ADSORBED GASES TABLE

ID No.	Hazardous material	LC_{50} ml/m³	Notes
3510 ...	Adsorbed gas, flammable, n.o.s.	.....	z.
3511 ...	Adsorbed gas, n.o.s.	.....	z.
3512 ...	Adsorbed gas, toxic, n.o.s.	≤5000	z.
3513 ...	Adsorbed gas, oxidizing, n.o.s.	.....	z.
3514 ...	Adsorbed gas, toxic, flammable, n.o.s.	≤5000	z.
3515 ...	Adsorbed gas, toxic, oxidizing, n.o.s.	≤5000	z.
3516 ...	Adsorbed gas, toxic, corrosive, n.o.s.	≤5000	z.
3517 ...	Adsorbed gas, toxic, flammable, corrosive, n.o.s.	≤5000	z.
3518 ...	Adsorbed gas, toxic, oxidizing, corrosive, n.o.s.	≤5000	z.
3519 ...	Boron trifluoride, adsorbed	387	a.
3520 ...	Chlorine, adsorbed	293	a.
3521 ...	Silicon tetrafluoride, adsorbed	450	a.
3522 ...	Arsine, adsorbed	20	d.
3523 ...	Germane, adsorbed	620	d, r.
3524 ...	Phosphorus pentafluoride, adsorbed	190	
3525 ...	Phosphine, adsorbed	20	d.
3526 ...	Hydrogen selenide, adsorbed	2	

Notes:
a: Aluminum alloy cylinders must not be used.
d: When steel cylinders are used, only those bearing the "H" mark in accordance with § 173.302b(f) are authorized.
r: The filling of this gas must be limited such that, if complete decomposition occurs, the pressure does not exceed two thirds of the test pressure of the cylinder.
z: The construction materials of the cylinders and their accessories must be compatible with the contents and must not react to form harmful or dangerous compounds therewith.

[80 FR 1161, Jan. 8, 2015]

§ 173.303 Charging of cylinders with compressed gas in solution (acetylene).

(a) *Cylinder, filler and solvent requirements.* (Refer to applicable parts of Specification 8 and 8AL). Acetylene gas must be shipped in Specification 8 or 8AL cylinders (§ 178.59 or § 178.60 of this subchapter). The cylinders shall consist of metal shells filled with a porous material, and this material must be charged with a suitable solvent. The cylinders containing the porous material and solvent shall be successfully tested in accordance with CGA C–12 (IBR, see § 171.7 of this subchapter). Representative samples of cylinders charged with acetylene must be successfully tested in accordance with CGA C–12.

(b) *Filling limits.* For DOT specification cylinders, the pressure in the cylinder containing acetylene gas may not exceed 250 psig at 70 °F. If cylinders are marked for a lower allowable charging pressure at 70 °F., that pressure must not be exceeded. For UN cylinders, the pressure in the cylinder may not exceed the limits specified in § 173.304b(b)(2).

(c) *Data requirements on filler and solvent.* Cylinders containing acetylene gas must not be shipped unless they were charged by or with the consent of the owner, and by a person, firm, or company having possession of complete information as to the nature of the porous filling, the kind and quantity of solvent in the cylinders, and the meaning of such markings on the cylinders as are prescribed by the Department's regulations and specifications applying to containers for the transportation of acetylene gas.

(d) *Verification of container pressure.* (1) Each day, the pressure in a container representative of that day's compression must be checked by the charging plant after the container has cooled to a settled temperature and a record of this test kept for at least 30 days.

(e) *Prefill requirements.* Before each filling of an acetylene cylinder, the person filling the cylinder must visually inspect the outside of the cylinder in accordance with the prefill requirements contained in CGA C–13, Section 3 (IBR, see § 171.7 of this subchapter).

(f) *UN cylinders.* (1) UN cylinders and bundles of cylinders are authorized for the transport of acetylene gas as specified in this section.

(i) Each UN acetylene cylinder must conform to ISO 3807:2013€: (IBR, see

§ 171.7 of this subchapter), have a homogeneous monolithic porous mass filler and be charged with acetone or a suitable solvent as specified in the standard. UN acetylene cylinders must have a minimum test pressure of 52 bar and may be filled up to the pressure limits specified in ISO 3807:2013(E). The use of UN tubes and MEGCs is not authorized.

(ii) Until December 31, 2020, cylinders conforming to the requirements in ISO 3807–2(E) (IBR, *see* § 171.7 of this subchapter), having a homogeneous monolithic porous mass filler and charged with acetone or a suitable solvent as specified in the standard are authorized. UN acetylene cylinders must have a minimum test pressure of 52 bar and may be filled up to the pressure limits specified in ISO 3807–2(E).

(2) UN cylinders equipped with pressure relief devices or that are manifolded together must be transported upright.

[29 FR 18743, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 173.303, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at *www.govinfo.gov*.

§ 173.304 Filling of cylinders with liquefied compressed gases.

(a) *General requirements.* A cylinder filled with a liquefied compressed gas (except gas in solution) must be offered for transportation in accordance with the requirements of this section and the general requirements in § 173.301. In addition, a DOT specification cylinder must meet the requirement in §§ 173.301a, 173.304a, and 173.305, as applicable. UN pressure receptacles must be shipped in accordance with the requirements in 173.301b and 173.304b, as applicable.

(1) A DOT 3AL cylinder may not be used for any material with a primary or subsidiary hazard of Class 8.

(2) Shipments of Division 2.1 materials in aluminum cylinders are authorized only when transported by motor vehicle, rail car, or cargo-only aircraft.

(b) *Filling limits.* Except for carbon dioxide; 1,1-Difluoroethylene (R–1132A); nitrous oxide; and vinyl fluoride, inhibited, the liquid portion of a liquefied gas may not completely fill the packaging at any temperature up to and including 55 °C (131 °F). The liquid portion of vinyl fluoride, inhibited, may completely fill the cylinder at 55 °C (131 °F) provided the pressure at the critical temperature does not exceed 1.25 times the service pressure of the cylinder.

(c) *Mixture of compressed gas and other material.* A mixture of compressed gas must be shipped in accordance with § 173.305.

(d) *Refrigerant and dispersant gases.* Nontoxic and nonflammable refrigerant or dispersant gases must be offered for transportation in cylinders prescribed in § 173.304a of this subchapter, or in DOT 2P, 2Q, or 2Q1 containers (§§ 178.33, 178.33a, and 178.33d–2 of this subchapter). DOT 2P, 2Q, and 2Q1 containers must be packed in strong outer packagings of such design that protect valves from damage or accidental functioning under conditions incident to transportation. For DOT 2P and 2Q containers, the pressure inside the containers may not exceed 87 psia at 21.1 °C (70 °F). For 2Q1 containers, the pressure inside the container may not exceed 210 psig at 55 °C (131 °F). Each completed metal container filled for shipment must be heated until its contents reach a minimum temperature of 55 °C (131 °F) without evidence of leakage, distortion, or other defect. Each outer package must be plainly marked ''INSIDE CONTAINERS COMPLY WITH PRESCRIBED SPECIFICATIONS''.

(e) *Engine starting fluid.* Engine starting fluid containing a flammable compressed gas or gases must be shipped in a cylinder as prescribed in § 173.304a or as follows:

(1) Inside non-refillable metal containers having a capacity not greater than 500 mL (32 in^3). The containers must be packaged in strong, tight outer packagings. The pressure in the container may not exceed 145 psia at 54 °C (130 °F). If the pressure exceeds 145 psia at 54 °C (130 °F), a DOT 2P container must be used. In either case, the metal container must be capable of withstanding, without bursting, a pressure of 1.5 times the pressure of the contents at 54 °C (130 °F). The liquid content of the material and gas may