

(iv) If a fusible device is used for relieving pressure, the device must have a minimum area of 1.25 square inches. The device must function at a temperature between 104 °C. and 149 °C. (220 °F. and 300 °F.) and at a pressure less than the design test pressure of the tank, unless this latter function is accomplished by a separate device; and

(v) No relief device may be used which would release flammable vapors under normal conditions of transportation (temperature up to and including 54 °C. (130 °F.)); and

(3) *Venting capacity.* The minimum venting capacity for pressure activated vents must be 6,000 cubic feet of free air per hour (measured at 101.3 kPa (14.7 psi) and 15.6 °C. (60 °F.)) at not more than 34.4 kPa (5 psi). The total emergency venting capacity (cu. ft./hr.) of each portable tank must be at least that determined from the following table:

Total surface area square feet <sup>1 2</sup>	Cubic feet free air per hour
20 .....	15,800
30 .....	23,700
40 .....	31,600
50 .....	39,500
60 .....	47,400
70 .....	55,300
80 .....	63,300
90 .....	71,200
100 .....	79,100
120 .....	94,900
140 .....	110,700
160 .....	126,500

<sup>1</sup> Interpolate for intermediate sizes.  
<sup>2</sup> Surface area excludes area of legs.

(4) Unless provided by §173.32(h)(3), an IM 101, 102 or UN portable tank with a bottom outlet and used to transport a liquid hazardous material that is a Class 3, PG I or II, or PG III with a flash point of less than 38 °C (100 °F); Division 5.1 PG I or II; or Division 6.1, PG I or II, must have internal valves conforming to §178.275(d)(3) of this subchapter.

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

(5) of the §172.101 Table of this subchapter for the material being transported.

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

- (i) Packing Group I liquids; and
- (ii) Packing Group I solids that may become liquid during transportation.

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

- (i) Wooden: 11C, 11D and 11F;
- (ii) Fiberboard: 11G;
- (iii) Flexible: 13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 and 13M2; and
- (iv) Composite: 11HZ2 and 21HZ2.

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

(1) Except as specifically authorized in this subchapter, Large Packagings may not be used for Packing Group I or II hazardous materials.

(2) Large Packagings with paper or fiberboard inner receptacles may not be used for solids that may become liquid in transportation.

[Amdt. 173-224, 55 FR 52663, Dec. 21, 1990]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting §173.242, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at [www.govinfo.gov](http://www.govinfo.gov).

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

When §172.101 of this subchapter specifies that a hazardous material be packaged under this section, only the following bulk packagings are authorized, subject to the requirements of subparts A and B of part 173 of this subchapter and the special provisions specified in column 7 of the §172.101 table.

§ 173.243

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(a) *Rail cars*: Class DOT 103, 104, 105, 109, 111, 112, 114, 115, 117, or 120 fusion-welded tank car tanks; and Class 106 or 110 multi-unit tank car tanks. Additional operational requirements apply to high-hazard flammable trains (see §171.8 of this subchapter) as prescribed in §174.310 of this subchapter. Except as otherwise provided in this section, DOT Specification 111 tank cars and DOT Specification 111 tank cars built to the CPC-1232 industry standard are no longer authorized to transport Class 3 (flammable liquids) in Packing Group

I, unless retrofitted to the DOT Specification 117R retrofit standards or the DOT Specification 117P performance standards provided in part 179, subpart D of this subchapter.

(1) DOT Specification 111 tank cars and DOT Specification 111 tank cars built to the CPC-1232 industry standard are no longer authorized for transport of Class 3 (flammable liquids) unless retrofitted prior to the dates corresponding to the specific material in the following table:

Material	Jacketed or non-jacketed tank car	DOT-111 not authorized on or after	DOT-111 built to the CPC-1232 not authorized on or after
<i>Unrefined petroleum products</i> .....	Non-jacketed .....	January 1, 2018 .....	April 1, 2020.
<i>Class 3, PG I (flammable liquid) other than unrefined petroleum products.</i>	Jacketed .....	March 1, 2018 .....	May 1, 2025.
	Non-jacketed .....	May 1, 2025 .....	May 1, 2025.
	Jacketed .....	May 1, 2025 .....	May 1, 2025.

(2) Conforming retrofitted tank cars are to be marked “DOT-117R.”

(3) Conforming performance standard tank cars are to be marked “DOT-117P.”

(b) *Cargo tanks*. Specification MC 304, MC 307, MC 330, MC 331 cargo tank motor vehicles; and MC 310, MC 311, MC 312, DOT 407, and DOT 412 cargo tank motor vehicles with tank design pressure of at least 172.4 kPa (25 psig). Cargo tanks used to transport Class 3 or Division 6.1 materials, or Class 8, Packing Group I or II materials must conform to the following special requirements:

(1) Pressure relief system: Except as provided by §173.33(d), each cargo tank must be equipped with a pressure relief system meeting the requirements of §178.346-3 or 178.347-4 of this subchapter. However, pressure relief devices on MC 310, MC 311 and MC 312 cargo tanks must meet the requirements for a Specification MC 307 cargo tank (except for Class 8, Packing Group I and II). Pressure relief devices on MC 330 and MC 331 cargo tanks must meet the requirement in §178.337-9 of this subchapter.

(2) Bottom outlets: DOT 407 and DOT 412 cargo tanks must be equipped with stop-valves meeting the requirements of §178.345-11 of this subchapter; MC

304, MC 307, MC 310, MC 311, and MC 312 cargo tanks must be equipped with stop-valves capable of being remotely closed within 30 seconds of actuation by manual or mechanic means and (except for Class 8, Packing Group I and II) by a closure activated at a temperature not over 121 °C (250 °F); MC 330 and MC 331 cargo tanks must be equipped with internal self-closing stop-valves meeting the requirements in §178.337-11 of this subchapter.

(c) *Portable tanks*. DOT Specification 51 and 60 portable tanks; UN portable tanks and IM 101 and IM 102 portable tanks when a T code is specified in Column (7) of the §172.101 Table of this subchapter for a specific hazardous material; and marine portable tanks conforming to 46 CFR part 64 with design pressure of at least 172.4 kPa (25 psig) are authorized. Unless provided by §173.32(h)(3), an IM 101, 102 or UN portable tank, with a bottom outlet, used to transport a liquid hazardous material that is a Class 3, PG I or II, or PG III with a flash point of less than 38 °C (100 °F); Division 5.1, PG I or II; or Division 6.1, PG I or II, must have internal valves conforming to §178.275(d)(3) of this subchapter.

(d) *IBCs*. IBCs are authorized subject to the conditions and limitations of this section provided the IBC type is

authorized according to the IBC packaging code specified for the specific hazardous material in Column (7) of the §172.101 Table of this subchapter and the IBC conforms to the requirements in subpart O of part 178 of this subchapter at the Packing Group performance level as specified in Column (5) of the §172.101 Table of this subchapter for the material being transported.

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

- (i) Packing Group I liquids; and
- (ii) Packing Group I solids that may become liquid during transportation.

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

- (i) Wooden: 11C, 11D and 11F;
- (ii) Fiberboard: 11G;
- (iii) Flexible: 13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 and 13M2; and
- (iv) Composite: 11HZ2 and 21HZ2.

(e) A dual hazard material may be packaged in accordance with §173.242 if:

(1) The subsidiary hazard is Class 3 with a flash point greater than 38 °C (100 °F); or

(2) The subsidiary hazard is Division 6.1, Packing Group III; or

(3) The subsidiary hazard is Class 8, Packaging Group, III.

[Amtd. 173-224, 55 FR 52663, Dec. 21, 1990]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting §173.243, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at [www.govinfo.gov](http://www.govinfo.gov).

**§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).**

When §172.101 of this subchapter specifies that a hazardous material be packaged under this section, only the following bulk packagings are authorized, subject to the requirements of subparts A and B of part 173 of this subchapter and the special provisions specified in column 7 of the §172.101 table.

(a) *Rail cars*: (1) Class DOT 105, 109, 112, 114, or 120 fusion-welded tank car tanks; and Class 106 or 110 multi-unit

tank car tanks. For tank car tanks built prior to March 16, 2009, the following conditions apply:

(i) Division 6.1 Hazard Zone A materials must be transported in tank cars having a test pressure of 34.47 Bar (500 psig) or greater and conform to Classes 105J, 106 or 110.

(ii) Division 6.1 Hazard Zone B materials must be transported in tank cars having a test pressure of 20.68 Bar (300 psig) or greater and conform to Classes 105S, 106, 110, 112J, 114J or 120S.

(iii) Hydrogen fluoride, anhydrous must be transported in tank cars having a test pressure of 20.68 Bar (300 psig) or greater and conform to Classes 105, 112, 114 or 120.

(2) For materials poisonous by inhalation, until December 31, 2027, single unit tank car tanks built prior to March 16, 2009, and approved by the Tank Car Committee for transportation of the specified material. Except as provided in paragraph (a)(3) of this section, tank cars built on or after March 16, 2009, used for the transportation of the PIH materials listed below, must meet the applicable authorized tank car specification listed in the following table:

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 <i>with not more than 20% hydrogen cyanide</i> (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