium hypochlorite mixtures, *etc*.	.....			.....		.....	.....	.....	.....	.....		.....
	Chlorine	2.3	UN1017	.....	2.3, 8	2, B9, B14, T50, TP19	None	304	314, 315	Forbidden	Forbidden	D	40, 51, 55, 62, 68, 89, 90

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Chlorine azide	Forbidden											
D	Chlorine dioxide, hydrate, frozen	5.1	NA9191	II	5.1, 6.1		None	229	None	Forbidden	Forbidden	E	
	Chlorine dioxide (not hydrate)	Forbidden											
	Chlorine pentafluoride	2.3	UN2548		2.3, 5.1, 8.	1, B7, B9, B14	None	304	314	Forbidden	Forbidden	D	40, 89, 90
	Chlorine trifluoride	2.3	UN1749		2.3, 5.1, 8.	2, B7, B9, B14	None	304	314	Forbidden	Forbidden	D	40, 89, 90
	Chlorite solution	8	UN1908	II	8	A3, A6, A7, B2, IB2, N34, T7, TP2, TP24	154	202	242	1 L	30 L	B	26
				III	8	A3, A6, A7, B2, IB3, N34, T4, TP2, TP24	154	203	241	5 L	60 L	B	26
	Chlorites, inorganic, n.o.s.	5.1	UN1462	II	5.1	A7, IB6, IP2, N34	152	212	242	5 kg	25 kg	A	56, 58, 106
	1-Chloro-1,1-difluoroethane *or* Refrigerant gas R 142b.	2.1	UN2517		2.1	T50	306	304	314, 315	Forbidden	150 kg	B	40
	3-Chloro-4-methylphenyl isocyanate.	6.1	UN2236	II	6.1	IB2	None	202	243	5 L	60 L	B	40
	1-Chloro-1,2,2,2-tetrafluoroethane*or* Refrigerant gas R 124.	2.2	UN1021		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	4-Chloro-o-toluidine hydrochloride	6.1	UN1579	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
	1-Chloro-2,2,2-trifluoroethane *or* Refrigerant gas R 133a.	2.2	UN1983		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	Chloroacetic acid, molten	6.1	UN3250	II	6.1, 8	IB1, T7, TP3	None	202	243	Forbidden	Forbidden	C	40
	Chloroacetic acid, solid	6.1	UN1751	II	6.1, 8	A3, A7, IB8, IP4, N34	None	212	242	15 kg	50 kg	A	40
	Chloroacetic acid, solution	6.1	UN1750	II	6.1, 8	A7, IB2, N34, T7, TP2	None	202	243	1 L	30 L	C	40
	Chloroacetone, stabilized	6.1	UN1695	I	6.1, 3, 8.	2, B9, B14, B32, B74, N12, N32, N34, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	21, 40, 100
	Chloroacetone (unstabilized)	Forbidden											
+	Chloroacetonitrile	6.1	UN2668	II	6.1, 3	2, B9, B14, B32, B74, IB99, T20, TP2, TP38, TP45	None	227	244	Forbidden	Forbidden	A	12, 26, 40
	Chloroacetophenone *(CN), liquid*	6.1	UN1697	II	6.1	A3, IB2, N12, N32, N33, T11, TP2, TP13, TP27	None	202	243	Forbidden	60 L	D	12, 40
	Chloroacetophenone *(CN), solid*	6.1	UN1697	II	6.1	A3, IB8, IP2, IP4, N12, N32, N33, N34, T7, TP2, TP13	None	212	None	Forbidden	100 kg	D	12, 40
	Chloroacetyl chloride	6.1	UN1752	I	6.1, 8	2, A3, A6, A7, B3, B8, B9, B14, B32, B74, B77, N34, N43, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Chloroanilines, liquid	6.1	UN2019	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	
	Chloroanilines, solid	6.1	UN2018	II	6.1	IB8, IP2, IP4, T7, TP2	None	212	242	25 kg	100 kg	A	
	Chloroanisidines	6.1	UN2233	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
	Chlorobenzene	3	UN1134	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Chlorobenzol, see Chlorobenzene												
	Chlorobenzotrifluorides	3	UN2234	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	40
	Chlorobenzyl chlorides	6.1	UN2235	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	Chlorobutanes	3	UN1127	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Chlorocresols, *liquid*	6.1	UN2669	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	12
	Chlorocresols, *solid*	6.1	UN2669	II	6.1	IB8, IP2, IP3, T7	None	212	242	25 kg	100 kg	A	12
	Chlorodifluorobromomethane *or* Refrigerant gas R 12B1.	2.2	UN1974		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	Chlorodifluoromethane and chloropentafluoroethane mixture *or* Refrigerant gas R 502 *with fixed boiling point, with approximately 49 percent chlorodifluoromethane*.	2.2	UN1973		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	Chlorodifluoromethane *or* Refrigerant gas R 22.	2.2	UN1018		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
+	Chlorodinitrobenzenes	6.1	UN1577	II	6.1	IB8, IP2, IP4, T7, TP2	None	212	242	25 kg	100 kg	A	91
	2-Chloroethanal	6.1	UN2232	I	6.1	2, B9, B14, B32, B74, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Chloroform	6.1	UN1888	III	6.1	IB3, N36, T7, TP2	153	203	241	60 L	220 L	A	40
G	Chloroformates, toxic, corrosive, flammable, n.o.s..	6.1	UN2742	II	6.1, 8, 3.	5, IB1, T7, TP2	None	202	243	1 L	30 L	A	12, 13, 21, 25, 40, 100
G	Chloroformates, toxic, corrosive, n.o.s..	6.1	UN3277	II	6.1, 8	IB2, T8, TP2, TP13, TP28	None	202	243	1 L	30 L	A	12, 13, 25, 40
	Chloromethyl chloroformate	6.1	UN2745	II	6.1, 8	IB2, T7, TP2, TP13	None	202	243	1 L	30 L	A	12, 13, 21, 25, 40, 100

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Chloromethyl ethyl ether	3	UN2354	II	3, 6.1	IB2, T7, TP1, TP13	None	202	243	1 L	60 L	E	40
	Chloronitroanilines	6.1	UN2237	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
+	Chloronitrobenzene, *ortho, liquid*	6.1	UN1578	II	6.1	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	A	
+	Chloronitrobenzenes *meta or para, solid.*	6.1	UN1578	II	6.1	IB8, IP2, IP4, T7, TP2	None	212	242	25 kg	100 kg	A	
	Chloronitrotoluenes, *liquid*	6.1	UN2433	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	Chloronitrotoluenes, *solid*	6.1	UN2433	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
	Chloropentafluoroethane *or* Refrigerant gas R 115.	2.2	UN1020		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	Chlorophenolates, liquid *or* Phenolates, liquid.	8	UN2904	III	8	IB3	154	203	241	5 L	60 L	A	
	Chlorophenolates, solid *or* Phenolates, solid.	8	UN2905	III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	
	Chlorophenols, liquid	6.1	UN2021	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	Chlorophenols, solid	6.1	UN2020	III	6.1	IB8, IP3, T4, TP1	153	213	240	100 kg	200 kg	A	
	Chlorophenyltrichlorosilane	8	UN1753	II	8	A7, B2, B6, IB2, N34, T7, TP2	None	202	242	Forbidden	30 L	C	40
+	Chloropicrin	6.1	UN1580	I	6.1	2, B7, B9, B14, B32, B46, B74, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Chloropicrin and methyl bromide mixtures.	2.3	UN1581		2.3	2, B9, B14, T50	None	193	314, 315	Forbidden	Forbidden	D	25, 40
	Chloropicrin and methyl chloride mixtures.	2.3	UN1582		2.3	2, T50	None	193	245	Forbidden	Forbidden	D	25, 40
	Chloropicrin mixture, flammable (pressure not exceeding 14.7 psia at 115 degrees F flash point below 100 degrees F) see Toxic liquids, flammable, *etc.*												
	Chloropicrin mixtures, n.o.s.	6.1	UN1583	I	6.1	5	None	201	243	Forbidden	Forbidden	C	40
				II	6.1	IB2	None	202	243	Forbidden	Forbidden	C	40
				III	6.1	IB3	153	203	241	Forbidden	Forbidden	C	40
D	Chloropivaloyl chloride	6.1	NA9263	I	6.1, 8	2, B9, B14, B32, B74, T20, TP4, TP12, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	B	40
	Chloroplatinic acid, solid	8	UN2507	III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	
	Chloroprene, stabilized	3	UN1991	I	3, 6.1	B57, T14, TP2, TP13	None	201	243	Forbidden	30 L	D	40
	Chloroprene, uninhibited	Forbidden											
	2-Chloropropane	3	UN2356	I	3	N36, T11, TP2, TP13	150	201	243	1 L	30 L	E	
	3-Chloropropanol-1	6.1	UN2849	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	2-Chloropropene	3	UN2456	I	3	A3, N36, T11, TP2	150	201	243	1 L	30 L	E	
	2-Chloropropionic acid	8	UN2511	III	8	IB3, T4, TP2	154	203	241	5 L	60 L	A	8
	2-Chloropyridine	6.1	UN2822	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	40
	Chlorosilanes, corrosive, flammable, n.o.s..	8	UN2986	II	8, 3	IB2, T11, TP2, TP27	None	202	243	1 L	30 L	C	40
	Chlorosilanes, corrosive, n.o.s.	8	UN2987	II	8	B2, IB2, T14, TP2, TP27	154	202	242	1 L	30 L	C	40
	Chlorosilanes, flammable, corrosive, n.o.s..	3	UN2985	II	3, 8	IB1, T11, TP2, TP13, TP27	None	201	243	1 L	5 L	B	40
	Chlorosilanes, water-reactive, flammable, corrosive, n.o.s..	4.3	UN2988	I	4.3, 3, 8.	A2, T10, TP2, TP7, TP13	None	201	244	Forbidden	1 L	D	21, 28, 40, 49, 100
+	Chlorosulfonic acid *(with or without sulfur trioxide).*	8	UN1754	I	8, 6.1	2, A3, A6, A10, B9, B10, B14, B32, B74, T20, TP2, TP12, TP38, TP45	None	227	244	Forbidden	Forbidden	C	40
	Chlorotoluenes	3	UN2238	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Chlorotoluidines *liquid*	6.1	UN2239	III	6.1	IB3, T7, TP1, TP28	153	203	241	60 L	220 L	A	
	Chlorotoluidines *solid*	6.1	UN2239	III	6.1	IB8, IP3, T4, TP1	153	213	240	100 kg	200 kg	A	
	Chlorotrifluoromethane and trifluoromethane azeotropic mixture *or* Refrigerant gas R 503 *with approximately 60 percent chlorotrifluoromethane*.	2.2	UN2599		2.2		306	304	314, 315	75 kg	150 kg	A	
	Chlorotrifluoromethane *or* Refrigerant gas R 13.	2.2	UN1022		2.2		306	304	314, 315	75 kg	150 kg	A	
	Chromic acid solution	8	UN1755	II	8	B2, IB2, T8, TP2, TP12	154	202	242	1 L	30 L	C	40
				III	8	IB3, T4, TP1, TP12	154	203	241	5 L	60 L	C	40
	Chromic anhydride, see Chromium trioxide, anhydrous.												
	Chromic fluoride, solid	8	UN1756	II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	A	26
	Chromic fluoride, solution	8	UN1757	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	A	
				III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Chromium nitrate	5.1	UN2720	III	5.1	A1, A29, IB8, IP3	152	213	240	25 kg	100 kg	A	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Chromium oxychloride	8	UN1758	I	8	A3, A6, A7, B10, N34, T10, TP2, TP12	None	201	243	0.5 L	2.5 L	C	40, 66, 74, 89, 90
	Chromium trioxide, anhydrous	5.1	UN1463	II	5.1, 8	IB8, IP4	None	212	242	5 kg	25 kg	A	
	Chromosulfuric acid	8	UN2240	I	8	A3, A6, A7, B4, B6, N34, T10, TP2, TP12, TP13	None	201	243	0.5 L	2.5 L	B	40, 66, 74, 89, 90
	Chromyl chloride, see Chromium oxychloride.												
	Cigar and cigarette lighters, charged with fuel, see Lighters for cigars, cigarettes, *etc.*												
	Coal briquettes, hot	Forbidden											
	Coal gas, compressed	2.3	UN1023		2.3, 2.1	3	None	302	314, 315	Forbidden	25 kg	D	40
	Coal tar distillates, flammable	3	UN1136	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T4, TP1, TP29	150	203	242	60 L	220 L	A	
	Coal tar dye, corrosive, liquid, n.o.s, see Dyes, liquid *or* solid, n.o.s. *or* Dye intermediates, liquid *or* solid, corrosive, n.o.s..												
	Coating solution (*includes surface treatments or coatings used for industrial or other purposes such as vehicle undercoating, drum or barrel lining*).	3	UN1139	I	3	T11, TP1, TP8, TP27	150	201	243	1 L	30 L	E	
				II	3	IB2, T4, TP1, TP8	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Cobalt naphthenates, powder	4.1	UN2001	III	4.1	A19, IB8, IP3	151	213	240	25 kg	100 kg	A	
	Cobalt resinate, precipitated	4.1	UN1318	III	4.1	A1, A19, IB6	151	213	240	25 kg	100 kg	A	
	Coke, hot	Forbidden											
	Collodion, see Nitrocellulose *etc*												
D G	Combustible liquid, n.o.s.	Combustible	NA1993	III	None	IB3,T1, T4, TP1	150	203	241	60 L	220 L	A	
G	Components, explosive train, n.o.s..	1.2B	UN0382	II	1.2B	101	None	62	None	Forbidden	Forbidden	11	
G	Components, explosive train, n.o.s..	1.4B	UN0383	II	1.4B	101	None	62	None	Forbidden	75 kg	06	
G	Components, explosive train, n.o.s..	1.4S	UN0384	II	1.4S	101	None	62	None	25 kg	100 kg	05	
G	Components, explosive train, n.o.s..	1.1B	UN0461	II	1.1B	101	None	62	None	Forbidden	Forbidden	11	
	Composition B, see Hexolite, *etc*												
D G	Compounds, cleaning liquid	8	NA1760	I	8	A7, B10, T14, TP2, TP9, TP27	None	201	243	0.5 L	2.5 L	B	40
				II	8	B2, IB2, N37, T11, TP2, TP27	154	202	242	1 L	30 L	B	40
				III	8	IB3, N37, T7, TP1, TP28	154	203	241	5 L	60 L	A	40
D G	Compounds, cleaning liquid	3	NA1993	I	3	T11, TP1, TP9	150	201	243	1 L	30 L	E	
				II	3	IB2, T7, TP1, TP8, TP28	150	202	242	5 L	60 L	B	
				III	3	B1, B52, IB3, T4, TP1, TP29	150	203	242	60 L	220 L	A	
D G	Compounds, tree killing, liquid *or* Compounds, weed killing, liquid.	8	NA1760	I	8	A7, B10, T14, TP2, TP9, TP27	None	201	243	0.5 L	2.5 L	B	40
				II	8	B2, IB2, N37, T11, TP2, TP27	154	202	242	1 L	30 L	B	40
				III	8	IB3, N37, T7, TP1, TP28	154	203	241	5 L	60 L	A	40
D G	Compounds, tree killing, liquid *or* Compounds, weed killing, liquid.	3	NA1993	I	3	T11, TP1, TP9	150	201	243	1 L	30 L	E	
				II	3	IB2, T7, TP1, TP8, TP28	150	202	242	5 L	60 L	B	
				III	3	B1, B52, IB3, T4, TP1, TP29	150	203	242	60 L	220 L	A	
D G	Compounds, tree killing, liquid *or* Compounds, weed killing, liquid.	6.1	NA2810	I	6.1	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1	IB2, T11, TP2, TP27	None	202	243	5 L	60 L	B	40
				III	6.1	IB3, T7, TP1, TP28	153	203	241	60 L	220 L	A	40
G	Compressed gas, flammable, n.o.s..	2.1	UN1954		2.1		306	302, 305	314, 315	Forbidden	150 kg	D	40
G	Compressed gas, n.o.s.	2.2	UN1956		2.2		306, 307	302, 305	314, 315	75 kg	150 kg	A	
G	Compressed gas, oxidizing, n.o.s.	2.2	UN3156		2.2, 5.1		306	302	314, 315	75 kg	150 kg	D	
G I	Compressed gas, toxic, corrosive, n.o.s. *Inhalation Hazard Zone A*.	2.3	UN3304		2.3, 8	1	None	192	245	Forbidden	Forbidden	D	40
G I	Compressed gas, toxic, corrosive, n.o.s. *Inhalation Hazard Zone B*.	2.3	UN3304		2.3, 8	2	None	302, 305	314, 315	Forbidden	Forbidden	D	40
G I	Compressed gas, toxic, corrosive, n.o.s. *Inhalation Hazard Zone C*.	2.3	UN3304		2.3, 8	3	None	302, 305	314, 315	Forbidden	Forbidden	D	40
G I	Compressed gas, toxic, corrosive, n.o.s. *Inhalation Hazard Zone D*.	2.3	UN3304		2.3, 8	4	None	302, 305	314, 315	Forbidden	Forbidden	D	40

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
G I	Compressed gas, toxic, flammable, corrosive, n.o.s. *Inhalation Hazard Zone A*.	2.3	UN3305	.....	2.3, 2.1, 8.	1	None	192	245	Forbidden	Forbidden	D	17, 40
G I	Compressed gas, toxic, flammable, corrosive, n.o.s. *Inhalation Hazard Zone B*.	2.3	UN3305	.....	2.3, 2.1, 8.	2	None	302, 305	314, 315	Forbidden	Forbidden	D	17, 40
G I	Compressed gas, toxic, flammable, corrosive, n.o.s. *Inhalation Hazard Zone C*.	2.3	UN3305	.....	2.3, 2.1, 8.	3	None	302, 305	314, 315	Forbidden	Forbidden	D	17, 40
G I	Compressed gas, toxic, flammable, corrosive, n.o.s. *Inhalation Hazard Zone D*.	2.3	UN3305	.....	2.3, 2.1, 8.	4	None	302, 305	314, 315	Forbidden	Forbidden	D	17, 40
G	Compressed gas, toxic, flammable, n.o.s. *Inhalation hazard Zone A*.	2.3	UN1953	.....	2.3, 2.1	1	None	192	245	Forbidden	Forbidden	D	40
G	Compressed gas, toxic, flammable, n.o.s. *Inhalation hazard Zone B*.	2.3	UN1953	.....	2.3, 2.1	2, B9, B14	None	302, 305	314, 315	Forbidden	Forbidden	D	40
G	Compressed gas, toxic, flammable, n.o.s. *Inhalation Hazard Zone C*.	2.3	UN1953	.....	2.3, 2.1	3, B14	None	302, 305	314, 315	Forbidden	Forbidden	D	40
G	Compressed gas, toxic, flammable, n.o.s. *Inhalation Hazard Zone D*.	2.3	UN1953	.....	2.3, 2.1	4	None	302, 305	314, 315	Forbidden	Forbidden	D	40
G	Compressed gas, toxic, n.o.s. *Inhalation Hazard Zone A*.	2.3	UN1955	.....	2.3	1	None	192	245	Forbidden	Forbidden	D	40
G	Compressed gas, toxic, n.o.s. *Inhalation Hazard Zone B*.	2.3	UN1955	.....	2.3	2, B9, B14	None	302, 305	314, 315	Forbidden	Forbidden	D	40
G	Compressed gas, toxic, n.o.s. *Inhalation Hazard Zone C*.	2.3	UN1955	.....	2.3	3, B14	None	302, 305	314, 315	Forbidden	Forbidden	D	40
G	Compressed gas, toxic, n.o.s. *Inhalation Hazard Zone D*.	2.3	UN1955	.....	2.3	4	None	302, 305	314, 315	Forbidden	Forbidden	D	40
G I	Compressed gas, toxic, oxdizing, corrosive, n.o.s. *Inhalation Hazard Zone A*.	2.3	UN3306	.....	2.3, 5.1, 8.	1	None	192	244	Forbidden	Forbidden	D	40, 89, 90
G I	Compressed gas, toxic, oxidizing, corrosive, n.o.s. *Inhalation Hazard Zone B*.	2.3	UN3306	.....	2.3, 5.1, 8.	2	None	302, 305	314, 315	Forbidden	Forbidden	D	40, 89, 90
G I	Compressed gas, toxic, oxidizing, corrosive, n.o.s. *Inhalation Hazard Zone C*.	2.3	UN3306	.....	2.3, 5.1, 8.	3	None	302, 305	314, 315	Forbidden	Forbidden	D	40, 89, 90
G I	Compressed gas, toxic, oxidizing, corrosive, n.o.s. *Inhalation Hazard Zone D*.	2.3	UN3306	.....	2.3, 5.1, 8.	4	None	302, 305	314, 315	Forbidden	Forbidden	D	40, 89, 90
G	Compressed gas, toxic, oxidizing, n.o.s. *Inhalation Hazard Zone A*.	2.3	UN3303	.....	2.3, 5.1	1	None	192	245	Forbidden	Forbidden	D	40
G	Compressed gas, toxic, oxidizing, n.o.s. *Inhalation Hazard Zone B*.	2.3	UN3303	.....	2.3, 5.1	2	None	302, 305	314, 315	Forbidden	Forbidden	D	40
G	Compressed gas, toxic, oxidizing, n.o.s. *Inhalation Hazard Zone C*.	2.3	UN3303	.....	2.3, 5.1	3	None	302, 305	314, 315	Forbidden	Forbidden	D	40
G	Compressed gas, toxic, oxidizing, n.o.s. *Inhalation Hazard Zone D*.	2.3	UN3303	.....	2.3, 5.1	4	None	302, 305	314, 315	Forbidden	Forbidden	D	40
D	Consumer commodity	ORM-D		.....	None ..		156, 306	156, 306	None	30 kg gross	30 kg gross	A	.....
	Contrivances, water-activated, *with burster, expelling charge or propelling charge*.	1.2L	UN0248	II	1.2L	101	None	62	None	Forbidden	Forbidden	08	8E, 14E, 15E, 17E
	Contrivances, water-activated, *with burster, expelling charge or propelling charge*.	1.3L	UN0249	II	1.3L	101	None	62	None	Forbidden	Forbidden	08	8E, 14E, 15E, 17E
	Copper acetoarsenite	6.1	UN1585	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	Copper acetylide	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Copper amine azide	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Copper arsenite	6.1	UN1586	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	Copper based pesticides, liquid, flammable, toxic, *flash point less than 23 degrees C*.	3	UN2776	I	3, 6.1	T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	B	40
	.....	.....		II	3, 6.1	IB2, T11, TP2, TP13, TP27	None	202	243	1 L	60 L	B	40
	Copper based pesticides, liquid, toxic.	6.1	UN3010	I	6.1	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
	.....	.....		II	6.1	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
	.....	.....		III	6.1	IB3, T7, TP2, TP28	153	203	241	60 L	220 L	A	40
	Copper based pesticides, liquid, toxic, flammable *flash point not less than 23 degrees C*.	6.1	UN3009	I	6.1, 3	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
	.....	.....		II	6.1, 3	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
	.....	.....		III	6.1, 3	B1, IB3, T7, TP2, TP28	153	203	242	60 L	220 L	A	40
	Copper based pesticides, solid, toxic.	6.1	UN2775	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	40

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	.....	.....		II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	40
	.....	.....		III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	40
	Copper chlorate	5.1	UN2721	II	5.1	A1, IB8, IP2, IP4	152	212	242	5 kg	25 kg	A	56, 58, 106
	Copper chloride	8	UN2802	III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	.....
	Copper cyanide	6.1	UN1587	II	6.1	IB8, IP2, IP4	None	204	242	25 kg	100 kg	A	26
	Copper selenate, see Selenates *or* Selenites.	.....			.....		.....	.....	.....	.....	.....		.....
	Copper selenite, see Selenates *or* Selenites.	.....			.....		.....	.....	.....	.....	.....		.....
	Copper tetramine nitrate	Forbidden			.....		.....	.....	.....	.....	.....		.....
A W	Copra	4.2	UN1363	III	4.2	IB8, IP3, IP6	None	213	241	Forbidden	Forbidden	A	13, 19, 48, 119
	Cord, detonating, *flexible*	1.1D	UN0065	II	1.1D	102	63(a)	62	None	Forbidden	Forbidden	07	.....
	Cord, detonating, *flexible*	1.4D	UN0289	II	1.4D		None	62	None	Forbidden	75 kg	06	.....
	Cord detonating *or* Fuse detonating *metal clad*.	1.2D	UN0102	II	1.2D		None	62	None	Forbidden	Forbidden	07	.....
	Cord, detonating *or* Fuse, detonating *metal clad*.	1.1D	UN0290	II	1.1D		None	62	None	Forbidden	Forbidden	07	.....
	Cord, detonating, mild effect *or* Fuse, detonating, mild effect *metal clad*.	1.4D	UN0104	II	1.4D		None	62	None	Forbidden	75 kg	06	.....
	Cord, igniter	1.4G	UN0066	II	1.4G		None	62	None	Forbidden	75 kg	06	.....
	Cordeau detonant fuse, see Cord, detonating, *etc;* Cord, detonating, *flexible*.	.....			.....		.....	.....	.....	.....	.....		.....
	Cordite, see Powder, smokeless	.....			.....		.....	.....	.....	.....	.....		.....
G	Corrosive liquid, acidic, inorganic, n.o.s..	8	UN3264	I	8	B10, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	B	40
	.....	.....		II	8	B2, IB2, T11, TP2, TP27	154	202	242	1 L	30 L	B	40
	.....	.....		III	8	IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	40
G	Corrosive liquid, acidic, organic, n.o.s..	8	UN3265	I	8	B10, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	B	40
	.....	.....		II	8	B2, IB2, T11, TP2, TP27	154	202	242	1 L	30 L	B	40
	.....	.....		III	8	IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	40
G	Corrosive liquid, basic, inorganic, n.o.s..	8	UN3266	I	8	B10, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	B	40
	.....	.....		II	8	B2, IB2, T11, TP2, TP27	154	202	242	1 L	30 L	B	40
	.....	.....		III	8	IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	40
G	Corrosive liquid, basic, organic, n.o.s..	8	UN3267	I	8	B10, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	B	40
	.....	.....		II	8	B2, IB2, T11, TP2, TP27	154	202	242	1 L	30 L	B	40
	.....	.....		III	8	IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	40
G	Corrosive liquid, self-heating, n.o.s..	8	UN3301	I	8, 4.2	B10	None	201	243	0.5 L	2.5 L	D	.....
	.....	.....		II	8, 4.2	B2, IB1	154	202	242	1 L	30 L	D	.....
G	Corrosive liquids, flammable, n.o.s..	8	UN2920	I	8, 3	B10, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	C	25, 40
	.....	.....		II	8, 3	B2, IB2, T11, TP2, TP27	None	202	243	1 L	30 L	C	25, 40
G	Corrosive liquids, n.o.s.	8	UN1760	I	8	A7, B10, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	B	40
	.....	.....		II	8	B2, IB2, T11, TP2, TP27	154	202	242	1 L	30 L	B	40
	.....	.....		III	8	IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	40
G	Corrosive liquids, oxidizing, n.o.s.	8	UN3093	I	8, 5.1		None	201	243	Forbidden	2.5 L	C	89
	.....	.....		II	8, 5.1	IB2	None	202	243	1 L	30 L	C	89
G	Corrosive liquids, toxic, n.o.s.	8	UN2922	I	8, 6.1	A7, B10, T14, TP2, TP13, TP27	None	201	243	0.5 L	2.5 L	B	40
	.....	.....		II	8, 6.1	B3, IB2, T7, TP2	None	202	243	1 L	30 L	B	40
	.....	.....		III	8, 6.1	IB3, T7, TP1, TP28	154	203	241	5 L	60 L	B	40
G	Corrosive liquids, water-reactive, n.o.s..	8	UN3094	I	8, 4.3		None	201	243	Forbidden	1 L	E	.....
	.....	.....		II	8, 4.3		None	202	243	1 L	5 L	E	.....
G	Corrosive solid, acidic, inorganic, n.o.s..	8	UN3260	I	8	IB7, IP1	None	211	242	1 kg	25 kg	B	.....
	.....	.....		II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	B	.....
	.....	.....		III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	.....
G	Corrosive solid, acidic, organic, n.o.s..	8	UN3261	I	8	IB7, IP1	None	211	242	1 kg	25 kg	B	.....
	.....	.....		II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	B	.....
	.....	.....		III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	.....
G	Corrosive solid, basic, inorganic, n.o.s..	8	UN3262	I	8	IB7, IP1	None	211	242	1 kg	25 kg	B	.....
	.....	.....		II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	B	.....
	.....	.....		III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	.....
G	Corrosive solid, basic, organic, n.o.s..	8	UN3263	I	8	IB7, IP1	None	211	242	1 kg	25 kg	B	.....

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	.....	.....		II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	B	.....
	.....	.....		III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	.....
G	Corrosive solids, flammable, n.o.s..	8	UN2921	I	8, 4.1	IB6	None	211	242	1 kg	25 kg	B	12, 25
	.....	.....		II	8, 4.1	IB8, IP2, IP4	None	212	242	15 kg	50 kg	B	12, 25
G	Corrosive solids, n.o.s.	8	UN1759	I	8	IB7, IP1	None	211	242	1 kg	25 kg	B	.....
	.....	.....		II	8	128, IB8, IP2, IP4	154	212	240	15 kg	50 kg	A	.....
	.....	.....		III	8	128, IB8, IP3	154	213	240	25 kg	100 kg	A	.....
G	Corrosive solids, oxidizing, n.o.s.	8	UN3084	I	8, 5.1		None	211	242	1 kg	25 kg	C	.....
	.....	.....		II	8, 5.1	IB6, IP2	None	212	242	15 kg	50 kg	C	.....
G	Corrosive solids, self-heating, n.o.s..	8	UN3095	I	8, 4.2		None	211	243	1 kg	25 kg	C	.....
	.....	.....		II	8, 4.2	IB6, IP2	None	212	242	15 kg	50 kg	C	.....
G	Corrosive solids, toxic, n.o.s.	8	UN2923	I	8, 6.1	IB7	None	211	242	1 kg	25 kg	B	40
	.....	.....		II	8, 6.1	IB8, IP2, IP4	None	212	240	15 kg	50 kg	B	40
	.....	.....		III	8, 6.1	IB8, IP3	154	213	240	25 kg	100 kg	B	40, 95
G	Corrosive solids, water-reactive, n.o.s..	8	UN3096	I	8, 4.3	IB4, IP1	None	211	243	1 kg	25 kg	D	.....
	.....	.....		II	8, 4.3	IB6, IP2	None	212	242	15 kg	50 kg	D	.....
D W	Cotton	9	NA1365	.....	9	137, IB8, IP2, IP4, W41	None	None	None	No limit	No limit	A	.....
A W	Cotton waste, oily	4.2	UN1364	III	4.2	IB8, IP6	None	213	None	Forbidden	Forbidden	A	54
A I W	Cotton, wet	4.2	UN1365	III	4.2	IB8, IP6	None	204	241	Forbidden	Forbidden	A	.....
	Coumarin derivative pesticides, liquid, flammable, toxic, *flash point less than 23 degrees C*.	3	UN3024	I	3, 6.1	T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	B	40
	.....	.....		II	3, 6.1	IB2, T11, TP2, TP13, TP27	None	202	243	1 L	60 L	B	40
	Coumarin derivative pesticides, liquid, toxic.	6.1	UN3026	I	6.1	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
	.....	.....		II	6.1	IB2, T11, TP2, TP27	None	202	243	5 L	60 L	B	40
	.....	.....		III	6.1	IB3, T7, TP1, TP28	153	203	241	60 L	220 L	A	40
	Coumarin derivative pesticides, liquid, toxic, flammable *flash point not less than 23 degrees C*.	6.1	UN3025	I	6.1, 3	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
	.....	.....		II	6.1, 3	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
	.....	.....		III	6.1, 3	B1, IB3, T7, TP1, TP28	153	203	242	60 L	220 L	A	40
	Coumarin derivative pesticides, solid, toxic.	6.1	UN3027	I	6.1	IB7, IP1, T14, TP2, TP27	None	211	242	5 kg	50 kg	A	40
	.....	.....		II	6.1	IB8, IP2, IP4, T11, TP2, TP27	None	212	242	25 kg	100 kg	A	40
	.....	.....		III	6.1	IB8, IP3, T7, TP1, TP28	153	213	240	100 kg	200 kg	A	40
	Cresols	6.1	UN2076	II	6.1, 8	IB8, IP2, IP4, T7, TP2	None	202	243	1 L	30 L	B	.....
	Cresylic acid	6.1	UN2022	II	6.1, 8	IB2, T7, TP2, TP13	None	202	243	1 L	30 L	B	.....
	Crotonaldehyde, stabilized	6.1	UN1143	I	6.1, 3	2, B9, B14, B32, B74, B77, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	B	40
	Crotonic acid *liquid*	8	UN2823	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	12
	Crotonic acid, *solid*	8	UN2823	III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	12
	Crotonylene	3	UN1144	I	3	T11, TP2	150	201	243	1 L	30 L	E	.....
	Cupriethylenediamine solution	8	UN1761	II	8, 6.1	IB2, T7, TP2	None	202	243	1 L	30 L	A	.....
	.....	.....		III	8, 6.1	IB3, T7, TP1, TP28	154	203	242	5 L	60 L	A	95
	Cutters, cable, explosive	1.4S	UN0070	II	1.4S ...		None	62	None	25 kg	100 kg	05	.....
	Cyanide or cyanide mixtures, dry, see Cyanides, inorganic, solid, n.o.s..	.....			.....		.....	.....	.....	.....	.....		.....
	Cyanide solutions, n.o.s.	6.1	UN1935	I	6.1	B37, T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40, 52
	.....	.....		II	6.1	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	A	40, 52
	.....	.....		III	6.1	IB3, T7, TP2, TP13, TP28	153	203	241	60 L	220 L	A	40, 52
	Cyanides, inorganic, solid, n.o.s.	6.1	UN1588	I	6.1	IB7, IP1, N74, N75	None	211	242	5 kg	50 kg	A	52
	.....	.....		II	6.1	IB8, IP2, IP4, N74, N75	None	212	242	25 kg	100 kg	A	52
	.....	.....		III	6.1	IB8, IP3, N74, N75	153	213	240	100 kg	200 kg	A	52
	Cyanogen	2.3	UN1026	.....	2.3, 2.1	2	None	192	245	Forbidden	Forbidden	D	40
	Cyanogen bromide	6.1	UN1889	I	6.1, 8	A6, A8	None	211	242	1 kg	15 kg	D	40
	Cyanogen chloride, stabilized	2.3	UN1589	.....	2.3, 8	1	None	192	245	Forbidden	Forbidden	D	40
	Cyanuric chloride	8	UN2670	II	8	IB8, IP2, IP4	None	212	240	15 kg	50 kg	A	12, 40
	Cyanuric triazide	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Cyclobutane	2.1	UN2601	.....	2.1		306	304	314, 315	Forbidden	150 kg	B	40
	Cyclobutyl chloroformate	6.1	UN2744	II	6.1, 8, 3.	IB1, T7, TP2, TP13	None	202	243	1 L	30 L	A	12, 13, 21, 25, 40, 100

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	1,5,9-Cyclododecatriene	6.1	UN2518	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	40
	Cycloheptane	3	UN2241	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	40
	Cycloheptatriene	3	UN2603	II	3, 6.1	IB2, T7, TP1, TP13	None	202	243	1 L	60 L	E	40
	Cycloheptene	3	UN2242	II	3	B1, IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Cyclohexane	3	UN1145	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	E	
	Cyclohexanone	3	UN1915	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Cyclohexene	3	UN2256	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	E	
	Cyclohexenyltrichlorosilane	8	UN1762	II	8	A7, B2, IB2, N34, T7, TP2, TP13	None	202	242	Forbidden	30 L	C	40
	Cyclohexyl acetate	3	UN2243	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Cyclohexyl isocyanate	6.1	UN2488	I	6.1, 3	2, B9, B14, B32, B74, B77, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Cyclohexyl mercaptan	3	UN3054	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	40, 95
	Cyclohexylamine	8	UN2357	II	8, 3	IB2, T7, TP2	None	202	243	1 L	30 L	A	40
	Cyclohexyltrichlorosilane	8	UN1763	II	8	A7, B2, IB2, N34, T7, TP2, TP13	None	202	242	Forbidden	30 L	C	40
	Cyclonite and cyclotetramethylenetetranitramine mixtures, wetted *or* desensitized *see* RDX and HMX mixtures, wetted *or* desensitized *etc*.												
	Cyclonite and HMX mixtures, wetted *or* desensitized *see* RDX and HMX mixtures, wetted *or* desensitized *etc*.												
	Cyclonite and octogen mixtures, wetted *or* desensitized *see* RDX and HMX mixtures, wetted *or* desensitized *etc*.												
	Cyclonite, *see* Cyclotrimethylenetrinitramine, *etc*.												
	Cyclooctadiene phosphines, *see* 9-Phosphabicyclononanes.												
	Cyclooctadienes	3	UN2520	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Cyclooctatetraene	3	UN2358	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Cyclopentane	3	UN1146	II	3	IB2, T7, TP1	150	202	242	5 L	60 L	E	
	Cyclopentane, methyl, see Methylcyclopentane.												
	Cyclopentanol	3	UN2244	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Cyclopentanone	3	UN2245	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Cyclopentene	3	UN2246	II	3	IB2, IP8, T7, TP2	150	202	242	5 L	60 L	E	
	Cyclopropane	2.1	UN1027		2.1	T50	306	304	314, 315	Forbidden	150 kg	E	40
	Cyclotetramethylene tetranitramine (dry or unphlegmatized) (HMX).	Forbidden											
	Cyclotetramethylenetetranitramine, desensitized *or* Octogen, desensitized *or* HMX, desensitized.	1.1D	UN0484	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Cyclotetramethylenetetranitramine, wetted *or* HMX, wetted *or* Octogen, wetted *with not less than 15 percent water, by mass*.	1.1D	UN0226	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Cyclotrimethylenetrinitramine and cyclotetramethylenetetranitramine mixtures, wetted *or* desensitized *see* RDX and HMX mixtures, wetted *or* desensitized *etc*.												
	Cyclotrimethylenenitramine and octogen, mixtures, wetted *or* desensitized *see* RDX and HMX mixtures, wetted *or* desensitized *etc*.												
	Cyclotrimethylenetrinitramine and HMX mixtures, wetted *or* desensitized *see* RDX and HMX mixtures, wetted *or* desensitized *etc*.												
	Cyclotrimethylenetrinitramine, desensitized *or* Cyclonite, desensitized *or* Hexogen, desensitized *or* RDX, desensitized.	1.1D	UN0483	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Cyclotrimethylenetrinitramine, wetted *or* Cyclonite, wetted *or* Hexogen, wetted *or* RDX, wetted *with not less than 15 percent water by mass*.	1.1D	UN0072	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Cymenes	3	UN2046	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Dangerous Goods in Machinery *or* Dangerous Goods in Apparatus.	9	UN3363			136	None	222	None	No limit	No limit	A	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Decaborane	4.1	UN1868	II	4.1, 6.1	A19, A20, IB6, IP2	None	212	None	Forbidden	50 kg	A	
	Decahydronaphthalene	3	UN1147	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	n-Decane	3	UN2247	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Deflagrating metal salts of aromatic nitroderivatives, n.o.s..	1.3C	UN0132	II	1.3C		None	62	None	Forbidden	Forbidden	10	5E
	Delay electric igniter, see Igniters												
	Depth charges, see Charges, depth.												
	Detonating relays, see Detonators, *etc*.												
	Detonator assemblies, non-electric *for blasting*.	1.1B	UN0360	II	1.1B		None	62	None	Forbidden	Forbidden	11	
	Detonator assemblies, non-electric, *for blasting*.	1.4B	UN0361	II	1.4B	103	63(f), 63(g).	62	None	Forbidden	75 kg	06	
	Detonator, assemblies, non-electric *for blasting*.	1.4S	UN0500	II	1.4S		63(f), 63(g).	62	None	25 kg	100 kg	05	
	Detonators, electric, *for blasting*	1.1B	UN0030	II	1.1B		63(f), 63(g).	62	None	Forbidden	Forbidden	11	
	Detonators, electric, *for blasting*	1.4B	UN0255	II	1.4B	103	63(f), 63(g).	62	None	Forbidden	75 kg	06	
	Detonators, electric *for blasting*	1.4S	UN0456	II	1.4S		63(f), 63(g).	62	None	25 kg	100 kg	05	
	Detonators for ammunition	1.1B	UN0073	II	1.1B		None	62	None	Forbidden	Forbidden	11	
	Detonators for ammunition	1.2B	UN0364	II	1.2B		None	62	None	Forbidden	Forbidden	11	
	Detonators for ammunition	1.4B	UN0365	II	1.4B	103	None	62	None	Forbidden	75 kg	06	
	Detonators for ammunition	1.4S	UN0366	II	1.4S		None	62	None	25 kg	100 kg	05	
	Detonators, non-electric, *for blasting*.	1.1B	UN0029	II	1.1B		None	62	None	Forbidden	Forbidden	11	
	Detonators, non-electric, *for blasting*.	1.4B	UN0267	II	1.4B	103	63(f), 63(g).	62	None	Forbidden	75 kg	06	
	Detonators, non-electric,*for blasting*.	1.4S	UN0455	II	1.4S		63(f), 63(g).	62	None	25 kg	100 kg	5	
	Deuterium, compressed	2.1	UN1957		2.1		306	302	None	Forbidden	150 kg	E	40
	Devices, small, hydrocarbon gas powered *or* Hydrocarbon gas refills for small devices *with release device*.	2.1	UN3150		2.1		306	304	None	Forbidden	150 kg	B	40
	Di-n-amylamine	3	UN2841	III	3, 6.1	B1, IB3, T4, TP1	150	203	242	60 L	220 L	A	
	Di-n-butyl peroxydicarbonate, with more than 52 percent in solution.	Forbidden											
	Di-n-butylamine	8	UN2248	II	8, 3	IB2, T7, TP2	None	202	243	1 L	30 L	A	
	2,2-Di-(tert-butylperoxy) butane, with more than 55 percent in solution.	Forbidden											
	Di-(tert-butylperoxy) phthalate, with more than 55 percent in solution.	Forbidden											
	2,2-Di-(4,4-di-tert-butylperoxycyclohexyl) propane, with more than 42 percent with inert solid.	Forbidden											
	Di-2,4-dichlorobenzoyl peroxide, with more than 75 percent with water.	Forbidden											
	1,2-Di-(dimethylamino)ethane	3	UN2372	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Di-2-ethylhexyl phosphoric acid, see Diisooctyl acid phosphate.												
	Di-(1-hydroxytetrazole) (dry)	Forbidden											
	Di-(1-naphthoyl) peroxide	Forbidden											
	a,a'-Di-(nitroxy) methylether	Forbidden											
	Di-(beta-nitroxyethyl) ammonium nitrate.	Forbidden											
	Diacetone alcohol	3	UN1148	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Diacetone alcohol peroxides, with more than 57 percent in solution with more than 9 percent hydrogen peroxide, less than 26 percent diacetone alcohol and less than 9 percent water; total active oxygen content more than 9 percent by mass.	Forbidden											
	Diacetyl, see Butanedione												
	Diacetyl peroxide, solid, or with more than 25 percent in solution.	Forbidden											
	Diallylamine	3	UN2359	II	3, 6.1, 8.	IB2, T7, TP1	None	202	243	1 L	5 L	B	21, 40, 100
	Diallylether	3	UN2360	II	3, 6.1	IB2, N12, T7, TP1, TP13	None	202	243	1 L	60 L	E	40
	4,4'-Diaminodiphenyl methane	6.1	UN2651	III	6.1	IB8, IP3, T4, TP1	153	213	240	100 kg	200 kg	A	
	p-Diazidobenzene	Forbidden											
	1,2-Diazidoethane	Forbidden											
	1,1'-Diazoaminonaphthalene	Forbidden											
	Diazoaminotetrazole (dry)	Forbidden											
	Diazodinitrophenol (dry)	Forbidden											

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Diazodinitrophenol, wetted *with not less than 40 percent water or mixture of alcohol and water, by mass*.	1.1A	UN0074	II	1.1A	111, 117	None	62	None	Forbidden	Forbidden	12	
	Diazodiphenylmethane	Forbidden											
	Diazonium nitrates (dry)	Forbidden											
	Diazonium perchlorates (dry)	Forbidden											
	1,3-Diazopropane	Forbidden											
	Dibenzyl peroxydicarbonate, with more than 87 percent with water.	Forbidden											
	Dibenzyldichlorosilane	8	UN2434	II	8	B2, IB2, T7, TP2, TP13	154	202	242	1 L	30 L	C	40
	Diborane, compressed	2.3	UN1911		2.3, 2.1	1	None	302	None	Forbidden	Forbidden	D	40, 57
D	Diborane mixtures	2.1	NA1911		2.1	5	None	302	245	Forbidden	Forbidden	D	40, 57
	Dibromoacetylene	Forbidden											
	1,2-Dibromobutan-3-one	6.1	UN2648	II	6.1	IB2	None	202	243	5 L	60 L	B	40
	Dibromochloropropane	6.1	UN2872	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
A	Dibromodifluoromethane, *R12B2*	9	UN1941	III	None	T11, TP2	155	203	241	100 L	220 L	A	25
	1,2-Dibromoethane, see Ethylene dibromide.												
	Dibromomethane	6.1	UN2664	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	Dibutyl ethers	3	UN1149	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Dibutylaminoethanol	6.1	UN2873	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	N,N'-Dichlorazodicarbonamidine (salts of) (dry).	Forbidden											
	1,1-Dichloro-1-nitroethane	6.1	UN2650	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	12, 40
D	3,5-Dichloro-2,4,6-trifluoropyridine	6.1	NA9264	I	6.1	2, B9, B14, B32, B74, T20, TP4, TP12, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	A	40
	Dichloroacetic acid	8	UN1764	II	8	A3, A6, A7, B2, IB2, N34, T8, TP2, TP12	154	202	242	1 L	30 L	A	
	1,3-Dichloroacetone	6.1	UN2649	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	B	12, 40
	Dichloroacetyl chloride	8	UN1765	II	8	A3, A6, A7, B2, B6, IB2, N34, T7, TP2	154	202	242	1 L	30 L	D	40
	Dichloroacetylene	Forbidden											
+	Dichloroanilines, liquid	6.1	UN1590	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	40
+	Dichloroanilines, solid	6.1	UN1590	II	6.1	IB8, IP2, IP4, T7, TP2	None	212	242	25 kg	100 kg	A	40
+	o-Dichlorobenzene	6.1	UN1591	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	2,2'-Dichlorodiethyl ether	6.1	UN1916	II	6.1, 3	IB2, N33, N34, T7, TP2	None	202	243	5 L	60 L	A	
	Dichlorodifluoromethane and difluoroethane azeotropic mixture *or* Refrigerant gas R 500 *with approximately 74 percent dichlorodifluoromethane*.	2.2	UN2602		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	Dichlorodifluoromethane *or* Refrigerant gas R 12.	2.2	UN1028		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	Dichlorodimethyl ether, symmetrical.	6.1	UN2249	I	6.1		None	201	243	Forbidden	Forbidden	D	40
	1,1-Dichloroethane	3	UN2362	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	40
	1,2-Dichloroethane, see Ethylene dichloride.												
	Dichloroethyl sulfide	Forbidden											
	1,2-Dichloroethylene	3	UN1150	II	3	IB2, T7, TP2	150	202	242	5 L	60 L	B	
	Dichlorofluoromethane *or* Refrigerant gas R21.	2.2	UN1029		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	Dichloroisocyanuric acid, dry *or* Dichloroisocyanuric acid salts.	5.1	UN2465	II	5.1	28, IB8, IP4	152	212	240	5 kg	25 kg	A	13
	Dichloroisopropyl ether	6.1	UN2490	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	B	
	Dichloromethane	6.1	UN1593	III	6.1	IB3, IP8, N36, T7, TP2	153	203	241	60 L	220 L	A	
	Dichloropentanes	3	UN1152	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Dichlorophenyl isocyanates	6.1	UN2250	II	6.1	IB8, IP2, IP4, T7, TP2	None	212	242	25 kg	100 kg	B	25, 40, 48
	Dichlorophenyltrichlorosilane	8	UN1766	II	8	A7, B2, B6, IB2, N34, T7, TP2, TP13	None	202	242	Forbidden	30 L	C	40
	1,2-Dichloropropane	3	UN1279	II	3	IB2, N36, T4, TP1	150	202	242	5 L	60 L	B	
	1,3-Dichloropropanol-2	6.1	UN2750	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	12, 40
	Dichloropropene and propylene dichloride mixture, see 1,2-Dichloropropane.												
	Dichloropropenes	3	UN2047	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Dichlorosilane	2.3	UN2189		2.3, 2.1, 8.	2, B9, B14	None	304	314, 315	Forbidden	Forbidden	D	17, 40
	1,2-Dichloro-1,1,2,2-tetrafluoroethane *or* Refrigerant gas R 114.	2.2	UN1958		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	Dichlorovinylchloroarsine	Forbidden											

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Dicycloheptadiene, see Bicyclo [2,2,1] hepta-2,5-diene, stabilized.												
	Dicyclohexylamine	8	UN2565	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Dicyclohexylammonium nitrite	4.1	UN2687	III	4.1	IB8, IP3	151	213	240	25 kg	100 kg	A	48
	Dicyclopentadiene	3	UN2048	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Didymium nitrate	5.1	UN1465	III	5.1	A1, IB8, IP3	152	213	240	25 kg	100 kg	A	
D	Diesel fuel	3	NA1993	III	None	B1, IB3, T4, TP1, TP29	150	203	242	60 L	220 L	A	
I	Diesel fuel	3	UN1202	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Diethanol nitrosamine dinitrate (dry).	Forbidden											
	Diethoxymethane	3	UN2373	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	E	
	3,3-Diethoxypropene	3	UN2374	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Diethyl carbonate	3	UN2366	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Diethyl cellosolve, see Ethylene glycol diethyl ether.												
	Diethyl ether *or* Ethyl ether	3	UN1155	I	3	T11, TP2	150	201	243	1 L	30 L	E	40
	Diethyl ketone	3	UN1156	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Diethyl peroxydicarbonate, with more than 27 percent in solution.	Forbidden											
	Diethyl sulfate	6.1	UN1594	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	C	
	Diethyl sulfide	3	UN2375	II	3	IB2, T7, TP1, TP13	None	202	243	5 L	60 L	E	
	Diethylamine	3	UN1154	II	3, 8	IB2, N34, T7, TP1	None	202	243	1 L	5 L	E	40
	2-Diethylaminoethanol	8	UN2686	II	8, 3	B2, IB2, T7, TP2	None	202	243	1 L	30 L	A	
	Diethylaminopropylamine	3	UN2684	III	3, 8	B1, IB3, T4, TP1	150	203	242	5 L	60 L	A	
+	N, N-Diethylaniline	6.1	UN2432	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	Diethylbenzene	3	UN2049	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Diethyldichlorosilane	8	UN1767	II	8, 3	A7, B6, IB2, N34, T7, TP2, TP13	None	202	243	Forbidden	30 L	C	40
	Diethylene glycol dinitrate	Forbidden											
	Diethyleneglycol dinitrate, desensitized *with not less than 25 percent non-volatile water-insoluble phlegmatizer, by mass.*	1.1D	UN0075	II	1.1D		None	62	None	Forbidden	Forbidden	13	21E
	Diethylenetriamine	8	UN2079	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	A	40
	N,N-Diethylethylenediamine	8	UN2685	II	8, 3	IB2, T7, TP2	None	202	243	1 L	30 L	A	
	Diethylgold bromide	Forbidden											
	Diethylthiophosphoryl chloride	8	UN2751	II	8	B2, IB2,T7, TP2	154	202	242	1 L	39 L	A	40
	Diethylzinc	4.2	UN1366	I	4.2, 4.3	B11, T21, TP2, TP7	None	181	244	Forbidden	Forbidden	D	18
	Difluorochloroethanes, see 1-Chloro-1,1-difluoroethanes.												
	1,1-Difluoroethane *or* Refrigerant gas R 152a.	2.1	UN1030		2.1	T50	306	304	314, 315	Forbidden	150 kg	B	40
	1,1-Difluoroethylene *or* Refrigerant gas R 1132a.	2.1	UN1959		2.1		306	304	None	Forbidden	150 kg	E	40
	Difluoromethane *or* Refrigerant gas R 32.	2.1	UN3252		2.1	T50	306	302	314, 315	Forbidden	150 kg	D	40
	Difluorophosphoric acid, anhydrous.	8	UN1768	II	8	A6, A7, B2, IB2, N5, N34, T8, TP2, TP12	None	202	242	1 L	30 L	A	40
	2,3-Dihydropyran	3	UN2376	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	1,8-Dihydroxy-2,4,5,7-tetranitroanthraquinone (chrysamminic acid).	Forbidden											
	Diiodoacetylene	Forbidden											
	Diisobutyl ketone	3	UN1157	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Diisobutylamine	3	UN2361	III	3, 8	B1, IB3, T4, TP1	150	203	242	5 L	60 L	A	
	Diisobutylene, isomeric compounds.	3	UN2050	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Diisooctyl acid phosphate	8	UN1902	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Diisopropyl ether	3	UN1159	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	E	40
	Diisopropylamine	3	UN1158	II	3, 8	IB2, T7, TP1	None	202	243	1 L	5 L	B	
	Diisopropylbenzene hydroperoxide, with more than 72 percent in solution.	Forbidden											
	Diketene, stabilized	6.1	UN2521	I	6.1, 3	2, B9, B14, B32, B74, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40, 49
	1,2-Dimethoxyethane	3	UN2252	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	1,1-Dimethoxyethane	3	UN2377	II	3	IB2, T7, TP1	150	202	242	5 L	60 L	B	
	Dimethyl carbonate	3	UN1161	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Dimethyl chlorothiophosphate, see Dimethyl thiophosphoryl chloride.												
	2,5-Dimethyl-2,5-dihydroperoxy hexane, with more than 82 percent with water.	Forbidden											
	Dimethyl disulfide	3	UN2381	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	40
	Dimethyl ether	2.1	UN1033		2.1	T50	306	304	314, 315	Forbidden	150 kg	B	40
	Dimethyl-N-propylamine	3	UN2266	II	3, 8	IB2, T7, TP2, TP13	None	202	243	1 L	5 L	B	40

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Dimethyl sulfate	6.1	UN1595	I	6.1, 8	2, B9, B14, B32, B74, B77, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Dimethyl sulfide	3	UN1164	II	3	IB1, IP8, T7, TP2	None	202	242	5 L	60 L	E	40
	Dimethyl thiophosphoryl chloride	6.1	UN2267	II	6.1, 8	IB2, T7, TP2	None	202	243	1 L	30 L	B	25
	Dimethylamine, anhydrous	2.1	UN1032		2.1	T50	None	304	314, 315	Forbidden	150 kg	D	40
	Dimethylamine solution	3	UN1160	II	3, 8	IB2, T7, TP1	None	202	243	1 L	5 L	B	
	2-Dimethylaminoacetonitrile	3	UN2378	II	3, 6.1	IB2, T7, TP1	None	202	243	1 L	60 L	A	26, 40
	2-Dimethylaminoethanol	8	UN2051	II	8, 3	B2, IB2, T7, TP2	154	202	243	1 L	30 L	A	
	2-Dimethylaminoethyl acrylate	6.1	UN3302	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	D	25
	2-Dimethylaminoethyl methacrylate.	6.1	UN2522	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	B	40
	N,N-Dimethylaniline	6.1	UN2253	II	6.1	IB1, T7, TP2	None	202	243	5 L	60 L	A	
	2,3-Dimethylbutane	3	UN2457	II	3	IB2, T7, TP1	150	202	242	5 L	60 L	E	
	1,3-Dimethylbutylamine	3	UN2379	II	3, 8	IB2, T7, TP1	None	202	243	1 L	5 L	B	
	Dimethylcarbamoyl chloride	8	UN2262	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	A	40
	Dimethylcyclohexanes	3	UN2263	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Dimethylcyclohexylamine	8	UN2264	II	8, 3	B2, IB2, T7, TP2	154	202	243	1 L	30 L	A	40
	Dimethyldichlorosilane	3	UN1162	II	3, 8	B77, IB2, T7, TP2, TP13	None	202	243	Forbidden	Forbidden	B	40
	Dimethyldiethoxysilane	3	UN2380	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Dimethyldioxanes	3	UN2707	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	N,N-Dimethylformamide	3	UN2265	III	3	B1, IB3, T2, TP2	150	203	242	60 L	220 L	A	
	Dimethylhexane dihydroperoxide (dry).	Forbidden											
	Dimethylhydrazine, symmetrical	6.1	UN2382	I	6.1, 3	2, A7, B9, B14, B32, B74, B77, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Dimethylhydrazine, unsymmetrical	6.1	UN1163	I	6.1, 3, 8.	2, B7, B9, B14, B32, B74, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	21, 38, 40, 100
	2,2-Dimethylpropane	2.1	UN2044		2.1		306	304	314, 315	Forbidden	150 kg	E	40
	Dimethylzinc	4.2	UN1370	I	4.2, 4.3	B11, B16, T21, TP2, TP7	None	181	244	Forbidden	Forbidden	D	18
	Dinitro-o-cresol, *solid*	6.1	UN1598	II	6.1	IB8, IP2, IP4, T7, TP2	None	212	242	25 kg	100 kg	A	
	Dinitro-o-cresol, *solution*	6.1	UN1598	II	6.1	IB2, IP2, IP4, T7, TP2	None	202	243	5 L	60 L	A	
	1,3-Dinitro-5,5-dimethyl hydantoin	Forbidden											
	Dinitro-7,8-dimethylglycoluril (dry)	Forbidden											
	1,3-Dinitro-4,5-dinitrosobenzene	Forbidden											
	1,4-Dinitro-1,1,4,4-tetramethylolbutanetetranitrate (dry).	Forbidden											
	2,4-Dinitro-1,3,5-trimethylbenzene	Forbidden											
	Dinitroanilines	6.1	UN1596	II	6.1	IB8, IP2, IP4, T7, TP2	None	212	242	25 kg	100 kg	A	91
	Dinitrobenzenes, *liquid*	6.1	UN1597	II	6.1	11, IB2, T7, TP2	None	202	243	5 L	60 L	A	91
	Dinitrobenzenes, *solid*	6.1	UN1597	II	6.1	11, IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	91
	Dinitrochlorobenzene, see Chlorodinitrobenzene.												
	1,2-Dinitroethane	Forbidden											
	1,1-Dinitroethane (dry)	Forbidden											
	Dinitrogen tetroxide	2.3	UN1067		2.3, 5.1, 8.	1, B7, B14, B45, B46, B61, B66, B67, B77, T50, TP21	None	336	314	Forbidden	Forbidden	D	40, 89, 90
	Dinitroglycoluril *or* Dingu	1.1D	UN0489	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Dinitromethane	Forbidden											
	Dinitrophenol, *dry or wetted with less than 15 percent water, by mass.*	1.1D	UN0076	II	1.1D, 6.1.		None	62	None	Forbidden	Forbidden	10	5E
	Dinitrophenol solutions	6.1	UN1599	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	36
				III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	36
	Dinitrophenol, wetted *with not less than 15 percent water, by mass.*	4.1	UN1320	I	4.1, 6.1	23, A8, A19, A20, N41	None	211	None	1 kg	15 kg	E	28, 36
	Dinitrophenolates *alkali metals, dry or wetted with less than 15 percent water, by mass.*	1.3C	UN0077	II	1.3C, 6.1.		None	62	None	Forbidden	Forbidden	10	5E
	Dinitrophenolates, wetted *with not less than 15 percent water, by mass.*	4.1	UN1321	I	4.1, 6.1	23, A8, A19, A20, N41	None	211	None	1 kg	15 kg	E	28, 36
	Dinitropropylene glycol	Forbidden											
	Dinitroresorcinol, *dry or wetted with less than 15 percent water, by mass.*	1.1D	UN0078	II	1.1D		None	62	None	Forbidden	Forbidden	10	5E
	2,4-Dinitroresorcinol (heavy metal salts of) (dry).	Forbidden											
	4,6-Dinitroresorcinol (heavy metal salts of) (dry).	Forbidden											
	Dinitroresorcinol, wetted *with not less than 15 percent water, by mass.*	4.1	UN1322	I	4.1	23, A8, A19, A20, N41	None	211	None	1 kg	15 kg	E	28, 36

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	3,5-Dinitrosalicylic acid (lead salt) (dry).	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Dinitrosobenzene	1.3C	UN0406	II	1.3C		None	62	None	Forbidden	Forbidden	10	.....
	Dinitrosobenzylamidine and salts of (dry).	Forbidden			.....		.....	.....	.....	.....	.....		.....
	2,2-Dinitrostilbene	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Dinitrotoluenes, *liquid*	6.1	UN2038	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	.....
	Dinitrotoluenes, molten	6.1	UN1600	II	6.1	T7, TP3	None	202	243	Forbidden	Forbidden	C	.....
	Dinitrotoluenes, *solid*	6.1	UN2038	II	6.1	IB8, IP2, IP4, T7, TP2	None	212	242	25 kg	100 kg	A	.....
	1,9-Dinitroxy pentamethylene-2,4, 6,8-tetramine (dry).	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Dioxane	3	UN1165	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	.....
	Dioxolane	3	UN1166	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	40
	Dipentene	3	UN2052	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	Diphenylamine chloroarsine	6.1	UN1698	I	6.1		None	201	None	Forbidden	Forbidden	D	40
	Diphenylchloroarsine, liquid	6.1	UN1699	I	6.1	A8, B14, B32, N33, N34, T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	D	40
	Diphenylchloroarsine, solid	6.1	UN1699	I	6.1	A8, B14, B32, IB7, IP1, N33, N34	None	211	242	Forbidden	15 kg	D	40
	Diphenyldichlorosilane	8	UN1769	II	8	A7, B2, IB2, N34, T7, TP2, TP13	None	202	242	Forbidden	30 L	C	40
	Diphenylmethyl bromide	8	UN1770	II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	D	40
	Dipicryl sulfide, *dry or wetted with less than 10 percent water, by mass.*	1.1D	UN0401	II	1.1D		None	62	None	Forbidden	Forbidden	10	.....
	Dipicryl sulfide, wetted *with not less than 10 percent water, by mass.*	4.1	UN2852	I	4.1	A2, N41	None	211	None	Forbidden	0.5 kg	D	28
	Dipicrylamine, *see* Hexanitrodiphenylamine.	.....			.....		.....	.....	.....	.....	.....		.....
	Dipropionyl peroxide, with more than 28 percent in solution.	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Di-n-propyl ether	3	UN2384	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	.....
	Dipropyl ketone	3	UN2710	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	Dipropylamine	3	UN2383	II	3, 8	IB2, T7, TP1	None	202	243	1 L	5 L	B	.....
G	Disinfectant, liquid, corrosive, n.o.s..	8	UN1903	I	8	A7, B10, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	B	.....
G	Disinfectants, liquid, corrosive n.o.s..	8	UN1903	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	B	.....
	.....	.....		III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	.....
G	Disinfectants, liquid, toxic, n.o.s. ..	6.1	UN3142	I	6.1	A4, T14, TP2, TP27	None	201	243	1 L	30 L	A	40
	.....	.....		II	6.1	IB2, T11, TP2, TP27	None	202	243	5 L	60 L	A	40
	.....	.....		III	6.1	IB3, T7, TP1, TP28	153	203	241	60 L	220 L	A	40
G	Disinfectants, solid, toxic, n.o.s.	6.1	UN1601	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	40
	.....	.....		III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	40
	Disodium trioxosilicate	8	UN3253	III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	.....
G	Dispersant gases, n.o.s. *see* Refrigerant gases, n.o.s..	.....			.....		.....	.....	.....	.....	.....		.....
	Divinyl ether, stabilized	3	UN1167	I	3	T11, TP2	None	201	243	1 L	30 L	E	40
	Dodecyltrichlorosilane	8	UN1771	II	8	A7, B2, B6, IB2, N34, T7, TP2, TP13	None	202	242	Forbidden	30 L	C	40
	Dry ice, *see* Carbon dioxide, solid	.....			.....		.....	.....	.....	.....	.....		.....
G	Dyes, liquid, corrosive, n.o.s. or Dye intermediates, liquid, corrosive, n.o.s..	8	UN2801	I	8	11, B10, T14, TP2, TP27	None	201	243	0.5 L	2.5 L	A	.....
	.....	.....		II	8	11, B2, IB2, T11, TP2, TP27	154	202	242	1 L	30 L	A	.....
	.....	.....		III	8	11, IB3, T7, TP1, TP28	154	203	241	5 L	60 L	A	.....
G	Dyes, liquid, toxic, n.o.s. *or* Dye intermediates, liquid, toxic, n.o.s..	6.1	UN1602	II	6.1	IB2	None	202	243	5 L	60 L	A	.....
	.....	.....		III	6.1	IB3	153	203	241	60 L	220 L	A	.....
G	Dyes, solid, corrosive, n.o.s. *or* Dye intermediates, solid, corrosive, n.o.s..	8	UN3147	I	8	IB7, IP1	None	211	242	1 kg	25 kg	A	.....
	.....	.....		II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	A	.....
	.....	.....		III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	.....
G	Dyes, solid, toxic, n.o.s. *or* Dye intermediates, solid, toxic, n.o.s..	6.1	UN3143	I	6.1	A5, IB7, IP1, T14, TP2, TP27	None	211	242	5 kg	50 kg	A	.....
	.....	.....		II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	.....	.....		III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	.....
	Dynamite, see Explosive, blasting, type A.	.....			.....		.....	.....	.....	.....	.....		.....
	Electrolyte (acid or alkali) for batteries, see Battery fluid, acid *or* Battery fluid, alkali.	.....			.....		.....	.....	.....	.....	.....		.....
	Elevated temperature liquid, flammable, n.o.s., *with flash point above 37.8 C, at or above its flash point.*	3	UN3256	III	3	IB1, T3, TP3, TP29	None	None	247	Forbidden	Forbidden	A	.....

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Elevated temperature liquid, n.o.s., *at or above 100 C and below its flash point (including molten metals, molten salts, etc.)*.	9	UN3257	III	9	IB1, T3, TP3, TP29	None	None	247	Forbidden	Forbidden	A	85
	Elevated temperature solid, n.o.s., *at or above 240 C, see § 173.247(h)(4)*.	9	UN3258	III	9		247(h)(4).	None	247	Forbidden	Forbidden	A	85
	Engines, internal combustion, *flammable gas powered*.	9	UN3166		9	135	220	220	220	Forbidden	No limit	A	
	Engines, internal combustion, *flammable liquid powered*.	9	UN3166		9	135	220	220	220	No limit	No limit	A	
G	Environmentally hazardous substances, liquid, n.o.s..	9	UN3082	III	9	8, IB3, T4, TP1, TP29	155	203	241	No limit	No limit	A	
G	Environmentally hazardous substances, solid, n.o.s..	9	UN3077	III	9	8, B54, IB8, N20	155	213	240	No limit	No limit	A	
	Epibromohydrin	6.1	UN2558	I	6.1, 3	T14, TP2, TP13	None	201	243	Forbidden	Forbidden	D	40
+	Epichlorohydrin	6.1	UN2023	II	6.1, 3	IB2, T7, TP2, TP13	None	202	243	5 L	60 L	A	40
	1,2-Epoxy-3-ethoxypropane	3	UN2752	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Esters, n.o.s.	3	UN3272	II	3	IB2, T7, TP1, TP8, TP28	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T4, TP1, TP29	150	203	242	60 L	220 L	A	
	Etching acid, liquid, n.o.s., see Hydrofluoric acid, solution *etc*.												
	Ethane	2.1	UN1035		2.1		306	304	302	Forbidden	150 kg	E	40
D	Ethane-Propane mixture, refrigerated liquid.	2.1	NA1961		2.1	T75, TP5	None	316	314, 315	Forbidden	Forbidden	D	40
	Ethane, refrigerated liquid	2.1	UN1961		2.1	T75, TP5	None	None	315	Forbidden	Forbidden	D	40
	Ethanol amine dinitrate	Forbidden											
	Ethanol *or* Ethyl alcohol *or* Ethanol solutions *or* Ethyl alcohol solutions.	3	UN1170	II	3	24, IB2, T4, TP1	150	202	242	5 L	60 L	A	
				III	3	24, B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Ethanolamine *or* Ethanolamine solutions.	8	UN2491	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Ether, see Diethyl ether												
	Ethers, n.o.s.	3	UN3271	II	3	IB2, T7, TP1, TP8, TP28	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T4, TP1, TP29	150	203	242	60 L	220 L	A	
	Ethyl acetate	3	UN1173	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Ethyl acrylate, stabilized	3	UN1917	II	3	IB2, T4, TP1, TP13	150	202	242	5 L	60 L	B	40
	Ethyl alcohol, *see* Ethanol												
	Ethyl aldehyde, see Acetaldehyde												
	Ethyl amyl ketone	3	UN2271	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	N-Ethyl-N-benzylaniline	6.1	UN2274	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	Ethyl borate	3	UN1176	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Ethyl bromide	6.1	UN1891	II	6.1	IB2, IP8, T7, TP2, TP13	None	202	243	5 L	60 L	B	40, 85
	Ethyl bromoacetate	6.1	UN1603	II	6.1, 3	IB2, T7, TP2	None	202	243	Forbidden	Forbidden	D	40
	Ethyl butyl ether	3	UN1179	II	3	B1, IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Ethyl butyrate	3	UN1180	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Ethyl chloride	2.1	UN1037		2.1	B77, T50	None	322	314, 315	Forbidden	150 kg	B	40
	Ethyl chloroacetate	6.1	UN1181	II	6.1, 3	IB2, T7, TP2	None	202	243	5 L	60 L	A	
	Ethyl chloroformate	6.1	UN1182	I	6.1, 3, 8.	2, A3, A6, A7, B9, B14, B32, B74, N34, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	21, 40, 100
	Ethyl 2-chloropropionate	3	UN2935	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
+	Ethyl chlorothioformate	8	UN2826	II	8, 6.1, 3.	2, B9, B14, B32, B74, T20, TP2, TP38, TP45	None	227	244	Forbidden	Forbidden	A	40
	Ethyl crotonate	3	UN1862	II	3	IB2, T4, TP2	150	202	242	5 L	60 L	B	
	Ethyl ether, *see* Diethyl ether												
	Ethyl fluoride *or* Refrigerant gas R161.	2.1	UN2453		2.1		306	304	314, 315	Forbidden	150 kg	E	40
	Ethyl formate	3	UN1190	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	E	
	Ethyl hydroperoxide	Forbidden											
	Ethyl isobutyrate	3	UN2385	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
+	Ethyl isocyanate	3	UN2481	I	3, 6.1	1, A7, B9, B14, B30, B72, T22, TP2, TP13, TP38, TP44	None	226	244	Forbidden	Forbidden	D	40
	Ethyl lactate	3	UN1192	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Ethyl mercaptan	3	UN2363	I	3	T11, TP2, TP13	None	201	243	Forbidden	30 L	E	95, 102
	Ethyl methacrylate	3	UN2277	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Ethyl methyl ether	2.1	UN1039		2.1		None	201	314, 315	Forbidden	150 kg	B	40
	Ethyl methyl ketone *or* Methyl ethyl ketone.	3	UN1193	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Ethyl nitrite solutions	3	UN1194	I	3, 6.1		None	201	None	Forbidden	Forbidden	E	40, 105
	Ethyl orthoformate	3	UN2524	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Ethyl oxalate	6.1	UN2525	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	Ethyl perchlorate	Forbidden											

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
D	Ethyl phosphonothioic dichloride, anhydrous.	6.1	NA2927	I	6.1, 8	2, B9, B14, B32, B74, T20, TP4, TP12, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
D	Ethyl phosphonous dichloride, anhydrous *pyrophoric liquid*.	6.1	NA2845	I	6.1, 4.2	2, B9, B14, B32, B74, T20, TP4, TP12, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	18
D	Ethyl phosphorodichloridate	6.1	NA2927	I	6.1, 8	2, B9, B14, B32, B74, T20, TP4, TP12, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Ethyl propionate	3	UN1195	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Ethyl propyl ether	3	UN2615	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	E	
	Ethyl silicate, see Tetraethyl silicate.												
	Ethylacetylene, stabilized	2.1	UN2452		2.1		None	304	314, 315	Forbidden	150 kg	B	40
	Ethylamine	2.1	UN1036		2.1	B77, T50	None	321	314, 315	Forbidden	150 kg	D	40
	Ethylamine, aqueous solution *with not less than 50 percent but not more than 70 percent ethylamine*.	3	UN2270	II	3, 8	IB2, T7, TP1	None	202	243	1 L	5 L	B	40
	N-Ethylaniline	6.1	UN2272	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	2-Ethylaniline	6.1	UN2273	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	Ethylbenzene	3	UN1175	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	N-Ethylbenzyltoluidines liquid	6.1	UN2753	III	6.1	IB3, T7, TP1	153	203	241	60 L	220 L	A	
	N-Ethylbenzyltoluidines solid	6.1	UN2753	III	6.1	IB8, IP3, T7, TP1	153	213	240	100 kg	200 kg	A	
	2-Ethylbutanol	3	UN2275	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Ethylbutyl acetate	3	UN1177	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	2-Ethylbutyraldehyde	3	UN1178	II	3	B1, IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Ethyldichloroarsine	6.1	UN1892	I	6.1	2, B9, B14, B32, B74, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Ethyldichlorosilane	4.3	UN1183	I	4.3, 8, 3.	A2, A3, A7, N34, T10, TP2, TP7, TP13	None	201	244	Forbidden	1 L	D	21, 28, 40, 49, 100
	Ethylene, acetylene and propylene in mixture, refrigerated liquid *with at least 71.5 percent ethylene with not more than 22.5 percent acetylene and not more than 6 percent propylene*.	2.1	UN3138		2.1	T75, TP5	None	304	314, 315	Forbidden	Forbidden	D	40
	Ethylene chlorohydrin	6.1	UN1135	I	6.1, 3	2, B9, B14, B32, B74, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Ethylene, compressed	2.1	UN1962		2.1		306	304	302	Forbidden	150 kg	E	40
	Ethylene diamine diperchlorate	Forbidden											
	Ethylene dibromide	6.1	UN1605	I	6.1	2, B9, B14, B32, B74, B77, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Ethylene dibromide and methyl bromide liquid mixtures, see Methyl bromide and ethylene dibromide, liquid mixtures.												
	Ethylene dichloride	3	UN1184	II	3, 6.1	IB2, T7, TP1	None	202	243	1 L	60 L	B	40
	Ethylene glycol diethyl ether	3	UN1153	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Ethylene glycol dinitrate	Forbidden											
	Ethylene glycol monoethyl ether	3	UN1171	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Ethylene glycol monoethyl ether acetate.	3	UN1172	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Ethylene glycol monomethyl ether	3	UN1188	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Ethylene glycol monomethyl ether acetate.	3	UN1189	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Ethylene oxide and carbon dioxide mixture *with more than 87 percent ethylene oxide*.	2.3	UN3300		2.3, 2.1	4	None	304	314, 315	Forbidden	Forbidden	D	40
	Ethylene oxide and carbon dioxide mixtures *with more than 9 percent but not more than 87 percent ethylene oxide*.	2.1	UN1041		2.1	T50	306	304	314, 315	Forbidden	25 kg	B	40
	Ethylene oxide and carbon dioxide mixtures *with not more than 9 percent ethylene oxide*.	2.2	UN1952		2.2		306	304	314, 315	75 kg	150 kg	A	
	Ethylene oxide and chlorotetrafluoroethane mixture *with not more than 8.8 percent ethylene oxide*.	2.2	UN3297		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	Ethylene oxide and dichlorodifluoromethane mixture, *with not more than 12.5 percent ethylene oxide*.	2.2	UN3070		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	Ethylene oxide and pentafluoroethane mixture *with not more than 7.9 percent ethylene oxide*.	2.2	UN3298		2.2	T50	306	304	314, 315	75 kg	150 kg	A	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Ethylene oxide and propylene oxide mixtures, *with not more than 30 percent ethylene oxide*.	3	UN2983	I	3, 6.1	5, A11, N4, N34, T14, TP2, TP7, TP13	None	201	243	Forbidden	30 L	E	40
	Ethylene oxide and tetrafluoroethane mixture *with not more than 5.6 percent ethylene oxide*.	2.2	UN3299		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	Ethylene oxide *or* Ethylene oxide with nitrogen *up to a total pressure of 1MPa (10 bar) at 50 degrees C*.	2.3	UN1040		2.3, 2.1	4, T50, TP20	None	323	323	Forbidden	25 kg	D	40
	Ethylene, refrigerated liquid *(cryogenic liquid)*.	2.1	UN1038		2.1	T75, TP5	None	316	318, 319	Forbidden	Forbidden	D	40
	Ethylenediamine	8	UN1604	II	8, 3	IB2, T7, TP2	154	202	243	1 L	30 L	A	40
	Ethyleneimine, stabilized	6.1	UN1185	I	6.1, 3	1, B9, B14, B30, B72, B77, N25, N32, T22, TP2, TP13, TP38, TP44	None	226	244	Forbidden	Forbidden	D	40
	Ethylhexaldehyde, see Octyl aldehydes *etc*.												
	2-Ethylhexyl chloroformate	6.1	UN2748	II	6.1, 8	IB2, T7, TP2, TP13	None	202	243	1 L	30 L	A	12, 13, 21, 25, 40, 100
	2-Ethylhexylamine	3	UN2276	III	3, 8	B1, IB3, T4, TP1	150	203	242	5 L	60 L	A	40
	Ethylphenyldichlorosilane	8	UN2435	II	8	A7, B2, IB2, N34, T7, TP2, TP13	None	202	242	Forbidden	30 L	C	
	1-Ethylpiperidine	3	UN2386	II	3, 8	IB2, T7, TP1	None	202	243	1 L	5 L	B	
	N-Ethyltoluidines	6.1	UN2754	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	
	Ethyltrichlorosilane	3	UN1196	II	3, 8	A7, IB1, N34, T7, TP2, TP13	None	202	243	1 L	5 L	B	40
	Etiologic agent, see Infectious substances, *etc*.												
	Explosive articles, see Articles, explosive , n.o.s. *etc*.												
	Explosive, blasting, type A	1.1D	UN0081	II	1.1D		None	62	None	Forbidden	Forbidden	10	21E
	Explosive, blasting, type B	1.1D	UN0082	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Explosive, blasting, type B *or* Agent blasting, Type B.	1.5D	UN0331	II	1.5D	105, 106	None	62	None	Forbidden	Forbidden	10	
	Explosive, blasting, type C	1.1D	UN0083	II	1.1D	123	None	62	None	Forbidden	Forbidden	10	22E
	Explosive, blasting, type D	1.1D	UN0084	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Explosive, blasting, type E	1.1D	UN0241	II	1.1D		None	62	None	Forbidden	Forbidden	10	19E
	Explosive, blasting, type E *or* Agent blasting, Type E.	1.5D	UN0332	II	1.5D	105, 106	None	62	None	Forbidden	Forbidden	10	
	Explosive, forbidden. See § 173.54.	Forbidden											
	Explosive substances, see Substances, explosive, n.o.s. *etc*.												
	Explosives, slurry, see Explosive, blasting, type E.												
	Explosives, water gels, see Explosive, blasting, type E.												
	Extracts, aromatic, liquid	3	UN1169	II	3	IB2, T4, TP1, TP8	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Extracts, flavoring, liquid	3	UN1197	II	3	IB2, T4, TP1, TP8	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Fabric with animal or vegetable oil, see Fibers *or* fabrics, *etc*.												
	Ferric arsenate	6.1	UN1606	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Ferric arsenite	6.1	UN1607	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Ferric chloride, anhydrous	8	UN1773	III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	
	Ferric chloride, solution	8	UN2582	III	8	B15, IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Ferric nitrate	5.1	UN1466	III	5.1	A1, A29, IB8, IP3	152	213	240	25 kg	100 kg	A	
	Ferrocerium	4.1	UN1323	II	4.1	59, A19, IB8, IP2, IP4	151	212	240	15 kg	50 kg	A	
	Ferrosilicon, *with 30 percent or more but less than 90 percent silicon*.	4.3	UN1408	III	4.3, 6.1	A1, A19, IB8, IP4	151	213	240	25 kg	100 kg	A	13, 40, 85, 103
	Ferrous arsenate	6.1	UN1608	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
D	Ferrous chloride, solid	8	NA1759	II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	A	
D	Ferrous chloride, solution	8	NA1760	II	8	B3, IB2, T11, TP2, TP27	154	202	242	1 L	30 L	B	40
	Ferrous metal borings *or* Ferrous metal shavings *or* Ferrous metal turnings *or* Ferrous metal cuttings *in a form liable to self-heating*.	4.2	UN2793	III	4.2	A1, A19, IB8, IP3, IP6	None	213	241	25 kg	100 kg	A	
	Fertilizer ammoniating solution *with free ammonia*.	2.2	UN1043		2.2		306	304	314, 315	Forbidden	150 kg	E	40
A W	Fibers *or* Fabrics, animal *or* vegetable *or* Synthetic, n.o.s. *with animal or vegetable oil*.	4.2	UN1373	III	4.2	137, IB8, IP3	None	213	241	Forbidden	Forbidden	A	
	Fibers *or* Fabrics impregnated with weakly nitrated nitrocellulose, n.o.s..	4.1	UN1353	III	4.1	A1, IB8, IP3	None	213	240	25 kg	100 kg	D	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Films, nitrocellulose base, from which gelatine has been removed; film scrap, see Celluloid scrap.	.....			.....		.....	.....	.....	.....	.....		.....
	Films, nitrocellulose base, *gelatine coated (except scrap)*.	4.1	UN1324	III	4.1		None	183	None	25 kg	100 kg	D	91
	Fire extinguisher charges, *corrosive liquid*.	8	UN1774	II	8	N41	154	202	None	1 L	30 L	A	.....
	Fire extinguisher charges, expelling, explosive, see Cartridges, power device.	.....			.....		.....	.....	.....	.....	.....		.....
	Fire extinguishers *containing compressed or liquefied gas*.	2.2	UN1044	.....	2.2	18, 110	309	309	None	75 kg	150 kg	A	.....
	Firelighters, solid *with flammable liquid*.	4.1	UN2623	III	4.1	A1, A19	None	213	None	25 kg	100 kg	A	.....
	Fireworks	1.1G	UN0333	II	1.1G ...	108	None	62	None	Forbidden	Forbidden	07	.....
	Fireworks	1.2G	UN0334	II	1.2G ...	108	None	62	None	Forbidden	Forbidden	07	.....
	Fireworks	1.3G	UN0335	II	1.3G ...	108	None	62	None	Forbidden	Forbidden	07	.....
	Fireworks	1.4G	UN0336	II	1.4G ...	108	None	62	None	Forbidden	75 kg	06	.....
	Fireworks	1.4S	UN0337	II	1.4S ...	108	None	62	None	25 kg	100 kg	05	.....
	First aid kits	9	UN3316	.....	9	15	None	None	None	10 kg	10 kg	A	.....
W	Fish meal, stabilized *or* Fish scrap, stabilized.	9	UN2216	III	None ..	IB8	155	218	218	No limit	No limit	A	88
	Fish meal, unstablized *or* Fish scrap, unstabilized.	4.2	UN1374	II	4.2	A1, A19, IB8, IP2	None	212	241	15 kg	50 kg	A	119, 120
	Fissile radioactive materials, see Radioactive material, fissile, n.o.s..	.....			.....		.....	.....	.....	.....	.....		.....
	Flammable compressed gas, see Compressed *or* Liquefied gas, flammable, *etc*.	.....			.....		.....	.....	.....	.....	.....		.....
	Flammable compressed gas (small receptacles not fitted with a dispersion device, not refillable), see Receptacles, *etc*.	.....			.....		.....	.....	.....	.....	.....		.....
	Flammable gas in lighters, see Lighters *or* lighter refills, *cigarettes, containing flammable gas*.	.....			.....		.....	.....	.....	.....	.....		.....
G	Flammable liquid, toxic, corrosive, n.o.s..	3	UN3286	I	3, 6.1, 8.	T14, TP2, TP13, TP27	None	201	243	Forbidden	2.5 L	E	21, 40, 100
	.....	.....		II	3, 6.1, 8.	IB2, T11, TP2, TP13, TP27	None	202	243	1 L	5 L	B	21, 40, 100
G	Flammable liquids, corrosive, n.o.s..	3	UN2924	I	3, 8	T14, TP2	None	201	243	0.5 L	2.5 L	E	40
	.....	.....		II	3, 8	IB2, T11, TP2, TP27	None	202	243	1 L	5 L	B	40
	.....	.....		III	3, 8	B1, IB3, T7, TP1, TP28	150	203	242	5 L	60 L	A	40
G	Flammable liquids, n.o.s.	3	UN1993	I	3	T11, TP1	150	201	243	1 L	30 L	E	.....
	.....	.....		II	3	IB2, T7, TP1, TP8, TP28	150	202	242	5 L	60 L	B	.....
	.....	.....		III	3	B1, B52, IB3, T4, TP1, TP29	150	203	242	60 L	220 L	A	.....
G	Flammable liquids, toxic, n.o.s.	3	UN1992	I	3, 6.1	T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	E	40
	.....	.....		II	3, 6.1	IB2, T7, TP2, TP13	None	202	243	1 L	60 L	B	40
	.....	.....		III	3, 6.1	B1, IB3, T7, TP1, TP28	150	203	242	60 L	220 L	A	.....
G	Flammable solid, corrosive, inorganic, n.o.s..	4.1	UN3180	II	4.1, 8	A1, IB6, IP2	151	212	242	15 kg	50 kg	D	40
	.....	.....		III	4.1, 8	A1, IB6	151	213	242	25 kg	100 kg	D	40
G	Flammable solid, inorganic, n.o.s.	4.1	UN3178	II	4.1	A1, IB8, IP2, IP4	151	212	240	15 kg	50 kg	B	.....
	.....	.....		III	4.1	A1, IB8, IP3	151	213	240	25 kg	100 kg	B	.....
G	Flammable solid, organic, molten, n.o.s..	4.1	UN3176	II	4.1	IB1, T3, TP3, TP26	151	212	240	Forbidden	Forbidden	C	.....
	.....	.....		III	4.1	IB1, T1, TP3, TP26	151	213	240	Forbidden	Forbidden	C	.....
G	Flammable solid, oxidizing, n.o.s.	4.1	UN3097	II	4.1, 5.1	131	None	214	214	Forbidden	Forbidden	E	40
	.....	.....		III	4.1, 5.1	131	None	214	214	Forbidden	Forbidden	D	40
G	Flammable solid, toxic, inorganic, n.o.s..	4.1	UN3179	II	4.1, 6.1	A1, IB6, IP2	151	212	242	15 kg	50 kg	B	40
	.....	.....		III	4.1, 6.1	A1, IB6	151	213	242	25 kg	100 kg	B	40
G	Flammable solids, corrosive, organic, n.o.s..	4.1	UN2925	II	4.1, 8	A1, IB6, IP2	None	212	242	15 kg	50 kg	D	40
	.....	.....		III	4.1, 8	A1, IB6	151	213	242	25 kg	100 kg	D	40
G	Flammable solids, organic, n.o.s.	4.1	UN1325	II	4.1	A1, IB8, IP2, IP4, T3, TP1	151	212	240	15 kg	50 kg	B	.....
	.....	.....		III	4.1	A1, IB8, IP3, T1, TP1	151	213	240	25 kg	100 kg	B	.....
G	Flammable solids, toxic, organic, n.o.s..	4.1	UN2926	II	4.1, 6.1	A1, IB6, IP2	None	212	242	15 kg	50 kg	B	40
	.....	.....		III	4.1, 6.1	A1, IB6	151	213	242	25 kg	100 kg	B	40
	Flares, aerial	1.3G	UN0093	II	1.3G ...		None	62	None	Forbidden	75 kg	07	.....
	Flares, aerial	1.4G	UN0403	II	1.4G ...		None	62	None	Forbidden	75 kg	06	.....
	Flares, aerial	1.4S	UN0404	II	1.4S ...		None	62	None	25 kg	100 kg	05	.....

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Flares, aerial	1.1G	UN0420	II	1.1G		None	62	None	Forbidden	Forbidden	07	
	Flares, aerial	1.2G	UN0421	II	1.2G		None	62	None	Forbidden	Forbidden	07	
	Flares, airplane, see Flares, aerial.												
	Flares, signal, see Cartridges, signal.												
	Flares, surface	1.3G	UN0092	II	1.3G		None	62	None	Forbidden	75 kg	07	
	Flares, surface	1.1G	UN0418	II	1.1G		None	62	None	Forbidden	Forbidden	07	
	Flares, surface	1.2G	UN0419	II	1.2G		None	62	None	Forbidden	Forbidden	07	
	Flares, water-activated, see Contrivances, water-activated, *etc*.												
	Flash powder	1.1G	UN0094	II	1.1G		None	62	None	Forbidden	Forbidden	15	
	Flash powder	1.3G	UN0305	II	1.3G		None	62	None	Forbidden	Forbidden	15	
	Flue dusts, poisonous, see Arsenical dust.												
	Fluoric acid, see Hydrofluoric acid, *etc*.												
	Fluorine, compressed	2.3	UN1045		2.3, 5.1, 8.	1	None	302	None	Forbidden	Forbidden	D	40, 89, 90
	Fluoroacetic acid	6.1	UN2642	I	6.1	IB7, IP1	None	211	242	1 kg	15 kg	E	
	Fluoroanilines	6.1	UN2941	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	Fluorobenzene	3	UN2387	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Fluoroboric acid	8	UN1775	II	8	A6, A7, B2, B15, IB2, N3, N34, T7, TP2	154	202	242	1 L	30 L	A	
	Fluorophosphoric acid anhydrous	8	UN1776	II	8	A6, A7, B2, IB2, N3, N34, T8, TP2, TP12	None	202	242	1 L	30 L	A	
	Fluorosilicates, n.o.s.	6.1	UN2856	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	26
	Fluorosilicic acid	8	UN1778	II	8	A6, A7, B2, B15, IB2, N3, N34, T8, TP2, TP12	None	202	242	1 L	30 L	A	
	Fluorosulfonic acid	8	UN1777	I	8	A3, A6, A7, A10, B6, B10, N3, T10, TP2, TP12	None	201	243	0.5 L	2.5 L	D	40
	Fluorotoluenes	3	UN2388	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	40
	Forbidden materials. See § 173.21.	Forbidden											
	Formaldehyde, solutions, flammable.	3	UN1198	III	3, 8	B1, IB3, T4, TP1	150	203	242	5 L	60 L	A	40
	Formaldehyde, solutions, *with not less than 25 percent formaldehyde*.	8	UN2209	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Formalin, see Formaldehyde, solutions.												
	Formic acid	8	UN1779	II	8	B2, B28, IB2, T7, TP2	154	202	242	1 L	30 L	A	40
	Fracturing devices, explosive, *without detonators for oil wells*.	1.1D	UN0099	II	1.1D		None	62	None	Forbidden	Forbidden	07	
	Fuel, aviation, turbine engine	3	UN1863	I	3	T11, TP1, TP8	150	201	243	1 L	30 L	E	
				II	3	IB2, T4, TP1, TP8	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
D	Fuel oil *(No. 1, 2, 4, 5, or 6)*	3	NA1993	III	3	B1, IB3, T4, TP1, TP29	150	203	242	60 L	220 L	A	
	Fuel system components (including fuel control units (FCU), carburetors, fuel lines, fuel pumps) see Dangerous Goods in Apparatus *or* Dangerous Goods in Machinery.												
	Fulminate of mercury (dry)	Forbidden											
	Fulminate of mercury, wet, see Mercury fulminate, *etc*.												
	Fulminating gold	Forbidden											
	Fulminating mercury	Forbidden											
	Fulminating platinum	Forbidden											
	Fulminating silver	Forbidden											
	Fulminic acid	Forbidden											
	Fumaryl chloride	8	UN1780	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	C	8, 40
	Fumigated lading, see §§ 172.302(g), 173.9 and 176.76(h).												
	Fumigated transport vehicle or freight container see 173.9.												
	Furaldehydes	6.1	UN1199	II	6.1, 3	IB2, T7, TP2	None	202	243	5 L	60 L	A	
	Furan	3	UN2389	I	3	T12, TP2, TP13	None	201	243	1 L	30 L	E	40
	Furfuryl alcohol	6.1	UN2874	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	26, 74
	Furfurylamine	3	UN2526	III	3, 8	B1, IB3, T4, TP1	150	203	242	5 L	60 L	A	40
	Fuse, detonating, *metal clad, see* Cord, detonating, *metal clad*.												
	Fuse, detonating, mild effect, *metal clad, see* Cord, detonating, mild effect, *metal clad*.												
	Fuse, igniter *tubular metal clad*	1.4G	UN0103	II	1.4G		None	62	None	Forbidden	75 kg	06	
	Fuse, non-detonating *instantaneous or quickmatch*.	1.3G	UN0101	II	1.3G		None	62	None	Forbidden	Forbidden	07	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Fuse, safety	1.4S	UN0105	II	1.4S		None	62	None	25 kg	100 kg	05	
D	Fusee (*railway or highway*)	4.1	NA1325	II	4.1		None	184	None	15 kg	50 kg	B	
	Fusel oil	3	UN1201	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Fuses, tracer, see Tracers for ammunition.												
	Fuzes, combination, percussion and time, see Fuzes, detonating *(UN0257, UN0367);* Fuzes, igniting *(UN0317, UN0368)*.												
	Fuzes, detonating	1.1B	UN0106	II	1.1B		None	62	None	Forbidden	Forbidden	11	
	Fuzes, detonating	1.2B	UN0107	II	1.2B		None	62	None	Forbidden	Forbidden	11	
	Fuzes, detonating	1.4B	UN0257	II	1.4B	116	None	62	None	Forbidden	75 kg	06	
	Fuzes, detonating	1.4S	UN0367	II	1.4S	116	None	62	None	25 kg	100 kg	05	
	Fuzes, detonating, *with protective features*.	1.1D	UN0408	II	1.1D		None	62	None	Forbidden	Forbidden	07	
	Fuzes, detonating, *with protective features*.	1.2D	UN0409	II	1.2D		None	62	None	Forbidden	Forbidden	07	
	Fuzes, detonating, *with protective features*.	1.4D	UN0410	II	1.4D	116	None	62	None	Forbidden	75 kg	06	
	Fuzes, igniting	1.3G	UN0316	II	1.3G		None	62	None	Forbidden	Forbidden	07	
	Fuzes, igniting	1.4G	UN0317	II	1.4G		None	62	None	Forbidden	75 kg	06	
	Fuzes, igniting	1.4S	UN0368	II	1.4S		None	62	None	25 kg	100 kg	05	
	Galactsan trinitrate	Forbidden											
	Gallium	8	UN2803	III	8		None	162	240	20 kg	20 kg	B	48
	Gas cartridges, *(flammable) without a release device, non-refillable*.	2.1	UN2037		2.1		306	304	None	1 kg	15 kg	B	40
	Gas generator assemblies (aircraft), *containing a non-flammable non-toxic gas and a propellant cartridge*.	2.2			2.2		None	335	None	75 kg	150 kg	A	
D	Gas identification set	2.3	NA9035		2.3	6	None	194	None	Forbidden	Forbidden	D	
	Gas oil	3	UN1202	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
G	Gas, refrigerated liquid, flammable, n.o.s. *(cryogenic liquid)*.	2.1	UN3312		2.1	T75, TP5	None	316	318	Forbidden	Forbidden	D	40
G	Gas, refrigerated liquid, n.o.s. *(cryogenic liquid)*.	2.2	UN3158		2.2	T75, TP5	320	316	318	50 kg	500 kg	D	
G	Gas, refrigerated liquid, oxidizing, n.o.s. *(cryogenic liquid)*.	2.2	UN3311		2.2, 5.1	T75, TP5	320	316	318	Forbidden	Forbidden	D	
	Gas sample, non-pressurized, flammable, n.o.s., *not refrigerated liquid*.	2.1	UN3167		2.1		306	302, 304	None	1 L	5 L	D	
	Gas sample, non-pressurized, toxic, flammable, n.o.s., *not refrigerated liquid*.	2.3	UN3168		2.3, 2.1		306	302	None	Forbidden	1 L	D	
	Gas sample, non-pressurized, toxic, n.o.s., *not refrigerated liquid*.	2.3	UN3169		2.3		306	302, 304	None	Forbidden	1 L	D	
D	Gasohol *gasoline mixed with ethyl alcohol, with not more than 20 percent alcohol*.	3	NA1203	II	3		150	202	242	5 L	60 L	E	
	Gasoline	3	UN1203	II	3	B33, IB2, T4, TP1	150	202	242	5 L	60 L	E	
	Gasoline, casinghead, see Gasoline.												
	Gelatine, blasting, see Explosive, blasting, type A.												
	Gelatine dynamites, see Explosive, blasting, type A.												
	Germane	2.3	UN2192		2.3, 2.1	2	None	192	245	Forbidden	Forbidden	D	40
	Glycerol-1,3-dinitrate	Forbidden											
	Glycerol gluconate trinitrate	Forbidden											
	Glycerol lactate trinitrate	Forbidden											
	Glycerol alpha-monochlorohydrin	6.1	UN2689	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	Glyceryl trinitrate, see Nitroglycerin, *etc*.												
	Glycidaldehyde	3	UN2622	II	3, 6.1	IB2, IP8, T7, TP1	150	202	243	1 L	60 L	A	40
	Grenades, *hand or rifle, with bursting charge*.	1.1D	UN0284	II	1.1D			62	None	Forbidden	Forbidden	07	
	Grenades, *hand or rifle, with bursting charge*.	1.2D	UN0285	II	1.2D			62	None	Forbidden	Forbidden	07	
	Grenades, *hand or rifle, with bursting charge*.	1.1F	UN0292	II	1.1F			62	None	Forbidden	Forbidden	08	
	Grenades, *hand or rifle, with bursting charge*.	1.2F	UN0293	II	1.2F			62	None	Forbidden	Forbidden	08	
	Grenades, illuminating, see Ammunition, illuminating, *etc*.												
	Grenades, practice, *hand or rifle*	1.4S	UN0110	II	1.4S			62	None	25 kg	100 kg	05	
	Grenades, practice, *hand or rifle*	1.3G	UN0318	II	1.3G			62	None	Forbidden	Forbidden	07	
	Grenades, practice, *hand or rifle*	1.2G	UN0372	II	1.2G			62	None	Forbidden	Forbidden	07	
	Grenades practice *Hand or rifle*	1.4G	UN0452	II	1.4G			62	None	Forbidden	75 kg	06	
	Grenades, smoke, see Ammunition, smoke, *etc*.												
	Guanidine nitrate	5.1	UN1467	III	5.1	A1, IB8, IP3	152	213	240	25 kg	100 kg	A	73
	Guanyl nitrosaminoguanylidene hydrazine (dry).	Forbidden											

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Guanyl nitrosaminoguanylidene hydrazine, wetted *with not less than 30 percent water, by mass*.	1.1A	UN0113	II	1.1A	111, 117	None	62	None	Forbidden	Forbidden	12	
	Guanyl nitrosaminoguanyltetrazene (dry).	Forbidden											
	Guanyl nitrosaminoguanyltetrazene, wetted *or* Tetrazene, wetted *with not less than 30 percent water or mixture of alcohol and water, by mass*.	1.1A	UN0114	II	1.1A	111, 117	None	62	None	Forbidden	Forbidden	12	
	Gunpowder, compressed *or* Gunpowder in pellets, *see* Black powder *(UN 0028)*.												
	Gunpowder, *granular or as a meal, see* Black powder *(UN 0027)*.												
	Hafnium powder, dry	4.2	UN2545	I	4.2		None	211	242	Forbidden	Forbidden	D	
				II	4.2	A19, A20, IB6, IP2, N34	None	212	241	15 kg	50 kg	D	
				III	4.2	IB8, IP3	None	213	241	25 kg	100 kg	D	
	Hafnium powder, wetted *with not less than 25 percent water (a visible excess of water must be present) (a) mechanically produced, particle size less than 53 microns; (b) chemically produced, particle size less than 840 microns*.	4.1	UN1326	II	4.1	A6, A19, A20, IB6, IP2, N34	None	212	241	15 kg	50 kg	E	
	Hand signal device, see Signal devices, hand.												
	Hazardous substances, liquid or solid, n.o.s., see Environmentally hazardous substances, *etc*.												
D G	Hazardous waste, liquid, n.o.s.	9	NA3082	III	9	IB3, T2, TP1	155	203	241	No limit	No limit	A	
D G	Hazardous waste, solid, n.o.s.	9	NA3077	III	9	B54, IB8, IP2	155	213	240	No limit	No limit	A	
	Heating oil, light	3	UN1202	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Helium, compressed	2.2	UN1046		2.2		306	302	302, 314	75 kg	150 kg	A	85
	Helium-oxygen mixture, see Rare gases and oxygen mixtures.												
	Helium, refrigerated liquid *(cryogenic liquid)*.	2.2	UN1963		2.2	T75, TP5	320	316	318	50 kg	500 kg	B	
	Heptafluoropropane *or* Refrigerant gas R 227.	2.2	UN3296		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	n-Heptaldehyde	3	UN3056	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Heptanes	3	UN1206	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	n-Heptene	3	UN2278	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Hexachloroacetone	6.1	UN2661	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	B	12, 40
	Hexachlorobenzene	6.1	UN2729	III	6.1	IB3	153	203	241	60 L	220 L	A	
	Hexachlorobutadiene	6.1	UN2279	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	Hexachlorocyclopentadiene	6.1	UN2646	I	6.1	2, B9, B14, B32, B74, B77, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Hexachlorophene	6.1	UN2875	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
	Hexadecyltrichlorosilane	8	UN1781	II	8	A7, B2, B6, IB2, N34, T7, TP2	None	202	242	Forbidden	30 L	C	40
	Hexadienes	3	UN2458	II	3	IB2, T4, TP1	None	202	242	5 L	60 L	B	
	Hexaethyl tetraphosphate and compressed gas mixtures.	2.3	UN1612		2.3	3	None	334	None	Forbidden	Forbidden	D	40
	Hexaethyl tetraphosphate, *liquid*	6.1	UN1611	II	6.1	IB2, IP2, IP4, N76	None	202	243	5 L	60 L	E	40
	Hexaethyl tetraphosphate, *solid*	6.1	UN1611	II	6.1	IB8, IP2, IP4, N76	None	212	242	25 kg	100 kg	E	40
	Hexafluoroacetone	2.3	UN2420		2.3, 8	2, B9, B14	None	304	314, 315	Forbidden	Forbidden	D	40
	Hexafluoroacetone hydrate	6.1	UN2552	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	B	40
	Hexafluoroethane, compressed *or* Refrigerant gas R 116.	2.2	UN2193		2.2		306	304	314, 315	75 kg	150 kg	A	
	Hexafluorophosphoric acid	8	UN1782	II	8	A6, A7, B2, IB2, N3, N34, T8, TP2, TP12	None	202	242	1 L	30 L	A	
	Hexafluoropropylene compressed *or* Refrigerant gas R 1216.	2.2	UN1858		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	Hexaldehyde	3	UN1207	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Hexamethylene diisocyanate	6.1	UN2281	II	6.1	IB2, T7, TP2, TP13	None	202	243	5 L	60 L	C	13, 40
	Hexamethylene triperoxide diamine (dry).	Forbidden											
	Hexamethylenediamine, solid	8	UN2280	III	8	IB8, IP3, T4, TP1	154	213	240	25 kg	100 kg	A	12
	Hexamethylenediamine solution	8	UN1783	II	8	IB2, T7, TP2	None	202	242	1 L	30 L	A	
				III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Hexamethyleneimine	3	UN2493	II	3, 8	IB2, T7, TP1	None	202	243	1 L	5 L	B	40
	Hexamethylenetetramine	4.1	UN1328	III	4.1	A1, IB8, IP3	151	213	240	25 kg	100 kg	A	
	Hexamethylol benzene hexanitrate.	Forbidden											
	Hexanes	3	UN1208	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	E	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	2,2',4,4',6,6'- Hexanitro-3,3'-dihydroxyazobenzene (dry).	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Hexanitroazoxy benzene	Forbidden			.....		.....	.....	.....	.....	.....		.....
	N,N'-(hexanitrodiphenyl) ethylene dinitramine (dry).	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Hexanitrodiphenyl urea	Forbidden			.....		.....	.....	.....	.....	.....		.....
	2,2',3',4,4',6-Hexanitrodiphenylamine.	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Hexanitrodiphenylamine *or* Dipicrylamine *or* Hexyl.	1.1D	UN0079	II	1.1D ...		None	62	None	Forbidden	Forbidden	10	.....
	2,3',4,4',6,6'-Hexanitrodiphenylether.	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Hexanitroethane	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Hexanitrooxanilide	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Hexanitrostilbene	1.1D	UN0392	II	1.1D ...		None	62	None	Forbidden	Forbidden	10	.....
	Hexanoic acid, see Corrosive liquids, n.o.s..	.....			.....		.....	.....	.....	.....	.....		.....
	Hexanols	3	UN2282	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	1-Hexene	3	UN2370	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	E	.....
	Hexogen and cyclotetramethylenetetranitramine mixtures, wetted *or* desensitized *see* RDX and HMX mixtures, wetted *or* desensitized *etc.*	.....			.....		.....	.....	.....	.....	.....		.....
	Hexogen and HMX mixtures, wetted *or* desensitized *see* RDX and HMX mixtures, wetted *or* desensitized *etc.*	.....			.....		.....	.....	.....	.....	.....		.....
	Hexogen and octogen mixtures, wetted *or* desensitized *see* RDX and HMX mixtures, wetted *or* desensitized *etc.*	.....			.....		.....	.....	.....	.....	.....		.....
	Hexogen, *see* Cyclotrimethylenetrinitramine, *etc.*	.....			.....		.....	.....	.....	.....	.....		.....
	Hexolite, *or* Hexotol *dry or wetted with less than 15 percent water, by mass.*	1.1D	UN0118	II	1.1D ...		None	62	None	Forbidden	Forbidden	10	.....
	Hexotonal	1.1D	UN0393	II	1.1D ...		None	62	None	Forbidden	Forbidden	10	.....
	Hexyl, *see* Hexanitrodiphenylamine.	.....			.....		.....	.....	.....	.....	.....		.....
	Hexyltrichlorosilane	8	UN1784	II	8	A7, B2, B6, IB2, N34, T7, TP2, TP13	None	202	242	Forbidden	30 L	C	40
	High explosives, see individual explosives' entries.	.....			.....		.....	.....	.....	.....	.....		.....
	HMX, *see* Cyclotetramethylenetetranitramine, *etc.*	.....			.....		.....	.....	.....	.....	.....		.....
	Hydrazine, anhydrous *or* Hydrazine aqueous solutions *with more than 64 percent hydrazine, by mass.*	8	UN2029	I	8, 3, 6.1.	A3, A6, A7, A10, B7, B16, B53	None	201	243	Forbidden	2.5 L	D	21, 40, 42, 100
	Hydrazine, aqueous solution *with not more than 37 percent hydrazine, by mass.*	6.1	UN3293	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	.....
	Hydrazine azide	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Hydrazine chlorate	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Hydrazine dicarbonic acid diazide	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Hydrazine hydrate *or* Hydrazine aqueous solutions, *with not less than 37 percent but not more than 64 percent hydrazine, by mass.*	8	UN2030	II	8, 6.1	B16, B53, IB2, T7, TP2, TP13	None	202	243	Forbidden	30 L	D	40, 42, 82
	Hydrazine perchlorate	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Hydrazine selenate	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Hydriodic acid, anhydrous, see Hydrogen iodide, anhydrous.	.....			.....		.....	.....	.....	.....	.....		.....
	Hydriodic acid	8	UN1787	II	8	A3, A6, B2, IB2, N41, T7, TP2	154	202	242	1 L	30 L	C	.....
	.....	.....		III	8	IB3, T4, TP1	154	203	241	5 L	60 L	C	8
	Hydrobromic acid, anhydrous, see Hydrogen bromide, anhydrous.	.....			.....		.....	.....	.....	.....	.....		.....
	Hydrobromic acid, *with more than 49 percent hydrobromic acid.*	8	UN1788	II	8	B2, B15, IB2, N41, T7, TP2	154	202	242	Forbidden	Forbidden	C	.....
	.....	.....		III	8	IB3, T4, TP1	154	203	241	Forbidden	Forbidden	C	8
	Hydrobromic acid, *with not more than 49 percent hydrobromic acid.*	8	UN1788	II	8	A3, A6, B2, B15, IB2, N41, T7, TP2	154	202	242	1 L	30 L	C	.....
	.....	.....		III	8	IB3, T4, TP1	154	203	241	5 L	30 L	C	8
	Hydrocarbon gas mixture, compressed, n.o.s..	2.1	UN1964	.....	2.1		306	302	314, 315	Forbidden	150 kg	E	40
	Hydrocarbon gas mixture, liquefied, n.o.s..	2.1	UN1965	.....	2.1	T50	306	304	314, 315	Forbidden	150 kg	E	40
	Hydrocarbons, liquid, n.o.s.	3	UN3295	I	3	T11, TP1, TP8	150	201	243	1 L	30 L	E	.....

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	.....	.....		II	3	IB2, T7, TP1, TP8, TP28	150	202	242	5 L	60 L	B	.....
	.....	.....		III	3	B1, IB3, T4, TP1, TP29	150	203	242	60 L	220 L	A	.....
	Hydrochloric acid, anhydrous, see Hydrogen chloride, anhydrous.	.....			.....		.....	.....	.....	.....	.....		.....
	Hydrochloric acid	8	UN1789	II	8	A3, A6, B3, B15, IB2, N41, T8, TP2, TP12	154	202	242	1 L	30 L	C	.....
	.....	.....		III	8	IB3, T4, TP1, TP12	154	203	241	5 L	60 L	C	8
	Hydrocyanic acid, anhydrous, see Hydrogen cyanide *etc*.	.....			.....		.....	.....	.....	.....	.....		.....
	Hydrocyanic acid, aqueous solutions *or* Hydrogen cyanide, aqueous solutions *with not more than 20 percent hydrogen cyanide*.	6.1	UN1613	I	6.1	2, B61, B65, B77, B82, T20, TP2, TP13	None	195	244	Forbidden	Forbidden	D	40
D	Hydrocyanic acid, aqueous solutions *with less than 5 percent hydrogen cyanide*.	6.1	NA1613	II	6.1	IB1, T14, TP2, TP13, TP27	None	195	243	Forbidden	5 L	D	40
	Hydrocyanic acid, liquefied, see Hydrogen cyanide, *etc*.	.....			.....		.....	.....	.....	.....	.....		.....
	Hydrocyanic acid (prussic), unstabilized.	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Hydrofluoric acid and Sulfuric acid mixtures.	8	UN1786	I	8, 6.1	A6, A7, B15, B23, N5, N34, T10, TP2, TP12, TP13	None	201	243	Forbidden	2.5 L	D	40
	Hydrofluoric acid, anhydrous, see Hydrogen fluoride, anhydrous.	.....			.....		.....	.....	.....	.....	.....		.....
	Hydrofluoric acid, *with more than 60 percent strength*.	8	UN1790	I	8, 6.1	A6, A7, B4, B15, B23, N5, N34, T10, TP2, TP12, TP13	None	201	243	0.5 L	2.5 L	D	12, 40
	Hydrofluoric acid, *with not more than 60 percent strength*.	8	UN1790	II	8, 6.1	A6, A7, B15, IB2, N5, N34, T8, TP2, TP12	None	202	243	1 L	30 L	D	12, 40
	Hydrofluoroboric acid, see Fluoroboric acid.	.....			.....		.....	.....	.....	.....	.....		.....
	Hydrofluorosilicic acid, see Fluorosilicic acid.	.....			.....		.....	.....	.....	.....	.....		.....
	Hydrogen and Methane mixtures, compressed.	2.1	UN2034	.....	2.1		306	302	302, 314, 315.	Forbidden	150 kg	E	40
	Hydrogen bromide, anhydrous	2.3	UN1048	.....	2.3, 8	3, B14	None	304	314, 315	Forbidden	25 kg	D	40
	Hydrogen chloride, anhydrous	2.3	UN1050	.....	2.3, 8	3	None	304	None	Forbidden	Forbidden	D	40
	Hydrogen chloride, refrigerated liquid.	2.3	UN2186	.....	2.3, 8	3, B6	None	None	314, 315	Forbidden	Forbidden	B	40
	Hydrogen, compressed	2.1	UN1049	.....	2.1		306	302	302, 314	Forbidden	150 kg	E	40, 57
	Hydrogen cyanide, solution in alcohol *with not more than 45 percent hydrogen cyanide*.	6.1	UN3294	I	6.1, 3	2, 25, B9, B14, B32, B74, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Hydrogen cyanide, stabilized *with less than 3 percent water*.	6.1	UN1051	I	6.1, 3	1, B35, B61, B65, B77, B82	None	195	244	Forbidden	Forbidden	D	40
	Hydrogen cyanide, stabilized, *with less than 3 percent water and absorbed in a porous inert material*.	6.1	UN1614	I	6.1	5	None	195	None	Forbidden	Forbidden	D	25, 40
	Hydrogen fluoride, anhydrous	8	UN1052	I	8, 6.1	3, B7, B46, B71, B77, T10, TP2	None	163	243	Forbidden	Forbidden	D	40
	Hydrogen iodide, anhydrous	2.3	UN2197	.....	2.3	3, B14	None	304	314, 315	Forbidden	Forbidden	D	40
	Hydrogen iodide solution, see Hydriodic acid, solution.	.....			.....		.....	.....	.....	.....	.....		.....
	Hydrogen peroxide and peroxyacetic acid mixtures, stabilized *with acids, water and not more than 5 percent peroxyacetic acid*.	5.1	UN3149	II	5.1, 8	A2, A3, A6, B53, IB2, IP5, T7, TP2, TP6, TP24	None	202	243	1 L	5 L	D	25, 66, 75, 106
	Hydrogen peroxide, aqueous solutions *with more than 40 percent but not more than 60 percent hydrogen peroxide (stabilized as necessary)*.	5.1	UN2014	II	5.1, 8	12, A3, A6, B53, B80, B81, B85, IB2, IP5, T7, TP2, TP6, TP24	None	202	243	Forbidden	Forbidden	D	25, 66, 75, 106
	Hydrogen peroxide, aqueous solutions *with not less than 20 percent but not more than 40 percent hydrogen peroxide (stabilized as necessary)*.	5.1	UN2014	II	5.1, 8	A2, A3, A6, B53, IB2, IP5, T7, TP2, TP6, TP24	None	202	243	1 L	5 L	D	25, 66, 75, 106
	Hydrogen peroxide, aqueous solutions *with not less than 8 percent but less than 20 percent hydrogen peroxide (stabilized as necessary)*.	5.1	UN2984	III	5.1	A1, IB2, IP5, T4, TP1, TP6, TP24	152	203	241	2.5 L	30 L	B	25, 75, 106

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Hydrogen peroxide, stabilized *or* Hydrogen peroxide aqueous solutions, stabilized *with more than 60 percent hydrogen peroxide*.	5.1	UN2015	I	5.1, 8	12, A3, A6, B53, B80, B81, B85, T10, TP2, TP6, TP24	None	201	243	Forbidden	Forbidden	D	25, 66, 75, 106
	Hydrogen, refrigerated liquid *(cryogenic liquid)*.	2.1	UN1966		2.1	T75, TP5	None	316	318, 319	Forbidden	Forbidden	D	40
	Hydrogen selenide, anhydrous	2.3	UN2202		2.3, 2.1	1	None	192	245	Forbidden	Forbidden	D	40
	Hydrogen sulfate, see Sulfuric acid.												
	Hydrogen sulfide	2.3	UN1053		2.3, 2.1	2, B9, B14	None	304	314, 315	Forbidden	Forbidden	D	40
	Hydrogendifluorides, n.o.s. *solid*	8	UN1740	II	8	IB5, IP2, IP4, N3, N34	None	212	240	15 kg	50 kg	A	25, 26, 40
				III	8	IB8, IP3, N3, N34	154	213	240	25 kg	100 kg	A	25, 26, 40
	Hydrogendifluorides, n.o.s. *solutions*.	8	UN1740	II	8	IB2, N3, N34	None	202	242	1 L	30 L	A	25, 26, 40
				III	8	IB3, IP3, N3, N34	154	203	241	5 L	60 L	A	25, 26, 40
	Hydroquinone	6.1	UN2662	III	6.1	IB8, IP3, T4, TP1	153	213	240	100 kg	200 kg	A	
	Hydrosilicofluoric acid, see Fluorosilicic acid.												
	Hydroxyl amine iodide	Forbidden											
	Hydroxylamine sulfate	8	UN2865	III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	
	Hypochlorite solutions	8	UN1791	II	8	A7, B2, B15, IB2, IP5, N34, T7, TP2, TP24	154	202	242	1 L	30 L	B	26
				III	8	IB3, N34, T4, TP2, TP24	154	203	241	5 L	60 L	B	26
	Hypochlorites, inorganic, n.o.s.	5.1	UN3212	II	5.1	IB8, IP2, IP4	152	212	240	5 kg	25 kg	D	48, 56, 58, 69, 106, 116, 118
	Hyponitrous acid	Forbidden											
	Igniter fuse, metal clad, see Fuse, *igniter, tubular, metal clad*.												
	Igniters	1.1G	UN0121	II	1.1G		None	62	None	Forbidden	Forbidden	07	
	Igniters	1.2G	UN0314	II	1.2G		None	62	None	Forbidden	Forbidden	07	
	Igniters	1.3G	UN0315	II	1.3G		None	62	None	Forbidden	Forbidden	07	
	Igniters	1.4G	UN0325	II	1.4G		None	62	None	Forbidden	75 kg	06	
	Igniters	1.4S	UN0454	II	1.4S		None	62	None	25 kg	100 kg	05	
	3,3'-Iminodipropylamine	8	UN2269	III	8	IB3, T4, TP2	154	203	241	5 L	60 L	A	
G	Infectious substances, affecting animals *only*.	6.2	UN2900		6.2		134	196	None	50 mL or 50 g	4 L or 4 kg	B	
G	Infectious substances, affecting humans.	6.2	UN2814		6.2		134	196	None	50 mL or 50 g	4 L or 4 kg	B	
	Inflammable, see Flammable												
	Initiating explosives (dry)	Forbidden											
	Inositol hexanitrate (dry)	Forbidden											
G	Insecticide gases, n.o.s.	2.2	UN1968		2.2		306	304	314, 315	75 kg	150 kg	A	
G	Insecticide gases, flammable, n.o.s..	2.1	UN3354		2.1	T50	306	304	314, 315	Forbidden	150 kg	D	40
G	Insecticide gases, toxic, flammable, n.o.s. *Inhalation hazard Zone A*.	2.3	UN3355		2.3, 2.1	1	None	192	245	Forbidden	Forbidden	D	40
G	Insecticide gases, toxic, flammable, n.o.s. *Inhalation hazard Zone B*.	2.3	UN3355		2.3, 2.1	2, B9, B14	None	302, 305	314, 315	Forbidden	Forbidden	D	40
G	Insecticide gases, toxic, flammable, n.o.s. *Inhalation hazard Zone C*.	2.3	UN3355		2.3, 2.1	3, B14	None	302, 305	314, 315	Forbidden	Forbidden	D	
G	Insecticide gases, toxic, flammable, n.o.s. *Inhalation hazard Zone D*.	2.3	UN3355		2.3, 2.1	4	None	302, 305	314, 315	Forbidden	Forbidden	D	
G	Insecticide gases, toxic, n.o.s.	2.3	UN1967		2.3	3	None	193, 334	245	Forbidden	Forbidden	D	40
	Inulin trinitrate (dry)	Forbidden											
	Iodine azide (dry)	Forbidden											
	Iodine monochloride	8	UN1792	II	8	B6, IB8, IP2, IP4, N41, T7, TP2	None	212	240	Forbidden	50 kg	D	40, 66, 74, 89, 90
	Iodine pentafluoride	5.1	UN2495	I	5.1, 6.1, 8.		None	205	243	Forbidden	2.5 L	D	25, 40, 66, 90
	2-Iodobutane	3	UN2390	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Iodomethylpropanes	3	UN2391	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Iodopropanes	3	UN2392	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Iodoxy compounds (dry)	Forbidden											
	Iridium nitratopentamine iridium nitrate.	Forbidden											
	Iron chloride, see Ferric chloride												
	Iron oxide, spent, *or* Iron sponge, spent *obtained from coal gas purification*.	4.2	UN1376	III	4.2	B18, IB8, IP3	None	213	240	Forbidden	Forbidden	E	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Iron pentacarbonyl	6.1	UN1994	I	6.1, 3	1, B9, B14, B30, B72, B77, T22, TP2, TP13, TP38, TP44	None	192	244	Forbidden	Forbidden	D	40
	Iron sesquichloride, see Ferric chloride.												
	Irritating material, see Tear gas substances, *etc.*												
	Isobutane *see also* Petroleum gases, liquefied.	2.1	UN1969		2.1	19, T50	306	304	314, 315	Forbidden	150 kg	E	40
	Isobutanol *or* Isobutyl alcohol	3	UN1212	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Isobutyl acetate	3	UN1213	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Isobutyl acrylate, stabilized	3	UN2527	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Isobutyl alcohol, *see* Isobutanol												
	Isobutyl aldehyde, *see* Isobutyraldehyde.												
D	Isobutyl chloroformate	6.1	NA2742	I	6.1, 3, 8.	2, B9, B14, B32, B74, T20, TP4, TP12, TP13, TP38, TP45	None	227	244	1 L	30 L	A	12, 13, 22, 25, 40, 48, 100
	Isobutyl formate	3	UN2393	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Isobutyl isobutyrate	3	UN2528	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
+	Isobutyl isocyanate	3	UN2486	I	3, 6.1	1, B9, B14, B30, B72, T22, TP2, TP13, TP27	None	226	244	Forbidden	Forbidden	D	40
	Isobutyl methacrylate, stabilized	3	UN2283	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Isobutyl propionate	3	UN2394	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	B	
	Isobutylamine	3	UN1214	II	3, 8	IB2, T7, TP1	None	202	243	1 L	5 L	B	40
	Isobutylene *see also* Petroleum gases, liquefied.	2.1	UN1055		2.1	19, T50	306	304	314, 315	Forbidden	150 kg	E	40
	Isobutyraldehyde *or* Isobutyl aldehyde.	3	UN2045	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	E	40
	Isobutyric acid	3	UN2529	III	3, 8	B1, IB3, T4, TP1	150	203	242	5 L	60 L	A	
	Isobutyronitrile	3	UN2284	II	3, 6.1	IB2, T7, TP2, TP13	None	202	243	1 L	60 L	E	40
	Isobutyryl chloride	3	UN2395	II	3, 8	IB1, T7, TP2	None	202	243	1 L	5 L	C	40
G	Isocyanates, flammable, toxic, n.o.s. *or* Isocyanate solutions, flammable, toxic, n.o.s. *flash point less than 23 degrees C.*	3	UN2478	II	3, 6.1	5, A3, A7, IB2, T11, TP2, TP13, TP27	None	202	243	1 L	60 L	D	40
G	Isocyanates, toxic, flammable, n.o.s. *or* Isocyanate solutions, toxic, flammable, n.o.s., *flash point not less than 23 degrees C but not more than 61 degrees C and boiling point less than 300 degrees C.*	6.1	UN3080	II	6.1, 3	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	25, 40, 48
G	Isocyanates, toxic, n.o.s. *or* Isocyanate solutions, toxic, n.o.s., *flash point more than 61 degrees C and boiling point less than 300 degrees C.*	6.1	UN2206	II	6.1	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	E	25, 40, 48
				III	6.1	IB3, T7, TP1, TP13, TP28	153	203	241	60 L	220 L	E	25, 40, 48
	Isocyanatobenzotrifluorides	6.1	UN2285	II	6.1, 3	5, IB2, T7, TP2	None	202	243	5 L	60 L	D	25, 40, 48
	Isoheptenes	3	UN2287	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Isohexenes	3	UN2288	II	3	IB2, IP8, T11, TP1	150	202	242	5 L	60 L	E	
	Isooctane, see Octanes												
	Isooctenes	3	UN1216	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Isopentane, see Pentane												
	Isopentanoic acid, see Corrosive liquids, n.o.s..												
	Isopentenes	3	UN2371	I	3	T11, TP2	150	201	243	1 L	30 L	E	
	Isophorone diisocyanate	6.1	UN2290	III	6.1	IB3, T4, TP2	153	203	241	60 L	220 L	B	40
	Isophoronediamine	8	UN2289	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Isoprene, stabilized	3	UN1218	I	3	T11, TP2	150	201	243	1 L	30 L	E	
	Isopropanol *or* Isopropyl alcohol	3	UN1219	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Isopropenyl acetate	3	UN2403	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Isopropenylbenzene	3	UN2303	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Isopropyl acetate	3	UN1220	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Isopropyl acid phosphate	8	UN1793	III	8	IB8, IP3, T4, TP1	154	213	240	25 kg	100 kg	A	
	Isopropyl alcohol, *see* Isopropanol.												
	Isopropyl butyrate	3	UN2405	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Isopropyl chloroacetate	3	UN2947	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Isopropyl chloroformate	6.1	UN2407	I	6.1, 3, 8.	2, B9, B14, B32, B74, B77, T20, TP2, TP13, TP38, TP44	None	227	244	Forbidden	Forbidden	B	40
	Isopropyl 2-chloropropionate	3	UN2934	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Isopropyl isobutyrate	3	UN2406	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
+	Isopropyl isocyanate	3	UN2483	I	3, 6.1	1, B9, B14, B30, B72, T22, TP2, TP13, TP38, TP44	None	226	244	Forbidden	Forbidden	D	40
	Isopropyl mercaptan, see Propanethiols.												

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Isopropyl nitrate	3	UN1222	II	3	IB2, IP7	150	202	None	5 L	60 L	D	
	Isopropyl phosphoric acid, see Isopropyl acid phosphate.												
	Isopropyl propionate	3	UN2409	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Isopropylamine	3	UN1221	I	3, 8	T11, TP2	None	201	243	0.5 L	2.5 L	E	
	Isopropylbenzene	3	UN1918	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Isopropylcumyl hydroperoxide, with more than 72 percent in solution.	Forbidden											
	Isosorbide dinitrate mixture *with not less than 60 percent lactose, mannose, starch or calcium hydrogen phosphate*.	4.1	UN2907	II	4.1	IB6, IP2	None	212	None	15 kg	50 kg	E	
	Isosorbide-5-mononitrate	4.1	UN3251	III	4.1	66, IB8	151	213	240	Forbidden	Forbidden	D	12
	Isothiocyanic acid	Forbidden											
	Jet fuel, see Fuel aviation, turbine engine.												
D	Jet perforating guns, charged oil well, with detonator.	1.1D	NA0124	II	1.1D	55, 56	None	62	None	Forbidden	Forbidden	07	
D	Jet perforating guns, charged oil well, with detonator.	1.4D	NA0494	II	1.4D	55, 56	None	62	None	Forbidden	Forbidden	06	
	Jet perforating guns, charged *oil well, without detonator*.	1.1D	UN0124	II	1.1D	55	None	62	None	Forbidden	Forbidden	07	
	Jet perforating guns, charged, *oil well, without detonator*.	1.4D	UN0494	II	1.4D	55, 114	None	62	None	Forbidden	300 kg	06	
	Jet perforators, see Charges, shaped, *etc*.												
	Jet tappers, without detonator, see Charges, shaped, *etc*.												
	Jet thrust igniters, for rocket motors or Jato, see Igniters.												
	Jet thrust unit (Jato), see Rocket motors.												
	Kerosene	3	UN1223	III	3	B1, IB3, T2, TP2	150	203	242	60 L	220 L	A	
G	Ketones, liquid, n.o.s.	3	UN1224	I	3	T11, TP1, TP8, TP27	None	201	243	1 L	30 L	E	
				II	3	IB2, T7, TP1, TP8, TP28	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T4, TP1, TP29	150	203	242	60 L	220 L	A	
	Krypton, compressed	2.2	UN1056		2.2		306	302	None	75 kg	150 kg	A	
	Krypton, refrigerated liquid *(cryogenic liquid)*.	2.2	UN1970		2.2	T75, TP5	320	None	None	50 kg	500 kg	B	
	Lacquer base or lacquer chips, nitrocellulose, dry, see Nitrocellulose, *etc. (UN 2557)*.												
	Lacquer base or lacquer chips, plastic, wet with alcohol or solvent, see Nitrocellulose *(UN2059, UN2555, UN2556, UN2557) or* Paint *etc.(UN1263)*.												
	Lead acetate	6.1	UN1616	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
	Lead arsenates	6.1	UN1617	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Lead arsenites	6.1	UN1618	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Lead azide (dry)	Forbidden											
	Lead azide, wetted *with not less than 20 percent water or mixture of alcohol and water, by mass*.	1.1A	UN0129	II	1.1A	111, 117	None	62	None	Forbidden	Forbidden	12	
	Lead compounds, soluble, n.o.s.	6.1	UN2291	III	6.1	138, IB8, IP3	153	213	240	100 kg	200 kg	A	
	Lead cyanide	6.1	UN1620	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	26
	Lead dioxide	5.1	UN1872	III	5.1	A1, IB8, IP3	152	213	240	25 kg	100 kg	A	
	Lead dross, see Lead sulfate, *with more than 3 percent free acid*.												
	Lead nitrate	5.1	UN1469	II	5.1, 6.1	IB8, IP2, IP4	None	212	242	5 kg	25 kg	A	
	Lead nitroresorcinate (dry)	Forbidden											
	Lead perchlorate, solid	5.1	UN1470	II	5.1, 6.1	IB6, IP2, T4, TP1	None	212	242	5 kg	25 kg	A	56, 58, 106
	Lead perchlorate, solution	5.1	UN1470	II	5.1, 6.1	IB1, T4, TP1	None	202	243	1 L	5 L	A	56, 58, 106
	Lead peroxide, see Lead dioxide												
	Lead phosphite, dibasic	4.1	UN2989	II	4.1	IB8, IP2, IP4	None	212	240	5 kg	25 kg	B	34
				III	4.1	IB8, IP3	151	213	240	15 kg	50 kg	B	34
	Lead picrate (dry)	Forbidden											
	Lead styphnate (dry)	Forbidden											
	Lead styphnate, wetted *or* Lead trinitroresorcinate, wetted *with not less than 20 percent water or mixture of alcohol and water, by mass*.	1.1A	UN0130	II	1.1A	111, 117	None	62	None	Forbidden	Forbidden	12	
	Lead sulfate *with more than 3 percent free acid*.	8	UN1794	II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	A	
	Lead trinitroresorcinate, *see* Lead styphnate, *etc*.												

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Life-saving appliances, not self inflating *containing dangerous goods as equipment*.	9	UN3072	.....	None ..	143	None	219	None	No limit	No limit	A	.....
	Life-saving appliances, self inflating.	9	UN2990	.....	None ..		None	219	None	No limit	No limit	A	.....
	Lighter replacement cartridges containing liquefied petroleum gases (and similar devices, each not exceeding 65 grams), see Lighters *or* lighter refills *etc. containing flammable gas*.	.....			.....		.....	.....	.....	.....	.....		.....
	Lighters, fuse	1.4S	UN0131	II	1.4S ...		None	62	None	25 kg	100 kg	05	.....
	Lighters *or* Lighter refills *cigarettes, containing flammable gas*.	2.1	UN1057	.....	2.1	N10	None	21, 308	None	1 kg	15 kg	B	40
	Lime, unslaked, see Calcium oxide.	.....			.....		.....	.....	.....	.....	.....		.....
G	Liquefied gas, flammable, n.o.s. ..	2.1	UN3161	.....	2.1	T50	306	304	314, 315	Forbidden	150 kg	D	40
G	Liquefied gas, n.o.s.	2.2	UN3163	.....	2.2	T50	306	304	314, 315	75 kg	150 kg	A	.....
G	Liquefied gas, oxidizing, n.o.s.	2.2	UN3157	.....	2.2, 5.1		306	304	314, 315	75 kg	150 kg	D	.....
G I	Liquefied gas, toxic, corrosive, n.o.s. *Inhalation Hazard Zone A*.	2.3	UN3308	.....	2.3, 8	1	None	192	245	Forbidden	Forbidden	D	40
G I	Liquefied gas, toxic, corrosive, n.o.s. *Inhalation Hazard Zone B*.	2.3	UN3308	.....	2.3, 8	2	None	304	314, 315	Forbidden	Forbidden	D	40
G I	Liquefied gas, toxic, corrosive, n.o.s. *Inhalation Hazard Zone C*.	2.3	UN3308	.....	2.3, 8	3	None	304	314, 315	Forbidden	Forbidden	D	40
G I	Liquefied gas, toxic, corrosive, n.o.s. *Inhalation Hazard Zone D*.	2.3	UN3308	.....	2.3, 8	4	None	304	314, 315	Forbidden	Forbidden	D	40
G I	Liquefied gas, toxic, flammable, corrosive, n.o.s. *Inhalation Hazard Zone A*.	2.3	UN3309	.....	2.3, 2.1, 8.	1	None	192	245	Forbidden	Forbidden	D	17, 40
G I	Liquefied gas toxic, flammable, corrosive, n.o.s. *Inhalation Hazard Zone B*.	2.3	UN3309	.....	2.3, 2.1, 8.	2	None	304	314, 315	Forbidden	Forbidden	D	17, 40
G I	Liquefied gas, toxic, flammable, corrosive, n.o.s. *Inhalation Hazard Zone C*.	2.3	UN3309	.....	2.3, 2.1, 8.	3	None	304	314, 315	Forbidden	Forbidden	D	17, 40
G I	Liquefied gas, toxic, flammable, corrosive, n.o.s. *Inhalation Hazard Zone D*.	2.3	UN3309	.....	2.3, 2.1, 8.	4	None	304	314, 315	Forbidden	Forbidden	D	17, 40
G	Liquefied gas, toxic, flammable, n.o.s. *Inhalation Hazard Zone A*.	2.3	UN3160	.....	2.3, 2.1	1	None	192	245	Forbidden	Forbidden	D	40
G	Liquefied gas, toxic, flammable, n.o.s. *Inhalation Hazard Zone B*.	2.3	UN3160	.....	2.3, 2.1	2, B9, B14	None	304	314, 315	Forbidden	Forbidden	D	40
G	Liquefied gas, toxic, flammable, n.o.s. *Inhalation Hazard Zone C*.	2.3	UN3160	.....	2.3, 2.1	3, B14	None	304	314, 315	Forbidden	Forbidden	D	40
G	Liquefied gas, toxic, flammable, n.o.s. *Inhalation Hazard Zone D*.	2.3	UN3160	.....	2.3, 2.1	4	None	304	314, 315	Forbidden	Forbidden	D	40
G	Liquefied gas, toxic, n.o.s. *Inhalation Hazard Zone A*.	2.3	UN3162	.....	2.3	1	None	192	245	Forbidden	Forbidden	D	40
G	Liquefied gas, toxic, n.o.s. *Inhalation Hazard Zone B*.	2.3	UN3162	.....	2.3	2, B9, B14	None	304	314, 315	Forbidden	Forbidden	D	40
G	Liquefied gas, toxic, n.o.s. *Inhalation Hazard Zone C*.	2.3	UN3162	.....	2.3	3, B14	None	304	314, 315	Forbidden	Forbidden	D	40
G	Liquefied gas, toxic, n.o.s. *Inhalation Hazard Zone D*.	2.3	UN3162	.....	2.3	4	None	304	314, 315	Forbidden	Forbidden	D	40
G I	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. *Inhalation Hazard Zone A*.	2.3	UN3310	.....	2.3, 5.1, 8.	1	None	192	245	Forbidden	Forbidden	D	40, 89, 90
G I	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. *Inhalation Hazard Zone B*.	2.3	UN3310	.....	2.3, 2.1, 8.	2	None	304	314, 315	Forbidden	Forbidden	D	40, 89, 90
G I	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. *Inhalation Hazard Zone C*.	2.3	UN3310	.....	2.3, 2.1, 8.	3	None	304	314, 315	Forbidden	Forbidden	D	40, 89, 90
G I	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. *Inhalation Hazard Zone D*.	2.3	UN3310	.....	2.3, 2.1, 8.	4	None	304	314, 315	Forbidden	Forbidden	D	40, 89, 90
G	Liquefied gas, toxic, oxidizing, n.o.s. *Inhalation Hazard Zone A*.	2.3	UN3307	.....	2.3, 5.1	1	None	192	245	Forbidden	Forbidden	D	40
G	Liquefied gas, toxic, oxidizing, n.o.s. *Inhalation Hazard Zone B*.	2.3	UN3307	.....	2.3, 5.1	2	None	304	314, 315	Forbidden	Forbidden	D	40
G	Liquefied gas, toxic, oxidizing, n.o.s. *Inhalation Hazard Zone C*.	2.3	UN3307	.....	2.3, 5.1	3	None	304	314, 315	Forbidden	Forbidden	D	40
G	Liquefied gas, toxic, oxidizing, n.o.s. *Inhalation Hazard Zone D*.	2.3	UN3307	.....	2.3, 5.1	4	None	304	314, 315	Forbidden	Forbidden	D	40
	Liquefied gases, *non-flammable charged with nitrogen, carbon dioxide or air*.	2.2	UN1058	.....	2.2		306	304	None	75 kg	150 kg	A	.....

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Liquefied hydrocarbon gas, see Hydrocarbon gas mixture, liquefied, n.o.s..	.....			.....		.....	.....	.....	.....	.....		.....
	Liquefied natural gas, see Methane, *etc. (UN 1972).*	.....			.....		.....	.....	.....	.....	.....		.....
	Liquefied petroleum gas *see* Petroleum gases, liquefied.	.....			.....		.....	.....	.....	.....	.....		.....
	Lithium	4.3	UN1415	I	4.3	A7, A19, IB1, IP1, N45	None	211	244	Forbidden	15 kg	E	.....
	Lithium acetylide ethylenediamine complex, see Water reactive solid *etc.*	.....			.....		.....	.....	.....	.....	.....		.....
	Lithium alkyls	4.2	UN2445	I	4.2, 4.3	B11, T21, TP2, TP7	None	181	244	Forbidden	Forbidden	D	.....
	Lithium aluminum hydride	4.3	UN1410	I	4.3	A19	None	211	242	Forbidden	15 kg	E	.....
	Lithium aluminum hydride, ethereal.	4.3	UN1411	I	4.3, 3	A2, A3, A11, N34	None	201	244	Forbidden	1 L	D	40
	Lithium batteries, contained in equipment.	9	UN3091	II	9	29	185(i)	185	None	5 kg	5 kg	A	.....
	Lithium batteries packed with equipment.	9	UN3091	II	9	29	185	185	None	5 kg gross	35 kg gross	A	.....
	Lithium battery	9	UN3090	II	9	29	185	185	None	5 kg gross	35 kg gross	A	.....
	Lithium borohydride	4.3	UN1413	I	4.3	A19, N40	None	211	242	Forbidden	15 kg	E	.....
	Lithium ferrosilicon	4.3	UN2830	II	4.3	A19, IB7, IP2	151	212	241	15 kg	50 kg	E	40, 85, 103
	Lithium hydride	4.3	UN1414	I	4.3	A19, N40	None	211	242	Forbidden	15 kg	E	.....
	Lithium hydride, fused solid	4.3	UN2805	II	4.3	A8, A19, A20, IB4	151	212	241	15 kg	50 kg	E	.....
	Lithium hydroxide, monohydrate *or* Lithium hydroxide, solid.	8	UN2680	II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	A	.....
	Lithium hydroxide, solution	8	UN2679	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	A	.....
	.....	.....		III	8	IB3, T4, TP2	154	203	241	5 L	60 L	A	96
	Lithium hypochlorite, dry *with more than 39% available chlorine (8.8% available oxygen) or* Lithium hypochlorite mixtures, dry *with more than 39% available chlorine (8.8% available oxygen).*	5.1	UN1471	II	5.1	A9, IB8, IP2, IP4, N34	152	212	240	5 kg	25 kg	A	48, 56, 58, 69, 106, 116
	Lithium in cartridges, see Lithium	.....			.....		.....	.....	.....	.....	.....		.....
	Lithium nitrate	5.1	UN2722	III	5.1	A1, IB8, IP3	152	213	240	25 kg	100 kg	A	.....
	Lithium nitride	4.3	UN2806	I	4.3	A19, IB4, IP1, N40	None	211	242	Forbidden	15 kg	E	.....
	Lithium peroxide	5.1	UN1472	II	5.1	A9, IB6, IP2, N34	152	212	None	5 kg	25 kg	A	13, 75, 106
	Lithium silicon	4.3	UN1417	II	4.3	A19, A20, IB7, IP2	151	212	241	15 kg	50 kg	A	85, 103
	LNG, see Methane *etc. (UN 1972).*	.....			.....		.....	.....	.....	.....	.....		.....
	London purple	6.1	UN1621	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	LPG, see Petroleum gases, liquefied.	.....			.....		.....	.....	.....	.....	.....		.....
	Lye, see Sodium hydroxide, solutions.	.....			.....		.....	.....	.....	.....	.....		.....
	Magnesium alkyls	4.2	UN3053	I	4.2, 4.3	B11, T21, TP2, TP7	None	181	244	Forbidden	Forbidden	D	18
	Magnesium aluminum phosphide	4.3	UN1419	I	4.3, 6.1	A19, N34, N40	None	211	242	Forbidden	15 kg	E	40, 85
+	Magnesium arsenate	6.1	UN1622	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	Magnesium bisulfite solution, see Bisulfites, aqueous solutions, n.o.s..	.....			.....		.....	.....	.....	.....	.....		.....
	Magnesium bromate	5.1	UN1473	II	5.1	A1, IB8, IP4	152	212	242	5 kg	25 kg	A	56, 58, 106
	Magnesium chlorate	5.1	UN2723	II	5.1	IB8, IP2, IP4	152	212	242	5 kg	25 kg	A	56, 58, 106
	Magnesium diamide	4.2	UN2004	II	4.2	A8, A19, A20, IB6	None	212	241	15 kg	50 kg	C	.....
	Magnesium diphenyl	4.2	UN2005	I	4.2		None	187	244	Forbidden	Forbidden	C	.....
	Magnesium dross, wet or hot	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Magnesium fluorosilicate	6.1	UN2853	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	26
	Magnesium granules, coated, *particle size not less than 149 microns.*	4.3	UN2950	III	4.3	A1, A19, IB8, IP4	151	213	240	25 kg	100 kg	A	.....
	Magnesium hydride	4.3	UN2010	I	4.3	A19, N40	None	211	242	Forbidden	15 kg	E	.....
	Magnesium *or* Magnesium alloys *with more than 50 percent magnesium in pellets, turnings or ribbons.*	4.1	UN1869	III	4.1	A1, IB8, IP3	151	213	240	25 kg	100 kg	A	39
	Magnesium nitrate	5.1	UN1474	III	5.1	A1, IB8, IP3	152	213	240	25 kg	100 kg	A	.....
	Magnesium perchlorate	5.1	UN1475	II	5.1	IB6, IP2	152	212	242	5 kg	25 kg	A	56, 58, 106
	Magnesium peroxide	5.1	UN1476	II	5.1	IB6, IP2	152	212	242	5 kg	25 kg	A	13, 75, 106
	Magnesium phosphide	4.3	UN2011	I	4.3, 6.1	A19, N40	None	211	None	Forbidden	15 kg	E	40, 85
	Magnesium, powder *or* Magnesium alloys, powder.	4.3	UN1418	I	4.3, 4.2	A19, B56	None	211	244	Forbidden	15 kg	A	39
	.....	.....		II	4.3, 4.2	A19, B56, IB5, IP2	None	212	241	15 kg	50 kg	A	39
	.....	.....		III	4.3, 4.2	A19, B56, IB8, IP4	None	213	241	25 kg	100 kg	A	39
	Magnesium scrap, see Magnesium, *etc. (UN 1869).*	.....			.....		.....	.....	.....	.....	.....		.....

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Magnesium silicide	4.3	UN2624	II	4.3	A19, A20, IB7, IP2	151	212	241	15 kg	50 kg	B	85, 103
	Magnetized material, see § 173.21.												
	Maleic anhydride	8	UN2215	III	8	IB8, IP3, T4, TP1	154	213	240	25 kg	100 kg	A	
	Malononitrile	6.1	UN2647	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	12
	Mancozeb (manganese ethylenebisdithiocarbamate complex with zinc) see Maneb.												
	Maneb *or* Maneb preparations *with not less than 60 percent maneb.*	4.2	UN2210	III	4.2, 4.3	57, A1, A19, IB6	None	213	242	25 kg	100 kg	A	34
	Maneb stabilized *or* Maneb preparations, stabilized *against self-heating.*	4.3	UN2968	III	4.3	54, A1, A19, IB8, IP4	151	213	242	25 kg	100 kg	B	34
	Manganese nitrate	5.1	UN2724	III	5.1	A1, IB8, IP3	152	213	240	25 kg	100 kg	A	
	Manganese resinate	4.1	UN1330	III	4.1	A1, IB6	151	213	240	25 kg	100 kg	A	
	Mannitan tetranitrate	Forbidden											
	Mannitol hexanitrate (dry)	Forbidden											
	Mannitol hexanitrate, wetted *or* Nitromannite, wetted *with not less than 40 percent water, or mixture of alcohol and water, by mass.*	1.1D	UN0133	II	1.1D	121	None	62	None	Forbidden	Forbidden	10	
	Marine pollutants, liquid or solid, n.o.s., see Environmentally hazardous substances, liquid *or* solid, n.o.s..												
	Matches, block, see Matches, 'strike anywhere'.												
	Matches, fusee	4.1	UN2254	III	4.1		186	186	None	Forbidden	Forbidden	A	
	Matches, safety *(book, card or strike on box).*	4.1	UN1944	III	4.1		186	186	None	25 kg	100 kg	A	
	Matches, strike anywhere	4.1	UN1331	III	4.1		186	186	None	Forbidden	Forbidden	B	
	Matches, wax, Vesta	4.1	UN1945	III	4.1		186	186	None	25 kg	100 kg	B	
	Matting acid, see Sulfuric acid												
	Medicine, liquid, flammable, toxic, n.o.s..	3	UN3248	II	3, 6.1	36, IB2	None	202	None	1 L	5 L	B	40
				III	3, 6.1	36, IB3	150	203	None	5 L	5 L	A	
	Medicine, liquid, toxic, n.o.s.	6.1	UN1851	II	6.1		153	202	243	5 L	5 L	C	40
				III	6.1		153	203	241	5 L	5 L	C	40
	Medicine, solid, toxic, n.o.s.	6.1	UN3249	II	6.1	36	153	212	None	5 kg	5 kg	C	40
				III	6.1	36	153	213	None	5 kg	5 kg	C	40
	Memtetrahydrophthalic anhydride, see Corrosive liquids, n.o.s..												
	Mercaptans, liquid, flammable, n.o.s. *or* Mercaptan mixture, liquid, flammable, n.o.s..	3	UN3336	I	3	T11, TP2	150	201	243	1 L	30 L	E	95
				II	3	IB2, T7, TP1, TP8, TP28	150	202	242	5 L	60 L	B	95
				III	3	B1, B52, IB3, T4, TP1, TP29	150	203	241	60 L	220 L	B	95
	Mercaptans, liquid, flammable, toxic, n.o.s. *or* Mercaptan mixtures, liquid, flammable, toxic, n.o.s..	3	UN1228	II	3, 6.1	IB2, T11, TP2, TP27	None	202	243	Forbidden	60 L	B	40, 95
				III	3, 6.1	B1, IB3, T7, TP1, TP28	150	203	242	5 L	220 L	A	40, 95
	Mercaptans, liquid, toxic, flammable, n.o.s. *or* Mercaptan mixtures, liquid, toxic, flammable, n.o.s., *flash point not less than 23 degrees C.*	6.1	UN3071	II	6.1, 3	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	C	40, 121
	5-Mercaptotetrazol-1-acetic acid	1.4C	UN0448	II	1.4C		None	62	None	Forbidden	75 kg	09	
	Mercuric arsenate	6.1	UN1623	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Mercuric chloride	6.1	UN1624	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Mercuric compounds, see Mercury compounds, *etc.*												
	Mercuric nitrate	6.1	UN1625	II	6.1	IB8, IP2, IP4, N73	None	212	242	25 kg	100 kg	A	
+	Mercuric potassium cyanide	6.1	UN1626	I	6.1	IB7, IP1, N74, N75	None	211	242	5 kg	50 kg	A	26
	Mercuric sulfocyanate, see Mercury thiocyanate.												
	Mercurol, see Mercury nucleate												
	Mercurous azide	Forbidden											
	Mercurous compounds, see Mercury compounds, *etc.*												
	Mercurous nitrate	6.1	UN1627	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
A W	Mercury	8	UN2809	III	8		164	164	240	35 kg	35 kg	B	40, 97
	Mercury acetate	6.1	UN1629	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Mercury acetylide	Forbidden											
	Mercury ammonium chloride	6.1	UN1630	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Mercury based pesticides, liquid, flammable, toxic, *flash point less than 23 degrees C.*	3	UN2778	I	3, 6.1	T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	B	40
				II	3, 6.1	IB2, T11, TP2, TP13, TP27	None	202	243	1 L	60 L	B	40
	Mercury based pesticides, liquid, toxic.	6.1	UN3012	I	6.1	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	.....	.....		II	6.1	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
	.....	.....		III	6.1	IB3, T7, TP2, TP28	153	203	241	60 L	220 L	A	40
	Mercury based pesticides, liquid, toxic, flammable, *flash point not less than 23 degrees C.*	6.1	UN3011	I	6.1, 3	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
	.....	.....		II	6.1, 3	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
	.....	.....		III	6.1, 3	IB3, T7, TP2, TP28	153	203	242	60 L	220 L	A	40
	Mercury based pesticides, solid, toxic.	6.1	UN2777	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	40
	.....	.....		II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	40
	.....	.....		III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	40
	Mercury benzoate	6.1	UN1631	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	Mercury bromides	6.1	UN1634	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	Mercury compounds, liquid, n.o.s.	6.1	UN2024	I	6.1		None	201	243	1 L	30 L	B	40
	.....	.....		II	6.1	IB2	None	202	243	5 L	60 L	B	40
	.....	.....		III	6.1	IB3	153	203	241	60 L	220 L	B	40
	Mercury compounds, solid, n.o.s.	6.1	UN2025	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	.....
	.....	.....		II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	.....	.....		III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	.....
A	Mercury *contained in manufactured articles.*	8	UN2809	III	8		None	164	None	No limit	No limit	B	40, 97
	Mercury cyanide	6.1	UN1636	II	6.1	IB8, IP2, IP4, N74, N75	None	212	242	25 kg	100 kg	A	26
	Mercury fulminate, wetted *with not less than 20 percent water, or mixture of alcohol and water, by mass.*	1.1A	UN0135	II	1.1A ...	111, 117	None	62	None	Forbidden	Forbidden	12	.....
	Mercury gluconate	6.1	UN1637	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	Mercury iodide, *solid*	6.1	UN1638	II	6.1	IB2, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	Mercury iodide aquabasic ammonobasic (Iodide of Millon's base).	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Mercury iodide, *solution*	6.1	UN1638	II	6.1	IB8, IP2, IP4	None	202	243	5 L	60 L	A	.....
	Mercury nitride	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Mercury nucleate	6.1	UN1639	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	Mercury oleate	6.1	UN1640	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	Mercury oxide	6.1	UN1641	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	Mercury oxycyanide	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Mercury oxycyanide, desensitized	6.1	UN1642	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	26, 91
	Mercury potassium iodide	6.1	UN1643	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	Mercury salicylate	6.1	UN1644	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
+	Mercury sulfates	6.1	UN1645	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	Mercury thiocyanate	6.1	UN1646	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	Mesityl oxide	3	UN1229	III	3	B1, IB3, T2, TP1	None	203	242	60 L	220 L	A	.....
	Metal alkyl halides, water-reactive n.o.s. *or* Metal aryl halides, water-reactive, n.o.s..	4.2	UN3049	I	4.2, 4.3	B9, B11, T21, TP2, TP7	None	181	244	Forbidden	Forbidden	D	.....
	Metal alkyl hydrides, water-reactive, n.o.s. *or* Metal aryl hydrides, water-reactive, n.o.s..	4.2	UN3050	I	4.2, 4.3	B9, B11, T21, TP2, TP7	None	181	244	Forbidden	Forbidden	D	.....
	Metal alkyls, water-reactive, n.o.s. *or* Metal aryls, water-reactive n.o.s..	4.2	UN2003	I	4.2, 4.3	B11, T21, TP2, TP7	None	181	244	Forbidden	Forbidden	D	.....
	Metal carbonyls, n.o.s.	6.1	UN3281	I	6.1	5, T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
	.....	.....		II	6.1	IB2, T11, TP2, TP27	None	202	243	5 L	60 L	B	40
	.....	.....		III	6.1	IB3, T7, TP1, TP28	153	203	241	60 L	220 L	A	40
	Metal catalyst, dry	4.2	UN2881	I	4.2	N34	None	187	None	25 kg	100 kg	C	.....
	.....	.....		II	4.2	IB6, IP2, N34	None	187	242	Forbidden	50 kg	C	.....
	.....	.....		III	4.2	IB8, IP3, N34	None	187	241	25 kg	100 kg	C	.....
	Metal catalyst, wetted *with a visible excess of liquid.*	4.2	UN1378	II	4.2	A2, A8, IB1, N34	None	212	None	Forbidden	50 kg	C	.....
	Metal hydrides, flammable, n.o.s.	4.1	UN3182	II	4.1	A1, IB4	151	212	240	15 kg	50 kg	E	.....
	.....	.....		III	4.1	A1, IB4	151	213	240	25 kg	100 kg	E	.....
	Metal hydrides, water reactive, n.o.s..	4.3	UN1409	I	4.3	A19, N34, N40	None	211	242	Forbidden	15 kg	D	.....
	.....	.....		II	4.3	A19, IB4, N34, N40	151	212	242	15 kg	50 kg	D	.....
	Metal powder, self-heating, n.o.s.	4.2	UN3189	II	4.2	IB6, IP2	None	212	241	15 kg	50 kg	C	.....
	.....	.....		III	4.2	IB8, IP3	None	213	241	25 kg	100 kg	C	.....
	Metal powders, flammable, n.o.s.	4.1	UN3089	II	4.1	IB8, IP2, IP4	151	212	240	15 kg	50 kg	B	.....
	.....	.....		III	4.1	IB6	151	213	240	25 kg	100 kg	B	.....
	Metal salts of methyl nitramine (dry).	Forbidden			.....		.....	.....	.....	.....	.....		.....
G	Metal salts of organic compounds, flammable, n.o.s..	4.1	UN3181	II	4.1	A1, IB8, IP2, IP4	151	212	240	15 kg	50 kg	B	40
	.....	.....		III	4.1	A1, IB8, IP3	151	213	240	25 kg	100 kg	B	40
	Metaldehyde	4.1	UN1332	III	4.1	A1, IB8, IP3	151	213	240	25 kg	100 kg	A	.....
G	Metallic substance, water-reactive, n.o.s..	4.3	UN3208	I	4.3	IB4	None	211	242	Forbidden	15 kg	E	40
	.....	.....		II	4.3	IB7, IP2	151	212	242	15 kg	50 kg	E	40

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	.....	.....		III	4.3	IB8, IP4	151	213	241	25 kg	100 kg	E	40
G	Metallic substance, water-reactive, self-heating, n.o.s..	4.3	UN3209	I	4.3, 4.2		None	211	242	Forbidden	15 kg	E	40
	.....	.....		II	4.3, 4.2	IB5, IP2	None	212	242	15 kg	50 kg	E	40
	.....	.....		III	4.3, 4.2	IB8, IP4	None	213	242	25 kg	100 kg	E	40
	Methacrylaldehyde, stabilized	3	UN2396	II	3, 6.1	45, IB2, T7, TP1, TP13	None	202	243	1 L	60 L	E	40
	Methacrylic acid, stabilized	8	UN2531	II	8	IB3, T4, TP1, TP18	154	202	242	1 L	30 L	A	.....
+	Methacrylonitrile, stabilized	3	UN3079	I	3, 6.1	2, B9, B14, B32, B74, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	12, 40, 48
	Methallyl alcohol	3	UN2614	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	Methane and hydrogen, mixtures, see Hydrogen and methane, mixtures, *etc.*	.....			.....		.....	.....	.....	.....	.....		.....
	Methane, compressed *or* Natural gas, compressed *(with high methane content)*.	2.1	UN1971	.....	2.1		306	302	302	Forbidden	150 kg	E	40
	Methane, refrigerated liquid *(cryogenic liquid) or* Natural gas, refrigerated liquid *(cryogenic liquid), with high methane content)*.	2.1	UN1972	.....	2.1	T75, TP5	None	None	318	Forbidden	Forbidden	D	40
	Methanesulfonyl chloride	6.1	UN3246	I	6.1, 8	2, 25, B9, B14, B32, B74, T20, TP2, TP12, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
+ I	Methanol	3	UN1230	II	3, 6.1	IB2, T7, TP2	150	202	242	1 L	60 L	B	40
D	Methanol	3	UN1230	II	3	IB2, T7, TP2	150	202	242	1 L	60 L	B	40
	Methazoic acid	Forbidden			.....		.....	.....	.....	.....	.....		.....
	4-Methoxy-4-methylpentan-2-one	3	UN2293	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	1-Methoxy-2-propanol	3	UN3092	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
+	Methoxymethyl isocyanate	3	UN2605	I	3, 6.1	1, B9, B14, B30, B72, T22, TP2, TP13, TP38, TP44	None	226	244	Forbidden	Forbidden	D	40
	Methyl acetate	3	UN1231	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	.....
	Methyl acetylene and propadiene mixtures, stabilized.	2.1	UN1060	.....	2.1	T50	306	304	314, 315	Forbidden	150 kg	B	40
	Methyl acrylate, stabilized	3	UN1919	II	3	IB2, T4, TP1, TP13	150	202	242	5 L	60 L	B	.....
	Methyl alcohol, see Methanol	.....			.....		.....	.....	.....	.....	.....		.....
	Methyl allyl chloride	3	UN2554	II	3	IB2, T4, TP1, TP13	150	202	242	5 L	60 L	E	.....
	Methyl amyl ketone, see Amyl methyl ketone.	.....			.....		.....	.....	.....	.....	.....		.....
	Methyl bromide	2.3	UN1062	.....	2.3	3, B14, T50	None	193	314, 315	Forbidden	25 kg	D	40
	Methyl bromide and chloropicrin mixtures with more than 2 percent chloropicrin, see Chloropicrin and methyl bromide mixtures.	.....			.....		.....	.....	.....	.....	.....		.....
	Methyl bromide and chloropicrin mixtures with not more than 2 percent chloropicrin, see Methyl bromide.	.....			.....		.....	.....	.....	.....	.....		.....
	Methyl bromide and ethylene dibromide mixtures, liquid.	6.1	UN1647	I	6.1	2, B9, B14, B32, B74, N65, T20, TP2, TP13, TP38, TP44	None	227	244	Forbidden	Forbidden	C	40
	Methyl bromoacetate	6.1	UN2643	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	D	40
	2-Methyl-1-butene	3	UN2459	I	3	T11, TP2	None	201	243	1 L	30 L	E	.....
	2-Methyl-2-butene	3	UN2460	II	3	IB2, IP8, T7, TP1	None	202	242	5 L	60 L	E	.....
	3-Methyl-1-butene	3	UN2561	I	3	T11, TP2	None	201	243	1 L	30 L	E	.....
	Methyl tert-butyl ether	3	UN2398	II	3	IB2, T7, TP1	150	202	242	5 L	60 L	E	.....
	Methyl butyrate	3	UN1237	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	.....
	Methyl chloride, *or* Refrigerant gas R 40.	2.1	UN1063	.....	2.1	T50	306	304	314, 315	5 kg	100 kg	D	40
	Methyl chloride and chloropicrin mixtures, see Chloropicrin and methyl chloride mixtures.	.....			.....		.....	.....	.....	.....	.....		.....
	Methyl chloride and methylene chloride mixtures.	2.1	UN1912	.....	2.1	T50	306	304	314, 315	Forbidden	150 kg	D	40
	Methyl chloroacetate	6.1	UN2295	I	6.1, 3	T14, TP2, TP13	None	201	243	1 L	30 L	D	.....
	Methyl chlorocarbonate, see Methyl chloroformate.	.....			.....		.....	.....	.....	.....	.....		.....
	Methyl chloroform, see 1,1,1-Trichloroethane.	.....			.....		.....	.....	.....	.....	.....		.....
	Methyl chloroformate	6.1	UN1238	I	6.1, 3, 8.	1, B9, B14, B30, B72, N34, T22, TP2, TP13, TP38, TP44	None	226	244	Forbidden	Forbidden	D	21, 40, 100
	Methyl chloromethyl ether	6.1	UN1239	I	6.1, 3	1, B9, B14, B30, B72, T22, TP2, TP38, TP44	None	226	244	Forbidden	Forbidden	D	40
	Methyl 2-chloropropionate	3	UN2933	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	Methyl dichloroacetate	6.1	UN2299	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	.....

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Methyl ethyl ether, see Ethyl methyl ether.	.....			.....		.....	.....	.....	.....	.....		.....
	Methyl ethyl ketone, *see* Ethyl methyl ketone.	.....			.....		.....	.....	.....	.....	.....		.....
	Methyl ethyl ketone peroxide, in solution with more than 9 percent by mass active oxygen.	Forbidden			.....		.....	.....	.....	.....	.....		.....
	2-Methyl-5-ethylpyridine	6.1	UN2300	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	.....
	Methyl fluoride, *or* Refrigerant gas R 41.	2.1	UN2454	.....	2.1		306	304	314, 315	Forbidden	150 kg	E	40
	Methyl formate	3	UN1243	I	3	T11, TP2	150	201	243	1 L	30 L	E	.....
	2-Methyl-2-heptanethiol	6.1	UN3023	I	6.1, 3	2, B9, B14, B32, B74, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40, 102
	Methyl iodide	6.1	UN2644	I	6.1	2, B9, B14, B32, B74, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	A	12, 40
	Methyl isobutyl carbinol	3	UN2053	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	Methyl isobutyl ketone	3	UN1245	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	.....
	Methyl isobutyl ketone peroxide, in solution with more than 9 percent by mass active oxygen.	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Methyl isocyanate	6.1	UN2480	I	6.1, 3	1, B9, B14, B30, B72, T22, TP2, TP13, TP38, TP44	None	226	244	Forbidden	Forbidden	D	26, 40
	Methyl isopropenyl ketone, stabilized.	3	UN1246	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	.....
	Methyl isothiocyanate	6.1	UN2477	I	6.1, 3	2, B9, B14, B32, B74, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	A	.....
	Methyl isovalerate	3	UN2400	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	.....
	Methyl magnesium bromide, in ethyl ether.	4.3	UN1928	I	4.3, 3		None	201	243	Forbidden	1 L	D	.....
	Methyl mercaptan	2.3	UN1064	.....	2.3, 2.1	3, B7, B9, B14, T50	None	304	314, 315	Forbidden	25 kg	D	40
	Methyl mercaptopropionaldehyde, see Thia-4-pentanal.	.....			.....		.....	.....	.....	.....	.....		.....
	Methyl methacrylate monomer, stabilized.	3	UN1247	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	40
	Methyl nitramine (dry)	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Methyl nitrate	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Methyl nitrite	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Methyl norbornene dicarboxylic anhydride, see Corrosive liquids, n.o.s..	.....			.....		.....	.....	.....	.....	.....		.....
	Methyl orthosilicate	6.1	UN2606	I	6.1, 3	2, B9, B14, B32, B74, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	E	40
D	Methyl phosphonic dichloride	6.1	NA9206	I	6.1, 8	2, A3, B9, B14, B32, B74, N34, N43, T20, TP4, TP12, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	C	.....
	Methyl phosphonothioic dichloride, anhydrous, see Corrosive liquid, n.o.s..	.....			.....		.....	.....	.....	.....	.....		.....
D	Methyl phosphonous dichloride, *pyrophoric liquid.*	6.1	NA2845	I	6.1, 4.2	2, B9, B14, B16, B32, B74, T20, TP4, TP12, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	18
	Methyl picric acid (heavy metal salts of).	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Methyl propionate	3	UN1248	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	.....
	Methyl propyl ether	3	UN2612	II	3	IB2, IP8, T7, TP2	150	202	242	5 L	60 L	E	40
	Methyl propyl ketone	3	UN1249	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	.....
	Methyl sulfate, see Dimethyl sulfate.	.....			.....		.....	.....	.....	.....	.....		.....
	Methyl sulfide, see Dimethyl sulfide.	.....			.....		.....	.....	.....	.....	.....		.....
	Methyl trichloroacetate	6.1	UN2533	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	.....
	Methyl trimethylol methane trinitrate.	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Methyl vinyl ketone, stabilized	6.1	UN1251	I	6.1, 3, 8.	1, 25, B9, B14, B30, B72, T22, TP2, TP13, TP38, TP44	None	226	244	Forbidden	Forbidden	B	40
	Methylal	3	UN1234	II	3	IB2, IP8, T7, TP2	None	202	242	5 L	60 L	E	.....
	Methylamine, anhydrous	2.1	UN1061	.....	2.1	T50	306	304	314, 315	Forbidden	150 kg	B	40
	Methylamine, aqueous solution	3	UN1235	II	3, 8	B1, IB2, T7, TP1	150	202	243	1 L	5 L	E	41
	Methylamine dinitramine and dry salts thereof.	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Methylamine nitroform	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Methylamine perchlorate (dry)	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Methylamyl acetate	3	UN1233	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	N-Methylaniline	6.1	UN2294	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	.....
	alpha-Methylbenzyl alcohol	6.1	UN2937	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	.....
	3-Methylbutan-2-one	3	UN2397	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	.....

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	N-Methylbutylamine	3	UN2945	II	3, 8	IB2, T7, TP1	None	202	243	1 L	5 L	B	40
	Methylchlorosilane	2.3	UN2534		2.3, 2.1, 8.	2, A2, A3, A7, B9, B14, N34	None	226	314, 315	Forbidden	Forbidden	D	17, 40
	Methylcyclohexane	3	UN2296	II	3	B1, IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Methylcyclohexanols, *flammable*	3	UN2617	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Methylcyclohexanone	3	UN2297	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Methylcyclopentane	3	UN2298	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
D	Methyldichloroarsine	6.1	NA1556	I	6.1	2, T20, TP4, TP12, TP13, TP38, TP45	None	192	None	Forbidden	Forbidden	D	40
	Methyldichlorosilane	4.3	UN1242	I	4.3, 8, 3.	A2, A3, A7, B6, B77, N34, T10, TP2, TP7, TP13	None	201	243	Forbidden	1 L	D	21, 28, 40, 49, 100
	Methylene chloride, see Dichloromethane.												
	Methylene glycol dinitrate	Forbidden											
	2-Methylfuran	3	UN2301	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	E	
	a-Methylglucoside tetranitrate	Forbidden											
	a-Methylglycerol trinitrate	Forbidden											
	5-Methylhexan-2-one	3	UN2302	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Methylhydrazine	6.1	UN1244	I	6.1, 3, 8.	1, B7, B9, B14, B30, B72, B77, N34, T22, TP2, TP13, TP38, TP44	None	226	244	Forbidden	Forbidden	D	21, 40, 49, 100
	4-Methylmorpholine *or* n-methylmorpholine.	3	UN2535	II	3, 8	B6, IB2, T7, TP1	None	202	243	1 L	5 L	B	40
	Methylpentadienes	3	UN2461	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	E	
	2-Methylpentan-2-ol	3	UN2560	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Methylpentanes, see Hexanes												
	Methylphenyldichlorosilane	8	UN2437	II	8	IB2, T7, TP2, TP13	154	202	242	1 L	30 L	C	40
	1-Methylpiperidine	3	UN2399	II	3, 8	IB2, T7, TP1	None	202	243	1 L	5 L	B	
	Methyltetrahydrofuran	3	UN2536	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Methyltrichlorosilane	3	UN1250	I	3, 8	A7, B6, B77, N34, T11, TP2, TP13	None	201	243	Forbidden	2.5 L	B	40
	alpha-Methylvaleraldehyde	3	UN2367	II	3	B1, IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Mine rescue equipment containing carbon dioxide, see Carbon dioxide.												
	Mines *with bursting charge*	1.1F	UN0136	II	1.1F			62	None	Forbidden	Forbidden	08	
	Mines *with bursting charge*	1.1D	UN0137	II	1.1D			62	None	Forbidden	Forbidden	03	
	Mines *with bursting charge*	1.2D	UN0138	II	1.2D			62	None	Forbidden	Forbidden	03	
	Mines *with bursting charge*	1.2F	UN0294	II	1.2F			62	None	Forbidden	Forbidden	08	
	Mixed acid, see Nitrating acid, mixtures *etc.*												
	Mobility aids, see Battery powered equipment *or* Battery powered vehicle'.												
D	Model rocket motor	1.4C	NA0276	II	1.4C	51	None	62	None	Forbidden	75 kg	06	
D	Model rocket motor	1.4S	NA0323	II	1.4S	51	None	62	None	25 kg	100 kg	05	
	Molybdenum pentachloride	8	UN2508	III	8	IB8, IP3, T4, TP1	154	213	240	25 kg	100 kg	C	40
	Monochloroacetone (unstabilized)	Forbidden											
	Monochloroethylene, see Vinyl chloride, stabilized.												
	Monoethanolamine, see Ethanolamine, solutions.												
	Monoethylamine, see Ethylamine												
	Morpholine	8	UN2054	I	8, 3	T10, TP2	None	201	243	.5 L	2.5 L	C	25,40
	Morpholine, aqueous, mixture, see Corrosive liquids, n.o.s..												
	Motor fuel anti-knock compounds *see* Motor fuel anti-knock mixtures.												
+	Motor fuel anti-knock mixtures	6.1	UN1649	I	6.1, 3	14, B9, B90, T14, TP2, TP13	None	201	244	Forbidden	30 L	D	25, 40
	Motor spirit, *see* Gasoline												
	Muriatic acid, see Hydrochloric acid.												
	Musk xylene, *see* 5-tert-Butyl-2,4,6-trinitro-m-xylene.												
	Naphtha see Petroleum distillates n.o.s..												
	Naphthalene, crude *or* Naphthalene, refined.	4.1	UN1334	III	4.1	A1, IB8, IP3	151	213	240	25 kg	100 kg	A	
	Naphthalene diozonide	Forbidden											
	beta-Naphthylamine	6.1	UN1650	II	6.1	IB8, IP2, IP4, T7, TP2	None	212	242	25 kg	100 kg	A	
	alpha-Naphthylamine	6.1	UN2077	III	6.1	IB8, IP3, T3, TP1	153	213	240	100 kg	200 kg	A	
	Naphthalene, molten	4.1	UN2304	III	4.1	A1, IB1, T1, TP3	151	213	241	Forbidden	Forbidden	C	
	Naphthylamineperchlorate	Forbidden											
	Naphthylthiourea	6.1	UN1651	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Naphthylurea	6.1	UN1652	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Natural gases (with high methane content), see Methane, *etc. (UN 1971, UN 1972).*												
	Neohexane, see Hexanes												

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Neon, compressed	2.2	UN1065		2.2		306	302	302	75 kg	150 kg	A	
	Neon, refrigerated liquid *(cryogenic liquid)*.	2.2	UN1913		2.2	T75, TP5	320	316	None	50 kg	500 kg	B	
	New explosive or explosive device, see §§ 173.51 and 173.56.												
	Nickel carbonyl	6.1	UN1259	I	6.1, 3	1	None	198	None	Forbidden	Forbidden	D	18, 40
	Nickel cyanide	6.1	UN1653	II	6.1	IB8, IP2, IP4, N74, N75	None	212	242	25 kg	100 kg	A	26
	Nickel nitrate	5.1	UN2725	III	5.1	A1, IB8, IP3	152	213	240	25 kg	100 kg	A	
	Nickel nitrite	5.1	UN2726	III	5.1	A1, IB8, IP3	152	213	240	25 kg	100 kg	A	56, 58
	Nickel picrate	Forbidden											
	Nicotine	6.1	UN1654	II	6.1	IB2	None	202	243	5 L	60 L	A	
	Nicotine compounds, liquid, n.o.s. *or* Nicotine preparations, liquid, n.o.s..	6.1	UN3144	I	6.1	A4	None	201	243	1 L	30 L	B	40
				II	6.1	IB2, T11, TP2, TP27	None	202	243	5 L	60 L	B	40
				III	6.1	IB3, T7, TP1, TP28	153	203	241	60 L	220 L	B	40
	Nicotine compounds, solid, n.o.s. *or* Nicotine preparations, solid, n.o.s..	6.1	UN1655	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	B	
				II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
				III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
	Nicotine hydrochloride *or* Nicotine hydrochloride solution.	6.1	UN1656	II	6.1	IB2, IP2, IP4	None	202	243	5 L	60 L	A	
	Nicotine salicylate	6.1	UN1657	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Nicotine sulfate, *solid*	6.1	UN1658	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Nicotine sulfate, *solution*	6.1	UN1658	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	
	Nicotine tartrate	6.1	UN1659	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Nitrated paper (unstable)	Forbidden											
	Nitrates, inorganic, aqueous solution, n.o.s..	5.1	UN3218	II	5.1	58, IB2, T4, TP1	152	202	242	1 L	5 L	B	46
				III	5.1	58, IB2, T4, TP1	152	203	241	2.5 L	30 L	B	46
	Nitrates, inorganic, n.o.s.	5.1	UN1477	II	5.1	IB8, IP2, IP4	152	212	240	5 kg	25 kg	A	46
				III	5.1	IB8, IP3	152	213	240	25 kg	100 kg	A	46
	Nitrates of diazonium compounds	Forbidden											
	Nitrating acid mixtures, spent *with more than 50 percent nitric acid*.	8	UN1826	I	8, 5.1	T10, TP2, TP12, TP13	None	158	243	Forbidden	2.5 L	D	40, 66
	Nitrating acid mixtures spent *with not more than 50 percent nitric acid*.	8	UN1826	II	8	B2, IB2, T8, TP2, TP12	None	158	242	Forbidden	30 L	D	40
	Nitrating acid mixtures *with more than 50 percent nitric acid*.	8	UN1796	I	8, 5.1	T10, TP2, TP12, TP13	None	158	243	Forbidden	2.5 L	D	40, 66
	Nitrating acid mixtures *with not more than 50 percent nitric acid*.	8	UN1796	II	8	B2, IB2, T8, TP2, TP12, TP13	None	158	242	Forbidden	30 L	D	40
	Nitric acid *other than red fuming, with more than 70 percent nitric acid*.	8	UN2031	I	8, 5.1	B47, B53, T10, TP2, TP12, TP13	None	158	243	Forbidden	2.5 L	D	44, 66, 89, 90, 110, 111
	Nitric acid *other than red fuming, with not more than 70 percent nitric acid*.	8	UN2031	II	8	B2, B47, B53, IB2, T8, TP2, TP12	None	158	242	Forbidden	30 L	D	44, 66, 89, 90, 110, 111
+	Nitric acid, red fuming	8	UN2032	I	8, 5.1, 6.1.	2, B9, B32, B74, T20, TP2, TP12, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40, 66, 74, 89, 90
	Nitric oxide, compressed	2.3	UN1660		2.3, 5.1, 8.	1, B37, B46, B50, B60, B77	None	337	None	Forbidden	Forbidden	D	40, 89, 90
	Nitric oxide and dinitrogen tetroxide mixtures *or* Nitric oxide and nitrogen dioxide mixtures.	2.3	UN1975		2.3, 5.1, 8.	1, B7, B9, B14, B45, B46, B61, B66, B67, B77	None	337	None	Forbidden	Forbidden	D	40, 89, 90
G	Nitriles, flammable, toxic, n.o.s.	3	UN3273	I	3, 6.1	T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	E	40, 52
				II	3, 6.1	IB2, T11, TP2, TP13, TP27	None	202	243	1 L	60 L	B	40, 52
G	Nitriles, toxic, flammable, n.o.s.	6.1	UN3275	I	6.1, 3	5, T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1, 3	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
G	Nitriles, toxic, n.o.s.	6.1	UN3276	I	6.1	5, T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	
				II	6.1	IB2, T11, TP2, TP27	None	202	243	5 L	60 L	B	
				III	6.1	IB3, T7, TP1, TP28	153	203	241	60 L	220 L	A	
	Nitrites, inorganic, aqueous solution, n.o.s..	5.1	UN3219	II	5.1	IB1, T4, TP1	152	202	242	1 L	5 L	B	46, 56, 58
				III	5.1	IB2, T4, TP1	152	203	241	2.5 L	30 L	B	46, 56, 58
	Nitrites, inorganic, n.o.s.	5.1	UN2627	II	5.1	33, IB8, IP4	152	212	None	5 kg	25 kg	A	46, 56, 58
	3-Nitro-4-chlorobenzotrifluoride	6.1	UN2307	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	40
	6-Nitro-4-diazotoluene-3-sulfonic acid (dry).	Forbidden											
	Nitro isobutane triol trinitrate	Forbidden											

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	N-Nitro-N-methylglycolamide nitrate.	Forbidden			.....		.....	.....	.....	.....	.....		.....
	2-Nitro-2-methylpropanol nitrate ..	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Nitro urea	1.1D	UN0147	II	1.1D ...		None	62	None	Forbidden	Forbidden	10	.....
	N-Nitroaniline	Forbidden			.....		.....	.....	.....	.....	.....		.....
+	Nitroanilines (*o-; m-; p-;*)	6.1	UN1661	II	6.1	IB8, IP2, IP4, T7, TP2	None	212	242	25 kg	100 kg	A	.....
+	Nitroanisole	6.1	UN2730	III	6.1	IB8, IP3, T4, TP1	153	213	240	100 kg	200 kg	A	.....
+	Nitrobenzene	6.1	UN1662	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	40
	m-Nitrobenzene diazonium perchlorate.	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Nitrobenzenesulfonic acid	8	UN2305	II	8	IB2	154	202	242	1 L	30 L	A	.....
	Nitrobenzol, see Nitrobenzene	.....			.....		.....	.....	.....	.....	.....		.....
	5-Nitrobenzotriazol	1.1D	UN0385	II	1.1D ...		None	62	None	Forbidden	Forbidden	10	.....
	Nitrobenzotrifluorides	6.1	UN2306	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	40
	Nitrobromobenzenes *liquid*	6.1	UN2732	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	.....
	Nitrobromobenzenes *solid*	6.1	UN2732	III	6.1	IB8, IP3, T4, TP1	153	213	240	100 kg	200 kg	A	.....
	Nitrocellulose, *dry or wetted with less than 25 percent water (or alcohol), by mass.*	1.1D	UN0340	II	1.1D ...		None	62	None	Forbidden	Forbidden	13	27E
	Nitrocellulose membrane filters, *with not more than 12.6% nitrogen, by dry mass.*	4.1	UN3270	II	4.1	43, A1	151	212	240	1 kg	15 kg	D	.....
	Nitrocellulose, plasticized *with not less than 18 percent plasticizing substance, by mass.*	1.3C	UN0343	II	1.3C ...		None	62	None	Forbidden	Forbidden	10	.....
	Nitrocellulose, solution, flammable *with not more than 12.6 percent nitrogen, by mass, and not more than 55 percent nitrocellulose.*	3	UN2059	II	3	IB2, T4, TP1, TP8	150	202	242	5 L	60 L	B	.....
	.....	.....		III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	Nitrocellulose, *unmodified or plasticized with less than 18 percent plasticizing substance, by mass.*	1.1D	UN0341	II	1.1D ...		None	62	None	Forbidden	Forbidden	13	27E
	Nitrocellulose, wetted *with not less than 25 percent alcohol, by mass.*	1.3C	UN0342	II	1.3C ...		None	62	None	Forbidden	Forbidden	10	.....
	Nitrocellulose with alcohol *with not less than 25 percent alcohol by mass, and with not more than 12.6 percent nitrogen, by dry mass.*	4.1	UN2556	II	4.1		151	212	None	1 kg	15 kg	D	28
	Nitrocellulose, *with not more than 12.6 percent nitrogen, by dry mass, or* Nitrocellulose mixture with pigment *or* Nitrocellulose mixture with plasticizer *or* Nitrocellulose mixture with pigment and plasticizer.	4.1	UN2557	II	4.1	44	151	212	None	1 kg	15 kg	D	28
	Nitrocellulose with water *with not less than 25 percent water, by mass.*	4.1	UN2555	II	4.1		151	212	None	15 kg	50 kg	E	28
	Nitrochlorobenzene, see Chloronitrobenzenes *etc.*	.....			.....		.....	.....	.....	.....	.....		.....
	Nitrocresols	6.1	UN2446	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	.....
	Nitroethane	3	UN2842	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	Nitroethyl nitrate	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Nitroethylene polymer	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Nitrogen, compressed	2.2	UN1066	.....	2.2		306	302	314, 315	75 kg	150 kg	A	.....
	Nitrogen dioxide, *see* Dinitrogen tetroxide.	.....			.....		.....	.....	.....	.....	.....		.....
	Nitrogen fertilizer solution, see Fertilizer ammoniating solution *etc.*	.....			.....		.....	.....	.....	.....	.....		.....
	Nitrogen, mixtures with rare gases, see Rare gases and nitrogen mixtures.	.....			.....		.....	.....	.....	.....	.....		.....
	Nitrogen peroxide, see Dinitrogen tetroxide.	.....			.....		.....	.....	.....	.....	.....		.....
	Nitrogen, refrigerated liquid *cryogenic liquid.*	2.2	UN1977	.....	2.2	T75, TP5	320	316	318	50 kg	500 kg	D	.....
	Nitrogen tetroxide and nitric oxide mixtures, see Nitric oxide and nitrogen tetroxide mixtures.	.....			.....		.....	.....	.....	.....	.....		.....
	Nitrogen tetroxide, see Dinitrogen tetroxide.	.....			.....		.....	.....	.....	.....	.....		.....
	Nitrogen trichloride	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Nitrogen trifluoride, compressed ..	2.2	UN2451	.....	2.2, 5.1		None	302	None	75 kg	150 kg	D	40
	Nitrogen triiodide	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Nitrogen triiodide monoamine	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Nitrogen trioxide	2.3	UN2421	.....	2.3, 5.1, 8.	1	None	336	245	Forbidden	Forbidden	D	40, 89, 90

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Nitroglycerin, desensitized *with not less than 40 percent non-volatile water insoluble phlegmatizer, by mass*.	1.1D	UN0143	II	1.1D, 6.1.	125	None	62	None	Forbidden	Forbidden	13	21E
	Nitroglycerin, liquid, not desensitized.	Forbidden											
	Nitroglycerin mixture, desensitized, liquid, flammable, n.o.s. *with not more than 30 percent nitroglycerin, by mass*.	3	UN3343		3	129	None	214	None	Forbidden	Forbidden	D	
	Nitroglycerin mixture, desensitized, liquid, n.o.s. *with not more than 30% nitroglycerin, by mass*.	3	UN3357	II	3	142	None	202	243	5 L	60 L	E	
	Nitroglycerin mixture, desensitized, solid, n.o.s. *with more than 2 percent but not more than 10 percent nitroglycerin, by mass*.	4.1	UN3319	II	4.1	118	None	None	None	Forbidden	0.5 kg	E	
	Nitroglycerin, solution in alcohol, *with more than 1 percent but not more than 5 percent nitroglycerin*.	3	UN3064	II	3	N8	None	202	None	Forbidden	5 L	E	
	Nitroglycerin, solution in alcohol, *with more than 1 percent but not more than 10 percent nitrogylcerin*.	1.1D	UN0144	II	1.1D		None	62	None	Forbidden	Forbidden	10	21E
	Nitroglycerin solution in alcohol *with not more than 1 percent nitroglycerin*.	3	UN1204	II	3	IB2, N34	None	202	None	5 L	60 L	B	
	Nitroguanidine nitrate	Forbidden											
	Nitroguanidine *or* Picrite, *dry or wetted with less than 20 percent water, by mass*.	1.1D	UN0282	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Nitroguanidine, wetted *or* Picrite, wetted *with not less than 20 percent water, by mass*.	4.1	UN1336	I	4.1	23, A8, A19, A20, N41	None	211	None	1 kg	15 kg	E	28
	1-Nitrohydantoin	Forbidden											
	Nitrohydrochloric acid	8	UN1798	I	8	A3, B10, N41, T10, TP2, TP12, TP13	None	201	243	Forbidden	2.5 L	D	40, 66, 74, 89, 90
	Nitromannite (dry)	Forbidden											
	Nitromannite, wetted, *see* Mannitol hexanitrate, *etc*.												
	Nitromethane	3	UN1261	II	3		150	202	None	Forbidden	Forbidden	A	
	Nitromuriatic acid, see Nitrohydrochloric acid.												
	Nitronaphthalene	4.1	UN2538	III	4.1	A1, IB8, IP3	151	213	240	25 kg	100 kg	A	
+	Nitrophenols (*o-; m-; p-;*)	6.1	UN1663	III	6.1	IB8, IP3, T4, TP3	153	213	240	100 kg	200 kg	A	
	m-Nitrophenyldinitro methane	Forbidden											
	Nitropropanes	3	UN2608	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	p-Nitrosodimethylaniline	4.2	UN1369	II	4.2	A19, A20, IB6, IP2, N34	None	212	241	15 kg	50 kg	D	34
	Nitrostarch, *dry or wetted with less than 20 percent water, by mass*.	1.1D	UN0146	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Nitrostarch, wetted *with not less than 20 percent water, by mass*.	4.1	UN1337	I	4.1	23, A8, A19, A20, N41	None	211	None	1 kg	15 kg	D	28
	Nitrosugars (dry)	Forbidden											
	Nitrosyl chloride	2.3	UN1069		2.3, 8	3, B14	None	304	314, 315	Forbidden	Forbidden	D	40
	Nitrosylsulfuric acid	8	UN2308	II	8	A3, A6, A7, B2, IB2, N34, T8, TP2, TP12	154	202	242	1 L	30 L	D	40, 66, 74, 89, 90
	Nitrotoluenes, *liquid o-; m-; p-;*	6.1	UN1664	II	6.1	IB2, IP2, IP4, T7, TP2	None	202	243	5 L	60 L	A	
	Nitrotoluenes, *solid m-, or p-*	6.1	UN1664	II	6.1	IB8, IP2, IP4, T7, TP2	None	212	242	25 kg	100 kg	A	
	Nitrotoluidines (mono)	6.1	UN2660	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
	Nitrotriazolone *or* NTO	1.1D	UN0490	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Nitrous oxide and carbon dioxide mixtures, see Carbon dioxide and nitrous oxide mixtures.												
	Nitrous oxide	2.2	UN1070		2.2, 5.1		306	304	314, 315	75 kg	150 kg	A	40
	Nitrous oxide, refrigerated liquid	2.2	UN2201		2.2, 5.1	B6, T75, TP5, TP22	None	304	314, 315	Forbidden	Forbidden	B	40
	Nitroxylenes, (o-; m-; p-)	6.1	UN1665	II	6.1	IB2, IP2, IP4, T7, TP2	None	202	243	5 L	60 L	A	
	Nitroxylol, see Nitroxylenes												
	Nonanes	3	UN1920	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Non-flammable gas, n.o.s., see Compressed gas, *etc. or* Liquefied gas, *etc*.												
	Nonliquefied gases, see Compressed gases, *etc*.												
	Nonliquefied hydrocarbon gas, see Hydrocarbon gas mixture, compressed, n.o.s..												

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Nonyltrichlorosilane	8	UN1799	II	8	A7, B2, B6, IB2, N34, T7, TP2, TP13	None	202	242	Forbidden	30 L	C	40
	Nordhausen acid, see Sulfuric acid, fuming *etc*.												
	2,5-Norbornadiene, stabilized, *see* Bicyclo *2,2,1* hepta-2,5-diene stabilized.												
	Octadecyltrichlorosilane	8	UN1800	II	8	A7, B2, B6, IB2, N34, T7, TP2, TP13	None	202	242	Forbidden	30 L	C	40
	Octadiene	3	UN2309	II	3	B1, IB2, T4, TP1	150	202	242	5 L	60 L	B	
	1,7-Octadine-3,5-diyne-1,8-dimethoxy-9-octadecynoic acid.	Forbidden											
	Octafluorobut-2-ene *or* Refrigerant gas R 1318.	2.2	UN2422		2.2		None	304	314, 315	75 kg	150 kg	A	
	Octafluorocyclobutane, *or* Refrigerant gas RC 1318.	2.2	UN1976		2.2	T50	None	304	314, 315	75 kg	150 kg	A	
	Octafluoropropane*or* Refrigerant gas R 218.	2.2	UN2424		2.2	T50	None	304	314, 315	75 kg	150 kg	A	
	Octanes	3	UN1262	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Octogen, *etc. see* Cyclotetramethylene tetranitramine, *etc.*.												
	Octolite *or* Octol, *dry or wetted with less than 15 percent water, by mass*.	1.1D	UN0266	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Octonal	1.1D	UN0496		1.1D		None	62	None	Forbidden	Forbidden	10	
	Octyl aldehydes	3	UN1191	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Octyltrichlorosilane	8	UN1801	II	8	A7, B2, B6, IB2, N34, T7, TP2, TP13	None	202	242	Forbidden	30 L	C	40
	Oil gas, compressed	2.3	UN1071		2.3, 2.1	6	None	304	314, 315	Forbidden	25 kg	D	40
	Oleum, see Sulfuric acid, fuming												
	Organic peroxide type A, liquid or solid.	Forbidden											
G	Organic peroxide type B, liquid	5.2	UN3101	II	5.2, 1	53	152	225	None	Forbidden	Forbidden	D	12, 40
G	Organic peroxide type B, liquid, temperature controlled.	5.2	UN3111	II	5.2, 1	53	None	225	None	Forbidden	Forbidden	D	2, 40
G	Organic peroxide type B, solid	5.2	UN3102	II	5.2, 1	53	152	225	None	Forbidden	Forbidden	D	12, 40
G	Organic peroxide type B, solid, temperature controlled.	5.2	UN3112	II	5.2, 1	53	None	225	None	Forbidden	Forbidden	D	2, 40
G	Organic peroxide type C, liquid	5.2	UN3103	II	5.2		152	225	None	5 L	10 L	D	12, 40
G	Organic peroxide type C, liquid, temperature controlled.	5.2	UN3113	II	5.2		None	225	None	Forbidden	Forbidden	D	2, 40
G	Organic peroxide type C, solid	5.2	UN3104	II	5.2		152	225	None	5 kg	10 kg	D	12, 40
G	Organic peroxide type C, solid, temperature controlled.	5.2	UN3114	II	5.2		None	225	None	Forbidden	Forbidden	D	2, 40
G	Organic peroxide type D, liquid	5.2	UN3105	II	5.2		152	225	None	5 L	10 L	D	12, 40
G	Organic peroxide type D, liquid, temperature controlled.	5.2	UN3115	II	5.2		None	225	None	Forbidden	Forbidden	D	2, 40
G	Organic peroxide type D, solid	5.2	UN3106	II	5.2		152	225	None	5 kg	10 kg	D	12, 40
G	Organic peroxide type D, solid, temperature controlled.	5.2	UN3116	II	5.2		None	225	None	Forbidden	Forbidden	D	2, 40
G	Organic peroxide type E, liquid	5.2	UN3107	II	5.2		152	225	None	10 L	25 L	D	12, 40
G	Organic peroxide type E, liquid, temperature controlled.	5.2	UN3117	II	5.2		None	225	None	Forbidden	Forbidden	D	2, 40
G	Organic peroxide type E, solid	5.2	UN3108	II	5.2		152	225	None	10 kg	25 kg	D	12, 40
G	Organic peroxide type E, solid, temperature controlled.	5.2	UN3118	II	5.2		None	225	None	Forbidden	Forbidden	D	2, 40
G	Organic peroxide type F, liquid	5.2	UN3109	II	5.2	IB52, IP5, T23	152	225	225	10 L	25 L	D	12, 40
G	Organic peroxide type F, liquid, temperature controlled.	5.2	UN3119	II	5.2	IB52, IP5, T23	None	225	225	Forbidden	Forbidden	D	2, 40
G	Organic peroxide type F, solid	5.2	UN3110	II	5.2	IB52, T23	152	225	225	10 kg	25 kg	D	12, 40
G	Organic peroxide type F, solid, temperature controlled.	5.2	UN3120	II	5.2	T23	None	225	225	Forbidden	Forbidden	D	2, 40
D	Organic phosphate, mixed with compressed gas *or* Organic phosphate compound, mixed with compressed gas *or* Organic phosphorus compound, mixed with compressed gas.	2.3	NA1955		2.3	3	None	334	None	Forbidden	Forbidden	D	40
	Organic pigments, self-heating	4.2	UN3313	II	4.2	IB8, IP4	None	212	241	15 kg	50 kg	C	
				III	4.2	IB8, IP3	None	213	241	25 kg	100 kg	C	
	Organoarsenic compound, n.o.s.	6.1	UN3280	I	6.1	5, IB7, IP1, T14, TP2, TP27	None	211	242	5 kg	50 kg	B	
				II	6.1	IB8, IP2, IP4, T11, TP2, TP27	None	212	242	25 kg	100 kg	B	
				III	6.1	IB8, IP3, T7, TP1, TP28	153	213	240	100 kg	200 kg	A	
	Organochlorine pesticides liquid, flammable, toxic, *flash point less than 23 degrees C*.	3	UN2762	I	3, 6.1	T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	B	40
				II	3, 6.1	IB2, T11, TP2, TP13, TP27	None	202	243	1 L	60 L	B	40
	Organochlorine pesticides, liquid, toxic.	6.1	UN2996	I	6.1	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	.....	.....		II	6.1	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
	.....	.....		III	6.1	IB3, T7, TP2, TP28	153	203	241	60 L	220 L	A	40
	Organochlorine pesticides, liquid, toxic, flammable, *flash point not less than 23 degrees C*.	6.1	UN2995	I	6.1, 3	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
	.....	.....		II	6.1, 3	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
	.....	.....		III	6.1	B1, IB3, T7, TP2, TP28	153	203	242	60 L	220 L	A	40
	Organochlorine pesticides, solid toxic.	6.1	UN2761	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	40
	.....	.....		II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	40
	.....	.....		III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	40
G	Organometallic compound *or* Compound solution *or* Compound dispersion, water-reactive, flammable, n.o.s..	4.3	UN3207	I	4.3, 3	T13, TP2, TP7	None	201	244	Forbidden	1 L	E	40
	.....	.....		II	4.3, 3	IB1, IP2, T7, TP2, TP7	None	202	243	1 L	5 L	E	40
	.....	.....		III	4.3, 3	IB2, IP4, T7, TP2, TP7	None	203	242	5 L	60 L	E	40
G	Organometallic compound, toxic n.o.s..	6.1	UN3282	I	6.1	IB7, IP1, T14, TP2, TP27	None	211	242	5 kg	50 kg	B	.....
	.....	.....		II	6.1	IB8, IP2, IP4, T11, TP2, TP27	None	212	242	25 kg	100 kg	B	.....
	.....	.....		III	6.1	IB8, IP3, T7, TP1, TP28	153	213	240	100 kg	200 kg	A	.....
	Organophosphorus compound, toxic, flammable, n.o.s..	6.1	UN3279	I	6.1, 3	5, T14, TP2, TP13	None	201	243	1 L	30 L	B	40
	.....	.....		II	6.1, 3	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
	Organophosphorus compound, toxic n.o.s..	6.1	UN3278	I	6.1	5, IB7, T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	.....
	.....	.....		II	6.1	IB2, T11, TP2, TP27	None	202	243	5 L	60 L	B	.....
	.....	.....		III	6.1	IB3, T7, TP1, TP28	153	203	241	60 L	220 L	A	.....
	Organophosphorus pesticides, liquid, flammable, toxic, *flash point less than 23 degrees C*.	3	UN2784	I	3, 6.1	T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	B	40
	.....	.....		II	3, 6.1	IB2, T11, TP2, TP13, TP27	None	202	243	1 L	60 L	B	40
	Organophosphorus pesticides, liquid, toxic.	6.1	UN3018	I	6.1	N76, T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
	.....	.....		II	6.1	IB2, N76, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
	.....	.....		III	6.1	IB3, N76, T7, TP2, TP28	153	203	241	60 L	220 L	A	40
	Organophosphorus pesticides, liquid, toxic, flammable, *flash point not less than 23 degrees C*.	6.1	UN3017	I	6.1, 3	N76, T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
	.....	.....		II	6.1, 3	IB2, N76, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
	.....	.....		III	6.1, 3	B1, IB3, N76, T7, TP2, TP28	153	203	242	60 L	220 L	A	40
	Organophosphorus pesticides, solid, toxic.	6.1	UN2783	I	6.1	IB7, IP1, N77	None	211	242	5 kg	50 kg	A	40
	.....	.....		II	6.1	IB8, IP2, IP4, N77	None	212	242	25 kg	100 kg	A	40
	.....	.....		III	6.1	IB8, IP3, N77	153	213	240	100 kg	200 kg	A	40
	Organotin compounds, liquid, n.o.s..	6.1	UN2788	I	6.1	A3, N33, N34, T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
	.....	.....		II	6.1	A3, IB2, N33, N34, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	A	40
	.....	.....		III	6.1	IB3, T7, TP2, TP28	153	203	241	60 L	220 L	A	40
	Organotin compounds, solid, n.o.s..	6.1	UN3146	I	6.1	A5, IB7, IP1	None	211	242	5 kg	50 kg	B	40
	.....	.....		II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	40
	.....	.....		III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	40
	Organotin pesticides, liquid, flammable, toxic, *flash point less than 23 degrees C*.	3	UN2787	I	3, 6.1	T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	B	40
	.....	.....		II	3, 6.1	IB2, T11, TP2, TP13, TP27	None	202	243	1 L	60 L	B	40
	Organotin pesticides, liquid, toxic	6.1	UN3020	I	6.1	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
	.....	.....		II	6.1	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
	.....	.....		III	6.1	IB3, T7, TP2, TP28	153	203	241	60 L	220 L	A	40

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Organotin pesticides, liquid, toxic, flammable, *flash point not less than 23 degrees C.*	6.1	UN3019	I	6.1, 3	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1, 3	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
				III	6.1, 3	B1, IB3, T7, TP2, TP28	153	203	242	60 L	220 L	A	40
	Organotin pesticides, solid, toxic	6.1	UN2786	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	40
				II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	40
				III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	40
	Orthonitroaniline, see Nitroanilines *etc.*												
	Osmium tetroxide	6.1	UN2471	I	6.1	A8, IB7, IP1, N33, N34	None	211	242	5 kg	50 kg	B	40
D G	Other regulated substances, liquid, n.o.s..	9	NA3082	III	9	IB3, T2, TP1	155	203	241	No limit	No limit	A	
D G	Other regulated substances, solid, n.o.s..	9	NA3077	III	9	B54, IB8, IP2	155	213	240	No limit	No limit	A	
G	Oxidizing liquid, corrosive, n.o.s.	5.1	UN3098	I	5.1, 8		None	201	244	Forbidden	2.5 L	D	13, 56, 58, 69, 106
				II	5.1, 8	IB1	None	202	243	1 L	5 L	B	34, 56, 58, 69, 106
				III	5.1, 8	IB2	152	203	242	2.5 L	30 L	B	34, 56, 58, 69, 106
G	Oxidizing liquid, n.o.s.	5.1	UN3139	I	5.1	127, A2	None	201	243	Forbidden	2.5 L	D	56, 58, 69, 106
				II	5.1	127, A2, IB2	152	202	242	1 L	5 L	B	56, 58, 69, 106
				III	5.1	127, A2, IB2	152	203	241	2.5 L	30 L	B	56, 58, 69, 106
G	Oxidizing liquid, toxic, n.o.s.	5.1	UN3099	I	5.1, 6.1		None	201	244	Forbidden	2.5 L	D	56, 58, 69, 106
				II	5.1, 6.1	IB1	None	202	243	1 L	5 L	B	56, 58, 95, 106
				III	5.1, 6.1	IB2	152	203	242	2.5 L	30 L	B	56, 58, 95, 106
G	Oxidizing solid, corrosive, n.o.s.	5.1	UN3085	I	5.1, 8		None	211	242	1 kg	15 kg	D	13, 56, 58, 69, 106
				II	5.1, 8	IB6, IP2	None	212	242	5 kg	25 kg	B	13, 34, 56, 58, 69, 106
				III	5.1, 8	IB8, IP3	152	213	240	25 kg	100 kg	B	13, 34, 56, 58, 69, 106
G	Oxidizing solid, flammable, n.o.s.	5.1	UN3137	I	5.1, 4.1		None	214	214	Forbidden	Forbidden		
G	Oxidizing solid, n.o.s.	5.1	UN1479	I	5.1	IB6, IP1	None	211	242	1 kg	15 kg	D	56, 58, 69, 106
				II	5.1	IB8, IP2, IP4	152	212	240	5 kg	25 kg	B	56, 58, 69, 106
				III	5.1	IB8, IP3	152	213	240	25 kg	100 kg	B	56, 58, 69, 106
G	Oxidizing solid, self-heating, n.o.s..	5.1	UN3100	II	5.1, 4.2		None	214	214	Forbidden	Forbidden		
G	Oxidizing solid, toxic, n.o.s.	5.1	UN3087	I	5.1, 6.1		None	211	242	1 kg	15 kg	D	56, 58, 69, 106
				II	5.1, 6.1	IB6, IP2	None	212	242	5 kg	25 kg	B	56, 58, 69, 95, 106
				III	5.1, 6.1	IB8, IP3	152	213	240	25 kg	100 kg	B	56, 58, 69, 95, 106
G	Oxidizing solid, water-reactive, n.o.s..	5.1	UN3121		5.1, 4.3		None	214	214	Forbidden	Forbidden		
	Oxygen and carbon dioxide mixtures, see Carbon dioxide and oxygen mixtures.												
	Oxygen, compressed	2.2	UN1072		2.2, 5.1	A52	306	302	314, 315	75 kg	150 kg	A	
	Oxygen difluoride, compressed	2.3	UN2190		2.3, 5.1, 8.	1	None	304	None	Forbidden	Forbidden	D	13, 40, 89, 90
	Oxygen generator, chemical *(including when contained in associated equipment, e.g., passenger service units (PSUs), portable breathing equipment (PBE), etc).*.	5.1	UN3356	II	5.1	60, A51	None	212	None	Forbidden	25 kg gross	D	56, 58, 69, 106
+	Oxygen generator, chemical, spent.	9	NA3356	III	9	61	None	213	None	Forbidden	Forbidden	A	
	Oxygen, mixtures with rare gases, see Rare gases and oxygen mixtures.												
	Oxygen, refrigerated liquid *(cryogenic liquid)*.	2.2	UN1073		2.2, 5.1	T75, TP5, TP22	320	316	318	Forbidden	Forbidden	D	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Paint *including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler, and liquid lacquer base*.	3	UN1263	I	3	T11, TP1, TP8	150	201	243	1 L	30 L	E	
				II	3	B52, IB2, T4, TP1, TP8	150	173	242	5 L	60 L	B	
				III	3	B1, B52, IB3, T2, TP1	150	173	242	60 L	220 L	A	
	Paint *or* Paint related material	8	UN3066	II	8	B2, IB2, T7, TP2	154	173	242	1 L	30 L	A	
				III	8	B52, IB3, T4, TP1	154	173	241	5 L	60 L	A	
	Paint related material *including paint thinning, drying, removing, or reducing compound*.	3	UN1263	I	3	T11, TP1, TP8	150	201	243	1 L	30 L	E	
				II	3	B52, IB2, T4, TP1, TP8	150	173	242	5 L	60 L	B	
				III	3	B1, B52, IB3, T2, TP1	150	173	242	60 L	220 L	A	
	Paper, unsaturated oil treated *incompletely dried (including carbon paper)*.	4.2	UN1379	III	4.2	IB8, IP3	None	213	241	Forbidden	Forbidden	A	
	Paraformaldehyde	4.1	UN2213	III	4.1	A1, IB8, IP3	151	213	240	25 kg	100 kg	A	
	Paraldehyde	3	UN1264	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Paranitroaniline, solid, see Nitroanilines *etc*.												
D	Parathion and compressed gas mixture.	2.3	NA1967		2.3	3	None	334	245	Forbidden	Forbidden	E	40
	Paris green, solid, see Copper acetoarsenite.												
A W	PCB, *see* Polychlorinated biphenyls.												
+	Pentaborane	4.2	UN1380	I	4.2, 6.1	1	None	205	245	Forbidden	Forbidden	D	
	Pentachloroethane	6.1	UN1669	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	40
	Pentachlorophenol	6.1	UN3155	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Pentaerythrite tetranitrate (dry)	Forbidden											
	Pentaerythrite tetranitrate mixture, desensitized, solid, n.o.s. *with more than 10 percent but not more than 20 percent PETN, by mass*.	4.1	UN3344	II	4.1	118	None	214	None	Forbidden	Forbidden	E	40
	Pentaerythrite tetranitrate *or* Pentaerythritol tetranitrate *or* PETN, *with not less than 7 percent wax by mass*.	1.1D	UN0411	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Pentaerythrite tetranitrate, wetted *or* Pentaerythritol tetranitrate, wetted, *or* PETN, wetted *with not less than 25 percent water, by mass, or* Pentaerythrite tetranitrate, *or* Pentaerythritol tetranitrate *or* PETN, desensitized *with not less than 15 percent phlegmatizer by mass*.	1.1D	UN0150	II	1.1D	121	None	62	None	Forbidden	Forbidden	10	
	Pentaerythritol tetranitrate, *see* Pentaerythrite tetranitrate, *etc*.												
	Pentafluoroethane *or* Refrigerant gas R 125.	2.2	UN3220		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	Pentamethylheptane	3	UN2286	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Pentane-2,4-dione	3	UN2310	III	3, 6.1	B1, IB3, T4, TP1	150	203	242	60 L	220 L	A	
	Pentanes	3	UN1265	I	3	T11, TP2	150	201	243	1 L	30 L	E	
				II	3	IB2, IP8, T4, TP1	150	202	242	5 L	60 L	E	
	Pentanitroaniline (dry)	Forbidden											
	Pentanols	3	UN1105	II	3	IB2, T4, TP1, TP29	150	202	242	5 L	60 L	B	
				III	3	B1, B3, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	1-Pentene *(n-amylene)*	3	UN1108	I	3	T11, TP2	150	201	243	1 L	30 L	E	
	1-Pentol	8	UN2705	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	B	38
	Pentolite, *dry or wetted with less than 15 percent water, by mass*.	1.1D	UN0151	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Pepper spray, see Aerosols, *etc. or* Self-defense spray, non-pressurized.												
	Perchlorates, inorganic, aqueous solution, n.o.s..	5.1	UN3211	II	5.1	IB2, T4, TP1	152	202	242	1 L	5 L	B	46, 56, 58
				III	5.1	IB2, T4, TP1	152	202	241	2.5 L	30 L	B	56, 58, 69, 106
	Pepper spray, see Aerosols, etc. or Self-defense spray, non-pressurized.			III	5.1		152	203	241	2.5 L	30 L	B	56, 58, 69, 106
	Perchlorates, inorganic, n.o.s.	5.1	UN1481	II	5.1	IB6, IP2	152	212	242	5 kg	25 kg	A	46, 56
				III	5.1	IB8, IP3	152	213	240	25 kg	100 kg	A	46, 56
	Perchloric acid, with more than 72 percent acid by mass.	Forbidden											
	Perchloric acid *with more than 50 percent but not more than 72 percent acid, by mass*.	5.1	UN1873	I	5.1, 8	A2, A3, N41, T10, TP1, TP12	None	201	243	Forbidden	2.5 L	D	66

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Perchloric acid *with not more than 50 percent acid by mass*.	8	UN1802	II	8, 5.1	IB2, N41, T7, TP2	None	202	243	Forbidden	30 L	C	66
	Perchloroethylene, see Tetrachloroethylene.												
	Perchloromethyl mercaptan	6.1	UN1670	I	6.1	2, A3, A7, B9, B14, B32, B74, N34, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Perchloryl fluoride	2.3	UN3083		2.3, 5.1	2, B9, B14	None	302	314, 315	Forbidden	Forbidden	D	40
	Percussion caps, see Primers, cap type.												
	Perfluoro-2-butene, see Octafluorobut-2-ene.												
	Perfluoro(ethyl vinyl ether)	2.1	UN3154		2.1		306	302, 304, 305.	314, 315	Forbidden	150 kg	E	40
	Perfluoro(methyl vinyl ether)	2.1	UN3153		2.1	T50	306	302, 304, 305.	314, 315	Forbidden	150 kg	E	40
	Perfumery products *with flammable solvents*.	3	UN1266	II	3	IB2, T4, TP1, TP8	150	202	242	15 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Permanganates, inorganic, aqueous solution, n.o.s..	5.1	UN3214	II	5.1	26, IB2, T4, TP1	152	202	242	1 L	5 L	D	56, 58, 69, 106, 107
	Permanganates, inorganic, n.o.s.	5.1	UN1482	II	5.1	26, A30, IB6, IP2	152	212	242	5 kg	25 kg	D	56, 58, 69, 106, 107
				III	5.1	26, A30, IB8, IP3	152	213	240	25 kg	100 kg	D	56, 58, 69, 106, 107
	Peroxides, inorganic, n.o.s.	5.1	UN1483	II	5.1	A7, A20, IB6, IP2, N34	None	212	242	5 kg	25 kg	A	13, 75, 106
				III	5.1	A7, A20, IB8, IP3, N34	152	213	240	25 kg	100 kg	A	13, 75, 106
	Peroxyacetic acid, with more than 43 percent and with more than 6 percent hydrogen peroxide.	Forbidden											
	Persulfates, inorganic, aqueous solution, n.o.s..	5.1	UN3216	III	5.1	IB2, T4, TP1, TP29	152	203	241	2.5 L	30 L	A	
	Persulfates, inorganic, n.o.s.	5.1	UN3215	III	5.1	IB8, IP3	152	213	240	25 kg	100 kg	A	
G	Pesticides, liquid, flammable, toxic, *flash point less than 23 degrees C*.	3	UN3021	I	3, 6.1	B5, T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	B	
				II	3, 6.1	IB2, T11, TP2, TP13, TP27	None	202	243	1 L	60 L	B	
G	Pesticides, liquid, toxic, flammable, n.o.s. *flash point not less than 23 degrees C*.	6.1	UN2903	I	6.1, 3	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1, 3	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
				III	6.1, 3	B1, IB3, T7, TP2	153	203	242	60 L	220 L	A	40
G	Pesticides, liquid, toxic, n.o.s.	6.1	UN2902	I	6.1	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
				III	6.1	IB3, T7, TP2, TP28	153	203	241	60 L	220 L	A	40
G	Pesticides, solid, toxic, n.o.s.	6.1	UN2588	I	6.1	IB7	None	211	242	5 kg	50 kg	A	40
				II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	40
				III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	40
	PETN, *see* Pentaerythrite tetranitrate.												
	PETN/TNT, *see* Pentolite, *etc*												
	Petrol, *see* Gasoline												
	Petroleum crude oil	3	UN1267	I	3	T11, TP1, TP8	None	201	243	1 L	30 L	E	
				II	3	IB2, T4, TP1, TP8	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Petroleum distillates, n.o.s. *or* Petroleum products, n.o.s..	3	UN1268	I	3	T11, TP1, TP8	150	201	243	1 L	30 L	E	
				II	3	IB2, T7, TP1, TP8, TP28	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T4, TP1, TP29	150	203	242	60 L	220 L	A	
	Petroleum gases, liquefied *or* Liquefied petroleum gas.	2.1	UN1075		2.1	T50	306	304	314, 315	Forbidden	150 kg	E	40
D	Petroleum oil	3	NA1270	I	3	T11, TP1, TP9	None	201	243	1 L	30 L	E	
				II	3	IB2, T7, TP1, TP8, TP28	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T4, TP1, TP29	150	203	242	60 L	220 L	A	
	Phenacyl bromide	6.1	UN2645	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	B	40
+	Phenetidines	6.1	UN2311	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	Phenol, molten	6.1	UN2312	II	6.1	B14, T7, TP3	None	202	243	Forbidden	Forbidden	B	40

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
+	Phenol, solid	6.1	UN1671	II	6.1	IB8, IP2, IP4, N78, T6, TP2	None	212	242	25 kg	100 kg	A	
	Phenol solutions	6.1	UN2821	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	
				III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	Phenolsulfonic acid, liquid	8	UN1803	II	8	B2, IB2, N41, T7, TP2	154	202	242	1 L	30 L	C	14
	Phenoxyacetic acid derivative pesticide, liquid, flammable, toxic *flash point less than 23 degrees C.*.	3	UN3346	I	3, 6.1	T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	B	40
				II	3, 6.1	IB2, T11, TP2, TP13, TP27	None	202	243	1 L	60 L	B	40
	Phenoxyacetic acid derivative pesticide, liquid, toxic.	6.1	UN3348	I	6.1	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1	IB2, T11, TP2, TP27	153	202	243	5 L	60 L	B	40
				III	6.1	IB3, T7, TP2, TP28	153	203	241	60 L	220 L	A	40
	Phenoxyacetic acid derivative pesticide, liquid, toxic, flammable, *flash point not less than 23 degrees C.*	6.1	UN3347	I	6.1, 3	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1, 3	IB2, T11, TP2, TP13, TP27	153	202	243	5 L	60 L	B	40
				III	6.1, 3	IB3, T7, TP2, TP28	153	203	241	60 L	220 L	A	40
	Phenoxyacetic acid derivative pesticide, solid, toxic.	6.1	UN3345	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	40
				II	6.1	IB8, IP2, IP4	153	212	242	25 kg	100 kg	A	40
				III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	40
	Phenyl chloroformate	6.1	UN2746	II	6.1, 8	IB2, T7, TP2, TP13	None	202	243	1 L	30 L	A	12, 13, 21, 25, 40, 100
	Phenyl isocyanate	6.1	UN2487	I	6.1, 3	2, B9, B14, B32, B74, B77, N33, N34, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Phenyl mercaptan	6.1	UN2337	I	6.1, 3	2, B9, B14, B32, B74, B77, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	B	26, 40
	Phenyl phosphorus dichloride	8	UN2798	II	8	B2, B15, IB2, T7, TP2	154	202	242	Forbidden	30 L	B	40
	Phenyl phosphorus thiodichloride	8	UN2799	II	8	B2, B15, IB2, T7, TP2	154	202	242	Forbidden	30 L	B	40
	Phenyl urea pesticides, liquid, toxic.	6.1	UN3002	I	6.1	T14, TP2, TP27	None	201	243	1 L	30 L	B	40
				II	6.1	T7, TP2	None	202	243	5 L	60 L	B	40
				III	6.1	T4, TP1	153	203	241	60 L	220 L	A	40
	Phenylacetonitrile, liquid	6.1	UN2470	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	26
	Phenylacetyl chloride	8	UN2577	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	C	40
	Phenylcarbylamine chloride	6.1	UN1672	I	6.1	2, B9, B14, B32, B74, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	m-Phenylene diaminediperchlorate (dry).	Forbidden											
+	Phenylenediamines *(o-, m-, p-)*	6.1	UN1673	III	6.1	IB8, IP3, T7, TP1	153	213	240	100 kg	200 kg	A	
	Phenylhydrazine	6.1	UN2572	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	40
	Phenylmercuric acetate	6.1	UN1674	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Phenylmercuric compounds, n.o.s..	6.1	UN2026	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	
				II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
				III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
	Phenylmercuric hydroxide	6.1	UN1894	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Phenylmercuric nitrate	6.1	UN1895	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Phenyltrichlorosilane	8	UN1804	II	8	A7, B6, IB2, N34, T7, TP2	None	202	242	Forbidden	30 L	C	40
	Phosgene	2.3	UN1076		2.3, 8	1, B7, B46	None	192	314	Forbidden	Forbidden	D	40
	9-Phosphabicyclononanes *or* Cyclooctadiene phosphines.	4.2	UN2940	II	4.2	A19, IB6, IP2	None	212	241	15 kg	50 kg	A	
	Phosphine	2.3	UN2199		2.3, 2.1	1	None	192	245	Forbidden	Forbidden	D	40
	Phosphoric acid	8	UN1805	III	8	A7, IB3, IP3, N34, T4, TP1	154	203	241	5 L	60 L	A	
	Phosphoric acid triethyleneimine, see Tris-(1-aziridiyl)phosphine oxide, solution.												
	Phosphoric anhydride, see Phosphorus pentoxide.												
	Phosphorous acid	8	UN2834	III	8	IB8, IP3, T3, TP1	154	213	240	25 kg	100 kg	A	48
	Phosphorus, amorphous	4.1	UN1338	III	4.1	A1, A19, B1, B9, B26, IB8, IP3	None	213	243	25 kg	100 kg	A	74
	Phosphorus bromide, see Phosphorus tribromide.												
	Phosphorus chloride, see Phosphorus trichloride.												

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Phosphorus heptasulfide, *free from yellow or white phosphorus*.	4.1	UN1339	II	4.1	A20, IB4, N34	None	212	240	15 kg	50 kg	B	74
	Phosphorus oxybromide	8	UN1939	II	8	B8, IB8, IP2, IP4, N41, N43, T7, TP2	None	212	240	Forbidden	50 kg	C	12, 40
	Phosphorus oxybromide, molten	8	UN2576	II	8	B2, B8, IB1, N41, N43, T7, TP3, TP13	None	202	242	Forbidden	Forbidden	C	40
+	Phosphorus oxychloride	8	UN1810	II	8, 6.1	2, A7, B9, B14, B32, B74, B77, N34, T20, TP2, TP38, TP45	None	227	244	Forbidden	Forbidden	C	40
	Phosphorus pentabromide	8	UN2691	II	8	A7, IB8, IP2, IP4, N34	154	212	240	Forbidden	50 kg	B	12, 40
	Phosphorus pentachloride	8	UN1806	II	8	A7, IB8, IP2, IP4, N34	None	212	240	Forbidden	50 kg	C	40
	Phosphorus pentafluoride, compressed.	2.3	UN2198		2.3, 8	2, B9, B14	None	302, 304	314, 315	Forbidden	Forbidden	D	40
	Phosphorus pentasulfide, *free from yellow or white phosphorus*.	4.3	UN1340	II	4.3, 4.1	A20, B59, IB4	151	212	242	15 kg	50 kg	B	74
	Phosphorus pentoxide	8	UN1807	II	8	A7, IB8, IP2, IP4, N34	154	212	240	15 kg	50 kg	A	
	Phosphorus sesquisulfide, *free from yellow or white phosphorus*.	4.1	UN1341	II	4.1	A20, IB4, N34	None	212	240	15 kg	50 kg	B	74
	Phosphorus tribromide	8	UN1808	II	8	A3, A6, A7, B2, B25, IB2, N34, N43, T7, TP2	None	202	242	Forbidden	30 L	C	40
	Phosphorus trichloride	6.1	UN1809	I	6.1, 8	2, B9, B14, B15, B32, B74, B77, N34, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	C	40
	Phosphorus trioxide	8	UN2578	III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	12
	Phosphorus trisulfide, *free from yellow or white phosphorus*.	4.1	UN1343	II	4.1	A20, IB4, N34	None	212	240	15 kg	50 kg	B	74
	Phosphorus, white dry *or* Phosphorus, white, under water *or* Phosphorus white, in solution *or* Phosphorus, yellow dry *or* Phosphorus, yellow, under water *or* Phosphorus, yellow, in solution.	4.2	UN1381	I	4.2, 6.1	B9, B26, N34, T9, TP3	None	188	243	Forbidden	Forbidden	E	
	Phosphorus white, molten	4.2	UN2447	I	4.2, 6.1	B9, B26, N34, T21, TP3, TP7, TP26	None	188	243	Forbidden	Forbidden	D	
	Phosphorus (white or red) and a chlorate, mixtures of.	Forbidden											
	Phosphoryl chloride, see Phosphorus oxychloride.												
	Phthalic anhydride *with more than .05 percent maleic anhydride*.	8	UN2214	III	8	IB8, IP3, T4, TP3	154	213	240	25 kg	100 kg	A	
	Picolines	3	UN2313	III	3	B1, IB3, T4, TP1	150	203	242	60 L	220 L	A	40
	Picric acid, *see* Trinitrophenol, *etc*												
	Picrite, *see* Nitroguanidine, *etc*												
	Picryl chloride, *see* Trinitrochlorobenzene.												
	Pine oil	3	UN1272	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	alpha-Pinene	3	UN2368	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Piperazine	8	UN2579	III	8	IB8, IP3, T4, TP1	154	213	240	25 kg	100 kg	A	12
	Piperidine	8	UN2401	I	8, 3	T10, TP2	None	201	243	0.5 L	2.5 L	B	
	Pivaloyl chloride, see Trimethylacetyl chloride.												
	Plastic molding compound *in dough, sheet or extruded rope form evolving flammable vapor*.	9	UN3314	III	9	32, IB8, IP6	155	221	221	100 kg	200 kg	A	85, 87
	Plastic solvent, n.o.s., see Flammable liquids, n.o.s..												
	Plastics, nitrocellulose-based, self-heating, n.o.s..	4.2	UN2006	III	4.2		None	213	None	Forbidden	Forbidden	C	
	Poisonous gases, n.o.s., see Compressed *or* liquefied gases, flammable *or* toxic, n.o.s..												
	Polyalkylamines, n.o.s., see Amines, *etc.*												
	Polychlorinated biphenyls, liquid	9	UN2315	II	9	9, 81, 140, IB3, T4, TP1	155	202	241	100 L	220 L	A	95
	Polychlorinated biphenyls, solid	9	UN2315	II	9	9, 81, 140, IB7	155	212	240	100 kg	200 kg	A	95
	Polyester resin kit	3	UN3269		3	40	152	225	None	5 kg	5 kg	B	
	Polyhalogenated biphenyls, liquid *or* Polyhalogenated terphenyls liquid.	9	UN3151	II	9	IB3	155	204	241	100 L	220 L	A	95
	Polyhalogenated biphenyls, solid *or* Polyhalogenated terphenyls, solid.	9	UN3152	II	9	IB8, IP2, IP4	155	204	241	100 kg	200 kg	A	95

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Polymeric beads, expandable, *evolving flammable vapor*.	9	UN2211	III	None	32, IB8, IP6	155	221	221	100 kg	200 kg	A	85, 87
	Potassium	4.3	UN2257	I	4.3	A19, A20, B27, IB1, IP1, N6, N34, T9, TP3, TP7	None	211	244	Forbidden	15 kg	D	
	Potassium arsenate	6.1	UN1677	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Potassium arsenite	6.1	UN1678	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Potassium bisulfite solution, see Bisulfites, aqueous solutions, n.o.s..												
	Potassium borohydride	4.3	UN1870	I	4.3	A19, N40	None	211	242	Forbidden	15 kg	E	
	Potassium bromate	5.1	UN1484	II	5.1	IB8, IP4	152	212	242	5 kg	25 kg	A	56, 58, 106
	Potassium carbonyl	Forbidden											
	Potassium chlorate	5.1	UN1485	II	5.1	A9, IB8, IP4, N34	152	212	242	5 kg	25 kg	A	56, 58, 106
	Potassium chlorate, aqueous solution.	5.1	UN2427	II	5.1	A2, IB2, T4, TP1	152	202	241	1 L	5 L	B	56, 58, 106
				III	5.1	A2, IB2, T4, TP1	152	203	241	2.5 L	30 L	B	56, 58, 69, 106
	Potassium chlorate mixed with mineral oil, see Explosive, blasting, type C.												
	Potassium cuprocyanide	6.1	UN1679	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	26
	Potassium cyanide	6.1	UN1680	I	6.1	B69, B77, IB7, IP1, N74, N75, T14, TP2, TP13	None	211	242	5 kg	50 kg	B	52
	Potassium dichloro isocyanurate or Potassium dichloro-s-triazinetrione, see Dichloroisocyanuric acid, dry *or* Dichloroisocyanuric acid salts *etc*.												
	Potassium dithionite *or* Potassium hydrosulfite.	4.2	UN1929	II	4.2	A8, A19, A20, IB6, IP2	None	212	241	15 kg	50 kg	E	13
	Potassium fluoride	6.1	UN1812	III	6.1	IB8, IP3, T4, TP1	153	213	240	100 kg	200 kg	A	26
	Potassium fluoroacetate	6.1	UN2628	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	E	
	Potassium fluorosilicate	6.1	UN2655	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	26
	Potassium hydrate, see Potassium hydroxide, solid.												
	Potassium hydrogen fluoride, see Potassium hydrogen difluoride.												
	Potassium hydrogen fluoride solution, see Corrosive liquid, n.o.s..												
	Potassium hydrogen sulfate	8	UN2509	II	8	A7, IB8, IP2, IP4, N34	154	212	240	15 kg	50 kg	A	
	Potassium hydrogendifluoride, *solid*.	8	UN1811	II	8, 6.1	IB8, IP2, IP4, N3, N34, T7, TP2	154	212	240	15 kg	50 kg	A	25, 26, 40
	Potassium hydrogendifluoride, *solution*.	8	UN1811	II	8, 6.1	IB8, IP2, IP4, N3, N34, T7, TP2	154	202	243	1 L	30 L	A	25, 26, 40
	Potassium hydrosulfite, *see* Potassium dithionite.												
	Potassium hydroxide, liquid, see Potassium hydroxide solution.												
	Potassium hydroxide, solid	8	UN1813	II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	A	
	Potassium hydroxide, solution	8	UN1814	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	A	
				III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Potassium hypochlorite, solution, see Hypochlorite solutions, *etc*.												
	Potassium, metal alloys	4.3	UN1420	I	4.3	A19, A20, B27, IB4, IP1	None	211	244	Forbidden	15 kg	D	
	Potassium metal, liquid alloy, see Alkali metal alloys, liquid, n.o.s..												
	Potassium metavanadate	6.1	UN2864	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Potassium monoxide	8	UN2033	II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	A	
	Potassium nitrate	5.1	UN1486	III	5.1	A1, A29, IB8, IP3	152	213	240	25 kg	100 kg	A	
	Potassium nitrate and sodium nitrite mixtures.	5.1	UN1487	II	5.1	B78, IB8, IP4	152	212	240	5 kg	25 kg	A	56, 58
	Potassium nitrite	5.1	UN1488	II	5.1	IB8, IP4	152	212	242	5 kg	25 kg	A	56, 58
	Potassium perchlorate, solid	5.1	UN1489	II	5.1	IB6, IP2	152	212	242	5 kg	25 kg	A	56, 58, 106
	Potassium perchlorate, solution	5.1	UN1489	II	5.1	IB2, T4, TP1	152	202	242	1 L	5 L	A	56, 58, 106
	Potassium permanganate	5.1	UN1490	II	5.1	IB8, IP4	152	212	240	5 kg	25 kg	D	56, 58, 69, 106, 107
	Potassium peroxide	5.1	UN1491	I	5.1	A20, IB6, IP1, N34	None	211	None	Forbidden	15 kg	B	13, 75, 106
	Potassium persulfate	5.1	UN1492	III	5.1	A1, A29, IB8, IP3	152	213	240	25 kg	100 kg	A	
	Potassium phosphide	4.3	UN2012	I	4.3, 6.1	A19, N40	None	211	None	Forbidden	15 kg	E	40, 85
	Potassium selenate, see Selenates *or* Selenites.												
	Potassium selenite, see Selenates *or* Selenites.												

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Potassium sodium alloys	4.3	UN1422	I	4.3	A19, B27, IB4, IP1, N34, N40, T9, TP3, TP7	None	211	244	Forbidden	15 kg	D	
	Potassium sulfide, anhydrous *or* Potassium sulfide *with less than 30 percent water of crystallization*.	4.2	UN1382	II	4.2	A19, A20, B16, IB6, IP2, N34	None	212	241	15 kg	50 kg	A	
	Potassium sulfide, hydrated *with not less than 30 percent water of crystallization*.	8	UN1847	II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	A	26
	Potassium superoxide	5.1	UN2466	I	5.1	A20, IB6, IP1	None	211	None	Forbidden	15 kg	B	13, 75, 106
	Powder cake, wetted *or* Powder paste, wetted *with not less than 17 percent alcohol by mass*.	1.1C	UN0433	II	1.1C		None	62	None	Forbidden	Forbidden	10	
	Powder cake, wetted *or* Powder paste, wetted *with not less than 25 percent water, by mass*.	1.3C	UN0159	II	1.3C		None	62	None	Forbidden	Forbidden	10	
	Powder paste, *see* Powder cake, *etc*.												
	Powder, smokeless	1.1C	UN0160	II	1.1C		None	62	None	Forbidden	Forbidden		26E
	Powder, smokeless	1.3C	UN0161	II	1.3C		None	62	None	Forbidden	Forbidden		26E
	Power device, explosive, see Cartridges, power device.												
	Primers, cap type	1.4S	UN0044	II	None		None	62	None	25 kg	100 kg	05	
	Primers, cap type	1.1B	UN0377	II	1.1B		None	62	None	Forbidden	Forbidden	11	
	Primers, cap type	1.4B	UN0378	II	1.4B		None	62	None	Forbidden	75 kg	06	
	Primers, small arms, see Primers, cap type.												
	Primers, tubular	1.3G	UN0319	II	1.3G		None	62	None	Forbidden	Forbidden	07	
	Primers, tubular	1.4G	UN0320	II	1.4G		None	62	None	Forbidden	75 kg	06	
	Primers, tubular	1.4S	UN0376	II	None		None	62	None	25 kg	100 kg	05	
	Printing ink, *flammable or* Printing ink related material *(including printing ink thinning or reducing compound), flammable*.	3	UN1210	I	3	T11, TP1, TP8	150	173	243	1 L	30 L	E	
				II	3	IB2, T4, TP1, TP8	150	173	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	173	242	60 L	220 L	A	
	Projectiles, illuminating, see Ammunition, illuminating, *etc*.												
	Projectiles, *inert with tracer*	1.4S	UN0345	II	1.4S			62	None	25 kg	100 kg	01	
	Projectiles, *inert, with tracer*	1.3G	UN0424	II	1.3G			62	None	Forbidden	Forbidden	03	
	Projectiles, *inert, with tracer*	1.4G	UN0425	II	1.4G			62	None	Forbidden	75 kg	02	
	Projectiles, *with burster or expelling charge*.	1.2D	UN0346	II	1.2D			62	None	Forbidden	Forbidden	03	
	Projectiles, *with burster or expelling charge*.	1.4D	UN0347	II	1.4D			62	None	Forbidden	75 kg	02	
	Projectiles, *with burster or expelling charge*.	1.2F	UN0426	II	1.2F			62	None	Forbidden	Forbidden	08	
	Projectiles, *with burster or expelling charge*.	1.4F	UN0427	II	1.4F			62	None	Forbidden	Forbidden	08	
	Projectiles, *with burster or expelling charge*.	1.2G	UN0434	II	1.2G			62	None	Forbidden	Forbidden	03	
	Projectiles, *with burster or expelling charge*.	1.4G	UN0435	II	1.4G			62	None	Forbidden	75 kg	02	
	Projectiles, *with bursting charge*	1.1F	UN0167	II	1.1F			62	None	Forbidden	Forbidden	08	
	Projectiles, *with bursting charge*	1.1D	UN0168	II	1.1D			62	None	Forbidden	Forbidden	03	
	Projectiles, *with bursting charge*	1.2D	UN0169	II	1.2D			62	None	Forbidden	Forbidden	03	
	Projectiles, *with bursting charge*	1.2F	UN0324	II	1.2F			62	None	Forbidden	Forbidden	08	
	Projectiles, *with bursting charge*	1.4D	UN0344	II	1.4D			62	None	Forbidden	75 kg	02	
	Propadiene, stabilized	2.1	UN2200		2.1		None	304	314, 315	Forbidden	150 kg	B	40
	Propadiene mixed with methyl acetylene, see Methyl acetylene and propadiene mixtures, stabilized.												
	Propane *see also* Petroleum gases, liquefied.	2.1	UN1978		2.1	19, T50	306	304	314, 315	Forbidden	150 kg	E	40
	Propanethiols	3	UN2402	II	3	IB2, T4, TP1, TP13	150	202	242	5 L	60 L	E	95, 102
	n-Propanol *or* Propyl alcohol, normal.	3	UN1274	II	3	B1, IB2, T4, TP1	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Propellant, liquid	1.3C	UN0495	II	1.3C	37	None	62	None	Forbidden	Forbidden	10	
	Propellant, liquid	1.1C	UN0497	II	1.1C	37	None	62	None	Forbidden	Forbidden	10	
	Propellant, solid	1.1C	UN0498	II	1.1C		None	62	None	Forbidden	Forbidden		26E
	Propellant, solid	1.3C	UN0499	II	1.3C		None	62	None	Forbidden	Forbidden		26E
	Propellant, solid	1.4C	UN0501		1.4C		None	62	None	Forbidden	Forbidden	A	24E
	Propionaldehyde	3	UN1275	II	3	IB2, T7, TP1	150	202	242	5 L	60 L	E	
	Propionic acid	8	UN1848	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Propionic anhydride	8	UN2496	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Propionitrile	3	UN2404	II	3, 6.1	IB2, T7, TP1, TP13	None	202	243	Forbidden	60 L	E	40
	Propionyl chloride	3	UN1815	II	3, 8	IB1, T7, TP1	None	202	243	1 L	5 L	B	40
	n-Propyl acetate	3	UN1276	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Propyl alcohol, *see* Propanol												
	n-Propyl benzene	3	UN2364	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Propyl chloride	3	UN1278	II	3	IB2, IP8, N34, T7, TP2	None	202	242	Forbidden	60 L	E	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	n-Propyl chloroformate	6.1	UN2740	I	6.1, 3, 8.	2, A3, A6, A7, B9, B14, B32, B74, B77, N34, T20, TP2, TP13, TP38, TP44	None	227	244	Forbidden	Forbidden	B	21, 40, 100
	Propyl formates	3	UN1281	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	n-Propyl isocyanate	6.1	UN2482	I	6.1, 3	1, B9, B14, B30, B72, T22, TP2, TP13, TP38, TP44	None	226	244	Forbidden	Forbidden	D	40
	Propyl mercaptan, see Propanethiols.												
	n-Propyl nitrate	3	UN1865	II	3	IB2, IP7	150	202	None	5 L	60 L	D	
	Propylamine	3	UN1277	II	3, 8	IB2, N34, T7, TP1	None	202	243	1 L	5 L	E	40
	Propylene *see also* Petroleum gases, liquefied.	2.1	UN1077		2.1	19, T50	306	304	314, 315	Forbidden	150 kg	E	40
	Propylene chlorohydrin	6.1	UN2611	II	6.1, 3	IB2, T7, TP2, TP13	None	202	243	5 L	60 L	A	12, 40, 48
	Propylene oxide	3	UN1280	I	3	A3, N34, T11, TP2, TP7	None	201	243	1 L	30 L	E	40
	Propylene tetramer	3	UN2850	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	1,2-Propylenediamine	8	UN2258	II	8, 3	A3, A6, IB2, N34, T7, TP2	None	202	243	1 L	30 L	A	40
	Propyleneimine, stabilized	3	UN1921	I	3, 6.1	A3, N34, T14, TP2, TP13	None	201	243	1 L	30 L	B	40
	Propyltrichlorosilane	8	UN1816	II	8, 3	A7, B2, B6, IB2, N34, T7, TP2, TP13	None	202	243	Forbidden	30 L	C	40
	Prussic acid, see Hydrogen cyanide.												
	Pyrethroid pesticide, liquid, flammable, toxic, *flash point less than 23 degrees C.*	3	UN3350	I	3, 6.1	T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	B	40
				II	3, 6.1	IB2, T11, TP2, TP13, TP27	None	202	243	1 L	60 L	B	40
	Pyrethroid pesticide, liquid toxic	6.1	UN3352	I	6.1	T14, TP2, TP13, TP27	None	211	242	1 L	30 L	A	40
				II	6.1	IB2, T11, TP2, TP27	153	212	242	5 L	60 L	A	40
				III	6.1	IB3, T7, TP2, TP28	153	213	240	60 L	220 L	A	40
	Pyrethroid pesticide, liquid, toxic, flammable, *flash point not less than 23 degrees C.*	6.1	UN3351	I	6.1, 3	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1, 3	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
				III	6.1, 3	IB3, T7, TP2, TP28	153	203	241	60 L	220 L	B	40
	Pyrethroid pesticide, solid, toxic	6.1	UN3349	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	40
				II	6.1	IB8, IP2, IP4	153	212	242	25 kg	100 kg	A	40
				III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	40
	Pyridine	3	UN1282	II	3	IB2, T4, TP2	None	202	242	5 L	60 L	B	21, 100
	Pyridine perchlorate	Forbidden											
G	Pyrophoric liquid, inorganic, n.o.s.	4.2	UN3194	I	4.2		None	181	244	Forbidden	Forbidden	D	18
G	Pyrophoric liquids, organic, n.o.s.	4.2	UN2845	I	4.2	B11, T22, TP2, TP7	None	181	244	Forbidden	Forbidden	D	18
G	Pyrophoric metals, n.o.s., *or* Pyrophoric alloys, n.o.s..	4.2	UN1383	I	4.2	B11	None	187	242	Forbidden	Forbidden	D	
G	Pyrophoric organometallic compound, water-reactive, n.o.s..	4.2	UN3203	I	4.2, 4.3	T21, TP2, TP7	None	187	242	Forbidden	Forbidden	D	18
G	Pyrophoric solid, inorganic, n.o.s.	4.2	UN3200	I	4.2		None	187	242	Forbidden	Forbidden	D	
G	Pyrophoric solids, organic, n.o.s.	4.2	UN2846	I	4.2		None	187	242	Forbidden	Forbidden	D	
	Pyrosulfuryl chloride	8	UN1817	II	8	B2, IB2, T8, TP2, TP12	154	202	242	1 L	30 L	C	40
	Pyroxylin solution or solvent, see Nitrocellulose.												
	Pyrrolidine	3	UN1922	II	3, 8	IB2, T7, TP1	None	202	243	1 L	5 L	B	40
	Quebrachitol pentanitrate	Forbidden											
	Quicklime, see Calcium oxide												
	Quinoline	6.1	UN2656	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	12
	R 12, see Dichlorodifluoromethane.												
	R 12B1, see Chlorodifluorobromomethane.												
	R 13, see Chlorotrifluoromethane												
	R 13B1, see Bromotrifluoromethane.												
	R 14, see Tetrafluoromethane												
	R 21, see Dichlorofluoromethane												
	R 22, see Chlorodifluoromethane												
	R 114, see Dichlorotetrafluoroethane.												
	R 115, see Chloropentafluoroethane.												
	R 116, see Hexafluoroethane												
	R 124, see Chlorotetrafluoroethane.												
	R 133a, see Chlorotrifluoroethane												

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	R 152a, see Difluoroethane												
	R 500, see Dichlorodifluoromethane and difluorethane, *etc.*												
	R 502, see Chlorodifluoromethane and chloropentafluoroethane mixture, *etc.*												
	R 503, see Chlorotrifluoromethane and trifluoromethane, *etc.*												
D	Radioactive material, excepted package-articles manufactured from natural *or* depleted uranium *or* natural thorium.	7	UN2910		None		422, 426	422, 426	422, 426			A	
I	Radioactive material, excepted package-articles manufactured from natural uranium *or* depleted uranium *or* natural thorium.	7	UN2909		None		422, 426	422, 426	422, 426			A	
D	Radioactive material, excepted package-empty package *or* empty packaging.	7	UN2910		Empty		428	428	428			A	
I	Radioactive material, excepted package-empty packaging.	7	UN2908		Empty		422, 428	422, 428	422, 428			A	
D	Radioactive material, excepted package-instruments *or* articles.	7	UN2910		None		422, 424	422, 424	422, 424			A	
I	Radioactive material, excepted package-instruments *or* articles.	7	UN2911		None		422, 424	422, 424	422, 424			A	
	Radioactive material, excepted package-limited quantity of material.	7	UN2910		None		421, 422	421, 422	421, 422			A	
D	Radioactive material, fissile, n.o.s.	7	UN2918		7		453	417	417			A	40, 95
I	Radioactive material, low specific activity (LSA-I) *non fissile or fissile-excepted*.	7	UN2912		7	T5, TP4, W7	421, 422, 428.	427	427			A	95
I	Radioactive material, low specific activity (LSA-II) *non fissile or fissile-excepted*.	7	UN3321		7	T5, TP4, W7	421, 422, 428.	427	427			A	95
I	Radioactive material, low specific activity (LSA-III) *non fissile or fissile excepted*.	7	UN3322		7	T5, TP4, W7	421, 422, 428.	427	427			A	95
D	Radioactive material, low specific activity, n.o.s. *or* Radioactive material, LSA, n.o.s..	7	UN2912		7	T5, TP4	421, 428	427	427			A	
D	Radioactive material, n.o.s.	7	UN2982		7		421, 428	415, 416	415, 416			A	40, 95
D	Radioactive material, special form, n.o.s..	7	UN2974		7		421, 424	415, 416	415, 416			A	
D	Radioactive material, surface contaminated object *or* Radioactive material, SCO.	7	UN2913		7		421, 424, 426.	427	427			A	
I	Radioactive material, surface contaminated objects (SCO-I *or* SCO-II) *non fissile or fissile-excepted*.	7	UN2913		7		421, 422, 428.	427	427			A	95
I	Radioactive material, transported under special arrangement, *non fissile or fissile excepted*.	7	UN2919		7	139							
I	Radioactive material, transported under special arrangement, fissile.	7	UN3331		7	139							
I	Radioactive material, Type A package, fissile *non-special form*.	7	UN3327		7	W7, W8	453	417	417			A	95
I	Radioactive material, Type A package *non-special form, non fissile or fissile-excepted*.	7	UN2915		7	W7, W8		415	415			A	95
I	Radioactive material, Type A package, special form *non fissile or fissile-excepted*.	7	UN3332		7	W7, W8		415, 476	415, 476			A	95
I	Radioactive material, Type A package, special form, fissile.	7	UN3333		7	W7, W8	453	417, 476	417, 476			A	
I	Radioactive material, Type B(M) package, fissile.	7	UN3329		7		453	417	417			A	
I	Radioactive material, Type B(M) package *non fissile or fissile-excepted*.	7	UN2917		7			416	416			A	95
I	Radioactive material, Type B(U) package, fissile.	7	UN3328		7		453	417	417			A	
I	Radioactive material, Type B(U) package *non fissile or fissile-excepted*.	7	UN2916		7			416	416			A	95
I	Radioactive material, uranium hexafluoride *non fissile or fissile-excepted*.	7	UN2978		7, 8		423	420, 427	420, 427			A	95
I	Radioactive material, uranium hexafluoride, fissile.	7	UN2977		7, 8		453	417, 420	417, 420			A	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Railway torpedo, see Signals, railway track, explosive.												
	Rare gases and nitrogen mixtures, compressed.	2.2	UN1981		2.2		306	302	None	75 kg	150 kg	A	
	Rare gases and oxygen mixtures, compressed.	2.2	UN1980		2.2	79	306	302	None	75 kg	150 kg	A	
	Rare gases mixtures, compressed.	2.2	UN1979		2.2		306	302	None	75 kg	150 kg	A	
	RC 318, see Octafluorocyclobutane.												
	RDX and cyclotetramethylenetetranitramine, wetted *or* desensitized *see* RDX and HMX mixtures, wetted or desensitized.												
	RDX and HMX mixtures, wetted *with not less than 15 percent water by mass or* RDX and HMX mixtures, desensitized *with not less than 10 percent phlegmatizer by mass*.	1.1D	UN0391	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	RDX and Octogen mixtures, wetted *or* desensitized *see* RDX and HMX mixtures, wetted *or* desensitized *etc*.												
	RDX, see Cyclotrimethylene trinitramine, *etc*.												
	Receptacles, small, containing gas (gas cartridges) *flammable, without release device, not refillable and not exceeding 1 L capacity*.	2.1	UN2037		2.1		306	304	None	1 kg	15 kg	B	40
	Receptacles, small, containing gas (gas cartridges) *non-flammable, without release device, not refillable and not exceeding 1 L capacity*.	2.2	UN2037		2.2		306	304	None	1 kg	15 kg	B	40
	Red phosphorus, see Phosphorus, amorphous.												
	Refrigerant gas R 404A	2.2	UN3337		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	Refrigerant gas R 407A	2.2	UN3338		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	Refrigerant gas R 407B	2.2	UN3339		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	Refrigerant gas R 407C	2.2	UN3340		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
G	Refrigerant gases, n.o.s.	2.2	UN1078		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
D	Refrigerant gases, n.o.s. *or* Dispersant gases, n.o.s..	2.1	NA1954		2.1	T50	306	304	314, 315	Forbidden	150 kg	D	40
	Refrigerating machines, *containing flammable, non-toxic, liquefied gas*.	2.1	UN3358		2.1		306	306	306	Forbidden	Forbidden	C	40
	Refrigerating machines, *containing non-flammable, non-toxic, liquefied gas or ammonia solution (UN2672)*.	2.2	UN2857		2.2	A53	306, 307	306	306, 307	450 kg	450 kg	A	
	Regulated medical waste	6.2	UN3291	II	6.2	A13, A14	134	197	None	No limit	No limit	E	
	Release devices, explosive	1.4S	UN0173	II	1.4S		None	62	None	25 kg	100 kg	05	
	Resin solution, *flammable*	3	UN1866	I	3	B52, T11, TP1, TP8	150	201	243	1 L	30 L	E	
				II	3	B52, IB2, T4, TP1, TP8	150	173	242	5 L	60 L	B	
				III	3	B1, B52, IB3, T2, TP1	150	173	242	60 L	220 L	A	
	Resorcinol	6.1	UN2876	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
	Rifle grenade, see Grenades, *hand or rifle, etc*.												
	Rifle powder, see Powder, smokeless *(UN 0160)*.												
	Rivets, explosive	1.4S	UN0174	II	1.4S		None	62	None	25 kg	100 kg	05	
	Road asphalt or tar liquid, see Tars, liquid, *etc*.												
	Rocket motors	1.3C	UN0186	II	1.3C	109	None	62	None	Forbidden	220 kg	03	
	Rocket motors	1.1C	UN0280	II	1.1C	109	None	62	None	Forbidden	Forbidden	03	
	Rocket motors	1.2C	UN0281	II	1.2C	109	None	62	None	Forbidden	Forbidden	03	
	Rocket motors, liquid fueled	1.2J	UN0395	II	1.2J	109	None	62	None	Forbidden	Forbidden	04	23E
	Rocket motors, liquid fueled	1.3J	UN0396	II	1.3J	109	None	62	None	Forbidden	Forbidden	04	23E
	Rocket motors with hypergolic liquids *with or without an expelling charge*.	1.3L	UN0250	II	1.3L	109	None	62	None	Forbidden	Forbidden	08	8E, 14E, 15E
	Rocket motors with hypergolic liquids *with or without an expelling charge*.	1.2L	UN0322	II	1.2L	109	None	62	None	Forbidden	Forbidden	08	8E, 14E, 15E
	Rockets, line-throwing	1.2G	UN0238	II	1.2G		None	62	None	Forbidden	Forbidden	07	
	Rockets, line-throwing	1.3G	UN0240	II	1.3G		None	62	None	Forbidden	75 kg	07	
	Rockets, line-throwing	1.4G	UN0453	II	1.4G		None	62	None	Forbidden	75 kg	06	
	Rockets, liquid fueled *with bursting charge*.	1.1J	UN0397	II	1.1J		None	62	None	Forbidden	Forbidden	04	23E
	Rockets, liquid fueled *with bursting charge*.	1.2J	UN0398	II	1.2J		None	62	None	Forbidden	Forbidden	04	23E

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Rockets, *with bursting charge*	1.1F	UN0180	II	1.1F		None	62	None	Forbidden	Forbidden	08	
	Rockets, *with bursting charge*	1.1E	UN0181	II	1.1E		None	62	None	Forbidden	Forbidden	03	
	Rockets, *with bursting charge*	1.2E	UN0182	II	1.2E		None	62	None	Forbidden	Forbidden	03	
	Rockets, *with bursting charge*	1.2F	UN0295	II	1.2F		None	62	None	Forbidden	Forbidden	08	
	Rockets, *with expelling charge*	1.2C	UN0436	II	1.2C		None	62	None	Forbidden	Forbidden	03	
	Rockets, *with expelling charge*	1.3C	UN0437	II	1.3C		None	62	None	Forbidden	Forbidden	03	
	Rockets, *with expelling charge*	1.4C	UN0438	II	1.4C		None	62	None	Forbidden	75 kg	02	
	Rockets, *with inert head*	1.3C	UN0183	II	1.3C		None	62	None	Forbidden	Forbidden	03	
	Rockets, *with inert head*	1.2C	UN0502		1.2		None	62	None	Forbidden	Forbidden	B	1E, 5E
	Rosin oil	3	UN1286	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Rubber solution	3	UN1287	II	3	IB2, T4, TP1, TP8	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Rubidium	4.3	UN1423	I	4.3	22, A7, A19, IB1, IP1, N34, N40, N45	None	211	242	Forbidden	15 kg	D	
	Rubidium hydroxide	8	UN2678	II	8	IB8, IP2, IP4, T7, TP2	154	212	240	15 kg	50 kg	A	
	Rubidium hydroxide solution	8	UN2677	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	A	
				III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Safety fuse, see Fuse, safety												
	Sand acid, see Fluorosilicic acid												
	Seed cake, *containing vegetable oil solvent extractions and expelled seeds, with not more than 10 percent of oil and when the amount of moisture is higher than 11 percent, with not more than 20 percent of oil and moisture combined*.	4.2	UN1386	III	None	IB8, IP3, IP6, N7	None	213	241	Forbidden	Forbidden	A	13
I	Seed cake *with more than 1.5 percent oil and not more than 11 percent moisture*.	4.2	UN1386	III	None	IB8, IP3, IP6, N7	None	213	241	Forbidden	Forbidden	E	13
I	Seed cake *with not more than 1.5 percent oil and not more than 11 percent moisture*.	4.2	UN2217	III	None	IB8, IP3, IP6, N7	None	213	241	Forbidden	Forbidden	A	13
	Selenates *or* Selenites	6.1	UN2630	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	E	
	Selenic acid	8	UN1905	I	8	IB7, IP1, N34	None	211	242	Forbidden	25 kg	A	
	Selenium compound, n.o.s.	6.1	UN3283	I	6.1	IB7, IP1, T14, TP2, TP27	None	211	242	5 kg	50 kg	B	
				II	6.1	IB8, IP2, IP4, T11, TP2, TP27	None	212	242	25 kg	100 kg	B	
				III	6.1	IB8, IP3, T7, TP1, TP28	153	213	240	100 kg	200 kg	A	
	Selenium disulfide	6.1	UN2657	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Selenium hexafluoride	2.3	UN2194		2.3, 8	1	None	302	None	Forbidden	Forbidden	D	40
	Selenium nitride	Forbidden											
	Selenium oxychloride	8	UN2879	I	8, 6.1	A3, A6, A7, N34, T10, TP2, TP12, TP13	None	201	243	0.5 L	2.5 L	E	40
	Self-defense spray, aerosol, see Aerosols, *etc.*												
+ A D	Self-defense spray, non-pressurized.	9	NA3334	III	9	A37	155	203	None	No limit	No limit	A	
G	Self-heating liquid, corrosive, inorganic, n.o.s..	4.2	UN3188	II	4.2, 8	IB2	None	202	243	1 L	5 L	C	
				III	4.2, 8	IB2	None	203	241	5 L	60 L	C	
G	Self-heating liquid, corrosive, organic, n.o.s..	4.2	UN3185	II	4.2, 8	IB2	None	202	243	1 L	5 L	C	
				III	4.2, 8	IB2	None	203	241	5 L	60 L	C	
G	Self-heating liquid, inorganic, n.o.s..	4.2	UN3186	II	4.2	IB2	None	202	242	1 L	5 L	C	
				III	4.2	IB2	None	203	241	5 L	60 L	C	
G	Self-heating liquid, organic, n.o.s.	4.2	UN3183	II	4.2	IB2	None	202	242	1 L	5 L	C	
				III	4.2	IB2	None	203	241	5 L	60 L	C	
G	Self-heating liquid, toxic, inorganic, n.o.s..	4.2	UN3187	II	4.2, 6.1	IB2	None	202	243	1 L	5 L	C	
				III	4.2, 6.1	IB2	None	203	241	5 L	60 L	C	
G	Self-heating liquid, toxic, organic, n.o.s..	4.2	UN3184	II	4.2, 6.1	IB2	None	202	243	1 L	5 L	C	
				III	4.2, 6.1	IB2	None	203	241	5 L	60 L	C	
G	Self-heating solid, corrosive, inorganic, n.o.s..	4.2	UN3192	II	4.2, 8	IB5, IP2	None	212	242	15 kg	50 kg	C	
				III	4.2, 8	IB8, IP3	None	213	242	25 kg	100 kg	C	
G	Self-heating, solid, corrosive, organic, n.o.s..	4.2	UN3126	II	4.2, 8	IB5, IP2	None	212	242	15 kg	50 kg	C	
				III	4.2, 8	IB8, IP3	None	213	242	25 kg	100 kg	C	
G	Self-heating solid, inorganic, n.o.s..	4.2	UN3190	II	4.2	IB6, IP2	None	212	241	15 kg	50 kg	C	
				III	4.2	IB8, IP3	None	213	241	25 kg	100 kg	C	
G	Self-heating, solid, organic, n.o.s.	4.2	UN3088	II	4.2	IB6, IP2	None	212	241	15 kg	50 kg	C	
				III	4.2	IB8, IP3	None	213	241	25 kg	100 kg	C	
G	Self-heating, solid, oxidizing, n.o.s..	4.2	UN3127		4.2, 5.1		None	214	214	Forbidden	Forbidden		
G	Self-heating solid, toxic, inorganic, n.o.s..	4.2	UN3191	II	4.2, 6.1	IB5, IP2	None	212	242	15 kg	50 kg	C	
				III	4.2, 6.1	IB8, IP3	None	213	242	25 kg	100 kg	C	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
G	Self-heating, solid, toxic, organic, n.o.s..	4.2	UN3128	II	4.2, 6.1	IB5, IP2	None	212	242	15 kg	50 kg	C	
				III	4.2, 6.1	IB8, IP3	None	213	242	25 kg	100 kg	C	
	Self-propelled vehicle, see Engines *or* Batteries *etc*.												
G	Self-reactive liquid type B	4.1	UN3221	II	4.1	53	None	224	None	Forbidden	Forbidden	D	61
G	Self-reactive liquid type B, temperature controlled.	4.1	UN3231	II	4.1	53	None	224	None	Forbidden	Forbidden	D	2, 61
G	Self-reactive liquid type C	4.1	UN3223	II	4.1		None	224	None	5 L	10 L	D	61
G	Self-reactive liquid type C, temperature controlled.	4.1	UN3233	II	4.1		None	224	None	Forbidden	Forbidden	D	2, 61
G	Self-reactive liquid type D	4.1	UN3225	II	4.1		None	224	None	5 L	10 L	D	61
G	Self-reactive liquid type D, temperature controlled.	4.1	UN3235	II	4.1		None	224	None	Forbidden	Forbidden	D	2, 61
G	Self-reactive liquid type E	4.1	UN3227	II	4.1		None	224	None	10 L	25 L	D	61
G	Self-reactive liquid type E, temperature controlled.	4.1	UN3237	II	4.1		None	224	None	Forbidden	Forbidden	D	2, 61
G	Self-reactive liquid type F	4.1	UN3229	II	4.1		None	224	None	10 L	25 L	D	61
G	Self-reactive liquid type F, temperature controlled.	4.1	UN3239	II	4.1		None	224	None	Forbidden	Forbidden	D	2, 61
G	Self-reactive solid type B	4.1	UN3222	II	4.1	53	None	224	None	Forbidden	Forbidden	D	61
G	Self-reactive solid type B, temperature controlled.	4.1	UN3232	II	4.1	53	None	224	None	Forbidden	Forbidden	D	2, 61
G	Self-reactive solid type C	4.1	UN3224	II	4.1		None	224	None	5 kg	10 kg	D	61
G	Self-reactive solid type C, temperature controlled.	4.1	UN3234	II	4.1		None	224	None	Forbidden	Forbidden	D	2, 61
G	Self-reactive solid type D	4.1	UN3226	II	4.1		None	224	None	5 kg	10 kg	D	61
G	Self-reactive solid type D, temperature controlled.	4.1	UN3236	II	4.1		None	224	None	Forbidden	Forbidden	D	2, 61
G	Self-reactive solid type E	4.1	UN3228	II	4.1		None	224	None	10 kg	25 kg	D	61
G	Self-reactive solid type E, temperature controlled.	4.1	UN3238	II	4.1		None	224	None	Forbidden	Forbidden	D	2, 61
G	Self-reactive solid type F	4.1	UN3230	II	4.1		None	224	None	10 kg	25 kg	D	61
G	Self-reactive solid type F, temperature controlled.	4.1	UN3240	II	4.1		None	224	None	Forbidden	Forbidden	D	2, 61
	Shale oil	3	UN1288	I	3	T11, TP1, TP8, TP27	None	201	243	1 L	30 L	B	
				II	3	IB2, T4, TP1, TP8	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Shaped charges, see Charges, shaped, *etc*.												
	Signal devices, hand	1.4G	UN0191	II	1.4G		None	62	None	Forbidden	75 kg	06	
	Signal devices, hand	1.4S	UN0373	II	1.4S		None	62	None	25 kg	100 kg	05	
	Signals, distress, *ship*	1.1G	UN0194	II	1.1G		None	62	None	Forbidden	Forbidden	07	
	Signals, distress, *ship*	1.3G	UN0195	II	1.3G		None	62	None	Forbidden	75 kg	07	
	Signals, highway, see Signal devices, hand.												
	Signals, railway track, explosive	1.1G	UN0192	II	1.1G		None	62	None	Forbidden	Forbidden	07	
	Signals, railway track, explosive	1.4S	UN0193	II	1.4S		None	62	None	25 kg	100 kg	05	
	Signals, railway track, explosive	1.3G	UN0492		1.3G		None	62	None	Forbidden	Forbidden	07	
	Signals, railway track, explosive	1.4G	UN0493		1.4G		None	62	None	Forbidden	75 kg	06	
	Signals, ship distress, water-activated, see Contrivances, water-activated, *etc*.												
	Signals, smoke	1.1G	UN0196	II	1.1G		None	62	None	Forbidden	Forbidden	07	
	Signals, smoke	1.4G	UN0197	II	1.4G		None	62	None	Forbidden	75 kg	06	
	Signals, smoke	1.2G	UN0313	II	1.2G		None	62	None	Forbidden	Forbidden	07	
	Signals, smoke	1.3G	UN0487	II	1.3G		None	62	None	Forbidden	Forbidden	07	
	Silane, compressed	2.1	UN2203		2.1		None	302	None	Forbidden	Forbidden	E	40, 57, 104
	Silicofluoric acid, see Fluorosilicic acid.												
	Silicon chloride, see Silicon tetrachloride.												
	Silicon powder, amorphous	4.1	UN1346	III	4.1	A1, IB8, IP3	None	213	240	25 kg	100 kg	A	
	Silicon tetrachloride	8	UN1818	II	8	A3, A6, B2, B6, IB2, T7, TP2, TP7	154	202	242	1 L	30 L	C	40
	Silicon tetrafluoride, compressed	2.3	UN1859		2.3, 8	2	None	302	None	Forbidden	Forbidden	D	40
	Silver acetylide (dry)	Forbidden											
	Silver arsenite	6.1	UN1683	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Silver azide (dry)	Forbidden											
	Silver chlorite (dry)	Forbidden											
	Silver cyanide	6.1	UN1684	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	26, 40
	Silver fulminate (dry)	Forbidden											
	Silver nitrate	5.1	UN1493	II	5.1	IB8, IP4	152	212	242	5 kg	25 kg	A	
	Silver oxalate (dry)	Forbidden											
	Silver picrate (dry)	Forbidden											
	Silver picrate, wetted *with not less than 30 percent water, by mass*.	4.1	UN1347	I	4.1		None	211	None	Forbidden	Forbidden	D	28, 36
	Sludge, acid	8	UN1906	II	8	A3, A7, B2, IB2, N34, T8, TP2, TP12	None	202	242	Forbidden	30 L	C	14
D	Smokeless powder for small arms (*100 pounds or less*).	4.1	NA3178	I	4.1	16	None	171	None	Forbidden	7.3 kg	A	
	Soda lime *with more than 4 percent sodium hydroxide*.	8	UN1907	III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Sodium	4.3	UN1428	I	4.3	A7, A8, A19, A20, B9, B48, B68, IB4, IP1, N34, T9, TP3, TP7, TP46	None	211	244	Forbidden	15 kg	D	
	Sodium aluminate, solid	8	UN2812	III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	
	Sodium aluminate, solution	8	UN1819	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	A	
				III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Sodium aluminum hydride	4.3	UN2835	II	4.3	A8, A19, A20, IB1	151	212	242	Forbidden	50 kg	E	
	Sodium ammonium vanadate	6.1	UN2863	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Sodium arsanilate	6.1	UN2473	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
	Sodium arsenate	6.1	UN1685	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Sodium arsenite, aqueous solutions.	6.1	UN1686	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	
				III	6.1	IB3, T4, TP2	153	203	241	60 L	220 L	A	
	Sodium arsenite, solid	6.1	UN2027	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Sodium azide	6.1	UN1687	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	36, 52, 91
	Sodium bifluoride, see Sodium hydrogendifluoride.												
	Sodium bisulfite, solution, see Bisulfites, aqueous solutions, n.o.s..												
	Sodium borohydride	4.3	UN1426	I	4.3	N40	None	211	242	Forbidden	15 kg	E	
	Sodium borohydride and sodium hydroxide solution, *with not more than 12 percent sodium borohydride and not more than 40 percent sodium hydroxide by mass*.	8	UN3320	II	8	B2, IB2, N34, T7, TP2	154	202	242	1 L	30 L	A	26
				III	8	B2, IB3, N34, T4, TP2	154	203	241	5 L	60 L	A	
	Sodium bromate	5.1	UN1494	II	5.1	IB8, IP4	152	212	242	5 kg	25 kg	A	56, 58, 106
	Sodium cacodylate	6.1	UN1688	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	26
	Sodium chlorate	5.1	UN1495	II	5.1	A9, IB8, IP4, N34, T4, TP1	152	212	240	5 kg	25 kg	A	56, 58, 106
	Sodium chlorate, aqueous solution.	5.1	UN2428	II	5.1	A2, IB2, T4, TP1	152	202	241	1 L	5 L	B	56, 58, 106
				III	5.1	A2, IB2, T4, TP1	152	203	241	2.5 L	30 L	B	56, 58, 69, 106
	Sodium chlorate mixed with dinitrotoluene, see Explosive blasting, type C.												
	Sodium chlorite	5.1	UN1496	II	5.1	A9, IB8, IP2, IP4, N34, T4, TP1	None	212	242	5 kg	25 kg	A	56, 58, 106
	Sodium chloroacetate	6.1	UN2659	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
	Sodium cuprocyanide, solid	6.1	UN2316	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	26
	Sodium cuprocyanide, solution	6.1	UN2317	I	6.1	T14, TP2, TP13	None	201	243	1 L	30 L	B	26, 40
	Sodium cyanide	6.1	UN1689	I	6.1	B69, B77, IB7, IP1, N74, N75, T14, TP2, TP13	None	211	242	5 kg	50 kg	B	52
	Sodium dichloroisocyanurate or Sodium dichloro-s-triazinetrione, see Dichloroisocyanuric acid *etc*.												
	Sodium dinitro-o-cresolate, *dry or wetted with less than 15 percent water, by mass*.	1.3C	UN0234	II	1.3C		None	62	None	Forbidden	Forbidden	10	5E
	Sodium dinitro-o-cresolate, wetted *with not less than 15 percent water, by mass*.	4.1	UN1348	I	4.1, 6.1	23, A8, A19, A20, N41	None	211	None	1 kg	15 kg	E	28, 36
	Sodium dithionite *or* Sodium hydrosulfite.	4.2	UN1384	II	4.2	A19, A20, IB6, IP2	None	212	241	15 kg	50 kg	E	13
	Sodium fluoride	6.1	UN1690	III	6.1	IB8, IP3, T4, TP1	153	213	240	100 kg	200 kg	A	26
	Sodium fluoroacetate	6.1	UN2629	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	E	
	Sodium fluorosilicate	6.1	UN2674	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	26
	Sodium hydrate, see Sodium hydroxide, solid.												
	Sodium hydride	4.3	UN1427	I	4.3	A19, N40	None	211	242	Forbidden	15 kg	E	
	Sodium hydrogendifluoride, *solid*	8	UN2439	II	8	IB8, IP2, IP4, N3, N34	154	212	240	15 kg	50 kg	A	12, 25, 26, 40
	Sodium hydrogendifluoride *solution*.	8	UN2439	II	8	IB8, IP2, IP4, N3, N34	154	202	242	1 L	30 L	A	12, 25, 26, 40
	Sodium hydrosulfide, *with less than 25 percent water of crystallization*.	4.2	UN2318	II	4.2	A7, A19, A20, IB6, IP2	None	212	241	15 kg	50 kg	A	
	Sodium hydrosulfide *with not less than 25 percent water of crystallization*.	8	UN2949	II	8	A7, IB8, IP2, IP4, T7, TP2	154	212	240	15 kg	50 kg	A	26
	Sodium hydrosulfite, *see* Sodium dithionite.												
	Sodium hydroxide, solid	8	UN1823	II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	A	
	Sodium hydroxide solution	8	UN1824	II	8	B2, IB2, N34, T7, TP2	154	202	242	1 L	30 L	A	
				III	8	IB3, N34, T4, TP1	154	203	241	5 L	60 L	A	
	Sodium hypochlorite, solution, see Hypochlorite solutions *etc*.												

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Sodium metal, liquid alloy, see Alkali metal alloys, liquid, n.o.s..	.....			.....		.....	.....	.....	.....	.....		.....
	Sodium methylate	4.2	UN1431	II	4.2, 8	A19, IB5, IP2	None	212	242	15 kg	50 kg	B	.....
	Sodium methylate solutions *in alcohol*.	3	UN1289	II	3, 8	IB2, T7, TP1, TP8	None	202	243	1 L	5 L	B	.....
	.....	.....		III	3, 8	B1, IB3, T4, TP1	150	203	242	5 L	60 L	A	.....
	Sodium monoxide	8	UN1825	II	8	IB8, IP2, IP4	154	212	240	15 kg	50 kg	A	.....
	Sodium nitrate	5.1	UN1498	III	5.1	A1, A29, IB8, IP3	152	213	240	25 kg	100 kg	A	.....
	Sodium nitrate and potassium nitrate mixtures.	5.1	UN1499	III	5.1	A1, A29, IB8, IP3	152	213	240	25 kg	100 kg	A	.....
	Sodium nitrite	5.1	UN1500	III	5.1, 6.1	A1, A29, IB8, IP3	152	213	240	25 kg	100 kg	A	56, 58
	Sodium pentachlorophenate	6.1	UN2567	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	Sodium perchlorate	5.1	UN1502	II	5.1	IB6, IP2	152	212	242	5 kg	25 kg	A	56, 58, 106
	Sodium permanganate	5.1	UN1503	II	5.1	IB6, IP2	152	212	242	5 kg	25 kg	D	56, 58, 69, 106, 107
	Sodium peroxide	5.1	UN1504	I	5.1	A20, IB6, IP1, N34	None	211	None	Forbidden	15 kg	B	13, 75, 106
	Sodium peroxoborate, anhydrous	5.1	UN3247	II	5.1	IB8, IP4	152	212	240	5 kg	25 kg	A	13, 25, 106
	Sodium persulfate	5.1	UN1505	III	5.1	A1, IB8, IP3	152	213	240	25 kg	100 kg	A	.....
	Sodium phosphide	4.3	UN1432	I	4.3, 6.1	A19, N40	None	211	None	Forbidden	15 kg	E	40, 85
	Sodium picramate, *dry or wetted with less than 20 percent water, by mass*.	1.3C	UN0235	II	1.3C		None	62	None	Forbidden	Forbidden	10	5E
	Sodium picramate, wetted *with not less than 20 percent water, by mass*.	4.1	UN1349	I	4.1	23, A8, A19, N41	None	211	None	Forbidden	15 kg	E	28, 36
	Sodium picryl peroxide	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Sodium potassium alloys, see Potassium sodium alloys.	.....			.....		.....	.....	.....	.....	.....		.....
	Sodium selenate, see Selenates *or* Selenites.	.....			.....		.....	.....	.....	.....	.....		.....
	Sodium sulfide, anhydrous *or* Sodium sulfide *with less than 30 percent water of crystallization*.	4.2	UN1385	II	4.2	A19, A20, IB6, IP2, N34	None	212	241	15 kg	50 kg	A	.....
	Sodium sulfide, hydrated *with not less than30 percent water*.	8	UN1849	II	8	IB8, IP2, IP4, T7, TP2	154	212	240	15 kg	50 kg	A	26
	Sodium superoxide	5.1	UN2547	I	5.1	A20, IB6, IP1, N34	None	211	None	Forbidden	15 kg	E	13, 75, 106
	Sodium tetranitride	Forbidden			.....		.....	.....	.....	.....	.....		.....
G	Solids containing corrosive liquid, n.o.s..	8	UN3244	II	8	49, IB5	154	212	240	15 kg	50 kg	B	40
G	Solids containing flammable liquid, n.o.s..	4.1	UN3175	II	4.1	47, IB6, IP2	151	212	240	15 kg	50 kg	B	.....
G	Solids containing toxic liquid, n.o.s..	6.1	UN3243	II	6.1	48, IB2	None	212	240	25 kg	100 kg	B	40
	Sounding devices, explosive	1.2F	UN0204	II	1.2F		None	62	None	Forbidden	Forbidden	08	.....
	Sounding devices, explosive	1.1F	UN0296	II	1.1F		None	62	None	Forbidden	Forbidden	08	.....
	Sounding devices, explosive	1.1D	UN0374	II	1.1D		None	62	None	Forbidden	Forbidden	07	.....
	Sounding devices, explosive	1.2D	UN0375	II	1.2D		None	62	None	Forbidden	Forbidden	07	.....
	Spirits of salt, see Hydrochloric acid.	.....			.....		.....	.....	.....	.....	.....		.....
	Squibs, see Igniters *etc*	.....			.....		.....	.....	.....	.....	.....		.....
	Stannic chloride, anhydrous	8	UN1827	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	C	.....
	Stannic chloride, pentahydrate	8	UN2440	III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	.....
	Stannic phosphide	4.3	UN1433	I	4.3, 6.1	A19, N40	None	211	242	Forbidden	15 kg	E	40, 85
	Steel swarf, see Ferrous metal borings, *etc*.	.....			.....		.....	.....	.....	.....	.....		.....
	Stibine	2.3	UN2676	.....	2.3, 2.1	1	None	304	None	Forbidden	Forbidden	D	40
	Storage batteries, wet, see Batteries, *wet etc*.	.....			.....		.....	.....	.....	.....	.....		.....
	Strontium arsenite	6.1	UN1691	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	Strontium chlorate	5.1	UN1506	II	5.1	A1, A9, IB8, IP2, IP4, N34	152	212	242	5 kg	25 kg	A	56, 58, 106
	Strontium nitrate	5.1	UN1507	III	5.1	A1, A29, IB8, IP3	152	213	240	25 kg	100 kg	A	.....
	Strontium perchlorate	5.1	UN1508	II	5.1	IB6, IP2	152	212	242	5 kg	25 kg	A	56, 58, 106
	Strontium peroxide	5.1	UN1509	II	5.1	IB6, IP2	152	212	242	5 kg	25 kg	A	13, 75, 106
	Strontium phosphide	4.3	UN2013	I	4.3, 6.1	A19, N40	None	211	None	Forbidden	15 kg	E	40, 85
	Strychnine *or* Strychnine salts	6.1	UN1692	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	40
	Styphnic acid, *see* Trinitroresorcinol, *etc*.	.....			.....		.....	.....	.....	.....	.....		.....
	Styrene monomer, stabilized	3	UN2055	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
G	Substances, explosive, n.o.s.	1.1L	UN0357	II	1.1L	101	None	62	None	Forbidden	Forbidden		8E, 14E, 15E, 17E
G	Substances, explosive, n.o.s.	1.2L	UN0358	II	1.2L	101	None	62	None	Forbidden	Forbidden		8E, 14E, 15E, 17E

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
G	Substances, explosive, n.o.s.	1.3L	UN0359	II	1.3L	101	None	62	None	Forbidden	Forbidden		8E, 14E, 15E, 17E
G	Substances, explosive, n.o.s.	1.1A	UN0473	II	1.1A	101, 111	None	62	None	Forbidden	Forbidden	12	
G	Substances, explosive, n.o.s.	1.1C	UN0474	II	1.1C	101	None	62	None	Forbidden	Forbidden	10	
G	Substances, explosive, n.o.s.	1.1D	UN0475	II	1.1D	101	None	62	None	Forbidden	Forbidden	10	
G	Substances, explosive, n.o.s.	1.1G	UN0476	II	1.1G	101	None	62	None	Forbidden	Forbidden	08	
G	Substances, explosive, n.o.s.	1.3C	UN0477	II	1.3C	101	None	62	None	Forbidden	Forbidden	10	
G	Substances, explosive, n.o.s.	1.3G	UN0478	II	1.3G	101	None	62	None	Forbidden	Forbidden	08	
G	Substances, explosive, n.o.s.	1.4C	UN0479	II	1.4C	101	None	62	None	Forbidden	75 kg	09	
6	Substances, explosive, n.o.s.	1.4D	UN0480	II	1.4D	101	None	62	None	Forbidden	75 kg	09	
G	Substances, explosive, n.o.s.	1.4S	UN0481	II	1.4S	101	None	62	None	25 kg	75 kg	05	
G	Substances, explosive, n.o.s.	1.4G	UN0485	II	1.4G	101	None	62	None	Forbidden	75 kg	08	
G	Substances, explosive, very insensitive, n.o.s., *or* Substances, EVI, n.o.s..	1.5D	UN0482	II	1.5D	101	None	62	None	Forbidden	Forbidden	10	
	Substituted nitrophenol pesticides, liquid, flammable, toxic, *flash point less than 23 degrees C*.	3	UN2780	I	3, 6.1	T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	B	40
				II	3, 6.1	IB2, T11, TP2, TP13, TP27	None	202	243	1 L	60 L	B	40
	Substituted nitrophenol pesticides, liquid, toxic.	6.1	UN3014	I	6.1	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
				III	6.1	IB3, T7, TP2, TP28	153	203	241	60 L	220 L	A	40
	Substituted nitrophenol pesticides, liquid, toxic, flammable *flash point not less than 23 degrees C*.	6.1	UN3013	I	6.1, 3	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1, 3	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
				III	6.1, 3	B1, IB3, T7, TP2, TP28	153	203	242	60 L	220 L	A	40
	Substituted nitrophenol pesticides, solid, toxic.	6.1	UN2779	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	40
				II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	40
				III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	40
	Sucrose octanitrate (dry)	Forbidden											
	Sulfamic acid	8	UN2967	III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	
D	Sulfur	9	NA1350	III	9	30, IB8, IP2	None	None	240	No limit	No limit	A	19, 74
I	Sulfur	4.1	UN1350	III	4.1	30, IB8, IP3, T1, TP1	None	None	240	No limit	No limit	A	19, 74
	Sulfur and chlorate, loose mixtures of.	Forbidden											
	Sulfur chlorides	8	UN1828	I	8	5, A3, B10, B77, N34, T20, TP2, TP12	None	201	243	Forbidden	2.5 L	C	40
	Sulfur dichloride, see Sulfur chlorides.												
	Sulfur dioxide	2.3	UN1079		2.3, 8	3, B14, T50, TP19	None	304	314, 315	Forbidden	25 kg	D	40
	Sulfur dioxide solution, see Sulfurous acid.												
	Sulfur hexafluoride	2.2	UN1080		2.2		306	304	314, 315	75 kg	150 kg	A	
D	Sulfur, molten	9	NA2448	III	9	IB3, T1, TP3	None	213	247	Forbidden	Forbidden	C	61
I	Sulfur, molten	4.1	UN2448	III	4.1	IB1, T1, TP3	None	213	247	Forbidden	Forbidden	C	61
	Sulfur tetrafluoride	2.3	UN2418		2.3, 8	1	None	302	245	Forbidden	Forbidden	D	40
+	Sulfur trioxide, stabilized	8	UN1829	I	8, 6.1	2, A7, B9, B14, B32, B49, B74, B77, N34, T20, TP4, TP12, TP13, TP25, TP26, TP38, TP45	None	227	244	Forbidden	Forbidden	A	40
	Sulfuretted hydrogen, see Hydrogen sulfide.												
	Sulfuric acid, fuming *with less than 30 percent free sulfur trioxide*.	8	UN1831	I	8	A3, A7, B84, N34, T20, TP2, TP12, TP13	None	201	243	Forbidden	2.5 L	C	14, 40
+	Sulfuric acid, fuming *with 30 percent or more free sulfur trioxide*.	8	UN1831	I	8, 6.1	2, A3, A6, A7, B9, B14, B32, B74, B77, B84, N34, T20, TP2, TP12, TP13	None	227	244	Forbidden	Forbidden	C	14, 40
	Sulfuric acid, spent	8	UN1832	II	8	A3, A7, B2, B83, B84, IB2, N34, T8, TP2, TP12	None	202	242	Forbidden	30 L	C	14
	Sulfuric acid *with more than 51 percent acid*.	8	UN1830	II	8	A3, A7, B3, B83, B84, IB2, N34, T8, TP2, TP12	154	202	242	1 L	30 L	C	14
	Sulfuric acid *with not more than 51% acid*.	8	UN2796	II	8	A3, A7, B2, B15, IB2, N6, N34, T8, TP2, TP12	154	202	242	1 L	30 L	B	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Sulfuric and hydrofluoric acid mixtures, *see* Hydrofluoric and sulfuric acid mixtures.	.....			.....		.....	.....	.....	.....	.....		.....
	Sulfuric anhydride, see Sulfur trioxide, stabilized.	.....			.....		.....	.....	.....	.....	.....		.....
	Sulfurous acid	8	UN1833	II	8	B3, IB2, T7, TP2	154	202	242	1 L	30 L	B	40
+	Sulfuryl chloride	8	UN1834	I	8, 6.1	1, A3, B6, B9, B10, B14, B30, B74, B77, N34, T22, TP2, TP12, TP38, TP44	None	226	244	Forbidden	Forbidden	C	40
	Sulfuryl fluoride	2.3	UN2191	.....	2.3	4	None	304	314, 315	Forbidden	25 kg	D	40
	Tars, liquid *including road asphalt and oils, bitumen and cut backs*.	3	UN1999	II	3	B13, IB2, T3, TP3, TP29	150	202	242	5 L	60 L	B	.....
	.....	.....		III	3	B1, B13, IB3, T1, TP3	150	203	242	60 L	220 L	A	.....
	Tear gas candles	6.1	UN1700	II	6.1, 4.1		None	340	None	Forbidden	50 kg	D	40
	Tear gas cartridges, see Ammunition, tear-producing, *etc*.	.....			.....		.....	.....	.....	.....	.....		.....
D	Tear gas devices *with more than 2 percent tear gas substances, by mass*.	6.1	NA1693	I	6.1		None	340	None	Forbidden	Forbidden	D	40
	.....	.....		II	6.1		None	340	None	Forbidden	Forbidden	D	40
	Tear gas devices, with not more than 2 percent tear gas substances, by mass, see Aerosols, *etc*.	.....			.....		.....	.....	.....	.....	.....		.....
	Tear gas grenades, see Tear gas candles.	.....			.....		.....	.....	.....	.....	.....		.....
G	Tear gas substances, liquid, n.o.s..	6.1	UN1693	I	6.1		None	201	None	Forbidden	Forbidden	D	40
	.....	.....		II	6.1	IB2	None	202	None	Forbidden	5 L	D	40
G	Tear gas substances, solid, n.o.s.	6.1	UN1693	I	6.1		None	211	None	Forbidden	15 kg	D	40
	.....	.....		II	6.1	IB8, IP2, IP4	None	212	None	Forbidden	25 kg	D	40
	Tellurium compound, n.o.s.	6.1	UN3284	I	6.1	IB7, IP1, T14, TP2, TP27	None	211	242	5 kg	50 kg	B	.....
	.....	.....		II	6.1	IB8, IP2, IP4, T11, TP2, TP27	None	212	242	25 kg	100 kg	B	.....
	.....	.....		III	6.1	IB8, IP3, T7, TP1, TP28	153	213	240	100 kg	200 kg	A	.....
	Tellurium hexafluoride	2.3	UN2195	.....	2.3, 8	1	None	302	None	Forbidden	Forbidden	D	40
	Terpene hydrocarbons, n.o.s.	3	UN2319	III	3	B1, IB3, T4, TP1, TP29	150	203	242	60 L	220 L	A	.....
	Terpinolene	3	UN2541	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	Tetraazido benzene quinone	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Tetrabromoethane	6.1	UN2504	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	.....
	Tetrachloroethane	6.1	UN1702	II	6.1	IB2, N36, T7, TP2	None	202	243	5 L	60 L	A	40
	Tetrachloroethylene	6.1	UN1897	III	6.1	IB3, N36, T4, TP1	153	203	241	60 L	220 L	A	40
	Tetraethyl dithiopyrophosphate	6.1	UN1704	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	D	40
	Tetraethyl silicate	3	UN1292	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	Tetraethylammonium perchlorate (dry).	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Tetraethylenepentamine	8	UN2320	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	.....
	1,1,1,2-Tetrafluoroethane *or* Refrigerant gas R 134a.	2.2	UN3159	.....	2.2	T50	306	304	314, 315	75 kg	150 kg	A	.....
	Tetrafluoroethylene, stabilized	2.1	UN1081	.....	2.1		306	304	None	Forbidden	150 kg	E	40
	Tetrafluoromethane, compressed *or* Refrigerant gas R 14.	2.2	UN1982	.....	2.2		None	302	None	75 kg	150 kg	A	.....
	1,2,3,6-Tetrahydrobenzaldehyde	3	UN2498	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	Tetrahydrofuran	3	UN2056	II	3	IB2, T4, TP1	None	202	242	5 L	60 L	B	.....
	Tetrahydrofurfurylamine	3	UN2943	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	Tetrahydrophthalic anhydrides *with more than 0.05 percent of maleic anhydride*.	8	UN2698	III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	.....
	1,2,3,6-Tetrahydropyridine	3	UN2410	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	.....
	Tetrahydrothiophene	3	UN2412	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	.....
	Tetramethylammonium hydroxide	8	UN1835	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	A	.....
	Tetramethylene diperoxide dicarbamide.	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Tetramethylsilane	3	UN2749	I	3	T14, TP2	None	201	243	Forbidden	30 L	D	.....
	Tetranitro diglycerin	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Tetranitroaniline	1.1D	UN0207	II	1.1D		None	62	None	Forbidden	Forbidden	10	.....
+	Tetranitromethane	5.1	UN1510	I	5.1, 6.1	2, B9, B14, B32, B74, T20, TP2, TP13, TP38, TP44	None	227	None	Forbidden	Forbidden	D	40, 66, 106
	2,3,4,6-Tetranitrophenol	Forbidden			.....		.....	.....	.....	.....	.....		.....
	2,3,4,6-Tetranitrophenyl methyl nitramine.	Forbidden			.....		.....	.....	.....	.....	.....		.....
	2,3,4,6-Tetranitrophenylnitramine	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Tetranitroresorcinol (dry)	Forbidden			.....		.....	.....	.....	.....	.....		.....
	2,3,5,6-Tetranitroso-1,4-dinitrobenzene.	Forbidden			.....		.....	.....	.....	.....	.....		.....
	2,3,5,6-Tetranitroso nitrobenzene (dry).	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Tetrapropylorthotitanate	3	UN2413	III	3	B1, IB3, T4, TP1	150	203	242	60 L	220 L	A	.....
	Tetrazene, *see* Guanyl nitrosaminoguanyltetrazene.	.....			.....		.....	.....	.....	.....	.....		.....

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Tetrazine (dry)	Forbidden											
	Tetrazol-1-acetic acid	1.4C	UN0407	II	1.4C		None	62	None	Forbidden	75 kg	09	
	1H-Tetrazole	1.1D	UN0504		1.1D		None	62	None	Forbidden	Forbidden	B	1E, 5E
	Tetrazolyl azide (dry)	Forbidden											
	Tetryl, *see* Trinitrophenylmethylnitramine.												
	Thallium chlorate	5.1	UN2573	II	5.1, 6.1	IB6, IP2	None	212	242	5 kg	25 kg	A	56, 58, 106
	Thallium compounds, n.o.s.	6.1	UN1707	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
	Thallium nitrate	6.1	UN2727	II	6.1, 5.1	IB6, IP2	None	212	242	5 kg	25 kg	A	
	4-Thiapentanal	6.1	UN2785	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	D	25, 49
	Thioacetic acid	3	UN2436	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Thiocarbamate pesticide, liquid, flammable, toxic, *flash point less than 23 degrees C.*	3	UN2772	I	3, 6.1	T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	B	40
				II	3, 6.1	IB2, T11, TP13, TP27	None	202	243	1 L	60 L	B	40
	Thiocarbamate pesticide, liquid, toxic, flammable, *flash point not less than 23 degrees C.*	6.1	UN3005	I	6.1, 3	T14, TP2, TP13	None	201	243	1 L	30 L	B	40
				II	6.1, 3	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
				III	6.1, 3	IB3, T7, TP2, TP28	153	203	242	60 L	220 L	A	40
	Thiocarbamate pesticide, liquid, toxic.	6.1	UN3006	I	6.1	T14, TP2, TP13	None	201	243	1 L	30 L	B	40
				II	6.1	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
				III	6.1	IB3, T7, TP2, TP28	153	203	241	60 L	220 L	A	40
	Thiocarbamate pesticides, solid, toxic.	6.1	UN2771	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	40
				II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	40
				III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	40
	Thiocarbonylchloride, see Thiophosgene.												
	Thioglycol	6.1	UN2966	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	
	Thioglycolic acid	8	UN1940	II	8	A7, B2, IB2, N34, T7, TP2	154	202	242	1 L	30 L	A	
	Thiolactic acid	6.1	UN2936	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	
	Thionyl chloride	8	UN1836	I	8	A7, B6, B10, N34, T10, TP2, TP12, TP13	None	201	243	Forbidden	Forbidden	C	40
	Thiophene	3	UN2414	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	40
+	Thiophosgene	6.1	UN2474	II	6.1	2, A7, B9, B14, B32, B74, N33, N34, T20, TP2, TP38, TP45	None	227	244	Forbidden	Forbidden	B	26, 40
	Thiophosphoryl chloride	8	UN1837	II	8	A3, A7, B2, B8, B25, IB2, N34, T7, TP2	None	202	242	Forbidden	30 L	C	40
	Thiourea dioxide	4.2	UN3341	II	4.2	IB6, IP2	None	212	241	15 kg	50 kg	D	
				III	4.2	IB8, IP3	None	213	241	25 kg	100 kg	D	
D	Thorium metal, pyrophoric	7	UN2975		7, 4.2		None	418	None	Forbidden	Forbidden	D	
D	Thorium nitrate, solid	7	UN2976		7, 5.1		None	419	None	Forbidden	15 kg	A	
	Tin chloride, fuming, see Stannic chloride, anhydrous.												
	Tin perchloride or Tin tetrachloride, see Stannic chloride, anhydrous.												
	Tinctures, medicinal	3	UN1293	II	3	IB2, T4, TP1, TP8	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Tinning flux, see Zinc chloride												
	Titanium disulphide	4.2	UN3174	III	4.2	IB8, IP3	None	213	241	25 kg	100 kg	A	
	Titanium hydride	4.1	UN1871	II	4.1	A19, A20, IB4, N34	None	212	241	15 kg	50 kg	E	
	Titanium powder, dry	4.2	UN2546	I	4.2		None	211	242	Forbidden	Forbidden	D	
				II	4.2	A19, A20, IB6, IP2, N5, N34	None	212	241	15 kg	50 kg	D	
				III	4.2	IB8, IP3	None	213	241	25 kg	100 kg	D	
	Titanium powder, wetted *with not less than 25 percent water (a visible excess of water must be present) (a) mechanically produced, particle size less than 53 microns; (b) chemically produced, particle size less than 840 microns.*	4.1	UN1352	II	4.1	A19, A20, IB6, IP2, N34	None	212	240	15 kg	50 kg	E	
	Titanium sponge granules *or* Titanium sponge powders.	4.1	UN2878	III	4.1	A1, IB8, IP3	None	213	240	25 kg	100 kg	D	
+	Titanium tetrachloride	8	UN1838	II	8, 6.1	2, A3, A6, B7, B9, B14, B32, B74, B77, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	C	40
	Titanium trichloride mixtures	8	UN2869	II	8	A7, IB8, IP2, IP4, N34	154	212	240	15 kg	50 kg	A	40
				III	8	A7, IB8, IP3, N34	154	213	240	25 kg	100 kg	A	40

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Titanium trichloride, pyrophoric *or* Titanium trichloride mixtures, pyrophoric.	4.2	UN2441	I	4.2, 8	A7, A8, A19, A20, N34	None	181	244	Forbidden	Forbidden	D	40
	TNT mixed with aluminum, see Tritonal.												
	TNT, *see* Trinitrotoluene, *etc*												
	Toluene	3	UN1294	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
+	Toluene diisocyanate	6.1	UN2078	II	6.1	IB2, T7, TP2, TP13	None	202	243	5 L	60 L	D	25, 40
	Toluene sulfonic acid, see Alkyl, *or* Aryl sulfonic acid *etc*.												
+	Toluidines *liquid*	6.1	UN1708	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	
+	Toluidines *solid*	6.1	UN1708	II	6.1	IB8, IP2, IP4, T7, TP2	None	212	242	25 kg	100 kg	A	
	2,4-Toluylenediamine *or* 2,4-Toluenediamine.	6.1	UN1709	III	6.1	IB8, IP3, T4, TP1	153	213	240	100 kg	200 kg	A	
	Torpedoes, liquid fueled, *with inert head*.	1.3J	UN0450	II	1.3J			62	None	Forbidden	Forbidden	04	23E
	Torpedoes, liquid fueled, *with or without bursting charge*.	1.1J	UN0449	II	1.1J			62	None	Forbidden	Forbidden	04	23E
	Torpedoes *with bursting charge*	1.1E	UN0329	II	1.1E			62	None	Forbidden	Forbidden	03	
	Torpedoes *with bursting charge*	1.1F	UN0330	II	1.1F			62	None	Forbidden	Forbidden	08	
	Torpedoes *with bursting charge*	1.1D	UN0451	II	1.1D			62	None	Forbidden	Forbidden	03	
G	Toxic liquid, corrosive, inorganic, n.o.s..	6.1	UN3289	I	6.1, 8	T14, TP2, TP13, TP27	None	201	243	0.5 L	2.5 L	A	
				II	6.1, 8	IB2, T11, TP2, TP27	None	202	243	1 L	30 L	A	
G	Toxic liquid, corrosive, inorganic, n.o.s. *Inhalation Hazard, Packing Group I, Zone A*.	6.1	UN3289	I	6.1, 8	1, B9, B14, B30, B72, T22, TP2, TP13, TP27, TP38, TP44	None	226	244	Forbidden	Forbidden	B	40
G	Toxic liquid, corrosive, inorganic, n.o.s. *Inhalation Hazard, Packing Group I, Zone B*.	6.1	UN3289	I	6.1, 8	2, B9, B14, B32, B74, T20, TP2, TP13, TP27, TP38, TP45	None	227	244	Forbidden	Forbidden	B	40
G	Toxic liquid, inorganic, n.o.s.	6.1	UN3287	I	6.1	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	A	
				II	6.1	IB2, T11, TP2, TP27	None	202	243	5 L	60 L	A	
				III	6.1	IB3, T7, TP1, TP28	153	203	241	60 L	220 L	A	
G	Toxic liquid, inorganic, n.o.s. *Inhalation Hazard, Packing Group I, Zone A*.	6.1	UN3287	I	6.1	1, B9, B14, B30, B72, T22, TP2, TP13, TP27, TP38, TP44	None	226	244	Forbidden	Forbidden	B	40
G	Toxic liquid, inorganic, n.o.s. *Inhalation Hazard, Packing Group I, Zone B*.	6.1	UN3287	I	6.1	2, B9, B14, B32, B74, T20, TP2, TP13, TP27, TP38, TP45	None	227	244	Forbidden	Forbidden	B	40
G	Toxic liquids, corrosive, organic, n.o.s..	6.1	UN2927	I	6.1, 8	T14, TP2, TP13, TP27	None	201	243	0.5 L	2.5 L	B	40
				II	6.1, 8	IB2, T11, TP2, TP27	None	202	243	1 L	30 L	B	40
G	Toxic liquids, corrosive, organic, n.o.s., *inhalation hazard, Packing Group I, Zone A*.	6.1	UN2927	I	6.1, 8	1, B9, B14, B30, B72, T22, TP2, TP13, TP27, TP38, TP44	None	226	244	Forbidden	Forbidden	D	40
G	Toxic liquids, corrosive, organic, n.o.s., *inhalation hazard, Packing Group I, Zone B*.	6.1	UN2927	I	6.1, 8	2, B9, B14, B32, B74, T20, TP2, TP13, TP27, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
G	Toxic liquids, flammable, organic, n.o.s..	6.1	UN2929	I	6.1, 3	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1, 3	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
G	Toxic liquids, flammable, organic, n.o.s., *inhalation hazard, Packing Group I, Zone A*.	6.1	UN2929	I	6.1, 3	1, B9, B14, B30, B72, T22, TP2, TP13, TP27, TP38, TP44	None	226	244	Forbidden	Forbidden	D	40
G	Toxic liquids, flammable, organic, n.o.s., *inhalation hazard, Packing Group I, Zone B*.	6.1	UN2929	I	6.1, 3	2, B9, B14, B32, B74, T20, TP2, TP13, TP27, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
G	Toxic, liquids, organic, n.o.s.	6.1	UN2810	I	6.1	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
				III	6.1	IB3, T7, TP1, TP28	153	203	241	60 L	220 L	A	40
G	Toxic, liquids, organic, n.o.s. *Inhalation hazard, Packing Group I, Zone A*.	6.1	UN2810	I	6.1	1, B9, B14, B30, B72, T22, TP2, TP13, TP27, TP38, TP44	None	226	244	Forbidden	Forbidden	D	40
G	Toxic, liquids, organic, n.o.s. *Inhalation hazard, Packing Group I, Zone B*.	6.1	UN2810	I	6.1	2, B9, B14, B32, B74, T20, TP2, TP13, TP27, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
G	Toxic liquids, oxidizing, n.o.s.	6.1	UN3122	I	6.1, 5.1	A4	None	201	243	Forbidden	2.5 L	C	
				II	6.1, 5.1	IB2	None	202	243	1 L	5 L	C	
G	Toxic liquids, oxidizing, n.o.s. *Inhalation hazard, Packing Group I, Zone A*.	6.1	UN3122	I	6.1, 5.1	1, B9, B14, B30, B72, T22, TP2, TP13, TP38, TP44	None	226	244	Forbidden	Forbidden	C	
G	Toxic liquids, oxidizing, n.o.s. *Inhalation Hazard, Packing Group I, Zone B*.	6.1	UN3122	I	6.1, 5.1	2, B9, B14, B32, T20, TP2, TP13, TP38, TP44	None	227	244	Forbidden	Forbidden	C	
G	Toxic liquids, water-reactive, n.o.s.	6.1	UN3123	I	6.1, 4.3	A4	None	201	243	Forbidden	1 L	E	40
				II	6.1, 4.3	IB2	None	202	243	1 L	5 L	E	40
G	Toxic liquids, water-reactive, n.o.s. *Inhalation hazard, packing group I, Zone A*.	6.1	UN3123	I	6.1, 4.3	1, B9, B14, B30, B72, T22, TP2, TP13, TP38, TP44	None	226	244	Forbidden	Forbidden	E	40
G	Toxic liquids, water-reactive, n.o.s. *Inhalation hazard, packing group I, Zone B*.	6.1	UN3123	I	6.1, 4.3	2, B9, B14, B32, B74, T20, TP2, TP13, TP38, TP44	None	227	244	Forbidden	Forbidden	E	40
G	Toxic solid, corrosive, inorganic, n.o.s.	6.1	UN3290	I	6.1, 8	IB7	None	211	242	1 kg	25 kg	A	
				II	6.1, 8	IB6, IP2	None	212	242	15 kg	50 kg	A	
G	Toxic solid, inorganic, n.o.s.	6.1	UN3288	I	6.1	IB7	None	211	242	5 kg	50 kg	A	
				II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	
				III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
G	Toxic solids, corrosive, organic, n.o.s.	6.1	UN2928	I	6.1, 8	IB7	None	211	242	1 kg	25 kg	B	40
				II	6.1, 8	IB6, IP2	None	212	242	15 kg	50 kg	B	40
G	Toxic solids, flammable, organic, n.o.s.	6.1	UN2930	I	6.1, 4.1	IB6	None	211	242	1 kg	15 kg	B	
				II	6.1, 4.1	IB8, IP2, IP4	None	212	242	15 kg	50 kg	B	
G	Toxic solids, organic, n.o.s.	6.1	UN2811	I	6.1	IB7	None	211	242	5 kg	50 kg	B	
				II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	B	
				III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	
G	Toxic solids, oxidizing, n.o.s.	6.1	UN3086	I	6.1, 5.1		None	211	242	1 kg	15 kg	C	
				II	6.1, 5.1	IB6, IP2	None	212	242	15 kg	50 kg	C	
G	Toxic solids, self-heating, n.o.s.	6.1	UN3124	I	6.1, 4.2	A5	None	211	242	5 kg	15 kg	D	40
				II	6.1, 4.2	IB6, IP2	None	212	242	15 kg	50 kg	D	40
G	Toxic solids, water-reactive, n.o.s.	6.1	UN3125	I	6.1, 4.3	A5	None	211	242	5 kg	15 kg	D	40
				II	6.1, 4.3	IB6, IP2	None	212	242	15 kg	50 kg	D	40
D	Toy Caps	1.4S	NA0337	II	1.4S		None	62	None	25 kg	100 kg	05	
	Tracers for ammunition	1.3G	UN0212	II	1.3G		None	62	None	Forbidden	Forbidden	07	
	Tracers for ammunition	1.4G	UN0306	II	1.4G		None	62	None	Forbidden	75 kg	06	
	Tractors, see Vehicle, *etc*												
	Tri-(b-nitroxyethyl) ammonium nitrate.	Forbidden											
	Triallyl borate	6.1	UN2609	III	6.1	IB3	153	203	241	60 L	220 L	A	13
	Triallylamine	3	UN2610	III	3, 8	B1, IB3, T4, TP1	None	203	242	5 L	60 L	A	40
	Triazine pesticides, liquid, flammable, toxic, *flash point less than 23 degrees C*.	3	UN2764	I	3, 6.1	T14, TP2, TP13, TP27	None	201	243	Forbidden	30 L	B	40
				II	3, 6.1	IB2, T11, TP2, TP13, TP27	None	202	243	1 L	60 L	B	40
	Triazine pesticides, liquid, toxic	6.1	UN2998	I	6.1	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
				III	6.1	IB3, T7, TP2, TP28	153	203	241	60 L	220 L	A	40
	Triazine pesticides, liquid, toxic, flammable, *flash point not less than 23 degrees C*.	6.1	UN2997	I	6.1, 3	T14, TP2, TP13, TP27	None	201	243	1 L	30 L	B	40
				II	6.1, 3	IB2, T11, TP2, TP13, TP27	None	202	243	5 L	60 L	B	40
				III	6.1, 3	IB3, T7, TP2, TP28	153	203	242	60 L	220 L	A	40
	Triazine pesticides, solid, toxic	6.1	UN2763	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	40
				II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	40
				III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	40
	Tributylamine	6.1	UN2542	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	
	Tributylphosphane	4.2	UN3254	I	4.2		None	211	242	Forbidden	Forbidden	D	
	Trichloro-s-triazinetrione dry, with more than 39 percent available chlorine, see Trichloroisocyanuric acid, dry.												
	Trichloroacetic acid	8	UN1839	II	8	A7, IB8, IP2, IP4, N34	154	212	240	15 kg	50 kg	A	
	Trichloroacetic acid, solution	8	UN2564	II	8	A3, A6, A7, B2, IB2, N34, T7, TP2	154	202	242	1 L	30 L	B	
				III	8	A3, A6, A7, IB3, N34, T4, TP1	154	203	241	5 L	60 L	B	8
+	Trichloroacetyl chloride	8	UN2442	II	8, 6.1	2, A3, A7, B9, B14, B32, B74, N34, T20, TP2, TP38, TP45	None	227	244	Forbidden	Forbidden	D	40
	Trichlorobenzenes, liquid	6.1	UN2321	III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	Trichlorobutene	6.1	UN2322	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	25, 40
	1,1,1-Trichloroethane	6.1	UN2831	III	6.1	IB3, N36, T4, TP1	153	203	241	60 L	220 L	A	40
	Trichloroethylene	6.1	UN1710	III	6.1	IB3, N36, T4, TP1	153	203	241	60 L	220 L	A	40

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Trichloroisocyanuric acid, dry	5.1	UN2468	II	5.1	IB8, IP4	152	212	240	5 kg	25 kg	A	13
	Trichloromethyl perchlorate	Forbidden											
	Trichlorosilane	4.3	UN1295	I	4.3, 3, 8.	A7, N34, T14, TP2, TP7, TP13	None	201	244	Forbidden	Forbidden	D	21, 28, 40, 49, 100
	Tricresyl phosphate *with more than 3 percent ortho isomer*.	6.1	UN2574	II	6.1	A3, IB2, N33, N34, T7, TP2	None	202	243	5 L	60 L	A	
	Triethyl phosphite	3	UN2323	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Triethylamine	3	UN1296	II	3, 8	IB2, T7, TP1	None	202	243	1 L	5 L	B	40
	Triethylenetetramine	8	UN2259	II	8	B2, IB2, T7, TP2	154	202	242	1 L	30 L	B	40
	Trifluoroacetic acid	8	UN2699	I	8	A3, A6, A7, B4, N3, N34, T10, TP2, TP12	None	201	243	0.5 L	2.5 L	B	12, 40
	Trifluoroacetyl chloride	2.3	UN3057		2.3, 8	2, B7, B9, B14, T50, TP21	None	304	314, 315	Forbidden	Forbidden	D	40
	Trifluorochloroethylene, stabilized	2.3	UN1082		2.3, 2.1	3, B14, T50	None	304	314, 315	Forbidden	Forbidden	D	40
	1,1,1-Trifluoroethane, compressed *or* Refrigerant gas R 143a.	2.1	UN2035		2.1	T50	306	304	314, 315	Forbidden	150 kg	B	40
	Trifluoromethane *or* Refrigerant gas R 23.	2.2	UN1984		2.2		306	304	314, 315	75 kg	150 kg	A	
	Trifluoromethane, refrigerated liquid.	2.2	UN3136		2.2	T75, TP5	306	None	314, 315	50 kg	500 kg	D	
	2-Trifluoromethylaniline	6.1	UN2942	III	6.1	IB3	153	203	241	60 L	220 L	A	
	3-Trifluoromethylaniline	6.1	UN2948	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	40
	Triformoxime trinitrate	Forbidden											
	Triisobutylene	3	UN2324	III	3	B1, IB3, T4, TP1	150	203	242	60 L	220 L	A	
	Triisopropyl borate	3	UN2616	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	A	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
D	Trimethoxysilane	6.1	NA9269	I	6.1, 3	2, B9, B14, B32, B74, T20, TP4, TP12, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	E	40
	Trimethyl borate	3	UN2416	II	3	IB2, T7, TP1	150	202	242	5 L	60 L	B	
	Trimethyl phosphite	3	UN2329	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	1,3,5-Trimethyl-2,4,6-trinitrobenzene.	Forbidden											
	Trimethylacetyl chloride	6.1	UN2438	I	6.1, 8, 3.	2, A3, A6, A7, B3, B9, B14, B32, B74, N34, T20, TP2, TP13, TP38, TP45	None	227	244	Forbidden	Forbidden	D	25, 40
	Trimethylamine, anhydrous	2.1	UN1083		2.1	T50	306	304	314, 315	Forbidden	150 kg	B	40
	Trimethylamine, aqueous solutions *with not more than 50 percent trimethylamine by mass*.	3	UN1297	I	3, 8	T11, TP1	None	201	243	0.5 L	2.5 L	D	40, 41
				II	3, 8	B1, IB2, T7, TP1	None	202	243	1 L	5 L	B	40, 41
				III	3, 8	B1, IB3, T7, TP1	150	203	242	5 L	60 L	A	40, 41
	1,3,5-Trimethylbenzene	3	UN2325	III	3	B1, IB3, T2, TP1	None	203	242	60 L	220 L	A	
	Trimethylchlorosilane	3	UN1298	II	3, 8	A3, A7, B77, IB2, N34, T7, TP2, TP13	None	202	243	1 L	5 L	E	40
	Trimethylcyclohexylamine	8	UN2326	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Trimethylene glycol diperchlorate	Forbidden											
	Trimethylhexamethylene diisocyanate.	6.1	UN2328	III	6.1	IB3, T4, TP2, TP13	153	203	241	60 L	220 L	B	
	Trimethylhexamethylenediamines	8	UN2327	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Trimethylol nitromethane trinitrate	Forbidden											
	Trinitro-meta-cresol	1.1D	UN0216	II	1.1D		None	62	None	Forbidden	Forbidden	10	5E
	2,4,6-Trinitro-1,3-diazobenzene	Forbidden											
	2,4,6-Trinitro-1,3,5-triazido benzene (dry).	Forbidden											
	Trinitroacetic acid	Forbidden											
	Trinitroacetonitrile	Forbidden											
	Trinitroamine cobalt	Forbidden											
	Trinitroaniline *or* Picramide	1.1D	UN0153	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Trinitroanisole	1.1D	UN0213	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Trinitrobenzene, *dry or wetted with less than 30 percent water, by mass*.	1.1D	UN0214	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Trinitrobenzene, wetted *with not less than 30 percent water, by mass*.	4.1	UN1354	I	4.1	23, A2, A8, A19, N41	None	211	None	0.5 kg	0.5 kg	E	28
	Trinitrobenzenesulfonic acid	1.1D	UN0386	II	1.1D		None	62	None	Forbidden	Forbidden	10	5E
	Trinitrobenzoic acid, *dry or wetted with less than 30 percent water, by mass*.	1.1D	UN0215	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Trinitrobenzoic acid, wetted *with not less than 30 percent water, by mass*.	4.1	UN1355	I	4.1	23, A2, A8, A19, N41	None	211	None	0.5 kg	0.5 kg	E	28
	Trinitrochlorobenzene *or* Picryl chloride.	1.1D	UN0155	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Trinitroethanol	Forbidden											
	Trinitroethylnitrate	Forbidden											
	Trinitrofluorenone	1.1D	UN0387	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Trinitromethane	Forbidden											
	1,3,5-Trinitronaphthalene	Forbidden											

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Trinitronaphthalene	1.1D	UN0217	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Trinitrophenetole	1.1D	UN0218	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Trinitrophenol *or* Picric acid, *dry or wetted with less than 30 percent water, by mass*.	1.1D	UN0154	II	1.1D		None	62	None	Forbidden	Forbidden	10	5E
	Trinitrophenol, wetted *with not less than 30 percent water, by mass*.	4.1	UN1344	I	4.1	23, A8, A19, N41	None	211	None	1 kg	15 kg	E	28, 36
	2,4,6-Trinitrophenyl guanidine (dry).	Forbidden											
	2,4,6-Trinitrophenyl nitramine	Forbidden											
	2,4,6-Trinitrophenyl trimethylol methyl nitramine trinitrate (dry).	Forbidden											
	Trinitrophenylmethylnitramine *or* Tetryl.	1.1D	UN0208	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Trinitroresorcinol *or* Styphnic acid, *dry or wetted with less than 20 percent water, or mixture of alcohol and water, by mass*.	1.1D	UN0219	II	1.1D		None	62	None	Forbidden	Forbidden	10	5E
	Trinitroresorcinol, wetted *or* Styphnic acid, wetted *with not less than 20 percent water, or mixture of alcohol and water by mass*.	1.1D	UN0394	II	1.1D		None	62	None	Forbidden	Forbidden	10	5E
	2,4,6-Trinitroso-3-methyl nitraminoanisole.	Forbidden											
	Trinitrotetramine cobalt nitrate	Forbidden											
	Trinitrotoluene and Trinitrobenzene mixtures *or* TNT and trinitrobenzene mixtures *or* TNT and hexanitrostilbene mixtures *or* Trinitrotoluene and hexanitrostilnene mixtures.	1.1D	UN0388	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Trinitrotoluene mixtures containing Trinitrobenzene and Hexanitrostilbene *or* TNT mixtures containing trinitrobenzene and hexanitrostilbene.	1.1D	UN0389	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Trinitrotoluene *or* TNT, *dry or wetted with less than 30 percent water, by mass*.	1.1D	UN0209	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Trinitrotoluene, wetted *with not less than 30 percent water, by mass*.	4.1	UN1356	I	4.1	23, A2, A8, A19, N41	None	211	None	0.5 kg	0.5 kg	E	28
	Tripropylamine	3	UN2260	III	3, 8	B1, IB3, T4, TP1	150	203	242	5 L	60 L	A	40
	Tripropylene	3	UN2057	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Tris-(1-aziridinyl)phosphine oxide, solution.	6.1	UN2501	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	
				III	6.1	IB3, T4, TP1	153	203	241	60 L	220 L	A	
	Tris, bis-bifluoroamino diethoxy propane (TVOPA).	Forbidden											
	Tritonal	1.1D	UN0390	II	1.1D		None	62	None	Forbidden	Forbidden	10	
	Tungsten hexafluoride	2.3	UN2196		2.3, 8	2	None	338	None	Forbidden	Forbidden	D	40
	Turpentine	3	UN1299	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Turpentine substitute	3	UN1300	I	3	T11, TP1, TP8, TP27	None	201	243	1 L	30 L	B	
				II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
				III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
	Undecane	3	UN2330	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	
D	Uranium hexafluoride, *fissile excepted or non-fissile*.	7	UN2978		7, 8		423	420, 427	420, 427				
D	Uranium hexafluoride, fissile (*with more than 1 percent U-235*).	7	UN2977		7, 8		453	417, 420	417, 420			A	
D	Uranium metal, pyrophoric	7	UN2979		7, 4.2		None	418	None			D	
D	Uranyl nitrate hexahydrate solution.	7	UN2980		7, 8		421, 427	415, 416, 417.	415, 416, 417.			D	
D	Uranyl nitrate, solid	7	UN2981		7, 5.1		None	419	None	Forbidden	15 kg	A	
	Urea hydrogen peroxide	5.1	UN1511	III	5.1, 8	A1, A7, A29, IB8, IP3	152	213	240	25 kg	100 kg	A	13
	Urea nitrate, *dry or wetted with less than 20 percent water, by mass*.	1.1D	UN0220	II	1.1D	119	None	62	None	Forbidden	Forbidden	10	
	Urea nitrate, wetted *with not less than 20 percent water, by mass*.	4.1	UN1357	I	4.1	39, A8, A19, N41	None	211	None	1 kg	15 kg	A	28
	Urea peroxide, see Urea hydrogen peroxide.												
	Valeraldehyde	3	UN2058	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Valeric acid, see Corrosive liquids, n.o.s..												
	Valeryl chloride	8	UN2502	II	8, 3	A3, A6, A7, B2, IB2, N34, T7, TP2	154	202	243	1 L	30 L	C	40
	Vanadium compound, n.o.s.	6.1	UN3285	I	6.1	IB7, IP1, T14, TP2, TP27	None	211	242	5 kg	50 kg	B	

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	.....	.....		II	6.1	IB8, IP2, IP4, T11, TP2, TP27	None	212	242	25 kg	100 kg	B	.....
	.....	.....		III	6.1	IB8, IP3, T7, TP1, TP28	153	213	240	100 kg	200 kg	A	.....
	Vanadium oxytrichloride	8	UN2443	II	8	A3, A6, A7, B2, B16, IB2, N34, T7, TP2	154	202	242	Forbidden	30 L	C	40
	Vanadium pentoxide, *non-fused form*.	6.1	UN2862	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	40
	Vanadium tetrachloride	8	UN2444	I	8	A3, A6, A7, B4, N34, T10, TP2	None	201	243	Forbidden	2.5 L	C	40
	Vanadium trichloride	8	UN2475	III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	40
	Vanadyl sulfate	6.1	UN2931	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	Vehicle, flammable gas powered	9	UN3166	.....	9	135	220	220	220	Forbidden	No limit	A	.....
	Vehicle, flammable liquid powered.	9	UN3166	.....	9	135	220	220	220	No limit	No limit	A	.....
	Very signal cartridge, see Cartridges, signal.	.....			.....		.....	.....	.....	.....	.....		.....
	Vinyl acetate, stabilized	3	UN1301	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	.....
	Vinyl bromide, stabilized	2.1	UN1085	.....	2.1	T50	306	304	314, 315	Forbidden	150 kg	B	40
	Vinyl butyrate, stabilized	3	UN2838	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	.....
	Vinyl chloride, stabilized *or* Vinyl chloride, stabilized.	2.1	UN1086	.....	2.1	21, B44, T50	306	304	314, 315	Forbidden	150 kg	B	40
	Vinyl chloroacetate	6.1	UN2589	II	6.1, 3	IB2, T7, TP2	None	202	243	5 L	60 L	A	.....
	Vinyl ethyl ether, stabilized	3	UN1302	I	3	A3, T11, TP2	None	201	243	1 L	30 L	D	.....
	Vinyl fluoride, stabilized	2.1	UN1860	.....	2.1		306	304	314, 315	Forbidden	150 kg	E	40
	Vinyl isobutyl ether, stabilized	3	UN1304	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	.....
	Vinyl methyl ether, stabilized	2.1	UN1087	.....	2.1	B44, T50	306	304	314, 315	Forbidden	150 kg	B	40
	Vinyl nitrate polymer	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Vinylidene chloride, stabilized	3	UN1303	I	3	T12, TP2, TP7	150	201	243	1 L	30 L	E	40
	Vinylpyridines, stabilized	6.1	UN3073	II	6.1, 3, 8.	IB1, T7, TP2, TP13	None	202	243	1 L	30 L	B	40
	Vinyltoluenes, stabilized	3	UN2618	III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	Vinyltrichlorosilane, stabilized	3	UN1305	I	3, 8	A3, A7, B6, N34, T11, TP2, TP13	None	201	243	Forbidden	2.5 L	B	40
	Warheads, rocket *with burster or expelling charge*.	1.4D	UN0370	II	1.4D ...		None	62	None	Forbidden	75 kg	02	.....
	Warheads, rocket *with burster or expelling charge*.	1.4F	UN0371	II	1.4F ...		None	62	None	Forbidden	Forbidden	08	.....
	Warheads, rocket *with bursting charge*.	1.1D	UN0286	II	1.1D ...		None	62	None	Forbidden	Forbidden	03	.....
	Warheads, rocket *with bursting charge*.	1.2D	UN0287	II	1.2D ...		None	62	None	Forbidden	Forbidden	03	.....
	Warheads, rocket *with bursting charge*.	1.1F	UN0369	II	1.1F ...		None	62	None	Forbidden	Forbidden	08	.....
	Warheads, torpedo *with bursting charge*.	1.1D	UN0221	II	1.1D ...		None	62	None	Forbidden	Forbidden	03	.....
G	Water-reactive liquid, corrosive, n.o.s..	4.3	UN3129	I	4.3, 8		None	201	243	Forbidden	1 L	D	.....
	.....	.....		II	4.3, 8	IB1	None	202	243	1 L	5 L	E	85
	.....	.....		III	4.3, 8	IB2	None	203	242	5 L	60 L	E	.....
G	Water-reactive liquid, n.o.s.	4.3	UN3148	I	4.3		None	201	244	Forbidden	1 L	E	40
	.....	.....		II	4.3	IB1	None	202	243	1 L	5 L	E	40
	.....	.....		III	4.3	IB2	None	203	242	5 L	60 L	E	40
G	Water-reactive liquid, toxic, n.o.s.	4.3	UN3130	I	4.3, 6.1	A4	None	201	243	Forbidden	1 L	D	.....
	.....	.....		II	4.3, 6.1	IB1	None	202	243	1 L	5 L	E	85
	.....	.....		III	4.3, 6.1	IB2	None	203	242	5 L	60 L	E	85
G	Water-reactive solid, corrosive, n.o.s..	4.3	UN3131	I	4.3, 8	IB4, IP1, N40	None	211	242	Forbidden	15 kg	D	.....
	.....	.....		II	4.3, 8	IB6, IP2	151	212	242	15 kg	50 kg	E	85
	.....	.....		III	4.3, 8	IB8, IP4	151	213	241	25 kg	100 kg	E	85
G	Water-reactive solid, flammable, n.o.s..	4.3	UN3132	I	4.3, 4.1	IB4, N40	None	211	242	Forbidden	15 kg	D	.....
	.....	.....		II	4.3, 4.1	IB4	151	212	242	15 kg	50 kg	E	.....
	.....	.....		III	4.3, 4.1	IB6	151	213	241	25 kg	100 kg	E	.....
G	Water-reactive solid, n.o.s.	4.3	UN2813	I	4.3	IB4, N40	None	211	242	Forbidden	15 kg	E	40
	.....	.....		II	4.3	IB7, IP2	151	212	242	15 kg	50 kg	E	40
	.....	.....		III	4.3	IB8, IP4	151	213	241	25 kg	100 kg	E	40
G	Water-reactive, solid, oxidizing, n.o.s..	4.3	UN3133	II	4.3, 5.1		None	214	214	Forbidden	Forbidden	E	40
	.....	.....		III	4.3, 5.1		None	214	214	Forbidden	Forbidden	E	40
G	Water-reactive solid, self-heating, n.o.s..	4.3	UN3135	I	4.3, 4.2	N40	None	211	242	Forbidden	15 kg	E	.....
	.....	.....		II	4.3, 4.2	IB5, IP2	None	212	242	15 kg	50 kg	E	.....
	.....	.....		III	4.3, 4.2	IB8, IP4	None	213	241	25 kg	100 kg	E	.....
G	Water-reactive solid, toxic, n.o.s.	4.3	UN3134	I	4.3, 6.1	A8, IB4, IP1, N40	None	211	242	Forbidden	15 kg	D	.....
	.....	.....		II	4.3, 6.1	IB5, IP2	151	212	242	15 kg	50 kg	E	85
	.....	.....		III	4.3, 6.1	IB8, IP4	151	213	241	25 kg	100 kg	E	85
	Wheel chair, electric, see Battery powered vehicle *or* Battery powered equipment.	.....			.....		.....	.....	.....	.....	.....		.....
	White acid, see Hydrofluoric acid	.....			.....		.....	.....	.....	.....	.....		.....
I	White asbestos *(chrysotile, actinolite, anthophyllite, tremolite)*.	9	UN2590	III	9	IB8, IP2, IP3	155	216	240	200 kg	200 kg	A	34, 40
	Wood preservatives, liquid	3	UN1306	II	3	IB2, T4, TP1, TP8	150	202	242	5 L	60 L	B	40
	.....	.....		III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	40
	Xanthates	4.2	UN3342	II	4.2	IB6, IP2	None	212	241	15 kg	50 kg	D	40

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	.....	.....		III	4.2	IB8, IP3	None	213	241	25 kg	100 kg	D	40
	Xenon, compressed	2.2	UN2036	.....	2.2		306	302	None	75 kg	150 kg	A	.....
	Xenon, refrigerated liquid *(cryogenic liquids)*.	2.2	UN2591	.....	2.2	T75, TP5	320	None	None	50 kg	500 kg	B	.....
	Xylenes	3	UN1307	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	.....
	.....	.....		III	3	B1, IB3, T2, TP1	150	203	242	60 L	220 L	A	.....
	Xylenols	6.1	UN2261	II	6.1	IB8, IP2, IP4, T7, TP2	None	212	242	25 kg	100 kg	A	.....
	Xylidines, solid	6.1	UN1711	II	6.1	IB8, IP2, IP4, T7, TP2	None	212	242	25 kg	100 kg	A	.....
	Xylidines, solution	6.1	UN1711	II	6.1	IB2, T7, TP2	None	202	243	5 L	60 L	A	.....
	Xylyl bromide	6.1	UN1701	II	6.1	A3, A6, A7, IB2, N33, T7, TP2, TP13	None	340	None	Forbidden	60 L	D	40
	p-Xylyl diazide	Forbidden			.....		.....	.....	.....	.....	.....		.....
	Zinc ammonium nitrite	5.1	UN1512	II	5.1	IB8, IP4	None	212	242	5 kg	25 kg	E	.....
	Zinc arsenate *or* Zinc arsenite *or* Zinc arsenate and zinc arsenite mixtures.	6.1	UN1712	II	6.1	IB8, IP2, IP4	None	212	242	25 kg	100 kg	A	.....
	Zinc ashes	4.3	UN1435	III	4.3	A1, A19, IB8, IP4	151	213	241	25 kg	100 kg	A	.....
	Zinc bisulfite solution, see Bisulfites, aqueous solutions, n.o.s..	.....			.....		.....	.....	.....	.....	.....		.....
	Zinc bromate	5.1	UN2469	III	5.1	A1, A29, IB8, IP3	152	213	240	25 kg	100 kg	A	56, 58, 106
	Zinc chlorate	5.1	UN1513	II	5.1	A9, IB8, IP2, IP4, N34	152	212	242	5 kg	25 kg	A	56, 58, 106
	Zinc chloride, anhydrous	8	UN2331	III	8	IB8, IP3	None	213	240	25 kg	100 kg	A	.....
	Zinc chloride, solution	8	UN1840	III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	.....
	Zinc cyanide	6.1	UN1713	I	6.1	IB7, IP1	None	211	242	5 kg	50 kg	A	26
	Zinc dithionite *or* Zinc hydrosulfite	9	UN1931	III	None ..	IB8	155	204	240	100 kg	200 kg	A	49
	Zinc ethyl, see Diethylzinc	.....			.....		.....	.....	.....	.....	.....		.....
	Zinc fluorosilicate	6.1	UN2855	III	6.1	IB8, IP3	153	213	240	100 kg	200 kg	A	26
	Zinc hydrosulfite, *see* Zinc dithionite.	.....			.....		.....	.....	.....	.....	.....		.....
	Zinc muriate solution, see Zinc chloride, solution.	.....			.....		.....	.....	.....	.....	.....		.....
	Zinc nitrate	5.1	UN1514	II	5.1	IB8, IP4	152	212	240	5 kg	25 kg	A	.....
	Zinc permanganate	5.1	UN1515	II	5.1	IB6, IP2	152	212	242	5 kg	25 kg	D	56, 58, 69, 106, 107
	Zinc peroxide	5.1	UN1516	II	5.1	IB6, IP2	152	212	242	5 kg	25 kg	A	13, 75, 106
	Zinc phosphide	4.3	UN1714	I	4.3, 6.1	A19, N40	None	211	None	Forbidden	15 kg	E	40, 85
	Zinc powder *or* Zinc dust	4.3	UN1436	I	4.3, 4.2	A19, IB4, IP1, N40	None	211	242	Forbidden	15 kg	A	.....
	.....	.....		II	4.3, 4.2	A19, IB7, IP2	None	212	242	15 kg	50 kg	A	.....
	.....	.....		III	4.3, 4.2	IB8, IP4	None	213	242	25 kg	100 kg	A	.....
	Zinc resinate	4.1	UN2714	III	4.1	A1, IB6	151	213	240	25 kg	100 kg	A	.....
	Zinc selenate, see Selenates *or* Selenites.	.....			.....		.....	.....	.....	.....	.....		.....
	Zinc selenite, see Selenates *or* Selenites.	.....			.....		.....	.....	.....	.....	.....		.....
	Zinc silicofluoride, see Zinc fluorosilicate.	.....			.....		.....	.....	.....	.....	.....		.....
	Zirconium, dry, *coiled wire, finished metal sheets, strip (thinner than 254 microns but not thinner than 18 microns)*.	4.1	UN2858	III	4.1	A1, IB8	151	213	240	25 kg	100 kg	A	.....
	Zirconium, dry, *finished sheets, strip or coiled wire*.	4.2	UN2009	III	4.2	A1, A19, IB8	None	213	240	25 kg	100 kg	D	.....
	Zirconium hydride	4.1	UN1437	II	4.1	A19, A20, IB4, N34	None	212	240	15 kg	50 kg	E	.....
	Zirconium nitrate	5.1	UN2728	III	5.1	A1, A29, IB8, IP3	152	213	240	25 kg	100 kg	A	.....
	Zirconium picramate, *dry or wetted with less than 20 percent water, by mass*.	1.3C	UN0236	II	1.3C ...		None	62	None	Forbidden	Forbidden	10	5E
	Zirconium picramate, wetted *with not less than 20 percent water, by mass*.	4.1	UN1517	I	4.1	23, N41	None	211	None	1 kg	15 kg	D	28, 36
	Zirconium powder, dry	4.2	UN2008	I	4.2		None	211	242	Forbidden	Forbidden	D	.....
	.....	.....		II	4.2	A19, A20, IB6, IP2, N5, N34	None	212	241	15 kg	50 kg	D	.....
	.....	.....		III	4.2	IB8, IP3	None	213	241	25 kg	100 kg	D	.....
	Zirconium powder, wetted *with not less than 25 percent water (a visible excess of water must be present) (a) mechanically produced, particle size less than 53 microns; (b) chemically produced, particle size less than 840 microns*.	4.1	UN1358	II	4.1	A19, A20, IB6, IP2, N34	None	212	241	15 kg	50 kg	E	.....
	Zirconium scrap	4.2	UN1932	III	4.2	IB8, IP3, N34	None	213	240	Forbidden	Forbidden	D	.....
	Zirconium suspended in a liquid ..	3	UN1308	I	3		None	201	243	Forbidden	Forbidden	B	.....
	.....	.....		II	3	IB2	None	202	242	5 L	60 L	B	.....
	.....	.....		III	3	B1, IB2	150	203	242	60 L	220 L	B	.....

§ 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	PG	Label Codes	Special provisions (§172.102)	(8) Packaging (§173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Zirconium tetrachloride	8	UN2503	III	8	IB8, IP3	154	213	240	25 kg	100 kg	A	

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12. In Appendix B to § 172.101, paragraphs 1. and 2. are revised and the List of Marine Pollutants is amended by removing 94 entries, adding 16 entries and revising 1 entry in appropriate alphabetical order to read as follows:

Appendix B to § 172.101—List of Marine Pollutants

1. See § 171.4 of this subchapter for applicability to marine pollutants. This appendix lists potential marine pollutants as defined in § 171.8 of this subchapter.

2. Marine pollutants listed in this appendix are not necessarily listed by name in the § 172.101 Table. If a marine pollutant not listed by name or by synonym in the § 172.101 Table meets the definition of any hazard Class 1 through 8, then you must determine the class and division of the material in accordance with § 173.2a of this subchapter. You must also select the most appropriate hazardous material description and proper shipping name. If a marine pollutant not listed by name or by synonym in the § 172.101 Table does not meet the definition of any Class 1 through 8, then you must offer it for transportation under the most appropriate of the following two Class 9 entries: ''Environmentally hazardous substances, liquid, n.o.s.,'' UN3082, or ''Environmentally hazardous substances, solid, n.o.s.'' UN3077.

* * * * *

LIST OF MARINE POLLUTANTS

S.M.P. (1)	Marine Pollutant (2)
[Remove:]	AcetalAcetaldehyde
	Amyl mercaptans
	Anisole
	Benzaldehyde
	Butyl benzenes
	n-Butyl butyrate
	Butyl mercaptans
	Butylphenols, liquid
	Butylphenols, solid
	Butyraldehyde
	Calcium naphthenate
	Camphor oil
	Chlorotoluenes (ortho-, meta-, para-)
	Coal tar
	Coal tar naphtha
	Creosote (coal tar)
	Creosote (wood tar)
	Cresols (o-; m-; p-)
	Cresylic acid
	Cresylic acid sodium salt

LIST OF MARINE POLLUTANTS

S.M.P. (1)	Marine Pollutant (2)
	normal-Decaldehyde
	normal-Decanol
	Decyl acrylate
	1,2-Dichlorobenzene
	Dichlorobenzene (meta; ortho; para)
	Dichlorophenols, liquid
	Dichlorophenols, solid
	2,4-Dichlorophenoxyacetic acid (see also 2,4D)
	2,4 Dichlorophenoxyacetic acid diethanolamine salt
	2,4 Dichlorophenoxyacetic acid dimethylamine salt
	2,4-Dichlorophenoxyacetic acid triisopropylamine salt
	Diethybenzenes (mixed isomers)
	Diisopropylnaphthalene
	Dimethyl disulphide
	Dimethyl glyoxal (butanedione)
	Dimethyl sulphide
	Diphenyl ether
	Diphenyl ether/biphenyl phenyl ether mixtures
	Diphenyl/diphenyl ether (mixtures)
	EPTC (ISO)
	Ethyl acrylate, inhibited
	Ethyl chlorothioformate
	1-Ethyl-2-methylbenzene
	2-Ethylbutyraldehyde
	2-Ethylhexenal
	2,4-Hexadiene aldehyde
	normal-Hexaldehyde
	Iron oxide, spent
	Iron sponge, spent
	Isobutyl aldehyde
	Isobutyl isobutyrate
	Isobutyl priopionate
	Isobutyraldehyde
	Isodecaldehyde
	Isodecanol
	Isononanol
	Isooctanol
	Isopropylbenzene
	Isovaleraldehyde
	1-Methyl-4-ethylbenzene
	2-Methyl-5-ethylpyridine
	Methyl salicylate
	2-Methylbutyraldehyde
	Methylnaphthalenes, liquid
	Methylnaphthalenes, solid
	Methylstyrenes, inhibited
	Naphthalene, crude *or* refined
	Naphthalene, molten
	Naphthenic acids, liquid
	Naphthenic acids, solid

LIST OF MARINE POLLUTANTS

S.M.P. (1)	Marine Pollutant (2)
	Nitrocresols
	Nitrotolueunes (ortho-;meta-;para-), liquid
	Nitrotoluenes (ortho-;meta-;para-), solid
	1-Nonanal
	1-Nonanol
	1-Octanol
	Phenylethylene, inhibited
	alpha-Pinene
	Propanethiols
	Propionaldehyde
	n-Propylbenzene
	Styrene monomer, inhibited
	n-Tetramethylbenzenes
	4-Thiapentanal
	1,2,3-Trimethylbenzene
	1,2,4-Trimethyl benzene
	1,3,5-Trimethyl benzene
	Turpentine
	1-Undecanol
	normal-Valeraldehyde
	Vinylbenzene, inhibited
	Vinyltoluenes, inhibited *mixed isomers*
	Xylenols
[Add:]	
*	* * * *
	Acrolein, stabilized
*	* * * *
	Chlorotoluenes (meta-;para-)
*	* * * *
	Cyanogen chloride, stabilized
*	* * * *
	Desmedipham
*	* * * *
PP	Diclofop-methyl
*	* * * *
	Dichlorobenzene (meta-; para-)
*	* * * *
	Diisopropylnaphthalenes, mixed isomers
*	* * * *
	Ethyl acrylate, stabilized
*	* * * *
PP	Fenchlorazole-ethyl
*	* * * *
PP	Fenoxapro-ethyl

LIST OF MARINE POLLUTANTS

S.M.P. (1)	Marine Pollutant (2)
PP	Fenoxaprop-P-ethyl
* * * * *	
	Linuron
* * * * *	
PP	Silafluofen
* * * * *	
PP	1,2,3—Trichlorobenzene
* * * * *	
	Vinylidene chloride, stabilized Vinyltoluenes, stabilized
* * * * *	
[Revise:] PP	Dodecyl hydroxypropyl sulfide
* * * * *	

13. In § 172.102:

a. In paragraph (c)(1), Special Provisions 43, 110 and 136 are revised and Special Provisions 139, 142 and 143 are added;

b. In paragraph (c)(2), Special Provision A53 is added;

c. Paragraph (c)(3) introductory text and Special Provisions B53 and B69 are revised;

d. In paragraph (c)(3), Special Provisions B100, B101, B103, B104, B105, B106, B108, B109 and B110 are removed;

e. Paragraphs (c)(4) and (c)(7) are revised; and

f. Paragraph (c)(8), Special Provisions W7, W8 and W9 are added in numerical order.

The additions and revisions read as follows:

§ 172.102 Special provisions.

* * * * *

(c) * * *

(1) * * *

Code/Special Provisions

* * * * *

43 The membrane filters, including paper separators and coating or backing materials, that are present in transport, must not be able to propagate a detonation as tested by one of the tests described in the UN Manual of Tests and Criteria, Part I, Test series 1(a) (see § 171.7 of this subchapter). On the basis of the results of suitable burning rate tests, and taking into account the standard tests in the UN Manual of Tests and Criteria, Part III, subsection 33.2.1 (see § 171.7 of this subchapter), nitrocellulose membrane filters in the form in which they are to be transported that do not meet the criteria for a Division 4.1 material are not subject to the requirements of this subchapter. Packagings must be so constructed that explosion is not possible by reason of increased internal pressure. Nitrocellulose membrane filters covered by this entry, each with a mass not exceeding 0.5 g, are not subject to the requirements of this subchapter when contained individually in an article or a sealed packet.

* * * * *

110 Fire extinguishers transported under UN1044 may include installed actuating cartridges (cartridges, power device of Division 1.4C or 1.4S), without changing the classification of Division 2.2, provided the aggregate quantity of deflagrating (propellant) explosives does not exceed 3.2 grams per extinguishing unit.

* * * * *

136 This entry only applies to machinery and apparatus containing hazardous materials as in integral element of the machinery or apparatus. It may not be used to describe machinery or apparatus for which a proper shipping name exists in the § 172.101 Table. Except when approved by the Associate Administrator, machinery or apparatus may only contain hazardous materials for which exceptions are referenced in Column (8) of the § 172.101 Table and are provided in part 173, subpart D, of this subchapter. Hazardous materials shipped under this entry are excepted from the labeling requirements of this subchapter unless offered for transportation or transported by aircraft and are not subject to the placarding requirements of part 173, subpart F, of this subchapter. Orientation markings as described in § 172.312 (a)(2) are required when liquid hazardous materials may escape due to incorrect orientation. The machinery or apparatus, if unpackaged, or the packaging in which it is contained shall be marked ''Dangerous goods in machinery'' or ''Dangerous goods in apparatus'', as appropriate, with the identification number UN3363. For transportation by aircraft, machinery or apparatus may not contain any material forbidden for transportation by passenger or cargo aircraft. The Associate Administrator may except from the requirements of this subchapter, equipment, machinery and apparatus provided:

a. It is shown that it does not pose a significant risk in transportation;

b. The quantities of hazardous materials do not exceed those specified in § 173.4 of this subchapter; and

c. The equipment, machinery or apparatus conforms with § 173.222 of this subchapter.

* * * * *

139 Use of the ''special arrangement'' proper shipping names for international shipments must be made under an IAEA Certificate of Competent Authority issued by the Associate Administrator in accordance with the requirements in § 173.471, § 173.472, or § 173.473 of this subchapter. Use of these proper shipping names for domestic shipments may be made only under a DOT exemption, as defined in, and in accordance with the requirements of subpart B of part 107 of this subchapter.

* * * * *

142 These hazardous materials may not be classified and transported unless authorized by the Associate Administrator. The Associate Administrator will base the authorization on results from Series 2 tests and a Series 6(c) test from the UN Manual of Tests and Criteria (see § 171.7 of this subchapter) on packages as prepared for transport in accordance with the requirements of this subchapter.

143 These articles may contain:

a. Division 2.2 compressed gases, including oxygen;

b. Signal devices (Class 1) which may include smoke and illumination signal flares. Signal devices must be packed in plastic or fiberboard inner packagings;

c. Electric storage batteries;

d. First aid kits; or

e. Strike anywhere matches.

(2) * * *

Code/Special Provisions

* * * * *

A53 Refrigerating machines and refrigerating machine components are not subject to the requirements of this subchapter when containing less than 12 kg (26.4 pounds) of a non-flammable gas or when containing 12 L (3 gallons) or less of ammonia solution (UN2672) (see § 173.307 of this subchapter).

(3) *''B'' codes*. These provisions apply only to bulk packagings, other than IBCs:

Code/Special Provisions

* * * * *

B53 Packagings must be made of either aluminum or steel.

* * * * *

B69 Dry sodium cyanide or potassium cyanide may be shipped in sift-proof weather-resistant metal covered hopper cars, covered motor vehicles, portable tanks or non-specification bins. Siftproof, water-resistant, fiberboard IBCs are permitted when transported in closed freight containers or transport vehicles. Bins must be approved by the Associate Administrator.

* * * * *

(4) *Table 1, Table 2, and Table 3—IB Codes, Organic Peroxide IBC Code, and IP Special IBC Packing Provisions*. These provisions apply only to transportation in IBCs. IBCs may be used for the transportation of hazardous materials when no IBC code is assigned in the § 172.101 Table for the specific material only when approved by the Associate Administrator. Tables 1, 2, and 3 follow:

TABLE 1.—IB CODES (IBC CODES)

IBC Code	Authorized IBCs
IB1	*Authorized IBCs*: Metal (31A, 31B and 31N). *Additional Requirement*: Only liquids with a vapor pressure less than or equal to 110 kPa at 50°C (1.1 bar at 122°F), or 130 kPa at55°C (1.3 bar at 131°F) are authorized.
IB2	*Authorized IBCs*: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). *Additional Requirement*: Only liquids with a vapor pressure less than or equal to 110 kPa at 50°C (1.1 bar at 122°F), or 130kPa at 55°C (1.3 bar at 131°F) are authorized.
IB3	*Authorized IBCs*: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). *Additional Requirement*: Only liquids with a vapor pressure less than or equal to 110 kPa at 50°C (1.1 bar at 122°F), or 130 kPa at 55°C (1.3 bar at 131 °F) are authorized.
IB4	*Authorized IBCs*: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N).
IB5	*Authorized IBCs*: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 21HZ1 and 31HZ1).
IB6	*Authorized IBCs*: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2). *Additional Requirement*: Composite IBCs 11HZ2 and 21HZ2 may not be used when the hazardous materials being transported may become liquid during transport.
IB7	*Authorized IBCs:* Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2); Wooden (11C, 11D and 11F). *Additional Requirement:* Liners of wooden IBCs must be sift-proof.
IB8	*Authorized IBCs:* Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2); Fiberboard (11G); Wooden (11C, 11D and 11F); Flexible (13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 or 13M2).
IB99	IBCs are only authorized if approved by the Associate Administrator.

TABLE 2.—ORGANIC PEROXIDE IBC CODE (IB52)

[This IBC Code applies to organic peroxides of type F. For formulations not listed in this table, only IBCs that are approved by the Associate Administrator may be used.]

UN No.	Organic peroxide	Type of IBC	Maximum quantity (liters)	Control temperature	Emergency temperature
3109	ORGANIC PEROXIDE, TYPE F, LIQUID				
	tert-Butyl hydroperoxide, not more than 72% with water	31A	1250		
	tert-Butyl peroxyacetate, not more than 32% in diluent type A	31A	1250		
		31HA1	1000		
	tert-Butyl peroxy-3,5,5-trimethylhexanoate, not more than 32% in diluent type A.	31A	1250		
		31HA1	1000		
	Cumyl hydroperoxide, not more than 90% in diluent type A	31HA1	1250		
	Dibenzoyl peroxide, not more than 42% as a stable dispersion	31H1	1000		
	Di-tert-butyl peroxide, not more than 52% in diluent type A	31A	1250		
		31HA1	1000		
	1,1-Di-(tert-butylperoxy) cyclohexane, not more than 42% in diluent type A	31H1	1000		
	Dilauroyl peroxide, not more than 42%, stable dispersion, in water	31HA1	1000		
	Isopropyl cumyl hydroperoxide, not more than 72% in diluent type A	31HA1	1250		
	p-Menthyl hydroperoxide, not more than 72% in diluent type A	31HA1	1250		
	Peroxyacetic acid, stabilized, not more than 17%	31H1	1500		
		31HA1	1500		
		31A	1500		
3110	Organic peroxide type F, solid	31A			
		31H1			
		31HA1			
	Dicumyl peroxide	31A			
		31H1			
		31HA1			
3119	ORGANIC PEROXIDE, TYPE F, LIQUID, TEMPERATURE CONTROLLED				
	tert-Butyl peroxy-2-ethylhexanoate, not more than 32% in diluent type B	31HA1	1000	+30°C	+35°C
		31A	1250	+30°C	+35°C
	tert-Butyl peroxyneodecanoate, not more than 32% in diluent type A	31A	1250	0°C	+10°C
	tert-Butyl peroxyneodecanoate, not more than 42% stable dispersion, in water	31A	1250	−5°C	+5°C
	tert-Butyl peroxypivalate, not more than 27% in diluent type B	31HA1	1000	+10°C	+15°C
		31A	1250	+10°C	+15°C
	Cumyl peroxyneodecanoate, not more than 52%, stable dispersion, in water	31A	1250	−15°C	−5°C
	Di-(4-tert-butylcyclohexyl) peroxydicarbonate, not more than 42%, stable dispersion, in water.	31HA1	1000	+30°C	+35°C
	Dicetyl peroxydicarbonate, not more than 42%, stable dispersion, in water	31HA1	1000	+30°C	+35°C
	Di-(2-ethylhexyl) peroxydicarbonate, not more than 52%, stable dispersion, in water.	31A	1250	−20°C	−10°C
	Dimyristyl peroxydicarbonate, not more than 42%, stable dispersion, in water	31HA1	1000	+15°C	+20°C

TABLE 2.—ORGANIC PEROXIDE IBC CODE (IB52)—Continued

[This IBC Code applies to organic peroxides of type F. For formulations not listed in this table, only IBCs that are approved by the Associate Administrator may be used.]

UN No.	Organic peroxide	Type of IBC	Maximum quantity (liters)	Control temperature	Emergency temperature
	Di-(3,5,5-trimethylhexanoyl) peroxide, not more than 38% in diluent type A	31HA1	1000	+10°C	+15°C
		31A	1250	+10°C	+15°C
	Di-(3,5,5-trimethylhexanoyl) peroxide, not more than 52%, stable dispersion, in water.	31A	1250	+10°C	+15°C
	1,1,3,3-Tetramethylbutyl peroxyneodecanoate, not more than 52%, stable dispersion, in water.	31A	1250	−5°C	+5°C

TABLE 3.—IP CODES

IP1 IBCs must be packed in closed freight containers or a closed transport vehicle.
IP2 When IBCs other than metal or rigid plastics IBCs are used, they must be offered for transportation in a closed freight container or a closed transport vehicle.
IP3 Flexible IBCs must be sift-proof and water-resistant or must be fitted with a sift-proof and water-resistant liner.
IP4 Flexible, fiberboard or wooden IBCs must be sift-proof and water-resistant or be fitted with a sift-proof and water-resistant liner.
IP5 IBCs must have a device to allow venting. The inlet to the venting device must be located in the vapor space of the IBC under maximum filling conditions.
IP6 Non-specification bulk bins are authorized.
IP7 For UN identification numbers 1327, 1363, 1364, 1365, 1386, 1841, 2211, 2217, 2793 and 3314, IBCs are not required to meet the IBC performance tests specified in part 178, subpart N of this subchapter.

* * * * *

(7) *''T'' codes.* (i) These provisions apply to the transportation of hazardous materials in UN portable tanks. Portable tank instructions specify the requirements applicable to a portable tank when used for the transportation of a specific hazardous material. These requirements must be met in addition to the design and construction specifications in part 178 of this subchapter. Portable tank instructions T1 through T22 specify the applicable minimum test pressure, the minimum shell thickness (in reference steel), bottom opening requirements and pressure relief requirements. In T23, the organic peroxides and self-reactive substances which are authorized to be transported in portable tanks are listed along with the applicable control and emergency temperatures. Liquefied compressed gases are assigned to portable tank instruction T50. T50 provides the maximum allowable working pressures, bottom opening requirements, pressure relief requirements and degree of filling requirements for liquefied compressed gases permitted for transport in portable tanks. Refrigerated liquefied gases which are authorized to be transported in portable tanks are specified in tank instruction T75.

(ii) The following table specifies the portable tank requirements applicable to T Codes T1 through T22. Column 1 specifies the T Code. Column 2 specifies the minimum test pressure, in bar (1 bar = 14.5 psig), at which the periodic hydrostatic testing required by § 180.605 of this subchapter must be conducted. Column 3 specifies the section reference for minimum shell thickness or, alternatively, the minimum shell thickness value. Column 4 specifies the applicability of § 178.275(g)(3) of this subchapter for the pressure relief devices. When the word ''Normal'' is indicated, § 178.275(g)(3) of this subchapter does not apply. Column 5 references the applicable requirements for bottom openings in part 178 of this subchapter or references ''Prohibited'' which means bottom openings are prohibited. The table follows:

TABLE OF PORTABLE TANK T CODER T1–T22

[Portable tank code T1–T22 apply to liquid and solid hazardous materials of Classes 3 through 9 which are transported in portable tanks.]

Portable tank instruction (1)	Minimum test pressure (bar) (2)	Minimum shell thickness (in mm-reference steel) (See § 178.274(d)) (3)	Pressure-relief requirements (See § 178.275(g)) (4)	Bottom opening requirements (See § 178.275(d)) (5)
T1	1.5	§ 178.274(d)(2)	Normal	§ 178.275(d)(2).
T2	1.5	§ 178.274(d)(2)	Normal	§ 178.275(d)(3).
T3	2.65	§ 178.274(d)(2)	Normal	§ 178.275(d)(2).
T4	2.65	§ 178.274(d)(2)	Normal	§ 178.275(d)(3).
T5	2.65	§ 178.274(d)(2)	§ 178.275(g)(3)	Prohibited.
T6	4	§ 178.274(d)(2)	Normal	§ 178.275(d)(2).
T7	4	§ 178.274(d)(2)	Normal	§ 178.275(d)(3).
T8	4	§ 178.274(d)(2)	Normal	Prohibited.
T9	4	6 mm	Normal	Prohibited.
T10	4	6 mm	§ 178.275(g)(3)	Prohibited.
T11	6	§ 178.274(d)(2)	Normal	§ 178.275(d)(3).
T12	6	§ 178.274(d)(2)	§ 178.275(g)(3)	§ 178.275(d)(3).

TABLE OF PORTABLE TANK T CODER T1–T22—Continued

[Portable tank code T1–T22 apply to liquid and solid hazardous materials of Classes 3 through 9 which are transported in portable tanks.]

Portable tank instruction (1)	Minimum test pressure (bar) (2)	Minimum shell thickness (in mm-reference steel) (See § 178.274(d)) (3)	Pressure-relief requirements (See § 178.275(g)) (4)	Bottom opening requirements (See § 178.275(d)) (5)
T13	6	6 mm	Normal	Prohibited.
T14	6	6 mm	§ 178.275(g)(3)	Prohibited.
T15	10	§ 178.274(d)(2)	Normal	§ 178.275(d)(3).
T16	10	§ 178.274(d)(2)	§ 178.275(g)(3)	§ 178.275(d)(3).
T17	10	6 mm	Normal	§ 178.275(d)(3).
T18	10	6 mm	§ 178.275(g)(3)	§ 178.275(d)(3).
T19	10	6 mm	§ 178.275(g)(3)	Prohibited.
T20	10	8 mm	§ 178.275(g)(3)	Prohibited.
T21	10	10 mm	Normal	Prohibited.
T22	10	10 mm	§ 178.275(g)(3)	Prohibited.

(iii) The following table specifies the portable tank requirements applicable to T23 for self-reactive substances of Division 4.1 and organic peroxides of Division 5.2 which are authorized to be transported in portable tanks:

PORTABLE TANK CODE T23

[Portable tank code T23 applies to self-reactive substances of Division 4.1 and organic peroxides of Division 5.2.]

UN No.	Hazardous material	Minimum test pressure (bar)	Minimum shell thickness (mm-reference steel) See . . .	Bottom opening requirements See . . .	Pressure-relief requirements See . . .	Filling limits	Control tempereature	Emergency temperature
3109	Organic peroxide, Type F, liquid	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
	tert-Butyl hydroperoxide, not more than 72% with water. *Provided that steps have been taken to achieve the safety equivalence of 65% tert-Butyl hydroperoxide and 35% water	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
	Cumyl hydro-peroxide, not more than 90% in diluent type A	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
	Di-tert-butyl peroxide, not more than 32% in diluent type A	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
	Isopropyl cumyl hydro-peroxide, not more than 72% in diluent type A	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
	p-Menthyl hydro-peroxide, not more than 72% in diluent type A	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
	Pinanyl hydro-peroxide, not more than 50% in diluent type A	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
3110	Organic peroxide, Type F, solid	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
	Dicumyl peroxide. *Maximum quantity per portable tank 2,000 kg							
3119	Organic peroxide, Type F, liquid, temperature controlled	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)	As approved by Assoc. Admin.	As approved by Assoc. Admin.
	tert-Butyl peroxyacetate, not more than 32% in diluent tyupe B	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)	+30°C	+35°C
	tert-Butyl peroxy-2-ethylhexanoate, not more than 32% in diluent type B	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)	+15°C	+20°C
	tert-Butyl peroxypivalate, not more than 27% in diluent type B	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)	−5°C	+10°C

PORTABLE TANK CODE T23—Continued

[Portable tank code T23 applies to self-reactive substances of Division 4.1 and organic peroxides of Division 5.2.]

UN No.	Hazardous material	Minimum test pressure (bar)	Minimum shell thickness (mm-reference steel) See . . .	Bottom opening requirements See . . .	Pressure-relief requirements See . . .	Filling limits	Control tempereature	Emergency temperature
	tert-Butyl peroxy-3,5,5-trimethyl-hexanoate, not more than 32% in dileunt type B	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)	+35°C	+40°C
	Di-(3,5,5-trimethyl-hexanoyl) peroxide, not more htan 38% in diluent type A	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)	0°C	+5°C
3120	Organix peroxide, Type F, solid, temperature controlled	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)	As approved by Assoc. Admin.	As approved by Assoc. Admin.
3229	Self-reactive liquid Type F	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
3230	Self-reactive solid Type F	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
3239	Self-reactive liquid Type F, temperature controlled	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)	As approved by Assoc. Admin.	As approved by Assoc. Admin.
3240	Self-reactive solid Type F, temperature controlled	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)	As approved by Assoc. Admin.	As approved by Assoc. Admin.

(iv) The following portable tank instruction applies to portable tanks used for the transportation of liquefied compressed gases. The T50 table provides the UN identification number and proper shipping name for each liquefied compressed gas authorized to be transported in a T50 portable tank. The table provides maximum allowable working pressures, bottom opening requirements, pressure relief device requirements and degree of filling requirements for each liquefied compressed gases permitted for transportation in a T50 portable tank. In the minimum test pressure column, ''small'' means a portable tank with a diameter of 1.5 meters or less when measured at the widest part of the shell, ''sunshield'' means a portable tank with a shield covering at least the upper third of the shell, ''bare'' means no sunshield or insulation is provided, and ''insulated'' means a complete cladding of sufficient thickness of insulating material necessary to provide a minimum conductance of not more than 0.67 w/m^2/k. In the pressure relief requirements column, the word ''Normal'' denotes that a frangible disc as specified in § 178.276(e)(3) of this subchapter is not required. The T50 table follows:

PORTABLE TANK CODE T50

[Portable tank code T50 applies to liquefied compressed gases.]

UN No.	Non-refrigerated liquefied compressed gases	Max. allowable working pressure (bar) small; bare; sunshield; insulated	Openings below liquid level	Pressure relief requirements (see § 178.27(e))	Maximum filling density (kg/l)
1005	Ammonia, anhydrous	29.0 25.7 22.0 19.7	Allowed	§ 178.276(e)(3)	0.53
1009	Bromotrifluoromethane *or* Refrigerant gas R 13B1.	38.0 34.0 30.0 27.5	Allowed	Normal	1.13
1010	Butadienes, stabilized	7.5 7.0 7.0 7.0	Allowed	Normal	0.55
1011	Butane	7.0 7.0 7.0 7.0	Allowed	Normal	0.51

PORTABLE TANK CODE T50—Continued

[Portable tank code T50 applies to liquefied compressed gases.]

UN No.	Non-refrigerated liquefied compressed gases	Max. allowable working pressure (bar) small; bare; sunshield; insulated	Openings below liquid level	Pressure relief requirements (see § 178.27(e))	Maximum filling density (kg/l)
1012	Butylene	8.0 7.0 7.0 7.0	Allowed	Normal	0.53
1017	Chlorine	19.0 17.0 15.0 13.5	Not Allowed	§ 178.276(e)(3)	1.25
1018	Chlorodifluoromethane *or* Refrigerant gas R 22.	26.0 24.0 21.0 19.0	Allowed	Normal	1.03
1020	Chloropentafluoroethane *or* Refrigerant gas R 115.	23.0 20.0 18.0 16.0	Allowed	Normal	1.06
1021	1-Chloro-1,2,2,2-tetrafluoroethane *or* Refrigerant gas R 124.	10.3 9.8 7.9 7.0	Allowed	Normal	1.2
1027	Cyclopropane	18.0 16.0 14.5 13.0	Allowed	Normal	0.53
1028	Dichlorodifluoromethane *or* Refrigerant gas R 12.	16.0 15.0 13.0 11.5	Allowed	Normal	1.15
1029	Dichlorofluoromethane *or* Refrigerant gas R 21.	7.0 7.0 7.0 7.0	Allowed	Normal	1.23
1030	1,1-Difluoroethane *or* Refrigerant gas R 152a.	16.0 14.0 12.4 11.0	Allowed	Normal	0.79
1032	Dimethylamine, anhydrous	7.0 7.0 7.0 7.0	Allowed	Normal	0.59
1033	Dimethyl ether	15.5 13.8 12.0 10.6	Allowed	Normal	0.58
1036	Ethylamine	7.0 7.0 7.0 7.0	Allowed	Normal	0.61
1037	Ethyl chloride	7.0 7.0 7.0 7.0	Allowed	Normal	0.8

PORTABLE TANK CODE T50—Continued

[Portable tank code T50 applies to liquefied compressed gases.]

UN No.	Non-refrigerated liquefied compressed gases	Max. allowable working pressure (bar) small; bare; sunshield; insulated	Openings below liquid level	Pressure relief requirements (see § 178.27(e))	Maximum filling density (kg/l)
1040	Ethylene oxide with *nitrogen up to a total pressure of 1MPa (10 bar) at 50 °C*.	Only authorized in 10 bar insulatedportable tanks.	Not allowed	§ 178.276(e)(3)	0.78
1041	Ethylene oxide and carbon dioxide mixture *with more than 9% butnot more than 87% ethylene oxide*.	See MAWP defination in § 178.276(a).	Allowed	Normal	See § 173.32(f)
1055	Isobutylene	8.1 7.0 7.0 7.0	Allowed	Normal	0.52
1060	Methyl acetylene and propadiene mixture, stabilized.	28.0 24.5 22.0 20.0	Allowed	Normal	0.43
1061	Methylamine, anhydrous	10.8 9.6 7.8 7.0	Allowed	Normal	0.58
1062	Methyl bromide	7.0 7.0 7.0 7.0	Not allowed	§ 178.276(e)(3)	1.51
1063	Methyl chloride *or* Refrigerant gas R 40.	14.5 12.7 11.3 10.0	Allowed	Normal	0.81
1064	Methyl mercaptan	7.0 7.0 7.0 7.0	Not allowed	§ 178.276(e)(3)	0.78
1067	Dinitrogen tetroxide	7.0 7.0 7.0 7.0	Not allowed	§ 178.276(e)(3)	1.3
1075	Petroleum gas, liquefied	See MAWP definition in § 178.276(a).	Allowed	Normal	See § 173.32(f)
1077	Propylene	28.0 24.5 22.0 20.0	Allowed	Normal	0.43
1078	Refrigerant gas, n.o.s.	See MAWP definition in § 178.276(a).	Allowed	Normal	See § 173.32(f)
1079	Sulphur dioxide	11.6 10.3 8.5 7.6	Not allowed	§ 178.276(e)(3)	1.23
1082	Trifluorochloroethylene, stabilized *or* Refrigerant gas R 1113.	17.0 15.0 13.1 11.6	Not allowed	§ 178.276(e)(3)	1.13

PORTABLE TANK CODE T50—Continued

[Portable tank code T50 applies to liquefied compressed gases.]

UN No.	Non-refrigerated liquefied compressed gases	Max. allowable working pressure (bar) small; bare; sunshield; insulated	Openings below liquid level	Pressure relief requirements (see § 178.27(e))	Maximum filling density (kg/l)
1083	Trimethylamine, anhydrous	7.0 7.0 7.0 7.0	Allowed	Normal	0.56
1085	Vinyl bromide, stabilized	7.0 7.0 7.0 7.0	Allowed	Normal	1.37
1086	Vinyl chloride, stabilized	10.6 9.3 8.0 7.0	Allowed	Normal	0.81
1087	Vinyl methyl ether, stabilized	7.0 7.0 7.0 7.0	Allowed	Normal	0.67
1581	Chloropicrin and methyl bromide mixture.	7.0 7.0 7.0 7.0	Not Allowed	§ 178.276(e)(3)	1.51
1582	Chloropicrin and methyl chloride mixture.	19.2 16.9 15.1 13.1	Not allowed	§ 178.276(e)(3)	0.81
1858	Hexafluoropropylene compressed *or* Refrigerant gas R 1216.	19.2 16.9 15.1 13.1	Allowed	Normal	1.11
1912	Methyl chloride and methylene chloride mixture.	15.2 13.0 11.6 10.1	Allowed	Normal	0.811954
NA 1954	Insecticide gases, *flammable,* n.o.s.	See MAWP definition in § 178.276(a).	Allowed	Normal	§ 173.32(f)
1958	1,2-Dichloro-1,1,2,2-tetrafluoroethane *or* Refrigerant gas R 114.	7.0 7.0 7.0 7.0	Allowed	Normal	1.3
1965	Hydrocarbon gas, mixture liquefied, n.o.s..	See MAWP definition in 178.276(a).	Allowed	Normal	See § 173.32(f)
1969	Isobutane	8.5 7.5 7.0 7.0	Allowed	Normal	0.49
1973	Chlorodifluoromethane and chloropentafluoroethane mixture *with fixed boiling point, withapproximately 49% chlorodifluoromethane or Refrigerant gas R502.*	28.3 25.3 22.8 20.3	Allowed	Normal	1.05
1974	Chlorodifluorobromomethane *or* Refrigerant gas R 12B1.	7.4 7.0 7.0 7.0	Allowed	Normal	1.61

PORTABLE TANK CODE T50—Continued

[Portable tank code T50 applies to liquefied compressed gases.]

UN No.	Non-refrigerated liquefied compressed gases	Max. allowable working pressure (bar) small; bare; sunshield; insulated	Openings below liquid level	Pressure relief requirements (see § 178.27(e))	Maximum filling density (kg/l)
1976	Octafluorocyclobutane *or* Refrigerant gas RC 318.	8.8 7.8 7.0 7.0	Allowed	Normal	1.34
1978	Propane	22.5 20.4 18.0 16.5	Allowed	Normal	0.42
1983	1-Chloro-2,2,2-trifluoroethane *or* Refrigerant gas R 133a.	7.0 7.0 7.0 7.0	Allowed	Normal	1.18
2035	1,1,1-Trifluoroethane compressed *or* Refrigerant gas R 143a.	31.0 27.5 24.2 21.8	Allowed	Normal	0.76
2424	Octafluoropropane *or* Refrigerant gas R 218.	23.1 20.8 18.6 16.6	Allowed	Normal	1.07
2517	1-Chloro-1,1-difluoroethane *or* Refrigerant gas R 142b.	8.9 7.8 7.0 7.0	Allowed	Normal	0.99
2602	Dichlorodifluoromethane and difluoroethane azeotropic mixture *with approximately 74% dichlorodifluoromethane or* Refrigerant gas R 500.	20.0 18.0 16.0 14.5	Allowed	Normal	1.01
3057	Trifluoroacetyl chloride	14.6 12.9 11.3 9.9	Not allowed	§ 178.276(e)(3)	1.17
3070	Ethylene oxide and dichlorodifluoromethane mixture *with not more than 12.5% ethylene oxide*.	14.0 12.0 11.0 9.0	Allowed	§ 178.276(e)(3)	1.09
3153	Perfluoro (methyl vinyl ether)	14.3 13.4 11.2 10.2	Allowed	Normal	1.14
3159	1,1,1,2-Tetrafluoroethane *or* Refrigerant gas R 134a.	17.7 15.7 13.8 12.1	Allowed	Normal	1.04
3161	Liquefied gas, flammable, n.o.s.	See MAWP definition in § 178.276(a).	Allowed	Normal	§ 173.32(f)
3163	Liquefied gas, n.o.s.	See MAWP definition in § 178.276(a).	Allowed	Normal	§ 173.32(f)

PORTABLE TANK CODE T50—Continued

[Portable tank code T50 applies to liquefied compressed gases.]

UN No.	Non-refrigerated liquefied compressed gases	Max. allowable working pressure (bar) small; bare; sunshield; insulated	Openings below liquid level	Pressure relief requirements (see § 178.27(e))	Maximum filling density (kg/l)
3220	Pentafluoroethane *or* Refrigerant gas R 125.	34.4 30.8 27.5 24.5	Allowed	Normal	0.95
3252	Difluoromethane *or* Refrigerant gas R 32.	43.0 39.0 34.4 30.5	Allowed	Normal	0.78
3296	Heptafluoropropane *or* Refrigerant gas R 227.	16.0 14.0 12.5 11.0	Allowed	Normal	1.2
3297	Ethylene oxide and chlorotetrafluoroethane mixture, *with not more than 8.8% ethylene oxide*.	8.1 7.0 7.0 7.0	Allowed	Normal	1.16
3298	Ethylene oxide and pentafluoroethane mixture, *with not more than 7.9% ethylene oxide*.	25.9 23.4 20.9 18.6	Allowed	Normal	1.02
3299	Ethylene oxide and tetrafluoroethane mixture, *with not more than 5.6% ethylene oxide*.	16.7 14.7 12.9 11.2	Allowed	Normal	1.03
3318	Ammonia solution, *relative density less than 0.880 at 15 °C in water, with more than 50% ammonia*.	See MAWP definition in 178.276(a).	Allowed	§ 178.276(e)(3)	§ 173.32(f)
3337	Refrigerant gas R 404A	31.6 28.3 25.3 22.5	Allowed	Normal	0.84
3338	Refrigerant gas R 407A	31.3 28.1 25.1 22.4	Allowed	Normal	0.95
3339	Refrigerant gas R 407B	33.0 29.6 26.5 23.6	Allowed	Normal	0.95
3340	Refrigerant gas R 407C	29.9 26.8 23.9 21.3	Allowed	Normal	0.95

(v) When portable tank instruction T75 is referenced in Column (7) of the § 172.101 Table, the applicable refrigerated liquefied gases are authorized to be transported in portable tanks in accordance with the requirements of § 178.277 of this subchapter.

(vi) *UN and IM portable tank codes/special provisions.* When a specific portable tank instruction is specified by a T Code in Column (7) of the § 172.101 Table for a specific hazardous material, a Specification portable tank conforming to an alternative tank instruction may be used if:

(A) the alternative portable tank has a higher or equivalent test pressure (for example, 4 bar when 2.65 bar is specified);

(B) the alternative portable tank has greater or equivalent wall thickness (for example, 10 mm when 6 mm is specified);

(C) the alternative portable tank has a pressure relief device as specified in the T Code. If a frangible disc is required in series with the reclosing pressure relief device for the specified portable tank, the alternative portable tank must be fitted with a frangible disc in series with the reclosing pressure relief device; and

(D) With regard to bottom openings—

(1) When two effective means are specified, the alternative portable tank is fitted with bottom openings having two or three effective means of closure or no bottom openings; or

(2) When three effective means are specified, the portable tank has no bottom openings or three effective means of closure; or

(3) When no bottom openings are authorized, the alternative portable tank must ot have bottom openings.

(vii) When a hazardous material is not assigned a portable tank T Code or TP 9 is referenced in Column (7) of the § 172.101 Table, the hazardous material may only be transported in a portable tank if approved by the Associate Administrator.

(viii) Portable tank special provisions are assigned to certain hazardous materials to specify requirements that are in addition to those provided by the portable tank instructions or the requirements in part 178 of this subchapter. Portable tank special provisions are designated with the abbreviation TP (tank provision) and are assigned to specific hazardous materials in Column (7) of the § 172.101 Table. The following is a list of the portable tank special provisions:

Code/Special Provisions

TP1 The maximum degree of filling must not exceed the degree of filling determined by the following:

$$\left(\text{Degree of filling} = \frac{97}{1+\alpha\left(t_r - t_f\right)}\right).$$

Where:

t_r is the maximum mean bulk temperature during transport, and t_f is the temperature in degrees celsius of the liquid during filling.

TP2 a. The maximum degree of filling must not exceed the degree of filling determined by the following:

$$\left(\text{Degree of filling} = \frac{95}{1+\alpha\left(t_r - t_f\right)}\right).$$

Where:

t_r is the maximum mean bulk temperature during transport,

t_f is the temperature in degrees celsius of the liquid during filling, and

α is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (t_f) and the maximum mean bulk temperature during transportation (t_r) both in degrees celsius.

b. For liquids transported under ambient conditions α may be calculated using the formula:

$$\alpha = \frac{d_{15} - d_{50}}{35\, d_{50}}$$

Where:

d_{15} and d_{50} are the densities (in units of mass per unit volume) of the liquid at 15°C (59°F) and 50°C (122°F), respectively.

TP3 For liquids transported under elevated temperature, the maximum degree of filling is determined by the following:

$$\left(\text{Degree of filling} = 95\frac{d_t}{d_f}\right).$$

Where:

d_t is the density of the material at the maximum mean bulk temperature during transport; and

d_f is the density of the material at the temperature in degrees celsius of the liquid during filling; and

d_f is the density of the liquid at the mean temperature of the liquid during filling, and d_t is the maximum mean bulk temperature during transport.

TP4 The maximum degree of filling for portable tanks must not exceed 90%.

TP5 For a portable tank used for the transport of flammable refrigerated liquefied gases or refrigerated liquefied oxygen, the maximum rate at which the portable tank may be filled must not exceed the liquid flow capacity of the primary pressure relief system rated at a pressure not exceeding 120 percent of the portable tank's design pressure. For portable tanks used for the transport of refrigerated liquefied helium and refrigerated liquefied atmospheric gas (except oxygen), the maximum rate at which the tank is filled must not exceed the liquid flow capacity of the pressure relief device rated at 130 percent of the portable tank's design pressure. Except for a portable tank containing refrigerated liquefied helium, a portable tank shall have an outage of at least two percent below the inlet of the pressure relief device or pressure control valve, under conditions of incipient opening, with the portable tank in a level attitude. No outage is required for helium.

TP6 To prevent the tank from bursting in an event, including fire engulfment (the conditions prescribed in CGA pamphlet S–1.2 (see § 171.7 of this subchapter) may be used to consider the fire engulfment condition), it must be equipped with pressure relief devices that are adequate in relation to the capacity of the tank and the nature of the hazardous material transported.

TP7 The vapor space must be purged of air by nitrogen or other means.

TP8 A portable tank having a minimum test pressure of 1.5 bar (150 kPa) may be used when the flash point of the hazardous material transported is greater than 0°C (32°F).

TP9 A hazardous material assigned to special provision TP9 in Column (7) of the § 172.101 Table may only be transported in a portable tank if approved by the Associate Administrator.

TP10 The portable tank must be fitted with a lead lining at least 5 mm (0.2 inches) thick. The lead lining must be tested annually to ensure that it is intact and functional. Another suitable lining material may be used if approved by the Associate Administrator.

TP12 This material is considered highly corrosive to steel.

TP13 Self-contained breathing apparatus must be provided when this hazardous material is transported by sea.

TP16 The portable tank must be protected against over and under pressurization which may be experienced during transportation. The means of protection must be approved by the approval agency designated to approve the portable tank in accordance with the procedures in part 107, subpart E, of this subchapter. The pressure relief device must be preceded by a frangible disk in accordance with the requirements in § 178.275(g)(3) of this subchapter to prevent crystallization of the product in the pressure relief device.

TP17 Only inorganic non-combustible materials may be used for thermal insulation of the tank.

TP18 The temperature of this material must be maintained between 18°C (64.4°F) and 40°C (104°F) while in transportation. Portable tanks containing solidified methacrylic acid must not be reheated during transportation.

TP19 The calculated wall thickness must be increased by 3 mm at the time of construction. Wall thickness must be verified ultrasonically at intervals midway between periodic hydraulic tests (every 2.5 years). The portable tank must not be used if the wall thickness is less than that prescribed by the applicable T code in Column (7) of the Table for this material.

TP20 This hazardous material must only be transported in insulated tanks under a nitrogen blanket.

TP21 The wall thickness must not be less than 8 mm. Portable tanks must be hydraulically tested and internally inspected at intervals not exceeding 2.5 years.

TP22 Lubricants for portable tank fittings (for example, gaskets, shut-off valves, flanges) must be oxygen compatible.

TP24 The portable tank may be fitted with a device to prevent the build up of excess pressure due to the slow decomposition of the hazardous material being transported. The device must be in the vapor space when the tank is filled under maximum filling conditions. This device must also prevent an unacceptable amount of leakage of liquid in the case of overturning.

TP25 Sulphur trioxide 99.95% pure and above may be transported in tanks without an inhibitor provided that it is maintained at a temperature equal to or above 32.5°C (90.5°F).

TP26 The heating device must be exterior to the shell. For UN 3176, this requirement only applies when the hazardous material reacts dangerously with water.

TP27 A portable tank having a minimum test pressure of 4 bar (400 kPa) may be used provided the calculated test pressure is 4 bar or less based on the MAWP of the hazardous material, as defined in § 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.

TP28 A portable tank having a minimum test pressure of 2.65 bar (265 kPa) may be used provided the calculated test pressure is 2.65 bar or less based on the MAWP of the

hazardous material, as defined in § 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.

TP29 A portable tank having a minimum test pressure of 1.5 bar (150.0 kPa) may be used provided the calculated test pressure is 1.5 bar or less based on the MAWP of the hazardous materials, as defined in § 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.

TP30 This hazardous material may only be transported in insulated tanks.

TP31 This hazardous material may only be transported in tanks in the solid state.

TP37 IM portable tanks are only authorized for the shipment of hydrogen peroxide solutions in water containing 72% or less hydrogen peroxide by weight. Pressure relief devices shall be designed to prevent the entry of foreign matter, the leakage of liquid and the development of any dangerous excess pressure. In addition, the portable tank must be designed so that internal surfaces may be effectively cleaned and passivated. Each tank must be equipped with pressure relief devices conforming to the following requirements:

Concentration of hydrogen per peroxide solution	Total [1]
52% or less	11
Over 52%, but not greater than 60%	22
Over 60%, but not greater than 72%	32

[1] Total venting capacity in standard cubic feet hour (S.C.F.H.) per pound of hydrogen peroxide solution.

TP38 Each portable tank must be insulated with an insulating material so that the overall thermal conductance at 15.5 °C (60 °F) is no more than 1.5333 kilojoules per hour per square meter per degree Celsius (0.075 Btu per hour per square foot per degree Fahrenheit) temperature differential. Insulating materials may not promote corrosion to steel when wet.

TP44 Each portable tank must be made of stainless steel, except that steel other than stainless steel may be used in accordance with the provisions of § 173.24b(b) of this subchapter. Thickness of stainless steel for tank shell and heads must be the greater of 7.62 mm (0.300 inch) or the thickness required for a portable tank with a design pressure at least equal to 1.5 times the vapor pressure of the hazardous material at 46 °C (115 °F).

TP45 Each portable tank must be made of stainless steel, except that steel other than stainless steel may be used in accordance with the provisions of 173.24b(b) of this subchapter. Thickness of stainless steel for portable tank shells and heads must be the greater of 6.35 mm (0.250 inch) or the thickness required for a portable tank with a design pressure at least equal to 1.3 times the vapor pressure of the hazardous material at 46 °C (115 °F).

TP46 Portable tanks in sodium metal service are not required to be hydrostatically retested.

(8) * * *

Code/Special Provisions

W7 Vessel stowage category for uranyl nitrate hexahydrate solution is ''D'' as defined in § 172.101(k)(4).

W8 Vessel stowage category for pyrophoric thorium metal or pyrophoric uranium metal is ''D'' as defined in § 172.101(k)(4).

W9 When offered for transportation by water, the following Specification packagings are not authorized unless approved by the Associate Administrator: woven plastic bags, plastic film bags, textile bags, paper bags, IBCs and bulk packagings.

* * * * *

14. In § 172.202, paragraphs (a)(4) and (e) are revised to read as follows:

§ 172.202 Description of hazardous material on shipping papers.

(a) * * *

(4) The packing group in Roman numerals, as designated for the hazardous material in Column 5 of the § 172.101 Table. Class 1 (explosives) materials, self-reactive substances, organic peroxides and entries that are not assigned a packing group are excepted from this requirement. The packing group may be preceded by the letters ''PG'' (for example, ''PG II''); and

* * * * *

(e) Except for those materials in the UN Recommendations, the ICAO Technical Instructions, or the IMDG Code (see § 171.7 of this subchapter), a material that is not a hazardous material according to this subchapter may not be offered for transportation or transported when its description on a shipping paper includes a hazard class or an identification number specified in the § 172.101 Table.

15. In § 172.203, paragraph (d)(11) is revised, new paragraphs (i)(5) and (i)(6) are added, and paragraph (n) is revised to read as follows:

§ 172.203 Additional description requirements.

* * * * *

(d) * * *

(11) For a shipment of low specific activity material or surface contaminated objects, the appropriate group notation of LSA–I, LSA–II, LSA–III, SCO–I, or SCO–II, unless the group notation is contained in the proper shipping name as described in the § 172.101 Table.

* * * * *

(i) * * *

(5) Minimum flash point if 61°C or below (in °C closed cup (c.c.) in association with the basic description.

(6) Subsidiary hazards not communicated in the proper shipping name shown either following the hazard class or division in parentheses, or in association with the basic description.

* * * * *

(n) *Elevated temperature materials.* If a liquid material in a package meets the definition of an elevated temperature material in § 171.8 of this subchapter, and the fact that it is an elevated temperature material is not disclosed in the proper shipping name (for example, when the words ''Molten'' or ''Elevated temperature'' are part of the proper shipping name), the word ''HOT'' must immediately precede the proper shipping name of the material on the shipping paper.

* * * * *

§ 172.330 [Amended]

16. In § 172.330, in paragraph (a)(1)(ii), the following changes are made:

a. The proper shipping name, ''Acrolein, inhibited'' is revised to read ''Acrolein, stabilized''.

b. The proper shipping name, ''Chloroprene, inhibited'' is revised to read ''Chloroprene, stabilized''.

c. The proper shipping name, ''Sulfur trioxide, inhibited'' is revised to read ''Sulfur trioxide, stabilized''.

17. In § 172.402, paragraph (b) is revised to read as follows:

§ 172.402 Additional labeling requirements.

* * * * *

(b) *Display of hazard class on labels.* The appropriate hazard class or division number must be displayed in the lower corner of a primary hazard label and a subsidiary hazard label. A subsidiary label meeting the specifications of this section which were in effect on September 30, 2001, such as, a label without the hazard class or division number displayed in the lower corner of the label) may continue to be used as a subsidiary label in domestic transportation by rail or highway until October 1, 2005, provided the color tolerances are maintained and are in accordance with the display requirements in this subchapter.

* * * * *

§ 172.405 [Amended]

18. In § 172.405, the following changes are made:

a. In paragraph (a) introductory text, the wording ''subsidiary label when—'' is removed and the wording ''subsidiary label.'' is added in its place.

b. Paragraphs (a)(1) and (a)(2) are removed.

19–20. In § 172.411, the section heading, the text of paragraph (c) preceding the labels, and paragraph (d)

are revised and, in paragraph (c), the wording ''EXPLOSIVE SUBSIDIARY LABEL:'' and the explosive subsidiary label following it are removed, to read as follows:

§ 172.411 EXPLOSIVE 1.1, 1.2, 1.3, 1.4, 1.5 and 1.6 labels.

* * * * *

(c) Except for size and color, the EXPLOSIVE 1.4, EXPLOSIVE 1.5 and EXPLOSIVE 1.6 labels must be as follows:

* * * * *

(d) In addition to complying with § 172.407, the background color on the EXPLOSIVE 1.4, EXPLOSIVE 1.5, EXPLOSIVE 1.6 and EXPLOSIVE subsidiary label must be orange. The ''*'' shall be replaced with the appropriate compatibility group. The compatibility group letter must be shown as a capitalized Roman letter. Division numerals must measure at least 30 mm (1.2 inches) in height and at least 5 mm (0.2 inches) in width.

21. In § 172.502, paragraph (b)(1) is revised to read as follows:

§ 172.502 Prohibited and permissive placarding.

* * * * *

(b) * * * (1) The restrictions in paragraph (a) of this section do not apply to a bulk packaging, freight container, unit load device, transport vehicle or rail car which is placarded in conformance with TDG Regulations, the IMDG Code or the UN Recommendations (see § 171.7 of this subchapter).

* * * * *

22. In § 172.504, in paragraph (g), a sentence is added at the end of the existing text and paragraphs (g)(1) through (g)(4) are added to read as follows:

§ 172.504 General placarding requirements.

* * * * *

(g) * * * When more than one compatibility group placard is required for Class 1 materials, only one placard is required to be displayed as follows:

(1) Explosive articles of compatibility groups C, D or E may be placarded displaying compatibility group E.

(2) Explosive articles of compatibility groups C, D, E or N may be placarded displaying compatibility group D.

(3) Explosive substances of compatibility groups C and D may be placarded displaying compatibility group D.

(4) Explosive articles of compatibility groups C, D, E or G, except for fireworks, may be placarded displaying compatibility group E.

§ 172.512 [Amended]

23. In § 172.512, in paragraph (a)(3), the wording ''ICAO Technical Instructions'' is removed and ''ICAO Technical Instructions (see § 171.7 of this subchapter)'' is added in its place.

24. In § 172.519, paragraph (b)(4) is revised to read as follows:

§ 172.519 General specifications for placards.

* * * * *

(b) * * *

(4) For a placard corresponding to the primary or subsidiary hazard class of a material, the hazard class or division number must be displayed in the lower corner of the placard. However, a permanently affixed subsidiary placard meeting the specifications of this section which were in effect on September 30, 2001, (such as, a placard without the hazard class or division number displayed in the lower corner of the placard) and which was installed prior to September 30, 2001, may continue to be used as a subsidiary placard in domestic transportation by rail or highway, provided the color tolerances are maintained and are in accordance with the display requirements in this subchapter. Stocks of non-permanently affixed subsidiary placards in compliance with the requirements in effect on September 30, 2001, may continue to be used in domestic transportation by rail or highway until October 1, 2005, or until current stocks are depleted, whichever occurs first.

* * * * *

PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

25. The authority citation for part 173 continues to read as follows:

Authority: 49 U.S.C. 5101–5127, 44701; 49 CFR 1.53.

26. In § 173.2a, in paragraph (b), in the Precedence of Hazard Table, in the first column, the first three entries are amended by adding a footnote reference ''[2]'' immediately following ''I'', ''II'', and ''III'', respectively, and footnote 2 at the end of the Precedence of Hazard Table is revised to read as follows:

§ 173.2a Classification of a material having more than one hazard.

* * * * *

(b) * * *

PRECEDENCE OF HAZARD TABLE

*	*	*	*	*
*	*	*	*	*
*	*	*	*	*

[2] Materials of Division 4.1 other than self-reactive substances and solid desensitized explosives, and materials of Class 3 other than liquid desensitized explosives.

* * * * *

27. In § 173.4, paragraph (a)(1) introductory text is revised to read as follows:

§ 173.4 Small quantity exceptions.

(a) * * *

(1) The maximum quantity of material per inner receptacle or article is limited to—

* * * * *

28. In § 173.24b, paragraph (e) is added to read as follows:

§ 173.24b Additional general requirements for bulk packagings.

* * * * *

(e) *UN portable tanks.* (1) A UN portable tank manufactured in the United States must conform in all details to the applicable requirements in parts 172, 173, 178 and 180 of this subchapter.

(2) *UN portable tanks manufactured outside the United States.* A UN portable tank manufactured outside the United States, in accordance with national or international regulations based on the UN Recommendations on the Transport of Dangerous Goods which is an authorized packaging under § 173.24 of this subchapter, may be filled, offered and transported in the United States, if the § 172.101 Table of this subchapter authorizes the hazardous material for transportation in the UN portable tank and it conforms to the applicable T codes, and tank provision codes, or other special provisions assigned to the hazardous material in Column (7) of the Table when manufactured in a country other than the United States. In addition, the portable tank must be—

(i) Conform to applicable provisions in the UN Recommendations on the Transport of Dangerous Goods (see § 171.7 of this subchapter) and the requirements of this subpart;

(ii) Be capable of passing the prescribed tests and inspections in part 180 of this subchapter applicable to the UN portable tank specification;

(iii) Be designed and manufactured according to the ASME Code (see § 171.7 of this subchapter) or a pressure vessel design code approved by the Associate Administrator;

(iv) Be approved by the Associate Administrator when the portable tank is

designed and constructed under the provisions of an alternative arrangement (see § 178.274(a)(2) of this subchapter); and

(v) The competent authority of the country of manufacture must provide reciprocal treatment for UN portable tanks manufactured in the United States.

§ 173.31 [Amended]

29. In § 173.31, in paragraph (b)(2)(ii), in the first sentence, the wording ''chloroprene, inhibited'' is revised to read ''chloroprene, stabilized'.

30. Section 173.32 is revised to read as follows:

§ 173.32 Requirements for the use of portable tanks.

(a) *General requirements.* No person may offer a hazardous material for transportation in a portable tank except as authorized by this subchapter.

(1) Except as otherwise provided in this subpart, no person may use a portable tank for the transportation of a hazardous material unless it meets the requirements of this subchapter.

(2) No person may fill and offer for transportation a portable tank when the prescribed periodic test or inspection under subpart G of part 180 of this subchapter has become due until the test or inspection has been successfully completed. This requirement does not apply to any portable tank filled prior to the test or inspection due date.

(3) When a portable tank is used as a cargo tank motor vehicle, it must conform to all the requirements prescribed for cargo tank motor vehicles. (See § 173.33.)

(b) *Substitute packagings.* A particular Specification portable tank may be substituted for another portable tank as follows:

(1) An IM or UN portable tank may be used whenever an IM or UN portable tank having less stringent requirements is authorized provided the portable tank meets or exceeds the requirements for pressure-relief devices, bottom outlets and any other special provisions specified in § 172.102(c)(7)(vi) of this subchapter.

(2) Where a Specification IM101 or IM102 portable tank is prescribed, a UN portable tank or Specification 51 portable tank otherwise conforming to the special commodity requirements of § 172.102(c)(7) of this subchapter for the material to be transported may be used.

(3) A DOT Specification 51 portable tank may be used whenever a DOT Specification 56, 57, or 60 portable tank is authorized. A DOT Specification 60 portable tank may be used whenever a DOT Specification 56 or 57 portable tank is authorized. A higher integrity tank used instead of a specified portable tank must meet the same design profile; for example, a DOT Specification 51 portable tank must be lined if used instead of a lined DOT Specification 60 portable tank.

(c) *Grandfather provisions for portable tanks*—(1) *Continued use of Specification 56 and 57 portable tanks.* Continued use of an existing portable tank constructed to DOT Specification 56 or 57 is authorized only for a portable tank constructed before October 1, 1996. A stainless steel portable tank internally lined with polyethylene that was constructed on or before October 1, 1996, and that meets all requirements of DOT Specification 57 except for being equipped with a polypropylene discharge ball valve and polypropylene secondary discharge opening closure, may be marked as a Specification 57 portable tank and used in accordance with the provisions of this section.

(2) A DOT Specification 51, IM 101, or IM 102 portable tank may not be manufactured after January 1, 2003; however, such tanks may continue to be used for the transportation of a hazardous material provided they meet the requirements of this subchapter, including the specification requirements and the requirements of this subchapter for the transportation of the particular hazardous material (see § 171.14(d)(4) of this subchapter), and provided it conforms to the periodic inspection and tests specified for the particular portable tank in subpart G of part 180 of this subchapter. After January 1, 2003, all newly manufactured portable tanks must conform to the requirements for the design, construction and approval of UN portable tanks as specified in §§ 178.273, 178.274, 178.275, 178.276, 178.277 and part 180, subpart G, of this subchapter.

(3) A DOT Specification portable tank manufactured prior to January 1, 1992 that is equipped with a non-reclosing pressure relief device may continue in service for the hazardous materials for which it is authorized. Except for a DOT Specification 56 or 57 portable tank, a DOT Specification portable tank manufactured after January 1, 1992, used for materials meeting the definition for Division 6.1 liquids, Packing Group I or II, Class 2 gases, or Class 3 or 4 liquids, must be equipped with a reclosing pressure relief valve having adequately sized venting capacity unless otherwise specified in this subchapter (see §§ 178.275(f)(4) and 178.277 of this subchapter).

(4) Any portable tank container constructed prior to May 15, 1950, complying with the requirements of either the ASME Code for Unfired Pressure Vessels, 1946 Edition, or the API ASME Code for Unfired Pressure Vessels, 1943 Edition (see § 171.7 of this subchapter), may be used for the transportation of liquefied compressed gas, provided it fulfills all the requirements of the part and specifications for the particular gas or gases to be transported. Such portable tanks must be marked ''ICC Specification 51X'' on the plate required by the specification, except as modified by any or all of the following:

(i) Portable tanks designed and constructed in accordance with Pars. U–68, U–69, or U–201 of the ASME Code (see § 171.7 of this subchapter) may be used. Portable tanks designed and constructed in accordance with Par. U–68 or Par. U–69 may be re-rated at a working pressure 25 percent in excess of the design pressure for which the portable tank was originally constructed. If the portable tank is re-rated, the re-rated pressure must be marked on the plate as follows: ''Re-rated working pressure—psig''.

Note to Paragraph (c)(4)(i): For purposes of setting safety relief valves, pressure control valves, establishing retest pressure and maximum and minimum design pressures, the re-rated working pressure must be considered as the equivalent of the design pressure as defined in the specification.

(ii) Loading and unloading accessories, valves, piping, fittings, safety and gauging devices, do not have to comply with the requirements for the particular location on the portable tank.

(5) Any ICC Specification 50 portable tank fulfilling the requirements of that specification may be continued in service for transportation of a liquefied petroleum gas if it is retested every five years in accordance with the requirements in § 180.605 of this subchapter. Use of existing portable tanks is authorized. New construction is not authorized.

(d) *Determination of an authorized portable tank.* Prior to filling and offering a portable tank for transportation, the shipper must ensure that the portable tank conforms to the authorized specification and meets the applicable requirements in this subchapter for the hazardous material. The shipper must ensure that the MAWP, design pressure or test pressure of the portable tank, as applicable, is appropriate for the hazardous material being transported. Determination of the applicable pressure must take into account the maximum pressure used to load or unload the hazardous material, the vapor pressure, static head and surge pressures of the hazardous

material and the temperatures that the hazardous material will experience during transportation.

(e) *External inspection prior to filling.* Each portable tank must be given a complete external inspection prior to filling. Any unsafe condition must be corrected prior to its being filled and offered for transportation. The external inspection shall include a visual inspection of:

(1) The shell, piping, valves and other appurtenances for corroded areas, dents, defects in welds and other defects such as missing, damaged, or leaking gaskets;

(2) All flanged connections or blank flanges for missing or loose nuts and bolts;

(3) All emergency devices for corrosion, distortion, or any damage or defect that could prevent their normal operation;

(4) All required markings on the tank for legibility; and

(5) Any device for tightening manhole covers to ensure such devices are operative and adequate to prevent leakage at the manhole cover.

(f) *Loading requirements.* (1) A hazardous material may not be loaded into a portable tank if the hazardous material would:

(i) Damage the portable tank;

(ii) React with the portable tank; or

(iii) Otherwise compromise its product retention capability.

(2) A hazardous material may not be loaded in a DOT Specification 51, DOT Specification 60, an IM or UN portable tank unless the portable tank has a pressure relief device that provides total relieving capacity meeting the requirements of this subchapter.

(3) Except during a pressure test, a portable tank may not be subjected to a pressure greater than its marked maximum allowable working pressure or, when appropriate, its marked design pressure.

(4) A portable tank may not be loaded to a gross mass greater than the maximum allowable gross mass specified on its identification plate.

(5) Except for a non-flowable solid or a liquid with a viscosity of 2,680 centistokes (millimeters squared per second) or greater at 20°C (68°F), an IM or UN portable tank, or compartment thereof, having a volume greater than 7,500 L (1,980 gallons) may not be loaded to a filling density of more than 20% and less than 80% by volume. This filling restriction does not apply if a portable tank is divided by partitions or surge plates into compartments of not more than 7,500 L (1,980 gallons) capacity; this portable tank must not be offered for transportation in an ullage condition liable to produce an unacceptable hydraulic force due to surge.

(6) The outage for a portable tank may not be less than 2% at a temperature of 50 °C (122 °F) unless otherwise specified in this subchapter. For UN portable tanks, the applicable maximum filling limits apply as specified according to the assigned TP codes in Column (7) of the § 172.101 Table of this subchapter except when transported domestically.

(7) Each tell-tale indicator or pressure gauge located in the space between a frangible disc and a safety relief valve mounted in series must be checked after the tank is filled and prior to transportation to ensure that the frangible disc is leak free. Any leakage through the frangible disc must be corrected prior to offering the tank for transportation.

(8) During filling, the temperature of the hazardous materials shall not exceed the limits of the design temperature range of the portable tank.

(9) The maximum mass of liquefied compressed gas per liter (gallon) of shell capacity (kg/L or lbs./gal.) may not exceed the density of the liquefied compressed gas at 50 °C (122 °F). The portable tank must not be liquid full at 60 °C (140 °F).

(g) *Additional requirements for specific modal transport.* In addition to other applicable requirements, the following apply:

(1) A portable tank containing a hazardous material may not be loaded on to a highway or rail transport vehicle unless loaded entirely within the horizontal outline thereof, without overhang or projection of any part of the tank assembly. In addition, for unloading a portable tank, see § 177.834(i)(2) of this subchapter.

(2) An IM or UN portable tank used for the transportation of flammable liquids by rail may not be fitted with non-reclosing pressure relief devices except in series with reclosing pressure relief valves.

(3) A portable tank or Specification 106A or 110A multi-unit tank car containing a hazardous material may not be offered for transportation aboard a passenger vessel unless:

(i) The vessel is operating under a change to its character of vessel certification as defined in § 171.8 of this subchapter; and

(ii) The material is permitted to be transported aboard a passenger vessel in the § 172.101 Table of this subchapter.

(h) *Additional general commodity-specific requirements.* In addition to other applicable requirements, the following requirements apply:

(1) Each uninsulated portable tank used for the transportation of a liquefied compressed gas must have an exterior surface finish that is significantly reflective, such as a light-reflecting color if painted, or a bright reflective metal or other material if unpainted.

(2) If a hazardous material is being transported in a molten state, the portable tank must be thermally insulated with suitable insulation material of sufficient thickness that the overall thermal conductance is not more than 0.080 Btu per hour per square foot per degree Fahrenheit differential.

(i) *Additional requirements for portable tanks other than IM specification and UN portable tanks.* (1) The bursting strength of any piping and fittings must be at least four times the design pressure of the tank, and at least four times the pressure to which, in any instance, it may be subjected in service by the action of a pump or other device (not including safety relief valves) that may subject piping to pressures greater than the design pressure of the tank.

(2) Pipe joints must be threaded, welded or flanged. If threaded pipe is used, the pipe and pipe fittings must not be lighter than Schedule 80 weight. Where copper tubing is permitted, joints must be brazed or be of equally strong metal union type. The melting point of brazing material may not be lower than 1,000 °F (537.8 °C). The method of joining tubing must not decrease the strength of the tubing such as by the cutting of threads.

(3) Non-malleable metals may not be used in the construction of valves or fittings.

(4) Suitable provision must be made in every case to allow for expansion, contraction, jarring and vibration of all pipe. Slip joints may not be used for this purpose.

(5) Piping and fittings must be grouped in the smallest practicable space and must be protected from damage as required by the specification.

(6) All piping, valves and fittings on every portable tank must be leakage tested with gas or air after installation and proved tight at not less than the design pressure of the portable tank on which they are used. In the event of replacement, all such piping, valves, or fittings must be tested in accordance with the requirements of this section before the portable tank is returned to transportation service. The requirements of this section apply to all hoses used on portable tanks, except that hoses may be tested either before or after installation on the portable tank.

(7) All materials used in the construction of portable tanks and their appurtenances may not be subject to

destructive attack by the contents of the portable tank.

(8) No aluminum, copper, silver, zinc nor their alloys may be used. Brazed joints may not be used. All parts of a portable tank and its appurtenances used for anhydrous ammonia must be steel.

(9) Each outlet of a portable tank used for the transportation of non-refrigerated liquefied compressed gases, except carbon dioxide, must be provided with a suitable automatic excess-flow valve (see definition in § 178.337–1(g) of this subchapter). The valve must be located inside the portable tank or at a point outside the portable tank where the line enters or leaves the portable tank. The valve seat must be located inside the portable tank or may be located within a welded flange or its companion flange, or within a nozzle or within a coupling. The installation must be made in such a manner as to reasonably assure that any undue strain which causes failure requiring functioning of the valve shall cause failure in such a manner that it will not impair the operation of the valve.

(i) A safety device connection or liquid level gauging device that is constructed so that the outward flow of the tank contents will not exceed that passed by an opening of 0.1397 cm (0.0550 inches) is not required to be equipped with excess-flow valves.

(ii) An excess-flow valve must close automatically if the flow reaches the rated flow of gas or liquid specified by the original valve manufacturer when piping mounted directly on the valve is sheared off before the first valve, pump, or fitting downstream from the excess flow valve.

(iii) An excess-flow valve may be designed with a by-pass, not to exceed a 0.1016 cm (0.040 inches) diameter opening to allow equalization of pressure.

(iv) Filling and discharge lines must be provided with manually operated shut-off valves located as close to the tank as practical. Unless this valve is manually operable at the valve, the line must also have a manual shut-off valve. The use of ''Stop-Check'' valves to satisfy with one valve the requirements of this section is forbidden. For portable tanks used for refrigerated liquefied gases, a ''stop check'' valve may be used on the vapor side of the pressure buildup circuit.

(10) Each portable tank used for carbon dioxide or nitrous oxide must be lagged with a suitable insulation material of such thickness that the overall thermal conductance is not more than 0.08 Btu per square foot per degree Fahrenheit differential in temperature per hour. The conductance must be determined at 60° Fahrenheit. Insulation material used on portable tanks for nitrous oxide must be noncombustible.

(11) Refrigerating or heating coils must be installed in portable tanks used for carbon dioxide and nitrous oxide. Such coils must be tested externally to at least the same pressure as the test pressure of the portable tank. The coils must also be tested internally to at least twice the working pressure of the heating or refrigerating system to be used, but in no case less than the test pressure of the portable tank. Such coils must be securely anchored. In the event of leakage, the refrigerant or heating medium to be circulated through the coil or coils must have no adverse chemical reaction with the portable tank or its contents.

(12) Excess flow valves are not required for portable tanks used for the transport of refrigerated liquefied gases.

§ 173.32a [Removed]

31. Section 173.32a is removed.

§ 173.32b [Removed]

32. Section 173.32b is removed.

§ 173.32c [Removed]

33. § 173.32c is removed.

§ 173.34 [Amended]

34. In § 173.34, in the paragraph (e)(13) table, in the second column, the following changes are made:

a. In the second entry, the wording ''Butadiene, inhibited'' is revised to read ''Butadiene, stabilized'.

b. In the ninth entry, the wording ''Ethyleneimine, inhibited'' is revised to read ''Ethyleneimine, stabilized'.

35. In § 173.61, paragraph (e)(3) is revised and a new paragraph (e)(8) is added to read as follows:

§ 173.61 Mixed packaging requirements.

* * * * *

(e) * * *

(3) Explosives of compatibility group S may be packaged together with explosives of any other compatibility group except A or L, and the combined package may be treated as belonging to any of the packaged compatibility groups except S.

* * * * *

(8) Explosive articles of compatibility group G, except for fireworks and articles requiring special packaging, may be packaged together with explosive articles of compatibility groups C, D or E and the combined package shall be treated as belonging to compatibility group E.

36. In § 173.62, in paragraph (b), in the Explosives Table, two entries are added in appropriate alphanumerical order and in paragraph (c), in the Explosives Packing Instructions Table, in the fourth column, for the packing instruction entry 144, under the Boxes entry ''plastics, expanded (4H1)'' add an entry for Drums to read as follows:

§ 173.62 Specific packaging requirements for explosives.

* * * * *

(b) * * *

EXPLOSIVES TABLE

ID#	PI
* * * * *	
UN0502	130
UN0504	112(c)
* * * * *	

(c) * * *

TABLE OF PACKING METHODS

Packing instruction	Inner packagings	Intermediate packagings	Outer packagings
* * * * * * *			
144 * * *	* * *	* * *	* * *
			Drums. Steel, removable head (1A2). Aluminum, removable head (1B2). Plastics, removable head (1H2). Plywood (1D).
* * * * * * *			

37. In addition, in § 173.62, in paragraph (c), in the Explosives Packing Instructions Table, in the fourth column, the following changes are made in appropriate packaging specification number order:

a. For packing instruction entries, 112(a), 112(b), 112(c), 113, 115, 116, 130, 131, 134, 135, 136, 138, 140, 141 and 142, under the word ''Drums'', the wording ''plywood (1D)'' is added in the alpha-numeric order of the parenthetical.

b. For the packing instruction entries, 112(c), 113, 115, 134, 138 and 140, under the word ''Drums'', the wording ''plastics, removable head (1H2)'' is added in the alpha-numeric order of the parenthetical.

c. For the packing instruction entries, 134 and 138, under the word ''Drums'', the wording ''fiberboard (1G)'' is added in the alpha-numeric order of the parenthetical.

d. For the packing instruction entries, 112(c) and 113, under the word ''Boxes'', the wording ''aluminum (4B)'' is added in the alpha-numeric order of the parenthetical.

e. For the packing instruction entry, 144, under the word ''Boxes'', the wording ''plastics, solid (4H2)'' is added in the alpha-numeric order of the parenthetical.

38. In § 173.150, paragraph (d)(2) is revised to read as follows:

§ 173.150 Exceptions for Class 3 (flammable) and combustible liquids.

* * * * *

(d) * * *

(2) Is in an inner packaging of five liters (1.3 gallons) or less for transportation on passenger-carrying aircraft and conforms to § 175.10(a)(17) of this subchapter as checked or carry-on baggage; or

* * * * *

39. In § 173.162, paragraphs (a) introductory text and (a)(1) are revised to read as follows:

§ 173.162 Gallium.

(a) Except when packaged in cylinders or steel flasks, gallium must be packaged in packagings which meet the requirements of part 178 of this subchapter at the Packing Group I performance level for transportation by aircraft, and at the Packing Group III performance level for transport by highway, rail or vessel, as follows:

(1) In combination packagings intended to contain liquids consisting of glass, earthenware or rigid plastic inner packagings with a maximum net mass of 15 kg (33 pounds) each. The inner packagings must be packed in wood boxes (4C1, 4C2, 4D, 4F), fiberboard boxes (4G), plastic boxes (4H1, 4H2), fiber drums (1G) or removable head steel and plastic drums or jerricans (1A2, 1H2, 3A2 or 3H2) with sufficient cushioning materials to prevent breakage. Either the inner packagings or the outer packagings must have an inner liner that is leakproof or bags of strong leakproof and puncture-resistant material impervious to the contents and completely surrounding the contents to prevent it from escaping from the package, irrespective of its position.

* * * * *

40. Section 173.185 is revised to read as follows:

§ 173.185 Lithium batteries and cells.

(a) Except as otherwise provided in this subpart, a lithium cell or battery is authorized for transportation only if it conforms to the provisions of this section. For the purposes of this subchapter, ''lithium content'' means the mass of lithium in the anode of a lithium metal or lithium alloy cell, except in the case of a lithium ion cell or battery where the ''equivalent lithium content'' in grams is calculated to be 0.3 times the rated capacity in ampere-hours.

(b) *Exceptions.* Cells and batteries are not subject to the requirements of this subchapter if they meet the following requirements:

(1) Each cell with a liquid cathode may contain not more than 0.5 g of lithium content. Each cell with a solid cathode may contain not more than 1.0 g of lithium content. Each lithium ion cell may contain not more than 1.5 g of equivalent lithium content;

(2) Each battery with a liquid cathode may contain an aggregate quantity of not more than 1.0 g of lithium content. Each battery with a solid cathode may contain an aggregate quantity of not more than 2.0 g of lithium content. Each lithium-ion battery may contain an aggregate quantity of not more than 8.0 grams of equivalent lithium content;

(3) Each cell or battery containing a liquid cathode must be hermetically sealed;

(4) Cells and batteries must be packed in such a way so as to prevent short circuits and must be packed in strong packagings, except when installed in equipment; and

(5) If when fully charged, the aggregate lithium content of the anodes in a liquid cathode battery is more than 0.5 g, or the aggregate lithium content of the anodes in a solid cathode battery is more than 1.0 g, then the battery may not contain a liquid or gas that is a hazardous material according to this subchapter unless the liquid or gas, if free, would be completely absorbed or neutralized by other materials in the battery.

(c) *Additional exceptions.* Cells and batteries also are not subject to this subchapter if they meet the following requirements:

(1) The lithium content of the anode of each cell, when fully charged, is not more than 5 g;

(2) The aggregate lithium content of the anodes of each battery, when fully charged, is not more than 25 g;

(3) Each cell or battery is of the type proven to be non-dangerous by testing in accordance with tests in the UN Manual of Tests and Criteria (see § 171.7 of this subchapter). Such testing must be carried out on each type of cell or battery prior to the initial transport of that type; and

(4) Cells and batteries are designed or packed in such a way as to prevent short circuits under conditions normally encountered in transportation.

(d) Cells and batteries and equipment containing cells and batteries which were first transported prior to January 1, 1995, and were assigned to Class 9 on the basis of the requirements of this subchapter in effect on October 1, 1993, may continue to be transported in accordance with the applicable requirements in effect on October 1, 1993.

(e) Cells and batteries may be transported as items of Class 9 if they meet the requirements in paragraphs (e)(1) through (e)(7) of this section:

(1) Each cell and battery must be equipped with an effective means of preventing external short circuits.

(2) Each cell and battery must incorporate a safety venting device or be designed in a manner that will preclude a violent rupture under conditions normally incidental to transportation.

(3) Batteries containing cells or series of cells connected in parallel must be equipped with diodes to prevent reverse current flow.

(4) Cells and batteries must be packed in inner packagings in such a manner as to effectively prevent short circuits and to prevent movement which could lead to short circuits.

(5) Cells and batteries must be packaged in packagings conforming to the requirements of part 178 of this subchapter at the Packing Group II performance level: Inner packagings must be packed within metal boxes (4A or 4B), wooden boxes (4C1, 4C2, 4D or 4F), fiberboard boxes (4G), solid plastic boxes (4H2), fiber drums (1G), metal drums (1A2 or 1B2), plywood drums (1D), plastic jerricans (3H2), or metal jerricans (3A2 or 3B2).

(6) Each cell or battery must be of the type proven to meet the lithium battery requirements in the UN Manual of Tests and Criteria (see § 171.7 of this subchapter).

(7) Except as provided in paragraph (h) of this section, cells or batteries may not be offered for transportation or transported if any cell has been discharged to the extent that the open circuit voltage is less than two volts or is less than ⅔ of the voltage of the fully charged cell, whichever is less.

(f) Equipment containing or packed with cells and batteries meeting the requirements of paragraph (b) or (c) of this section is excepted from all other requirements of this subchapter.

(g) Equipment containing or packed with cells and batteries may be transported as items of Class 9 if the batteries and cells meet all requirements of paragraph (e) of this section and are packaged as follows:

(1) Equipment containing cells and batteries must be packed in a strong outer packaging that is waterproof or has a waterproof liner, unless the equipment is made waterproof by nature of its construction. The equipment must be secured within the outer packaging and be packed as to effectively prevent movement, short circuits, and accidental operation during transport; and

(2) Cells and batteries packed with equipment must be packed in inner packagings conforming to (e)(5) of this section in such a manner as to effectively prevent movement and short circuits.

(h) Cells and batteries, for disposal, may be offered for transportation or transported to a permitted storage facility and disposal site by motor vehicle when they meet the following requirements:

(1) Be equipped with an effective means of preventing external short circuits; and

(2) Be packed in a strong outer packaging conforming to the requirements of §§ 173.24 and 173.24a. The packaging need not conform to performance requirements of part 178 of this subchapter.

(i) Cells and batteries and equipment containing or packed with cells and batteries which do not comply with the provisions of this section may be transported only if they are approved by the Associate Administrator.

(j) For testing purposes, when not contained in equipment, cells and batteries may be offered for transportation or transported by highway as items of Class 9. Packaging must conform with paragraph (e)(5) of this section.

41. In § 173.224, paragraph (b)(4) is revised; in the table following paragraph (b)(7), the following entry is added in appropriate alphabetical order; and paragraph (d) is removed to read as follows:

§ 173.224 Packaging and control and emergency temperatures for self-reactive materials.

* * * * *

(b) * * *

(4) *Packing method.* Column 4 specifies the highest packing method which is authorized for the self-reactive material. A packing method corresponding to a smaller package size may be used, but a packing method corresponding to a larger package size may not be used. The Table of Packing Methods in § 173.225(d) defines the packing methods. Bulk packagings are authorized as specified in § 173.225(d) for Type F self-reactive substances. Additional bulk packagings are authorized if approved by the Associate Administrator.

* * * * *

(7) * * *

SELF-REACTIVE MATERIALS TABLE

Self-reactive substance	Indentification no.	Concentration (%)	Packing method	Control temperature—(°C)	(Emergency temperature	Notes
(1)	(2)	(3)	(4)	(5)	(6)	(7)
* * *		*	*	*		*
2,2'-Azodi(isobutyronitrile) as a water based paste ...	.....	3224	.....	≤50%	OP6	.....
* * *		*	*	*		*

42. In § 173.225, in paragraph (b), in the Organic Peroxide Table, the following entries are removed and added in the appropriate alphabetical order; in Column (8), Notes ''7'' and ''10'' are removed each place they appear; and in the ''NOTES'' immediately following the Table, Notes ''7'' and ''10'' are removed and reserved and Note ''26'' is added in the appropriate numerical order; and paragraphs (e) introductory text, (e)(3) and (e)(5) are revised to read as follows:

§ 173.225 Packaging requirements and other provisions for organic peroxides.

* * * * *

(b) * * *

ORGANIC PEROXIDE TABLE

Technical name	ID No.	Concentration (mass %)	Diluent (mass %)			Water (mass %)	Packing method	Temperature (°C)		Notes
			A	B	I			Control	Emergency	
(1)	(2)	(3)	(4a)	(4b)	(4c)	(5)	(6)	(7a)	(7b)	(8)
* * *		*			*		*		*	
[REMOVE:]										
tert-Amyl peroxybenzoate	UN3105	≤96	≥4				OP7			
* * *		*			*		*		*	
tert-Butyl peroxy-2-ethylhexanoate	UN3119	≤32		≥68			Bulk	+10	+15	14
* * *		*			*		*		*	
tert-Butyl peroxyneodecanoate [asa stable dispersion inwater].	UN3117	≤42					OP8	0	+10	

ORGANIC PEROXIDE TABLE—Continued

Technical name	ID No.	Concentration (mass %)	Diluent (mass %)			Water (mass %)	Packing method	Temperature (°C)		Notes
			A	B	I			Control	Emergency	
(1)	(2)	(3)	(4a)	(4b)	(4c)	(5)	(6)	(7a)	(7b)	(8)
* * *	*	*			*		*		*	
tert-Butyl peroxyneoheptanoate	UN3115	≤77	≥23				OP7	+10	+15	
* * *	*	*			*		*		*	
tert-Butyl peroxypivalate	UN3119	≤27		≥73			Bulk	−5	+5	14
* * *	*	*			*		*		*	
Cumyl peroxyneoheptanoate	UN3115	≤77	≥23				OP7	0	+10	
* * *	*	*			*		*		*	
Cyclohexanoneperoxide(s)	UN3105	≤72		≥28			OP7			5
* * *	*	*			*		*		*	
1,1-Di-(tert-butylperoxy)-3,5,5-trimethylcyclohexane.	UN3101	>90–100					OP5			
1,1-Di-(tert-butylperoxy)-3,5,5-trimethylcyclohexane.	UN3103	>57–90	≥10				OP5			
1,1-Di-(tert-butylperoxy)-3,5,5-trimethylcyclohexane.	UN3106	≤57			≥43		OP7			
1,1-Di-(tert-butylperoxy)-3,5,5-trimethylcyclohexane.	UN3107	≤57	≥43				OP8			
1,1-Di-(tert-butylperoxy)-3,5,5-trimethylcyclohexane.	UN3107	≤32	≥26	≥42			OP8			
* * *	*	*			*		*		*	
Di-(2-ethylhexyl)peroxydicarbonate	UN3115	≤77					OP7	−15	−5	
* * *	*	*			*		*		*	
Diisopropylperoxydicarbonate	UN3115	≤52		≥48			OP7	−10	0	
* * *	*	*			*		*		*	
2,5-Dimethyl-2,5-di-(2-ethylhexanoylperoxy)hexane.	UN3115	≤100					OP7	+20	+25	
* * *	*	*			*		*		*	
Dimyristylperoxydicarbonate [as astable dispersion in water].	UN3119	≤42					IBC	+15	+25	
* * *	*	*			*		*		*	
Di-n-propylperoxydicarbonate	UN3113	≤100					OP4	−25	−15	
* * *	*	*			*		*		*	
Di-(3,5,5-trimethylhexanoyl)peroxide	UN3119	≤38	≥62				Bulk	−10	0	14
* * *	*	*			*		*		*	
Isopropyl sec-butylperoxydicarbonate [and]Di-sec-butylperoxydi-carbonate [and]Di-isopropylperoxydicarbonate.	UN3115	≤32 +≤15–18 +≤12–15	≥38				OP7	−20	−10	
* * *	*	*			*		*		*	
2,4,4-Trimethylpentyl-2-peroxyneodecanoate	UN3115	≤72		≥28			OP7	−5	+5	
2,4,4-Trimethylpentyl-2-phenoxynedecanoate [asa stable dispersion inwater]..	UN3119	≤52					OP8	−5	+5	
2,4,4-Trimethylpentyl-2-peroxy phenoxyacetate.	UN3115	≤37		≥63			OP7	−10	0	
* * *	*	*			*		*		*	
[ADD:]										
tert-Amyl peroxybenzoate	UN3103	≤100	.....	.....	.....	.....	OP5	.....	.....	.....
* * *	*	*			*		*		*	
tert-Butyl peroxy-2-ethylhexanoate	UN3119	≤32	.....	≥68	.....	.....	Bulk	+15	+20	14
* * *	*	*			*		*		*	
tert-Butyl peroxyneodecanoate [as a stable dispersion in water].	UN3117	≤52	.....	.....	.....	.....	OP8	0	+10	.....
* * *	*	*			*		*		*	
tert-Butyl peroxyneodecanoate [as a stable dispersion in water].	UN3119	≤42	.....	.....	.....	.....	IBC	−5	+5	.....
* * *	*	*			*		*		*	
tert-Butyl peroxyneodecanoate	UN3119	≤32	≥68	.....	.....	.....	IBC	0	+10	.....
* * *	*	*			*		*		*	
tert-Butyl peroxyneoheptanoate	UN3115	≤77	≥23	.....	.....	.....	OP7	0	+10	.....
* * *	*	*			*		*		*	
tert-Butyl peroxypivalate	UN3119	≤27	.....	≥73	.....	.....	Bulk	+5	+10	14
* * *	*	*			*		*		*	
Cumyl peroxyneodecanoate [as a stable dispersion in water].	UN3119	≤52	.....	.....	.....	.....	IBC	−15	−5	.....
* * *	*	*			*		*		*	
Cumyl peroxyneoheptanoate	UN3115	≤77	≥23	.....	.....	.....	OP7	−10	0	.....

ORGANIC PEROXIDE TABLE—Continued

Technical name	ID No.	Concentration (mass %)	Diluent (mass %)			Water (mass %)	Packing method	Temperature (°C)		Notes
			A	B	I			Control	Emergency	
(1)	(2)	(3)	(4a)	(4b)	(4c)	(5)	(6)	(7a)	(7b)	(8)
* * *	*			*		*		*		
Cyclohexanone peroxide(s)	UN3105	≤72	≥28				OP7			5
* * *	*			*		*		*		
1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclohexane.	UN3101	>90–100					OP5			
* * *	*			*		*		*		
1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclohexane.	UN3103	>57–90	≥10				OP5			
* * *	*			*		*		*		
1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclohexane.	UN3105	≤77		≥23			OP7			
* * *	*			*		*		*		
1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclohexane.	UN3106	≤57			≥43		OP7			
* * *	*			*		*		*		
1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclohexane.	UN3107	≤57	≥43				OP8			
* * *	*			*		*		*		
1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclohexane.	UN3107	≤32	≥26	≥42			OP8			
* * *	*			*		*		*		
2,2-Di-(4,4-di-(tert-butylperoxy cyclohexyl) propane.	UN3107	≤22		≥78			OP8			
* * *	*			*		*		*		
Di-(2-ethylhexyl) peroydicarbonate [as a stable dispersion in water].	UN3119	≤52					IBC	−20	−10	
* * *	*			*		*		*		
Di-(2-ethoxyethyl) peroxydicarbonate	UN3115	≤52		≥48			OP7	−10	0	
* * *	*			*		*		*		
Di-(2-ethylhexyl) peroxydicarbonate	UN3115	≤77		≥23			OP7	−15	−5	
* * *	*			*		*		*		
Di-(2-ethylhexyl) peroxydicarbonate [as a stable dispersion in water].	UN3117	≤62					OP8	−15	−5	
* * *	*			*		*		*		
Diisopropyl peroxydicarbonate	UN3115	≤52		≥48			OP7	−20	−10	
* * *	*			*		*		*		
Di-(3-methoxybutyl) peroxydicarbonate	UN3115	≤52		≥48			OP7	−5	+5	
* * *	*			*		*		*		
Di-(3-methylbenzoyl) peroxide + Benzoyl (3-methylbenzoyl) peroxide +Dibenzoyl peroxide.	UN3115	≤20 +≤18 +≤ 4		≥58			OP7	+35	+40	
* * *	*			*		*		*		
2,5 Dimethyl 2,5 di-2-ethylhexanoylperoxy hexane.	UN3113	≤100					OP5	+20	+25	
* * *	*			*		*		*		
2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexane	UN3108	≤77			≥23		OP8			
* * *	*			*		*		*		
2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexyne-3.	UN3101	>86–100					OP5			
* * *	*			*		*		*		
Dimyristyl peroxydicarbonate [as a stable dispersion in water].	UN3119	≤42					IBC	+15	+20	
* * *	*			*		*		*		
Di-n-propyl peroxydicarbonate	UN3113	≤100					OP3	−25	−15	
* * *	*			*		*		*		
Di-n-propyl peroxydicarbonate	UN3113	≤77		≥23			OP5	−20	−10	
* * *	*			*		*		*		
tert-Hexyl peroxyneodecanoate	UN3115	≤71	≥29				OP7	0	+10	
* * *	*			*		*		*		
tert-Hexyl peroxypivalate	UN3115	≤72		≥28			OP7	+10	+15	
* * *	*			*		*		*		
Methyl ethyl ketone peroxide(s)	UN3105	≤37	≥55			≥8	OP7			5
* * *	*			*		*		*		
1,1,3,3-Tetramethylbutyl peroxyneodecanoate.	UN3115	≤72		≥28			OP7	-5	+5	

ORGANIC PEROXIDE TABLE—Continued

Technical name	ID No.	Concentration (mass %)	Diluent (mass %)			Water (mass %)	Packing method	Temperature (°C)		Notes
			A	B	I			Control	Emergency	
(1)	(2)	(3)	(4a)	(4b)	(4c)	(5)	(6)	(7a)	(7b)	(8)
1,1,3,3-Tetramethylbutyl peroxyneodecanoate [as a stable dispersion in water]..	UN3119	≤52	.....	.....	.....	.....	IBC	−5	+5	.....
1,1,3,3-Tetramethylbutyl peroxy phenoxyacetate.	UN3115	≤37	.....	≥63	.....	.....	OP7	−10	0	.....
* *	*	*			*		*		*	
3,6,9-Triethyl-3,6,9-trimethyl-1,4,7-triperoxonane.	UN3105	≤42	≥58	.....	.....	.....	OP7	.....	.....	26
* *	*	*			*		*		*	

Notes:

* * * * *

26. Available oxygen must be ≤ 7.6%.

* * * * *

(e) *Bulk packagings for organic peroxides.* The following bulk packagings are authorized:

* * * * *

(3) *Portable tanks.* The following requirements apply to portable tanks intended for the transport of Type F organic peroxides or Type F self-reactive substances. DOT 51, 57, IM 101 portable tanks, and UN portable tanks that conform to the requirements of T23 (see § 172.102(c)(7) of this subchapter), when T23 is specified in Column (7) of the § 171.101 Table of this subchapter for the Type F organic peroxide or Type F self-reactive substance. Type F organic peroxide or self-reactive substance formulations other than those indicated in T23 may be transported in portable tanks if approved by the Associate Administrator. The following conditions also apply:

(i) The portable tank must be designed for a test pressure of at least 0.4 MPa (4 bar).

(ii) Portable tanks must be fitted with temperature-sensing devices.

(iii) Portable tanks must be fitted with pressure relief devices and emergency-relief devices. Vacuum-relief devices may also be used. Pressure relief devices must operate at pressures determined according to both the properties of the hazardous material and the construction characteristics of the portable tank. Fusible elements are not allowed in the shell.

(iv) The pressure relief devices must consist of reclosing devices fitted to prevent significant build-up within the portable tank of the decomposition products and vapors released at a temperature of 50 °C (122 °F). The capacity and start-to-discharge pressure of the relief devices must be in accordance with the applicable requirements of this subchapter specified for the portable tank. The start-to-discharge pressure must in no case be such that liquid would escape from the pressure relief devices if the portable tank were overturned.

(v)(A) The emergency-relief devices may be of the reclosing or frangible types, or a combination of the two, designed to vent all the decomposition products and vapors evolved during a period of not less than one hour of complete fire engulfment as calculated by the following formula:

$$q = 70961\ F\ A^{0.82}$$

Where:

q = heat absorption (W)

A = wetted area (m^2)

F = insulation factor (-)

(B) Insulation factor (F) in the formula in paragraph (e)(3)(v)(A) of this section equals 1 for non-insulated vessels and for insulated vessels F is calculated using the following formula:

$$F = \frac{U(923 - T_{PO})}{47032}$$

Where:

U = K/L = heat transfer coefficient of the insulation ($W \cdot m^{-2} \cdot K^{-1}$); where K = heat conductivity of insulation layer ($W \cdot m^{-1} \cdot K^{-1}$), and L = thickness of insulation layer (m).

T_{PO} = temperature of material at relieving conditions (K).

(vi) The start-to-discharge pressure of emergency-relief devices must be higher than that specified for the pressure relief devices in paragraph (e)(3)(iv) of this section. The emergency-relief devices must be sized and designed in such a way that the maximum pressure in the shell never exceeds the test pressure of the portable tank.

Note to Paragraph (e)(3)(vi): An example of a method to determine the size of emergency-relief devices is given in Appendix 5 of the UN Manual of Tests and Criteria (incorporated by reference, see § 171.7 of this subchapter).

(vii) For insulated portable tanks, the capacity and setting of emergency-relief devices must be determined assuming a loss of insulation from 1 percent of the surface area.

(viii) Vacuum-relief devices and reclosing devices on portable tanks used for flammable hazardous materials must be provided with flame arresters. Any reduction of the relief capacity caused by the flame arrester must be taken into account and the appropriate relief capacity must be provided.

(ix) Service equipment such as devices and external piping must be designed and constructed so that no hazardous material remains in them after filling the portable tank.

(x) Portable tanks may be either insulated or protected by a sun-shield. If the SADT of the hazardous material in the portable tank is 55 °C (131°F) or less, the portable tank must be completely insulated. The outer surface must be finished in white or bright metal.

(xi) The degree of filling must not exceed 90% at 15 °C (59 °F).

(xii) DOT 57 metal portable tanks are authorized only for tert-butyl cumyl peroxide, di-(2-tert-butylperoxyisopropyl-benzene(s), dicumyl peroxide and mixtures of two or more of these peroxides. DOT 57 portable tanks must conform to the venting requirements of paragraph (e)(5) of this section. These portable tanks are not subject to the requirements of

paragraphs (e)(3)(ii) and (e)(3)(iv) of this section.

* * * * *

(5) *IBCs.* IBCs are authorized subject to the conditions and limitations of this section provided the IBC type is authorized according to IB52 (see § 172.102(c)(4) of this subchapter), as applicable, and the IBC conforms to the requirements in subpart O of part 178 of this subchapter at the Packing Group II performance level. The following additional requirements also apply:

(i) IBCs shall be provided with a device to allow venting during transportation. The inlet to the pressure relief device shall be sited in the vapor space of the IBC under maximum filling conditions during transportation.

(ii) To prevent explosive rupture of metal IBCs or composite IBCs with complete metal casing, the emergency-relief devices shall be designed to vent all the decomposition products and vapors evolved during self-accelerating decomposition or during a period of not less than one hour of complete fire-engulfment as calculated by the formula in paragraph (e)(3)(v) of this section. The control and emergency temperatures specified in IB52 are based on a non-insulated IBC.

43. In § 173.240, paragraphs (c) and (d) are revised to read as follows:

§ 173.240 Bulk packaging for certain low hazard solid materials.

* * * * *

(c) *Portable tanks and closed bulk bins.* DOT 51, 56, 57 and 60 portable tanks; IMO type 1, 2 and 5, and IM 101 and IM 102 portable tanks; UN portable tanks; marine portable tanks conforming to 46 CFR part 64; and sift-proof non-DOT Specification portable tanks and closed bulk bins are authorized.

(d) *IBCs.* IBCs are authorized subject to the conditions and limitations of this section provided the IBC type is authorized according to the IBC packaging code specified for the specific hazardous material in Column (7) of the § 172.101 Table of this subchapter and the IBC conforms to the requirements in subpart O of part 178 of this subchapter at the Packing Group performance level as specified in Column (5) of the § 172.101 Table of this subchapter for the material being transported.

(1) IBCs may not be used for the following hazardous materials:

(i) Packing Group I liquids; and

(ii) Packing Group I solids that may become liquid during transportation.

(2) The following IBCs may not be used for Packing Group II and III solids that may become liquid during transportation:

(i) Wooden: 11C, 11D and 11F;

(ii) Fiberboard: 11G;

(iii) Flexible: 13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 and 13M2; and

(iv) Composite: 11HZ2 and 21HZ2.

44. In § 173.241, paragraphs (c) and (d) are revised to read as follows:

§ 173.241 Bulk packagings for certain low hazard liquid and solid materials.

* * * * *

(c) *Portable tanks.* DOT Specification 51, 56, 57 and 60 portable tanks; IMO type 1, 2 and 5, and IM 101 and IM 102 portable tanks; UN portable tanks; marine portable tanks conforming to 46 CFR part 64; and non-DOT Specification portable tanks suitable for transport of liquids are authorized.

(d) *IBCs.* IBCs are authorized subject to the conditions and limitations of this section provided the IBC type is authorized according to the IBC packaging code specified for the specific hazardous material in Column (7) of the § 172.101 Table of this subchapter and the IBC conforms to the requirements in subpart O of part 178 of this subchapter at the Packing Group performance level as specified in Column (5) of the § 172.101 Table for the material being transported.

(1) IBCs may not be used for the following hazardous materials:

(i) Packing Group I liquids; and

(ii) Packing Group I solids that may become liquid during transportation.

(2) The following IBCs may not be used for Packing Group II and III solids that may become liquid during transportation:

(i) Wooden: 11C, 11D and 11F;

(ii) Fiberboard: 11G;

(iii) Flexible: 13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 and 13M2; and

(iv) Composite: 11HZ2 and 21HZ2.

45. In § 173.242, paragraphs (c) introductory text and (d) are revised to read as follows:

§ 173.242 Bulk packagings for certain medium hazard liquids and solids, including solids with dual hazards.

* * * * *

(c) *Portable tanks.* DOT Specification 51, 56, 57 and 60 portable tanks; Specification IM and UN portable tanks when a T Code is specified in Column (7) of the § 172.101 Hazardous Materials Table for a specific hazardous material; and marine portable tanks conforming to 46 CFR part 64 are authorized. DOT Specification 57 portable tanks used for the transport by vessel of Class 3, Packaging Group II materials must conform to the following:

* * * * *

(d) *IBCs.* IBCs are authorized subject to the conditions and limitations of this section provided the IBC type is authorized according to the IBC packaging code specified for the specific hazardous material in Column (7) of the § 172.101 Table of this subchapter and the IBC conforms to the requirements in subpart O of part 178 of this subchapter at the Packing Group performance level as specified in Column (5) of the § 172.101 Table of this subchapter for the material being transported.

(1) IBCs may not be used for the following hazardous materials:

(i) Packing Group I liquids; and

(ii) Packing Group I solids that may become liquid during transportation.

(2) The following IBCs may not be used for Packing Group II and III solids that may become liquid during transportation:

(i) Wooden: 11C, 11D and 11F;

(ii) Fiberboard: 11G;

(iii) Flexible: 13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 and 13M2; and

(iv) Composite: 11HZ2 and 21HZ2.

46. In § 173.243, paragraphs (c) and (d) are revised to read as follows:

§ 173.243 Bulk packaging for certain high hazard liquids and dual hazard materials which pose a moderate hazard.

* * * * *

(c) *Portable tanks.* DOT Specification 51 and 60 portable tanks; UN portable tanks when a T code is specified in Column (7) of the § 172.101 Table of this subchapter for a specific hazardous material; and marine portable tanks conforming to 46 CFR part 64 with design pressure of at least 172.4 kPa (25 psig) are authorized.

(d) *IBCs.* IBCs are authorized subject to the conditions and limitations of this section provided the IBC type is authorized according to the IBC packaging code specified for the specific hazardous material in Column (7) of the § 172.101 Table of this subchapter and the IBC conforms to the requirements in subpart O of part 178 of this subchapter at the Packing Group performance level as specified in Column (5) of the § 172.101 Table of this subchapter for the material being transported.

(1) IBCs may not be used for the following hazardous materials:

(i) Packing Group I liquids; and

(ii) Packing Group I solids that may become liquid during transportation.

(2) The following IBCs may not be used for Packing Group II and III solids that may become liquid during transportation:

(i) Wooden: 11C, 11D and 11F;

(ii) Fiberboard: 11G;

(iii) Flexible: 13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 and 13M2; and

(iv) Composite: 11HZ2 and 21HZ2.

* * * * *

47. In § 173.247, paragraph (c) is revised to read as follows:

§ 173.247 Bulk packaging for certain elevated temperature materials (Class 9) and certain flammable elevated temperature materials (Class 3).

* * * * *

(c) *Portable tanks.* DOT Specification 51, 56, 57 and 60 portable tanks; IM 101 and IM 102 portable tanks; UN portable tanks; marine portable tanks conforming to 46 CFR part 64; metal IBCs and non-specification portable tanks equivalent in structural design and accident damage resistance to specification packagings are authorized.

* * * * *

§ 173.301 [Amended]

48. In § 173.301, in paragraph (d)(2), in the first sentence, the wording ''tetrafluoroethylene, inhibited'' is revised to read ''tetrafluoroethylene, stabilized''.

§ 173.304 [Amended]

49. In § 173.304, the following changes are made:

a. In the paragraph (a)(2) table, in the first column, in the second to the last entry, the wording ''Vinyl fluoride, inhibited'' is revised to read ''Vinyl fluoride, stabilized''.

b. In paragraph (b), in the first sentence, the wording ''vinyl fluoride, inhibited'' is revised to read ''vinyl fluoride, stabilized''.

50. In § 173.306, paragraph (a)(4)(iii) is revised to read as follows:

§ 173.306 Limited quantities of compressed gases.

* * * * *

(4) ** *

(iii) Non-pressurized gases, flammable must be packed in hermetically-sealed glass or metal inner packagings of not more than 5 L (1.3 gallons) and overpacked in a strong outer packaging.

* * * * *

§ 173.314 [Amended]

51. In § 173.314, the following changes are made:

a. In the paragraph (c) table, in the first column, the last entry, ''Vinyl fluoride, inhibited'' is revised to read ''Vinyl fluoride, stabilized''.

b. In paragraph (g) introductory text, the wording ''vinyl fluoride, inhibited'' is revised to read ''vinyl fluoride, stabilized''.

52. In § 173.315:

a. The text of paragraph (a) preceding the table is revised;

b. In the paragraph (a) table, in the first column, the entry ''Butadiene, inhibited'' is revised to read ''Butadiene, stabilized'' and the second to the last entry ''Vinyl fluoride, inhibited'' is revised to read ''Vinyl fluoride, stabilized'';

c. In paragraph (b) introductory text, the wording ''butadiene, inhibited'' is revised to read ''butadiene, stabilized'';

d. In the paragraph (h) table, in the first column, the sixth entry, ''Butadiene, inhibited'' is revised to read ''Butadiene, stabilized'';

e. Paragraphs (i)(1)(iii), (i)(3), (i)(4) and (i)(8) are revised; and

f. Paragraph (i)(7) is removed and reserved.

The revisions read as follows:

§ 173.315 Compressed gases in cargo tanks and portable tanks.

(a) Liquefied compressed gases that are transported in UN portable tanks must be loaded and offered for transportation in accordance with portable tank provision T50 in § 172.102 of this subchapter. A liquefied compressed gas offered for transportation in a cargo tank motor vehicle or a portable tank must be prepared in accordance with this section, § 173.32, § 173.33 and subpart E or subpart G of part 180 of this subchapter, as applicable. For cryogenic liquids, see § 173.318. For marking requirements, see §§ 172.326 and 172.328 of this subchapter. Except for UN portable tanks, a liquefied compressed gas must be loaded and offered for transportation in accordance with the following table:

* * * * *

(i) * * *

(1) * * *

(iii) For an insulated tank, the required relieving capacity of the relief devices must be the same as for an uninsulated tank, unless the insulation will remain in place and will be effective under fire conditions. In this case, except for UN portable tanks, each insulated tank must be covered by a sheet metal jacket of not less than 16 gauge thickness. For UN portable tanks where the relieving capacity of the valves has been reduced on the basis of the insulation system, the insulation system must remain effective at all temperatures less than 649°C (1200.2°F) and be jacketed with a material having a melting point of 700 °C (1292.0 °F) or greater.

* * * * *

(3) Each safety relief valve on a portable tank, other than a UN portable tank, must be set to start-to-discharge at pressure no higher than 110% of the tank design pressure and no lower than the design pressure specified in paragraph (a) of this section for the gas transported. For UN portable tanks used for liquefied compressed gases and constructed in accordance with the requirements of § 178.276 of this subchapter, the pressure relief device(s) must conform to § 178.276(e) of this subchapter.

(4) Except for UN portable tanks, each safety relief valve must be plainly and permanently marked with the pressure in p.s.i.g. at which it is set to discharge, with the actual rate of discharge of the device in cubic feet per minute of the gas or of air at 60 °F (15.6 °C) and 14.7 p.s.i.a., and with the manufacturer's name or trade name and catalog number. The start-to-discharge valve marking must be visible after the valve is installed. The rated discharge capacity of the device must be determined at a pressure of 120% of the design pressure of the tank. For UN portable tanks, each pressure relief device must be clearly and permanently marked as specified in § 178.274(f)(1) of this subchapter.

* * * * *

(8) Each safety relief valve outlet must be provided with a protective device to prevent the entrance and accumulation of dirt and water. This device must not impede flow through the valve. Pressure relief devices must be designed to prevent the entry of foreign matter, the leakage of liquid and the development of any dangerous excess pressure.

* * * * *

53. In § 173.320, paragraph (c) is revised to read as follows:

§ 173.320 Cryogenic liquids; exceptions.

* * * * *

(c) For transportation aboard aircraft, see the ICAO Technical Instructions, Packing Instruction P202 and the packaging specifications in part 6, Chapter 5. (See § 171.7 of this subchapter for ICAO Technical Instructions.)

PART 175—CARRIAGE BY AIRCRAFT

54. The authority citation for part 175 continues to read as follows:

Authority: 49 U.S.C. 5101–5127; 49 CFR 1.53.

55. In § 175.10, paragraphs (a)(10) and (a)(16) are revised, and paragraph (a)(17) is added to read as follows:

§ 175.10 Exceptions.

(a) * * *

(10) Safety matches or a lighter intended for use by an individual when carried on one's person. However, lighters containing unabsorbed liquid

fuel (other than liquefied gas), lighter fuel, and lighter refills are not permitted on one's person or in checked or carry-on baggage.

* * * * *

(16) Perfumes and colognes, purchased through duty-free sales, carried by passengers or crew in carry-on baggage.

(17) Alcoholic beverages containing:

(i) Not more than 24% alcohol by volume; or

(ii) More than 24% and not more than 70% alcohol by volume when in retail packagings not exceeding 5 liters (1.3 gallons) carried by a crew member or passenger in checked or carry-on baggage, with a total net quantity per person of 5 liters (1.3 gallons) for such beverages.

* * * * *

56. In § 175.33, paragraph (a) introductory text is revised to read as follows:

§ 175.33 Notification of pilot-in-command.

(a) Except as provided in § 175.10, when a hazardous material subject to the provisions of this subchapter is carried in an aircraft, the operator of the aircraft must provide the pilot-in-command with accurate and legible written information as early as practicable before departure of the aircraft, which specifies at least the following:

* * * * *

57. § 175.78 is revised to read as follows:

§ 175.78 Stowage compatibility of cargo.

(a) For stowage on an aircraft, in a cargo facility, or in any other area at an airport designated for the stowage of hazardous materials, packages containing hazardous materials which might react dangerously with one another may not be placed next to each other or in a position that would allow a dangerous interaction in the event of leakage.

(b) As a minimum, the segregation instructions prescribed in the following Segregation Table must be followed to maintain acceptable segregation between packages containing hazardous materials with different hazards. The Segregation Table instructions apply whether or not the class or division is the primary or subsidiary risk. The Segregation Table follows:

SEGREGATION TABLE

Hazard label	Class or division							
	1	2	3	4.2	4.3	5.1	5.2	8
1	Note 1	Note 2	Note 2	Note 2	Note 2	Note 2	Note 2	Note 2
2	Note 2							
3	Note 2					X		
4.2	Note 2					X		
4.3	Note 2							X
51	Note 2		X	X				
5.2	Note 2							
8	Note 2				X			

(c) Instructions for using the Segregation Table are as follows:(1) The dots at the intersection of a row and column indicate that no restrictions apply.

(2) The letter ''X'' at the intersection of a row and column indicates that packages containing these classes of hazardous materials may not be stowed next to or in contact with each other, or in a position which would allow interaction in the event of leakage of the contents.

(3) **Note 1.** ''Note 1'' at the intersection of a row and column means the following:

(i) For explosives in compatibility groups A through K and N —

(A) Packages bearing the same compatibility group letter and the same division number may be stowed together.

(B) Explosives of the same compatibility group, but different divisions may be stowed together provided the whole shipment is treated as belonging to the division having the smaller number. However, when explosives of Division 1.5 Compatibility Group D are stowed together with explosives of Division 1.2 Compatibility Group D, the whole shipment must be treated as Division 1.1, Compatibility Group D.

(C) Packages bearing different compatibility group letters may not be stowed together whether or not they belong to the same division, except as provided in paragraphs (c)(3)(ii) and (iii) of this section.

(ii) Explosives in Compatibility Group L may not be stowed with explosives in other compatibility groups. They may only be stowed with the same type of explosives in Compatibility Group L.

(iii) Explosives of Division 1.4, Compatibility Group S, may be stowed with explosives of all compatibility groups except for Compatibility Groups A and L.

(iv) Other than explosives of Division 1.4, Compatibility Group S (see paragraph (c)(3)(iii) of this section), and Compatibility Groups C, D and E that may be stowed together, explosives that do not belong in the same compatibility group may not be stowed together.

(A) Any combination of substances in Compatibility Groups C and D must be assigned to the most appropriate compatibility group shown in the § 172.101 Table of this subchapter.

(B) Explosives in Compatibility Group N may be stowed together with explosives in Compatibility Groups C, D or E when the combination is assigned Compatibility Group D.

(4) **Note 2.** ''Note 2'' at the intersection of a row and column means that other than explosives of Division 1.4, Compatibility Group S, explosives may not be stowed together with that class.

(5) Packages containing hazardous materials with multiple hazards in the

class or divisions, which require segregation in accordance with the Segregation Table need not be segregated from other packages bearing the same UN number.

(6) A package labeled ''BLASTING AGENT'' may not be stowed next to or in a position that will allow contact with a package of special fireworks or railway torpedoes.

58. In § 175.85, paragraph (a) is revised to read as follows:

§ 175.85 Cargo location.

(a) Except as provided in § 175.10, no person may carry a hazardous material subject to the requirements of this subchapter in the cabin of a passenger-carrying aircraft or on the flight deck of any aircraft. Hazardous materials may be carried in a main deck cargo compartment of a passenger aircraft provided that the compartment is inaccessible to passengers and that it meets all certification requirements for a Class B aircraft cargo compartment in 14 CFR 25.857(b) or for a Class C aircraft cargo compartment in 14 CFR 25.857(c).

* * * * *

PART 176—CARRIAGE BY VESSEL

59. The authority citation for part 176 continues to read as follows:

Authority: 49 U.S.C. 5101–5127; 49 CFR 1.53.

60. In § 176.2, the following definition is added in appropriate alphabetical order to read as follows:

§ 176.2 Definitions.

* * * * *

INF cargo means packaged irradiated nuclear fuel, plutonium or high-level radioactive wastes as those terms are defined in the ''International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes on Board Ships' (INF Code) (contained in IMDG Code, 2000 edition, see § 171.7 of this subchapter).

* * * * *

61. In § 176.63, a new paragraph (e) is added to read as follows:

§ 176.63 Stowage locations.

* * * * *

(e) *Closed cargo transport unit,* for the purpose of stowage of Class 1 (explosive) materials on board a vessel, means a clean, substantial, weatherproof box structure which can be secured to the ship's structure and includes a closed freight container, a closed vehicle, a closed rail wagon or a portable magazine. When this stowage is specified, stowage in small compartments such as deckhouses and mast lockers or oversized weatherproof packages (overpacks) are acceptable alternatives. The floor of any closed cargo transport unit or compartment shall be constructed of wood, close boarded or arranged so that goods are stowed on sparred gratings, wooden pallets or dunnage. Provided that the necessary additional specifications are met, a closed cargo transport unit may be used for Class 1 (explosive) magazine stowage type ''A,'' ''B'' or ''C,'' but not as a portable magazine.

62. In § 176.84, in paragraph (b) Table of provisions, the entries ''4'' and ''5'' are revised; paragraph (c)(1) is revised; paragraph (c)(2), the List of Notes is revised; and paragraph (c)(3) is removed to read as follows:

§ 176.84 Other requirements for stowage and segregation for cargo vessels and passenger vessels.

* * * * *

(b) *Table of provisions:*

Code	Provisions
*	* * * *
4	Stow ''Separated from'' liquid organic materials.
5	Stow ''Separated from'' powdered metals and their compounds.
*	* * * *

(c) * * * (1) Explosive substances and explosive articles must be stowed in accordance with Column (10A) and Column (10B) of the 172.101 Table of this subchapter.

(2) * * *

Notes	Provisions
5E	Stow ''away from'' lead and its compounds.
7E	Stowage category ''04'' for projectiles or cartridges for guns, cannons or mortars; Stowage category ''08'' for other types.
8E	When under deck, special stowage is required.
14E ...	On deck, cargo transport unit must be steel.
15E ...	On deck, cargo transport unit must be leakproof.
17E ...	On deck stowage is recommended.
19E ...	Stow ''away from'' *Explosive, blasting, type C,* UN0083 which contain chlorates or perchlorates.
20E ...	Stowage category ''03'' for projectiles or cartridges for guns, cannons or mortars; Stowage category ''07'' for other types; magazines must be of steel construction that prevents leakage.
21E ...	Cargo space ventilation must be carefully controlled to avoid excessive condensation.
22E ...	When containing chlorates or perchlorates, stow ''away from'' explosives containing ammonium nitrate or other ammonium salts.
23E ...	Segregate from other Class 1 (explosive) materials in the same manner as is required for flammable liquids.
26E ...	Stowage category ''13'' and, for on deck stowage, non-metallic lining of closed cargo transport unit is required when not in effectively sealed, sift-proof packages; Stowage category ''10'' permitted when in effectively sealed, sift-proof packages.
0127E	For closed cargo transport unit, a non-metallic lining is required.

§ 176.128 [Amended]

63. In § 176.128, in paragraph (c), the word ''UN 0600'' is revised to read ''UN 0060''.

§ 176.136 [Amended]

64. In § 176.136, in paragraph (e), the word ''portable'' is removed.

65. In § 176.142, paragraph (a) is revised to read as follows:

§ 176.142 Hazardous materials of extreme flammability.

(a) Except as allowed by paragraph (b) of this section, certain hazardous materials of extreme flammability may not be transported in a vessel carrying Class 1 (explosive) materials. This prohibition applies to the following liquid hazardous materials:

Carbon disulfide	UN1131	Class 3
Diethylzinc	UN1366	Division 4.2
Dimethylzinc	UN1370	Division 4.2
Magnesium alkyls	UN3053	Division 4.2
Methyl phosphonous dichloride, *pyrophoric liquid*	NA2845	Division 6.1
Nickel carbonyl	UN1259	Division 6.1
Pyrophoric liquid, inorganic, n.o.s.	UN3194	Division 4.2
Pyrophoric liquids, organic, n.o.s.	UN2845	Division 4.2
Pyrophoric organometallic compound, water-reactive, n.o.s.	UN3203	Division 4.2

* * * * *

66. A new section § 176.720 is added to subpart M to read as follows:

§ 176.720 Requirements for carriage of INF cargo in international transportation.

A vessel carrying INF cargo (see § 176.2, under INF cargo definition) in international transportation must meet the requirements of the INF Code (contained in IMDG Code, 2000 edition, see § 171.7 of this subchapter) in addition to all other applicable requirements of this subchapter.

PART 177—CARRIAGE BY PUBLIC HIGHWAY

67. The authority citation for part 177 continues to read as follows:

Authority: 49 U.S.C. 5101–5127; 49 CFR 1.53.

68. In § 177.848, paragraph (g)(3)(vi) is revised to read as follows:

§ 177.848 Segregation of hazardous materials.

* * * * *

(g) * * *

(3) * * *

(vi) ''6'' means explosive articles in compatibility group G, other than fireworks and those requiring special handling, may be loaded, transported and stored with other explosive articles of compatibility groups C, D and E, provided that explosive substances (such as those not contained in articles) are not carried in the same vehicle.

* * * * *

PART 178—SPECIFICATIONS FOR PACKAGINGS

69. The authority citation for part 178 continues to read as follows:

Authority: 49 U.S.C. 5101–5127; 49 CFR 1.53.

70. A new section § 178.273 is added to subpart H to read as follows:

§ 178.273 Approval of Specification IM portable tanks and UN portable tanks.

(a) *Application for approval.* (1) An owner or manufacturer of a portable tank shall apply for approval to a designated approval agency authorized to approve the portable tank in accordance with the procedures in subpart E, part 107 of this subchapter.

(2) Each application for approval must contain the following information:

(i) Two complete copies of all engineering drawings, calculations, and test data necessary to ensure that the design meets the relevant specification.

(ii) The manufacturer's serial number that will be assigned to each portable tank.

(iii) A statement as to whether the design type has been examined by any approval agency previously and judged unacceptable. Affirmative statements must be documented with the name of the approval agency, reason for nonacceptance, and the nature of modifications made to the design type.

(b) *Action by approval agency.* The approval agency must perform the following activities:

(1) Review the application for approval to determine whether it is complete and conforms with the requirements of paragraph (a) of this section. If an application is incomplete, it will be returned to the applicant with an explanation as to why the application is incomplete.

(2) Review all drawings and calculations to ensure that the design is in compliance with all requirements of the relevant specification. If the application is approved, one set of the approved drawings, calculations, and test data shall be returned to the applicant. The second (inspector's copy) set of approved drawings, calculations, and test data shall be retained by the approval agency. Maintain drawings and approval records for as long as the portable tank remains in service. The drawings and records must be provided to the Department of Transportation (DOT) upon request.

(3) Witness all tests required for the approval of the portable tank specified in this section and part 180, subpart G of this subchapter.

(4) Ensure, through appropriate inspection that each portable tank is fabricated in all respects in conformance with the approved drawings, calculations, and test data.

(5) Determine and ensure that the portable tank is suitable for its intended use and that it conforms to the requirements of this subchapter.

(6) For UN portable tanks intended for non-refrigerated and refrigerated liquefied gases and Division 6.1 liquids which meet the inhalation toxicity criteria (Zone A or B) as defined in § 173.132 of this subchapter, or that are designated as toxic by inhalation materials in the § 172.101 Table of this subchapter, the approval agency must ensure that:

(i) The portable tank has been constructed in accordance with the ASME Code, Section VIII, Division 1 (see § 171.7 of this subchapter). ASME Code, Section VIII, Division 2 (see § 171.7 of this subchapter) or other design codes may be used if approved by the Associate Administrator (see § 178.274(b)(1));

(ii) All applicable provisions of the design and construction have been met to the satisfaction of the designated approval agency in accordance with the rules established in the ASME Code and that the portable tank meets the requirements of the ASME Code and all the applicable requirements specified in this subchapter;

(iii) The inspector has carried out all the inspections specified by the rules established in the ASME Code; and

(iv) The portable tank is marked with a U stamp code symbol under the authority of the authorized independent inspector.

(7) Upon successful completion of all requirements of this subpart, the approval agency must:

(i) Apply its name, identifying mark or identifying number, and the date upon which the approval was issued, to the metal identification marking plate attached to the portable tank. Any approvals for UN portable tanks authorizing design or construction alternatives (Alternate Arrangements) approved by the Associate Administrator (see § 178.274(a)(2)) must be indicated on the plate as specified in § 178.274(i).

(ii) Issue an approval certificate for each portable tank or, in the case of a series of identical portable tanks manufactured to a single design type, for each series of portable tanks. The approval certificate must include all the information required to be displayed on the required metal identification plate required by § 178.270–14 of this subchapter for IM portable tanks, § 178.245–6 for Specification 51 steel portable tanks, or § 178.274(i) for UN portable tanks. The approval certificate must certify that the approval agency designated to approve the portable tank has approved the portable tank in accordance with the procedures in subpart E of part 107 of this subchapter and that the portable tank is suitable for its intended purpose and meets the requirements of this subchapter. When a series of portable tanks is manufactured without change in the design type, the certificate may be valid for the entire series of portable tanks representing a single design type. For UN portable tanks, the certificate must refer to the prototype test report, the hazardous material or group of hazardous materials allowed to be transported, the materials of construction of the shell and lining (when applicable) and an approval number. The approval number must consist of the distinguishing sign or mark of the country (''USA'' for the United States of America) where the approval was granted and a registration number.

(iii) Retain a copy of each approval certificate.

(8) For UN portable tanks, the approval certificate must also include the following:

(i) The results of the applicable framework and rail impact test specified in part 180, subpart G, of this subchapter; and

(ii) The results of the initial inspection and test in § 180.605 of this subchapter.

(9) The approval agency shall be independent from the manufacturer. The approval agency and the authorized inspector may be the same entity.

(c) *Manufacturers' responsibilities.* The manufacturer is responsible for compliance with the applicable specifications for the design and construction of portable tanks. In addition to responsibility for compliance, manufacturers are responsible for ensuring that the contracted approval agency and authorized inspector, if applicable, are qualified, reputable and competent. The manufacturer of a portable tank shall—

(1) Comply with all the applicable requirements of the ASME Code (see § 171.7 of this subchapter) and of this subpart including, but not limited to, ensuring that the quality control, design calculations and required tests are performed and that all aspects of the portable tank meet the applicable requirements.

(2) Obtain and use a designated approval agency, if applicable, and obtain and use a DOT-designated approval agency to approve the design, construction and certification of the portable tank.

(3) Provide a statement in the manufacturers' data report certifying that each portable tank that is manufactured complies with the relevant specification and all the applicable requirements of this subchapter.

(4) Maintain records of the qualification of portable tanks for at least 5 years and provide copies to the approval agency, the owner or lessee of the tank. Upon request, provide these records to a representative of DOT.

(d) *Denial of application for approval.* If an approval agency finds that a portable tank cannot be approved for any reason, it shall notify the applicant in writing and shall provide the applicant with the reasons for which the approval is denied. A copy of the notification letter shall be provided to the Associate Administrator. An applicant aggrieved by a decision of an approval agency may appeal the decision in writing, within 90 days of receipt, to the Associate Administrator.

(e) *Modifications to approved portable tanks.* (1) Prior to modification of any approved portable tank which may affect conformance and the safe use of an IM or UN portable tank, which may involve a change to the design type or which may affect its ability to retain the hazardous material in transportation, the person desiring to make such modification shall inform the approval agency that issued the initial approval of the portable tank (or if unavailable another approval agency) of the nature of the modification and request approval of the modification. The person desiring to modify the tank must supply the approval agency with three sets of all revised drawings, calculations, and test data relative to the intended modification.

(2) A statement as to whether the intended modification has been examined and determined to be unacceptable by any approval agency. The written statement must include the name of the approving agency, the reason for nonacceptance, and the nature of changes made to the modification since its original rejection.

(3) The approval agency shall review the request for modification, and if it is determined that the proposed modification is in full compliance with the relevant DOT specification, including a UN portable tank, the request shall be approved and the approval agency shall perform the following activities:

(i) Return one set of the approved revised drawings, calculations, and test data to the applicant. The second and third sets of the approved revised drawings, calculations, and data shall be retained by the approval agency as required in § 107.404(a)(3) of this subchapter.

(ii) Ensure through appropriate inspection that all modifications conform to the revised drawings, calculations, and test data.

(iii) Determine the extent to which retesting of the modified tank is necessary based on the nature of the proposed modification, and ensure that all required retests are satisfactorily performed.

(iv) If modification to an approved tank alters any information on the approval certificate, issue a new approval certificate for the modified tank and ensure that any necessary changes are made to the metal identification plate. A copy of each newly issued approval certificate shall be retained by the approval agency and by the owner of each portable tank.

(4) If the approval agency determines that the proposed modification is not in compliance with the relevant DOT specification, the approval agency shall deny the request in accordance with paragraph (d) of this section.

(f) *Termination of Approval Certificate.* (1) The Associate Administrator may terminate an approval issued under this section if he determines that—

(i) Information upon which the approval was based is fraudulent or substantially erroneous; or

(ii) Termination of the approval is necessary to adequately protect against risks to life and property; or

(iii) The approval was not issued by the approval agency in good faith; or

(iv) The portable tank does not meet the specification.

(2) Before an approval is terminated, the Associate Administrator gives the interested party(ies):

(i) Written notice of the facts or conduct believed to warrant the termination;

(ii) Opportunity to submit oral and written evidence; and

(iii) Opportunity to demonstrate or achieve compliance with the applicable requirements.

(3) If the Associate Administrator determines that a certificate of approval must be terminated to preclude a significant and imminent adverse affect on public safety, he may terminate the certificate immediately. In such circumstances, the opportunities of paragraphs (f)(2) (ii) and (iii) of this section need not be provided prior to termination of the approval, but shall be provided as soon as practicable thereafter.

71. Section 178.274 is added to subpart H to read as follows:

§ 178.274 Specifications for UN portable tanks.

(a) *General.* (1) Each UN portable tank must meet the requirements of this section. In addition to the requirements of this section, requirements specific to UN portable tanks used for liquid and solid hazardous materials, non-refrigerated liquefied gases and refrigerated liquefied gases are provided in §§ 178.275, 178.276 and 178.277, respectively. Requirements for approval, maintenance, inspection, testing and use are provided in § 178.273 and part 180, subpart G, of this subchapter. Any portable tank which meets the definition of a ''container'' within the terms of the International Convention for Safe Containers (CSC) must meet the requirements of the CSC as amended and 49 CFR parts 450 through 453 and must have a CSC safety approval plate.

(2) In recognition of scientific and technological advances, the technical requirements applicable to UN portable

tanks may be varied if approved by the Associate Administrator and the portable tank is shown to provide a level of safety equal to or exceeding the requirements of this subchapter. Portable tanks approved to alternative technical requirements must be marked ''Alternative Arrangement'' as specified in paragraph (i) of this section.

(3) *Definitions.* The following definitions apply for the purposes of design and construction of UN portable tanks under this subpart:

Alternate Arrangement portable tank means a UN portable tank that has been approved to alternative technical requirements or testing methods other than those specified for UN portable tanks in part 178 or part 180 of this subchapter.

Approval agency means the designated approval agency authorized to approve the portable tank in accordance with the procedures in subpart E of part 107 of this subchapter.

Design pressure is defined according to the hazardous materials intended to be transported in the portable tank. See §§ 178.275, 178.276 and 178.277, as applicable.

Design type means a portable tank or series of portable tanks made of materials of the same material specifications and thicknesses, manufactured by a single manufacturer, using the same fabrication techniques (for example, welding procedures) and made with equivalent structural equipment, closures, and service equipment.

Fine grain steel means steel which has a ferritic grain size of 6 or finer when determined in accordance with ASTM E 112–96 (see § 171.7 of this subchapter).

Fusible element means a non-reclosing pressure relief device that is thermally activated and that provides protection against excessive pressure buildup in the portable tank developed by exposure to heat, such as from a fire (see § 178.275(g)).

Jacket means the outer insulation cover or cladding which may be part of the insulation system.

Leakage test means a test using gas to subject the shell and its service equipment to an internal pressure.

Maximum allowable working pressure (MAWP) is defined according to the hazardous materials intended to be transported in the portable tank. See §§ 178.275, 178.276 and 178.277, as applicable.

Maximum permissible gross mass (MPGM) means the sum of the tare mass of the portable tank and the heaviest hazardous material authorized for transportation.

Mild steel means a steel with a guaranteed minimum tensile strength of 360 N/mm² to 440 N/mm² and a guaranteed minimum elongation at fracture as specified in paragraph (c)(10) of this section.

Offshore portable tank means a portable tank specially designed for repeated use in the transportation of hazardous materials to, from and between offshore facilities. An offshore portable tank is designed and constructed in accordance with the Guidelines for the Approval of Containers Handled in Open Seas specified in the IMDG Code (see § 171.7 of this subchapter).

Reference steel means a steel with a tensile strength of 370 N/mm² and an elongation at fracture of 27%.

Service equipment means measuring instruments and filling, discharge, venting, safety, heating, cooling and insulating devices.

Shell means the part of the portable tank which retains the hazardous materials intended for transportation, including openings and closures, but does not include service equipment or external structural equipment.

Structural equipment means the reinforcing, fastening, protective and stabilizing members external to the shell.

Test pressure means the maximum gauge pressure at the top of the shell during the hydraulic pressure test equal to not less than 1.5 times the design pressure for liquids and 1.3 for liquefied compressed gases. In some instances a pneumatic test is authorized as an alternative to the hydraulic test. The minimum test pressures for portable tanks intended for specific liquid and solid hazardous materials are specified in the applicable portable tank T codes (such as T1–T23) assigned to these hazardous materials in the § 172.101 Table of this subchapter.

(b) *General design and construction requirements.* (1) The design temperature range for the shell must be −40 °C to 50 °C (−40 °F to 122 °F) for hazardous materials transported under normal conditions of transportation, except for portable tanks used for refrigerated liquefied gases where the minimum design temperature must not be higher than the lowest (coldest) temperature (for example, service temperature) of the contents during filling, discharge or transportation. For hazardous materials handled under elevated temperature conditions, the design temperature must not be less than the maximum temperature of the hazardous material during filling, discharge or transportation. More severe design temperatures must be considered for portable tanks subjected to severe climatic conditions (for example, portable tanks transported in arctic regions). Shells must be designed and constructed in accordance with the requirements of the ASME Code, Section VIII, Division 1 (see § 171.7 of this subchapter), except as limited or modified in this subchapter. For portable tanks used for liquid or solid hazardous materials, a design code other than the ASME Code may be used if approved by the Associate Administrator. Portable tanks used for non-refrigerated and refrigerated liquified compressed gases require an ASME certification and U stamp. Shells must be made of metallic materials suitable for forming. Non-metallic materials may be used for the attachments and supports between the shell and jacket, provided their material properties at the minimum and maximum design temperatures are proven to be sufficient. For welded shells, only a material whose weldability has been fully demonstrated may be used. Welds must be of high quality and conform to a level of integrity at least equivalent to the welding requirements specified in Section VIII of the ASME Code for the welding of pressure vessels. When the manufacturing process or the materials make it necessary, the shells must be suitably heat-treated to guarantee adequate toughness in the weld and in the heat-affected zones. In choosing the material, the design temperature range must be taken into account with respect to risk of brittle fracture, stress corrosion cracking, resistance to impact, and suitability for the hazardous materials intended for transportation in the portable tank. When fine grain steel is used, the guaranteed value of the yield strength must be not more than 460 N/mm² and the guaranteed value of the upper limit of the tensile strength must be not more than 725 N/mm² according to the material specification. Aluminum may not be used as a construction material for the shells of portable tanks intended for the transport of non-refrigerated liquefied gases. For portable tanks intended for the transport of liquid or solid hazardous materials, aluminum may only be used as a construction material for portable tank shells if approved by the Associate Administrator. Portable tank materials must be suitable for the external environment where they will be transported, taking into account the determined design temperature range. Portable tanks shall be designed to withstand, without loss of contents, at least the internal pressure due to the

contents and the static, dynamic and thermal loads during normal conditions of handling and transportation. The design must take into account the effects of fatigue, caused by repeated application of these loads through the expected life of the portable tank.

(2) Portable tank shells, fittings, and pipework shall be constructed from materials that are:

(i) Compatible with the hazardous materials intended to be transported; or

(ii) Properly passivated or neutralized by chemical reaction, if applicable; or

(iii) For portable tanks used for liquid and solid materials, lined with corrosion-resistant material directly bonded to the shell or attached by equivalent means.

(3) Gaskets and seals shall be made of materials that are compatible with the hazardous materials intended to be transported.

(4) When shells are lined, the lining must be compatible with the hazardous materials intended to be transported, homogeneous, non-porous, free from perforations, sufficiently elastic and compatible with the thermal expansion characteristics of the shell. The lining of every shell, shell fittings and piping must be continuous and must extend around the face of any flange. Where external fittings are welded to the tank, the lining must be continuous through the fitting and around the face of external flanges. Joints and seams in the lining must be made by fusing the material together or by other equally effective means.

(5) Contact between dissimilar metals which could result in damage by galvanic action must be prevented by appropriate measures.

(6) The construction materials of the portable tank, including any devices, gaskets, linings and accessories, must not adversely affect or react with the hazardous materials intended to be transported in the portable tank.

(7) Portable tanks must be designed and constructed with supports that provide a secure base during transportation and with suitable lifting and tie-down attachments.

(c) *Design criteria.* (1) Portable tanks and their fastenings must, under the maximum permissible loads and maximum permissible working pressures, be capable of absorbing the following separately applied static forces (for calculation purposes, acceleration due to gravity (g) =9.81m/s^2):

(i) In the direction of travel: 2g (twice the MPGM multiplied by the acceleration due to gravity);

(ii) Horizontally at right angles to the direction of travel: 1g (the MPGM multiplied by the acceleration due to gravity);

(iii) Vertically upwards: 1g (the MPGM multiplied by the acceleration due to gravity); and

(iv) Vertically downwards: 2g (twice the MPGM multiplied by the acceleration due to gravity).

(2) Under each of the forces specified in paragraph (c)(1) of this section, the safety factor must be as follows:

(i) For metals having a clearly defined yield point, a design margin of 1.5 in relation to the guaranteed yield strength; or

(ii) For metals with no clearly defined yield point, a design margin of 1.5 in relation to the guaranteed 0.2% proof strength and, for austenitic steels, the 1% proof strength.

(3) The values of yield strength or proof strength must be the values according to recognized material standards. When austenitic steels are used, the specified minimum values of yield strength or proof strength according to the material standards may be increased by up to 15% for portable tanks used for liquid and solid hazardous materials, other than toxic by inhalation liquids meeting the criteria of Hazard Zone A or Hazard Zone B (see § 173.133 of this subchapter), when these greater values are attested in the material inspection certificate.

(4) Portable tanks must be capable of being electrically grounded to prevent dangerous electrostatic discharge when they are used for Class 2 flammable gases or Class 3 flammable liquids, including elevated temperature materials transported at or above their flash point.

(5) For shells of portable tanks used for liquefied compressed gases, the shell must consist of a circular cross section. Shells must be of a design capable of being stress-analysed mathematically or experimentally by resistance strain gauges as specified in UG–101, Section VIII of the ASME Code (see § 171.7 of this subchapter), or other methods approved by the Associate Administrator.

(6) Shells must be designed and constructed to withstand a hydraulic test pressure of not less than 1.5 times the design pressure for portable tanks used for liquids and 1.3 times the design pressure for portable tanks used for liquefied compressed gases. Specific requirements are provided for each hazardous material in the applicable T Code or portable tank special provision specified in the § 172.101 Table of this subchapter. The minimum shell thickness requirements must also be taken into account.

(7) For metals exhibiting a clearly defined yield point or characterized by a guaranteed proof strength (0.2% proof strength, generally, or 1% proof strength for austenitic steels), the primary membrane stress σ (sigma) in the shell must not exceed 0.75 Re or 0.50 Rm, whichever is lower, at the test pressure, where:

Re = yield strength in N/mm^2, or 0.2% proof strength or, for austenitic steels, 1% proof strength;

Rm = minimum tensile strength in N/mm^2.

(8) The values of Re and Rm to be used must be the specified minimum values according to recognized material standards. When austenitic steels are used, the specified minimum values for Re and Rm according to the material standards may be increased by up to 15% when greater values are attested in the material inspection certificate.

(9) Steels which have a Re/Rm ratio of more than 0.85 are not allowed for the construction of welded shells. The values of Re and Rm to be used in determining this ratio must be the values specified in the material inspection certificate.

(10) Steels used in the construction of shells must have an elongation at fracture, in percentage, of not less than 10,000/Rm with an absolute minimum of 16% for fine grain steels and 20% for other steels.

(11) For the purpose of determining actual values for materials for sheet metal, the axis of the tensile test specimen must be at right angles (transversely) to the direction of rolling. The permanent elongation at fracture must be measured on test specimens of rectangular cross sections in accordance with ISO 6892 (see § 171.7 of this subchapter), using a 50 mm gauge length.

(d) *Minimum shell thickness.* (1) The minimum shell thickness must be the greatest thickness of the following:

(i) the minimum thickness determined in accordance with the requirements of paragraphs (d)(2) through (d)(10) of this section;

(ii) the minimum thickness determined in accordance with Section VIII of the ASME Code (see § 171.7 of this subchapter) or other approved pressure vessel code; or

(iii) the minimum thickness specified in the applicable T code or portable tank special provision indicated for each hazardous material in the § 172.101 Table of this subchapter.

(2) Shells (cylindrical portions, heads and manhole covers) not more than 1.80 m in diameter may not be less than 5 mm thick in the reference steel or of

equivalent thickness in the metal to be used. Shells more than 1.80 m in diameter may not be less than 6 mm (0.2 inches) thick in the reference steel or of equivalent thickness in the metal to be used. For portable tanks used only for the transportation of powdered or granular solid hazardous materials of Packing Group II or III, the minimum thickness requirement may be reduced to 5 mm in the reference steel or of equivalent thickness in the metal to be used regardless of the shell diameter. For vacuum-insulated tanks, the aggregate thickness of the jacket and the shell must correspond to the minimum thickness prescribed in this paragraph, with the thickness of the shell itself not less than the minimum thickness prescribed in paragraph (d)(3) of this section.

(3) When additional protection against shell damage is provided in the case of portable tanks used for liquid and solid hazardous materials requiring test pressures less than 2.65 bar (265.0 kPa), subject to certain limitations specified in the UN Recommendations (see § 171.7 of this subchapter), the Associate Administrator may approve a reduced minimum shell thickness.

(4) The cylindrical portions, heads and manhole covers of all shells must not be less than 3 mm (0.1 inch) thick regardless of the material of construction, except for portable tanks used for liquefied compressed gases where the cylindrical portions, ends (heads) and manhole covers of all shells must not be less than 4 mm (0.2 inch) thick regardless of the material of construction.

(5) When steel is used, that has characteristics other than that of reference steel, the equivalent thickness of the shell and heads must be determined according to the following formula:

$$e_1 = \frac{21.4 e_0 d_1}{1.8m \sqrt[3]{Rm_1 \times A_1}}$$

Where:

e_1 = required equivalent thickness (in mm) of the metal to be used;

e_0 = minimum thickness (in mm) of the reference steel specified in the applicable T code or portable tank special provision indicated for each material in the § 172.101 Table of this subchapter;

d_1 = 1.8m, unless the formula is used to determine the equivalent minimum thickness for a portable tank shell that is required to have a minimum thickness of 8mm or 10mm according to the applicable T code indicated in the § 172.101 Table of this subchapter. When reference steel thicknesses of 8mm or 10mm are specified, d_1 is equal to the actual diameter of the shell but not less than 1.8m;

Rm_1 = guaranteed minimum tensile strength (in N/mm ^{2}) of the metal to be used;

A_1 = guaranteed minimum elongation at fracture (in %) of the metal to be used according to recognized material standards.

(6) The wall and all parts of the shell may not have a thickness less than that prescribed in paragraphs (d)(2), (d)(3) and (d)(4) of this section. This thickness must be exclusive of any corrosion allowance.

(7) There must be no sudden change of plate thickness at the attachment of the heads to the cylindrical portion of the shell.

(e) *Service equipment.* (1) Service equipment must be arranged so that it is protected against the risk of mechanical damage by external forces during handling and transportation. When the connections between the frame and the shell allow relative movement between the sub-assemblies, the equipment must be fastened to allow such movement without risk of damage to any working part. The external discharge fittings (pipe sockets, shut-off devices) and the internal stop-valve and its seating must be protected against mechanical damage by external forces (for example, by using shear sections). Each internal self-closing stop-valve must be protected by a shear section or sacrificial device located outboard of the valve. The shear section or sacrificial device must break at no more than 70% of the load that would cause failure of the internal self-closing stop valve. The filling and discharge devices (including flanges or threaded plugs) and any protective caps must be capable of being secured against unintended opening.

(2) Each filling or discharge opening of a portable tank must be clearly marked to indicate its function.

(3) Each stop-valve or other means of closure must be designed and constructed to a rated pressure not less than the MAWP of the shell taking into account the temperatures expected during transport. All stop-valves with screwed spindles must close by a clockwise motion of the handwheel. For other stop-valves, the position (open and closed) and direction of closure must be clearly indicated. All stop-valves must be designed to prevent unintentional opening.

(4) Piping must be designed, constructed and installed to avoid the risk of damage due to thermal expansion and contraction, mechanical shock and vibration. All piping must be of a suitable metallic material. Welded pipe joints must be used wherever possible.

(5) Joints in copper tubing must be brazed or have an equally strong metal union. The melting point of brazing materials must be no lower than 525°C (977°F). The joints must not decrease the strength of the tubing, such as may happen when cutting threads. Brazed joints are not authorized for portable tanks intended for refrigerated liquefied gases.

(6) The burst pressure of all piping and pipe fittings must be greater than the highest of four times the MAWP of the shell or four times the pressure to which it may be subjected in service by the action of a pump or other device (except pressure relief devices).

(7) Ductile metals must be used in the construction of valves and accessories.

(f) *Pressure relief devices.*—(1) *Marking of pressure relief devices.* Every pressure relief device must be clearly and permanently marked with the following:

(i) the pressure (in bar or kPa) or temperature for fusible elements (in °C) at which it is set to discharge;

(ii) the allowable tolerance at the discharge pressure for reclosing devices;

(iii) the reference temperature corresponding to the rated pressure for frangible discs;

(iv) the allowable temperature tolerance for fusible elements;

(v) the rated flow capacity of the device in standard cubic meters of air per second (m^3/s)determined according to ISO 4126–1 (see § 171.7 of this subchapter); and

(vi) when practicable, the device must show the manufacturer's name and product number.

(2) *Connections to pressure relief devices.* Connections to pressure relief devices must be of sufficient size to enable the required discharge to pass unrestricted to the safety device. No stop-valve may be installed between the shell and the pressure relief devices except where duplicate devices are provided for maintenance or other reasons and the stop-valves serving the devices actually in use are locked open or the stop-valves are interlocked so that at least one of the devices is always in use. There must be no obstruction in an opening leading to a vent or pressure relief device which might restrict or cut-off the flow from the shell to that device. Vents or pipes from the pressure relief device outlets, when used, must deliver the relieved vapor or liquid to the atmosphere in conditions of minimum back-pressure on the relieving devices.

(3) *Location of pressure relief devices.* (i) Each pressure relief device inlet must be situated on top of the shell in a position as near the longitudinal and

transverse center of the shell as reasonably practicable. All pressure relief device inlets must, under maximum filling conditions, be situated in the vapor space of the shell and the devices must be so arranged as to ensure that any escaping vapor is not restricted in any manner. For flammable hazardous materials, the escaping vapor must be directed away from the shell in such a manner that it cannot impinge upon the shell. For refrigerated liquefied gases, the escaping vapor must be directed away from the tank and in such a manner that it cannot impinge upon the tank. Protective devices which deflect the flow of vapor are permissible provided the required relief-device capacity is not reduced.

(ii) Provisions must be implemented to prevent unauthorized persons from access to the pressure relief devices and to protect the devices from damage caused by the portable tank overturning.

(g) *Gauging devices.* Unless a portable tank is intended to be filled by weight, it must be equipped with one or more gauging devices. Glass level-gauges and gauges made of other fragile material, which are in direct communication with the contents of the tank are prohibited. A connection for a vacuum gauge must be provided in the jacket of a vacuum-insulated portable tank.

(h) *Portable tank supports, frameworks, lifting and tie-down attachments.* (1) Portable tanks must be designed and constructed with a support structure to provide a secure base during transport. The forces and safety factors specified in paragraphs (c)(1) and (c)(2) of this section, respectively, must be taken into account in this aspect of the design. Skids, frameworks, cradles or other similar structures are acceptable.

(2) The combined stresses caused by portable tank mountings (for example, cradles, framework, etc.) and portable tank lifting and tie-down attachments must not cause stress that would damage the shell in a manner that would compromise its lading retention capability. Permanent lifting and tie-down attachments must be fitted to all portable tanks. Preferably they should be fitted to the portable tank supports but may be secured to reinforcing plates located on the shell at the points of support. Each portable tank must be designed so that the center of gravity of the filled tank is approximately centered within the points of attachment for lifting devices.

(3) In the design of supports and frameworks, the effects of environmental corrosion must be taken into account.

(4) Forklift pockets must be capable of being closed off. The means of closing forklift pockets must be a permanent part of the framework or permanently attached to the framework. Single compartment portable tanks with a length less than 3.65 m (12 ft.) need not have forklift pockets that are capable of being closed off provided that:

(i) The shell, including all the fittings, are well protected from being hit by the forklift blades; and

(ii) The distance between forklift pockets (measured from the center of each pocket) is at least half of the maximum length of the portable tank.

(5) During transport, portable tanks must be adequately protected against damage to the shell, and service equipment resulting from lateral and longitudinal impact and overturning, or the shell and service equipment must be constructed to withstand the forces resulting from impact or overturning. External fittings must be protected so as to preclude the release of the shell contents upon impact or overturning of the portable tank on its fittings. Examples of protection include:

(i) Protection against lateral impact which may consist of longitudinal bars protecting the shell on both sides at the level of the median line;

(ii) Protection of the portable tank against overturning which may consist of reinforcement rings or bars fixed across the frame;

(iii) Protection against rear impact which may consist of a bumper or frame;

(iv) Protection of the shell against damage from impact or overturning by use of an ISO frame in accordance with ISO 1496–3 (see § 171.7 of this subchapter); and

(v) Protection of the portable tank from impact or damage that may result from overturning by an insulation jacket.

(i) *Marking.* (1) Every portable tank must be fitted with a corrosion resistant metal plate permanently attached to the portable tank in a conspicuous place and readily accessible for inspection. When the plate cannot be permanently attached to the shell, the shell must be marked with at least the information required by Section VIII of the ASME Code (see § 171.7 of this subchapter). At a minimum, the following information must be marked on the plate by stamping or by any other equivalent method:

Country of manufacture
U N
Approval Country
Approval Number
Alternative Arrangements (see § 178.247(a)(2)) ''AA''
Manufacturer's name or mark
Manufacturer's serial number
Approval Agency (Authorized body for the design approval)
Owner's registration number
Year of manufacture
Pressure vessel code to which the shell is designed
Test pressure_____bar gauge.
MAWP_____bar gauge.
External design pressure (not required for portable tanks used for refrigerated liquefied gases)_____bar gauge.
Design temperature range_____°C to_____°C. (For portable tanks used for refrigerated liquefied gases, the minimum design temperature must be marked.)
Water capacity at 20°C/_____liters.
Water capacity of each compartment at 20°C_____liters.
Initial pressure test date and witness identification.
MAWP for heating/cooling system_____bar gauge.
Shell material(s) and material standard reference(s).
Equivalent thickness in reference steel_____mm.
Lining material (when applicable).
Date and type of most recent periodic test(s).
Month_____Year_____Test pressure_____bar gauge.
Stamp of approval agency that performed or witnessed the most recent test.

For portable tanks used for refrigerated liquefied gases:

Either ''thermally insulated'' or ''vacuum insulated''_____.
Effectiveness of the insulation system (heat influx)_____Watts (W).
Reference holding time_____days or hours and initial pressure_____bar/kPa gauge and degree of filling_____in kg for each refrigerated liquefied gas permitted for transportation.

(2) The following information must be marked either on the portable tank itself or on a metal plate firmly secured to the portable tank:

Name of the operator.
Name of hazardous materials being transported and maximum mean bulk temperature (except for refrigerated liquefied gases, the name and temperature are only required when the maximum mean bulk temperature is higher than 50°C).
Maximum permissible gross mass (MPGM)_____kg.
Unladen (tare) mass_____kg.

Note to Paragraph (i)(2): For the identification of the hazardous materials being transported refer to part 172 of this subchapter.

(3) If a portable tank is designed and approved for open seas operations, such as offshore oil exploration, in accordance with the IMDG Code, the words ''OFFSHORE PORTABLE TANK'' must be marked on the identification plate.

(j) *Initial inspection and test.* The initial inspection and test of a portable tank must include the following:

(1) A check of the design characteristics.

(2) An internal and external examination of the portable tank and its fittings, taking into account the hazardous materials to be transported. For UN portable tanks used for refrigerated liquefied gases, a pressure test using an inert gas may be conducted instead of a hydrostatic test. An internal inspection is not required for a portable tank used for the dedicated transportation of refrigerated liquefied gases that are not filled with an inspection opening.

(3) A pressure test as specified in paragraph (i) of this section.

(4) A leakage test.

(5) A test of the satisfactory operation of all service equipment including pressure relief devices must also be performed. When the shell and its fittings have been pressure-tested separately, they must be subjected to a leakage test after reassembly. All welds, subject to full stress level in the shell, must be inspected during the initial test by radiographic, ultrasonic, or another suitable non-destructive test method. This does not apply to the jacket.

(6) A UN portable tank that meets the definition of ''container'' in the CSC (see 49 CFR 450.3(a)(2)) must be subjected to an impact test using a prototype representing each design type. The prototype portable tank must be shown to be capable of absorbing the forces resulting from an impact not less than 4 times (4 g) the maximum permissable gross mass of the fully loaded portable tank at a duration typical of the mechanical shocks experienced in rail transportation. A listing of standards describing methods acceptable for performing the impact test are provided in the UN Recommendations (see § 171.7 of this subchapter). UN portable tanks used for the dedicated transportation of ''Helium, refrigerated liquid,'' UN1963 and ''Hydrogen, refrigerated liquid,'' UN1966 that are marked ''NOT FOR RAIL TRANSPORT'' in letters of a minimum height of 20 cm (8 inches) on at least two sides of the portable tank are excepted from the 4 g impact test.

(7) The following tests must be completed on a portable tank or a series of portable tanks designed and constructed to a single design type that is also a CSC container without leakage or deformation that would render the portable tank unsafe for transportation and use:

(i) *Longitudinal inertia.* The portable tank loaded to its maximum gross weight must be positioned with its longitudinal axis vertical. It shall be held in this position for five minutes by support at the lower end of the base structure providing vertical and lateral restraint and by support at the upper end of the base structure providing lateral restraint only.

(ii) *Lateral inertia.* The portable tank loaded to its maximum gross weight must be positioned for five minutes with its transverse axis vertical. It shall be held in this position for five minutes by support at the lower side of the base structure providing vertical and lateral restraint and by support at the upper side of the base structure providing lateral restraint only.

72. Section 178.275 is added to subpart H to read as follows:

§ 178.275 Specification for UN Portable Tanks intended for the transportation of liquid and solid hazardous materials.

(a) In addition to the requirements of § 178.274, this section sets forth definitions and requirements that apply to UN portable tanks intended for the transportation of liquid and solid hazardous materials.

(b) *Definitions and requirements.*—(1) *Design pressure* means the pressure to be used in calculations required by the recognized pressure vessel code. The design pressure must not be less than the highest of the following pressures:

(i) The maximum effective gauge pressure allowed in the shell during filling or discharge; or

(ii) The sum of—

(A) The absolute vapor pressure (in bar) of the hazardous material at 65 °C, minus 1 bar (149 °F, minus 100 kPa);

(B) The partial pressure (in bar) of air or other gases in the ullage space, resulting from their compression during filling without pressure relief by a maximum ullage temperature of 65 °C (149 °F) and a liquid expansion due to an increase in mean bulk temperature of 35 °C (95 °F); and

(C) A head pressure determined on the basis of the forces specified in § 178.274(c) of this subchapter, but not less than 0.35 bar (35 kPa).

(2) *Maximum allowable working pressure (MAWP)* means a pressure that must not be less than the highest of the following pressures measured at the top of the shell while in operating position:

(i) The maximum effective gauge pressure allowed in the shell during filling or discharge; or

(ii) The maximum effective gauge pressure to which the shell is designed which must be not less than the design pressure.

(c) *Service equipment.* (1) In addition to the requirements specified in § 178.274, for service equipment, all openings in the shell, intended for filling or discharging the portable tank must be fitted with a manually operated stop-valve located as close to the shell as reasonably practicable. Other openings, except for openings leading to venting or pressure relief devices, must be equipped with either a stop-valve or another suitable means of closure located as close to the shell as reasonably practicable.

(2) All portable tanks must be fitted with a manhole or other inspection openings of a suitable size to allow for internal inspection and adequate access for maintenance and repair of the interior. Compartmented portable tanks must have a manhole or other inspection openings for each compartment.

(3) For insulated portable tanks, top fittings must be surrounded by a spill collection reservoir with suitable drains.

(4) Piping must be designed, constructed and installed to avoid the risk of damage due to thermal expansion and contraction, mechanical shock and vibration. All piping must be of a suitable metallic material. Welded pipe joints must be used wherever possible.

(d) *Bottom openings.* (1) Certain hazardous materials may not be transported in portable tanks with bottom openings. When the applicable T code or portable tank special provision, as referenced for materials in the § 172.101 Table of this subchapter, specifies that bottom openings are prohibited, there must be no openings below the liquid level of the shell when it is filled to its maximum permissible filling limit. When an existing opening is closed, it must be accomplished by internally and externally welding one plate to the shell.

(2) Bottom discharge outlets for portable tanks carrying certain solid, crystallizable or highly viscous hazardous materials must be equipped with at least two serially fitted and mutually independent shut-off devices. Use of only two shut-off devices is only authorized when this paragraph is referenced in the applicable T Code indicated for each hazardous material in the § 172.101 Table of this subchapter. The design of the equipment must be to the satisfaction of the approval agency and must include:

(i) An external stop-valve fitted as close to the shell as reasonably practicable; and

(ii) A liquid tight closure at the end of the discharge pipe, which may be a bolted blank flange or a screw cap.

(3) Except as provided in paragraph (c)(2) of this section, every bottom discharge outlet must be equipped with

three serially fitted and mutually independent shut-off devices. The design of the equipment must include:

(i) A self-closing internal stop-valve, which is a stop-valve within the shell or within a welded flange or its companion flange, such that:

(A) The control devices for the operation of the valve are designed to prevent any unintended opening through impact or other inadvertent act;

(B) The valve is operable from above or below;

(C) If possible, the setting of the valve (open or closed) must be capable of being verified from the ground;

(D) Except for portable tanks having a capacity less than 1,000 liters (264.2 gallons), it must be possible to close the valve from an accessible position on the portable tank that is remote from the valve itself within 30 seconds of actuation; and

(E) The valve must continue to be effective in the event of damage to the external device for controlling the operation of the valve;

(ii) An external stop-valve fitted as close to the shell as reasonably practicable;

(iii) A liquid tight closure at the end of the discharge pipe, which may be a bolted blank flange or a screw cap; and

(iv) For portable tanks used for the transportation of liquid materials that are flammable, pyrophoric, oxidizing or toxic, the remote means of closure must be capable of thermal activation. The thermal means of activation must activate at a temperature of not more than 121 °C (250 °F).

(e) *Pressure relief devices.* All portable tanks must be fitted with at least one pressure relief device. All relief devices must be designed, constructed and marked in accordance with the requirements of this subchapter.

(f) *Vacuum-relief devices.* (1) A shell which is to be equipped with a vacuum-relief device must be designed to withstand, without permanent deformation, an external pressure of not less than 0.21 bar (21.0 kPa). The vacuum-relief device must be set to relieve at a vacuum setting not greater than –0.21 bar (–21.0 kPa) unless the shell is designed for a higher external over pressure, in which case the vacuum-relief pressure of the device to be fitted must not be greater than the tank design vacuum pressure. A shell that is not fitted with a vacuum-relief device must be designed to withstand, without permanent deformation, an external pressure of not less than 0.4 bar (40.0 kPa).

(2) Vacuum-relief devices used on portable tanks intended for the transportation of hazardous materials meeting the criteria of Class 3, including elevated temperature hazardous materials transported at or above their flash point, must prevent the immediate passage of flame into the shell or the portable tank must have a shell capable of withstanding, without leakage, an internal explosion resulting from the passage of flame into the shell.

(g) *Pressure relief devices.* (1) Each portable tank with a capacity not less than 1,900 liters (501.9 gallons) and every independent compartment of a portable tank with a similar capacity, must be provided with one or more pressure relief devices of the reclosing type. Such portable tanks may, in addition, have a frangible disc or fusible element in parallel with the reclosing devices, except when the applicable T code assigned to a hazardous material requires that the frangible disc precede the pressure relief device, according to paragraph (g)(3) of this section, or when no bottom openings are allowed. The pressure relief devices must have sufficient capacity to prevent rupture of the shell due to over pressurization or vacuum resulting from filling, discharging, heating of the contents or fire.

(2) Pressure relief devices must be designed to prevent the entry of foreign matter, the leakage of liquid and the development of any dangerous excess pressure.

(3) When required for certain hazardous materials by the applicable T code or portable tank special provision specified for a hazardous material in the § 172.101 Table of this subchapter, portable tanks must have a pressure relief device consistent with the requirements of this subchapter. Except for a portable tank in dedicated service that is fitted with an approved relief device constructed of materials compatible with the hazardous material, the relief device system must include a frangible disc preceding (such as, between the lading and the reclosing pressure relief device) a reclosing pressure relief device. A pressure gauge or suitable tell-tale indicator for the detection of disc rupture, pin-holing or leakage must be provided in the space between the frangible disc and the pressure relief device to allow the portable tank operator to check to determine if the disc is leak free. The frangible disc must rupture at a nominal pressure 10% above the start-to-discharge pressure of the reclosable pressure relief device.

(4) Every portable tank with a capacity less than 1,900 liters (501.9 gallons) must be fitted with a pressure relief device which, except as provided in paragraph (g)(3) of this section, may be a frangible disc when this disc is set to rupture at a nominal pressure equal to the test pressure at any temperature within the design temperature range.

(5) When the shell is fitted for pressure discharge, a suitable pressure relief device must provide the inlet line to the portable tank and set to operate at a pressure not higher than the MAWP of the shell, and a stop-valve must be fitted as close to the shell as practicable to minimize the potential for damage.

(6) *Setting of pressure relief devices.* (i) Pressure relief devices must operate only in conditions of excessive rise in temperature. The shell must not be subject to undue fluctuations of pressure during normal conditions of transportation.

(ii) The required pressure relief device must be set to start to discharge at a nominal pressure of five-sixths of the test pressure for shells having a test pressure of not more than 4.5 bar (450 kPa) and 110% of two-thirds of the test pressure for shells having a test pressure of more than 4.5 bar (450 kPa). A self-closing relief device must close at a pressure not more than 10% below the pressure at which the discharge starts. The device must remain closed at all lower pressures. This requirement does not prevent the use of vacuum-relief or combination pressure relief and vacuum-relief devices.

(h) *Fusible elements.* Fusible elements must operate at a temperature between 110°C (230°F) and 149°C (300.2°F) provided that the pressure in the shell at the fusing temperature will not exceed the test pressure. They must be placed at the top of the shell with their inlets in the vapor space and in no case may they be shielded from external heat. Fusible elements must not be utilized on portable tanks with a test pressure which exceeds 2.65 bar (265.0 kPa). Fusible elements used on portable tanks intended for the transport of elevated temperature hazardous materials must be designed to operate at a temperature higher than the maximum temperature that will be experienced during transport and must be designed to the satisfaction of the approval agency.

(i) *Capacity of pressure relief devices.* (1) The reclosing pressure relief device required by paragraph (g)(1) of this section must have a minimum cross sectional flow area equivalent to an orifice of 31.75 mm (1.3 inches) diameter. Vacuum-relief devices, when used, must have a cross sectional flow area not less than 284 mm^2 (11.2 $inches^2$).

(2) Under conditions of complete fire engulfment of the portable tank, the combined delivery capacity of the relief

devices must be sufficient to limit the pressure in the shell to 20% above the start-to-discharge pressure specified in paragraph (g)(6) of this section. Emergency pressure relief devices may be used to achieve the full relief capacity prescribed. The total required capacity of the relief devices may be determined using the formula in paragraph (i)(2)(i)(A) of this section or the table in paragraph (i)(2)(iii) of this section.

(i)(A) To determine the total required capacity of the relief devices, which must be regarded as being the sum of the individual capacities of all the contributing devices, the following formula must be used:

$$Q = 12.4 \frac{FA^{0.82}}{LC} \sqrt{\frac{ZT}{M}}$$

Where:

Q = minimum required rate of discharge in cubic meters of air per second (m^3/s) at standard conditions: 1 bar and 0°C (273 K);

F = for uninsulated shells: 1; for insulated shells: U(649-t)/13.6 but in no case is less than 0.25 where: U = thermal conductance of the insulation, in $kW \cdot m^{-2} K^{-1}$, at 38°C; and t = actual temperature of the hazardous material during filling (in °C) or when this temperature is unknown, let t = 15°C. The value of F given in this paragraph (i)(2)(i)(A) for insulated shells may only be used if the insulation is in conformance with paragraph (i)(2)(iv) of this section;

A = total external surface area of shell in square meters;

Z = the gas compressibility factor in the accumulating condition (when this factor is unknown, let Z equal 1.0);

T = absolute temperature in Kelvin (°C + 273) above the pressure relief devices in the accumulating condition;

L = the latent heat of vaporization of the liquid, in kJ/kg, in the accumulating condition;

M = molecular weight of the hazardous material.

(B) The constant C, as shown in the formula in paragraph (i)(2)(i)(A) of this section, is derived from one of the following formula as a function of the ratio k of specific heats:

$$k = \frac{c_p}{c_v}$$

Where:

c_p is the specific heat at constant pressure; and

c_v is the specific heat at constant volume.

(C) When k >1:

$$C = \sqrt{k\left(\frac{2}{k+1}\right)^{\frac{k+1}{k-1}}}$$

(D) When k = 1 or k is unknown, a value of 0.607 may be used for the constant C. C may also be taken from the following table:

C CONSTANT VALUE TABLE

k	C	k	C	k	C
1.00	0.607	1.26	0.660	1.52	0.704
1.02	0.611	1.28	0.664	1.54	0.707
1.04	0.615	1.30	0.667	1.56	0.710
1.06	0.620	1.32	0.671	1.58	0.713
1.08	0.624	1.34	0.674	1.60	0.716
1.10	0.628	1.36	0.678	1.62	0.719
1.12	0.633	1.38	0.681	1.64	0.722
1.14	0.637	1.40	0.685	1.66	0.725
1.16	0.641	1.42	0.688	1.68	0.728
1.18	0.645	1.44	0.691	1.70	0.731
1.20	0.649	1.46	0.695	2.00	0.770
1.22	0.652	1.48	0.698	2.20	0.793
1.24	0.656	1.50	0.701		

(ii) As an alternative to the formula in paragraph (i)(2)(i)(A) of this section, relief devices for shells used for transporting liquids may be sized in accordance with the table in paragraph (i)(2)(iii) of this section. The table in paragraph (i)(2)(iii) of this section assumes an insulation value of F = 1 and must be adjusted accordingly when the shell is insulated. Other values used in determining the table in paragraph (i)(2)(iii) of this section are: L = 334.94 kJ/kg; M = 86.7; T = 394 K; Z = 1; and C = 0.607.

(iii) Minimum emergency vent capacity, Q, in cubic meters per air per second at 1 bar and 0°C (273 K) shown in the following table:

MINIMUM EMERGENCY VENT CAPACITY

[Q Values]

A Exposed area (square meters)	Q (Cubic meters of air per second)	A Exposed area (square meters)	Q (Cubic meters of air per second)
2	0.230	37.5	2.539
3	0.320	40	2.677
4	0.405	42.5	2.814
5	0.487	45	2.949
6	0.565	47.5	3.082
7	0.641	50	3.215
8	0.715	52.5	3.346
9	0.788	55	3.476
10	0.859	57.5	3.605
12	0.998	60	3.733
14	1.132	62.5	3.860
16	1.263	65	3.987
18	1.391	67.5	4.112

MINIMUM EMERGENCY VENT CAPACITY—Continued

[Q Values]

A Exposed area (square meters)	Q (Cubic meters of air per second)	A Exposed area (square meters)	Q (Cubic meters of air per second)
20	1.517	70	4.236
22.5	1.670	75	4.483
25	1.821	80	4.726
27.5	1.969	85	4.967
30	2.115	90	5.206
32.5	2.258	95	5.442
35	2.400	100	5.676

(iv) Insulation systems, used for the purpose of reducing venting capacity, must be specifically approved by the approval agency. In all cases, insulation systems approved for this purpose must—

(A) Remain effective at all temperatures up to 649 °C (1200.2 °F); and

(B) Be jacketed with a material having a melting point of 700 °C (1292 °F) or greater.

(j) *Approval, inspection and testing.* Approval procedures for UN portable tanks are specified in § 178.273. Inspection and testing requirements are specified in § 180.605 of this subchapter.

73. Section 178.276 is added to subpart H to read as follows:

§ 178.276 Requirements for the design, construction, inspection and testing of portable tanks intended for the transportation of non-refrigerated liquefied compressed gases.

(a) In addition to the requirements of § 178.274 applicable to UN portable tanks, the following requirements apply to UN portable tanks used for non-refrigerated liquefied compressed gases. In addition to the definitions in § 178.274, the following definitions apply:

(1) *Design pressure* means the pressure to be used in calculations required by the ASME Code, Section VIII (see § 171.7 of this subchapter). The design pressure must be not less than the highest of the following pressures:

(i) The maximum effective gauge pressure allowed in the shell during filling or discharge; or

(ii) The sum of:

(A) The maximum effective gauge pressure to which the shell is designed as defined in this paragraph under ''MAWP''; and

(B) A head pressure determined on the basis of the dynamic forces specified in paragraph (h) of this section, but not less than 0.35 bar (35 kPa).

(2) *Design reference temperature* means the temperature at which the vapor pressure of the contents is determined for the purpose of calculating the MAWP. The value for each portable tank type is as follows:

(i) Shell with a diameter of 1.5 meters (4.9 ft.) or less: 65 °C (149 °F); or

(ii) Shell with a diameter of more than 1.5 meters (4.9 ft.):

(A) Without insulation or sun shield: 60 °C (140 °F);

(B) With sun shield: 55 °C (131 °F); and

(C) With insulation: 50 °C (122 °F).

(3) *Filling density* means the average mass of liquefied compressed gas per liter of shell capacity (kg/l).

(4) *Maximum allowable working pressure (MAWP)* means a pressure that must be not less than the highest of the following pressures measured at the top of the shell while in operating position, but in no case less than 7 bar (700 kPa):

(i) The maximum effective gauge pressure allowed in the shell during filling or discharge; or

(ii) The maximum effective gauge pressure to which the shell is designed, which must be:

(A) Not less than the pressure specified for each liquefied compressed gas listed in portable tank special provision T50; and

(B) Not less than the sum of:

(*1*) The absolute vapor pressure (in bar) of the liquefied compressed gas at the design reference temperature minus 1 bar; and

(*2*) The partial pressure (in bar) of air or other gases in the ullage space which is determined by the design reference temperature and the liquid phase expansion due to the increase of the mean bulk temperature of t_r-t_f (t_f = filling temperature, usually 15 °C, t_r = 50 °C maximum mean bulk temperature).

(b) *General design and construction requirements.* (1) Shells must be of seamless or welded steel construction, or combination of both, and have a water capacity greater than 450 liters (118.9 gallons). Shells must be designed, constructed, certified and stamped in accordance with the ASME Code, Section VIII (see § 171.7 of this subchapter).

(2) Portable tanks must be postweld heat-treated and radiographed as prescribed in Section VIII of the ASME Code, except that each portable tank constructed in accordance with part UHT of the ASME Code must be postweld heat-treated. Where postweld heat treatment is required, the portable tank must be treated as a unit after completion of all the welds in and/or to the shell and heads. The method must be as prescribed in the ASME Code. Welded attachments to pads may be made after postweld heat treatment is made. A portable tank used for anhydrous ammonia must be postweld heat-treated. The postweld heat treatment must be as prescribed in the ASME Code, but in no event at less than 1050 °F tank metal temperature. Additionally, portable tanks constructed in accordance with part UHT of the ASME Code must conform to the following requirements:

(i) Welding procedure and welder performance tests must be made annually in accordance with Section IX of the ASME Code (see § 171.7 of this subchapter). In addition to the essential variables named therein, the following must be considered to be essential variables: number of passes, thickness of plate, heat input per pass, and manufacturer's identification of rod and flux. The number of passes, thickness of plate and heat input per pass may not vary more than 25 percent from the qualified procedure. Records of the qualification must be retained for at least 5 years by the portable tank manufacturer or his designated agent and, upon request, made available to a representative of the Department of Transportation or the owner of the tank.

(ii) Impact tests must be made on a lot basis. A lot is defined as 100 tons or less of the same heat and having a thickness variation no greater than plus or minus 25 percent. The minimum impact required for full-sized specimens shall

be 20 foot-pounds (or 10 foot-pounds for half-sized specimens) at 0 °F (−17.8 °F) Charpy V–Notch in both the longitudinal and transverse direction. If the lot test does not pass this requirement, individual plates may be accepted if they individually meet this impact requirement.

(3) When the shells intended for the transportation of non-refrigerated liquefied compressed gases are equipped with thermal insulation, a device must be provided to prevent any dangerous pressure from developing in the insulating layer in the event of a leak, when the protective covering is closed it must be gas tight. The thermal insulation must not inhibit access to the fittings and discharge devices. In addition, the thermal insulation systems must satisfy the following requirements:

(i) consist of a shield covering not less than the upper third, but not more than the upper half of the surface of the shell, and separated from the shell by an air space of approximately 40 mm (1.7 inches) across; or

(ii) consist of a complete cladding of insulating materials. The insulation must be of adequate thickness and constructed to prevent the ingress of moisture and damage to the insulation. The insulation and cladding must have a thermal conductance of not more than 0.67 ($W \cdot m^{-2} \cdot K^{-1}$) under normal conditions of transportation.

(c) *Service equipment.* (1) Each opening with a diameter of more than 1.5 mm (0.1 inch) in the shell of a portable tank, except openings for pressure-relief devices, inspection openings and closed bleed holes, must be fitted with at least three mutually independent shut-off devices in series: the first being an internal stop-valve, excess flow valve, integral excess flow valve, or excess flow feature (see § 178.337–1(g)), the second being an external stop-valve and the third being a blank flange, thread cap, plug or equivalent tight liquid closure device.

(2) When a portable tank is fitted with an excess flow valve, the excess flow valve must be so fitted that its seating is inside the shell or inside a welded flange or, when fitted externally, its mountings must be designed so that in the event of impact it maintains its effectiveness. The excess flow valves must be selected and fitted so as to close automatically when the rated flow, specified by the manufacturer, is reached. Connections and accessories leading to or from such a valve must have a capacity for a flow more than the excess flow valve's rated flow.

(3) For filling and discharge openings that are located below the liquid level, the first shut-off device must be an internal stop-valve and the second must be a stop-valve placed in an accessible position on each discharge and filling pipe.

(4) For filling and discharge openings located below the liquid level of portable tanks intended for the transportation of flammable and/or toxic liquefied compressed gases, the internal stop-valve must be a self-closing safety device that fully closes automatically during filling or discharge in the event of fire engulfment. The device shall fully close within 30 seconds of actuation and the thermal means of closure must actuate at a temperature of not more than 121 °C (250 °F). Except for portable tanks having a capacity less than 1,000 liters (264.2 gallons), this device must be operable by remote control.

(5) In addition to filling, discharge and gas pressure equalizing orifices, shells may have openings in which gauges, thermometers and manometers can be fitted. Connections for such instruments must be made by suitable welded nozzles or pockets and may not be connected by screwed connections through the shell.

(6) All portable tanks must be fitted with manholes or other inspection openings of suitable size to allow for internal inspection and adequate access for maintenance and repair of the interior.

(7) *Inlets and discharge outlets on chlorine portable tanks.* The inlet and discharge outlets on portable tanks used to transport chlorine must meet the requirements of § 178.337–1(c)(2) and must be fitted with an internal excess flow valve. In addition to the internal excess flow valve, the inlet and discharge outlets must be equipped with an external stop valve (angle valve). Excess flow valves must conform to the standards of The Chlorine Institute, Inc. (see § 171.7 of this subchapter) as follows:

(i) A valve conforming to Drawing 101–7, dated July 1993, must be installed under each liquid angle valve.

(ii) A valve conforming to Drawing 106–6, dated July 1993, must be installed under each gas angle valve. For portable tanks used to transport non-refrigerated liquefied gases.

(8) External fittings must be grouped together as close as reasonably practicable. The following openings may be installed at locations other than on the top or end of the tank:

(i) The openings for liquid level gauging devices, pressure gauges, or for safety devices, may be installed separately at the other location or in the side of the shell;

(ii) One plugged opening of 2-inch National Pipe Thread or less provided for maintenance purposes may be located elsewhere;

(iii) An opening of 3-inch National Pipe Size or less may be provided at another location, when necessary, to facilitate installation of condensing coils.

(9) Filling and discharge connections are not required to be grouped and may be installed below the normal liquid level of the tank if:

(i) The portable tank is permanently mounted in a full framework for containerized transport;

(ii) For each portable tank design, a prototype portable tank, meets the requirements of parts 450 through 453 of this title for compliance with the requirements of Annex II of the International Convention for Safe Containers; and

(iii) Each filling and discharge outlet meets the requirements of paragraph (c)(4) of this section.

(d) *Bottom openings.* Bottom openings are prohibited on portable tanks when the portable tank special provision T50 in § 172.102(c)(7) of this subchapter indicates that bottom openings are not allowed. In this case, there may be no openings located below the liquid level of the shell when it is filled to its maximum permissible filling limit.

(e) *Pressure relief devices.* (1) Portable tanks must be provided with one or more reclosing pressure relief devices. The pressure relief devices must open automatically at a pressure not less than the MAWP and be fully open at a pressure equal to 110% of the MAWP. These devices must, after discharge, close at a pressure not less than 10% below the pressure at which discharge starts and must remain closed at all lower pressures. The pressure relief devices must be of a type that will resist dynamic forces including liquid surge. A frangible disc may only be used in series with a reclosing pressure relief device.

(2) Pressure relief devices must be designed to prevent the entry of foreign matter, the leakage of gas and the development of any dangerous excess pressure.

(3) A portable tank intended for the transportation of certain liquefied compressed gases identified in portable tank special provision T50 in § 172.102 of this subchapter must have a pressure relief device which conforms to the requirements of this subchapter. Unless a portable tank, in dedicated service, is fitted with a relief device constructed of materials compatible with the hazardous material, the relief device must be comprised of a frangible disc

preceded by a reclosing device. The space between the frangible disc and the device must be provided with a pressure gauge or a suitable tell-tale indicator. This arrangement must facilitate the detection of disc rupture, pinholing or leakage which could cause a malfunction of the pressure relief device. The frangible disc must rupture at a nominal pressure 10% above the start-to-discharge pressure of the relief device.

(4) In the case of portable tanks used for more than one gas, the pressure relief devices must open at a pressure indicated in paragraph (e)(1) of this section for the gas having the highest maximum allowable pressure of the gases allowed to be transported in the portable tank.

(f) *Capacity of relief devices.* The combined delivery capacity of the relief devices must be sufficient so that, in the event of total fire engulfment, the pressure inside the shell cannot exceed 120% of the MAWP. Reclosing relief devices must be used to achieve the full relief capacity prescribed. In the case of portable tanks used for more than gas, the combined delivery capacity of the pressure relief devices must be taken for the liquefied compressed gas which requires the highest delivery capacity of the liquefied compressed gases allowed to be transported in the portable tank. The total required capacity of the relief devices must be determined according to the requirements in § 178.275(h). These requirements apply only to liquefied compressed gases which have critical temperatures well above the temperature at the accumulating condition. For gases which have critical temperatures near or below the temperature at the accumulating condition, the calculation of the pressure relief device delivery capacity must consider the additional thermodynamic properties of the gas (for example, CGA S–1.2–1980 (see § 171.7 of this subchapter).

74. A new § 178.277 is added to subpart H to read as follows:

§ 178.277 Requirements for the design, construction, inspection and testing of portable tanks intended for the transportation of refrigerated liquefied gases.

(a) In addition to the requirements of § 178.274 applicable to UN portable tanks, the following requirements and definitions apply to UN portable tanks used for refrigerated liquefied gases:

Design pressure For the purpose of this section the term ''design pressure'' is consistent with the definition for design pressure in the ASME Code, Section VIII (see § 171.7 of this subchapter).

Holding time is the time, as determined by testing, that will elapse from loading until the pressure of the contents, under equilibrium conditions, reaches the lowest set pressure of the pressure limiting device(s) (for example, pressure control valve or pressure relief device). Holding time must be determined as specified in § 178.338–9.

Maximum allowable working pressure (MAWP) means the maximum effective gauge pressure permissible at the top of the shell of a loaded portable tank in its operating position including the highest effective pressure during filling and discharge;

Minimum design temperature means the temperature which is used for the design and construction of the shell not higher than the lowest (coldest) service temperature of the contents during normal conditions of filling, discharge and transportation.

Shell means the part of the portable tank which retains the refrigerated liquefied gas intended for transport, including openings and their closures, but does not include service equipment or external structural equipment.

Tank means a construction which normally consists of either:

(1) A jacket and one or more inner shells where the space between the shell(s) and the jacket is exhausted of air (vacuum insulation) and may incorporate a thermal insulation system; or

(2) A jacket and an inner shell with an intermediate layer of solid thermally insulating material (for example, solid foam).

(b) *General design and construction requirements.* (1) Portable tanks must be of seamless or welded steel construction and have a water capacity of more than 450 liters (118.9 gallons). Portable tanks must be designed, constructed, certified and stamped in accordance with Section VIII of the ASME Code (see § 171.7 of this subchapter).

(2) Portable tanks must be postweld heat treated and radiographed as prescribed in the ASME Code except that each tank constructed in accordance with part UHT of the ASME Code must be postweld heat treated. Where postweld heat treatment is required, the tank must be treated as a unit after completion of all the welds to the shell and heads. The method must be as prescribed in the ASME Code. Welded attachments to pads may be made after postweld heat treatment is made. The postweld heat treatment must be as prescribed in Section VIII of the ASME Code, but in no event at less than 1050 °F tank metal temperature.

(3) Welding procedure and welder performance tests must be made annually in accordance with Section IX of the ASME Code (see § 171.7 of this subchapter). In addition to the essential variables named in the ASME Code, the following must be considered as essential variables: number of passes, thickness of plate, heat input per pass, and the specified rod and flux. The number of passes, thickness of plate and heat input per pass may not vary more than 25% from the procedure qualification. Records of the qualification must be retained for at least 5 years by the portable tank manufacturer and made available to the approval agency and the owner of the portable tank as specified in § 178.273.

(4) Shells and jackets must be made of metallic materials suitable for forming. Jackets must be made of steel. Non-metallic materials may be used for the attachments and supports between the shell and jacket, provided their material properties at the minimum design temperature are proven to be sufficient. In choosing the material, the minimum design temperature must be taken into account with respect to risk of brittle fracture, to hydrogen embrittlement, to stress corrosion cracking and to resistance to impact.

(5) Any part of a portable tank, including fittings, gaskets and pipe-work, which can be expected normally to come into contact with the refrigerated liquefied gas transported must be compatible with that refrigerated liquefied gas.

(6) The thermal insulation system must include a complete covering of the shell with effective insulating materials. External insulation must be protected by a jacket so as to prevent the ingress of moisture and other damage under normal transport conditions.

(7) When a jacket is so closed as to be gas-tight, a device must be provided to prevent any dangerous pressure from developing in the insulation space.

(8) Materials which may react with oxygen or oxygen enriched atmospheres in a dangerous manner may not be used in portable tanks intended for the transport of refrigerated liquefied gases having a boiling point below minus 182°C at atmospheric pressure in locations with the thermal insulation where there is a risk of contact with oxygen or with oxygen enriched fluid.

(9) Insulating materials must not deteriorate to an extent that the effectiveness of the insulation system, as determined in accordance with paragraph (b)(11) of this section, would be reduced in service.

(10) A reference holding time must be determined for each refrigerated

liquefied gas intended for transport in a portable tank. The reference holding time must be determined by testing in accordance with the requirements of § 178.338–9, considering the following factors:

(i) The effectiveness of the insulation system, determined in accordance with paragraph (b)(11) of this section;

(ii) The lowest set pressure of the pressure limiting device;

(iii) The initial filling conditions;

(iv) An assumed ambient temperature of 30 °C (86 °F);

(v) The physical properties of the individual refrigerated liquefied gas intended to be transported.

(11) The effectiveness of the insulation system (heat influx in watts) may be determined by type testing the portable tank in accordance with a procedure specified in § 178.338–9(c) or by using the holding time test in § 178.338–9(b). This test must consist of either:

(i) A constant pressure test (for example, at atmospheric pressure) when the loss of refrigerated liquefied gas is measured over a period of time; or

(ii) A closed system test when the rise in pressure in the shell is measured over a period of time.

(12) When performing the constant pressure test, variations in atmospheric pressure must be taken into account. When performing either test, corrections must be made for any variation of the ambient temperature from the assumed ambient temperature reference value of 30°C (86°F).

(13) The jacket of a vacuum-insulated double-wall tank must have either an external design pressure not less than 100 kPa (1 bar) gauge pressure calculated in accordance with the ASME Code or a calculated critical collapsing pressure of not less than 200 kPa (2 bar) gauge pressure. Internal and external reinforcements may be included in calculating the ability of the jacket to resist the external pressure.

Note to Paragraph (b): For the determination of the actual holding time, as indicated by paragraphs (b)(10), (11), (12), and (13), before each journey, refer to § 178.338–9(b).

(c) *Design criteria.* For shells with vacuum insulation, the test pressure must not be less than 1.3 times the sum of the MAWP and 100 kPa (1 bar). In no case may the test pressure be less than 300 kPa (3 bar) gauge pressure.

(d) *Service equipment.* (1) Each filling and discharge opening in portable tanks used for the transport of flammable refrigerated liquefied gases must be fitted with at least three mutually independent shut-off devices in series: the first being a stop-valve situated as close as reasonably practicable to the jacket, the second being a stop-valve and the third being a blank flange or equivalent device. The shut-off device closest to the jacket must be a self-closing device, which is capable of being closed from an accessible position on the portable tank that is remote from the valve within 30 seconds of actuation. This device must actuate at a temperature of not more than 121 °C (250 °F).

(2) Each filling and discharge opening in portable tanks used for the transport of non-flammable refrigerated liquefied gases must be fitted with at least two mutually independent shut-off devices in series: the first being a stop-valve situated as close as reasonably practicable to the jacket and the second a blank flange or equivalent device.

(3) For sections of piping which can be closed at both ends and where liquid product can be trapped, a method of automatic pressure relief must be provided to prevent excess pressure build-up within the piping.

(4) Each filling and discharge opening on a portable tank must be clearly marked to indicate its function.

(5) When pressure-building units are used, the liquid and vapor connections to that unit must be provided with a valve as close to the jacket as reasonably practicable to prevent the loss of contents in case of damage to the pressure-building unit. A check valve may be used for this purpose if it is located on the vapor side of the pressure build-up coil.

(6) The materials of construction of valves and accessories must have satisfactory properties at the lowest operating temperature of the portable tank.

(7) Vacuum insulated portable tanks are not required to have an inspection opening.

(e) *Pressure relief devices.* (1) Every shell must be provided with not less than two independent reclosing pressure relief devices. The pressure relief devices must open automatically at a pressure not less than the MAWP and be fully open at a pressure equal to 110% of the MAWP. These devices must, after discharge, close at a pressure not lower than 10% below the pressure at which discharge starts and must remain closed at all lower pressures. The pressure relief devices must be of the type that will resist dynamic forces including surge.

(2) Except for portable tanks used for oxygen, portable tanks for non-flammable refrigerated liquefied gases (except oxygen) and hydrogen may in addition have frangible discs in parallel with the reclosing devices as specified in paragraphs (e)(4)(ii) and (e)(4)(iii) of this section.

(3) Pressure relief devices must be designed to prevent the entry of foreign matter, the leakage of gas and the development of any dangerous excess pressure.

(4) *Capacity and setting of pressure relief devices.* (i) In the case of the loss of vacuum in a vacuum-insulated tank or of loss of 20% of the insulation of a portable tank insulated with solid materials, the combined capacity of all pressure relief devices installed must be sufficient so that the pressure (including accumulation) inside the shell does not exceed 120% of the MAWP.

(ii) For non-flammable refrigerated liquefied gases (except oxygen) and hydrogen, this capacity may be achieved by the use of frangible discs in parallel with the required safety-relief devices. Frangible discs must rupture at nominal pressure equal to the test pressure of the shell.

(iii) Under the circumstances described in paragraphs (e)(4)(i) and (e)(4)(ii) of this section, together with complete fire engulfment, the combined capacity of all pressure relief devices installed must be sufficient to limit the pressure in the shell to the test pressure.

(iv) The required capacity of the relief devices must be calculated in accordance with CGA Pamphlet S–1.2 (see § 171.7 of this subchapter).

75. In § 178.703, the section heading and paragraph (a)(1) introductory text are revised and in paragraph (a)(1)(ii), a new sentence is added at the end of the paragraph to read as follows:

§ 178.703 Marking of IBCs.

(a) * * *

(1) Mark every IBC in a durable and clearly visible manner. The marking may be applied in a single line or in multiple lines provided the correct sequence is followed with the information required by this section in letters, numerals and symbols of at least 12 mm in height. This minimum marking size applies only to IBCs manufactured after October 1, 2001). The following information is required in the sequence presented:

* * * * *

(ii) * * * The letter ''W'' must follow the IBC design type identification code on an IBC when the IBC differs from the requirements in subpart N of this part, or is tested using methods other than those specified in this subpart, and is approved by the Associate Administrator in accordance with the provisions in § 178.801(i).

* * * * *

76. In § 178.705, the section heading and paragraph (c)(1)(iv)(A) are revised and a new paragraph (c)(1)(iv)(C) is added to read as follows:

§ 178.705 Standards for metal IBCs.

* * * * *

(c) * * *

(1) * * *

(iv) * * *

(A) For a reference steel having a product of Rm X Ao = 10,000, where Ao is the minimum elongation (as a percentage) of the reference steel to be used on fracture under tensile stress, (Rm X Ao = 10,000 X 145; if tensile strength is in U.S. Standard units of pounds per square inch) the wall thickness must not be less than:

Capacity (C) in liters [1]	Wall thickness (T) in mm			
	Types 11A, 11B, 11N	Types 21A, 21B, 21N, 31A, 31B, 31N		
		Unprotected	Protected	Unprotected
C ≤ 1000	2.0	1.5	2.5	2.0
1000 < C ≤ 2000	T=C/2000 + 1.5	T=C/2000 + 1.0	T=C/2000 + 2.0	T=C/2000 + 1.5
2000 < C ≤ 3000	T=C/2000 + 1.5	T=C/2000 + 1.0	T=C/1000 + 1.0	T=C/2000 + 1.5

[1] Where: gallons = liters X 0.264.

* * * * *

(C) For purposes of the calculation described in paragraph (c)(1)(iv)(B) of this section, the guaranteed minimum tensile strength of the metal to be used (Rm_1) must be the minimum value according to material standards. However, for austenitic (stainless) steels, the specified minimum value for Rm, according to the material standards, may be increased by up to 15% when a greater value is provided in the material inspection certificate. When no material standard exists for the material in question, the value of Rm must be the minimum value indicated in the material inspection certificate.

* * * * *

77. In § 178.801, in paragraph (i), two sentences are added at the end of the paragraph to read as follows:

§ 178.801 General requirements.

* * * * *

(i) * * * A large packaging, as defined in § 171.8 of this subchapter, may be used if approved by the Associate Administrator. The large packaging must conform to the construction standards, performance testing and packaging marking requirements specified in the UN Recommendations.

* * * * *

78. In § 178.812, paragraph (c)(1) is revised and a new paragraph (c)(3) is added to read as follows:

§ 178.812 Top lift test.

* * * * *

(c) *Test method.* (1) A metal or flexible IBC must be lifted in the manner for which it is designed until clear of the floor and maintained in that position for a period of five minutes.

* * * * *

(3) If not tested as indicated in paragraph (c)(1) of this section, a flexible IBC design type must be tested as follows:

(i) Fill the flexible IBC to 95% full with a material representative of the product to be shipped.

(ii) Suspend the flexible IBC by its lifting devices.

(iii) Apply a constant downward force through a specially designed platen. The platen will be a minimum of 60% and a maximum of 80% of the cross sectional surface area of the flexible IBC.

(iv) The combination of the mass of the filled flexible IBC and the force applied through the platen must be a minimum of six times the maximum net mass of the flexible IBC. The test must be conducted for a period of five minutes.

(v) Other equally effective methods of top lift testing and preparation may be used with approval of the Associate Administrator.

* * * * *

PART 179—SPECIFICATIONS FOR TANK CARS

79. The authority citation for part 179 continues to read as follows:

Authority: 49 U.S.C. 5105–5127; 49 CFR 1.53.

§ 179.102–4 [Amended]

80. In § 179.102–4, in the introductory text, the wording ''vinyl fluoride, inhibited'' is revised to read ''vinyl fluoride, stabilized''.

PART 180—CONTINUING QUALIFICATION AND MAINTENANCE OF PACKAGINGS

81. The authority citation for part 180 continues to read as follows:

Authority: 49 U.S.C. 5101–5127; 49 CFR 1.53.

82. Subpart G is added to part 180 to read as follows:

Subpart G—Qualification and Maintenance of Portable Tanks

Sec.
180.601 Applicability.
180.603 Qualification of portable tanks.
180.605 Requirements for periodic testing, inspection and repair of portable tanks.

Subpart G—Qualification and Maintenance of Portable Tanks

§ 180.601 Applicability.

This subpart prescribes requirements, in addition to those contained in parts 107, 171, 172, 173, and 178 of this subchapter, applicable to any person responsible for the continuing qualification, maintenance or periodic retesting of a portable tank.

§ 180.603 Qualification of portable tanks.

(a) Each portable tank used for the transportation of hazardous materials must be an authorized packaging.

(b) To qualify as an authorized packaging, each portable tank must conform to the requirements of this subchapter and the applicable design specification to which the portable tank was constructed.

(c) The following portable tanks are authorized for use provided they conform to all applicable safety requirements of this subchapter: 51, 56, 57, 60, IM 101, IM 102 and UN portable tanks.

(d) A portable tank that also meets the definition of ''container'' in 49 CFR 450.3(a)(3) must conform to the requirements in parts 450 through 453 of this title for compliance with Annex II of the Convention for Safe Containers (CSC).

(e) *Exemption portable tanks based on DOT 51 portable tanks.* The owner of a portable tank constructed in accordance with and used under an exemption issued prior to August 31, 1996, which was in conformance with the requirements for Specification DOT 51 portable tanks with the exception of the

location of fill and discharge outlets, shall examine the portable tank and its design to determine if it meets the outletrequirements in effect on October 1, 1996. If the owner determines that the portable tank is in compliance with all requirements of the DOT 51 specification, the exemption number stenciled on the portable tank shall be removed and the specification plate (or a plate placed adjacent to the specification plate) shall be durably marked ''DOT 51–E*****'' (where ***** is to be replaced by the exemption number). During the period the portable tank is in service, and for one year thereafter, the owner of the portable tank must retain on file, at its principal place of business, a copy of the last exemption in effect.

§ 180.605 Requirements for periodic testing, inspection and repair of portable tanks.

(a) A portable tank constructed in accordance with a DOT specification for which a test or inspection specified in this subpart has become due, must be tested or inspected prior to being returned for transportation.

(b) *Conditions requiring test and inspection of portable tanks.* Without regard to any other test or inspection requirements, a Specification or UN portable tank must be tested and inspected in accordance with this section prior to further use if any of the following conditions exist:

(1) The portable tank shows evidence of dents, corroded or abraded areas, leakage, or any other condition that might render it unsafe for transportation service.

(2) The portable tank has been in an accident and has been damaged to an extent that may adversely affect its ability to retain the hazardous material.

(3) The portable tank has been out of hazardous materials transportation service for a period of one year or more.

(4) The portable tank has been modified from its original design specification.

(5) The portable tank is in an unsafe operating condition based on the existence of probable cause.

(c) *Schedule for periodic inspections and tests.* Each Specification portable tank must be tested and inspected in accordance with the following schedule:

(1) Each IM or UN portable tank must be given an initial inspection and test before being placed into service, a periodic inspection and test at least once every 5 years, and an intermediate periodic inspection and test at least every 2.5 years following the initial inspection and the last 5 year periodic inspection and test.

(2) Each Specification 51 portable tank must be given a periodic inspection and test at least once every five years.

(3) Each Specification 56 or 57 portable tank must be given a periodic inspection and test at least once every 2.5 years.

(4) Each Specification 60 portable tank must be given a periodic inspection and test at the end of the first 4-year period after the original test; at least once every 2 years thereafter up to a total of 12 years of service; and at least once annually thereafter. Retesting is not required on a rubber-lined tank except before each relining.

(d) *Intermediate periodic inspection and test.* For IM and UN portable tanks the intermediate 2.5 year periodic inspection and test must include at least an internal and external examination of the portable tank and its fittings taking into account the hazardous materials intended to be transported; a leakage test; and a test of the satisfactory operation of all service equipment. Sheathing, thermal insulation, etc. need only be removed to the extent required for reliable appraisal of the condition of the portable tank. For portable tanks intended for the transportation of a single hazardous material, the internal examination may be waived if it is leakage tested in accordance with the procedures in paragraph (i) of this section prior to each filling, or if approved by the Associate Administrator. Portable tanks used for dedicated transportation of refrigerated liquefied gases that are not fitted with inspection openings are excepted from the internal inspection requirement.

(e) *Periodic inspection and test.* The 5 year periodic inspection and test must include an internal and external examination and, unless excepted, a pressure test as specified in this section. Sheathing, thermal insulation, etc. need only to be removed to the extent required for reliable appraisal of the condition of the portable tank. Except for DOT Specification 56 and 57 portable tanks, reclosing pressure relief devices must be removed from the tank and tested separately unless they can be tested while installed on the portable tank. For portable tanks where the shell and equipment have been pressure-tested separately, after assembly they must be subjected together to a leakage test and effectively tested and inspected for corrosion. Portable tanks used for the transportation of refrigerated, liquefied gases are excepted from the requirement for internal inspection and the hydraulic pressure test if the portable tanks are pressure tested using an inert gas as prescribed in § 178.338–16(a) and (b) of this subchapter.

(f) *Exceptional inspection and test.* The exceptional inspection and test is necessary when a portable tank shows evidence of damaged or corroded areas, or leakage, or other conditions that indicate a deficiency that could affect the integrity of the portable tank. The extent of the exceptional inspection and test must depend on the amount of damage or deterioration of the portable tank. It must include at least the inspection and a pressure test according to paragraph (e) of this section. Pressure relief devices need not be tested or replaced unless there is reason to believe the relief devices have been affected by the damage or deterioration.

(g) *Internal and external examination.* The internal and external examinations must ensure that:

(1) The shell is inspected for pitting, corrosion, or abrasions, dents, distortions, defects in welds or any other conditions, including leakage, that might render the portable tank unsafe for transportation;

(2) The piping, valves, and gaskets are inspected for corroded areas, defects, and other conditions, including leakage, that might render the portable tank unsafe for filling, discharge or transportation;

(3) Devices for tightening manhole covers are operative and there is no leakage at manhole covers or gaskets;

(4) Missing or loose bolts or nuts on any flanged connection or blank flange are replaced or tightened;

(5) All emergency devices and valves are free from corrosion, distortion and any damage or defect that could prevent their normal operation. Remote closure devices and self-closing stop-valves must be operated to demonstrate proper operation;

(6) Required markings on the portable tank are legible and in accordance with the applicable requirements; and

(7) The framework, the supports and the arrangements for lifting the portable tank are in satisfactory condition.

(h) *Pressure test procedures for specification 51, 57, 60, IM or UN portable tanks.* (1) Each Specification 57 portable tank must be leak tested by a minimum sustained air pressure of at least 3 psig applied to the entire tank. Each Specification 51 or 56 portable tank must be tested by a minimum pressure (air or hydrostatic) of at least 2 psig or at least one and one-half times the design pressure (maximum allowable working pressure, or re-rated pressure) of the tank, whichever is greater. The leakage test for portable tanks used for refrigerated liquefied gas must be performed at 90% of MAWP. Leakage tests for all other portable tanks must be at a pressure of at least 25% of

MAWP. During each air pressure test, the entire surface of all joints under pressure must be coated with or immersed in a solution of soap and water, heavy oil, or other material suitable for the purpose of detecting leaks. The pressure must be held for a period of time sufficiently long to assure detection of leaks, but in no case less than five minutes. During the air or hydrostatic test, relief devices may be removed, but all the closure fittings must be in place and the relief device openings plugged. Lagging need not be removed from a lagged tank if it is possible to maintain the required test pressure at constant temperature with the tank disconnected from the source of pressure.

(2) Each Specification 60 portable tank must be retested by completely filling the tank with water or other liquid having a similar viscosity, the temperature of the liquid must not exceed 37.7°C (100°F) during the test, and applying a pressure of 60 psig. The portable tank must be capable of holding the prescribed pressure for at least 10 minutes without leakage, evidence of impending failure, or failure. All closures shall be in place while the test is made and the pressure shall be gauged at the top of the tank. Safety devices and/or vents shall be plugged during this test.

(3) Each Specification IM or UN portable tank, except for UN portable tanks used for non-refrigerated and refrigerated liquefied gases, and all piping, valves and accessories, except pressure relief devices, must be hydrostatically tested with water, or other liquid of similar density and viscosity, to a pressure not less than 150% of its maximum allowable working pressure. UN portable tanks used for the transportation of non-refrigerated liquefied gases must be hydrostatically tested with water, or other liquid of similar density and viscosity, to a pressure not less than 130% of its maximum allowable working pressure. UN portable tanks used for the transportation of refrigerated liquefied gases may be tested hydrostatically or pneumatically using an inert gas. For pneumatic testing, due regard for protection of all personnel must be taken because of the potential hazard involved in such a test. The pneumatic test pressure in the portable tank must be reached by gradually increasing the pressure to one-half of the test pressure. Thereafter, the test pressure must be increased in steps of approximately one-tenth of the test pressure until the required test pressure has been reached. The pressure must then be reduced to a value equal to four-fifths of the test pressure and held for a sufficient time to permit inspection of the portable tank for leaks. The minimum test pressure for a portable tank is determined on the basis of the hazardous materials that are intended to be transported in the portable tanks. For liquid, solid and non-refrigerated liquefied gases, the minimum test pressure for specific hazardous materials are specified in the applicable T Codes assigned to a particular hazardous material in the § 172.101 Table of this subchapter. While under pressure the tank shall be inspected for leakage, distortion, or any other condition which might render the tank unsafe for service. A portable tank fails to meet the requirements of the pressure test if, during the test, there is permanent distortion of the tank exceeding that permitted by the applicable specification; if there is any leakage; or if there are any deficiencies that would render the portable tank unsafe for transportation. Any portable tank that fails must be rejected and may not be used again for the transportation of a hazardous material unless the tank is adequately repaired, and, thereafter, a successful test is conducted in accordance with the requirements of this paragraph. An approval agency shall witness the hydrostatic or pneumatic test. Any damage or deficiency that might render the portable tank unsafe for service shall be repaired to the satisfaction of the witnessing approval agency. The repaired tank must be retested to the original pressure test requirements. Upon successful completion of the hydrostatic or pneumatic test, as applicable, the witnessing approval agency shall apply its name, identifying mark or identifying number in accordance with paragraph (k) of this section.

(i) *Rejection criteria.* When evidence of any unsafe condition is discovered, the portable tank may not be returned to service until it has been repaired and the pressure test is repeated and passed.

(j) *Repair.* The repair of a portable tank is authorized, provided such repairs are made in accordance with the requirements prescribed in the specification for the tank's original design and construction. In addition to any other provisions of the specification, no portable tank may be repaired so as to cause leakage or cracks or so as to increase the likelihood of leakage or cracks near areas of stress concentration due to cooling metal shrinkage in welding operations, sharp fillets, reversal of stresses, or otherwise. No field welding may be done except to non-pressure parts. Any cutting, burning or welding operations on the shell of an IM or UN portable tank must be done with the approval of the approval agency and be done in accordance with the requirements of this subchapter, taking into account the pressure vessel code used for the construction of the shell. A pressure test to the original test pressure must be performed after the work is completed.

(k) *Inspection and test markings.* Each IM or UN portable tank must be durably and legibly marked, in English, with the date (month and year) of the last pressure test, the identification markings of the approval agency witnessing the test, when required, and the date of the last visual inspection. The marking must be placed on or near the metal identification plate, in letters not less than 3 mm (0.118 inches) high when on the metal identification plate, and 12 mm (0.5 inches) high when on the portable tank.

(l) *Record retention.* The owner of each portable tank or his authorized agent shall retain a written record of the date and results of all required inspections and tests, including an ASME manufacturer's date report, if applicable, and the name and address of the person performing the inspection or test, in accordance with the applicable specification. The manufacturer's data report, including a certificate(s) signed by the manufacturer, and the authorized design approval agency, as applicable, indicating compliance with the applicable specification of the portable tank, must be retained in the files of the owner, or his authorized agent, during the time that such portable tank is used for such service, except for Specifications 56 and 57 portable tanks.

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Acting Deputy Administrator.

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