TABLE 2.—ORGANIC PEROXIDE IBC CODE (IB52)—Continued

[This IBC Code applies to organic peroxides of type F. For formulations not listed in this table, only IBCs that are approved by the Associate Administrator may be used.]

UN No.	Organic peroxide	Type of IBC	Maximum quantity (liters)	Control temperature	Emergency temperature
	Di-(3,5,5-trimethylhexanoyl) peroxide, not more than 38% in diluent type A	31HA1	1000	+10°C	+15°C
		31A	1250	+10°C	+15°C
	Di-(3,5,5-trimethylhexanoyl) peroxide, not more than 52%, stable dispersion, in water.	31A	1250	+10°C	+15°C
	1,1,3,3-Tetramethylbutyl peroxyneodecanoate, not more than 52%, stable dispersion, in water.	31A	1250	−5°C	+5°C

TABLE 3.—IP CODES

IP1 IBCs must be packed in closed freight containers or a closed transport vehicle.
IP2 When IBCs other than metal or rigid plastics IBCs are used, they must be offered for transportation in a closed freight container or a closed transport vehicle.
IP3 Flexible IBCs must be sift-proof and water-resistant or must be fitted with a sift-proof and water-resistant liner.
IP4 Flexible, fiberboard or wooden IBCs must be sift-proof and water-resistant or be fitted with a sift-proof and water-resistant liner.
IP5 IBCs must have a device to allow venting. The inlet to the venting device must be located in the vapor space of the IBC under maximum filling conditions.
IP6 Non-specification bulk bins are authorized.
IP7 For UN identification numbers 1327, 1363, 1364, 1365, 1386, 1841, 2211, 2217, 2793 and 3314, IBCs are not required to meet the IBC performance tests specified in part 178, subpart N of this subchapter.

* * * * *

(7) *''T'' codes.* (i) These provisions apply to the transportation of hazardous materials in UN portable tanks. Portable tank instructions specify the requirements applicable to a portable tank when used for the transportation of a specific hazardous material. These requirements must be met in addition to the design and construction specifications in part 178 of this subchapter. Portable tank instructions T1 through T22 specify the applicable minimum test pressure, the minimum shell thickness (in reference steel), bottom opening requirements and pressure relief requirements. In T23, the organic peroxides and self-reactive substances which are authorized to be transported in portable tanks are listed along with the applicable control and emergency temperatures. Liquefied compressed gases are assigned to portable tank instruction T50. T50 provides the maximum allowable working pressures, bottom opening requirements, pressure relief requirements and degree of filling requirements for liquefied compressed gases permitted for transport in portable tanks. Refrigerated liquefied gases which are authorized to be transported in portable tanks are specified in tank instruction T75.

(ii) The following table specifies the portable tank requirements applicable to T Codes T1 through T22. Column 1 specifies the T Code. Column 2 specifies the minimum test pressure, in bar (1 bar = 14.5 psig), at which the periodic hydrostatic testing required by § 180.605 of this subchapter must be conducted. Column 3 specifies the section reference for minimum shell thickness or, alternatively, the minimum shell thickness value. Column 4 specifies the applicability of § 178.275(g)(3) of this subchapter for the pressure relief devices. When the word ''Normal'' is indicated, § 178.275(g)(3) of this subchapter does not apply. Column 5 references the applicable requirements for bottom openings in part 178 of this subchapter or references ''Prohibited'' which means bottom openings are prohibited. The table follows:

TABLE OF PORTABLE TANK T CODER T1–T22

[Portable tank code T1–T22 apply to liquid and solid hazardous materials of Classes 3 through 9 which are transported in portable tanks.]

Portable tank instruction	Minimum test pressure (bar)	Minimum shell thickness (in mm-reference steel) (See § 178.274(d))	Pressure-relief requirements (See § 178.275(g))	Bottom opening requirements (See § 178.275(d))
(1)	(2)	(3)	(4)	(5)
T1	1.5	§ 178.274(d)(2)	Normal	§ 178.275(d)(2).
T2	1.5	§ 178.274(d)(2)	Normal	§ 178.275(d)(3).
T3	2.65	§ 178.274(d)(2)	Normal	§ 178.275(d)(2).
T4	2.65	§ 178.274(d)(2)	Normal	§ 178.275(d)(3).
T5	2.65	§ 178.274(d)(2)	§ 178.275(g)(3)	Prohibited.
T6	4	§ 178.274(d)(2)	Normal	§ 178.275(d)(2).
T7	4	§ 178.274(d)(2)	Normal	§ 178.275(d)(3).
T8	4	§ 178.274(d)(2)	Normal	Prohibited.
T9	4	6 mm	Normal	Prohibited.
T10	4	6 mm	§ 178.275(g)(3)	Prohibited.
T11	6	§ 178.274(d)(2)	Normal	§ 178.275(d)(3).
T12	6	§ 178.274(d)(2)	§ 178.275(g)(3)	§ 178.275(d)(3).

TABLE OF PORTABLE TANK T CODER T1–T22—Continued

[Portable tank code T1–T22 apply to liquid and solid hazardous materials of Classes 3 through 9 which are transported in portable tanks.]

Portable tank instruction (1)	Minimum test pressure (bar) (2)	Minimum shell thickness (in mm-reference steel) (See § 178.274(d)) (3)	Pressure-relief requirements (See § 178.275(g)) (4)	Bottom opening requirements (See § 178.275(d)) (5)
T13	6	6 mm	Normal	Prohibited.
T14	6	6 mm	§ 178.275(g)(3)	Prohibited.
T15	10	§ 178.274(d)(2)	Normal	§ 178.275(d)(3).
T16	10	§ 178.274(d)(2)	§ 178.275(g)(3)	§ 178.275(d)(3).
T17	10	6 mm	Normal	§ 178.275(d)(3).
T18	10	6 mm	§ 178.275(g)(3)	§ 178.275(d)(3).
T19	10	6 mm	§ 178.275(g)(3)	Prohibited.
T20	10	8 mm	§ 178.275(g)(3)	Prohibited.
T21	10	10 mm	Normal	Prohibited.
T22	10	10 mm	§ 178.275(g)(3)	Prohibited.

(iii) The following table specifies the portable tank requirements applicable to T23 for self-reactive substances of Division 4.1 and organic peroxides of Division 5.2 which are authorized to be transported in portable tanks:

PORTABLE TANK CODE T23

[Portable tank code T23 applies to self-reactive substances of Division 4.1 and organic peroxides of Division 5.2.]

UN No.	Hazardous material	Minimum test pressure (bar)	Minimum shell thickness (mm-reference steel) See . . .	Bottom opening requirements See . . .	Pressure-relief requirements See . . .	Filling limits	Control tempereature	Emergency temperature
3109	Organic peroxide, Type F, liquid	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
	tert-Butyl hydroperoxide, not more than 72% with water. *Provided that steps have been taken to achieve the safety equivalence of 65% tert-Butyl hydroperoxide and 35% water	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
	Cumyl hydro-peroxide, not more than 90% in diluent type A	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
	Di-tert-butyl peroxide, not more than 32% in diluent type A	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
	Isopropyl cumyl hydro-peroxide, not more than 72% in diluent type A	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
	p-Menthyl hydro-peroxide, not more than 72% in diluent type A	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
	Pinanyl hydro-peroxide, not more than 50% in diluent type A	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
3110	Organic peroxide, Type F, solid	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
	Dicumyl peroxide. *Maximum quantity per portable tank 2,000 kg							
3119	Organic peroxide, Type F, liquid, temperature controlled	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)	As approved by Assoc. Admin.	As approved by Assoc. Admin.
	tert-Butyl peroxyacetate, not more than 32% in diluent tyupe B	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)	+30°C	+35°C
	tert-Butyl peroxy-2-ethylhexanoate, not more than 32% in diluent type B	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)	+15°C	+20°C
	tert-Butyl peroxypivalate, not more than 27% in diluent type B	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)	−5°C	+10°C

PORTABLE TANK CODE T23—Continued

[Portable tank code T23 applies to self-reactive substances of Division 4.1 and organic peroxides of Division 5.2.]

UN No.	Hazardous material	Minimum test pressure (bar)	Minimum shell thickness (mm-reference steel) See . . .	Bottom opening requirements See . . .	Pressure-relief requirements See . . .	Filling limits	Control tempereature	Emergency temperature
	tert-Butyl peroxy-3,5,5-trimethyl-hexanoate, not more than 32% in dileunt type B	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)	+35°C	+40°C
	Di-(3,5,5-trimethyl-hexanoyl) peroxide, not more htan 38% in diluent type A	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)	0°C	+5°C
3120	Organix peroxide, Type F, solid, temperature controlled	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)	As approved by Assoc. Admin.	As approved by Assoc. Admin.
3229	Self-reactive liquid Type F	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
3230	Self-reactive solid Type F	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)		
3239	Self-reactive liquid Type F, temperature controlled	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)	As approved by Assoc. Admin.	As approved by Assoc. Admin.
3240	Self-reactive solid Type F, temperature controlled	4	§ 178.274(d)(2)	§ 178.275(d)(3)	§ 178.275(g)(1)	Not more than 90% at 59° F (15°C)	As approved by Assoc. Admin.	As approved by Assoc. Admin.

(iv) The following portable tank instruction applies to portable tanks used for the transportation of liquefied compressed gases. The T50 table provides the UN identification number and proper shipping name for each liquefied compressed gas authorized to be transported in a T50 portable tank. The table provides maximum allowable working pressures, bottom opening requirements, pressure relief device requirements and degree of filling requirements for each liquefied compressed gases 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. The T50 table follows:

PORTABLE TANK CODE T50

[Portable tank code T50 applies to liquefied compressed gases.]

UN No.	Non-refrigerated liquefied compressed gases	Max. allowable working pressure (bar) small; bare; sunshield; insulated	Openings below liquid level	Pressure relief requirements (see § 178.27(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

PORTABLE TANK CODE T50—Continued

[Portable tank code T50 applies to liquefied compressed gases.]

UN No.	Non-refrigerated liquefied compressed gases	Max. allowable working pressure (bar) small; bare; sunshield; insulated	Openings below liquid level	Pressure relief requirements (see § 178.27(e))	Maximum filling density (kg/l)
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
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

PORTABLE TANK CODE T50—Continued

[Portable tank code T50 applies to liquefied compressed gases.]

UN No.	Non-refrigerated liquefied compressed gases	Max. allowable working pressure (bar) small; bare; sunshield; insulated	Openings below liquid level	Pressure relief requirements (see § 178.27(e))	Maximum filling density (kg/l)
1040	Ethylene oxide with *nitrogen up to a total pressure of 1MPa (10 bar) at 50 °C*.	Only authorized in 10 bar insulatedportable tanks.	Not allowed	§ 178.276(e)(3)	0.78
1041	Ethylene oxide and carbon dioxide mixture *with more than 9% butnot more than 87% ethylene oxide*.	See MAWP defination 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 13.1 11.6	Not allowed	§ 178.276(e)(3)	1.13

PORTABLE TANK CODE T50—Continued

[Portable tank code T50 applies to liquefied compressed gases.]

UN No.	Non-refrigerated liquefied compressed gases	Max. allowable working pressure (bar) small; bare; sunshield; insulated	Openings below liquid level	Pressure relief requirements (see § 178.27(e))	Maximum filling density (kg/l)
1083	Trimethylamine, anhydrous	7.0 7.0 7.0 7.0	Allowed	Normal	0.56
1085	Vinyl bromide, stabilized	7.0 7.0 7.0 7.0	Allowed	Normal	1.37
1086	Vinyl chloride, stabilized	10.6 9.3 8.0 7.0	Allowed	Normal	0.81
1087	Vinyl methyl ether, stabilized	7.0 7.0 7.0 7.0	Allowed	Normal	0.67
1581	Chloropicrin and methyl bromide mixture.	7.0 7.0 7.0 7.0	Not Allowed	§ 178.276(e)(3)	1.51
1582	Chloropicrin and methyl chloride mixture.	19.2 16.9 15.1 13.1	Not allowed	§ 178.276(e)(3)	0.81
1858	Hexafluoropropylene compressed *or* Refrigerant gas R 1216.	19.2 16.9 15.1 13.1	Allowed	Normal	1.11
1912	Methyl chloride and methylene chloride mixture.	15.2 13.0 11.6 10.1	Allowed	Normal	0.811954
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 7.0 7.0 7.0	Allowed	Normal	1.3
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 7.5 7.0 7.0	Allowed	Normal	0.49
1973	Chlorodifluoromethane and chloropentafluoroethane mixture *with fixed boiling point, withapproximately 49% chlorodifluoromethane or Refrigerant gas R502.*	28.3 25.3 22.8 20.3	Allowed	Normal	1.05
1974	Chlorodifluorobromomethane *or* Refrigerant gas R 12B1.	7.4 7.0 7.0 7.0	Allowed	Normal	1.61

PORTABLE TANK CODE T50—Continued

[Portable tank code T50 applies to liquefied compressed gases.]

UN No.	Non-refrigerated liquefied compressed gases	Max. allowable working pressure (bar) small; bare; sunshield; insulated	Openings below liquid level	Pressure relief requirements (see § 178.27(e))	Maximum filling density (kg/l)
1976	Octafluorocyclobutane *or* Refrigerant gas RC 318.	8.8 7.8 7.0 7.0	Allowed	Normal	1.34
1978	Propane	22.5 20.4 18.0 16.5	Allowed	Normal	0.42
1983	1-Chloro-2,2,2-trifluoroethane *or* Refrigerant gas R 133a.	7.0 7.0 7.0 7.0	Allowed	Normal	1.18
2035	1,1,1-Trifluoroethane compressed *or* Refrigerant gas R 143a.	31.0 27.5 24.2 21.8	Allowed	Normal	0.76
2424	Octafluoropropane *or* Refrigerant gas R 218.	23.1 20.8 18.6 16.6	Allowed	Normal	1.07
2517	1-Chloro-1,1-difluoroethane *or* Refrigerant gas R 142b.	8.9 7.8 7.0 7.0	Allowed	Normal	0.99
2602	Dichlorodifluoromethane and difluoroethane azeotropic mixture *with approximately 74% dichlorodifluoromethane or* Refrigerant gas R 500.	20.0 18.0 16.0 14.5	Allowed	Normal	1.01
3057	Trifluoroacetyl chloride	14.6 12.9 11.3 9.9	Not allowed	§ 178.276(e)(3)	1.17
3070	Ethylene oxide and dichlorodifluoromethane mixture *with not more than 12.5% ethylene oxide*.	14.0 12.0 11.0 9.0	Allowed	§ 178.276(e)(3)	1.09
3153	Perfluoro (methyl vinyl ether)	14.3 13.4 11.2 10.2	Allowed	Normal	1.14
3159	1,1,1,2-Tetrafluoroethane *or* Refrigerant gas R 134a.	17.7 15.7 13.8 12.1	Allowed	Normal	1.04
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)

PORTABLE TANK CODE T50—Continued

[Portable tank code T50 applies to liquefied compressed gases.]

UN No.	Non-refrigerated liquefied compressed gases	Max. allowable working pressure (bar) small; bare; sunshield; insulated	Openings below liquid level	Pressure relief requirements (see § 178.27(e))	Maximum filling density (kg/l)
3220	Pentafluoroethane *or* Refrigerant gas R 125.	34.4 30.8 27.5 24.5	Allowed	Normal	0.95
3252	Difluoromethane *or* Refrigerant gas R 32.	43.0 39.0 34.4 30.5	Allowed	Normal	0.78
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

(v) When portable tank instruction T75 is referenced in Column (7) of the § 172.101 Table, the applicable refrigerated liquefied gases are authorized to be transported in portable tanks in accordance with the requirements of § 178.277 of this subchapter.

(vi) *UN and IM portable tank codes/special provisions.* When a specific portable tank instruction is specified by a T Code in Column (7) of the § 172.101 Table for a specific hazardous material, a Specification portable tank conforming to an alternative tank instruction may be used if:

(A) the alternative portable tank has a higher or equivalent test pressure (for example, 4 bar when 2.65 bar is specified);

(B) the alternative portable tank has greater or equivalent wall thickness (for example, 10 mm when 6 mm is specified);

(C) the alternative portable tank has a pressure relief device as specified in the T Code. If a frangible disc is required in series with the reclosing pressure relief device for the specified portable tank, the alternative portable tank must be fitted with a frangible disc in series with the reclosing pressure relief device; and

(D) With regard to bottom openings—

(1) When two effective means are specified, the alternative portable tank is fitted with bottom openings having two or three effective means of closure or no bottom openings; or

(2) When three effective means are specified, the portable tank has no bottom openings or three effective means of closure; or

(3) When no bottom openings are authorized, the alternative portable tank must ot have bottom openings.

(vii) When a hazardous material is not assigned a portable tank T Code or TP 9 is referenced in Column (7) of the § 172.101 Table, the hazardous material may only be transported in a portable tank if approved by the Associate Administrator.

(viii) Portable tank special provisions are assigned to certain hazardous materials to specify requirements that are in addition to those provided by the portable tank instructions or the requirements in part 178 of this subchapter. Portable tank special provisions are designated with the abbreviation TP (tank provision) and are assigned to specific hazardous materials in Column (7) of the § 172.101 Table. The following is a list of the portable tank special provisions:

Code/Special Provisions

TP1 The maximum degree of filling must not exceed the degree of filling determined by the following:

$$\left(\text{Degree of filling} = \frac{97}{1+\alpha\left(t_r - t_f\right)}\right).$$

Where:

t_r is the maximum mean bulk temperature during transport, and t_f is the temperature in degrees celsius of the liquid during filling.

TP2 a. The maximum degree of filling must not exceed the degree of filling determined by the following:

$$\left(\text{Degree of filling} = \frac{95}{1+\alpha\left(t_r - t_f\right)}\right).$$

Where:

t_r is the maximum mean bulk temperature during transport,

t_f is the temperature in degrees celsius of the liquid during filling, and

α is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (t_f) and the maximum mean bulk temperature during transportation (t_r) both in degrees celsius.

b. For liquids transported under ambient conditions α may be calculated using the formula:

$$\alpha = \frac{d_{15} - d_{50}}{35\, d_{50}}$$

Where:

d_{15} and d_{50} are the densities (in units of mass per unit volume) of the liquid at 15°C (59°F) and 50°C (122°F), respectively.

TP3 For liquids transported under elevated temperature, the maximum degree of filling is determined by the following:

$$\left(\text{Degree of filling} = 95\frac{d_t}{d_f}\right).$$

Where:

d_t is the density of the material at the maximum mean bulk temperature during transport; and

d_f is the density of the material at the temperature in degrees celsius of the liquid during filling; and

d_f is the density of the liquid at the mean temperature of the liquid during filling, and d_t is the maximum mean bulk temperature during transport.

TP4 The maximum degree of filling for portable tanks must not exceed 90%.

TP5 For a portable tank used for the transport of flammable refrigerated liquefied gases or refrigerated liquefied oxygen, the maximum rate at which the portable tank may be filled must not exceed the liquid flow capacity of the primary pressure relief system rated at a pressure not exceeding 120 percent of the portable tank's design pressure. For portable tanks used for the transport of refrigerated liquefied helium and refrigerated liquefied atmospheric gas (except oxygen), the maximum rate at which the tank is filled must not exceed the liquid flow capacity of the pressure relief device rated at 130 percent of the portable tank's design pressure. Except for a portable tank containing refrigerated liquefied helium, a portable tank shall have an outage of at least two percent below the inlet of the pressure relief device or pressure control valve, under conditions of incipient opening, with the portable tank in a level attitude. No outage is required for helium.

TP6 To prevent the tank from bursting in an event, including fire engulfment (the conditions prescribed in CGA pamphlet S–1.2 (see § 171.7 of this subchapter) may be used to consider the fire engulfment condition), it must be equipped with pressure relief devices that are adequate in relation to the capacity of the tank and the nature of the hazardous material transported.

TP7 The vapor space must be purged of air by nitrogen or other means.

TP8 A portable tank having a minimum test pressure of 1.5 bar (150 kPa) may be used when the flash point of the hazardous material transported is greater than 0°C (32°F).

TP9 A hazardous material assigned to special provision TP9 in Column (7) of the § 172.101 Table may only be transported in a portable tank if approved by the Associate Administrator.

TP10 The portable tank must be fitted with a lead lining at least 5 mm (0.2 inches) thick. The lead lining must be tested annually to ensure that it is intact and functional. Another suitable lining material may be used if approved by the Associate Administrator.

TP12 This material is considered highly corrosive to steel.

TP13 Self-contained breathing apparatus must be provided when this hazardous material is transported by sea.

TP16 The portable tank must be protected against over and under pressurization which may be experienced during transportation. The means of protection must be approved by the approval agency designated to approve the portable tank in accordance with the procedures in part 107, subpart E, of this subchapter. The pressure relief device must be preceded by a frangible disk in accordance with the requirements in § 178.275(g)(3) of this subchapter to prevent crystallization of the product in the pressure relief device.

TP17 Only inorganic non-combustible materials may be used for thermal insulation of the tank.

TP18 The temperature of this material must be maintained between 18°C (64.4°F) and 40°C (104°F) while in transportation. Portable tanks containing solidified methacrylic acid must not be reheated during transportation.

TP19 The calculated wall thickness must be increased by 3 mm at the time of construction. Wall thickness must be verified ultrasonically at intervals midway between periodic hydraulic tests (every 2.5 years). The portable tank must not be used if the wall thickness is less than that prescribed by the applicable T code in Column (7) of the Table for this material.

TP20 This hazardous material must only be transported in insulated tanks under a nitrogen blanket.

TP21 The wall thickness must not be less than 8 mm. Portable tanks must be hydraulically tested and internally inspected at intervals not exceeding 2.5 years.

TP22 Lubricants for portable tank fittings (for example, gaskets, shut-off valves, flanges) must be oxygen compatible.

TP24 The portable tank may be fitted with a device to prevent the build up of excess pressure due to the slow decomposition of the hazardous material being transported. The device must be in the vapor space when the tank is filled under maximum filling conditions. This device must also prevent an unacceptable amount of leakage of liquid in the case of overturning.

TP25 Sulphur trioxide 99.95% pure and above may be transported in tanks without an inhibitor provided that it is maintained at a temperature equal to or above 32.5°C (90.5°F).

TP26 The heating device must be exterior to the shell. For UN 3176, this requirement only applies when the hazardous material reacts dangerously with water.

TP27 A portable tank having a minimum test pressure of 4 bar (400 kPa) may be used provided the calculated test pressure is 4 bar or less based on the MAWP of the hazardous material, as defined in § 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.

TP28 A portable tank having a minimum test pressure of 2.65 bar (265 kPa) may be used provided the calculated test pressure is 2.65 bar or less based on the MAWP of the

hazardous material, as defined in § 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.

TP29 A portable tank having a minimum test pressure of 1.5 bar (150.0 kPa) may be used provided the calculated test pressure is 1.5 bar or less based on the MAWP of the hazardous materials, as defined in § 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.

TP30 This hazardous material may only be transported in insulated tanks.

TP31 This hazardous material may only be transported in tanks in the solid state.

TP37 IM portable tanks are only authorized for the shipment of hydrogen peroxide solutions in water containing 72% or less hydrogen peroxide by weight. Pressure relief devices shall be designed to prevent the entry of foreign matter, the leakage of liquid and the development of any dangerous excess pressure. In addition, the portable tank must be designed so that internal surfaces may be effectively cleaned and passivated. Each tank must be equipped with pressure relief devices conforming to the following requirements:

Concentration of hydrogen per peroxide solution	Total [1]
52% or less	11
Over 52%, but not greater than 60%	22
Over 60%, but not greater than 72%	32

[1] Total venting capacity in standard cubic feet hour (S.C.F.H.) per pound of hydrogen peroxide solution.

TP38 Each portable tank must be insulated with an insulating material so that the overall thermal conductance at 15.5 °C (60 °F) is no more than 1.5333 kilojoules per hour per square meter per degree Celsius (0.075 Btu per hour per square foot per degree Fahrenheit) temperature differential. Insulating materials may not promote corrosion to steel when wet.

TP44 Each portable tank must be made of stainless steel, except that steel other than stainless steel may be used in accordance with the provisions of § 173.24b(b) of this subchapter. Thickness of stainless steel for tank shell and heads must be the greater of 7.62 mm (0.300 inch) or the thickness required for a portable tank with a design pressure at least equal to 1.5 times the vapor pressure of the hazardous material at 46 °C (115 °F).

TP45 Each portable tank must be made of stainless steel, except that steel other than stainless steel may be used in accordance with the provisions of 173.24b(b) of this subchapter. Thickness of stainless steel for portable tank shells and heads must be the greater of 6.35 mm (0.250 inch) or the thickness required for a portable tank with a design pressure at least equal to 1.3 times the vapor pressure of the hazardous material at 46 °C (115 °F).

TP46 Portable tanks in sodium metal service are not required to be hydrostatically retested.

(8) * * *

Code/Special Provisions

W7 Vessel stowage category for uranyl nitrate hexahydrate solution is ''D'' as defined in § 172.101(k)(4).

W8 Vessel stowage category for pyrophoric thorium metal or pyrophoric uranium metal is ''D'' as defined in § 172.101(k)(4).

W9 When offered for transportation by water, the following Specification packagings are not authorized unless approved by the Associate Administrator: woven plastic bags, plastic film bags, textile bags, paper bags, IBCs and bulk packagings.

* * * * *

14. In § 172.202, paragraphs (a)(4) and (e) are revised to read as follows:

§ 172.202 Description of hazardous material on shipping papers.

(a) * * *

(4) The packing group in Roman numerals, as designated for the hazardous material in Column 5 of the § 172.101 Table. Class 1 (explosives) materials, self-reactive substances, organic peroxides and entries that are not assigned a packing group are excepted from this requirement. The packing group may be preceded by the letters ''PG'' (for example, ''PG II''); and

* * * * *

(e) Except for those materials in the UN Recommendations, the ICAO Technical Instructions, or the IMDG Code (see § 171.7 of this subchapter), a material that is not a hazardous material according to this subchapter may not be offered for transportation or transported when its description on a shipping paper includes a hazard class or an identification number specified in the § 172.101 Table.

15. In § 172.203, paragraph (d)(11) is revised, new paragraphs (i)(5) and (i)(6) are added, and paragraph (n) is revised to read as follows:

§ 172.203 Additional description requirements.

* * * * *

(d) * * *

(11) For a shipment of low specific activity material or surface contaminated objects, the appropriate group notation of LSA–I, LSA–II, LSA–III, SCO–I, or SCO–II, unless the group notation is contained in the proper shipping name as described in the § 172.101 Table.

* * * * *

(i) * * *

(5) Minimum flash point if 61°C or below (in °C closed cup (c.c.) in association with the basic description.

(6) Subsidiary hazards not communicated in the proper shipping name shown either following the hazard class or division in parentheses, or in association with the basic description.

* * * * *

(n) *Elevated temperature materials.* If a liquid material in a package meets the definition of an elevated temperature material in § 171.8 of this subchapter, and the fact that it is an elevated temperature material is not disclosed in the proper shipping name (for example, when the words ''Molten'' or ''Elevated temperature'' are part of the proper shipping name), the word ''HOT'' must immediately precede the proper shipping name of the material on the shipping paper.

* * * * *

§ 172.330 [Amended]

16. In § 172.330, in paragraph (a)(1)(ii), the following changes are made:

a. The proper shipping name, ''Acrolein, inhibited'' is revised to read ''Acrolein, stabilized''.

b. The proper shipping name, ''Chloroprene, inhibited'' is revised to read ''Chloroprene, stabilized''.

c. The proper shipping name, ''Sulfur trioxide, inhibited'' is revised to read ''Sulfur trioxide, stabilized''.

17. In § 172.402, paragraph (b) is revised to read as follows:

§ 172.402 Additional labeling requirements.

* * * * *

(b) *Display of hazard class on labels.* The appropriate hazard class or division number must be displayed in the lower corner of a primary hazard label and a subsidiary hazard label. A subsidiary label meeting the specifications of this section which were in effect on September 30, 2001, such as, a label without the hazard class or division number displayed in the lower corner of the label) may continue to be used as a subsidiary label in domestic transportation by rail or highway until October 1, 2005, provided the color tolerances are maintained and are in accordance with the display requirements in this subchapter.

* * * * *

§ 172.405 [Amended]

18. In § 172.405, the following changes are made:

a. In paragraph (a) introductory text, the wording ''subsidiary label when—'' is removed and the wording ''subsidiary label.'' is added in its place.

b. Paragraphs (a)(1) and (a)(2) are removed.

19–20. In § 172.411, the section heading, the text of paragraph (c) preceding the labels, and paragraph (d)