

DEPARTMENT OF TRANSPORTATION**Research and Special Programs Administration****49 CFR Parts 171, 172, 173, 178**

[Docket No. HM-181H; Amdt Nos. 171-147, 172-150, 173-255, 178-117]

RIN 2137-AC66

Performance-Oriented Packaging Standards; Final Transitional Provisions

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

ACTION: Final rule.

SUMMARY: RSPA is incorporating into the Hazardous Materials Regulations (HMR) a number of changes, based on agency initiative, petitions for rulemaking and comments received at public meetings, to the classification of certain hazardous materials which are poisonous by inhalation and to provisions for the manufacture, use and reuse of hazardous materials packagings. These regulatory changes are intended to improve safety, reduce compliance costs for offerors and transporters of hazardous materials, make the regulations easier to use, and correct errors.

DATES: *Effective date.* The effective date of these amendments is January 1, 1997.

Compliance date. Because the amendments adopted herein generally clarify and relax certain provisions scheduled to go into effect on October 1, 1996, RSPA is authorizing immediate voluntary compliance. However, persons voluntarily complying with these regulations should be aware that petitions for reconsideration may be received and, as a result of RSPA's evaluation of those petitions, the amendments adopted in this final rule could be subject to further revision.

Incorporation by reference. The incorporation by reference of certain publications listed in these amendments has been approved by the Director of the Federal Register as of January 1, 1997.

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SUPPLEMENTARY INFORMATION:**I. Background**

On December 21, 1990, RSPA published a final rule [Docket HM-181; 55 FR 52402], which comprehensively

revised the HMR with respect to hazard communication, classification, and packaging requirements based on the United Nations (UN) Recommendations on the Transport of Dangerous Goods (UN Recommendations). A document responding to petitions for reconsideration and containing editorial and substantive revisions to the final rule was published on December 20, 1991 [56 FR 66124]. On October 1, 1992, under Dockets HM-181 and HM-189, RSPA issued editorial and technical corrections to the regulations published in 1991. On September 24, 1993, RSPA issued a final rule under Docket HM-181F [58 FR 50224] which made changes to the HMR based on agency initiative and petitions for rulemaking received since the December 20, 1991 response to petitions for reconsideration. That final rule primarily revised requirements with a mandatory compliance date of October 1, 1993, as provided in the transitional provisions in § 171.14(b)(4).

RSPA published a notice of proposed rulemaking (NPRM) on June 26, 1996, under Docket HM-181H [61 FR 33216] to address most remaining issues associated with the implementation of Docket HM-181 provisions and certain other issues arising from a final rule issued December 29, 1994, under Docket HM-215A [59 FR 67390]. These issues were raised through petitions for rulemaking and agency initiative.

RSPA proposed changes to numerous requirements with a compliance date of October 1, 1996. Although these changes focus primarily on provisions concerning hazard classification and the maintenance and use of performance packaging, RSPA also proposed changes to intermediate bulk container (IBC) requirements, portable tank requirements, and regulated medical waste provisions adopted under Dockets HM-181E and HM-181G, respectively. Several current exemptions were proposed for conversion into regulations of general applicability, and an approval concerning design qualification and periodic testing was proposed for incorporation into the HMR.

II. Summary of Comments to the NPRM

RSPA received nearly 40 comments in response to the proposed rule. The comments were submitted by chemical manufacturing companies, trade associations, packaging manufacturers, drum reconditioners, and various organizations representing the medical waste industry. Commenters were uniformly supportive of RSPA's efforts to address remaining issues associated with Docket HM-181 and other issues arising from the Docket HM-215A final

rule. Certain issues proposed in the notice received little or no comment. Other issues, such as drum reuse provisions, display packs for ORM-D materials, an exception proposed for certain Division 6.2 waste materials, and winter filling limits for tank cars, were the focus of many of the comments. Several commenters requested amendments to the HMR other than those proposed as part of this initiative. Most of these suggestions are beyond the scope of the proposed changes in this rule and are under review.

The Hazardous Materials Advisory Council (HMAC) expressed concern that the proposed rule frequently cited a petition for rulemaking [P-1169] without proposing adoption or discussing other provisions identified by HMAC in their April 13, 1993 petition. HMAC also claimed that another petition [P-1232], addressing outage requirements for materials poisonous by inhalation, merited consideration because it appeared to be within the scope of the Docket HM-181H rulemaking.

Petition P-1169 contained 25 separate issues that HMAC submitted to RSPA for consideration to amend the HMR. Of the 25 issues identified in that petition, RSPA has adopted a majority, including seven issues in this rulemaking. The few remaining issues will appear in upcoming proposed rulemaking actions (such as HM-215B) or are presently under review.

Under Docket HM-181, RSPA adopted a five percent outage requirement for poisonous by inhalation hazard materials in bulk packagings. Chemical manufacturers and associations, such as HMAC, opposed this requirement, claiming that any safety benefit is offset by additional shipments and resultant costs. RSPA believes a change in outage requirements is beyond the scope of this rulemaking.

III. Summary of Regulatory Changes by Section

Listed below is a section-by-section summary of changes and, as applicable, a discussion of comments received.

Part 171

Section 171.7. The table of material incorporated by reference is amended by adding a new entry referencing a publication issued by the Department of Health and Human Services for defining biosafety levels and adding two new ASTM steel standards referenced in § 178.601.

Section 171.14. All transitional provisions reflecting a compliance date of October 1, 1996, or earlier are

removed. One commenter representing the agricultural chemical industry asked RSPA to establish a five-year delayed compliance date for products in DOT specification and non-specification packagings filled before October 1, 1996. The commenter described a lengthy process for agricultural chemicals moving through a distribution chain to end users and then frequent product returns several years after the original sale. According to the commenter, an additional five-year compliance period would provide sufficient time for the industry to eliminate any non-specification and DOT-specification packagings which would not otherwise be authorized after October 1, 1996.

RSPA provided a five-year transition period from October 1, 1991 to October 1, 1996 for users of these packagings to deplete inventory and phase in UN performance packagings. RSPA believes this five-year transition period has afforded industry sufficient time to prepare for the October 1, 1996 compliance date. However, RSPA recognizes that an extensive distribution process that includes procedures for return of products to distributors warrants limited relief to allow the transportation of materials in previously authorized and filled packages to end users or for their return, repackaging, or disposal. From an overall transportation safety perspective, it is RSPA's view that it is safer to allow one final shipment of these previously authorized and filled packagings than to compel the transfer of materials, such as pesticides, into packagings required by the HMR as of October 1, 1996.

Therefore, RSPA is adding a provision to authorize non-bulk packagings, other than cylinders, which were filled prior to October 1, 1996 in conformance with regulations in effect on September 30, 1996, to be offered for transportation and transported domestically until October 1, 1999. RSPA believes a three-year delay in compliance affords sufficient time for these packagings to be eliminated from a distribution system. It is emphasized that this provision *does not* authorize the filling of packagings, only offering and transportation of packagings filled prior to October 1, 1996.

In addition, three other transition provisions are retained for packages filled prior to October 1, 1991, new placard specifications, and authorization for use of fiber drums.

Part 172

Section 172.101. The text preceding the § 172.101 Hazardous Materials Table (HMT) sets forth procedures for using the HMT. To clarify procedures

contained in paragraph (c)(12)(iii) for selecting a proper shipping name for a material that meets the definition of more than one hazard class, RSPA proposed to replace the phrase "identified * * * by a specific description" with "identified * * * specifically by name" and include an example. All three commenters addressing this issue supported this proposed change, stating that it will clarify the procedure for selecting a proper shipping name.

In addition, RSPA is adding as proposed a new paragraph (c)(10)(iii) which clarifies the process for selecting a proper shipping name for a mixture of two or more hazardous materials in the same hazard class. Currently, paragraph (c)(10)(i) contains a provision for selecting a proper shipping name for a mixture of a hazardous material and non-hazardous material, and paragraph (c)(12)(ii) prescribes the proper shipping name selection process for a material meeting more than one hazard class.

Section 172.101; the Hazardous Materials Table (HMT). A new entry to provide for the domestic transportation of black powder for small arms reclassified as a Division 4.1 is added as proposed. This revision is based on comparable provisions for smokeless powder, small arms cartridges and power device cartridges. In conjunction with this change, a new Special Provision 70 and new non-bulk packaging section § 173.170 is added.

In the HMT, the entries "Chlorosilanes, n.o.s.", with identification numbers UN 2986, UN 2987, and UN 2988, are not authorized to be shipped in DOT Specification Intermodal (IM) portable tanks. Based on a petition for rulemaking requesting that RSPA authorize IM portable tanks for all chlorosilanes and that the use of IM portable tanks for these materials will not compromise safety and would be consistent with other specific authorizations, RSPA is adopting the proposal to authorize certain IM portable tanks for all chlorosilanes. RSPA is adding special provisions in Column (7) for "Chlorosilanes, n.o.s.", with identification numbers UN 2986, UN 2987, and UN 2988, to permit the transport of these materials in IM portable tanks.

Bulk packaging references for three Type F organic peroxides (UN 3110, UN 3119, and UN 3120) are revised by changing "None" to "225" in Column (8C) to indicate that these materials are authorized in bulk packagings. In addition, for the entries "Organic Peroxide, type F, liquid (or solid), temperature controlled" (UN 3119 and UN 3120), in Column (8A), the

packaging exception reference "152" is removed for each entry to indicate that these temperature controlled organic peroxides are not eligible for packaging exceptions. One commenter noted that even though § 173.225 is authorized in Column (8C) of the Hazardous Materials Table, this authorization alone will not allow bulk packaging for organic peroxide, type F, solid. A note in Column 8 of the Organic Peroxide Table, in conjunction with the technical name of the material, indicates whether the material is authorized to be packaged in a bulk packaging.

More than 30 entries classed as Division 4.3 (dangerous when wet) solids in Packing Groups II and III are amended by revising Column (8A) to authorize § 173.151 as a packaging exception section. One commenter asked RSPA to authorize a packaging exception section for three additional Division 4.3 materials that exhibit similar characteristics and do not pose an unreasonable risk in transportation. After reviewing these materials, RSPA agrees and is adding them to the list of entries that are authorized a packaging exception in § 173.151.

Revisions to Classification and Hazard Zone Identification for Certain Materials Poisonous by Inhalation.

Based on acute inhalation toxicity data and related information obtained by RSPA, the HMT is amended to change the hazard zone for some materials poisonous by inhalation, and to add other materials to the list of materials poisonous by inhalation. For certain materials this revision imposes more stringent hazard communication and packaging requirements. The Docket HM-181H NPRM contains a more complete description of the data on which these revisions are based. The materials are listed as follows:

a. Hydrogen cyanide, solution in alcohol (with not more than 45 percent hydrogen cyanide) (UN3294). Based on the toxicity and volatility of hydrogen cyanide, the packing group assigned and the dilution factor for this solution of hydrogen cyanide, RSPA is identifying hydrogen cyanide, solution in alcohol with not more than 45 percent hydrogen cyanide as a Hazard Zone B inhalation hazard. A new special provision "25" is assigned to this entry to authorize a one-year delay for compliance with new packaging requirements.

b. Metal carbonyls, n.o.s. (UN3281). The acute toxicity of metal carbonyls may differ from one compound to another. Those toxic by inhalation may fall into Hazard Zone A or Hazard Zone B. Others may not be toxic by inhalation, but may exhibit oral and/or dermal toxicity, which places them in

Division 6.1, Packing Group I. Therefore, RSPA is adding special provision "5" to Column 7 of the entry for metal carbonyls, n.o.s. at the Packing Group I level.

c. Methanesulfonyl chloride (UN3246). As proposed, RSPA is identifying methanesulfonyl chloride as a Hazard Zone B inhalation hazard. A new special provision "25" is assigned to this entry to authorize a one-year delay for compliance with new packaging requirements.

d. Methyl vinyl ketone (UN1251). As proposed, RSPA is identifying methyl vinyl ketone as a Hazard Zone A inhalation hazard. Also, to be consistent with the UN Recommendations (Eighth revised edition), RSPA is adding the plus (+) symbol to Column 1 of the entry for methyl vinyl ketone. A new special provision "25" is assigned to this entry to authorize a one-year delay for compliance with new packaging requirements.

e. Nitriles, toxic, flammable, n.o.s. (UN3275). This generic entry covers Division 6.1, Packing Groups I and II toxic, flammable nitriles that are not specifically listed by name but exhibit acute oral, dermal and/or inhalation toxicity. The acute toxicity of these nitriles may differ from one compound to another. Those toxic by inhalation may fall into Hazard Zone A or Hazard Zone B. Other nitriles may not be toxic by inhalation, but may exhibit oral and/or dermal toxicity which places them in Division 6.1, Packing Group I. Therefore, RSPA is adding special provision "5" to Column 7 of the entry for nitriles, toxic, flammable, n.o.s. at the Packing Group I level.

f. Nitriles, toxic, n.o.s. (UN3276). This generic entry covers Division 6.1, Packing Groups I, II and III toxic nitriles that are not specifically listed by name but exhibit acute oral, dermal and/or inhalation toxicity. The acute toxicity of these nitriles may differ from one compound to another. Those toxic by inhalation may fall into Hazard Zone A or Hazard Zone B. Other nitriles may not be toxic by inhalation, but may exhibit oral and/or dermal toxicity which places them in Division 6.1, Packing Group I. Therefore, RSPA is adding special provision "5" to Column 7 of the entry for nitriles, toxic, n.o.s. at the Packing Group I level.

g. Organoarsenic compound, n.o.s. (UN3280). This generic entry covers Division 6.1, Packing Groups I, II and III toxic organoarsenic compounds that are not specifically listed by name but exhibit acute oral, dermal and/or inhalation toxicity. The acute toxicity of these organoarsenic compounds may differ from one compound to another.

Those toxic by inhalation may fall into Hazard Zone A or Hazard Zone B. Others may not be toxic by inhalation, but may exhibit oral and/or dermal toxicity which places them in Division 6.1, Packing Group I. Therefore, RSPA is adding special provision "5" to Column 7 of the entry for organoarsenic compound, n.o.s. at the Packing Group I level.

h. Organophosphorus compound, toxic, flammable, n.o.s. (UN3279). This generic entry covers Division 6.1, Packing Groups I and II toxic, flammable organophosphorus compounds that are not specifically listed by name but may exhibit acute oral, dermal and/or inhalation toxicity. The acute toxicity of these organophosphorus compounds may differ from one compound to another. Those toxic by inhalation may fall into Hazard Zone A or Hazard Zone B. Others may not be toxic by inhalation, but may exhibit oral and/or dermal toxicity which places them in Division 6.1, Packing Group I. Therefore, RSPA is adding special provision "5" to Column 7 of the entry for organophosphorus compound, toxic, flammable, n.o.s. at the Packing Group I level.

i. Organophosphorus compound, toxic, n.o.s. (UN3278). This generic entry covers Division 6.1, Packing Groups I, II and III toxic organophosphorus compounds that are not listed by name but exhibit acute oral, dermal and/or inhalation toxicity. The acute toxicity of these organophosphorus compounds may differ from one compound to another. Those toxic by inhalation may fall into Hazard Zone A or Hazard Zone B. Others may not be toxic by inhalation, but may exhibit oral and/or dermal toxicity which places them in Packing Group I. Therefore, RSPA is adding special provision "5" to Column 7 of this entry for organophosphorus compound, toxic, n.o.s. at the Packing Group I level.

j. Phosphorus pentafluoride (UN2198). As proposed, RSPA is identifying phosphorus pentafluoride as a Hazard Zone B inhalation hazard.

k. Tungsten hexafluoride (UN2196). As proposed, RSPA is identifying tungsten hexafluoride as a Hazard Zone B inhalation hazard.

Section 172.102. As noted in the discussion on revisions for materials poisonous by inhalation, RSPA is authorizing a one-year delay for compliance with new packaging requirements by assigning a new special provision "25" to three commodities.

Special Provision B59, which authorizes AAR 207A tank cars for phosphorus pentasulfide, is revised as

proposed to reference the use of water-tight, sift-proof, closed-top, metal-covered hopper cars.

A new special provision (N42) is added as proposed to authorize a UN 1A1 steel drum for stabilized benzyl chloride. One comment was received in response to this proposal and strongly supported the addition of N42, which allows use of phenolic-lined steel drums with a minimum thickness of 1.3 mm (0.050 inch) which have been tested and certified to a Packing Group I level at a specific gravity of 1.8. The commenter cited a history of shipping benzyl chloride in phenolic-lined 17C and UN 1A1 steel drums since 1981 without incident and without failure of the phenolic lining.

Section 172.302. In the general marking requirements for bulk packagings, markings on portable tanks with capacities of less than 3,785 L (1,000 gallons) must be at least 6.0 mm (0.24 inch) wide and at least 25 mm (one inch) high. RSPA proposed a revision of paragraph (b)(2) to decrease to 4 mm (0.16 inch) the minimum width of markings required on portable tanks having a capacity less than 3,785 L (1,000 gallons). RSPA also proposed reducing both the minimum height and width of markings required on IBCs to 25 mm (one inch). Commenters were uniformly supportive of both proposals, and they are adopted as proposed. RSPA is not adopting one commenter's recommendation to amend Appendix B to Subpart B of Part 107 to allow a marking height of one inch for certain small portable tanks authorized under an exemption.

Section 172.504. RSPA is removing the second sentence of paragraph (f)(8) which allows a CLASS 9 placard to be substituted for a COMBUSTIBLE LIQUID placard for material meeting both Combustible liquid and Class 9 hazard classes. Several commenters agreed that this provision created potential confusion and misunderstanding between documentation and marking requirements describing a Combustible liquid and the application of CLASS 9 placards.

Part 173

Section 173.24a. RSPA proposed to amend paragraph (a)(3) to clarify that cushioning material used to protect inner packagings must not be adversely affected (e.g., disintegrate) if there is leakage of a hazardous material from the inner packagings. A degradation of cushioning materials could significantly reduce the effectiveness of a packaging to a point that it would not conform with its marked performance standard

or meet general packaging requirements. This clarification is consistent with international air transport provisions contained in the International Civil Aviation Organization's (ICAO) Technical Instructions. Commenters supported this proposed revision; however, the Fibre Box Association expressed concern that the proposal might be interpreted to mean corrugated cushioning and corrugated packaging of liquids will not be allowed. The Fibre Box Association stated that the phrase "having protective properties [significantly] impaired in event of leakage" is too vague.

The proposed change was not intended to preclude the use of fiberboard cushioning or packaging for liquids. Although there is no established criteria for evaluating degradation of cushioning material, RSPA agrees that the phrase "significantly impaired" should be revised. RSPA believes "significantly weakened" more accurately conveys the intent of this provision and is revising this phrase accordingly.

Currently, paragraphs (b)(1) and (b)(2) provide filling limits for single and composite packagings, but no such limits are provided for combination packagings. As proposed, RSPA is revising paragraph (b)(2) of this section to prescribe filling limits for all non-bulk packagings, including combination packagings. This provision prohibits combination packagings from being filled with a hazardous material to a gross mass greater than the maximum gross mass marked on the packaging.

Section 173.28. RSPA proposed adding a formula in paragraph (b)(4) for calculating an equivalent minimum thickness for stainless steel drums. This formula is consistent with the formula contained in § 178.705 for calculating minimum wall thicknesses for metal IBCs. The Association of Container Reconditioners (ACR) opposed this proposed change and stated that this issue is too complex for adoption at this time. ACR believes that by reducing the minimum thickness of stainless steel to the equivalent strength of carbon steel, the rationale for waiving leakproofness testing for stronger steel is eliminated. ACR requested that, if this proposal is adopted, a drum manufacturer's use of this equivalence formula be communicated through a particular unique mark, thus advising persons responsible for reuse or reconditioning of this equivalence formula being used.

RSPA is confident that the equivalence formula adopted in this final rule provides an equivalent level of safety and drum integrity. The language in the paragraph (b)(7) leakproofness

testing waiver for stainless steel drums requires a thickness of one and one-half times the thickness prescribed for reuse, thus precluding use of any thinner drums.

An adjustment to Footnote 1, which specifies a minimum thickness of 0.82 mm body and 1.11 mm head and corresponds with ISO 3574, is adopted as proposed. Commenters supporting this proposed change included ACR, several chemical manufacturing companies, the Association of Waste Hazardous Materials Transporters, and a drum manufacturer. Two commenters, a different drum manufacturer and the Steel Shipping Container Institute (SSCI), opposed this proposal, stating that this request from ACR was driven by economic considerations, not safety. SSCI claimed that technology for determining minimum thicknesses is readily available. The drum manufacturer opposing this change stated that if the footnote adjustment was adopted as proposed, RSPA should provide a transition period for drum manufacturers to deplete their inventory of material rendered obsolete by this change.

RSPA is making this adjustment to Footnote 1 to standardize minimum thickness requirements with breakpoints commonly recognized by international standards, not to provide any economic benefit to industry. RSPA also is revising Footnote 1 to authorize metal drums or jerricans constructed with a minimum thickness of 0.82 mm body and 1.09 mm heads until December 31, 1996. After that date, drums must be constructed with heads meeting a minimum thickness of 1.11 mm. This delay will provide drum manufacturers additional time to deplete existing inventory and build an inventory of new material.

Paragraph (b)(7)(iv)(C) is revised as proposed to clarify that there are established conditions which must be met before an approval is granted by the Associate Administrator for Hazardous Materials Safety to allow relief from leakproofness testing for a packaging constructed of a material or thickness not otherwise authorized in the exception.

Paragraph (c)(2) prescribes reconditioning requirements for non-bulk packagings other than metal drums. In the NPRM, RSPA proposed a revision to this paragraph to clarify that repairing or replacing a bung or removable gasket in a plastic closed head (UN 1H1) drum is not considered reconditioning. Both SSCI and ACR opposed this proposed change, stating that replacing gaskets or closures on a plastic drum *is* plastic drum

reconditioning. SSCI claimed that a change in the material of a drum is reconditioning or remanufacturing, and that changing location, type or size of gasket material or properties affecting the performance of the gasket is considered design type changes requiring complete design qualification testing. The SSCI also warned that this proposal downplays the significance of gaskets in minimizing leaks and will shift drum purchases from steel to plastic drums to save costs in reconditioning and leaktesting. In RSPA's view, simply "replacing" a bung or gasket in a plastic closed head drum is not reconditioning. In this final rule, RSPA is clarifying in paragraph (c)(2) that repair or replacement of a bung or a removable gasket in a plastic closed head (UN 1H1) drum with a bung or gasket that is of the same design and material as the original bung or gasket, and provides equivalent performance, is not considered reconditioning and does not subject the drum to reconditioning marking requirements or to leakproofness testing requirements if it is otherwise excepted from leakproofness testing.

Section 173.32. As proposed, RSPA is reinstating pressure testing requirements for DOT 57 portable tanks in paragraph (e)(2)(i). RSPA also is amending paragraph (d) to allow plastic discharge valves for certain stainless steel DOT 57 tanks constructed before October 1, 1996. Allowing a plastic discharge valve on these tanks eliminates the need for an existing exemption, DOT-E-10916, and permits continued use of thousands of portable tanks with a proven safety record. Two comments were received in response to the proposal, both supporting revisions to this section.

RSPA is adding a new paragraph (t) which allows the remarking of certain portable tanks currently authorized under DOT exemptions as DOT 51 portable tanks. These portable tanks were in full conformance with the requirements for DOT 51 portable tanks, including the ASME Code "U" stamp, except for the location of fill and discharge outlets.

The changes adopted in this final rule relating to the location of outlets on DOT 51 portable tanks will allow for the elimination of numerous exemptions based on the design and excellent safety record of these portable tanks. RSPA believes that as a minimum, the following exemptions will be affected:

DOT-E 6518
DOT-E 8196
DOT-E 9401
DOT-E 9402

DOT-E 9632
 DOT-E 9718
 DOT-E 10032
 DOT-E 10171
 DOT-E 10193
 DOT-E 10291
 DOT-E 10567
 DOT-E 11239
 DOT-E 11275
 DOT-E 11313
 DOT-E 11331
 DOT-E 11539
 DOT-E 11589
 DOT-E 11604
 DOT-E 11658
 DOT-E 11661

Persons holding other exemptions which they believe are impacted by changes adopted by this final rule should contact RSPA.

Section 173.115. Paragraph (b)(1) is revised as proposed to reflect the correct conversion of 280 kPa to read "280 kPa (40.6 psia)" for informational purposes.

Section 173.120 and Appendix H to Part 173. Based on requests from industry and comments supporting this proposed revision, RSPA is adding a new paragraph (b)(3) to specify a procedure for testing combustible liquids with a flash point above 60.5° C (141° F) and below 93° C (200° F) for the ability to sustain combustion. Appendix H to Part 173 is revised to provide additional test temperatures in paragraph 5.(h) for combustible liquids that closely parallel the approach for flammable liquids.

Sections 173.121, 173.125, and 173.127. As proposed, RSPA is adopting a clarification of the methods for determining packing groups described in §§ 173.121(a), 173.125(a), and 173.127(b) for Class 3, Class 4, and Class 5 materials, respectively.

Section 173.133. RSPA is revising as proposed the wording "more than one packing group and hazard zone" in paragraph (b)(1) to read "more than one packing group or hazard zone". One commenter expressed support for the proposed change, stating that it will clarify the determination of applicable packing groups.

Section 173.134. Paragraph (a)(4) limits the definition of regulated medical waste to exclude discarded cultures and stocks of infectious substances. In this final rule, paragraph (b) is revised as proposed by adding a new paragraph (b)(4) authorizing discarded cultures and stocks in Biosafety Levels 1, 2 and 3, as defined in HHS Publication No. (CDC) 93-8395, *Biosafety in Microbiological and Biomedical Laboratories*, 3rd Edition, May 1993, Section II to be described and packaged as regulated medical waste

rather than infectious substances. Packagings must conform to Packing Group II performance requirements. Transport of these materials is limited to private or contract motor freight carriers in dedicated service to the transportation of medical waste. Commenters uniformly supported this proposed change. One commenter referenced a recent Center for Disease Control proposed list of infectious substances capable of causing substantial harm to human health. This commenter believed all discarded cultures and stocks of infectious substances not on this proposed list should be eligible for regulation as regulated medical waste. Another commenter believed RSPA should provide even more relief for these materials by allowing them to be packaged in OSHA-authorized containers conforming to DOT's general packaging standards, and also should allow private carriers transporting these types of cultures and stocks to backhaul non-food products if trailers are properly disinfected. It is RSPA's view that these suggested changes are beyond the scope of this rulemaking.

Section 173.151. A new paragraph (d) is added as proposed to incorporate limited quantity provisions for Division 4.3 (dangerous when wet) solid materials in Packing Groups II and III. This amendment aligns the HMR with limited quantity exceptions contained in the UN Recommendations.

Section 173.156. Paragraph (b)(2) is revised as proposed to remove the 30 kg (66 pounds) weight restriction for ORM-D materials packaged in "display packs" which are offered for transportation, or transported, by highway or rail between a manufacturer, a distribution center, and a retail outlet. These display packs are inner receptacles of ORM-D materials which are secured in corrugated fiberboard trays and then stacked and placed within a strong outer container. Each outer container is strapped to a wooden pallet with steel or polyester strapping to form an integral part of the packaging. All commenters addressing this issue supported the proposal; however, several commenters requested that the net weight of each display pack be raised from 250 kg (550 pounds) to 525 kg (1155 pounds) to reflect the weight limit authorized in an exemption recently granted for this type of packaging. RSPA believes that display packs should be limited to 250 kg (550 pounds) net weight until satisfactory experience is gained under the exemption at the higher weight.

RSPA proposed an exception for transportation of ORM-D materials to

disposal facilities in paragraph (b)(1) to allow discarded consumer commodities to be transported from manufacturing, distribution or retail facilities to a disposal facility when packaged in large boxes or overpacks exceeding 30 kg (66 pounds). RSPA received comments supporting this proposal from The Conference on the Safe Transportation of Hazardous Articles (petitioner for this change) and the National Wholesale Druggists' Association. The Association of Waste Hazardous Materials Transporters opposed the proposal, stating it has the potential for abuse. This commenter believed the proposal was not in the public interest and will create confusion about the regulatory status of discarded material, which may be subject to regulation as either a solid waste or hazardous waste.

RSPA does not agree. However, based on further review of this proposal, RSPA is revising the proposed provision to require that the transportation of discarded consumer commodities to a disposal facility must be from a single point of origin. RSPA believes that limiting the consolidation of discarded consumer commodities in one shipping unit from one offeror establishes an appropriate condition for such transportation, taking into account other requirements such as §§ 173.24 and 173.24a.

Section 173.158. Paragraph (d) is revised as proposed to authorize additional packagings for nitric acid in concentrations of 90 percent or greater when offered for transportation or transported by rail, highway or water. A combination packaging consisting of a 1A2, 1B2, 1D, 1G, 1H2, 3H2 or 4G outer packaging with inner glass packagings of 2.5 L (0.66 gallons) or less capacity cushioned with a non-reactive, absorbent material and packed within a leak-tight packaging of metal or plastic is authorized.

In addition, RSPA is revising paragraph (f)(1) as proposed to authorize 6HH1 and 6HA1 composite packagings with PFA Teflon inner receptacles for nitric acid concentrations of 70 percent or less. These composite packagings are authorized under the provisions of three exemptions and have demonstrated an equivalent level of safety.

Section 173.170. RSPA is adding a new non-bulk packaging section for black powder for small arms when transported domestically and reclassified as Division 4.1. For consistency with comparable provisions for smokeless powder for small arms, RSPA is revising approval procedures as proposed in the NPRM by requiring that black powder must be examined and approved for Division 4.1 classification and the

complete package must be of the same type as that approved under § 173.56.

Section 173.183. As proposed, RSPA is adding a packaging authorization to allow the use of polypropylene inner packagings for nitrocellulose base film.

Section 173.225. Paragraph (a) is amended as proposed to specify that inner plastic packagings of a combination packaging used for transporting organic peroxides must be constructed of new resin. The one commenter responding to this proposal, the Organic Peroxide Producers Safety Division of the Society of the Plastics Industry, petitioned for the change. RSPA agrees with the commenter that most regulated organic peroxides are too sensitive to contamination to be stored in packages manufactured from "resin of unknown history."

Section 173.306. Paragraph (i)(1) is removed as proposed and paragraphs (i)(2) through (i)(4) are redesignated accordingly as paragraphs (i)(1) through (i)(3). In addition, RSPA is revising the introductory text of paragraph (i) to clarify that flammability of aerosols is based on obtaining a positive test result from any of the three methods contained in this paragraph. This approach is consistent with the ICAO Technical Instructions.

Section 173.314. RSPA is adopting a seasonal filling limit for tank cars containing anhydrous ammonia and liquefied petroleum gas based on winter filling reference temperatures of 29°C (85°F), 32°C (90°F), and 38°C (100°F), for insulated tanks, thermally-protected and jacketed tanks, and noninsulated tanks, respectively. These filling limits would authorize a winter filling limit greater than that authorized in the HM-181 final rule. RSPA believes that these filling limits will ensure safety in transit while providing economic relief from the requirements adopted in the HM-181 final rule. Commenters uniformly supported this proposed change. The National Industrial Transportation League stated this change strikes an appropriate balance between safety and efficiency by avoiding the necessity for increasing the number of tank car shipments (and corresponding risk of spills) in winter months to achieve the same overall volume. The National Propane Gas Association also supported this proposal for tank cars and indicated its intent to submit a proposal to RSPA later this year for adoption of seasonal filling limits for cargo tanks.

Part 178

Sections 178.245 and 178.245-1. RSPA is making several editorial changes for clarity and one significant change to allow DOT Specification 51

portable tanks to have openings at locations other than the top or one end of the tank under certain circumstances. Commenters supported the proposal to allow bottom outlets on tank containers, citing safety and economic benefits.

Section 178.245-4. As proposed, RSPA is adding a new paragraph (e) to require that a DOT 51 portable tank in an ISO framework for containerized transportation must meet the requirements specified in 49 CFR Parts 450-453.

Section 178.245-6. The first sentence of paragraph (a) is amended as proposed to require the nameplate to be in close proximity to the ASME plate.

Section 178.270-12. RSPA is amending paragraph (a) as proposed to notify manufacturers, owners and approval agencies of the requirements for the number and type of closures required for filling and discharge connections located below the normal liquid level of IM portable tanks.

Section 178.601. Paragraph (g)(8) is added to list changes in one or more design elements which would constitute a different drum design type.

Commenters supported the addition of this paragraph, but recommended revisions to be consistent with an approval issued to SSCI. RSPA agrees and is revising these provisions accordingly.

Section 178.705. As proposed, a correction is made to the constant in the equivalence thickness formula for U.S. Standard Units in paragraph (c)(1)(iv)(B) to ensure that the resulting thickness is in inches.

Paragraph (c)(2) of this section specifies pressure relief devices for metal IBCs. RSPA proposed adding a new sentence in paragraph (c)(2)(ii) to clarify that the specified start-to-discharge pressure requirements do not apply to fusible links unless these links are the sole source of pressure relief for the IBC. RSPA's proposal did not change any existing UN requirements, but simply clarified that the start-to-discharge pressure requirements in 178.705(c)(2)(ii) did not apply to fusible devices if such devices are used in addition to other venting devices. If fusible devices are the sole means for providing venting relief capacity, an IBC marked "31A" must not exceed 65 kPa (9 psig) at the fusible device operating temperature.

Several commenters requested that RSPA not adopt this amendment as proposed. It appears commenters are requesting an exception from start-to-discharge pressure requirements when fusible devices are the sole means of pressure relief capacity. This exception would not be consistent with pressure

relief requirements for IBCs in the UN Recommendations. The UN Recommendations specify pressure relief capabilities for an IBC regardless of the type of pressure relief device utilized. To maintain international consistency, such an exception should first be proposed and adopted in the UN Recommendations.

RSPA is adopting this amendment in paragraph (c)(2)(ii) essentially as proposed, but is replacing the phrase "fusible links" with "fusible devices" to more accurately describe these devices. This revision is based on a comment by the Rigid Intermediate Bulk Container Association.

IV. Rulemaking Analyses and Notices

A. Executive Order 12866 and DOT Regulatory Policies and Procedures

This final rule is not considered a significant regulatory action under section 3(f) of Executive Order 12866 and therefore, was not reviewed by the Office of Management and Budget. The rule is not considered a significant rule under the Regulatory Policies and Procedures of the Department of Transportation [44 FR 11034].

The economic impact of this final rule is expected to result in only minimal costs to certain persons subject to the HMR and may result in modest cost savings to a small number of persons subject to the HMR and to the agency. Because of the minimal economic impact of this rule, preparation of a regulatory impact analysis or a regulatory evaluation is not warranted.

B. Executive Order 12612

This final rule has been analyzed in accordance with the principles and criteria contained in Executive Order 12612 ("Federalism"). Federal law expressly preempts State, local, and Indian tribe requirements applicable to the transportation of hazardous material that cover certain subjects and are not substantively the same as Federal requirements. 49 U.S.C. 5125(b)(1). These subjects are:

- (1) The designation, description, and classification of hazardous material;
- (2) The packing, repacking, handling, labeling, marking, and placarding of hazardous material;
- (3) The preparation, execution, and use of shipping documents pertaining to hazardous material, and requirements respecting the number, content, and placement of such documents;
- (4) The written notification, recording, and reporting of the unintentional release in transportation of hazardous material; or
- (5) The design, manufacturing, fabrication, marking, maintenance,

reconditioning, repairing, or testing of a package or container which is represented, marked, certified, or sold as qualified for use in the transportation of hazardous material.

This final rule preempts State, local, or Indian tribe requirements concerning these subjects unless the non-Federal requirements are "substantively the same" (see 49 CFR 107.202(d) as the Federal requirements).

Federal law (49 U.S.C. 5125(b)(2)) provides that if DOT issues a regulation concerning any of the covered subjects, DOT must determine and publish in the Federal Register the effective date of Federal preemption. The effective date may not be earlier than the 90th day following the date of issuance of the final rule and not later than two years after the date of issuance. RSPA has determined that the effective date of Federal preemption for these requirements will be January 1, 1997. Thus, RSPA lacks discretion in this area, and preparation of a federalism assessment is not warranted.

C. Regulatory Flexibility Act

This final rule responds to petitions for rulemaking. It is intended to provide clarification of the regulations and relax certain requirements. Therefore, I certify

that this final rule will not have a significant economic impact on a substantial number of small entities.

D. Paperwork Reduction Act

There are no new information collection requirements in this final rule.

E. Regulation Identifier Number (RIN)

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

List of Subjects

49 CFR Part 171

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

49 CFR Part 172

Hazardous materials transportation, Hazardous waste, Labels, Markings,

Packaging and containers, Reporting and recordkeeping requirements.

49 CFR Part 173

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

49 CFR Part 178

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

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

PART 171—GENERAL INFORMATION, REGULATIONS, AND DEFINITIONS

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

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

2. In the § 171.7(a)(3) Table, three new entries are added in alphabetical order to read as follows:

§ 171.7 Reference material.

(a) *Matter incorporated by reference*

* * *

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

Source and name of material	49 CFR reference
* * * * *	*
American Society for Testing and Materials	
* * * * *	*
ASTM A 366/A 366M–91 (1993)e1 Standard Specification for Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality	178.601
* * * * *	*
ASTM A 568/A 568M–95 Standard Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for	178.601
* * * * *	*
Health and Human Services	
Centers for Disease Control and Prevention, 1600 Clifton Road N.E., Atlanta GA 30333.	
Also available from: Superintendent of Documents, Government Printing Office (GPO), HHS Publication No. (CDC) 93–8395, Biosafety in Microbiological and Biomedical Laboratories, 3rd Edition, May 1993, Section II	173.134
* * * * *	*

* * * * *

3. In § 171.14, as amended at 61 FR 7959, effective October 1, 1996, paragraph (a) introductory text through paragraph (a)(2)(i) and paragraph (b) are removed, paragraphs (a)(2)(ii) and (a)(2)(iii) are redesignated as paragraphs (b) and (c) and a new paragraph (a) is added to read as follows:

§ 171.14 Transitional provisions for implementing requirements based on the UN Recommendations.

* * * * *

(a) *Previously filled packages—(1) Packages filled prior to October 1, 1991.* Notwithstanding the marking and labeling provisions of subparts D and E, respectively, of part 172, and the packaging provisions of part 173 and subpart B of Part 172 of this subchapter, a package may be offered for

transportation and transported prior to October 1, 2001, if it—

(i) Conforms to the old requirements of this subchapter in effect on September 30, 1991;

(ii) Was filled with a hazardous material prior to October 1, 1991;

(iii) Is marked "Inhalation Hazard" if appropriate, in accordance with § 172.313 of this subchapter or Special Provision 13, as assigned in the § 172.101 Table; and

(iv) Is not emptied and refilled on or after October 1, 1991.

(2) *Non-bulk packages filled prior to October 1, 1996.* Notwithstanding the packaging provisions of subpart B of Part 172 and the packaging provisions of part 173 of this subchapter with respect to UN standard packagings, a non-bulk package other than a cylinder may be offered for transportation and transported domestically prior to October 1, 1999, if it—

(i) Conforms to the requirements of this subchapter in effect on September 30, 1996;

(ii) Was filled with a hazardous material prior to October 1, 1996; and

(iii) Is not emptied and refilled on or after October 1, 1996.

* * * * *

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

4. The authority citation for Part 172 continues to read as follows:

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

5. In § 172.101, a new paragraph (c)(10)(iii) is added to read as follows:

§ 172.101 Purpose and use of hazardous materials table.

* * * * *

(c) * * *

(10) * * *

(iii) A mixture or solution not identified in the Table by a specific description, comprised of two or more hazardous materials in the same hazard class, shall be described using an appropriate shipping description (e.g., “Flammable liquid, n.o.s.”). Some mixtures may be more appropriately described according to their application, such as “Coating solution” or “Extracts, flavoring liquid” rather than by an n.o.s. entry. Under the provisions of subparts C and D of this part, the technical names of at least two components most predominately contributing to the hazards of the mixture or solution may be required in association with the proper shipping name.

* * * * *

§ 172.101 [Amended]

6. In addition, in § 172.101, in paragraph (c)(12), the following changes are made:

a. In paragraph (c)(12)(ii), in the last sentence, the wording “technical name of the constituent” is revised to read “technical name of one or more constituents”.

b. In paragraph (c)(12)(iii), in the first sentence, the wording “by a specific description,” is revised to read “specifically by name (e.g., acetyl chloride).”

7. In § 172.101, the Hazardous Materials Table, as amended at 61 FR 18932 and 61 FR 27172 effective October 1, 1996, is amended by adding in alphabetical order or revising the following entries to read as follows:

§ 172.101 Purpose and use of hazardous materials table.

* * * * *

§ 172.101 HAZARDOUS MATERIALS TABLE

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Nos.	PG	Label codes	Special provisions	(8) Packaging (§ 173.***)			(9) Quantity limitations		(10) Vessel stowage	
							Exceptions	Non-bulk	Bulk	Passenger aircraft/rail	Cargo aircraft only	location	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
D	[ADD:] Black powder for small arms.	4.1	NA0027	I	4.1	70	None	170	None	Forbidden	Forbidden	E	
	[REVISE:] Hydrogen cyanide, solution in alcohol with not more than 45 percent hydrogen cyanide.	6.1	UN3294	I	6.1, 3	2,25, B9, B14, B32, B74, T38, T43, T45.	None	227	244	Forbidden	Forbidden	D	40
	Methanesulfonyl chloride.	6.1	UN3246	I	6.1, 8	2,25, B9, B14, B32, B74, T38, T43, T45.	None	227	244	Forbidden	Forbidden	D	40
+	Methyl vinyl ketone.	3	UN1251	II	3, 6.1	1,25, B9, B14, B30, B72, T38, T43, T44.	None	226	244	Forbidden	Forbidden	B	40

§ 172.101 [Amended]

8. In addition, in § 172.101, in the Hazardous Materials Table, the following changes are made:

a. For the entry “Benzyl chloride”, in column (7), Special Provision “N43” is revised to read “N42”.

b. For the entry “Chlorosilanes, corrosive, flammable, n.o.s.”, in Column

(7), Special Provisions “T18, T26” are added following “B100”.

c. For the entry “Chlorosilanes, corrosive, nos.”, in Column (7), Special Provisions, “T8, T26” are added following “B2”.

d. For the entry, “Chlorosilanes, water-reactive, flammable, corrosive, n.o.s.”, in Column (7), Special

Provisions “T24, T26” are added following “A2”.

e. For the entries “Organic peroxide type F, liquid, temperature controlled” and “Organic peroxide type F, solid, temperature controlled”, in Column (8A), the reference “225” is removed each place it appears and “None” added in each place, and in Column (8C), the

reference "None" is removed each place it appears and "225" added in each place.

f. For the entry "Organic peroxide type F, solid", in Column (8C), the reference "None" is removed and "225" is added in its place.

g. For the entry "Phosphorus pentafluoride", in Column (7), the wording "1" is removed and "2, B9, B14" is added in its place; in Column (8B) "302" is revised to read "302, 304"; and in Column (8C), "None" is revised to read "314, 315".

h. For the entry "Tungsten hexafluoride", in Column (7), special provision "3" is revised to read "2".

i. For the entries "Metal carbonyls, n.o.s., UN3281, PG I"; "Nitriles, toxic, flammable, n.o.s., UN3275, PG I"; "Nitriles, toxic, n.o.s., UN3276, PG I"; "Organoarsenic compound, n.o.s., UN3280, PG I"; "Organophosphorus compound, toxic, flammable, n.o.s., UN3279, PG I"; and "Organophosphorus compound, toxic, n.o.s., UN3278, PG I", in Column (7), Special Provision "5" is added.

j. For each of the following entries, in Column (8A), the word "None" is removed and "151" added in its place:

- Alkali metal amides
- Alkaline earth metal alloys, n.o.s.
- Aluminum carbide
- Aluminum ferrosilicon powder (both entries)
- Aluminum powder, uncoated (both entries)
- Aluminum processing by-products (both entries)
- Aluminum silicon powder, uncoated
- Barium
- Calcium
- Calcium carbide, in PG II
- Calcium cyanamide *with more than 0.1 percent of calcium carbide*
- Calcium manganese silicon
- Calcium silicide (both entries)
- Cerium, *turnings or gritty powder*
- Ferrosilicon *with 30 percent or more but less than 90 percent silicon*
- Lithium ferrosilicon
- Lithium hydride, fused solid
- Lithium silicon
- Magnesium granules, coated *particle size not less than 149 microns*
- Magnesium powder or Magnesium alloys, powder
- Magnesium silicide
- Maneb stabilized or Maneb preparations, stabilized *against self-heating*
- Metal hydrides, water-reactive, n.o.s., in PG II
- Metallic substance, water-reactive, n.o.s., in PG II and III
- Phosphorous pentasulfide, *free from yellow or white phosphorous*

Sodium aluminum hydride
Water-reactive solid, corrosive, n.o.s., in PG II and III

Water-reactive solid, flammable, n.o.s., in PG II and III

Water-reactive solid, n.o.s., in PG II and III

Water-reactive solid, toxic, n.o.s., in PG II and III

Zinc ashes

9. In § 172.102, in paragraph (c)(1) Special Provisions 25 and 70 are added, in paragraph (c)(3) Special Provision B59 is revised, and in paragraph (c)(5), Special Provision N42 is added, to read as follows:

§ 172.102 Special provisions.

* * * * *

(c) * * *

(1) * * *

* * * * *

25 Until October 1, 1997, this material may be transported or offered for transportation in a packaging authorized under the regulations in effect on September 30, 1996.

* * * * *

70 Black powder that has been classed in accordance with the requirements of § 173.56 of this subchapter may be reclassified and offered for domestic transportation as a Division 4.1 material if it is offered for transportation and transported in accordance with the limitations and packaging requirements of § 173.170 of this subchapter.

* * * * *

(3) * * *

* * * * *

B59 Water-tight, sift-proof, closed-top, metal-covered hopper cars are also authorized provided that the lading is covered with a nitrogen blanket.

* * * * *

(5) * * *

* * * * *

N42 1A1 drums made of carbon steel with thickness of body and heads of not less than 1.3 mm (0.050 inch) and with a corrosion-resistant phenolic lining are authorized for stabilized benzyl chloride if tested and certified to the Packing Group I performance level at a specific gravity of not less than 1.8.

* * * * *

10. In § 172.302, paragraph (b) is revised to read as follows:

§ 172.302 General marking requirements for bulk packagings.

* * * * *

(b) *Size of markings.* Except as otherwise provided, markings required by this subpart on bulk packagings must—

(1) Have a width of at least 6.0 mm (0.24 inch) and a height of at least 100 mm (3.9 inches) for rail cars;

(2) Have a width of at least 4.0 mm (0.16 inch) and a height of at least 25

mm (one inch) for portable tanks with capacities of less than 3,785 L (1,000 gallons) and intermediate bulk containers; and

(3) Have a width of at least 6.0 mm (0.24 inch) and a height of at least 50 mm (2.0 inches) for cargo tanks and other bulk packagings.

* * * * *

§ 172.504 [Amended]

11. In § 172.504, the last sentence of paragraph (f)(8) is removed.

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. 5102–5127; 49 CFR 1.53.

13. In § 173.24a, the last sentence of paragraph (a)(3) and paragraph (b)(2) are revised, to read as follows:

§ 173.24a Additional general requirements for non-bulk packagings and packages.

(a) * * *

(3) * * * Cushioning material must not be capable of reacting dangerously with the contents of the inner packagings or having its protective properties significantly weakened in the event of leakage.

* * * * *

(b) * * *

(2) Except as otherwise provided in this section, a non-bulk packaging may not be filled with a hazardous material to a gross mass greater than the maximum gross mass marked on the packaging.

* * * * *

§ 173.24b [Amended]

14. In § 173.24b, in the first sentence in paragraph (b), the wording "stainless steel is steel" is revised to read "the reference stainless steel is stainless steel".

15. In § 173.28, paragraphs (b)(4) and (b)(7)(iv)(C) are revised and a new sentence is added in paragraph (c)(2) following the first sentence, to read as follows:

§ 173.28 Reuse, reconditioning and remanufacture of packagings.

* * * * *

(b) * * *

(4) Metal and plastic drums and jerricans used as single packagings or the outer packagings of composite packagings are authorized for reuse only when they are marked in a permanent manner (e.g., embossed) in millimeters with the nominal (for metal packagings) or minimum (for plastic packagings)

thickness of the packaging material, as required by § 178.503(a)(9) of this subchapter, and—

(i) Except as provided in paragraph (b)(4)(ii) of this section, conform to the following minimum thickness criteria:

Maximum capacity not over	Minimum thickness of packaging material	
	Metal drum or jerrican	Plastic drum or jerrican
20 L	0.63 mm (0.025 inch).	1.1 mm (0.043 inch).
30 L	0.73 mm (0.029 inch).	1.1 mm (0.043 inch).
40 L	0.73 mm (0.029 inch).	1.8 mm (0.071 inch).
60 L	0.92 mm (0.036 inch).	1.8 mm (0.071 inch).
120 L	0.92 mm (0.036 inch).	2.2 mm (0.087 inch).
220 L	0.92 mm (0.036 inch) ¹ .	2.2 mm (0.087 inch).
450 L	1.77 mm (0.070 inch).	5.0 mm (0.197 inch).

¹ Metal drums or jerricans constructed with a minimum thickness of 0.82 mm body and 1.09 mm heads are authorized until December 31, 1996. After that date, metal drums or jerricans constructed with a minimum thickness of 0.82 mm body and 1.11 heads are authorized.

(ii) For stainless steel drums and jerricans, conform to a minimum wall thickness as determined by the following equivalence formula:

Formula for Metric Units

$$e_1 = \frac{21.4 \times e_0}{\sqrt[3]{(Rm_1 \times A_1)}}$$

Formula for U.S. Standard Units

$$e_1 = \frac{21.4 \times e_0}{\sqrt[3]{(Rm_1 \times A_1) / 145}}$$

where:

- e₁=required equivalent wall thickness of the metal to be used (in mm or, for U.S. Standard units, use inches).
- e₀=required minimum wall thickness for the reference steel (in mm or, for U.S. Standard units, use inches).
- Rm₁=guaranteed minimum tensile strength of the metal to be used (in N/mm² or for U.S. Standard units, use pounds per square inch).
- A₁=guaranteed minimum elongation (as a percentage) of the metal to be used on fracture under tensile stress (see paragraph (c)(1) of this section).

* * * * *

- (7) * * *
- (iv) * * *

(C) another material or thickness when approved under the conditions established by the Associate Administrator for Hazardous Materials Safety for reuse without retesting.

(c) * * *
 (2) * * * For a UN 1H1 plastic drum, replacing a removable gasket or closure device with a replacement of the same design and material which provides equivalent performance does not constitute reconditioning. * * *

* * * * *

§ 173.28 [Amended]

16. In addition, in § 173.28, in the first sentence of paragraph (c)(2), the wording “or a UN 1H1 plastic drum” is added immediately following the wording “other than a metal drum”.

17. In § 173.32, in paragraph (d) a new third sentence is added at the end of the paragraph, in paragraph (e)(2)(i), the second sentence is revised, and a new paragraph (t) is added, to read as follows:

§ 173.32 Qualification, maintenance and use of portable tanks other than Specification 1M portable tanks.

* * * * *

(d) * * * A stainless steel portable tank internally lined with polyethylene, which was constructed on or before October 1, 1996, and complies with all requirements of Specification 57 except that it is equipped with a polypropylene discharge ball valve and polypropylene secondary discharge opening closure, may be marked as a Specification 57 portable tank and used in accordance with the provisions of this section.

(e) * * *
 (2) * * *

(i) * * * Each Specification 57 tank must be leak tested by a minimum sustained air pressure of at least three pounds per square inch gage applied to the entire tank. * * *

* * * * *

(t) *Exemption portable tanks based on DOT 51 portable tanks.* (1) The owner of a portable tank constructed in accordance with and used under an exemption issued prior to August 31, 1996, that was in conformance with the requirements for Specification DOT 51 portable tanks with the exception of the location of fill and discharge outlets, shall examine the portable tank and its design to determine if it meets the new outlet requirements contained in § 178.245–1(d) of this subchapter. If the owner determines that the portable tank is in compliance with all the requirements of § 178.245 of this subchapter, the exemption number stenciled on the portable tank shall be removed and the specification plate (or a plate placed adjacent to the specification plate) shall be durably marked “DOT 51—E*****” (where ***** is to be replaced by the exemption number).

(2) During the period the portable tank is in service, and for one year thereafter, the owner of the portable tank must retain on file at its principal place of business a copy of the last exemption in effect.

§ 173.115 [Amended]

18. In § 173.115, in paragraph (b)(1), the wording “(41 psia)” is revised to read “(40.6 psia)”.

19. In § 173.120, a new paragraph (b)(3) is added to read as follows:

§ 173.120 Class 3—Definitions.

* * * * *

(b) * * *

(3) A combustible liquid which does not sustain combustion is not subject to the requirements of this subchapter as a combustible liquid. A procedure for determining if a material sustains combustion when heated under test conditions and exposed to an external source of flame is provided in Appendix H of this part.

* * * * *

§ 173.121 [Amended]

20. In § 173.121, in the second sentence of paragraph (a), the wording “or indicates that the packing group is to be determined on the basis of the grouping criteria for Class 3,” is removed.

21. In § 173.125, paragraph (a) is revised to read as follows:

§ 173.125 Class 4—Assignment of packing group.

(a) The packing group of a Class 4 material is assigned in Column (5) of the § 172.101 Table. When the § 172.101 Table provides more than one packing group for a hazardous material, the packing group shall be determined on the basis of test results following test methods given in appendix E of this part and by applying the appropriate criteria given in this section.

* * * * *

22. In § 173.127, the section heading is revised, paragraph (b)(1) is removed, paragraphs (b)(2) and (b)(3) are redesignated as paragraphs (b)(1) and (b)(2), and the paragraph (b) heading and the newly designated paragraph (b)(1) introductory text are revised to read as follows:

§ 173.127 Class 5, Division 5.1—Definition and assignment of packing groups.

* * * * *

(b) *Assignment of packing group.* (1) The packing group of a Division 5.1 material shall be as assigned in Column (5) of the § 172.101 Table. When the § 172.101 Table provides more than one packing group for a hazardous material,

the packing group shall be determined on the basis of test results following test methods given in appendix F of this part and by applying the following criteria:

* * * * *

§ 173.133 [Amended]

23. In § 173.133, in paragraph (a) introductory text, in the second sentence, the wording "more than one packing group and hazard zone" is revised to read "more than one packing group or hazard zone".

24. In § 173.134, the introductory text of paragraph (b)(3)(ii) is revised and a new paragraph (b)(4) is added to read as follows:

§ 173.134 Class 6, Division 6.2—Definitions, exceptions and packing group assignments.

* * * * *

- (b) * * *
- (3) * * *

(ii) For other than a waste culture or stock of an infectious substance, the specific packaging requirements of § 173.197, if packaged in a rigid non-bulk packaging conforming to—

* * * * *

(4) A waste culture or stock of infectious substances may be offered for transportation and transported as a regulated medical waste when the culture or stock—

(i) Conforms to Biosafety Level 1, 2 or 3, as defined in HHS Publication No. (CDC) 93-8395, *Biosafety in Microbiological and Biomedical Laboratories*, 3rd Edition, May 1993, Section II;

(ii) Is packaged in accordance with requirements specified in § 173.197; and

(iii) Is transported by a private or contract carrier using a vehicle dedicated to the transportation of medical waste.

* * * * *

25. In § 173.151, the section heading is revised and a new paragraph (d) is added to read as follows:

§ 173.151 Exceptions for Class 4.

* * * * *

(d) *Limited quantities of Division 4.3 (dangerous when wet) material.* Limited quantities of Division 4.3 (dangerous when wet) solids in Packing Groups II and III are excepted from labeling, unless offered for transportation or transported by aircraft, and the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. In addition, shipments of limited quantities are not subject to subpart F (Placarding) of part 172 of this subchapter. Each package must conform

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

(1) For Division 4.3 solids in Packing Group II, inner packagings not over 0.5 kg (1.1 pound) net capacity each, packed in strong outer packagings; and

(2) For Division 4.3 solids in Packing Group III, inner packagings not over 1 kg (2.2 pounds) net capacity each, packed in strong outer packagings.

26. In § 173.156, paragraph (b) is revised to read as follows.

§ 173.156 Exceptions for ORM materials.

* * * * *

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

(1) Strong outer packagings as specified in this part, the marking requirements specified in § 172.316 of this subchapter, and the 30 kg (66 pounds) gross weight limitation are not required for materials classed as ORM-D when—

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

(ii) Offered for transportation or transported by:

(A) Rail;

(B) Private or contract motor carrier; or

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

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

(2) The 30 kg (66 pounds) gross weight limitation does not apply to materials classed as ORM-D when offered for transportation, or transported, by highway or rail between a manufacturer, a distribution center, and a retail outlet provided—

(i) Inner packagings conform to the quantity limits for inner packagings specified in §§ 173.150(b), 173.152(b), 173.154(b), 173.155(b) and 173.306 (a) and (b), as appropriate;

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

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

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

(v) The maximum net quantity of hazardous material permitted on one

palletized unit is 250 kg (550 pounds); and

(vi) The package is properly marked in accordance with § 172.316 of this subchapter.

27. In § 173.158, paragraph (d) is revised, and paragraph (f)(1) is amended by adding a second sentence at the end of the paragraph to read as follows:

§ 173.158 Nitric acid.

* * * * *

(d) Nitric acid of 90 percent or greater concentration, when offered for transportation or transported by rail, highway, or water may be packaged as follows:

(1) In 4C1, 4C2, 4D or 4F wooden boxes with inner packagings consisting of glass bottles further individually overpacked in tightly closed metal packagings. Glass bottles must be of 2.5 L (0.66 gallon) or less capacity and cushioned with a non-reactive, absorbent material within the metal packagings.

(2) In combination packagings with 1A2, 1B2, 1D, 1G, 1H2, 3H2 or 4G outer packagings with inner glass packagings of 2.5 L (0.66 gallons) or less capacity cushioned with a non-reactive, absorbent material and packed within a tightly closed intermediate packaging of metal or plastic.

(f) * * *

(1) * * * 6HH1 and 6HA1 composite packaging with plastic inner receptacles meeting the compatibility requirements § 173.24(e) (e.g., PFA Teflon) are authorized.

* * * * *

28. Section 173.170 is added to read as follows:

§ 173.170 Black powder for small arms.

Black powder for small arms that has been classed in Division 1.1 may be reclassified as a Division 4.1 material, for domestic transportation by motor vehicle, rail freight, and cargo vessel only, subject to the following conditions:

(a) The powder must be examined and approved for Division 1.1 and Division 4.1 classification in accordance with §§ 173.56 and 173.58;

(b) The total quantity of black powder in one motor vehicle, rail car, or freight container may not exceed 45.4 kg (100 pounds) net mass, and no more than four freight containers may be on board one cargo vessel;

(c) The black powder must be packed in inner metal or heavy wall conductive plastic receptacles not over 450 g (15.9 ounces) net capacity each, with no more than 25 cans in one outer UN 4G fiberboard box. The inner packagings must be arranged and protected so as to

prevent simultaneous ignition of the contents. The complete package must be of the same type which has been examined as required in § 173.56;

(d) Each completed package must be marked "BLACK POWDER FOR SMALL ARMS" and "NA 0027"; and

(e) Each package must bear the FLAMMABLE SOLID label.

§ 173.183 [Amended]

29. In § 173.183, in paragraphs (a) and (b), the wording " polypropylene canister," is added immediately following the wording "closed metal can" each place it appears.

30. In § 173.225, in paragraph (a), a new sentence is added as the penultimate sentence to read as follows:

§ 173.225 Packaging requirements and other provisions for organic peroxides.

(a) * * * No used material, other than production residues or regrind from the same production process, may be used in plastic packagings. * * *

31. In § 173.306, paragraph (i)(1) is removed, paragraphs (i)(2) through (i)(4) are redesignated as paragraphs (i)(1) through (i)(3), respectively, and the introductory text in paragraph (i) is revised to read as follows:

§ 173.306 Limited quantities of compressed gases.

* * * * *

(i) An aerosol is flammable if a positive test result is obtained using any of the following test methods:

* * * * *

32. In § 173.314, as amended at 61 FR 28676, effective October 1, 1996, in the paragraph (c) table, Note 2 is revised and Notes 9 and 10 are added, to read as follows:

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

* * * * *

(c) * * *
Notes:

* * * * *

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.

* * * * *

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.

* * * * *

§ 173.314 [Amended]

33. In addition, in § 173.314, in the paragraph (c) table, as amended at 61 FR 28676, effective October 1, 1996, the following changes are made:

a. For the entry "Ammonia, anhydrous, or ammonia solutions >50 percent ammonia", in Column 2, the wording "Note 2" is removed and "Notes 2, 10" added in its place.

b. For the entry "Division 2.1 materials not specifically provided in this table" in Column 2, the wording "Note 3" is removed and the wording "Notes 9, 10" added in its place.

Appendix H to Part 173—[Amended]

34. In Appendix H to Part 173, the second sentence of paragraph 5.(b) is revised and in paragraph 5.(h), a second sentence is added at the end of the paragraph to read as follows:

Appendix H to Part 173—Method of Testing for Sustained Combustibility

* * * * *

5. * * *
(b) * * * For the appropriate test temperature, see paragraph 5.(h) of this appendix. * * *

* * * * *

(h) * * * In the case of a material which has a flash point above 60.5° C (141° F) and below 93° C (200° F), if sustained combustion interpreted in accordance with paragraph 6. of this appendix is not found at a test temperature of 5° C (9° F) above its flash point, repeat the complete procedure with new test portions, but at a test temperature of 20° C (36° F) above its flash point.

* * * * *

PART 178—SPECIFICATIONS FOR PACKAGINGS

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

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

36. Section 178.245–1 is revised to read as follows:

§ 178.245–1 Requirements for design and construction.

(a) Tanks must be seamless or welded steel construction or combination of both and have a water capacity in excess of 454 kg (1,000 pounds). Tanks must be designed, constructed, certified and stamped in accordance with the ASME Code.

(b) Tanks must be postweld heat treated and radiographed as prescribed in the ASME Code except that each tank constructed in accordance with part UHT of the ASME Code must be postweld heat treated. Where postweld heat treatment is required, the tank must be treated as a unit after completion of all the welds in and/or to the shell and heads. The method must be as prescribed in the ASME Code. Welded attachments to pads may be made after postweld heat treatment is made. A tank used for anhydrous ammonia must be postweld heat treated. The postweld heat treatment must be as prescribed in the ASME Code, but in no event at less than 1050° F tank metal temperature. Additionally, tanks constructed in accordance with part UHT of the ASME Code must conform to the following requirements:

(1) Welding procedure and welder performance tests must be made

annually in accordance with section IX of the ASME Code. In addition to the essential variables named therein, the following must be considered to be essential variables: number of passes, thickness of plate, heat input per pass, and manufacturer's identification of rod and flux. The number of passes, thickness of plate and heat input per pass may not vary more than 25 percent from the procedure qualification. Records of the qualification must be retained for at least 5 years by the tank manufacturer and made available to duly identified representatives of the Department of Transportation or the owner of the tank.

(2) Impact tests must be made on a lot basis. A lot is defined as 100 tons or less of the same heat and having a thickness variation no greater than plus or minus 25 percent. The minimum impact required for full-sized specimens shall be 20 foot-pounds (or 10 foot-pounds for half-sized specimens) at 0° F Charpy V-Notch in both the longitudinal and transverse direction. If the lot test does not pass this requirement, individual plates may be accepted if they individually meet this impact requirement.

(c) Except as provided in paragraph (d) of this section, all openings in the tank shall be grouped in one location, either at the top of the tank or at one end of the tank.

(d) The following openings may be installed at locations other than on the top or end of the tank:

(1) The openings for liquid level gauging devices, pressure gauges, or for safety devices, may be installed separately at the other location or in the side of the shell;

(2) One plugged opening of 2-inch National Pipe Thread or less provided for maintenance purposes may be located elsewhere;

(3) An opening of 3-inch National Pipe Size or less may be provided at another location, when necessary, to facilitate installation of condensing coils; or

(4) Filling and discharge connections may be installed below the normal liquid level of the tank if the tank design conforms to the following requirements:

(i) The tank must be permanently mounted in a full framework for containerized transport. For each tank design, a prototype tank, must fulfill the requirements of parts 450 through 453 of this title for compliance with the requirements of Annex II of the International Convention for Safe Containers.

(ii) Each filling and discharge connection must be equipped with an internal self-closing stop-valve capable

of closing within 30 seconds of actuation. Each internal self-closing stop-valve must be protected by a shear section or sacrificial device located outboard of the valve. The shear section or sacrificial device must break at no more than 70 percent of the load that would cause failure of the internal self-closing stop-valve.

(iii) Each internal self-closing stop-valve must be provided with remote means of automatic closure, both thermal and mechanical. The thermal means of automatic closure must actuate at a temperature of not over 250° F.

(e) Each uninsulated tank used for the transportation of compressed gas, as defined in § 173.300 of this subchapter, must have an exterior surface finish that is significantly reflective, such as a light reflecting color if painted, or a bright reflective metal or other material if unpainted.

37. In § 178.245-4, a new paragraph (e) is added to read as follows:

§ 178.245-4 Tank mountings.

* * * * *

(e) A DOT 51 portable tank that meets the definition of "container" in § 450.3(a)(3) of this title must meet the requirements of parts 450 through 453 of this title, in addition to the requirements of this subchapter.

§ 178.245-6 [Amended]

38. In § 178.245-6, in the first sentence of paragraph (a), the wording "on one of the heads of the tank" is revised to read "in close proximity to the ASME "U" stamp certification".

39. In § 178.270-12, in paragraph (a), the first two sentences are revised to read as follows:

§ 178.270-12 Valves, nozzles, piping, and gauging devices.

(a) All tank nozzles, except those provided for filling and discharge connections below the normal liquid level of the tank, relief devices, thermometer wells, and inspection openings, must be fitted with manually operated stop valves located as near the shell as practicable either internal or external to the shell. Each filling and discharge connection located below the normal liquid level of the tank must be equipped with an internal discharge valve. * * *

* * * * *

40. In § 178.601, the word "or" is removed at the end of paragraph (c)(4)(iv), the period at the end of paragraph (c)(4)(v) is removed and "or" added in its place and new paragraphs (c)(4)(vi) and (g)(8) are added to read as follows:

§ 178.601 General requirements.

* * * * *

(c) * * *

(4) * * *

(vi) For a steel drum, variations in design elements which do not constitute a different design type under the provisions of paragraph (g)(8) of this section.

* * * * *

(g) * * *

(8) For a steel drum with a capacity greater than 50 L (13 gallons) manufactured from low carbon, cold-rolled sheet steel meeting ASTM designations A366/A366M or A568/A568M, variations in elements other than the following design elements are considered minor and do not constitute a different drum design type, or "different packaging" as defined in paragraph (c) of this section for which design qualification testing and periodic retesting are required. Minor variations authorized without further testing include changes in the identity of the supplier of component material made to the same specifications, or the original manufacturer of a DOT specification or UN standard drum to be remanufactured. A change in any one or more of the following design elements constitutes a different drum design type:

(i) The packaging type and category of the original drum and the remanufactured drum, i.e., 1A1 or 1A2;

(ii) The style, (i.e., straight-sided or tapered);

(iii) Except as provided in paragraph (g)(3) of this section, the rated (marked) capacity and outside dimensions;

(iv) The physical state for which the packaging was originally approved (e.g., tested for solids or liquids);

(v) An increase in the marked level of performance of the original drum (i.e., to a higher packing group, hydrostatic test pressure, or specific gravity to which the packaging has been tested);

(vi) Type of side seam welding;

(vii) Type of steel;

(viii) An increase greater than 10% or any decrease in the steel thickness of the head, body, or bottom;

(ix) End seam type, (e.g., triple or double seam);

(x) A reduction in the number of rolling hoops which equal or exceed the diameter over the chimes;

(xi) The location, type or size, and material of closures (other than the cover of UN 1A2 drums); and

(xii) For UN 1A2 drums:

(A) Gasket material (e.g., plastic), or properties affecting the performance of the gasket;

(B) Configuration or dimensions of the gasket;

(C) Closure ring style including bolt size, (e.g., square or round back, 0.625" bolt); and

(D) Closure ring thickness.

* * * * *

41. In § 178.705, in paragraph (c)(2)(ii), a new sentence is added after the first sentence to read as follows.

§ 178.705 Standards for metal intermediate bulk containers.

* * * * *

(c) * * *

(2) * * *

(ii) * * * This does not apply to fusible devices unless such devices are the only source of pressure relief for the IBC. * * *

§ 178.705 [Amended]

42. In addition, in § 178.705, in paragraph (c)(1)(iv)(B), in the second formula, the Formula for U.S. Standard units, the number "544" is revised to read "21.4".

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Kelley S. Coyner,

Deputy Administrator.

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