

**DEPARTMENT OF TRANSPORTATION****Pipeline and Hazardous Materials Safety Administration**

**49 CFR Parts 107, 171, 172, 173, 178, 179, and 180**

[Docket No. PHMSA–2017–0120 (HM–219C)]

RIN 2137–AF33

**Hazardous Materials: Adoption of Miscellaneous Petitions To Reduce Regulatory Burdens**

**AGENCY:** Pipeline and Hazardous Materials Safety Administration (PHMSA), Department of Transportation (DOT).

**ACTION:** Final rule.

**SUMMARY:** The Pipeline and Hazardous Materials Safety Administration (PHMSA) is amending the Hazardous Materials Regulations in response to 24 petitions for rulemaking submitted by the regulated community between February 2015 and March 2018. This final rule updates, clarifies, or provides relief from various regulatory requirements without adversely affecting safety. PHMSA also, as of the effective date of this final rule, withdraws its September 28, 2017 enforcement discretion regarding the phase-out of mobile refrigeration systems.

**DATES:** *Effective date:* This rule is effective December 28, 2020.

*Incorporation by reference date:* The incorporation by reference of certain publications listed in this final rule is approved by the Director of the Federal Register as of December 28, 2020.

*Delayed compliance date:* Except as provided by the compliance timelines set forth in this final rule in connection with petitions for rulemaking P–1646, P–1691 and P–1692, compliance with the amendments adopted in this final rule is required beginning November 26, 2021.

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**SUPPLEMENTARY INFORMATION:****Abbreviations and Terms**

AAR Association of American Railroads  
ACC American Chemistry Council  
ADR European Agreement Concerning the International Carriage of Dangerous Goods by Road  
AESC Association of Energy Service Companies

AFSL American Fireworks Standards Laboratory  
APA American Pyrotechnics Association  
ASME American Society of Mechanical Engineers  
ASME BPVC ASME Boiler and Pressure Vessel Code  
ASTM American Society for Testing and Materials  
ATCCRP Advanced Tank Car Collaborative Research Program  
CEQ Council on Environmental Quality  
CFR Code of Federal Regulations  
Chemours The Chemours Company  
CI The Chlorine Institute  
CGA Compressed Gas Association  
COSTHA Council on Safe Transportation of Hazardous Articles  
CPC Casualty Prevention Circular  
CPSC Consumer Product Safety Commission  
DGAC Dangerous Goods Advisory Council  
DOT Department of Transportation  
EC European Community  
EPA Environmental Protection Agency  
EU European Union  
GIS Gentry Investigative Service  
GTTC Global Transport Tank Consultants  
HMR Hazardous Materials Regulations  
HMT Hazardous Materials Table (49 CFR 172.101)  
IAEA International Atomic Energy Agency  
IBC Intermediate Bulk Container  
ICAO International Civil Aviation Organization  
ICAO Technical Instructions ICAO Technical Instructions for the Safe Transport of Dangerous Goods  
IIAR International Institute of Ammonia Refrigeration  
IMDG Code International Maritime Dangerous Goods Code  
IME Institute of Makers of Explosives  
IVODGA International Vessel Operators Dangerous Goods Association  
JPG Jet Perforating Gun  
MAWP Maximum Allowable Working Pressure  
MTC UN Manual of Tests and Criteria  
NBIC National Board Inspection Code  
NFA National Fireworks Association  
NPRM Notice of Proposed Rulemaking  
OMB Office of Management and Budget  
PHMSA Pipeline and Hazardous Materials Safety Administration  
PIH Poison-by-Inhalation Hazard  
PRD Pressure Relief Device  
PSI Pounds per Square Inch  
PSIG Pounds per Square Inch Gauge  
RCRA Resource Conservation and Recovery Act  
RFI Request for Information  
RIA Regulatory Impact Analysis  
RID European Agreement Concerning the International Carriage of Dangerous Goods by Rail  
RIPA Reusable Industrial Packaging Association  
RSI Railway Supply Institute  
SBA Small Business Administration  
SFX Stage FX  
TC Transport Canada  
TCC AAR Tank Car Committee  
TFI The Fertilizer Institute  
TDG Transport of Dangerous Goods  
TPED Transportable Pressure Equipment Directive

UN United Nations  
UN Model Regulations United Nations Recommendations on the Transport of Dangerous Goods: Model Regulations Unified Agenda Unified Agenda of Federal Regulatory and Deregulatory Actions

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**I. Background**

The Administrative Procedure Act<sup>1</sup> requires Federal agencies to give interested persons the right to petition an agency to issue, amend, or repeal a rule. The Department of Transportation (DOT) and PHMSA implementing regulations at 49 Code of Federal Regulations (CFR) 5.13(c) and 106.95, respectively, allow persons to ask PHMSA to add, revise, or delete a regulation by filing a petition for rulemaking containing adequate support for the requested action.

This final rule revises the Hazardous Materials Regulations (HMR<sup>2</sup>) in response to petitions for rulemaking submitted by shippers, carriers, manufacturers, and industry representatives. These revisions update, clarify, or provide relief from various regulatory requirements without adversely affecting safety. PHMSA discusses the petitions and revisions in detail in Section IV (Discussion of Amendments and Applicable Comments) of the preamble to this final rule. In this final rule, PHMSA is:

- Revising § 173.31 to prohibit the use of tank cars with shells or heads constructed of non-normalized steel in

<sup>1</sup> 5 U.S.C. 553 *et seq.*

<sup>2</sup> 49 CFR parts 171–180.

the transportation of poison-by-inhalation hazard (PIH) materials by rail after December 31, 2020.

- Harmonizing availability of limited quantity shipping exceptions for more than 100 entries for corrosive materials in the Hazardous Materials Table (HMT, § 172.101).
- Revising § 172.302(b)(2) to allow a minimum height of 12 mm (0.47 inches) for a proper shipping name marked on a portable tank with a capacity of less than 3,785 L (1,000 gallons).
- Revising § 173.28(c)(1)(i) to allow for regulatory flexibility for cleaning metal drums for reuse and clarifying the existing cleaning standard.
- Revising § 173.5b to allow for the continued use of portable and mobile refrigerator systems placed into service prior to 1991 that are rated to a minimum service pressure of 250 pounds per square inch (psig).
- Incorporating by reference updated editions of multiple Compressed Gas Association (CGA) publications into § 171.7.
- Removing the reference to special provision 103 in § 172.101 from Column (7) for four HMT entries.
- Removing the words “manufactured before September 1, 1995” from § 180.417(a)(3) to allow for an alternative report for cargo tanks manufactured after September 1, 1995.
- Revising the basis weight tolerance provided in § 178.521 from ±5 percent to ±10 percent from the nominal basis weight reported in the initial design qualification test report for paper shipping sacks.
- Revising § 173.308(d)(3) to harmonize with the International Maritime Dangerous Goods (IMDG) Code by removing the requirement for a closed transport container to have the warning mark “WARNING—MAY CONTAIN EXPLOSIVE MIXTURES WITH AIR—KEEP IGNITION SOURCES AWAY WHEN OPENING” when transporting lighters.
- Revising §§ 173.244(a)(2) and 173.314(c) to make the “interim” rail tank car specifications the “final” specifications for the transportation of PIH materials.

- Revising § 173.31 to prohibit the use of certain rail tank cars for the transportation of PIH materials after December 31, 2027.
  - Allowing all waste materials to be managed in accordance with the lab pack exception and associated paragraphs in § 173.12 irrespective of whether they meet the definition of a hazardous waste per Environmental Protection Agency (EPA) regulations implementing the Resource Conservation and Recovery Act (RCRA).<sup>3</sup>
  - Incorporating by reference the 2017 edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPVC) Sections II (Parts A and B), V, VIII (Division 1), and IX into § 171.7.
  - Revising §§ 171.23, 173.302, and 173.304 to permit the import of filled pi-marked foreign pressure receptacles for intermediate storage, transport to point of use, discharge, and export as well as the import of certain pi-marked foreign pressure receptacles for filling, intermediate storage, and export.
  - Revising § 172.101(c) to clarify that the word “stabilized” must be included as part of the proper shipping name when stabilization is required for transportation.
  - Revising § 171.7(r) to update the address of the Institute of Makers of Explosives (IME) and to incorporate by reference the Association of Energy Service Companies (AESC)/IME Jet Perforating Gun (JPG) Standard, also known as the “Guide to Obtaining DOT Approval of Jet Perforating Guns using AESC/IME Perforating Gun Specifications,” Ver. 02, dated September 1, 2017.
  - Incorporating by reference the January 1, 2018, edition of the American Pyrotechnics Association (APA) Standard 87–1 A, B, C, “Standard for Construction and Approval for Transportation of Fireworks, Novelties, and Theatrical Pyrotechnics,” replacing the December 1, 2001 edition into § 171.7.
- PHMSA discusses the petitions and revisions in detail in Section IV

(Discussion of Amendments and Applicable Comments) of the preamble to this final rule. PHMSA also, as of the effective date of this final rule, withdraws its September 28, 2017, enforcement discretion regarding the phase-out of mobile refrigeration systems.

**II. Incorporation by Reference Discussion Under 1 CFR part 51**

The European Union (EU) standards, the APA standards, and the AESC/IME standards are free and accessible to the public on the internet, with access provided through the parent organization websites. The CGA and ASME references are available for interested parties to purchase in either print or electronic editions through the parent organization websites. The specific standards are discussed in greater detail in the section-by-section review (see § 171.7).

**III. NPRM: Publication and Public Comments: Executive Order 13924**

On August 14, 2019, PHMSA published a notice of proposed rulemaking (NPRM) in the **Federal Register** titled, “Hazardous Materials: Adoption of Miscellaneous Petitions to Reduce Regulatory Burdens”<sup>4</sup> under Docket No. PHMSA–2017–0120 (HM–219C). The NPRM proposed revisions to the HMR in response to 24 petitions for rulemaking submitted to PHMSA by various stakeholders. PHMSA discusses these petitions and revisions in detail in Section IV (Discussion of Amendments and Applicable Comments) of the preamble to this final rule.

The comment period for the NPRM closed on October 15, 2019. PHMSA received a total of 49 sets of comments from 48 separate entities, 6 of which had submitted petitions that were the basis for HMR amendments proposed in the NPRM. There were no late-filed comments. An alphabetical list of the persons, companies, and associations that submitted comments to the HM–219C NPRM may be found in the below table:

Commenter name	Docket No.
American Fireworks Standards Laboratory (AFSL)	PHMSA–2017–0120–0050.
American Chemistry Council (ACC), the Chlorine Institute (CI), and The Fertilizer Institute (TFI)	PHMSA–2017–0120–0034.
American Pyrotechnics Association (APA)	PHMSA–2017–0120–0045.
American Pyrotechnics Association (APA)	PHMSA–2017–0120–0053.
Association of American Railroads (AAR)	PHMSA–2017–0120–0028.
Anthony Munoz	PHMSA–2017–0120–0016.
Charles Wald	PHMSA–2017–0120–0014.
Chemours Company (Chemours)	PHMSA–2017–0120–0055.
Compressed Gas Association (CGA)	PHMSA–2017–0120–0008.

<sup>3</sup> 42 U.S.C. 6901 *et seq.*

<sup>4</sup> 84 FR 41556 (Aug. 14, 2019).

Commenter name	Docket No.
Council on the Safe Transportation of Hazardous Articles (COSTHA)	PHMSA-2017-0120-0018.
Crazy Debbie's Fireworks, LLC	PHMSA-2017-0120-0049.
Daniel Butt	PHMSA-2017-0120-0039.
David Carlson	PHMSA-2017-0120-0012.
Dangerous Goods Advisory Council (DGAC)	PHMSA-2017-0120-0042.
Dow Chemical Company	PHMSA-2017-0120-0037.
Fireworks by Grucci, Inc.	PHMSA-2017-0120-0040.
Fireworks Over America	PHMSA-2017-0120-0027.
Galaxy Fireworks, Inc.	PHMSA-2017-0120-0026.
Garrett's Fireworks	PHMSA-2017-0120-0031.
Gentry Investigative Service, LLC (GIS)	PHMSA-2017-0120-0010.
Global Transport Tank Consultants (GTTC)	PHMSA-2017-0120-0007.
ICON Pyrotechnics International	PHMSA-2017-0120-0035.
Institute of Makers of Explosives (IME)	PHMSA-2017-0120-0011.
International Vessel Operators Dangerous Goods Association (IVODGA)	PHMSA-2017-0120-0017.
Inter-Oriental Fireworks (HK) LTD	PHMSA-2017-0120-0051.
Jake's Fireworks	PHMSA-2017-0120-0036.
Huang Johnson	PHMSA-2017-0120-0020.
Matson	PHMSA-2017-0120-0013.
Matthew Jones	PHMSA-2017-0120-0054.
National Fireworks Association (NFA)	PHMSA-2017-0120-0047.
NextFX	PHMSA-2017-0120-0023.
NJP Engineering LLC	PHMSA-2017-0120-0009.
Owen Compliance Services	PHMSA-2017-0120-0015.
Precocious Pyrotechnics	PHMSA-2017-0120-0046.
Pyrotechnics Guild International, Inc.	PHMSA-2017-0120-0038.
Pyrotechnics Guild International, Inc.	PHMSA-2017-0120-0041.
Rebecca Thomas	PHMSA-2017-0120-0033.
ResPyro—Kent Orwoll/VP Manufacturing	PHMSA-2017-0120-0025.
ResPyro—Steve Comen/CEO	PHMSA-2017-0120-0021.
Reusable Industrial Packaging Association (RIPA)	PHMSA-2017-0120-0052.
Santore and Sons	PHMSA-2017-0120-0032.
Stage FX (SFX)/Lyle Salmi	PHMSA-2017-0120-0024.
StageFX/Dennis Slicer	PHMSA-2017-0120-0029.
Ultratec Special Effects—John Thomas	PHMSA-2017-0120-0044.
Ultratec Special Effects—Otis Hart	PHMSA-2017-0120-0048.
Veolia ES Technical Solutions, LLC	PHMSA-2017-0120-0006.
Western Enterprises Inc.	PHMSA-2017-0120-0019.
Winco Fireworks International	PHMSA-2017-0120-0043.
Yienger Fireworks	PHMSA-2017-0120-0030.

The comments submitted to this docket may be accessed via the docket file numbers listed in the above table, as well as at <http://www.regulations.gov>. PHMSA developed this final rule in consideration of the comments received to the public docket.

Following the closing of the comment period, Executive Order (E.O.) 13924, “Regulatory Relief to Support Economic Recovery,”<sup>5</sup> directed Federal agencies to respond to the economic harm caused by the novel coronavirus by reviewing their regulations and rescinding or modifying those regulations to reduce regulatory burdens and thereby promote economic growth. E.O. 13924 at § 4. PHMSA understands the cost savings expected from this final rule to be consistent with E.O. 13924’s mandate.

**IV. Discussion of Amendments and Applicable Comments**

Based on an assessment of the 24 petitions and the comments received,

PHMSA is amending the HMR as detailed in this section.

**1. Phase-Out of Non-Normalized Tank Cars Used To Transport PIH Materials**

In its petition (P-1646), the Association of American Railroads (AAR) requests that PHMSA consider an amendment to § 173.31 to codify a prohibition on the use of rail tank cars with shells or heads constructed of non-normalized steel for transportation of PIH materials.<sup>6</sup> In P-1646, AAR claims that the continued use of pressurized tank cars constructed from non-normalized steel for rail transportation of PIH materials poses an unnecessary

<sup>6</sup> PHMSA notes that petition P-1646 (codifying an industry phase-out of legacy tank cars with non-normalized steel for PIH service by December 31, 2020) is related to two other AAR petitions addressed in this final rule: P-1691 (re-designating the “interim” HM-246 standard for PIH tank cars as a “permanent” standard), and P-1692 (codifying an industry phase-out of legacy tank cars not built to the HM-246 standard for PIH service by December 31, 2027). See Sections IV.13 (Finalization of the HM-246 Tank Car Standard) and IV.14 (Phase-out of Non-HM-246 Compliant Rail Tank Cars).

risk to the public because at lower temperatures non-normalized steel is susceptible to brittle fractures, which are far more likely to result in a catastrophic failure and instantaneous release of a tank car’s entire contents than ductile fractures. AAR notes that while a slow release of contents generally has time to dissipate in the atmosphere, an instantaneous release from a catastrophic failure creates a concentrated toxic cloud with potential catastrophic consequences for the nearby population.

PHMSA agrees with AAR’s safety rationale for its recommendation of a regulatory prohibition on the use of rail tank cars with shells or heads constructed of non-normalized steel for transportation of PIH materials. Further, PHMSA expects that a regulatory phase-out of these rail tank cars would reinforce the voluntary phase-out of legacy PIH tank cars pursuant to current industry efforts. In 2008, PHMSA considered mandating a 5-year phase-out of non-normalized steel tank cars in

<sup>5</sup> 85 FR 31353 (May 22, 2020).

PIH service.<sup>7</sup> However, in 2009, based in part on statements from owners that they were voluntarily phasing out such tank cars, PHMSA declined to require the phase-out but did require that owners prioritize replacement of the non-normalized steel tank cars from their PIH fleets.<sup>8</sup> Those voluntary efforts have been memorialized in interchange rules issued by AAR requiring compliance with design standards or operating conditions as a condition of shipping hazardous materials by rail. On April 7, 2017, AAR adopted an interchange rule in Casualty Prevention Circular (CPC)-1325<sup>9</sup> that implemented a phase-out of these non-normalized (legacy) steel tank cars in PIH service by July 1, 2019. On July 27, 2018, AAR revised CPC-1325 and re-issued it as CPC-1336, but retained the phase-out deadline for the non-normalized steel tank cars,<sup>10</sup> effective July 1, 2019. Because AAR has already adopted a phase-out schedule, there are no additional costs associated with PHMSA implementing a December 31, 2020, date as a regulatory deadline. A more detailed discussion of this economic analysis can be found in the accompanying Regulatory Impact Analysis (RIA).

PHMSA received comments from AAR, the Chemours Company (Chemours), and a joint comment from the American Chemistry Council (ACC), the Chlorine Institute (CI), and The Fertilizer Institute (TFI) in support of the proposal to amend the HMR to include a regulatory phase-out of the use of pressurized tank cars constructed from non-normalized steel for rail transportation of PIH materials. These associations represent major stakeholders impacted by this change, including the shippers who own or lease the tank cars, and may bear the cost of implementing any phase-out, and the railroads who must transport the freight under their obligations as common carriers. PHMSA's actions to align the HMR with industry's voluntary phase-out the use of non-normalized (legacy) steel tank cars in PIH service in

this final rule provide both shippers and carriers with regulatory certainty on the transportation of PIH materials by rail. This regulatory certainty makes transportation cost known to industry and, more importantly, locks-in within the HMR safety benefits from the transportation of PIH materials by rail achieved by industry's voluntary efforts to phasing-out the use of tank cars with shells or heads constructed of non-normalized steel.

Therefore, in this final rule, PHMSA is revising § 173.31 to provide for a regulatory phase-out non-normalized steel rail tank cars for the transportation of PIH materials by December 31, 2020.

### 2. Limited Quantity Shipments of Hydrogen Peroxide

In its petition (P-1658), Steris requests that PHMSA revise Column (8A) of the HMT to make available the limited quantity packaging exceptions at § 173.152 for "UN2014, Hydrogen peroxide aqueous solution." Steris notes that the United Nations (UN) Recommendations on the Transport of Dangerous Goods: Model Regulations (Model Regulations) authorize shipment of limited quantities of UN2014 (Hydrogen peroxide). Steris contends that this amendment would provide economic and logistical consistency in global transportation and facilitate commerce for domestic companies without adversely impacting safety. PHMSA received no comments on this proposed revision in the NPRM.

The HMR at subpart D of part 173 provides, among other provisions, exceptions for some classes of hazardous materials when shipped under certain limited quantity thresholds. However, while other international standards and regulations, such as the UN Model Regulations, provide for the transport of UN2014 in limited quantities (up to 60 percent concentration), UN2014 is not authorized a limited quantity exception within the HMR as currently written. PHMSA has considered the operational experience in international transportation of UN2014 pursuant to the UN Model Regulations as well as in the domestic transport of materials of the same hazard class in limited quantities as allowed by current HMR exceptions and concluded that a limited quantity exception should be extended to UN2014 as well. PHMSA is unaware of any characteristics of UN2014 (Hydrogen peroxide) making it uniquely unsuitable for limited quantity shipment when other hazardous materials assigned the same hazard class can be shipped in limited quantities. Consequently, PHMSA expects that

expanding the applicability of the limited quantity exception to this material will not adversely affect safety—particularly as other HMR requirements would still apply to assure safe shipment of limited quantities of UN2014 (Hydrogen peroxide). PHMSA expects cost savings to be achieved from this amendment to the HMR, as extension of the limited quantity exceptions to apply to another material will reduce regulatory burdens on regulated entities. However, since limited quantity shipments within the United States have not been authorized for UN2014 (Hydrogen peroxide) previously, there is inadequate domestic data available to quantify the specific cost savings that would result from this change. A more detailed discussion of the economic analysis can be found in the accompanying RIA.

Therefore, in this final rule, PHMSA is revising Column (8A) of the HMT for "UN2014, Hydrogen peroxide aqueous solution" to allow limited quantity packaging for this material by referencing the exception in § 173.152.

### 3. Markings on Portable Tanks

In his petition (P-1666), William J. Briner requests that PHMSA revise § 172.302(b)(2) of the HMR consistent with section 5.3.2.0.2 of the IMDG Code to allow a minimum height of 12 mm (0.47 inches) for proper shipping name markings on portable tanks with a capacity of less than 3,785 L (1,000 gallons). The petitioner contends that the revision would provide regulatory flexibility for the size of markings on portable tanks without adversely impacting safety. PHMSA received no comments on this proposed revision in the NPRM.

As currently codified in the HMR, § 172.302(b)(2) requires markings on portable tanks with capacity less than 3,785 L (1,000 gallons) to have a width of at least 4.0 mm (0.16 inch) and a height of at least 25 mm (1 inch). Through its technical review of this petition, PHMSA determined that harmonizing the height of this marking with that in the IMDG Code (12 mm) would not cause a reduction in hazard communication and, therefore, would not have a negative effect on safety. PHMSA expects that harmonizing this requirement with international standards would provide cost savings and efficiencies in transportation; however, PHMSA is unable to quantify these potential cost savings as there is no cost data on the savings gained from using smaller markings and the number of stakeholders affected. A more detailed discussion of the economic

<sup>7</sup> See 73 FR 17817 (April 1, 2008).

<sup>8</sup> 74 FR 1770 (Jan. 13, 2009).

<sup>9</sup> CPCs are documents issued by AAR to its members outlining requirements for the transportation of hazardous materials by rail.

<sup>10</sup> A piece of rail equipment, such as a tank car, that does not meet AAR interchange standards is effectively prohibited from movement on the U.S., Canadian, and Mexican freight rail system. The AAR Tank Car Committee (TCC) initially developed a phase-out schedule for non-normalized tank cars in 2008 under AAR CPC-1187, which prohibited the use of non-normalized tank cars after December 31, 2018. Prior to adoption of the final AAR interchange phase-out requirements in CPC-1325, AAR TCC solicited comments to amend CPC-1187 via CPC-1324.

analysis can be found in the accompanying RIA.

Therefore, in this final rule, PHMSA is revising § 172.302(b)(2) to allow a minimum height of 12 mm (0.47 inches) for proper shipping name markings on portable tanks with a capacity of less than 3,785 L (1,000 gallons).

#### 4. Reconditioning of Metal Drums

In its petition (P-1670), the Reusable Industrial Packaging Association (RIPA) requests that PHMSA revise § 173.28(c)(1)(i) to require that labels be substantially removed, rather than completely removed, during the reconditioning of metal drums. RIPA states that a strict reading of the current HMR requirement asks for an impossible standard, as the full removal of coatings and labels (including their adhesive residues) is practically impossible. RIPA justifies this request by noting that current cleaning and surface preparation processes have been utilized for decades and, from its standpoint, have never been considered a safety issue.

In the NPRM, PHMSA responded to P-1670 by proposing to allow tightly adhering paint, mill scale, and rust to remain on no more than 10 percent of the surface area of a drum being reconditioned. While supportive of revising this section, RIPA notes in its comments to the NPRM that the proposed revision fails to achieve PHMSA's goal of allowing some coating residue to remain on steel drums provided safety is not compromised. RIPA contends it is technically impossible to meet a requirement that entails the removal of 90 percent of "tightly adhering paint . . ." from the entire surface area of every steel drum and contends that the limit of 10 percent surface area for exterior coatings is arbitrary and will be difficult to enforce. Lastly, RIPA notes that mill scale does not appear on metal used to manufacture or recondition steel drums and should be removed from the proposed revisions to § 173.28(c)(1)(i). Therefore, in its comments to the NPRM, RIPA suggests that § 173.28(c)(1)(i) be revised to read, "Cleaning to base material of construction, with all former contents, internal and external corrosion removed, and any external coatings and labels sufficiently removed to expose any metal deterioration which adversely affects transportation safety." RIPA contends this will establish a workable safety standard based upon adequate removal of surface coating materials to expose evidence of metal deterioration. PHMSA received no other comments on this proposed change to the HMR.

After further consideration, PHMSA agrees that identifying a specific numeric threshold for sufficient removal of coatings and labels to expose deterioration is impracticable and expects that the language RIPA suggests in its comments to the NPRM will appropriately address the issue by ensuring external coatings and labels are sufficiently removed to expose metal deterioration that could adversely impact transportation safety. Furthermore, PHMSA expects cost savings to be achieved through this amendment, as it provides for a partial relaxation of the requirements in the HMR; however, PHMSA is unable to quantify these potential cost savings because it does not have data on the cost differences between "removed" and "substantially removed" or the number of persons affected. A more detailed discussion of the economic analysis can be found in the accompanying RIA.

Therefore, in this final rule, PHMSA is revising § 173.28(c)(1)(i) to read, "Cleaning to base material of construction, with all former contents, internal and external corrosion removed, and any external coatings and labels sufficiently removed to expose any metal deterioration that adversely affects transportation safety."

#### 5. Limited Quantity Harmonization

In its petition (P-1676), URS Corporation requests that PHMSA revise Column (8A) of the HMT to extend exceptions allowing for shipment of limited quantities of 45 additional hazardous materials. URS Corporation noted that the absence from the HMR of limited quantity exceptions for those materials is inconsistent with provisions under various international standards authorizing limited quantity shipment of the same materials. URS Corporation contends that this inconsistency between domestic and international standards regarding the limited quantity exception for these 45 proper shipping names causes confusion regarding the pertinent regulatory requirements with importing hazardous materials shipments into the United States that had been prepared as limited quantity shipments under international regulations.

As noted in the NPRM, PHMSA conducted a technical review of the petition and identified a total of 114 entries in the HMT—including the 45 listed in URS Corporation's petition—that are not in alignment with the UN Model Regulations permitting limited quantity shipment of hazardous materials. In addition, PHMSA determined that HMR treatment of 64 of those 114 entries also diverged from the

International Civil Aviation Organization Technical Instructions for the Safe Transport of Dangerous Goods (ICAO Technical Instructions) permitting limited quantity shipment of hazardous materials. Further, in reviewing the HMR, PHMSA determined that these hazardous materials currently without limited quantity exceptions are of the same hazard classes as materials for which the HMR already contains an exception allowing limited quantity shipment.

PHMSA expects that expanding the applicability of the limited quantity exception to these additional materials would not adversely affect safety. PHMSA is unaware of any characteristics of the hazardous materials at issue that makes them uniquely unsuitable for limited quantity shipment when the HMR authorizes other hazardous materials assigned the same hazard class to be shipped in limited quantities. Consequently, PHMSA expects that expanding the applicability of the limited quantity exception to other materials that are within the same hazard class will not adversely affect safety—particularly as other HMR requirements would still apply to assure safe shipment of limited quantities of those materials. By way of example, limited quantities of these hazardous materials will still need to display a conspicuous marking indicating they are limited quantity shipments pursuant to § 172.315, and will still need to be packaged in accordance with other requirements in 49 CFR part 173. The operational experience of safe transportation of limited quantities of these materials pursuant to UN Model Regulations provides additional evidence that extension of the HMR's limited quantity exceptions to those materials will not adversely affect safety. Furthermore, PHMSA expects cost savings to be achieved through this amendment, as it provides exceptions to the requirements in the HMR that impose compliance burdens on regulated entities; however, due to a lack of domestic data on these types of shipments, PHMSA is unable to quantify the specific cost savings that would result from this change. A more detailed discussion of the economic analysis can be found in the accompanying RIA.

The Council on Safe Transportation of Hazardous Articles (COSTHA) and International Vessel Operators Dangerous Goods Association (IVODGA) submitted comments to the NPRM in support of this proposed revision, while also noting that PHMSA overlooked one listing in the HMT for harmonization. The commenters explain that the HMT

listing for “UN3170, Aluminum smelting by-products or Aluminum remelting by-products” includes a change in Column (8A) from “None” to “151” for Packing Group (PG) II but failed to revise the PG III entry. PHMSA acknowledges that this was an oversight and is revising the language in the HMT to include “UN3170, Aluminum smelting by-products or Aluminum remelting by-products” PG III materials in this final rule.

Therefore, in this final rule, PHMSA is revising Column (8A) (exceptions) of the HMT consistent with the UN Model Regulations to allow an additional 114 hazardous materials entries to be shipped as limited quantities under the HMR. The complete list of hazardous materials affected by this provision is in the amendments to the HMT at the end of this final rule.

#### 6. Mobile Refrigeration Units

In its petition (P-1677), the International Institute of Ammonia Refrigeration (IIAR) requests that PHMSA revise § 173.5b to allow the continued use of mobile refrigeration units (which are commonly used by the U.S. produce industry) that were placed into service prior to 1991, provided they are tested to a service pressure of 250 psig. PHMSA received no comments on this proposed revision in the NPRM.

As currently written, § 173.5b(b)(6) of the HMR requires that mobile refrigeration systems placed into service prior to June 1, 1991 be phased-out by October 1, 2017; however, PHMSA issued an enforcement discretion memorandum<sup>11</sup> on September 28, 2017, permitting the continued use of mobile refrigeration units that are tested to a service pressure of 250 psig. In its technical review conducted in connection with the Enforcement Discretion Memorandum, PHMSA determined there is no reduction in safety by authorizing the continued use of mobile refrigeration units that are tested to a service pressure of 250 psig because the purpose of § 173.5b is to eliminate the use of systems with a maximum allowable working pressure (MAWP) of 150 psig. PHMSA consequently incorporated that conservatism within the Enforcement Discretion Memorandum in the proposed HMR amendments set forth in the NPRM. The proposed amendment would allow the system to be used if its components are designed for a MAWP of 250 psig regardless of whether it was

put into service before June 1, 1991, or if the MAWP is a result of upgrading components.

As described in the RIA, although PHMSA describes the nature of cost savings associated with adoption of this petition, PHMSA was unable to estimate the cost savings with sufficient accuracy to quantify them due to data uncertainties. Therefore, in this final rule, PHMSA is revising § 173.5b to allow the continued use of certain portable and mobile refrigerator systems that meet the 250 psig service pressure specification by removing the prohibition on use of refrigeration systems placed into service before June 1, 1991. Further, PHMSA, as of the effective date of this final rule, withdraws its September 28, 2017, enforcement discretion regarding the phase-out of mobile refrigeration systems because it will no longer be necessary.

#### 7. Incorporation by Reference of CGA Standards

PHMSA received multiple petitions to update CGA standards currently incorporated by reference in § 171.7 of the HMR. These petitions include:

- Petition P-1679. CGA requests that PHMSA incorporate by reference CGA C-6.3, “Standard for Visual Inspection of Low Pressure Aluminum Alloy Cylinders, 2013, Third Edition”<sup>12</sup> into § 171.7 to replace the outdated reference to the First Edition of this standard published in 1991. This publication is an industry standard governing periodic inspection of aluminum alloy compressed gas cylinders with service pressures of 500 psi (3450 kPa) or less. Notable changes from the previous edition consist of updating HMR citations and changing the characterization of the document from a “guideline” to a “standard.”

- Petition P-1680. CGA requests that PHMSA incorporate by reference CGA S-7, “Method for Selecting Pressure Relief Devices for Compressed Gas Mixtures in Cylinders, 2013, Fifth Edition” into § 171.7 to replace the outdated reference to the Fourth Edition of this standard published in 2005. This industry standard governs methods for selecting pressure relief devices (PRDs) for compressed gas mixtures packaged in cylinders having water capacities of 1000 lb (454 kg) or less. Notable changes from the previous edition of this document includes revising reference temperatures, changing the

characterization of this document from a “publication” to a “standard,” and expanding its scope to address PRDs for five additional gases.

- Petitions P-1684 and P-1693. In two separate petitions, Worthington Cylinders and CGA request that PHMSA incorporate by reference CGA C-11, “Practices for Inspection of Compressed Gas Cylinders at Time of Manufacture, 2013, Fifth Edition” into § 171.7 to replace the outdated reference to the Third Edition of this standard published in 2001. These petitions also request revisions to § 178.35(b) and (c) to refer to CGA C-11. This updated publication outlines best practices for inspection of cylinders consistent with industry practice and clarifies the parameters of inspector actions when inspecting compressed gas cylinders.

- Petition P-1694. CGA requests that PHMSA incorporate by reference CGA C-6.1-2013, “Standards for Visual Inspection of High Pressure Aluminum Compressed Gas Cylinders” into § 171.7 to replace the outdated reference to the Fourth Edition of this standard published in 2002. This standard was developed for the visual inspection of aluminum alloy compressed gas cylinders with service pressures of 1800 psi (12410 kPa) or greater. Notable changes from the previous edition of this publication include new guidelines for the use of ultrasonic inspection (UE), and incorporation by reference of another CGA publication (CGA Safety Bulletin 22 Aluminum Cylinders—Guidelines for Heat Exposure) for use with aluminum cylinders.

PHMSA evaluated the recommended CGA standards as part of its technical review of these petitions. In each instance, PHMSA compared the two editions—the edition currently incorporated by reference in the HMR and the update edition proposed to be incorporated by the petitioner—for any changes or substantial revisions. PHMSA found only non-substantial revisions during that review and determined that they would not result in a reduction in safety. Moreover, insofar as the revisions in the updated CGA standards reflect lessons learned from operational experience and best practices developed since the earlier standards were placed in effect, incorporation of those updated standards could promote safety. There were no quantifiable cost savings identified, as these revisions to the CGA standards incorporated by reference are primarily technical in nature and are not expected to have a material effect on the cost of business. A more detailed discussion of the economic analysis can be found in the accompanying RIA.

<sup>11</sup> Enforcement Discretion Memorandum for Mobile Refrigeration Units—<https://www.regulations.gov/document?D=PHMSA-2016-0085-0004>.

<sup>12</sup> The previous edition of this document was titled, “Guidelines for Visual Inspection and Requalification of Low Pressure Aluminum Compressed Gas Cylinders, 1991, First Edition.”

PHMSA received comments from CGA, COSTHA, and Gentry Investigative Service (GIS) in support of this proposal. However, in its comment, GIS notes that there are newer editions of the CGA publications and suggests that these editions should be incorporated as part of this final rule. Although PHMSA acknowledges that newer editions have been recently developed, PHMSA declines to incorporate by reference in this rulemaking newer editions of CGA documents. PHMSA has yet to evaluate those more recent editions, which were not proposed in the HM-219C NPRM. PHMSA, however, encourages industry to petition PHMSA to include any newer edition of incorporated-by-reference publications as desired and supported by technical analysis within those petitions.

Therefore, in this final rule, PHMSA is updating CGA standards incorporated by reference in § 171.7 of the HMR as proposed in the NPRM.

#### 8. Special Provision for Explosives

In its petition (P-1681), IME requests that PHMSA remove special provision 103 from § 172.102 and from Column (7) of the HMT for the following entries: “UN0361, Detonator assemblies, non-electric, for blasting”; “UN0365, Detonators for ammunition”; “UN0255, Detonators, electric, for blasting”; and “UN0267, Detonators, non-electric, for blasting.” IME explains that this change would harmonize the HMR with the UN Model Regulations, and would enhance continuity when transporting these materials domestically and internationally. PHMSA proposed these changes in the NPRM and PHMSA received comments in support from IME, Owen Compliance Services, and COSTHA.

Special provision 103 restricts classification of detonators as Division 1.4B if they are shipped in packages containing more than 25 grams of net explosive mass that could be involved in a limited propagation explosion. However, the UN Model Regulations contain no quantified mass restriction for the same materials: rather, they require only that detonators must pass the tests prescribed by the UN Manual of Tests and Criteria (MTC)—in this case, the UN Test Series 6 requirements—to be classified as Division 1.4B. The UN MTC contains the criteria, test methods, and procedures used for the classification of dangerous goods (*i.e.*, hazardous materials) per the provisions of UN Model Regulations to ensure an appropriate level of safety, and demonstrate whether exposure of the

material to fire or explosion during shipment conditions will result in a mass detonation of the material. Only those detonators that successfully pass tests prescribed for Division 1.4B may be classed in this hazardous materials category.

PHMSA agrees that the removal of special provision 103 would harmonize with the international regulations and would have no negative impact on safety. Special provision 103 is outdated, as the HMR has since aligned its classification methodologies with the UN performance-based classification method to improve harmonization with the internationally-accepted system for the classification of explosives. Finally, the operational experience of safe transportation of these materials pursuant to UN Model Regulations provides further evidence that the amendments to the HMR as proposed will not adversely affect safety—particularly as other HMR requirements would still apply to assure safe shipment. However, since special provision 103 is no longer widely used, PHMSA does not expect there would be any quantifiable cost savings. A more detailed discussion of the economic analysis can be found in the accompanying RIA.

Therefore, in this final rule, PHMSA is removing the references to special provision 103 from four entries in Column (7) (Special provisions) of the HMT, and removing special provision 103 from § 172.102 altogether.

#### 9. Safety Devices

In its petition (P-1683), the Ford Motor Company requests that PHMSA remove the word “None” from Column (8A) of the HMT for the proper shipping name “UN0503, Safety Devices, pyrotechnic” and replace it with “166,” which would allow for the packaging exceptions currently authorized for other safety devices in § 173.166.

PHMSA proposed this revision in the HM-219C NPRM. PHMSA separately published a notice of request for information (RFI) in the **Federal Register** soliciting information and data from stakeholders regarding the classification, testing, and conditions for transportation relevant to the potential classification of safety devices.<sup>13</sup> To

<sup>13</sup> 85 FR 35368 (June 9, 2020). PHMSA has continued to see advancements in technologies for articles containing hazardous materials; those advancements have been the subject of requests for approvals or special permits for transportation as safety devices (UN0503 and UN3268). As such, PHMSA is, in the RFI, requesting information or data from stakeholders regarding the classification, testing, and conditions for transportation of these devices requesting an approval to be classified as safety devices.

ensure a more fulsome safety analysis of the HMR amendments requested in P-1683, PHMSA is not adopting the amendments proposed in the NPRM at this time and may instead consider them in a future rulemaking that could be informed by the information and data received in response to the RFI.

#### 10. Alternative Reports for Cargo Tanks

In its petition (P-1685), Polar Service Systems requests that PHMSA revise § 180.417(a)(3) to remove the words “manufactured before September 1, 1995,” thereby allowing an alternative report in lieu of obtaining the manufacturers certificate of compliance for cargo tanks manufactured after September 1, 1995. The petitioner notes that there is no provision to allow for the use of alternative reports when a certificate of compliance is unavailable for cargo tanks manufactured after September 1, 1995,<sup>14</sup> and explains that some cargo tank manufacturers have gone out of business in the past 25 years, making it impossible for a tank owner to obtain a missing certificate of compliance from these manufacturers. Therefore, these alternative reports would replace a missing certificate of compliance for cargo tanks manufactured after September 1, 1995. PHMSA received no comments on this proposed revision in the NPRM.

PHMSA’s technical review of the petition determined there are challenges in maintaining the required documentation for cargo tanks and cargo tank motor vehicles when cargo tank manufacturers are no longer in business. This is true irrespective of the timeframe set forth in § 180.417. Further, PHMSA does not expect there would be a reduction in safety in allowing alternative reports for cargo tanks manufactured after September 1, 1995, because the testing and recordkeeping requirements that PHMSA would demand in those alternative reports provide much of the same information that would be in a manufacturer’s certificate. Further, PHMSA’s experience administering the alternative reporting requirement under existing HMR provisions demonstrates that extension of this compliance flexibility to additional cargo tanks would not adversely affect safety. Similarly, this amendment is not expected to result in any material cost to industry; rather, cargo tanks manufactured after September 1, 1995, with useful life remaining would not be forced out of service, thereby saving regulated entities the cost of replacement. A more detailed

<sup>14</sup> See 59 FR 1786 (Jan. 12, 1994).

discussion of the economic analysis can be found in the accompanying RIA.

Therefore, in this final rule, PHMSA is revising the language in § 180.417(a)(3) to allow for alternative reports when a manufacturer's certificate is not available regardless of the date of manufacture of the cargo tank.

### 11. Weight Tolerances for Paper Shipping Sacks

In its petition (P-1688), the Paper Shipping Sack Manufacturers Association requests that PHMSA amend § 178.521 to revise the basis weight tolerances for liners and mediums used in the manufacture of multi-wall shipping sacks from  $\pm 5$  percent to  $\pm 10$  percent from the nominal basis weight reported to PHMSA in the initial design qualification test. The petitioner explains that multi-wall sacks are manufactured on the same or technically equivalent machines that manufacture the liners for fiberboard boxes and further notes that PHMSA revised the basis weight tolerances from  $\pm 5$  percent to  $\pm 10$  percent for fiberboard boxes in the HM-219A final rule.<sup>15</sup>

PHMSA notes that the petitioner is correct in that the paper used to manufacture multi-wall shipping sacks is made on the same or similar machines as those used to make fiberboard boxes. Given the technical data presented in the petition, which included linerboard drop and dynamic compression tests, PHMSA concluded that a small reduction (or a nearly infinite increase) in basis weight of the paper used in manufacturing fiberboard boxes would not affect the safety of the packaging, and PHMSA expects that multi-wall shipping sacks—made of similar materials and manufactured on the same or technically equivalent machines—will behave similarly such that there will be no adverse impact to safety. Furthermore, PHMSA estimates the total potential annualized cost savings to the industry of between \$20,000 and \$200,000. A more detailed discussion of the economic analysis can be found in the accompanying RIA.

PHMSA received one comment from David Carlson in support of this proposal. However, in addition to his support, Mr. Carlson requested that PHMSA extend a similar provision to 11G packagings in this final rule. PHMSA notes that 11G packagings were not discussed in the NPRM, and while there may be merits to this proposed revision, PHMSA has not conducted a technical analysis of that proposal and is not adopting it at this time. PHMSA

would like to allow further stakeholder engagement and opportunity to comment on any proposed changes before making this specific determination. The commenter is encouraged to petition PHMSA with supporting data to include 11G packagings in a future rulemaking.

Therefore, based on its technical analysis showing no negative impact on safety, PHMSA is amending § 178.521 to revise the nominal basis weight reported in the initial design qualification test report from  $\pm 5$  percent to  $\pm 10$  percent.

### 12. Markings on Closed Transport Containers

In its petition (P-1690), Matson requests that PHMSA amend § 173.308(d)(3) to remove the requirement for a warning to be placed on the access door of a closed transport vehicle or a closed freight container when lighters are transported by vessel. Matson explains that the IMDG Code does not require a similar warning, thereby noting inconsistencies between the HMR and the international requirements that could cause confusion regarding the pertinent requirements governing international shipments. PHMSA received one comment from IVODGA in support of this proposal. The petitioner is correct in that the current HMR requirement is inconsistent with the IMDG Code. The IMDG Code does not require this additional marking and has not experienced an appreciable adverse safety impact. PHMSA is, further, unaware of a compelling safety justification for requiring the marking—particularly as other HMR hazard communication requirements (such as transport documents and container placards) would remain operative even if the amendment is adopted. In addition, the amendment would improve the internal consistency of the HMR, which does not impose the same restriction on other packages containing a Division 2.1 flammable gas as it does packages composed of lighters containing Division 2.1 flammable gasses. Furthermore, while PHMSA was unable to quantify any specific cost savings associated with this amendment, no costs are anticipated. A more detailed discussion of the economic analysis can be found in the accompanying RIA.

Therefore, based on its technical analysis, PHMSA is amending § 173.308(d)(3) to remove the requirement for vessel transport of a closed transport vehicle or freight container to display the warning mark “WARNING—MAY CONTAIN EXPLOSIVE MIXTURES WITH AIR—

KEEP IGNITION SOURCES AWAY WHEN OPENING” on the access door.

### 13. Finalization of the HM-246 Tank Car Standard

In a joint petition (P-1691), AAR, CI, ACC, TFI, and the Railway Supply Institute (RSI) request that PHMSA revise §§ 173.314(c) and 173.244(a)(2) of the HMR to convert “interim” rail tank car specifications to “final” tank car specifications. The interim tank car specifications were issued as part of the HM-246 final rule titled, “Hazardous Materials: Improving the Safety of Railroad Tank Car Transportation of Hazardous Materials”<sup>16</sup> to be used for rail tank cars transporting PIH materials until PHMSA issued a permanent standard. The petitioners note that the PIH tank cars built in compliance with the HM-246 interim specifications have performed well and with no noteworthy safety concerns.

The HM-246 final rule prescribed enhanced safety measures for PIH materials transported in rail tank cars. These safety measures include stronger tanks made from normalized steel and capable of withstanding higher tank test pressures, fittings, tank head-puncture resistance protection, and thermal protection for some commodities. The HM-246 final rule was the result of industry consensus that an updated regulatory standard was necessary to improve accident survivability, even as research continued to develop a long-term PIH tank car specification. Following publication of the HM-246 final rule and adoption of the interim specifications, the Advanced Tank Car Collaborative Research Program (ATCCRP)<sup>17</sup> suggested the HM-246 interim specifications provide significant safety improvements over legacy designs and noted a scarcity of other feasible options beyond the interim specifications. In addition, conclusions from various ATCCRP projects provide scientific support to make the interim specifications permanent. Conclusions resulting from these safety research efforts, as reported by ATCCRP, include:

- The interim specifications provide significant improvement in accident

<sup>16</sup> 74 FR 1769 (Jan. 13, 2009).

<sup>17</sup> The ATCCRP coordinates research efforts to enhance the safety and security of rail tank car shipments of toxic-by-inhalation hazard (TIH) materials. It is a joint effort comprised of shippers of tank cars carrying TIH materials (represented by ACC, CI, and TFI); railroads that transport hazardous materials (represented by AAR); and rail tank car builders and lessors (represented by RSI). For more information, see <https://tankcarresourcecenter.com/wp-content/uploads/2017/11/ATCCRP-Research-Background-2016.pdf>.

<sup>15</sup> 83 FR 55792 (Nov. 7, 2018).



survivability over the legacy designs (*i.e.*, legacy specifications); and

- No design feature or material was identified that would provide a significantly greater level of improvement, or would be a reasonable alternative (from an economic or manufacturability standpoint) that should be required industry-wide.

PHMSA received comments to the HM-219C NPRM from AAR, The Dow Chemical Company, Chemours, and a joint comment from ACC, CI, and TFI in support of this proposal. These commenters noted that by re-designating the HM-246 specifications as permanent, PHMSA will provide regulatory certainty to the stakeholder community that an “interim” standard cannot. In its comment, AAR recommended that PHMSA coordinate with Transport Canada (TC) to assign a unique designator when translating the interim tank car specifications into permanent tank car specifications. PHMSA agrees with AAR and collaborated with TC during the final rule drafting stage to assign a unique designator to denote those permanent tank car specifications. This unique identifier will help ensure that tank cars used to transport PIH materials built to the permanent specifications can more easily move between the United States and Canada without encountering delays.

PHMSA’s technical review of this petition determined that the HM-246 compliant rail tank cars have an established safety record with no major incidents attributed to the tank car design. As explained by ATCCRP and discussed at greater length in Section IV.14. (Phase-out of Non-HM-246 Compliant Rail Tank Cars), the HM-246 interim specifications represent a substantial safety improvement over legacy tank cars in PIH service. This amendment is not expected to result in any new material costs to industry. Any costs associated with phasing out legacy tank cars result from the decision by AAR to utilize interchange agreements to mandate retirement of these cars from PIH service by the date (December 31, 2027) specified in CPC-1336; this final rule would align the HMR with those industry efforts. A more detailed discussion of this economic analysis can be found in the accompanying RIA.

Therefore, in this final rule, PHMSA is amending §§ 173.314(c) and 173.244(a)(2) of the HMR to make the HM-246 rail tank car specifications permanent for the transportation of PIH materials and is assigning the unique identifier of “DOT-105H600W” for HM-246 tank cars transporting PIH materials by rail.

#### 14. Phase-Out of Non-HM-246 Compliant Rail Tank Cars

In its petition (P-1692), AAR requests that PHMSA amend § 173.31 to adopt a 6-year phase-out for PIH rail tank cars that do not meet the interim HM-246 specifications as implemented in the HM-246 final rule published on January 13, 2009. Specifically, AAR argues that collaborative research undertaken by industry and government partners (through ATCCRP) has confirmed that HM-246 specification cars have the highest accident survivability rate over other designs and are the most feasible available technology to transport PIH materials.

In 2006, after several major PIH rail tank car accidents, AAR began to release a series of CPCs that mandated the use of a safer design for tank cars that transport PIH materials. On March 31, 2008, AAR published CPC-1187, which implemented design specifications for tank cars used in PIH service and included a 10-year phase-out schedule for tank cars that did not meet the CPC-1187 specifications. According to CPC-1187, non-compliant tank cars would not be accepted for interchange after December 31, 2018. PHMSA published an NPRM<sup>18</sup> proposing revisions to the HMR to improve the crashworthiness protection of rail tank cars designed to transport PIH materials on April 1, 2008 and later issued a final rule establishing the interim HM-246 specifications in January 13, 2009. The interim HM-246 specifications effectively adopted AAR’s CPC-1187 tank car specifications for the transportation of PIH materials until further research could be completed on enhanced tank car specifications.

In the HM-246 NPRM, PHMSA considered adopting a phase-out of tank cars that did not meet the proposed interim specifications. However, PHMSA did not codify a phase-out timeline in the final rule, stating “[a]lthough PHMSA continues to expect that an accelerated phase-out of these cars is justified, PHMSA recognizes the voluntary efforts already underway by many fleet owners to phase out these cars, in many cases on schedules more aggressive than the five-year deadline proposed in the NPRM.”<sup>19</sup> Instead, the HM-246 final rule adopted the interim tank car specifications; subsequently, AAR suspended CPC-1187 until new tank car specifications could be finalized and suspended the December 2018 retirement deadline for non-compliant tank cars.

As discussed in the previous subsection (“Finalization of the HM-246

Tank Car Standard”), research conducted under the ATCCRP has since demonstrated that the HM-246 interim tank car specifications provide significant improvements in survivability and there is no reason to expect a different design would provide a significantly greater level of improvement. However, despite initial indications in 2009 that voluntary efforts would result in an accelerated phase-out of those tank cars in PIH service that failed to comply with the HM-246 interim specifications, the industry had not adopted a voluntary phase-out schedule as of December 2016 that would eliminate such tank cars from PIH service.

On December 16, 2016, AAR submitted its petition (P-1692) requesting that PHMSA adopt a 6-year phase-out for PIH rail tank cars that do not meet the interim specifications as implemented in the HM-246 final rule published on January 13, 2009. AAR argued that collaborative research undertaken by industry and government partners (through ATCCRP) over the last 7 years had confirmed that HM-246 specification cars have the highest accident survivability rate over other designs and are the most feasible technology to transport PIH materials.

Before PHMSA completed its review of P-1692, AAR adopted CPC-1325 in April 2017, which implemented a mandatory phase-out by July 1, 2023, of any tank car in PIH service that does not comply with the HM-246 interim specifications. Prior to AAR’s adoption of CPC-1325, TFI commented to the P-1692 docket<sup>20</sup> that it opposed implementation of the July 1, 2023, phase-out schedule. TFI contended that DOT has sole authority over hazardous materials packaging and that because AAR’s adoption of the phase-out schedule was done without performing an economic analysis, it was impossible to estimate the full extent of its potential costs or benefits.

Similar comments were relayed to PHMSA by a group of shipper associations during a January 13, 2017 meeting.<sup>21</sup> AAR met with PHMSA and the Federal Railroad Administration (FRA) on August 1, 2017, during which AAR suggested its phase-out schedule did not conflict with DOT regulations and that the phase-out schedule was intended to remove an older, less-safe

<sup>20</sup> Docket No. PHMSA-2016-0165, available at [www.regulations.gov](http://www.regulations.gov).

<sup>21</sup> Attendees included representatives from TFI, ACC, CI, and API. Meeting Notes from the Listening Session for Petitions P-1678 and P-1692, available at <https://www.regulations.gov/document?D=PHMSA-2016-0165-0007>.

<sup>18</sup> 73 FR 17817 (Apr. 1, 2008).

<sup>19</sup> 74 FR at 1777-78.

car design from PIH service.<sup>22</sup> PHMSA later notified AAR on December 7, 2017, that it was accepting P-1692 and would conduct a “safety and policy review that will aid in determining whether the HMR should mandate a phase-out period and, if so, what period would ensure safety and protect the public interest.”<sup>23</sup>

On July 27, 2018, AAR revised CPC-1325 and re-issued it as CPC-1336, extending the phase-out schedule for non-HM-246 compliant tank cars from 6 years (July 1, 2023) to 10 years (December 31, 2027). On August 15, 2018, the railroads (represented by AAR) and a group of leading PIH material shippers (represented by ACC, CI, and TFI) submitted a joint comment to P-1692 proposing a phase-out date of December 31, 2027, for all non-HM-246 specification rail tank cars. The December 31, 2027, phase-out date is in lieu of the 6-year timeline requested in AAR’s original petition. The joint commenters met with PHMSA on September 6, 2018, and urged PHMSA to act quickly in completing a rulemaking that would adopt the petition’s proposed 10-year phase-out timeline.<sup>24</sup> The joint commenters contend that codifying the phase-out in the HMR would improve safety and increase market certainty. PHMSA in the NPRM proposed revision of the HMR to adopt the joint commenters’ December 31, 2027 deadline. PHMSA received no adverse comments in response to that NPRM proposal. PHMSA received comments in support of this proposal from AAR, the Dow Chemical Company, Chemours, and a joint comment by ACC, CI, and TFI.

PHMSA expects the phase-out of legacy rail tank cars for PIH service will have a positive impact on safety because they would be replaced with more robust tank cars for use in the transportation of PIH materials and because regulatory certainty could foster market certainty. In the NPRM, PHMSA proposed a phase-out deadline of December 31, 2027; however, the phase-out will go into effect under mandatory railroad interchange rules regardless of whether PHMSA adopts this date into regulation. As a result, there is no cost associated with PHMSA promulgating this date as a regulatory deadline for the

phase-out. A more detailed discussion of the economic analysis can be found in the accompanying RIA.

As such, PHMSA is codifying the phase-out of all non-HM-246 rail tank cars for use in the transportation of PIH materials. PHMSA’s actions in this final rule provide both shippers and carriers with regulatory certainty on the transportation of PIH materials by rail. This regulatory certainty makes transportation cost predictable to industry and—more importantly—locks-in safety benefits associated with industry’s movement to phase-out non-HM-246 tank cars in the transportation of PIH materials by rail.

Therefore, PHMSA is revising § 173.31 to phase-out all non-HM-246 rail tank cars for the transportation of PIH materials by December 31, 2027, to align with the agreed upon phase-out dates between AAR and leading PIH material shippers.

#### 15. Allow Non-RCRA Waste To Use Lab Pack Exception

In its petition (P-1695), Veolia requests that PHMSA amend § 171.8 by adding a definition of “waste material” to allow for all waste material to be managed in accordance with the lab packs exception and associated paragraphs in § 173.12, regardless of whether it meets the definition of a “hazardous waste” in EPA regulations implementing RCRA at 40 CFR 261.3. The “lab pack exception” for waste under § 173.12(b) provides for exceptions from some HMR packaging requirements (such as those pertaining to chemical constituent marking and specification packaging requirements for combination packages) to facilitate transportation for disposal of certain waste materials when shipped in packages satisfying packaging requirements identified in that section. The petitioner notes that PHMSA has stated in a letter of interpretation (16-0099)<sup>25</sup> that this exception only applies to “hazardous wastes” as defined by EPA’s regulations implementing RCRA; amendment of the HMR to make the lab pack exception in § 173.12 more broadly available to “waste materials” would provide regulatory relief in the disposal and recovery of hazardous materials. PHMSA received comments from Veolia and COSTHA in support of this proposal.

PHMSA’s technical review of the petition supports the petitioner’s interpretation. Neither the regulatory text nor the preamble of the December

21, 1990 final rule codifying § 173.12(b) indicate the lab pack exception is limited to “hazardous wastes” as that term is defined under the EPA’s RCRA regulations.<sup>26</sup> PHMSA expects that making all waste material eligible for the lab pack exception would not lead to a reduction in safety because waste materials present no greater hazard than materials defined as a hazardous waste according to the EPA’s RCRA regulations. Further, insofar as the lab pack exception would make it easier for regulated entities without sophisticated compliance programs, or limited storage space, to dispose of waste consistent with the HMR, the final rule could improve safety. In addition, there are no costs expected based on this revision. Extension of the lab pack exception offers additional flexibility for transporting waste materials; it does not increase compliance costs or changes to how waste material is handled. A more detailed discussion of the economic analysis can be found in the accompanying RIA.

Therefore, in this final rule, PHMSA is adding a definition of “waste material” to allow for all waste material to be managed in accordance with the lab packs exception and associated paragraphs in § 173.12.

#### 16. Incorporation of ASME Code Sections II, V, VIII, and IX

In its petition (P-1700), Trinity Containers requests that PHMSA incorporate by reference the 2017 edition of the ASME BPVC Sections II (Parts A and B), V, VIII (Division 1), and IX into § 171.7(g)(1) of the HMR. The ASME BPVC is a consensus industry standard for the design and construction of boilers and pressure vessels. Significant revisions to the relevant portions of the ASME BPVC introduced in the 2017 edition include the following:

- ASME BPVC Section II, Part A: Incorporation of 25 new American Society for Testing and Materials (ASTM) and 7 new international specifications authorized in connection within ferrous material within ASME-compliant boilers and pressure vessels;
- ASME BPVC Section II, Part B: Incorporation of 10 new ASTM specifications authorized for use in connection with non-ferrous material within ASME-compliant boilers and pressure vessels;
- ASME BPVC Section V: Incorporation of 19 new ASTM specifications providing for ASME-compliant methodologies in conducting non-destructive examination of boilers

<sup>22</sup> AAR Presentation on Tank Car Phase Out and TCC Authority from August 1, 2017, available at <https://www.regulations.gov/document?D=PHMSA-2016-0165-0011>.

<sup>23</sup> P-1692 Acceptance Letter, available at <https://www.regulations.gov/document?D=PHMSA-2016-0165-0012>.

<sup>24</sup> Meeting Summary, available at <https://www.regulations.gov/document?D=PHMSA-2016-0165-0014>.

<sup>25</sup> PHMSA Letter of Interpretation, Reference No. 16-0099, available at <https://www.phmsa.dot.gov/regulations/title49/interp/16-0099>.

<sup>26</sup> See 55 FR 52402, 52423 (Dec. 21, 1990).

and pressure vessels, as well as revisions of existing standards pertaining to acoustic emissions testing and block calibration;

- ASME BPVC Section VIII, Division 1: Revision of existing specifications for the construction of pressure vessels to expand coverage of openings and quick-action/actuation closures, clarify guidelines on performance of manual and automated ultrasonic testing, and provide new procedural pathways for manufacturers to obtain ASME certifications; and

- ASME BPVC Section IX: Revision of existing specifications for welding, brazing and fusing qualifications to expand acceptable testing methods and clarify welder personnel qualification requirements.

The petitioner contends that without regulatory amendment, ASME certificate holders would be obliged to comply with obsolete industry standards for manufacturing cargo tanks, non-specification tanks, and implements of husbandry to the ASME BPVC referenced in § 171.7(g)(1).

PHMSA received comments on this proposal from Global Transport Tank Consultants (GTTC), GIS, and NJP Engineering. GTTC requests that PHMSA clarify which sections are being updated and whether the updated ASME BPVC Section VIII, Division 1 “Design Margin” would be applicable to any of the cargo tank packaging “designed” to the requirements of ASME BVCP Section VIII, Division 1. In addition, GTTC asks if it was PHMSA’s intention to require the repair of ASME “marked” packaging to meet the requirements of the 1992 edition of the National Board Inspection Code (NBIC) currently incorporated by reference in to HMR. GTTC and GIS request that PHMSA incorporate the 2019 editions of the ASME BPVC and the NBIC since they are currently available.

NJP Engineering supports the HMR amendments proposed in the NPRM but requests correction of an alleged oversight by PHMSA in incorporating the 2015 edition of the ASME BPVC.<sup>27</sup> NJP Engineering notes that the ASME BPVC standard contains a requirement for a 6 percent knuckle radius on torispherical heads that is the subject of exception in three places (see §§ 178.346–1(d)(8), 178.347–1(d)(8), and 178.348(e)(2)(viii)) within the HMR. These HMR exceptions reference standard ASME BPVC standard UG–32(e) and were added to the HMR in response to the incorporation of the previous 1998 edition of the ASME BPVC. However, prior to the

incorporation of the 2015 edition, ASME removed paragraph (b) from UG–32, resulting in the re-designation of the former UG–32(e) as UG–32(d). NJP Engineering seeks clarification that it was PHMSA’s intention to retain those exceptions and recommends that “UG–32(e)” be replaced with “UG–32(d)” accordingly.

In this final rule, PHMSA is incorporating by reference the 2017 editions of the ASME BPVC Section II, Part A (Ferrous Materials Specifications); Section II, Part B (Nonferrous Material Specifications); Section V (Nondestructive Examination); Section VIII, Division 1 (Rules for Construction of Pressure Vessels Division); and Section IX (Welding, Brazing, and Fusing Qualifications). PHMSA’s technical review of P–1700 determined that the HMR’s incorporation by reference of the obsolete 2015 edition of the ASME BPVC could induce confusion among stakeholders about the controlling edition of the ASME BPVC. PHMSA agrees with the petitioner that adopting the updated edition would help ensure that the HMR remains consistent with the best practices used by the industry.

The design margin(s) in the HMR for DOT specification cargo tanks remain as currently authorized;<sup>28</sup> this rulemaking does not authorize the “design margin” described in the 2017 edition of the ASME BPVC Sections II (Parts A and B), V, VIII (Division 1), and IX into the HMR for DOT specification cargo tanks, even as it would apply to specification portable tanks. This distinction was clarified in a letter of interpretation (17–0083)<sup>29</sup> published in response to PHMSA’s incorporation by reference of the 2015 edition of the ASME BPVC Section VIII Division. This rulemaking did not consider incorporating the updated NBIC; however, the 2017 edition is under review currently as part of the HM–241<sup>30</sup> rulemaking. The 1992 edition of the NBIC currently incorporated by reference into the HMR will remain in effect for the repair of ASME packagings manufactured in accordance with the HMR. PHMSA will retain the exceptions in §§ 178.346–1(d)(8), 178.347–1(d)(8), and

<sup>28</sup> The ASME design margin does not apply to DOT specification cargo tanks because of the structural integrity sections in part 178, which specify alternative design margins. In contrast, the ASME design margin applies to portable tanks as the HMR contains no exception allowing the use of an alternative design margin.

<sup>29</sup> PHMSA Letter of Interpretation Reference No. 17–0083, available at <https://www.phmsa.dot.gov/regulations/title49/interp/17-0083>.

<sup>30</sup> See Spring 2020 Unified Agenda at <https://www.reginfo.gov/public/do/AgendaViewRule?pubId=202004&RIN=2137-AE58>.

178.348(e)(2)(viii), and agrees that “UG–32(e)” should be replaced with “UG–32(d)” provisions. PHMSA is making an additional editorial change to the HMR to update the references to UG–32 as recommended by NJP Engineering. PHMSA expects that the cost-savings associated with P–1700 would be modest. A more detailed discussion of this economic analysis can be found in the accompanying RIA.

#### 17. Import of Foreign Pi-Marked Cylinders

In its petition (P–1701), CGA requests that PHMSA modify §§ 171.23, 173.302, and 173.304 to permit the transportation of filled pi-marked foreign pressure receptacles in compliance with applicable requirements of the European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR) and EU Directive 2010/35/EU of the European Parliament and of the Council. The HMR currently allows pi-marked cylinders (which are filled and shipped within the EU and marked with a pi ( $\pi$ ) symbol to denote compliance with the ADR and EU Directive 2010/35/EU) to be imported through use of special permits. The petitioner requests revisions to the HMR authorizing without the need for a special permit, the (1) import, intermediate storage, transport to point of use, discharge, and export, as well as (2) import of empty pi-marked foreign pressure receptacles for filling, intermediate storage, and export. Entegris provided comments to the P–1701 docket<sup>31</sup> and requested additional revisions to §§ 171.23(a) and 173.302(a)(2) to allow shipment of adsorbed gasses within those pi-marked cylinders that were the subject of CGA’s petition for rulemaking. The changes to § 171.23(a)(3) requested by Entegris are intended to allow for domestic sourcing as well as the import of empty pi-marked pressure receptacles for filling and export.

PHMSA’s technical review did not find evidence to suggest there would be any adverse safety impacts resulting from those HMR amendments. The shipping of pi-marked cylinders within the United States has been allowed for many years through special permits—with at least 3,000 shipments occurring since the special permits were first issued; there is also extensive operational experience in the safe international shipment of pi-marked cylinders. Although there is limited market data on the current export of pi-marked cylinders pursuant to special permit, PHMSA expects that adopting

<sup>31</sup> <https://www.regulations.gov/docket?D=PHMSA-2017-0026>.

<sup>27</sup> See 81 FR 25613 (Apr. 29, 2016).

these amendments would not result in a change to the number of pi-marked cylinders that are transported or the risk profile of their transportation.

Nonetheless, cost savings are expected to be minimal, resulting primarily from the potential time savings for industry and government due to the elimination of the need for a special permit. A more detailed discussion of the economic analysis can be found in the accompanying RIA.

PHMSA received comments from CGA and Chemours in support of this proposal. COSTHA notes that the 2017 edition of the ADR is being referenced in § 171.7 of the NPRM. COSTHA also notes that as of September 2019, the most current edition of the ADR is the 2019 edition that became effective July 1, 2019. PHMSA will consider updating this reference in a future rulemaking, as it has yet to conduct a technical evaluation of the 2019 edition of the ADR.

In this final rule, PHMSA is modifying §§ 171.23, 173.302, and 173.304 to permit the import of filled pi-marked foreign pressure receptacles for storage incidental to movement, transport to point of use, discharge, and export. PHMSA is also permitting the transportation of pi-marked foreign pressure receptacles for export, including filling and storage incidental to movement. In addition, PHMSA is revising §§ 171.23(a) and 173.302(a)(2) to ensure that the authorization for pi-marked cylinders is applicable to adsorbed gas packages. Finally, to align with similar ADR provisions and increase shipper and carrier awareness of the requirements for pi-marked cylinders, PHMSA is requiring a notation on the shipping paper following the basic description of the hazardous material to certify compliance with the pi-marked cylinder requirements. PHMSA is updating § 171.7 to include the ADR and EU Directive 2010/35/EU of the European Parliament and of the Council into the HMR.

#### 18. Placement of the Word “Stabilized” in Shipping Description

In its petition (P–1706), Evonik requests that PHMSA revise how the word “stabilized” should appear when providing the shipping name for a hazardous material to maintain consistency with the IMDG Code. The HMR does not allow the word “stabilized” to appear as part of the proper shipping name, whereas the IMDG Code requires it, when stabilization is required prior to transportation. The petitioner claims that this causes needless discrepancies

with the IMDG Code in connection with international shipments. PHMSA received comments from the Dow Chemical Company, Dangerous Goods Advisory Council (DGAC), and IVODGA supporting this proposal.

PHMSA’s technical review confirmed inconsistency between the HMR and the IMDG Code and revealed that hazardous materials that have some instability but that are not specifically identified or classified as self-reactive substances or organic peroxides cannot be shipped in compliance with both the IMDG Code and the HMR as currently written. In addition, PHMSA determined that requiring the use of the word “stabilized” when stabilization is required by § 173.21(f) would not result in any reduction in safety, but would instead increase safety by indicating that a material has been stabilized in preparing it for transportation. Although this amendment may incur costs for manufacturers and shippers related to training and compliance, costs are expected to be negligible because affected entities that engage in international commerce are already aware of the requirement under the IMDG Code. A more detailed discussion of the economic analysis can be found in the accompanying RIA.

Therefore, in this final rule, PHMSA is revising § 172.101(c) to clarify that the word “stabilized” must be included as part of the proper shipping name when the HMR requires stabilization before transportation.

#### 19. Incorporation by Reference of an AESC/IME Standard

In its petition (P–1710), IME requests that PHMSA update § 171.7(r) to update IME’s corporate address and incorporate by reference the AESC/IME JPG Standard, also called the “Guide to Obtaining DOT Approval of Jet Perforating Guns using AESC/IME Perforating Gun Specifications,” Version 02, dated September 1, 2017. IME also proposes that PHMSA include a new § 173.67 codifying PHMSA’s current practice excepting JPGs conforming to the AESC/IME JPG Standard from the exhaustive testing generally required pursuant to § 173.56 to receive an EX number authorizing transportation of a new explosive.<sup>32</sup>

JPGs use shaped explosive charges to produce a high-pressure jet penetrating the liner or casing of a wellbore to

enhance production of oil and gas wells. The petitioners note that the initial version of the AESC/IME JPG Standard has been used by PHMSA since 2008. Entities seeking PHMSA’s assignment of an EX number for a JPG product submit applications demonstrating conformity with one of 13 standard design templates within the AESC/IME JPG Standard, thereby avoiding having to submit their product for explosive laboratory testing normally required under § 173.56. IME submits that the HMR amendments identified in its petition would codify existing PHMSA practices for review of JPG products under § 173.56. PHMSA received no adverse comments on the petition or the proposals in the NPRM.

PHMSA expects that adoption of the petition as proposed in the NPRM will not have an adverse effect on safety. PHMSA has relied on AESC/IME’s JPG Standard to expedite its review of applications since 2008; PHMSA is unaware any significant operational or testing experience indicating that historical practice is unsafe. Further, the most recent version of the AESC/IME JPG Standard is potentially more conservative than the current standard, as it would narrow the universe of JPG product designs (from 13 to 8) eligible for expedited review to only those 1.1D products without a detonator. Furthermore, the economic analysis suggests potential annualized cost savings of approximately \$360,000 for manufacturers of JPGs that would avail themselves of the newly-codified regulations incorporating the updated AESC/IME JPG Standard to avoid the need for explosives laboratory testing. Additional cost savings are expected for both manufacturers and PHMSA due to reduced labor requirements for processing applications for EX approvals. A more detailed discussion of the economic analysis can be found in the accompanying RIA.

Therefore, in this final rule, PHMSA is updating IME’s address in § 171.7(r), incorporating the updated AESC/IME JPG Standard into a new § 171.7(r)(3) of the HMR, and adding a new § 173.67 codifying existing practice allowing AESC/IME JPG Standard-compliant products access to expedited PHMSA review under § 173.56.

#### 20. Incorporation by Reference of an Updated APA Standard 87–1

In its petition (P–1711), the APA requests that PHMSA incorporate by reference the 2018 edition of APA Standard 87–1, “Standard for Construction and Approval for Transportation of Fireworks, Novelties,

<sup>32</sup> PHMSA’s use of the 2008 version of the AESC/IME JPG Standard in its § 173.56 reviews is an informal practice and not a regulatory requirement. See Correspondence from Theodore L. Willke (PHMSA) to Lon Santis (IME) (Nov. 19, 2008), [http://www.ocsresponds.com/ref/AESC-IMEPerfGunApproval\(2008.11.19\).pdf](http://www.ocsresponds.com/ref/AESC-IMEPerfGunApproval(2008.11.19).pdf).

and Theatrical Pyrotechnics”<sup>33</sup> to replace the outdated reference to the 2001 edition of this standard, noting advances in product safety and design in the fireworks industry over the last 15 years. Significant changes from the previous edition of APA Standard 87–1 include the following:

- Re-organizing Standard 87–1 into three parts: APA Standard 87–1A (consumer fireworks), APA Standard 87–1B (display fireworks), and APA Standard 87–1C (entertainment and technical industry fireworks, otherwise referred to as articles pyrotechnics).

- Updating the product descriptions throughout each of those parts to accommodate new types and configurations popularized since the 2001 edition of APA Standard 87–1.

The petitioner contends that because the classification system in the 2001 edition of APA Standard 87–1 does not reflect new product types and configurations (e.g., combination devices containing multiple tubes, and combinations of effects previously limited to single tubes), those new products are not eligible pursuant to §§ 173.64 and 173.65 for expedited PHMSA review and approval.<sup>34</sup> The petitioner submits that incorporation by reference of the updated version of APA Standard 87–1 would relieve administrative burdens on industry by facilitating expedited PHMSA review and approval of fireworks products and provide regulatory certainty regarding compliance with the HMR.

PHMSA received numerous comments to the NPRM regarding this petition, and to address each issue, PHMSA broke them out into the following sub-sections for detailed discussion.

#### General Comments: Support

PHMSA received comments in support of this proposal from Charles Ward; Huang Johnson; Western Enterprises Inc.; ResPyro (Steve Comen); StageFX (Lyle Salmi); Galaxy Fireworks, Inc.; ResPyro (Kent Orwoll); NextFX; Fireworks Over America; Dennis Slicer; Santore and Sons; Pyrotechnics Guild International (Paul Smith); Garrett’s

<sup>33</sup> APA Standard 87–1 is a consensus industry standard in which fireworks classifications are assigned based upon the weight and type of chemical composition for each type of device, including specific permissible and restricted chemicals.

<sup>34</sup> Sections 173.64 and 173.65 permit fireworks manufactured in compliance with APA Standard 87–1 to be classified and approved on an expedited basis, as each application for a new fireworks product would otherwise have to provide product-specific testing required under § 173.56 to obtain an EX number from PHMSA authorizing their transportation.

Fireworks; ICON Pyrotechnics Internationals; American Fireworks Standards Laboratory (AFSL); Inter-Oriental Fireworks LTD; APA; APA Rebuttal to National Fireworks Association (NFA); and Matthew Jones. These commenters generally supported incorporating the updated APA Standard 87–1, noting that it will add numerous new devices, expand the permitted chemical list, and is directed toward hazard classification for transportation. The commenters add that the updated APA Standard 87–1 provides defined criteria that will relieve the burden of submitting new fireworks designs to a third-party test lab for classification and will reduce the regulatory burden on industry, including manufacturers and small business importers, who often have to spend their time helping their foreign manufacturers obtain EX approvals.

#### General Comment: Opposed

PHMSA received comments opposing incorporation of APA Standard 87–1A from Yienger Fireworks, NFA, and Crazy Debbie’s Fireworks. NFA and Crazy Debbie’s Fireworks explain that while many of the proposed revisions to APA Standards 87–1A, B, and C would clarify the requirements applicable to fireworks devices, there are certain revisions in APA Standard 87–1A that will not reduce regulatory burdens and do not relate to improving transportation safety. These commenters further contend that APA Standard 87–1A would conflict with the regulatory regime of the Consumer Product Safety Commission (CPSC) governing the safety of fireworks from a consumer-use standpoint.

Instead, PHMSA’s incorporation of APA Standard 87–1 pertains to its distinguishable jurisdictional responsibility over regulation of packaging and transportation of fireworks and other hazardous materials. PHMSA-imposed restrictions on packaging and shipment of hazardous materials for transportation that give rise to incidental effects on the way those materials are marketed to consumers are, therefore, not duplicative or conflicting regulations. In addition, PHMSA notes that the APA 87–1 standards were developed with the resources of the APA, which welcomed broad input and participation from the fireworks industry. APA allowed organizations, including the NFA, to participate in that process as an organization.

#### Comments Regarding Section 2.4: Break/Burst Charge Limits

PHMSA received several comments on section 2.4 of APA Standard 87–1A, which outlines the general requirements that must be met for construction and design of consumer firework devices and novelties. Jake’s Fireworks, NFA, Crazy Debbie’s Fireworks, Ultratec Special Effects and the APA provided comments specifically on the break/burst charge limits outlined in this section of APA Standard 87–1A:

- Jake’s Fireworks contends that APA Standard 87–1A’s limitation on metals in the composition of a break/burst charges was rejected by the CPSC commissioners, alleging that in doing so, the CPSC rejected metal composition as a factor in the safety of break/burst charges.

- Ultratec Special Effects states that some of the weight limit increases for devices per tube in APA Standard 87–1A will allow for a break/burst charge of 42.5 grams, which is more than enough to produce a salute device. It also claims that if these devices were subject to UN Series 6 testing, they would likely be classified as 1.3G or 1.1G devices, further adding that reports and airburst reports should always be subject to UN Series 6 testing since these devices are highly energetic and should be scrutinized for proper construction and packing techniques to ensure safe transportation. Ultratec Special Effects adds that many of these devices are currently unregulated due to older issued EX numbers that have vague specifications and no specified part numbers.

- NFA asserts that adoption of the language for break/burst charges in APA Standard 87–1A will not reduce regulatory burdens and will create conflict and confusion between agency regulations instead, further claiming that it is unrelated to safe transportation of hazardous materials in commerce.

- Crazy Debbie’s Fireworks alleges that APA Standards 87–1A and C should have identical break/burst charge limits for the same fireworks. By way of example, Crazy Debbie’s Fireworks notes that for the same firework—“UN0336, Fireworks, 1.4G”—each of APA Standard 87–1A and Standard 87–1C impose two different break/burst composition restrictions. Under APA Standard 87–1A, this material is limited to less than 149 microns (100 mesh) metals in the break/burst charges, but APA Standard 87–1C states that aluminum particles greater than 53 microns in diameter must not exceed 10 percent by weight of the break/burst charge.

APA Standard 87–1A’s restrictions on metal size and chemical composition within break/burst charges for consumer fireworks are not new regulatory requirements; rather, they have been in place since the 2001 edition of APA Standard 87–1 currently incorporated into § 171.7, as metal size and chemical composition directly impact hazard classification. For this reason, PHMSA is not persuaded by the commenters’ arguments that APA Standard 87–1A’s limitations on break/burst device metal composition are unnecessary; rather, PHMSA understands those metal size limitations to be essential to safe transportation of consumer fireworks whose chemical structure and metal composition makes them inherently more dangerous than fireworks with different constituents. Further, even if the CPSC may not have had reservations about whether an adequate technical basis to conclude that the precise metal composition limits at issue in its rulemaking would ensure consumer product safety, PHMSA is satisfied, based on its experience regulating transportation of hazardous materials (an activity that involves a different risk profile than use of fireworks by individual consumers) that the approach taken in APA Standard 87–1 and 87–1A is appropriate for its transportation regulatory oversight activities. PHMSA notes that none of the commenters on the NPRM provided technical or operational data supporting a contrary conclusion.

In addition, Ultratec Special Effects’ assertion that APA Standard 87–1A will allow for an increased break/burst charge of 42.5 grams, and therefore allow salute device access to the expedited review processes under §§ 173.64 and 173.65, is incorrect. A device containing a burst charge weight of 42.5 grams would not comply with either the existing APA Standard 87–1 nor the updated APA Standard 87–1A. The only weight increases in the updated APA Standard 87–1A pertain to fountain devices, which do not contain burst/break charges; the break/burst charge weight limit of 15 grams for aerial shells did not change. Devices with break/burst charges exceeding 15 grams would have to be submitted to a DOT-approved test laboratory pursuant to § 173.56, where the device would be subjected to the UN Series 6 testing and subsequently reviewed by PHMSA.

Further, although PHMSA acknowledges that the HMR allows the use of the default UN classification testing (including UN Series 6 testing) instead of reliance on compliance with APA Standard 87–1A, PHMSA is not convinced that UN Series 6 testing is

necessarily superior to APA Standard 87–1A’s approach of limiting the metal particle sizes and chemical composition. Indeed, insofar as both APA Standards (87–1 and 87–1A) as well as the UN Model Regulations classify fireworks with an eye toward limiting the amount of flash powder compositions that can be present in fireworks, they do so by different approaches: APA Standard 87–1 and the updated 87–1A do so by way of adjusting chemical composition and metal particle sizes to control flash powder compositions, while the UN Model Regulations rely on the use of a flash powder test to determine the presence of flash powder compositions. Based on its long experience regulating safe transportation of fireworks, PHMSA is satisfied that both the APA Standard (87 and 87–1A) and UN approaches are appropriate. PHMSA notes that none of the commenters on the NPRM provided technical or operational data supporting a contrary conclusion.

PHMSA is aware of the different limits on metal size permitted under APA Standards 87–1A and C for the same UN0336, 1.4G firework. As explained above, PHMSA understands metal size to be an important factor in classifying fireworks to ensure their safe transportation. But metal size is not necessarily the only component that should be considered in the classification of fireworks under the HMR. Indeed, the differences between APA Standards 87–1A and C with respect to the same fireworks reflect the common-sense proposition that other characteristics of fireworks can influence their classification for regulation of their transportation—and that those transportation-relevant characteristics often derive from (or incidentally effect) the end uses of the fireworks. As explained by APA in supplemental comments submitted in response to Crazy Debbie’s Fireworks et al., the chemical composition and design of articles pyrotechnics governed by APA Standard 87–1C are much more energetic than the consumer fireworks governed by APA Standard 87–1A—hence, the difference in authorized metal sizes despite the same 1.4G classification. PHMSA understands the different metal size limits for consumer applications (APA Standard 87–1A) and articles pyrotechnics applications (APA Standard 87–1C) to be appropriate.

#### Comments Regarding Reloadable Aerial Shell Kits

PHMSA received comments from Jake’s Fireworks, NFA, and Crazy Debbie’s Fireworks, on sections 2.4 and 3.2.5.1 of APA Standard 87–1A

pertaining to reloadable aerial shell kits. These commenters do not view those requirements (for fully assembled tubes, inner packaging and a base) as being related to the risk of harm in the transportation of these products, instead claiming they relate to the kits’ packaging and design as it interfaces with the consumer, which they allege is subject to the jurisdiction of the CPSC and distinct from transportation safety regulated by PHMSA. NFA further claims adoption of this portion of the proposed language under section 3.2.5.1 will not reduce regulatory burdens, may create conflict and confusion between CPSC and PHMSA regulations, and eliminate a currently-allowed industry practice prior to an item being offered for retail sale.

However, APA submitted supplemental comments noting that NFA, et al. were not criticizing the NPRM so much as existing HMR requirements as elaborated by PHMSA safety guidance<sup>35</sup> on reloadable aerial shell kits. APA further explained that the transportation of completed kits with inner packaging significantly increases safety in the event of an incident occurring during transportation: If a trailer load or shipping container of reloadable shells did not have the separation provided by inner packaging required under APA Standard 87–1A, the product could behave as a 1.3G explosive and pose far more serious transportation risks than a 1.4G incident.

PHMSA agrees with APA that Standard 87–1A’s requirement for reloadable aerial shell kits to contain fully assembled tube and be packaged in an inner packaging with base is not a new regulatory requirement: Those elements are in the 2001 edition of APA Standard 87–1, in addition to the PHMSA guidance identified above. PHMSA further agrees with APA that the requirements for inner packaging and bases for reloadable aerial shell kits in APA Standard 87–1A are important contributors to the safe shipment of aerial shell kits. Indeed, PHMSA’s technical review regarding P–1710 included research yielding a preliminary conclusion that reloadable aerial shell kits can be shipped in bulk safely as 1.4G explosives.

#### Comments Regarding Appendices

PHMSA received comments from Jake’s Fireworks and the NFA on “Appendix VI: General Requirements

<sup>35</sup> <https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/approvals-and-permits/hazmat/energetic-materials-approvals/18296/safetyguidancefortheclassificationofanaerialshellkit.pdf>.

Pertaining to the Consumer Product Safety Commission.” The commenters note that the requirements in Appendix VI do not relate to matters of transportation safety, but rather concern consumer safety issues which are within the jurisdiction of the CPSC.

PHMSA agrees with the commenters that Appendix VI of APA Standard 87-1A is within the jurisdiction of CPSC, and will therefore not incorporate it by reference in this final rule. Nor will PHMSA incorporate by reference any of Appendices II-V of APA Standard 87-1A, Appendices II-IV of APA Standard 87-1B, and Appendices II-IV of APA Standard 87-1C, as PHMSA has not conducted a technical evaluation of those Appendices.

#### Conclusion Regarding Incorporation by Reference of Updated APA Standard

Based on PHMSA’s technical analysis and the comments received on the NPRM, PHMSA will in this final rule incorporate by reference the updated APA Standards 87-1A, B, and C, with their respective Appendix I Permitted and Restricted Chemicals lists. Other Appendices of APA Standard 87-1A (Appendices II-VI), APA Standard 87-1B (Appendices II-IV), and APA Standard 87-1C (Appendices II-IV) will not be incorporated by reference. PHMSA expects the updated APA Standards 87-1A, B, and C will provide clarity to the fireworks industry, while maintaining the composition restrictions for classification that are needed to ensure the safe transportation of fireworks. Furthermore, PHMSA’s decision to incorporate by reference the updated APA Standard 87-1 is based on its review of the requirements for consumer fireworks in APA Standard 87-1A, display fireworks in APA Standard 87-1B, and professional fireworks (classed as articles pyrotechnics) in APA Standard 87-1C. These standards add numerous new devices, expand the permitted chemical list, and are directed toward hazard classification for transportation. PHMSA is also clarifying that in incorporating Appendix I of each of APA Standards 87-1A, B, and C, it will adopt a one-percent manufacturing tolerance for the application of the chemical constituent limits in updated APA Standard 87-1. This would mean that for individual chemical constituents, an increase or decrease of one-percent of that material’s share of the composition compared to the limits set forth in the updated APA Standard will be permitted for chemicals (other than red phosphorous and silver fulminate).

PHMSA expects its incorporation of the updated APA Standard 87-1 will

provide cost savings to the fireworks industry by streamlining the EX approval process for many types of pyrotechnic devices. The EX approval processes within the updated APA Standard 87-1 will relieve the burden of submitting new fireworks designs to a third-party test lab for classification—a compliance cost often borne by distributors and small business importers, who often must contract to assist foreign manufacturing sources in obtaining EX approvals for their manufactured products. In addition, PHMSA expects that the incorporation of the revised APA standards will provide opportunities for the fireworks industry to work with the Department of Defense in developing incendiary type devices for training exercises. PHMSA estimates that adoption of this petition would provide an annualized cost savings of approximately \$270,000 to industry through expediting the approval process to reduce explosives lab testing requirements. A more detailed discussion of the economic analysis can be found in the accompanying RIA.

#### V. Section-by-Section Review

Below is a section-by-section description of the amendments in this final rule.

##### 1. Appendix A to Part 107, Subpart D

Appendix A to Part 107, Subpart D sets forth the guidelines PHMSA uses (as of October 2, 2013) in making initial baseline determinations for civil penalties. In this final rule, PHMSA is updating the references to APA Standard 87-1 to reflect the new edition of this standard.

##### 2. Section 107.402

Section 107.402 outlines how to apply for designation as a certification agency. PHMSA is updating the references to the APA Standard 87-1 to reflect the new edition of this standard in § 107.402(d).

##### 3. Section 171.7

Section 171.7 lists all standards incorporated by reference into the HMR that are not specifically set forth in the regulations. In this final rule, PHMSA is incorporating by reference the following publications by the APA, ASME, CGA, EU, and AESC/IME:

- *European Agreement concerning the International Carriage of Dangerous Goods by Road*, 2017, into § 171.23. The ADR is the European agreement concerning the international carriage of dangerous goods by road within the EU.
- *Directive 2010/35/EU of the European Parliament and of the*

*Council*, June 16, 2010, into § 171.23. The aim of Directive 2010/35/EU of the European Parliament and of the Council on Transportable Pressure Equipment (2010 TPED) is to promote the free movement of transportable pressure equipment (TPE) within the European Community (EC). It provides for a legal structure whereby TPE can be manufactured and sold and used throughout the EC.

- CGA C-6.1, *Standards for Visual Inspection of High Pressure Aluminum Compressed Gas Cylinders*, 2002, Fourth Edition, into §§ 180.205 and 180.209. This publication has been prepared as a guide for the visual inspection of aluminum compressed gas cylinders with service pressures of 1800 psig or greater. It is general in nature and does not cover all circumstances for each individual cylinder type or lading.

- CGA C-6.3, *Guidelines for Visual Inspection and Requalification of Low Pressure Aluminum Compressed Gas Cylinders*, 2013, Third Edition, into §§ 180.205 and 180.209. This publication has been prepared as a guide for the periodic inspection of aluminum alloy compressed gas cylinders with service pressures of 500 psi or less. This publication is general in nature and will not cover all circumstances for each individual cylinder type or lading.

- CGA C-11, *Recommended Practices for Inspection of Compressed Gas Cylinders at Time of Manufacture*, 2013, Fifth Edition, into § 178.35. The purpose of this publication is to promote safety by outlining inspection requirements of DOT and UN pressure vessels as interpreted and practiced by manufacturers and inspectors.

- CGA S-7, *Method for Selecting Pressure Relief Devices for Compressed Gas Mixtures in Cylinders*, 2013, Fifth Edition, into § 173.301. This method is applicable to the determination of the PRD to use with compressed gas mixtures in cylinders. This method is limited to those compressed gas mixtures with known flammability, toxicity, state, and corrosivity.

- ASME *Boiler and Pressure Vessel Code (ASME BPVC)*, 2017 Edition, July 1, 2017 (as follows), into §§ 172.102; 173.3; 173.5b; 173.24b; 173.306; 173.315; 173.318; 173.420; 178.255-1; 178.255-2; 178.255-14; 178.255-15; 178.273; 178.274; 178.276; 178.277; 178.320; 178.337-1; 178.337-2; 178.337-3; 178.337-4; 178.337-6; 178.337-16; 178.337-18; 178.338-1; 178.338-2; 178.338-3; 178.338-4; 178.338-5; 178.338-6; 178.338-13; 178.338-16; 178.338-18; 178.338-19; 178.345-1; 178.345-2; 178.345-3; 178.345-4; 178.345-7; 178.345-14;

178.345–15; 178.346–1; 178.347–1; 178.348–1; 179.400–3; and 180.407. The ASME BPVC is a standard that regulates the design and construction of boilers and pressure vessels. The document is written and maintained by volunteers chosen for their technical expertise.

- AESC/IME JPG Standard, *Guide to Obtaining DOT Approval of Jet Perforating Guns using AESC/IME Perforating Gun Specifications*, Ver. 02, dated September 1, 2017, into § 173.67. The AESC/IME JPG Standard was developed by IME, AESC, and PHMSA to provide an efficient and economical mechanism to obtain explosives approvals of JPGs in compliance with the HMR. Applications that are prepared and submitted using the standard are processed by PHMSA with minimal delay and without the need for expensive and time-consuming testing.

- APA Standards: 87–1A *Standard for the Construction, Classification, Approval and Transportation of Consumer Fireworks*, January 1, 2018 edition into §§ 107.402(d), 173.59, 173.64, 173.65, and Appendix A to Part 107, Subpart D (Guidelines for Civil Penalties); 87–1B *Standard for the Construction, Classification, Approval, and Transportation of Display Fireworks*, January 1, 2018 edition into § 173.64 and Appendix C to Part 107, Subpart D (Guidelines for Civil Penalties); and 87–1C *Standard for the Construction, Classification, Approval, and Transportation of Entertainment Industry and Technical (EI&T) Pyrotechnics*, January 1, 2018 edition version into § 173.64 and Appendix A to Part 107, Subpart D (Guidelines for Civil Penalties). APA Standard 87–1A, B, and C is a consensus standard in which fireworks classifications are assigned based upon the weight and type of chemical composition contained for each specific type of device, including specific permissible and restricted chemicals.

#### 4. Section 171.8

Section 171.8 defines terms generally used throughout the HMR that have broad or multi-modal applicability. PHMSA is adding a definition for “waste material” to allow wastes that do not meet the EPA/RCRA definition of hazardous waste to be managed in accordance with the lab pack exception and associated paragraphs in § 171.23.

#### 5. Section 171.23

Section 171.23 covers the requirements for specific materials and packagings transported under the ICAO Technical Instructions, IMDG Code, TC Transport of Dangerous Goods (TDG) Regulations, or the International Atomic

Energy Agency (IAEA) Regulations. PHMSA is revising § 171.23(a)(3) to allow for the use of pressure vessels and pressure receptacles that are marked with a pi mark in accordance with the European Directive 2010/35/EU on TPED and that comply with the requirements of Packing Instruction P200, P208 and 6.2 of ADR concerning PRD use, test period, filling ratios, test pressure, maximum working pressure, and material compatibility for the lading contained or gas being filled. This revision allows for import, intermediate storage, transport to point of use, discharge, and export of pi-marked cylinders. Note that since the publication of the NPRM, PHMSA has made minor editorial revisions to this section such as revising § 171.23(a)(3) to refer to 6.2.2. of the ADR instead of 6.2. PHMSA also removed the word “import” from § 171.23(a)(3)(i) and “export” from § 171.23(a)(3)(ii).

#### 6. Section 172.101

The HMT is contained in § 172.101. The HMT lists alphabetically, by proper shipping name, those materials that have been designated hazardous materials for transportation purpose. It provides information used on shipping papers, package marking, and labeling, as well as other pertinent shipping information for hazardous materials. In this final rule, PHMSA is removing references to special provision 103 from Column (7) of the HMT for the following four explosive entries: “UN0361, Detonator assemblies, non-electric, for blasting”; “UN0365, Detonators for ammunition”; “UN0255, Detonators, electric, for blasting”; and “UN0267, Detonators, non-electric, for blasting.” PHMSA is also revising more than 100 entries to harmonize the limited quantity exceptions in Column (8A) with the ICAO Technical Instructions and the UN Model Regulations.

#### 7. Section 172.102

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. Consistent with the § 172.101 Column (7) revisions to “UN0361, Detonator assemblies, non-electric, for blasting”; “UN0365, Detonators for ammunition”; “UN0255, Detonators, electric, for blasting”; and “UN0267, Detonators, non-electric, for blasting,” PHMSA is removing special provision 103 as it would no longer apply to any HMT entry.

#### 8. Section 172.302

Section 172.302 describes the general marking requirements for bulk packagings. In this final rule, PHMSA is revising the minimum size of the marking requirement on certain portable tanks in § 172.302(b)(2). This revision requires a minimum marking of 12 mm (0.47 inch) in height as applicable to portable tanks with capacities less than 3,785 L (1,000 gallons).

#### 9. Section 173.5b

Section 173.5b authorizes the transportation by highway of residual amounts of Division 2.2 refrigerant gases or anhydrous ammonia contained in non-specification pressure vessels that are components of refrigeration systems. PHMSA is revising paragraph (b) to indefinitely allow the use of refrigeration systems placed into service prior to June 1, 1991 under specified conditions.

#### 10. Section 173.28

Section 173.28 outlines the requirements for the reuse, reconditioning, and re-manufacture of packagings. In this final rule, PHMSA is modifying language in § 173.28(c)(1)(i) to clarify requirements for reconditioning metal drums and to allow for the sufficient removal of external coatings to ensure there is no adverse effect on transportation safety.

#### 11. Section 173.31

Section 173.31 outlines the requirements for shipping hazardous materials in tank cars. In this final rule, PHMSA is prohibiting the use of tank cars that were manufactured using non-normalized steel for head or shell construction for the transportation of PIH materials after December 31, 2020. Furthermore, PHMSA is phasing out all non-HM–246 compliant tank cars for the transportation of PIH materials by December 31, 2027.

#### 12. Section 173.56

Section 173.56 outlines the definitions and procedures for the classification and approval of a new explosive. In this final rule, PHMSA is adding a reference to the new § 173.67, which would apply to exceptions for Division 1.1 JPGs.

#### 13. Section 173.59

Section 173.59 outlines the description of terms for explosives. In this final rule, PHMSA is updating a reference to the APA documents in the definition of consumer fireworks.



#### 14. Section 173.64

Section 173.64 outlines the exceptions for Division 1.3 and 1.4 fireworks. In this final rule, PHMSA is updating a reference to the APA documents in § 173.64(a)(1) and (3).

#### 15. Section 173.65

Section 173.65 outlines the exceptions for Division 1.4G consumer fireworks. In this final rule, PHMSA is updating a reference to the APA documents in § 173.65(a)(1), (a)(3)(i), and (a)(4)(iv).

#### 16. Section 173.67

In this final rule, PHMSA is adding a new § 173.67 to outline exceptions for Division 1.1 JPGs.

#### 17. Section 173.151

Section 173.151 outlines exceptions for Class 4 materials. In this final rule, PHMSA is revising the limited quantities provisions in this section to present limited quantities in appropriate SI units in liters in addition to kilograms.

#### 18. Section 173.244

Section 173.244 outlines the requirements for bulk packaging for certain pyrophoric liquids, dangerous when wet (Division 4.3) materials, and poisonous liquids with inhalation hazards (Division 6.1). In this final rule, PHMSA is modifying the list of authorized tank car specifications in the table of PIH materials (§ 173.244(a)(2)) by replacing the delimiter “I” with “W” to reflect the change of the interim tank car standard to a permanent standard.

#### 19. Section 173.302

Section 173.302 outlines the requirements for the filling of cylinders with nonliquefied (permanent) compressed gases or adsorbed gases. In this final rule, PHMSA is revising § 173.302(a)(1) to refer to exceptions in § 171.23(a)(3) for the importation of pi-marked cylinders. PHMSA is also revising § 173.302(a)(2) to make adsorbed gases eligible for the exceptions provided in § 171.23(a)(3).

#### 20. Section 173.304

Section 173.304 outlines the requirements for the filling of cylinders with liquefied compressed gases. In this final rule, PHMSA is revising § 173.304(a) to refer to exceptions in § 171.23(a)(3) for the importation of pi-marked cylinders.

#### 21. Section 173.308

Section 173.308 outlines the requirements for the shipment of lighters. In this final rule, PHMSA is

deleting § 173.308(d)(3), which requires a closed transport vehicle or closed freight container being transported by vessel to contain the marking, “WARNING—MAY CONTAIN EXPLOSIVE MIXTURES WITH AIR—KEEP IGNITION SOURCES AWAY WHEN OPENING.”

#### 22. Section 173.314

Section 173.314 outlines the requirements for transporting compressed gases in tank cars and multi-unit tank cars. In this final rule, PHMSA is modifying the table in § 173.314(c), which lists the authorized tank car specifications for specific compressed gases. The changes replace the last specification delimiter “J” with “H” and “I” with “W” to reflect the change of the interim HM-246 tank car specification standard for PIH materials to a permanent standard.

#### 23. Section 178.35

Section 178.35 prescribes the manufacturing and testing specifications for cylinders used for the transportation of hazardous materials in commerce. In this final rule, PHMSA is modifying § 178.35(b) and (c) to clarify inspection requirements as stipulated in CGA C-11. This includes revision to the inspector duties as consistent with CGA C-11.

#### 24. Section 178.521

Section 178.521 prescribes the requirements for paper bags used as non-bulk packagings for hazardous materials. In this final rule, PHMSA is revising § 178.521(b)(4) to allow for a weight tolerance of  $\pm 10$  percent from the nominal basis weight reported in the initial design qualification test report instead of  $\pm 5$  percent.

#### 25. Section 179.22

Section 179.22 specifies additional marking requirements for tank cars. In this final rule, PHMSA is modifying § 179.22(e) to provide for new markings for tank cars manufactured after March 16, 2009, to meet the requirements of §§ 173.244(a)(2) or (3) or 173.314(c) or (d) to reflect the change of the interim tank car standard to a permanent standard. PHMSA is replacing “I” with “W” for cars manufactured before the effective date of this final rule and specifying that tank cars manufactured after the effective date will be marked with “W” following the test pressure and with a delimiter of “H.”

#### 26. Section 180.209

Section 180.209 specifies requirements for requalification of specification cylinders. In this final

rule, PHMSA is modifying § 180.209(l)(2) to reference § 171.23(a)(5) in lieu of paragraph (4).

#### 27. Section 180.213

Section 180.213 specifies requirements for requalification markings. In this final rule, PHMSA is modifying § 180.213(d)(2) to reference § 171.23(a)(5) in lieu of paragraph (4).

#### 28. Section 180.417

Section 180.417 prescribes the reporting and record retention requirements pertaining to cargo tanks. Currently, §§ 180.417(a)(3)(i) and (ii) allow the use of alternative reports when a manufacturer’s certificate and related papers are not available for DOT specification cargo tanks that were manufactured before September 1, 1995. In this final rule, PHMSA is removing the provision that limits use of alternative reports to those DOT specification cargo tanks “manufactured before September 1, 1995” from § 180.417(a)(3).

## VI. Regulatory Analyses and Notices

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

This rulemaking is published under the authority of Federal hazardous materials transportation law<sup>36</sup> (Federal hazmat law.). Section 5103(b) of the Federal hazmat law authorizes the Secretary of Transportation to “prescribe regulations for the safe transportation, including security, of hazardous materials in intrastate, interstate, and foreign commerce.” The Secretary’s authority regarding hazardous materials safety is delegated to PHMSA at 49 CFR 1.97. This rulemaking amends several sections of the HMR in response to petitions for rulemaking received from the regulated community.

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

This final rule is not considered a significant regulatory action under section 3(f) of E.O. 12866, “Regulatory Planning and Review”<sup>37</sup> and, therefore, was not formally reviewed by the Office of Management and Budget (OMB). This rulemaking is also not considered a significant rulemaking under the DOT regulations governing rulemaking procedures at 49 CFR part 5, subpart B. E.O. 12866 requires agencies to regulate in the “most cost-effective manner,” to make a “reasoned determination that the benefits of the intended regulation justify its costs,” and to develop

<sup>36</sup> 49 U.S.C. 5101 *et seq.*

<sup>37</sup> 58 FR 51735 (Oct. 4, 1993).

regulations that “impose the least burden on society.” Similarly, DOT regulations at § 5.5(f)–(g) require that regulations issued by PHMSA and other DOT Operating Administrations “should be designed to minimize burdens and reduce barriers to market entry whenever possible, consistent with the effective promotion of safety” and should generally “not be issued unless their benefits are expected to exceed their costs.”

In addition, E.O. 12866 and DOT implementing regulations at 49 CFR 5.5(i) require PHMSA to provide a meaningful opportunity for public participation, which also reinforces requirements for notice and comment under the Administrative Procedure

Act. Therefore, in the NPRM, PHMSA sought public comment on its proposed revisions to the HMR, the preliminary cost and cost savings analyses in the Preliminary RIA, as well as any information that could assist in quantifying the benefits of this rulemaking. Those comments are addressed in this final rule, and additional discussion about the economic impacts of the final rule are provided within the RIA posted in the docket.

In this final rule, PHMSA is introducing amendments to the HMR responding to 24 petitions that have been submitted by stakeholders. Overall, this rulemaking maintains the continued safe transportation of

hazardous materials while producing a net cost savings. PHMSA estimates a present value of quantified net cost savings of approximately \$0.72 million annualized at a 7 percent discount rate over a perpetual time horizon. These estimates do not include non-monetized and qualitative cost/cost savings discussed in the RIA.

PHMSA’s cost/cost savings analysis relies on the monetization of impacts for three petitions included in this rulemaking. The following table presents a summary of the three petitions that would have monetized impacts upon codification and contribute to PHMSA’s estimation of quantified net cost savings.

TABLE 1—SUMMARY OF COST/COST SAVINGS OF PETITIONS FOR REGULATORY REFORM

Monetized costs/(cost savings) by petition			
Petition #	Petition topic	Total cost savings (millions)	Annualized cost savings (millions)
P–1688	<i>Weight Tolerances for Paper Shipping Sacks</i>	\$1.30	\$0.09
P–1710	<i>Incorporation of an Institute of Makers of Explosives Standard</i>	5.10	0.36
P–1711	<i>Incorporation of American Pyrotechnics Association Standard</i>	3.90	0.27
Total		10.30	0.72

In addition to those three items, this rulemaking amends the HMR in response to other petitions that are either (1) cost neutral or (2) deregulatory in nature in that they provide relief from unnecessary requirements or provide additional flexibility, but which have not been monetized due to information gaps preventing quantification of cost savings. Furthermore, PHMSA’s actions in this final rule provide regulatory certainty to industry and allow efficient movement of hazardous materials resulting in increased economic activity.

PHMSA’s findings are described in further detail in the RIA posted in the docket.

C. Executive Order 13771

This final rule is a deregulatory action under E.O. 13771, “Reducing Regulation and Controlling Regulatory Costs.”<sup>38</sup> Details on the estimated cost savings of this final rule can be found in the RIA posted in the docket.

D. Executive Order 13132

This rulemaking was analyzed in accordance with the principles and criteria contained in E.O. 13132, “Federalism”,<sup>39</sup> and the presidential memorandum (“Preemption”) that was

published in the **Federal Register**.<sup>40</sup> E.O. 13132 requires agencies to assure meaningful and timely input by State and local officials in the development of regulatory policies that may have “substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.” This rulemaking may preempt State, local, and Tribal 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 E.O. 13132 do not apply.

The Federal hazmat law contains an express preemption provision, 49 U.S.C. 5125(b), that preempts State, local, and Indian Tribal requirements on the following subjects:

- (1) The designation, description, and classification of hazardous materials;
- (2) The packing, repacking, handling, labeling, marking, and placarding of hazardous materials;
- (3) The preparation, execution, and use of shipping documents related to

hazardous materials and requirements related to the number, contents, and placement of those documents;

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

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

This final rule addresses covered certain of the subject items above and preempts State, local, and Indian Tribe requirements concerning those subjects unless the non-Federal requirements are “substantively the same” as the Federal requirements. PHMSA received no comments on the NPRM regarding the effect of the adoption of the specific proposals on State, local or tribal governments.

E. Executive Order 13175

This rulemaking was analyzed in accordance with the principles and criteria contained in E.O. 13175, “Consultation and Coordination with Indian Tribal Governments”<sup>41</sup> and DOT Order 5301.1, “Department of

<sup>38</sup> 82 FR 9339 (Jan. 30, 2017).

<sup>39</sup> 64 FR 43255 (Aug. 10, 1999).

<sup>40</sup> 74 FR 24693 (May 22, 2009).

<sup>41</sup> 65 FR 67249 (Nov. 6, 2000).

Transportation Policies, Programs, and Procedures Affecting American Indians, Alaska Natives, and Tribes.” E.O. 13175 requires agencies to assure meaningful and timely input from Tribal government representatives in the development of rules that significantly or uniquely affect Tribal communities by imposing “substantial direct compliance costs” or “substantial direct effects” on such communities or the relationship and distribution of power between the Federal Government and Tribes. PHMSA assessed the impact of the rulemaking on Indian Tribal communities and determined that it would not significantly or uniquely affect Tribal communities or Indian Tribal governments. Therefore, the funding and consultation requirements of E.O. 13175 do not apply. Further, PHMSA did not receive comments on the Tribal implications of the rulemaking.

*F. Regulatory Flexibility Act, Executive Order 13272, and DOT Procedures and Policies*

The Regulatory Flexibility Act<sup>42</sup> requires agencies to consider whether their rulemakings will have a “significant economic impact on a substantial number of small entities” to include small businesses, not-for-profit organizations that are independently owned and operated and are not dominant in their fields, and governmental jurisdictions with populations under 50,000. This rulemaking has been developed in accordance with E.O. 13272, “Proper

Consideration of Small Entities in Agency Rulemaking,”<sup>43</sup> and DOT implementing regulations at 49 CFR 5.13(f) to ensure compliance with the Regulatory Flexibility Act requirements regarding evaluation of potential impacts of draft rules on small entities.

*1. Need for and objectives of the final rule.*

This final rule amends miscellaneous provisions in the HMR in response to 24 petitions for rulemaking. While maintaining safety, this final rule would amend certain requirements that are overly burdensome and provide clarity and flexibility where requested by the regulated community. The changes are generally intended to provide relief to shippers, carriers, and packaging manufacturers, including small entities.

*2. Significant issues raised by the public comments, a statement of the assessment by PHMSA regarding such issues, and a statement of any changes made in the proposed rule as a result of such comments.*

PHMSA did not receive any public comments suggesting that the proposed amendments would have a significant impact on small entities. Please refer to Section IV. (Discussion of Amendments and Applicable Comments) above and the RIA for PHMSA’s responses to comments submitted in the rulemaking docket.

*3. PHMSA’s response to any comments of the Chief Counsel for Advocacy of the Small Business Association (SBA).*

PHMSA received no comments filed by the SBA in response to the NPRM,

and therefore has introduced no changes to this final rule in response.

*4. An estimate of the number of small entities to which the rule will apply or an explanation of why no such estimate is available.*

This final rule affects numerous small entities across a wide range of industries. However, quantified impacts on entities, large or small, could only be assessed for a few of the changes incorporated in this final rule due to data limitations. These impacts are explained, discussed and assessed in the accompanying RIA. For the purposes of identifying affected small entities, PHMSA focused on the industries for which quantified impacts could be estimated. PHMSA assumes that any change that did not draw comment from the industry and could not be quantified is unlikely to have a significant economic or other impact on small entities. PHMSA therefore limits the discussion here to the three items for which impacts could be quantified: (1) The adoption of petition P–1688 adopting a wider range of basis weight for the paper stock used to manufacture UN specification paper sacks; (2) P–1710 adopting a new AESC/IME standard for JPGs; and (3) P–1711 incorporating by reference an updated APA Standard 87–1 pertaining to fireworks.

The table below presents the U.S. Census Bureau Statistics of U.S. Businesses (SUBS) revenue data for each relevant NAICS Code that could be affected by incorporating P–1688.

NAICS	Industry title	Firm size category	Number of firms in category	Total firm revenue in category (\$1,000s)
322220 .....	Paper Bag and Coated and Treated Paper Manufacturing ...	Total	575	20,836,474
322220 .....	Paper Bag and Coated and Treated Paper Manufacturing ...	< 500	511	7,225,805
322220 .....	Paper Bag and Coated and Treated Paper Manufacturing ...	500+	64	13,610,669

Depending on the industrial sector, the SBA defines small entities either by a revenue threshold or by the number of employees. As identified in the accompanying RIA, the entities affected by the adoption of petition P–1688 are in North American Industrial Classification System (NAICS) code 322220—Paper Bag and Coated and Treated Paper Products Manufacturing. Firms in this NAICS sector manufacture a wide range of products, of which only a small subset are shipping sacks or shipping sack feed stock. Data are not available that would enable PHMSA to

identify how many firms within the larger NAICS manufacture both shipping sacks and feed stock for shipping sacks, much less identify the number of small entities. Neither can PHMSA estimate the revenues for those small entities with any degree of certainty. As noted in the RIA, the high-end cost savings estimate is roughly \$160,000 in cost savings per year. PHMSA does not believe these modest cost savings, spread among all affected manufacturers, would rise to the level of a significant impact for affected small entities.

The second industry to consider is associated with petition P–1710 and affects manufacturers of JPGs. As described in the RIA, there are five NAICS sectors that manufacture, operate or contract JPG services. These sectors include:

- NAICS Code 325920, *Explosives Manufacturing*
- NAICS Code 213111, *Drilling Oil and Gas Wells*
- NAICS Code 213112, *Support Activities for Oil and Gas Operations*

<sup>42</sup> 65 FR 67249 (Nov. 6, 2000).

<sup>43</sup> 67 FR 53461 (Aug. 16, 2002).

- NAICS Code 333132, *Oil and Gas Field Machinery and Equipment Manufacturing*
- NAICS Code 423830, *Industrial Machinery and Equipment Merchant Wholesalers*

The RIA quantifies impacts related to elimination of testing requirements. The entities most directly impacted by this elimination are manufacturers of JPGs. While the firms involved in drilling wells, and equipment wholesalers, and support activities for oil and gas

operations may use JPGs they are unlikely to manufacture them. PHMSA therefore uses NAICS codes 325920 and 333132 to identify the entities most likely to be affected by the cost savings associated with the changes associated with adoption of this petition. The small business size threshold for NAICS 325920—Explosives Manufacturing—is fewer than 750 employees. For NAICS 333132 the threshold for a small business is fewer than 1,250 employees. Given the size threshold for NAICS 333132—Oil and Gas Field Machinery

and Equipment Manufacturing, and looking at the Census Bureau SUBS tables, for this NAICS, it seems likely that virtually all firms in this industry qualify as small businesses. The average number of employees per firm with 500 employees or more is essentially 500 employees, indicating that even the largest firms in this industry are not much larger than 500 employees. Given that the threshold is more than double 500 employees, it seems reasonable to assume that essentially all firms in this industry fall under the SBA threshold.

NAICS	Industry title	Firm size category	Number of firms in category	Total firm revenue in category (\$1,000s)
325920	Explosives Manufacturing	Total	52	2,382,540
325920	Explosives Manufacturing	< 500	37	560,068
325920	Explosives Manufacturing	500+	15	1,822,472

NAICS	Industry title	Firm size category	Number of firms in category	Total firm revenue in category (\$1,000s)
333132	Oil and Gas Field Machinery and Equipment Manufacturing	Total	502	12,526,389
333132	Oil and Gas Field Machinery and Equipment Manufacturing	< 500	456	4,285,830
333132	Oil and Gas Field Machinery and Equipment Manufacturing	500+	46	8,240,559

The other NAICS under consideration (Explosives Manufacturing) has a threshold of 750 employees. 15 of the 52 firms in this sector have more than 500 employees. Again, it appears likely that the larger firms are clustered nearer the 500-employee threshold and hence would qualify as small businesses given a threshold of 750 employees.

Both industrial sectors manufacture a wide range of products: Explosives range from munitions, to fireworks, demolitions explosives, etc. JPGs make up a small fraction of the product output for these firms. Similarly, there is a wide range of drilling and other equipment manufactured for oil and gas exploration, of which JPGs make up a small fraction. Given the nature of the data available from the Census Bureau or other sources, PHMSA is unable to identify the number of firms in either of these broader industrial sectors that manufacture JPGs, much less those that would qualify as small entities. Nor could PHMSA identify revenues for small entities for use in making a significance determination with any degree of certainty. Although PHMSA cannot determine the number of JPG manufacturers or their revenues with any degree of specificity, PHMSA does

not believe that the cost savings would amount to a significant impact on small entities, as estimated cost savings would be \$360,000 split among all manufacturers of JPGs.

PHMSA concludes by evaluating the last provision of this final rule for which it has quantified the economic impacts: That element responding to petition P-1711 by incorporating an updated edition of APA Standard 87-1 by reference. This provision is the only element of the NPRM that drew adverse comments. These adverse comments are addressed above in the preamble. To summarize PHMSA's response, the items that drew the most concern appear to be unchanged from the existing regulatory requirements. Insofar as that is the case, the negative consequences for small entities alleged by the comments on the NPRM do not result from adoption of the updated APA Standard 87-1.

PHMSA did quantify some cost savings related to testing fireworks associated with adoption of the updated APA Standard 87-1. These cost savings result from reducing UN series 5 and 6 testing requirements for certain classes of fireworks. As described in the RIA, PHMSA estimated that this change may

reduce testing costs by roughly \$270,000 per year. Such a reduction in costs would be to the benefit of the fireworks industry, and PHMSA does not interpret these cost savings to be significant.

As described in the RIA, virtually all consumer fireworks, and roughly 75 percent of display fireworks, are manufactured in China. The RIA describes the U.S. fireworks industry as having about \$1.2 billion in revenue, of which consumer fireworks revenues account for about \$885 million and display fireworks account for the remaining \$353 million.

Fireworks manufacturers fall into a miscellaneous NAICS code—NAICS 325998—All Other Miscellaneous Chemical Product and Preparation Manufacturing. Fireworks manufacturing makes up a small fraction of the economic activity in this industry, which has a total revenue of roughly \$22 billion according to the Census Bureau SUBS data. The SBA size threshold for this industry is 500 employees: Firms with fewer than 500 employees are defined as small entities and those with 500 or more employees are not defined as small entities. The table below presents the relevant SUBS data for this NAICS code.

NAICS	Industry title	Firm size category	Number of firms in category	Total firm revenue in category (\$1,000s)
325998 .....	All Other Miscellaneous Chemical Product and Preparation Manufacturing.	Total	1,064	21,932,497
325998 .....	All Other Miscellaneous Chemical Product and Preparation Manufacturing.	< 500	974	8,690,809
325998 .....	All Other Miscellaneous Chemical Product and Preparation Manufacturing.	500+	90	13,241,688

As with other sectors assessed in this section, PHMSA cannot estimate the number of entities within the broader NAICS category that manufacture fireworks. The NAICS category in question contains firms that manufacture a wide range of products, only one small subset of which are fireworks. Given the lack of data with more detailed specificity, PHMSA cannot identify firms that manufacture fireworks, much less identify small entities that manufacture fireworks, or estimate revenue for those small entities. Given the relatively modest estimate of \$270,000 in annual cost savings, and that those savings would be split among multiple firms, PHMSA does not expect the impacts to be significant.

5. *A description of the projected reporting, recordkeeping and other compliance requirements of the rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for preparation of the report or record.*

There are no reporting or recordkeeping requirements under the “Paperwork Reduction Act” associated with this final rule.

6. *Alternative proposals for small entities.*

The Regulatory Flexibility Act directs agencies to establish exceptions and differing compliance standards for small entities, where it is possible to do so and still meet the objectives of the applicable regulatory statutes.

To the extent that PHMSA received adverse comments, they were not targeted at alleviating burdens on small entities. While PHMSA may consider guidance to the extent that it is necessary to help clarify responsibilities for small entities, PHMSA does not expect that establishing exceptions to the HMR amendments in this final rule or alternative requirements for small entities to address potential concerns about the impact on small entities would accomplish the safety objectives of Federal hazmat law. Moreover, many of the HMR amendments introduced in this final rule—insofar as they relate to

or incorporate by reference technical specifications or industry standards—do not accommodate different regulatory approaches based on whether the entity is small entity or not. Further, as explained at length in Section IV. (Discussion of Amendments and Applicable Comments) of this final rule, the HMR amendments introduced in this final rule are generally deregulatory in nature and intended to provide reduce regulatory burdens on small entities and other members of the regulated community.

7. *Conclusion.*

The changes in this final rule are generally intended to provide relief to shippers, carriers, and packaging manufactures and testers, including small entities. As discussed above, a shortage of pertinent data prevents PHMSA from quantifying economic impacts on small entities potentially affected by most of the HMR amendments introduced in this final rule. However, PHMSA has developed estimates for the numbers of small businesses that may be affected by the HMR revisions introduced in this final rule for which PHMSA has provided quantified cost benefits. For those HMR amendments, PHMSA has compared cost savings impacts to average small entity annual revenue and in none of those cases does an impact rise to even 1 percent of average small entity revenue, and in all cases the impacts reduce costs for the entities affected. Therefore, PHMSA determines that this final rule will not have a significant economic impact on a substantial number of small entities.

G. *Paperwork Reduction Act*

PHMSA has analyzed this final rule in accordance with the Paperwork Reduction Act of 1995.<sup>44</sup> This final rule does not impose new information collection requirements. PHMSA did not receive any comments regarding information collection activities under this final rule.

<sup>44</sup> 44 U.S.C. 3501 *et seq.*

H. *Regulation Identifier Number (RIN)*

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

I. *Unfunded Mandates Reform Act*

The Unfunded Mandates Reform Act (UMRA)<sup>45</sup> requires agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local, or Tribal governments, in the aggregate, or by the private sector, of \$100 million or more annually, adjusted for inflation. A Federal mandate is defined, in part, as a regulation that imposes an enforceable duty upon State, local, or Tribal governments or would reduce or eliminate the amount of authorization of appropriation for Federal financial assistance that would be provided to State, local, or Tribal governments for the purpose of complying with a previous Federal mandate.

This final rule does not impose unfunded mandates under the UMRA. It does not result in costs of \$100 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.

J. *Environmental Assessment*

The National Environmental Policy Act of 1969 (NEPA)<sup>46</sup> requires Federal agencies to consider the consequences of major Federal actions and prepare a detailed statement on actions significantly affecting the quality of the human environment. The Council on Environmental Quality (CEQ)

<sup>45</sup> 2 U.S.C. 1501 *et seq.*

<sup>46</sup> 42 U.S.C. 4321 *et seq.*

implementing regulations (40 CFR part 1500–1508) require Federal agencies to conduct an environmental review considering (1) the need for the action, (2) a description of the action and alternatives, (3) probable environmental impacts of the action and alternatives, and (4) comments from the public and the agencies and persons consulted during the consideration process. DOT Order 5610.1C, “Procedures for Considering Environmental Impacts,” establishes departmental procedures for evaluation of environmental impacts under NEPA and its implementing regulations.

PHMSA has completed its NEPA analysis. Based on the environmental assessment herein, PHMSA determined that an environmental impact statement is not required for this final rule because the HMR amendments introduced will not result in a significant environmental impact requiring the preparation of an environmental impact statement. PHMSA notes that it received no comments from the public on the NEPA analysis within the NPRM.

#### 1. Need for the Action

PHMSA is amending the HMR in response to petitions for rulemaking submitted by the regulated community to update, clarify, or provide relief from miscellaneous regulatory requirements. PHMSA expects that the HMR revisions in this final rule will provide cost benefits to the regulated community without adversely affecting safety. PHMSA has provided a brief summary of each of those HMR revisions, including their impact on safety, in Section IV (Discussion of Amendments and Applicable Comments) of this final rule.

#### 2. Alternatives

In this rulemaking, PHMSA considered the following alternatives:

##### Alternative 1: No Action

The No Action Alternative would not proceed with a rulemaking on any of the previously-accepted petitions for rulemaking submitted by stakeholders. In the No Action Alternative, current HMR provisions would remain in effect.

##### Alternative 2: Amend the HMR as Provided in This Final Rule

The Final Rule Alternative would adopt the HMR amendments set forth in this final rule.

#### 3. Environmental Impacts

Hazardous materials are substances that may pose a threat to public safety or the environment during transportation because of their physical, chemical, or nuclear properties. Under the HMR, hazardous materials are transported by aircraft, vessel, rail, and highway. The HMR embodies a risk management approach that is prevention-oriented and focused on identifying a safety hazard and reducing the probability and quantity of a hazardous material release. 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, loading, unloading, collisions, handling problems, or deliberate sabotage. The release of hazardous materials can cause the loss of ecological resources (e.g., wildlife habitats) and the contamination of air, aquatic environments, and soil. Contamination of soil can lead to the contamination of ground water. Compliance with the HMR substantially reduces the possibility of accidental release of hazardous materials, thereby minimizing the potential a significant impact on public health and the environment.

##### Alternative 1: No Action

If PHMSA were to select the No Action Alternative, current regulations would remain in place. However, efficiencies gained through harmonization of HMR provisions with international (UN, ICAO, IMDG, and EU) and consensus standards (AAR, APA, ASME, CGA, IME) for domestic U.S. industry would not be realized, thereby foregoing cost and safety benefits identified in Section IV. (Discussion of Amendments and Applicable Comments) of this final rule. Consistency between HMR requirements and international regulations and updated industry standards can promote the safety of international hazardous materials transportation through a better understanding of HMR requirements, an increased level of industry compliance, and fewer disruptions in transport of hazardous materials from their points of origin to their points of destination. Each of those consequences promote protection of human health and the environment; they also result in decreased compliance costs for regulated entities.

Nor, moreover, would the No Action Alternative provide meaningful safety benefits in declining to adopt HMR revisions in this final rule affording regulated entities greater flexibility in complying with HMR requirements. As explained in greater detail in Section IV. (Discussion of Amendments and Applicable Comments) PHMSA does not expect those flexibility-affording HMR amendments in the final rule (including, but not limited to, extension of regulatory exceptions to additional commodities; relaxation of labelling requirements or cleaning requirements) to adversely affect safety. Further, the regulatory flexibilities foregone in the No Action Alternative do not exist in isolation: Rather, they are each backstopped by the robust, proven safety framework provided by other HMR requirements governing the transportation of hazardous materials.

##### Alternative 2: Go Forward With the Proposed Amendments to the HMR in This Final Rule

PHMSA selected the Final Rule Alternative as the preferred alternative. The Final Rule Alternative updates, clarifies, or provides relief from a variety of HMR regulatory requirements. As explained at greater length in Section IV (Discussion of Amendments and Applicable Comments) of this final rule and the above discussion of the No Action Alternative, PHMSA expects the Final Rule Alternative will realize cost benefits from providing greater compliance flexibility for regulated entities without adversely affecting safety. Further, PHMSA expects cost and safety benefits from harmonizing HMR requirements with international and domestic U.S. industry standards can also promote safety, thereby minimizing the risk of environmental impacts from the release of hazardous materials to the environment during shipment. For example, the Final Rule Alternative’s regulatory phase out of legacy-specification PIH tank cars consistent with industry (AAR) consensus standards and contractual practices (e.g., interchange rules) permanently locks-in the safety benefits associated with a more robust tank car design for transporting PIH material.

The table below summarizes the anticipated environmental impacts from each of the elements of the final rule alternative:

SUMMARY OF PROBABLE ENVIRONMENTAL IMPACTS BY AMENDMENTS

Proposed amendment(s) to HMR (lettered as above herein)	Type of amendment(s)	Environmental impact(s) anticipated
A. Phase-Out of Non-Normalized Tank Cars Used to Transport PIH material ...	Regulatory Flexibility .....	No adverse impacts.
B. Limited Quantity Shipments of Hydrogen Peroxide .....	Regulatory Flexibility—Harmonization .....	No adverse impacts.
C. Markings on Portable Tanks .....	Regulatory Flexibility .....	No adverse impacts.
D. Reconditioning of Metal Drums .....	Regulatory Flexibility .....	No adverse impacts.
E. Limited Quantity Harmonization .....	Regulatory Flexibility—Harmonization .....	No adverse impacts.
F. Mobile Refrigeration Units .....	Regulatory Flexibility .....	No adverse impacts.
G. Incorporation by Reference of CGA Standards .....	Standard Incorporation .....	No adverse impacts.
H. Special Provision for Explosives .....	Regulatory Flexibility .....	No adverse impacts.
I. Cargo Tank Reports .....	Regulatory Flexibility .....	No adverse impacts.
J. Weight Tolerances for Paper Shipping Sacks .....	Regulatory Flexibility .....	No adverse impacts.
K. Markings on Closed Transport Containers .....	Regulatory Flexibility .....	No adverse impacts.
L. Finalization of the HM-246 Tank Car Standard .....	Regulatory Flexibility .....	No adverse impacts.
M. Phase-out of non-HM-246 Tank Cars .....	Harmonization .....	No adverse impacts.
O. Allow Non-RCRA Waste to Use Lab Pack Exception .....	Regulatory Flexibility .....	No adverse impacts.
P. Incorporation of ASME Code Sections II, V, VIII, and IX .....	Standard Incorporation .....	No adverse impacts.
Q. Import of Foreign Pi-Marked Cylinders .....	Regulatory Flexibility—Harmonization .....	No adverse impacts.
R. Placement of the word “stabilized” in shipping description .....	Regulatory Flexibility .....	No adverse impacts.
S. Incorporation of an IME Standard .....	Standard Incorporation .....	No adverse impacts.
T. Incorporation of APA Standard .....	Standard Incorporation .....	No adverse impacts.

4. Agencies consulted

PHMSA expects this final rule would affect hazardous materials shippers and carriers by highway, rail, vessel, and aircraft, as well as package manufacturers and testers. PHMSA sought therefore comment from the following Federal Agencies and modal partners:

- Federal Aviation Administration
- Federal Motor Carrier Safety Administration
- Federal Railroad Administration
- U.S. Coast Guard

PHMSA did not receive any adverse comments on the amendments in this final rule from these or any other Federal Agencies.

5. Conclusion

PHMSA finds that no significant environmental impacts will result from this final rule. The revisions in the final rule are intended to update, clarify, or provide relief from certain existing HMR requirements by eliminating unnecessary regulatory requirements; aligning HMR requirements with international and industry standards; and introducing editorial clarifications to make HMR requirements easier to understand. PHMSA does not expect those HMR revisions to adversely impact safety, much less cause a significant environmental impact under NEPA.

K. Privacy Act

In accordance with 5 U.S.C. 553(c), DOT solicits comments from the public to better inform its rulemaking process. DOT posts these comments, without edit, including any personal information the commenter provides, to [http://](http://www.regulations.gov)

[www.regulations.gov](http://www.regulations.gov), as described in the system of records notice (DOT/ALL-14 FDMS), which can be reviewed at <http://www.dot.gov/privacy>.

L. Executive Order 13609 and International Trade Analysis

Under E.O. 13609, “Promoting International Regulatory Cooperation,”<sup>47</sup> agencies must consider whether the impacts associated with significant variations between domestic and international regulatory approaches are unnecessary or may impair the ability of American business to export and compete internationally. In meeting shared challenges involving health, safety, labor, security, environmental, and other issues, international regulatory cooperation can identify approaches that are at least as protective as those that are or would be adopted in the absence of such cooperation. International regulatory cooperation can also reduce, eliminate, or prevent unnecessary differences in regulatory requirements.

Similarly, the Trade Agreements Act of 1979,<sup>48</sup> as amended by the Uruguay Round Agreements Act,<sup>49</sup> 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 to protect the safety of the American public. PHMSA has assessed the effects of the rulemaking to ensure that it does not cause unnecessary obstacles to foreign trade. As explained in greater detail in Section IV. (Discussion of Amendments and Applicable Comments) of the preamble to this final rule, several of the HMR amendments introduced in this rulemaking better align U.S. requirements for transportation of hazardous materials with international (e.g., UN, IMDG) standards. Further, insofar as those and other HMR amendments in this final rule are expected to reduce regulatory burdens, improve the clarity of HMR provisions, and afford regulated entities greater flexibility in satisfying HMR requirements, PHMSA expects the final rule to make a positive contribution to U.S. domestic and international trade. Accordingly, this final rule is consistent with E.O. 13609 and PHMSA’s obligations under the Trade Agreement Act, as amended.

M. Executive Order 13211

E.O. 13211, “Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use”<sup>50</sup> requires Federal agencies to prepare a Statement of Energy Effects for any “significant energy action.” Under E.O. 13211, a “significant energy action” is defined as any action by an agency

<sup>47</sup> 77 FR 26413 (May 4, 2012).

<sup>48</sup> Public Law 96–39.

<sup>49</sup> Public Law 103–465.

<sup>50</sup> 66 FR 28355 (May 22, 2001).

(normally published in the **Federal Register**) that promulgates, or is expected to lead to the promulgation of, a final rule or regulation (including a notice of inquiry, ANPRM, and NPRM) that: (1)(i) Is a significant regulatory action under E.O. 12866 or any successor order, and (ii) is likely to have a significant adverse effect on the supply, distribution, or use of energy; or (2) is designated by the Administrator of the Office of Information and Regulatory Affairs as a significant energy action.

This final rule is not significant energy action as contemplated by E.O. 13211. It is neither a “significant regulatory action” under E.O. 12866, nor expected to have a significant adverse effect on the supply, distribution or use of energy in the United States. The Administrator of OIRA has not designated the final rule as a significant energy action.

*N. National Technology Transfer and Advancement Act*

The National Technology Transfer and Advancement Act of 1995<sup>51</sup> directs Federal agencies to use voluntary consensus standards in their regulatory activities unless doing so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., specification of materials, test methods, or performance requirements) that are developed or adopted by voluntary consensus standards bodies. This final rule incorporates updates to multiple voluntary consensus standards which

are listed in § 171.7. See Section II, “Incorporation by Reference Discussion Under 1 CFR part 51” for availability.

**List of Subjects**

*49 CFR Part 107*

Administrative practice and procedure, Hazardous materials transportation, Incorporation by reference, Packaging and containers, Penalties, Reporting and recordkeeping requirements.

*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 178*

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

*49 CFR Part 179*

Hazardous materials transportation, Incorporation by reference, Railroad safety, Reporting and recordkeeping requirements.

*49 CFR Part 180*

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

In consideration of the foregoing, PHMSA amends 49 CFR chapter I as follows:

**PART 107—HAZARDOUS MATERIALS PROGRAM PROCEDURES**

■ 1. The authority citation for part 107 continues to read as follows:

**Authority:** 49 U.S.C. 5101–5128, 44701; Pub. L. 101–410, Section 4; Pub. L. 104–121, Sections 212–213; Pub. L. 104–134, Section 31001; Pub. L. 114–74, Section 4 (28 U.S.C. 2461 note); 49 CFR 1.81 and 1.97; 33 U.S.C. 1321.

■ 2. In Appendix A to subpart D of part 107, in the List of Frequently Cited Violations, under “Offeror Requirements—Specific hazardous materials” revise sections B.1 through 7 to read as follows:

**Appendix A to Subpart D of Part 107—Guidelines for Civil Penalties**

\* \* \* \* \*

Violation description	Section or cite	Baseline assessment
* * * * *		*
Offeror Requirements—Specific hazardous materials		
* * * * *		*
B. Class 1—Explosives:		
1. Failure to mark the package with the EX number for each substance contained in the package or, alternatively, indicate the EX number for each substance in association with the description on the shipping description.	172.320	\$1,000.
2. Offering an unapproved explosive for transportation:	173.54, 173.56(b)	
a. Division 1.4 fireworks meeting the chemistry requirements of APA 87–1A or 87–1C.		\$5,000.
b. Division 1.3 fireworks meeting the chemistry requirements of APA 87–1B		\$7,500.
c. All other explosives (including forbidden)		\$12,500 and up.
3. Offering an unapproved explosive for transportation that minimally deviates from an approved design in a manner that does not impact safety:	173.54, 173.56(b)	
a. Division 1.4		\$3,000.
b. Division 1.3		\$4,000.
c. All other explosives		\$6,000.
4. Offering a leaking or damaged package of explosives for transportation:	173.54(c)	
a. Division 1.3 and 1.4		\$12,500.
b. All other explosives		\$16,500.

<sup>51</sup> 15 U.S.C. 272 note.



Violation description	Section or cite	Baseline assessment
5. Offering a Class 1 material that is fitted with its own means of ignition or initiation, without providing protection from accidental actuation.	173.60(b)(5) .....	\$15,000.
6. Packaging explosives in the same outer packaging with other materials .....	173.61 .....	\$9,300.
7. Transporting a detonator on the same vehicle as incompatible materials using the approved method listed in 177.835(g)(3) without meeting the requirements of IME Standard 22.	177.835(g)(3) .....	\$10,000.

\* \* \* \* \*

■ 3. In § 107.402, revise paragraph (d) introductory text to read as follows:

**§ 107.402 Application for designation as a certification agency.**

\* \* \* \* \*

(d) *Fireworks Certification Agency.* Prior to reviewing, and certifying Division 1.4G consumer fireworks (UN0336) for compliance with the APA 87–1A, excluding appendices II through VI, (IBR, see § 171.7 of this chapter) as specified in part 173 of this chapter, a person must apply to, and be approved by, the Associate Administrator to act as a Fireworks Certification Agency.

\* \* \* \* \*

**PART 171—GENERAL INFORMATION, REGULATIONS, AND DEFINITIONS**

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

**Authority:** 49 U.S.C. 5101–5128, 44701; Pub. L. 101–410, Section 4; Pub. L. 104–134, Section 31001; Pub. L. 114–74, Section 4 (28 U.S.C. 2461 note); 49 CFR 1.81 and 1.97.

■ 5. In § 171.7:

- a. Revise paragraphs (f), (g), and (n)(4), (6), (9), and (20);
- b. Add paragraph (p);
- c. Revise paragraph (r) introductory text; and
- d. Add paragraphs (r)(3) and (dd)(4).

The revisions and additions read as follows:

**§ 171.7 Reference material.**

\* \* \* \* \*

(f) *American Pyrotechnics Association* (APA), P.O. Box 30438, Bethesda, MD 20824, (301) 907–8181, [www.americanpyro.com](http://www.americanpyro.com).

(1) APA 87–1A: Standard for the Construction, Classification, Approval and Transportation of Consumer Fireworks, final draft January 1, 2018 (excluding appendices II through VI), into §§ 107.402(d); 173.59; 173.64; and 173.65.

(2) APA 87–1B: Standard for the Construction, Classification, Approval, and Transportation of Display Fireworks, final draft January 1, 2018 (excluding appendices II through IV), into § 173.64.

(3) APA 87–1C: Standard for the Construction, Classification, Approval, and Transportation of Entertainment Industry and Technical (EI&T) Pyrotechnics, final draft January 1, 2018 (excluding appendices II through IV), into § 173.64.

(g) *The American Society of Mechanical Engineers* (ASME), 150 Clove Road, Little Falls, NJ 07424–2139, telephone: 1–800–843–2763, <http://www.asme.org>.

(1) ASME Boiler and Pressure Vessel Code (ASME Code), 2017 Edition, July 1, 2017 (as follows), into §§ 172.102; 173.3; 173.5b; 173.24b; 173.306; 173.315; 173.318; 173.420; 178.255–1; 178.255–2; 178.255–14; 178.255–15; 178.273; 178.274; 178.276; 178.277; 178.320; 178.337–1; 178.337–2; 178.337–3; 178.337–4; 178.337–6; 178.337–16; 178.337–18; 178.338–1; 178.338–2; 178.338–3; 178.338–4; 178.338–5; 178.338–6; 178.338–13; 178.338–16; 178.338–18; 178.338–19; 178.345–1; 178.345–2; 178.345–3; 178.345–4; 178.345–7; 178.345–14; 178.345–15; 178.346–1; 178.347–1; 178.348–1; 179.400–3; 180.407:

- (i) ASME BPVC.II.A–2017 (vols. 1 and 2), Section II—Materials—Part A—Ferrous Materials Specifications.
- (ii) ASME BPVC.II.B–2017, Section II—Materials—Part B—Nonferrous Material Specifications.
- (iii) ASME BPVC.V–2017, Section V—Nondestructive Examination.
- (iv) ASME BPVC.VIII.1–2017, Section VIII—Rules for Construction of Pressure Vessels Division 1.
- (v) ASME BPVC.IX–2017, Section IX—Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators.

**Note 1 to paragraph (g)(1):** The requirement for a 6% knuckle radius on torispherical heads are excepted.

(2) ASME B31.4–2012, Pipeline Transportation Systems for Liquids and Slurries, November 12, 2012, into § 173.5a.

\* \* \* \* \*

(n) \* \* \*

(4) CGA C–6.1–2013, Standards for Visual Inspection of High Pressure

Aluminum Compressed Gas Cylinders, Sixth Edition, copyright 2013 (corrected 4/14/2015), into §§ 180.205; 180.209.

\* \* \* \* \*

(6) CGA C–6.3–2013, Standard for Visual Inspection of Low Pressure Aluminum Alloy Compressed Gas Cylinders, Third Edition, copyright 2013, into §§ 180.205; 180.209.

\* \* \* \* \*

(9) CGA C–11–2013, Practices for Inspection of Compressed Gas Cylinders at Time of Manufacture, Fifth Edition, copyright 2013, into § 178.35.

\* \* \* \* \*

(20) CGA S–7–2013, Standard for Selecting Pressure Relief Devices for Compressed Gas Mixtures in Cylinders, Fifth Edition, copyright 2013, into § 173.301.

\* \* \* \* \*

(p) *European Union. Rue de la Loi/Wetstraat, 175B–1048 Bruxelles/Brussel Belgique/België*, [https://europa.eu/european-union/documents-publications\\_en](https://europa.eu/european-union/documents-publications_en).

(1) Directive 2010/35/EU of the European Parliament and of the Council, “on transportable pressure equipment and repealing Council Directives 76/767/EEC, 84/525/EEC, 84/526/EEC, 84/527/EEC and 1999/36/EC”, June 16, 2010, into § 171.23.

(2) [Reserved].

\* \* \* \* \*

(r) *Institute of Makers of Explosives*, 1212 New York Ave NW, #650, Washington, DC 20005.

\* \* \* \* \*

(3) AESC/IME JPG Standard, Guide to Obtaining DOT Approval of Jet Perforating Guns using AESC/IME Perforating Gun Specifications, Ver. 02, dated September 1, 2017, into § 173.67.

\* \* \* \* \*

(dd) \* \* \*

(4) ECE/TRANS/257 (Vol.I), European Agreement concerning the International Carriage of Dangerous Goods by Road, copyright 2016, into § 171.23.

\* \* \* \* \*

■ 6. In § 171.8, add a definition for “waste material” in alphabetical order to read as follows:

**§ 171.8 Definitions and abbreviations.**

\* \* \* \* \*

*Waste material* means, for the purposes of lab pack requirements in § 173.12 of this subchapter, all hazardous materials which are destined for disposal or recovery, and not so limited to only those defined as a hazardous waste in this section.

\* \* \* \* \*

■ 7. In § 171.23, revise paragraph (a) 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.**

\* \* \* \* \*

(a) *Conditions and requirements for cylinders and pressure receptacles*—(1) *Applicability.* Except as provided in this paragraph (a), a filled cylinder (pressure receptacle) manufactured to other than a DOT specification or a UN standard in accordance with part 178 of this subchapter, a DOT exemption or special permit cylinder, a TC, CTC, CRC, or BTC cylinder authorized under § 171.12, or a cylinder used as a fire extinguisher in conformance with § 173.309(a) of this subchapter, may not be transported to, from, or within the United States.

(2) *Conditions.* Cylinders (including UN pressure receptacles) transported to, from, or within the United States must conform to the applicable requirements of this subchapter. Unless otherwise excepted in this subchapter, a cylinder must not be transported unless—

(i) The cylinder is manufactured, inspected and tested in accordance with a DOT specification or a UN standard prescribed in part 178 of this subchapter, or a TC, CTC, CRC, or BTC specification set out in the Transport Canada TDG Regulations (IBR, see § 171.7), except that cylinders not conforming to these requirements must meet the requirements in paragraph (a)(3), (4), or (5) of this section;

(ii) The cylinder is equipped with a pressure relief device in accordance with § 173.301(f) of this subchapter and conforms to the applicable requirements in part 173 of this subchapter for the hazardous material involved;

(iii) The openings on an aluminum cylinder in oxygen service conform to the requirements of this paragraph, except when the cylinder is used for aircraft parts or used aboard an aircraft in accordance with the applicable airworthiness requirements and operating regulations. An aluminum DOT specification cylinder must have an opening configured with straight (parallel) threads. A UN pressure receptacle may have straight (parallel)

or tapered threads provided the UN pressure receptacle is marked with the thread type, e.g. “17E, 25E, 18P, or 25P” and fitted with the properly marked valve; and

(iv) A UN pressure receptacle is marked with “USA” as a country of approval in conformance with §§ 178.69 and 178.70 of this subchapter, or “CAN” for Canada.

(3) *Pi-marked pressure receptacles.* Pressure receptacles that are marked with a pi mark in accordance with the European Directive 2010/35/EU (IBR, see § 171.7) on transportable pressure equipment (TPED) and that comply with the requirements of Packing Instruction P200 or P208 and 6.2 of ECE/TRANS/257 (Vol. I), the Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR) (IBR, see § 171.7) concerning pressure relief device use, test period, filling ratios, test pressure, maximum working pressure, and material compatibility for the lading contained or gas being filled, are authorized as follows:

(i) Filled pressure receptacles imported for intermediate storage, transport to point of use, discharge, and export without further filling; and

(ii) Pressure receptacles imported or domestically sourced for the purpose of filling, intermediate storage, and export.

(iii) The bill of lading or other shipping paper must identify the cylinder and include the following certification: “This cylinder (These cylinders) conform(s) to the requirements for pi-marked cylinders found in 171.23(a)(3).”

(4) *Importation of cylinders for discharge within a single port area.* Except as provided in § 171.23(a)(3), a cylinder manufactured to other than a DOT specification or UN standard in accordance with part 178 of this subchapter, or a TC, CTC, BTC, or CRC specification cylinder set out in the Transport Canada TDG Regulations (IBR, see § 171.7), and certified as being in conformance with the transportation regulations of another country may be authorized, upon written request to and approval by the Associate Administrator, for transportation within a single port area, provided—

(i) The cylinder is transported in a closed freight container;

(ii) The cylinder is certified by the importer to provide a level of safety at least equivalent to that required by the regulations in this subchapter for a comparable DOT, TC, CTC, BTC, or CRC specification or UN cylinder; and

(iii) The cylinder is not refilled for export unless in compliance with paragraph (a)(5) of this section.

(5) *Filling of cylinders for export or for use on board a vessel.* A cylinder not manufactured, inspected, tested and marked in accordance with part 178 of this subchapter, or a cylinder manufactured to other than a UN standard, DOT specification, exemption or special permit, or other than a TC, CTC, BTC, or CRC specification, may be filled with a gas in the United States and offered for transportation and transported for export or alternatively, for use on board a vessel, if the following conditions are met:

(i) The cylinder has been requalified and marked with the month and year of requalification in accordance with subpart C of part 180 of this subchapter, or has been requalified as authorized by the Associate Administrator;

(ii) In addition to other requirements of this subchapter, the maximum filling density, service pressure, and pressure relief device for each cylinder conform to the requirements of this part for the gas involved; and

(iii) The bill of lading or other shipping paper identifies the cylinder and includes the following certification: “This cylinder has (These cylinders have) been qualified, as required, and filled in accordance with the DOT requirements for export.”

(6) *Cylinders not equipped with pressure relief devices.* A DOT specification or a UN cylinder manufactured, inspected, tested and marked in accordance with part 178 of this subchapter and otherwise conforms to the requirements of part 173 of this subchapter for the gas involved, except that the cylinder is not equipped with a pressure relief device may be filled with a gas and offered for transportation and transported for export if the following conditions are met:

(i) Each DOT specification cylinder or UN pressure receptacle must be plainly and durably marked “For Export Only”;

(ii) The shipping paper must carry the following certification: “This cylinder has (These cylinders have) been retested and refilled in accordance with the DOT requirements for export.”; and

(iii) The emergency response information provided with the shipment and available from the emergency response telephone contact person must indicate that the pressure receptacles are not fitted with pressure relief devices and provide appropriate guidance for exposure to fire.

\* \* \* \* \*

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

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

Authority: 49 U.S.C. 5101–5128, 44701; 49 CFR 1.81, 1.96 and 1.97.

■ 9. In § 172.101, add paragraph (c)(17) and amend the Hazardous Materials Table to revise entries under “[REVISE]” to read as follows:

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

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

(17) Unless it is already included in the proper shipping name in the

§ 172.101 Table, the qualifying word “stabilized” may be added in association with the proper shipping name, as appropriate, where without stabilization the substance would be forbidden for transportation according to § 173.21(f) of this subchapter.

\* \* \* \* \*

**§ 172.101 Hazardous Materials Table**

Sym-bols	Hazardous materials descriptions and proper shipping names	Hazard class or division	Identi-fication Nos.	PG	Label codes	Special provi-sions (§ 172.102)	(8)			(9)		(10)	
							Packaging (§ 173.***)			Quantity limitations (see §§ 173.27 and 175.75)		Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo air-craft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
[REVISE]	Allyl isothiocyanate, stabilized.	6.1	UN1545	II	6.1, 3	387, A3, A7, IB2, T7, TP2.	153	202	243	Forbidden	60 L	D	25, 40
	Aluminum smelting by-products or Aluminum remelting by-products.	4.3	UN3170	II	4.3	128, B115, IB7, IP2, IP21, T3, TP33, W31, W40.	151	212	242	15 kg	50 kg	B	13, 85, 103, 148
				III	4.3	128, B115, IB8, IP21, T1, TP33, W31.	151	213	241	25 kg	100 kg	B	13, 85, 103, 148
G	Amine, liquid, corrosive, flammable, n.o.s. or Polyamines, liquid, corrosive, flammable, n.o.s.	8	UN2734	I	8, 3	A3, A6, N34, T14, TP2, TP27.	None	201	243	0.5L	2.5L	A	52
				II	8, 3	IB2, T11, TP2, TP27.	154	201	243	1L	30L	A	52
	Amyl mercaptan	3	UN1111	II	3	A3, A6, IB2, T4, TP1.	150	202	242	5 L	60 L	B	95, 102
	Antimony pentachloride, liquid.	8	UN1730	II	8	B2, IB2, T7, TP2.	154	202	242	1 L	30 L	C	40, 53, 58
	Antimony pentafluoride	8	UN1732	II	8, 6.1	A3, A6, A7, A10, IB2, N3, N36, T7, TP2.	154	202	243	Forbidden	30 L	D	40, 44, 53, 58, 89, 100, 141
	Batteries, dry, containing potassium hydroxide solid, electric storage.	8	UN3028		8	237	154	213	None	25 kg	230 kg	A	52
	Borneol	4.1	UN1312	III	4.1	A1, IB8, IP3, T1, TP33.	151	213	240	25 kg	100 kg	A	
	5-tert-Butyl-2,4,6-trinitro-m-xylene or Musk xylene.	4.1	UN2956	III	4.1	159	151	223	None	Forbidden	Forbidden	D	12, 25, 40, 127
	1,4-Butyenediol	6.1	UN2716	III	6.1	A1, IB8, IP3, T1, TP33.	153	213	240	100 kg	200 kg	C	52, 53, 70
	Calcium resinate	4.1	UN1313	III	4.1	A1, A19, IB6, T1, TP33.	151	213	240	25 kg	100 kg	A	
	Calcium resinate, fused.	4.1	UN1314	III	4.1	A1, A19, IB4, T1, TP33.	151	213	240	25 kg	100 kg	A	
	Camphor, synthetic	4.1	UN2717	III	4.1	A1, IB8, IP3, T1, TP33.	151	213	240	25 kg	100 kg	A	
	Celluloid, in block, rods, rolls, sheets, tubes, etc., except scrap.	4.1	UN2000	III	4.1	420	151	213	240	25 kg	100 kg	A	
	Cerium, slabs, ingots, or rods.	4.1	UN1333	II	4.1	IB8, IP2, IP4, N34, W100.	151	212	240	15 kg	50 kg	A	13, 74, 91, 147, 148
	Chloric acid aqueous solution, with not more than 10 percent chloric acid.	5.1	UN2626	II	5.1	IB2, T4, TP1, W31.	152	229	None	Forbidden	Forbidden	D	53, 56, 58

Sym-bols	Hazardous materials descriptions and proper shipping names	Hazard class or division	Identifi-cation Nos.	PG	Label codes	Special provi-sions (§ 172.102)	(8)			(9)		(10)	
							Packaging (§ 173.***)			Quantity limitations (see §§ 173.27 and 175.75)		Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo air-craft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	1-Chloropropane	3	UN1278	II	3	IB2, IP8, N34, T7, TP2.	150	202	242	Forbidden	60 L	E	
	Chromium trioxide, anhydrous.	5.1	UN1463	II	5.1, 6.1, 8.	IB8, IP2, IP4, T3, TP33, W31.	152	212	242	5 kg	25 kg	A	66, 90
	Corrosive liquids, flammable, n.o.s.	8	UN2920	I	8, 3	A6, B10, T14, TP2, TP27.	None	201	243	0.5 L	2.5 L	C	25, 40
				II	8, 3	B2, IB2, T11, TP2, TP27.	154	202	243	1 L	30 L	C	25, 40
G	Corrosive liquids, oxidizing, n.o.s.	8	UN3093	I	8, 5.1	A6, A7	None	201	243	Forbidden	2.5 L	C	89
				II	8, 5.1	A6, A7, IB2	154	202	243	1 L	30 L	C	89
	Corrosive solids, flammable, n.o.s.	8	UN2921	I	8, 4.1	IB6, T6, TP33	None	211	242	1 kg	25 kg	B	12, 25
				II	8, 4.1	IB8, IP2, IP4, T3, TP33.	154	212	242	15 kg	50 kg	B	12, 25
G	Corrosive solids, oxidizing, n.o.s.	8	UN3084	I	8, 5.1	T6, TP33	None	211	242	1 kg	25 kg	C	
				II	8, 5.1	154, IB6, IP2, T3, TP33.	154	212	242	15 kg	50 kg	C	
G	Corrosive solids, water-reactive, n.o.s.	8	UN3096	I	8, 4.3	IB4, IP1, T6, TP33.	None	211	243	1 kg	25 kg	D	13, 148
				II	8, 4.3	IB6, IP2, T3, TP33, W100.	154	212	242	15 kg	50 kg	D	13, 148
G	Corrosive liquids, oxidizing, n.o.s.	8	UN3093	I	8, 5.1	A6, A7	None	201	243	Forbidden	2.5 L	C	89
				II	8, 5.1	A6, A7, IB2	154	202	243	1 L	30 L	C	89
G	Corrosive solids, oxidizing, n.o.s.	8	UN3084	I	8, 5.1	T6, TP33	None	211	242	1 kg	25 kg	C	
				II	8, 5.1	154, IB6, IP2, T3, TP33.	154	212	242	15 kg	50 kg	C	
G	Corrosive solids, self-heating, n.o.s.	8	UN3095	I	8, 4.2	T6, TP33	None	211	243	1 kg	25 kg	C	
				II	8, 4.2	IB6, IP2, T3, TP33.	154	212	242	15 kg	50 kg	C	
G	Corrosive solids, water-reactive, n.o.s.	8	UN3096	I	8, 4.3	IB4, IP1, T6, TP33.	None	211	243	1 kg	25 kg	D	13, 148
				II	8, 4.3	IB6, IP2, T3, TP33, W100.	154	212	242	15 kg	50 kg	D	13, 148
	Cyanuric chloride	8	UN2670	II	8	IB8, IP2, IP4, T3, TP33.	None	212	240	15 kg	50 kg	A	12, 25, 40, 53, 58
	Cyclohexylamine	8	UN2357	II	8, 3	IB2, T7, TP2	154	202	243	1 L	30 L	A	40, 52
	Decaborane	4.1	UN1868	II	4.1, 6.1	A19, A20, IB6, IP2, T3, TP33, W31.	151	212	None	Forbidden	50 kg	A	74
	Detonator assemblies, non-electric, for blasting.	1.4B	UN0361		1.4B	148	63(f), 63(g)	62	None	Forbidden	75 kg	05	25
	Detonators, electric, for blasting.	1.4B	UN0255		1.4B	148	63(f), 63(g)	62	None	Forbidden	75 kg	05	25
	Detonators for ammunition.	1.4B	UN0365		1.4B		None	62	None	Forbidden	75 kg	05	25
	Detonators, non-electric, for blasting.	1.4B	UN0267		1.4B		63(f), 63(g)	62	None	Forbidden	75 kg	05	25
	Diethyl sulfide	3	UN2375	II	3	IB2, T7, TP1, TP13.	150	202	243	5 L	60 L	E	52
	2-Diethylaminoethanol	8	UN2686	II	8, 3	B2, IB2, T7, TP2.	154	202	243	1 L	30 L	A	52
	N,N-Diethylethylenediamine.	8	UN2685	II	8, 3	IB2, T7, TP2	154	202	243	1 L	30 L	A	52
	Diethylthiophosphoryl chloride.	8	UN2751	II	8	B2, IB2, T7, TP2.	154	212	240	15 kg	50 kg	D	12, 25, 40, 53, 58

Sym-bols	Hazardous materials descriptions and proper shipping names	Hazard class or division	Identi-fication Nos.	PG	Label codes	Special provi-sions (§ 172.102)	(8)			(9)		(10)	
							Packaging (§ 173.***)			Quantity limitations (see §§ 173.27 and 175.75)		Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo air-craft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Difluorophosphoric acid, anhydrous.	8	UN1768	II	8	A6, A7, B2, IB2, N5, N34, T8, TP2.	154	202	242	1 L	30 L	A	40, 53, 58
	Di-n-butylamine	8	UN2248	II	8, 3	IB2, T7, TP2	154	202	243	1 L	30 L	A	52
	Ethyl bromoacetate	6.1	UN1603	II	6.1, 3	IB2, T7, TP2	153	202	243	Forbidden	Forbidden	D	40
	Fibers or Fabrics impregnated with weakly nitrated nitro-cellulose, n.o.s.	4.1	UN1353	III	4.1	A1, IB8, IP3	151	213	240	25 kg	100 kg	D	
	Films, nitrocellulose base, gelatine coat-ed (except scrap).	4.1	UN1324	III	4.1		151	183	None	25 kg	100 kg	D	28
	Firelighters, solid with flammable liquid.	4.1	UN2623	III	4.1	A1, A19	151	213	None	25 kg	100 kg	A	52
G	Flammable solid, oxidi-zing, n.o.s.	4.1	UN3097	II	4.1, 5.1	131	151	214	214	Forbidden	Forbidden	E	40
				III	4.1, 5.1	131, T1, TP33.	151	214	214	Forbidden	Forbidden	D	40
	Flammable solids, cor-rosive, organic, n.o.s.	4.1	UN2925	II	4.1, 8	A1, IB6, IP2, T3, TP33.	151	212	242	15 kg	50 kg	D	40
				III	4.1, 8	A1, IB6, T1, TP33.	151	213	242	25 kg	100 kg	D	40
	Fluorophosphoric acid anhydrous.	8	UN1776	II	8	A6, A7, B2, IB2, N3, N34, T8, TP2.	154	202	242	1 L	30 L	A	53, 58
	Fluorosilicic acid	8	UN1778	II	8	A6, A7, B2, B15, IB2, N3, N34, T8, TP2.	154	202	242	1 L	30 L	A	53, 58
	Gallium	8	UN2803	III	8	T1, TP33	154	162	240	20 kg	20 kg	B	25
	Hafnium powder, wetted with not less than 25 percent water (a visible excess of water must be present) (a) me-chanically produced, particle size less than 53 microns; (b) chemically produced, particle size less than 840 microns.	4.1	UN1326	II	4.1	A6, A19, A20, IB6, IP2, N34, T3, TP33, W31, W40.	151	212	241	15 kg	50 kg	E	74
	Hexadienes	3	UN2458	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Hexafluorophosphoric acid.	8	UN1782	II	8	A6, A7, B2, IB2, N3, N34, T8, TP2.	154	202	242	1 L	30 L	A	53, 58
	Hexamethylenediamine solution.	8	UN1783	II	8	IB2, T7, TP2	154	202	242	1 L	30 L	A	52
				III	8	IB3, T4, TP1	154	203	241	5 L	60 L	A	
	Hydrazine aqueous so-lution, with more than 37% hydrazine, by mass.	8	UN2030	I	8, 6.1	B16, B53, T10, TP2, TP13.	None	201	243	Forbidden	2.5 L	D	40, 52
				II	8, 6.1	B16, B53, IB2, T7, TP2, TP13.	154	202	243	Forbidden	30 L	D	40, 52
				III	8, 6.1	B16, B53, IB3, T4, TP1.	154	203	241	5 L	60 L	D	40, 52
	Hydrogen peroxide and peroxyacetic acid mixtures, stabilized with acids, water, and not more than 5 percent peroxyacetic acid.	5.1	UN3149	II	5.1, 8	145, A2, A3, A6, B53, IB2, IP5, T7, TP2, TP6, TP24.	152	202	243	1 L	5 L	D	25, 66, 75.

Sym-bols	Hazardous materials descriptions and proper shipping names	Hazard class or division	Identifi-cation Nos.	PG	Label codes	Special provi-sions (§ 172.102)	(8)			(9)		(10)	
							Packaging (§ 173.***)			Quantity limitations (see §§ 173.27 and 175.75)		Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo air-craft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Hydrogen, peroxide, aqueous solutions with more than 40 percent but not more than 60 percent hydrogen peroxide (stabilized as necessary).	5.1 .....	UN2014	II	5.1, 8	12, A60, B53, B80, B81, B85, IB2, IP5, T7, TP2, TP6, TP24, TP37.	152	202	243	Forbidden	Forbidden	D	25, 66, 75
	Hydrogen peroxide, aqueous solutions with not less than 20 percent but not more than 40 percent hydrogen peroxide (stabilized as necessary).	5.1 .....	UN2014	II	5.1, 8	A2, A3, A6, B53, IB2, IP5, T7, TP2, TP6, TP24, TP37.	152	202	243	1 L	5 L	D	25, 66, 75
	Hydrogendifluoride, solid, n.o.s.	8 .....	UN1740	II	8	IB8, IP2, IP4, N3, N34, T3, TP33.	154	212	240	15 kg	50 kg	A	25, 40, 52, 53, 58
				III	8	IB8, IP3, N3, N34, T1, TP33.	154	213	240	25 kg	100 kg	A	25, 40, 52
	Iodine monochloride, solid.	8 .....	UN1792	II	8	B6, IB8, IP2, IP4, N41, T7, TP2.	154	212	240	Forbidden	50 kg	D	40, 53, 58, 66, 74
	Lead phosphite, dibasic.	4.1 .....	UN2989	II	4.1	IB8, IP2, IP4, T3, TP33.	151	212	240	15 kg	50 kg	B	34.
				III	4.1	IB8, IP3, T1, TP33.	151	213	240	25 kg	100 kg	B	34
	Mercaptans, liquid, flammable, toxic, n.o.s. or Mercaptan mixtures, liquid, flammable, toxic, n.o.s.	3 .....	UN1228	II	3, 6.1	IB2, T11, TP2, TP27.	150	202	243	Forbidden	60 L	B	40, 95, 102
				III	3, 6.1	A6, B1, IB3, T7, TP1, TP28.	150	203	242	5 L	220 L	A	40, 95, 102
	2-Methyl-2-butene	3 .....	UN2460	II	3	IB2, IP8, T7, TP1.	150	202	242	5 L	60 L	E	
	Methylal	3 .....	UN1234	II	3	IB2, IP8, T7, TP2.	150	202	242	5 L	60 L	E	
	Nitrating acid mixtures spent with not more than 50 percent nitric acid.	8 .....	UN1826	II	8	A7, B2, IB2, T8, TP2.	154	158	242	Forbidden	30 L	D	40, 53, 58
	Nitrating acid mixtures with not more than 50 percent nitric acid.	8 .....	UN1796	II	8	A7, B2, IB2, T8, TP2, TP13.	154	158	242	Forbidden	30 L	D	40, 53, 58
	Nitric acid other than red fuming, with at least 65 percent, but not more than 70 percent nitric acid.	8 .....	UN2031	II	8, 5.1	A6, B2, B47, B53, IB2, IP15, T8, TP2.	154	158	242	Forbidden	30 L	D	53, 58, 66, 74, 89, 90
	Nitric acid other than red fuming, with more than 20 percent and less than 65 percent nitric acid.	8 .....	UN2031	II	8	A6, A212, B2, B47, B53, IB2, IP15, T8, TP2.	154	158	242	Forbidden	30 L	D	44, 66, 53, 58, 74, 89, 90
	Nitric acid other than red fuming with not more than 20 percent nitric acid.	8 .....	UN2031	II	8	A6, B2, B47, B53, IB2, T8, TP2.	154	158	242	1 L	30 L	D	53, 58
	Octafluorobut-2-ene or Refrigerant gas R 1318.	2.2 .....	UN2422		2.2		306	304	314, 315	75 kg	150 kg	A	
	Octafluorocyclobutane, or Refrigerant gas RC 318.	2.2 .....	UN1976		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
	Octafluoropropane or Refrigerant gas R 218.	2.2 .....	UN2424		2.2	T50	306	304	314, 315	75 kg	150 kg	A	
G	Organometallic substance, liquid, water-reactive.	4.3 .....	UN3398	I	4.3	T13, TP2, TP7, TP36, TP47, W31.	None	201	244	Forbidden	1 L	D	13, 40, 52, 148
				II	4.3	IB1, IP2, T7, TP2, TP7, TP36, TP47, W31.	151	202	243	1 L	5 L	D	13, 40, 52, 148

Sym- bols	Hazardous materials descriptions and proper shipping names	Hazard class or division	Identifi- cation Nos.	PG	Label codes	Special provi- sions (§ 172.102)	(8)			(9)		(10)	
							Packaging (§ 173.***)			Quantity limitations (see §§ 173.27 and 175.75)		Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo air- craft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
				III	4.3	IB2, IP4, T7, TP2, TP7, TP36, TP47, W31.	151	203	242	5 L	60 L	E	13, 40, 52, 148
G	Organometallic sub- stance, liquid, water- reactive, flammable.	4.3	UN3399	I	4.3, 3	T13, TP2, TP7, TP36, TP47, W31.	None	201	244	Forbidden	1 L	D	13, 40, 52, 148
				II	4.3, 3	IB1, IP2, T7, TP2, TP7, TP36, TP47, W31.	151	202	243	1 L	5 L	D	13, 40, 52, 148
				III	4.3, 3	IB2, IP4, T7, TP2, TP7, TP36, TP47, W31.	151	203	242	5 L	60 L	E	13, 40, 52, 148
G	Organometallic sub- stance, solid, water- reactive, self-heating.	4.3	UN3397	I	4.3, 4.2	N40, T9, TP7, TP33, TP36, TP47, W31.	None	211	242	Forbidden	15 kg	E	13, 40, 52, 148
				II	4.3, 4.2	IB4, T3, TP33, TP36, TP47, W31.	151	212	242	15 kg	50 kg	E	13, 40, 52, 148
				III	4.3, 4.2	IB6, T1, TP33, TP36, TP47, W31.	151	213	241	25 kg	100 kg	E	13, 40, 52, 148
G	Oxidizing liquid, corro- sive, n.o.s.	5.1	UN3098	I	5.1, 8	62, A6	None	201	244	Forbidden	2.5 L	D	13, 56, 58, 138
				II	5.1, 8	62, IB1	152	202	243	1 L	5 L	B	13, 56, 58, 138
				III	5.1, 8	62, IB2	152	203	242	2.5 L	30 L	B	13, 56, 58, 138
G	Oxidizing solid, water reactive, n.o.s.	5.1	UN3121	I	5.1, 4.3	62	None	214	214	Forbidden	Forbidden		13, 148
	Perchloric acid with not more than 50 per- cent acid by mass.	8	UN1802	II	5.1, 4.3 8, 5.1	62 IB2, N41, T7, TP2.	152 154	214 202	214 243	Forbidden Forbidden	Forbidden 30 L	C	13, 148 53, 58, 66
	Peroxides, inorganic, n.o.s.	5.1	UN1483	II	5.1	A7, A20, IB6, IP2, N34, T3, TP33, W100.	152	212	242	5 kg	25 kg	C	13, 52, 66, 75, 148
				III	5.1	A7, A20, B134, IB8, IP21, N34, T1, TP33, W100.	152	213	240	25 kg	100 kg	C	13, 52, 66, 75, 148
	Phosphorus heptasulfide, free from yellow or white phosphorus.	4.1	UN1339	II	4.1	A20, IB4, N34, T3, TP33, W31.	151	212	240	15 kg	50 kg	B	13, 74, 147, 148
	Phosphorus, amor- phous.	4.1	UN1338	III	4.1	A1, A19, B1, B9, B26, IB8, IP3, T1, TP33.	151	213	243	25 kg	100 kg	A	74
	Phosphorus oxybromide.	8	UN1939	II	8	B8, IB8, IP2, IP4, N41, N43, T3, TP33.	154	212	240	Forbidden	50 kg	C	12, 25, 40, 53, 58
	Phosphorus pentachloride.	8	UN1806	II	8	A7, IB8, IP2, IP4, N34, T3, TP33.	154	212	240	Forbidden	50 kg	C	40, 44, 53, 58, 89, 100, 141
	Phosphorus sesquisulfide, free from yellow or white phosphorus.	4.1	UN1341	II	4.1	A20, IB4, N34, T3, TP33, W31.	151	212	240	15 kg	50 kg	B	74
	Phosphorus tribromide	8	UN1808	II	8	A3, A6, A7, B2, B25, IB2, N34, N43, T7, TP2.	154	202	242	Forbidden	30 L	C	40, 53, 58
	Phosphorus trisulfide, free from yellow or white phosphorus.	4.1	UN1343	II	4.1	A20, IB4, N34, T3, TP33, W31.	151	212	240	15 kg	50 kg	B	13, 74, 147, 148
	Propionitrile	3	UN2404	II	3, 6.1	IB2, T7, TP1, TP13.	150	202	243	Forbidden	60 L	E	40
	1,2-Propylenediamine	8	UN2258	II	8, 3	A3, A6, IB2, N34, T7, TP2.	154	202	243	1 L	30 L	A	40, 52

Sym-bols	Hazardous materials descriptions and proper shipping names	Hazard class or division	Identifi-cation Nos.	PG	Label codes	Special provi-sions (§ 172.102)	(8)			(9)		(10)	
							Packaging (§ 173.***)			Quantity limitations (see §§ 173.27 and 175.75)		Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo air-craft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Pyridine	3	UN1282	II	3	IB2, T4, TP2	150	202	242	5 L	60 L	B	21, 100
	Silicon powder, amor-phous.	4.1	UN1346	III	4.1	A1, IB8, IP3, T1, TP33.	151	213	240	25 kg	100 kg	A	74
	Sludge, acid	8	UN1906	II	8	A3, A7, B2, IB2, N34, T8, TP2, TP28.	154	202	242	Forbidden	30 L	C	14, 53, 58
	Sodium chlorite	5.1	UN1496	II	5.1	A9, IB8, IP2, IP4, N34, T3, TP33.	152	212	242	5 kg	25 kg	A	56, 58
I	Sulfur	4.1	UN1350	III	4.1	30, B120, IB8, IP3, T1, TP33.	151	None	240	25 kg	100 kg	A	25, 74
	Sulfuric acid, spent	8	UN1832	II	8	A3, A7, B2, B83, B84, IB2, N34, T8, TP2.	154	202	242	Forbidden	30 L	C	14, 53, 58
	Tetrafluoromethane or Refrigerant gas R 14.	2.2	UN1982		2.2		306	302	None	75 kg	150 kg	A	
	Tetrahydrofuran	3	UN2056	II	3	IB2, T4, TP1	150	202	242	5 L	60 L	B	
	Thiophosphoryl chlo-ride.	8	UN1837	II	8	A3, A7, B2, B8, B25, IB2, N34, T7, TP2.	154	202	242	Forbidden	30 L	C	40, 53, 58
	Titanium hydride	4.1	UN1871	II	4.1	A19, A20, IB4, N34, T3, TP33, W31, W40.	151	212	241	15 kg	50 kg	E	
	Titanium powder, wetted with not less than 25 percent water (a visible excess of water must be present) (a) mechanically produced, particle size less than 53 microns; (b) chemically produced, particle size less than 840 microns.	4.1	UN1352	II	4.1	A19, A20, IB6, IP2, N34, T3, TP33, W31, W40.	151	212	240	15 kg	50 kg	E	74
	Titanium sponge gran-ules or Titanium sponge powders.	4.1	UN2878	III	4.1	A1, B134, IB8, IP21, T1, TP33, W100.	151	213	240	25 kg	100 kg	D	13, 74, 147, 148
G	Toxic liquids, water-re-actve, n.o.s.	6.1	UN3123	I	6.1, 4.3	A4	None	201	243	Forbidden	1 L	E	13,40, 148
				II	6.1, 4.3	IB2	153	202	243	1 L	5 L	E	13, 40, 148
G	Toxins, extracted from living sources, liquid, n.o.s.	6.1	UN3172	I	6.1	141	None	201	243	1 L	30 L	B	40
				II	6.1	141, IB2	153	202	243	5 L	60 L	B	40
				III	6.1	141, IB3	153	203	241	60 L	220 L	B	40
G	Toxins, extracted from living sources, solid, n.o.s.	6.1	UN3462	I	6.1	141, IB7, IP1, T6, TP33.	None	211	243	5 kg	50 kg	B	
				II	6.1	141, IB8, IP2, IP4, T3, TP33.	153	212	243	25 kg	100 kg	B	
				III	6.1	141, IB8, IP3, T1 TP33.	153	213	241	100 kg	200 kg	A	
G	Toxins, extracted from living sources, solid, n.o.s.	6.1	UN3462	I	6.1	141, IB7, IP1, T6, TP33.	None	211	243	5 kg	50 kg	B	G
				II	6.1	141, IB8, IP2, IP4, T3, TP33.	153	212	243	25 kg	100 kg	B	
				III	6.1	141, IB8, IP3, T1 TP33.	153	213	241	100 kg	200 kg	A	
	Triallylamine	3	UN2610	III	3, 8	B1, IB3, T4, TP1.	150	203	242	5 L	60 L	A	40, 52
G	Water-reactive liquid, corrosive, n.o.s.	4.3	UN3129	I	4.3, 8	T14, TP2, TP7, TP13.	None	201	243	Forbidden	1 L	D	13, 148
				II	4.3, 8	IB1, T11, TP2, TP7.	151	202	243	1 L	5 L	E	13, 85, 148
				III	4.3, 8	IB2, T7, TP2, TP7.	151	203	242	5 L	60 L	E	13, 148



Sym-bols	Hazardous materials descriptions and proper shipping names	Hazard class or division	Identi-fication Nos.	PG	Label codes	Special provi-sions (§ 172.102)	(8)			(9)		(10)	
							Packaging (§ 173.***)			Quantity limitations (see §§ 173.27 and 175.75)		Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo air-craft only	Location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
G	Water-reactive liquid, n.o.s.	4.3	UN3148	I	4.3	T13, TP2, TP7, TP41, W31.	None	201	244	Forbidden	1 L	E	13, 40, 148
					4.3	IB1, T7, TP2, TP7, W31.	151	202	243	1 L	5 L	E	13, 40, 148
					4.3	IB2, T7, TP2, TP7, W31.	151	203	242	5 L	60 L	E	13, 40, 148
G	Water-reactive liquid, toxic, n.o.s.	4.3	UN3130	I	4.3, 6.1	A4	None	201	243	Forbidden	1 L	D	13, 148
					4.3, 6.1	IB1	151	202	243	1 L	5 L	E	13, 85, 148
					4.3, 6.1	IB2	151	203	242	5 L	60 L	E	13, 85, 148
G	Water-reactive, solid, oxidizing, n.o.s.	4.3	UN3133	II	4.3, 5.1		151	214	214	Forbidden	Forbidden	E	13, 40, 148
					4.3, 5.1		151	214	214	Forbidden	Forbidden	E	13, 40, 148
	Zinc ammonium nitrite	5.1	UN1512	II	5.1	IB8, IP4, T3, TP33.	152	212	242	5 kg	25 kg	E	
	Zinc chloride, anhy-drous.	8	UN2331	III	8	IB8, IP3, T1, TP33.	154	213	240	25 kg	100 kg	A	53, 58
	Zirconium hydride	4.1	UN1437	II	4.1	A19, A20, IB4, N34, T3, TP33, W31, W40.	151	212	240	15 kg	50 kg	E	
	Zirconium powder, wetted with not less than 25 percent water (a visible excess of water must be present) (a) mechanically produced, particle size less than 53 microns; (b) chemically produced, particle size less than 840 microns.	4.1	UN1358	II	4.1	A19, A20, IB6, IP2, N34, T3, TP33, W31, W40.	151	212	241	15 kg	50 kg	E	13, 74, 147, 148
	Zirconium suspended in a liquid.	3	UN1308	I	3		None	201	243	Forbidden	Forbidden	B	
3					IB2	150	202	242	5 L	60 L	B		
3					B1, IB2	150	203	242	60 L	220 L	B		

§ 172.102 [Amended]

■ 10. In § 172.102, amend paragraph (c)(1) by removing special provision 103.

■ 11. In § 172.302, revise paragraph (b)(2) to read as follows:

§ 172.302 General marking requirements for bulk packagings.

\* \* \* \* \*

(b) \* \* \*

(2) Have a width of at least 4.0 mm (0.16 inch) and a height of at least 12 mm (0.47 inch) for portable tanks with capacities of less than 3,785 L (1,000 gallons) and a width of at least 4.0 mm (0.16 inch) and a height of 25 mm (one inch) for IBCs; and

\* \* \* \* \*

PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

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

Authority: 49 U.S.C. 5101–5128, 44701; 49 CFR 1.81, 1.96 and 1.97.

■ 13. In § 173.5b, revise paragraph (b) to read as follows:

§ 173.5b Portable and mobile refrigeration systems.

\* \* \* \* \*

(b) Refrigeration systems placed into service prior to June 1, 1991. (1) For refrigeration systems placed into service prior to June 1, 1991, each pressure vessel and associated piping must be rated at a MAWP of not less than 250 psig. During transportation, pressure in the components that are part of the evaporating line may not exceed 150 psig.

(2) Each pressure vessel and associated piping that is part of the evaporating line must be marked “LOW SIDE” in a permanent and clearly visible manner. The evaporating line must have a pressure gauge with corresponding temperature markings mounted in a manner that is easily readable when standing on the ground. The gauge must be permanently marked or tagged “SATURATION GAUGE.”

(3) Each pressure vessel and associated piping containing liquid

anhydrous ammonia must be isolated using appropriate means from piping and components marked “LOW SIDE.”

(4) Prior to transportation, each pressure vessel and associated piping must be relieved of enough gaseous lading to ensure that the MAWP is not exceeded at transport temperatures up to 54 °C (130 °F).

\* \* \* \* \*

■ 14. In § 173.28, revise paragraph (c)(1)(i) to read as follows:

§ 173.28 Reuse, reconditioning and remanufacture of packagings.

\* \* \* \* \*

(c) \* \* \*

(1) \* \* \*

(i) Cleaning to base material of construction, with all former contents, internal and external corrosion removed, and any external coatings and labels sufficiently removed to expose any metal deterioration that adversely affects transportation safety;

\* \* \* \* \*

■ 15. In § 173.31, add paragraph (a)(6)(v) and revise paragraph (e) to read as follows:

**§ 173.31 Use of tank cars.**

\* \* \* \* \*

(a) \* \* \*

(6) \* \* \*

(v) When a tank car delimiter is a “H”, offerors may not use a tank car with any other delimiter.

\* \* \* \* \*

(e) *Special requirements for poison by inhalation (PIH) material—(1) Interior heater coils.* Tank cars used for PIH material may not have interior heater coils.

(2) *Tank car specifications.* A tank car used for a PIH material must have a tank test pressure of 20.7 Bar (300 psig) or greater, head protection, and a metal jacket (e.g., DOT 105S300W), except that—

(i) A higher test pressure is required if otherwise specified in this subchapter; and

(ii) Each tank car constructed on or after March 16, 2009, and used for the transportation of PIH materials must meet the applicable authorized tank car specifications and standards listed in §§ 173.244(a)(2) or (3) and 173.314(c) or (d).

(iii) A tank car owner retiring or otherwise removing a tank car from service transporting PIH material, other than because of damage to the car, must retire or remove cars constructed of non-normalized steel in the head or shell before removing any car in service transporting PIH materials constructed of normalized steel meeting the applicable DOT specification.

(3) *Phase-out of non-normalized steel tank cars.* After December 31, 2020, tank cars manufactured with non-normalized steel for head or shell construction may not be used for the transportation of PIH material.

(4) *Phase-out of legacy tank cars.* After December 31, 2027, tank cars not meeting the requirements of §§ 173.244(a)(2) or (3) and 173.314(c) or (d) may not be used for the transportation of PIH material.

\* \* \* \* \*

■ 16. In § 173.56, revise paragraph (b) introductory text to read as follows:

**§ 173.56 New explosives—definition and procedures for classification and approval.**

\* \* \* \* \*

(b) *Examination, classification and approval.* Except as provided in §§ 173.64, 173.65, and 173.67, no person may offer a new explosive for transportation unless that person has specified to the examining agency the ranges of composition of ingredients

and compounds, showing the intended manufacturing tolerances in the composition of substances or design of articles which will be allowed in that material or device, and unless it has been examined, classed and approved as follows:

\* \* \* \* \*

■ 17. In § 173.59, revise the definition of “consumer firework” to read as follows:

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

\* \* \* \* \*

*Consumer firework.* Any finished firework device that is in a form intended for use by the public that complies with any limits and requirements of the APA Standard 87–1A (IBR, see § 171.7 of this subchapter) and the construction, performance, chemical composition, and labeling requirements codified by the U.S. Consumer Product Safety Commission in 16 CFR parts 1500 and 1507. A consumer firework does not include firework devices, kits or components banned by the U.S. Consumer Product Safety Commission in 16 CFR 1500.17(a)(8).

\* \* \* \* \*

■ 18. In § 173.64, revise paragraphs (a)(1) and (3) to read as follows:

**§ 173.64 Exceptions for Division 1.3 and 1.4 fireworks.**

(a) \* \* \*

(1) The fireworks are manufactured in accordance with the applicable requirements in APA 87–1A, 87–1B, and 87–1C (IBR, see § 171.7 of this subchapter);

\* \* \* \* \*

(3) The manufacturer applies in writing to the Associate Administrator following the applicable requirements in APA 87–1A, 87–1B, and 87–1C and is notified in writing by the Associate Administrator that the fireworks have been classed, approved, and assigned an EX number. Each application must be complete and include all relevant background data and copies of all applicable drawings, test results, and any other pertinent information on each device for which approval is being requested. The manufacturer must sign the application and certify that the device for which approval is requested conforms to the appropriate APA Standard, that the descriptions and technical information contained in the application are complete and accurate, and with respect to APA 87–1A that no duplicate application has been submitted to a fireworks certification agency. If the application is denied, the manufacturer will be notified in writing

of the reasons for the denial. The Associate Administrator may require that the fireworks be examined by an agency listed in § 173.56(b)(1) of this part.

\* \* \* \* \*

■ 19. In § 173.65, revise paragraphs (a)(1), (a)(3)(i), and (a)(4)(iv) to read as follows:

**§ 173.65 Exceptions for Division 1.4G consumer fireworks.**

(a) \* \* \*

(1) The fireworks are manufactured in accordance with the applicable requirements in APA 87–1A (IBR, see § 171.7 of this subchapter);

\* \* \* \* \*

(3) \* \* \*

(i) Certified that it complies with APA 87–1A, and meets the requirements of this section; and

\* \* \* \* \*

(4) \* \* \*

(iv) Signed certification declaring that the device for which certification is requested conforms to the APA 87–1A, that the descriptions and technical information contained in the application are complete and accurate, and that no duplicate applications have been submitted to PHMSA. If the application is denied, the Fireworks Certification Agency must notify the manufacturer in writing of the reasons for the denial. As detailed in the DOT-approval issued to the Fireworks Certification Agency, following the issuance of a denial from a Fireworks Certification Agency, a manufacturer may seek reconsideration from the Fireworks Certification Agency, or may appeal the reconsideration decision of the Fireworks Certification Agency to the PHMSA Administrator.

\* \* \* \* \*

■ 20. Add § 173.67 to subpart C to read as follows:

**§ 173.67 Exceptions for Division 1.1 jet perforating guns.**

(a) Notwithstanding the requirements of § 173.56(b), Division 1.1 jet perforating guns may be classed and approved by the Associate Administrator without prior examination and offered for transportation if the following conditions are met:

(1) The jet perforating guns are manufactured in accordance with the applicable requirements in AESC/IME JPG Standard (IBR, see § 171.7 of this subchapter);

(2) The jet perforating gun must be of a type described in the AESC/IME JPG Standard;

(3) The applicant applies in writing to the Associate Administrator following

the applicable requirements in the AESC/IME JPG Standard, and is notified in writing by the Associate Administrator that the jet perforating gun has been classed, approved, and assigned an EX number. Each application must be complete and include all relevant background data, the applicable drawings, and any other pertinent information as described in the AESC/IME JPG Standard on each jet perforating gun for which approval is being requested. The manufacturer must sign the application and certify that the jet perforating gun for which approval is requested conforms to the AESC/IME JPG Standard and that the descriptions and technical information contained in the application are complete and

accurate. If the application is denied, the applicant will be notified in writing of the reasons for the denial. The Associate Administrator may require that the jet perforating gun be examined as provided under § 173.56(b)(1).

(b) [Reserved]

■ 21. In § 173.151, revise paragraphs (b)(1)(i) and (ii) to read as follow:

**§ 173.151 Exceptions for Class 4**

\* \* \* \* \*

(b) \* \* \*

(1) \* \* \*

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

(ii) For flammable solids in Packing Group III, inner packagings not over 5.0 kg (11 pounds) or 5.0 L (1.3 gallon) net capacity each, packed in a strong outer packaging.

\* \* \* \* \*

■ 22. In § 173.244, revise the table in paragraph (a)(2) to read as follows:

**§ 173.244 Bulk packaging for certain pyrophoric liquids (Division 4.2), dangerous when wet (Division 4.3) materials, and poisonous liquids with inhalation hazards (Division 6.1).**

\* \* \* \* \*

(a) \* \* \*

(2) \* \* \*

TABLE 1 TO PARAGRAPH (a)(2)

Proper shipping name	Authorized tank car specification
Acetone cyanohydrin, stabilized (Note 1) .....	105H500W, 112H500W
Acrolein (Note 1) .....	105H600W
Allyl Alcohol .....	105H500W, 112H500W
Bromine .....	105H500W
Chloropicrin .....	105H500W, 112H500W
Chlorosulfonic acid .....	105H500W, 112H500W
Dimethyl sulfate .....	105H500W, 112H500W
Ethyl chloroformate .....	105H500W, 112H500W
Hexachlorocyclopentadiene .....	105H500W, 112H500W
Hydrocyanic acid, aqueous solution or Hydrogen cyanide, aqueous solution with not more than 20% hydrogen cyanide (Note 2) .....	105H500W, 112H500W
Hydrogen cyanide, stabilized (Note 2) .....	105H600W
Hydrogen fluoride, anhydrous .....	105H500W, 112H500W
Poison inhalation hazard, Zone A materials not specifically identified in this table .....	105H600W
Poison inhalation hazard, Zone B materials not specifically identified in this table .....	105H500W, 112H500W
Phosphorus trichloride .....	105H500W, 112H500W
Sulfur trioxide, stabilized .....	105H500W, 112H500W
Sulfuric acid, fuming .....	105H500W, 112H500W
Titanium tetrachloride .....	105H500W, 112H500W

Note 1 to table 1 to paragraph (a)(2): Each tank car must have a reclosing pressure relief device having a start-to-discharge pressure of 10.34 Bar (150 psig). Restenciling to a lower test pressure is not authorized.

Note 2 to table 1 to paragraph (a)(2): Each tank car must have a reclosing pressure relief device having a start-to-discharge pressure of 15.51 Bar (225 psig). Restenciling to a lower test pressure is not authorized.

\* \* \* \* \*

■ 23. In § 173.302, revise paragraph (a) to read as follows:

**§ 173.302 Filling of cylinders with non-liquefied (permanent) compressed gases or adsorbed gases.**

(a) *General requirements.* (1) Except as provided in § 171.23(a)(3) of this subchapter, a cylinder filled with a non-liquefied compressed gas (except gas in solution) must be offered for transportation in accordance with the requirements of this section and § 173.301 of this subpart. In addition, a DOT specification cylinder must meet the requirements in §§ 173.301a, 173.302a, and 173.305 of the subpart, as applicable. UN pressure receptacles must meet the requirements in §§ 173.301b and 173.302b of this subpart, as applicable. Where more than

one section applies to a cylinder, the most restrictive requirements must be followed.

(2) *Adsorbed gas.* Except as provided in § 171.23(a)(3) of this subchapter, a cylinder filled with an adsorbed gas must be offered for transportation in accordance with the requirements of paragraph (d) of this section, and §§ 173.301, and 173.302c of this subpart. UN cylinders must meet the requirements in §§ 173.301b and 173.302b of this subpart, as applicable. Where more than one section applies to a cylinder, the most restrictive requirements must be followed.

\* \* \* \* \*

■ 24. In § 173.304, revise paragraph (a) introductory text to read as follows:

**§ 173.304 Filling of cylinders with liquefied compressed gases.**

(a) *General requirements.* Except as provided in § 171.23(a)(3) of this subchapter, a cylinder filled with a liquefied compressed gas (except gas in solution) must be offered for transportation in accordance with the requirements of this section and the general requirements in § 173.301 of this subpart. In addition, a DOT specification cylinder must meet the requirement in §§ 173.301a, 173.304a, and 173.305 of this subpart, as applicable. UN pressure receptacles must be shipped in accordance with the requirements in §§ 173.301b and 173.304b of this subpart, as applicable.

\* \* \* \* \*

■ 25. In § 173.308, revise paragraph (d) to read as follows:

**§ 173.308 Lighters.**

\* \* \* \* \*

(d) *Shipping paper and marking requirements.* (1) In addition to the requirements of subpart C of part 172, shipping papers must be annotated with the lighter design test report identifier (see paragraph (b)(4)(i)(C) of this section) traceable to the test report assigned to the lighters or, if applicable,

the previously issued approval number (*i.e.*, T\* \* \*), in association with the basic description.

(2) In addition to the requirements of subpart D of part 172, a lighter design test report identifier (see paragraph (b)(4)(i)(C) of this section) or, if applicable, the previously issued approval number (*i.e.*, T\* \* \*), must be

marked on a package containing lighters.

\* \* \* \* \*

■ 26. In § 173.314, amend paragraph (c) by revising the table to read as follows:

**§ 173.314 Compressed gases in tank cars and multi-unit tank cars.**

\* \* \* \* \*

(c) \* \* \*

TABLE 1 TO PARAGRAPH (c)

Proper shipping name	Outage and filling limits (see note 1)	Authorized tank car class (see note 11)	Authorized tank car specification (see note 12)
Ammonia, anhydrous, or ammonia solutions >50 percent ammonia .....	Notes 2, 10 .....	105, 112, 114, 120 .....	105H500W, 112H500W
	Note 3 .....	106 .....	
Ammonia solutions with >35 percent, but ≤50 percent ammonia by mass ..	Note 3 .....	105, 109, 112, 114, 120 ....	
Argon, compressed .....	Note 4 .....	107 .....	
Boron trichloride .....	Note 3 .....	105, 106 .....	
Carbon dioxide, refrigerated liquid .....	Note 5 .....	105 .....	
Chlorine .....	Note 6 .....	105 .....	105H600W
	125 .....	106 .....	
Chlorine trifluoride .....	Note 3 .....	106, 110 .....	
Chlorine pentafluoride .....	Note 3 .....	106, 110 .....	
Dimethyl ether .....	Note 3 .....	105, 106, 110, 112, 114, 120.	
Dimethylamine, anhydrous .....	Note 3 .....	105, 106, 112 .....	
Dinitrogen tetroxide, inhibited .....	Note 3 .....	105, 106, 112 .....	105H500W
Division 2.1 materials not specifically identified in this table .....	Notes 9, 10 .....	105, 106, 110, 112, 114, 120.	
Division 2.2 materials not specifically identified in this table .....	Note 3 .....	105, 106, 109, 110, 112, 114, 120.	
Division 2.3 Zone A materials not specifically identified in this table .....	None .....	See § 173.245. ....	105H600W
Division 2.3 Zone B materials not specifically identified in this table .....	Note 3 .....	105, 106, 110, 112, 114, 120.	105H600W
Division 2.3 Zone C materials not specifically identified in this table .....	Note 3 .....	105, 106, 110, 112, 114, 120.	105H500W
Division 2.3 Zone D materials not specifically identified in this table .....	Note 3 .....	105, 106, 109, 110, 112, 114, 120.	105H500W, 112H500H
Ethylamine .....	Note 3 .....	105, 106, 110, 112, 114, 120.	
Helium, compressed .....	Note 4 .....	107 .....	
Hydrogen .....	Note 4 .....	107 .....	
Hydrogen chloride, refrigerated liquid .....	Note 7 .....	105 .....	105H600W, 112H600W
Hydrogen sulfide .....	Note 3 .....	105, 106, 110, 112, 114, 120.	105H600W
Hydrogen sulfide, liquefied .....	68 .....	106 .....	
Methyl bromide .....	Note 3 .....	105, 106 .....	105H500W
Methyl chloride .....	Note 3 .....	105, 106, 112 .....	
Methyl mercaptan .....	Note 3 .....	105, 106 .....	105H500W
Methylamine, anhydrous .....	Note 3 .....	105, 106, 112 .....	
Nitrogen, compressed .....	Note 4 .....	107 .....	
Nitrosyl chloride .....	124 .....	105 .....	105H500W
	110 .....	106 .....	
Nitrous oxide, refrigerated liquid .....	Note 5 .....	105 .....	
Oxygen, compressed .....	Note 4 .....	107 .....	
Phosgene .....	Note 3 .....	106 .....	
Sulfur dioxide, liquefied .....	125 .....	105, 106, 110 .....	105H500W
Sulfuryl fluoride .....	120 .....	105 .....	
Vinyl fluoride, stabilized .....	Note 8 .....	105 .....	

**Notes to table 1 to paragraph (c):** 1. The percent filling density for liquefied gases is hereby defined as the percent ratio of the mass of gas in the tank to the mass of water that the tank will hold. For determining the water capacity of the tank in kilograms, the mass of 1 L of water at 15.5 °C in air is 1 kg. (the mass of one gallon of water at 60 °F in air is 8.32828 pounds).

2. The liquefied gas must be loaded so that the outage is at least two percent of the total capacity of the tank at the reference temperature of 46 °C (115 °F) for a noninsulated tank; 43 °C (110 °F) for a tank having a thermal protection system incorporating a metal jacket that provides an overall thermal conductance at 15.5 °C (60 °F) of no more than 10.22 kilojoules per hour per square meter per degree Celsius (0.5 Btu per hour/ per square foot/ per degree F) temperature differential; and 41 °C (105 °F) for an insulated tank having an insulation system incorporating a metal jacket that provides an overall thermal conductance at 15.5 °C (60 °F) of no more than 1.5333 kilojoules per hour per square meter per degree Celsius (0.075 Btu per hour/ per square foot/ per degree F) temperature differential.

3. The requirements of § 173.24b(a) apply.

- 4. The gas pressure at 54.44 °C (130°F) in any non-insulated tank car may not exceed 7/10 of the marked test pressure, except that a tank may be charged with helium to a pressure 10 percent in excess of the marked maximum gas pressure at 54.44 °C (130°F) of each tank.
- 5. The liquid portion of the gas at -17.77 °C (0 °F.) must not completely fill the tank.
- 6. The maximum permitted filling density is 125 percent. The quantity of chlorine loaded into a single unit-tank car may not be loaded in excess of the normal lading weights nor in excess of 81.65 Mg (90 tons).
- 7. 89 percent maximum to 80.1 percent minimum at a test pressure of 6.2 Bar (90 psig).
- 8. 59.6 percent maximum to 53.6 percent minimum at a test pressure of 7.2 Bar (105 psig).
- 9. For a liquefied petroleum gas, the liquefied gas must be loaded so that the outage is at least one percent of the total capacity of the tank at the reference temperature of 46 °C (115°F) for a noninsulated tank; 43 °C (110°F) for a tank having a thermal protection system incorporating a metal jacket that provides an overall thermal conductance at 15.5 °C (60°F) of no more than 10.22 kilojoules per hour per square meter per degree Celsius (0.5 Btu per hour/per square foot/per degree F) temperature differential; and 41 °C (105°F) for an insulated tank having an insulation system incorporating a metal jacket that provides an overall thermal conductance at 15.5 °C (60°F) of no more than 1.5333 kilojoules per hour per square meter per degree Celsius (0.075 Btu per hour/per square foot/per degree F) temperature differential.
- 10. For liquefied petroleum gas and anhydrous ammonia, during the months of November through March (winter), the following reference temperatures may be used: 38 °C (100°F) for a noninsulated tank; 32 °C (90°F) for a tank having a thermal protection system incorporating a metal jacket that provides an overall thermal conductance at 15.5 °C (60°F) of no more than 10.22 kilojoules per hour per square meter per degree Celsius (0.5 Btu per hour/per square foot/per degree F) temperature differential; and 29 °C (85°F) for an insulated tank having an insulation system incorporating a metal jacket and insulation that provides an overall thermal conductance at 15.5 °C (60°F) of no more than 1.5333 kilojoules per hour per square meter per degree Celsius (0.075 Btu per hour/per square foot/per degree F) temperature differential. The winter reference temperatures may only be used for a tank car shipped directly to a consumer for unloading and not stored in transit. The offeror of the tank must inform each customer that the tank car was filled based on winter reference temperatures. The tank must be unloaded as soon as possible after March in order to retain the specified outage and to prevent a release of hazardous material which might occur due to the tank car becoming liquid full at higher temperatures.
- 11. For materials poisonous by inhalation, the single unit tank car tanks authorized are only those cars approved by the Tank Car Committee for transportation of the specified material and built prior to March 16, 2009.
- 12. Except as provided by paragraph (d) of this section, for materials poisonous by inhalation, fusion-welded tank car tanks built on or after March 16, 2009 used for the transportation of the PIH materials noted, must meet the applicable authorized tank car specification and must be equipped with a head shield as prescribed in § 179.16(c)(1).

\* \* \* \* \*

**PART 178—SPECIFICATIONS FOR PACKAGINGS**

■ 27. The authority citation for part 178 continues to read as follows:

**Authority:** 49 U.S.C. 5101–5128; 49 CFR 1.81 and 1.97.

■ 28. In § 178.35, revise paragraphs (b)(2) and (c) as follows:

**§ 178.35 General requirements for specification cylinders.**

\* \* \* \* \*

(b) \* \* \*

(2) For DOT Specifications 3B, 3BN, 3E, 4B, 4BA, 4B240ET, 4AA480, 4L, 8, 8AL, 4BW, 4E, 4D (with a water capacity less than 1,100 cubic inches) and Specification 39 (with a marked service pressure 900 psig or lower), and manufactured within the United States, a competent inspector of the manufacturer.

(c) *Duties of inspector.* The inspector shall determine that each cylinder made is in conformance with the applicable specification. Inspections shall conform to CGA C–11 (IBR, see § 171.7 of this subchapter) except as otherwise specified in the applicable specification.

(1) *Seamless cylinders.* Seamless cylinders shall be inspected in accordance with Section 5 of CGA C–11. For cylinders made by the billet-piercing process, billets must be inspected and shown to be free from piping (laminations), cracks, excessive segregation and other injurious defects after parting or, when applicable, after nick and cold break.

(2) *Welded cylinders.* Welded cylinders shall be inspected in accordance with Section 6 of CGA C–11.

Note: The recommended locations for test specimens are depicted in Figures 1 through 5 in appendix A to subpart C of part 178.

(3) *Non-refillable cylinders.* Non-refillable cylinders shall be inspected in accordance with Section 7 of CGA C–11

(4) *Inspector’s report.* The inspector shall prepare a report containing, at a minimum, the applicable information listed in CGA C–11. Any additional information or markings that are required by the applicable specification must be shown on the test report. The signature of the inspector on the reports certifies that the processes of manufacture and heat treatment of cylinders were observed and found satisfactory. The inspector must furnish the completed test reports required by this subpart to the maker of the cylinder and, upon request, to the purchaser. The test report must be retained by the inspector for 15 years from the original test date of the cylinder.

\* \* \* \* \*

■ 29. In § 178.521, revise paragraph (b)(4) as follows:

**§ 178.521 Standards for paper bags.**

\* \* \* \* \*

(b) \* \* \*

(4) UN5M1 and UN5M2 multi-wall paper bags that have paper wall basis weights that vary by not more than plus or minus 10 percent from the nominal basis weight reported in the initial design qualification test report.

**PART 179—SPECIFICATIONS FOR TANK CARS.**

■ 30. The authority citation for part 179 continues to read as follows:

**Authority:** 49 U.S.C. 5101–5128; 49 CFR 1.81 and 1.97.

■ 31. In § 179.22, revise paragraph (e) as follows:

**§ 179.22 Marking.**

\* \* \* \* \*

(e) Each tank car manufactured after March 16, 2009, and before December 28, 2020, to meet the requirements of §§ 173.244(a)(2) or (3) or 173.314(c) or (d) that is marked with the letter “I” in the specification marking, following the test pressure, shall be re-marked with the letter “W” with a delimiter of letter “H” at the tank car’s next qualification. (Example: DOT 105J600I would be re-marked as 105H600W.) Each new tank car manufactured after December 28, 2020 shall be marked with the letter “W” following the test pressure and with a delimiter of “H”. (Example: 105H600W).

**PART 180—CONTINUING QUALIFICATION AND MAINTENANCE OF PACKAGINGS**

■ 32. The authority citation for part 180 continues to read as follows:

**Authority:** 49 U.S.C. 5101–5128; 49 CFR 1.81 and 1.97.

■ 33. In § 180.209, revise paragraph (l)(2) to read as follows:

**§ 180.209 Requirements for requalification of specification cylinders.**

\* \* \* \* \*

(l) \* \* \*

(2) It is offered for transportation in conformance with the requirements of §§ 171.12(a)(4) or 171.23(a)(5) of this subchapter.

\* \* \* \* \*

■ 34. In § 180.213, revise paragraph (d)(2) to read as follows:

**§ 180.213 Requalification markings.**

\* \* \* \* \*

(d) \* \* \*

(2) Exception: A cylinder subject to the requirements of § 171.23(a)(5) of this

subchapter may not be marked with a RIN.

\* \* \* \* \*

■ 35. In § 180.417, revise the paragraph (a)(3) subject heading to read as follows:

**§ 180.417 Reporting and record retention requirements.**

\* \* \* \* \*

(a) \* \* \*

(3) *DOT Specification cargo tanks.*

\* \* \* \* \*

Issued in Washington, DC, on October 21, 2020, under authority delegated in 49 CFR 1.97.

**Howard R. Elliott,**

*Administrator, Pipeline and Hazardous Materials Safety Administration.*

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