

not more than 80 percent of the water capacity.

(b) No cylinder may be equipped with an education tube or a fusible plug.

(c) No cylinder may be equipped with any valve unless the valve is a type approved by the Associate Administrator.

(d) Cylinders must be overpacked in a box, crate, or other strong outer packaging conforming to the requirements of §173.25 and arranged to protect each valve or other closing device from damage. Except as provided in paragraph (e) of this section, no more than four cylinders may be packed in a strong outer packaging. Each strong outer packaging with its closing device protection must be sufficiently strong to protect all parts of each cylinder from deformation or leakage if the completed package is dropped 1.8 m (6 feet) onto a non-yielding surface, such as concrete or steel, impacting at the packaging's weakest point.

(e) Cylinders may be packed in strong wooden boxes with valves or other closing devices protected from damage, with not more than twelve cylinders in one outside wooden box. An outer fiberboard box may be used when not more than four such cylinders are to be shipped in one packaging. Valves must be adequately protected. Box and valve protection must be of sufficient strength to protect all parts of inner packagings and valves from deformation or breakage resulting from a drop of at least 1.8 m (6 feet) onto a non-yielding surface, such as concrete or steel, impacting at the weakest point.

[67 FR 51651, Aug. 8, 2002, as amended at 71 FR 54395, Sept. 14, 2006; 75 FR 5395, Feb. 2, 2010]

§ 173.335 Chemical under pressure n.o.s.

(a) *General requirements.* A cylinder filled with a chemical under pressure must be offered for transportation in accordance with the requirements of this section and §172.301. In addition, a DOT specification cylinder must meet the requirements in §§173.301a, 173.302, 173.302a, and 173.305, as applicable. UN pressure receptacles must meet the requirements in §§173.301b and 173.302b, as applicable. Where more than one section applies to a cylinder, the most re-

strictive requirements must be followed.

(b) *Filling limits.* Cylinders must be filled so that at 50 °C (122 °F) the non-gaseous phase does not exceed 95% of their water capacity and they are not completely filled at 60 °C (140 °F). When filled, the internal pressure at 65 °C (149 °F) must not exceed the test pressure of the cylinder. The vapor pressures and volumetric expansion of all substances in the cylinders must be taken into account.

(c) *Minimum service pressure.* The minimum service pressure must be in accordance with the design specifications of part 178 of this subchapter for the propellant. In any case the minimum test pressure must not be less than 20 bar.

(d) *Periodic inspection.* The maximum requalification test period for cylinders transporting chemical under pressure n.o.s. is 5 years.

[78 FR 1092, Jan. 7, 2013]

§ 173.336 Nitrogen dioxide, liquefied, or dinitrogen tetroxide, liquefied.

(a) Nitrogen dioxide, liquefied, or dinitrogen tetroxide, liquefied, must be packaged in specification or UN cylinders as prescribed in §173.192, except valves are not authorized. UN tubes and MEGCs are not authorized for use. Cylinders must be equipped with a stainless steel valve and valve seat that will not deteriorate in contact with nitrogen dioxide. Each valve opening must be closed by a solid metal plug with tapered thread properly luted to prevent leakage. Transportation in DOT 3AL cylinders is authorized only by highway and rail.

(b) Each UN pressure receptacle must be cleaned in accordance with the requirements of ISO 11621 (IBR, see §171.7 of this subchapter). Each DOT specification cylinder must be cleaned according to the requirements of GSA Federal Specification RR-C-901D, paragraphs 3.3.1 and 3.3.2 (IBR, see §171.7 of this subchapter). Cleaning agents equivalent to those specified in RR-C-901D may be used; however, any cleaning agent must not be capable of reacting with oxygen. One cylinder selected at random from a group of 200 or fewer and cleaned at the same time must be