

**DEPARTMENT OF TRANSPORTATION****Pipeline and Hazardous Materials Safety Administration****49 CFR Parts 171, 172, 173, 175, 176, 178, and 180**

[Docket Nos. PHMSA-2009-0126 (HM-215K)]

**RIN 2137-AE45****Hazardous Materials: Harmonization With the United Nations Recommendations, International Maritime Dangerous Goods Code, and the International Civil Aviation Organization Technical Instructions for the Safe Transport of Dangerous Goods by Air****AGENCY:** Pipeline and Hazardous Materials Safety Administration (PHMSA), DOT.**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** PHMSA proposes to amend the Hazardous Materials Regulations to maintain alignment with international standards by incorporating various amendments, including changes to proper shipping names, hazard classes, packing groups, special provisions, packaging authorizations, air transport quantity limitations, and vessel stowage requirements. These revisions are necessary to harmonize the Hazardous Materials Regulations with recent changes made to the International Maritime Dangerous Goods Code, the International Civil Aviation Organization's Technical Instructions for the Safe Transport of Dangerous Goods by Air, and the United Nations Recommendations on the Transport of Dangerous Goods—Model Regulations.

**DATES:** Comments must be received by October 25, 2010.

**ADDRESSES:** You may submit comments by any of the following methods:

*Federal Rulemaking Portal:* <http://www.regulations.gov>. Follow the on-line instructions for submitting comments.

*Fax:* 1-202-493-2251.

*Mail:* Docket Management System; U.S. Department of Transportation, Dockets Operations, M-30, Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590-0001.

*Hand Delivery:* To U.S. Department of Transportation, Dockets Operations, M-30, Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590-0001 between 9 a.m. and 5 p.m. Monday through Friday, except Federal holidays.

*Instructions:* Include the agency name and docket number PHMSA-2009-0126

(HM-215K) or RIN 2137-AE45 for this rulemaking at the beginning of your comment. Note that all comments received will be posted without change to <http://www.regulations.gov> including any personal information provided. If sent by mail, comments must be submitted in duplicate. Persons wishing to receive confirmation of receipt of their comments must include a self-addressed stamped postcard.

**Privacy Act:** Anyone is able to search the electronic form of any written communications and comments received into any of our dockets by the name of the individual submitting the document (or signing the document, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (65 FR 19477), or you may visit <http://www.regulations.gov>.

**Docket:** You may view the public docket through the Internet at <http://www.regulations.gov> or in person at the Docket Operations office at the above address (See **ADDRESSES**).

**FOR FURTHER INFORMATION CONTACT:** Michael Stevens, Office of Hazardous Materials Standards, telephone (202) 366-8553, or Shane Kelley, International Standards, telephone (202) 366-0656, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, 1200 New Jersey Avenue, SE., 2nd Floor, Washington, DC 20590-0001.

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**I. Background**

In a final rule published December 21, 1990 (Docket HM-181; 55 FR 52402), the Research and Special Programs Administration (RSPA), the predecessor agency to the Pipeline and Hazardous Materials Safety Administration

(PHMSA), comprehensively revised the Hazardous Materials Regulations (HMR; 49 CFR Parts 171 to 180) to harmonize U.S. hazardous materials transportation requirements with the United Nations Recommendations on the Transport of Dangerous Goods (UN Model Regulations). The UN Model Regulations are not regulations, but rather are recommendations issued by the UN Committee of Experts on the Transport of Dangerous Goods (UNSCOE) and the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). These Model Regulations are amended and updated biennially by the UNSCOE and serve as the basis for national, regional, and international modal regulations, including the International Maritime Organization's International Maritime Dangerous Goods Code (IMDG Code) and International Civil Aviation Organization Technical Instructions (ICAO TI) for the Transport of Dangerous Goods by Air.

Since publication of the 1990 rule, we have issued eight additional international harmonization rules (Dockets HM-215A, 59 FR 67390; HM-215B, 62 FR 24690; HM-215C, 64 FR 10742; HM-215D, 66 FR 33316; HM-215E, 68 FR 44992; HM-215G, 69 FR 76044; HM-215I, 71 FR 78595; and HM-215J, 74 FR 2200) based on the corresponding biennial updates of the UN Model Regulations, the IMDG Code, and the ICAO TI.

To maintain alignment of the HMR with international requirements, in this NPRM, we are proposing to incorporate changes based on the Sixteenth revised edition of the UN Model Regulations, Amendment 35-10 to the IMDG Code, and the 2011-2012 ICAO TI, which becomes effective January 1, 2011 (the IMDG Code is effective January 1, 2012).

Federal law and policy strongly favor the harmonization of domestic and international standards for hazardous materials transportation. The Federal hazardous materials transportation law (Federal hazmat law; 49 U.S.C. 5101 *et seq.*) permits PHMSA to depart from international standards in order to promote safety or other overriding public interest, but otherwise requires PHMSA to align the HMR with international transport standards and requirements to the extent practicable (see 49 U.S.C. 5120). Harmonization facilitates international trade by minimizing the costs and other burdens of complying with multiple or inconsistent safety requirements for transportation of hazardous materials to and from the United States and becomes increasingly important as the volume of hazardous materials transported in

international commerce grows. By facilitating compliance, harmonization also tends to enhance safety for international movements, but only if the international standards themselves provide an appropriate level of safety. To that end, PHMSA actively participates in the development of international standards for the transportation of hazardous materials, frequently advocating the adoption in international standards of particular HMR requirements.

When considering the adoption of international standards under the HMR, we review and evaluate each amendment on its own merit, on the basis of its overall impact on transportation safety, and the economic implications associated with its adoption into the HMR. Our goal is to harmonize without diminishing the level of safety currently provided by the HMR and without imposing undue burdens on the regulated public.

## II. ANPRM

On October 21, 2009, PHMSA published an advance notice of proposed rulemaking (ANPRM; 74 FR 53982) highlighting issues under consideration for harmonization with international standards and requesting comments as to whether the HMR should be amended to incorporate specific international standards and the potential benefits and costs of doing so. The following companies and organizations submitted comments in response to the ANPRM:

- (1) Institute of Makers of Explosives (IME; PHMSA-2009-0126-0003);
- (2) United Parcel Service (UPS; PHMSA-2009-0126-0005);
- (3) Sporting Arms and Ammunition Manufacturers' Institute (SAAMI; PHMSA-2009-0126-0006);
- (4) Dangerous Goods Advisory Council (DGAC; PHMSA-2009-0126-0007);
- (5) Reusable Industrial Packaging Association (RIPA; PHMSA-2009-0126-0008);
- (6) Association of Hazmat Shippers, Inc. (AHS; PHMSA-2009-0126-0009);
- (7) U.S. Fuel Cell Council (USFCC; PHMSA-2009-0126-0010);
- (8) The Council on Safe Transportation of Hazardous Articles, Inc. (COSTHA; PHMSA-2009-0126-0011);
- (9) Federal Express (FedEx; PHMSA-2009-0126-0012);
- (10) American Petroleum Institute (API; PHMSA-2009-0126-0013);
- (11) American Coatings Association, Inc. (ACA; PHMSA-2009-0126-0014);
- (12) PPG Industries, Inc. (PPG; PHMSA-2009-0126-0016);

(13) E.I. DuPont de Nemours and Company (DuPont; PHMSA-2009-0126-0018);

(14) The Alliance of Special Effects and Pyrotechnics Operators, Inc. (ASEPO; PHMSA-2009-0126-0020).

Comments on specific harmonization issues are discussed below.

### *A. Classification of Sour Crude Oil*

Transportation of sour crude oil may pose risks due to its inherent potential of evolving hydrogen sulfide, a highly toxic and flammable gas. Sour crude oil, commonly found in North America, contains a high concentration of sulfur. The evolution of hydrogen sulfide vapors from crude oil is dependent on temperature, packaging confinement, transport conditions (e.g., sloshing), bacteria, and sulfur concentration, among many other potential factors. Based on the risk of toxic vapors, the UN Model Regulations were amended by assigning a new identification number and shipping description for sour crude oil with a flammable primary hazard and a toxic subsidiary hazard. Additionally, a new special provision was added specifying the assignment of a Packing Group (PG) based on the degree of danger presented by either the flammability or toxicity hazard of the sour crude oil. For example, sour crude oil meeting flammability criteria for Class 3, PG II, and toxicity criteria for Division 6.1, PG I, poisonous-by-inhalation, would be classified as a Class 3, PG I material.

In the ANPRM, PHMSA invited commenters to provide data and information concerning the impact on domestic shippers and carriers if these requirements are adopted in the HMR. The agency also asked for comments addressing which hazard communication methods (e.g., package markings, shipping papers) and/or packaging requirements are most cost-effective for communicating the hazards and reducing the risks of transporting sour crude oil.

We received two comments (API, DGAC) opposing adoption of the UN amendments for the description and classification of sour crude oil into the HMR. DGAC recommends against requiring domestic use of the new proper shipping name for sour crude oil with a Division 6.1 subsidiary risk and recommends that use be limited to international transport. The DGAC states:

[T]he new [proper shipping name] would introduce impracticalities into the collection and transport of crude oil \* \* \* Crude oil carriers, who currently use flammable liquid placards displaying UN1267 and who typically use permanent shipping papers,

would now be required to assess the inhalation hazard of each crude oil batch they transport and switch to other placards and shipping papers based on their assessment. In addition, § 173.244 would suggest that some of these crude oils with a Division 6.1 subsidiary risk would be required to be transported in higher integrity bulk packagings. We consider this highly inappropriate. The concentration of [hydrogen sulfide] in the liquid crude oil phase under classification conditions will not predict the hydrogen sulfide concentration in the headspace during transport. It is not possible to use existing UN classification criteria for [D]ivision 6.1 in classifying crude oils as inhalation hazard substances or assigning the packing group. We also noted that classification on the basis of the possible evolution of [hydrogen sulfide] vapors is unprecedented and that there are other substances with the potential to evolve hydrogen sulfide vapors \* \* \* Exposure to high concentrations of [hydrogen sulfide] is most likely when the cargo tank truck is opened or when a tank is reloaded \* \* \* The hazard is essentially a workplace hazard. For purposes of the HMR, DGAC recommends limiting the provisions to cargo tank truck [loading and unloading] operations.

DGAC recommends that PHMSA require drivers engaged in the loading and unloading of sour crude oil to wear a hydrogen sulfide monitoring device and have respiratory protection accessible, and require warning signs at the cargo tank manhole and area of operation.

In its comments, API recognizes that hydrogen sulfide is a hazard, but suggests that classification of crude oil at the time of shipment may not reflect the toxicity of hydrogen sulfide in the vapor space of a cargo tank or other packaging after the crude oil has been in transportation. API also notes that there are best industry practices already in place. API states:

[C]reation of a new classification scheme with the addition of a new [proper shipping name] for sour crude oil, and leaving the current classification and [proper shipping name] for "other" crude oils, will increase risks at this time, DOT should not harmonize the HMR with the new amendments in the UN Model Regulations regarding classification of sour crude. Before changing the HMR, criteria for sour crude should be defined and a valid test methodology should be developed \* \* \* the occurrence of hazardous levels of [hydrogen sulfide] cannot be predicted from the liquid state [of crude oil]. Safe transport of these materials \* \* \* is best accomplished through training, proper handling procedures, monitoring, and use of proper personal protective equipment, and not a separate identification number, shipping description, or packing group for sour crude oils \* \* \* Until an accurate and accepted method for predicting [hydrogen sulfide] evolution [into the vapor space of packaging] and a corresponding toxicity and

hazard during transport is available. \* \* \* The U.S. government should not propose adoption of the [UN] classification scheme in the HMR.

API adds that the Occupational Safety and Health Administration (OSHA) has requirements in place to communicate the hazards of hydrogen sulfide in the workplace. API supports other means of hazard communication to ensure that

workers are aware of the hazards of hydrogen sulfide such as a marking on a bulk packaging.

Currently, petroleum crude oil is listed as a Class 3 flammable liquid in the § 172.101 Hazardous Materials Table (HMT). PHMSA is aware that, in some instances, petroleum crude oil may evolve hydrogen sulfide gas, a toxic-by-inhalation material. When transported

in bulk packagings such as cargo tanks, the evolved hydrogen sulfide gas may build up in the vapor space of the packaging, posing a potential risk, in particular, during loading and unloading. The following table illustrates the dangerous effects of hydrogen sulfide gas exposure to humans:

#### EFFECTS OF HYDROGEN SULFIDE ON HUMANS<sup>1</sup>

Effect	Concentration (ppm)
Detectable odor .....	0.2
Maximum allowable concentration for daily 8-hour exposure .....	20
Eye and respiratory irritation .....	50
Olfactory nerve paralysis .....	150
Exposure may cause pulmonary edema .....	250
Systemic symptoms occur in 1/2 hour .....	500
Quickly unconscious; death without rescue .....	750
Rapid collapse; respiratory paralysis .....	1,000
Immediate death .....	5,000

The agency agrees with the commenters that a new proper shipping name is not necessary and that there are more cost-effective ways to communicate the potential inhalation hazard risk to transport workers. Therefore, in this NPRM, PHMSA proposes to include the new proper shipping name in the UN Model Regulations—"Petroleum sour crude oil, flammable, toxic"—with the letter "I" in Column (1) of the HMT indicating that this description may be used for international transportation. However, PHMSA is not proposing to require use of the new proper shipping name for domestic transportation. Additionally, PHMSA is proposing a new marking be applied to bulk packagings containing sour crude in order to communicate the potential inhalation risk in transportation. See Section 172.327 for a discussion of proposed marking requirements.

#### B. Classification of Division 1.4S Explosives

For eight Division 1.4 explosive articles (UN0323, UN0366, UN0441, UN0445, UN0455, UN0456, UN0460, and UN0500), the UN Model

Regulations have been amended to require a Type 6(d) test to determine whether an article may be assigned to Compatibility Group S. The test is performed on a single package containing an explosive substance or explosive article to determine if the package is capable of containing any hazardous effects in the event of an accidental initiation or ignition of its contents. The amendments include revisions to the explosives testing standards in the UN Manual of Tests and Criteria and include a new special provision that would allow the use of the above mentioned identification numbers only if the results of test Type 6(d) successfully demonstrate that any hazardous effects are confined within a package. In the ANPRM, we invited commenters to provide data and information concerning the possible safety impacts of the new test provisions and compliance costs that would be incurred if the new test is adopted in the HMR. In addition, we invited commenters to provide suggestions or recommendations concerning whether to apply the test to already-approved explosives.

We received several comments both supporting (COSTHA, DGAC, and IME) and opposing (ASEPO and SAAMI) adoption of the Type 6(d) test to determine whether a Division 1.4 explosive article may be assigned to Compatibility Group S. All the commenters who addressed this issue indicate that, if adopted, the test must be applied to previously-approved articles in a manner that is reasonable and not overly broad. A suggestion by both DGAC and IME is to allow the

classification of previously-approved explosive articles to be based on results of testing of product groups by a PHMSA-approved laboratory or based on results of self-testing and video documentation by the manufacturer.

Concerning compliance costs, IME states:

[D]epending upon the laboratory, the cost of performing the test will range from \$1,000 to \$5,000 per article tested. This estimate includes the cost of samples consumed in testing, the cost of transporting those samples to the laboratory, and the cost of set up, performance, and evaluation of the test. In the case of already approved explosives, if self-testing is allowed, the cost per article tested might be somewhat reduced. Also, the cost of the test will be influenced by the extent to which testing is required \* \* \* If the current practice of family classifications is maintained, where "worst-case" representative samples are allowed for evaluation of groups of similar articles, the number of tests and the cost of those tests will be reduced.

ASEPO and SAAMI oppose adoption of the Type 6(d) test. SAAMI suggests that more research on the practical effect of this testing requirement is necessary and that the lack of grandfathering criteria for products already approved as Division 1.4S explosives (e.g., power device cartridges) is impractical, expensive, and impedes commerce. Concerning compliance costs, ASEPO states:

[O]ur organization has contacted all the authorized laboratories regarding the cost of conducting the testing. While the "several thousand dollars" figure for testing alone often associated with discussions of such inquiries is not inaccurate, it is important to note that we also received a detailed proposal

<sup>1</sup> References: Milby T, Baselt R. Hydrogen sulfide poisoning. Clarification of some controversial issues. *Am J Ind Med*. 1999; 35: 192–195. Beauchamp R, Bus J, Popp J, Boreiko C, Andjelkovich D. A critical review of the literature on hydrogen sulfide toxicity. *CRC Crit Rev Toxicol*. 1984; 13:25–97. Deng J. Hydrogen sulfide. In: Sullivan J, Kreiger G, eds. *Hazardous Materials Toxicology: Clinical Principles of Environmental Health*. Baltimore: Williams and Wilkins; 1997: 711–717. National Institute for Occupational Safety and Health. *Criteria for a Recommended Standard for Occupational Exposure to Hydrogen Sulfide*. Washington, DC: U.S. Government Printing Office; 1977: 23. DHEW (NIOSH) Publication No. 77–158.

from one laboratory for \$10,000 and one for \$13,000 for this [Type 6(d)] test.

ASEPO also indicates concern regarding the cost of articles consumed in testing in addition to the cost of pre-testing or redesign of an article by a manufacturer to ensure passing the Type 6(d) test, but did not quantify these costs.

While PHMSA understands that additional required tests usually result in increased research and development costs, we believe there is merit to additional required tests when there is a credible and measureable increase in safety. Consequently, PHMSA proposes to require the incremental testing of all new and previously approved designs, depending on the intended mode of transport, under the newly adopted criteria for those affected articles expected to obtain or retain a Division 1.4S classification. For newly produced explosive articles, a person who successfully performs the Type 6(d) test would not be required to also perform the Type 6(a) test. PHMSA believes such initiatives will greatly reduce research and development costs without compromising safety.

In this NPRM, PHMSA proposes to require the Type 6(d) test as prescribed in Section 16.7 of the Fifth revised edition of the UN Manual of Tests and Criteria in the new § 172.102(c)(1), Special provision 347. PHMSA is proposing that for affected articles intended for transportation by aircraft, the effective date of this new requirement is April 1, 2011. If a manufacturer or approval holder of affected articles that previously classed and approved an article as Division 1.4S chooses to continue offering such shipments by aircraft, the articles must be successfully tested under Test Series 6(d) and a new approval obtained from PHMSA. Additionally, a previously classed and approved Division 1.4S article that is not successfully tested under Test Series 6(d) must be assigned to a compatibility group other than "S" (e.g., B, C, or D) prior to the April 1, 2011 effective date if intended for transportation by aircraft on or after that date. PHMSA is also proposing that the effective date of testing to maintain Division 1.4S classification or reclassification to a higher compatibility group other than "S" is no later than January 1, 2014 for Division 1.4S articles approved prior to January 1, 2012 and are intended for domestic highway or rail transportation. For previously-approved affected articles transported by highway, rail and vessel, reclassification to a compatibility group other than "S" may be accomplished by

using existing data and when recommended by an authorized examination and testing agency approved by PHMSA. For international highway, rail and vessel transportation, the proposed effective date of Type 6(d) testing requirements or reclassification for new and previously produced affected articles is January 1, 2012 (*i.e.*, the compliance date of a final rule under this docket, if adopted as proposed).

#### C. IBC Rebottling

Under both the UN Model Regulations and the HMR, replacement of the rigid plastic receptacle of a composite IBC is considered a "repair" under certain conditions and, thus, not subject to design qualification testing as a new or different design. The UN Model Regulations were amended to specify that a replacement bottle (*i.e.*, rigid plastic receptacle) must be of the original tested design type and limits the replacement to a bottle from the original manufacturer. In the ANPRM, we invited comments on this amendment and how, if adopted in the HMR, it would impact the use of IBCs in domestic or international commerce.

All commenters who addressed this issue (DGAC, DuPont, and RIPA) support the adoption of the UN Model Regulations definition of "repair" for IBC rebottling purposes. The comments include a request for an extended compliance date of January 1, 2012, to provide users and manufacturers of composite IBCs adequate time to implement the provision and not place them at an economic disadvantage with international counterparts. In this NPRM, we are proposing to adopt the revised definition of "repair" for composite IBCs consistent with international standards. Additionally, to address commenter concern, PHMSA reminds them of the proposed compliance date of a final rule under this docket would be no earlier than January 1, 2012. *See* Section 180.350 for a discussion of the proposed revision.

#### D. Limited Quantities and Consumer Commodities

PHMSA has long recognized the need to authorize limited exceptions for the transportation of certain hazardous materials described as limited quantities or consumer commodities. Considerable efforts have recently been made internationally to harmonize multimodal standards with regard to the transport of limited quantities, including consumer commodities. PHMSA held public meetings on this issue in February, 2006 and March, 2008 to discuss potential impacts on

domestic stakeholders. Additionally, this issue was discussed during the agency's pre-UN public meetings held in 2006 and 2007. There was considerable domestic interest in pursuing further harmonization internationally due to the potential for substantial savings in transportation costs and improved transportation efficiency. In the ANPRM, PHMSA invited comments on this issue with regard to aligning the HMR with the UN Model Regulations for the domestic and international transport of limited quantities and consumer commodities. Of particular concern, was any potential negative impact on the domestic transportation of hazardous materials reclassified as Consumer commodity, ORM-D. While some changes adopted in the UN Model Regulations are similar to those currently in the HMR (*e.g.*, inner packaging limits and authorized use of non-specification outer packagings), some changes are not (*e.g.*, marking, labeling and package gross mass). PHMSA suggested that, depending on comments received and our own evaluation, the agency may determine that the significance of any amendments on this issue may warrant a separate rulemaking action.

We received several comments (ACA, AHS, COSTHA, DGAC, DuPont, FedEx, PPG, SAAMI, and UPS) supporting adoption of the UN Model Regulation limited quantity provisions into the HMR. UPS urges PHMSA to move to adopt the Limited Quantity provisions as contained in the UN Model Regulations, stating:

[B]y \* \* \* phasing out the current provisions of 49 CFR on a well-publicized schedule, PHMSA will improve the general understanding \* \* \* [I]t is the understanding of UPS that PHMSA may be contemplating replacement of the current ORM-D classifications with the Limited Quantity provisions of the UN Model Regulations. UPS supports such a change \* \* \* The U.S. is unique in its use of the ORM-D classification; other countries do not always recognize the meaning of the ORM-D marking, which means that packages intended for global commerce must be marked in more than one way. While PHMSA has held that such dual (or multiple) markings are authorized, multiple markings complicate hazard communication and have the potential to confuse both shipper and carrier personnel.

AHS adds:

To cut back to one system, using one mark, without shipping documents and descriptions for each separate inner receptacle, would enhance compliance and comprehension throughout the transportation system.

However, several commenters (ACA, DGAC, DuPont, and SAAMI) express concern that this should not be done at

the expense of the ORM-D provisions currently in the HMR. ACA opposes the elimination of the existing provisions for ORM-D materials as part of HM-215K and recommends that any changes to the requirements be made through a separate rulemaking. SAAMI states:

[SAAMI] welcome[s] changes to the Limited Quantities (LQ) system which will reduce the regulatory burden for lower hazard products in consumer sized packages \* \* \* and government and industry need time to use the new system and work out any bugs. If in the future LQ is shown to have all the benefits of ORM-D, then ORM-D can be phased out. Meanwhile, the ORM-D system in the US should remain unchanged.

DGAC notes:

[S]ome items eligible for ORM-D classification are not permitted as limited quantities (e.g., small arms ammunition). In addition, we note that ORM-D provisions in

§ 173.156 important to retail sale of consumer commodities are not applicable to limited quantities of hazardous materials. We also note that the US Postal Service regulations allow some ORM-D materials to be transported by mail. Eliminating ORM-D provisions could adversely impact use of the mail for packages of some ORM-D materials (e.g., recycling of small spent fuel cell devices).

PHMSA believes that aligning the existing limited quantity provisions in the HMR with the international standards will substantially enhance safety. The agency emphasizes that the proposals in this NPRM do not include the immediate or short-term removal of the existing “limited quantity” provisions in the HMR (including Consumer commodities, Cartridges, small arms and Cartridges, power device in the ORM-D hazard class). Because

the limited quantity provisions in the UN Model Regulations and the IMDG Code are closely aligned with those already contained in the HMR, domestic alignment for highway, rail and vessel transportation will result in minimal impact and regulatory burden. And, because of the inherent risk unique to air transportation, we believe full harmonization with the ICAO TI (where appropriate) is necessary with regard to the materials authorized and quantity limits for limited quantities (including consumer commodities) intended for transport by air. The following table is used to illustrate the differences that exist between the HMR and corresponding international modal standards regarding limited quantities and consumer commodities:

#### LIMITED QUANTITIES AND CONSUMER COMMODITIES

Requirement	HMR LQ	HMR ORM-D	UN LQ	ICAO TI LQ	IMDG CODE LQ
Marking .....	PSN or UN diamond/ID# (§§ 172.301 and 172.315).	“ORM-D” or “ORM-D-AIR” “Consumer commodity” (§ 172.316).	UN diamond/ID# unless consumer commodity (ID# not required).	PSN, ID# or diamond and “LTD QTY.”	UN diamond/ID# unless consumer commodity (ID# not required). Exception includes MARPOL.
Labeling .....	None unless Division 6.1, Packing Groups II and III.	None .....	None .....	Required .....	None (Placard-size CTU LQ mark required).
Documentation .....	Required .....	ORM-D-AIR only unless RQ, waste or MARPOL.	Required unless a consumer commodity.	Required .....	Required unless consumer commodity.
Material Authorizations	PSN entry must cite exception section in Column (8A) of HMT, typically one of the following: <ul style="list-style-type: none"> <li>• Divisions 2.1 and 2.2 (gases and aerosols).</li> <li>• Class 3 (PG II, III).</li> <li>• Division 4.1 (Flam solids), PG II, III.</li> <li>• Division 4.3, PG II, III.</li> <li>• Division 5.1, PG II, III.</li> <li>• Division 5.2, Types B, C, D, E, F.</li> <li>• Division 6.1, PG II, III.</li> <li>• Class 8, PG II, III.</li> <li>• Class 9 .....</li> </ul> Compared to UNMR the HMR: <ul style="list-style-type: none"> <li>• Permits (23) PG I Class 3 materials as LQ..</li> <li>• Permits (11) Class 9 materials as LQ..</li> </ul>	Generally, all materials authorized LQ except for Division 6.1, PG II (unless drug or medicine).	Similar to HMR except as follows: <ul style="list-style-type: none"> <li>• Division 2.2 only (except aerosols).</li> <li>• Certain Class 9 materials not authorized LQ. Compared to HMR, the UNMR:               <ul style="list-style-type: none"> <li>• Permits (9) PG I Class 3 materials as LQ.</li> <li>• Permits (10) Class 9 materials as LQ.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Aerosols (Divisions 2.1, 2.1 w/sub risks) and Small receptacles (Divisions 2.1, 2.2 w/o sub risks).               <ul style="list-style-type: none"> <li>• Class 3, PG II, III..</li> </ul> </li> <li>• Division 4.1, PG II, III (no self-reactives).</li> <li>• Division 4.3, PG II, III (solids only).</li> <li>• Division 5.1, PG II, III.</li> <li>• Division 5.2, Types C, D, E, F when part of PRK, FAK or CK.</li> <li>• Division 6.1, PG II, III.</li> <li>• Class 8, PG II, III excluding 2794, 2795, 2803, 2809 and 3028 (batteries, gallium, mercury).</li> <li>• Class 9 (1941, 1990, 2071, 3077, 3082, 3316 only).</li> </ul>	Generally, aligned with UNMR with minor vessel-unique requirements.

## LIMITED QUANTITIES AND CONSUMER COMMODITIES—Continued

Requirement	HMR LQ	HMR ORM-D	UN LQ	ICAO TI LQ	IMDG CODE LQ
LQ Quantity Limits .....	<ul style="list-style-type: none"> <li>• Aerosols more restrictive than UNMR, ICAO TI and IMDG Code.</li> <li>• Classes and Divisions 3–9 generally aligned w/int'l codes except for materials w/primary or sub risk of Division 6.1, PG II and III.</li> </ul>	ORM-D—AIR inner packaging quantity limits are specified in § 173.27 and are based on Column (9A) and (9B) values in the HMT, or, in §§ 173.150–173.155 and 173.306, whichever value is more restrictive. They normally exceed the ICAO TI inner packaging quantity limit values for LQ.	Generally, aligned with HMR w/minor differences (e.g., Division 6.1 and Class 9 materials).	<ul style="list-style-type: none"> <li>• Aerosols/Small receptacles: 30 Kg G.</li> <li>• Inner and outer packaging quantity limits generally aligned with UNMR.</li> </ul>	Generally, aligned with UNMR with minor vessel-unique requirements.

Based on the favorable comments received in response to the ANPRM, PHMSA proposes to adopt limited quantities provisions into the HMR based on the UN Model Regulations, IMDG Code and the ICAO TI that include a transitional period sufficient in length to allow stakeholders adequate time to comply with the new requirements. We are proposing to authorize immediate voluntary compliance with the new requirements upon the effective date of any final rule. Additionally, we are proposing to eliminate the ORM-D and ORM-D—AIR hazard class limited quantities described as “Consumer commodities” after three years, effective January 1, 2014, if the amendments proposed in this notice are adopted in a final rule. Such materials or articles would simply become limited quantities based on risk rather than their intended end-use. Additionally, for transportation by domestic highway or rail, alignment of the HMR with international standards actually increases the number of exceptions provided to limited quantities and consumer commodities when compared to current HMR requirements for such materials and articles. To address comments regarding exceptions provided by the HMR to consumer commodities under § 173.156, we are proposing to extend the exceptions to all limited quantities regardless of their end-use. To address the comment regarding the U.S. Postal Service (USPS) allowing certain packages classed as ORM-D in the postal system, we intend to work very closely with our USPS counterparts to ensure a seamless transition to the new HMR requirements and assist them in any way we can.

For Cartridges, small arms and Cartridges, power device in the ORM-D hazard class, we are proposing to also

continue authorizing such articles indefinitely under the exceptions provided in § 173.63 of the HMR for domestic transportation by highway or rail. For more discussion of proposed amendments to the HMR as a result of the further alignment with international standards, see the detailed discussion in the affected sections under the “Section-by-Section Review.” The following sections are affected by the amendments proposed in this NPRM regarding limited quantities and consumer commodities:

- § 172.203 Additional description requirements.
- § 172.315 Packages containing limited quantities.
- § 172.316 Packages containing materials classed as ORM-D.
- § 172.500 Applicability of placarding requirements.
- § 173.25 Authorized packagings and overpacks.
- § 173.27 General requirements for transportation by aircraft.
- § 173.63 Packaging exceptions.
- § 173.144 Other regulated materials (ORM)—Definitions.
- § 173.150 Exceptions for Class 3 (flammable and combustible liquids).
- § 173.151 Exceptions for Class 4.
- § 173.152 Exceptions for Division 5.1 (oxidizers) and Division 5.2 (organic peroxides).
- § 173.153 Exceptions for Division 6.1 (poisonous materials).
- § 173.154 Exceptions for Class 8 (corrosive materials).
- § 173.155 Exceptions for Class 9 (miscellaneous hazardous materials).
- § 173.156 Exceptions for ORM materials.
- § 173.161 Chemical kits and first aid kits.
- § 173.165 Polyester resin kits.
- § 173.167 Consumer commodities.
- § 173.230 Fuel cell cartridges containing hazardous material.

- § 173.306 Limited quantities of compressed gases.

#### *E. Metal Hydride Storage Systems in Conveyances*

A metal hydride storage system is a single complete hydrogen storage system that includes a receptacle, metal hydride, a pressure relief device, a shut-off valve, service equipment, and internal components. The HMR currently do not prescribe specific packaging or shipping methods for metal hydride storage systems containing hydrogen. However, PHMSA has issued a number of special permits to allow the use of these systems for transport. The UN Model Regulations, in new Packing Instruction P205, prescribe standards for the construction, qualification, marking and requalification of such systems. In the ANPRM, PHMSA invited comments on whether similar standards should be adopted in the HMR.

One commenter (DGAC) supports adoption of the standards for the construction, qualification, marking, and requalification of metal hydride storage systems containing hydrogen. Thus, in this NPRM, PHMSA is proposing to adopt the standards for the construction, qualification, marking and requalification of hydrogen in metal hydride storage systems adopted in the UN Model Regulations. See Section 173.311 for a detailed discussion of proposed requirements.

#### *F. In Vitro Testing for Corrosivity*

In 1993, RSPA (the predecessor agency to PHMSA) began recognizing an alternative test method (*i.e.*, *in vitro* testing) to determine the corrosivity of a hazardous material for transportation purposes under the terms and conditions specified in a special permit (DOT-SP 10904). Similar *in vitro* test

methods are prescribed in the following Organization for Economic Cooperation and Development (OECD) *Guidelines for the Testing of Chemicals* and were adopted in the UN Model Regulations:

- No. 430, *In Vitro* Skin Corrosion: Transcutaneous Electrical Resistance Test (TER) (2004);
- No. 431, *In Vitro* Skin Corrosion: Human Skin Model Test (2004); and,
- No. 435, *In Vitro* Membrane Barrier Test Method for Skin Corrosion (2006).

Because methods 430 and 431 can be used to determine corrosivity for other than transportation purposes, they cannot be used to determine the Packing Group (PG) assignment of a material that tests positive for corrosivity for the purposes of hazardous materials transportation. A negative result for corrosivity under methods 430 and 431 can, however, preclude further testing to determine the PG assignment using method 404, the current OECD Guideline involving *in vivo* testing or, method 435, the newly adopted OECD Guideline involving *in vitro* testing.

We received three comments (DGAC, DuPont, and PPG) supporting adoption and use of the OECD *in vitro* test methods for determining corrosivity on the basis of reducing the number of tests requiring live animals.

Based on the overwhelming support for adoption in the HMR, in this NPRM PHMSA is proposing to adopt and authorize the use of the OECD *in vitro* methods. See § 173.137 for further discussion of such methods.

### III. Harmonization Proposals in This NPRM

In this NPRM, PHMSA is proposing the following amendments to harmonize the HMR with the most recent revisions to the UN Model Regulations, ICAO TI, and the IMDG Code:

- *Hazardous Materials Table (HMT):* Amendments to the HMT to add, revise, or remove certain proper shipping names, hazard classes, packing groups, special provisions, packaging authorizations, bulk packaging requirements, passenger and cargo aircraft maximum quantity limitations, and vessel stowage provisions.

• *Limited Quantity Exceptions:* Amendments for the highway, rail, and vessel transportation of limited quantities are based on the recently adopted limited quantity provisions in the UN Model Regulations and IMDG Code. Amendments for the air transportation of limited quantities are based on the 2011–2012 revision of the ICAO TI. In addition, amendments are proposed to provide a transition period for complete alignment of the HMR limited quantity eligibility (including

consumer commodities and certain articles of Class 2 and Division 1.4S reclassified as ORM–D), when transported by all modes (domestic and international), in accordance with HMR requirements that are based on international standards for limited quantities and consumer commodities.

- *Organic Peroxide Tables:*

Amendments to the Organic Peroxide Tables to add, revise, or remove certain hazardous materials and provisions.

- *Incorporation by Reference:*

Amendments to incorporate by reference the 2011–2012 ICAO TI, Amendment 35–10 to the IMDG Code, and the Sixteenth Revised Edition of the UN Model Regulations. Additionally, we are proposing to update our incorporation by reference of the Canadian Transportation of Dangerous Goods Regulations to include Amendment 6 (SOR/2008–34) February 7, 2008 (pertains to miscellaneous amendments); and Amendment 7 (SOR/2007–179) August 22, 2007 (pertains to highway cargo tanks). This incorporation by reference augments the broad reciprocity provided in 171.12 where the HMR allow the use of the Canadian TDG Regulations under certain conditions when transporting hazardous materials to or from Canada by highway or rail.

• *Petitions for Rulemaking:* We are addressing one petition for rulemaking: P–1550, from the People for the Ethical Treatment of Animals (PETA) requesting that PHMSA incorporate by reference OECD Guidelines 430, 431 and 435 into the HMR that prescribe *in vitro* testing methods for determining corrosivity.

- *Classification of Sour Crude Oil:*

See ANPRM comment summary for discussion of issue and PHMSA proposal.

• *Classification of Certain Division 1.4S Explosives:* See ANPRM comment summary for discussion of issue and PHMSA proposal.

• *IBC Rebottling:* See ANPRM comment summary for discussion of issue and PHMSA proposal.

• *Metal Hydride Storage Systems in Conveyances:* See ANPRM comment summary for discussion of issue and PHMSA proposal.

### IV. Amendments Not Being Considered for Adoption in This NPRM

This NPRM proposes changes to the HMR based on amendments made in the UN Model Regulations (Sixteenth revised edition), IMDG Code (Amendment 35–10) and the ICAO TI (2011–2012), which become effective January 1, 2011 (the IMDG Code is effective January 1, 2012). We are not,

however, proposing to adopt all the amendments made to the various international standards into the HMR. In many cases, amendments to the international recommendations and regulations have not been adopted because the framework or structure of the HMR makes adoption unnecessary. In other cases, we have handled, or will be handling, the amendments in separate rulemaking proceedings. If we have inadvertently omitted an amendment in this NPRM, we will attempt to include the omission in the final rule. However, our ability to make changes in a final rule is limited by requirements of the Administrative Procedure Act (5 U.S.C. 553). In some instances, we can adopt a provision inadvertently omitted in the NPRM if it is clearly within the scope of changes proposed in the notice, does not require substantive changes from the international standard on which it is based, and imposes minimal or no cost impacts on persons subject to the requirement. Otherwise, in order to provide opportunity for notice and comment, the change must first be proposed in an NPRM.

One of the goals of this rulemaking is to continue to maintain consistency between the HMR and the international requirements. We are not striving to make the HMR identical to the international regulations but rather to remove or avoid potential barriers to international transportation.

Below is a listing of those significant amendments to the international regulations that we are not proposing to adopt in this NPRM, with a brief explanation of why the amendment was not included:

*Requirements for Radioactive Materials.* Notwithstanding two minor shipping paper and labeling amendments, we are not proposing to adopt provisions pertaining to the transportation of Class 7 (radioactive) materials. Amendments to requirements pertaining to the transportation of Class 7 (radioactive) materials are based on changes contained in the International Atomic Energy Agency (IAEA) publication, “IAEA Safety Standards: Regulations for the Safe Transport of Radioactive Materials.” Due to their complexity, these changes are being addressed in a separate rulemaking.

*Requirements for Lithium Batteries.* On January 11, 2010, we published an NPRM (HM–224F; 75 FR 1302). The NPRM includes provisions to ensure all lithium batteries are packaged to reduce the possibility of damage that could lead to a catastrophic incident, and minimize the consequences of an incident should one occur. In addition, PHMSA

proposed to require lithium battery shipments to be accompanied by hazard communication that ensures appropriate and careful handling by air carrier personnel, including the flight crew, and informs both transport workers and emergency response personnel of actions to be taken in an emergency. The NPRM, which PHMSA developed in close coordination with our colleagues in the Federal Aviation Administration, is the latest in a series of actions PHMSA has taken to address the very serious risks posed by lithium batteries in transportation. The NPRM includes revisions to the HMR that are based on lithium battery provisions in the Sixteenth revised edition of the UN Model Regulations. Therefore, except for wheelchairs powered by lithium ion batteries, we are not proposing to adopt new provisions pertaining to the transportation of lithium cells and batteries in this rulemaking. The docket for the lithium battery rulemaking can be found elsewhere at <http://www.regulations.gov> under PHMSA-2009-0095.

**Requirements for Air Packaging.** We are not proposing to adopt provisions pertaining to certain packagings offered for transportation by aircraft under this rulemaking. PHMSA is considering certain amendments to the HMR related to requirements for the packaging of hazardous materials intended for transportation by aircraft under a separate docket (HM-231A). These would include amendments based on the reformatted packing instructions in the 2011-2012 ICAO TI. PHMSA published an ANPRM on July 7, 2008 (73 FR 38361) and, on May 14, 2010, an NPRM (75 FR 27273). See <http://www.regulations.gov> under PHMSA-2007-29364 for more information.

## V. Section-by-Section Review

Following is a section-by-section review of the amendments proposed in this NPRM:

### Part 171

#### Section 171.7

The “National Technology Transfer and Advancement Act of 1996” 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.

To these ends, PHMSA actively participates in the development and updating of consensus standards through representation on more than 20 consensus standard bodies. PHMSA regularly reviews updated consensus standards and considers their merit for inclusion in the HMR.

Section 171.7 lists all standards incorporated by reference into the HMR. For this rulemaking, we evaluated updated international consensus standards pertaining to proper shipping names, hazard classes, packing groups, special provisions, packaging authorizations, air transport quantity limitations, and vessel stowage requirements and determined that the revised standards provide an enhanced level of safety without imposing significant compliance burdens. These standards have a well-established and documented safety history; their adoption will maintain the high safety standard currently achieved under the HMR. Therefore, we propose to update by adding and revising the incorporation by reference materials under the following organizations:

- The *American Society for Testing and Materials (ASTM)*
  - ASTM D56-05, Standard Test Method for Flash Point by Tag Closed Tester (Referenced in § 173.120(c)(1)(i)(A); Added to § 171.7).
  - ASTM D86-07a, Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure (Added; Referenced in § 173.121).
  - ASTM D93-08, Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester (Referenced in § 173.120(c)(1)(ii)(A); Added to § 171.7).
  - ASTM D1078-05, Standard Test Method for Distillation Range of Volatile Organic Liquids (Added; Referenced in § 173.121).
  - ASTM D3278-96(2004)e1, Standard Test Methods for Flash Point of Liquids by Small Scale Closed-Cup Apparatus (Referenced in § 173.120(c)(1)(i)(B); Added to § 171.7).
  - ASTM D3828-07a, Standard Test Methods for Flash Point by Small Scale Closed cup Tester (Referenced in § 173.120(c)(1)(i)(C); Added to § 171.7).
  - The *International Civil Aviation Organization (ICAO) Technical Instructions for the Safe Transport of Dangerous Goods by Air, 2009-2010 Edition* would be revised to incorporate 2011-2012 Edition.
- The *International Convention for the Safety of Life at Sea (SOLAS) Amendments 2002, Chapter II-2/ Regulation 19, Consolidated Edition 2004* would be revised to incorporate the 2009 Edition.
- The *International Maritime Organization (IMO) International Maritime Dangerous Goods Code, 2008 Edition, Incorporating Amendment 33-08, English Edition, Volumes 1 and 2* would be revised to incorporate Amendment 35-10.
- The *International Organization for Standardization (ISO)*
  - ISO 1516:2002 Determination of flash/no flash—Closed cup equilibrium method (Added; Referenced in § 173.120).
  - ISO 1523:2002 Determination of flash point—Closed cup equilibrium method (Added; Referenced in § 173.120).
  - ISO 2719:2002 Determination of flash point—Pensky-Martens closed cup method (Added; Referenced in § 173.120).
  - ISO 3405:2000 Petroleum products—Determination of distillation characteristics at atmospheric pressure (Added; Referenced in § 173.121).
  - ISO 3679:2004 Determination of flash point—Rapid equilibrium closed cup method (Added; Referenced in § 173.120).
  - ISO 3680:2004 Determination of flash/no flash—Rapid equilibrium closed cup method (Added; Referenced in § 173.120).
  - ISO 3924:1999 Petroleum products—Determination of boiling range distribution—Gas chromatography method (Added; Referenced in § 173.121).
  - ISO 4626:1980 Volatile organic liquids—Determination of boiling range of organic solvents used as raw materials (Added; Referenced in § 173.121).
  - ISO 4706:2008, Gas cylinders—Refillable welded steel cylinders—Test pressure 60 bar and below (Added; Referenced in § 178.71).
  - ISO 10297:1999, Gas cylinders—Refillable gas cylinder valves—Specification and type testing, First edition, May 1999, (E) (Revised to incorporate 2006 Edition).
  - ISO 10461:2005, Gas cylinders—Seamless aluminum-alloy gas cylinders, Periodic inspection and testing, Second edition, February 2005, (E) (Revised to incorporate Addendum 1 (2006)).
  - ISO 10692-2:2001 Gas cylinders—Gas cylinder valve connections for use in the micro-electronics industry—Part 2: Specification and type testing for valve to cylinder connections (Added; Referenced in § 173.40).

- ISO 13736:2008 Determination of flash point—Abel closed-cup method (Added; Referenced in § 173.120).
- ISO 16111:2008 Transportable gas storage devices — Hydrogen absorbed in reversible metal hydride (Added; Referenced in §§ 173.311, 178.71).
- ISO 18172-1:2007, Gas cylinders—Refillable welded stainless steel cylinders—Part 1: Test pressure 6 MPa and below (Added; Referenced in § 178.71).
- ISO 20703:2006, Gas cylinders—Refillable welded aluminum-alloy cylinders—Design, construction and testing (Added; Referenced in § 178.71).
  - *Organization for Economic Cooperation and Development (OECD)*
  - Guidelines for the Testing of Chemicals, No. 430, *In Vitro Skin Corrosion: Transcutaneous Electrical Resistance Test (TER)* (2004) (Added; Referenced in § 173.137);
  - Guidelines for the Testing of Chemicals, No. 431, *In Vitro Skin Corrosion: Human Skin Model Test* (2004) (Added; Referenced in § 173.137); and,
  - Guidelines for the Testing of Chemicals, No. 435, *In Vitro Membrane Barrier Test Method for Skin Corrosion* (2006) (Added; Referenced in § 173.137).
- *Transport Canada*, Transportation of Dangerous Goods Regulations, including Clear Language Amendments 1 through 5 (Revised to add Amendments 6 and 7).

• *The United Nations*

*Recommendations on the Transport of Dangerous Goods—Model Regulations*, Fifteenth revised edition (2007), Volumes I and II (Revised to incorporate the Sixteenth revised edition).

#### Section 171.8

This section defines terms generally used throughout the HMR that have broad or multi-modal applicability. PHMSA is proposing to add the following defined terms based on their adoption in the UN Model Regulations:

**Metal hydride storage system.** This term means a single complete hydrogen storage system that includes a receptacle, metal hydride, pressure relief device, shut-off valve, service equipment and internal components used for the transportation of hydrogen only.

**Open cryogenic receptacle.** This term means a transportable thermally insulated receptacle for refrigerated liquefied gases maintained at atmospheric pressure by continuous venting of the refrigerated gas.

**Oxidizing gas.** In this NPRM, PHMSA proposes to amend the definition of *Oxidizing gas*. *Oxidizing gas* is now

defined as a gas that may, by providing oxygen, cause or contribute to combustion of other material more than air does. We are proposing to revise the definition to specify that an oxidizing gas is a pure gas or gas mixture with an oxidizing power greater than 23.5% as determined by a method specified in ISO 10156:1996 or 10156-2:2005. See also discussion of changes to the HMT entries “Air, compressed, UN1002” and “Compressed gas, n.o.s., UN1956” in Sections 172.101 and 173.115(k).

#### Section 171.23

Section 171.23 prescribes the conditional requirements for specific materials and packages transported under the various international standards as permitted by the HMR. In this NPRM, except for transportation by aircraft, we are proposing to remove the condition in § 171.23(b)(9) that stipulates certain Division 6.1 materials transported as limited quantities are not excepted from labeling as specified in § 173.153(b). This proposed change aligns the labeling requirements in the HMR for limited quantities with the international standards without compromising safety. This is accomplished by the current inner packaging quantity limits for Division 6.1 materials in Packing Group (PG) II that are packaged under the exceptions provided for such materials in §§ 173.150–173.156 of the HMR.

#### Section 171.25

Section 171.25 prescribes the additional requirements for specific materials and packages transported under the IMDG Code as permitted by the HMR. In this notice, we are proposing to delete paragraphs (c)(5) and (d)(3) because the IMDG Code now requires cryogenic materials to be stowed on deck.

Effective January 1, 1997, vehicles and mechanical equipment containing internal combustion engines were no longer subject to the IMDG Code as conditionally designated under Amendment 28-96. Effective January 1, 2012, such articles will once again be subject to the IMDG Code under Amendment 35-10. Because the new requirements in the IMDG Code are more stringent than requirements for similar articles in the HMR, PHMSA is proposing to amend Section 171.25 by revising paragraph (b)(1) and adding a new paragraph (b)(4) permitting use of the IMDG Code or the HMR to prepare and stow vehicles and mechanical equipment containing internal combustion engines when offered for transport by vessel.

#### Part 172

##### Section 172.101

Introductory text to the § 172.101 HMT contains explanatory text for each of the columns that comprise the HMT. Currently, § 172.101(c)(10) provides specific requirements regarding the selection of an appropriate proper shipping name for mixtures and solutions containing more than one hazardous material of the same hazard class. In many cases, such mixtures and solutions are best described by a generic or “not otherwise specified” entry (*i.e.*, an “n.o.s.” entry). For example, a solution containing two or more flammable liquid constituents may best be described under the entry “Flammable liquids, n.o.s., UN1993.” However, in some cases where two or more hazardous materials may be present, a single hazardous material may predominate where the other hazardous materials may be present in only trace amounts. In such cases, a description applicable to the predominant material may be more appropriate. A recent incident underscores the importance of using the most specific and appropriate shipping description. In that incident, an aluminum cylinder containing 99.9% pure ethyl chloride ruptured in storage incidental to transport. It was determined that the root cause was a reaction between the cylinder’s contents and the aluminum. The relevant construction standard for the cylinder indicated that ethyl chloride was reactive with aluminum and that aluminum was not recommended for the transport of ethyl chloride. However, the shipper selected a generic compressed gas shipping description rather than the ethyl chloride name due to the presence of trace amounts of other hazardous materials. While we note that the general requirements for packagings still broadly address the responsibility of the shipper in selecting a packaging that is compatible with its lading, and that these requirements were also applicable and apparently overlooked, the incident nonetheless highlights the benefit of using a more specific description, where appropriate, to help ensure that the most appropriate transport provisions are followed.

To address this issue, the UN Model Regulations were amended to require, except as otherwise specified, that a mixture or solution of a single predominant hazardous material containing only traces of one or more additional hazardous materials listed by name in the HMT or additional non-hazardous constituents be assigned the UN number and proper shipping name

of the predominant material contributing to the overall hazard classification of the mixture or solution. Adopting a similar provision in the HMR will enhance a shipper's ability to select the most appropriate shipping description. Therefore, in this NPRM, PHMSA is proposing to add a new paragraph § 172.101(c)(10)(iv) outlining the authorization to describe the mixture or solution based on the predominant material contributing to the hazard classification.

#### Identification Numbers Preceded by the Letters "ID"

Paragraph (e) of § 172.101 provides explanations for the letters that precede identification numbers assigned to proper shipping names in the HMT. In this NPRM, PHMSA is proposing to add an explanation for identification numbers associated with those descriptions recognized under the ICAO Technical Instructions only and are preceded by the letters "ID." Additionally, PHMSA is proposing to recognize the international air description, "ID8000, Consumer commodity, 9" in the HMT with material and article eligibility for use of the description based on Special provision A112 and Packing Instruction Y963 of the 2011–2012 ICAO Technical Instructions.

#### Hazardous Materials Table (HMT)

In this NPRM, PHMSA is proposing to make various amendments to the HMT. Readers should review all changes for a complete understanding of the amendments. For purposes of the Government Printing Office's typesetting procedures, proposed changes to the HMT appear under three sections of the Table, "remove," "add," and "revise." Certain entries in the HMT, such as those with revisions to the proper shipping names, appear as a "remove" and "add." Proposed amendments to the HMT include, but are not limited to the following:

##### New HMT Entries

UN3482 Alkali metal dispersions, flammable or Alkaline earth metal dispersions, flammable.

UN3496 Batteries, nickel-metal hydride.

This new HMT entry for UN3496 would include a "W" in Column (1) to indicate use of this hazardous materials description would be limited to vessel transport. PHMSA also proposes to include additional language in Column (2) to refer shippers transporting nickel-metal hydride batteries by modes other than vessel to the HMT entry "Batteries, dry, sealed, n.o.s." for instruction on the

transport requirements for these batteries.

UN3485 Calcium hypochlorite, dry, corrosive or Calcium hypochlorite mixtures, dry, corrosive with more than 39% available chlorine (8.8% available oxygen).

UN3487 Calcium hypochlorite, hydrated, corrosive or Calcium hypochlorite, hydrated mixture, corrosive with not less than 5.5% but not more than 16% water.

UN3486 Calcium hypochlorite mixture, dry, corrosive with more than 10% but not more than 39% available chlorine.

ID8000 Consumer commodity.

This description would be added to the HMT as a Class 9 miscellaneous hazardous material to be used for the air transportation of limited quantities of certain Class 2 materials (non-toxic aerosols only), Class 3 materials (PG II and III only), Division 6.1 (PG III only), UN3077, UN3082, and UN3175 provided such materials do not have a subsidiary risk and are authorized aboard a passenger-carrying aircraft.

UN3484 Hydrazine aqueous solution, flammable, with more than 37% hydrazine, by mass.

UN3495 Iodine.

Iodine is transported globally under a number of different shipping descriptions dependent on the shipper. In the interest of reducing risks associated with transport of iodine under various descriptions and therefore, varied packaging, we are proposing to add this unique UN number and shipping description to provide for specific packaging requirements and faster identification and access to emergency response information.

UN1471 Lithium hypochlorite, dry or Lithium hypochlorite mixture, Division 5.1, PG III.

Lithium hypochlorite is a common commercial product used as a disinfectant that is often mixed with other non-hazardous organic salts. Currently, the HMT only provides for a Division 5.1, PG II designation for this material, yet testing conducted in accordance with the UN Manual of Tests and Criteria has indicated that some common commercial mixtures meet the criteria for classification in Division 5.1, PG III. Therefore, PHMSA is proposing to add a line to the current entry to allow for classification of mixtures of lithium hypochlorite in PG III, where appropriate.

UN3483 Motor fuel anti-knock mixtures, flammable.

UN3494 Petroleum sour crude oil, flammable, toxic.

This entry would be authorized for international transportation only.

UN3492 Toxic-by-inhalation liquid, corrosive, flammable, n.o.s. with an inhalation toxicity lower than or equal to 200 ml/m<sup>3</sup> and saturated vapor concentration greater than or equal to 500 LC<sub>50</sub>.

UN3493 Toxic-by-inhalation liquid, corrosive, flammable, n.o.s. with an inhalation toxicity lower than or equal to 1000 ml/m<sup>3</sup> and saturated vapor concentration greater than or equal to 10 LC<sub>50</sub>.

UN3488 Toxic-by-inhalation liquid, flammable, corrosive, n.o.s. with an inhalation toxicity lower than or equal to 200 ml/m<sup>3</sup> and saturated vapor concentration greater than or equal to 500 LC<sub>50</sub>.

UN3489 Toxic-by-inhalation liquid, flammable, corrosive, n.o.s. with an inhalation toxicity lower than or equal to 1000 ml/m<sup>3</sup> and saturated vapor concentration greater than or equal to 10 LC<sub>50</sub>.

UN3490 Toxic-by-inhalation liquid, water-reactive, flammable, n.o.s. with an inhalation toxicity lower than or equal to 200 ml/m<sup>3</sup> and saturated vapor concentration greater than or equal to 500 LC<sub>50</sub>.

UN3491 Toxic-by-inhalation liquid, water-reactive, flammable, n.o.s. with an inhalation toxicity lower than or equal to 1000 ml/m<sup>3</sup> and saturated vapor concentration greater than or equal to 10 LC<sub>50</sub>.

##### Amendments to the Column (1) symbols.

The entries "Elevated temperature liquid, flammable, n.o.s., with flash point above 37.8 °C, at or above its flash point, UN3256," "Elevated temperature liquid, n.o.s., at or above 100 °C and below its flash point (including molten metals, molten salts, etc.), UN3257," and "Elevated temperature solid, n.o.s., at or above 240 °C, UN3258" would be revised by adding the symbol G. The symbol G identifies proper shipping names for which a technical name of the hazardous material is required in parentheses in association with the basic description. Requiring the technical name(s) for certain elevated temperatures materials will help emergency responders in selecting the proper materials for extinguishing a fire involving these hazardous materials and will aid in estimating the temperature properties of the materials (e.g., the melting point).

The entries "Metal catalyst, dry, UN2881" and "Metal catalyst, wetted with a visible excess of liquid, UN1378" would be revised by adding the symbol G. The symbol G identifies proper

shipping names for which a technical name of the hazardous material is required in parentheses in association with the basic description. Requiring the technical name(s) for metal catalysts will aid emergency responders in selecting the proper fire suppressant (e.g., CO<sub>2</sub>) in the event the hazardous material is involved in a fire or in identifying other materials the metal catalyst could react with.

The entry “Powder, smokeless, UN0509,” would be revised by deleting the symbol D. The symbol D identifies a proper shipping name for domestic use only. This entry has been adopted into the UN Model Regulations, the ICAO TI, and the IMDG Code. This proposed deletion is consistent with our final rule published January 14, 2009 (HM-215J) (74 FR 2200) in which we indicate our intent to remove the symbol D in a future rulemaking upon adoption of the entry into international regulations.

For the following Division 5.1 (oxidizer) materials and Division 6.1 (toxic) materials, the entries would be revised by adding the symbol G. The symbol G identifies proper shipping names for which one or more technical names of the hazardous material must be entered in parentheses in association with the basic description on a shipping paper. Knowledge of the technical name of toxic materials may aid emergency responders with implementing more appropriate first aid measures:

UN3141 Antimony compounds, inorganic, liquid, n.o.s.  
 UN1549 Antimony compounds, organic, liquid, n.o.s.  
 UN1556 Arsenic compounds, liquid, n.o.s. *inorganic, including arsenates, n.o.s.; arsenates, n.o.s.; arsenic sulfides, n.o.s.; and organic compounds of arsenic, n.o.s.*  
 UN1557 Arsenic compounds, solid, n.o.s. *inorganic, including arsenates, n.o.s.; arsenates, n.o.s.; arsenic sulfides, n.o.s.; and organic compounds of arsenic, n.o.s.*  
 UN1564 Barium compounds, n.o.s.  
 UN1566 Beryllium compounds, n.o.s.  
 UN3213 Bromates, inorganic, aqueous solution, n.o.s.  
 UN1450 Bromates, inorganic, n.o.s.  
 UN2570 Cadmium compounds  
 UN3210 Chlorates, inorganic, aqueous solution, n.o.s.  
 UN1461 Chlorates, inorganic, n.o.s.  
 UN1462 Chlorites, inorganic, n.o.s.  
 UN1583 Chloropicrin mixtures, n.o.s.  
 UN3362 Chlorosilanes, toxic, corrosive, flammable, n.o.s.  
 UN3361 Chlorosilanes, toxic, corrosive, n.o.s.  
 UN1935 Cyanide solutions, n.o.s.

UN2856 Fluorosilicates, n.o.s.  
 UN3212 Hypochlorites, inorganic, n.o.s.  
 UN2291 Lead compounds, soluble, n.o.s.  
 UN2024 Mercury compounds, liquid, n.o.s.  
 UN2025 Mercury compounds, solid, n.o.s.  
 UN3144 Nicotine compounds, liquid, n.o.s. *or Nicotine preparations, liquid, n.o.s.*  
 UN1665 Nicotine compounds, solid, n.o.s. *or Nicotine preparations, solid, n.o.s.*  
 UN3219 Nitrates, inorganic, aqueous solution, n.o.s.  
 UN2627 Nitrates, inorganic, n.o.s.  
 UN3214 Permanganates, inorganic, aqueous solution, n.o.s.  
 UN1482 Permanganates, inorganic, n.o.s.  
 UN2026 Phenylmercuric compounds, n.o.s.  
 UN2630 Selenates or Selenites.  
 UN3440 Selenium compound, liquid, n.o.s.  
 UN3283 Selenium compound, solid, n.o.s.  
 UN3284 Tellurium compound, solid, n.o.s.  
 UN3285 Vanadium compound, solid, n.o.s.

*Amendments to the Column (2) hazardous materials descriptions and proper shipping names.*

The proper shipping name for the entry “Detonator, assemblies, non-electric, *for blasting*, UN0500,” would be revised by removing the comma after “Detonator” to read “Detonator assemblies, non-electric, *for blasting*.” This revision appears as a “Remove/Add” in this rulemaking.

The proper shipping name for the entry “Engines, internal combustion, *flammable gas powered*, UN3166,” would be revised to read “Engines, internal combustion *or* Engines, fuel cell, *flammable gas powered*.” This revision appears as a “Remove/Add” in this rulemaking.

The proper shipping name for the entry “Engines, internal combustion, *flammable liquid powered*, UN3166,” would be revised to read “Engines, internal combustion *or* Engines, fuel cell, *flammable liquid powered*.” This revision appears as a “Remove/Add” in this rulemaking.

The proper shipping names “Formaldehyde, solutions, flammable, UN1198” and “Formaldehyde, solutions, *with not less than 25 percent formaldehyde*, UN2209” would be revised to remove an errant comma between the words “Formaldehyde” and “solutions.” This revision appears as a “Remove/Add” in this rulemaking.

The proper shipping name for the entry “1-Hydroxybenzotriazole, anhydrous, wetted *with not less than 20 percent water, by mass*, UN3474” would be revised to read “1-Hydroxybenzotriazole, monohydrate.” This revision appears as a “Remove/Add” in this rulemaking.

The proper shipping name for the entry “Nitric acid *other than red fuming, with less than 65 percent nitric acid*, UN2031” would be revised to read “Nitric acid *other than red fuming, with more than 20 percent and less than 65 percent nitric acid*, UN2031.” The proper shipping name for the Packing Group I entry “Nitric acid *other than red fuming, with more than 70 percent nitric acid*, UN2031” is added to the HMT. In a final rule published on January 14, 2009 (HM-215J; 74 FR 2200), errors were made to both nitric acid entries and in this NPRM, PHMSA proposes to align them correctly in accordance with the various international standards. Additionally, we are proposing to remove the outdated Packing Group II entry “Nitric acid *other than red fuming, with not more than 70 percent nitric acid*, UN2031” that should have been removed from the HMT in the same final rule.

The proper shipping name for the entry “Tars, liquid *including road asphalt and oils, bitumen and cut backs*, UN1999” would be revised to read “Tars, liquid *including road oils and cutback bitumens*.” The entries in the HMT applicable to transport of bitumen may cause confusion with respect to the proper classification of the material. The entries include “Combustible liquid, n.o.s., NA1993, combustible liquid” and “Tars, liquid *including road asphalt and oils, bitumen and cut backs*, UN1999, 3,” and the entries “Elevated temperature liquid, flammable, n.o.s., UN3256, 3” and “Elevated temperature liquid, n.o.s., UN3257, 9,” when the material is heated and offered for transport. Bitumen is a hydrocarbon material derived from crude oil having a flashpoint of 160 °C or greater. Bitumens typically do not meet the classification for a Class 3 flammable liquid except for cutback bitumens which are blended with a flammable material such as kerosene. Also, road asphalt is bitumen mixed with sand and fillers which also does not meet the classification for a Class 3 flammable liquid. Therefore, we propose to revise the proper shipping name “Tars, liquid *including road asphalt and oils, bitumen and cut backs*” by removing reference to asphalt and clarifying applicability to cutback bitumens to read “Tars, liquid *including road oils and cutback bitumens*.” This

revision appears as a “Remove/Add” in this rulemaking.

The proper shipping name for the entry “Trinitro-meta-cresol, UN0216” would be revised to read “Trinitro-m-cresol.” This revision appears as a “Remove/Add” in this rulemaking.

The proper shipping name for the entry “Vehicle, flammable gas powered, UN3166,” would be revised to read “Vehicle, flammable gas powered or Vehicle, fuel cell, flammable gas powered.” This revision appears as a “Remove/Add” in this rulemaking.

The proper shipping name for the entry “Vehicle, flammable liquid powered, UN3166,” would be revised to read “Vehicle, flammable liquid powered or Vehicle, fuel cell, flammable liquid powered.” This revision appears as a “Remove/Add” in this rulemaking.

*Amendments to the Column (3) hazard class or division.*

PHMSA is proposing to revise the classification of a number of entries to Division 6.1 toxic-by-inhalation primary hazards for consistency with the adoption of classification changes into the 16th revised edition of the UN Model Regulations. The changes are based on data provided from a thorough review of literature on toxic-by-inhalation materials. The review of literature is provided in Informal Document UN/SCETDG/33/INF.8 submitted to the 33rd session of the UN Sub-Committee of Experts on the Transport of Dangerous Goods which is available at <http://www.unece.org/trans/main/dgdb/dgsubc/c3inf33.html>.

For the entry “Tetranitromethane, UN1510,” the Class 5 oxidizer primary hazard would be revised to a Division 6.1 toxic-by-inhalation material primary hazard to read 6.1.

For the following Class 3 flammable liquid materials, the Class 3 primary hazard would be revised to a Division 6.1 toxic-by-inhalation material primary hazard to read 6.1.

UN2481 Ethyl isocyanate.

UN2486 Isobutyl isocyanate.

UN2483 Isopropyl isocyanate.

UN3079 Methacrylonitrile, stabilized.

UN2605 Methoxymethyl isocyanate.

For the following Class 8 corrosive materials, the Class 8 primary hazard would be revised to a Division 6.1 toxic-by-inhalation material primary hazard to read 6.1.

UN1810 Phosphorous oxychloride.

UN1834 Sulfur chloride.

UN1838 Titanium tetrachloride.

*Amendments to the Column (5) packing group (PG).*

The entry “Carbon dioxide, solid or Dry ice, UN1845” would be revised by deleting the PG III designation. In

general, the PG assigned to a material identifies the degree of hazard the material represents and determines the performance level of the packaging required for the material. For example, a PG II material (*i.e.*, a moderate hazard material) is considered more hazardous and requires more stringent packaging than a PG III material (*i.e.*, a low hazard material). Dry ice presents minimal risk during transport except where concentrations may build up in a confined space. Therefore, in this NPRM, PHMSA proposes to delete the PG III designation from the entry.

For the following Division 6.1 toxic-by-inhalation materials, the PG would be revised to read “I”.

UN2668 Chloroacetonitrile.

UN1810 Phosphorous oxychloride.

UN2474 Thiophosgene.

UN1838 Titanium tetrachloride.

PHMSA is proposing this revision to the PG assignment for these entries for consistency with the adoption of changes into the Revised 16th edition of the UN Model Regulations. The changes are based on data provided from a thorough review of literature on toxic-by-inhalation materials. The review of literature is provided in Informal Document UN/SCETDG/33/INF.8 submitted to the 33rd session of the UN Sub-Committee of Experts on the Transport of Dangerous Goods which is available at <http://www.unece.org/trans/main/dgdb/dgsubc/c3inf33.html>.

*Amendments to the Column (6) label(s).*

For the following hazardous material entries, PHMSA is proposing to revise the labels for consistency with changes made to the classification of these materials under amendments to Column (3) (see above). The Class 3 (flammable liquid), Class 8 (corrosive), or Division 5.1 (oxidizer) primary hazard labels, as appropriate, and the Division 6.1 subsidiary hazard label would be revised to a Division 6.1 toxic-by-inhalation material primary hazard label and Class 3, Class 8, or Division 5.1 subsidiary hazard label to read “6.1, 3,” “6.1, 8,” or “6.1, 5.1,” as appropriate.”

UN2481 Ethyl isocyanate.

UN2486 Isobutyl isocyanate.

UN2483 Isopropyl isocyanate.

UN3079 Methacrylonitrile, stabilized.

UN2605 Methoxymethyl isocyanate.

UN1810 Phosphorous oxychloride.

UN1510 Tetranitromethane.

UN1838 Titanium tetrachloride.

*Amendments to the Column (7) special provisions.*

The entry “Compressed gas, n.o.s., UN1956” would be revised by deleting Special provision 77 which authorizes the use of this entry for mixtures of

gases with less than 23.5% oxygen when no other oxidizing gases are present. Because we are proposing to modify the definition of oxidizing gas in § 171.8 of the HMR to indicate that “a gas which may, by providing oxygen, cause or contribute to the combustion of other material more than air does means pure gases or gas mixtures with an oxidizing power greater than 23.5% oxygen” and because the entry “Compressed gas, oxidizing, n.o.s., UN3156” is currently available in the HMT, the Special provision is redundant and no longer necessary.

The entry “1-Hydroxybenzotriazole, monohydrate, UN3474” would be revised by deleting Special provision 162. Special provision 162 requires that for the material to be transported as a Division 4.1 desensitized material, it must be transported in such a manner that at no time during the course of transportation does the percentage concentration of water fall below 20%. Anhydrous hydroxybenzotriazole rapidly converts to the monohydrate form in the presence of water, that is, the thermally stable form of the substance. Additionally, tests have indicated that the monohydrate maintains its water content under temperature conditions encountered in storage and transport over extended periods of time. This conforms to the intent of the provisions specified in Special provision 162 and therefore, we are proposing to delete Special provision 162 from the entry.

The entry “Motor fuel anti-knock mixtures, UN1649” would be revised by deleting Special provision 151. Special provision 151 requires that if this material also meets the definition of a Class 3 (flammable liquid) under § 173.120 of the HMR, a FLAMMABLE LIQUID label is required and the basic description on the shipping paper must indicate the Class 3 subsidiary hazard. However, because of the proposed addition of the new entry “Motor fuel anti-knock mixtures, flammable, UN3483” which indicates a Class 3 subsidiary hazard, we believe it is no longer necessary to assign Special provision 151 to this entry.

The entry “Nitrogen, refrigerated liquid cryogenic liquid, UN1977” would be revised by adding new Special provisions 345 and 346. *See Section 172.102 Special Provisions* for a discussion of new Special provisions 345 and 346.

The entry “Oxygen, compressed, UN1072” would be revised by adding Special provision 110 authorizing an actuating cartridge (*e.g.*, power device cartridges of Division 1.4, compatibility groups C and S) to be installed on a

cylinder containing oxygen without changing the classification of Division 2.2. *See Section 172.102 Special provisions* for a detailed discussion of our proposed revision to Special provision 110.

The entry “Pentaerythrite tetranitrate or Pentaerythritol tetranitrate or PETN, with not less than 7 percent wax by mass” would be revised by assigning Special provision 120 to the entry. A final rule published in the **Federal Register** on May 6, 1997, under Docket HM-215B (62 FR 24689), added Special provision 120 to § 172.102(c)(1) of the HMR and assigned it to one of the phlegmatized HMT entries for PETN (UN0411). In this notice, PHMSA is reassigning Special provision 120 to UN0411 in Column 7 of the HMT because it never appeared in the subsequent HMR when printed but remains valid.

The entry “Petroleum crude oil, UN1267” would be revised by adding new Special provision 357 instructing a shipper, if applicable, to use the entry “Petroleum sour crude oil, flammable, toxic, UN3494” for petroleum crude oil containing hydrogen sulfide in sufficient concentration that vapors evolved from the crude oil can present an inhalation hazard when offered for transportation internationally.

The entry “Zinc ammonium nitrate, UN1512” would be revised by deleting Special provision IP2 which requires IBCs other than metal or rigid plastic IBCs to be offered for transportation in a closed freight container or a closed transport vehicle.

The following Division 1.4, Compatibility Group S (1.4S) explosive substance and article entries in the HMT would be revised by adding new Special provision 347 which limits the use of the entries to only those substances and articles that have passed Test series 6(d) of Part I of the UN Manual of Tests and Criteria. *See Section 172.102 Special Provisions* for a discussion of new Special provision 347.

UN0323 Cartridges, power device.  
UN0460 Charges, bursting, plastics bonded.  
UN0445 Charges, explosive, commercial *without detonator*.  
UN0441 Charges, shaped, *without detonator*.  
UN0500 Detonator assemblies, non-electric, *for blasting*.  
UN0456 Detonators, electric *for blasting*.  
UN0366 Detonators for ammunition.  
UN0455 Detonators, non-electric, *for blasting*.

The following Division 6.1 toxic-by-inhalation materials entries would be

revised by replacing the portable tank instruction T Code T22 with T20. The UN Committee of Experts on the Transport of Dangerous Goods revised the T Code assignment for a number of Division 6.1 toxic-by-inhalation materials from T14 to T20. Assigning T20 requires a higher pressure for the periodic hydrostatic test (6 bar to 10 bar) and a thicker minimum shell thickness (6 mm to 8 mm). This change is consistent with the T Code assigned to the same materials in the HMT. However, for the materials listed below, we assigned a T Code T22 which requires a minimum shell thickness of 10 mm. We do not believe there would be a safety risk in reducing the minimum shell thickness for these materials from 10 mm to 8 mm. Therefore, for consistency with revisions made to the T Code assignments under the 16th revised edition of the UN Model Regulations as well as consistency with the current assignment of T20 to a number of other Division 6.1 toxic-by-inhalation material entries, the T Code T20 would be assigned for the following materials.

UN2484 tert-Butyl Isocyanate.  
UN2481 Ethyl isocyanate.  
UN2486 Isobutyl isocyanate.  
UN2483 Isopropyl isocyanate.  
UN2482 n-Propyl isocyanate.

The following Division 6.1 toxic-by-inhalation materials would be revised by adding the portable tank special provision TP13 as a conforming amendment to the proposed changes to the PG assignment for these materials (*see Amendments to Column (5) above*). Special provision TP13 requires the use of self-contained breathing apparatus when the hazardous material is transported by vessel:

UN2668 Chloroacetonitrile.  
UN1810 Phosphorous oxychloride.  
UN1834 Sulfur chloride.  
UN2474 Thiophosgene.

The following Division 5.1 oxidizers would be revised by adding new Special provision W1. Special provision W1 would except these materials from regulation for vessel transport when transported in non-friable prill or granule form. The material must be accompanied by a certificate from an accredited laboratory stating that the product has been tested in accordance with the UN Manual of Tests and Criteria.

UN1486 Potassium nitrate.  
UN1498 Sodium nitrate.  
UN1499 Sodium nitrate and potassium nitrate mixtures.

*Amendments to the Column (8) packaging authorizations.*

The four flammable liquid entries “Alcohols, n.o.s., UN1987,” “Ethanol,

UN1170,” “Formaldehyde solutions, flammable, UN1198” and “Isopropanol, UN1219” would be revised in Column (8A) by adding section “4b” to the exceptions column. Section 173.4b prescribes the requirements for *de minimis* quantities of hazardous materials offered for transportation and transported by all modes, domestic or international. We are proposing to add a paragraph (b) to allow non-infectious specimens (e.g., museum specimens) preserved with small amounts of certain Class 3 materials not to be subject to the HMR as recently adopted in the international standards. This amendment is consistent with previous interpretations we have issued on this matter.

The entry “Hydrogen in a metal hydride storage system or Hydrogen in a metal hydride storage system contained in equipment or Hydrogen in a metal hydride storage system packed with equipment, UN3468” would be revised in Column (8B) by deleting the current reference to § 173.214 for authorized non-bulk packaging and adding new section reference § 173.311. (*See the Section 173.311 summary for a discussion of authorized packaging provisions for hydrogen in a metal hydride storage system.*)

The entry “Polyester resin kit, UN3269” would be revised by amending Columns (8A) and (8B) to read 173.165. Currently, Column (8A) for the entry refers to § 173.152 and Column (8B) refers to § 173.225. For clarity and consistency, such articles should be incorporated in their own packing instruction.

*Amendments to the Column (9) quantity limitations.*

Maximum quantities per package by passenger air and rail are prescribed in Column (9A). Consistent with an amendment made to the 2011–2012 ICAO Technical Instructions, the quantity limitation for the entry “Silicon tetrachloride, UN1818” would be revised from “1 L” to read “Forbidden.”

Columns 10 and 11 of Table 3–1 in the ICAO TI have long indicated the limited quantity packing instruction and net quantity per package, respectively, for substances and articles eligible to be packaged and transported as a limited quantity by air. The ICAO TI identify a limited quantity packing instruction with the letter “Y” preceding the three-digit packing instruction number. PHMSA is considering revising Column (9A) of the HMT in a future rulemaking by placing the letter “Y” following the net quantity per package authorized aboard a passenger-carrying aircraft for those substances or articles eligible to be packaged and transported as a limited

quantity by air under the HMR. We believe this simple and straightforward revision to the HMT will assist both shippers and carriers, while not adding length or bulk to the HMT or the HMR.

*Amendments to the Column (10) vessel stowage requirements.*

*Vessel stowage location (10A).* For the following materials, we propose to revise the authorized stowage locations in Column (10A) by revising the stowage category to "D." Assignment of stowage category "D" means the material must be stowed "on deck only" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers or one passenger per each 3 meters of overall vessel length. The material is prohibited on passenger vessels in which the limiting number is exceeded:

UN1951 Argon, refrigerated liquid (*cryogenic liquid*).  
 UN2187 Carbon dioxide, refrigerated liquid.  
 UN1143 Crotonaldehyde or Crotonaldehyde, stabilized.  
 UN1963 Helium, refrigerated liquid (*cryogenic liquid*).  
 UN1970 Krypton, refrigerated liquid (*cryogenic liquid*).  
 UN1647 Methyl bromide and ethylene dibromide mixtures, liquid.  
 UN2644 Methyl iodide.  
 UN2477 Methyl isothiocyanate.  
 UN2606 Methyl orthosilicate.  
 UN1913 Neon, refrigerated liquid (*cryogenic liquid*).  
 UN2201 Nitrous oxide, refrigerated liquid.  
 UN2337 Phenyl mercaptan.  
 UN1810 Phosphorous oxychloride.  
 UN1834 Sulfur chloride.  
 UN2474 Thiophosgene.  
 UN1838 Titanium tetrachloride.  
 UN2591 Xenon, refrigerated liquid (*cryogenic liquids*).

*Vessel stowage codes (10B).* For the following hazardous materials, we propose to remove from Column (10B) stowage code "18" (stowage code "143" for UN3392) which prohibits the material from being transported on any vessel carrying explosives (except Division 1.4S explosives), and we propose to add in its place stowage code 78 which requires the materials to be stowed "separated longitudinally by an intervening complete compartment or hold from" explosives.

UN1131 Carbon disulfide.  
 UN1259 Nickel carbonyl.  
 UN3392 Organometallic substance, liquid, pyrophoric.  
 UN3394 Organometallic substance, liquid, pyrophoric, water-reactive.  
 UN3194 Pyrophoric liquid, inorganic, n.o.s.

UN2845 Pyrophoric liquids, organic, n.o.s.

**Section 172.102 Special Provisions**

Section 172.102 lists special provisions applicable to the transportation of specific hazardous materials. Special provisions contain packaging requirements, prohibitions, and exceptions applicable to particular quantities or forms of hazardous materials. PHMSA is proposing the following revisions to the § 172.102, Special provisions:

Special provision 15 would be revised by removing extraneous and redundant regulatory text applicable to "Chemical kits, UN3316" and "First aid kits, UN3316."

Special provision 40 would be revised to indicate that "Polyester resin kit, UN3269" requires specification outer packaging based on the PG assigned to the base (Class 3) material unless excepted as a limited or excepted quantity. This revision is a clarification of the existing requirement.

Special provision 77 would be deleted. Special provision 77 allows use of the entry "Compressed gas, n.o.s., UN1956" for mixtures of gases with less than 23.5% oxygen when no other oxidizing gases are present. PHMSA is proposing to modify the definition of oxidizing gas in § 171.8 to state that "a gas which may, by providing oxygen, cause or contribute to the combustion of other material more than air does," meaning, pure gases or gas mixtures with an oxidizing power greater than 23.5% oxygen. Because of the availability of the entry "Compressed gas, oxidizing, n.o.s., UN3156" in the HMT, we believe Special provision 77 is redundant and no longer necessary.

Special provision 78 would be revised to direct shippers to use the entry "Compressed gas, oxidizing, n.o.s., UN3156" to describe compressed air that contains pure gases or gas mixtures with an oxidizing power greater than 23.5% oxygen. PHMSA is proposing to modify the definition of oxidizing gas in § 171.8 of the HMR to indicate that "a gas which may, by providing oxygen, cause or contribute to the combustion of other material more than air does," meaning, pure gases or gas mixtures with an oxidizing power greater than 23.5% oxygen. Therefore, we believe this Special provision should also be revised to emphasize the proposed revised definition and use of the proper shipping description.

Special provision 110 would be revised to include oxygen cylinders for emergency use. Currently, fire extinguishers (UN1044) are assigned Special provision 110 which authorizes

the installation of a cartridge power device (of Divisions 1.4C and S) on the fire extinguisher without changing its classification as Division 2.2 provided the actuating cartridge does not contain deflagrating (propellant) explosives exceeding 3.2 g. Many of these types of fire extinguishers are used in commercial aircraft applications where the actuating cartridge is necessary for remote activation to discharge the fire suppressant contained in the cylinder. Similarly, commercial aircraft are being designed to incorporate small oxygen cylinders in the overhead panels above passenger seats to provide emergency oxygen in the event of a depressurization. The design of the system is that a small actuating cartridge attached to each cylinder will be initiated once the passenger starts breathing into the mask, which will allow the flow of oxygen from these cylinders. In connection with the manufacturing and maintenance of the aircraft, it is necessary for these small cylinders to be transported with the actuator installed. The principal hazard presented by these oxygen cylinders remains that of Division 2.2, and not the Division 1.4 explosive hazard of the actuating cartridge; therefore, in this NPRM, PHMSA is proposing to authorize the transport of oxygen cylinders for emergency use with an installed actuating cartridge without changing the classification of Division 2.2 provided that the total quantity of deflagrating (propellant) explosives does not exceed 3.2 g per oxygen cylinder and further provided that the cylinders have an effective means of preventing inadvertent activation.

For conformance with the addition of new proper shipping name(s) for UN3166, Special provision 134 would be revised to specify that a battery-powered vehicle or equipment that also contains an internal combustion engine must be consigned under the entry "Engine, internal combustion, flammable gas powered" or "Engine, internal combustion, flammable liquid powered" or "Vehicle, flammable gas powered" or "Vehicle, flammable liquid powered," as appropriate. These entries include hybrid electric vehicles powered by both an internal combustion engine and batteries. Furthermore, a battery-powered vehicle or equipment that contains a fuel cell engine must be consigned under the entries "Engine, fuel cell, flammable gas powered" or "Engine, fuel cell, flammable liquid powered" or "Vehicle, fuel cell, flammable gas powered" or "Vehicle, fuel cell, flammable liquid powered," as appropriate. These entries include

hybrid electric vehicles powered by a fuel cell, an internal combustion engine, and batteries.

Special provision 135 would be revised to specify that an internal combustion engine installed in a vehicle must be consigned to the entries "Vehicle, flammable gas powered" or "Vehicle, flammable liquid powered," as appropriate. These entries include hybrid electric vehicles powered by both an internal combustion engine and wet, sodium or lithium batteries installed. If a fuel cell engine is installed in a vehicle, the vehicle must be consigned using the entries "Vehicle, fuel cell, flammable gas powered" or "Vehicle, fuel cell, flammable liquid powered," as appropriate. These entries include hybrid electric vehicles powered by a fuel cell, an internal combustion engine, and batteries.

Special provision 149 would be revised to indicate that the exception provided may not be used for transportation by aircraft. This special provision authorizes an increased amount of certain Class 3 (flammable liquid) materials in PG II that are also consumer commodities and is not consistent with the limited quantities authorized for air transportation in § 173.27(f) of the HMR.

Special provision 157 would be deleted because the language of this provision has been combined with the language of revised Special provision 135. Special provision 157 is currently assigned to the entries "Vehicle, fuel cell, flammable gas powered" and "Vehicle, fuel cell, flammable liquid powered" and instructs shippers that these entries include hybrid electric vehicles powered by both an internal combustion engine and wet, sodium or lithium batteries installed.

Special provision 167 would be revised to require metal hydride storage system(s) installed in conveyances, etc., to be approved by the competent authority before acceptance for transport. Special provision 167 would also be applicable, where appropriate, to UN3166 entries powered by fuel cells.

Special provision 198 would be revised to include "Perfumery products, UN1266" among the list of products that nitrocellulose solutions containing not more than 20% nitrocellulose can be transported as. PHMSA is also proposing to revise this provision to clarify that the nitrocellulose may not contain more than 12.6% nitrogen by dry mass.

A new Special provision 340 would be added to provide special instruction for the vessel transport of nickel-metal hydride batteries (including cells). Except for nickel-metal hydride button

cells or nickel-metal hydride cells or batteries packed with or contained in equipment, nickel-metal hydride cells or batteries would be required to be securely packed and protected against short circuits in the same manner as batteries transported as "Batteries, dry, sealed, n.o.s." Additionally, when loaded in a vessel cargo transport unit in a total quantity of 100 kg gross mass or more, nickel-metal hydride batteries would be subject to the shipping paper and dangerous cargo manifest requirements under § 176.30 of the HMR.

A new Special provision 343 would be added and assigned to new HMT entry "Petroleum sour crude oil, flammable, toxic, UN3494" indicating that for international transportation, this entry in the HMT must be used for petroleum crude oil containing hydrogen sulfide in sufficient concentration that vapors evolved from the crude oil can present an inhalation hazard. As discussed in detail in response to comments submitted to the ANPRM, for domestic transportation only, consideration of vapor toxicity levels would not be required and the appropriate non-toxic petroleum description may be used. However, a bulk packaging when used for the domestic transport of petroleum crude oil would be required to be marked in accordance with the new marking prescribed in § 172.327 of the HMR to provide warning of the potential hazard from inhalation of hydrogen sulfide vapors.

A new Special provision 345 would be added excepting from the requirements of the HMR "Nitrogen, refrigerated liquid *cryogenic liquid*, UN1977" transported in open cryogenic receptacles with a maximum capacity of 1 L. The receptacles must be constructed with glass double walls having the space between the walls vacuum insulated and each receptacle must be transported in an outer packaging with sufficient cushioning and absorbent materials to protect the receptacle from damage.

A new Special provision 346 would be added excepting from the requirements of the HMR "Nitrogen, refrigerated liquid *cryogenic liquid*, UN1977" transported in accordance with the requirements for open cryogenic receptacles in § 173.320 of the HMR. The receptacle must contain no hazardous materials other than the liquid nitrogen which must be fully absorbed in a porous material in the receptacle.

A new Special provision 347 would be added restricting the use of certain HMT entries classed as Division 1.4S

explosive materials to those substances and articles passing Test series 6(d) of Part I of the UN Manual of Tests and Criteria (see *Section 172.101 Hazardous Materials Table (HMT)* for the list of proper shipping names that would be assigned Special provision 347). A Division 1.4 explosive is defined as an explosive that presents a minor explosion hazard such that hazardous effects are confined to a package and no projection of fragments of appreciable size or range are expected; and that an external fire must not cause virtually instantaneous explosion of almost the entire contents of a package containing a Division 1.4 explosive. Under § 173.58 of the HMR, an explosive substance or article is subjected to Test series 6(a), 6(b), and 6(c) for assignment to an appropriate division (e.g. Division 1.4). Explosive substances or articles are assigned to Division 1.4, Compatibility Group S (1.4S) if hazardous effects are confined within a package or the blast and projection effects do not significantly hinder emergency response efforts. Test series 6(a), 6(b), and 6(c) address hazard effects from exposure of the package to a fire but do not address whether hazardous effects from functioning of the substance or articles is confined within the package. PHMSA is concerned that there is a possibility that products classified as Division 1.4S based on behavior in a fire according to test procedures of Type 6(c) may still produce a hazardous effect that, when initiated, is not confined to a package. Initiation or ignition as a result of fire, after the package is degraded, may produce different results from functioning with the intended means of ignition or initiation. Knowledge of the behavior of the article or substance in both cases is needed to allow proper classification.

As discussed in the comment summary in response to the ANPRM, PHMSA is proposing to require the Type 6(d) test as prescribed in Section 16.7 of the Fifth revised edition of the UN Manual of Tests and Criteria in the new Special provision 347. PHMSA is proposing that for affected articles intended for transportation by aircraft, the effective date of this new requirement is April 1, 2011. If a manufacturer or approval holder of affected articles previously classed and approved as Division 1.4S chooses to continue offering such shipments by aircraft, the articles must be successfully tested under Test Series 6(d) and a new approval obtained from PHMSA. Additionally, a previously classed and approved Division 1.4S article that is not successfully tested under Test Series

6(d) must be assigned to a compatibility group other than "S" (e.g., B, C, or D) prior to the April 1, 2011 effective date if intended for transportation by aircraft on or after that date. PHMSA is also proposing that for Division 1.4S articles approved prior to January 1, 2012 and, are intended for domestic highway or rail transportation, the effective date of testing to maintain Division 1.4S classification or reclassification to a higher compatibility group other than "S" is no later than January 1, 2014. For previously approved affected articles, for transportation other than by aircraft, reclassification to a compatibility group other than "S" may be accomplished by using existing data and when recommended by an authorized examination and testing agency approved by PHMSA. For international highway, rail and vessel transportation, the proposed effective date of Type 6(d) testing requirements or reclassification for new and previously produced affected articles is January 1, 2012.

A new Special provision 349 would be added and assigned to "Hypochlorites, inorganic, n.o.s., UN3212" to specify that transport of mixtures of hypochlorite and an ammonium salt is forbidden.

A new Special provision 350 would be added and assigned to "Bromates, inorganic, n.o.s., UN1450" and "Bromates, inorganic, aqueous solution, n.o.s., UN3213" to specify that transport of ammonium bromate and its aqueous solutions and mixtures of a bromate and an ammonium salt is forbidden.

A new Special provision 351 would be added and assigned to "Chlorates, inorganic, n.o.s., UN1461" and "Chlorates, inorganic, aqueous solution, n.o.s., UN3210" to specify that transport of ammonium chlorate and its aqueous solutions and mixtures of a chlorate and an ammonium salt is forbidden.

A new Special provision 352 would be added and assigned to "Chlorites, inorganic, n.o.s., UN1462" to specify that transport of ammonium chlorite and its aqueous solutions and mixtures of a chlorite and an ammonium salt is forbidden.

A new Special provision 353 would be added and assigned to "Permanganates, inorganic, n.o.s., UN1482" and "Permanganates, inorganic, aqueous solution, n.o.s., UN3214" to specify that transport of ammonium permanganate and its aqueous solutions and mixtures of a permanganate and an ammonium salt is forbidden.

A new Special provision 357 would be added and assigned to the entry "Petroleum crude oil, UN1267" to clarify that when transported internationally,

petroleum crude oil containing hydrogen sulfide in sufficient concentration that vapors evolved from the crude oil can present an inhalation hazard must be transported under the entry "Petroleum sour crude oil, flammable, toxic, UN3494." As discussed in detail in response to comments submitted to the ANPRM, for domestic transportation, use of the toxic description is not required; however, a bulk package would be required to be marked in accordance with the requirement of new § 172.327 of the HMR. *See Section 173.327* for a discussion of the proposed marking requirement.

Special provision A59 would be revised consistent with amendments made to Special provision A131 of the 2011–2012 ICAO TI. Special provision A59 allows for sterilization devices containing ethylene oxide to be offered for transportation and transported by air (and thereby all modes) under the excepted quantity provisions of § 173.4a of the HMR. In this NPRM, PHMSA is proposing to revise Special provision A59 to clarify that it is only applicable to glass inner packagings, such as ampoules or capsules, intended for use in sterilization devices and containing ethylene oxide. Currently, the special provision does not explicitly limit the material of construction to glass for inner packagings as intended.

A new Special provision A112 would be added authorizing the transportation of certain IBCs by passenger and cargo-only aircraft that contain up to a maximum net quantity of 1,000 kg of a Environmentally hazardous substance, solid, n.o.s. (UN3077). This amendment is consistent with the authorization in the 2011–2012 ICAO TI.

In paragraph (c)(4), Table 1 (IBC Codes) would be editorially revised to remove UN Specifications 31A, 31B and 31N from IBC Codes IB4, IB5, IB6, IB7, and IB8. This revision is consistent with amendments to international standards and removes the specifications from the indicated codes in the table because IBC Codes IB4 through IB8 are assigned to solids whereas, UN Specifications 31A, 31B, and 31N are authorized for transportation of liquids in IBC Codes IB1 through IB3 and assigned to liquid materials.

A new portable tank special provision TP36 would be added authorizing the use of fusible elements in the vapor space of portable tanks with a gauge test pressure that exceeds 265 kPa (38.4 psig/2.65 bar). *See Section 178.275* for a detailed discussion. This portable tank special provision is only applicable to the following organometallic materials:

UN3391 Organometallic substance, solid, pyrophoric.  
 UN3392 Organometallic substance, liquid, pyrophoric.  
 UN3393 Organometallic substance, solid, pyrophoric, water-reactive.  
 UN3394 Organometallic substance, liquid, pyrophoric, water-reactive.  
 UN3395 Organometallic substance, solid, water-reactive.  
 UN3396 Organometallic substance, solid, water-reactive, flammable.  
 UN3397 Organometallic substance, solid, water-reactive, self-heating.  
 UN3398 Organometallic substance, liquid, water-reactive.  
 UN3399 Organometallic substance, liquid, water-reactive, flammable.  
 UN3400 Organometallic substance, solid, self-heating.

A new Special provision W1 would be added indicating that the hazardous materials "Potassium nitrate, UN1486," "Sodium nitrate, UN1498," and "Sodium nitrate and Potassium nitrate mixtures, UN1499" are not subject to the HMR when transported by vessel in non-friable prills or granules form. The material would be required to be accompanied by a certificate from an accredited laboratory stating that the product has been properly sampled and tested by the laboratory according to the UN Manual of Tests and Criteria.

#### Section 172.203

Section 172.203 specifies additional hazardous materials description requirements on shipping papers. Paragraph (b) is revised to indicate that when a shipping paper is required, a limited quantity must be indicated as such. This revision is necessary due to the shipping paper exception proposed in this notice for limited quantities intended for transportation by highway or rail.

#### Section 172.300

Section 172.300 prescribes the applicability of the HMR marking requirements incorporated in subpart D. Paragraph (l)(1) of § 172.101 authorizes up to a one-year transition period for compliance when new amendments are made to the HMT. This transition period allows the continued use of preprinted shipping paper and marked packaging stock until depleted or for one year, whichever comes first. Consistent with the transition period authorized in § 172.101(l)(1), in this NPRM we propose to amend § 172.300 of the HMR to authorize the continued use of preprinted packaging stock for one-year or until depleted (whichever is less) regardless of whether the amendment is the result of a change made to the HMT, such as an amendment made to the text

of a required marking in a packaging section. This proposed amendment allows the continued use of preprinted packaging stock that is marked before the effective date of any final rule with markings in accordance with the manner previously authorized.

#### Section 172.312

Section 172.312 prescribes the required orientation markings for non-bulk packages containing liquids. PHMSA is proposing to amend paragraph (c)(5) to clarify that the exception only applies to a hermetically sealed inner packaging or receptacle not exceeding 500 mL each.

#### Section 172.315

Section 172.315 specifies the markings required on a package containing limited quantities of hazardous materials. These new markings are consistent with the UN Model Regulations, ICAO TI and IMDG Code and are required on packages of limited quantities offered for transportation by highway, rail, air and vessel. Additionally, PHMSA received positive comments submitted in response to the ANPRM concerning the new marking because the requirement specifies minimum dimensions on each side (100 mm) that substantially increases the visibility of the marking when compared with the current ORM-D marking prescribed in § 172.316 of the HMR. Commenters stated that increased visibility of the mark will enhance safety while reducing regulatory burden.

For limited quantities intended for transportation by vessel, this new marking with minimum dimensions of 250 mm on each side is required on cargo transport units containing limited quantities. For limited quantities intended for transportation by aircraft, the marking requirements are in accordance with the 2011–2012 ICAO TI (*i.e.*, “Y” mark on a white square on point) in addition to any required labels.

#### Section 172.316

Section 172.316 prescribes marking requirements for packages containing materials classed as ORM-D and ORM-D-AIR. If adopted in a final rule, the marking prescribed in this section will no longer be authorized for limited quantities three years after the effective date of the final rule.

#### Section 172.322

Section 172.322 prescribes marking requirements for packages containing marine pollutants. PHMSA is proposing to add an exception from the marking requirement in new paragraph (d)(2)(iii)

for packages of limited quantities marked in accordance with § 172.315.

#### Section 172.324

Section 172.324 prescribes marking requirements for packages containing hazardous substances in non-bulk packagings. PHMSA is proposing to revise paragraph (b) for packages containing hazardous substances marked in accordance with the limited quantity marking prescribed in § 172.315.

#### Section 172.326

Section 172.326 prescribes the marking requirements for portable tanks. In this notice, we are proposing to revise paragraph (a) to align the minimum height for a proper shipping name marked on a portable tank to 65 mm when offered for transportation and transported by vessel. This amendment is in response to a revision made in Amendment 35–10 of the IMDG Code.

#### Section 172.327

New section 172.327 specifies the marking required for a bulk packaging containing petroleum crude oil to warn of the potential toxic inhalation hazard from vapors evolved from hydrogen sulfide present in the crude oil. PHMSA is proposing to require placement of the marking used for toxic materials under the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) in the immediate vicinity of any location on a bulk packaging, such as loading heads and manholes that could pose a health risk to transportation workers if exposed to hydrogen sulfide vapors emitted from that location. This proposed hazard communication marking requirement is applicable to bulk packagings in domestic transportation only. The new hazardous materials description for “Petroleum sour crude oil, flammable, toxic, UN3494” proposed to be added to the HMT would be used for international transportation of petroleum crude oil with hydrogen sulfide in sufficient concentration that vapors evolved from the crude oil present an inhalation hazard (for both bulk and non-bulk packagings).

#### Section 172.500

Section 172.500 specifies the applicability of placarding requirements to certain materials. PHMSA is proposing an amendment to paragraph (b)(3) to clarify that limited quantities marked in accordance with revised § 172.315 of the HMR are not subject to placarding requirements.

#### Section 172.502

Section 172.502 specifies prohibited and permissive placarding requirements. In this NPRM, PHMSA proposes to revise the exceptions provided in paragraph (b)(2) to include the sour crude oil marking and the limited quantity marking in §§ 172.315 and 172.327 of the HMR, respectively.

#### Part 173

#### Section 173.4

Section 173.4 prescribes the requirements for small quantities of hazardous materials offered for transportation and transported by domestic highway or rail. PHMSA is proposing to revise paragraph (a) and add new paragraph (a)(1)(v) to allow Division 2.2 (non-flammable, non-poisonous, compressed gas) material without a subsidiary hazard (except for aerosols) without applying for an approval from the Associate Administrator as prescribed under paragraph (c) of this section. Other Class 2 materials, including Division 2.2 aerosols, will still require approval under § 173.4(c) of the HMR. These amendments are consistent with the authorization under § 173.4a(b)(1) for Division 2.2 gases without a subsidiary hazard as well as our proposal to exclude aerosols from authorized materials in § 173.4a of the HMR. *See Section 173.4a* for a discussion of revisions proposed for excepted quantities of hazardous materials.

#### Section 173.4a

Section 173.4a prescribes the requirements for excepted quantities of hazardous materials offered for transportation and transported by all modes, domestic or international. PHMSA is proposing to amend paragraph (a) by adding a new paragraph (a)(4) for pressure differential capability for packages intended for transportation by aircraft in accordance with § 173.27(c) of the HMR. PHMSA is also proposing to amend paragraph (b)(1) to clarify that the authorization for Division 2.2 (non-flammable, non-poisonous, compressed gas) excludes aerosols as an excepted quantity material. Such articles are authorized as a limited quantity under both domestic and international standards. Additionally, PHMSA is proposing to revise paragraph (b)(5) to add polyester resin kits to the types of Division 5.2 (organic peroxide) material authorized as an excepted quantity and to revise paragraph (d)(3) by correcting the outer packaging aggregate quantity limit for Division 5.2 liquids from 250 mL to 500 mL.

**Section 173.4b**

Section 173.4b prescribes the requirements for *de minimis* quantities of hazardous materials offered for transportation and transported by all modes, domestic or international. Consistent with the international standards, PHMSA is proposing to add a new paragraph (b) to except non-infectious specimens preserved with small amounts of certain Class 3 (flammable liquid) materials for scientific purposes from the requirements of the HMR. This amendment is also consistent with previous interpretations we have issued on this matter indicating these specimens do not pose a risk to safety during the course of transportations.

**Section 173.25**

Section 173.25 prescribes the requirements for certain authorized packagings and overpacks. Consistent with the international standards, PHMSA is proposing to require an overpack containing packages of limited quantity material marked with the new limited quantities marking proposed in this NPRM (see the *Section 173.315* discussion) to be marked with the word "OVERPACK" if the markings are not visible, in addition to all other required package markings. This mark is an indication that the packages contained within the overpack are in accordance with the HMR. Additionally, for excepted quantities (see the *Section 173.4a* discussion) where the required package markings are not visible inside an overpack, the excepted quantities marking must also be placed on the overpack. An overpack containing packages of excepted quantities is not required to be marked with the word "OVERPACK."

**Section 173.27**

Section 173.27 prescribes the general requirements for packaging offered or intended for air transportation. In this NPRM, PHMSA is proposing to amend paragraph (f) by adding a new Table 3 that outlines the requirements for limited quantities intended for air transportation consistent with the 2011–2012 ICAO TI where appropriate.

**Section 173.40**

Section 173.40 specifies the general packaging requirements for toxic materials packaged in cylinders. PHMSA is proposing to amend paragraph (c)(1) concerning closure requirements by requiring the valve connections on UN Specification cylinders to be made by a taper thread or some other means in accordance with ISO Standard 10692–2:2001.

**Section 173.59**

Section 173.59 provides definitions of explosive terms and are intended for information only. The UN recently defined the term "phlegmatized" as applying to the addition of a substance to an explosive to enhance its safety in handling and transport. In this NPRM, PHMSA is proposing to adopt the definition in the HMR without modification.

**Section 173.63**

Section 173.63 specifies packaging exceptions for certain Division 1.4S explosive articles authorized for reclassification and transport as ORM-D material. Based on the proposed elimination of the ORM-D hazard class, in this NPRM, PHMSA is authorizing the current exceptions to continue to be used in all domestic modes of transportation for at least three years after the effective date of a final rule, if adopted. PHMSA invites comments or suggestions on how to facilitate a straightforward transition from transportation of explosives articles reclassified as ORM-D to transportation as limited quantity material such that it ensures no undue burdens are placed on shippers and carriers of such articles.

PHMSA is also proposing in § 173.63 to require "Cartridges, power devices, ORM-D-AIR" (UN0323), before being offered for transportation by aircraft, to have been successfully tested in accordance with the new UN Test Series 6(d) test effective April 1, 2011. This proposed requirement is a precondition for reclassification from Division 1.4S to ORM-D for such articles intended for transportation by international highway, rail and vessel effective January 1, 2012. Articles approved as Division 1.4S prior to January 1, 2012, may continue to be offered in domestic highway and rail transportation only until January 1, 2014.

**Section 173.120**

Section 173.120 defines Class 3 (flammable liquid) material. PHMSA is proposing to revise paragraph (c) to add new testing methods for determining the flash point of a liquid.

**Section 173.121**

Section 173.121 prescribes the packing group assignment for flammable liquids. Currently, the HMR do not specify test method for determining the boiling point of a liquid which may be necessary for liquids with very low flash points. PHMSA is proposing to revise paragraph (a) to add new testing methods for determining the boiling point of a liquid.

**Section 173.124**

Section 173.124 defines Class 4 material. For consistency with a revision adopted in the UN Model Regulations, PHMSA proposes to amend the definition of "self-heating" in § 173.124(b)(2) of the HMR to read: "Self-heating of a substance is a process where the gradual reaction of that substance with oxygen (in air) generates heat. If the rate of heat production exceeds the rate of heat loss, then the temperature of the substance will rise which, after an induction time, may lead to self-ignition and combustion."

**Section 173.137**

Section 173.137 establishes test criteria and packing group assignments for Class 8 (corrosive) material. Since 1993, PHMSA has authorized under the terms of a special permit an *in vitro* test method as an alternative form of testing to that specified in the HMR to determine the corrosivity of certain substances. Substances authorized for analysis using the alternative test method include acids (and their derivatives), acyl halides, alkylamines and polyalkylamines, bases, chlorosilanes, metal halides, and oxyhalides.

The UN Committee of Experts (COE) recently recognized and adopted *in vitro* test methods in the UN Model Regulations as an alternative form of testing to that specified in OECD Guideline for Testing of Chemicals, Number 404, "Acute Dermal Irritation/Corrosion." These alternative *in vitro* test methods include:

- OECD Guidelines for the Testing of Chemicals, No. 430, "In Vitro Skin Corrosion: Transcutaneous Electrical Resistance Test (TER)" (2004);
- No. 431, "In Vitro Skin Corrosion: Human Skin Model Test" (2004); and
- No. 435, "In Vitro Membrane Barrier Test Method for Skin Corrosion" (2006).

A positive result under *in vitro* methods 430 and 431 may be used to determine corrosivity for transportation purposes but cannot be used to determine the PG assignment. A negative result for corrosivity under *in vitro* methods 430 and 431 can preclude further testing to determine PG assignment using method 404, the current OECD Guideline involving *in vivo* testing or, method 435, the newly adopted OECD Guideline involving *in vitro* testing.

Based on the adoption of three new OECD guidelines for the *in vitro* testing of materials for corrosivity in the UN Model Regulations and our own initiative, PHMSA is proposing to adopt such guidelines as matter incorporated

by reference (IBR) in §§ 171.7 and 173.137 of the HMR. This is consistent with a petition for rulemaking (P-1550) filed by the People for the Ethical Treatment of Animals (PETA), who voice strong support for such action.

#### Section 173.144

Section 173.144 would be editorially revised by adding the descriptions “Cartridges, small arms” and “Cartridges, power device” and removing the description “Consumer commodity.”

Sections 173.150, 173.151, 173.152, 173.153, 173.154, 173.155

Sections 173.150 through 173.155 prescribe the exceptions from certain regulation as Class 3, 8 and 9 and Division 4.1, 4.2, 4.3, 5.1, 5.2 and 6.1 materials under the HMR. PHMSA is proposing to revise each of these sections to recognize the UN Model Regulations and IMDG Code provisions for the highway, rail, and vessel transportation of limited quantities. No quantity limits are proposed to decrease; however, two are increased slightly to maintain alignment.

Section 173.150 prescribes specific exceptions for Class 3 (flammable and combustible liquid) materials. Paragraph (d) prescribes exceptions for alcoholic beverages (wine and distilled spirits) as defined in 27 CFR 4.10 and 5.11. In this NPRM, PHMSA is proposing to revise paragraph (d) only to clarify the exceptions by mode of transport in order to provide a better understanding of the applicability of the HMR to such materials.

When we lowered the quantity limits for limited quantities of Division 6.1 (primary or subsidiary) hazardous materials in PG II in a final rule published June 13, 2005 (HM-215G) (70 FR 34065), we did not remove the labeling requirement for such materials when intended for transportation by highway, rail and vessel nor did we authorize them as “Consumer commodity, ORM-D” material. In this NPRM, except for transportation by aircraft, we are proposing to remove the labeling requirement for all limited quantities of Division 6.1 materials in PG II and III as authorized under § 173.153. When the exceptions Column (8A) of the HMT specifies Section 173.153, and the packaged is marked in accordance with § 172.315, PHMSA is proposing not to require a Division 6.1 label for transportation by highway, rail and vessel. We believe this alignment with international standards will promote compliance without compromising safety.

#### Section 173.156

Section 173.156 prescribes the conditions under which materials reclassified as ORM-D may be offered for transportation and transported in excepted types of packagings or in excess of authorized weight limits when transported to or from a manufacturer, a distribution center, retail outlet, or disposal facility. In this notice, PHMSA is proposing to eliminate the ORM-D hazard class (after three years), if adopted in a final rule. Until that time, use of exceptions provided in § 173.156 will be authorized and extended to all limited quantities marked in accordance with § 172.315 regardless of whether they also meet the definition of a “Consumer commodity” or not. In this NPRM, PHMSA is proposing that markings prescribed in § 172.316 (ORM-D and ORM-D-AIR) will no longer be authorized on or after January 1, 2014.

#### Section 173.161

Section 173.161 prescribes packaging requirements for chemical kits and first aid kits containing small amounts of hazardous materials. In this notice, PHMSA is proposing to editorially revise the section. In addition, PHMSA is proposing to allow transport of dry ice in accordance with the packaging requirements of § 173.217 in packaging authorized under this section when used as a refrigerant for the contents of a kit. For chemical and first aid kits intended for transportation by air, the reader is also directed to § 173.27 of the HMR.

#### Section 173.165

A new section 173.165 would be added to prescribe packaging and other requirements for “Polyester resin kits, UN3269” formerly contained in § 172.102, Special provision 40 and § 173.152(b)(4) of the HMR. This amendment is intended to provide clarification of existing requirements while also harmonizing with international standards.

#### Section 173.167

A new section 173.167 would be added to indicate authorized materials and quantity limits for articles and substances that may be described as “Consumer commodity, ID8000” when intended for transportation by aircraft. Such articles and substances eligible for classification or reclassification to Class 9 are Class 2 materials (non-toxic aerosols only), Class 3 materials (Packing Group II and III only), Division 6.1 (Packing Group III only), UN/NA3077, UN/NA3082, and UN3175 provided such materials do not have a

subsidiary risk and are authorized aboard a passenger-carrying aircraft. Inner and outer packaging quantity limits are based on Packing Instruction Y963 of the 2011–2012 ICAO TI. Specification outer packagings are not required under the conditions prescribed in this section.

#### Section 173.220

Section 173.220 provides exceptions from regulation under the HMR for the transport of internal combustion engines, self-propelled vehicles, mechanical equipment containing internal combustion engines, and battery-powered vehicles or equipment. This section would be revised to include engines, vehicles, and equipment powered by fuel cells consistent with similar provisions under international standards.

#### Section 173.225

Section 173.225 specifies packaging requirements and other provisions for organic peroxides. When the § 172.101 HMT specifies this section, the organic peroxide must be packaged and offered for transportation in accordance with the provisions of this section. Each packaging must also conform to the general requirements of subpart B of part 173 and to the applicable requirements of part 178 of the HMR. Specifically, organic peroxides that require temperature control are subject to § 173.21(f). When an IBC or bulk packaging is authorized and meets the requirements of paragraph (f) or (h) of § 173.225, respectively, lower control temperatures than those specified for non-bulk packaging may be required. An organic peroxide not identified in paragraph (c), (e), or (g) of § 173.225 by technical name, or not assigned to a generic type in accordance with paragraph (b)(3) of this section, must conform to the requirements in paragraph (c) of § 173.128.

The Organic Peroxides Table specifies by technical name those organic peroxides that are authorized for transportation and not subject to the approval provisions of § 173.128. An organic peroxide identified by technical name is authorized for transportation only if it conforms to all applicable provisions of the table. In this NPRM, PHMSA is proposing to amend the Organic Peroxide Table in § 173.225(c)(8) by adding a new entry and revising current entries. We are also proposing to revise an entry to the Organic Peroxide IBC Table in paragraph (e) of this section.

The following entries in the Organic Peroxide Table are being revised:

UN3106 Di-(2-tert-butylperoxyisopropyl) benzene(s).  
Exempt Di-(2-tert-butylperoxyisopropyl) benzene(s).  
UN3105 2, 5-Dimethyl-2, 5-di-(tert-butylperoxy) hexane.

The following entry would be added to the Organic Peroxide Table:  
UN3103 2, 5-Dimethyl-2, 5-di-(tert-butylperoxy) hexane.

The following entry in the Organic Peroxide IBC Table is being revised:  
UN3109 Peroxyacetic acid, stabilized, not more than 17%.

#### Section 173.230

Section 173.230 prescribes the requirements for fuel cells offered for transportation by all modes. In paragraph (g), PHMSA is proposing to allow only those fuel cells containing flammable liquids and corrosive materials to be transported as a limited quantity by aircraft. In paragraph (h), PHMSA is also proposing to prohibit the reclassification to "Consumer commodity, ORM-D-AIR" for transportation by aircraft.

#### Section 173.301b

Section 173.301b prescribes general requirements for shipment of UN pressure receptacles. PHMSA is proposing to revise paragraph (c)(2)(iii) to indicate that valve protection requirements for metal hydride storage systems are specified in ISO 16111. Additionally, we are proposing to revise paragraph (e) regarding the integrity of UN pressure receptacles used for pyrophoric gases or flammable mixtures of gases containing more than 1% pyrophoric compounds in accordance with the 16th revised edition of the UN Model Regulations.

#### Section 173.306

Section 173.306 prescribes the requirements for limited quantities of compressed gases. PHMSA is proposing to revise paragraphs (i) and (k) of the section to recognize the proposed new marking for limited quantities of such materials and provide a transitional period for the eventual elimination of the ORM-D hazard class.

PHMSA is proposing to revise paragraph (h) to clarify that except for transportation by aircraft, lighter refills in the ORM-D hazard class are eligible for the exceptions in paragraph (i) of the section and § 173.156.

#### Section 173.307

Section 173.307 establishes exceptions for compressed gases. In this NPRM, PHMSA is proposing to add certain light bulbs provided they are packaged appropriately so that if a bulb

ruptures all pieces are contained within the package.

#### Section 173.311

PHMSA is proposing to add a new § 173.311 to prescribe the packaging requirements for Metal hydride storage systems, UN3468, used for the transport of hydrogen. A metal hydride storage system is a single complete hydrogen storage system that includes a receptacle, metal hydride, a pressure relief device, a shut-off valve, service equipment and internal components.

The HMR currently do not prescribe specific packaging or shipping methods for metal hydride storage systems containing hydrogen. However, PHMSA has issued a number of special permits to allow the use of these systems for transport. The UN Model Regulations, in new Packing Instruction P205, prescribe standards for the construction, qualification, marking and requalification of such systems and is the basis for the proposed HMR requirements. Some amendments proposed in new § 173.311 include:

- Applies to transportable metal hydride storage systems with pressure receptacles not exceeding 150 liters in water capacity and having a maximum developed pressure not exceeding 25 MPa.

- Requires transportable metal hydride storage systems to be designed, constructed, initially inspected and tested in accordance with ISO standard 16111:2008, "Transportable gas storage devices—Hydrogen absorbed in reversible metal hydride," as authorized under § 178.71(f) (formerly reserved).

- Requires steel pressure receptacles or composite pressure receptacles with steel liners to be marked in accordance with § 173.301b(f) of the HMR which specifies that a steel UN pressure receptacle bearing an "H" mark must be used for hydrogen bearing gases or other gases that may cause hydrogen embrittlement.

- Requires a requalification interval of no more than five years as specified in § 180.207 of the HMR in accordance with the requalification procedures prescribed in ISO 16111.

#### Section 173.320

Section 173.320 provides exceptions from certain regulations for cryogenic liquids. In this NPRM, PHMSA is proposing to add a paragraph clarifying authorization of use of the IMDG Code for the transportation of cryogenic liquids aboard vessels consistent with amendments made to the IMDG Code concerning stowage of cryogenic liquids.

#### Section 173.322

Section 173.322 prescribes various packaging methods for ethyl chloride. In this NPRM, PHMSA is proposing to adopt the amended provisions from packaging instruction P200 of the UN Model Regulations for ethyl chloride in a new paragraph (e). This new packaging method authorizes ethyl chloride in capsules not exceeding 150 g of gas each, closed with a secondary means applied, and placed in a strong outer packaging not to exceed 75 kg gross mass.

#### Part 175

##### Section 175.8

Section 175.8 provides for exceptions from certain regulation for air carrier operator equipment and items of replacement. PHMSA is proposing to revise paragraph (b)(3) to clarify that transportation of alcoholic beverages, perfumes, colognes, and liquefied gas lighters carried aboard a passenger-carrying aircraft by an operator must be for use or sale of those items on that specific aircraft. *See Ref. No. 09-0207 under the "Interpretations" link on our Web site.*

##### Section 175.9

Section 175.9 prescribes the applicability of the HMR to special aircraft and rotocraft operations. This section also prescribes the conditions under which certain operations may be performed in accordance with 14 CFR and 49 CFR (e.g., avalanche and weather control). In this notice, PHMSA is emphasizing that rotocraft operations are fully subject to both sets of regulations.

##### Section 175.10

Section 175.10 specifies the conditions for which passengers, crew members or an operator may carry hazardous materials aboard an aircraft. PHMSA is proposing to add a new paragraph (a)(17) to permit a mobility aid such as a wheelchair, containing a lithium-ion battery, to be transported in accordance with the exceptions provided in this section. A wheelchair or other mobility aid that contains a lithium metal battery is not permitted aboard a passenger-carrying aircraft. As a result of this proposed amendment, current paragraph (a)(17) is redesignated as paragraph (a)(18) and current paragraph (a)(18) is redesignated as paragraph (a)(19).

Paragraph (a)(19) is being revised to allow passengers and crew members to place certain spare fuel cell cartridges in checked baggage. This exception does not apply to Divisions 2.1 or 4.3

materials contained in spare fuel cell cartridges. Although the ICAO TI only restricts spare fuel cell cartridges containing Division 4.3 materials from checked baggage, PHMSA strongly believes that the restriction should also include spare cartridges containing Division 2.1 materials. Thus, PHMSA is proposing a risk-based regulatory amendment to allow spare fuel cell cartridges containing flammable and corrosive liquids in checked baggage while continuing to require spare fuel cell cartridges containing Division 2.1 and 4.3 materials to be carried aboard in carry-on baggage only. This proposal is also consistent with the risk-based limited quantity authorization for fuel cells and cartridges containing Division 2.1 and 4.3 materials offered for transportation and transported by aircraft in amendments proposed in § 173.230 of this notice.

#### Section 175.25

PHMSA is proposing to require operators to provide certain information to passengers regarding what hazardous materials they may check-in or carry-on a flight. Effective January 1, 2011, this information is to be provided at points of ticket sale and, effective January 1, 2013, at automated or remote passenger check-in. Consistent with the ICAO TI, if adopted these amendments will require a passenger to acknowledge limitations before a ticket purchase and automated or remote check-in can be finalized. PHMSA believes these amendments only clarify existing regulatory requirements in § 175.25 that have not been updated due to changing technologies used by air carriers to either sell tickets (Internet) or check-in passengers (automated kiosks). Additionally, these amendments provide air carriers greater flexibility in how the information they are required to provide passengers on hazardous materials is disseminated to them.

#### Section 175.30

Section 175.30 prescribes inspection procedures for operators. PHMSA is revising paragraph (e) regarding overpack marking requirements for packages of limited quantities offered for transportation by aircraft.

#### Section 175.75

Section 175.75 prescribes quantity limitations and cargo location requirements for hazardous materials transported by aircraft. PHMSA is proposing to revise paragraph (e) to correct an inadvertent cargo compartment restriction for passenger-authorized materials carried aboard a cargo-only aircraft published in a final

rule under docket HM-215J (January 14, 2009; 74 FR 2267). PHMSA is also proposing to revise the paragraph (f) Quantity and Loading Tables for clarity.

#### Section 175.78

Section 175.78 prescribes the stowage compatibility of hazardous materials offered for transportation by aircraft. PHMSA is proposing to revise paragraph (c)(4)(iii) to specify that except as provided in paragraph (c)(4)(iv) of § 175.78, Division 1.4B explosive materials may only be stowed together with Division 1.4S explosive materials. This revision is in accordance with an amendment made in the 2011–2012 ICAO TI.

#### Part 176

##### Section 176.2

Section 176.2 establishes definitions specific to the transportation of hazardous materials by vessel. PHMSA is proposing to revise the definition for “Cargo transport unit” to include a multiple-element gas container or MEGC.

##### Section 176.76

Section 176.76 prescribes certain requirements for transport vehicles, freight containers, and portable tanks containing hazardous materials transported by vessel. In this notice, we are revising paragraph (a)(9) to require that when security devices, beacons or other tracking or monitoring equipment are used, they must be securely installed and must be of a certified safe type for the hazardous materials that will be carried within the freight container or transport vehicle.

##### Section 176.84

Section 176.84 outlines additional requirements for stowage and segregation of hazardous materials transported by cargo and passenger vessels. In this NPRM, PHMSA is proposing to remove the redundant stowage code “143.” This provision is currently assigned to UN1259, UN2845, UN3194, UN3392, and UN3394 which prohibits the carriage of them aboard a vessel transporting Class 1 explosive material (except for explosive of Division 1.4S). See the Section 172.101 Hazardous Materials Table changes for our proposed amendment that adds stowage code “78” to the above materials of extreme flammability. Such materials are now required to be “separated longitudinally by an intervening complete compartment or held from explosives” based on amendments adopted in the IMDG Code.

#### Section 176.142

Section 176.142 prescribes the requirements for hazardous materials of extreme flammability transported on the same vessel as Class 1 (explosive) materials. In this NPRM, PHMSA is proposing to delete this outdated section as the restriction no longer exists. Hazardous materials of extreme flammability are no longer prohibited from stowage on the same vessel as explosives. For these entries, the most restrictive stowage requirements will be required.

#### Section 176.905

Section 176.905 prescribes specific requirements for motor vehicles or mechanical equipment powered by internal combustion engines that are offered for transportation and transported by vessel. For consistency with Amendment 35–10 of the IMDG Code, PHMSA is proposing to remove the signage requirement for such articles in paragraph (a)(5) and the ignition key removal provisions from paragraph (a)(6).

#### Part 178

##### Section 178.71

Section 178.71 establishes the specifications for UN pressure receptacles. In this NPRM, we are proposing to amend the cylinder bundle marking requirements in § 178.71(e) by adding a new paragraph (e)(8) specifying pressure vessel markings only apply to the pressure vessel itself and not to the assembly structure of the bundle. Additionally, we are proposing to add new paragraphs (f) and (m), that establish the design and construction requirements for UN metal hydride storage systems and refillable welded cylinders, respectively. To accomplish this, we are redesignating paragraphs (m) through (r) as paragraphs (n) through (s), and revising paragraphs (q) and (s) accordingly to correct paragraph references. Further, we are adding three ISO standards to the IBR table in § 171.7 of this subchapter for UN refillable welded cylinders (4706, 18172–1 and 20703). Lastly, we are proposing to require that transportable metal hydride storage systems (see § 173.311) be designed, constructed, initially inspected and tested in accordance with ISO 16111:2008, “Transportable gas storage devices—Hydrogen absorbed in reversible metal hydride.” as authorized under § 178.71(m).

#### Section 178.275

Section 178.275 prescribes requirements for UN portable tanks intended for transportation of liquid and

solid hazardous materials. Currently, § 178.275(h) prohibits the use of fusible elements on portable tanks with a test pressure which exceeds 2.65 bar (265 kPa). In § 172.102(c)(8), we proposed to add a new portable tank Special provision “TP36” authorizing the use of fusible elements in the vapor space of portable tanks with a gauge test pressure that exceeds 265 kPa (38.4 psig/2.65 bar) for certain organometallic substances. In this NPRM, we are proposing to authorize use of fusible elements based on a well-established history of safe transportation of these substances in portable tanks equipped with fusible elements capable of properly functioning at pressure of at least 1000 kPa (145 psig/10 bar). Past experience of the use of fusible elements indicates reliability and a proper functioning even in the event of a release during loading or unloading. Additionally, for organometallic materials that are shipped in rigid portable tanks with a minimum test pressure of more than 265 kPa (38.4 psig/2.65 bar), the tanks are required to be equipped with a depressurizing system that releases the inside pressure to avoid rupturing the tank as a result of an inadvertent release or fire. Fusible elements are used by shippers as a secondary pressure relief device, in addition to a re-closing pressure relief device. No regulatory amendments are proposed to this section.

#### Section 178.347–1

Section 178.347–1 prescribes the general requirements for DOT Specification 407 cargo tank motor vehicles. Paragraph (d)(9) prescribes weld integrity, compliance and acceptance criteria for bulkheads.

The exemption in § 178.347–1(d)(8) currently provides an unconditional exemption from UW–12 for all joints. Section 178.347–1(d)(9) applies a condition to one particular joint configuration in a head. In petition P–1333, TTMA requested that we adopt a weld joint efficiency of 0.85 for head seams in bulkheads on DOT 407 cargo tanks. Based on review of the TTMA petition and additional information that was provided, we proposed in the HM–213 NPRM (66 FR 63095; December 4, 2001) that the strength of a weld seam in a bulkhead without radiographic examination of the weld must be 0.85 of the strength of the bulkhead. The welded seam must be a full penetration butt weld, no more than one seam may be used per bulkhead, and the welded seam must be completed before forming the dish radius and knuckle radius.

TTMA commented on the above proposal to the NPRM regarding

§ 178.347–1(d)(9), General Requirements and stated, “While we agree with the proposal to allow a provisional 85% weld joint efficiency for DOT 407 heads with butt-welded seams, we would like to see the requirements of UW–12 of the ASME Code specifically exempted for this welded joint. Even though this section implies an exemption, the exemption is not specific. We suggest the following wording, \* \* \* “The strength of a weld seam in a bulkhead that has not been radiographically examined shall be 0.85 of the strength of the bulkhead and be exempted from the requirements of UW–12 of the ASME Code under the following condition;”

In the final rule, we agreed with their comment and agreed to make the change; however, it was changed in a corrections document (68 FR 52363; September 3, 2003). The final rule stated: “In its comments to the NPRM, TTMA agrees with the provisional 85% weld joint efficiency for DOT 407 heads with butt-welded seams. However, TTMA suggests that we include the requirements of Part UW–12 of the ASME Code to the list of excepted requirements in § 178.347–1(d)(8). We agree with TTMA. In this final rule, we are adding Part UW–12 of the ASME Code to the list of excepted requirements.”

In October 2004, we added an exemption from the radiography/joint efficiency requirements of ASME VIII sec UW–12 for DOT 407 cargo tanks 35 psig and less in § 178.347–1(d)(8) and (9). The intent was to provide a conditional alternate means of determining a joint efficiency for certain head welds. Listing UW–12 in § 178.347–1(d)(8) instead of (9), however, results in an unconditional exemption from UW–12 in all welds on these tanks. Therefore, we are proposing to revise § 178.347–1(d)(9), add a new subparagraph (i), and re-number accordingly in order to harmonize these requirements with the applicable Transport Canada Regulations.

#### Section 178.603

Section 178.603 prescribes the drop test requirements for non-bulk packagings in the HMR. In this notice, PHMSA is proposing to revise paragraph (f)(4) to amend the criteria for passing the tests. Currently, the HMR only require that there is no leakage of filling substance from the inner packaging. In this notice, we are proposing to also require that inner receptacles, inner packagings and articles remain completely within the outer package when drop tested.

#### Section 178.703

Section 178.703 prescribes the marking requirements for IBCs. PHMSA is proposing to align paragraph (a)(1)(viii) with the UN Model Regulations by requiring the gross mass, in kg, to be marked on all IBC types. Currently, the HMR require a net mass to be marked on flexible IBCs which is inconsistent with international standards. PHMSA inadvertently did not revise the HMR when the international standards were amended to specify that a maximum permissible gross mass be marked on all IBC types.

#### Section 178.955

Section 178.955 establishes definitions used with regard to Subpart Q of Part 178 that prescribes the design and testing criteria for Large Packagings. PHMSA is proposing to add the following two new definitions, “Remanufactured Large Packaging” and “Reused Large Packaging,” in new paragraphs (c)(6) and (c)(7), respectively. A “remanufactured” large packaging would be defined as a metal or rigid plastic large packaging that is produced as a UN type from a non-UN type or is converted from one UN design type to another UN design type. Remanufactured large packagings are subject to the same HMR requirements that apply to a new large packaging. A “reused” large packaging would be defined as a large packaging to be refilled which has been examined and found free of defects affecting the ability to withstand the performance tests. The term includes those which are refilled with the same or similar compatible contents and are transported within distribution chains controlled by the consignor of the product.

#### Part 180

##### Section 180.207

Section 180.207 prescribes the requirements for the requalification of UN pressure receptacles. In this notice, PHMSA is proposing to require that metal hydride storage systems be requalified every five years in accordance with ISO 16111:2008 and the records of that requalification be retained in accordance with § 180.215 of the HMR.

##### Section 180.350

Section 180.350 prescribes applicability and defines certain terms regarding the qualification and maintenance of IBCs. PHMSA is proposing to revise paragraph (b) to indicate that the replacement of the inner receptacle of a composite IBC with one from the original manufacturer is

considered repair. This revision is consistent with the recent change in the definition of “repair” in the UN Model Regulations.

## VI. Regulatory Analyses and Notices

### A. Statutory/Legal Authority for This Rulemaking

This proposed rule is published under the following statutory authorities:

1. 49 U.S.C. 5103(b) authorizes the Secretary of Transportation to prescribe regulations for the safe transportation, including security, of hazardous materials in intrastate, interstate, and foreign commerce. This proposed rule amends regulations to maintain alignment with international standards by incorporating various amendments, including changes to proper shipping names, hazard classes, packing groups, special provisions, packaging authorizations, air transport quantity limitations and vessel stowage requirements. To this end, as discussed in detail above, the proposed rule amends the HMR to more fully align them with the biennial updates of the UN Model Regulations, the IMDG Code and the ICAO TI.

Harmonization serves to facilitate international commerce; at the same time, harmonization promotes the safety of people, property, and the environment by reducing the potential for confusion and misunderstanding that could result if shippers and transporters were required to comply with two or more conflicting sets of regulatory requirements. While the intent of this rulemaking is to align the HMR with international standards, we review and consider each amendment on its own merit based on its 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. Thus, as explained in the corresponding sections above, we are not proposing harmonization with certain specific provisions of the UN Model Regulations, the IMDG Code, and the ICAO TI. Moreover, we are maintaining a number of current exceptions for domestic transportation that should minimize the compliance burden on the regulated community.

2. 49 U.S.C. 5120(b) authorizes the Secretary of Transportation to ensure that, to the extent practicable, regulations governing the transportation of hazardous materials in commerce are consistent with standards adopted by international authorities. This rule proposes to amend the HMR to maintain

alignment with international standards by incorporating various amendments to facilitate the transport of hazardous material in international commerce. To this end, as discussed in detail above, PHMSA proposes to incorporate changes into the HMR based on the Sixteenth revised edition of the UN Model Regulations, Amendment 35–10 to the IMDG Code, and the 2011–2012 ICAO TI, which become effective January 1, 2011. The continually increasing amount of hazardous materials transported in international commerce warrants the harmonization of domestic and international requirements to the greatest extent possible.

### B. Executive Order 12866 and DOT Regulatory Policies and Procedures

This proposed 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. The proposed rule is not considered a significant rule under the Regulatory Policies and Procedures of the Department of Transportation [44 FR 11034]. This proposed rule applies to offerors and carriers of hazardous materials, such as chemical manufacturers, chemical users and suppliers, packaging manufacturers, distributors, radiopharmaceutical companies, and training companies. Benefits resulting from the adoption of the amendments in this proposed rule include enhanced transportation safety resulting from the consistency of domestic and international hazard communications and continued access to foreign markets by U.S. manufacturers of hazardous materials.

The majority of amendments in this proposed 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.

We propose a one-year transition period to allow for training of employees and to ease any burden on entities affected by the amendments. The total net increase in costs to businesses in implementing the proposed rule is considered to be minimal. Initial start-up and inventory costs would result from these changes; however, the costs would be offset by greater long-term savings of conformance with one set of regulations and a one-year transition period. A regulatory evaluation is available for review in the public docket for this rulemaking.

### C. Executive Order 13132

This proposed rule has been analyzed in accordance with the principles and criteria contained in Executive Order 13132 (“Federalism”). This proposed rule preempts State, local and Indian Tribe requirements but does not propose 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. 5101–5128, contains an express preemption provision (49 U.S.C. 5125(b)) that preempts State, local and Indian Tribe requirements on certain covered subjects, as follows:

- (1) The designation, description, and classification of hazardous material;
- (2) The packing, repacking, handling, labeling, marking, and placarding of hazardous material;

- (3) The preparation, execution, and use of shipping documents related to hazardous material 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 material; and

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

This proposed rule addresses covered subject items (1), (2), (3), (4) and (5) above and preempts State, local, and Indian Tribe requirements not meeting the “substantively the same” standard. This proposed rule is necessary to incorporate changes adopted in international standards, effective January 1, 2011. If the changes in this proposed 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 regulations. The changes in this proposed rulemaking are intended to avoid this result. Federal hazardous materials transportation law provides at 49 U.S.C. 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. PHMSA proposes the effective date of Federal preemption be 90 days from publication of a final rule in this matter.

#### D. Executive Order 13175

This proposed rule was analyzed in accordance with the principles and criteria contained in Executive Order 13175 (“Consultation and Coordination with Indian Tribal Governments”). Because this proposed rule does not have Tribal implications, does not impose substantial direct compliance costs, and is required by statute, the funding and consultation requirements of Executive Order 13175 do not apply.

#### E. Regulatory Flexibility Act, Executive Order 13272, and DOT Procedures and Policies

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 proposed rule facilitates the transportation of hazardous materials in international commerce by providing consistency with international standards. This proposed rule applies to offerors and carriers of hazardous materials, some of whom are small entities, such as chemical manufacturers, users and suppliers, packaging manufacturers, distributors

and training companies. As discussed above, under *Executive Order 12866*, the majority of amendments in this proposed 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.

Many companies will realize economic benefits as a result of these amendments. Additionally, the changes effected by this final rule will relieve U.S. companies, including small entities competing in foreign markets, from the burden of complying with a dual system of regulations. Therefore, I certify that these amendments will not, if promulgated, have a significant economic impact on a substantial number of small entities.

This proposed rule has been developed in accordance with Executive Order 13272 (“Proper Consideration of Small Entities in Agency Rulemaking”) and DOT’s procedures and policies to promote compliance with the Regulatory Flexibility Act to ensure that potential impacts of draft rules on small entities are properly considered.

#### F. Paperwork Reduction Act

PHMSA currently has approved information collections under Office of Management and Budget (OMB) Control Number 2137–0034, “Hazardous Materials Shipping Papers and Emergency Response Information,” with an expiration date of May 31, 2011, and OMB Control Number 2137–0557, “Approvals for Hazardous Materials,”

with an expiration date of June 30, 2011. This NPRM may result in an decrease in the annual burden and costs of OMB Control Number 2137–0034 due to proposed amendments to the exceptions for shipping paper requirements for limited quantities of Class 3, Division 4.1, Division 4.2, Division 4.3, Division 5.1, Division 5.2, Division 6.1, Class 8, and Class 9 materials for those limited quantities that are defined as consumer commodities. This NPRM may result in an increase in the annual burden and costs of OMB Control Number 2137–0557 due to proposed amendments to the classification criteria for eight Division 1.4 explosive articles to add the Type 6(d) test as prescribed in the 5th Revised Edition of the UN Manual of Tests and Criteria.

Under the Paperwork Reduction Act of 1995, no person is required to respond to an information collection unless it has been approved by OMB and displays a valid OMB control number. Section 1320.8(d), title 5, Code of Federal Regulations requires that PHMSA provide interested members of the public and affected agencies an opportunity to comment on information and recordkeeping requests.

This notice identifies revised information collection requests that PHMSA will submit to OMB for approval based on the requirements in this proposed rule. PHMSA has developed burden estimates to reflect changes in this proposed rule, and estimates the information collection and recordkeeping burden as proposed in this rule to be as follows:

OMB Control No.:	2137–0034
Annual Decrease in Number of Respondents .....	75,000,000
Annual Decrease in Annual Number of Responses .....	75,000,000
Annual Decrease in Annual Burden Hours .....	1,875,000
Annual Decrease in Annual Burden Costs .....	\$1,875,000.00
OMB Control No.:	2137–0557
Annual Increase in Number of Respondents .....	465
Annual Increase in Annual Number of Responses .....	465
Annual Increase in Annual Burden Hours .....	2,325
Annual Increase in Annual Burden Costs .....	\$58,125

PHMSA specifically requests comments on the information collection and recordkeeping burdens associated with developing, implementing, and maintaining these requirements for approval under this proposed rule. Requests for a copy of this information collection should be directed to Steven Andrews or T. Glenn Foster, Office of Hazardous Materials Standards (PHH–11), Pipeline and Hazardous Materials Safety Administration, 1200 New Jersey

Avenue, SE., Washington, DC 20590–0001, Telephone (202) 366–8553.

Address written comments to the Dockets Unit as identified in the **ADDRESSES** section of this rulemaking. We must receive comments regarding information collection burdens prior to the close of the comment period identified in the **DATES** section of this rulemaking. In addition, you may submit comments specifically related to the information collection burden to the

PHMSA Desk Officer, Office of Management and Budget, at fax number 202–395–6974. If these proposed requirements are adopted in a final rule, PHMSA will submit the revised information collection and recordkeeping requirements to OMB for approval.

#### G. 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 contained in the heading of this document can be used to cross-reference this action with the Unified Agenda.

#### *H. Unfunded Mandates Reform Act*

This proposed rule does not impose unfunded mandates under the Unfunded Mandates Reform Act of 1995. It does not result in costs of \$141.3 million or more, adjusted for inflation, to either State, local or Tribal governments, in the aggregate, or to the private sector in any one year, and is the least burdensome alternative that achieves the objective of the rule.

#### *I. Environmental Assessment*

The National Environmental Policy Act, 42 U.S.C. 4321–4375, requires that Federal agencies analyze proposed actions to determine whether the action will have a significant impact on the human environment. The Council on Environmental Quality (CEQ) regulations order Federal agencies to conduct an environmental review considering (1) the need for the proposed action, (2) alternatives to the proposed action, (3) probable environmental impacts of the proposed action and alternatives, and (4) the agencies and persons consulted during the consideration process. 40 CFR 1508.9(b).

#### *1. Purpose and Need*

PHMSA is proposing to amend the Hazardous Materials Regulations to maintain alignment with international standards by incorporating various amendments, including changes to proper shipping names, hazard classes, packing groups, special provisions, packaging authorizations, air transport quantity limitations, and vessel stowage requirements. These revisions are necessary to harmonize the Hazardous Materials Regulations with recent changes to the International Maritime Dangerous Goods Code, the International Civil Aviation Organization's Technical Instructions for the Transport of Dangerous Goods by Air, and the United Nations Recommendations on the Transport of Dangerous Goods. The amendments are intended to enhance the safety of international hazardous materials transportation through better understanding of the regulations, an increased level of industry compliance, the smooth flow of hazardous materials from their points of origin to their points of destination, and effective emergency response in the event of a hazardous materials incident. Under Alternative 3, we would harmonize the HMR with international standards to the extent consistent with U.S. safety and economic goals.

Alternative 3 is the only alternative that addresses, in all respects, the purpose of this regulatory action, which

emergency response in the event of a hazardous materials incident.

The HMR regulate materials that meet the definition of a marine pollutant in all modes of transportation. The intended effect is to increase the level of safety associated with the transportation of substances hazardous to the marine environment by way of improved communication of their presence in transportation and establishing appropriate requirements for their packaging. The HMR uses a list based system designed to help shippers determine if a material meets the definition of a marine pollutant. Recently, the IMO adopted a criteria based system for identification of materials hazardous to the marine environment based on the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

#### *2. Alternatives*

In developing this proposed rule, we considered three alternatives:

- (1) Do nothing.
- (2) Adopt the international standards in their entirety.

(3) Adopt most of the international standards, with certain modifications based on safety or economic considerations.

##### *Alternative 1:*

Because our goal is to facilitate uniformity, compliance, commerce and safety in the transportation of hazardous materials, we rejected this alternative.

##### *Alternative 2:*

By adopting the international standards in their entirety, PHMSA could potentially adopt provisions that, in our view, do not provide an adequate safety level. Further, because we provide for domestic exceptions and extended compliance periods to minimize the potential economic impact of any revisions on the regulated community, this alternative was also rejected.

##### *Alternative 3:*

Consistency between U.S. and international regulations helps to assure the safety of international hazardous materials transportation through better understanding of the regulations, an increased level of industry compliance, the smooth flow of hazardous materials from their points of origin to their points of destination, and effective emergency response in the event of a hazardous materials incident. Under Alternative 3, we would harmonize the HMR with international standards to the extent consistent with U.S. safety and economic goals.

is to facilitate the safe and efficient transportation of hazardous materials in international commerce. These actions will provide the greatest possible harmonization with international requirements without posing an undue increased cost burden on industry. For these reasons, alternative 3 is our recommended alternative.

#### *3. Analysis of Environmental Impacts*

Hazardous materials are transported by aircraft, vessel, rail, and highway. The potential for environmental damage or contamination exists when packages of hazardous materials are involved in accidents or en route incidents resulting from cargo shifts, valve failures, package failures, or loading, unloading, or handling problems. The ecosystems that could be affected by a release include air, water, soil, and ecological resources (for example, wildlife habitats). The adverse environmental impacts associated with releases of most hazardous materials are short-term impacts that can be greatly reduced or eliminated through prompt clean-up of the accident scene. Most hazardous materials are not transported in quantities sufficient to cause significant, long-term environmental damage if they are released.

The hazardous material regulatory system is a risk-management system that is prevention-oriented and focused on identifying hazards and reducing the probability and quantity of a hazardous material release. Amending the Hazardous Materials Regulations to maintain alignment with international standards enhances the safe transportation of hazardous materials in domestic and international commerce. When considering the adoption of international standards under the HMR, we review and consider each amendment on its own merit and assess their impact on transportation safety and the environment. It is our preliminary conclusion that the proposals being made in this notice will have no adverse affect on the environment we welcome public comment on the matter.

#### *4. Consultations and Public Comment*

On June 20, 2007, November 27, 2007, June 18, 2008, and November 19, 2008, PHMSA hosted public meetings with public and private stakeholders to discuss draft U.S. positions on the United Nation's Sub-Committee of Experts on the Transport of Dangerous Goods (UNSCOE) proposals for the Sixteenth revised edition of the UN Recommendations on the Transport of Dangerous Goods Model Regulations. In addition, PHMSA and the U.S. Coast

Guard hosted a public meeting on September 17, 2008, and hosted a second meeting on September 10, 2009, to discuss amendments to the IMDG Code. A public meeting was held on September 29, 2009 to discuss amendments to the ICAO TI. During these public meetings, U.S. positions on proposed amendments to the UN Recommendations were considered and discussed. Positions were established based on input received during these meetings in conjunction with internal review, including thorough technical review.

We have identified a number of immediate and long-term actions that participants in the international community are taking or will take to enhance the safe transportation of hazardous materials. Through this integrated and cooperative approach, we believe we can be most successful in reducing incidents, enhancing safety, and protecting the public. We expect to receive comments from other agencies and affected members of the regulated and international communities during the comment period.

#### J. Privacy Act

Anyone is able to search the electronic form of any written communications and comments received into any of our dockets by the name of the individual submitting the document (or signing the document, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (65 FR 19477) or you may visit <http://www.dot.gov/privacy.html>.

#### K. International Trade Analysis

The Trade Agreements Act of 1979 (Pub. L. 96-39), as amended by the Uruguay Round Agreements Act (Pub. L. 103-465), prohibits Federal agencies from establishing any standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. For purposes of these requirements, Federal agencies may participate in the establishment of international standards, so long as the standards have a legitimate domestic objective, such as providing for safety, and do not operate to exclude imports that meet this objective. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards. PHMSA participates in the establishment of international standards in order to protect the safety of the American public, and we have assessed the effects

of the proposed rule to ensure that it does not exclude imports that meet this objective. Accordingly, this rulemaking is consistent with PHMSA's obligations under the Trade Agreement Act, as amended.

#### 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, Incorporation by reference, Labeling, Markings, Packaging and containers, Reporting and recordkeeping requirements.

##### 49 CFR Part 173

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

##### 49 CFR Part 178

Hazardous materials transportation, Incorporation by reference, Motor vehicle safety, Packaging and containers, 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, PHMSA proposes to amend 49 CFR chapter I 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. 5101–5128, 44701; 49 CFR 1.45 and 1.53; Pub. L. 101–410 section 4 (28 U.S.C. 2461 note); Pub. L. 104–134 section 31001.

2. In § 171.7, in the paragraph (a)(3) table, the following changes are made:

a. Under the entry "American Society for Testing and Materials (ASTM)," the entries "ASTM D56–05", "ASTM D86–07a", "ASTM D93–08", "ASTM D1078–05", "ASTM D3278–96(2004)e1", and "ASTM D3828–07a" are added in appropriate numerical order;

b. Under the entry "International Civil Aviation Organization (ICAO)," the entry "Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Technical Instructions)" is revised;

c. Under the entry "International Maritime Organization (IMO)" the entries "International Maritime Dangerous Goods Code (IMDG Code)," and "International Convention for the Safety of Life at Sea (SOLAS)" are revised;

d. Under the entry "International Organization for Standardization (ISO)," the entries "ISO 2592—1973(E)", "ISO 10297:1999" and "ISO 10461:2005" are revised; and the entries "ISO 1516:2002", "ISO 1523:2002", "ISO 2719:2002", "ISO 3405:2000", "ISO 3679:2004", "ISO 3680:2004", "ISO 3924:1999", "ISO 4626:1980", "ISO 4706:2008", "ISO 10692–2:2001", "ISO 13736:2008", "ISO 16111:2008", "ISO 18172–1:2007" and "ISO 20703" are added in numerical order;

e. Under the entry "Organization for Economic Cooperation and Development (OECD)", the entries "OECD Guideline for the Testing of Chemicals, Number 430, 'In Vitro Skin Corrosion: Transcutaneous Electrical Resistance Test (TER) (2004)", "OECD Guideline for the Testing of Chemicals, Number 431, 'In Vitro Skin Corrosion: Human Skin Model Test (2004)", and "OECD Guideline for the Testing of Chemicals, Number 435, 'In Vitro Membrane Barrier Test Method for Skin Corrosion (2006)" are added in numerical order, and the entry "OECD Guideline for the Testing of Chemicals, Number 404, 'Acute Dermal Irritation/Corrosion (1992)" is revised;

f. Under the entry for "Transport Canada," the entry "Transportation of Dangerous Goods Regulations" is revised; and

g. Under the entry "United Nations," the entry "UN Recommendations on the Transport of Dangerous Goods" is revised.

The additions and revisions read as follows:

#### § 171.7 Reference material.

- (a) \* \* \*
- (3) \* \* \*

Source and name of material	49 CFR reference
<i>American Society for Testing and Materials (ASTM)</i>	
ASTM D56–05, Standard test method for flash point by tag closed cup tester .....	173.120.
ASTM D86–07a, Standard test method for distillation of petroleum products at atmospheric pressure .....	173.120.
ASTM D93–08, Standard test methods for flash point by Pensky-Martens closed cup tester .....	173.120.
ASTM D1078–05, Standard test method for distillation range of volatile organic liquids .....	173.120.
ASTM D3278–96(2004) e1, Standard test methods for flash point of liquids by small scale closed-cup apparatus.	173.120.
ASTM D3828–07a, Standard test methods for flash point by small scale closed tester .....	173.120.
<i>International Civil Aviation Organization (ICAO)</i>	
Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Technical Instructions), 2011–2012 Edition.	171.8; 171.22; 171.23; 171.24; 172.202; 172.401; 172.512; 172.602; 173.56; 173.320; 175.33; 178.3.
<i>International Maritime Organization (IMO)</i>	
International Convention for the Safety of Life at Sea (SOLAS), Chapter II–2/Regulation 19, 2009 .....	176.63, 176.84.
International Maritime Dangerous Goods Code (IMDG Code), 2010 Edition, Incorporating Amendment 35–10 (English Edition), Volumes 1 and 2.	171.22; 171.23; 171.25; 172.101; Appendix B; 172.202; 172.401; 172.502; 172.602; 173.21; 173.56; 176.2; 176.5; 176.11; 176.27; 176.30; 176.84; 178.3.
<i>International Organization for Standardization</i>	
ISO 1516:2002 Determination of flash/no flash—Closed cup equilibrium method .....	173.120.
ISO 1523:2002 Determination of flash point—Closed cup equilibrium method .....	173.120.
ISO 2592:2000 Petroleum products—Determination of flash and fire points—Cleveland open cup method	173.120.
ISO 2719:2002 Determination of flash point—Pensky-Martens closed cup method .....	173.120.
ISO 3405:2000 Petroleum products—Determination of distillation characteristics at atmospheric pressure	173.121.
ISO 3679:2004 Determination of flash point—Rapid equilibrium closed cup method .....	173.120.
ISO 3680:2004 Determination of flash/no flash—Rapid equilibrium closed cup method .....	173.120.
ISO 3924:1999 Petroleum products—Determination of boiling range distribution—Gas chromatography method.	173.121.
ISO 4626:1980 Volatile organic liquids—Determination of boiling range of organic solvents used as raw materials.	173.121.
ISO 4706, Gas cylinders—Refillable welded steel cylinders—Test pressure 60 bar and below, First edition, 2008.	178.71.
ISO 10297, Gas cylinders—Refillable gas cylinder valves Specification and type testing, Second edition, 2006, (E).	173.301b, 178.71.
ISO 10461, Gas cylinders—Seamless aluminum-alloy gas cylinders Periodic inspection and testing, Second edition, February 2005, (E), and Addendum 1, (2006).	180.207.
ISO 10692–2:2001 Gas cylinders—Gas cylinder valve connections for use in the micro-electronics industry—Part 2: Specification and type testing for valve to cylinder connections”.	173.40.
ISO 13736:2008 Determination of flash point—Abel closed-cup method .....	173.120.
ISO 16111:2008 Transportable gas storage devices—Hydrogen absorbed in reversible metal hydride .....	173.311, 178.71.
ISO 18172–1, Gas cylinders—Refillable welded stainless steel cylinders—Part 1: Test pressure 6 MPa and below, First edition, 2007.	178.71.
ISO 20703, Gas cylinders—Refillable welded aluminum-alloy cylinders—Design, construction and testing, First edition, 2006.	178.71.

Source and name of material	49 CFR reference
*	*
<i>Organization for Economic Cooperation and Development (OECD)</i>	
OECD Guideline for the Testing of Chemicals, Number 404, "Acute Dermal Irritation/Corrosion" (2002) .....	173.137.
OECD Guideline for the Testing of Chemicals, Number 430, "In Vitro Skin Corrosion: Transcutaneous Electrical Resistance Test (TER)" (2004).	173.137.
OECD Guideline for the Testing of Chemicals, Number 431, "In Vitro Skin Corrosion: Human Skin Model Test" (2004).	173.137.
OECD Guideline for the Testing of Chemicals, Number 435, "In Vitro Membrane Barrier Test Method for Skin Corrosion" (2006).	173.137.
*	*
<i>Transport Canada</i>	
*	*
Transportation of Dangerous Goods Regulations (Transport Canada TDG Regulations), August 2001 including Clear Language Amendments SOR 2001-286, Amendment 1 (SOR/2002-306) August 8, 2002; Amendment 2 (SOR/2003-273) July 24, 2003; Amendment 3 (SOR/2003-400) December 3, 2003; Amendment 4 (SOR/2005-216) July 13, 2005; Amendment 5 (SOR/2005-279) September 21, 2005; subsection 4.18(5) of Amendment 6 (SOR/2008-34) February 7, 2008; Amendment 6 (SOR/2008-34) February 7, 2008; and Amendment 7 (SOR/2007-179) August 22, 2007.	171.12; 171.22; 171.23; 172.401; 172.502; 172.519; 172.602; 173.31; 173.32; 173.33.
*	*
<i>United Nations</i>	
*	*
UN Recommendations on the Transport of Dangerous Goods, Sixteenth revised edition (2009) Volumes I and II.	171.12; 171.22; 171.23; 172.202; 172.401; 172.502; 173.22; 173.24; 173.24b; 173.40; 173.56; 173.192; 173.197; 173.302b; 173.304b; 178.75; 178.274; 178.801.
*	*

3. In § 171.8, the definitions for "Metal hydride storage system" and "Open cryogenic receptacle" are added and the definition for "Oxidizing gas" is revised to read as follows:

**§ 171.8 Definitions and abbreviations.**

\* \* \* \* \*

*Metal hydride storage system* means a single complete hydrogen storage system that includes a receptacle, metal hydride, pressure relief device, shut-off valve, service equipment and internal components used for the transportation of hydrogen only.

\* \* \* \* \*

*Open cryogenic receptacle* means a transportable thermally insulated receptacle for refrigerated liquefied gases maintained at atmospheric pressure by continuous venting of the refrigerated gas.

\* \* \* \* \*

*Oxidizing gas* means a gas that may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does. Specifically, this means a pure gas or

gas mixture with an oxidizing power greater than 23.5% as determined by a method specified in ISO 10156:1996 or 10156-2:2005 (IBR, *see* § 171.7 of this subchapter) (*see also* § 173.115(k)).

\* \* \* \* \*

4. In § 171.23, paragraph (b)(9) is revised to read as follows: § 171.23 Requirements for specific materials and packagings transported under the ICAO Technical Instructions, IMDG Code, Transport Canada TDG Regulations, or the IAEA Regulations.

\* \* \* \* \*

(b) \* \* \*

(9) *Poisonous materials, Division 6.1.* Division 6.1 hazardous materials transported by aircraft as limited quantities are not excepted from labeling.

\* \* \* \* \*

5. In § 171.25, the first sentence in paragraph (b)(1) is revised, a new paragraph (b)(4) is added, and paragraphs (c)(5) and (d)(3) are removed.

The revision and addition read as follows:

**§ 171.25 Additional requirements for the use of the IMDG Code.**

\* \* \* \* \*

(b) \* \* \*

(1) Unless specified otherwise in this subchapter, a shipment must conform to the requirements in part 176 of this subchapter. \* \* \*

\* \* \*

(4) Articles consigned under UN3166 and UN3171 (*e.g.*, Engines, internal combustion, *etc.*, Vehicles, *etc.* and Battery-powered equipment) may be prepared in accordance with the IMDG Code or this subchapter.

\* \* \* \* \*

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

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

**Authority:** 49 U.S.C. 5101–5128; 44701; 49 CFR 1.53.

7. In § 172.101, the following amendments are made:

- a. A new paragraph (c)(10)(iv) is added.
- b. Paragraph (e) is amended by adding a new sentence at the end of the paragraph; and
- c. The Hazardous Materials Table is amended by removing, adding and revising entries, in the appropriate alphabetical sequence.

The revisions, removals and additions read as follows:

**§ 172.101 Purpose and use of hazardous materials table.**

\* \* \* \* \*

(c) \* \* \*

(10) \* \* \*

(iv) A mixture or solution not identified in the Table specifically by name, comprised of a single predominant hazardous material and traces of one or more hazardous and non-hazardous materials not affecting the classification of the predominant hazardous material must be described

using an appropriate shipping description for the predominant hazardous material.

\* \* \* \* \*

(e) \* \* \* Those preceded by the letters "ID" are associated with proper shipping names considered appropriate for air transportation only and recognized by the ICAO Technical Instructions (IBR, *see* § 171.7 of this subchapter).

\* \* \* \* \*

## § 172.101 HAZARDOUS MATERIALS TABLE

Symbol	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)
[REMOVE]													
Detonator, assemblies, non-electric, for blasting.	1.4S	UN0500	*	II	1.4S	*	*	*	63(f), 63(g)	62	None .....	25 kg .....	100 kg .....
Engines, internal combustion, flammable gases powered.	9	UN3166	*	9	*	135	*	220	220 .....	220 .....	220 .....	Forbidden	No limit .....
Engines, internal combustion, flammable liquid powered.	9	UN3166	*	9	*	135	*	220	220 .....	220 .....	220 .....	No limit .....	No limit .....
Formaldehyde, solutions, flammable.	3	UN1198	*	III	3, 8	*	B1, IB3, T4, TP1 .....	150	203 .....	242 .....	5 L .....	60 L .....	A .....
Formaldehyde, solutions, with not less than 25 percent formaldehyde.	8	UN2209	*	III	8	*	IB3, T4, TP1 .....	154	203 .....	241 .....	5 L .....	60 L .....	A .....
1-Hydroxybenzotriazole, anhydrous, wetted with not less than 20 percent water, by mass.	4.1	UN3474	*	I	4.1	*	162, N90 .....	None .....	211 .....	*	0.5 kg .....	0.5 kg .....	D .....
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 .....
Nitric acid other than red fuming, with less than 65 percent nitric acid.	8	UN2031	*	II	8	*	A6, B2, B47, B53, IB2, IP15, T8, TP2.	None .....	158 .....	242 .....	Forbidden	30 L .....	D .....
Nitric acid other than red fuming, with not more than 70 percent nitric acid.	8	UN2031	*	II	8	*	A6, B2, B47, B53, IB2, T8, TP2.	None .....	158 .....	242 .....	Forbidden	30 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)
	Tars, liquid including road asphalt and oils, bitumen and cut backs.	*	3 UN1999 ...	*	*	*	149, B13, IB2, T3, TP3, TP29.	150 .....	203 .....	242 .....	60 L .....	220 L .....	A.
	Trinitro-meta-cresol ....	*	1.1D UN0216 ...	*	*	*	1.1D .....	1.1D .....	None .....	*	*	Forbidden	10 .....
	Vehicle, flammable gas powered.	*	9 UN3166 ...	*	*	*	9 .....	135 .....	220 .....	*	*	No limit ....	A.
	Vehicle, flammable liquid powered.	*	9 UN3166 ...	*	*	*	9 .....	135 .....	220 .....	220 .....	No limit ....	No limit ....	A.
	[ADD]												
	Alkali metal dispersions, flammable or Alkaline earth metal dispersions, flammable.	*	4.3 UN3482 ...	*	*	*	4.3, 3 .....	A2, A3, A7 .....	None .....	201 .....	244 .....	Forbidden	1 L .....
		*		*	*	*			*	*	*		52.
	W .....	Batteries, nickel-metal hydride.	*	9 UN3496 ...	*	*	9 .....	130, 340 .....	*	*	*		A .....
	Calcium hypochlorite, dry, corrosive or Calcium hypochlorite mixtures, dry, corrosive with more than 39% available chlorine (8.8% available oxygen).	*	5.1 UN3485 ...	*	*	*	5.1, 8 .....	165, 166, A7, A9, IB8, IP2, IP4, IP13, N34, W9.	152 .....	212 .....	*	*	D .....
		*		*	*	*					*		4, 48, 52, 56, 58, 69, 142.
	Calcium hypochlorite, hydrated, corrosive or Calcium hypochlorite mixtures, dry, corrosive with less than 5.5% but not more than 16% water.	*	5.1 UN3487 ...	*	*	*	5.1, 8 .....	165, IB8, IP2, IP4, IP13, W9.	152 .....	212 .....	240 .....	*	D .....
		*		*	*	*					*		4, 48, 52, 56, 58, 69, 142.



## § 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				
							(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)		
+ .....	Motor fuel anti-knock mixtures, flammable.	6.1	UN3483	*	*	*	*	*	*	*	*	*	*		
		*	8	UN2031	*	*	*	*	*	*	*	*	*		
	Nitric acid other than red fuming, with more than 20 percent and less than 65 percent nitric acid.	*	*	*	*	*	A6, B2, B47, B53, IB2, IP15, T8, TP2.	*	*	*	*	*	*		
		*	8	UN2031	*	*	8, 5.1	*	A3, B47, B53, T10, TP2, TP13.	*	*	*	*		
	Nitric acid other than red fuming, with more than 70 percent nitric acid.	*	*	*	*	*	*	*	*	*	*	*	*		
I .....	Petroleum sour crude oil, flammable, toxic.	3	UN3494	*	*	3, 6.1	343, T14, TP2, TP13 ..	None .....	201 .....	243 .....	1 L .....	*	30 L .....	D .....	40.
		II	.....	*	*	3, 6.1	343, IB2, T7, TP2 .....	150 .....	202 .....	243 .....	5 L .....	*	60 L .....	D .....	40.
	Tars, liquid including road oils and cut-back bitumens.	3	UN1999	*	*	3, 6.1	343, IB3, T4, TP1 .....	150 .....	203 .....	242 .....	60 L .....	*	220 L .....	C .....	40.
		III	.....	*	*	3	149, B13, IB2, T3, TP3, TP29.	150 .....	202 .....	242 .....	5 L .....	*	60 L .....	B.	40.
G .....	Toxic by inhalation liquid, corrosive, flammable, n.o.s. with an inhalation toxicity lower than or equal to 200 $ml/m^3$ and saturated vapor concentration greater than or equal to 500 $LC50$ .	6.1	UN3492	*	*	6.1, 8, 3 ..	1, B9, B14, B30, B72, T22, TP2, TP13, TP27, TP38, TP44.	None .....	226 .....	244 .....	Forbidden	*	Forbidden	D .....	40, 125.
G .....	Toxic by inhalation liquid, corrosive, flammable, n.o.s. with an inhalation toxicity lower than or equal to 1,000 $ml/m^3$ and saturated vapor concentration greater than or equal to 10 $LC50$ .	6.1	UN3493	*	*	6.1, 8, 3 ..	2, B9, B14, B32, B74, T20, TP2, TP13, TP27, TP38, TP45.	None .....	227 .....	244 .....	Forbidden	*	Forbidden	D .....	40, 125.



## § 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	(8A)	(8B)	(8C)	(9A)	(9B)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(9C)	(10A)	(10B)
			*	*	*	*	*	*	*	*	*	*	*	*
	Alcohols, n.o.s. ....	3	UN1987 ...	1	3	172, T11, TP1, TP8, TP27.	4b	201	243	1 L	30 L	30 L	E.	
		II				172, IB2, T7, TP1, TP8, TP28.	4b, 150	202	242	5 L	60 L	60 L	B.	
		III				172, BI, IB3, T4, TP1, TP29.	4b, 150	203	242	60 L	220 L	220 L	A.	
G .....	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.	
G .....	Antimony compounds, inorganic, solid, n.o.s.	6.1	UN1549 ...	III	6.1	35, IB8, IP3, T1, TP33	153	*	213	240	100 kg	200 kg	A.	
			*	*	*	*	*	*	*	*	*	*	*	
	Argon, refrigerated liquid (cryogenic liquid).	2.2	UN1951 ...		2.2	T75, TP5	*	320	316	318	50 kg	500 kg	D.	
G .....	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	T14, TP2, TP13, TP27	None	*	201	243	1 L	30 L	B .....	
			*	*	*	*	*	*	*	*	*	*	40, 137.	
		II	6.1			IB2, T11, TP2, TP13, TP27.	153	202	243	5 L	60 L	60 L	B .....	
		III	6.1			IB3, T7, TP2, TP28	153	203	241	60 L	220 L	220 L	B .....	
		I	6.1			IB7, IP1, T6, TP33	None	201	242	5 kg	50 kg	50 kg	A .....	
G .....	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 ...										40, 137.	
			*	*	*	*	*	*	*	*	*	*		
		II	6.1			IB8, IP2, IP4, T3, TP33	153	212	242	25 kg	100 kg	100 kg	A .....	
		III	6.1			IB8, IP3, T1, TP33	153	213	240	100 kg	200 kg	200 kg	A .....	
G .....	Barium compounds, n.o.s.	*	6.1	UN1564 ...	II	IB8, IP2, IP4, T3, TP33	153	*	212	242	25 kg	100 kg	A .....	
			*	*	*	IB8, IP3, T1, TP33	153	*	213	240	100 kg	200 kg	A .....	
G .....	Beryllium compounds, n.o.s.	*	6.1	UN1566 ...	II	IB8, IP2, IP4, T3, TP33	153	*	212	242	25 kg	100 kg	A .....	
			*	*	*	IB8, IP3, T1, TP33	153	*	213	240	100 kg	200 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)		
+	Chloroacetonitrile	.....	*	*	*	*	*	*	*	*	*	*	12, 40, 52.		
+	Chloropicrin	.....	6.1	UN1580	.....	6.1	.....	2, B7, B9, B14, B32, B46, T22, TP2, TP13, TP38, TP45.	None	.....	227	.....	244	.....	
G	Chloropicrin mixtures, n.o.s.	.....	6.1	UN1583	.....	6.1	.....	5	.....	None	.....	201	.....		
			II	.....	6.1	.....	IB2	.....	153	.....	202	.....	243	.....	
			III	.....	6.1	.....	IB3	.....	153	.....	203	.....	241	.....	
G	Chlorosilanes, toxic, corrosive, flammable, n.o.s.	.....	6.1	UN3362	.....	6.1, 3, 8	.....	T14, TP2, TP7, TP13, TP27.	None	.....	206	.....	243	.....	
G	Chlorosilanes, toxic, corrosive, n.o.s.	.....	6.1	UN3361	.....	6.1, 8	.....	T14, TP2, TP7, TP13, TP27.	None	.....	206	.....	243	.....	
G	Compressed gas, n.o.s	.....	2.2	UN1956	.....	2.2	.....	.....	.....	306, 307	.....	302, 305	.....		
			*	.....	6.1	3	.....	2, 175, B9, B14, B32, B77, T20, TP2, TP13, TP38, TP45.	None	.....	227	.....	244	.....	
G	Crotonaldehyde or Crotonaldehyde, stabilized.	.....	6.1	UN1143	.....	*	*	*	*	306, 307	.....	314, 315	.....		
			*	.....	6.1	3	.....	2, 175, B9, B14, B32, B77, T20, TP2, TP13, TP38, TP45.	None	.....	201	.....	243	.....	
G	Cyanide solutions, n.o.s.	.....	6.1	UN1935	.....	6.1	.....	B37, T14, TP2, TP13, TP27.	None	.....	202	.....	243	.....	
			II	.....	6.1	.....	IB2, T11, TP2, TP13, TP27.	153	.....	202	.....	243	.....	5 L	.....
			III	.....	6.1	.....	IB3, T7, TP2, TP13, TP28.	153	.....	203	.....	241	.....	60 L	.....
	Detonators, electric for blasting.	.....	1.4S	UN0456	.....	*	*	*	*	63(f), 63(g)	62	.....	None	.....	
	Detonators for ammunition.	.....	1.4S	UN0366	.....	*	*	*	*	347	.....	63(f), 63(g)	62	.....	
	Detonators, non-electric, for blasting.	.....	1.4S	UN0455	.....	*	*	*	*	347	.....	63(f), 63(g)	62	.....	

G .....	Elevated temperature liquid, 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.		
G .....	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 .....		
G .....	Elevated temperature liquid, 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.		
G .....	Environmentally hazardous substance, n.o.s.	*	9	UN3077	.....	III	.....	9	*	.....	8, 146, A112, B54, IB8, IP3, N20, T1, TP33,	*	155	.....	213	*	.....	240	.....	.....	.....	.....	No limit .....		
G .....	Ethanol or Ethyl alcohol or Ethanol solutions or Ethyl alcohol solutions.	*	3	UN1170	.....	II	.....	3	*	.....	24, IB2, T4, TP1 .....	*	4b, 150	.....	202	*	.....	242	.....	5L	*	.....	60 L .....	A.	
+ .....	Ethyl isocyanate .....	*	6.1	UN2481	.....	I	.....	6.1, 3	*	.....	24, B1, IB3, T2, TP1 .....	4b, 150	.....	203	*	.....	242	.....	60 L	.....	.....	220 L .....	A.		
G .....	Fluorosilicates, n.o.s. ....	*	6.1	UN2856	.....	III	.....	6.1	*	.....	IB8, IP3, T1, TP33 .....	153	.....	213	*	.....	240	.....	100 kg	.....	200 kg	.....	A .....		
G .....	Helium, refrigerated liquid (cryogenic liquid).	*	2.2	UN1963	.....	.....	.....	2.2	*	.....	T75, TP5 .....	*	320	.....	316	*	.....	318	.....	50 kg	.....	500 kg	.....	D.	
G .....	Hydrogen in a metal hydride storage system or Hydrogen in a metal hydride storage system contained in equipment or Hydrogen in a metal hydride storage system packed with equipment.	*	2.1	UN3468	.....	.....	.....	2.1	*	.....	167	*	.....	None	*	.....	311	.....	None	*	.....	ForbIDDEN	*	100 kg	D.
G .....	Hypochlorites, inorganic, n.o.s.	*	5.1	UN3212	.....	II	.....	5.1	*	.....	349, A9, IB8, IP2, IP4, T3, TP33,	*	152	.....	212	*	.....	240	.....	5 kg	*	.....	25 kg	.....	D .....
+ .....	Isobutyl isocyanate .....	*	6.1	UN2486	.....	I	.....	6.1, 3	*	.....	1, B9, B14, B30, T20, TP2, TP13, TP27,	*	None	*	.....	226	.....	244	.....	ForbIDDEN	*	ForbIDDEN	D .....	40.	
																								4, 48, 52, 56, 58, 69, 106, 116, 118.	

## § 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												
							(5)	(6)	(7)	(8A)	(8B)	Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	Location	Other (10B)					
(1)			*	3	UN1219	*	*	*	IB2, T4, TP1	*	4b, 150	*	202	*	242	*	5 L	.....	60 L	.....	B.		
	Isopropanol or isopropyl alcohol.		*	6.1	UN2483	*	*	*	1, B9, B14, B30, T20, TP2, TP13, TP38, TP44.	*	None	*	226	*	244	*	ForbIDDEN	ForbIDDEN	D	.....	40.		
			*	2.2	UN1970	*	*	2.2	T75, TP5	*	320	*	None	*	None	*	50 kg	.....	500 kg	.....	D.		
G	Isopropyl isocyanate ...		*	6.1	UN2291	*	*	6.1	138, IB8, IP3, T1, TP33.	*	153	*	213	*	240	*	100 kg	.....	200 kg	.....	A.		
G	Krypton, refrigerated liquid (cryogenic liquid).		*	3	UN3248	*	*	3, 6.1	IB2	*	150	*	202	*	243	*	1 L	.....	60 L	.....	B	.....	40.
G	Lead compounds, soluble, n.o.s.		*	6.1	UN1851	*	*	3, 6.1	IB3	*	150	*	203	*	242	*	60 L	.....	220 L	.....	A	.....	40.
G	Medicine, liquid, flammable, toxic, n.o.s.		*	6.1	UN3249	*	*	6.1	T3, TP33	*	153	*	203	*	243	*	5 L	.....	60 L	.....	C	.....	40.
G	Medicine, liquid, toxic, n.o.s.		*	6.1	UN2024	*	*	6.1	T3, TP33	*	153	*	212	*	241	*	60 L	.....	220 L	.....	C	.....	40.
G	Medicine, solid, toxic, n.o.s.		*	6.1	UN2025	*	*	6.1	IB2	*	153	*	213	*	240	*	25 kg	.....	100 kg	.....	C	.....	40.
G	Mercury compounds, liquid, n.o.s.		*	4.2	UN2881	*	*	4.2	IB3	*	153	*	202	*	243	*	1 L	.....	30 L	.....	B	.....	40.
G	Mercury compounds, solid, n.o.s.		*	4.2	UN1378	*	*	4.2	IB7, IP1, T6, TP33	*	153	*	203	*	241	*	60 L	.....	220 L	.....	B	.....	40.
G	Metal catalyst, dry .....		*	6.1	UN3079	*	*	6.1, 3	IB6, IP2, N34, T3, TP33.	*	153	*	212	*	240	*	25 kg	.....	100 kg	.....	A.	.....	40.
G	Metal catalyst, wetted with a visible excess of liquid.		*	6.1	UN3079	*	*	6.1, 3	IB8, IP3, N34, T1, TP33.	*	153	*	213	*	240	*	100 kg	.....	200 kg	.....	A.	.....	40.
	Methacrylonitrile, stabilized.		*						2, B9, B14, B32, T20, TP2, TP13, TP38, TP46.	*		*	227	*	244	*	ForbIDDEN	ForbIDDEN	D	.....	12, 40, 48.		

+ .....	Methoxymethyl isocyanate.	6.1 UN2605 .....	*	6.1, 3 .....	*	1, B9, B14, B30, T20, TP2, TP13, TP38, TP44.	None .....	*	226 .....	*	244 .....	*	Forbidden	D .....	40.	
	Methyl bromide and ethylene dibromide mixtures, liquid.	6.1 UN1647 .....	*	6.1 .....	*	2, B9, B14, B32, N65, T20, TP2, TP13, TP38, TP44.	None .....	*	227 .....	*	244 .....	*	Forbidden	D .....	40.	
	Methyl iodide .....	6.1 UN2644 .....	*	6.1 .....	*	2, B9, B14, B32, T20, TP2, TP13, TP38, TP45.	None .....	*	227 .....	*	244 .....	*	Forbidden	D .....	40.	
	Methyl isothiocyanate	6.1 UN2477 .....	*	6.1, 3 .....	*	2, B9, B14, B32, T20, TP2, TP13, TP38, TP45.	None .....	*	227 .....	*	244 .....	*	Forbidden	D .....	40.	
	Methyl orthosilicate .....	6.1 UN2606 .....	*	6.1, 3 .....	*	2, B9, B14, B32, T20, TP2, TP13, TP38, TP45.	None .....	*	227 .....	*	244 .....	*	Forbidden	D .....	40.	
+ .....	Motor fuel anti-knock mixtures.	6.1 UN1649 .....	*	6.1 .....	*	14, B9, B90, T14, TP2, TP13.	None .....	*	201 .....	*	244 .....	*	Forbidden	30 L .....	D .....	25, 40.
	Neon, refrigerated liquid (cryogenic liquid).	2.2 UN1913 .....	*	2.2 .....	*	T75, TP5 .....	320 .....	*	316 .....	*	None .....	*	500 kg .....	500 kg .....	D.	
	Nickel carbonyl .....	6.1 UN1259 .....	*	6.1, 3 .....	*	1 .....	*	*	None .....	*	198 .....	*	None .....	Forbidden	D .....	40, 78.
G .....	Nicotine compounds, liquid, n.o.s. or Nicotine preparations, liquid, n.o.s.	6.1 UN3144 .....	*	6.1 .....	*	A4 .....	None .....	*	201 .....	*	243 .....	*	1 L .....	30 L .....	B .....	40.
G .....	Nicotine compounds, solid, n.o.s. or Nicotine preparations, solid, n.o.s.	II UN1665 .....	II .....	6.1 .....	IB2, T11, TP2, TP27 .....	153 .....	202 .....	243 .....	5 L .....	60 L .....	60 L .....	50 kg .....	60 L .....	B .....	40.	
		III .....	III .....	6.1 .....	IB3, T7, TP1, TP28 .....	153 .....	203 .....	241 .....	60 L .....	220 L .....	220 L .....	50 kg .....	220 L .....	B .....	40.	
G .....	Nitrites, inorganic, aqueous solution, n.o.s.	5.1 UN3219 .....	*	6.1 .....	IB8, IP2, IP4, T3, TP33 .....	153 .....	212 .....	242 .....	5 kg .....	100 kg .....	100 kg .....	*	5 L .....	B .....	46, 56, 58, 133.	
		III .....	III .....	6.1 .....	IB8, IP3, T1, TP33 .....	153 .....	213 .....	240 .....	100 kg .....	200 kg .....	200 kg .....	*	1 L .....	A .....	46, 56, 58, 133.	
G .....	Nitrites, inorganic, n.o.s.	5.1 UN2627 .....	*	5.1 .....	IB1, T4, TP1 .....	152 .....	202 .....	242 .....	*	1 L .....	5 L .....	*	5 L .....	B .....	46, 56, 58, 133.	
					IB2, T4, TP1 .....	152 .....	203 .....	241 .....	25 L .....	30 L .....	30 L .....	*	2.5 L .....	A .....	46, 56, 58, 133.	
	Nitrogen, refrigerated liquid cryogenic liquid.	2.2 UN1977 .....	*	2.2 .....	345, 346, T75, TP5 .....	320 .....	*	316 .....	*	318 .....	*	*	500 kg .....	500 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	
							(7)	(8A)	(8B)	(8C)	(9A)	(9B)
(1)	(2)	(3)	(4)	(5)	(6)	*	*	*	*	*	*	*
	Nitrous oxide, refrigerated liquid.	2.2	UN2201	...	2.2, 5.1 ....	B6, T75, TP5, TP22, ...	None ....	304 ....	314, 315 ...	ForbIDDEN	ForbIDDEN	D .... 40.
G	Organometallic substance, liquid, pyrophoric.	4.2	UN3392	*	*	B11, T21, TP2, TP7, TP36.	None ....	181 ....	244 ....	ForbIDDEN	ForbIDDEN	D .... 78.
G	Organometallic substance, liquid, pyrophoric, water-reactive.	4.2	UN3394	1	4.2, 4.3 ....	B11, T21, TP2, TP7, TP36.	None ....	181 ....	244 ....	ForbIDDEN	ForbIDDEN	D .... 78.
G	Organometallic substance, liquid, water-reactive.	4.3	UN3398	1	4.3 ....	T13, TP2, TP7, TP36	None ....	201 ....	244 ....	ForbIDDEN	1 L ....	E .... 40, 52.
G	Organometallic substance, liquid, water-reactive, flammable.	4.3	UN3399	1	4.3, 3 ....	IB1, T7, TP2, TP36.	None ....	202 ....	243 ....	1 L ....	5 L ....	E .... 40, 52.
G	Organometallic substance, solid, pyrophoric.	4.2	UN3391	1	4.2 ....	IB2, T7, TP2, TP36.	None ....	203 ....	242 ....	5 L ....	60 L ....	E .... 40, 52.
G	Organometallic substance, solid, pyrophoric, water-reactive.	4.2	UN3393	1	4.2, 4.3 ....	T13, TP2, TP7, TP36	None ....	201 ....	244 ....	ForbIDDEN	1 L ....	D .... 40, 52.
G	Organometallic substance, solid, self-heating.	4.2	UN3400	1	4.2 ....	IB1, IP2, T7, TP2, TP7, TP36.	None ....	202 ....	243 ....	1 L ....	5 L ....	D .... 40, 52.
G	Organometallic substance, solid, water-reactive.	4.3	UN3395	1	4.2 ....	IB8, T1, TP33, TP36 ...	None ....	213 ....	242 ....	242 ....	25 kg ....	100 kg ....
G	Organometallic substance, solid, water-reactive, flammable.	4.3	UN3396	1	4.3 ....	IB4, T3, TP33, TP36 ...	None ....	211 ....	242 ....	242 ....	ForbIDDEN	ForbIDDEN
G	Organometallic substance, solid, water-reactive, self-heating.	4.3	UN3397	1	4.3, 4.1 ....	IB4, T3, TP33, TP36 ...	151 ....	212 ....	242 ....	15 kg ....	50 kg ....	40, 52.
	Oxygen, compressed ..	2.2	UN1072	...	2.2, 5.1 ....	IB6, T1, TP33, TP36 ...	151 ....	213 ....	241 ....	25 kg ....	100 kg ....	E .... 40, 52.
		*	*	*	*	110, A14 ....	*	*	*	*	150 kg ....	A.
		*	*	*	*	110, A14 ....	*	*	*	*	150 kg ....	A.
		*	*	*	*	110, A14 ....	*	*	*	*	150 kg ....	A.

G .....	Permanganates, inorganic, aqueous solution, n.o.s.	5.1 UN3214 ...	*	5.1 .....	*	26, 353, IB2, T4, TP1	152 .....	*	202 .....	*	242 .....	1 L .....	*	5 L .....	*	5 L .....	D .....	56, 58, 133, 138.		
G .....	Permanganates, inorganic, n.o.s.	5.1 UN1482 ...	II .....	5.1 .....	*	26, 353, A30, IB6, IP2, T3, TP33.	152 .....	*	212 .....	242 .....	5 kg .....	25 kg .....	25 kg .....	25 kg .....	D .....	56, 58, 138.				
		III .....	5.1 .....	*	26, 353, A30, IB8, IP3, T1, TP33.	152 .....	*	213 .....	240 .....	25 kg .....	100 kg .....	100 kg .....	D .....	56, 58, 138.						
	Pentaerythrite tetrinitrate or Pentaerythritol tetrinitrate or PETN, with not less than 7 percent wax by mass.	1.1D UN0411 ...	*	*	*	*	*	*	*	*	*	None .....	None .....	None .....	Forbidden	*	Forbidden	10.		
	Petroleum crude oil .....	*	3 UN1267 ...	*	1 .....	*	144, 357, T11, TP1, TP8.	150 .....	*	201 .....	243 .....	1 L .....	*	30 L .....	E.					
		II .....	*	3 .....	*	144, 357, IB2, T4, TP1, TP8.	150 .....	*	202 .....	242 .....	5 L .....	242 .....	5 L .....	60 L .....	B.					
		III .....	*	3 .....	*	144, 357, B1, IB3, T2, TP1.	150 .....	*	203 .....	242 .....	60 L .....	220 L .....	220 L .....	220 L .....	A.					
	Phenyl mercaptan .....	*	6.1 UN2337 ...	*	1 .....	*	2, B9, B14, B32, B77, T20, TP2, TP13, TP38, TP45.	None .....	*	227 .....	244 .....	*	*	Forbidden	D .....	40, 52.				
G .....	Phenylmercuric compounds, n.o.s.	6.1 UN2026 ...	I .....	6.1 .....	*	IB7, IP1, T6, TP33 .....	None .....	*	211 .....	242 .....	5 kg .....	5 kg .....	5 kg .....	50 kg .....	A.					
		II .....	*	6.1 .....	*	IB8, IP2, IP4, T3, TP33.	153 .....	*	212 .....	242 .....	25 kg .....	25 kg .....	25 kg .....	100 kg .....	A.					
		III .....	*	6.1 .....	*	IB8, IP3, T1, TP33 .....	153 .....	*	213 .....	240 .....	100 kg .....	100 kg .....	100 kg .....	200 kg .....	A.					
+ .....	Phosphorous oxychloride.	*	6.1 UN1810 ...	*	1 .....	*	2, B9, B14, B32, B77, N34, T20, TP2, TP13, TP38, TP45.	None .....	*	227 .....	244 .....	*	*	Forbidden	D .....	40.				
	Polyester resin kit .....	*	3 UN3269 ...	*	3 .....	*	40, 149 .....	*	165 .....	*	None .....	5 kg .....	*	5 kg .....	B.					
	Potassium nitrate .....	*	5.1 UN1486 ...	*	III .....	*	A1, A29, IB8, IP3, T1, TP33, WI.	*	*	213 .....	240 .....	*	*	25 kg .....	100 kg .....	A.				
	Powder, smokeless .....	*	1.4C UN0509 ...	*	...	*	1,4C .....	*	...	*	None .....	62 .....	*	*	None .....	25 kg .....	9.			
+ .....	n-Propyl isocyanate ...	*	6.1 UN2482 ...	*	1 .....	*	1, B9, B14, B30, T20, TP2, TP13, TP38, TP44.	*	*	226 .....	244 .....	*	*	Forbidden	D .....	40.				
G .....	Pyrophoric liquid, inorganic, n.o.s.	*	4.2 UN3194 ...	*	1 .....	*	1, B11, T22, TP2, TP7 .....	None .....	*	181 .....	244 .....	*	*	Forbidden	D .....	78.				
G .....	Pyrophoric liquids, organic, n.o.s.	4.2 UN2845 ...	II .....	4.2 .....	*	1B7, IP1, T6, TP33 .....	None .....	*	181 .....	244 .....	*	*	Forbidden	D .....	78.					
G .....	Selenates or Selenites (1)	*	6.1 UN2630 (4) (5)	*	6.1 (6) .....	*	IB7, IP1, T6, TP33 .....	None .....	*	211 (8A) .....	242 (8B) .....	5 kg (9A) .....	50 kg (9B) .....	E. (10A) .....	(10B)	(10A)				

## § 172.101 HAZARDOUS MATERIALS TABLE—Continued

Symbol	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		
							(5)	(6)	(7)	(8A)	(8B)	(8C)	(10A)
G .....	Selenium compound, liquid, n.o.s.	6.1	UN3440	*	*	*	T14, TP2, TP27 .....	None .....	201 .....	*	*	*	
G .....	Selenium compound, solid, n.o.s.	6.1	UN3283	II	6.1 .....	IB2, T11, TP2, TP27 .....	153 .....	202 .....	243 .....	5 L .....	60 L .....	B.	
G .....	Selenium compound, solid, n.o.s.	6.1	UN3283	III	6.1 .....	IB3, T7, TP1, TP28 .....	153 .....	203 .....	241 .....	60 L .....	220 L .....	A.	
G .....	Sodium nitrate .....	5.1	UN1498	II	6.1 .....	IB7, IP1, T6, TP33 .....	None .....	201 .....	242 .....	5 kg .....	50 kg .....	B.	
G .....	Sodium nitrate and potassium nitrate mixtures.	5.1	UN1499	III	6.1 .....	IB8, IP2, IP4, T3, TP33, IP3, T1, TP33 .....	153 .....	212 .....	242 .....	25 kg .....	100 kg .....	B.	
G .....	Sulfur chloride .....	6.1	UN1834	*	*	*	1, B6, B9, B10, B14, B30, B77, N34, T22, TP2, TP13, TP38, TP44.	None .....	226 .....	*	*	*	
G .....	Tellurium compound, solid, n.o.s.	6.1	UN3284	*	*	*	IB7, IP1, T6, TP33 .....	None .....	201 .....	242 .....	5 kg .....	50 kg .....	B.
G .....	Tetranitromethane .....	6.1	UN1510	*	*	*	IB8, IP2, IP4, T3, TP33, IP3, T1, TP33 .....	153 .....	212 .....	242 .....	25 kg .....	100 kg .....	B.
G .....	Thiophosgene .....	6.1	UN2474	*	*	*	2, B32, T20, TP2, TP13, TP38, TP44.	None .....	227 .....	None .....	*	*	
G .....	Titanium tetrachloride	6.1	UN1838	*	*	*	2, B7, B9, B14, B32, B77, T20, TP2, TP13, TP38, TP45.	None .....	227 .....	244 .....	Forbidden	Forbidden	D .....
G .....	Vanadium compound, solid, n.o.s.	6.1	UN3285	*	*	*	IB7, IP1, T6, TP33 .....	None .....	201 .....	242 .....	5 kg .....	50 kg .....	B.
G .....	Vanadium compound, solid, n.o.s.	6.1	UN3285	II	6.1 .....	IB8, IP2, IP4, T3, TP33, IP3, T1, TP33 .....	153 .....	212 .....	242 .....	25 kg .....	100 kg .....	B.	
G .....	Vanadium compound, solid, n.o.s.	6.1	UN3285	III	6.1 .....	IB8, IP3, T1, TP33 .....	153 .....	213 .....	240 .....	100 kg .....	200 kg .....	A.	

Xenon, refrigerated liquid (cryogenic liquids).	* 2.2 UN2591	*	*	2.2 .....	T75, TP5 .....	*	*	320 .....	None .....	*	50 kg .....	*	500 kg .....	D.
Zinc ammonium nitrite	* 5.1 UN1512	*	.....	5.1 .....	IB8, IP4, T3, TP33 .....	*	*	None .....	212 .....	*	5 kg .....	*	25 kg .....	E.

\* \* \* \* \*

9. In § 172.102, the following amendments are made:

a. In paragraph (c)(1), Special provisions 77 and 157 are removed; Special provisions 15, 40, 78, 110, 134, 135, 149, 167 and 198 are revised; and new Special provisions 340, 343, 345, 346, 347, 349, 350, 351, 352, 353, and 357 are added.

b. In paragraph (c)(2), Special provision A59 is revised and new Special provision A112 is added.

c. In paragraph (c)(4), Table 1—IB Codes (IBC Codes) is revised.

d. In paragraph (c)(8), new Special provision TP36 is added.

e. In paragraph (c)(9), new Special provision W1 is added.

The revisions and additions read as follows:

**§ 172.102 Special provisions.**

\* \* \* \* \*

(c) \* \* \*

(1) \* \* \*

*Code/Special Provisions*

\* \* \* \* \*

15 This entry applies to “Chemical kits” and “First aid kits” containing one or more compatible items of hazardous materials in boxes, cases, *etc.* that, for example, are used for medical, analytical, diagnostic, testing, or repair purposes. Kits that are carried on board transport vehicles for first aid or operating purposes are not subject to the requirements of this subchapter.

\* \* \* \* \*

40 Polyester resin kits consist of two components: A base material (Class 3, Packing Group II or III) and an activator (organic peroxide), each separately packed in an inner packaging. The organic peroxide must be type D, E, or F, not requiring temperature control. The components may be placed in the same outer packaging provided they will not interact dangerously in the event of leakage. The Packing Group assigned will be II or III, according to the classification criteria for Class 3, applied to the base material.

Additionally, unless otherwise excepted in this subchapter, polyester resin kits must be packaged in specification combination packagings based on the performance level of the base material contained within the kit.

\* \* \* \* \*

78 This entry may not be used to describe compressed air which contains more than 23.5 percent oxygen. Compressed air containing greater than 23.5 percent oxygen must be shipped using the description “Compressed gas, oxidizing, n.o.s., UN3156.”

\* \* \* \* \*

110 Fire extinguishers transported under UN1044 and Oxygen, compressed cylinders transported for emergency use under UN1072 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 cylinder. Oxygen cylinders with installed actuating cartridges as prepared for transportation must have an effective means of preventing inadvertent activation.

\* \* \* \* \*

134 This entry only applies to vehicles, machinery and equipment powered by wet batteries, sodium batteries, or lithium batteries that are transported with these batteries installed. Examples of such items are electrically-powered cars, lawn mowers, wheelchairs, and other mobility aids. Self-propelled vehicles or equipment that also contain an internal combustion engine must be consigned under the entry “Engine, internal combustion, flammable gas powered” or “Engine, internal combustion, flammable liquid powered” or “Vehicle, flammable gas powered” or “Vehicle, flammable liquid powered,” as appropriate. These entries include hybrid electric vehicles powered by both an internal combustion engine and batteries. Additionally, self-propelled vehicles or equipment that contain a fuel cell engine must be consigned under the entries “Engine, fuel cell, flammable gas powered” or “Engine, fuel cell, flammable liquid powered” or “Vehicle, fuel cell, flammable gas powered” or “Vehicle, fuel cell, flammable liquid powered,” as appropriate. These entries include hybrid electric vehicles powered by a fuel cell engine, an internal combustion engine, and batteries.

135 Internal combustion engines installed in a vehicle must be consigned under the entries “Vehicle, flammable gas powered” or “Vehicle, flammable liquid powered,” as appropriate. These entries include hybrid electric vehicles powered by both an internal combustion engine and wet, sodium or lithium batteries installed. If a fuel cell engine is installed in a vehicle, the vehicle must be consigned using the entries “Vehicle, fuel cell, flammable gas powered” or “Vehicle, fuel cell, flammable liquid powered,” as appropriate. These entries include hybrid electric vehicles powered by a fuel cell, an internal combustion engine, and wet, sodium or lithium batteries installed.

\* \* \* \* \*

149 Except for transportation by aircraft, when transported as a limited quantity or a consumer commodity, the maximum net capacity specified in § 173.150(b)(2) of this subchapter for inner packagings may be increased to 5 L (1.3 gallons).

\* \* \* \* \*

167 These storage systems must always be considered as containing hydrogen. A metal hydride storage system installed in or intended to be installed in a vehicle or equipment or in vehicle or equipment components must be approved for transport by the Associate Administrator. A copy of the approval must accompany each shipment.

\* \* \* \* \*

198 Nitrocellulose solutions containing not more than 20% nitrocellulose may be transported as paint, perfumery products, or printing ink, as applicable, provided the nitrocellulose contains no more 12.6% nitrogen (by dry mass). See UN1210, UN1263, UN1266, UN3066, UN3469, and UN3470.

\* \* \* \* \*

340 Except for nickel-metal hydride button cells or nickel-metal hydride cells or batteries packed with or contained in equipment (which must be transported in accordance with Special provision 130 for the transport of “Batteries, dry, sealed, n.o.s.” nickel-metal hydride batteries must be prepared and packaged for transport in a manner to prevent a dangerous evolution of heat, short circuits, and damage to terminals; and are subject to the incident reporting in accordance with § 171.16 of this subchapter if a fire, violent rupture, explosion or dangerous evolution of heat (*i.e.*, an amount of heat sufficient to be dangerous to packaging or personal safety to include charring of packaging, melting of packaging, scorching of packaging, or other evidence) occurs as a direct result of a nickel-metal hydride battery. When loaded in a cargo transport unit in a total quantity of 100 kg gross mass or more, nickel-metal hydride batteries are also subject to the shipping paper requirements of Subpart C of this Part, the manifest requirements of § 176.30 of this subchapter, and the vessel stowage requirements assigned to this entry in Column (10) of the § 172.101 hazardous materials table.

\* \* \* \* \*

343 This entry must be used for international transportation of petroleum crude oil containing hydrogen sulfide in sufficient concentration that vapors evolved from the crude oil presents an inhalation

hazard during the course of transportation. For domestic transportation, the entry "Petroleum crude oil, UN1267" may be used without consideration of a Division 6.1 subsidiary hazard classification. However, bulk packagings used to transport petroleum crude oil domestically are required to be marked in accordance with § 172.327 of this Part.

345 Nitrogen, refrigerated liquid *cryogenic liquid*, UN1977 transported in open cryogenic receptacles with a maximum capacity of 1 L are not subject to the requirements of this subchapter. The receptacles must be constructed with glass double walls having the space between the walls vacuum insulated and each receptacle must be transported in an outer packaging with sufficient cushioning and absorbent materials to protect the receptacle from damage.

346 Nitrogen, refrigerated liquid *cryogenic liquid*, UN1977 transported in accordance with the requirements for open cryogenic receptacles in § 173.320 are not subject to the requirements of this subchapter. The receptacle must contain no hazardous materials other than the liquid nitrogen which must be fully absorbed in a porous material in the receptacle.

347 Effective April 1, 2011, for transportation by aircraft this entry may only be used if the results of Test series 6(d) of Part I of the UN Manual of Tests and Criteria (IBR, see § 171.7 of this subchapter) have demonstrated that any hazardous effects from accidental functioning are confined to within the package. Effective January 1, 2014, for transportation domestically by highway or rail, this entry may only be used if the results of Test series 6(d) of Part I of the UN Manual of Tests and Criteria (IBR, see § 171.7 of this subchapter) have demonstrated that any hazardous effects from accidental functioning are confined to within the package.

\* \* \* \* \*

349 Hypochlorite mixed with an ammonium salt is forbidden for transport. An aqueous solution of hypochlorite (re: UN1791) is a Class 8 corrosive material.

350 Ammonium bromate, ammonium bromate aqueous solutions, and mixtures of a bromate with an ammonium salt is forbidden for transport.

351 Ammonium chlorate, ammonium chlorate aqueous solutions, and mixtures of a chlorate with an ammonium salt is forbidden for transport.

352 Ammonium chlorite, ammonium chlorite aqueous solutions,

and mixtures of a chlorite with an ammonium salt is forbidden for transport.

353 Ammonium permanganate, ammonium permanganate aqueous solutions, and mixtures of a permanganate with an ammonium salt are forbidden for transport.

357 For international transportation, petroleum crude oil containing hydrogen sulfide in sufficient concentration that vapors evolved from the crude oil can present an inhalation hazard may not be transported under this entry. Such crude oil must be transported under the entry "Petroleum sour crude oil, flammable, toxic, UN3494." For domestic transportation in bulk packagings, consideration for inclusion in Division 6.1 is not required. However, bulk packagings in domestic transportation that do emit hydrogen sulfide in sufficient concentration that vapors evolved from the crude oil can present an inhalation hazard must be marked as specified in § 172.327.

(2) \* \* \*

A59 Glass inner packagings (such as ampoules or capsules) intended only for use in sterilization devices, when containing less than 30 mL of ethylene oxide per inner packaging with not more than 300 mL per outer packaging, may be transported in accordance with § 173.4a of this subchapter, irrespective of § 173.4a(b) provided that:

a. After filling, each glass inner packaging must be determined to be leak-tight by placing the glass inner packaging in a hot water bath at a temperature and for a period of time sufficient to ensure that an internal pressure equal to the vapor pressure of ethylene oxide at 55 °C is achieved. Any glass inner packaging showing evidence of leakage, distortion or other defect under this test must not be transported under the terms of this special provision;

b. In addition to the packaging required in § 173.4a, each glass inner packaging must be placed in a sealed plastic bag compatible with ethylene oxide and capable of containing the contents in the event of breakage or leakage of the glass inner packaging; and

c. Each glass inner packaging is protected by a means of preventing puncture of the plastic bag (e.g., sleeves or cushioning) in the event of damage to the packaging (e.g., by crushing).

\* \* \* \* \*

A112 Notwithstanding the quantity limits shown in Column (9A) and (9B) for this entry, the following IBCs are authorized for transportation aboard passenger and cargo-only aircraft. Each IBC may not exceed a maximum net quantity of 1,000 kg:

a. Metal: 11A, 11B, 11N, 21A, 21B and 21N

b. Rigid plastics: 11H1, 11H2, 21H1 and 21H2

c. Composite with plastic inner receptacle: 11HZ1, 11HZ2, 21HZ1 and 21HZ2

d. Fiberboard: 11G

e. Wooden: 11C, 11D and 11F (with inner liners)

f. Flexible: 13H2, 13H3, 13H4, 13H5, 13L2, 13L3, 13L4, 13M1 and 13M2 (flexible IBCs must be sift-proof and water resistant or must be fitted with a sift-proof and water resistant liner).

(4) \* \* \*

TABLE 1—IB CODES (IBC CODES)

IBC code	Authorized IBCs
IB1 .....	<i>Authorized IBCs:</i> Metal (31A, 31B and 31N). <i>Additional Requirement:</i> 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.
IB2 .....	<i>Authorized IBCs:</i> Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). <i>Additional Requirement:</i> 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.
IB3 .....	<i>Authorized IBCs:</i> Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). <i>Additional Requirement:</i> 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, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672).
IB4 .....	<i>Authorized IBCs:</i> Metal (11A, 11B, 11N, 21A, 21B and 21N).
IB5 .....	<i>Authorized IBCs:</i> Metal (11A, 11B, 11N, 21A, 21B and 21N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 21HZ1 and 31HZ1).
IB6 .....	<i>Authorized IBCs:</i> Metal (11A, 11B, 11N, 21A, 21B and 21N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2). <i>Additional Requirement:</i> Composite IBCs 11HZ2 and 21HZ2 may not be used when the hazardous materials being transported may become liquid during transport.

TABLE 1—IB CODES (IBC CODES)—Continued

IBC code	Authorized IBCs
IB7 .....	<i>Authorized IBCs:</i> Metal (11A, 11B, 11N, 21A, 21B and 21N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2); Wooden (11C, 11D and 11F). <i>Additional Requirement:</i> Liners of wooden IBCs must be sift-proof.
IB8 .....	<i>Authorized IBCs:</i> Metal (11A, 11B, 11N, 21A, 21B and 21N); 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).
IB9 .....	IBCs are only authorized if approved by the Associate Administrator.

\* \* \* \* \*

(8) \* \* \*

*Code/Special Provisions*

\* \* \* \* \*

TP36 Portable tanks may be equipped with fusible elements in the vapor space of the portable tank.

\* \* \* \* \*

(9) \* \* \*

*Code/Special Provisions*

W1 When offered for transportation by vessel, this material is not subject to the provisions of this subchapter. The material must be accompanied by a certificate from an accredited laboratory stating that the product has been

sampled and tested according to the UN Manual of Tests and Criteria.

\* \* \* \* \*

10. In § 172.200, paragraph (b)(3) is revised to read as follows:

**§ 172.200 Applicability.**

\* \* \* \* \*

(b) \* \* \*

(3) A limited quantity unless the material is offered or intended for transportation by air or vessel or is a hazardous waste, a hazardous substance or a marine pollutant, and, until December 31, 2013, a limited quantity that conforms to the ORM-D reclassification and packaging requirements of this subchapter in effect on October 1, 2010 when offered for transportation by highway or rail.

\* \* \* \* \*

11. In § 172.203, paragraph (b) is revised to read as follows:

**§ 172.203 Additional description requirements.**

\* \* \* \* \*

(b) *Limited quantities.* When a shipping paper is required by this subchapter, the description for a material offered for transportation as “limited quantity,” as authorized by this subchapter, must include the words “Limited Quantity” or “Ltd Qty” following the basic description.

\* \* \* \* \*

12. In § 172.300, a new paragraph (c) is added to read as follows:

**§ 172.300 Applicability.**

\* \* \* \* \*

(c) Stocks of preprinted packagings marked prior to the effective date of a final rule may be continued in use, in the manner previously authorized, until depleted or for a one-year period, subsequent to the effective date of the marking amendment, whichever is less.

13. In § 172.312, paragraph (c)(5) is revised to read as follows:

**§ 172.312 Liquid hazardous materials in non-bulk packagings.**

\* \* \* \* \*

(c) \* \* \*

(5) A non-bulk package with hermetically sealed inner packagings not exceeding 500 mL each.

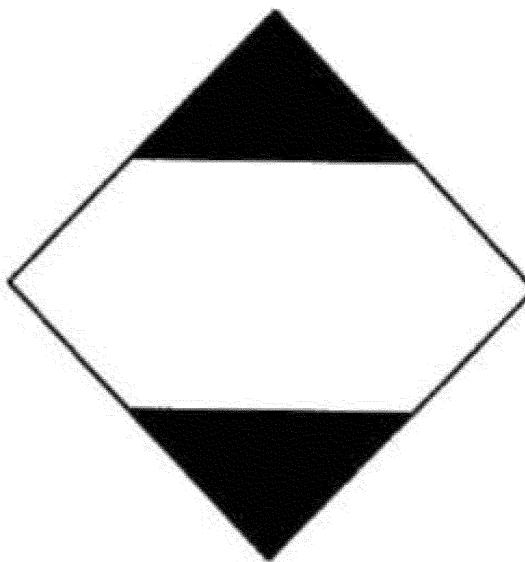
\* \* \* \* \*

14. Section 172.315 is revised to read as follows:

**§ 172.315 Limited quantities.**

Except for transportation by aircraft or as otherwise provided in this subchapter, a package and, for transportation by vessel, a cargo transport unit (see § 176.2 of this subchapter) containing a limited quantity of hazardous materials is not required to be marked with the proper shipping name provided it is marked with the square-on-point in accordance with the following:

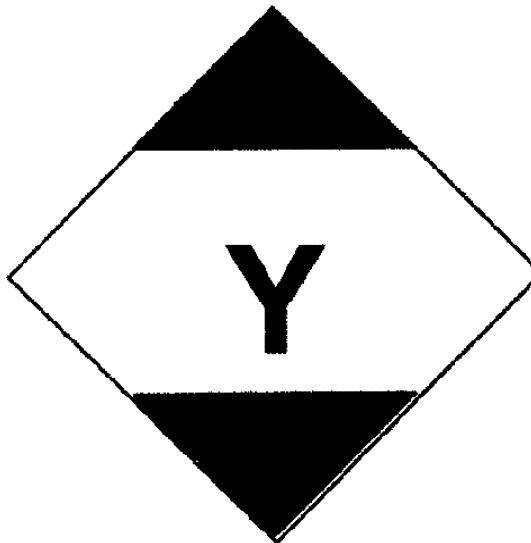
(a) The limited quantity marking must be durable, legible and of a size relative to the package as to be readily visible. The marking must be applied on at least one side or one end of the outer packaging. The width of line forming the square-on-point must be at least 2 mm and the minimum dimension on each side must be 100 mm unless the package size requires a reduced size label that must be no less than 50 mm on each side. When intended for transportation by vessel, a cargo transport unit must be suitably marked on the exterior of the unit with an identical mark except that it must have minimum dimensions on each side of 250 mm. The top and bottom portions of the square-on-point and the line forming the diamond must be black and the center white or of a suitable contrasting background as follows:



(b)(1) Effective January 1, 2012, packages of limited quantities intended for transportation by aircraft must be marked as prescribed in this paragraph

when conforming to Table 3 of § 173.27(f) of this subchapter or part 3;4 of the ICAO Technical Instructions and labeled as appropriate. When intended

for transportation by aircraft, a limited quantity package is to be marked as follows:



(2) The limited quantity marking must be durable, legible and of a size relative to the package as to be readily visible. The width of line forming the square-on-point must be at least 2 mm and the minimum dimension on each side must be 100 mm unless the package size requires a reduced size label that must be no less than 50 mm on each side. The top and bottom portions of the square-on-point and the line forming the diamond must be black and the center white or of a suitable contrasting background. The symbol "Y" must be located in the center of the square-on-point and be clearly visible. The

marking must be applied on at least one side or one end of the outer packaging.

(c) The applicable package markings required by this subpart (e.g., proper shipping name, technical name, "RQ") must be in association with the marking required by paragraph (a) or (b) of this section.

15. In § 172.316, paragraphs (a)(1) and (a)(2) are revised to read as follows:

**§ 172.316 Packagings containing materials classed as ORM-D.**

(a) \* \* \*

(1) Until December 31, 2013, ORM-D AIR for an ORM-D that is prepared for air shipment and packaged in accordance with §§ 173.63, 173.150

through 173.155, and 173.306 and the applicable requirements in § 173.27.

(2) Until December 31, 2013, ORM-D for an ORM-D other than as described in paragraph (a)(1) of this section.

\* \* \* \* \*

16. In § 172.322, paragraph (d)(2)(iii) is added to read as follows:

**§ 172.322 Marine pollutants.**

\* \* \* \* \*

(d) \* \* \*

(2) \* \* \*

(iii) On a package of limited quantity material marked in accordance with § 172.315 of this part.

\* \* \* \* \*

17. In § 172.324, in paragraph (b), the words “or the identification number” are removed and the words “and the limited quantity marking” are added in their place.

18. In § 172.326, in paragraph (a), a second sentence is added to read as follows:

#### § 172.326 Portable tanks.

(a) *Shipping name.* \* \* \* For transportation by vessel, the minimum height for a proper shipping name marked on a portable tank is 65 mm.

\* \* \* \* \*

19. Section 172.327 is added to read as follows:

#### § 172.327 Sour crude oil toxic hazard marking.

(a) When sour crude oil transported in a bulk packaging may release concentrations of hydrogen sulfide gas that pose a risk to persons in the immediate vicinity (e.g., manhole, loading head), except for the size, the bulk packaging must be marked as follows:



(b) Each side of the marking shown must be at least 100 mm (3.9 inches).

20. In § 172.500, paragraph (b)(3) is revised to read as follows:

#### § 172.500 Applicability of placarding requirements.

\* \* \* \* \*

(b) \* \* \*

(3) Hazardous materials authorized by this subchapter to be offered for transportation as a limited quantity when identified as such on a shipping paper in accordance with § 172.203(b) or when marked as such in accordance with § 172.315.

\* \* \* \* \*

21. In § 172.502, paragraph (b)(2) is revised to read as follows:

#### § 172.502 Prohibited and permissive placarding.

\* \* \* \* \*

(b) \* \* \*

(2) The restrictions of paragraph (a) of this section do not apply to the display of a Limited Quantity marking, a BIOHAZARD marking, a “HOT” marking, a sour crude oil toxic hazard marking, or an identification number on a white square-on-point configuration in accordance with §§ 172.323(c), 172.325(c), 172.327(a), or 172.336(b) of this part, respectively.

\* \* \* \* \*

#### PART 173—SHIPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

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

**Authority:** 49 U.S.C. 5101–5128, 44701; 49 CFR 1.45, 1.53.

23. In § 173.4, paragraphs (a) introductory text and (c) are revised and a new paragraph (a)(1)(v) is added to read as follows:

#### § 173.4 Small quantities for highway and rail.

(a) When transported domestically by highway or rail in conformance with this section, quantities of Division 2.2 (except aerosols and with no subsidiary hazard), Class 3, Division 4.1, Division 4.2 (PG II and III), Division 4.3 (PG II and III), Division 5.1, Division 5.2, Division 6.1, Class 7, Class 8, and Class 9 materials that also meet the definition of one or more of these hazard classes, are not subject to any other requirements when—

(1) \* \* \*

(v) Except for aerosols or a material with a subsidiary hazard, a Division 2.2 material when contained in an inner receptacle not exceeding a water capacity of 30 mL (1.8 cubic inches) or less.

\* \* \* \* \*

(c) Packages which contain a Class 2 (other than that authorized in paragraph (a)(1)(v) of this section), Division 4.2 (PG I), or Division 4.3 (PG I) material conforming to paragraphs (a)(1) through (a)(10) of this section may be offered for transportation or transported if specifically approved by the Associate Administrator.

\* \* \* \* \*

24. In § 173.4a, paragraph (a)(4) is added and paragraphs (b)(5) and (d)(3) are revised to read as follows:

#### § 173.4a Excepted quantities.

(a) \* \* \*

(4) Packagings for which retention of liquid is a basic function must be capable of withstanding without leakage the pressure differential specified in § 173.27(c).

(b) \* \* \*

(5) Division 5.2 materials only when contained in a chemical kit, first aid kit or a polyester resin kit;

\* \* \* \* \*

(d) \* \* \*

(3) For Division 5.2 material, 500 g (1.1 pounds) for solids or 500 mL (0.1 gallons) for liquids.

\* \* \* \* \*

25. In § 173.4b, paragraph (b) is added to read as follows:

**§ 173.4b De minimis exceptions.**

\* \* \* \* \*

(b) Non-infectious specimens, such as specimens of mammals, birds, amphibians, reptiles, fish, insects and other invertebrates containing small quantities of Ethanol (UN1170), Formaldehyde solution, flammable (UN1198), Alcohols, n.o.s. (UN1987) and Isopropanol (UN1219) are not subject to the requirements of this subchapter provided the following packaging, marking and documentation provisions, as applicable, are met:

(1) The specimens are:

(i) Wrapped in a paper towel or cheesecloth moistened with alcohol or an alcohol solution and placed in a plastic bag that is heat-sealed. Any free liquid in the bag must not exceed 30 mL; or

(ii) Placed in vials or other rigid containers with no more than 30 mL of alcohol or alcohol solution. The containers are placed in a plastic bag that is heat-sealed;

(2) The bagged specimens are placed in another plastic bag with sufficient absorbent material to absorb the entire liquid contents inside the primary receptacle. The outer plastic bag is then heat-sealed;

(3) The completed bag is placed in a strong outer packaging with sufficient cushioning material that conforms to subpart B of part 173;

(4) The aggregate net quantity of flammable liquid in one outer packaging may not exceed 1 L; and

(5) The outer package must be legibly marked "Scientific research specimens, 49 CFR 173.4b applies."

(6) *Documentation.* (i) For transportation by highway or rail, no shipping paper is required.

(ii) For transport by air, a shipping paper is not required, except that, if a document such as an air waybill accompanies a shipment of specimens containing hazardous materials

excepted under the terms of this section, the document must include the statement "Scientific research specimens, 49 CFR 173.4b applies" and the number of packages indicated.

(iii) For transport by vessel, a shipping paper is not required; however, the Dangerous Cargo Manifest must include the statement "Scientific research specimens, 49 CFR 173.4b applies" and the number of packages indicated. Vessel stowage is the same as for hazardous materials in excepted quantities.

(7) *Training.* Each person who offers or transports excepted quantities of hazardous materials must know about the requirements of this section.

(8) *Restrictions.* For transportation by aircraft, hazardous material packaged in accordance with this special provision may not be carried in checked or carry-on passenger or crew member baggage.

26. In § 173.25, a new paragraph (a)(6) is added to read as follows:

**§ 173.25 Authorized packagings and overpacks.**

\* \* \*

(6) Where packages of limited quantity materials are overpacked and, until December 31, 2013, packages bearing the ORM-D or ORM-D AIR marking, must be marked "OVERPACK" unless all marking and labeling required by this subchapter are visible. Where packages of excepted quantities are overpacked and all required markings are not visible through the overpack, they must be repeated on the overpack.

\* \* \* \* \*

27. In § 173.27, paragraph (f) introductory text is removed, paragraphs (f)(1) and (2) and a new Table 3 with notes 1 through 6 are added, and a new paragraph (j) is added to read as follows:

**§ 173.27 General requirements for transportation by aircraft.**

\* \* \* \* \*

(f) *Combination packagings.* (1) For authorized materials and inner and outer packaging quantity limits for combination packages of excepted quantities intended for transportation by aircraft, see § 173.4a. Unless otherwise specified in this part, or in Subpart C of Part 171 of this subchapter, when combination packagings are intended for transportation aboard an aircraft, inner packagings must conform to the quantity limitations set forth in table 1 of this paragraph for transport aboard passenger-carrying aircraft and table 2 of this paragraph for transport aboard cargo-only aircraft.

(2) *Limited quantity.* For excepted quantities intended for transportation by aircraft, see § 173.4a. Unless otherwise specified in this part, or in Subpart C of Part 171 of this subchapter, when a limited quantity of authorized hazardous material packaged in a combination packaging is intended for transportation aboard an aircraft, the inner packagings must conform to the quantity limitations set forth in table 3 of this paragraph and any applicable notes following the table. Materials must be eligible for transportation aboard a passenger-carrying aircraft. Materials not authorized as limited quantity by aircraft are those in Packing Group I, Class 1 and 7 material, Divisions 2.1 (except Aerosols (UN1950) and Receptacles, small (UN2037) without subsidiary risk), 2.3, 4.1 (self-reactive), 4.2 (primary or subsidiary risk), 4.3 (liquids), 5.2 (except when contained in a Chemical or First aid kit (UN3316) or Polyester resin kit (UN3269) (Types D, E and F non-temperature controlled only)), Class 8 materials UN2794, UN2795, UN2803, UN2809, 3028, and all Class 9 materials *except for* UN1941, UN1990, UN2071, UN3077, UN3082, UN3316. The tables and notes are as follows:

\* \* \* \* \*

**TABLE 3—MAXIMUM NET QUANTITY OF EACH INNER PACKAGING AND MATERIALS AUTHORIZED TRANSPORTATION AS LIMITED QUANTITY BY AIRCRAFT**

Hazard class or division	Maximum authorized net quantity of each inner packaging		Maximum authorized net quantity of each outer package	Notes
	Glass, earthenware or fiber inner packagings	Metal or plastic inner packagings		
Class 1 .....	.....	.....	.....	Forbidden.
Class 2 .....	.....	.....	30 kg Gross .....	<i>Authorized materials:</i> UN 1950 (Aerosols) in Divisions 2.1 and 2.2, and UN2037 (Receptacles, small) in Divisions 2.1 and 2.2 without subsidiary risk only.
Class 3 .....	PG I .....	.....	.....	Forbidden.

TABLE 3—MAXIMUM NET QUANTITY OF EACH INNER PACKAGING AND MATERIALS AUTHORIZED TRANSPORTATION AS LIMITED QUANTITY BY AIRCRAFT—Continued

Hazard class or division	Maximum authorized net quantity of each inner packaging		Maximum authorized net quantity of each outer package	Notes
	Glass, earthenware or fiber inner packagings	Metal or plastic inner packagings		
Division 4.1 (Excluding self-reactives).	PG II: 0.5L .....	PG II: 0.5L .....	PG II: 1L* .....	*Maximum net quantity per outer package with corrosive subsidiary risk (e.g., UN2924, UN3286) is 0.5L. For Class 3 materials contained in a “Polyester resin kit” (UN3269), see § 173.165. For “Fuel cell cartridges containing flammable liquids” (UN3473), see § 173.230.
	PG III: 2.5L* .....	PG III: 5.0L* .....	PG III: 10L* .....	*Maximum net quantity per outer package with corrosive subsidiary risk (e.g., UN2924) or toxic (e.g., UN1992) is 1L.
	*Corrosive subsidiary risk (e.g., UN2924) or toxic (e.g., UN1992) is 1L.	*Corrosive subsidiary risk (e.g., UN2924) or toxic (e.g., UN1992) is 1L.		
	PG I .....	.....	.....	.....
	PG II: 0.5 kg .....	PG II: 0.5 kg .....	PG II: 5 kg* .....	*Maximum net quantity per outer package with toxic subsidiary risk (e.g., UN3179) is 1 kg.
	PG III: 1 kg .....	PG III: 1 kg .....	PG III: 10 kg* .....	*Maximum net quantity per outer package with corrosive subsidiary risk (e.g., UN3180) is 5 kg.
Division 4.2 .....	.....	.....	.....	Forbidden.
Division 4.3 (Solids only).	PG I .....	.....	.....	Forbidden.
Division 5.1 .....	PG II: 0.5 kg .....	PG II: 0.5 kg .....	PG II: 5 kg* .....	*Maximum net quantity per outer package with toxic subsidiary risk (e.g., UN3134) is 1 kg.
	PG III: 1 kg .....	PG III: 1 kg .....	PG III: 10 kg* .....	*Maximum net quantity per outer package with corrosive or flammable subsidiary risk (e.g., UN3131 or UN3132, respectively) is 5 kg.
	[Liquids] PG II: 0.1L .....	[Liquids] PG II: 0.1L .....	[Liquids] PG II: 0.5L .....	*Maximum net quantity per outer package with toxic subsidiary risk (e.g., UN3087) is 1 kg.
	[Liquids] PG III: 0.5L .....	[Liquids] PG III: 0.5L .....	[Liquids] PG III: 1.0L .....	*Maximum net quantity per outer package with corrosive subsidiary risk (e.g., UN3085) is 1 kg.
Division 5.2 .....	[Solids] PG II: 0.5 kg .....	[Solids] PG II: 0.5 kg .....	[Solids] PG II: 2.5 kg* .....	
	[Solids] PG III: 1.0 kg .....	[Solids] PG III: 1.0 kg .....	[Solids] PG III: 10 kg* .....	
Division 6.1 .....	Liquids: 30 mL .....	Liquids: 30 mL .....	1 kg .....	
	Solids: 100g .....	Solids: 100g .....		
	PG I .....	.....		
	[Liquids] PG II: 0.1L .....	[Liquids] PG II: 0.1L .....	[Liquids] PG II: 1.0L* .....	Authorized materials: Types D, E and F only authorized as part of a Chemical or First Aid Kit (UN3316) in accordance with § 173.161 or a Polyester Resin Kit (UN3269) in accordance with § 173.165.
	[Liquids] PG III: 0.5L .....	[Liquids] PG III: 0.5L .....	[Liquids] PG III: 2.0L .....	Forbidden.
	[Solids] PG II: 0.5 kg .....	[Solids] PG II: 0.5 kg .....	[Solids] PG II: 1.0 kg .....	*Maximum net quantity per outer package with corrosive subsidiary risk (e.g., UN3289) is 0.5L.
	[Solids] PG III: 1.0 kg .....	[Solids] PG III: 1.0 kg .....	[Solids] PG III: 10 kg .....	
Class 7 .....	.....	.....	.....	Forbidden (see § 173.421).
Class 8 .....	PG I .....	.....	.....	Forbidden.

TABLE 3—MAXIMUM NET QUANTITY OF EACH INNER PACKAGING AND MATERIALS AUTHORIZED TRANSPORTATION AS LIMITED QUANTITY BY AIRCRAFT—Continued

Hazard class or division	Maximum authorized net quantity of each inner packaging		Maximum authorized net quantity of each outer package	Notes
	Glass, earthenware or fiber inner packagings	Metal or plastic inner packagings		
	[Liquids] PG II: 0.1L .....	[Liquids] PG II: 0.1L .....	[Liquids] PG II: 0.5L.	For “Fuel cell cartridges containing corrosive substances” (UN3477), see § 173.230.
	[Liquids] PG III: 0.5L .....	[Liquids] PG III: 0.5L .....	[Liquids] PG III: 1.0L.	
	[Solids] PG II: 0.5 kg .....	[Solids] PG II: 0.5 kg .....	[Solids] PG II: 5.0 kg*.	
	[Solids] PG III: 1.0 kg .....	[Solids] PG III: 1.0 kg .....	[Solids] PG III: 5.0 kg.	*Maximum net quantity per outer package for UN2430 is 1.0 kg. UN2794, UN2795, UN2803, UN2809, UN3028 not authorized limited quantity.
Class 9 .....	[Liquids]: 30 mL (UN3316); 5.0L (UN1941, UN1990, UN3082). [Solids]: 100g (UN3316); 5.0 kg (UN2071, UN3077).	[Liquids]: 30 mL (UN3316); 5.0L (UN1941, UN1990, UN3082). [Solids]: 100g (UN3316); 5.0 kg (UN2071, UN3077).	1 kg (UN3316); 30 kg (all others).	Authorized materials: UN1941, UN1990, UN2071, UN3077, UN3082, and UN3316 only. Additionally, “Consumer commodity (NA8000)” in accordance with § 173.167 and “Chemical kit” or “First aid kit” (UN3316), in accordance with § 173.161 are authorized.

**Note 1:** Effective January 1, 2012, packages must be marked with the limited quantity “Y” mark as prescribed in paragraph (j) of this section when conforming to Table 3 of this paragraph or part 3;4 of the ICAO Technical Instructions and labeled as appropriate. Until December 31, 2013, a package may be marked with the proper shipping name “Consumer commodity” and “ORM-D-AIR” if a limited quantity and consumer commodity, as authorized by this subchapter in effect on October 1, 2010.

**Note 2:** 30 kg gross weight maximum.

**Note 3:** Absorbent material is not required.

**Note 4:** Secondary means of closure required for all liquids contained in inner packagings. If this requirement cannot be satisfied, the use of an intermediate and leakproof form of containment, such as a liner, may be used.

**Note 5:** Packages must be capable of passing a 1.2 m drop test and a 24-hour stack test.

**Note 6:** Except for UN3082, inner packagings of combination packagings containing liquids must be capable of passing the pressure differential test in paragraph (c) of this section.

\* \* \* \* \*

(j) **Limited quantity marking.** (1) Effective January 1, 2012, packages of limited quantities intended for transportation by aircraft must be marked as prescribed in this paragraph when conforming to Table 3 of this section or part 3;4 of the ICAO Technical Instructions and labeled as appropriate.

(2) Until December 31, 2013, a package may be marked with the proper shipping name “Consumer commodity” (see § 171.8) and reclassified as “ORM-D-AIR” if it contains a properly packaged limited quantity and consumer commodity, as authorized by this subchapter on October 1, 2010. A limited quantity package that is also a consumer commodity that is reclassified ORM-D-AIR is to be marked as prescribed in § 172.316.

28. In § 173.40, in paragraph (c)(1), a new second sentence is added to read as follows:

**§ 173.40 General packaging requirements for toxic materials packaged in cylinders.**

\* \* \* \* \*

(c) \* \* \*

(1) \* \* \* For UN pressure receptacles, each valve must be capable of withstanding the test pressure of the pressure receptacle and be connected directly to the pressure receptacle by either a taper thread or other means which meets the requirements of ISO 10692-2:2001.

\* \* \* \* \*

29. In § 173.59, a new definition “Phlegmatized” is added in the appropriate alphabetical sequence to read as follows:

**§ 173.59 Description of terms for explosives.**

\* \* \* \* \*

*Phlegmatized* means that a substance (or “phlegmatizer”) has been added to an explosive to enhance its safety in handling and transport. The phlegmatizer renders the explosive insensitive, or less sensitive, to the following actions: heat, shock, impact, percussion or friction. Typical phlegmatizing agents include, but are not limited to: Wax, paper, water, polymers (such as chlorofluoropolymers), alcohol and oils (such as petroleum jelly and paraffin).

\* \* \* \* \*

30. In § 173.63, paragraph (b) is revised to read as follows:

**§ 173.63 Packaging exceptions.**

\* \* \* \* \*

(b) *Cartridges, small arms, and cartridges power devices.* (1)(i) Cartridges, small arms, and Cartridges power device (used to project fastening devices), that have been classed as a Division 1.4S explosive may be offered for transportation and transported when packaged in accordance with paragraph (b)(2) of this section. For transportation by aircraft, the package must conform to the applicable requirements of § 173.27 and, effective April 1, 2011, Cartridge, power devices must have successfully been tested under the UN Test Series 6(d) to be reclassified as ORM-D-AIR material. Effective January 1, 2012, Cartridge, power devices must have successfully been tested under the UN Test Series 6(d) to be reclassified as ORM-D material for transportation by highway, rail or vessel. Packages must be marked as prescribed in § 172.315. Packages of such articles are not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition

of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel. Additionally, packages of such articles are excepted from the requirements of subparts E (Labeling) and F (Placarding) of part 172 of this subchapter.

(ii) Until December 31, 2013, a package may be marked with the proper shipping name "Cartridges, small arms, and Cartridges power device" and reclassified as "ORM-D" or "ORM-D-AIR" material if it contains properly packaged articles as authorized by this subchapter on October 1, 2010. Additionally, for transportation by aircraft, Cartridge, power devices must have successfully been tested under the UN Test Series 6(d) to be reclassified as ORM-D-AIR material effective April 1, 2011.

(iii) Cartridges, small arms and power devices that may be shipped as a limited quantity material are as follows:

- (A) Ammunition for rifle, pistol or shotgun;
- (B) Ammunition with inert projectiles or blank ammunition;
- (C) Ammunition having no tear gas, incendiary, or detonating explosive projectiles;
- (D) Ammunition not exceeding 12.7 mm (50 caliber or 0.5 inch) for rifle or pistol, cartridges or 8 gauge for shotshells; and

(E) Cartridges, power devices which are used to project fastening devices.

(2) Packaging for Cartridges, small arms, and eligible Cartridges, power devices as an ORM-D or ORM-D-AIR material must be as follows:

(i) Ammunition must be packed in inside boxes, or in partitions which fit snugly in the outside packaging, or in metal clips;

(ii) Primers must be protected from accidental initiation;

(iii) Inside boxes, partitions or metal clips must be packed in securely-closed strong outside packagings;

(iv) Maximum gross weight is limited to 30 kg (66 pounds) per package; and

(v) Cartridges, power devices which are used to project fastening devices and 22 caliber rim-fire cartridges may be packaged loose in strong outside packagings.

\* \* \* \* \*

31. In § 173.120, new paragraphs (c)(1)(ii)(C), (c)(1)(ii)(D), (c)(1)(ii)(E), (c)(1)(ii)(F), (c)(1)(ii)(G), and (c)(1)(ii)(H) are added to read as follows:

#### § 173.120 Class 3—Definitions.

\* \* \* \* \*

- (c) \* \* \*
- (1) \* \* \*
- (ii) \* \* \*

(C) ISO 1516:2002 Determination of flash/no flash—Closed cup equilibrium

method (IBR; see § 171.7 of this subchapter);

(D) ISO 1523:2002 Determination of flash point—Closed cup equilibrium method (IBR; see § 171.7 of this subchapter);

(E) ISO 2719:2002 Determination of flash point—Pensky-Martens closed cup method (IBR; see § 171.7 of this subchapter);

(F) ISO 3679:2004 Determination of flash point—Rapid equilibrium closed cup method (IBR; see § 171.7 of this subchapter);

(G) ISO 3680:2004 Determination of flash/no flash—Rapid equilibrium closed cup method (IBR; see § 171.7 of this subchapter); or

(H) ISO 13736:2008 Determination of flash point—Abel closed-cup method (IBR; see § 171.7 of this subchapter).

\* \* \* \* \*

32. In § 173.121, paragraph (a) is revised to read as follows:

#### § 173.121 Class 3—Assignment of packing group.

(a)(1) The packing group of a Class 3 material is as assigned in column 5 of the § 172.101 table. When the § 172.101 table provides more than one packing group for a hazardous material, the packing group must be determined by applying the following criteria:

Packing group	Flash point (closed-cup)	Initial boiling point
I .....	.....	≤35 °C (95 °F)
II .....	<23 °C (73 °F) .....	>35 °C (95 °F)
III .....	≥23 °C, ≤60 °C (≥73 °F, ≤140 °F) .....	>35 °C (95 °F)

(2) The initial boiling point of a Class 3 material may be determined by using one of the following test methods:

(i) ASTM D86, Standard test method for distillation of petroleum products at atmospheric pressure (IBR; see § 171.7 of this subchapter);

(ii) ASTM D1078, Standard test method for distillation range of volatile organic liquids (IBR; see § 171.7 of this subchapter);

(iii) ISO 3405, Petroleum products—Determination of distillation characteristics at atmospheric pressure (IBR; see § 171.7 of this subchapter);

(iv) ISO 3924, Petroleum products—Determination of boiling range distribution—Gas chromatography method (IBR; see § 171.7 of this subchapter); or

(v) ISO 4626, Volatile organic liquids—Determination of boiling range of organic solvents used as raw materials (IBR; see § 171.7 of this subchapter).

\* \* \* \* \*

33. In § 173.124, paragraph (b)(2) is revised to read as follows:

#### § 173.124 Class 4, Divisions 4.1, 4.2 and 4.3—Definitions.

\* \* \* \* \*

- (b) \* \* \*

(2) A self-heating material. A self-heating material is a material that through a process where the gradual reaction of that substance with oxygen (in air) generates heat. If the rate of heat production exceeds the rate of heat loss, then the temperature of the substance will rise which, after an induction time, may lead to self-ignition and combustion. A material of this type which exhibits spontaneous ignition or if the temperature of the sample exceeds 200 °C (392 °F) during the 24-hour test period when tested in accordance with UN Manual of Tests and Criteria, is classed as a Division 4.2 material.

\* \* \* \* \*

34. In § 173.137, in the introductory text, the second sentence is revised and

a third and fourth sentence are added to read as follows:

#### § 173.137 Class 8—Assignment of packing group.

\* \* \* When the § 172.101 Table provides more than one packing group for a Class 8 material, the packing group must be determined using data obtained from tests conducted in accordance with the OECD Guideline for the Testing of Chemicals, Number 435, "In Vitro Membrane Barrier Test Method for Skin Corrosion" (IBR, see § 171.7 of this subchapter) or Number 404, "Acute Dermal Irritation/Corrosion" (IBR, see § 171.7 of this subchapter). A material that is determined not to be corrosive in accordance with OECD Guideline for the Testing of Chemicals, Number 430, "In Vitro Skin Corrosion: Transcutaneous Electrical Resistance Test (TER)" or Number 431, "In Vitro Skin Corrosion: Human Skin Model Test" may be considered not to be corrosive to human skin for the

purposes of this subchapter without further testing. The packing group assignment using data obtained from tests conducted in accordance with OECD Guideline Number 404 must be as follows:

\* \* \* \* \*

35. Section 173.144 is revised to read as follows:

**§ 173.144 Other Regulated Materials (ORM)—Definitions.**

For the purpose of this subchapter, “ORM-D material” means a material or article such as “Cartridges, small arms” or “Cartridges, power device,” which, although otherwise subject to the regulations of this subchapter, presents a limited hazard during transportation due to its form, quantity and packaging. It must be a material or article for which ORM-D exceptions are provided in the section indicated in Column (8A) of the § 172.101 Hazardous Materials Table for a specific material or article.

36. In § 173.150, paragraphs (b), (c) and (d) are revised to read as follows:

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

\* \* \* \* \*

(b) *Limited quantities of Class 3 materials.* Limited quantities of flammable liquids (Class 3) and combustible liquids are excepted from labeling requirements, unless the material is offered for transportation or transported by aircraft, and the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. Unless otherwise specified in paragraph (c) of this section, packages of limited quantities intended for transportation by aircraft must conform to the applicable requirements (e.g., authorized materials, inner packaging quantity limits and closure securement) of § 173.27. A limited quantity package which conforms to the provisions of this section is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel, and is eligible for the exceptions provided in § 173.156. In addition, packages of consumer commodities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight. The following combination packagings are authorized:

(1) For flammable liquids in Packing Group I, inner packagings not over 0.5 L (0.1 gallon) net capacity each, packed in strong outer packagings;

(2) For flammable liquids in Packing Group II, inner packagings not over 1.0 L (0.3 gallons) net capacity each, unless the material has a subsidiary hazard of Division 6.1, Packing Group II, in which case the inner packagings may not exceed 100 mL (3.38 ounces) net capacity each, packed in a strong outer packaging.

(3) For flammable liquids in Packing Group III and combustible liquids, inner packagings not over 5.0 L (1.3 gallons) net capacity each, packed in strong outer packagings.

(c) Until December 31, 2013, a limited quantity which conforms to the provisions of paragraph (b) of this section that is also a “consumer commodity” as defined in 171.8 of this subchapter may be renamed “Consumer commodity” and reclassified and marked as ORM-D material in accordance with § 172.316. Additionally, until December 31, 2013, an ORM-D material that is prepared for air shipment and packaged in accordance with § 173.27 in effect on October 1, 2010, may be renamed “Consumer commodity” and reclassified and marked as ORM-D-AIR material in accordance with § 172.316. A consumer commodity package which conforms to the provisions of this section is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel, and is eligible for the exceptions provided in § 173.156. In addition, packages of consumer commodities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight.

(d) *Alcoholic beverages.* An alcoholic beverage (wine and distilled spirits as defined in 27 CFR 4.10 and 5.11) is not subject to the requirements of this subchapter if it—

(1) Contains 24 percent or less alcohol by volume;

(2) For other than air or vessel transportation, when contained in an inner packaging of 5 L (1.3 gallons) or less;

(3) For other than air transportation, a Packing Group III alcoholic beverage when contained in a packaging 250 liters (66 gallons) or less;

(4) For air transportation, a Packing Group III alcoholic beverage when

contained in a packaging of 5 L (1.3 gallons) or less; or

(5) For transportation aboard a passenger-carrying aircraft in checked or carry-on baggage, a Packing Group III alcoholic beverage when contained in a packaging of 5 L (1.3 gallons) or less and conforming to § 175.10(a)(4) of this subchapter.

\* \* \* \* \*

37. In § 173.151, paragraphs (b), (c) and (d) are revised to read as follows:

**§ 173.151 Exceptions for Class 4.**

\* \* \* \* \*

(b) *Limited quantities of Division 4.1 and Division 4.2 materials.* Limited quantities of flammable solids (Division 4.1) in Packing Group II and III and, where authorized, charcoal briquettes (Division 4.2) in Packing Group III, are excepted from labeling requirements, unless the material is offered for transportation or transported by aircraft, and the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. Unless otherwise specified in paragraph (c) of this section, packages of limited quantities intended for transportation by aircraft must conform to the applicable requirements (e.g., authorized materials, inner packaging quantity limits and closure securement) of § 173.27. A limited quantity package which conforms to the provisions of this section is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel, and is eligible for the exceptions provided in § 173.156. In addition, packages of limited quantities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight. The following combination packagings are authorized:

(1) For flammable solids in Packing Group II, inner packagings not over 1.0 kg (2.2 pounds) net capacity each, unless the material has a subsidiary hazard of Division 6.1, Packing Group II, in which case the inner packagings may not exceed 0.5 kg (1.1 pounds) net capacity each, packed in a strong outer packaging.

(2) For flammable solids in Packing Group III, inner packagings not over 5.0 kg (11 pounds) net capacity each, packed in a strong outer packaging.

(3) Until December 31, 2013, Charcoal briquettes (NA1361) in Packing Group

III when contained in packagings not exceeding 25 kg net weight when intended for transportation by passenger-carrying aircraft, and 100 kg net weight when intended for transportation by cargo-only aircraft. After December 31, 2013, Charcoal briquettes (NA1361) may no longer be offered for transportation or transported by aircraft or vessel as a limited quantity material. For transportation by highway or rail, Charcoal briquettes (NA1361) may be packaged as a limited quantity in accordance with paragraph (b) of this section in packagings not exceeding 30 kg gross weight and are eligible for the exceptions provided in § 173.156.

(c) Until December 31, 2013, a limited quantity package (including Charcoal briquettes (NA1361)) which conforms to the provisions of paragraph (b) of this section that is also a "consumer commodity," as defined in 171.8 of this subchapter, may be renamed "Consumer commodity" and reclassified and marked as ORM-D material in accordance with § 172.316. Additionally, until December 31, 2013, an ORM-D material (including Charcoal briquettes (NA1361)) intended for transportation by aircraft and is packaged in accordance with § 173.27 in effect on October 1, 2010, may be renamed "Consumer commodity" and reclassified and marked as ORM-D-AIR material in accordance with § 172.316. A consumer commodity package which conforms to the provisions of this section is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel, and is eligible for the exceptions provided in § 173.156. In addition, packages of consumer commodities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight.

(d) *Limited quantities of Division 4.3 materials.* Limited quantities of Division 4.3 (dangerous when wet) solids in Packing Group II and III are excepted from labeling requirements, unless the material is offered for transportation or transported by aircraft, and the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. Unless otherwise specified in paragraph (c) of this section, packages of limited quantities intended for transportation by aircraft must conform to the applicable requirements (e.g., authorized materials, inner packaging quantity limits and closure securement) of § 173.27. A limited quantity package which conforms to the provisions of this section is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel, and is eligible for the exceptions provided in § 173.156. In addition, packages of limited quantities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part

inner packaging quantity limits and closure securement) of § 173.27. Packages of Limited quantities of Division 4.3 materials are not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel. In addition, shipments of limited quantities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight. The following combination packagings are authorized:

(1) For oxidizers in Packing Group II, inner packagings not over 1.0 L (0.3 gallon) net capacity each for liquids or not over 1.0 kg (2.2 pounds) net capacity each for solids, unless the material has a subsidiary hazard of Division 6.1, Packing Group II, in which case the inner packagings may not exceed 100 mL (3.38 ounces) for liquids or 0.5 kg (1.1 pounds) for solids, packed in a strong outer packaging.

(2) For oxidizers in Packing Group III, inner packagings not over 5 L (1.3 gallons) net capacity each for liquids or not over 5.0 kg (11 lbs) net capacity each for solids, and packed in strong outer packagings.

(3) Organic peroxides which do not require temperature control during transportation—

(i) Except for transportation by aircraft, Type B or C organic peroxides, contained in inner packagings not over 25 mL (0.845 ounces) net capacity each for liquids or 100 g (3.528 ounces) net capacity for solids, packed in strong outer packagings.

(ii) For Type D, E, or F organic peroxides, inner packagings not over 125 mL (4.22 ounces) net capacity each for liquids or 500 g (17.64 ounces) net capacity for solids, packed in strong outer packagings.

(c) Until December 31, 2013, a limited quantity which conforms to the provisions of paragraph (b) of this section that is also a "consumer commodity" as defined in 171.8 of this subchapter, may be renamed "Consumer commodity" and reclassified and marked as ORM-D material in accordance with § 172.316. Additionally, until December 31, 2013, an ORM-D material that is prepared for air shipment and packaged in accordance with § 173.27 in effect on October 1, 2010, may be renamed "Consumer commodity" and reclassified and marked as ORM-D-AIR material in accordance with § 172.316. A consumer commodity package which conforms to the provisions of this section is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel, and is eligible for the exceptions provided in § 173.156. In addition, packages of consumer commodities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part

**§ 173.152 Exceptions for Division 5.1 (oxidizers) and Division 5.2 (organic peroxides).**

\* \* \* \* \*

(b) *Limited quantities of Division 5.1 and Division 5.2 materials.* Limited quantities of oxidizers (Division 5.1) in Packing Group II and III and organic peroxides (Division 5.2) are excepted from labeling requirements unless the material is offered for transportation or transported by aircraft, and the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. Unless otherwise specified in paragraph (c) of this section, packages of limited quantities intended for transportation by aircraft must conform to the applicable requirements (e.g., authorized materials, inner packaging quantity limits and closure securement) of § 173.27. A limited quantity package which conforms to the provisions of this section is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel, and is eligible for the exceptions provided in § 173.156. In addition, packages of limited quantities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part

and may not exceed 30 kg (66 pounds) gross weight.

39. In § 173.153, paragraphs (b) and (c) are revised to read as follows:

**§ 173.153 Exceptions for Division 6.1 (poisonous materials).**

\* \* \* \* \*

(b) *Limited quantities of Division 6.1 materials.* The exceptions in this paragraph do not apply to poison-inhalation-hazard materials. Limited quantities of poisonous materials (Division 6.1) in Packing Group II and III are excepted from labeling requirements, unless the material is offered for transportation or transported by aircraft, and the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. Unless otherwise specified in paragraph (c) of this section, packages of limited quantities intended for transportation by aircraft must conform to the applicable requirements (e.g., authorized materials, inner packaging quantity limits and closure securement) of § 173.27. A limited quantity package which conforms to the provisions of this section is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel, and is eligible for the exceptions provided in § 173.156. In addition, packages of consumer commodities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight. The following combination packagings are authorized:

(1) For poisonous materials in Packing Group II, inner packagings not over 100 mL (3.38 ounces) each for liquids or 0.5 kg (1.1 pounds) each for solids, packed in a strong outer packaging. Inner packagings containing a liquid poisonous material which is also a drug or medicine in Packing Group II may be increased to not over 250 mL (8 ounces) each and packed in a strong outer packaging.

(2) For poisonous materials in Packing Group III, inner packagings not over 5 L (1.3 gallons) each for liquids or 5.0 kg (11 pounds) each for solids, packed in a strong outer packaging.

(c) Until December 31, 2013, a limited quantity of poisonous material in Packing Group III and a drug or medicine in Packing Group II and III which conforms to the provisions of

paragraph (b) of this section that is also a “consumer commodity” as defined in 171.8 of this subchapter may be renamed “Consumer commodity” and reclassified and marked as ORM-D material in accordance with § 172.316. Additionally, until December 31, 2013, an ORM-D material that is prepared for air shipment and packaged in accordance with § 173.27 in effect on October 1, 2010, may be renamed “Consumer commodity” and reclassified and marked as ORM-D-AIR material in accordance with § 172.316. A consumer commodity package which conforms to the provisions of this section is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel, and is eligible for the exceptions provided in § 173.156. In addition, packages of consumer commodities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight.

40. In § 173.154, paragraphs (b) and (c) are revised to read as follows:

**§ 173.154 Exceptions for Class 8 (corrosive materials).**

\* \* \* \* \*

(b) *Limited quantities of Class 8 materials.* Limited quantities of corrosive materials (Class 8) in Packing Group II and III are excepted from labeling requirements, unless the material is offered for transportation or transported by aircraft, and the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. Unless otherwise specified in paragraph (c) of this section, packages of limited quantities intended for transportation by aircraft must conform to the applicable requirements (e.g., authorized materials, inner packaging quantity limits and closure securement) of § 173.27. A limited quantity package which conforms to the provisions of this section is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel, and is eligible for the exceptions provided in § 173.156. In addition, packages of consumer commodities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight.

\* \* \* \* \*

of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight. The following combination packagings are authorized:

(1) For corrosive materials in Packing Group II, inner packagings not over 1.0 L (0.3 gallon) net capacity each for liquids or not over 1.0 kg (2.2 pounds) net capacity each for solids, unless the material has a subsidiary hazard of Division 6.1, Packing Group II in which case the inner packagings may not exceed 100 mL (3.38 ounces) for liquids or 0.5 kg (1.1 pounds) for solids, packed in a strong outer packaging.

(2) For corrosive materials in Packing Group III, in inner packagings not over 5.0 L (1.3 gallons) net capacity each for liquids, or not over 5.0 kg (11 lbs) net capacity each for solids, and packed in strong outer packagings.

(c) Until December 31, 2013, a limited quantity of corrosive material in Packing Group II and III which conforms to the provisions of paragraph (b) of this section that is also a “consumer commodity,” as defined in 171.8 of this subchapter, may be renamed “Consumer commodity” and reclassified and marked as ORM-D material in accordance with § 172.316. Additionally, until December 31, 2013, an ORM-D material that is prepared for air shipment and packaged in accordance with § 173.27 in effect on October 1, 2010, may be renamed

“Consumer commodity” and reclassified and marked as ORM-D-AIR material in accordance with § 172.316. A consumer commodity package which conforms to the provisions of this section is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel, and is eligible for the exceptions provided in § 173.156. In addition, packages of consumer commodities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight.

\* \* \* \* \*

41. In § 173.155, paragraphs (b) and (c) are revised to read as follows:

**§ 173.155 Exceptions for Class 9 (miscellaneous hazardous materials).**

\* \* \* \* \*

(b) *Limited quantities of Class 9 materials.* Limited quantities of miscellaneous hazardous materials (Class 9) in Packing Group II and III are

excepted from labeling requirements, unless the material is offered for transportation or transported by aircraft, and the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. Unless otherwise specified in paragraph (c) of this section, packages of limited quantities intended for transportation by aircraft must conform to the applicable requirements (e.g., authorized materials, inner packaging quantity limits and closure securement) of § 173.27. A limited quantity package which conforms to the provisions of this section is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel, and is eligible for the exceptions provided in § 173.156. In addition, packages of limited quantities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight. The following combination packagings are authorized:

(1) For miscellaneous materials in Packing Group II, inner packagings not over 1.0 L (0.3 gallon) net capacity each for liquids, or not over 1.0 kg (2.2 pounds) net capacity each for solids, packed in a strong outer packaging.

(2) For miscellaneous materials in Packing Group III, in inner packagings not over 5.0 L (1.3 gallons) net capacity each for liquids, or not over 5.0 kg (11 lbs) net capacity each for solids, packed in a strong outer packaging.

(c) Until December 31, 2013, a limited quantity of miscellaneous material in Packing Group II and III which conforms to the provisions of paragraph (b) of this section that is also a “consumer commodity,” as defined in 171.8 of this subchapter, may be renamed “Consumer commodity” and reclassified and marked as ORM-D material in accordance with § 172.316. Additionally, until December 31, 2013, an ORM-D material that is prepared for air shipment and packaged in accordance with § 173.27 in effect on October 1, 2010, may be renamed “Consumer commodity” and reclassified and marked as ORM-D-AIR material in accordance with § 172.316. A consumer commodity package which conforms to the provisions of this section is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous

substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel, and is eligible for the exceptions provided in § 173.156. In addition, packages of consumer commodities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight.

42. Section 173.156 is revised to read as follows:

**§ 173.156 Exceptions for limited quantity and ORM.**

(a) Exceptions for hazardous materials shipments in the following paragraphs are permitted only if this section is referenced for the specific hazardous material in the § 172.101 table or in a packaging section in this part.

(b) Packagings for limited quantity and ORM are specified according to hazard class in §§ 173.150 through 173.155 and in § 173.306. In addition to other exceptions provided for limited quantity and ORM-D materials in this part:

(1) Strong outer packagings as specified in this part, marking requirements specified in subpart D of part 172 of this subchapter, and the 30 kg (66 pounds) gross weight limitation are not required for packages of limited quantity materials marked in accordance with § 172.315, or, until December 31, 2013, materials classed and marked as ORM-D and described as a Consumer commodity, as defined in § 171.8 of this subchapter, when—

(i) Unitized in cages, carts, boxes or similar overpacks;

(ii) Offered for transportation or transported by:

(A) Rail;  
(B) Private or contract motor carrier;

or

(C) Common carrier in a vehicle under exclusive use for such service; and

(iii) Transported to or from a manufacturer, a distribution center, or a retail outlet, or transported to a disposal facility from one offeror.

(2) The 30 kg (66 pounds) gross weight limitation does not apply to packages of limited quantity materials marked in accordance with § 172.315, or, until December 31, 2013, materials classed and marked as ORM-D and described as a Consumer commodity, as defined in § 171.8 of this subchapter, when offered for transportation, or transported, by highway or rail between a manufacturer, a distribution center, and a retail outlet provided—

(i) Inner packagings conform to the quantity limits for inner packagings

specified in §§ 173.150(b), 173.152(b), 173.154(b), 173.155(b) and 173.306 (a) and (b), as appropriate;

(ii) The inner packagings are packed into corrugated fiberboard trays to prevent them from moving freely;

(iii) The trays are placed in a fiberboard box which is banded and secured to a wooden pallet by metal, fabric, or plastic straps, to form a single palletized unit;

(iv) The package conforms to the general packaging requirements of subpart B of this part;

(v) The maximum net quantity of hazardous material permitted on one palletized unit is 250 kg (550 pounds); and

(vi) The package is properly marked in accordance with § 172.315 or, until December 31, 2013, § 172.316 of this subchapter.

43. Section 173.161 is revised to read as follows:

**§ 173.161 Chemical kits and first aid kits.**

(a) *Applicability.* Chemical kits and First aid kits contain one or more compatible items of hazardous materials in boxes, cases, etc. that, for example, are used for medical, analytical, diagnostic, testing, or repair purposes.

(b) *Authorized materials.* (1) The kits may only contain hazardous materials for which packaging exceptions are provided in column 8(A) the § 172.101 Table of this subchapter. For transportation by aircraft, the kits may only contain quantities of hazardous materials authorized as excepted quantities in § 173.4a or as limited quantities in § 173.27(f). Materials forbidden for transportation by passenger aircraft or cargo aircraft may not be included in the kits.

(2) The packing group assigned to the chemical kit and first aid kit as a whole must be the most stringent packing group assigned to any individual substance in the kit and must be shown on the shipping paper, if applicable, in accordance with Subpart C of Part 172 of this subchapter.

(c) *Packaging.* Except for transportation by aircraft or vessel, chemical kits and first aid kits must be packaged in combination packagings conforming to the packaging requirements of subpart B of this part. For transportation by aircraft or vessel, chemical kits and first aid kits must be packaged in specification combination packagings based on the performance level of the most stringent packing group of material contained within the kit. For transportation by aircraft, friction-type closures must be secured by secondary means and inner packagings intended to contain liquids

must be capable of meeting the pressure differential requirements prescribed in § 173.27(c). Inner and outer packaging quantity limits for packages are as follows:

(1) Except for liquids of Division 5.2 (organic peroxide), inner packagings containing not more than 250 mL. Except for transportation by aircraft, for Division 5.2 (organic peroxide) liquids of Type B and C, inner packagings containing not more than 25 mL and for Division 5.2 (organic peroxide) liquids of Type D, E and F, inner packagings containing not more than 125 mL. For transportation by aircraft, for Division 5.2 (organic peroxide) liquids of Type D, E and F (only), inner packagings containing not more than 125 mL;

(2) Except for solids of Division 5.2 (organic peroxide) of Type B and C, inner packagings containing not more than 250 g. Except for transportation by aircraft, for a Division 5.2 (organic peroxide) solid of Type B and C, inner packagings containing not more than 100 g. For transportation by aircraft, for a Division 5.2 (organic peroxide) solid of Type D, E and F (only), inner packagings containing not more than 250 g;

(3) No more than 10 L or 10 kg of hazardous material may be contained in one outer package (excluding dry ice). For transportation by aircraft, no more than 1 L or 1 kg of hazardous material may be contained in one kit (excluding dry ice);

(4) Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight;

(5) Except for Carbon dioxide, solid (Dry ice), UN1845, no other hazardous materials may be packed within the same outer packaging as the kits. Dry ice must be packaged in accordance with § 173.217 of this subchapter;

(6) The kits must include sufficient absorbent material to completely absorb the contents of any liquid hazardous materials contained in the kits. The contents must be separated, placed, or packed, and closed with cushioning material to protect them from damage; and

(7) The contents of the kits must be packed so there will be no possibility of the mixture of contents causing dangerous evolution of heat or gas.

(d) *Exceptions.* (1)(i) Chemical kits and first aid kits are eligible for the excepted quantity exceptions provided in §§ 173.4 and 173.4a. For transportation by aircraft, chemical kits and first aid kits and are also eligible for the limited quantity provisions provided in § 173.27(f). For inner

packaging quantity limits, see § 173.27(f), Table 3.

(ii) A package conforming to the provisions of this section is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel. Chemical kits and first aid kits conforming to this section may be marked as a limited quantity as prescribed in § 172.315 and, if applicable, are eligible for the exceptions provided in § 173.156. Additionally, chemical and first aid kits conforming to this section are not subject to part 174 (carriage by rail) or part 177 (carriage by highway) of this subchapter when marked in accordance with § 172.315 of this subchapter.

(2) *Consumer commodities.* Until December 31, 2013, a chemical kit or first aid kit conforming to the provisions of this section that is also a consumer commodity (see § 171.8 of this subchapter) may be renamed "Consumer commodity" and reclassified and marked as "ORM-D" or "ORM-D-AIR" material in accordance with § 172.316 of this subchapter. Consumer commodities are excepted from the specification packaging requirements of this subchapter and each completed package must conform to Subpart B of this Part. A consumer commodity package which conforms to the provisions of this paragraph is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel, and is eligible for the exceptions provided in § 173.156.

(3) Kits that are carried on board transport vehicles for first aid or operating purposes are not subject to the requirements of this subchapter.

44. New § 173.165 is added to read as follows:

#### § 173.165 Polyester resin kits.

(a) Except for transportation by aircraft, polyester resin kits consisting of a base material component (Class 3, Packing Group II or III) and an activator component (Type D, E, or F organic peroxide which does not require temperature control)—

(1) The organic peroxide component must be packed in inner packagings not over 125 mL (4.22 ounces) net capacity each for liquids or 500 g (17.64 ounces) net capacity each for solids;

(2) The flammable liquid component must be packed in inner packagings not

over 5 L (1.3 gallons) net capacity each for Packing Group II or III liquid; and

(3) The flammable liquid component and the organic peroxide component may be packed in the same strong outer packaging provided they will not interact dangerously in the event of leakage.

(b) For transportation by aircraft, polyester resin kits consisting of a base material component (Class 3, Packing Group II or III) and an activator component (Type D, E, or F organic peroxide which does not require temperature control)—

(1) The organic peroxide component is limited to a quantity of 125 mL (4.22 ounces) per inner packaging if liquid, and 500 g (1 pound) if solid. The base material is limited to a quantity of 5 L (1.3 gallons) in metal or plastic inner packagings and 1 L (0.3 gallons) in glass inner packagings;

(2) The components may be placed in the same outer packaging provided they will not interact dangerously in the event of leakage;

(3) Packing group will be II or III, according to the criteria for Class 3, applied to the base material. Additionally, unless otherwise excepted in this subchapter, polyester resin kits must be packaged in specification combination packagings based on the performance level required of the base material (II or III) contained within the kit;

(4) Closures must be secured by secondary means;

(5) Inner packagings intended to contain liquids must be capable of meeting the pressure differential requirements prescribed in § 173.27(c); and

(6) Except as provided in paragraph (b) of this section, exceptions for polyester resin kits intended for transportation by aircraft are provided in §§ 173.4a (excepted quantities) and 173.27(f) (limited quantities).

(c) *Consumer commodities.* Until December 31, 2013, a polyester resin kit conforming to the provisions of this section that is also a consumer commodity (see § 171.8 of this subchapter) may be renamed "Consumer commodity" and reclassified and marked as "ORM-D" or "ORM-D-AIR" material in accordance with § 172.316 of this subchapter. Consumer commodities are excepted from the specification packaging requirements of this subchapter and each completed package must conform to subpart B of this part 173. A consumer commodity package which conforms to the provisions of this paragraph is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the

material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel, and is eligible for the exceptions provided in § 173.156.

45. New § 173.167 is added to read as follows:

**§ 173.167 Consumer commodities.**

Consumer commodities (see § 171.8 of this subchapter) when intended for transportation by aircraft may only include articles or substances of Class 2 (non-toxic aerosols only), Class 3 (Packing Group II and III only), Division 6.1 (Packing Group III only), UN3077, UN3082, and UN3175 provided such materials do not have a subsidiary risk and are authorized aboard a passenger-carrying aircraft. Friction-type closures must be secured by secondary means. Inner packagings intended to contain liquids must be capable of meeting the

pressure differential requirements prescribed in § 173.27(c). Consumer commodities are excepted from the specification packaging requirements of this subchapter and each completed package must conform to subpart B of part 173 of this subchapter. Packages of consumer commodities must also be capable of withstanding a 1.2 m drop on solid concrete in the position most likely to cause damage and a 24-hour stack test. Inner and outer packaging quantity limits for consumer commodities are as follows:

(a) Non-toxic aerosols, as defined in § 171.8 and constructed in accordance with § 173.306 of this subchapter, in non-refillable, non-metal containers not exceeding 120 mL (4 fluid ounces) each, or in non-refillable metal containers not exceeding 820 mL (28 ounces) each except that flammable aerosols may not exceed 500 mL (16.9 ounces) each;

(b) Liquids, in inner packagings not exceeding 500 mL (16.9 ounces) each;

(c) Solids, in inner packagings not exceeding 500 g (1.0 pounds) each; or

(d) Any combination thereof, placed in an outer packaging not to exceed 30 kg (66 pounds) gross weight as prepared for shipment.

46. In § 173.225:

a. In paragraph (c)(8), the Organic Peroxide Table is amended by removing and adding the following entries in the appropriate order.

b. In paragraph (e), the Organic Peroxide IBC Table is amended by removing one entry and adding one entry in the appropriate order.

**§ 173.225 Packaging requirements and other provisions for organic peroxides.**

\* \* \* \* \*

(c) \* \* \*

(8) \* \* \*

## ORGANIC PEROXIDE TABLE

Technical name (1)	ID No. (2)	Concent. (mass %) (3)	Diluent (mass %) (4a)	Diluent (mass %) (4b)	Diluent (mass %) (4c)	Diluent (mass %) (4d)	Water (mass %) (5)	Packing method (6)	Temp control (7a)	Temp emergency (7b)	Notes (8)
<b>[Remove]</b>											
Di-(2-tert-butylperoxyisopropyl) benzene(s) ..	UN3106 ..	*	*	*	*	*	≤57 .....	OP7 .....	.....	.....	1, 9
Di-(2-tert-butylperoxyisopropyl) benzene(s) ..	Exempt ..	≤42 .....	.....	.....	.....	.....	≥58 .....	Exempt.	.....	.....	.....
2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexane	UN3105 ..	*	*	*	*	*	.....	.....	.....	.....	.....
<b>[Add]</b>											
Di-(tert-butylperoxyisopropyl) benzene(s) ..	UN3106 ..	*	*	*	*	*	≤57 .....	OP7 .....	.....	.....	1, 9
Di-(tert-butylperoxyisopropyl) benzene(s) ..	Exempt ..	≤42 .....	.....	.....	.....	.....	≥58 .....	Exempt.	.....	.....	.....
2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexane	UN3103 ..	*	*	*	*	*	.....	.....	.....	.....	.....
2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexane	UN3105 ..	*	*	*	*	*	.....	.....	.....	.....	.....

\* \* \* \* \*

(e) \* \* \*

## ORGANIC PEROXIDE IBC TABLE

UN No.	Organic peroxide	Type of IBC	Maximum quantity (liters)	Control temperature	Emergency temperature
<b>[Remove]</b>					
3109 .....	ORGANIC PEROXIDE, TYPE F, LIQUID.			*	*
	Peroxyacetic acid, stabilized, not more than 17% .....	31H1 31HA1 31A	1500 1500 1500	*	*
<b>[Add]</b>					
3109 .....	ORGANIC PEROXIDE, TYPE F, LIQUID.			*	*
	Peroxyacetic acid, stabilized, not more than 17% .....	31A 31H1 31H2 31HA1	1500 1500 1500 1500	*	*
				*	*

\* \* \* \* \*

47. In § 173.230, paragraphs (g) and (h) are revised to read as follows:

**§ 173.230 Fuel cell cartridges containing hazardous material.**

\* \* \* \* \*

(g) *Limited quantities.* Limited quantities of hazardous materials contained in fuel cell cartridges are excepted from the labeling requirements, unless the cartridges are offered for transportation or transported by aircraft, and the placarding and specification packaging requirements of this subchapter when packaged according to this section. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight. Except as authorized in paragraph (h) of this section, a package containing a limited quantity of fuel cell cartridges must be marked as specified in § 172.315 of this subchapter and, for transportation by highway or rail, are not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, or marine pollutant, and are eligible for the exceptions provided in § 173.156. Limited quantities of fuel cell cartridges containing Division 2.1 (flammable gas) or Division 4.3 (water-reactive) material are not permitted for transportation by aircraft. For transportation by highway,

rail and vessel, the following combination packagings are authorized:

(1) For flammable liquids, in fuel cell cartridges containing not more than 1.0 L (0.3 gallon), packed in strong outer packaging.

(2) For water-reactive substances (Division 4.3 Dangerous when wet material), in fuel cell cartridges containing not more than 0.5 L (16.9 fluid ounces) for liquids or not over 0.5 kg (1.1 pound) for solids, packed in strong outer packaging.

(3) For corrosive materials, in fuel cell cartridges containing not more than 1.0 L (0.3 gallon) for liquids or not more than 1.0 kg (2.2 pounds) for solids packed in strong outer packaging.

(4) For liquefied (compressed) flammable gas, in fuel cell cartridges not over 120 mL (4 fluid ounces) net capacity each, packed in strong outer packaging.

(5) For hydrogen in metal hydride, in fuel cell cartridges not over 120 mL (4 fluid ounces) net capacity each, packed in strong outer packaging.

(6) For transportation by aircraft, the following combination packagings are authorized:

(i) For flammable liquids, in fuel cell cartridges containing not more than 0.5 L (16.9 fluid ounces), packed in strong outer packaging. Additionally, each package may contain no more than 2.5 kg (net mass) of fuel cell cartridges.

(ii) For corrosive materials, in fuel cell cartridges containing not more than 200 mL (6.7 fluid ounces) for liquids or not

more than 200 g (0.4 pounds) for solids packed in strong outer packaging. Additionally, each package may contain no more than 2.5 kg (net mass) of fuel cell cartridges.

(h) *Consumer commodities.* Except for transportation by aircraft and until December 31, 2013, a limited quantity which conforms to the provisions of paragraph (g) of this section and is also a "consumer commodity" as defined in § 171.8 of this subchapter may be renamed "Consumer commodity" and reclassified as ORM-D. Shipments of ORM-D materials are not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, and are eligible for the exceptions provided in § 173.156.

48. In § 173.301b, paragraphs (c)(2)(iii) and (e) are revised to read as follows:

**§ 173.301b Additional general requirements for shipment of UN pressure receptacles.**

\* \* \* \* \*

(c) \* \* \*  
(2) \* \* \*

(iii) By protecting the valves by shrouds or guards conforming to the requirements in ISO 11117. For metal hydride storage systems, valve protection in accordance with the requirements in ISO 16111 (IBR; see § 171.7 of this subchapter);

\* \* \* \* \*

(e) *Pyrophoric gases.* A UN pressure receptacle must have valve outlets equipped with gas-tight plugs or caps when used for pyrophoric or flammable mixtures of gases containing more than 1% pyrophoric compounds. When these pressure receptacles are manifolded in a bundle, each of the pressure receptacles must be equipped with an individual valve that must be closed while in transportation, and the outlet of the manifold valve must be equipped with a pressure retaining gas-tight plug or cap. Gas-tight plugs or caps must have threads that match those of the valve outlets.

\* \* \* \* \*

49. In § 173.306, paragraphs (h)(2), (i) and (k) are revised to read as follows:

**§ 173.306 Limited quantities of compressed gases.**

\* \* \* \* \*

(h) \* \* \*

(2)(i) Except for transportation by aircraft, special exceptions for shipment of lighter refills in the ORM-D class are provided in paragraph (i) of this section.

(ii) *Exceptions.* For highway transportation, when no more than 1,500 lighter refills covered by this paragraph are transported in one motor vehicle, the requirements of subparts C through H of part 172, and Part 177 of this subchapter do not apply. Lighter refills covered under this paragraph must be packaged in rigid, strong outer packagings meeting the general packaging requirements of subpart B of this part. Outer packagings must be plainly and durably marked, on two opposing sides or ends, with the word "LIGHTER REFILLS" and the number of devices contained therein in letters measuring at least 20 mm (0.79 in) in height. No person may offer for transportation or transport the lighter refills or prepare the lighter refills for shipment unless that person has been specifically informed of the requirements of this section.

(i)(1) A limited quantity of compressed gas (Class 2) which conform to the provisions of paragraph (a)(1), (a)(3), (a)(5), (b) or, except for transportation by aircraft, paragraph (h) of this section are excepted from labeling requirements, unless the material is offered for transportation or transported by aircraft, and the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. Unless otherwise specified in paragraph (i)(2) of this section, packages of limited quantities intended for transportation by aircraft must conform to the applicable requirements (e.g., authorized materials,

inner packaging quantity limits and closure securement) of § 173.27. A limited quantity package which conforms to the provisions of this section is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel, and is eligible for the exceptions provided in § 173.156. Outside packagings conforming to this paragraph are not required to be marked "INSIDE CONTAINERS COMPLY WITH PRESCRIBED REGULATIONS." In addition, packages of limited quantities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight. The following combination packagings are authorized:

(2) Until December 31, 2013, a limited quantity of compressed gas which conforms to the provisions of paragraphs (a)(1), (a)(3), (a)(5), (b) or (h) of this section and is also a "consumer commodity" as defined in 171.8 of this subchapter in effect on October 1, 2010, may be renamed "Consumer commodity" and reclassified and marked as ORM-D material in accordance with § 172.316. Additionally, until December 31, 2013, an ORM-D material that is prepared for air shipment and packaged in accordance with § 173.27 in effect on October 1, 2010, may be renamed "Consumer commodity" and reclassified and marked as ORM-D-AIR material in accordance with § 172.316. A consumer commodity package which conforms to the provisions of this section is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel, and is eligible for the exceptions provided in § 173.156. Outside packagings conforming to this paragraph are not required to be marked "INSIDE CONTAINERS COMPLY WITH PRESCRIBED REGULATIONS." In addition, packages of consumer commodities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight.

\* \* \* \* \*

(k) For additional exceptions, see § 173.307.

50. In § 173.307, a new paragraph (a)(6) is added to read as follows:

**§ 173.307 Exceptions for compressed gases.**

(a) \* \* \*

(6) Light bulbs provided they are packaged so that the projectile effects of any rupture of the bulb will be contained within the package.

\* \* \* \* \*

51. New § 173.311 is added to read as follows:

**§ 173.311 Metal hydride storage systems.**

The following packing instruction is applicable to transportable UN Metal hydride storage systems (UN3468) with pressure receptacles not exceeding 150 liters (40 gallons) in water capacity and having a maximum developed pressure not exceeding 25 MPa. Metal hydride storage systems be designed, constructed, initially inspected and tested in accordance with ISO 16111:2008, Transportable gas storage devices—Hydrogen absorbed in reversible metal hydride (IBR, see § 171.7 of this subchapter) as authorized under § 178.71(f) of this subchapter. Steel pressure receptacles or composite pressure receptacles with steel liners must be marked in accordance with § 173.301b(f) which specifies that a steel UN pressure receptacle bearing an "H" mark must be used for hydrogen bearing gases or other gases that may cause hydrogen embrittlement. Requalification intervals must be no more than every five years as specified in § 180.207 in accordance with the requalification procedures prescribed in ISO 16111.

52. In § 173.320, a new paragraph (d) is added to read as follows:

**§ 173.320 Cryogenic liquids; exceptions.**

\* \* \* \* \*

(d) For transportation aboard a vessel, see the IMDG Code (IBR, see § 171.7 of this subchapter), Packing Instruction P203 and the packaging specifications in part 6, chapter 6.2.

53. In 173.322, paragraph (e) is added to read as follows:

**§ 173.322 Ethyl chloride.**

\* \* \* \* \*

(e) In capsules under the following conditions:

(1) The mass of gas must not exceed 150 g per capsule;

(2) The capsule must be free of faults liable to impair its strength;

(3) The leakproofness integrity of the closure must be maintained by a secondary means (e.g., cap, crown, seal, binding, etc.) capable of preventing any leakage of the closure while in transportation; and

(4) The capsules must be placed in a strong outer packaging suitable for its contents and may not exceed a gross mass of 75 kg.

## PART 175—CARRIAGE BY AIRCRAFT

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

**Authority:** 49 U.S.C. 5101–5128; 44701; 49 CFR 1.45 and 1.53.

55. In § 175.8, in paragraph (b)(3), the first sentence is revised to read as follows:

### § 175.8 Exceptions for operator equipment and items of replacement.

\* \* \* \* \*

(b) \* \* \*

(3) Alcoholic beverages, perfumes, colognes, and liquefied gas lighters carried aboard a passenger-carrying aircraft by the operator for use or sale on that specific aircraft. \* \* \*

\* \* \* \* \*

56. Section 175.9 is revised to read as follows:

### § 175.9 Special aircraft operations.

(a) This subchapter applies to rotorcraft external load operations transporting hazardous material on board, attached to, or suspended from an aircraft. Additionally, operators must have all applicable requirements prescribed in 14 CFR part 133 approved by the FAA Administrator prior to accepting or transporting hazardous material.

(b) *Exceptions.* This subchapter does not apply to the following materials used for special aircraft operations when applicable FAA operator requirements have been met, including training operator personnel on the proper handling and stowage of the hazardous materials carried:

(1) Hazardous materials loaded and carried in hoppers or tanks of aircraft certificated for use in aerial seeding, dusting spraying, fertilizing, crop improvement, or pest control, to be dispensed during such an operation.

(2) Parachute activation devices, lighting equipment, oxygen cylinders, flotation devices, smoke grenades, flares, or similar devices carried during a parachute operation.

(3) Smoke grenades, flares, and pyrotechnic devices affixed to aircraft during any flight conducted as part of a scheduled air show or exhibition of aeronautical skill. The aircraft may not carry any persons other than required flight crewmembers. The affixed installation accommodating the smoke grenades, flares, or pyrotechnic devices on the aircraft must be approved for its intended use by the FAA Flight

Standards District Office having responsibility for that aircraft.

(4) Hazardous materials are carried and used during dedicated air ambulance, fire fighting, or search and rescue operations.

(5) A transport incubator unit necessary to protect life or an organ preservation unit necessary to protect human organs, carried in the aircraft cabin, provided:

(i) The compressed gas used to operate the unit is in an authorized DOT specification cylinder and is marked, labeled, filled, and maintained as prescribed by this subchapter;

(ii) Each battery used is of the nonspillable type;

(iii) The unit is constructed so valves, fittings, and gauges are protected from damage;

(iv) The pilot-in-command is advised when the unit is on board, and when it is intended for use;

(v) The unit is accompanied by a person qualified to operate it;

(vi) The unit is secured in the aircraft in a manner that does not restrict access to or use of any required emergency or regular exit or of the aisle in the passenger compartment; and,

(vii) Smoking within 3 m (10 feet) of the unit is prohibited.

(6) Hazardous materials which are loaded and carried on or in cargo only aircraft, and which are to be dispensed or expended during flight for weather control, environmental restoration or protection, forest preservation and protection, fire fighting and prevention, flood control, or avalanche control purposes, when the following requirements are met:

(i) Operations may not be conducted over densely populated areas, in a congested airway, or near any airport where carrier passenger operations are conducted.

(ii) Each operator must prepare and keep current a manual containing operational guidelines and handling procedures, for the use and guidance of flight, maintenance, and ground personnel concerned in the dispensing or expending of hazardous materials. The manual must be approved by the FAA Principal Operations Inspector assigned to the operator.

(iii) No person other than a required flight crewmember, FAA inspector, or person necessary for handling or dispensing the hazardous material may be carried on the aircraft.

(iv) The operator of the aircraft must have advance permission from the owner of any airport to be used for the dispensing or expending operation.

(v) When dynamite and blasting caps are carried for avalanche control flights,

the explosives must be handled by, and at all times be under the control of, a qualified blaster. When required by a State or local authority, the blaster must be licensed and the State or local authority must be identified in writing to the FAA Principal Operations Inspector assigned to the operator.

57. In § 175.10:

a. Paragraphs (a)(17) and (18) are redesignated as paragraphs (a)(18) and (19) respectively.

b. New paragraph (a)(17) is added.

c. In newly designated paragraph (a)(19), in the introductory text, the words “and checked” are added between the word “carry-on” and the word “baggage.”

d. In newly designated paragraph (a)(19) introductory text, after the phrase “fuel cell systems”, the word “and” is removed.

e. Newly designated paragraph (a)(19)(iv) is revised.

f. In newly designated paragraph (a)(19)(x), at the end of the sentence, the period is replaced with a semicolon.

g. New paragraphs (a)(19)(xi) and (xii) are added.

The revisions and additions read as follows:

### § 175.10 Exceptions for passengers, crewmembers, and air operators.

(a) \* \* \*

(17) A wheelchair or other battery-powered mobility aid equipped with a lithium-ion battery, when carried as checked baggage, provided—

(i) The lithium-ion battery must be of a type that successfully passed each test in the UN Manual of Tests and Criteria as specified in § 173.185, unless approved by the Associate Administrator;

(ii) Visual inspection including removal of the battery, where necessary, reveals no obvious defects (removal of the battery from the housing should be performed by qualified airline personnel only);

(iii) Battery terminals must be protected from short circuits (e.g., by being enclosed within a battery container) that is securely attached to the mobility aid;

(iv) The pilot-in-command is advised, either orally or in writing, prior to departure, as to the location of the wheelchair or mobility aid aboard the aircraft; and

(v) The wheelchair or mobility aid is loaded, stowed, secured and unloaded in an upright position and in a manner that prevents unintentional activation and protects it from damage.

(vi) A lithium metal battery is forbidden aboard a passenger-carrying aircraft.

\* \* \* \* \*

(19) \* \* \*

(iv) Fuel cells containing fuel are permitted in carry-on baggage only;

\* \* \*

(xi) Spare fuel cell cartridges containing flammable liquids or corrosive materials may be transported in checked or carry-on baggage.

(xii) Spare fuel cell cartridges containing liquefied flammable gas, hydrogen in a metal hydride or water reactive substances may only be transported in carry-on baggage.

\* \* \* \* \*

58. Section 175.25 is revised to read as follows:

**§ 175.25 Notification at air passenger facilities of hazardous materials restrictions.**

(a) Each person who engages in for-hire air transportation of passengers must display notices of the requirements applicable to the carriage of hazardous materials aboard aircraft, and the penalties for failure to comply with those requirements in accordance with this section.

(b) *Ticket purchase.* An aircraft operator must ensure that information on the types of hazardous materials specified in paragraph (d) of this section which a passenger is permitted and forbidden to transport aboard an aircraft is provided at the point of ticket purchase. During the purchase process, regardless if the process is completed remotely (e.g. via the Internet or phone) or when completed at the airport, with or without assistance from another person (e.g. automated check-in facility), the aircraft operator must ensure that information on the types of hazardous materials which a passenger is forbidden to transport aboard an aircraft is provided to passengers. Information may be in text or in pictorial form and, effective January 1, 2013, must be such that the final ticket purchase cannot be completed until the passenger, or a person acting on the person's behalf, has indicated that they understand the restrictions on hazardous materials in baggage.

(c) An aircraft operator must ensure that information on the types of hazardous materials which a passenger is forbidden to transport aboard an aircraft is provided during the flight check-in process.

(1) Effective January 1, 2013, when the flight check-in process is conducted remotely (e.g. via the Internet or phone) or when completed at the airport, without assistance from another person (e.g. automated check-in kiosk), the aircraft operator must ensure that information on the types of hazardous materials which a passenger is

forbidden to transport aboard an aircraft is provided to passengers. Information may be in text or in pictorial form and should be such that the check in process cannot be completed until the passenger, or a person acting on the person's behalf, has indicated that they understand the restrictions on hazardous materials in baggage.

(2) When the check-in process is not conducted remotely (e.g. at the airport with the assistance of an airline representative), passenger notification of permitted and forbidden hazardous materials may be completed through signage (electronic or otherwise) provided it is legible and prominently displayed so it can be seen by passengers in locations where the aircraft operator issues tickets, checks baggage, and maintains aircraft boarding areas.

(d) An operator of passenger-carrying aircraft should have information on those hazardous materials which may be carried by passengers in accordance with § 175.10 available prior to the check-in process (e.g., on their Web site) or conveyed through other sources of information.

59. In § 175.30, paragraph (e)(3) is revised to read as follows:

**§ 175.30 Inspecting shipments.**

\* \* \* \* \*

(e) \* \* \*

(3) Has determined that the word "OVERPACK" appears on the outside of the overpack when specification packagings are prescribed or the overpack contains packages of limited quantities conforming to § 173.27.

60. Section 175.75 is revised to read as follows:

**§ 175.75 Quantity limitations and cargo location.**

(a) No person may carry on an aircraft a hazardous material except as permitted by this subchapter.

(b) Except as otherwise provided in this subchapter, no person may carry a hazardous material in the cabin of a passenger-carrying aircraft or on the flight deck of any aircraft, and the hazardous material must be located in a place that is inaccessible to persons other than crew-members. 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). A package bearing a KEEP AWAY FROM HEAT handling marking must be protected from direct sunshine and

stored in a cool and ventilated place, away from sources of heat.

(c) For each package containing a hazardous material acceptable for carriage aboard passenger-carrying aircraft, no more than 25 kg (55 pounds) net weight of hazardous material may be loaded in an inaccessible manner. In addition, an additional 75 kg (165 pounds) net weight of Division 2.2 (non-flammable compressed gas) may be loaded in an inaccessible manner. The requirements of this paragraph do not apply to ORM-D-AIR materials or Class 9 materials, except that lithium batteries, including lithium batteries packed with or contained in equipment may be loaded in an inaccessible manner only if they are packaged in a container approved by the FAA Administrator for such use or carried in a Class C cargo compartment.

(d) For the purposes of this section—

(1) *Accessible* means on passenger-carrying or cargo-only aircraft each package is loaded where a crew member or other authorized person can access, handle and when size and weight permit, separate such packages from other cargo during flight including a freight container in an accessible cargo compartment when packages are loaded in an accessible manner. Additionally, a package is considered accessible when transported on a cargo-only aircraft if:

(i) In a cargo compartment certified by FAA as a Class C aircraft cargo compartment as defined in 14 CFR 25.857(c); or

(ii) In an FAA-certified freight container that has an approved fire or smoke detection system and fire suppression system equivalent to that required by the certification requirements for a Class C aircraft cargo compartment.

(2) *Inaccessible* means all other configurations including a freight container in an accessible compartment when packages are loaded inaccessibly.

(e) For transport aboard cargo-only aircraft, the requirements of paragraphs (c) and (d) of this section do not apply to the following hazardous materials:

(1) Class 3—Packing Group III (that do not meet the definition of another hazard class except CORROSIVE), Division 6.1 ((primary) except those also labeled FLAMMABLE LIQUID), Division 6.2, Class 7, Class 9 except that lithium batteries, including lithium batteries packed with or contained in equipment may be loaded in an inaccessible manner only if they are packaged in a container approved by the FAA Administrator for such use or carried in a Class C cargo compartment, or ORM-D-AIR materials marked in

accordance with § 172.316 of this subchapter.

(2) Packages of hazardous materials transported aboard a cargo aircraft, when other means of transportation are impracticable or not available, in accordance with procedures approved in writing by the FAA Regional or Field Security Office in the region where the operator is located.

(3) Packages of hazardous materials carried on small, single pilot, cargo aircraft if:

(i) No person is carried on the aircraft other than the pilot, an FAA inspector, the shipper or consignee of the material, a representative of the shipper or consignee so designated in writing, or a person necessary for handling the material;

(ii) The pilot is provided with written instructions on the characteristics and proper handling of the materials; and

(iii) Whenever a change of pilots occurs while the material is on board, the new pilot is briefed under a hand-

to-hand signature service provided by the operator of the aircraft.

(f) At a minimum, quantity limits and loading instructions in the following quantity and loading table must be followed to maintain acceptable quantity and loading between packages containing hazardous materials. The quantity and loading table is as follows:

#### QUANTITY AND LOADING TABLE

Applicability	Forbidden	Quantity limitation: 25 kg net weight of hazardous material plus 75 kg net weight of Division 2.2 (non-flammable compressed gas)	No limit
Passenger-carrying aircraft .....	Cargo Aircraft Only labeled packages	Inaccessible .....	Accessible.
Cargo-only aircraft—Packages authorized aboard a passenger-carrying aircraft.	Not applicable .....	Inaccessible (See Note) .....	Accessible.
Cargo-only aircraft—Packages not authorized aboard a passenger-carrying aircraft and displaying a Cargo Aircraft Only label.	Inaccessible (See Note) .....	Not applicable .....	Accessible.

**Note:** The following materials are not subject to this loading restriction—

- a. Class 3, PG III (unless the hazardous material meets the definition of another hazard class, except CORROSIVE).
- b. Primary Class 6 (unless also labeled as a flammable liquid).
- c. Class 7 (unless the hazardous material meets the definition of another hazard class).
- d. Class 9 (except lithium batteries) or ORM-D—AIR materials marked in accordance with § 172.316.

61. In § 175.78, paragraph (c)(4)(iii) is revised to read as follows:

#### § 175.78 Stowage compatibility of cargo.

\* \* \* \* \*

(c) \* \* \*

(4) \* \* \*

(iii) Except for Division 1.4B explosives and as otherwise provided in this note, explosives of different compatibility groups may be stowed together whether or not they belong to the same division. Division 1.4B explosives must not be stowed together with any other explosive permitted aboard aircraft except Division 1.4S unless segregated as prescribed in paragraph (iv) of this note.

\* \* \* \* \*

#### PART 176—CARRIAGE BY VESSEL

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

**Authority:** 49 U.S.C. 5101–5128; 49 CFR 1.53.

63. In § 176.2, in the definition for “Cargo transport unit,” the first sentence is revised to read as follows:

#### § 176.2 Definitions.

\* \* \* \* \*

*Cargo transport unit* means a transport vehicle, a freight container, a portable tank or a MEGC. \* \* \*

64. In § 176.76, paragraph (a)(9) is added to read as follows:

#### § 176.76 Transport vehicles, freight containers, and portable tanks containing hazardous materials.

(a) \* \* \*

(9) When security devices, beacons or other tracking or monitoring equipment are used, they must be securely installed and must be of a certified safe type for the hazardous materials that will be carried within the freight container or transport vehicle.

\* \* \* \* \*

65. In § 176.84, in paragraph (b) Table of provisions, Code Number “143” and its corresponding provision are removed.

66. Section 176.142 is removed and reserved.

67. In Section 176.905, paragraphs (a)(5) and (a)(6) are removed and reserved.

#### PART 178—SPECIFICATIONS FOR PACKAGINGS

68. The authority citation for part 178 continues to read as follows:

**Authority:** 49 U.S.C. 5101–5128; 49 CFR 1.53.

69. Section 178.71 is revised to read as follows:

#### § 178.71 Specifications for UN pressure receptacles.

(a) *General.* Each UN pressure receptacle must meet the requirements of this section. Requirements for approval, qualification, maintenance, and testing are contained in § 178.70 and subpart C of part 180 of this subchapter.

(b) *Definitions.* The following definitions apply for the purposes of design and construction of UN pressure receptacles under this subpart:

*Alternative arrangement* means an approval granted by the Associate Administrator for a MEGC that has been designed, constructed or tested to the technical requirements or testing methods other than those specified for UN pressure receptacles in part 178 or part 180 of this subchapter.

*Bundle of cylinders.* See § 171.8 of this subchapter.

*Design type* means a pressure receptacle design as specified by a particular pressure receptacle standard.

*Design type approval* means an overall approval of the manufacturer's quality system and design type of each pressure receptacle to be produced within the manufacturer's facility.

*UN tube.* See § 171.8 of this subchapter.

(c) *General design and construction.* UN pressure receptacles and their closures must be designed, manufactured, tested and equipped in accordance with the requirements contained in this section.

(1) Following the final heat treatment, all cylinders, except those selected for batch testing, must be subjected to a hydraulic volumetric expansion test.

(2) The standard requirements applicable to UN pressure receptacles may be varied only if approved in writing by the Associate Administrator.

(3) The test pressure of UN cylinders, tubes, and bundles of cylinders must conform to the requirements in part 178 of this subchapter.

(d) *Service equipment.* (1) Except for pressure relief devices, UN pressure receptacle equipment, including valves, piping, fittings, and other equipment subjected to pressure must be designed and constructed to withstand at least 1.5 times the test pressure of the pressure receptacle.

(2) Service equipment must be configured or designed to prevent damage that could result in the release of the pressure receptacle contents during normal conditions of handling and transport. Manifold piping leading to shut-off valves must be sufficiently flexible to protect the valves and the piping from shearing or releasing the pressure receptacle contents. The filling and discharge valves and any protective caps must be secured against unintended opening. The valves must conform to ISO 10297 (IBR, see § 171.7 of this subchapter) and be protected as specified in § 173.301b(f) of this subchapter.

(3) UN pressure receptacles that cannot be handled manually or rolled, must be equipped with devices (e.g. skids, rings, straps) ensuring that they can be safely handled by mechanical means and so arranged as not to impair the strength of, nor cause undue stresses, in the pressure receptacle.

(4) Pressure receptacles filled by volume must be equipped with a level indicator.

(e) *Bundles of cylinders.* UN pressure receptacles assembled in bundles must be structurally supported and held together as a unit and secured in a manner that prevents movement in relation to the structural assembly and movement that would result in the concentration of harmful local stresses. The frame design must ensure stability under normal operating conditions.

(1) The frame must securely retain all the components of the bundle and must protect them from damage during

conditions normally incident to transportation. The method of cylinder restraint must prevent any vertical or horizontal movement or rotation of the cylinder that could cause undue strain on the manifold. The total assembly must be able to withstand rough handling, including being dropped or overturned.

(2) The frame must include features designed for the handling and transportation of the bundle. The lifting rings must be designed to withstand a design load of 2 times the maximum gross weight. Bundles with more than one lifting ring must be designed such that a minimum sling angle of 45 degrees to the horizontal can be achieved during lifting using the lifting rings. If four lifting rings are used, their design must be strong enough to allow the bundle to be lifted by two rings. Where two or four lifting rings are used, diametrically opposite lifting rings must be aligned with each other to allow for correct lifting using shackle pins. If the bundle is filled with forklift pockets, it must contain two forklift pockets on each side from which it is to be lifted. The forklift pockets must be positioned symmetrically consistent with the bundle center of gravity.

(3) The frame structural members must be designed for a vertical load of 2 times the maximum gross weight of the bundle. Design stress levels may not exceed 0.9 times the yield strength of the material.

(4) The frame must not contain any protrusions from the exterior frame structure that could cause a hazardous condition.

(5) The frame design must prevent collection of water or other debris that would increase the tare weight of bundles filled by weight.

(6) The floor of the bundle frame must not buckle during normal operating conditions and must allow for the drainage of water and debris from around the base of the cylinders.

(7) If the frame design includes movable doors or covers, they must be capable of being secured with latches or other means that will not become dislodged by operational impact loads. Valves that need to be operated in normal service or in an emergency must be accessible.

(8) For bundles of cylinders, pressure receptacle marking requirements only apply to the individual cylinders of a bundle and not to any assembly structure.

(f) *Design and construction requirements for UN refillable welded cylinders.* In addition to the general requirements of this section, UN refillable welded cylinders must

conform to the following ISO standards, as applicable:

(1) ISO 4706: Gas cylinders—Refillable welded steel cylinders—Test pressure 60 bar and below (IBR, see § 171.7 of this subchapter).

(2) ISO 20703: Gas cylinders—Refillable welded aluminum-alloy cylinders—Design, construction and testing (IBR, see § 171.7 of this subchapter).

(3) ISO 18172-1: Gas cylinders—Refillable welded stainless steel cylinders—Part 1: Test pressure 6 MPa and below (IBR, see § 171.7 of this subchapter).

(g) *Design and construction requirements for UN refillable seamless steel cylinders.* In addition to the general requirements of this section, UN refillable seamless steel cylinders must conform to the following ISO standards, as applicable:

(1) ISO 9809-1: Gas cylinders—Refillable seamless steel gas cylinders—Design, construction and testing—Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa. (IBR, see § 171.7 of this subchapter).

(2) ISO 9809-2: Gas cylinders—Refillable seamless steel gas cylinders—Design, construction and testing—Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1 100 MPa. (IBR, see § 171.7 of this subchapter).

(3) ISO 9809-3: Gas cylinders—Refillable seamless steel gas cylinders—Design, construction and testing—Part 3: Normalized steel cylinders. (IBR, see § 171.7 of this subchapter).

(h) *Design and construction requirements for UN refillable seamless aluminum alloy cylinders.* In addition to the general requirements of this section, UN refillable seamless aluminum cylinders must conform to ISO 7866: Gas cylinders—Refillable seamless aluminum alloy gas cylinders—Design, construction and testing. (IBR, see § 171.7 of this subchapter). The use of Aluminum alloy 6351-T6 or equivalent is prohibited.

(i) *Design and construction requirements for UN non-refillable metal cylinders.* In addition to the general requirements of this section, UN non-refillable metal cylinders must conform to ISO 11118: Gas cylinders—Non-refillable metallic gas cylinders—Specification and test methods. (IBR, see § 171.7 of this subchapter).

(j) *Design and construction requirements for UN refillable seamless steel tubes.* In addition to the general requirements of this section, UN refillable seamless steel tubes must conform to ISO 11120: Gas cylinders—

Refillable seamless steel tubes of water capacity between 150 L and 3000 L—Design, construction and testing. (IBR, see § 171.7 of this subchapter).

(k) *Design and construction requirements for UN acetylene cylinders.* In addition to the general requirements of this section, UN acetylene cylinders must conform to the following ISO standards, as applicable:

(1) For the cylinder shell:

(i) ISO 9809–1: Gas cylinders—Refillable seamless steel gas cylinders—Design, construction and testing—Part 1: Quenched and tempered steel cylinders with tensile strength less than 100 MPa.

(ii) ISO 9809–3: Gas cylinders—Refillable seamless steel gas cylinders—Design, construction and testing—Part 3: Normalized steel cylinders.

(2) The porous mass in an acetylene cylinder must conform to ISO 3807–2: Cylinders for acetylene—Basic requirements—Part 2: Cylinders with fusible plugs. (IBR, see § 171.7 of this subchapter).

(l) *Design and construction requirements for UN composite cylinders.* (1) In addition to the general requirements of this section, UN composite cylinders must be designed for unlimited service life and conform to the following ISO standards, as applicable:

(i) ISO 11119–1: Gas cylinders of composite construction—Specification and test methods—Part 1: Hoop-wrapped composite gas cylinders. (IBR, see § 171.7 of this subchapter).

(ii) ISO 11119–2: Gas cylinders of composite construction—Specification and test methods—Part 2: Fully-wrapped fibre reinforced composite gas cylinders with load-sharing metal liners. (IBR, see § 171.7 of this subchapter).

(iii) ISO 11119–3: Gas cylinders of composite construction—Specification and test methods—Part 3: Fully wrapped fibre reinforced composite gas cylinders with non-load sharing metallic or non-metallic liners. (IBR, see § 171.7 of this subchapter).

(2) ISO 11119–2 and ISO 11119–3 gas cylinders of composite construction manufactured in accordance with the requirements for underwater use must bear the “UW” mark.

(m) *Design and construction requirements for UN metal hydride storage systems.* In addition to the general requirements of this section, metal hydride storage systems must conform to the following ISO standards, as applicable:

ISO 16111: Transportable gas storage devices—Hydrogen absorbed in reversible metal hydride (IBR, see § 171.7 of this subchapter).

(n) *Material compatibility.* In addition to the material requirements specified in the UN pressure receptacle design and construction ISO standards, and any restrictions specified in part 173 for the gases to be transported, the requirements of the following standards must be applied with respect to material compatibility:

(1) ISO 11114–1: Transportable gas cylinders—Compatibility of cylinder and valve materials with gas contents—Part 1: Metallic materials. (IBR, see § 171.7 of this subchapter).

(2) ISO 11114–2: Transportable gas cylinders—Compatibility of cylinder and valve materials with gas contents—Part 2: Non-metallic materials. (IBR, see § 171.7 of this subchapter).

(o) *Protection of closures.* Closures and their protection must conform to the requirements in § 173.301(f) of this subchapter.

(p) *Marking of UN refillable pressure receptacles.* UN refillable pressure receptacles must be marked clearly and legibly. The required markings must be permanently affixed by stamping, engraving, or other equivalent method, on the shoulder, top end or neck of the pressure receptacle or on a permanently affixed component of the pressure receptacle, such as a welded collar. Except for the “UN” mark, the minimum size of the marks must be 5 mm for pressure receptacles with a diameter greater than or equal to 140 mm and 2.5 mm for pressure receptacles with a diameter less than 140 mm. The minimum size of the “UN” mark must be 5 mm for pressure receptacles with a diameter less than 140 mm and 10 mm for pressure receptacles with a diameter of greater than or equal to 140 mm. The depth of the markings must not create harmful stress concentrations. A refillable pressure receptacle conforming to the UN standard must be marked as follows:

(1) The UN packaging symbol.



(2) The ISO standard, for example ISO 9809–1, used for design, construction and testing. Acetylene cylinders must be marked to indicate the porous mass and the steel shell, for example: “ISO 3807–2/ISO 9809–1.”

(3) The mark of the country where the approval is granted. The letters “USA”

must be marked on UN pressure receptacles approved by the United States. The manufacturer must obtain an approval number from the Associate Administrator. The manufacturer approval number must follow the country of approval mark, separated by a slash (for example, USA/MXXXX). Pressure receptacles approved by more than one national authority may contain the mark of each country of approval, separated by a comma.

(4) The identity mark or stamp of the IIA.

(5) The date of the initial inspection, the year (four digits) followed by the month (two digits) separated by a slash, for example “2006/04”.

(6) The test pressure in bar, preceded by the letters “PH” and followed by the letters “BAR”. The test pressure must be obtained from the results of a hydraulic volumetric expansion test.

(7) The rated charging pressure of the metal hydride storage system in bar, preceded by the letters “RCP” and followed by the letters “BAR.”

(8) The empty or tare weight. Except for acetylene cylinders, empty weight is the mass of the pressure receptacle in kilograms, including all integral parts (e.g., collar, neck ring, foot ring, etc.), followed by the letters “KG”. The empty weight does not include the mass of the valve, valve cap or valve guard or any coating. The empty weight must be expressed to three significant figures rounded up to the last digit. For cylinders of less than 1 kg, the empty weight must be expressed to two significant figures rounded down to the last digit. For acetylene cylinders, the tare weight must be marked on the cylinders in kilograms (KG). The tare weight is the sum of the empty weight, mass of the valve, any coating and all permanently attached parts (e.g. fittings and accessories) that are not removed during filling. The tare weight must be expressed to two significant figures rounded down to the last digit. The tare weight does not include the cylinder cap or any outlet cap or plug not permanently attached to the cylinder.

(9) The minimum wall thickness of the pressure receptacle in millimeters followed by the letters “MM”. This mark is not required for pressure receptacles with a water capacity less than or equal to 1.0 L or for composite cylinders.

(10) For pressure receptacles intended for the transport of compressed gases and UN 1001 acetylene, dissolved, the working pressure in bar, preceded by the letters “PW”.

(11) For liquefied gases, the water capacity in liters expressed to three significant digits rounded down to the last digit, followed by the letter “L”. If

the value of the minimum or nominal water capacity is an integer, the digits after the decimal point may be omitted.

(12) Identification of the cylinder thread type (e.g., 25E).

(13) The country of manufacture. The letters "USA" must be marked on cylinders manufactured in the United States.

(14) The serial number assigned by the manufacturer.

(15) For steel pressure receptacles, the letter "H" showing compatibility of the steel, as specified in ISO 11114-1.

(16) Identification of aluminum alloy, if applicable.

(17) Stamp for nondestructive testing, if applicable.

(18) Stamp for underwater use of composite cylinders, if applicable.

(19) For metal hydride storage systems having a limited life, the date of expiration indicated by the word "FINAL," followed by the year (four digits), the month (two digits) and separated by a slash.

(q) *Marking sequence.* The marking required by paragraph (p) of this section must be placed in three groups as shown in the example below:

(1) The top grouping contains manufacturing marks and must appear consecutively in the sequence given in paragraphs (p)(12) through (19) of this section.

(2) The middle grouping contains operational marks described in paragraphs (p)(6) through (11) of this section.

(3) The bottom grouping contains certification marks and must appear consecutively in the sequence given in paragraphs (p)(1) through (5) of this section.

(12) (13) (14) (15) (16) (17) (18) (19)

25E USA 765432 H UW FINAL 2XXX/XX

(10) (6) (7) (8) (11) (9)

PW200 PH300BAR RCPXXXBAR 62.1 KG 50L 5.8MM

(1) (2) (3) (4) (5)



ISO 9809-1 USA/MXXXX IB 2005/12

(r) *Other markings.* Other markings are allowed in areas other than the side wall, provided they are made in low stress areas and are not of a size and depth that will create harmful stress concentrations. Such marks must not conflict with required marks.

(s) *Marking of UN non-refillable pressure receptacles.* Unless otherwise specified in this paragraph, each UN non-refillable pressure receptacle must be clearly and legibly marked as prescribed in paragraph (p) of this section. In addition, permanent stenciling is authorized. Except when stenciled, the marks must be on the shoulder, top end or neck of the pressure receptacle or on a permanently affixed component of the pressure receptacle, for example a welded collar.

(1) The marking requirements and sequence listed in paragraphs (p)(1) through (19) of this section are required,

except the markings in paragraphs (p)(8), (9), (12) and (18) are not applicable. The required serial number marking in paragraph (p)(14) may be replaced by the batch number.

(2) Each receptacle must be marked with the words "DO NOT REFILL" in letters of at least 5 mm in height.

(3) A non-refillable pressure receptacle, because of its size, may substitute the marking required by this paragraph with a label. Reduction in marking size is authorized only as prescribed in ISO 7225, Gas cylinders—Precautionary labels. (IBR, see § 171.7 of this subchapter).

(4) Each non-refillable pressure receptacle must also be legibly marked by stenciling the following statement: "Federal law forbids transportation if refilled—penalty up to \$500,000 fine and 5 years in imprisonment (49 U.S.C. 5124)."

(5) No person may mark a non-refillable pressure receptacle as meeting the requirements of this section unless it was manufactured in conformance with this section.

70. In § 178.347-1, paragraph (d)(9) is revised to read as follows:

**§ 178.347-1 General requirements.**

\* \* \* \* \*

(d) \* \* \*

(9) UW-12 in Section VIII of the ASME Code does not apply to a weld seam in a bulkhead that has not been radiographically examined under the following conditions:

(i) The strength of the weld seam is assumed to be 0.85 of the strength of the bulkhead.

(ii) The welded seam must be a full penetration butt weld.

(iii) No more than one seam may be used per bulkhead.

(iv) The welded seam must be completed before forming the dish radius and knuckle radius.

(v) *Compliance test:* Two test specimens of materials representative of those to be used in the manufacture of a cargo tank bulkhead must be tested to failure in tension. The test specimen must be of the same thickness and joined by the same welding procedure. The test specimens may represent all the tanks that are made in the same facility within 6 months after the tests are completed. Before welding, the fit-up of the joints on the test specimens must represent production conditions that would result in the least joint strength. Evidence of joint fit-up and test results must be retained at the manufacturers' facility for at least 5 years.

(vi) *Acceptance criteria:* The ratio of the actual tensile stress at failure to the actual tensile strength of the adjacent material of all samples of a test lot must be greater than 0.85.

71. In § 178.603, paragraph (f)(4) is revised to read as follows:

**§ 178.603 Drop test.**

\* \* \* \* \*

(f) \* \* \*

(4) The packaging or outer packaging of a composite or combination packaging must not exhibit any damage liable to affect safety during transport. Inner receptacles, inner packagings, or articles must remain completely within

the outer packaging and there must be no leakage of the filling substance from the inner receptacles or inner packagings.

\* \* \* \* \*

72. In § 178.703, paragraph (a)(1)(viii) is revised to read as follows:

**§ 178.703 Marking of IBCs.**

(a) \* \* \*  
(1) \* \* \*

(viii) The maximum permissible gross mass, in kg.

\* \* \* \* \*

73. In § 178.955, published February 2, 2010 (75 FR 5400), and effective October 1, 2010, new paragraphs (c)(6) and (c)(7) are added to read as follows:

**§ 178.955 General requirements.**

\* \* \* \* \*

(c) \* \* \*

(6) *Remanufactured Large Packaging* is a metal or rigid Large Packaging that is produced as a UN type from a non-UN type or is converted from one UN design type to another UN design type. Remanufactured Large Packagings are subject to the same requirements of this subchapter that apply to new Large Packagings of the same type.

(7) *Reused Large Packaging* is a Large Packaging intended to be refilled and has been examined and found free of defects affecting its ability to withstand the performance tests. *See also* § 173.36(c) of this subchapter.

\* \* \* \* \*

**PART 180—CONTINUING  
QUALIFICATION AND MAINTENANCE  
OF PACKAGINGS**

74. The authority citation for part 180 continues to read as follows:

**Authority:** 49 U.S.C. 5101–5128; 49 CFR 1.53.

75. In § 180.207, in paragraph (c), in Table 1, between the right-hand column entries “Composite pressure receptacles” and “Pressure receptacles used for,” a new entry “Metal hydride storage systems” is added in the right-hand column and the number “5” is added for the entry in the left-hand column.

76. In § 180.350, in paragraph (b), the second sentence is revised to read as follows:

**§ 180.350 Applicability and definitions.**

\* \* \* \* \*

(b) \* \* \* For the purposes of this subchapter, the replacement of the rigid inner receptacle of a composite IBC with one from the original manufacturer is considered repair. \* \* \*

\* \* \* \* \*

Issued in Washington, DC, on August 6, 2010, under authority delegated in 49 CFR part 106.

**Magdy El-Sibaie,**

*Associate Administrator for Hazardous Materials Safety.*

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