

as indicated in paragraph (b)(2) of this section.

[69 FR 76172, Dec. 20, 2004, as amended at 71 FR 33881, June 12, 2006]

**§ 173.227 Materials poisonous by inhalation, Division 6.1, Packing Group I, Hazard Zone B.**

(a) In packagings as authorized in § 173.226 and seamless and welded specification cylinders or UN seamless cylinders conforming to the requirements of § 173.40.

(b) 1A1, 1B1, 1N1 or 1H1 drum or 6HA1 composite further packed in a 1A2 or 1H2 drum. Both the inner and outer drums must conform to the performance test requirements of subpart M of part 178 of this subchapter at the Packing Group I performance level. The outer drums may be tested either as a package intended to contain inner packagings (combination package) or as a single packaging intended to contain solids or liquids at a mass corresponding to the mass of the assembled packaging system. The outer drum must have a minimum thickness of 1.35 mm (0.053 inches) for a 1A2 outer drum or 6.30 mm (0.248 inches) for a 1H2 outer drum. Outer 1A2 and 1H2 drums must withstand a hydrostatic test pressure of 100 kPa (15 psig). Capacity of the inner drum may not exceed 220 liters. In addition, the inner drum must conform to all of the following requirements:

(1) Satisfactorily withstand the leakproofness test in § 178.604 of this subchapter using an internal air pressure of at least two times the vapor pressure at 55 °C (131 °F) of the material to be packaged;

(2) Have screw closures that are—

(i) Closed and tightened to a torque prescribed by the closure manufacturer, using a properly calibrated device that is capable of measuring torque;

(ii) Physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transportation; and

(iii) Provided with a cap seal that is properly applied in accordance with the cap seal manufacturer's recommendations and is capable of withstanding an internal pressure of at least 100 kPa (15 psig).

(3) Have a minimum thickness as follows:

(i) For a 1A1 drum, 0.69 mm (0.027 inch);

(ii) For a 1B1 drum, 2.79 mm (0.110 inch);

(iii) For a 1H1 drum, 1.14 mm (0.045 inch); or

(iv) For a 6HA1 drum, the plastic inner container shall be 1.58 mm (0.0625 inch), the outer steel drum shall be 0.70 mm (0.027 inch).

(4) Be isolated from the outer drum by a shock-mitigating, non-reactive material which completely surrounds the inner packaging on all sides.

(5) Prior to reuse, all authorized inner drums must be leakproofness tested and marked in accordance with § 173.28 using a minimum test pressure as indicated in paragraph (b)(1) of this section.

(c) 1A1, 1B1, 1H1, 1N1, 6HA1 or 6HH1 drums described in paragraph (b) of this section may be used without being further packed in a 1A2 or 1H2 drum if the shipper loads the material, blocks and braces the drums within the transport vehicle and seals the transport vehicle used. Drums may not be stacked (double decked) within the transport vehicle. Shipments must be from one origin to one destination only without any intermediate pickup or delivery.

[70 FR 34398, June 14, 2005, as amended at 71 FR 33881, June 12, 2006]

**§ 173.228 Bromine pentafluoride or bromine trifluoride.**

(a) Bromine pentafluoride and bromine trifluoride are authorized in packagings as follows:

(1) Specification 3A150, 3AA150, 3B240, 3BN150, 4B240, 4BA240, 4BW240, and 3E1800 cylinders.

(2) UN cylinders as specified in part 178 of this subchapter, except acetylene cylinders and non-refillable cylinders, with a minimum test pressure of 10 bar and a minimum outage of 8 percent by volume. The use of UN tubes and MEGCs is not authorized.

(3) The use of a pressure relief device is not authorized.

(b) A material in Hazard Zone A must be transported in a seamless specification cylinder conforming to the requirements of § 173.40. However, a welded cylinder filled before October 1, 2002,

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in accordance with the requirements of this subchapter in effect at the time of filling, may be transported for reprocessing or disposal of the cylinder's contents until December 31, 2003. No cylinder may be equipped with a pressure relief device.

[67 FR 51643, Aug. 8, 2002, as amended at 67 FR 61289, Sept. 30, 2002; 68 FR 24660, May 8, 2003, as amended at 71 FR 33881, June 12, 2006]

**§ 173.229 Chloric acid solution or chlorine dioxide hydrate, frozen.**

When the §172.101 table specifies that a hazardous material be packaged in accordance with this section, only 4G fiberboard boxes, with inner packagings of polyethylene or other suitable material, are authorized. Fiberboard boxes must be reinforced and insulated and sufficient dry ice must be used to maintain the hydrate or acid in a frozen state during transportation. Each packaging must conform to the general packaging requirements of subpart B of part 173, and to the requirements of part 178 of this subchapter at the Packing Group I performance level. Transportation is authorized only by private or contract carrier by motor vehicle.

**§ 173.230 Fuel cell cartridges containing flammable liquids.**

(a) A fuel cell cartridge is a container that stores fuel for controlled discharge into fuel cell powered equipment through a valve. The cartridge must be designed and constructed to prevent the fuel from leaking during normal conditions of transportation and be free of electric charge generating components.

(b) Fuel cell cartridges containing flammable liquids, including methanol or methanol/water solutions, must conform to the following:

(1) The fuel cell cartridge design type without its packaging must be shown to pass an internal pressure test at a pressure of 15 psig (100 kPa);

(2) Fuel cell cartridges must be packaged in rigid outer packagings which meet the requirements of part 178 at the Packing Group II performance level and conform to the general packaging requirements of subpart B of part 173.

(c) Fuel cell cartridges packed in or with equipment are excepted from the packaging requirements in paragraph (b)(2) of this section if the cartridges are packed in a strong outer packaging conforming to the requirements of §§173.24 and 173.24a. For cartridges installed in equipment, the equipment may be considered the outer packaging if it provides an equivalent level of protection. The packaging need not conform to performance requirements of part 178 of this subchapter. The cartridges must be protected against damage that may be caused by the movement or placement of the equipment and the cartridges within the outer packaging.

[71 FR 78633, Dec. 29, 2006]

**Subpart F—Bulk Packaging for Hazardous Materials Other Than Class 1 and Class 7**

**§ 173.240 Bulk packaging for certain low hazard solid materials.**

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:* Class DOT 103, 104, 105, 109, 111, 112, 114, 115, or 120 tank car tanks; Class 106 or 110 multi-unit tank car tanks; and metal non-DOT specification, sift-proof tank car tanks and sift-proof closed cars.

(b) *Motor vehicles:* Specification MC 300, MC 301, MC 302, MC 303, MC 304, MC 305, MC 306, MC 307, MC 310, MC 311, MC 312, MC 330, MC 331, DOT 406, DOT 407, and DOT 412 cargo tank motor vehicles; non-DOT specification, sift-proof cargo tank motor vehicles; and sift-proof closed vehicles.

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

(d) *IBCs.* IBCs are authorized subject to the conditions and limitations of