not exceeding 25 MPa. Metal hydride storage systems must be designed, constructed, initially inspected and tested in accordance with ISO 16111 (IBR, see §171.7 of this subchapter) as authorized under §178.71(m) of this subchapter. Steel pressure receptacles or composite pressure receptacles with steel liners must be marked in accordance with §173.301b(f) of this part which specifies that a steel UN pressure receptacle bearing an ''H'' mark must be used for hydrogen bearing gases or other gases that may cause hydrogen embrittlement. Requalification intervals must be no more than every five years as specified in §180.207 of this subchapter in accordance with the requalification procedures prescribed in ISO 16111.

[76 FR 3381, Jan. 19, 2011, as amended at 76 FR 82178, Dec. 30, 2011]

§173.312 Requirements for shipment of MEGCs.

(a) *General requirements.* (1) Unless otherwise specified, a MEGC is authorized for the shipment of liquefied and non-liquefied compressed gases. Each pressure receptacle contained in a MEGC must meet the requirements in §§173.301, 173.301b, 173.302b and 173.304b, as applicable.

(2) The MEGC must conform to the design, construction, inspection and testing requirements prescribed in §178.75 of this subchapter.

(3) No person may offer or accept a hazardous material for transportation in a MEGC that is damaged to such an extent that the integrity of the pressure receptacles or the MEGC's structural or service equipment may be affected.

(4) No person may fill or offer for transportation a pressure receptacle in a MEGC if the pressure receptacle or the MEGC is due for periodic requalification, as prescribed in subpart C to part 180 of this subchapter. However, this restriction does not preclude transportation of pressure receptacles filled and offered for transportation prior to the requalification due date.

(5) Prior to filling and offering a MEGC for transportation, the MEGC's structural and service equipment must be visually inspected. Any unsafe condition must be corrected before the MEGC is offered for transportation. All required markings must be legible.

(6) Except for Division 2.2 permanent gases, each pressure receptacle must be equipped with an individual shutoff valve that must be tightly closed while in transit. For Division 2.1, Division 2.2 liquefied gases and 2.3 gases, the manifold must be designed so that each pressure receptacle can be filled separately and be kept isolated by a valve capable of being closed during transit. For Division 2.1 gases, the pressure receptacles must be isolated by a valve into assemblies of not more than 3,000 L.

(b) *Filling.* (1) A MEGC may not be filled to a pressure greater than the lowest marked working pressure of any pressure receptacle. A MEGC may not be filled above its marked maximum permissible gross mass.

(2) After each filling, the shipper must verify the leakproofness of the closures and equipment. Each fill opening must be closed by a cap or plug.

(c) *Damage protection.* During transportation, a MEGC must be protected against damage to the pressure receptacles and service equipment resulting from lateral and longitudinal impact and overturning as prescribed in §178.75 of this subchapter.

[71 FR 33884, June 12, 2006]

§173.313 UN Portable Tank Table for Liquefied Compressed Gases.

The UN Portable Tank Table for Liquefied Compressed Gases is referenced in §172.102(c)(7)(iii) of this subchapter for portable tanks that are used to transport liquefied compressed gases. The table applies to each liquefied compressed gas that is identified with Special Provision T50 in Column (7) of the §172.101 Table. In addition to providing the UN identification number and proper shipping name, the table provides maximum allowable working pressures, bottom opening requirements, pressure relief device requirements, and degree of filling requirements for liquefied compressed gas permitted for transportation in a T50 portable tank. In the minimum test pressure column, ''small'' means a portable tank with a diameter of 1.5 meters or less when measured at the widest part

of the shell, ''sunshield'' means a portable tank with a shield covering at least the upper third of the shell, ''bare'' means no sunshield or insulation is provided, and ''insulated'' means a complete cladding of sufficient thickness of insulating material necessary to provide a minimum conductance of not more than 0.67 w/m^2/k. In the pressure relief requirements column, the word ''Normal'' denotes that a frangible disc as specified in § 178.276(e)(3) of this subchapter is not required.

UN PORTABLE TANK TABLE FOR LIQUEFIED COMPRESSED GASES

UN No.	Non-refrigerated liquefied compressed gases	Minimum design pressure (bar) small; bare; sunshield; insulated	Openings below liquid level	Pressure relief requirements (*See* § 178.276(e))	Maximum filling density (kg/l)
1005	Ammonia, anhydrous	29.0 25.7 22.0 19.7	Allowed	§ 178.276(e)(3)	0.53
1009	Bromotrifluoromethane or Refrigerant gas R 13B1.	38.0 34.0 30.0 27.5	Allowed	Normal	1.13
1010	Butadienes, stabilized	7.5 7.0 7.0 7.0	Allowed	Normal	0.55
1011	Butane	7.0 7.0 7.0 7.0	Allowed	Normal	0.51
1012	Butylene	8.0 7.0 7.0 7.0	Allowed	Normal	0.53
1017	Chlorine	19.0 17.0 15.0 13.5	Not Allowed	§ 178.276(e)(3)	1.25
1018	Chlorodifluoromethane or Refrigerant gas R 22.	26.0 24.0 21.0 19.0	Allowed	Normal	1.03
1020	Chloropentafluoroethane or Refrigerant gas R 115.	23.0 20.0 18.0 16.0	Allowed	Normal	1.06
1021	1-Chloro-1,2,2,2-tetrafluoroethane or Refrigerant gas R 124.	10.3 9.8 7.9 7.0	Allowed	Normal	1.2
1027	Cyclopropane	18.0 16.0 14.5 13.0	Allowed	Normal	0.53
1028	Dichlorodifluoromethane or Refrigerant gas R 12.	16.0 15.0 13.0 11.5	Allowed	Normal	1.15
1029	Dichlorofluoromethane or Refrigerant gas R 21.	7.0 7.0 7.0 7.0	Allowed	Normal	1.23
1030	1,1-Difluoroethane or Refrigerant gas R 152a.	16.0 14.0 12.4 11.0	Allowed	Normal	0.79

UN PORTABLE TANK TABLE FOR LIQUEFIED COMPRESSED GASES—Continued

UN No.	Non-refrigerated liquefied compressed gases	Minimum design pressure (bar) small; bare; sunshield; insulated	Openings below liquid level	Pressure relief requirements (*See* § 178.276(e))	Maximum filling density (kg/l)
1032	Dimethylamine, anhydrous	7.0 7.0 7.0 7.0	Allowed	Normal	0.59
1033	Dimethyl ether	15.5 13.8 12.0 10.6	Allowed	Normal	0.58
1036	Ethylamine	7.0 7.0 7.0 7.0	Allowed	Normal	0.61
1037	Ethyl chloride	7.0 7.0 7.0 7.0	Allowed	Normal	0.8
1040	Ethylene oxide with nitrogen up to a total pressure of 1MPa (10 bar) at 50 °C.	Only authorized in 10 bar insulated portable tanks—	Not Allowed	§ 178.276(e)(3)	0.78
1041	Ethylene oxide and carbon dioxide mixture with more than 9% but not more than 87% ethylene oxide.	See MAWP definition in § 178.276(a)	Allowed	Normal	*See* § 173.32(f)
1055	Isobutylene	8.1 7.0 7.0 7.0	Allowed	Normal	0.52
1060	Methyl acetylene and propadiene mixture, stabilized.	28.0 24.5 22.0 20.0	Allowed	Normal	0.43
1061	Methylamine, anhydrous	10.8 9.6 7.8 7.0	Allowed	Normal	0.58
1062	Methyl bromide	7.0 7.0 7.0 7.0	Not Allowed	§ 178.276(e)(3)	1.51
1063	Methyl chloride *or* Refrigerant gas R 40	14.5 12.7 11.3 10.0	Allowed	Normal	0.81
1064	Methyl mercaptan	7.0 7.0 7.0 7.0	Not Allowed	§ 178.276(e)(3)	0.78
1067	Dinitrogen tetroxide	7.0 7.0 7.0 7.0	Not Allowed	§ 178.276(e)(3)	1.3
1075	Petroleum gas, liquefied	See MAWP definition in § 178.276(a)	Allowed	Normal	See § 173.32(f)
1077	Propylene	28.0 24.5 22.0 20.0	Allowed	Normal	0.43
1078	Refrigerant gas, n.o.s.	See MAWP definition in § 178.276(a)	Allowed	Normal	See § 173.32(f)
1079	Sulphur dioxide	11.6 10.3 8.5 7.6	Not Allowed	§ 178.276(e)(3)	1.23
1082	Trifluorochloroethylene, stabilized *or* Refrigerant gas R 1113.	17.0 15.0	Not Allowed	§ 178.276(e)(3)	1.13

UN PORTABLE TANK TABLE FOR LIQUEFIED COMPRESSED GASES—Continued

UN No.	Non-refrigerated liquefied compressed gases	Minimum design pressure (bar) small; bare; sunshield; insulated	Openings below liquid level	Pressure relief requirements (*See* § 178.276(e))	Maximum filling density (kg/l)
		13.1			
		11.6			
1083	Trimethylamine, anhydrous	7.0	Allowed	Normal	0.56
		7.0			
		7.0			
		7.0			
1085	Vinyl bromide, stabilized	7.0	Allowed	Normal	1.37
		7.0			
		7.0			
		7.0			
1086	Vinyl chloride, stabilized	10.6	Allowed	Normal	0.81
		9.3			
		8.0			
		7.0			
1087	Vinyl methyl ether, stabilized	7.0	Allowed	Normal	0.67
		7.0			
		7.0			
		7.0			
1581	Chloropicrin and methyl bromide mixture.	7.0	Not Allowed	§ 178.276(e)(3)	1.51
		7.0			
		7.0			
		7.0			
1582	Chloropicrin and methyl chloride mixture.	19.2	Not Allowed	§ 178.276(e)(3)	0.81
		16.9			
		15.1			
		13.1			
1858	Hexafluoropropylene compressed *or* Refrigerant gas R 1216.	19.2	Allowed	Normal	1.11
		16.9			
		15.1			
		13.1			
1912	Methyl chloride and methylene chloride mixture.	15.2	Allowed	Normal	0.081
		13.0			
		11.6			
		10.1			
NA, 1954	Insecticide gases, *flammable*, n.o.s.	See MAWP definition in § 178.276(a)	Allowed	Normal	§ 173.32(f)
1958	1,2-Dichloro-1,1,2,2-tetrafluoroethane or Refrigerant gas R 114.	7.0	Allowed	Normal	1.3
		7.0			
		7.0			
		7.0			
1965	Hydrocarbon gas, mixture liquefied, n.o.s..	See MAWP definition in 178.276(a)	Allowed	Normal	See § 173.32(f)
1969	Isobutane	8.5	Allowed	Normal	0.49
		7.5			
		7.0			
		7.0			
1973	Chlorodifluoromethane and chloropentafluoroethane mixture with fixed boiling point, with approximately 49% chlorodifluoromethane or Refrigerant gas R 502.	28.3	Allowed	Normal	1.05
		25.3			
		22.8			
		20.3			
1974	Chlorodifluorobromomethane *or* Refrigerant gas R 12B1.	7.4	Allowed	Normal	1.61
		7.0			
		7.0			
		7.0			
1976	Octafluorocyclobutane *or* Refrigerant gas RC 318.	8.8	Allowed	Normal	1.34
		7.8			

UN PORTABLE TANK TABLE FOR LIQUEFIED COMPRESSED GASES—Continued

UN No.	Non-refrigerated liquefied compressed gases	Minimum design pressure (bar) small; bare; sunshield; insulated	Openings below liquid level	Pressure relief requirements (*See* § 178.276(e))	Maximum filling density (kg/l)
		7.0			
		7.0			
1978	Propane	22.5	Allowed	Normal	0.42
		20.4			
		18.0			
		16.5			
1983	1-Chloro-2,2,2-trifluoroethane or Refrigerant gas R 133a.	7.0	Allowed	Normal	1.18
		7.0			
		7.0			
		7.0			
2035	1,1,1-Trifluoroethane compressed or Refrigerant gas R 143a.	31.0	Allowed	Normal	0.76
		27.5			
		24.2			
		21.8			
2424	Octafluoropropane or Refrigerant gas R 218.	23.1	Allowed	Normal	1.07
		20.8			
		18.6			
		16.6			
2517	1-Chloro-1,1-difluoroethane or Refrigerant gas R 142b.	8.9	Allowed	Normal	0.99
		7.8			
		7.0			
		7.0			
2602	Dichlorodifluoromethane and difluoroethane azeotropic mixture with approximately 74% dichlorodifluoromethane or Refrigerant gas R 500.	20.0	Allowed	Normal	1.01
		18.0			
		16.0			
		14.5			
3057	Trifluoroacetyl chloride	14.6	Not allowed	§ 178.276(e)(3)	1.17
		12.9			
		11.3			
		9.9			
3070	Ethylene oxide and dichlorodifluoromethane mixture with not more than 12.5% ethylene oxide.	14.0	Allowed	§ 178.276(e)(3)	1.09
		12.0			
		11.0			
		9.0			
3153	Perfluoro (methyl vinyl ether)	14.3	Allowed	Normal	1.14
		13.4			
		11.2			
		10.2			
3159	1,1,1,2-Tetrafluoroethane or Refrigerant gas R 134a.	17.7	Allowed	Normal	1.04
		15.7			
		13.8			
		12.1			
3161	Liquefied gas, flammable, n.o.s.	See MAWP definition in § 178.276(a)	Allowed	Normal	§ 173.32(f)
3163	Liquefied gas, n.o.s.	See MAWP definition in § 178.276(a)	Allowed	Normal	§ 173.32(f)
3220	Pentafluoroethane or Refrigerant gas R 125.	34.4	Allowed	Normal	0.95
		30.8			
		27.5			
		24.5			
3252	Difluoromethane or Refrigerant gas R 32.	43.0	Allowed	Normal	0.78
		39.0			
		34.4			
		30.5			

UN PORTABLE TANK TABLE FOR LIQUEFIED COMPRESSED GASES—Continued

UN No.	Non-refrigerated liquefied compressed gases	Minimum design pressure (bar) small; bare; sunshield; insulated	Openings below liquid level	Pressure relief requirements (*See* § 178.276(e))	Maximum filling density (kg/l)
3296	Heptafluoropropane or Refrigerant gas R 227.	16.0 14.0 12.5 11.0	Allowed	Normal	1.2
3297	Ethylene oxide and chlorotetrafluoroethane mixture, with not more than 8.8% ethylene oxide.	8.1 7.0 7.0 7.0	Allowed	Normal	1.16
3298	Ethylene oxide and pentafluoroethane mixture, with not more than 7.9% ethylene oxide.	25.9 23.4 20.9 18.6	Allowed	Normal	1.02
3299	Ethylene oxide and tetrafluoroethane mixture, with not more than 5.6% ethylene oxide.	16.7 14.7 12.9 11.2	Allowed	Normal	1.03
3318	Ammonia solution, relative density less than 0.880 at 15 °C in water, with more than 50% ammonia.	See MAWP definition in § 178.276(a)	Allowed	§ 178.276(e)(3)	§ 173.32(f)
3337	Refrigerant gas R 404A	31.6 28.3 25.3 22.5	Allowed	Normal	0.84
3338	Refrigerant gas R 407A	31.3 28.1 25.1 22.4	Allowed	Normal	0.95
3339	Refrigerant gas R 407B	33.0 29.6 26.5 23.6	Allowed	Normal	0.95
3340	Refrigerant gas R 407C	29.9 26.8 23.9 21.3	Allowed	Normal	0.95

[69 FR 76174, Dec. 20, 2004, as amended at 70 FR 34399, June 14, 2005]

§ 173.314 Compressed gases in tank cars and multi-unit tank cars.

(a) *Definitions.* For definitions of compressed gases, see § 173.115.

(b) *General requirements.* (1) Tank car tanks containing compressed gases must not be shipped unless they were loaded by or with the consent of the owner thereof.

(2) Tank car tanks must not contain gases capable of combining chemically and must not be loaded with any gas which combines chemically with the gas previously loaded therein, until all residue has been removed and interior of tank thoroughly cleaned.

(3) For tanks of the DOT-106A and 110A class, the tanks must be placed in position and attached to car structure by the shipper.

(4) Wherever the word ''approved'' is used in this part of the regulations, it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 179.3 of this subchapter.

(5) Each tank car used for the transportation of anhydrous ammonia or any material that meets the criteria of Division 2.1 or 2.3 must have gaskets for manway cover plates and for