

(2) The Flexible Bulk Container is marked in accordance with requirements in §178.1010 of this subchapter. Required markings that are missing, damaged or difficult to read must be restored or returned to original condition.

(3) The following components must be examined to determine structural serviceability:

- (i) Textile slings;
- (ii) Load-bearing structure straps;
- (iii) Body fabric; and
- (iv) Lock device parts including metal and textile parts are free from protrusions or damage.

(4) The use of Flexible Bulk Containers for the transport of hazardous materials is permitted for a period not to exceed two years from the date of manufacture of the Flexible Bulk Container.

(c) During transportation—

(1) No hazardous material may remain on the outside of the Flexible Bulk Container; and

(2) Each Flexible Bulk Container must be securely fastened to or contained within the transport unit.

(3) If restraints such as banding or straps are used, these straps must not be over-tightened to an extent that causes damage or deformation to the Flexible Bulk Container.

(4) Flexible Bulk Containers must be transported in a conveyance with rigid sides and ends that extend at least two-thirds of the height of the Flexible Bulk Container.

(5) Flexible Bulk Containers must not be stacked for highway or rail transportation.

(6) Flexible Bulk Containers must not be transported in cargo transport units when offered for transportation by vessel.

(7) Flexible Bulk Containers when transported by barge must be stowed in such a way that there are no void spaces between the Flexible Bulk Containers in the barge. If the Flexible Bulk Containers do not completely fill the barge, adequate measures must be taken to avoid shifting of cargo. The maximum permissible height of the stack of Flexible Bulk Containers must not exceed 3 containers high.

(d) A Flexible Bulk Container used to transport hazardous materials may not

exceed 15 cubic meters (530 cubic feet) capacity.

[78 FR 1073, Jan. 7, 2013]

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

When this section is referenced for a Hazard Zone A or B hazardous material elsewhere in this subchapter, the requirements in this section are applicable to cylinders used for that material.

(a) *Authorized cylinders.* (1) A cylinder must conform to a DOT specification or UN standard prescribed in subpart C of part 178 of this subchapter, or a TC, CTC, CRC, or BTC cylinder authorized in §171.12 of this subchapter, except that acetylene cylinders and non-refillable cylinders are not authorized. The use of UN tubes and MEGCs is prohibited for Hazard Zone A materials.

(2) The use of a specification 3AL cylinder made of aluminum alloy 6351-T6 is prohibited for a Division 2.3 Hazard Zone A material or a Division 6.1 Hazard Zone A material.

(3) A UN composite cylinder certified to ISO-11119-3 is not authorized for a Division 2.3 Hazard Zone A or B material.

(4) For UN seamless cylinders used for Hazard Zone A materials, the maximum water capacity is 85 L.

(b) *Outage and pressure requirements.* For DOT specification cylinders, the pressure at 55 °C (131 °F) of Hazard Zone A and Hazard Zone B materials may not exceed the service pressure of the cylinder. Sufficient outage must be provided so that the cylinder will not be liquid full at 55 °C (131 °F).

(c) *Closures.* Each cylinder containing a Hazard Zone A material must be closed with a plug or valve conforming to the following:

(1) Each plug or valve must have a taper-threaded connection directly to the cylinder and be capable of withstanding the test pressure of the cylinder without damage or leakage. For UN pressure receptacles, each valve must be capable of withstanding the test pressure of the pressure receptacle and be connected directly to the pressure receptacle by either a taper thread or other means which meets the requirements of ISO 10692-2: (IBR, see §171.7 of this subchapter).

(2) Each valve must be of the packless type with non-perforated diaphragm, except that, for corrosive materials, a valve may be of the packed type with an assembly made gas-tight by means of a seal cap with gasketed joint attached to the valve body or the cylinder to prevent loss of material through or past the packing.

(3) Each valve outlet must be sealed by a threaded cap or threaded solid plug and inert gasketing material.

(4) The materials of construction for the cylinder, valves, plugs, outlet caps, luting, and gaskets must be compatible with each other and with the lading.

(d) *Additional handling protection.* Each cylinder or cylinder overpack combination offered for transportation containing a Division 2.3 or 6.1 Hazard Zone A or B material must conform to the valve damage protection performance requirements of this section. In addition to the requirements of this section, overpacks must conform to the overpack provisions of § 173.25.

(1) DOT specification cylinders must conform to the following:

(i) Each cylinder with a wall thickness at any point of less than 2.03 mm (0.08 inch) and each cylinder that does not have fitted valve protection must be overpacked in a box. The box must conform to overpack provisions in § 173.25. Box and valve protection must be of sufficient strength to protect all parts of the cylinder and valve, if any, from deformation and breakage resulting from a drop of 2.0 m (7 ft) or more onto a non-yielding surface, such as concrete or steel, impacting at an orientation most likely to cause damage. “Deformation” means a cylinder or valve that is bent, distorted, mangled, misshapen, twisted, warped, or in a similar condition.

(ii) Each cylinder with a valve must be equipped with a protective metal or plastic cap, other valve protection device, or an overpack which is sufficient to protect the valve from breakage or leakage resulting from a drop of 2.0 m (7 ft) onto a non-yielding surface, such as concrete or steel. Impact must be at an orientation most likely to cause damage.

(2) Each UN cylinder containing a Hazard Zone A or Hazard Zone B material must have a minimum test pres-

sure in accordance with P200 of the UN Recommendations (IBR, see § 171.7 of this subchapter). For Hazard Zone A gases, the cylinder must have a minimum wall thickness of 3.5 mm if made of aluminum alloy or 2 mm if made of steel or, alternatively, cylinders may be packed in a rigid outer packaging that meets the Packing Group I performance level when tested as prepared for transport, and that is designed and constructed to protect the cylinder and valve from puncture or damage that may result in release of the gas.

(e) *Interconnection.* Cylinders may not be manifolded or connected. This provision does not apply to MEGCs containing Hazard Zone B materials in accordance with § 173.312.

[67 FR 51642, Aug. 8, 2002, as amended at 67 FR 61289, Sept. 30, 2002; 68 FR 24660, May 8, 2003; 71 FR 33880, June 12, 2006; 76 FR 3371, Jan. 19, 2011; 81 FR 3672, Jan. 21, 2016; 82 FR 15876, Mar. 30, 2017]

§ 173.41 Sampling and testing program for unrefined petroleum-based products.

(a) *General.* Unrefined petroleum-based products offered for transportation must be properly classed and described as prescribed in § 173.22, in accordance with a sampling and testing program, which specifies at a minimum:

(1) A frequency of sampling and testing that accounts for any appreciable variability of the material (*e.g.*, history, temperature, method of extraction [including chemical use], location of extraction, time of year, length of time between shipments);

(2) Sampling prior to the initial offering of the material for transportation and when changes that may affect the properties of the material occur (*i.e.*, mixing of the material from multiple sources, or further processing and then subsequent transportation);

(3) Sampling methods that ensure a representative sample of the entire mixture, as offered, is collected;

(4) Testing methods that enable classification of the material under the HMR;

(5) Quality control measures for sample frequencies;