

Trichloroisocyanuric acid, dry	5.1	UN 2468	Oxidizer	II	1,2	1,2	Shade from radiant heat. Keep dry. Stow 'separated from' nitrogen compounds
Trichlorosilane	4.3	UN 1295	Dangerous When Wet, Flammable Liquid, Corrosive	I	1	5	
Tricresylphosphate, with more than 3% ortho isomer	6.1	UN 2574	Poison	II	1,2	1,2	
Triethylaluminium	4.2	UN 1102	Spontaneously Combustible	I	1	1	
Triethylamine	3.2	UN 1296	Flammable Liquid	II	1,2	1	
Triethylenetetramine	8	UN 2259	Corrosive	II	1,2	1	Stow 'separated from' nitric acid, 'away from' acids, copper and copper alloys and living quarters
Triethyl phosphite	3.3	UN 2323	Flammable Liquid	III	1,2	1,2	Stow 'separated from' acids
Trifluoroacetic acid	8	UN 2699	Corrosive	I	1,3	1	Keep cool. Stow 'away from' all other corrosives
<i>Trifluorobromomethane. See Bromotrifluoromethane</i>							
<i>Trifluorochloroethane. See Chlorotrifluoroethane</i>							
Trifluorochloroethylene, inhibited	2.1	UN 1082	Flammable Gas	—	1,2	1	
<i>Trifluorochloromethane. See Chlorotrifluoromethane</i>							
Trifluoroethane	2.1	UN 2035	Flammable Gas	—	1,2	1	Stow 'away from' living quarters
Trifluoromethane	2.2	UN 1984	Nonflammable Gas	—	1,2	1,2	
3-Trifluoromethyl aniline	6.1	UN 2948	Poison	II	1,2	1,2	
2-Trifluoromethyl aniline	6.1	UN 2942	St. Andrews Cross	III	1,2	1,2	
Triisobutyl aluminium	4.2	UN 1930	Spontaneously Combustible	I	1	1	
Triisobutylene	3.3	UN 2324	Flammable Liquid	II	1,2	1,2	
Triisocyanatoisocyanurate of isophoronediiisocyanate, solution 70%, by weight	3.3	UN 2906	Flammable Liquid	III	1,2	1,2	
Triisopropyl borate	3.3	UN 2616	Flammable Liquid	II	1,2	1,2	
Trimethylacetyl chloride	8	UN 2438	Corrosive, Flammable Liquid	II	1	5	Shade from radiant heat. Segregation same as for flammable liquids
Trimethylaluminium	4.2	UN 1103	Spontaneously Combustible	I	1	1	
Trimethylamine, anhydrous	2.1	UN 1083	Flammable Gas	—	1	5	
Trimethylamine, aqueous solutions containing not more than 30% of trimethylamine	3.2	UN 1297	Flammable Liquid	II	1,2	1	Stow 'away from' mercury and its compounds
1,3,5-Trimethylbenzene	3.3	UN 2325	Flammable Liquid	III	1,2	1,2	
Trimethyl borate	3.2	UN 2416	Flammable Liquid	II	1,2	1	
	3.3	UN 2416	Flammable Liquid	II	1,2	1,2	
Trimethylchlorosilane	3.2	UN 1298	Flammable Liquid, Corrosive	I	1,2	1	
Trimethylcyclohexylamine	8	UN 2326	Corrosive	III	1,2	1,2	Glass carboys prohibited on passenger vessels
Trimethylhexamethylene diamines	8	UN 2327	Corrosive	III	1,2	1,2	Glass carboys prohibited on passenger vessels
Trimethylhexamethylene diisocyanate	6.1	UN 2328	Poison	II	1,2	1	
2,4,4-Trimethylpentyl-2-peroxy phenoxy acetate, maximum concentration 37%, in solution	5.2	UN 2961	Organic Peroxide	II	1	5	Control temperature — 10 deg C. Emergency temperature 0 deg C

§ 172.102 Optional Hazardous Materials Table—Continued

§ 172.102

(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	(3) IMO Class	(4) Identifi- cation Number	(5) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a)	(b)	(c) Other requirements
						Cargo vessel	Pass- enger vesse]	
	Trimethyl phosphite	3.3	UN 2329	Flammable Liquid	III	1,2	1,2	
N	Trinitro-aniline	1.1D	UN 0153	Explosive (1.1D)	--	--	--	
N	Trinitroanisole	1.1D	UN 0213	Explosive (1.1D)	--	--	--	
N	Trinitrobenzene, <i>dry or wetted with less than 30% water, by weight</i>	1.1D	UN 0214	Explosive (1.1D)	--	--	--	
N	Trinitrobenzenesulfonic acid	1.1L	UN 0386	Explosive (1.1L)	--	--	--	
	Trinitrobenzene, <i>wetted with, by weight, at least 10% water</i>	4.1	UN 1354	Flammable Solid	I	1	5	Stow 'away from' heavy metals and their compounds
	Trinitrobenzene, <i>wetted with not less than 30% water, by weight</i>	4.1	UN 1354	Flammable Solid	I	1,2	5	Stow 'away from' heavy metals and their compounds
N	Trinitrobenzoic acid, <i>dry or containing, by weight, less than 30% water</i>	1.1D	UN 0215	Explosive (1.1D)	--	--	--	
	Trinitrobenzoic acid, <i>wetted with, by weight, at least 10% water</i>	4.1	UN 1355	Flammable Solid	I	1	5	Stow 'away from' heavy metals and their compounds
	Trinitrobenzoic acid, <i>wetted with not less than 30% water, by weight</i>	4.1	UN 1355	Flammable Solid	I	1,2	5	Stow 'away from' heavy metals and their compounds
N	Trinitrochlorobenzene	1.1D	UN 0155	Explosive (1.1D)	--	--	--	
N	Trinitrofluorenone	1.1D	UN 0387	Explosive (1.1D)	--	--	--	
N	Trinitro-m-cresol	1.1D	UN 0216	Explosive (1.1D)	--	--	--	
N	Trinitronaphthalene	1.1D	UN 0217	Explosive (1.1D)	--	--	--	
N	Trinitrophenetole	1.1D	UN 0218	Explosive (1.1D)	--	--	--	
N	Trinitrophenol, <i>dry or wetted with less than 30% water, by weight</i>	1.1D	UN 0154	Explosive (1.1D)	--	--	--	
	Trinitrophenol, <i>wetted, with not less than 30% water, by weight</i>	4.1	UN 1344	Flammable Solid	I	1,2	5	Stow 'away from' heavy metals and their compounds
	Trinitrophenol, <i>wetted with not less than 10% water, by weight</i>	4.1	UN 1344	Flammable Solid	I	1	5	Stow 'away from' heavy metals and their compounds
N	Trinitrophenylmethylnitramine	1.1D	UN 0208	Explosive (1.1D)	--	--	--	
N	Trinitroresorcinol, <i>containing, by weight, not less than 20% water or mixture of alcohol and water</i>	1.1D	UN 0394	Explosive (1.1D)	--	--	--	
N	Trinitroresorcinol, <i>dry or wetted with less than 20% water, by weight (or mixture of alcohol and water)</i>	1.1D	UN 0219	Explosive (1.1D)	--	--	--	
N	Trinitrotoluene and hexanitrostilbene mixtures or Trinitrotoluene and trinitrobenzene mixtures	1.1D	UN 0388	Explosive (1.1D)	--	--	--	
N	Trinitrotoluene, <i>dry or wetted with less than 30% water, by weight</i>	1.1D	UN 0209	Explosive (1.1D)	--	--	--	
N	Trinitrotoluene mixtures containing trinitrobenzene and hexanitrostilbene	1.1D	UN 0389	Explosive (1.1D)	--	--	--	

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	Trinitrotoluene, wetted with, by weight, at least 10% water	4.1	UN 1356	Flammable Solid	I	1	5	Stow 'away from' heavy metals and their compounds
	Trinitrotoluene, wetted with not less than 30% water, by weight	4.1	UN 1356	Flammable Solid	I	1,2	5	Stow 'away from' heavy metals and their compounds
	Tripropylaluminum	4.2	UN 2718	Spontaneously Combustible	I	1	5	
	Tripropylamine	3.3	UN 2260	Flammable Liquid, Corrosive	II	1,2	1,2	
	Tripropylene	3.2	UN 2057	Flammable Liquid	II	1,2	1	
		3.3	UN 2057	Flammable Liquid	II	1,2	1,2	
	Tris-(1-aziridinyl)phosphine oxide, solution	6.1	UN 2501	Poison	II	1,2	1,2	Stow 'away from' living quarters
N	Tritonal	1.1D	UN 0390	Explosive (1.1D)	--	--	--	
	Tungsten hexafluoride	2.3	UN 2196	Poison Gas	--	1	5	
	Turpentine	3.3	UN 1299	Flammable Liquid	III	1,2	1,2	
	Turpentine substitute	3.2	UN 1300	Flammable Liquid	II	1,2	1	
		3.3	UN 1300	Flammable Liquid	II	1,2	1,2	
	<i>U D M H. See Dimethylhydrazine, unsymmetrical</i>							
	Undecane	3.3	UN 2330	Flammable Liquid	III	1,2	1,2	
	Urea hydrogen peroxide	5.1	UN 1511	Oxidizer	III	1,2	1,2	Keep dry. Shade from radiant heat
N	Urea nitrate, dry or containing, by weight, less than 20% water	1.1D	UN 0220	Explosive (1.1D)	--	--	--	
	Urea nitrate, wetted with not less than 10% water, by weight	4.1	UN 1357	Flammable Solid	I	1,2	1,2	
	Urea nitrate, wetted with not less than 20% water, by weight	4.1	UN 1357	Flammable Solid	I	1,2	1,2	
	Valeraldehyde	3.2	UN 2058	Flammable Liquid	II	1,2	1	
	Valeryl chlorides	8	UN 2502	Corrosive	II	1	1	Keep dry
	Vanadium oxitrichloride	8	UN 2443	Corrosive	II	1	1	Keep dry. Stow 'away from' organic compounds
	Vanadium pentoxide, non-fused form	6.1	UN 2862	Poison	II	1,2	1,2	Stow 'away from' living quarters
	Vanadium tetrachloride	8	UN 2444	Corrosive	I	1	1	Keep dry. Glass carboys prohibited on passenger vessels
	Vanadium trichloride	8	UN 2475	Corrosive	III	1,2	1,2	Keep dry
	Vanadium trioxide, non-fused form	6.1	UN 2860	Poison	II	1,2	1,2	Stow 'away from' living quarters
	Vanadyl sulphate	6.1	UN 2931	Poison	II	1,2	1,2	Stow 'away from' living quarters
	Varnish. See Paints, etc.							
	Vinyl acetate, inhibited	3.2	UN 1301	Flammable Liquid	II	1,2	1	
	Vinyl bromide, inhibited	2.1	UN 1085	Flammable Gas	--	1,2	1	Stow 'away from' living quarters
	Vinyl butyrate, inhibited	3.2	UN 2838	Flammable Liquid	II	1,2	1	
	Vinyl chloride, inhibited	2.1	UN 1086	Flammable Gas	--	1,2	1	Stow 'away from' living quarters
	Vinyl chloroacetate	6.1	UN 2589	Poison, Flammable Liquid	II	1,2	1,2	Segregation same as for flammable liquids
	Vinyl ethyl ether, inhibited	3.1	UN 1302	Flammable Liquid	I	1,3	5	Keep cool
	Vinyl fluoride, inhibited	2.1	UN 1860	Flammable Gas	--	1,2	1	Stow 'away from' living quarters
	Vinylidene chloride, inhibited	3.1	UN 1303	Flammable Liquid	I	1,2	5	Keep cool
	Vinyl isobutyl ether, inhibited	3.2	UN 1304	Flammable Liquid	II	1,2	1	
	Vinyl methyl ether, inhibited	2.1	UN 1087	Flammable Gas	--	1,2	1	

§ 172.102 Optional Hazardous Materials Table—Continued

§ 172.102

(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	(3) IMO Class	(4) Identifi- cation Number	(5) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a)	(b)	(c) Other requirements
						Cargo vessel	Pas- senger vessel	
	Vinyl toluenes (<i>mixed isomers</i>), inhibited	3.3	UN 2618	Flammable Liquid	III	1,2	1,2	
	Vinyl trichlorosilane, inhibited	3.2	UN 1305	Flammable Liquid, Corrosive	I	1,2	1	
N	Warheads, rocket, with burster or expelling charge	1.4D	UN 0370	Explosive (1.4D)	-	-	-	
N	Warheads, rocket, with burster or expelling charge	1.4F	UN 0371	Explosive (1.4F)	-	-	-	
N	Warheads, rocket, with bursting charge	1.1D	UN 0286	Explosive (1.1D)	-	-	-	
N	Warheads, rocket, with bursting charge	1.2D	UN 0287	Explosive (1.2D)	-	-	-	
N	Warheads, rocket, with bursting charge	1.1F	UN 0369	Explosive (1.1F)	-	-	-	
N	Warheads, torpedo, with bursting charge	1.1D	UN 0221	Explosive (1.1D)	-	-	-	
	White asbestos. See Asbestos, white							
	White phosphorus, dry. See Phosphorus, white or yellow, dry							
	White phosphorus, wet. See Phosphorus, white or yellow, in water							
	Wood alcohol. See Methanol							
	Wool waste, wet	4.2	UN 1387	Spontaneously Combustible	III	1,2	1,2	
	Xenon	2.2	UN 2036	Nonflammable Gas	-	1,2	1,2	
	Xenon, refrigerated liquid	2.2	UN 2591	Nonflammable Gas	-	1,2	1	
	Xylenes	3.2	UN 1307	Flammable Liquid	II	1,2	1	
		3.3	UN 1307	Flammable Liquid	II	1,2	1,2	
	Xylenols	6.1	UN 2261	Poison	II	1,2	1,2	
	Xylidines	6.1	UN 1711	Poison	II	1,2	1,2	Stow 'away from' acids
	Xylois. See Xylenes							
	Xylyl bromide	6.1	UN 1701	Poison	II	1	5	
	Yellow phosphorus, dry. See Phosphorus, white or yellow, dry							
	Yellow phosphorus, wet. See Phosphorus, white or yellow, in water							
	Zinc arsenate or Zinc arsenite, or mixtures thereof, solid	6.1	UN 1712	Poison	II	1,2	1,2	
	Zinc ashes	4.3	UN 1435	Dangerous When Wet	III	1,2	1,2	
	Zinc bromate	5.1	UN 2469	Oxidizer	III	1,2	1,2	Stow 'away from' powdered metals and 'separated from' ammonium compounds
	Zinc chlorate	5.1	UN 1513	Oxidizer	II	1,2	1,2	Stow 'away from' powdered metals, 'separated from' ammonium compounds
	Zinc chloride, anhydrous	8	UN 2331	Corrosive	III	1,2	1,2	Keep dry
	Zinc chloride, solution	8	UN 1840	Corrosive	III	1,2	1,2	

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Zinc cyanide	6.1	UN 1713	Poison	I	1,2	1,2	Stow 'away from' acids
Zinc hydrosulphite	9	UN 1931	None	III	1,2	1,2	Keep dry. Stow 'away from' acids
Zinc nitrate	5.1	UN 1514	Oxidizer	II	1,2	1,2	
Zinc permanganate	5.1	UN 1515	Oxidizer	II	1,2	1,2	Stow 'separated from' ammonium compounds and hydrogen peroxide
Zinc peroxide	5.1	UN 1516	Oxidizer	II	1,2	1,2	Keep dry
Zinc phosphide	4.3	UN 1714	Dangerous When Wet, Poison	I	1,2	5	When stowed under deck, stow in a mechanically ventilated space
Zinc, powder or dust, pyrophoric. See Pyrophoric metals							
Zinc powder or zinc dust, non-pyrophoric	4.3	UN 1436	Dangerous When Wet	II	1,2	1,2	
Zinc resinate	4.1	UN 2714	Flammable Solid	III	1,2	1,2	
Zinc silicofluoride	6.1	UN 2855	St. Andrews Cross	III	1,2	1,2	Stow 'away from' acids
Zirconium hydride	4.1	UN 1437	Flammable Solid	II	1,2	5	
Zirconium, metal, dry, finished metal sheets, strip or coiled wire (thinner than 18 microns)	4.2	UN 2009	Spontaneously Combustible	III	1	5	
Zirconium, metal, dry, finished sheets, strip or coiled wire (thinner than 254 microns but not thinner than 18 microns)	4.1	UN 2858	Flammable Solid	III	1,2	1,2	
Zirconium metal powder, dry mechanically produced, particle size between 3 and 53 microns; or chemically produced, particle size between 10 and 840 microns	4.2	UN 2008	Spontaneously Combustible	II	1	5	
Zirconium metal powder, wetted with not less than 25% water (a visible excess of water must be present), mechanically produced, having a particle size less than 53 microns; or chemically produced, having a particle size less than 840 microns	4.1	UN 1358	Flammable Solid	II	1,2	5	
Zirconium nitrate	5.1	UN 2728	Oxidizer	III	1,2	1,2	Shade from radiant heat
Zirconium picramate, dry or wetted with less than 20% water, by weight	1.3C	UN 0236	Explosive (1.3C)	-	-	-	
Zirconium picramate, wetted with, by weight, at least 20% water	5.1	UN 1517	Oxidizer	I	1	5	Stow 'away from' heavy metals and their salts
Zirconium, scrap	4.2	UN 1932	Spontaneously Combustible	III	1	5	
Zirconium, suspended in flammable liquid	3.1	UN 1308	Flammable Liquid	II	1	5	Keep cool
Zirconium tetrachloride	8	UN 2503	Corrosive	III	1,2	1,2	Keep dry

App. A

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(49 U.S.C. 1803, 1804, 1808, 49 CFR 1.53, App. A to Part 1)

[Amdt. 72-58, 45 FR 34647, May 22, 1980; 45 FR 74652, Nov. 10, 1980, as amended by Amdt. 172-75, 47 FR 44471, Oct. 7, 1982; Amdt. 172-84, 48 FR 50234, Oct. 31, 1983; Amdt. 172-94, 49 FR 38133, Sept. 27, 1984; Amdt. 172-105, 51 FR 26639, July 15, 1986; Amdt. 172-108, 52 FR 4842, Feb. 17, 1987; Amdt. 172-111, 52 FR 36671, Sept. 30, 1987]

APPENDIX A TO SUBPART B—IDENTIFICATION NUMBER CROSS REFERENCE TO PROPER SHIPPING NAMES IN §§ 172.101 AND 172.102

This listing is provided for information purposes only.

(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 0001	102	Alarm devices, explosive
UN 0004	102	Ammonium picrate
UN 0005	102	Cartridges for weapons
UN 0008	102	Cartridges for weapons
UN 0007	102	Cartridges for weapons
UN 0009	102	Ammunition, incendiary
UN 0010	102	Ammunition, incendiary
UN 0012	102	Cartridges for weapons
UN 0014	102	Cartridges for weapons, blank or Cartridges, safety, blank
UN 0015	102	Ammunition, smoke
UN 0016	102	Ammunition, smoke
UN 0018	102	Ammunition, tear producing
UN 0019	102	Ammunition, tear producing
UN 0020	102	Ammunition, toxic
UN 0021	102	Ammunition, toxic
UN 0027	102	Black powder
UN 0028	102	Black powder, compressed
UN 0029	102	Detonators, non-electric
UN 0030	102	Detonators, electric
UN 0033	102	Bombs
UN 0034	102	Bombs
UN 0035	102	Bombs
UN 0037	102	Bombs, photo-flash
UN 0038	102	Bombs, photo-flash
UN 0039	102	Bombs, photo-flash
UN 0042	102	Boosters
UN 0043	102	Bursters
UN 0044	102	Primers, cap type
UN 0048	102	Charges, demolition
UN 0049	102	Cartridges, flash
UN 0050	102	Cartridges, flash
UN 0054	102	Cartridges, signal
UN 0055	102	Cases, cartridges, empty, with primer
UN 0058	102	Charges, depth
UN 0059	102	Charges, shaped, commercial
UN 0060	102	Charges, supplementary, explosive
UN 0065	102	Cord, detonating
UN 0066	102	Cord, igniter
UN 0070	102	Cutters, cable, explosive
UN 0072	102	Cyclotrimethylenetrinitramine, watted
UN 0073	102	Detonators for ammunition
UN 0074	102	Diazodinitrophenol
UN 0075	102	Diethyleneglycol dinitrate, desensi- tized
UN 0076	102	Dinitrophenol
UN 0077	102	Dinitrophenates
UN 0078	102	Dinitrosorcinol

(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 0079	102	Hexanitrodiphenylamine
UN 0081	102	Explosives, blasting, Type A
UN 0082	102	Explosives, blasting, Type B
UN 0083	102	Explosives, blasting, Type C
UN 0084	102	Explosives, blasting, Type D
UN 0082	102	Flares, surface
UN 0093	102	Flares, aerial
UN 0094	102	Photo-flash powder
UN 0096	102	Photo-flash powder
UN 0099	102	Fracturing devices, explosive
UN 0101	102	Fuse, instantaneous, non-detonat- ing
UN 0102	102	Cord, detonating
UN 0103	102	Fuse, igniter
UN 0104	102	Cord, detonating, mild effect
UN 0105	102	Fuse, safety
UN 0106	102	Fuzes, detonating
UN 0107	102	Fuzes, detonating
UN 0110	102	Grenades, practice
UN 0113	102	Guanyl nitrosamino guanylidene hy- drazine
UN 0114	102	Guanyl nitrosamino guanyl tetra- zene
UN 0118	102	Hexolite
UN 0121	102	Igniters
UN 0124	102	Jet perforating guns, charged
UN 0129	102	Lead azide
UN 0130	102	Lead styphnate
UN 0131	102	Lighters, fuse
UN 0132	102	Deflagrating metal salts of aromatic nitro-derivatives, n.o.s.
UN 0133	102	Mannitol hexanitrate
UN 0135	102	Mercury fulminate
UN 0136	102	Mines
UN 0137	102	Mines
UN 0138	102	Mines
UN 0143	102	Nitroglycerine, desensitized
UN 0144	102	Nitroglycerine, spirit of
UN 0146	102	Nitrostarch
UN 0147	102	Nitro urea
UN 0150	102	Pentaerythrite tetranitrate, wetted
UN 0151	102	Pentolite
UN 0153	102	Trinitro-aniline
UN 0154	102	Trinitrophenol
UN 0155	102	Trinitrochlorobenzene
UN 0158	102	Potassium salts of nitro-aromatic derivatives
UN 0159	102	Powder cake, wetted
UN 0160	102	Powder, smokeless
UN 0161	102	Powder, smokeless
UN 0167	102	Projectiles
UN 0168	102	Projectiles
UN 0169	102	Projectiles
UN 0171	102	Ammunition, illuminating
UN 0173	102	Release devices, explosive
UN 0174	102	Rivets, explosive
UN 0180	102	Rockets
UN 0161	102	Rockets
UN 0182	102	Rockets
UN 0183	102	Rockets
UN 0186	102	Rocket motors
UN 0190	102	Samples, explosive
UN 0191	102	Signal devices, hand
UN 0192	102	Signals, railway track, explosive
UN 0193	102	Signals, railway track, explosive
UN 0194	102	Signals, distress
UN 0195	102	Signals, distress
UN 0186	102	Signals, smoke
UN 0187	102	Signals, smoke
UN 0203	102	Sodium salts of nitro-aromatic de- rivatives, n.o.s.

(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 0204.....	102	Sounding devices, explosive
UN 0206.....	102	Squibs
UN 0207.....	102	Tetranitro-aniline
UN 0208.....	102	Trinitrophenylmethylnitramine
UN 0209.....	102	Trinitrotoluene
UN 0212.....	102	Tracers for ammunition
UN 0213.....	102	Trinitroanisole
UN 0214.....	102	Trinitrobenzene
UN 0215.....	102	Trinitrobenzoic acid
UN 0216.....	102	Trinitro-m-cresol
UN 0217.....	102	Trinitronaphthalene
UN 0218.....	102	Trinitrophenetole
UN 0219.....	102	Trinitroresorcinol
UN 0220.....	102	Urea nitrate
UN 0221.....	102	Warheads, torpedo
UN 0222.....	102	Ammonium nitrate
UN 0223.....	102	Ammonium nitrate fertilizers
UN 0224.....	102	Barium azide
UN 0225.....	102	Boosters, with detonator
UN 0228.....	102	Cyclotetramethylenetetranitramine, wetted
UN 0234.....	102	Sodium dinitro-o-cresolate
UN 0235.....	102	Sodium picramate
UN 0236.....	102	Zirconium picramate
UN 0237.....	102	Charges, shaped, flexible, linear
UN 0238.....	102	Rockets, line throwing
UN 0240.....	102	Rockets, line throwing
UN 0241.....	102	Explosives, blasting, Type E
UN 0242.....	102	Charges, propelling, for cannon
UN 0243.....	102	Ammunition, incendiary, white phosphorus
UN 0244.....	102	Ammunition, incendiary, white phosphorus
UN 0245.....	102	Ammunition, smoke, white phosphorus
UN 0246.....	102	Ammunition, smoke, white phosphorus
UN 0247.....	102	Ammunition, incendiary
UN 0248.....	102	Contrivances, water-activated
UN 0249.....	102	Contrivances, water-activated
UN 0250.....	102	Rocket motors
UN 0254.....	102	Ammunition, illuminating
UN 0255.....	102	Detonators, electric
UN 0257.....	102	Fuzes, detonating
UN 0268.....	102	Octolite
UN 0267.....	102	Detonators, non-electric
UN 0268.....	102	Boosters, with detonator
UN 0271.....	102	Charges, propelling, for rocket motors
UN 0272.....	102	Charges, propelling, for rocket motors
UN 0273.....	102	Charges, propelling, for rocket motors
UN 0274.....	102	Charges, propelling, for rocket motors
UN 0275.....	102	Cartridges, power device
UN 0276.....	102	Cartridges, power device
UN 0277.....	102	Cartridges, oil well
UN 0278.....	102	Cartridges, oil well
UN 0279.....	102	Charges, propelling, for cannon
UN 0280.....	102	Rocket motors
UN 0281.....	102	Rocket motors
UN 0282.....	102	Nitroguanidine
UN 0283.....	102	Boosters
UN 0284.....	102	Grenades
UN 0285.....	102	Grenades
UN 0286.....	102	Warheads, rocket
UN 0287.....	102	Warheads, rocket
UN 0288.....	102	Charges, shaped, flexible, linear
UN 0289.....	102	Cord, detonating
UN 0290.....	102	Cord, detonating

(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 0291.....	102	Bombs
UN 0292.....	102	Grenades
UN 0293.....	102	Grenades
UN 0294.....	102	Mines
UN 0295.....	102	Rockets
UN 0296.....	102	Sounding devices, explosive
UN 0297.....	102	Ammunition, illuminating
UN 0299.....	102	Bombs, photo-flash
UN 0300.....	102	Ammunition, incendiary
UN 0301.....	102	Ammunition, tear-producing
UN 0303.....	102	Ammunition, smoke
UN 0305.....	102	Photo-flash powder
UN 0306.....	102	Tracers for ammunition
UN 0312.....	102	Cartridges, signal
UN 0313.....	102	Signals, smoke
UN 0314.....	102	Igniters
UN 0315.....	102	Igniters
UN 0316.....	102	Fuzes, igniting
UN 0317.....	102	Fuzes, igniting
UN 0318.....	102	Grenades, practice
UN 0319.....	102	Primers, tubular
UN 0320.....	102	Primers, tubular
UN 0321.....	102	Cartridges for weapons
UN 0322.....	102	Rocket motors
UN 0323.....	102	Cartridges, power device
UN 0324.....	102	Projectiles
UN 0325.....	102	Igniters
UN 0326.....	102	Cartridges for weapons, blank
UN 0327.....	102	Cartridges for weapons, blank
UN 0328.....	102	Cartridges for weapons, with inert projectile
UN 0329.....	102	Torpedoes
UN 0330.....	102	Torpedoes
UN 0331.....	102	Explosives, blasting, Type B
UN 0332.....	102	Explosives, blasting, Type E
UN 0333.....	102	Fireworks, Type A
UN 0334.....	102	Fireworks, Type B
UN 0335.....	102	Fireworks, Type C
UN 0336.....	102	Fireworks, Type D
UN 0337.....	102	Fireworks, Type D
UN 0338.....	102	Cartridges for weapons, blank
UN 0339.....	102	Cartridges for weapons, with inert projectile
UN 0340.....	102	Nitrocellulose
UN 0341.....	102	Nitrocellulose
UN 0342.....	102	Nitrocellulose, wetted
UN 0343.....	102	Nitrocellulose, plasticized
UN 0344.....	102	Projectiles
UN 0345.....	102	Projectiles
UN 0346.....	102	Projectiles
UN 0347.....	102	Projectiles
UN 0348.....	102	Cartridges for weapons
UN 0349.....	102	Articles, explosive, n.o.s.
UN 0350.....	102	Articles, explosive, n.o.s.
UN 0351.....	102	Articles, explosive, n.o.s.
UN 0352.....	102	Articles, explosive, n.o.s.
UN 0353.....	102	Articles, explosive, n.o.s.
UN 0354.....	102	Articles, explosive, n.o.s.
UN 0355.....	102	Articles, explosive, n.o.s.
UN 0356.....	102	Articles, explosive, n.o.s.
UN 0357.....	102	Substances, explosive, n.o.s.
UN 0358.....	102	Substances, explosive, n.o.s.
UN 0359.....	102	Substances, explosive, n.o.s.
UN 0360.....	102	Detonator assemblies, non-electric
UN 0361.....	102	Detonator assemblies, non-electric
UN 0362.....	102	Ammunition, practice
UN 0363.....	102	Ammunition, proof
UN 0364.....	102	Detonators for ammunition
UN 0365.....	102	Detonators for ammunition
UN 0366.....	102	Detonators for ammunition
UN 0367.....	102	Fuzes, detonating

(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 0368.....	102	Fuzes, igniting
UN 0369.....	102	Warheads, rocket
UN 0370.....	102	Warheads, rocket
UN 0371.....	102	Warheads, rocket
UN 0372.....	102	Grenades, practice
UN 0373.....	102	Signal devices, hand
UN 0374.....	102	Sounding devices, explosive
UN 0375.....	102	Sounding devices, explosive
UN 0376.....	102	Primers, tubular
UN 0377.....	102	Primers, cap type
UN 0378.....	102	Primers, cap type
UN 0379.....	102	Cases, cartridge, empty, with primer
UN 0380.....	102	Articles, pyrophoric
UN 0381.....	102	Cartridges, power device
UN 0382.....	102	Components, explosive train, n.o.s.
UN 0383.....	102	Components, explosive train, n.o.s.
UN 0384.....	102	Components, explosive train, n.o.s.
UN 0385.....	102	5-Nitrobenzotriazol
UN 0386.....	102	Trinitrobenzenesulfonic acid
UN 0387.....	102	Trinitrofluorenone
UN 0388.....	102	Trinitrotoluene and hexanitrostilbene mixtures or Trinitrotoluene and trinitrobenzene mixtures
UN 0389.....	102	Trinitrotoluene mixtures containing trinitrobenzene and hexanitrostilbene
UN 0390.....	102	Tritonal
UN 0391.....	102	Cyclotrimethylenetrinitramine and cyclotetramethylenetetranitramine, mixtures, wetted
UN 0392.....	102	Hexanitrostilbene
UN 0393.....	102	Hexatolal, cast
UN 0394.....	102	Trinitroresorcinol
UN 0395.....	102	Rocket motors, liquid fueled
UN 0396.....	102	Rocket motors, liquid fueled
UN 0397.....	102	Rockets, liquid fueled
UN 0398.....	102	Rockets, liquid fueled
UN 0399.....	102	Bombs, containing flammable liquid
UN 0400.....	102	Bombs, containing flammable liquid
UN 0401.....	102	Dipicryl sulfide
UN 0402.....	102	Ammonium perchlorate
UN 0403.....	102	Flares, aerial
UN 0404.....	102	Flares, aerial
UN 0405.....	102	Cartridges, signal
UN 0406.....	102	Dinitrosobenzene
UN 0407.....	102	Tetrazol-1-acetic acid
UN 0408.....	102	Fuzes, detonating
UN 0409.....	102	Fuzes, detonating
UN 0410.....	102	Fuzes, detonating
UN 0411.....	102	Pentaerythrite tetranitrate
UN 0412.....	102	Cartridges for weapons
UN 0413.....	102	Cartridges for weapons, blank
UN 0414.....	102	Charges, propelling, for cannon
UN 0415.....	102	Charges, propelling, for rocket motors
UN 0416.....	102	Charges, propelling, for rocket motors
UN 0417.....	102	Cartridges for weapons, with inert projectile
UN 0418.....	102	Flares, surface
UN 0419.....	102	Flares, surface
UN 0420.....	102	Flares, aerial
UN 0421.....	102	Flares, aerial
UN 0422.....	102	Squibs
UN 0423.....	102	Squibs
UN 0424.....	102	Projectiles
UN 0425.....	102	Projectiles
UN 0426.....	102	Projectiles
UN 0427.....	102	Projectiles
UN 1001.....	101	Acetylene
UN 1002.....	102	Air

(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 1002.....	101	Air, compressed
UN 1003.....	102	Air
UN 1005.....	102	Ammonia
UN 1005.....	101	Ammonia, anhydrous
UN 1008.....	102	Argon
UN 1008.....	101	Argon or Argon, compressed
UN 1008.....	101	Boron trifluoride
UN 1008.....	101	Bromotrifluoromethane
UN 1010.....	102	Butadiene
UN 1010.....	101	Butadiene, inhibited
UN 1011.....	102	Butane or butane mixtures
UN 1012.....	102	Butylene
UN 1013.....	101	Carbon dioxide
UN 1014.....	102	Carbon dioxide and oxygen
UN 1014.....	101	Carbon dioxide-oxygen-mixture
UN 1015.....	102	Carbon dioxide and nitrous oxide
UN 1015.....	101	Carbon dioxide-nitrous oxide mixture
UN 1016.....	101	Carbon monoxide
UN 1017.....	101	Chlorine
UN 1018.....	101	Chlorodifluoromethane
UN 1020.....	101	Chloropentafluoroethane
UN 1021.....	101	Chlorotetrafluoroethane
UN 1022.....	101	Chlorotrifluoromethane
UN 1023.....	102	Coal gas
UN 1026.....	102	Cyanogen
UN 1026.....	101	Cyanogen gas
UN 1027.....	101	Cyclopropane
UN 1027.....	102	Cyclopropane, liquefied
UN 1028.....	101	Dichlorodifluoromethane
UN 1029.....	102	Dichloromono fluoromethane
UN 1030.....	102	1,1-Difluoroethane
UN 1030.....	101	Difluoroethane
UN 1032.....	102	Dimethylamine
UN 1032.....	101	Dimethylamine, anhydrous
UN 1033.....	101	Dimethyl ether
UN 1035.....	102	Ethane
UN 1035.....	101	Ethane or Ethane, compressed
UN 1036.....	102	Ethylamine
UN 1036.....	101	Monoethylamine
UN 1037.....	101	Ethyl chloride
UN 1038.....	102	Ethylene
UN 1038.....	101	Ethylene, refrigerated liquid
UN 1039.....	101	Ethyl methyl ether
UN 1040.....	101	Ethylene oxide
UN 1041.....	102	Carbon dioxide and ethylene oxide mixtures
NA 1043.....	101	Crude nitrogen fertilizer solution
UN 1043.....	101	Fertilizer ammoniating solution
NA 1043.....	101	Nitrogen fertilizer solution
UN 1044.....	101	Fire extinguisher
UN 1044.....	102	Fire extinguishers
UN 1045.....	101	Fluorine
UN 1046.....	102	Helium
UN 1046.....	101	Helium or Helium, compressed
UN 1048.....	101	Hydrogen bromide
UN 1048.....	102	Hydrogen bromide, anhydrous
UN 1049.....	102	Hydrogen
UN 1049.....	101	Hydrogen or Hydrogen, compressed
UN 1050.....	101	Hydrogen chloride or Hydrogen chloride, anhydrous
UN 1050.....	102	Hydrogen chloride, anhydrous
NA 1051.....	101	Hydrocyanic acid, liquefied
UN 1051.....	102	Hydrogen cyanide, anhydrous, stabilized
UN 1052.....	101	Hydrogen fluoride
UN 1052.....	102	Hydrogen fluoride, anhydrous
UN 1053.....	101	Hydrogen sulfide
UN 1053.....	102	Hydrogen sulphide
UN 1055.....	102	Isobutylene

(1)— Identification Number	(2)— Source 172.***	(3)—Description	(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 1056	102	Krypton	UN 1109	101	Amyl formate
UN 1057	101	Cigarette lighter	UN 1109	102	Amyl formates
UN 1057	102	Lighters for cigars and cigarettes	UN 1110	102	Amyl methyl ketone
NA 1058	101	Liquefied nonflammable gas	UN 1110	101	Methyl amyl ketone
UN 1058	102	Liquefied non-flammable gases	UN 1111	101	Amyl mercaptan
UN 1060	102	Methyl acetylene and propadiene	UN 1112	102	Amyl nitrate
UN 1060	101	Methylacetylene-propadiene, stabl- lized	UN 1113	101	Amyl nitrite
UN 1061	102	Methylamine	UN 1114	101	Benzene
UN 1061	101	Methylamine, anhydrous	UN 1115	101	Benzene
UN 1062	102	Methyl bromide	UN 1118	102	Brake fluid
UN 1062	101	Methyl bromide, liquid	UN 1120	102	Butanol
UN 1063	101	Methyl chloride	NA 1120	101	Butyl alcohol
UN 1064	101	Methyl mercaptan	UN 1120	102	sec-Butanol
UN 1064	102	Methylmercaptan	UN 1120	101	tert-Butanol
UN 1065	102	Neon	UN 1123	101	Butyl acetate
UN 1065	101	Neon or Neon, compressed	UN 1123	102	Butyl acetates
UN 1066	102	Nitrogen	UN 1125	101	Butylamine
UN 1066	101	Nitrogen or Nitrogen, compressed	UN 1125	102	n-Butylamine
UN 1067	102	Nitrogen dioxide	UN 1126	101	Butyl bromide
UN 1067	101	Nitrogen dioxide, liquid	UN 1126	102	n-Butyl bromide
NA 1067	101	Nitrogen peroxide, liquid	UN 1127	101	Butyl chloride
NA 1067	101	Nitrogen tetroxide, liquid	UN 1127	102	Chlorobutanes
UN 1069	101	Nitrosyl chloride	UN 1128	101	Butyl formate
UN 1070	102	Nitrous oxide	UN 1128	102	n-Butyl formate
UN 1070	101	Nitrous oxide or Nitrous oxide, compressed	UN 1129	101	Butyraldehyde
UN 1071	102	Oil gas	UN 1130	101	Camphor oil
UN 1072	102	Oxygen	UN 1131	101	Carbon bisulfide, or Carbon disul- fide
UN 1072	101	Oxygen or Oxygen, compressed	UN 1131	102	Carbon disulphide
UN 1073	102	Oxygen	UN 1132	102	Carbon remover
UN 1073	101	Oxygen, refrigerated liquid	UN 1132	101	Carbon remover, liquid
UN 1075	101	Liquefied petroleum gas	UN 1133	101	Adhesive
UN 1075	102	Petroleum gases, liquefied	UN 1133	102	Adhesives
UN 1076	101	Phosgene	NA 1133	101	Cement
UN 1077	102	Propylene	NA 1133	101	Cement, container, linoleum, tile, or wallboard, liquid
UN 1078	102	Refrigerant gases, n.o.s.	NA 1133	101	Cement, leather
UN 1078	101	Refrigerant gas, n.o.s. or Dispers- ant gas, n.o.s.	NA 1133	101	Cement, pyroxylin
UN 1079	101	Sulfur dioxide	NA 1133	101	Cement, roofing, liquid
UN 1079	102	Sulphur dioxide	NA 1133	101	Cement, rubber
UN 1080	101	Sulfur hexafluoride	UN 1134	101	Chlorobenzene
UN 1080	102	Sulphur hexafluoride	UN 1135	101	Ethylene chlorohydrin
UN 1081	101	Tetrafluoroethylene, inhibited	UN 1136	101	Coal tar distillate
UN 1082	101	Trifluoroethoxyethylene	NA 1136	101	Coal tar distillate
UN 1082	102	Trifluoroethoxyethylene, inhibited	NA 1136	101	Coal tar light oil
UN 1083	101	Trimethylamine, anhydrous	UN 1137	101	Coal tar oil
UN 1085	102	Vinyl bromide	UN 1137	101	Coal tar distillate
UN 1086	101	Vinyl chloride	NA 1137	101	Coal tar light oil
UN 1087	101	Vinyl methyl ether	NA 1137	101	Coal tar oil
UN 1088	101	Acetal	UN 1139	101	Coating solution
UN 1089	101	Acetaldehyde	NA 1142	101	Antifreeze compound, liquid
UN 1090	101	Acetone	NA 1142	101	Antifreeze preparation, liquid
UN 1091	101	Acetone oil	NA 1142	101	Compound, polishing, liquid
UN 1091	102	Acetone oils	NA 1142	101	Compound, vulcanizing, liquid
UN 1092	101	Acrolein, inhibited	UN 1142	101	Dressing, leather
UN 1093	101	Acrylonitrile	UN 1142	102	Flammable liquid preparations, n.o.s.
UN 1093	102	Acrylonitrile, inhibited	NA 1142	101	Leather bleach or dressing
UN 1098	101	Allyl alcohol	NA 1142	101	Polish, metal, stove, furniture or wood, liquid
UN 1099	101	Allyl bromide	NA 1142	101	Rust preventive coating
UN 1100	101	Allyl chloride	UN 1143	101	Crotonaldehyde
UN 1101	102	Diethylaluminum chloride	UN 1143	102	Crotonaldehyde, inhibited
UN 1102	102	Triethylaluminum	UN 1144	101	Crotonylene
UN 1103	102	Trimethylaluminum	UN 1145	101	Cyclohexane
UN 1104	101	Amyl acetate	UN 1145	101	Cyclopentane
UN 1104	102	Amyl acetates	UN 1147	101	Decahydronaphthalene
UN 1105	102	Amyl alcohols	UN 1148	102	Diacetone alcohol
UN 1108	101	Amylamine	UN 1148	101	Diacetone alcohol
UN 1107	101	Amyl chloride	UN 1149	101	Butyl ether
UN 1108	101	Amylene	UN 1149	102	Dibutyl ethers
UN 1108	102	n-Amylene	UN 1150	101	Dichloroethylene

App. A

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(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 1152.....	101	Dichloropentane
UN 1152.....	102	Dichloropentanes
UN 1153.....	101	Ethylene glycol diethyl ether
UN 1154.....	101	Diethylamine
UN 1155.....	102	Diethyl ether
UN 1155.....	101	Ethyl ether
UN 1156.....	101	Diethyl ketone
UN 1157.....	101	Diisobutyl ketone
UN 1158.....	101	Diisopropylamine
UN 1159.....	101	Diisopropyl ether
UN 1160.....	101	Dimethylamine, aqueous solution
UN 1160.....	102	Dimethylamine, solution
UN 1161.....	101	Dimethyl carbonate
UN 1162.....	101	Dimethyldichlorosilane
UN 1163.....	101	Dimethylhydrazine, unsymmetrical
UN 1164.....	101	Dimethyl sulfide
UN 1164.....	102	Dimethyl sulphida
UN 1165.....	101	Dioxane
UN 1166.....	101	Dioxolane
UN 1167.....	101	Divinyl ether
UN 1167.....	102	Divinyl ether, inhibited
UN 1168.....	102	Driers
UN 1168.....	101	Driers, paint or varnish, liquid, n.o.s.
UN 1169.....	102	Extracts, aromatic, liquid
UN 1170.....	101	Alcoholic beverage
NA 1170.....	101	Cologne spirits
UN 1170.....	102	Ethanol or Ethanol solutions
UN 1170.....	101	Ethyl alcohol
UN 1171.....	101	Ethylene glycol monoethyl ether
UN 1172.....	101	Ethylene glycol monoethyl ether acetate
UN 1173.....	101	Ethyl acetate
UN 1175.....	101	Ethyl benzene
UN 1175.....	102	Ethylbenzene
UN 1176.....	101	Ethyl borate
UN 1177.....	102	Ethylbutyl acetate
UN 1177.....	101	Ethyl butyl acetate
UN 1178.....	102	2-Ethylbutylaldehyde
UN 1178.....	101	Ethyl butylaldehyde
UN 1179.....	101	Ethyl butyl ether
UN 1180.....	101	Ethyl butyrate
UN 1181.....	101	Ethyl chloroacetate
UN 1182.....	101	Ethyl chloroformate
UN 1183.....	101	Ethyl dichlorosilane
UN 1183.....	102	Ethylidichlorosilane
UN 1184.....	101	Ethylene dichloride
UN 1185.....	102	Ethyleneimine
UN 1185.....	101	Ethylene imine, inhibited
UN 1188.....	101	Ethylene glycol monomethyl ether
UN 1189.....	101	Ethylene glycol monomethyl ether acetate
UN 1180.....	101	Ethyl formate
UN 1191.....	102	Ethyl hexaldehyde
UN 1191.....	101	Ethylhexaldehyde
UN 1192.....	101	Ethyl lactate
UN 1193.....	101	Ethyl methyl ketone
UN 1193.....	101	Methyl ethyl ketone
UN 1194.....	101	Ethyl nitrite (nitrous ether)
UN 1194.....	102	Ethyl nitrite, solutions
UN 1195.....	101	Ethyl propionate
UN 1196.....	101	Ethyl trichlorosilane
UN 1196.....	102	Ethyltrichlorosilane
UN 1197.....	101	Extract, liquid, flavoring
UN 1197.....	102	Extracts, flavouring, liquid
UN 1198.....	101	Formaldehyde solution
UN 1198.....	102	Formaldehyde solutions
UN 1199.....	101	Furfural
UN 1201.....	101	Fusel oil
UN 1202.....	101	Gas oil
UN 1203.....	101	Gasoline
(UN 1203)	102	Motor fuel, n.o.s.

(1)— Identification Number	(2)— Source 172.***	(3)—Description
NA 1203.....	101	Motor fuel, n.o.s.
UN 1204.....	102	Nitroglycerin solution, in alcohol
NA 1204.....	101	Spirits of nitroglycerin
NA 1204.....	101	Spirits of nitroglycerin, not exceeding 1% nitroglycerin by weight
UN 1205.....	102	Gutta serena solution
UN 1206.....	101	Heptane
UN 1207.....	101	Hexaldehyde
UN 1208.....	101	Hexane
UN 1208.....	101	Neohexane
UN 1210.....	101	Ink
UN 1210.....	102	Ink, printers
UN 1212.....	102	Isobutanol
UN 1213.....	101	Isobutyl acetate
UN 1214.....	101	Isobutylamine
UN 1216.....	101	Isocotene
UN 1218.....	101	Isoprene
UN 1218.....	102	Isoprene, inhibited
UN 1219.....	101	Isopropanol
UN 1220.....	101	Isopropyl acetate
UN 1221.....	101	Isopropylamine
UN 1222.....	101	Isopropyl nitrate
UN 1223.....	101	Kerosene
UN 1224.....	102	Ketones, liquid, n.o.s.
UN 1226.....	101	Cigarette lighter
UN 1226.....	101	Lighter fluid
UN 1226.....	102	Lighter fuels
UN 1226.....	102	Lighters
NA 1228.....	101	Mercaptan mixture, aliphatic
UN 1228.....	102	Mercaptans, liquid, n.o.s. or Mercaptan mixtures, liquid, n.o.s.
UN 1229.....	101	Mesityl oxide
NA 1230.....	101	Columbian spirits
UN 1230.....	102	Methanol
UN 1230.....	101	Methyl alcohol
UN 1231.....	101	Methyl acetate
UN 1232.....	101	Methyl acetone
UN 1233.....	101	Methylamyl acetate
UN 1234.....	101	Methylal
UN 1235.....	101	Methylamine, aqueous solution
UN 1237.....	101	Methyl butyrate
UN 1238.....	101	Methyl chloroformate
UN 1239.....	102	Methylchloromethyl ether
UN 1239.....	101	Methylchloromethyl ether, anhydrous
UN 1242.....	101	Methyl dichlorosilane
UN 1242.....	102	Methyldichlorosilane
UN 1243.....	101	Methyl formate
UN 1244.....	101	Methylhydrazine
UN 1245.....	102	Methyl isobutyl ketone
UN 1245.....	102	Methyl isopropyl ketone
UN 1246.....	101	Methyl isopropenyl ketone, inhibited
UN 1247.....	102	Methyl methacrylate
UN 1247.....	101	Methyl methacrylate monomer, inhibited
NA 1247.....	101	Methyl methacrylate monomer, uninhibited
UN 1248.....	101	Methyl propionate
UN 1249.....	101	Methyl propyl ketone
UN 1250.....	101	Methyltrichlorosilane
UN 1251.....	102	Methyl vinyl ketone
UN 1251.....	101	Methyl vinyl ketone, inhibited
UN 1255.....	102	Naphtha, petroleum
UN 1255.....	101	Petroleum naphtha
UN 1256.....	101	Naphtha, solvent
UN 1257.....	102	Casinghead gasoline
UN 1259.....	101	Nickel carbonyl
UN 1281.....	101	Nitromethane
UN 1262.....	101	Isocotene
UN 1262.....	101	Octane

(1)— Identification Number	(2)— Source 172.***	(3)—Description	(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 1263.....	101	Lacquer base or Lacquer chips, plastic	UN 1318.....	101	Cobalt resin, precipitated
UN 1263.....	101	Paint	UN 1320.....	102	Dinitrophenol, wetted
NA 1263.....	101	Paint related material	UN 1321.....	102	Dinitrophenolates, wetted
UN 1263.....	102	Paints, enamels, lacquers, stains, shellac	UN 1322.....	102	Dinitroresorcinol, wetted
UN 1264.....	101	Paraldehyde	UN 1323.....	102	Ferracerium
UN 1265.....	101	Isopentane	NA 1324.....	101	Film
UN 1265.....	101	Pentane	UN 1324.....	102	Film, motion picture
UN 1265.....	102	Pentanes	NA 1325.....	101	Antimony sulfide, solid
UN 1266.....	102	Perfumery products	NA 1325.....	101	Burmt cotton, not repicked
UN 1267.....	101	Crude oil, petroleum	NA 1325.....	101	Cosmetics, n.o.s.
UN 1267.....	102	Petroleum crude oil	UN 1325.....	101	Drugs, n.o.s.
NA 1268.....	101	Naphtha distillate	UN 1325.....	101	Flammable solid, n.o.s.
UN 1268.....	101	Petroleum distillate	NA 1325.....	102	Flammable solids, n.o.s.
UN 1268.....	102	Petroleum distillates, n.o.s.	UN 1325.....	101	Fusee
NA 1268.....	101	Peat oil	NA 1325.....	101	Garbage tankage
NA 1270.....	101	Oil	NA 1325.....	101	N-Methyl-N'-nitro-N-nitrosoguanidine
UN 1270.....	102	Petroleum oil	NA 1325.....	101	Paper stock, wet
UN 1271.....	101	Petroleum ether	UN 1325.....	101	Pyroxilin plastic, rods, sheets, rolls, or tubes
UN 1271.....	102	Petroleum spirit	NA 1325.....	101	Pyroxilin plastic, scrap
UN 1272.....	101	Pine oil	NA 1325.....	101	Rags, wet
UN 1274.....	102	Propanol	NA 1325.....	101	Rough ammoniate tankage
UN 1274.....	101	Propyl alcohol	NA 1325.....	101	Smokeless powder for small arms
UN 1275.....	101	Propionaldehyde	NA 1325.....	101	Tankage fertilizer
UN 1276.....	102	n-Propyl acetate	NA 1325.....	101	Tankage, rough ammoniate
UN 1276.....	101	Propyl acetate	NA 1325.....	101	Waste paper, wet
UN 1277.....	102	Monopropylamine	UN 1326.....	102	Hafnium
UN 1277.....	101	Propylamine	UN 1326.....	101	Hafnium metal, wet
UN 1278.....	101	Propyl chloride	UN 1327.....	102	Bhusa
UN 1279.....	101	Propylene dichloride	UN 1327.....	101	Hay
UN 1280.....	101	Propylene oxide	UN 1327.....	101	Hay or straw
UN 1281.....	101	Propyl formate	UN 1327.....	102	Straw
UN 1281.....	102	Propyl formates	UN 1328.....	102	Hexamine
UN 1282.....	101	Pyridine	UN 1330.....	102	Manganose resinote
UN 1286.....	102	Rosin oil	UN 1331.....	102	Matches
UN 1287.....	102	Rubber solution	UN 1331.....	101	Matches, strike anywhere
UN 1288.....	102	Shale oil	UN 1332.....	102	Metaldehyde
NA 1289.....	101	Sodium methylate, alcohol mixture	UN 1333.....	102	Cerium, crude
UN 1289.....	102	Sodium methylate, solutions	UN 1334.....	102	Naphthalene, crude or refined
UN 1292.....	101	Ethyl silicate	UN 1334.....	101	Naphthalene or Naphthalin
UN 1292.....	102	Tetraethyl silicate	UN 1336.....	102	Nitroguanidine, wetted
UN 1293.....	102	Tinctures, medicinal	UN 1336.....	101	Nitroguanidine, wet with not less than 20% water
UN 1294.....	101	Toluene	UN 1337.....	102	Nitrostarch, wetted
UN 1295.....	101	Trichlorosilane	UN 1337.....	101	Nitrostarch, wet with not less than 20% water
UN 1296.....	101	Triethylamine	UN 1337.....	101	Nitrostarch, wet with not less than 30% alcohol or solvent
UN 1297.....	102	Trimethylamine	UN 1338.....	102	Phosphorus, amorphous
UN 1297.....	101	Trimethylamine, aqueous solution	UN 1339.....	101	Phosphorus, amorphous, red
UN 1298.....	101	Trimethylchlorosilane	UN 1339.....	101	Phosphorus heptasulfide
UN 1299.....	101	Turpentine	UN 1339.....	102	Phosphorus heptasulphide
UN 1300.....	101	Turpentine substitute	UN 1340.....	101	Phosphorus pentasulfide
UN 1301.....	101	Vinyl acetate	UN 1340.....	102	Phosphorus pentasulphide
UN 1302.....	102	Vinyl ethyl ether	UN 1341.....	101	Phosphorus sesquisulfide
UN 1302.....	101	Vinyl ethyl ether, inhibited	UN 1341.....	102	Phosphorus sesquisulphide
UN 1303.....	102	Vinylidene chloride	UN 1343.....	101	Phosphorus trisulfide
UN 1303.....	101	Vinylidene chloride, inhibited	UN 1343.....	102	Phosphorus trisulphide
UN 1304.....	101	Vinyl isobutyl ether	NA 1344.....	101	Picric acid, wet, with not less than 10% water
UN 1305.....	101	Vinyl trichlorosilane	UN 1344.....	102	Trinitrophenol, wetted
UN 1305.....	102	Vinyl trichlorosilane, inhibited	UN 1345.....	102	Rubber scrap
UN 1307.....	101	Xylene	UN 1345.....	101	Rubber scrap or Rubber buffings
UN 1307.....	102	Xylenes	UN 1345.....	101	Rubber shoddy or Rubber, regenerated or Rubber, reclaimed
UN 1308.....	102	Zirconium	UN 1346.....	102	Silicon powder
UN 1308.....	101	Zirconium, metal, liquid, suspensions	UN 1347.....	102	Silver picrate, wetted
UN 1309.....	102	Aluminium powder, coated	UN 1348.....	102	Sodium dinitro-o-cresolate, wetted
UN 1310.....	101	Ammonium picrate, wet	UN 1349.....	101	Sodium picramate, wet
UN 1310.....	102	Ammonium picrate, wetted	UN 1349.....	102	Sodium picramate, wetted
UN 1312.....	102	Barnsol			
UN 1313.....	101	Calcium resinote			
UN 1314.....	101	Calcium resinote, fused			
UN 1318.....	102	Cobalt resinote			

App. A

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(1)— Identification Number	(2)— Source 172.***	(3)—Description	(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 1350.....	101	Sulfur, solid	UN 1363.....	102	Pyrophoric metals, n.o.s. or Pyro- phoric alloys, n.o.s.
UN 1350.....	102	Sulphur	UN 1384.....	102	Sodium dithionite
UN 1352.....	102	Titanium	UN 1384.....	101	Sodium hydrosulfite
UN 1352.....	101	Titanium metal powder, wet with 20% or more water	UN 1385.....	101	Sodium sulfide, anhydrous
UN 1353.....	102	Toe puffs	UN 1385.....	102	Sodium sulphide, anhydrous or Sodium sulphide
UN 1354.....	101	Trinitrobenzene, wet	UN 1386.....	102	Seed cake
UN 1354.....	102	Trinitrobenzene, wetted	UN 1387.....	101	Waste wool, wet
UN 1355.....	101	Trinitrobenzoic acid, wet	UN 1387.....	102	Wool waste
UN 1355.....	102	Trinitrobenzoic acid, wetted	UN 1389.....	102	Alkali metal amalgams, n.o.s.
UN 1356.....	101	Trinitrotoluene, wet	UN 1380.....	102	Alkali metal amides, n.o.s.
UN 1356.....	102	Trinitrotoluene, wetted	UN 1391.....	102	Alkali metal dispersions, n.o.s. or Alkali earth metal dispersions, n.o.s.
UN 1357.....	101	Urea nitrate, wet	UN 1392.....	102	Alkaline earth metal amalgams, n.o.s.
UN 1357.....	102	Urea nitrate, wetted	UN 1393.....	102	Alkaline earth metal alloys, n.o.s.
UN 1358.....	102	Zirconium	UN 1394.....	102	Aluminium carbide
UN 1358.....	101	Zirconium metal, wet	UN 1395.....	102	Aluminium ferrosilicon
UN 1359.....	102	Bags	UN 1396.....	102	Aluminium, powder, uncoated
UN 1359.....	101	Bags, sodium nitrate, empty and unwashed	UN 1396.....	101	Aluminium, metallic, powder
UN 1360.....	101	Calcium phosphide	UN 1397.....	102	Aluminium phosphide
UN 1361.....	102	Carbon	UN 1397.....	101	Aluminium phosphide
NA 1361.....	101	Charcoal briquettes or briquets	UN 1398.....	102	Aluminium silicon
NA 1361.....	101	Charcoal screenings, made from "pinon" wood	UN 1400.....	102	Barium
NA 1361.....	101	Charcoal, shell	UN 1401.....	102	Barium
NA 1361.....	101	Charcoal, wood, ground, crushed, granulated, or pulverized	UN 1401.....	101	Calcium
NA 1361.....	101	Charcoal, wood, lump	UN 1401.....	101	Calcium, metal
NA 1361.....	101	Charcoal wood screenings, other than "pinon" wood screenings	NA 1401.....	101	Calcium, metal, crystalline
NA 1361.....	101	Coal, ground bituminous, sea coal, coal facings	UN 1402.....	101	Calcium carbide
UN 1362.....	102	Carbon, activated	UN 1403.....	102	Calcium cyanamide
UN 1362.....	101	Charcoal, activated	UN 1403.....	101	Calcium cyanamide, not hydrated
UN 1363.....	101	Copra	UN 1404.....	102	Calcium hydride
UN 1364.....	101	Cotton waste, oily	UN 1405.....	102	Calcium silicide
UN 1365.....	102	Cotton	UN 1406.....	101	Calcium silicon
UN 1366.....	102	Diethylzinc	UN 1407.....	102	Cesium
UN 1367.....	102	Diethylmagnesium	UN 1407.....	101	Cesium metal
UN 1368.....	102	Dimethylmagnesium	UN 1408.....	101	Ferrosilicon
UN 1369.....	102	p-Nitrosodimethylaniline	UN 1409.....	102	Hydrides
UN 1370.....	102	Dimethylzinc	UN 1410.....	102	Lithium aluminium hydride
UN 1371.....	102	Driers	UN 1410.....	101	Lithium aluminium hydride
NA 1372.....	101	Burnt fiber	UN 1411.....	102	Lithium aluminium hydride
NA 1372.....	101	Fibers	UN 1411.....	101	Lithium aluminium hydride, ethereal
NA 1372.....	101	Fibers, burnt	UN 1412.....	102	Lithium amide
UN 1372.....	102	Fibres, animal or vegetable	UN 1412.....	101	Lithium amide, powdered
NA 1372.....	101	Hair, wet	UN 1413.....	101	Lithium borohydride
NA 1373.....	101	Fibers or fabric, containing more than 5% animal or vegetable oil	UN 1414.....	101	Lithium hydride
UN 1373.....	102	Fibres or Fabric, animal or vegeta- ble	UN 1415.....	102	Lithium
UN 1374.....	102	Fishmeal or fishscrap	UN 1415.....	101	Lithium metal
NA 1374.....	101	Fish meal or fish-scrap containing less than 8% or more than 12% water	UN 1415.....	101	Lithium metal, in cartridges
UN 1375.....	102	Fuel, pyrophoric, n.o.s.	UN 1417.....	101	Lithium silicon
UN 1376.....	101	Iron mass or sponge, spent	UN 1418.....	102	Magnesium powder or Magnesium alloys, powder
UN 1376.....	102	Iron oxide	UN 1419.....	102	Magnesium aluminium phosphide
UN 1378.....	101	Nickel catalyst, wet	UN 1420.....	101	Magnesium aluminum phosphide
UN 1378.....	102	Nickel catalyst, wetted	UN 1420.....	102	Potassium, metal alloys
UN 1379.....	102	Paper, unsaturated oil treated	NA 1421.....	101	Potassium, metal liquid alloy
UN 1380.....	101	Pentaborane	UN 1422.....	102	Alkali metal alloys, liquid
UN 1381.....	102	Phosphorus	UN 1422.....	101	Sodium, metal liquid alloy
UN 1381.....	101	Phosphorus, white or yellow, dry	UN 1422.....	102	Potassium-sodium
UN 1381.....	101	Phosphorus, white or yellow, in water	UN 1422.....	101	Sodium potassium alloy, liquid
UN 1382.....	101	Potassium sulfide	UN 1422.....	101	Sodium potassium alloy, solid
UN 1382.....	102	Potassium sulphide, anhydrous or Potassium sulphide	UN 1423.....	102	Rubidium
NA 1383.....	101	Iron mass or sponge	UN 1423.....	101	Rubidium metal
			UN 1423.....	101	Rubidium metal, in cartridges
			UN 1424.....	102	Sodium amalgam
			UN 1425.....	101	Sodium amide
			UN 1426.....	102	Sodium borohydride
			UN 1427.....	101	Sodium hydride
			UN 1428.....	102	Sodium

(1)— Identification Number	(2)— Source 172.***	(3)—Description	(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 1428.....	101	Sodium, metal or metallic	UN 1479.....	101	Oxidizer, n.o.s. or Oxidizing materi- al, n.o.s.
UN 1429.....	102	Sodium	UN 1479.....	102	Oxidizing substances, n.o.s.
UN 1429.....	101	Sodium, metal dispersion in organic solvent	NA 1479.....	101	Potassium dichromate
UN 1431.....	102	Sodium methylate	NA 1479.....	101	Sodium dichromate
UN 1431.....	101	Sodium methylate, dry	NA 1481.....	101	Perchlorate, n.o.s.
UN 1432.....	101	Sodium phosphide	UN 1481.....	102	Perchlorates, inorganic, n.o.s.
UN 1433.....	101	Stannic phosphide	NA 1482.....	101	Perrnanganate, n.o.s.
UN 1433.....	102	Stannic phosphides	UN 1482.....	102	Perrnanganates, inorganic, n.o.s.
UN 1434.....	102	Strontium	UN 1483.....	102	Peroxides, inorganic, n.o.s.
UN 1435.....	102	Zinc ashes	UN 1484.....	101	Potassium bromate
UN 1436.....	102	Zinc powder or zinc dust	UN 1485.....	101	Potassium chlorate
UN 1437.....	101	Zirconium hydride	UN 1486.....	101	Potassium nitrate
UN 1439.....	102	Aluminium nitrate	UN 1487.....	102	Potassium nitrate and sodium ni- trite, mixture
UN 1439.....	101	Aluminium nitrate	UN 1487.....	101	Sodium nitrite mixed with potassium nitrate
UN 1439.....	101	Ammonium dichromate	NA 1487.....	101	Sodium nitrite mixture
UN 1442.....	101	Ammonium perchlorate	UN 1488.....	101	Potassium nitrite
UN 1444.....	102	Ammonium persulphate	UN 1488.....	101	Potassium perchlorate
UN 1445.....	101	Barium chlorate	UN 1489.....	101	Potassium permanganate
NA 1445.....	101	Barium chlorate, wet	UN 1491.....	101	Potassium peroxide
UN 1446.....	101	Barium nitrate	UN 1492.....	102	Potassium persulphate
UN 1447.....	101	Barium perchlorate	UN 1493.....	101	Silver nitrate
UN 1448.....	101	Barium permanganate	UN 1494.....	101	Sodium bromate
UN 1449.....	102	Barium peroxide	UN 1495.....	101	Sodium chlorate
UN 1449.....	101	Barium peroxide	UN 1496.....	101	Sodium chlorite
UN 1450.....	102	Bromates, inorganic, n.o.s.	UN 1498.....	101	Sodium nitrate
UN 1451.....	102	Caesium nitrate	UN 1499.....	102	Sodium nitrate and potassium ni- trate
UN 1452.....	101	Calcium chlorate	UN 1500.....	101	Sodium nitrite
UN 1453.....	101	Calcium chlorite	UN 1502.....	101	Sodium perchlorate
UN 1454.....	101	Calcium nitrate	UN 1503.....	101	Sodium permanganate
UN 1455.....	102	Calcium perchlorate	UN 1504.....	101	Sodium peroxide
UN 1456.....	101	Calcium permanganate	UN 1505.....	102	Sodium persulphate
UN 1457.....	101	Calcium peroxide	UN 1506.....	101	Strontium chlorate
UN 1458.....	101	Chlorate and borate mixture	UN 1506.....	101	Strontium chlorate, wet
UN 1458.....	102	Chlorate and borate, mixtures	UN 1507.....	101	Strontium nitrate
UN 1459.....	101	Chlorate and magnesium chloride mixture	UN 1508.....	102	Strontium perchlorate
UN 1459.....	102	Chlorate and magnesium chloride, mixture	UN 1509.....	101	Strontium peroxide
UN 1481.....	101	Chlorate, n.o.s.	UN 1510.....	101	Tetranitromethane
NA 1461.....	101	Chlorate, n.o.s., wet	UN 1511.....	102	Urea hydrogen peroxide
UN 1461.....	102	Chlorates, inorganic, n.o.s.	NA 1511.....	101	Urea peroxide
UN 1462.....	102	Chlorites, inorganic, n.o.s.	UN 1512.....	101	Zinc ammonium nitrite
NA 1463.....	101	Chromic acid mixture, dry	UN 1513.....	101	Zinc chlorate
NA 1463.....	101	Chromic acid, solid	UN 1514.....	101	Zinc nitrate
UN 1463.....	102	Chromium trioxide, anhydrous	UN 1515.....	101	Zinc permanganate
UN 1465.....	102	Didymium nitrate	UN 1516.....	101	Zinc peroxide
UN 1466.....	101	Ferrio nitrate	UN 1517.....	101	Zirconium picramate, wet
UN 1467.....	101	Guanidine nitrate	UN 1517.....	102	Zirconium picramate, wetted
UN 1469.....	101	Lead nitrate	UN 1541.....	101	Acetone cyanohydrin
UN 1470.....	102	Lead perchlorate	UN 1544.....	102	Alkaloids, n.o.s. or Alkaloid salts, n.o.s.
UN 1471.....	101	Lithium hypochlorite compound, dry	UN 1546.....	102	Ailyl isothiocyanate
UN 1471.....	102	Lithium hypochlorite, dry or Lithium hypochlorite mixtures	UN 1546.....	102	Ammonium arsenate
UN 1472.....	101	Lithium peroxide	UN 1546.....	101	Ammonium arsenate, solid
UN 1473.....	102	Magnesium bromate	UN 1547.....	102	Aniline
UN 1474.....	101	Magnesium nitrate	UN 1547.....	101	Aniline oil, liquid
UN 1475.....	101	Magnesium perchlorate	UN 1548.....	102	Aniline hydrochloride
UN 1476.....	102	Magnesium peroxide	UN 1549.....	102	Antimony compounds, inorganic, n.o.s.
UN 1476.....	101	Magnesium peroxide, solid	NA 1549.....	101	Antimony tribromide, solid
NA 1477.....	101	Ammonium sulfate nitrate	NA 1549.....	101	Antimony tribromide solution
NA 1477.....	101	Nitrate, n.o.s.	NA 1549.....	101	Antimony trifluoride, solid
UN 1477.....	102	Nitrates, inorganic, n.o.s.	NA 1549.....	101	Antimony trifluoride solution
UN 1478.....	102	Sodium nitrate and potash, mix- tures	UN 1550.....	102	Antimony lactate
NA 1479.....	101	Compound, tree or weed killing, solid	UN 1550.....	101	Antimony lactate, solid
NA 1479.....	101	Cosmetics, n.o.s.	UN 1551.....	102	Antimony potassium tartrate
NA 1479.....	101	Cupric nitrate	UN 1551.....	101	Antimony potassium tartrate, solid
NA 1479.....	101	Drugs, n.o.s.	UN 1553.....	102	Arsenic acid, liquid
			UN 1553.....	101	Arsenic acid solution

App. A

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(1)— Identification Number	(2)— Source 172.**	(3)—Description	(1)— Identification Number	(2)— Source 172.**	(3)—Description
UN 1554.....	101	Arsenic acid, solid	UN 1588.....	101	Cyanide or cyanide mixture, dry
UN 1555.....	102	Arsenic bromide	UN 1588.....	102	Cyanides, inorganic, n.o.s.
UN 1555.....	101	Arsenic bromide, solid	UN 1589.....	101	Cyanogen chloride
UN 1556.....	101	Arsenical compound, liquid, n.o.s., or Arsenical mixture, liquid, n.o.s.	UN 1590.....	102	Dichloroanilines
UN 1556.....	102	Arsenic compounds, liquid, n.o.s.	UN 1591.....	101	Dichlorobenzene, ortho, liquid
NA 1556.....	101	Methyldichloroarsine	UN 1591.....	102	o-Dichlorobenzene
NA 1556.....	101	Phenyldichloroarsine	UN 1592.....	101	Dichlorobenzene, para, solid
UN 1557.....	101	Arsenical compound, solid, n.o.s., or Arsenical mixture, solid, n.o.s.	UN 1592.....	102	p-Dichlorobenzene
NA 1557.....	101	Arsenical dip, liquid	UN 1593.....	102	Dichloromethane
UN 1557.....	102	Arsenic compounds, solid, n.o.s.	UN 1593.....	101	Dichloromethane or Methylene chloride
NA 1557.....	101	Arsenic iodide, solid	UN 1594.....	102	Diethyl sulphate
NA 1557.....	101	Arsenic sulfide, solid	UN 1595.....	101	Dimethyl sulfate
NA 1557.....	101	Arsenic trisulfide	UN 1595.....	102	Dimethyl sulphate
UN 1558.....	102	Arsenic	UN 1596.....	102	Dinitroanilines
UN 1558.....	101	Arsenic, solid	UN 1597.....	102	Dinitrobenzenes
UN 1559.....	102	Arsenic pentoxide	UN 1597.....	101	Dinitrobenzene, solid, or Dinitroben- zol, solid
UN 1559.....	101	Arsenic pentoxide, solid	UN 1597.....	101	Dinitrobenzene solution
UN 1560.....	102	Arsenic trichloride	UN 1598.....	102	Dinitro-o-cresol
UN 1560.....	101	Arsenic trichloride, liquid	UN 1599.....	101	Dinitrophenol solution
UN 1561.....	102	Arsenic trioxide	UN 1599.....	102	Dinitrophenol, solution
UN 1561.....	101	Arsenic trioxide, solid	UN 1600.....	101	Dinitrotoluene, liquid
UN 1562.....	101	Arsenical dust	UN 1600.....	102	Dinitrotoluenes, molten
UN 1564.....	102	Barium compounds, n.o.s.	UN 1601.....	101	Disinfectant, liquid
UN 1565.....	102	Barium cyanide	UN 1601.....	102	Disinfectants, n.o.s.
UN 1565.....	101	Barium cyanide, solid	UN 1601.....	101	Disinfectant, solid
NA 1566.....	101	Beryllium chloride	UN 1602.....	102	Dyes, n.o.s. or Dye intermediates, n.o.s.
UN 1566.....	101	Beryllium compound, n.o.s.	UN 1603.....	102	Ethyl bromoacetate
UN 1566.....	102	Beryllium compounds	UN 1604.....	101	Ethylenediamine
NA 1566.....	101	Beryllium fluoride	UN 1605.....	101	Ethylene dibromide
UN 1567.....	102	Beryllium	UN 1606.....	102	Ferric arsenate
UN 1569.....	102	Bromoacetone	UN 1606.....	101	Ferric arsenate, solid
UN 1569.....	101	Bromoacetone, liquid	UN 1607.....	102	Ferric arsenite
UN 1570.....	102	Brucine	UN 1607.....	101	Ferric arsenite, solid
UN 1570.....	101	Brucine, solid	UN 1608.....	102	Ferrous arsenate
UN 1571.....	101	Barium azide, wet	UN 1608.....	101	Ferrous arsenate, solid
UN 1571.....	102	Barium azide, wetted	UN 1610.....	102	Halogenated irritating liquids, n.o.s.
UN 1572.....	102	Cacodylic acid	UN 1611.....	102	Hexaethyl tetraphosphate
UN 1573.....	102	Calcium arsenate	UN 1611.....	101	Hexaethyl tetraphosphate, liquid
UN 1573.....	101	Calcium arsenate, solid	UN 1612.....	102	Hexaethyl tetraphosphate and com- pressed gas
UN 1574.....	102	Calcium arsenate and arsenite	UN 1612.....	101	Hexaethyl tetraphosphate and com- pressed gas mixture
NA 1574.....	101	Calcium arsenite, solid	UN 1613.....	102	Hydrocyanic acid, aqueous solu- tions
UN 1575.....	102	Calcium cyanide	UN 1613.....	101	Hydrocyanic acid solution
UN 1575.....	101	Calcium cyanide, solid or Calcium cyanide mixture, solid	UN 1613.....	101	Hydrocyanic acid solution, less than 5% hydrocyanic acid
UN 1577.....	102	Chlorodinitrobenzenes	UN 1614.....	102	Hydrogen cyanide, anhydrous, sta- bilized
UN 1577.....	101	Dinitrochlorobenzene	UN 1616.....	101	Lead acetate
UN 1578.....	102	Chloronitrobenzenes	UN 1617.....	102	Lead arsenates
UN 1578.....	101	Nitrochlorobenzene, meta or para, solid	UN 1617.....	101	Lead arsenate, solid
UN 1578.....	101	Nitrochlorobenzene, ortho, liquid	UN 1618.....	102	Lead arsenites
UN 1579.....	101	4-Chloro-o-toluidine hydrochloride	UN 1618.....	101	Lead arsenite, solid
UN 1580.....	102	Chloropicrin	UN 1620.....	101	Lead cyanide
UN 1580.....	101	Chloropicrin, liquid	UN 1621.....	102	London purple
UN 1581.....	102	Chloropicrin and methyl bromide	UN 1621.....	101	London purple, solid
NA 1581.....	101	Methyl bromide and more than 2% chloropicrin mixture, liquid	UN 1622.....	102	Magnesium arsenate
UN 1582.....	102	Chloropicrin and methyl chloride	UN 1622.....	101	Magnesium arsenate, solid
UN 1582.....	101	Chloropicrin and methyl chloride mixture	UN 1623.....	102	Mercuric arsenate
NA 1583.....	101	Chloropicrin, absorbed	UN 1624.....	102	Mercuric chloride
UN 1583.....	101	Chloropicrin mixture	UN 1624.....	101	Mercuric chloride, solid
UN 1583.....	102	Chloropicrin mixtures, n.o.s.	UN 1625.....	101	Mercuric nitrate
UN 1584.....	102	Cocculus	UN 1626.....	102	Mercuric potassium cyanide
UN 1584.....	101	Cocculus, solid	UN 1626.....	101	Mercuric potassium cyanide, solid
UN 1585.....	102	Copper acetoarsenite	UN 1627.....	102	Mercurous nitrate
UN 1585.....	101	Copper acetoarsenite, solid	UN 1627.....	101	Mercurous nitrate, solid
UN 1586.....	102	Copper arsenite	UN 1628.....	101	Mercurous sulfate, solid
UN 1586.....	101	Copper arsenite, solid			
UN 1587.....	101	Copper cyanide			

(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 1628	102	Mercurous sulphate
UN 1629	101	Mercuric acetate
UN 1629	101	Mercurous acetate, solid
UN 1629	102	Mercury acetate
UN 1630	101	Mercuric ammonium chloride, solid
UN 1630	102	Mercury ammonium chloride
UN 1631	101	Mercuric benzoate, solid
UN 1631	102	Mercury benzoate
UN 1633	102	Mercury bisulphate
UN 1634	101	Mercuric bromide, solid
UN 1634	101	Mercurous bromide, solid
UN 1634	102	Mercury bromides
UN 1636	101	Mercuric cyanide, solid
UN 1636	102	Mercury cyanide
UN 1637	101	Mercurous gluconate, solid
UN 1637	102	Mercury gluconate
UN 1638	101	Mercuric iodide, solid
UN 1638	101	Mercuric iodide, solution
UN 1638	101	Mercurous iodide, solid
UN 1638	102	Mercury iodide
UN 1639	101	Mercuric or Mercury nucleate, solid
UN 1639	102	Mercury nucleate
UN 1640	101	Mercuric oleate, solid
UN 1640	102	Mercury oleate
UN 1641	101	Mercuric oxide, solid
UN 1641	101	Mercurous oxide, black, solid
UN 1641	102	Mercury oxide
UN 1642	101	Mercuric oxycyanide, solid
UN 1642	102	Mercury oxycyanide
UN 1643	101	Mercuric potassium iodide, solid
UN 1643	102	Mercury potassium iodide
UN 1644	101	Mercuric salicylate solid
UN 1644	102	Mercury salicylate
UN 1645	101	Mercuric sulfate, solid
UN 1645	102	Mercury sulphate
UN 1646	101	Mercuric thiocyanate, solid or Mer- curic thiocyanate, solid
UN 1646	102	Mercury thiocyanate
UN 1647	102	Methyl bromide and ethylene dibro- mide mixtures, liquid
UN 1647	101	Methyl bromide - ethylene dibro- mide mixture, liquid
NA 1648	101	Acetonitrile
UN 1648	102	Methyl cyanide
UN 1649	101	Motor fuel antiknock compound or Antiknock compound
UN 1649	102	Motor fuel anti-knock mixtures
NA 1649	101	Tetraethyl lead, liquid
UN 1650	102	Naphthylamine
UN 1651	102	alpha-Naphthylthiourea
UN 1652	102	Naphthylurea
UN 1653	102	Nickel cyanide
UN 1653	101	Nickel cyanide, solid
UN 1654	102	Nicotine
UN 1654	101	Nicotine, liquid
UN 1655	102	Nicotine compounds, n.o.s. or Nico- tine preparations, n.o.s.
UN 1656	101	Nicotine hydrochloride
UN 1656	102	Nicotine hydrochloride, or Nicotine hydrochloride solutions
UN 1657	101	Nicotine salicylate
UN 1658	101	Nicotine sulfate, liquid
UN 1658	101	Nicotine sulfate, solid
UN 1659	102	Nicotine sulphate, solid or solution
UN 1659	101	Nicotine tartrate
UN 1660	101	Nitric oxide
UN 1661	101	Nitroaniline
UN 1661	102	Nitroanilines
UN 1662	102	Nitrobenzene
UN 1662	101	Nitrobenzene, liquid or Nitrobenzol, liquid

(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 1663	101	Nitrophenol
UN 1663	102	Nitrophenols
UN 1664	101	Nitrotoluene
UN 1664	102	Nitrotoluenes
UN 1665	102	Nitroxylenes
NA 1665	101	Nitroxylic
UN 1669	102	Pentachloroethane
UN 1670	101	Perchloromethyl mercaptan
UN 1671	101	Phenol
UN 1672	102	Phenylcarbylamine chloride
UN 1673	101	Phenylenediamine, meta or para, solid
UN 1673	102	Phenylenediamines
UN 1674	102	Phenylmercuric acetate
UN 1677	102	Potassium arsenate
UN 1677	101	Potassium arsenate, solid
UN 1678	102	Potassium arsenite
UN 1678	101	Potassium arsenite, solid
UN 1679	102	Potassium cuprocyanide
UN 1680	102	Potassium cyanide
UN 1680	101	Potassium cyanide, solid
UN 1680	101	Potassium cyanide solution
UN 1681	102	Rodenticides, n.o.s.
UN 1683	102	Silver arsenite
UN 1684	101	Silver cyanide
UN 1685	101	Sodium arsenate
UN 1686	102	Sodium arsenite, aqueous solutions
UN 1686	101	Sodium arsenite, liquid
UN 1687	101	Sodium azide
UN 1688	102	Sodium cacodylate
UN 1689	102	Sodium cyanide
UN 1689	101	Sodium cyanide, solid
UN 1689	101	Sodium cyanide solution
UN 1690	101	Sodium fluoride, solid
UN 1690	101	Sodium fluoride, solution
UN 1691	102	Strontium arsenite
UN 1691	101	Strontium arsenite, solid
UN 1692	102	Strychnine
UN 1692	101	Strychnine salt, solid
UN 1692	101	Strychnine, solid
NA 1693	101	Irritating agent, n.o.s.
NA 1693	101	ORM-A, n.o.s.
UN 1693	102	Tear gas
NA 1693	101	Tear gas device
UN 1694	102	Bromobenzyl cyanides
UN 1695	102	Chloroacetone
UN 1695	101	Monochloroacetone, stabilized or inhibited
UN 1697	102	Chloroacetophenone
UN 1697	101	Chloroacetophenone, gas, liquid, or solid
UN 1698	101	Diphenylaminechloroarsine
UN 1699	102	Diphenylchloroarsine
UN 1700	101	Tear gas candle
UN 1700	102	Tear gas candles
UN 1701	101	Xylyl bromide
UN 1702	102	1,1,2,2-Tetrachloroethane
UN 1702	101	Tetrachloroethane
UN 1703	101	Tetraethyl dithiopyrophosphate and compressed gas mixture
UN 1703	102	Tetraethyl dithiopyrophosphate with gases
UN 1704	101	Tetraethyl dithiopyrophosphate, liquid
UN 1704	102	Tetraethyl dithiopyrophosphate, liquid or mixtures
UN 1704	101	Tetraethyl dithiopyrophosphate mix- ture, dry
UN 1704	101	Tetraethyl dithiopyrophosphate mix- ture, liquid

(1)— Identification Number	(2)— Source 172.***	(3)—Description	(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 1705.....	102	Tetraethyl pyrophosphate and compressed gas	UN 1764.....	101	Chlorosulfonic acid-sulfur trioxide mixture
UN 1705.....	101	Tetraethyl pyrophosphate and compressed gas mixture	UN 1764.....	102	Chlorosulphonic acid
UN 1707.....	102	Thallium compounds, n.o.s.	UN 1755.....	102	Chromic acid
NA 1707.....	101	Thallium salt, solid, n.o.s.	UN 1755.....	101	Chromic acid solution
NA 1707.....	101	Thallium sulfate, solid	UN 1756.....	101	Chromic fluoride, solid
UN 1708.....	102	Toluidines	UN 1757.....	101	Chromic fluoride solution
UN 1709.....	102	2,4-Toluylenediamine	UN 1757.....	102	Chromic fluoride, solution
NA 1709.....	101	Toluenediamine	UN 1758.....	102	Chromium oxychloride
UN 1710.....	101	Trichloroethylene	UN 1758.....	101	Chromium oxychloride or Chromyl chloride
UN 1711.....	102	Xylidines	UN 1759.....	101	Corrosive solid, n.o.s.
UN 1712.....	101	Zinc arsenate	UN 1759.....	102	Corrosive solids, n.o.s.
UN 1712.....	102	Zinc arsenate or Zinc arsenite, or mixtures	NA 1759.....	101	Cosmetics, solid, n.o.s.
UN 1712.....	101	Zinc arsenite, solid	NA 1759.....	101	Drugs, solid, n.o.s.
UN 1713.....	101	Zinc cyanide	NA 1759.....	101	Ferrous chloride, solid
UN 1714.....	101	Zinc phosphide	NA 1759.....	101	Stannous chloride, solid
UN 1715.....	101	Acetic anhydride	NA 1760.....	101	2-(2-Aminoethoxy) ethanol
UN 1716.....	101	Acetyl bromide	NA 1760.....	101	2,2-Dichloropropionic acid
UN 1717.....	101	Acetyl chloride	NA 1760.....	101	Acid, liquid, n.o.s.
UN 1718.....	101	Acid butyl phosphate	NA 1760.....	101	Aluminum phosphate solution
UN 1718.....	102	Butyl acid phosphate	NA 1760.....	101	Aluminum sulfate solution
NA 1719.....	101	Alkaline liquid, n.o.s.	NA 1760.....	101	Aminopropyl(diethanolamine bis (Aminopropyl) piperazine
UN 1719.....	102	Caustic alkali liquids, n.o.s.	NA 1760.....	101	Boiler compound, liquid
UN 1722.....	101	Allyl chlorocarbonate	NA 1760.....	101	Chemical kit
UN 1722.....	102	Allyl chloroformate	NA 1760.....	101	Compound, cleaning, liquid
UN 1723.....	102	Allyl iodide	NA 1760.....	101	Compound, rust preventing or Compound, rust removing
UN 1724.....	101	Allyl trichlorosilane	NA 1760.....	101	Compound, tree or weed killing, liquid
UN 1725.....	102	Aluminium bromide, anhydrous	NA 1760.....	101	Compound, vulcanizing, liquid
UN 1725.....	101	Aluminium bromide, anhydrous	UN 1760.....	101	Corrosive liquid, n.o.s.
UN 1726.....	102	Aluminium chloride, anhydrous	UN 1760.....	102	Corrosive liquids, n.o.s.
UN 1727.....	101	Ammonium hydrogen fluoride, solid	NA 1760.....	101	Cosmetics, liquid, n.o.s.
UN 1728.....	102	Amyl trichlorosilane	NA 1760.....	101	Drugs, liquid, n.o.s.
UN 1728.....	101	Amyl trichlorosilane	NA 1760.....	101	Ethyl phosphonothioic dichloride, anhydrous
UN 1729.....	101	Arisoyl chloride	NA 1760.....	101	Ethyl phosphorodichloridate
UN 1730.....	101	Antimony pentachloride	NA 1760.....	101	Ferrous chloride, solution
UN 1731.....	102	Antimony pentachloride	NA 1760.....	101	Flame retardant compound liquid
UN 1731.....	101	Antimony pentachloride solution	NA 1760.....	101	Hexanoic acid
UN 1732.....	101	Antimony pentfluoride	NA 1760.....	101	Isopentanoic acid
UN 1733.....	102	Antimony trichloride	NA 1760.....	101	Mentetrahydro phthalic anhydride
UN 1733.....	101	Antimony trichloride, solid	NA 1760.....	101	Methyl phosphonothioic dichloride, anhydrous
UN 1733.....	101	Antimony trichloride solution	NA 1760.....	101	Morpholine, aqueous, mixture
UN 1738.....	101	Benzoyl chloride	NA 1760.....	101	N-Aminopropylmorpholine
UN 1737.....	101	Benzyl bromide	NA 1760.....	101	Nitric acid, 40% or less
UN 1738.....	101	Benzyl chloride	NA 1760.....	101	ORM-B, n.o.s.
UN 1739.....	101	Benzyl chloroformate	NA 1760.....	101	Paint or paint related material
UN 1740.....	102	Bifluorides, n.o.s.	NA 1760.....	101	Textile treating compound or mixture, liquid
UN 1741.....	101	Boron trichloride	NA 1760.....	101	Titanium sulfate solution
UN 1742.....	102	Boron trifluoride acetic acid complex	NA 1760.....	101	Valeric acid
UN 1742.....	101	Boron trifluoride-acetic acid complex	NA 1760.....	101	Water treatment compounds, liquid
UN 1743.....	102	Boron trifluoride propionic acid complex	NA 1760.....	101	White acid
UN 1744.....	101	Bromine	UN 1761.....	101	Cupriethylene-diamine solution
UN 1745.....	101	Bromine pentafluoride	UN 1761.....	102	Cupriethylene-diamine, solution
UN 1746.....	101	Bromine trifluoride	UN 1761.....	101	Cyclohexanyl trichlorosilane
UN 1747.....	101	Butyl trichlorosilane	UN 1762.....	101	Cyclohexyl trichlorosilane
UN 1748.....	102	Calcium hypochlorite, dry or Calcium hypochlorite mixtures	UN 1763.....	101	Cyclohexyl trichlorosilane
UN 1748.....	101	Calcium hypochlorite mixture	UN 1764.....	101	Dichloroacetic acid
UN 1749.....	101	Chlorine trifluoride	UN 1765.....	101	Dichloroacetyl chloride
UN 1750.....	102	Chloroacetic acid	UN 1766.....	102	Dichlorophenyl trichlorosilane
UN 1750.....	101	Chloroacetic acid, liquid or solution	UN 1768.....	101	Dichlorophenyltrichlorosilane
UN 1761.....	101	Chloroacetic acid, solid	UN 1767.....	101	Diethyl dichlorosilane
UN 1762.....	101	Chloroacetyl chloride	UN 1768.....	102	Diffuorophosphoric acid
UN 1763.....	102	Chlorophenyl trichlorosilane	UN 1768.....	101	Diffuorophosphoric acid, anhydrous
UN 1763.....	101	Chlorophenyltrichlorosilane	UN 1769.....	101	Diphenyl dichlorosilane
UN 1754.....	101	Chlorosulfonic acid	UN 1770.....	102	Diphenylmethyl bromide
			UN 1770.....	101	Diphenyl methyl bromide, solid

(1)— Identification Number	(2)— Source 172.***	(3)—Description	(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 1770.....	101	Diphenyl methyl bromide solution	UN 1802.....	101	Perchloric acid, not over 50% acid
UN 1771.....	101	Dodecyl trichlorosilane	UN 1803.....	102	Phenolsulphonic acid
UN 1773.....	102	Ferric chloride, anhydrous	UN 1804.....	102	Phenyl trichlorosilane
UN 1773.....	101	Ferric chloride, solid	UN 1804.....	101	Phenyltrichlorosilane
UN 1774.....	101	Fire extinguisher charge containing sulfuric acid	UN 1805.....	101	Phosphoric acid
UN 1774.....	102	Fire extinguisher charges	UN 1808.....	102	Phosphorus pentachloride
UN 1775.....	101	Fluoboric acid	UN 1808.....	101	Phosphorus pentachloride, solid
UN 1776.....	102	Fluorophosphoric acid	NA 1807.....	101	Phosphoric anhydride
UN 1776.....	101	Monofluorophosphoric acid, anhydrous	UN 1807.....	102	Phosphorus pentoxide
UN 1777.....	101	Fluorosulfuric acid or Fluosulfonic acid	UN 1808.....	101	Phosphorus tribromide
UN 1777.....	102	Fluorosulphonic acid	UN 1809.....	101	Phosphorus trichloride
UN 1778.....	102	Fluosilicic acid	UN 1810.....	101	Phosphorus oxychloride
NA 1778.....	101	Hydrofluorosilicic acid	UN 1811.....	102	Potassium bifluoride
UN 1779.....	101	Formic acid	NA 1811.....	101	Potassium hydrogen fluoride solution
UN 1779.....	101	Formic acid solution	UN 1812.....	101	Potassium fluoride
UN 1780.....	101	Fumaryl chloride	UN 1812.....	101	Potassium fluoride solution
UN 1781.....	102	Hexadecyl trichlorosilane	NA 1813.....	101	Battery
UN 1781.....	101	Hexadecyltrichlorosilane	UN 1813.....	101	Potassium hydroxide, dry solid, flake, bead, or granular
UN 1782.....	101	Hexafluorophosphoric acid	UN 1813.....	102	Potassium hydroxide, solid
UN 1783.....	101	Hexamethylenediamine, solution	UN 1814.....	101	Potassium hydroxide, liquid or solution
UN 1784.....	102	Hexyl trichlorosilane	UN 1814.....	102	Potassium hydroxide, solution
UN 1784.....	101	Hexyltrichlorosilane	UN 1815.....	102	Propylal chloride
UN 1786.....	102	Hydrofluoric acid and sulphuric acid mixtures	UN 1816.....	101	Propyl trichlorosilane
UN 1786.....	101	Hydrofluoric and sulfuric acid mixture	UN 1817.....	101	Pyrosulfuryl chloride
UN 1787.....	101	Hydroiodic acid	UN 1817.....	102	Pyrosulphuryl chloride
UN 1787.....	102	Hydroiodic acid, solution	UN 1818.....	101	Silicon chloride or Silicon tetrachloride
UN 1788.....	101	Hydrobromic acid	UN 1818.....	102	Silicon tetrachloride
UN 1788.....	101	Hydrobromic acid not more than 49% strength	UN 1819.....	101	Sodium aluminate solution
UN 1788.....	102	Hydrobromic acid, solution	UN 1819.....	102	Sodium aluminate, solution
NA 1789.....	101	Compound, cleaning, liquid (containing hydrochloric (muriatic) acid)	UN 1821.....	101	Sodium hydrogen sulfate, solid
UN 1789.....	101	Hydrochloric acid	UN 1821.....	102	Sodium hydrogen sulphate, solid
NA 1789.....	101	Hydrochloric acid mixture	UN 1823.....	101	Sodium hydroxide, dry solid, flake, bead, or granular
UN 1789.....	102	Hydrochloric acid, solution	UN 1823.....	102	Sodium hydroxide, solid
UN 1789.....	101	Hydrochloric acid solution, inhibited	UN 1824.....	101	Sodium hydroxide, liquid or solution
NA 1790.....	101	Compound, cleaning, liquid (containing hydrofluoric acid)	UN 1824.....	102	Sodium hydroxide, solution
NA 1790.....	101	Etching acid, liquid, n.o.s.	UN 1825.....	102	Sodium monoxide
UN 1790.....	101	Hydrofluoric acid solution	UN 1825.....	101	Sodium monoxide, solid
UN 1790.....	102	Hydrofluoric acid, solution	UN 1826.....	102	Acid mixtures, spent, nitrating
UN 1791.....	101	Hypochlorite solution	NA 1826.....	101	Nitrating acid, spent
NA 1791.....	101	Hypochlorite solution containing not more than 7% available chlorine	UN 1827.....	102	Stannic chloride, anhydrous
UN 1791.....	102	Hypochlorite, solutions	UN 1827.....	101	Tin tetrachloride, anhydrous
UN 1792.....	101	Iodine monochloride	UN 1828.....	101	Sulfur chloride
UN 1793.....	101	Isopropyl acid phosphate, solid	UN 1828.....	102	Sulphur chlorides
UN 1793.....	102	Isopropyl acid phosphatic	UN 1829.....	101	Sulfur trioxide
NA 1794.....	101	Lead dross	UN 1829.....	102	Sulphur trioxide
UN 1794.....	101	Lead sulfate, solid	UN 1830.....	101	Sulfuric acid
UN 1794.....	102	Lead sulphate	UN 1830.....	102	Sulphuric acid
UN 1796.....	102	Nitrating acid, mixtures	NA 1831.....	101	Oleum
UN 1796.....	101	Nitrating acid, mixture (with more than 50% nitric acid)	UN 1831.....	102	Sulphuric acid, fuming
UN 1796.....	101	Nitrating acid, mixture (with not more than 50% nitric acid)	UN 1832.....	101	Sulfuric acid, spent
UN 1798.....	101	Nitrohydrochloric acid	UN 1832.....	102	Sulphuric acid, spent
UN 1798.....	101	Nitrohydrochloric acid, diluted	UN 1833.....	101	Sulfurous acid
UN 1799.....	102	Nonyl trichlorosilane	UN 1833.....	102	Sulphurous acid
UN 1799.....	101	Nonyltrichlorosilane	UN 1834.....	101	Sulfuryl chloride
UN 1800.....	102	Octadecyl trichlorosilane	UN 1834.....	102	Sulphuryl chloride
UN 1800.....	101	Octadecyltrichlorosilane	UN 1835.....	102	Tetramethylammonium hydroxide, liquid
UN 1801.....	102	Octyl trichlorosilane	UN 1836.....	101	Thionyl chloride
UN 1801.....	101	Octyltrichlorosilane	UN 1837.....	101	Thiophosphoryl chloride
UN 1802.....	102	Perchloric acid	UN 1838.....	101	Titanium tetrachloride
			UN 1839.....	101	Trichloroacetic acid, solid
			UN 1840.....	101	Zinc chloride solution
			UN 1840.....	102	Zinc chloride, solution
			UN 1841.....	101	Acetaldehyde ammonia
			UN 1843.....	102	Ammonium dinitro-o-cresolate

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(1)— Identification Number	(2)— Source 172.***	(3)—Description	(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 1845.....	102	Carbon dioxide, solid	UN 1910.....	101	Calcium oxide
UN 1845.....	101	Carbon dioxide, solid, <i>or</i> Dry ice, <i>or</i> Carbonic	UN 1911.....	102	Diborane
UN 1846.....	101	Carbon tetrachloride	UN 1911.....	101	Diborane <i>or</i> diborane mixtures
UN 1847.....	102	Potassium sulphide, hydrated	UN 1912.....	102	Methyl chloride and methylene chloride, mixtures
UN 1848.....	101	Propionic acid	UN 1912.....	101	Methyl chloride-methylene chloride mixture
UN 1848.....	101	Propionic acid, solution	UN 1913.....	101	Neon, refrigerated liquid
UN 1849.....	102	Sodium sulphide, hydrated	UN 1913.....	102	Neon, refrigerated liquid
UN 1850.....	101	Eradicator, paint <i>or</i> grease, liquid	UN 1914.....	102	Butyl propionate
UN 1850.....	102	Eradicators	UN 1915.....	102	Cyclohexanone
UN 1851.....	101	Medicines, liquid, n.o.s.	UN 1916.....	102	Dichloroethyl ether
UN 1851.....	101	Medicines, n.o.s.	UN 1917.....	102	Ethyl acrylate
UN 1851.....	101	Medicines, solid, n.o.s.	UN 1917.....	101	Ethyl acrylate, inhibited
UN 1854.....	102	Barium alloys, pyrophoric	UN 1918.....	102	Isopropylbenzene
UN 1855.....	102	Calcium, pyrophoric <i>or</i> Calcium alloys, pyrophoric	UN 1918.....	102	Methyl acrylate
UN 1856.....	102	Flags	UN 1918.....	101	Methyl acrylate, inhibited
UN 1856.....	101	Flags, oily	UN 1920.....	102	Nonane
UN 1857.....	101	Textile waste, wet	UN 1921.....	102	Propyleneimine
UN 1857.....	102	Textile waste, wet, n.o.s.	UN 1921.....	101	Propyleneimine, inhibited
UN 1857.....	101	Waste textile, wet	UN 1922.....	101	Pyrolidone
UN 1858.....	101	Hexafluoropropylene	UN 1923.....	102	Calcium hydrosulphite
UN 1859.....	101	Silicon tetrafluoride	UN 1924.....	102	Ethyl aluminium dichloride
UN 1860.....	102	Vinyl fluoride	UN 1925.....	102	Ethyl aluminium sesquichloride
UN 1860.....	101	Vinyl fluoride, inhibited	UN 1926.....	102	Methyl aluminium sesquibromide
UN 1862.....	101	Ethyl crotonate	UN 1927.....	102	Methyl aluminium sesquichloride
UN 1863.....	102	Fuel, aviation	UN 1928.....	101	Methyl magnesium bromide in ethyl ether
UN 1863.....	101	Fuel, aviation, turbine engine	UN 1928.....	102	Methyl magnesium bromide, in ethyl ether
UN 1864.....	102	Gas drips	UN 1929.....	102	Potassium hydrosulphite
UN 1864.....	101	Gas drips, hydrocarbon	UN 1930.....	102	Triisobutyl aluminium
UN 1865.....	102	n-Propyl nitrate	UN 1931.....	101	Zinc hydrosulfite
UN 1866.....	101	Resin solution	UN 1931.....	102	Zinc hydrosulphite
UN 1867.....	102	Cigarettes	UN 1932.....	102	Zirconium
UN 1867.....	101	Self-lighting cigarette	UN 1932.....	101	Zirconium scrap
UN 1868.....	101	Decaborane	UN 1935.....	101	Cyanide solution, n.o.s.
UN 1869.....	101	Magnesium, metal	UN 1935.....	102	Cyanide, solutions
UN 1869.....	102	Magnesium <i>or</i> Magnesium alloys	UN 1938.....	102	Bromoacetic acid
NA 1869.....	101	Magnesium scrap	UN 1938.....	101	Bromoacetic acid, solid
UN 1870.....	102	Potassium borohydride	UN 1938.....	101	Bromoacetic acid solution
UN 1871.....	102	Titanium hydride	UN 1939.....	101	Phosphorus oxybromide
UN 1872.....	102	Lead dioxide	UN 1939.....	102	Phosphorus oxybromide, solid
UN 1872.....	101	Lead peroxide	UN 1940.....	101	Thioglycolic acid
UN 1873.....	101	Perchloric acid	UN 1941.....	101	Dibromodifluoromethane
UN 1884.....	101	Barium oxide	UN 1942.....	102	Ammonium nitrate
UN 1885.....	101	Benzidine	UN 1942.....	101	Ammonium nitrate (no organic coating)
UN 1886.....	102	Benzylidene chloride	NA 1942.....	101	Ammonium nitrate (organic coating)
UN 1887.....	101	Bromochloromethane	UN 1944.....	101	Matches, safety
UN 1888.....	101	Chloroform	UN 1945.....	102	Matches
UN 1889.....	101	Cyanogen bromide	UN 1950.....	102	Aerosol dispensers
UN 1891.....	102	Ethyl bromide	UN 1951.....	101	Argon, refrigerated liquid
UN 1892.....	102	Ethyl dichloroarsine	UN 1951.....	102	Argon, refrigerated liquid
UN 1894.....	102	Phenylmercuric hydroxide	UN 1952.....	102	Carbon dioxide and ethylene oxide mixtures
UN 1895.....	102	Phenylmercuric nitrate	UN 1953.....	102	Compressed <i>or</i> liquefied gases, flammable, toxic, n.o.s.
UN 1898.....	102	Resin solution, poisonous	NA 1953.....	101	Poisonous liquid <i>or</i> gas, flammable, n.o.s.
UN 1897.....	102	Tetrachloroethylene	UN 1954.....	101	Compressed gas, n.o.s.
UN 1897.....	101	Tetrachloroethylene <i>or</i> Perchloroethylene	UN 1954.....	102	Compressed <i>or</i> liquefied gases, flammable
UN 1898.....	101	Acetyl iodide	NA 1954.....	101	Refrigerant gas, n.o.s. <i>or</i> Dispersant gas, n.o.s.
NA 1902.....	101	Di-(2-ethylhexyl) phosphoric acid	NA 1954.....	101	Refrigerating machine
UN 1902.....	101	Disooctyl acid phosphate	NA 1955.....	101	Chloroplatin and nonflammable, nonliquefied compressed gas mixture
UN 1903.....	101	Disinfectant, liquid	UN 1955.....	102	Compressed <i>or</i> liquefied gases
UN 1903.....	102	Disinfectants, corrosive, liquid, n.o.s.			
UN 1905.....	102	Selenic acid			
UN 1905.....	101	Selenic acid, liquid			
UN 1906.....	101	Acid, sludge			
UN 1906.....	102	Sludge acid			
UN 1907.....	102	Soda lime			
UN 1907.....	101	Soda lime, solid			
UN 1908.....	101	Sodium chlorite solution			
UN 1908.....	102	Sodium chlorite, solution			

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(1)— Identification Number	(2)— Source 172...*	(3)—Description	(1)— Identification Number	(2)— Source 172...*	(3)—Description
NA 1955.....	101	Methyl bromide and nonflammable, nonliquefied compressed gas mixture, liquid	NA 1986.....	101	Propargyl alcohol
NA 1955.....	101	Organic phosphate, Organic phosphate compound, or Organic phosphorus compound; mixed with compressed gas	NA 1986.....	101	Rum, denatured
NA 1955.....	101	Poisonous liquid or gas, n.o.s.	UN 1987.....	101	Alcohol, n.o.s.
UN 1955.....	102	Tetrafluorohydrazine	UN 1987.....	102	Alcohols, n.o.s.
NA 1956.....	101	Accumulator, pressurized	UN 1988.....	102	Aldehydes, toxic, n.o.s.
UN 1956.....	101	Compressed gas, n.o.s.	UN 1989.....	102	Aldehydes, n.o.s.
UN 1956.....	102	Compressed or liquefied gases	NA 1989.....	101	Benzaldehyde
NA 1956.....	101	Hexafluoropropylene oxide	UN 1991.....	101	Chloroprene, inhibited
NA 1956.....	101	Mine rescue equipment containing carbon dioxide	UN 1992.....	101	Flammable liquid, poisonous, n.o.s.
NA 1956.....	101	Water pump system	UN 1992.....	102	Flammable liquids, poisonous, n.o.s.
UN 1957.....	102	Deuterium	NA 1993.....	101	Combustible liquid, n.o.s.
UN 1958.....	102	Dichlorotetrafluoroethane	NA 1993.....	101	Compound, cleaning, liquid
UN 1959.....	102	1,1-Difluoroethylene	NA 1993.....	101	Compound, tree or weed killing, liquid
UN 1960.....	101	Engine starting fluid	NA 1993.....	101	Cosmetics, n.o.s.
UN 1961.....	102	Ethane	UN 1993.....	101	Creosote, coal tar
NA 1961.....	101	Ethane-Propane mixture, refrigerated liquid	UN 1993.....	101	Disinfectant, liquid, n.o.s.
UN 1981.....	101	Ethane, refrigerated liquid	UN 1993.....	101	Drugs, n.o.s.
UN 1982.....	102	Ethylene	UN 1993.....	101	Ethyl nitrate
UN 1982.....	102	Ethylene or Ethylene, compressed	UN 1993.....	101	Flammable liquid, n.o.s.
UN 1983.....	101	Helium, refrigerated liquid	UN 1993.....	102	Flammable liquids, n.o.s.
UN 1983.....	102	Helium, refrigerated liquid	NA 1993.....	101	Fuel oil
UN 1984.....	102	Hydrocarbon gases, compressed, n.o.s. or Hydrocarbon gases, mixtures, compressed, n.o.s.	NA 1993.....	101	Fuel oil, No. 1, 2, 4, 5 or 6
UN 1984.....	101	Hydrocarbon gas, nonliquefied	NA 1993.....	101	Heater for refrigerator car, liquid fuel type
UN 1985.....	102	Hydrocarbon gases, liquefied, n.o.s. or Hydrocarbon gases, mixtures, liquefied, n.o.s.	NA 1993.....	101	Insecticide, liquid, n.o.s.
UN 1985.....	101	Hydrocarbon gas, liquefied	NA 1993.....	101	Organic peroxide, liquid or solution, n.o.s.
UN 1986.....	102	Hydrogen	NA 1993.....	101	Plastic solvent, n.o.s.
UN 1986.....	101	Hydrogen, refrigerated liquid	NA 1993.....	101	Refrigerating machine
UN 1987.....	102	Insecticide gases	NA 1993.....	101	Solvent, n.o.s.
NA 1987.....	101	Insecticide, liquefied gas, containing Poison A material or Poison B material	NA 1994.....	101	Wax, liquid
NA 1967.....	101	Parathion and compressed gas mixture	NA 1999.....	102	Iron pentacarbonyl
UN 1968.....	102	Insecticide gases	UN 1999.....	101	Asphalt
NA 1968.....	101	Insecticide, liquefied gas	UN 1999.....	102	Asphalt, cut back
UN 1969.....	102	Isobutane or Isobutane mixtures	UN 2000.....	102	Cut-backs
UN 1970.....	102	Krypton, refrigerated liquid	UN 1999.....	101	Tar, liquid
UN 1971.....	101	Methane or Methane, compressed	UN 2000.....	102	Celluloid
UN 1971.....	102	Methane or Natural gases	UN 2001.....	102	Cobalt naphthenates
UN 1972.....	102	Methane or Natural gases	UN 2002.....	102	Celluloid, scrap
UN 1972.....	101	Methane, refrigerated liquid	UN 2003.....	102	Metal alkyls, n.o.s.
UN 1972.....	101	Natural gas, refrigerated liquid	UN 2004.....	102	Magnesium diamide
UN 1973.....	102	Chlorodifluoromethane and chloropentafluoroethane	UN 2005.....	102	Magnesium diphenyl
UN 1974.....	102	Chlorodifluorobromomethane	UN 2006.....	102	Plastics, nitrocellulose-based, spontaneously combustible, n.o.s.
UN 1975.....	102	Nitric oxide and nitrogen tetroxide mixtures	UN 2008.....	102	Zirconium
UN 1976.....	102	Octafluorocyclobutane	UN 2008.....	101	Zirconium metal, dry
UN 1977.....	101	Nitrogen, refrigerated liquid	UN 2009.....	102	Zirconium
UN 1977.....	102	Nitrogen, refrigerated liquid	UN 2010.....	102	Magnesium hydride
UN 1978.....	102	Propane	UN 2011.....	102	Magnesium phosphide
UN 1979.....	102	Rare gases	UN 2012.....	102	Potassium phosphide
NA 1980.....	101	Helium-oxygen mixture	UN 2013.....	102	Strontium phosphide
UN 1980.....	102	Rare gases	UN 2014.....	102	Hydrogen peroxide, aqueous solutions
UN 1981.....	102	Tetrafluoromethane	UN 2014.....	101	Hydrogen peroxide solution (8% to 40% peroxide)
UN 1982.....	102	Chlorotrifluoroethane	UN 2014.....	101	Hydrogen peroxide solution (40% to 52% peroxide)
UN 1983.....	102	Chlorotrifluoroethane	UN 2015.....	101	Hydrogen peroxide solution (over 52% peroxide)
UN 1984.....	102	Trifluoromethane	UN 2015.....	102	Hydrogen peroxide, stabilized, or Hydrogen peroxide, aqueous solutions, stabilized
UN 1985.....	102	Alcohols, toxic, n.o.s.	UN 2016.....	102	Ammunition
UN 1986.....	101	Alcohols, toxic, n.o.s.	UN 2016.....	101	Chemical ammunition, nonexplosive
UN 1987.....	101	Alcohols, toxic, n.o.s.	NA 2016.....	101	Grenade
UN 1988.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	102	Ammunition, tear producing, non-explosive
UN 1989.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 1990.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 1991.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 1992.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 1993.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 1994.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 1995.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 1996.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 1997.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 1998.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 1999.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 2000.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 2001.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 2002.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 2003.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 2004.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 2005.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 2006.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 2007.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 2008.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 2009.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 2010.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 2011.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 2012.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 2013.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 2014.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 2015.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 2016.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive
UN 2017.....	101	Alcohols, toxic, n.o.s.	UN 2017.....	101	Chemical ammunition, nonexplosive

(1)— Identification Number	(2)— Source 172.***	(3)—Description	(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 2288.....	101	Methylcyclopentane	UN 2367.....	102	alpha-Methyl valeraldehyde
UN 2289.....	101	Methyl dichloroacetate	UN 2368.....	102	alpha-Pinene
UN 2300.....	102	2-Methyl-5-ethylpyridine	UN 2368.....	101	Pinene
UN 2300.....	101	Methyl ethyl pyridine	UN 2369.....	102	Ethylene glycol monobutyl ether
UN 2301.....	102	2-Methylfuran	UN 2370.....	102	Hex-1-ene
UN 2301.....	101	Methylfuran	UN 2371.....	102	Isopentenes
UN 2302.....	102	5-Methylhexan-2-one	UN 2372.....	102	1,2-Di-(dimethylamino)-ethane
UN 2303.....	102	Isopropenylbenzene	UN 2373.....	102	Diethoxymethane
UN 2304.....	102	Naphthalene, molten	UN 2374.....	102	3,3-Diethoxypropane
UN 2305.....	102	Nitrobenzenesulphonic acid	UN 2375.....	102	Diethyl sulfide
UN 2308.....	102	Nitrobenzotrifluorides	UN 2376.....	102	2,3-Dihydropyran
UN 2307.....	102	3-Nitro-4-chlorobenzotrifluoride	UN 2376.....	101	Dihydropyran
UN 2308.....	102	Nitrosylsulphuric acid	UN 2377.....	102	1,1-Dimethoxyethane
UN 2309.....	102	Octadiene	UN 2378.....	102	2-Dimethylaminoacetone nitrile
UN 2310.....	102	2,4-Pentanedione	UN 2379.....	102	1,3-Dimethylbutylamine
UN 2311.....	102	Phenethidines	UN 2380.....	102	Dimethyldiethoxysilane
UN 2312.....	102	Phenol, molten	UN 2381.....	102	Dimethyl disulfide
UN 2313.....	102	Picolines	UN 2382.....	102	Dimethylhydrazine
UN 2315.....	101	Polychlorinated biphenyls	UN 2383.....	102	Dipropylamine
UN 2316.....	102	Sodium cuprocyanide	UN 2384.....	102	Dipropyl ether
UN 2317.....	102	Sodium cuprocyanide solution	UN 2385.....	102	Ethylisobutyrate
UN 2318.....	101	Sodium hydrosulfide, solid	UN 2386.....	102	1-Ethyl piperidine
UN 2318.....	102	Sodium hydrosulphide	UN 2387.....	102	Fluorobenzene
UN 2319.....	102	Terpena hydrocarbons n.o.s.	UN 2388.....	102	Fluorotoluenes
UN 2320.....	102	Tetraethylenepentamine	UN 2389.....	101	Furan
UN 2321.....	102	Trichlorobenzenes	UN 2390.....	102	2-Iodobutane
UN 2322.....	102	Trichlorobutene	UN 2391.....	102	Iodomethylpropanes
UN 2323.....	102	Triethyl phosphite	UN 2392.....	102	Iodopropanes
UN 2324.....	102	Triisobutylene	UN 2393.....	102	Isobutyl formate
UN 2325.....	102	1,3,5-Trimethylbenzene	UN 2394.....	102	Isobutyl propionate
UN 2326.....	102	Trimethylcyclohexylamine	UN 2395.....	102	Isobutyl chloride
UN 2327.....	102	Trimethylhexamethylene diamines	UN 2396.....	102	Methacraldehyde
UN 2328.....	102	Trimethylhexamethylene diisocyan- ate	UN 2397.....	102	3-Methyl butan-2-one
UN 2329.....	102	Trimethyl phosphite	UN 2398.....	102	Methyl-tart-butyl ether
UN 2330.....	102	Undecane	UN 2399.....	102	1-Methylpiperidine
UN 2331.....	102	Zinc chloride, anhydrous	UN 2400.....	102	Methylisovalerate
UN 2331.....	101	Zinc chloride, solid	UN 2401.....	102	Piperidine
UN 2332.....	102	Acetaldehyde oxime	UN 2402.....	102	Propanethiols
UN 2333.....	102	Allyl acetate	UN 2403.....	102	Isopropenyl acetate
UN 2334.....	102	Allylamine	UN 2404.....	102	Propionitrile
UN 2335.....	102	Allyl ethyl ether	UN 2405.....	102	Isopropyl butyrate
UN 2336.....	102	Allyl formate	UN 2408.....	102	Isopropyl isobutyrate
UN 2337.....	101	Phenyl mercaptan	UN 2407.....	102	Isopropyl chloroformate
UN 2338.....	102	Benzotrifluoride	UN 2409.....	102	Isopropyl propionate
UN 2339.....	102	2-Bromobutane	UN 2410.....	102	1,2,3,6-Tetrahydropyridine
UN 2340.....	102	2-Bromomethyl ethyl ether	UN 2411.....	102	Butyronitrile
UN 2341.....	102	1-Bromo-3-methylbutane	UN 2412.....	102	Tetrahydrothiophene
UN 2342.....	102	Bromomethylpropanes	UN 2413.....	102	Tetrapropylorthotitanate
UN 2343.....	102	2-Bromopentane	UN 2414.....	102	Thiophene
UN 2344.....	102	Bromopropanes	UN 2416.....	102	Trimethyl borate
UN 2345.....	102	3-Bromopropyne	UN 2417.....	102	Carbonyl fluoride
UN 2346.....	102	Butanedione	UN 2418.....	102	Sulphur tetrafluoride
UN 2346.....	101	Diacetyl	UN 2419.....	102	Bromotrifluoroethylene
UN 2347.....	101	Butyl mercaptan	UN 2420.....	102	Hexafluoroacetone
UN 2348.....	102	Butylacrylate, inhibited	UN 2421.....	102	Nitrogen trioxide
UN 2350.....	102	Butyl methyl ether	UN 2422.....	102	Octafluorobut-2-ene
UN 2351.....	102	Butyl nitrite	NA 2422.....	101	Perfluoro-2-butene
UN 2352.....	102	Butyl vinyl ether	UN 2424.....	102	Octafluoropropane
UN 2353.....	102	Butyl chloride	UN 2426.....	101	Ammonium nitrate, solution
UN 2354.....	102	Chloromethyl ethyl ether	UN 2427.....	102	Potassium chlorate
UN 2355.....	102	2-Chloropropane	UN 2428.....	102	Sodium chlorate
UN 2357.....	101	Cyclohexylamine	UN 2429.....	102	Calcium chlorate
UN 2358.....	102	Cyclooctatetraene	UN 2430.....	102	Alkyl phenols, n.o.s.
UN 2359.....	102	Diallylamine	UN 2431.....	102	o-Anisidine
UN 2360.....	102	Diallylether	UN 2432.....	102	N,N-Diethylaniline
UN 2361.....	102	Diisobutylamine	UN 2433.....	102	Chloro-o-nitrotoluene
UN 2362.....	102	1,1-Dichloroethane	UN 2434.....	102	Dibenzylchlorosilanes
UN 2363.....	101	Ethyl mercaptan	UN 2435.....	101	Ethyl phenyl dichlorosilane
UN 2384.....	102	Propyl benzene	UN 2435.....	102	Ethylphenyldichlorosilane
UN 2366.....	102	Diethyl carbonate	UN 2436.....	102	Thioacetic acid
			UN 2437.....	102	Methylphenyldichlorosilane

App. A

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(1)— Identification Number	(2)— Source 172.***	(3)—Description	(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 2438.....	101	Trimethylacetyl chloride	UN 2491.....	102	Ethanolamine or Ethanolamine solutions
UN 2439.....	101	Sodium bifluoride, solid	UN 2491.....	101	Monoethanolamine
UN 2439.....	101	Sodium bifluoride, solution	UN 2493.....	101	Hexamethyleneimine
UN 2439.....	102	Sodium hydrogen fluoride	UN 2495.....	101	Iodine pentafluoride
UN 2440.....	102	Stannic chloride pentahydrate	UN 2496.....	101	Propionic anhydride
UN 2441.....	102	Titanium trichloride, pyrophoric or Titanium trichloride mixtures, pyrophoric	UN 2497.....	101	Sodium phenolate, solid
UN 2442.....	102	Trichloroacetyl chloride	UN 2498.....	101	1,2,3,6-Tetrahydrobenzaldehyde
UN 2443.....	102	Vanadium oxytrichloride	UN 2501.....	101	Tris-(1-aziridinyl) phosphine oxide
UN 2443.....	101	Vanadium oxytrichloride	UN 2501.....	102	Tris-(1-aziridinyl)phosphine oxide, solution
NA 2443.....	101	Vanadium oxytrichloride and titanium tetrachloride mixture	UN 2502.....	101	Valeryl chloride
UN 2444.....	101	Vanadium tetrachloride	UN 2502.....	102	Valeryl chlorides
UN 2445.....	102	Lithium alkyls	UN 2503.....	102	Zirconium tetrachloride
UN 2446.....	102	Nitrocresols	UN 2503.....	101	Zirconium tetrachloride, solid
UN 2447.....	102	Phosphorus, white, molten	UN 2504.....	101	Acetylene tetrabromide
UN 2448.....	102	Sulphur, molten	UN 2504.....	102	Tetrabromoethane
NA 2449.....	101	Ammonium oxalate	UN 2505.....	101	Ammonium fluoride
NA 2449.....	101	Cupric oxalate	UN 2506.....	101	Ammonium hydrogen sulfate
UN 2449.....	102	Oxalates	UN 2506.....	102	Ammonium hydrogen sulphate
UN 2451.....	101	Nitrogen trifluoride	UN 2507.....	101	Chloroplatinic acid, solid
UN 2452.....	102	Ethyl acetylene, inhibited	UN 2508.....	101	Molybdenum pentachloride
UN 2453.....	102	Ethyl fluoride	UN 2509.....	101	Potassium hydrogen sulfate, solid
UN 2454.....	102	Methyl fluoride	UN 2509.....	102	Potassium hydrogen sulphate
UN 2456.....	101	2-Chloropropene	UN 2511.....	102	Chloropropionic acid
UN 2457.....	101	2,3-Dimethylbutane	UN 2512.....	102	Aminophenols
UN 2458.....	101	Hexadiene	UN 2513.....	102	Bromoacetyl bromide
UN 2459.....	102	2-Methyl-1-butene	UN 2514.....	101	Bromobenzene
UN 2460.....	102	2-Methyl-2-butene	UN 2515.....	102	Bromoform
UN 2460.....	101	Methyl butene	UN 2516.....	102	Carbon tetrabromide
UN 2461.....	101	Methylpentadiene	UN 2517.....	101	Chlorodifluoroethane
UN 2462.....	101	Methyl pentane	UN 2517.....	102	Chlorodifluoroethanes
UN 2462.....	102	Methylpentanes	UN 2518.....	102	1,5,9-Cyclododecatriene
UN 2463.....	102	Aluminium hydride	UN 2520.....	102	Cyclooctadiene
UN 2463.....	101	Aluminum hydride	UN 2521.....	102	Diketene, inhibited
UN 2464.....	101	Beryllium nitrate	UN 2522.....	102	Dimethylaminoethyl methacrylate
UN 2465.....	102	Dichloroisocyanuric acid, dry or Dichloroisocyanuric acid salts	UN 2524.....	102	Ethyl orthoformate
NA 2465.....	101	Potassium dichloro-s-triazinetriene	UN 2525.....	102	Ethyl oxalate
UN 2465.....	101	Sodium dichloro-s-triazinetriene	UN 2528.....	102	Furfurylamine
UN 2466.....	101	Potassium superoxide	UN 2527.....	102	Isobutyl acrylate
UN 2467.....	102	Sodium percarbonates	UN 2528.....	102	Isobutyl isobutyrate
NA 2468.....	101	(mono-(Trichloro) tetra-(monopotassium dichloro)-penta-s-triazinetriene, dry	UN 2529.....	101	Isobutyric acid
UN 2468.....	102	Trichloroisocyanuric acid, dry	UN 2530.....	101	Isobutyric anhydride
UN 2468.....	101	Trichloro-s-triazinetriene	UN 2531.....	102	Methacrylic acid, inhibited
UN 2469.....	102	Zinc bromate	UN 2533.....	102	Methyl trichloroacetate
UN 2470.....	102	Phenylacetoneitrile, liquid	UN 2534.....	102	Methyl chlorosilane
UN 2471.....	102	Cesium tetroxide	UN 2535.....	102	Methylmorpholine
UN 2472.....	102	Pindone	UN 2539.....	102	Methyltetrahydrofuran
UN 2473.....	102	Sodium arsenilate	UN 2538.....	102	Nitronaphthalene
UN 2474.....	101	Thiophosgene	UN 2641.....	102	Terpinolene
UN 2475.....	102	Vanadium trichloride	UN 2642.....	102	Tributylamine
UN 2477.....	102	Methyl isothiocyanate	UN 2545.....	102	Hafrinium
UN 2478.....	102	Isocyanates, n.o.s. or Isocyanate solutions, n.o.s.	UN 2545.....	101	Hafrinium metal, dry.
UN 2480.....	101	Methyl isocyanate	UN 2548.....	102	Titanium
UN 2480.....	102	Methyl isocyanate or Methyl isocyanate solutions	UN 2548.....	101	Titanium metal powder, dry or wet
UN 2481.....	102	Ethyl isocyanate	UN 2548.....	101	Sodium superoxide
UN 2482.....	102	n-Propyl isocyanate	UN 2550.....	102	Chlorine pentafluoride
UN 2483.....	102	Isopropyl isocyanate	UN 2550.....	102	Ethyl methyl ketone peroxide(s)
UN 2484.....	102	tert-Butyl isocyanate	UN 2550.....	101	Methyl ethyl ketone peroxide
UN 2485.....	101	n-Butyl isocyanate	UN 2551.....	102	tert-Butyl peroxydiethylacetate
UN 2486.....	102	Isobutyl isocyanate	UN 2551.....	101	tert-Butyl peroxydiethylacetate, with tert-Butyl peroxybenzoate
UN 2487.....	102	Phenyl isocyanate	UN 2552.....	102	Hexafluoroacetone hydrate
UN 2488.....	102	Cyclohexyl isocyanate	UN 2553.....	102	Coal tar naptha
UN 2488.....	102	Diphenylmethane-4,4'-diisocyanate	NA 2553.....	101	Coal tar naptha
UN 2490.....	101	Dichloroisopropyl ether	UN 2553.....	101	Naptha
			UN 2554.....	102	Methyl allyl chloride
			UN 2555.....	102	Nitrocellulose
			NA 2655.....	101	Nitrocellulose, colloided, granular or flake, wet with not less than 20% water

(1)— Identification Number	(2)— Source 172.***	(3)—Description	(1)— Identification Number	(2)— Source 172.***	(3)—Description
NA 2555.....	101	Nitrocellulose, wet with not less than 20% water	UN 2602.....	102	Dichlorodifluoromethane and difluoroethane, azeotropic mixture
(UN 2556).....	102	Nitrocellulose	UN 2603.....	102	Cycloheptatriene
UN 2558.....	102	Nitrocellulose	UN 2604.....	102	Boron trifluoride diethyl etherate
NA 2558.....	101	Nitrocellulose, wet with not less than 30% alcohol or solvent	UN 2605.....	102	Methoxymethyl isocyanate
NA 2567.....	101	Lacquer base, or Lacquer chips, dry	UN 2606.....	102	Methyl orthosilicate
UN 2557.....	102	Nitrocellulose	UN 2607.....	102	Acrolein dimer
UN 2558.....	102	Epibromohydrin	UN 2608.....	102	Nitropropanes
UN 2560.....	102	2-Methylpentan-2-ol	UN 2609.....	102	Triallyl borate
UN 2561.....	102	3-Methyl-1-butene	UN 2610.....	102	Triallylamine
UN 2562.....	101	tert-Butyl peroxyisobutyrate	UN 2611.....	102	Propylene chlorohydrin
UN 2564.....	102	Trichloroacetic acid	UN 2612.....	102	Methyl propyl ether
UN 2564.....	101	Trichloroacetic acid solution	UN 2614.....	102	Methallyl alcohol
UN 2565.....	102	Dicyclohexylamine	UN 2615.....	102	Ethyl propyl ether
UN 2567.....	101	Sodium pentachlorophenate	UN 2616.....	102	Trisopropyl borate
NA 2570.....	101	Cadmium acetate	UN 2617.....	102	Methyl cyclohexanol
NA 2570.....	101	Cadmium bromide	UN 2618.....	102	Vinyl toluenes
NA 2570.....	101	Cadmium chloride	UN 2619.....	102	Benzyl dimethylamine
UN 2570.....	102	Cadmium compounds	UN 2620.....	102	Amyl butyrates
UN 2571.....	102	Ethylsulphuric acid	UN 2621.....	102	Acetyl methyl carbinol
UN 2572.....	102	Phenylhydrazine	UN 2622.....	102	Glycidaldehyde
UN 2573.....	102	Thallium chlorate	UN 2623.....	102	Firefighters
UN 2574.....	102	Tricresylphosphate	UN 2624.....	102	Magnesium silicide
UN 2576.....	102	Phosphorus oxybromide, molten	NA 2626.....	101	Chloric acid
UN 2577.....	102	Phenylacetyl chloride	UN 2626.....	102	Chloric acid solution
UN 2578.....	102	Phosphorus trioxide	UN 2627.....	102	Nitrites, inorganic, n.o.s.
UN 2579.....	102	Piperazine	UN 2628.....	102	Potassium fluoroacetate
UN 2580.....	102	Aluminium bromide solution	UN 2629.....	102	Sodium fluoroacetate
UN 2581.....	102	Aluminium chloride solution	UN 2630.....	102	Selenates, n.o.s. or Selenites, n.o.s.
UN 2582.....	101	Ferric chloride solution	UN 2630.....	101	Sodium selenite
UN 2582.....	102	Ferric chloride, solution	UN 2642.....	102	Fluoroacetic acid
UN 2583.....	102	Alkyl, Aryl or Toluene sulphonic acid, solid	UN 2643.....	102	Methyl bromoacetate
UN 2584.....	101	Alkanesulfonic acid	UN 2644.....	102	Methyl iodide
UN 2584.....	102	Alkyl, Aryl or Toluene sulphonic acid, liquid	UN 2645.....	102	Phenacyl bromide
NA 2584.....	101	Dodecylbenzenesulfonic acid	UN 2646.....	101	Hexachlorocyclopentadiene
UN 2584.....	101	Toluene sulfonic acid, liquid	UN 2647.....	102	Malononitrile
UN 2585.....	102	Alkyl, Aryl or Toluene sulphonic acid, solid	UN 2648.....	102	1,2-Dibromobutan-3-one
UN 2586.....	102	Alkyl, Aryl or Toluene sulphonic acid, liquid	UN 2649.....	102	1,3-Dichloroacetone
UN 2587.....	102	Benzoquinone	UN 2650.....	102	1,1-Dichloro-1-nitroethane
NA 2588.....	101	Insecticide, dry, n.o.s.	UN 2651.....	102	4,4'-Diaminodiphenyl methane
UN 2588.....	102	Pesticides, solid, toxic, n.o.s.	UN 2653.....	102	Benzyl iodide
UN 2589.....	102	Vinyl chloroacetate	UN 2655.....	102	Potassium silicofluoride
UN 2590.....	102	Asbestos, white	UN 2656.....	101	Quinoline
UN 2591.....	102	Xenon, refrigerated liquid	UN 2657.....	102	Selenium disulphide
UN 2592.....	101	Di-tert-butyl peroxydicarbonate	UN 2658.....	102	Selenium
UN 2592.....	102	Di-tert-butyl peroxydicarbonate	UN 2659.....	102	Sodium chloroacetate
UN 2593.....	101	Di-(2-methylbenzoyl)peroxide	UN 2660.....	102	Mononitrotoluidines
UN 2594.....	101	tert-Butyl peroxydecanoate	UN 2661.....	102	Hexachloroacetone
UN 2595.....	101	Dimyristyl peroxydicarbonate	UN 2662.....	102	Hydroquinone
UN 2595.....	102	Dimyristyl peroxydicarbonate	UN 2664.....	102	Dibromomethane
UN 2598.....	101	3-tert-Butyl peroxy-3-phenylphthalide	UN 2666.....	102	Ethyl cyanoacetate
UN 2598.....	102	3-tert-Butylperoxy-3-phenyl phthalide	UN 2667.....	102	Butyl toluenes
UN 2597.....	101	Di-(3,5,5-trimethyl-1,2-dioxolanyl-3)peroxide	UN 2668.....	102	Chloroacetoneitrile
UN 2598.....	102	Ethyl-3,3-di-(tert-butylperoxy)butyrate	UN 2669.....	102	Chlorocresols
UN 2598.....	101	Ethyl-3,3-di-(tert-butylperoxy)butyrate	UN 2670.....	102	Cyanuric chloride
UN 2599.....	102	Chlorotrifluoromethane and trifluoromethane azeotropic mixture	UN 2671.....	102	Aminopyridines
UN 2600.....	102	Carbon monoxide and hydrogen mixture	UN 2672.....	102	Ammonia solutions
UN 2601.....	102	Cyclobutane	NA 2672.....	101	Ammonium hydroxide
			UN 2673.....	102	2-Amino-4-chlorophenol
			UN 2674.....	102	Sodium silicofluoride
			UN 2676.....	102	Stibine
			UN 2677.....	102	Rubidium hydroxide, solution
			UN 2678.....	102	Rubidium hydroxide, solid
			UN 2679.....	102	Lithium hydroxide, solution
			UN 2680.....	102	Lithium hydroxide monohydrate
			UN 2681.....	102	Caesium hydroxide, solution
			UN 2682.....	102	Caesium hydroxide, solid
			NA 2683.....	101	Ammonium hydrosulfide solution
			UN 2683.....	101	Ammonium sulfide solution
			UN 2685.....	102	Ammonium sulphide, solution
			UN 2684.....	102	3-(Diethylamino) propylamine

(1)— Identification Number	(2)— Source 172.***	(3)—Description	(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 2685	102	N,N-Diethylethylene diamine	UN 2757	101	Carbamate pesticide, solid, n.o.s.
UN 2686	102	Diethylaminoethanol	UN 2757	102	Carbamate pesticides, solid, toxic, n.o.s.
UN 2687	102	Dicyclohexylammonium nitrite	NA 2757	101	Carbaryl
UN 2688	102	1-Chloro-3-bromopropane	NA 2757	101	Carbofuran
UN 2689	102	Glycerol-alpha-monochlorohydrin	NA 2757	101	Carbofuran mixture, liquid
UN 2690	102	N-n-Butyl imidazole	NA 2757	101	Mercaptodimethur
UN 2691	102	Phosphorus pentabromide	NA 2757	101	Mexacarbate
UN 2692	101	Boron tribromide	UN 2758	101	Carbamate pesticide, liquid, n.o.s.
NA 2693	101	Ammonium bisulfite, solid	UN 2758	102	Carbamate pesticides, liquid, flammable, toxic, n.o.s.
UN 2693	101	Ammonium bisulfite solution	UN 2759	101	Arsenical pesticide, liquid, n.o.s.
UN 2693	102	Bisulphites, inorganic, aqueous solution, n.o.s.	UN 2759	102	Arsenical pesticides, solid, toxic, n.o.s.
NA 2693	101	Calcium hydrogen sulfite solution	NA 2759	101	Bordeaux arsenite, liquid
NA 2693	101	Potassium metabisulfite	NA 2759	101	Bordeaux arsenite, solid
NA 2693	101	Sodium hydrogen sulfite, solid	UN 2760	101	Arsenical pesticide, liquid, n.o.s.
NA 2693	101	Sodium hydrogen sulfite, solution	UN 2760	102	Arsenical pesticides, liquid, flammable, toxic, n.o.s.
NA 2693	101	Sodium metabisulfite	NA 2761	101	Aldrin
UN 2698	102	Tetrahydrophthalic anhydrides	NA 2761	101	Aldrin, cast solid
UN 2698	102	Trifluoroacetic acid	NA 2761	101	Aldrin mixture, dry
UN 2703	101	Isopropyl mercaptan	NA 2761	101	Aldrin mixture, dry, with 65% or less aldrin
UN 2704	101	Propyl mercaptan	NA 2761	101	DDT or Dichlorodiphenyltrichloroethane
UN 2705	102	1-Pentol	NA 2761	101	Dichlone
UN 2706	102	Diethylcarbinol	NA 2761	101	Dieldrin
UN 2707	102	Dimethyldioxanes	NA 2761	101	Endosulfan
UN 2708	102	Butoxyl	NA 2761	101	Endosulfan mixture, liquid
UN 2709	102	Butyl benzenes	NA 2761	101	Endrin
UN 2710	102	Dipropylketone	NA 2761	101	Endrin mixture, liquid
UN 2711	102	Dibromobenzene	NA 2761	101	Heptachlor
UN 2713	102	Acridine	NA 2761	101	Keithane
UN 2714	102	Zinc resinates	NA 2761	101	Kepones
UN 2715	102	Aluminium resinates	NA 2761	101	Lindane
UN 2716	102	1,4-Butynediol	NA 2761	101	Methoxychlor
UN 2717	102	Camphor	UN 2761	101	Organochlorine pesticide, liquid, n.o.s.
UN 2718	102	Tripropylaluminum	UN 2761	101	Organochlorine pesticide, solid, n.o.s.
UN 2719	102	Barium bromate	UN 2761	102	Organochlorine pesticides, solid, toxic, n.o.s.
UN 2720	102	Chromium nitrate	NA 2761	101	TDE
UN 2721	102	Copper chlorate	NA 2762	101	Toxaphene
UN 2722	102	Lithium nitrate	NA 2762	101	Aldrin mixture, liquid
UN 2723	102	Magnesium chlorate	NA 2762	101	Aldrin mixture, liquid, with 60% or less aldrin
UN 2724	102	Manganese nitrate	UN 2762	101	Chlordane, liquid
UN 2725	101	Nickel nitrate	UN 2762	102	Organochlorine pesticide, liquid, n.o.s.
UN 2726	102	Nickel nitrite	UN 2763	101	Triazine pesticide, solid, n.o.s.
UN 2727	102	Thallium nitrate	UN 2763	102	Triazine pesticides, solid, toxic, n.o.s.
UN 2728	101	Zirconium nitrate	UN 2764	101	Triazine pesticide, liquid, n.o.s.
UN 2729	102	Hexachlorobenzene	UN 2764	102	Triazine pesticides, liquid, flammable, toxic, n.o.s.
UN 2730	102	Nitroanisoles	NA 2765	101	2,4,5-Trichlorophenoxyacetic acid
UN 2732	102	Nitrobromobenzenes	NA 2765	101	2,4,5-Trichlorophenoxyacetic acid amine, ester, or salt
UN 2733	102	Alkylamines and polyamines	UN 2765	101	2,4,5-Trichlorophenoxypropionic acid
UN 2734	102	Alkylamines and polyamines	UN 2765	101	2,4,5-Trichlorophenoxypropionic acid ester
UN 2735	102	Alkylamines and polyamines	NA 2765	101	2,4-Dichlorophenoxyacetic acid
UN 2738	102	N-n-Butylaniline	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2739	102	Butyric anhydride	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2740	102	n-Propyl chloroformate	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2741	102	Barium hypochlorite	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2742	102	Chloroformates, n.o.s.	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2743	102	n-Butylchloroformate	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2744	102	Cyclobutylchloroformate	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2745	102	Chloromethylchloroformate	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2746	102	Phenylchloroformate	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2747	102	tert-Butylcyclohexylchloroformate	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2748	102	2-Ethylhexylchloroformate	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2749	102	Tetramethylsilane	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2750	102	1,3-Dichloropropanol-2	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2751	102	Diethylthiophosphoryl chloride	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2752	102	1,2-Epoxy-3-ethoxy propane	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2753	102	N-ethylbenzyltoluidines	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2754	102	N-Ethyltoluidines	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2755	101	3-Chloroperoxybenzoic acid	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2756	101	Organic peroxide, mixture	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2758	102	Organic peroxides, mixture	UN 2765	101	2,4-Dichlorophenoxyacetic acid ester
UN 2757	101	Carbamate pesticide, liquid, n.o.s.			

(1)— Identification Number	(2)— Source 172.***	(3)—Description	(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 2765.....	102	Phenoxy pesticides, solid, toxic, n.o.s.	UN 2779.....	101	Substituted nitrophenol pesticide, solid, n.o.s.
UN 2765.....	101	Phenoxy pesticide, liquid, n.o.s.	UN 2779.....	102	Substituted nitrophenol pesticides, solid, toxic, n.o.s.
UN 2765.....	101	Phenoxy pesticide, solid, n.o.s.	UN 2780.....	101	Substituted nitrophenol pesticide, liquid, n.o.s.
NA 2765.....	101	Propargite	UN 2780.....	102	Substituted nitrophenol pesticides, liquid, flammable, toxic, n.o.s.
UN 2766.....	101	Phenoxy pesticide, liquid, n.o.s.	UN 2781.....	101	Bipyridilium pesticide, liquid, n.o.s.
UN 2766.....	102	Phenoxy pesticides, liquid, flammable, toxic, n.o.s.	UN 2781.....	101	Bipyridilium pesticide, solid, n.o.s.
UN 2766.....	102	Phenoxy pesticides, liquid, flammable, toxic, n.o.s.	UN 2781.....	102	Bipyridilium pesticides, solid, toxic, n.o.s.
NA 2767.....	101	Diuron	NA 2781.....	101	Diquat
UN 2767.....	101	Phenylurea pesticide, liquid, n.o.s.	UN 2782.....	101	Bipyridilium pesticide, liquid, n.o.s.
UN 2767.....	101	Phenylurea pesticide, solid, n.o.s.	UN 2782.....	102	Bipyridilium pesticides, liquid, flammable, toxic, n.o.s.
UN 2767.....	102	Phenyl urea pesticides, solid, toxic, n.o.s.	NA 2783.....	101	Azinphos methyl
UN 2768.....	101	Phenylurea pesticide, liquid, n.o.s.	UN 2783.....	101	Azinphos methyl mixture, liquid
UN 2768.....	102	Phenyl urea pesticides, liquid, flammable, toxic, n.o.s.	NA 2783.....	101	Chlorpyrifos
UN 2769.....	101	Benzoic derivative pesticide, liquid, n.o.s.	NA 2783.....	101	Coumaphos
UN 2769.....	101	Benzoic derivative pesticide, solid, n.o.s.	NA 2783.....	101	Coumaphos mixture, liquid
UN 2769.....	102	Benzoic derivative pesticides, solid, toxic, n.o.s.	NA 2783.....	101	Diazinon
NA 2769.....	101	Dicamba	NA 2783.....	101	Dichlorvos
NA 2769.....	101	Dichlobenil	NA 2783.....	101	Dichlorvos mixture, dry
UN 2770.....	101	Benzoic derivative pesticide, liquid, n.o.s.	NA 2783.....	101	Disulfoton
UN 2770.....	101	Benzoic derivative pesticide, liquid, n.o.s.	NA 2783.....	101	Disulfoton mixture, dry
UN 2770.....	102	Benzoic derivative pesticides, liquid, flammable, toxic, n.o.s.	NA 2783.....	101	Disulfoton mixture, liquid
UN 2771.....	101	Dithiocarbamate pesticide, liquid, n.o.s.	NA 2783.....	101	Ethion
UN 2771.....	101	Dithiocarbamate pesticide, solid, n.o.s.	NA 2783.....	101	Ethion mixture, dry
UN 2771.....	102	Dithiocarbamate pesticides, solid, toxic, n.o.s.	NA 2783.....	101	Hexaethyl tetraphosphate mixture, dry
NA 2771.....	101	Thiram	UN 2783.....	101	Hexaethyl tetraphosphate mixture, liquid
UN 2772.....	101	Dithiocarbamate pesticide, liquid, n.o.s.	NA 2783.....	101	Malathion
UN 2772.....	102	Dithiocarbamate pesticides, liquid, flammable, toxic, n.o.s.	NA 2783.....	101	Methyl parathion, liquid
UN 2773.....	101	Phthalimide derivative pesticide, liquid, n.o.s.	NA 2783.....	101	Methyl parathion mixture, dry
UN 2773.....	101	Phthalimide derivative pesticide, solid, n.o.s.	NA 2783.....	101	Methyl parathion mixture, liquid
UN 2773.....	102	Phthalimide derivative pesticides, solid, toxic, n.o.s.	NA 2783.....	101	Methyl parathion mixture, liquid (containing 25% or less methyl parathion)
UN 2774.....	101	Phthalimide derivative pesticide, liquid, n.o.s.	NA 2783.....	101	Mevinphos
UN 2774.....	102	Phthalimide derivative pesticides, liquid, flammable, toxic, n.o.s.	UN 2783.....	101	Mevinphos mixture, dry
UN 2775.....	101	Copper based pesticide, liquid, n.o.s.	NA 2783.....	101	Mevinphos mixture, liquid
UN 2775.....	101	Copper based pesticide, solid, n.o.s.	NA 2783.....	101	Mipafox
UN 2775.....	102	Copper based pesticides, solid, toxic, n.o.s.	NA 2783.....	101	Naled
UN 2776.....	101	Copper based pesticide, liquid, n.o.s.	NA 2783.....	101	Organic phosphate mixture, Organic phosphate compound mixture, or Organic phosphorus compound mixture; liquid
UN 2776.....	102	Copper based pesticides, liquid, flammable, toxic, n.o.s.	NA 2783.....	101	Organic phosphate mixture, Organic phosphate compound, or Organic phosphorus compound; liquid
UN 2777.....	101	Mercury based pesticide, liquid, n.o.s.	NA 2783.....	101	Organic phosphate, Organic phosphate compound, or Organic phosphorus compound; solid or dry
UN 2777.....	101	Mercury based pesticide, solid, n.o.s.	UN 2783.....	101	Organophosphorus pesticide, liquid, n.o.s.
UN 2777.....	102	Mercury based pesticides, solid, toxic, n.o.s.	UN 2783.....	101	Organophosphorus pesticide, solid, n.o.s.
UN 2778.....	101	Mercury based pesticide, liquid, n.o.s.	UN 2783.....	102	Organophosphorus pesticides solid, toxic, n.o.s.
UN 2778.....	102	Mercury based pesticides, liquid, flammable, toxic, n.o.s.	NA 2783.....	101	Parathion, liquid
UN 2778.....	101	Substituted nitrophenol pesticide, liquid, n.o.s.	NA 2783.....	101	Parathion mixture, dry
UN 2778.....	101	Substituted nitrophenol pesticide, liquid, n.o.s.	NA 2783.....	101	Parathion mixture, liquid

(1)— Identification Number	(2)— Source 172.***	(3)—Description	(1)— Identification Number	(2)— Source 172.***	(3)—Description
NA 2783.....	101	Phenacpton	NA 2810.....	101	Drugs, liquid, n.o.s.
NA 2783.....	101	Tetraethyl pyrophosphate, liquid	UN 2810.....	101	Poisonous liquid, n.o.s. or Poison B, liquid, n.o.s.
NA 2783.....	101	Tetraethyl pyrophosphate mixture, dry	UN 2810.....	102	Poisonous liquids, n.o.s.
NA 2783.....	101	Tetraethyl pyrophosphate mixture, liquid	NA 2811.....	101	Drugs, solid, n.o.s.
NA 2783.....	101	Trichlorfon	NA 2811.....	101	Flue dust, poisonous
UN 2784.....	101	Organophosphorus pesticide, liquid, n.o.s.	NA 2811.....	101	Lead fluoride
UN 2784.....	102	Organophosphorus pesticides, liquid, flammable, toxic, n.o.s.	NA 2811.....	101	Lead iodide
UN 2785.....	102	4-Thiopentanal	UN 2811.....	101	Lead stearate
UN 2786.....	101	Organotin pesticide, liquid, n.o.s.	UN 2811.....	101	Poisonous solid, n.o.s. or Poison B, solid, n.o.s.
UN 2786.....	101	Organotin pesticide, solid, n.o.s.	UN 2811.....	102	Poisonous solids, n.o.s.
UN 2786.....	102	Organotin pesticides, solid, toxic, n.o.s.	UN 2811.....	101	Selenium oxide
UN 2787.....	101	Organotin pesticide, liquid, n.o.s.	UN 2812.....	101	Sodium aluminate, solid
UN 2787.....	102	Organotin pesticides, liquid, flammable, toxic, n.o.s.	NA 2813.....	101	Lithium acetylide-ethylene diamine complex
UN 2788.....	102	Organotin compounds, n.o.s.	UN 2813.....	102	Substances which, in contact with water, emit flammable gases, n.o.s.
UN 2789.....	101	Acetic acid, glacial	UN 2813.....	101	Water reactive solid, n.o.s.
UN 2789.....	102	Acetic acid, glacial or Acetic acid solution	NA 2814.....	101	Etiologic agent, n.o.s.
UN 2790.....	101	Acetic acid	UN 2814.....	101	Infectious substance, human, n.o.s.
UN 2790.....	102	Acetic acid solution	UN 2815.....	101	N-Aminoethylpiperazine
NA 2791.....	101	Aircraft rocket engine	UN 2817.....	101	Ammonium hydrogen fluoride solution
UN 2791.....	102	Aircraft thrust device	UN 2817.....	102	Ammonium hydrogen fluoride, solution
UN 2792.....	101	Aircraft rocket engine igniter	UN 2818.....	101	Ammonium polysulfide solution
UN 2792.....	102	Igniter for aircraft thrust device	UN 2818.....	102	Ammonium polysulfide, solution
UN 2793.....	102	Ferrous metal borings, shavings, turnings, or cuttings	UN 2819.....	101	Amyl acid phosphate
UN 2793.....	101	Metal borings, shavings, turnings, or cuttings	UN 2820.....	101	Butyric acid
UN 2794.....	102	Batteries, wet, filled with acid	UN 2820.....	102	n-Butyric acid
NA 2794.....	101	Battery	NA 2821.....	101	Phenol, liquid or solution
UN 2794.....	101	Battery	UN 2821.....	102	Phenol solutions
UN 2795.....	102	Batteries, wet, filled with alkali	UN 2822.....	102	2-Chloropyridine
NA 2795.....	101	Battery	UN 2823.....	101	Crotonic acid
UN 2795.....	101	Battery	UN 2825.....	102	N,N-Diisopropyl ethanolamine
UN 2798.....	101	Battery fluid, acid	UN 2826.....	101	Ethyl chloroethoformate
NA 2798.....	101	Battery fluid, acid, with battery	UN 2830.....	101	Lithium ferrosilicon
NA 2798.....	101	Battery fluid, acid, with electronic equipment or actuating device	UN 2831.....	101	1,1,1-Trichloroethane
UN 2798.....	102	Sulphuric acid	UN 2831.....	102	1,1,1-Trichloroethane
UN 2797.....	101	Battery fluid, alkali	UN 2834.....	102	Phosphorus acid, ortho
UN 2797.....	101	Battery fluid, alkali, with battery	UN 2835.....	102	Sodium aluminum hydride
UN 2797.....	101	Battery fluid, alkali, with electronic equipment or actuating device	UN 2835.....	101	Sodium aluminum hydride
UN 2798.....	101	Benzene phosphorus dichloride	UN 2837.....	101	Sodium hydrogen sulfate solution
UN 2798.....	102	Phenyl phosphorus dichloride	UN 2837.....	102	Sodium hydrogen sulphate, solution
UN 2799.....	101	Benzene phosphorus thiodichloride	UN 2838.....	102	Vinyl butyrate, inhibited
UN 2799.....	102	Phenyl phosphorus thiodichloride	UN 2839.....	102	Aldol
UN 2800.....	102	Batteries, wet, non-spillable	UN 2840.....	102	Butyraldoxime
NA 2801.....	101	Coal tar dye, liquid	UN 2841.....	102	Di-n-amyamine
UN 2801.....	101	Dye intermediate, liquid	UN 2842.....	102	Nitroethane
UN 2801.....	102	Dyes, n.o.s. or Dye intermediates, n.o.s.	UN 2844.....	102	Calcium manganese silicon
UN 2802.....	101	Copper chloride	UN 2845.....	101	Pyrophoric liquid, n.o.s. or Pyroforic liquid, n.o.s.
UN 2803.....	102	Gallium	UN 2845.....	102	Pyrophoric liquids, n.o.s.
UN 2803.....	101	Gallium metal, liquid	UN 2849.....	102	Pyrophoric solids, n.o.s.
UN 2803.....	101	Gallium metal, solid	UN 2850.....	102	3-Chloropropanol-1
UN 2805.....	102	Lithium hydride, fused solid	UN 2851.....	102	Propylene tetramer
UN 2805.....	101	Lithium hydride in fused solid form	UN 2852.....	102	Boron trifluoride dihydrate
UN 2806.....	101	Lithium nitride	UN 2853.....	102	Dipicryl sulphide, wetted
UN 2807.....	101	Magnetized material	UN 2853.....	102	Magnesium silicofluoride
UN 2808.....	102	Mercury	UN 2854.....	101	Ammonium silicofluoride
NA 2808.....	101	Mercury, metallic	UN 2855.....	101	Zinc silicofluoride
NA 2810.....	101	Arsenious and mercuric iodide solution	UN 2856.....	102	Silicofluorides, n.o.s.
NA 2810.....	101	Compound, tree or weed killing, liquid	UN 2857.....	101	Refrigerating machine
			UN 2857.....	102	Refrigerating machines
			UN 2858.....	102	Zirconium
			UN 2859.....	102	Ammonium metavanadate
			UN 2880.....	102	Vanadium trioxide
			UN 2881.....	102	Ammonium polyvanadate
			UN 2882.....	101	Vanadium pentoxide

(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 2863	102	Sodium ammonium vanadate
UN 2864	102	Potassium metavanadate
UN 2865	102	Hydroxylamine sulphate
UN 2867	101	Ink
UN 2868	101	Resin solution
UN 2869	102	Titanium trichloride mixtures
UN 2870	102	Aluminium borohydride or Alumin- um borohydride in devices
UN 2871	102	Antimony powder
UN 2872	102	1,2-Dibromo-3-chloropropane
UN 2873	102	N,N-Di-n-butylaminoethanol
UN 2874	102	Furfuryl alcohol
UN 2875	102	Hexachlorophene
UN 2876	101	Resorcinol
UN 2877	102	Thiourea
UN 2878	102	Titanium sponge granules or Tita- nium sponge powders
UN 2879	102	Selenium oxychloride
UN 2880	102	Calcium hypochlorate, hydrated or Calcium hypochlorite, hydrated mixtures
UN 2880	101	Calcium hypochlorite, hydrated
UN 2881	102	Nickel catalyst, dry
UN 2883	101	2,2-Di-(tert-butylperoxy)propane
UN 2883	102	2,2-Di-(tert-butylperoxy) propane
UN 2884	101	2,2-Di-(tert-butylperoxy)propane
UN 2884	102	2,2-Di-(tert-butylperoxy) propane
UN 2885	101	1,1-Di-(tert-butylperoxy)cyclohexane
UN 2885	102	1,1-Di-(tert-butylperoxy) cyclohex- ane
UN 2886	102	tert-Butyl peroxy-2-ethylhexanoate
UN 2886	101	tert-Butyl peroxy-2-ethylhexanoate, with 2,2-Di-(tert- butylperoxy)butane
UN 2887	101	tert-Butyl peroxy-2-ethylhexanoate
UN 2888	101	tert-Butyl peroxy-2-ethylhexanoate
UN 2889	102	Diisotridecyl peroxydicarbonate
UN 2889	101	Diisotridecyl peroxydicarbonate
UN 2890	101	tert-Butyl peroxybenzoate
UN 2891	102	tert-Amyl peroxyneodecanoate
UN 2891	101	tert- Amyl peroxyneodecanoate
UN 2892	101	Dimyristyl peroxydicarbonate
UN 2892	102	Dimyristyl peroxydicarbonate
UN 2893	102	Dilauroyl peroxide
UN 2893	101	Lauroyl peroxide
UN 2894	101	Di-(4-tert- butylcyclohexyl)peroxydicarbonate
UN 2894	102	Di-(4-tert-butylcyclohexyl) peroxydi- carbonate
UN 2895	101	Dicetyl peroxydicarbonate
UN 2895	102	Dicetyl peroxydicarbonate
UN 2896	101	Cyclohexanone peroxide
UN 2896	102	Cyclohexanone peroxides
UN 2897	101	1,1-Di-(tert-butylperoxy)cyclohexane
UN 2897	102	1,1-Di-(tert-butylperoxy) cyclohex- ane
UN 2898	101	tert-Amyl peroxy-2-ethylhexanoate
UN 2899	102	Organic peroxides, n.o.s., trial quantities
UN 2899	101	Organic peroxide, trial quantity, n.o.s.
UN 2901	102	Bromine chloride
NA 2902	101	Allethrin
NA 2902	101	Insecticide, liquid, n.o.s.
UN 2902	102	Pesticides, liquid, toxic, n.o.s.
UN 2903	102	Pesticides, liquid, toxic, flammable, n.o.s.
UN 2904	102	Chlorophenates, liquid
UN 2905	102	Chlorophenates, solid
UN 2906	102	Triisocyanatoliscyanurate of Iso- phoronediliscyanate, solution

(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 2907	102	Isosorbide dinitrate mixture
UN 2908	101	Radioactive material, empty pack- ages
UN 2909	101	Radioactive material, articles, man- ufactured from natural or depleat- ed uranium or natural thorium
UN 2910	101	Radioactive material, limited quanti- ty, n.o.s.
UN 2911	101	Radioactive material, instruments and articles
UN 2912	101	Radioactive material, low specific activity or LSA, n.o.s.
UN 2918	101	Radioactive material, fieslle, n.o.s.
UN 2920	102	Corrosive liquids, flammable, n.o.s.
UN 2921	102	Corrosive solids, flammable, n.o.s.
UN 2922	101	Corrosive liquid, poisonous, n.o.s.
UN 2922	102	Corrosive liquids, poisonous, n.o.s.
NA 2922	101	Dimethyl chlorothiophosphate
NA 2922	101	Sodium hydrosulfide, solution
UN 2923	102	Corrosive solids, poisonous, n.o.s.
NA 2923	101	Sodium hydrosulfide, solid
NA 2924	101	Dichlorobutene
UN 2924	101	Flammable liquid, corrosive, n.o.s.
UN 2924	102	Flammable liquids, corrosive, n.o.s.
UN 2925	101	Flammable solid, corrosive, n.o.s.
UN 2925	102	Flammable solids, corrosive, n.o.s.
UN 2926	101	Flammable solid, poisonous, n.o.s.
UN 2926	102	Flammable solids, poisonous, n.o.s.
UN 2927	102	Poisonous liquids, corrosive, n.o.s.
UN 2928	101	Poisonous solid, corrosive, n.o.s.
UN 2928	102	Poisonous solids, corrosive, n.o.s.
NA 2929	101	Chloroform mixture, flammable
UN 2929	102	Poisonous liquids, flammable, n.o.s.
UN 2930	102	Poisonous solids, flammable, n.o.s.
UN 2931	102	Vanadyl sulphate
UN 2933	102	Methyl-2-chloropropionate
UN 2934	102	Isopropyl-2-chloropropionate
UN 2935	102	Ethyl-2-chloropropionate
UN 2936	102	Thioctic acid
UN 2937	102	alpha-Methylbenzyl alcohol
UN 2938	102	Methylbenzoate
UN 2940	101	9-Phosphabicycnonanes
UN 2941	102	2-Fluoroaniline
UN 2942	102	2-Trifluoromethyl aniline
UN 2943	102	Tetrahydrofurfurylamine
UN 2944	102	4-Fluoroaniline
UN 2945	102	N-Methylbutylamine
UN 2946	102	2-Amino-5-diethylaminopentane
UN 2947	102	Isopropyl chloroacetate
UN 2946	102	3-Trifluoromethyl aniline
UN 2949	102	Sodium hydrosulphide
UN 2950	101	Magnesium granules-coated
UN 2950	102	Magnesium granules, coated
UN 2952	102	Azodisobutyronitrile
UN 2953	102	2,2'-Azodi-(2,4-dimethylvaleronitrile)
UN 2954	102	Azodi-(1,1'-hexahydrobenzoxitrile)
UN 2955	102	2,2'-Azodi-(2,4-dimethyl-4- methoxyvaleronitrile)
UN 2957	102	tert-Amyl peroxyvalate
UN 2958	102	Diperoxyazelaic acid
UN 2959	102	2,5-Dimethyl-2,5-di-(benzoylperoxy) hexane
UN 2980	102	Di-(2-ethylhexyl) peroxydicarbonate
UN 2951	102	2,4,4-Trimethylpenyl-2-peroxy phenoxy acetate
UN 2882	102	Disuccinic acid peroxide
UN 2883	102	Cumyl peroxyneodecanoate
UN 2884	102	Cumyl peroxyvalate
UN 2885	102	Boron trifluoride dimethyl etherate
UN 2886	102	Thioglycol
UN 2887	102	Sulphamic acid

App. A

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(1)— Identification Number	(2)— Source 172.***	(3)—Description	(1)— Identification Number	(2)— Source 172.***	(3)—Description
UN 2868.....	102	Maneb, or Maneb preparation(s)	UN 3017.....	102	Organophosphorus pesticides, liquid, toxic, flammable, n.o.s.
UN 2869.....	102	Castor beans, Castor meal, Castor pomace or Castor flake	UN 3018.....	102	Organophosphorus pesticides, liquid, toxic, n.o.s.
UN 2974.....	101	Radioactive material, special form, n.o.s.	UN 3019.....	102	Organotin pesticides, liquid, toxic, flammable, n.o.s.
UN 2975.....	101	Thorium metal, pyrophoric	UN 3020.....	102	Organotin pesticides, liquid, toxic, n.o.s.
UN 2976.....	101	Thorium nitrate	UN 3021.....	102	Pesticides, liquid, flammable, toxic, n.o.s.
UN 2977.....	101	Uranium hexafluoride, fissile	NA 9011.....	101	Camphene
UN 2978.....	101	Uranium hexafluoride, low specific activity	NA 9018.....	101	Dichlorodifluoroethylene
UN 2979.....	101	Uranium metal, pyrophoric	NA 9028.....	101	Dinitrocyclohexylphenol
UN 2980.....	101	Uranyl nitrate hexahydrate solution	NA 9035.....	101	Gas identification set
UN 2981.....	101	Uranyl nitrate, solid	NA 9037.....	101	Hexachloroethane
UN 2982.....	101	Radioactive material, n.o.s.	NA 9053.....	101	Oiled material
UN 2983.....	102	Ethylene oxide and propylene oxide mixtures	NA 9069.....	101	Tetramethylmethylenediamine
UN 2984.....	102	Hydrogen peroxide, aqueous solutions	NA 9077.....	101	Adipic acid
UN 2989.....	102	Lead phosphite dibasic	NA 9078.....	101	Aluminum sulfate, solid
UN 2991.....	102	Carbamate pesticides, liquid, toxic, flammable, n.o.s.	NA 9079.....	101	Ammonium acetate
UN 2992.....	102	Carbamate pesticides, liquid, toxic, n.o.s.	NA 9080.....	101	Ammonium benzoate
UN 2993.....	102	Arsenical pesticides, liquid, toxic, flammable, n.o.s.	NA 9081.....	101	Ammonium bicarbonate
UN 2994.....	102	Arsenical pesticides, liquid, toxic, n.o.s.	NA 9083.....	101	Ammonium carbamate
UN 2995.....	102	Organochlorine pesticides, liquid, toxic, flammable, n.o.s.	NA 9084.....	101	Ammonium carbonate
UN 2996.....	102	Organochlorine pesticides, liquid, toxic, n.o.s.	NA 9085.....	101	Ammonium chloride
UN 2997.....	102	Triazine pesticides, liquid, toxic, flammable, n.o.s.	NA 9086.....	101	Ammonium chromate
UN 2998.....	102	Triazine pesticides, liquid, toxic, n.o.s.	NA 9087.....	101	Ammonium citrate, dibasic
UN 2999.....	102	Phenoxy pesticides, liquid, toxic, flammable, n.o.s.	NA 9088.....	101	Ammonium fluoride
UN 3000.....	102	Phenoxy pesticides, liquid, toxic, n.o.s.	NA 9089.....	101	Ammonium sulfamate
UN 3001.....	102	Phenyl urea pesticides, liquid, toxic, flammable, n.o.s.	NA 9090.....	101	Ammonium sulfite
UN 3002.....	102	Phenyl urea pesticides, liquid, toxic, n.o.s.	NA 9091.....	101	Ammonium tartrate
UN 3003.....	102	Benzoic derivative pesticides, liquid, toxic, flammable, n.o.s.	NA 9092.....	101	Ammonium thiocyanate
UN 3004.....	102	Benzoic derivative pesticides liquid, toxic, n.o.s.	NA 9093.....	101	Ammonium thiosulfate
UN 3005.....	102	Dithiocarbamate pesticides, liquid, toxic, flammable, n.o.s.	NA 9094.....	101	Benzoic acid
UN 3006.....	102	Dithiocarbamate pesticides, liquid, toxic, n.o.s.	NA 9095.....	101	n-Butyl phthalate
UN 3007.....	102	Phthalimide derivative pesticides, liquid, toxic, flammable, n.o.s.	NA 9096.....	101	Calcium chromate
UN 3008.....	102	Phthalimide derivative pesticides, liquid, toxic, n.o.s.	NA 9097.....	101	Calcium dodecylbenzenesulfonate
UN 3009.....	102	Copper based pesticides, liquid, toxic, flammable, n.o.s.	NA 9099.....	101	Captan
UN 3010.....	102	Copper based pesticides, liquid, toxic, n.o.s.	NA 9100.....	101	Chromic sulfate
UN 3011.....	102	Mercury based pesticides, liquid, toxic, flammable, n.o.s.	NA 9101.....	101	Chromic acetate
UN 3012.....	102	Mercury based pesticides, liquid, toxic, n.o.s.	NA 9102.....	101	Chromous chloride
UN 3013.....	102	Substituted nitrophenol pesticides, liquid, toxic, flammable, n.o.s.	NA 9103.....	101	Cobaltous bromide
UN 3014.....	102	Substituted nitrophenol pesticides, liquid, toxic, n.o.s.	NA 9104.....	101	Cobaltous formate
UN 3015.....	102	Bipyridilium pesticides, liquid, toxic, flammable, n.o.s.	NA 9105.....	101	Cobaltous sulfamate
UN 3016.....	102	Bipyridilium pesticides, liquid, toxic, n.o.s.	NA 9108.....	101	Cupric acetate
			NA 9109.....	101	Cupric sulfate
			NA 9110.....	101	Cupric sulfate, ammoniated
			NA 9111.....	101	Cupric tartrate
			NA 9117.....	101	Ethylenediaminetetraacetic acid
			NA 9118.....	101	Ferric ammonium citrate
			NA 9119.....	101	Ferric ammonium oxalate
			NA 9120.....	101	Ferric fluoride
			NA 9121.....	101	Ferric sulfate
			NA 9122.....	101	Ferrous ammonium sulfate
			NA 9125.....	101	Ferrous sulfate
			NA 9126.....	101	Fumaric acid
			NA 9127.....	101	Isopropanolamine dodecylbenzenesulfonate
			NA 9134.....	101	Lithium chromate
			NA 9137.....	101	Naphthenic acid
			NA 9138.....	101	Nickel ammonium sulfate
			NA 9139.....	101	Nickel chloride
			NA 9140.....	101	Nickel hydroxide
			NA 9141.....	101	Nickel sulfate
			NA 9142.....	101	Potassium chromate
			NA 9145.....	101	Sodium chromate
			NA 9148.....	101	Sodium dodecylbenzenesulfonate
			NA 9147.....	101	Sodium phosphate, dibasic
			NA 9148.....	101	Sodium phosphate, tribasic
			NA 9149.....	101	Strontium chromate

(1)— Identification Number	(2)— Source 172.***	(3)—Description
NA 9151.....	101	Triethanolamine dodecylbenzene-sulfonate
NA 9152.....	101	Vanadyl sulfate
NA 9153.....	101	Zinc acetate
NA 9154.....	101	Zinc ammonium chloride
NA 9155.....	101	Zinc borate
NA 9156.....	101	Zinc bromide
NA 9157.....	101	Zinc carbonate
NA 9158.....	101	Zinc fluoride
NA 9159.....	101	Zinc formate
NA 9160.....	101	Zinc phenolsulfonate
NA 9161.....	101	Zinc sulfate
NA 9162.....	101	Zirconium potassium fluoride
NA 9163.....	101	Zirconium sulfate
NA 9180.....	101	Uranyl acetate
NA 9183.....	101	Organic peroxide, liquid or solution, n.o.s.
NA 9184.....	101	Pyrethrins
NA 9187.....	101	Organic peroxide, solid, n.o.s.
NA 9188.....	101	Hazardous substance, liquid or solid, n.o.s.
NA 9189.....	101	Hazardous waste, liquid or solid, n.o.s.
NA 9180.....	101	Ammonium permanganate
NA 9191.....	101	Chlorine dioxide hydrate, frozen
NA 9193.....	101	Oxidizer, corrosive, liquid, n.o.s.
NA 9194.....	101	Oxidizer, corrosive, solid, n.o.s.
NA 9195.....	101	Metal alkyl, solution, n.o.s.
NA 9199.....	101	Oxidizer, poisonous, liquid, n.o.s.
NA 9200.....	101	Oxidizer, poisonous, solid, n.o.s.
NA 9201.....	101	Antimony trioxide
NA 9202.....	101	Carbon monoxide, cryogenic liquid
NA 9206.....	101	Methyl phosphonic dichloride

(49 U.S.C. 1803, 1804, 1808, 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-85, 48 FR 50446, Nov. 1, 1983, as amended by Amdt. 172-89, 49 FR 7385, Feb. 29, 1984; Amdt. 172-94, 49 FR 38134, Sept. 27, 1984; Amdt. 172-111, 52 FR 36671, Sept. 30, 1987]

Subpart C—Shipping Papers

§ 172.200 Applicability:

(a) *Description of hazardous materials required.* Except as otherwise provided in this subpart, each person who offers a hazardous material for transportation shall describe the hazardous material on the shipping paper in the manner required by this subpart.

(b) This subpart does not apply to any material other than a hazardous waste or a hazardous substance, that is:

(1) An ORM-A, B, or C, unless it is offered or intended for transportation by air when it is subject to the regulations pertaining to transportation by air as specified in § 172.101; or

(2) An ORM-A, B, or C, unless it is offered or intended for transportation by water when it is subject to the regulations pertaining to transportation by water as specified in § 172.101; or

(3) An ORM-D unless it is offered or intended for transportation by air.

[Amdt. 172-29A, 41 FR 40677, Sept. 20, 1976, as amended by Amdt. 172-58, 45 FR 34697, May 22, 1980; Amdt. 172-74, 47 FR 43065, Sept. 30, 1982]

§ 172.201 General entries.

(a) *Contents.* When a description of hazardous material is required to be included on a shipping paper, that description must conform to the following requirements:

(1) When a hazardous material and a material not subject to the requirements of this subchapter are described on the same shipping paper, the hazardous material description entries required by § 172.202 and those additional entries that may be required by § 172.203:

(i) Must be entered first, or

(ii) Must be entered in a color that clearly contrasts with any description on the shipping paper of a material not subject to the requirements of this subchapter, except that a description on a reproduction of a shipping paper may be highlighted, rather than printed, in a contrasting color (the provisions of this paragraph apply only to the basic description required by § 172.202(a) (1) and (2), and (3)), or

(iii) Must be identified by the entry of an "X" placed before the proper shipping name in a column captioned "HM." (The "X" may be replaced by "RQ," if appropriate.)

(2) The required shipping description on a shipping paper and all copies thereof used for transportation purposes, must be legible and printed (manually or mechanically) in English.

(3) Unless it is specifically authorized or required in this subpart, the required shipping description may not contain any code or abbreviation.

(4) A shipping paper may contain additional information concerning the material provided the information is not inconsistent with the required description. Unless otherwise permitted

or required by this subpart, additional information must be placed after the basic description required by § 172.202(a).

(i) When appropriate, the entries "IMO" or "IMO Class" may be entered immediately before or immediately following the class entry in the basic description.

(ii) For a material meeting the definition of more than one hazard class, the additional hazard class or classes may be entered after the hazard class in the basic description.

(b) *Name of shipper.* A shipping paper for a shipment by water must contain the name of the shipper.

(c) *Continuation page.* A shipping paper may consist of more than one page, if each page is consecutively numbered and the first page bears a notation specifying the total number of pages included in the shipping paper. For example, "Page 1 of 4 pages."

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-29A, 41 FR 40677, Sept. 20, 1976, as amended by Amdt. 172-29B, 41 FR 57067, Dec. 30, 1976; Amdt. 172-58, 45 FR 34697, May 22, 1980; Amdt. 172-58, 45 FR 74664, Nov. 10, 1980; Amdt. 172-75, 47 FR 44471, Oct. 7, 1982; Amdt. 172-90, 49 FR 10510, Mar. 20, 1984]

§ 172.202 Description of hazardous material on shipping papers.

(a) The shipping description of a hazardous material on the shipping paper must include:

(1) The proper shipping name prescribed for the material in § 172.101 or § 172.102 (when authorized);

(2) The hazard class prescribed for the material in the same section. Except for a proper shipping name that contains words describing more than one hazard class, inclusion of the hazard class is not required when the words of the proper shipping name contain the key word or words of the hazard class of the material, such as Flammable liquid; Poison B, liquid; Radioactive device; or Corrosive liquid;

(3) The identification number (preceded by "UN" or "NA" as appropriate) prescribed for the material in the same section; and

(4) Except for empty packagings, cylinders for compressed gases, and packagings of greater than 110 gallons capacity, the total quantity by weight (net or gross as appropriate) or volume, including the unit of measure, of the hazardous material covered by the description. For example: "800 lbs", "55 gal".

(b) Except as provided in this subpart, the basic description specified in paragraphs (a) (1), (2) and (3) of this section must be shown in sequence. For example: "Gasoline, Flammable liquid, UN1203".

(c) The total quantity of the material covered by one description must appear before or after, or both before and after, the description required and authorized by this subpart.

(1) Abbreviations may be used to specify the type of packaging and unit of measurement for total quantity. For example: "10 ctns. Paint, Flammable liquid, UN1263, 500 lbs".

(2) The type of packaging and destination marks may be entered in any appropriate manner before or after the basic description.

(d) Technical and chemical group names may be entered in parentheses between the proper shipping name and hazard class.

(e) Except for those materials in the UN Recommendations, the ICAO Technical Instructions, or the IMDG Code, 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 § 172.101.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-101, 45 FR 74665, Nov. 10, 1980, as amended by Amdt. 172-81, 48 FR 28098, June 20, 1983; Amdt. 172-103, 51 FR 5970, Feb. 18, 1986; Amdt. 172-109, 52 FR 13038, Apr. 20, 1987]

§ 172.203 Additional description requirements.

(a) *Exemptions.* Each shipping paper issued in connection with a shipment made under an exemption must bear the notation "DOT-E" followed by the exemption number assigned and so lo-

cated that the notation is clearly associated with the description to which the exemption applies.

(b) *Limited quantities.* The description for a material offered for transportation as "limited quantity," as authorized by this subchapter, must include the words "Limited Quantity" or "Ltd Qty" following the basic description.

(c) *Hazardous substances.* (1) If the proper shipping name for a material that is a hazardous substance does not identify the hazardous substance by name, one of the following descriptions shall be entered, in parentheses, in association with the basic description:

(i) The name of the hazardous substance as shown in the appendix to § 172.101; or

(ii) For waste streams, the waste stream number; or

(iii) For wastes which exhibit an EPA characteristic of ignitability, corrosivity, reactivity, or EP toxicity, the letters "EPA" followed by the word "ignitability", or "corrosivity", or "reactivity", or "EP toxicity", as appropriate or the corresponding "D" number, as appropriate.

(2) The letters "RQ" shall be entered on the shipping paper either before or after the basic description required by § 172.202 for each hazardous substance. For example: "RQ, Cresol, Corrosive material, UN 2076"; or "Hazardous substance, solid, n.o.s., ORM-E, NA9188, (Adipic acid), RQ".

(d) *Radioactive material.* (1) The description for a shipment of radioactive material must include the following additional entries as appropriate:

(i) The name of each radionuclide in the radioactive material that is listed in § 173.435 of this subchapter. Abbreviations, e.g., "⁹⁹Mo" are authorized.

(ii) A description of the physical and chemical form of the material, if the material is not in special form (generic chemical description is acceptable for chemical form).

(iii) The activity contained in each package of the shipment in terms of curies, millicuries, or microcuries. Abbreviations are authorized. For the shipment of a package containing a highway route controlled quantity of radioactive materials (see § 173.403(l)

of this subchapter), the words "Highway route controlled quantity" must be entered in association with the basic description.

(iv) The category of label applied to each package in the shipment. For example: "RADIOACTIVE WHITE-I."

(v) The transport index assigned to each package in the shipment bearing RADIOACTIVE YELLOW-II or RADIOACTIVE YELLOW-III labels.

(vi) For a shipment of fissile radioactive materials:

(A) The words "Fissile Exempt," if the package is exempt pursuant to § 173.453 of this subchapter, or

(B) If not exempt, the fissile class of each package in the shipment, pursuant to § 173.455 of this subchapter; and

(C) For a Fissile Class III shipment, the additional notation: "Warning—Fissile Class III Shipment. Do not Load More Than * * * Packages per Vehicle." (Asterisks to be replaced by appropriate number.) "In loading and Storage Areas, Keep at Least 20 Feet (6 Meters) from Other Packages Bearing Radioactive Labels."

(D) If a Fissile Class III shipment is to be transported by water, the supplementary notation must also include the following statement: "For shipment by water, only one Fissile Class III shipment is permitted in each hold."

(vii) For a package approved by the U.S. Department of Energy (DOE) or U.S. Nuclear Regulatory Commission (USNRC), a notation of the package identification marking as prescribed in the applicable DOE or USNRC approval. (See § 173.471 of the subchapter.)

(viii) For an export shipment or a shipment in a foreign made package, a notation of the package identification marking as prescribed in the applicable International Atomic Energy Agency (IAEA) Certificate of Competent Authority which has been issued for the package. (See § 173.473 of the subchapter.)

(e) *Empty packagings.* (1) The description on the shipping paper for a packaging containing the residue of a hazardous material may include the words "RESIDUE: Last Contained * * *" in association with the

basic description of the hazardous material last contained in the packaging.

(2) For a tank car containing the residue (as defined in 171.8) of a hazardous material, the requirements of § 174.25(c) and paragraph (e)(3) of this section apply.

(3) If a packaging, including a tank car, contains a residue that is a hazardous substance, the description on the shipping papers must be prefaced with the phrase "RESIDUE: Last Contained * * *" and the letters "RQ" must be entered on the shipping paper either before or after the basic description.

(f) *Transportation by air.* When a package containing a hazardous material is offered for transportation by air and this subchapter prohibits its transportation aboard passenger-carrying aircraft, the words "Cargo aircraft only" must be entered after the basic description.

(g) *Transportation by rail.* (1) The shipping paper for a rail car containing a hazardous material must contain the notation "Placarded" followed by the name of the placard required for the rail car.

(2) The shipping paper for each Class DOT-113 tank car containing a flammable gas must contain an appropriate notation, such as "DOT-113A," and the statement "Do Not Hump or Cut Off Car While in Motion."

(h) *Transportation by highway.* Following the basic description for a hazardous material in a Specification MC 330 or MC 331 cargo tank, there must be entered for—

(1) *Anhydrous ammonia.* (i) The words "0.2 PERCENT WATER" to indicate the suitability for shipping anhydrous ammonia in a cargo tank made of quenched and tempered steel as authorized by § 173.315(a)(1), Note 14 of this subchapter, or

(ii) The words "NOT FOR Q and T TANKS" when the anhydrous ammonia does not contain 0.2 percent or more water by weight.

(2) *Liquefied petroleum gas.* (i) The word "NONCORROSIVE" or "NONCOR" to indicate the suitability for shipping "Noncorrosive" liquefied petroleum gas in a cargo tank made of quenched and tempered steel as au-

thorized by § 173.315(a)(1), Note 15 to this subchapter, or

(ii) The words "NOT FOR Q and T TANKS" for grades of liquefied petroleum gas other than "Noncorrosive".

(i) *Transportation by water.* (1) Each shipment by water must have the following additional shipping paper entries:

(i) Identification of the type of packages such as barrels, drums, cylinders, and boxes.

(ii) The number of each type of package including those in a freight container or on a pallet, and

(iii) The gross weight of each type of package or the individual gross weight of each package.

(2) The shipping paper for a hazardous material offered for transportation by vessel to any country outside the United States must have in parentheses the technical name of the material immediately following the proper shipping name when the material is described by an n.o.s. entry in § 172.101 or § 172.102. For example: "Corrosive liquid, n.o.s. (Caprylyl chloride), UN1760." If the material is a mixture of two or more hazardous materials, the names of at least two components most predominately contributing to the hazard or hazards of the mixture shall be entered in parentheses. For example: "Flammable liquid, corrosive, n.o.s. (Methyl alcohol, Potassium hydroxide), UN2924." The provisions of this paragraph do not apply:

(1) If the n.o.s. description for the material (other than a mixture of hazardous materials of different classes meeting the definition of more than one hazard class) contains the name of the chemical element or group which is primarily responsible for the material being included in the hazard class indicated. For example: "Mercury compound, solid, n.o.s., Poison B, UN2025."

(ii) If the n.o.s. description for the material (which is a mixture of hazardous materials of different classes meeting the definition of more than one hazard class) contains the name of the chemical element or group responsible for the material meeting the definition of one of these classes. In such cases, only the technical name of the

component that is not appropriately identified in the n.o.s. description shall be entered in parentheses. For example: "Carbamate pesticide, liquid, n.o.s. (contains Xylene), Flammable liquid, UN2758, Poison."

(3) The entry "Skin corrosive only" must be included to also authorize "under deck" stowage for corrosive liquid, n.o.s. and corrosive solid, n.o.s. that meet only the corrosion to skin criteria of § 173.240(a)(1).

(j) *Dangerous When Wet.* The words "Dangerous When Wet" shall be entered on the shipping paper in association with the basic description when a package covered by the basic description is required to be labeled with a DANGEROUS WHEN WET label.

(k) *Poisonous materials.* Notwithstanding the class to which a material is assigned:

(1) If the name of the compound or principal constituent that causes a material to meet the definition of a poison (according to this subchapter) is not included in the proper shipping name for the material, the name of that compound or constituent shall be entered on the shipping paper in association with the shipping description for the material. The name of the compound or principal constituent may be either a technical name or any name for the material that is listed in the NIOSH Registry. This subparagraph does not apply to:

(i) A material having a proper shipping name that includes the chemical element or group which causes the material to be a poison.

(ii) Limited Quantities.

(2) If a liquid or solid material in a package meets the definition of a poison according to this subchapter, and the fact that it is a poison is not disclosed in the shipping name or class entry, the word "Poison" shall be entered on the shipping paper in association with the shipping description.

(3) The provisions of paragraphs (k)(1) and (2) of this section do not apply:

(i) To consumer commodities, ORM-D, or

(ii) To compounds or principal constituents that would cause death by corrosive destruction to tissue rather than by systemic poisoning.

(4) If the inhalation toxicity of any material falls within the criteria specified in § 173.3a(b)(2) (subject to definitions and implementation conditions of (c) and (d) of the same section), the words "Poison-Inhalation Hazard" shall be entered on the shipping paper in association with the shipping description. However, the word "Poison" need not be repeated if it is entered as part of the basic description or in conformance with paragraph (k)(2) of this section. This paragraph does not apply to packagings having primary containment units of one liter capacity or less.

(1) *IM portable tanks.* A hazardous material described by an "n.o.s." entry in § 172.101 or § 172.102 (when authorized) and offered for transportation in an IM portable tank must be described on shipping papers in accordance with the provisions of paragraph (i)(2) of this section.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53; App. A to Part 1)

[Amdt. 172-29A, 41 FR 40677, Sept. 20, 1976]

EDITORIAL NOTE: For Federal Register citations affecting § 172.203, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 172.204 Shipper's certification.

(a) *General.* Except as provided in paragraphs (b) and (c) of this section, each person who offers a hazardous material for transportation shall certify that the material is offered for transportation in accordance with this subchapter by printing (manually or mechanically) on the shipping paper containing the required shipping description the certification contained in paragraph (a)(1) of this section or the certification (declaration) containing the language contained in paragraph (a)(2) of this section.

(1) "This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation."

NOTE: In line one of the certification the words "herein-named" may be substituted for the words "above-named".

(2) "I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by [*] according to applicable international and national governmental regulations."

*Additional language indicating the modes of transportation to be used may be inserted at this point in the certification. All modes of transportation may be indicated provided that any mode not applicable to a specific shipment is deleted (lined out).

(b) *Exceptions.* (1) Except for a hazardous waste, no certification is required for a hazardous materials offered for transportation by motor vehicle and transported:

(i) In a cargo tank supplied by the carrier, or

(ii) By the shipper as a private carrier except for a hazardous material that is to be reshipped or transferred from one carrier to another.

(2) No certification is required for the return of an empty tank car which previously contained a hazardous material and which has not been cleaned or purged.

(c) *Transportation by air*—(1) *General.* Certification containing the following language may be used in place of the certification required by paragraph (a) of this section:

I hereby certify that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and in proper condition for carriage by air according to applicable national governmental regulations.

(2) *Certificate in duplicate.* Each person who offers a hazardous material to an aircraft operator for transportation by air shall provide two copies of the certification required in this section. (See § 175.30 of this subchapter.)

(3) *Passenger and cargo aircraft.* Each person who offers for transportation by air a hazardous material authorized for air transportation shall add to the certification required in this section the following statement:

This shipment is within the limitations prescribed for passenger aircraft/cargo aircraft only (delete nonapplicable).

(4) *Radioactive material.* Each person who offers any radioactive material for transportation aboard a passenger-carrying aircraft shall sign (mechanically or manually) a printed certificate stating that the shipment contains radioactive material intended for use in, or incident to, research, or medical diagnosis or treatment.

(d) *Signature.* The certifications required by paragraph (a) or (c) of this section:

(1) Must be legibly signed by a principal, officer, partner, or employee of the shipper or his agent; and

(2) May be legibly signed manually, by typewriter, or by other mechanical means.

(49 U.S.C. 1803, 1804, 1806, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-29A, 41 FR 40677, Sept. 20, 1976]

EDITORIAL NOTE: For Federal Register citations affecting § 172.204, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 172.205 Hazardous waste manifest.

(a) No person may offer, transport, transfer, or deliver a hazardous waste (waste) unless an EPA Form 8700-22 and 8700-22A (when necessary) hazardous waste manifest (manifest) is prepared in accordance with 40 CFR 262.20 and is signed, carried, and given as required of that person by this section.

(b) The shipper (generator) shall prepare the manifest in accordance with 40 CFR Part 262.

(c) The original copy of the manifest must be dated by, and bear the handwritten signature of, the person representing:

(1) The shipper (generator) of the waste at the time it is offered for transportation, and

(2) The initial carrier accepting the waste for transportation.

(d) A copy of the manifest must be dated by, and bear the handwritten signature of the person representing:

(1) Each subsequent carrier accepting the waste for transportation, at the time of acceptance, and

(2) The designated facility receiving the waste, upon receipt.

(e) A copy of the manifest bearing all required dates and signatures must be:

(1) Given to a person representing each carrier accepting the waste for transportation,

(2) Carried during transportation in the same manner as required by this subchapter for shipping papers,

(3) Given to a person representing the designated facility receiving the waste,

(4) Returned to the shipper (generator) by the carrier that transported the waste from the United States to a foreign destination with a notation of the date of departure from the United States, and

(5) Retained by the shipper (generator) and by the initial and each subsequent carrier for three years from the date the waste was accepted by the initial carrier. Each retained copy must bear all required signatures and dates up to and including those entered by the next person who received the waste.

(f) The requirements of paragraphs (d) and (e) of this section do not apply to a rail carrier when waste is delivered to a designated facility by railroad if:

(1) All of the information required to be entered on the manifest (except generator and carrier identification numbers and the generator's certification) is entered on the shipping paper carried in accordance with § 174.26(c) of this subchapter;

(2) The delivering rail carrier obtains and retains a receipt for the waste that is dated by and bears the handwritten signature of the person representing the designated facility; and

(3) A copy of the shipping paper is retained for three years by each railroad transporting the waste.

(g) The person delivering a hazardous waste to an initial rail carrier shall send a copy of the manifest, dated and signed by a representative of the rail carrier, to the person representing the designated facility.

(h) A hazardous waste manifest required by 40 CFR Part 262, containing all of the information required by this

subpart, may be used as the shipping paper required by this subpart.

(Approved by the Office of Management and Budget under control number 2137-0034)

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-58, 45 FR 34698, May 22, 1980, as amended by Amdt. 172-90, 49 FR 10510, Mar. 20, 1984; 49 FR 11184, Mar. 26, 1984]

Subpart D—Marking

§ 172.300 Applicability.

(a) Each person who offers a hazardous material for transportation shall mark each package, freight container, and transport vehicle containing the hazardous material in the manner required by this subpart.

(b) When assigned the function by this subpart, each carrier that transports a hazardous material shall mark each package, freight container, and transport vehicle containing the hazardous material in the manner required by this subpart.

[Amdt. 172-101, 45 FR 74666, Nov. 10, 1980]

§ 172.301 General marking requirements.

(a) Except as provided by this subchapter, each person who offers for transportation a hazardous material in a packaging having a rated capacity of 110 gallons or less shall mark the package with the proper shipping name and identification number (preceded by "UN" or "NA" as appropriate) assigned to the material in § 172.101 or § 172.102 (when authorized). In addition, if the inhalation toxicity of any material in a package falls within the criteria specified in § 173.3a(b)(2), the package shall be marked "Inhalation Hazard" in association with the required label(s). This additional marking requirement does not apply to packaging having primary containment units of one liter capacity or less and to packagings of greater than 110 gallons capacity.

(1) The proper shipping name is not required to include the word "Waste" as specified by § 172.101(c)(10) if the package bears the EPA marking prescribed by 40 CFR 262.32.

(b) When it has been determined by the shipper that a package has been

previously marked as required for the material it contains, it need not be re-marked. (For empty packagings, see § 173.29 of this subchapter.)

(c) This section does not apply to:

(1) Display of identification numbers on packages containing Limited Quantities (see § 171.8 of this subchapter) or materials classed as ORM-D (see § 173.1200 of this subchapter) when packed with no other hazardous material.

(2) Display of identification numbers on packagings having a rated capacity of 110 gallons or less filled for shipment prior to July 1, 1983.

NOTE: EPA requires special markings for hazardous wastes. See 40 CFR 262.32.

[Amdt. 172-101, 45 FR 74666, Nov. 10, 1980, as amended by Amdt. 172-74, 47 FR 43065, Sept. 30, 1982; Amdt. 172-99, 50 FR 41096, Oct. 8, 1985]

§ 172.302 Export shipments by water.

(a) Each package of hazardous material offered for export by water and described by a "n.o.s." entry in § 172.101 or § 172.102 (when authorized) must have the technical name or names of the material added in parentheses immediately following the proper shipping name (see § 172.203(1)(2)). For example: Corrosive liquid, n.o.s. (Caprylyl chloride).

(b) For a mixture of two or more hazardous materials, the technical name of at least two components most predominately contributing to the hazard or hazards of the mixture must be added in parentheses immediately following the proper shipping name.

[Amdt. 172-101, 45 FR 74666, Nov. 10, 1980, as amended by Amdt. 172-74, 47 FR 43065, Sept. 30, 1982]

§ 172.304 Marking requirements.

(a) The marking required in this subpart—(1) Must be durable, in English and printed on or affixed to the surface of a package or on a label, tag, or sign.

(2) Must be displayed on a background of sharply contrasting color;

(3) Must be unobscured by labels or attachments; and

(4) Must be located away from any other marking (such as advertising) that could substantially reduce its effectiveness.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-29B, 41 FR 57067, Dec. 30, 1976]

§ 172.306 Consignee's or consignor's name and address.

(a) Each package containing a hazardous material offered for transportation must be marked with the name and address of the consignee or consignor except when the package is:

(1) Transported by highway and will not be transferred from one motor carrier to another, or

(2) Part of a carload lot, truckload lot, or freight container load, and the entire contents of the rail car, truck or freight container are tendered from one consignor to one consignee, or

(3) A portable tank, cargo tank or tank car.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-29A, 41 FR 40678, Sept. 20, 1976; Amdt. 172-29B, 41 FR 57067, Dec. 30, 1976]

§ 172.308 Authorized abbreviations.

(a) Abbreviations may not be used in a proper shipping name marking except in the following instances:

(1) For marking descriptions of ammunition, such as Ammunition for cannon without projectile, etc., the words "with" or "without" may be abbreviated as "W" or "W/O". For example: "Ammunition for cannon W/O projectile."

(2) The abbreviation "ORM" may be used in place of the words "Other Regulated Material."

[Amdt. 172-101, 45 FR 74666, Nov. 10, 1980]

§ 172.310 Radioactive materials.

(a) In addition to any other markings required by this subpart, each package containing radioactive materials must be marked as follows: (1) Each package of radioactive materials in excess of 110 pounds (50 kilograms) must have its gross weight plainly and durably marked on the outside of the package.

(2) Each package of radioactive materials which conforms to the requirements for Type A or Type B packaging (§ 173.403 of this subchapter) must be plainly and durably marked on the outside of the package in letters at

least ½-inch (13 mm.) high, with the words "TYPE A" or "TYPE B" as appropriate. A packaging which is not in compliance with these requirements may not be so marked.

(3) Each package of radioactive material destined for export shipment must also be marked "USA" in conjunction with the specification marking, or other package certificate identification. (See §§ 173.471 173.472, and 173.473 of this subchapter.)

(49 U.S.C. 1803, 1804, 1808, 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-78, 48 FR 10226, Mar. 10, 1983]

§ 172.312 Liquid hazardous materials.

(a) Except as provided in this section, each package having an inside packaging containing liquid hazardous materials must be:

(1) Packed with closures upward, and

(2) Legibly marked "THIS SIDE UP" or "THIS END UP" as appropriate, to indicate the upward position of the inside packaging.

(b) Except as otherwise prescribed in Part 173 of this subchapter cylinders of liquefied compressed gas and specification containers 6D, 37M, 37P, and 21P are not required to be marked "THIS SIDE UP" or "THIS END UP".

(c) Arrows for purposes other than indicating proper package orientation may not be displayed on a package containing a hazardous material that is a liquid.

(1) An arrow symbol indicating "This Way Up" as specified in ANSI MH6.11968 entitled "Pictorial Marking for Handling of Goods" should be used in addition to the marking required by this section and § 173.25 of this subchapter.

(d) Except when offered for transportation by air, packages containing flammable liquids in inside packagings of one quart or less prepared in accordance with §§ 173.118(a) or 173.1200(a)(1) of this subchapter are excepted from the requirements of paragraph (a) of this section.

(e) When offered for transportation by air, packages containing flammable liquids in inside packagings of one quart or less prepared in accordance

with §§ 173.118(a) or 173.1200(a)(1) of this subchapter are excepted from the requirements of paragraph (a) of this section when packed with sufficient absorption material between the inner and outer packagings to completely absorb the liquid contents.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, amended by Amdt. 172-29A, 41 FR 40878, Sept. 20, 1976; Amdt. 172-29B, 41 FR 57087, Dec. 30, 1976; Amdt. 173-135, 45 FR 13090, Feb. 28, 1980; Amdt. 172-62, 45 FR 68654, Oct. 16, 1980]

§ 172.316 Packagings containing material classed as ORM.

(a) Each packaging having a rated capacity of 110 gallons or less and containing a material classed as ORM-A, B, C, D, or E must be plainly, durably, and legibly marked on at least one side or end with the appropriate ORM designation immediately following or below the proper shipping name of the material. The appropriate ORM designation must be placed within a rectangle that is approximately ¼ inch (6.3 mm.) larger on each side than the designation. The appropriate designation for each ORM must be:

(1) ORM-A for an ORM-A.

(2) ORM-B-KEEP DRY for an ORM-B that is a solid and is corrosive only to aluminum when wet.

(3) ORM-B for an ORM-B other than that described in paragraph (a)(2) of this section.

(4) ORM-C for an ORM-C.

(5) ORM-D-AIR for an ORM-D that is prepared for air shipment and packaged in accordance with the provisions of § 173.6 of this subchapter.

(6) ORM-D for an ORM-D other than that described in paragraph (a)(5) of this section.

(7) ORM-E for an ORM-E.

(b) When the ORM-D marking including the proper shipping name can not be affixed on the package surface, it may be on an attached tag.

(c) The marking ORM-A, B, C, D, or E is the certification by the person offering the package for transportation that the material is properly described, classed, packaged, marked and labeled (when appropriate) and in proper condition for transportation according to the applicable regulations of this subchapter. This form of certi-

fication does not preclude the requirement for a certificate on a shipping paper when required by Subpart C of this part.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976]

EDITORIAL NOTE: For Federal Register citations affecting § 172.316, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 172.324 Hazardous substances.

For each package with a capacity of 110 gallons or less that contains a hazardous substance—

(a) If the proper shipping name does not identify the hazardous substance by name, one of the following descriptions shall be marked on the package, in parentheses, in association with the proper shipping name:

(1) The name of the hazardous substance as shown in the appendix to § 172.101; or

(2) For waste streams, the waste stream number; or

(3) For wastes which exhibit an EPA characteristic of ignitability, corrosivity, reactivity, or EP toxicity, the letters "EPA" followed by the word "ignitability", or "corrosivity", or "reactivity", or "EP toxicity", as appropriate or the corresponding "D" number, as appropriate.

(b) The letters "RQ" shall be marked on the package in association with the proper shipping name.

[Amdt. 172-108, 52 FR 4843, Feb. 17, 1987]

§ 172.326 Portable tanks.

(a) No person may offer for transportation or transport a portable tank containing a hazardous material unless it is legibly marked with letters or numerals, as required, measuring no less than two inches (50.8 mm.) in height:

(1) On two opposing sides with the proper shipping name of the material, and

(2) As prescribed by § 172.332, with the identification number specified for the material in § 172.101 or § 172.102, (when authorized), and

(i) On each side and each end, if the tank has a capacity of 1,000 gallons or more, or

(ii) On two opposing sides in association with the proper shipping name, if

the tank has a capacity of less than 1,000 gallons.

(b) A portable tank marked with the name or identification number of a hazardous material may not be used to transport any other material unless the marking is removed, or changed to identify the hazardous material in the portable tank, whichever is appropriate.

(c) The name of the owner, or when appropriate, of the lessee, must be legibly displayed on a portable tank that contains a hazardous material.

(d) If the marking required by paragraph (a) (2) of this section is not visible, a transport vehicle, or freight container used to transport a portable tank must be marked on each side and each end as required by § 172.332 with the identification number specified for the material in § 172.101 or § 172.102 (when authorized),

(1) Each person who offers a motor carrier a portable tank for transportation in a transport vehicle or freight container shall provide the motor carrier with the required identification numbers on placards, orange panels, or the white square-on-point configuration, as appropriate, for each side and each end of the transport vehicle or freight container from which identification numbers on the portable tank are not visible.

(e) Each portable tank marked as required by paragraph (a) of this section must remain marked unless it is:

(1) Filled with a material not subject to this subchapter; or

(2) Sufficiently cleaned of residue and purged of vapor to remove any potential hazard.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-58, 45 FR 34699, May 22, 1980; Amdt. 172-101, 45 FR 74866, Nov. 10, 1980; Amdt. 172-110, 52 FR 29527, Aug. 10, 1987]

EFFECTIVE DATE NOTE: At 52 FR 29527, Aug. 10, 1987, § 172.326 was amended by adding paragraph (d)(1), effective February 1, 1988.

§ 172.328 Cargo tanks.

(a) Except as provided in this subpart, no person may offer for transportation or transport a hazardous material in a cargo tank unless the

cargo tank is marked as required by § 172.332 on each side and each end with the identification number specified for the material in § 172.101 or § 172.102 (when authorized).

(1) A person who offers a motor carrier a hazardous material for transportation in a cargo tank shall provide the motor carrier the required identification numbers on placards or shall affix orange panels containing the required identification numbers, prior to or at the time the material is offered for transportation unless the cargo tank is already marked with the identification number required by this subpart in accordance with paragraph (f) of this section and § 173.29(c) of this subchapter.

(2) A person who offers a cargo tank containing a hazardous material for transportation shall affix the required identification numbers on panels or placards prior to or at the time the cargo tank is offered for transportation unless it is already marked with identification numbers as required by this subpart.

(b) When the name of a material is required by this subchapter to be marked on a cargo tank, it must be legibly displayed on each end and each side in lettering no less than two inches (50.8 mm.) in height.

(c) *Required markings: Gases.* Except for certain nurse tanks which must be marked as specified in § 173.315(m) of this subchapter, each cargo tank transporting flammable or nonflammable gas (including a cryogenic liquid) subject to this subchapter must be marked as specified in this part on each end and each side with—

(1) The proper shipping name of the gas, or

(2) An appropriate common name for the material such as "Refrigerant Gas."

(d) *QT/NQT marking for MC 330 and MC 331 cargo tanks.* Each specification MC 330 and MC 331 cargo tank must be appropriately marked "QT" or "NQT" to indicate it is constructed of quenched and tempered steel (QT) or other than quenched and tempered steel (NQT). These markings must be placed near the specification identification plate letters no less than two inches (50.8 mm.) in height.

(e) A cargo tank marked with the name or identification number of a hazardous material may not be used to transport any other material unless that marking:

(1) Is removed;

(2) Is changed to identify the hazardous material in the cargo tank; or

(3) Conforms with § 172.336 (c)(4) or (c)(5) of this part.

(f) A cargo tank that is required to be marked with the name or identification number of a hazardous material must remain marked when empty unless it is:

(1) Reloaded with a material not subject to this subchapter; or

(2) Sufficiently cleaned of residue and purged of vapor to remove any potential hazard.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-29B, 41 FR 57067, Dec. 30, 1976, as amended by Amdt. 172-58, 45 FR 34699, May 22, 1980; Amdt. 172-101, 45 FR 74666, Nov. 10, 1980; Amdt. 172-82, 48 FR 27691, June 16, 1983; Amdt. 172-85, 48 FR 50440, Nov. 1, 1983; Amdt. 172-103, 51 FR 5970, Feb. 18, 1986; Amdt. 172-110, 52 FR 29527, Aug. 10, 1987]

EFFECTIVE DATE NOTE: At 52 FR 29527, Aug. 10, 1987, § 172.328, was amended by revising paragraph (e), effective February 1, 1988. For the convenience of the user, the superseded text is set forth below:

§ 172.328 Cargo tanks.

* * * * *

(e) A cargo tank marked with the name or identification number of a hazardous material may not be used to transport any other material unless the marking is removed, or changed to identify the hazardous material in the cargo tank, whichever is appropriate.

* * * * *

§ 172.330 Tank cars and multi-unit tank cars tanks.

(a) No person may offer for transportation or transport a hazardous material in a tank car (other than a multi-unit tank car tank) unless the tank car is:

(1) Marked on each side, when required by Part 173 or 179 of this subchapter, with the:

(i) Proper shipping name of the material, or

(ii) Common name authorized in this subchapter for the material such as "Refrigerant Gas."

(2) Marked on each side and each end, as required by § 172.332, with the identification number specified for the material in § 172.101 or § 172.102 (when authorized).

(b) The letters in the marking of a proper shipping name or common name must be 4 inches (101.6 mm.) or more in height with at least a 3/8 inch (15.9 mm.) stroke. The separation between each letter must be at least 3/4 inch (19.0 mm.).

(c) No person may offer for transportation or transport a hazardous material in a multi-unit tank car tank unless it is marked on opposing sides, in letters and numerals no less than two inches high, with the:

(1) Proper shipping name specified for the material in § 172.101 or § 172.102, or common name authorized for the material in this subchapter, and

(2) Identification number specified for the material in § 172.101 or § 172.102 (when authorized).

(d) A tank car or a multi-unit tank car tank marked with the identification number or name of a hazardous material may not be used to transport any other material unless the marking is removed, or changed to identify the hazardous material that the tank car or multi-unit tank car tank contains, whichever is appropriate.

(e) A motor vehicle or rail car used to transport a multi-unit tank car tank must be marked on each side and each end, as required by § 172.332, with the identification number specified for the material in § 172.101 or § 172.102 (when authorized).

(f) If a multi-unit tank car tank contains chlorine, marking of the name "Chlorine" is not required when the CHLORINE label is used as provided in § 172.405(b).

(g) Each multi-unit tank car tank and each tank car (except when it contains a combustible liquid) must remain marked when empty unless:

(1) Reloaded with a material not subject to this subchapter, or

(2) Sufficiently cleaned of residue and purged of vapor to remove any potential hazard.

[172-58, 45 FR 34699, May 22, 1980, as amended by Amdt. 172-101, 45 FR 74687, Nov. 10, 1980; Amdt. 172-85, 48 FR 50459, Nov. 1, 1983]

§ 172.331 Bulk packagings other than portable tanks, cargo tanks, tank cars and multi-unit tank car tanks.

(a) This section prescribes marking requirements for bulk packagings other than portable tanks (see § 172.326), cargo tanks (see § 172.328), tank cars and multi-unit tank car tanks (see § 172.330).

(b) No person may offer for transportation or transport a bulk packaging unless the packaging is marked as prescribed in § 172.332 or § 172.336(b), as appropriate, with the identification number specified for the material in § 172.101 or § 172.102, when authorized—

(1) On two opposing sides, for a packaging of 1,000 gallons (3,785.4 liters or 133.7 cubic feet) or less capacity;

(2) On each side and each end, for a packaging of greater than 1,000 gallons (3,785.4 liters or 133.7 cubic feet) capacity.

(c) The provisions of paragraph (b) do not apply to cylinders permanently installed on a tube trailer motor vehicle if the identification numbers are displayed as prescribed on each side and each end of the motor vehicle.

(d) Each person who offers a motor carrier a hazardous material in a bulk packaging for transportation shall provide the motor carrier with the required identification numbers on placards of plain white square-on-point display configurations, as authorized, or shall affix orange panels containing the required identification numbers to the packaging prior to or at the time the material is offered for transportation, unless the packaging is already marked with the identification number as required by this subpart.

(e) Each person who offers a bulk packaging containing a hazardous material for transportation shall affix to the packaging the required identification numbers on orange panels,

square-on-point configurations or placards, as appropriate, prior to, or at the time the packaging is offered for transportation unless it is already marked with identification numbers as required by this subchapter.

(f) No person may mark a bulk packaging with the name or identification number of a hazardous material that is not in the bulk packaging:

(g) A bulk packaging that is required to be marked with the name or identification number of a hazardous material must remain marked unless it is—

(1) Reloaded with a material that requires another marking or no marking; or

(2) Cleaned and purged of all residue.

[Amdt. 172-110, 52 FR 29527, Aug. 10, 1987]

EFFECTIVE DATE NOTE: Section 172.331 was added at 52 FR 29527, Aug. 10, 1987, effective February 1, 1988.

§ 172.332 Identification number markings.

(a) *General.* When required by §§ 172.326, 172.328, 172.330, or § 172.331 of this subpart, identification numbers shall be displayed on orange panels or placards as specified in this section or, when appropriate, on white square-on-point configurations as prescribed in § 172.336(b).

(b) *Orange panels.* Display of an identification number on an orange panel shall be in conformance with the following:

(1) The orange panel must be 6¼ inches (16 cm.) high by 15¼ inches (40 cm.) wide with a ⅝ inch (15 mm.) black outer border. The identification number shall be displayed in 4-inch (10 cm.) black Helvetica Medium numerals on the orange panel. Measurements may vary from those specified plus or minus 0.2 of an inch (5 mm.).

(2) The orange panel may be made of any durable material prescribed for placards in § 172.519, and shall be of the orange color specified for labels or placards in Appendix A to this part.

(3) The name and hazard class of a material represented by the identification number may be shown in the upper left border of the orange panel in letters not more than ¼ inch (18 points) high.

(4) Except for size and color, the orange panel and identification num-

bers shall be as illustrated for Liquefied petroleum gas:



(c) *Placards.* Display of an identification number on a hazard warning placard shall be in conformance with the following:

(1) The identification number shall be displayed across the center area of the placard in 3½ inch (89 mm.) black Alpine Gothic or Alternate Gothic No. 3 numerals on a white background 4 inches (10 cm.) high and approximately 8½ inches (21.5 cm.) wide and may be outlined with a solid or dotted line border.

(2) The top of the 4-inch (10 cm.) high white background shall be approximately 1¼ inches (40.0 mm.) above the placard horizontal center line.

(3) When an identification number is displayed on a placard the United Nations hazard class number for the material shall be displayed in the lower corner of each placard as specified in § 172.519(d).

(4) For a COMBUSTIBLE placard used to display an identification number, the entire background below the white background for the identification number must be white during transportation by rail and may be white during transportation by highway.

(5) The name of the hazardous material and the hazard class may be shown in letters not more than ¼ inch (18 points) high immediately within the upper border of the space on the placard bearing the identification number of the material.

(6) If an identification number is placed over the word(s) on a placard, the word(s) should be substantially covered to maximize the effectiveness of the identification number.

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(d) Except for size and color, the display of an identification number on a placard shall be as illustrated for Acetone:



(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-101, 45 FR 74667, Nov. 10, 1980, as amended by Amdt. 172-81, 48 FR 28099, June 20, 1983; Amdt. 172-85, 48 FR 50459, Nov. 1, 1983; Amdt. 172-110, 52 FR 29527, Aug. 10, 1987]

EFFECTIVE DATE NOTE: At 52 FR 29527, Aug. 10, 1987, § 172.332 was amended by revising paragraphs (a) and (c)(1), effective February 1, 1988. For the convenience of the user, the superseded text is set forth below:

§ 172.332 Identification number markings.

(a) *General.* When required by §§ 172.326, 172.328, 172.330 of this subpart, identification numbers shall be displayed on orange panels or placards as specified in this section.

* * * * *

(c) * * *

(1) The identification number shall be displayed across the center area of the placard in 3 1/2 inch (89 mm.) black Alpine Gothic or Alternate Gothic No. 3 numerals on a white background 4 inches (10 cm.) high and approximately 8 1/2 inches (21.5 cm.) wide.

* * * * *

§ 172.334 Identification numbers; prohibitory display.

(a) No person may display an identification number on a POISON GAS, RADIOACTIVE, EXPLOSIVES A.

EXPLOSIVES B, BLASTING AGENTS OR DANGEROUS placard.

(b) No person may display an identification number on a placard, orange panel or white square-on-point display configuration unless—

(1) The identification number is specified for the material in § 172.101 or § 172.102 (when authorized);

(2) The identification number is displayed on the placard, orange panel or white square-on-point configuration authorized by § 172.332 or § 172.336(b), as appropriate, and any placard used for display of the identification number corresponds to the hazard class of the material specified in § 172.504;

(3) Except as provided under § 172.336 (c)(4) or (c)(5) the package, freight container, or transport vehicle on which the number is displayed contains the hazardous material associated with that identification number in § 172.101 or § 172.102.

(c) Except as required by § 172.332(c)(4) for a combustible liquid, the identification number of a material may be displayed only on the placards required by the tables in § 172.504.

(d) Except as provided in § 172.336, a placard bearing an identification number may not be used to meet the requirements of Subpart F of this part unless it is the correct identification number for all hazardous materials of the same class in the transport vehicle or freight container on which it is displayed.

(e) Except as specified in § 172.338, an identification number may not be displayed on an orange panel on a cargo tank unless affixed to the cargo tank by the person offering the hazardous material for transportation in the cargo tank.

(f) If a placard is required by § 172.504, an identification number may not be displayed on an orange panel unless it is displayed in proximity to the placard.

(g) No person shall add any color, number, letter, symbol, or word other than as specified in this subchapter, to any identification number marking display which is required or authorized by this subchapter.

[Amdt. 172-101, 45 FR 74667, Nov. 10, 1980, as amended by Amdt. 172-104, 51 FR 23078, June 25, 1986; Amdt. 172-110, 52 FR 29528, Aug. 10, 1987]

EFFECTIVE DATE NOTE: At 52 FR 29528, Aug. 10, 1987, § 172.334 was amended by revising paragraphs (a) and (b) and adding paragraph (g), effective February 1, 1988. For the convenience of the user, the superseded text is set forth below:

§ 172.334 Identification numbers; prohibited display.

(a) An identification number may not be displayed on a POISON GAS, RADIOACTIVE or EXPLOSIVES placard.

(b) An identification number may not be displayed on an orange panel or a placard affixed to any package, freight container or transport vehicle that does not contain a hazardous material associated with that identification number in § 172.101 or § 172.102 (when authorized).

§ 172.336 Identification numbers; special provisions and exceptions.

(a) When not required or prohibited by this subpart, identification numbers may be displayed on a transport vehicle or a freight container in the manner prescribed by this subpart.

(b) For hazardous materials in hazard classes for which hazard warning placards are not specified (e.g., ORM-A, B, C, D, or E), identification numbers, when required, must be displayed on either orange panels (see § 172.332(b)) or on a plain white square-on-point display configuration having the same outside dimensions as a placard. In addition, for materials in hazard classes for which placards are specified and identification number displays are required, but for which identification numbers may not be displayed on the placards authorized for the material (see § 172.334(a)), identification numbers must be displayed on orange panels or on the plain white square-on-point display configuration in association with the required placards. An identification number displayed on a white square-on-point display configuration is not considered to be a placard.

(1) The 4-inch (10 cm.) by 8½ inch (21.5 cm.) area containing the identification number shall be located as prescribed by § 172.332 (c)(1) and (c)(2)

and may be outlined with a solid or dotted line border.

(c) Identification numbers are not required:

(1) On the ends of a portable tank, cargo tank or tank car having more than one compartment if hazardous materials having different identification numbers are being transported therein. In such a circumstance, the identification numbers on the sides of the tank shall be displayed in the same sequence as the compartments containing the materials they identify.

(2) On a cargo tank containing only gasoline, if the cargo tank is marked "Gasoline" on each side and rear in letters no less than 2 inches high, or is placarded in accordance with § 172.542(c).

(3) On a cargo tank containing only fuel oil, if the cargo tank is marked "Fuel Oil" on each side and rear in letters no less than 2 inches high, or is placarded in accordance with § 172.544(c).

(4) For each of the different liquid petroleum distillate fuels, including gasoline and gasohol in a compartmented cargo tank or tank car, if the identification number is displayed for the distillate fuel having the lowest flash point.

(5) For each of the different liquid petroleum distillate fuels, including gasoline and gasohol transported in a cargo tank, if the identification number is displayed for the liquid petroleum distillate fuel having the lowest flash point.

(6) On nurse tanks meeting the provisions of § 173.315(m) of this subchapter.

[Amdt. 172-101, 45 FR 74667, Nov. 10, 1980, as amended by Amdt. 172-71, 46 FR 50801, Oct. 15, 1981; Amdt. 172-74, 47 FR 40365, Sept. 30, 1982; Amdt. 172-109, 52 FR 13038, Apr. 20, 1987; Amdt. 172-110, 52 FR 29528, Aug. 10, 1987]

EFFECTIVE DATE NOTE: At 52 FR 29528, Aug. 10, 1987, § 172.336 was amended by revising the introductory text of paragraph (b), effective February 1, 1988. For the convenience of the user, the superseded text is set forth below:

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§ 172.336 Identification numbers; special provisions and exceptions.

* * * * *

(b) For hazardous materials in hazard classes for which placards are not required, identification numbers may be displayed on a plain white square-on-point configuration having the same outside dimensions as those prescribed by this part for placards. An identification number displayed as authorized by this paragraph is not considered a placard.

* * * * *

§ 172.338 Replacement of identification numbers.

If more than one of the identification number markings on placards, orange panels, or white square-on-point display configurations that are required to be displayed are lost, damaged or destroyed during transportation, the carrier shall replace all the missing or damaged identification numbers as soon as practicable. However, in such a case, the numbers may be entered by hand on the appropriate placard, orange panel or white square-on-point display configuration providing the correct identification numbers are entered legibly using an indelible marking material. When entered by hand, the identification numbers must be located in the white display area specified in § 172.332. This section does not preclude required compliance with the placarding requirements of Subpart F of this subchapter.

[Amdt. 172-110, 52 FR 29528, Aug. 10, 1987]

EFFECTIVE DATE NOTE: At 52 FR 29528, Aug. 10, 1987, § 172.338 was revised, effective February 1, 1988. For the convenience of the user, the superseded text is set forth below:

§ 172.338 Replacement of identification numbers.

If more than one of the identification number markings on the placards or orange panels that are required to be displayed are lost or destroyed during transportation, the carrier shall replace all the missing identification number(s) as soon as practicable. However, in such a case, the numerals may be entered legibly by hand using an indelible marking material. This section does not preclude required compliance with the placarding requirements of this subchapter.

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[Amdt. 172-101, 45 FR 74668, Nov. 10, 1980]

Subpart E—Labeling

§ 172.400 General labeling requirements.

(a) Except as otherwise provided in this subchapter, each person who offers a package, overpack, or freight container containing a hazardous material for transportation shall label it, when required, with labels prescribed for the material as specified in § 172.101 or § 172.102 (when authorized) and in accordance with this subpart.

(b) A label is not required on a:

(1) Package for which labeling is not required under the conditions set forth in this subchapter and in this section;

(2) Cylinder containing a compressed gas classed as flammable or nonflammable that is:

(i) Carried by a private or contract motor carrier;

(ii) Not overpacked; and

(iii) Durably and legibly marked in accordance with CGA Pamphlet C-7, Appendix A.

(3) Package or unit of military explosives (including ammunition) shipped by or on behalf of the DOD when in (i) freight containerload, carload or truckload shipments, if loaded and unloaded by the shipper or DOD or (ii) unitized or palletized break bulk shipments by cargo vessel under charter to DOD if at least one required label is displayed on each unitized or palletized load.

(4) Package containing a hazardous material other than ammunition that is:

(i) Loaded and unloaded under the supervision of DOD personnel, and

(ii) Escorted by DOD personnel in a separate vehicle.

(5) Compressed gas cylinder permanently mounted in or on a transport vehicle;

(6) Portable tank which is placarded in accordance with § 172.514;

(7) Freight container having a volume of 640 cubic feet or more which is subject to § 172.512;

(8) Package containing a material classed as ORM-A, B, C, D, or E if that package does not contain any

other material classed as a hazardous material that requires labeling.

(9) Package containing a combustible liquid; or

(10) Package of low specific activity radioactive material, when being transported in a conveyance assigned for exclusive use of the consignor under § 173.425(b) of this subchapter.

(11) Cargo tank or tank car other than a multi-unit tank car tank.

(c) Provisions of paragraph (b) of this section, do not apply to the CARGO AIRCRAFT ONLY label.

(d) Except as provided in paragraph (b) of this section, when the proper shipping name marked on a package is a proper shipping name from § 172.102 that does not appear in § 172.101, the package must be labeled as provided in § 172.102.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-29A, 41 FR 40679, Sept. 20, 1976; Amdt. 172-29B, 41 FR 57067, Dec. 30, 1976; Amdt. 172-58, 45 FR 34701, May 22, 1980; Amdt. 172-101, 45 FR 74668, Nov. 10, 1980; Amdt. 172-78, 48 FR 10226, Mar. 10, 1983; Amdt. 172-81, 48 FR 28099, June 20, 1983; 48 FR 31217, July 7, 1983; Amdt. 172-111, 52 FR 36671, Sept. 30, 1987]

§ 172.401 Prohibited labeling.

(a) Except as provided in paragraphs (c) and (d) of this section, no person may offer for transportation and no carrier may transport any package bearing a label specified in this subpart unless:

(1) The package contains a material that is a hazardous material, and

(2) The label represents a hazard of the hazardous material in the package.

(b) No person may offer for transportation and no carrier may transport a package bearing any marking or label which by its color, design, or shape could be confused with or conflict with a label prescribed by this part.

(c) The restrictions in paragraphs (a) and (b) of this section, do not apply to packages labeled in conformance with:

(1) Any United Nations recommendation, including the class number (see § 172.407), in the document entitled "Transport of Dangerous Goods.";

(2) The International Maritime Organization (IMO) requirements, including the class number (see § 172.407), in the document entitled "International Maritime Dangerous Goods Code";

(3) The ICAO Technical Instructions; or

(4) The TDG Regulations.

(d) A package containing a sample of a hazardous material, other than an explosive, must be labeled in accordance with § 172.402(h).

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-9, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-75, 47 FR 44471, Oct. 7, 1982; Amdt. 172-77, 47 FR 54822, Dec. 6, 1982; Amdt. 172-94, 49 FR 38134, Sept. 27, 1984; Amdt. 172-100, 50 FR 41521, Oct. 11, 1985]

§ 172.402 Additional labeling requirements.

(a) *Multiple labeling.* Each package containing a material meeting the definition of more than one hazard class must be labeled as follows:

(1) A material classed as an Explosive A, Poison A, or Radioactive material that also meets the definition of another hazard class, must be labeled as required for each class.

(2) A Poison B liquid that also meets the definition of a Flammable liquid must be labeled POISON and FLAMMABLE LIQUID.

(3) A material classed as Oxidizer, Flammable solid or Flammable liquid that also meets the definition of a Poison B must be labeled POISON in addition to the class label.

(4) A material classed as a Flammable solid that also meets the definition of a water reactive material must have both the FLAMMABLE SOLID and DANGEROUS WHEN WET labels affixed.

(5) A material classed as a Corrosive material that also meets the definition of a Poison B shall be labeled with a POISON label in addition to the class label. This subparagraph does not apply to a material that would cause death due to corrosive destruction of tissue rather than by systemic poisoning.

(6) A material classed as a Poison B that also meets the definition of a cor-

rosive material shall be labeled with a CORROSIVE label in addition to the class label.

(7) A material classed as a Flammable liquid that also meets the definition of a Corrosive material shall be labeled with a CORROSIVE label in addition to the class label.

(8) A material classed as a Flammable solid that also meets the definition of a Corrosive material shall be labeled with a CORROSIVE label in addition to the class label.

(9) A material classed as an Oxidizer that also meets the definition of a Corrosive material shall be labeled with a CORROSIVE label in addition to the class label.

(10) A material falling within the inhalation hazard criteria described in § 173.3a(b)(2) shall be labeled with a POISON label in addition to any other label(s) required by this section. Duplication of the POISON label is not required.

(b) **CARGO AIRCRAFT ONLY label.** Each person who offers for transportation by air a package containing a hazardous material authorized only on cargo aircraft shall affix to the package a CARGO AIRCRAFT ONLY label which is described in § 172.448.

(c) **DANGEROUS WHEN WET label.** Each person who offers for transportation a package containing a hazardous material must affix to the package a DANGEROUS WHEN WET label as described in § 172.423 when required by § 172.101.

(d) [Reserved]

(e) **BUNG label.** Each metal barrel or drum containing a flammable liquid having a vapor pressure between 16 and 40 p.s.i.a. at 100° F. must have affixed a BUNG label as specified in § 173.119(i) of this subchapter in addition to a FLAMMABLE LIQUID label described in § 172.419.

(f) **ETIOLOGIC AGENTS label.** See § 172.444 and § 173.388 of this subchapter for ETIOLOGIC AGENTS labeling requirements.

(g) **EMPTY label.** See § 173.29 of this subchapter for EMPTY labeling requirements.

(h) **Packages containing samples.** Except as provided in §§ 173.21 and 173.86 of this subchapter, a material for which a reasonable doubt exists as

to its class and labeling requirements, and for which a sample must be transported for laboratory analysis may be labeled according to the shipper's tentative class assignment based upon:

(1) Defining criteria in this subchapter;

(2) The hazard precedence prescribed in § 173.2 of this subchapter; and

(3) The shipper's knowledge of the material.

(i) **Labels for DOT specification 106 and 110 tanks.** A DOT specification 106 or 110 tank must be labeled on each end as required by this subchapter for the hazardous material it contains.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-29A, 41 FR 40879, Sept. 20, 1976; Amdt. 172-58, 45 FR 34701, May 22, 1980; Amdt. 172-85, 48 FR 50459, Nov. 1, 1983; Amdt. 172-99, 50 FR 41096, Oct. 8, 1985; Amdt. 172-102, 50 FR 48420, Nov. 25, 1985]

§ 172.403 Radioactive material.

(a) Unless excepted from labeling by §§ 173.421 through 173.425 of this subchapter, each package of radioactive material must be labeled as provided in this section.

(b) The proper label to affix to a package of radioactive material is based on the radiation level at the surface of the package, the transport index (§ 173.403 of this subchapter) and, if appropriate, the fissile characteristics of the package. The proper category of label shall be determined in accordance with paragraph (c) of this section. The label to be applied shall be the highest category required for any of the three determining conditions for the package. Radioactive White-I is the lowest category and Radioactive Yellow-III is the highest. For example: a package with a transport index of 0.8 and a maximum surface radiation level of 60 millirem per hour which contains no fissile material must bear a Radioactive Yellow-III label.

(c) Category of Label to be Applied to Radioactive Materials Packages:

Transport index (T.I.)	Radiation level at package surface (RL)	Fissile criteria	Label category. ¹
N/A.....	RL<0.5 mirem per hour (mrem/h).	Fissile class I only, no fissile class II or III.	White-I.
T.I.<1.0.....	0.5 mrem/h < RL < 50 mrem/h.	Fissile class I, fissile class II, with T.I.<1.0, no fissile class III.	Yellow-II.
1.0<T.I.....	50 mrem/h < RL.	Fissile class II with 1.0<T.I., fissile class III.	Yellow-III.

¹ Any package containing a "highway route controlled quantity" (§ 173.403 of this subchapter) must be labeled as Radioactive Yellow-III.

(d) [Reserved]

(e) Each package containing a radioactive material that also meets the definition of one or more additional hazards must be labeled as a radioactive material as required by this section and for each additional hazard. For example:

(1) Packages containing the solid nitrates of uranium or thorium must be labeled RADIOACTIVE and OXIDIZER.

(2) Packages containing nitric acid solutions of radioactive material must be labeled RADIOACTIVE and CORROSIVE.

(f) Each package required by this section to be labeled with a RADIOACTIVE label must have two of these labels, affixed to opposite sides of the package. (See § 172.406(e)(3) for freight container label requirements).

(g) The following applicable items of information must be entered in the blank spaces on the RADIOACTIVE label by legible printing (manual or mechanical), using a durable weather resistant means of marking:

(1) "Contents." The name of the radionuclides as taken from the listing of radionuclides in § 173.435, of this subchapter (symbols which conform to established radiation protection terminology are authorized, i.e., ⁹⁹Mo, ⁶⁰Co, etc.). For mixtures of radionuclides, the most restrictive radionuclides on the basis of radiotoxicity must be listed as space on the label allows.

(2) "Activity." Units shall be expressed in appropriate curie units, i.e., curies (Ci), millicuries (mCi) or microcuries (uCi) (abbreviations are authorized). For a fissile material, the weight in grams or kilograms of the fissile radioisotope also may be inserted.

(3) "Transport index." (See § 173.403 of this subchapter.)

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-29A, 41 FR 40679, Sept. 20, 1976; Amdt. 172-60, 45 FR 49940, July 28, 1980; Amdt. 172-78, 48 FR 10226, Mar. 10, 1983; 48 FR 13431, Mar. 31, 1983; 48 FR 31217, July 7, 1983; Amdt. 172-85, 48 FR 50459, Nov. 1, 1983]

§ 172.404 Labels for mixed and consolidated packaging.

(a) *Mixed packaging.* When hazardous materials having different hazard classes are packed within the same packaging, or within the same outside container or overpack as described in § 173.25 and authorized by § 173.21 of this subchapter, the packaging, outside container or overpack must be labeled as required for each class of hazardous material contained therein.

(b) *Consolidated packaging.* When two or more packages containing compatible hazardous material (see § 173.21 of this subchapter) are placed within the same outside container or overpack, the outside container or overpack must be labeled as required for each class of hazardous material contained therein.

§ 172.405 Authorized label modifications.

(a) For a package containing Oxygen, the word "OXYGEN" may be used in the place of the word "OXIDIZER" on the OXIDIZER label provided the letter size and color for OXYGEN are the same as those required for OXIDIZER.

(b) For a package containing Chlorine, the word "CHLORINE" may be used in the place of the word "POISON" on the POISON label provided the letter size and color for CHLORINE are the same as those required for POISON; (1) A CHLORINE label may be used in place of the NON-FLAMMABLE GAS and

POISON labels required for Chlorine by § 172.101.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-29A, 41 FR 40679, Sept. 20, 1976]

§ 172.406 Placement of labels.

(a) *General.* Except as provided in paragraphs (b) and (c) of this section, each label required by this subpart must be printed on or affixed to the surface of the package near the marked proper shipping name required by Subpart D of this part.

(b) *Exceptions.* Labels may be printed on or placed on a securely affixed tag, or may be affixed by other suitable means to:

(1) A package that contains no radioactive material and which has dimensions less than those of the required label;

(2) A compressed gas cylinder; and

(3) A package which has such an irregular surface that a label cannot be satisfactorily affixed.

(c) *Placement of multiple labels.* When two or more different labels are required, they must be displayed or affixed next to each other.

(d) *Label border.* Each label must be affixed to a background of contrasting color, or must have a dotted or solid line outer border.

(e) *Additional labeling.* When labeling is required, the labels must be displayed on at least two sides or two ends (excluding the bottom) of:

(1) Each package containing a radioactive material;

(2) Each package having a volume of 64 cubic feet or more; and

(3) Each freight container having a volume of 64 cubic feet or more, but less than 640 cubic feet, except when placarded in accordance with § 172.512(b).

(i) Placarding may not be used instead of labeling on a package containing radioactive material.

(ii) When labeled, one of each of the appropriate labels must be displayed on or near the closure.

(4) Each portable tank having a rated capacity of less than 1,000 gallons, except when placarded in accordance with § 172.514(a).

(f) *Obscured labels.* A label must not be obscured by markings or attachments.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-29A, 41 FR 40679, Sept. 20, 1976; Amdt. 172-29B, 41 FR 57067, Dec. 30, 1976]

§ 172.407 Label specifications.

(a) Each label, affixed to or printed on a package must be durable and weather resistant. Black and any color on a label must be able to withstand, without substantial change:

(1) A 72-hour fadeometer test (for a description of equipment designed for this purpose, see ASTM G 23-69 (1975), or ASTM G 26-70); and

(2) A 30-day exposure to conditions incident to transportation that reasonably could be expected to be encountered by the labeled package.

(b) Each diamond (square-on-point) label prescribed in this part must be at least 4 inches (101 mm.) on each side with each side having a black solid line border $\frac{1}{4}$ -inch (6.3 mm.) from the edge.

(c) Except for size and color, the printing, inner border, and symbol on each label must be as shown for each label.

(d) A color on a label, upon visual examination, must fall within the color tolerances displayed on the appropriate Office of Hazardous Materials Label and Placard Color Tolerance Chart.

(1) A set of six charts, dated January 1973, for comparison with labels and placards surfaced with paint, lacquer, enamel, plastic or other opaque coatings, or ink, may be purchased from the Office of Hazardous Materials Regulation, U.S. Department of Transportation, Washington, D.C. 20590, for \$5.50.

(2) A set of six charts, dated January 1974, for comparison with labels and placards surfaced with ink, may be similarly purchased for \$12.50.

(3) Both sets of charts may be inspected in Room 8426, Nassif Building, 400 7th Street S.W., Washington, D.C. 20590, or any of the offices of the Federal Highway Administration listed at 49 CFR 390.40.

(4) The technical specifications for each chart are set forth in Appendix A to this part.

(e) The specified label color must extend to the edge of the label in the area designated on each label except the **CORROSIVE, MAGNETIZED MATERIAL, RADIOACTIVE YELLOW-II, and RADIOACTIVE YELLOW-III** labels.

(f) A label may contain form identification information, including the name of its maker, provided that information is printed outside of the solid line inner border in no larger than 10-point type.

(g) A label may contain the UN and (IMO) hazard class number and, when appropriate, the division number. The number must be:

(1) Black, unless it is on a **CORROSIVE** label when it must be white, or unless other colors are authorized by this part.

(2) Located in the lower corner of the label, and

(3) One-half inch (12.7 mm.) or less in height.

(h) For import shipments only, a label conforming to the requirements of IMO or the United Nations Recommendations affixed to a package in another country may contain inscriptions required by the country of origin.

(i) The dotted line border shown on each label is not part of the label specification, except when used as an alternative for the solid line outer border to meet the requirements of § 172.406(d).

(j) **EXPLOSIVE A, EXPLOSIVE B, and EXPLOSIVE C** labels may bear inscriptions in addition to those prescribed in this subpart, if required for import or export purposes.

(49 U.S.C. 1808)

[Amtd. 172-29, 41 FR 15996, Apr. 15, 1976]

EDITORIAL NOTE: For Federal Register citations affecting § 172.407, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 172.411 EXPLOSIVE A, EXPLOSIVE B, EXPLOSIVE C, and BLASTING AGENTS labels.

(a) Except for size and color, the **EXPLOSIVE A, EXPLOSIVE B, and**

EXPLOSIVE C labels must be as follows:



(b) In addition to complying with § 172.407, the **EXPLOSIVE A, EXPLOSIVE B, and EXPLOSIVE C** labels must be orange. The printing and symbol must be black.

(c) Except for size and color, the **BLASTING AGENT** label must be as follows:



(d) In addition to complying with § 172.407, the **BLASTING AGENT** label must be orange. The printing must be black.

§ 172.415

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-48, 44 FR 31182, May 31, 1979]

§ 172.415 NON-FLAMMABLE GAS label.

(a) Except for size and color, the NON-FLAMMABLE GAS label must be as follows:



(b) In addition to the requirements specified in § 172.407, the NON-FLAMMABLE GAS label must be green. The symbol and inscription must be black or white. The solid line border and, if used, the hazard class number must be the color of the symbol.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-101, 45 FR 74668, Nov. 10, 1980]

§ 172.416 POISON GAS label.

(a) Except for size and color, the POISON GAS label must be as follows:

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(b) In addition to complying with § 172.407, the POISON GAS label must be white. The printing must be black, and the symbol must be black and white.

§ 172.417 FLAMMABLE GAS label.

(a) Except for size and color, the FLAMMABLE GAS label must be as follows:



(b) In addition to complying with § 172.407, the FLAMMABLE GAS label must be red. The symbol and inscription must be black or white. The solid line border and, if used, the

hazard class number must be the color of the symbol.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-101, 45 FR 74668, Nov. 10, 1980]

§ 172.419 FLAMMABLE LIQUID label.

(a) Except for size and color, the FLAMMABLE LIQUID label must be as follows:



(b) In addition to complying with § 172.407, the FLAMMABLE LIQUID label must be red. The symbol and inscription must be black or white. The solid line border and, if used, the hazard class number must be the color of the symbol.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-101, 45 FR 74668, Nov. 10, 1980]

§ 172.420 FLAMMABLE SOLID label.

(a) Except for size and color, the FLAMMABLE SOLID label must be as follows:



(b) In addition to complying with § 172.407, the FLAMMABLE SOLID label must be white with vertical red stripes equally spaced on each side of a red strip in the center of the label. The rectangle for the words "FLAMMABLE SOLID" must be white. The printing and symbol must be black with the symbol overprinted. The words "FLAMMABLE SOLID" must not contact any red stripe. The white stripes must be sufficiently wider than the red stripes to make them appear visually equal in width.

§ 172.422 SPONTANEOUSLY COMBUSTIBLE label.

(a) Except for size and color, the SPONTANEOUSLY COMBUSTIBLE label must be as follows:



§ 172.423

(b) In addition to complying with § 172.407, the SPONTANEOUSLY COMBUSTIBLE label must be red in the lower half and white in the upper half. The symbol and printing must be black.

(c) If use of the SPONTANEOUSLY COMBUSTIBLE label is required by the regulations of another country, it may be used in addition to the labels required by §§ 172.400 and 172.402.

§ 172.423 DANGEROUS WHEN WET label.

(a) Except for size and color, the DANGEROUS WHEN WET label must be as follows:



(b) In addition to complying with § 172.407, the DANGEROUS WHEN WET LABEL must be blue. The symbol and inscription must be black or white. The solid line border and, if used, the hazardous class number must be the color of the symbol.

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(c) If use of the DANGEROUS WHEN WET label is required by the regulations of another country, it may be used in addition to the labels required by §§ 172.400 and 172.402.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-101, 45 FR 74668, Nov. 10, 1980]

§ 172.426 OXIDIZER label.

(a) Except for size and color, the OXIDIZER label must be as follows (see § 172.405 for authorized label modification):



(b) In addition to complying with § 172.407, the OXIDIZER label must be yellow. The printing and symbol must be black.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-29A, 41 FR 40679, Sept. 20, 1976]

§ 172.427 ORGANIC PEROXIDE label.

(a) Except for size and color, the ORGANIC PEROXIDE label must be as follows:

[Amdt. 172-29, 41 FR 15998, Apr. 15, 1976, as amended by Amdt. 172-29A, 41 FR 40879, Sept. 20, 1976]

§ 172.432 IRRITANT label.

(a) Except for size and color, the IRRITANT label must be as follows:



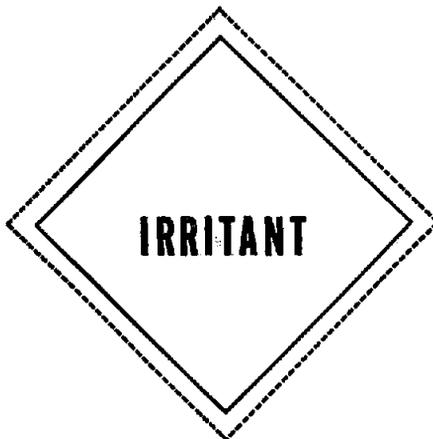
(b) In addition to complying with § 172.407, the ORGANIC PEROXIDE label must be yellow. The printing and symbol must be black.

§ 172.430 POISON label.

(a) Except for size and color, the POISON label must be as follows (see § 172.405 for authorized label modification):



(b) In addition to complying with § 172.407, the POISON label must be white. The printing and symbol must be black.



(b) In addition to complying with § 172.407, the IRRITANT label must be white. The word "IRRITANT" must be red.

(c) For export shipments, if use of the following label is required for irritants by the regulations of another country, it may be used in place of the label for irritants required by § 172.407 and described in § 172.432. In addition to complying with § 172.407, this label for irritant, except for size and color, must be as follows:



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(d) The printing and symbol must be black on a white background.

[Amdt. 172-29, 41 FR 15998, Apr. 15, 1976, as amended by Amdt. 172-29A, 41 FR 40679, Sept. 20, 1976]

§ 172.436 RADIOACTIVE WHITE-I label.

(a) Except for size and color, the RADIOACTIVE WHITE-I label must be as follows:



(b) In addition to complying with § 172.407, the RADIOACTIVE WHITE-I label must be white. The printing and symbol must be black except for the "I" which must be red.

[Amdt. 172-29, 41 FR 15998, Apr. 15, 1976, as amended by Amdt. 172-60 45 FR 49940, July 28, 1980]

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§ 172.438 RADIOACTIVE YELLOW-II label.

(a) Except for size and color, the RADIOACTIVE YELLOW-II label must be as follows:



(b) In addition to complying with § 172.407, the RADIOACTIVE YELLOW-II label must be yellow in the top half and white in the lower half. The printing and symbol must be black, except for the "II" which must be red.

[Amdt. 172-29, 41 FR 15998, Apr. 15, 1976, as amended by Amdt. 172-60, 45 FR 49940, July 28, 1980]

§ 172.440 RADIOACTIVE YELLOW-III label.

(a) Except for the size and color, the RADIOACTIVE YELLOW-III label must be as follows:



(b) In addition to complying with § 172.407, the RADIOACTIVE YELLOW-III label must be yellow in the top half and white in the lower half. The printing and symbol must be black, except for the "III" which must be red.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-60 45 FR 49940, July 28, 1980]

§ 172.442 CORROSIVE label.

(a) Except for size and color, the CORROSIVE label must be as follows:

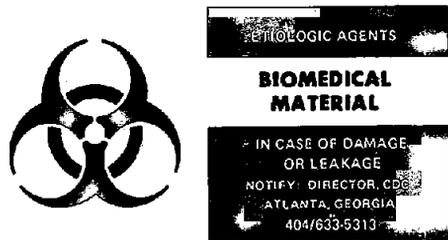


(b) In addition to complying with § 172.407, the CORROSIVE label must

be white in the top half and black in the lower half. The printing must be white and the symbol must be black and white.

§ 172.444 ETIOLOGIC AGENT label.

(a) Each package containing an Etiologic agent subject to this subchapter must be labeled as specified in § 173.388 of this subchapter.



(b) For export shipments, if use of the following label is required by the regulations of another country, it may be used in addition to the label required in paragraph (a) of this section for Etiologic agents. In addition to complying with § 172.407, this additional label for Etiologic agents, except for size and color, must be as follows:



(c) The printing and symbol must be black on a white background.

§ 172.448

§ 172.448 CARGO AIRCRAFT ONLY label.

(a) Except for size and color, the CARGO AIRCRAFT ONLY label must be as follows:



(b) The CARGO AIRCRAFT ONLY label must be a rectangle measuring $4\frac{1}{8}$ inches (110 mm.) high by $4\frac{1}{4}$ inches (120 mm.) wide. The printing must be black and the symbol must be black and orange.

(c) CARGO AIRCRAFT ONLY labels with the text "DANGER-PELIGRO" may continue to be used until stocks existing on January 1, 1983, are depleted.

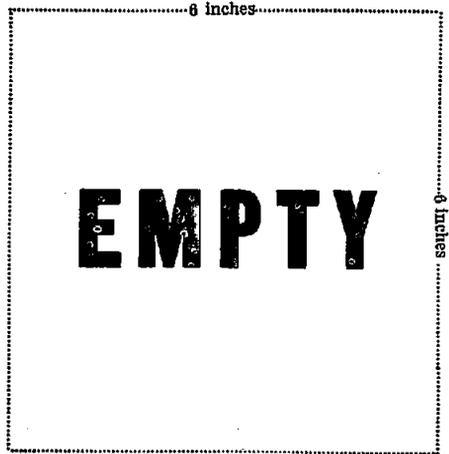
(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-29, 41 FR 15998, Apr. 15, 1976, as amended by Amdt. 172-77, 47 FR 54822, Dec. 6, 1982]

§ 172.450 EMPTY label.

(a) Each EMPTY label, except for size, must be as follows:

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(1) Each side must be at least 6 inches (152 mm.) with each letter at least 1 inch (25.4 mm.) in height.

(2) The label must be white with black printing.

Subpart F—Placarding

§ 172.500 Applicability of placarding requirements.

(a) Each person who offers for transportation or transports any hazardous material subject to this subchapter shall comply with the applicable placarding requirements of this subpart.

(b) This subpart does not apply to:

(1) Etiologic agents,
(2) Hazardous materials classed as ORM-A, B, C, D, or E, or

(3) Hazardous materials authorized by this subchapter to be offered for transportation as Limited Quantities when identified as such on shipping papers in accordance with § 172.203(b).

[Amdt. 172-29, 41 FR 15998, Apr. 15, 1976, as amended by Amdt. 172-29A, 41 FR 40679, Sept. 20, 1976; Amdt. 172-101, 45 FR 74668, Nov. 10, 1980]

§ 172.502 Prohibited placarding.

(a) Except as provided in paragraph (c) of this section, no person may affix or display on a transport vehicle, portable tank or freight container any placard described in this subpart unless:

(1) The material being offered or transported is a hazardous material, and

(2) The placard represents a hazard of the hazardous material being offered or transported.

(b) No person may affix or display any sign or other device on a transport vehicle, portable tank, or freight container, that by its color, design, shape, or content could be confused with any placard prescribed in this subpart.

(c) The restrictions in paragraphs (a) and (b) of this section do not apply to transport vehicles, portable tanks, or freight containers which:

(1) In addition to any placards required by this part, may be placarded in conformance with the IMDG Code; or

(2) Are placarded in conformance with the TDG Regulations.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-61 45 FR 62081, Sept. 18, 1980; Amdt. 172-75, 47 FR 44471, Oct. 7, 1982; Amdt. 172-100, 50 FR 51421, Oct. 11, 1985; Amdt. 172-103, 51 FR 5970, Feb. 18, 1986]

§ 172.503 Identification number display on placards.

For procedures and limitations pertaining to the display of identification numbers on placards, see § 172.334.

[Amdt. 172-58, 45 FR 34701, May 22, 1980]

§ 172.504 General placarding requirements.

(a) Except as otherwise provided in this subchapter, each transport vehicle and freight container containing

any quantity of a hazardous material must be placarded on each end and each side with the type of placards specified in the following tables and other placarding requirements of this subpart, including the specifications for the placards named in the tables and described in detail in §§ 172.519 through 172.558.

(b) A transport vehicle or freight container containing two or more classes of materials requiring different placards specified in Table 2 may be placarded DANGEROUS in place of the separate placarding specified for each of those classes of material specified in Table 2. However, when 5,000 pounds or more of one class of material is loaded therein at one loading facility, the placard specified for that class in Table 2 must be applied. This paragraph does not apply to a portable tank, cargo tank, or tank car.

(c) When the gross weight of all hazardous materials covered by Table 2 is less than 1000 pounds, no placard is required on a transport vehicle, or freight container for the Table 2 materials. A Table 1 material must be placarded as specified in Table 1. This paragraph does not apply to portable tanks, cargo tanks, tank cars, transportation by air or water, or transport vehicles and freight containers subject to § 172.505.

(d) Any packaging having a capacity of 110 gallons or less that contains only the residue of a hazardous material covered by Table 2 of this section need not be included in determining the applicability of the placarding requirements.

TABLE 1

If the transport vehicle, or freight container contains a material classed (described) as—	The transport vehicle or freight container must be placarded on each side and each end—
Class A explosives.....	EXPLOSIVES A. ¹
Class B explosives.....	EXPLOSIVES B. ²
Poison A.....	POISON GAS. ¹
Flammable solid (DANGEROUS WHEN WET label only).....	FLAMMABLE SOLID W. ³
Radioactive material.....	RADIOACTIVE. ^{4, 5}
Radioactive material:	
Uranium hexafluoride, fissile (containing more than 1.0 pct U ²³⁵).....	RADIOACTIVE ⁴ AND CORROSIVE. ⁶
Uranium hexafluoride, low specific activity (containing 1.0 pct or less U ²³⁵)..	RADIOACTIVE ^{4, 5} AND CORROSIVE. ⁶

¹See § 172.610(a).

²EXPLOSIVES B placard not required if the transport vehicle or freight container contains class A explosives and is placarded EXPLOSIVES A as required.

³FLAMMABLE SOLID "W" placard is required only when the DANGEROUS WHEN WET label is specified in § 172.101 for a material classed as a Flammable solid.

⁴Applies only to any quantity of packages bearing the RADIOACTIVE YELLOW III label. (See § 172.403.)
⁵For exclusive use shipments (see § 173.403) of low specific activity radioactive materials transported in accordance with § 173.425 (b) or (c).
⁶CORROSIVE placard not required for shipments of less than 1000 pounds gross weight.

TABLE 2

If the transport vehicle, or freight container contains a material classed (described) as—	The transport vehicle or freight container must be placarded on each side and each end—
Class C explosives.....	DANGEROUS. ^{1, 9}
Blasting agents.....	BLASTING AGENTS. ^{9, 10}
Nonflammable gas.....	NONFLAMMABLE GAS. ⁹
Nonflammable gas (chlorine).....	CHLORINE. ⁷
Nonflammable gas (fluorine).....	POISON.
Nonflammable gas (oxygen, cryogenic liquid).....	OXYGEN.
Flammable gas.....	FLAMMABLE GAS. ⁹
Combustible liquid.....	COMBUSTIBLE. ^{3, 4}
Flammable liquid.....	FLAMMABLE.
Flammable solid.....	FLAMMABLE SOLID. ⁹
Oxidizer.....	OXIDIZER. ^{9, 10}
Organic peroxide.....	ORGANIC PEROXIDE.
Poison B.....	POISON.
Corrosive material.....	CORROSIVE. ⁶
Irritating material.....	DANGEROUS.

¹Applies only to a class C explosive required to be labeled with an EXPLOSIVE C label.
²(Reserved)
³COMBUSTIBLE placard required only when a material classed as a combustible liquid is transported in a packaging having a rated capacity of more than 110 gallons, a cargo tank, or a tank car.
⁴A FLAMMABLE placard may be used on a cargo tank or portable tank during transportation by highway, rail or water, and on a compartmented tank car containing materials classed as flammable liquid and combustible liquid.
⁵Except when offered for transportation by water, a FLAMMABLE placard may be displayed in place of a FLAMMABLE SOLID placard except when a DANGEROUS WHEN WET label is specified for the material in sec. 172.101. (See table 1, this section.)
⁶See § 173.245(b) of this subchapter for authorized exceptions.
⁷CHLORINE placard required only for a packaging having a rated capacity of more than 110 gallons; the NON-FLAMMABLE GAS placard for packagings having a rated capacity of 110 gallons or less.
⁸A NON-FLAMMABLE GAS placard is not required on a motor vehicle displaying a FLAMMABLE GAS placard or an OXYGEN placard.
⁹BLASTING AGENTS, OXIDIZER and DANGEROUS placards need not be displayed if a transport vehicle or freight container also contains Class A or Class B explosives and is placarded EXPLOSIVES A or EXPLOSIVES B as required.
¹⁰Except for shipments by water, OXIDIZER placards need not be displayed if a freight container, motor vehicle or rail car also contains blasting agents and is placarded BLASTING AGENT as required.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-29A, 41 FR 40679, Sept. 20, 1976; Amdt. 172-29B, 41 FR 57087, Dec. 30, 1976; Amdt. 172-48, 44 FR 31182, May 31, 1979; Amdt. 172-58, 45 FR 34701, May 22, 1980; 45 FR 46421, July 10, 1980; Amdt. 172-78, 48 FR 10228, Mar. 10, 1983; Amdt. 172-82, 48 FR 27692, June 16, 1983; Amdt. 172-81, 48 FR 28099, June 20, 1983; Amdt. 172-78, 48 FR 31217, July 7, 1983; Amdt. 172-82, 48 FR 50440, Nov. 1, 1983; Amdt. 172-96, 50 FR 11051, Mar. 19, 1985; Amdt. 172-98, 50 FR 39007, Sept. 26, 1985; Amdt. 172-99, 50 FR 41096, Oct. 8, 1985; Amdt. 172-103, 51 FR 5971, Feb. 18, 1986; Amdt. 172-104, 51 FR 23078, June 25, 1986; Amdt. 172-109, 52 FR 13038, Apr. 20, 1987]

§ 172.505 Special placarding requirements for certain poisonous materials.

[50 41096, Oct. 8, 1985]

Each transport vehicle and freight container that contains a material subject to the "Poison-Inhalation Hazard" shipping paper description of § 172.203(k)(4) must be placarded POISON on each side and each end in addition to the placards required by § 172.504. This requirement also applies to portable tanks. Duplication of POISON placards is not required nor display of UN class numbers at the bottom of additional placards required by this section.

§ 172.506 Providing and affixing placards: Highway.

(a) Each person offering a motor carrier a hazardous material for transportation by highway shall provide to the motor carrier the required placards for the material being offered prior to or at the same time the material is offered for transportation, unless the carrier's motor vehicle is already placarded for the material as required by this subpart.

(1) No motor carrier may transport a hazardous material in a motor vehicle, unless the placards required for the hazardous material are affixed thereto as required by this subpart.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-29A, 41 FR 40679, Sept. 20, 1976]

§ 172.507 Special placarding provisions: Highway.

(a) Each motor vehicle used to transport a package of highway route controlled quantity radioactive materials (see § 173.403(1) of this subchapter) must have the required RADIOACTIVE warning placard placed on a square background as described in § 172.527.

(b) A nurse tank, meeting the provisions of § 173.315(m) of this subchapter, is not required to be placarded on an end containing valves, fittings, regulators or gauges when those appurtenances prevent the markings and placard from being properly placed and visible.

[Amdt. 172-103, 51 FR 5971, Feb. 18, 1986]

§ 172.508 Placarding and affixing placards: Rail.

(a) Each person offering a hazardous material for transportation by rail shall affix to the rail car containing the material, the placards specified by this subpart for the material unless the placards already displayed on motor vehicles, transport containers, or portable tanks that are on a rail car comply with §§ 172.502 and 172.504 as these sections pertain to placarding the rail car.

(b) No rail carrier may accept a rail car containing a hazardous material for transportation unless the placards for the hazardous material are affixed thereto as required by this subpart.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-29B, 41 FR 57068, Dec. 30, 1976]

§ 172.510 Special placarding provisions: Rail.

(a) *Square background required.* Each EXPLOSIVE A placard, POISON GAS placard and POISON GAS-RESIDUE placard affixed to a

rail car must be placed on a square background as described in § 172.527.

(b) [Reserved]

(c) *RESIDUE placard.* Each tank car containing the residue of a hazardous material must be placarded with the appropriate RESIDUE placards, as required in § 172.525 and paragraph (a) of this section. The RESIDUE placard must correspond to the placard that was required for the material the tank car contained when loaded, unless the tank car—

(1) Is reloaded with a material requiring no placards or different placards; or

(2) Is sufficiently cleaned of residue and purged of vapor to remove any potential hazard.

(d) *FUMIGATION placard.* Each transport vehicle and freight container containing lading that has been fumigated or treated with poisonous liquid, solid, or gas, and that is offered for transportation by rail must have the placard specified in § 173.9 of this subchapter affixed on or near each door.

(e) *Chemical ammunition.* Each rail car containing Class A explosive ammunition which has the additional hazard of Poison A must be placarded EXPLOSIVES A and POISON GAS.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-29A, 41 FR 40680, Sept. 20, 1976; Amdt. 172-78, 48 FR 10226, Mar. 10, 1983; Amdt. 172-98, 50 FR 39007, Sept. 26, 1985; Amdt. 172-103, 51 FR 5971, Feb. 18, 1986; Amdt. 172-104, 51 FR 23078, June 25, 1986; Amdt. 172-110, 52 FR 29528, Aug. 10, 1987; Amdt. 172-111, 52 FR 36671, Sept. 30, 1987]

EFFECTIVE DATE NOTE: At 52 FR 29528, Aug. 10, 1987, § 172.510 was amended by adding paragraph (e), effective February 1, 1988.

§ 172.512 Freight containers and aircraft unit load devices.

(a) *Capacity of 640 cubic feet or more.* Each person who offers for transportation, and each person who loads and transports, a hazardous material in a freight container or aircraft unit load device having a capacity of 640 cubic feet or more shall affix to the freight container or aircraft unit

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load device the placards specified for the material in accordance with § 172.504. However:

(1) The placarding exception provided in § 172.504(c) applies to motor vehicles transporting freight containers and aircraft unit load devices,

(2) The placarding exception provided in § 172.504(c) applies to each freight container and aircraft unit load device being transported for delivery to a consignee immediately following an air or water shipment, and,

(3) Placarding is not required on a freight container or aircraft unit load device if it is only transported by air and is identified as containing a hazardous material in the manner provided in Part 5, Chapter 2, Section 2.7, of the ICAO Technical Instructions.

(b) *Capacity less than 640 cubic feet.* Each person who offers for transportation by air, and each person who loads and transports by air, a hazardous material in a freight container or aircraft unit load device having a capacity of less than 640 cubic feet shall affix one placard of the type specified by paragraph (a) of this section unless the freight container or aircraft unit load device:

(1) Is labeled in accordance with § 172.406(e)(3);

(2) Contains radioactive materials requiring the Radioactive Yellow III label and is placarded with one Radioactive placard and is labeled in accordance with § 172.406(e); or,

(3) Is identified as containing a hazardous material in the manner provided in Part 5, Chapter 2, Section 2.7, of the ICAO Technical Instructions.

When hazardous materials are offered for transportation, not involving air transportation, in a freight container having a capacity of less than 640 cubic feet the freight container need not be placarded. However, if not placarded it must be labeled in accordance with Subpart E of this part.

(c) Notwithstanding paragraphs (a) and (b) of this section, packages containing hazardous materials, other than ORM-D, offered for transportation by air in freight containers are subject to the inspection requirements of § 175.30 of this chapter.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-29A, 41 FR 40680, Sept. 20, 1976; Amdt. 172-29B, 41 FR 57088, Dec. 30, 1976; Amdt. 172-87, 48 FR 53712, Nov. 29, 1983; 48 FR 55469, Dec. 13, 1983; Amdt. 172-103, 51 FR 5971, Feb. 13, 1986; Amdt. 172-111, 52 FR 36671, Sept. 30, 1987]

§ 172.514 Cargo tanks and portable tanks.

(a) Each person who offers for transportation a cargo tank or a portable tank containing a hazardous material shall affix the placards specified for the material in accordance with § 172.504(a). However, if placarded instead of labeled as provided in § 172.406(e)(4), a portable tank having a rated capacity of less than 1,000 gallons need be placarded on only two opposite sides.

(b) Each cargo tank and portable tank that is required to be placarded when it contains a hazardous material must remain placarded when it is emptied unless it is:

(1) Reloaded with a material not subject to this subchapter; or

(2) Sufficiently cleaned and purged of vapors to remove any potential hazard.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-29A, 41 FR 40680, Sept. 20, 1976; Amdt. 172-29B, 41 FR 57088, Dec. 30, 1976]

§ 172.516 Visibility and display of placards.

(a) Each placard on a motor vehicle and each placard on a rail car must be readily visible from the direction it faces except from the direction of another motor vehicle or rail car to which the motor vehicle or rail car is coupled. This requirement may be met by the placards displayed on the freight containers or portable tanks loaded on a motor vehicle or rail car.

(b) The required placarding of the front of a motor vehicle may be on the front of a truck-tractor instead of or in addition to the placarding on the front of the cargo body to which a truck-tractor is attached.

(c) Each placard on a transport vehicle, portable tank or freight container must:

(1) Be securely attached or affixed thereto or placed in a holder thereon. (See Appendix C to this part.);

(2) Be located clear of appurtenances and devices such as ladders, pipes, doors, and tarpaulins;

(3) So far as practicable, be located so that dirt or water is not directed to it from the wheels of the transport vehicle;

(4) Be located away from any marking (such as advertising) that could substantially reduce its effectiveness, and in any case at least 3 inches (76.0 mm.) away from such marking;

(5) Have the words or identification number (when authorized) printed on it displayed horizontally, reading from left to right.

(6) Be maintained by the carrier in a condition so that the format, legibility, color, and visibility of the placard will not be substantially reduced due to damage, deterioration, or obscurement by dirt or other matter.

(d) Recommended specifications for a placard holder are set forth in Appendix C of this part. Except for a placard holder similar to that contained in Appendix C to this part, the means used to attach a placard may not obscure any part of its surface other than the borders.

(e) A placard or placard holder may be hinged provided the required format, color, and legibility of the placard are maintained.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-101, 45 FR 74668, Nov. 10, 1980]

§ 172.519 General specifications for placards.

(a) A placard may be made of any plastic, metal, or other material that is equal to or better in strength and durability than the tagboard specified in paragraph (b) of this section. Also, reflective or retroreflective materials may be used on a placard providing the prescribed colors, strength and durability are maintained.

(b) A placard made of tagboard must be of material that has:

(1) A quality at least equal to that designated commercially as white tagboard;

(2) A weight of 175 pounds per ream of 24 by 36-inch sheets (waterproofing materials included);

(3) The ability to pass a 60 p.s.i. Mullen test; and

(4) Been treated with plastic or other waterproofing material that will give it the ability to withstand open weather exposure (including rain) for 30 days without a substantial reduction in effectiveness.

(c) A placard may contain form identification information, including the name of its maker if that information is printed in the outer 1/2-inch (12.7 mm.) border in no larger than 10-point type.

(d) The hazard class and division number prescribed for dangerous goods in the UN Recommendations titled "Transport of Dangerous Goods" may be entered in the lower corner of the diamond on each placard. If a placard is used to display identification numbers as authorized by § 172.332, the class number must be entered in a numeral approximately 1 1/4 inches (45 mm.) in height (numeral height may be between 1 1/8 inches (41 mm.) and 1 1/4 inches (45 mm.)). It must be black on each placard except when on a NON-FLAMMABLE GAS, FLAMMABLE GAS, FLAMMABLE, COMBUSTIBLE or CORROSIVE placard. The class number on a NON-FLAMMABLE GAS, FLAMMABLE GAS, FLAMMABLE and COMBUSTIBLE placard may be white or black. The class number on a CORROSIVE placard must be white, and on a COMBUSTIBLE placard with a white bottom as prescribed by § 172.332(c)(4), the class number must be red or black.

(e) Surface pigmentation on a placard must meet the following requirements:

(1) Black and any color must be able to withstand, without substantial change:

(i) A 72-hour fadeometer test (for a description of equipment designed for this purpose, see ASTM G 23-69 (1975), or ASTM G 26-70); and

(ii) A 30-day exposure to open weather conditions.

(2) A color on a placard, upon visual examination, must fall within the color tolerances displayed on the appropriate Office of Hazardous Materials Label and Placard Color Tolerance Chart (see § 172.407(d)).

(f) Except as provided in § 172.332, placards shall be as described in this

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section and as prescribed in Appendix B to this part.

(g) The dotted line at the outside of the 1/2-inch (12.7 mm.) white border on each placard is not part of the placard specification. However, a dotted or solid line outer border may be used when needed to indicate the full size of a placard that is part of a larger format or is on a background the color of which does not contrast with the placard color.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53(e)) [Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-29A, 41 FR 40680, Sept. 20, 1976; Admt. 172-37, 42 FR 34285, July 5, 1977; Amdt. 172-58, 45 FR 34702, May 22, 1980; Amdt. 172-58, 45 FR 74668, Nov. 10, 1980; Amdt. 172-85, 48 FR 50460, Nov. 1, 1983; Amdt. 172-109, 52 FR 13038, Apr. 20, 1987]

EFFECTIVE DATE NOTE: At 52 FR 13038, Apr. 20, 1987, § 172.519 was amended by revising paragraphs (b)(2) and (4), effective May 18, 1988. For the convenience of the user, the superseded text is set forth below:

§ 172.519 General specifications for placards.

* * * * *

(b) * * *

(2) A weight of 125 pounds per ream of 24 by 36-inch sheets;

* * * * *

(4) The ability to withstand open weather exposure for 30 days without a substantial reduction in effectiveness.

* * * * *

§ 172.521 DANGEROUS placard.

(a) Except for size and color, the DANGEROUS placard must be as follows:



(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part, the DANGEROUS placard must have a red upper and lower triangle. The placard center area and 1/2-inch (12.7 mm.) border must be white. The inscription must be black with the 1/8-inch (3.2 mm.) border marker in the white area at each end of the inscription red.

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-29A, 41 FR 40680, Sept. 20, 1976]

§ 172.522 EXPLOSIVES A placard.

(a) Except for size and color, the EXPLOSIVES A placard must be as follows:



(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part, the **EXPLOSIVES A** placard must be orange with a ½ inch (12.7 mm.) white outer border. The symbol and print must be black.

§ 172.523 **EXPLOSIVES B** placard.

(a) Except for size and color, the **EXPLOSIVES B** placard must be as follows:



(b) In addition to meeting the requirements of § 172.519 and Appendix B to this part, the **EXPLOSIVES B** placard must be orange with a ½-inch (12.7 mm.) white outer border. The symbol and print must be black.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt 172-29, 41 FR 15996, Apr. 15, 1976. Redesignated by Amdt. 172-48, 44 FR 31182, May 31, 1979]

§ 172.524 **BLASTING AGENTS** placard.

(a) Except for size and color, the **BLASTING AGENTS** placard must be as follows:



(b) In addition to meeting the requirements of this part, the **BLASTING AGENTS** placard must be orange with a ½-inch (12.7 mm) white outer border. The printing must be black.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-48, 44 FR 31182, May 31, 1979]

§ 172.525 Standard requirements for the **RESIDUE** placard.

(a) Each **RESIDUE** placard must be as follows:

(1) Except as provided in paragraph (a)(3) of this section, the lower triangle of the **RESIDUE** placard must be black and the word "**RESIDUE**" must be in white letters approximately 1 inch (25mm) high, made with approximately ¼ inch (6mm) stroke. Use of **RESIDUE** placards displaying the word "**RESIDUE**" in 1½ inch lettering is authorized until July 1, 1987.

(2) Except for the **POISON GAS**, **RADIOACTIVE**, **EXPLOSIVES**, or subsidiary placard required by § 172.505, the **RESIDUE** placard may

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be used to display the appropriate identification number in accordance with the provisions of Subpart D of this part.

(3) For a combustible liquid residue, the lower triangle of the RESIDUE placard must be white and the word "RESIDUE" must be in black letters.

(4) Otherwise, the RESIDUE placard must be as specified in § 172.519 and Appendix B to this Part, and §§ 172.528, 172.530, 172.532, 172.536, 171.540, 172.542, 172.544, 172.546, 172.548, 172.550, 172.552, 172.554 and 172.558, as appropriate for the residue of the hazardous material being transported and required by this subchapter to be placarded. No other placard may be used as a RESIDUE placard.

(b) The lower part of each placard must be specified in Appendix B to this Part and as illustrated on the FLAMMABLE-RESIDUE placard which, except for size and color, must be as follows:



(c) The RESIDUE placard must be as shown in paragraph (b) of this section and may be—

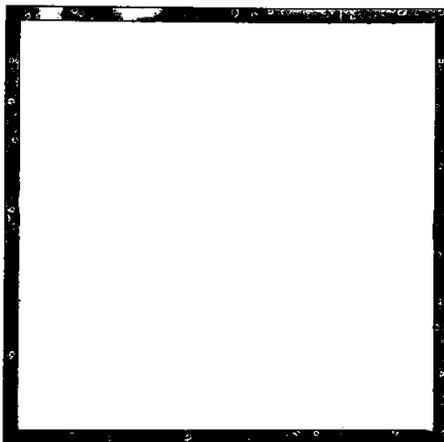
- (1) A separate placard,
- (2) On the reverse side of a placard, or
- (3) A composite made according to the specifications in this section, and paragraph (a)(10) of Appendix B to

this Part. The lower triangle of the appropriate placard should have a black triangle bearing the word RESIDUE in white letters with the appropriate hazard class number in white.

[Amdt. 172-98, 50 FR 39007, Sept. 26, 1985; 50 FR 46054, Nov. 6, 1985, as amended by Amdt. 172-104, 51 FR 23079, June 25, 1986; Amdt. 172-106, 51 FR 34987, Oct. 1, 1986]

§ 172.527 Background requirements for certain placards.

(a) Except for size and color, the square background required by § 172.510(a) for certain placards on rail cars, and § 172.507 for placards on motor vehicles containing a package of highway route controlled quantity radioactive materials, must be as follows:



(b) In addition to meeting the requirements of § 172.519 for minimum durability and strength, the square background must consist of a white square measuring 14 1/4 inches (362.0 mm.) on each side surrounded by a black border extending to 1 1/4 inches (387.0 mm.) on each side.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 172-29, 41 FR 15996, Apr. 15, 1976, as amended by Amdt. 172-64, 46 FR 5316, Jan. 19, 1981; Amdt. 172-78, 48 FR 10226, Mar. 10, 1983]

§ 172.528 NON-FLAMMABLE GAS placard.

(a) Except for size and color, the NON-FLAMMABLE GAS placard must be as follows:



(b) In addition to meeting the requirement of § 172.519, and Appendix B to this part, the NON-FLAMMABLE GAS placard must be green with the symbol, inscription, and ½ inch (12.7 mm.) border white.

§ 172.530 OXYGEN placard.

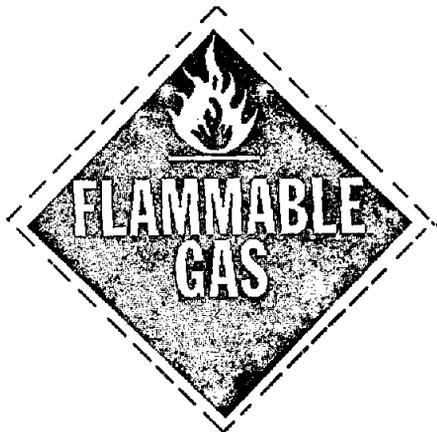
(a) Except for size and color, the OXYGEN placard must be as follows:



(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part, the OXYGEN placard must be yellow with ½ inch (12.7 mm.) white border. The symbol and inscription must be black.

§ 172.532 FLAMMABLE GAS placard.

(a) Except for size and color, the FLAMMABLE GAS placard must be as follows:



(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part, the FLAMMABLE GAS placard must be red with the symbol, inscription, and ½ inch (12.7 mm.) border white.

§ 172.536 CHLORINE placard.

(a) Except for size, the CHLORINE placard must be as follows:



(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part, the CHLORINE placard must be a white 10¼ inches (273.0 mm.) square-on-point with a ½-inch (3.2 mm.) black solid line border ½-inch (12.7 mm.) in from each edge. The symbol and inscription must be black.

§ 172.540 POISON GAS placard.

(a) Except for size, the POISON GAS placard must be as follows:



(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part, the POISON GAS placard must be a white 10¼ inches

(273.0 mm.) square-on-point with a ½-inch (3.2 mm.) black solid line border ½-inch (12.7 mm.) in from each edge. The symbol and inscription must be black.

§ 172.542 FLAMMABLE placard and modification.

(a) Except for size and color, the FLAMMABLE placard must be as follows:



(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part the FLAMMABLE placard must be red with white symbol, inscription, and ½-inch (12.7 mm.) border.

(c) The word "GASOLINE" may be used in place of the word "FLAMMABLE" on the placard that is displayed on a cargo tank or portable tank being used to transport gasoline by highway. The word "GASOLINE" must be in letters of the same size and color as those in the word "FLAMMABLE."

§ 172.544 COMBUSTIBLE placard and modification.

(a) Except for size and color, the COMBUSTIBLE placard must be as follows:



(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part, the COMBUSTIBLE placard must be red with white symbol, inscription, and ½-inch (12.7 mm.) border.

(c) The words "FUEL OIL" may be used in place of the word "COMBUSTIBLE" on the placard that is displayed on a cargo tank or portable tank being used to transport by highway fuel oil that is not classed as a flammable liquid. The words "FUEL OIL" must be in letters of the same size and color as those in the word "COMBUSTIBLE."

§ 172.546 FLAMMABLE SOLID placard.

(a) Except for size and color, the FLAMMABLE SOLID placard must be as follows:



(b) In addition to complying with § 172.519 and Appendix B to this part the FLAMMABLE SOLID placard must be white with seven vertical red stripes and a ½-inch (12.7 mm.) white border. The symbol and inscription must be black.

§ 172.548 FLAMMABLE SOLID W placard.

(a) Except for size and color, the FLAMMABLE SOLID W placard must be as follows:



(b)(1) The triangle at the top of the FLAMMABLE SOLID W placard must be blue with a white symbol, otherwise, the specifications for the FLAMMABLE SOLID placard are the

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same as those for the **FLAMMABLE SOLID** placard.

(2) The **FLAMMABLE SOLID W** placard may be:

- (i) A separate placard;
 - (ii) On the reverse side of a placard;
- or
- (iii) A composite made by covering the top triangle of the **FLAMMABLE SOLID** placard with the blue triangle and white symbol as shown in paragraph (a) of this section.

§ 172.550 **OXIDIZER** placard.

(a) Except for size and color, the **OXIDIZER** placard must be as follows:



(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part the **ORGANIC PEROXIDE** placard must be yellow with a ½-inch (12.7 mm.) white border. The symbol and inscription must be black.

§ 172.554 **POISON** placard.

(a) Except for size, the **POISON** placard must be as follows:



(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part, the **OXIDIZER** placard must be yellow with a ½-inch (12.7 mm.) white border. The symbol and inscription must be black.

§ 172.552 **ORGANIC PEROXIDE** placard.

(a) Except for size and color, the **ORGANIC PEROXIDE** placard must be as follows:



(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part, the **POISON** placard must be white with a ½-inch (3.2 mm.) black solid line border ½-inch (12.7

mm.) in from the edge. The symbol and inscription must be black.

§ 172.556 RADIOACTIVE placard.

(a) Except for size and color, the RADIOACTIVE placard must be as follows:



(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part, the RADIOACTIVE placard must have the top portion yellow with the symbol black. The lower portion must be white and the inscription black.

§ 172.558 CORROSIVE placard.

(a) Except for size, the CORROSIVE placard must be as follows:



(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part, the CORROSIVE placard must have the center and lower area black except for the letters in the word "CORROSIVE" which must be white. The symbol must be black and white.

APPENDIX A—OFFICE OF HAZARDOUS MATERIALS TRANSPORTATION COLOR TOLERANCE CHARTS AND TABLES

The following are Munsell notations and Commission Internationale de L'Eclairage (CIE) coordinates which describe the Office of Hazardous Materials Transportation Label and Placard Color Tolerance Charts in Tables 1 and 2, and the CIE coordinates for the color tolerances specified in Table 3. Central colors and tolerances described in Table 2 approximate those described in Table 1 while allowing for differences in production methods and materials used to manufacture labels and placards surfaced with printing inks. Primarily, the color charts based on Table 1 are for label or placard colors applied as opaque coatings such as paint, enamel or plastic, whereas color charts based on Table 2 are intended for use with labels and placards surfaced only with inks.

For labels printed directly on packaging surfaces, Table 3 may be used, although compliance with either Table 1 or Table 2 is sufficient. However, if visual reference indicates that the colors of labels printed directly on package surfaces are outside the Table 1 or 2 tolerances, a spectrophotometer or other instrumentation may be required to insure compliance with Table 3.

TABLE 1—SPECIFICATIONS FOR COLOR TOLERANCE CHARTS FOR USE WITH LABELS AND PLACARDS SURFACED WITH PAINT, LACQUER, ENAMEL, PLASTIC, OTHER OPAQUE COATINGS, OR INK¹

Color	Munsell notations	CIE data for source C		
		Y	x	y
Red:				
Central color.....	7.5R 4.0/14.....	12.00	.5859	.3269
Orange.....	8.5R 4.0/14.....	12.00	.6037	.3389
Purple and vivid.....	6.5R 4.0/14.....	12.00	.5889	.3184
Grayish.....	7.5R 4.0/12.....	12.00	.5603	.3321
Vivid.....	7.5R 4.0/16.....	12.00	.6280	.3182
Light.....	7.5R 4.5/14.....	15.57	.5775	.3320
Dark.....	7.5R 3.5/14.....	09.00	.6226	.3141
Orange:				
Central color.....	5.OYR 6.0/15.....	30.05	.5510	.4214
Yellow and Grayish.....	6.25YR 6.0/15.....	30.05	.5452	.4329
Red and vivid.....	3.75YR 6.0/15.....	30.05	.5562	.4091
Grayish.....	5.OYR 6.0/13.....	30.05	.5311	.4154
Vivid.....	5.OYR 6.0/16.....	30.05	.5597	.4239
Light.....	5.OYR 6.5/15.....	36.20	.5427	.4206
Dark.....	5.OYR 5.5/15.....	24.58	.5608	.4218
Yellow:				
Central color.....	5.OY 8.0/12.....	59.10	.4582	.4788
Green.....	6.5Y 8.0/12.....	59.10	.4498	.4865
Orange and vivid.....	3.5Y 8.0/12.....	59.10	.4632	.4669
Grayish.....	5.OY 8.0/10.....	59.10	.4378	.4601
Vivid.....	5.OY 8.0/14.....	59.10	.4699	.4920
Light.....	5.OY 8.5/12.....	68.40	.4508	.4754
Dark.....	5.OY 7.5/12.....	50.68	.4620	.4823
Green:				
Central color.....	7.5G 4.0/9.....	12.00	.2111	.4121
Bluish.....	0.5BG 4.0/9.....	12.00	.1974	.3809
Green-yellow.....	5.0G 4.0/9.....	12.00	.2237	.4399
Grayish A.....	7.5G 4.0/7.....	12.00	.2350	.3922
Grayish B ²	7.5G 4.0/8.....	12.00	.2467	.3822
Vivid.....	7.5G 4.0/11.....	12.00	.1848	.4319
Light.....	7.5G 4.5/9.....	15.57	.2204	.4080
Dark.....	7.5G 3.5/9.....	09.00	.2027	.4183
Blue:				
Central color.....	2.5PB 3.5/10.....	09.00	.1691	.1744
Purple.....	4.5PB 3.5/10.....	09.00	.1798	.1711
Green and vivid.....	10.0B 3.5/10.....	09.00	.1557	.1815
Grayish.....	2.6PB 3.5/8.....	09.00	.1888	.1964
Vivid.....	2.6PB 3.5/12.....	09.00	.1516	.1547
Light.....	2.6PB 4.0/10.....	12.00	.1805	.1888
Dark.....	2.6PB 3.0/10.....	06.65	.1576	.1600
Purple:				
Central color.....	10.0P 4.5/10.....	15.57	.3307	.2245
Reddish purple.....	2.5RP 4.5/10.....	15.57	.3584	.2377
Blue purple.....	7.5P 4.5/10.....	15.57	.3098	.2145
Reddish gray.....	10.0P 4.5/8.....	15.57	.3280	.2391
Gray ²	10.0P 4.5/6.5.....	15.57	.3254	.2519
Vivid.....	10.0P 4.5/12.....	15.57	.3333	.2101
Light.....	10.0P 5.0/10.....	19.77	.3308	.2328
Dark.....	10.0P 4.0/10.....	12.00	.3306	.2182

¹ Maximum chroma is not limited.² For the colors green and purple, the minimum saturation (chroma) limits for porcelain enamel on metal are lower than for most other surface coatings. Therefore, the minimum chroma limits of these two colors as displayed on the Charts for comparison to porcelain enamel on metal is low, as shown for green (grayish B) and purple (gray).

NOTE: CIE=Commission Internationale de L'Eclairage.

TABLE 2—SPECIFICATIONS FOR COLOR TOLERANCE CHARTS FOR USE WITH LABELS AND PLACARDS SURFACED WITH INK

Color/series	Munsell notation	CIE data for source C		
		Y	x	y
Red:				
Central series:				
Central color.....	6.8R 4.47/12.8	15.34	.5510	.3286
Grayish.....	7.2R 4.72/12.2	17.37	.5368	.3348
Purple.....	6.4R 4.49/12.7	15.52	.5442	.3258
Purple and vivid.....	6.1R 4.33/13.1	14.25	.5529	.3209
Vivid.....	6.7R 4.29/13.2	13.99	.5617	.3253
Orange.....	7.3R 4.47/12.8	15.34	.5572	.3331
Orange and grayish.....	7.65R 4.70/12.4	17.20	.5438	.3382
Light series:				
Light.....	7.0R 4.72/13.2	17.32	.5511	.3322
Light and orange.....	7.4R 4.96/12.6	18.38	.5365	.3382
Light and purple.....	6.6R 4.79/12.9	17.94	.5397	.3289
Dark series:				
Dark A.....	6.7R 4.19/12.5	13.30	.5566	.3265
Dark B.....	7.0R 4.25/12.35	13.72	.5522	.3294
Dark and purple.....	7.5R 4.23/12.4	13.58	.5577	.3329
Orange:				
Central series:				
Central color.....	5.0YR 6.10/12.15	31.27	.5193	.4117
Yellow and grayish A.....	5.8YR 6.22/11.7	32.69	.5114	.4155
Yellow and grayish B.....	6.1YR 6.26/11.85	33.20	.5109	.4180
Vivid.....	5.1YR 6.07/12.3	30.86	.5226	.4134
Red and vivid A.....	3.9YR 5.87/12.75	28.53	.5318	.4038
Red and vivid B.....	3.6YR 5.91/12.6	29.05	.5291	.4021
Grayish.....	4.9YR 6.10/11.9	31.22	.5170	.4089
Light series:				
Light and vivid A.....	5.8YR 6.78/12.7	39.94	.5120	.4177
Light and yellow.....	6.0YR 6.80/12.8	40.20	.5135	.4198
Light and vivid B.....	4.9YR 6.60/12.9	37.47	.5218	.4128
Dark series:				
Dark end yellow.....	5.8YR 5.98/11.0	29.87	.5052	.4132
Dark A.....	5.1YR 5.80/11.1	27.80	.5127	.4094
Dark B.....	5.0YR 5.80/11.0	27.67	.5109	.4088
Yellow:				
Central series:				
Central color.....	4.3Y 7.87/10.3	56.81	.4445	.4589
Vivid A.....	4.5Y 7.82/10.8	55.92	.4503	.4658
Vivid B.....	3.3Y 7.72/11.35	54.24	.4612	.4624
Vivid and orange.....	3.2Y 7.72/10.8	54.25	.4576	.4572
Grayish A.....	4.1Y 7.95/9.7	58.18	.4380	.4518
Grayish B.....	5.1Y 8.06/9.05	60.12	.4272	.4508
Green-yellow.....	5.2Y 7.97/9.9	58.53	.4358	.4605
Light series:				
Light.....	5.4Y 8.59/10.5	70.19	.4351	.4628
Light and green-yellow.....	5.4Y 8.56/11.2	69.59	.4414	.4692
Light and vivid.....	4.4Y 8.45/11.4	67.42	.4490	.4682
Dark series:				
Dark and green-yellow.....	4.4Y 7.57/9.7	51.82	.4423	.4562
Dark and orange A.....	3.4Y 7.39/10.4	48.86	.4584	.4590
Dark and orange B.....	3.5Y 7.41/10.0	49.20	.4517	.4544
Green:				
Central series:				
Central color.....	9.75G 4.26/7.75	13.80	.2214	.3791
Grayish.....	10G 4.46/7.5	15.25	.2263	.3742
Blue A.....	1.4BG 4.20/7.4	13.36	.2151	.3625
Blue B.....	1.0BG 4.09/7.75	12.60	.2109	.3685
Vivid.....	8.4G 4.09/9.05	12.59	.2183	.3954
Vivid green-yellow.....	7.0G 4.23/8.0	13.54	.2292	.4045
Green-yellow.....	7.85G 4.46/7.7	15.23	.2313	.3914
Light series:				
Light and vivid.....	9.5G 4.45/8.8	15.21	.2141	.3863
Light and blue.....	0.2BG 4.31/8.8	14.12	.2089	.3814
Light and green-yellow.....	8.3G 4.29/9.05	14.01	.2119	.4006
Dark series:				
Dark and green-yellow.....	7.1G 4.08/7.1	12.55	.2354	.3972
Dark and grayish.....	9.5G 4.11/6.9	12.70	.2262	.3764

TABLE 2—SPECIFICATIONS FOR COLOR TOLERANCE CHARTS FOR USE WITH LABELS AND PLACARDS SURFACED WITH INK—Continued

Color/series	Munsell notation	CIE data for source C		
		Y	x	y
Dark	8.5G 3.97/7.2	11.78	.2269	.3874
Blue:				
Central series:				
Central color	3.5PB 3.94/9.7	11.58	.1885	.1911
Green and grayish A	2.0PB 4.35/8.7	14.41	.1822	.2099
Green and grayish B	1.7PB 4.22/9.0	13.50	.1898	.2053
Vivid	2.9PB 3.61/9.7	10.78	.1814	.1852
Purple and vivid A	4.7PB 3.53/10.0	8.15	.1817	.1727
Purple and vivid B	5.0PB 3.71/9.9	10.20	.1888	.1788
Grayish	3.75PB 4.03/9.1	12.17	.1943	.1961
Light series:				
Light and green A	1.7PB 4.32/9.2	14.22	.1904	.2056
Light and green B	1.5PB 4.11/9.6	12.72	.1815	.1971
Light and vivid	3.2PB 3.95/10.05	11.70	.1831	.1868
Dark series:				
Dark and grayish	3.9PB 4.01/8.7	12.04	.1982	.1992
Dark and purple A	4.8PB 3.67/9.3	9.95	.1918	.1831
Dark and purple B	5.2PB 3.80/9.05	10.76	.1885	.1885
Purple:				
Central series:				
Central color	9.5P 4.71/11.3	17.25	.3274	.2165
Red	1.0RP 5.31/10.8	22.70	.3404	.2354
Red and vivid A	1.4RP 5.00/11.9	19.78	.3500	.2274
Red and vivid B	0.2RP 4.39/12.5	14.70	.3365	.2059
Vivid	5.0P 4.04/12.0	12.23	.3098	.1918
Blue	7.0P 4.39/10.8	14.71	.3007	.2037
Grayish	8.8P 5.00/10.3	19.73	.3191	.2251
Light series:				
Light and red A	0.85RP 5.56/11.1	25.18	.3387	.2356
Light and red B	1.1RP 5.27/12.3	22.27	.3460	.2276
Light and vivid	9.2P 4.94/11.95	19.24	.3247	.2163
Dark series:				
Dark and grayish	9.6P 4.70/10.9	17.19	.3283	.2204
Dark and vivid	8.4P 4.05/11.6	12.35	.3144	.1870
Dark and blue	7.5P 4.32/10.5	14.19	.3059	.2078

TABLE 3—SPECIFICATION FOR COLORS FOR USE WITH LABELS PRINTED ON PACKAGINGS SURFACES

CIE data for source C	Red	Orange	Yellow	Green	Blue	Purple
x	.424	.460	.417	.228	.200	.377
y	.306	.370	.392	.354	.175	.205
X	.571	.543	.480	.310	.255	.377
Y	.306	.450	.442	.354	.250	.284
X	.424	.445	.390	.228	.177	.342
y	.350	.395	.430	.403	.194	.205
X	.571	.504	.440	.310	.230	.342
Y	.350	.430	.492	.403	.267	.284
Y (high)	23.0	41.8	72.6	20.6	15.9	21.2
Y (low)	7.7	18.5	29.1	7.4	6.5	8.2

(49 U.S.C. 1803,1804,1808, 49 CFR 1.53)

[Amdt. 172-50, 44 FR 9757, Feb. 15, 1979; Amdt. 172-50, 44 FR 10984, Feb. 26, 1979, as amended by Amdt. 172-50, 44 FR 22467, Apr. 18, 1979; 50 FR 45731, Nov. 1, 1985]

APPENDIX B—DIMENSIONAL SPECIFICATION FOR PLACARDS

1. *Placard specifications.* (a) The print type on each placard must be Franklin Gothic Condensed.

(b) Each square-on-point placard must measure 10 $\frac{1}{2}$ inches (273.0 mm.) on each side, the outer, $\frac{1}{2}$ -inch (12.7 mm.) of which must be white.

NOTE: The measurements in these specifications may be rounded to the nearest $\frac{1}{2}$ of an inch and to the nearest whole millimeter.

(c) Specifications for each placard to augment those in paragraphs (1)(a) and (b) of this Appendix and those contained in Subpart F, Part 172 of this subchapter are as follows:

(1) *DANGEROUS placard.* The word "DANGEROUS" must be across the center of the placard and made with letters $2\frac{1}{2}$ inches (66.4 mm.) high with a $\frac{3}{8}$ -inch (9.5 mm.) stroke. The white section of the placard must be centered across the placard and 5 inches (127 mm.) wide. The two ends of the white area must have an $\frac{1}{2}$ -inch (3.2 mm.) red solid line border to indicate the outer $\frac{1}{2}$ -inch (12.7 mm.) white placard border. The placard color must be red, white, and black.

(2) *EXPLOSIVES A placard.* The word "EXPLOSIVES" must be across the center area of the placard and made with letters 1 $\frac{1}{2}$ inches (47.6 mm.) high with a $\frac{1}{8}$ -inch (7.9 mm.) stroke. The top of the letters in the words "EXPLOSIVES" must be $\frac{1}{2}$ inches (38.1 mm.) above the placard horizontal center line. The top of the letter "A" must be $\frac{1}{2}$ -inch (12.7 mm.) below the horizontal center line. The letter "A" must be approximately 2 inches (50.8 mm.) high. The base of the symbol must be $2\frac{1}{8}$ inches (52.4 mm.) above the placard horizontal center line, and must be $\frac{1}{2}$ inch (12.7 mm.) high when measured from a horizontal line touching the lowest extremity. The width of the symbol must be 7 $\frac{1}{2}$ inches (200.0 mm.) when measured between two lines perpendicular to the base line and touching the widest extremities on each side. The radius of the bomb must be $\frac{3}{8}$ -inch (19.1 mm.). The placard color must be orange, black, and white.

(3) Except for the letter "B", the EXPLOSIVES B placard specifications are the same as those for the EXPLOSIVES A placard. The location, height, and stroke of the letter "B" are the same as those prescribed for the letter "A".

(4) The word "NON-FLAMMABLE" must be across the center area with the word "GAS" centered beneath the word "NON-FLAMMABLE." The letters in both words must be $1\frac{1}{8}$ inches (39.6 mm.) high and made with a $\frac{1}{8}$ -inch (7.1 mm.) stroke. The top of the letters in the words "NON-

FLAMMABLE" must be $1\frac{1}{8}$ inches (35.9 mm.) above the placard horizontal center line, and the top of the letters in the word "GAS" must be $\frac{1}{8}$ -inch (14.3 mm.) below the placard horizontal center line. The base of the symbol must be $3\frac{1}{8}$ inches (79.3 mm.) above the horizontal centerline with the top $4\frac{1}{8}$ inches (125.4 mm.) above the placard horizontal center line. The lower portion of the cylinder (symbol) must be $1\frac{1}{2}$ -inch (13.5 mm.) wide with the neck $\frac{1}{2}$ -inch (6.3 mm.) wide. The symbol must be $3\frac{1}{8}$ inches (90.4 mm.) long. The placard color must be green and white.

(5) The word "OXYGEN" must be centered on the placard horizontal center line in letters $2\frac{1}{2}$ inches (63.5 mm.) high and made with a $\frac{1}{8}$ -inch (11.1 mm.) stroke. The base of the bar in the symbol must be $2\frac{1}{8}$ inches (52.4 mm.) above the placard horizontal center line. The overall height of the symbol must be $4\frac{1}{8}$ inches (109.5 mm.) with the bar measuring $\frac{1}{2}$ -inch (3.2 mm.) wide and, $3\frac{1}{8}$ inches (55.5 mm.) long.

The symbol must be $2\frac{1}{8}$ inches (60.3 mm.) across the widest part.

The outer $\frac{1}{2}$ -inch (12.7 mm.) of the 10 $\frac{1}{2}$ inches (273.0 mm.) square on-point placard must be white. The placard color must be yellow, black, and white.

(6) *FLAMMABLE GAS placard.* The word "FLAMMABLE" must be across the placard center area with the word "GAS" centered beneath the word "FLAMMABLE." The letters in both words must be 2 inches (50.8 mm.) high and made with a $\frac{3}{8}$ -inch (9.5 mm.) stroke. The top of the letters in the word "FLAMMABLE" must be $1\frac{1}{8}$ inches (41.3 mm.) above the placard horizontal center line and the top of the word "GAS" must be $\frac{1}{8}$ -inch (15.9 mm.) below the placard horizontal center line. The base of the symbol bar must be $2\frac{1}{8}$ inches (57.1 mm.) above the placard horizontal center line, and must be $4\frac{1}{2}$ inches (115.1 mm.) high and $3\frac{1}{8}$ inches (84.1 mm.) wide. The bar must be $\frac{1}{2}$ -inch (4.0 mm.) wide and $3\frac{1}{8}$ inches (84.1 mm.) long. The outer $\frac{1}{2}$ (12.7 mm.) of the 10 $\frac{1}{2}$ inches (273.0 mm.) square-on-point placard must be white. The placard color must be red and white.

(7) *CHLORINE placard.* The specifications for the CHLORINE placard are the same as those for the POISON GAS placard except for the word "CHLORINE" and the symbol. The word "CHLORINE" must be centered on the placard horizontal center line in letters $2\frac{1}{2}$ inches (63.5 mm.) high and made with a $\frac{1}{8}$ -inch (11.1 mm.) stroke. The lowest part of the symbol must be $1\frac{1}{8}$ inches (44.5 mm.) above the placard horizontal center line. The symbol must be $3\frac{1}{2}$ inches (93.6 mm.) high and $5\frac{1}{2}$ inches (130.2 mm.) across the widest extremities.

(8) *POISON GAS placard.* The word "POISON" must be across the center area

of the placard with the word "GAS" centered beneath the word "POISON." The letters in both words must be $2\frac{1}{16}$ inches (55.5 mm.) high and made with a $\frac{1}{32}$ -inch (10.3 mm.) stroke. The top of the letters in the word "POISON" must be $2\frac{1}{4}$ inches (57.1 mm.) above the horizontal center line. The lowest part of the symbol must be $2\frac{1}{8}$ inches (69.8 mm.) above the horizontal center line and must be $3\frac{1}{8}$ inches (82.5 mm.) high and $4\frac{1}{16}$ inches (109.5 mm.) across the widest extremities. The $\frac{1}{8}$ -inch (3.2 mm.) black border must be $\frac{1}{8}$ -inch (12.7 mm.) in from the placard edge. The placard color must be black and white.

(9) **FLAMMABLE placard.** The word "FLAMMABLE" must be centered on the placard horizontal center line. The letters in the word "FLAMMABLE" must be 2 inches (50.8 mm.) high and made with an $\frac{1}{32}$ -inch (8.7 mm.) stroke. The base of the symbol bar must be $2\frac{1}{4}$ inches (57.1 mm.) above the placard horizontal center line. The symbol must be $4\frac{1}{16}$ inches (115.9 mm.) high and $3\frac{1}{16}$ inches (84.1 mm.) wide. The bar must be $\frac{1}{8}$ -inch (3.2 mm.) wide and $3\frac{1}{16}$ inches (84.1 mm.) long. The outer $\frac{1}{8}$ -inch (12.7 mm.) of the 10 $\frac{1}{2}$ inches (273.0 mm.) square-on-point placard must be white.

(10) **RESIDUE placard.** The specifications for the FLAMMABLE-RESIDUE placard are the same as the specifications for the following RESIDUE placards: NON-FLAMMABLE GAS; POISON GAS; CHLORINE; OXYGEN; FLAMMABLE GAS; FLAMMABLE; FLAMMABLE SOLID; FLAMMABLE SOLID W; OXIDIZER; ORGANIC PEROXIDE; POISON; and CORROSIVE. The lower triangle of each RESIDUE placard must be black. This triangle must be 2-3/8 inches (50 mm) below the horizontal center line of the placard or adjacent to the lower edge of the white block for the identification number. The letters in the word RESIDUE must be approximately 1 inch (25mm) high, made with approximately $\frac{1}{8}$ inch (6 mm) stroke. The letters must be located in the lower black triangle and parallel to the horizontal center line of the placard. The hazard class number must be approximately $1\frac{1}{2}$ inches (40 mm) high and centered below the word RESIDUE. The RESIDUE placard may be made in any of the three ways cited in § 172.525(c), Subpart F of Part 172.

(11) **COMBUSTIBLE placard.** The specification for the COMBUSTIBLE placard are the same as those prescribed for the FLAMMABLE placard except the letters in the word "COMBUSTIBLE" must be $1\frac{1}{8}$ inches (47.6 mm.) high and made with an $\frac{1}{32}$ -inch (8.7 mm.) stroke.

(12) **FLAMMABLE SOLID placard.** The word "FLAMMABLE" must be across the center of the placard with the word "SOLID" centered beneath the word "FLAMMABLE." The letters in the word "FLAMMABLE" must be 2 inches (50.8

mm.) high and made with a $\frac{1}{8}$ -inch (9.5 mm.) stroke. The letters in the word "SOLID" must be $1\frac{1}{8}$ inches (38.1 mm.) high and made with a $\frac{1}{8}$ -inch (6.3 mm.) stroke. The top of the letters in the word "FLAMMABLE" must be $1\frac{1}{16}$ inches (30.1 mm.) above the placard horizontal center line, and the top of the word "SOLID" must be 1-inch (25.5 mm.) below the placard horizontal center line. The base of the symbol bar must be $2\frac{1}{4}$ inches (57.1 mm.) above the placard horizontal center line. The symbol must be $4\frac{1}{16}$ inches (115.9 mm.) high and $3\frac{1}{16}$ inches (84.1 mm.) wide. The outer $\frac{1}{8}$ -inch (12.7 mm.) of the 10 $\frac{1}{2}$ inches (273.0 mm.) square-on-point placard must be white. Each red and white stripe must be approximately 1 inch (25.4 mm.) wide. The placard must have seven red stripes and six white stripes. One red stripe must be approximately centered on the vertical center line of the placard. The placard color must be black, white, and red.

(13) **FLAMMABLE SOLID W placard.** The specifications for the FLAMMABLE SOLID W are the same as the specifications for the FLAMMABLE SOLID placard except for the top triangle. The base of the blue triangle must be 2 inches (50.8 mm.) above the placard horizontal center line with the base of the symbol $2\frac{1}{8}$ inches (60.3 mm.) above the placard horizontal center line. The symbol must be $2\frac{1}{4}$ inches (57.1 mm.) high; $2\frac{3}{8}$ inches (69.8 mm.) across the top $1\frac{1}{8}$ inches (44.4 mm.) across the base, and made with a $\frac{1}{16}$ -inch (7.9 mm.) stroke. The white stripe in the symbol must be $\frac{1}{32}$ -inch (5.5 mm.) wide and $3\frac{1}{2}$ inches (88.9 mm.) long. The white stripe must slant upward from right to left at an angle of approximately 21 degrees from the horizontal. This placard may be made in any of the three ways cited in § 172.548, Subpart F of Part 172.

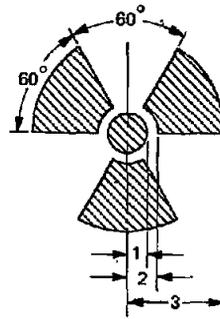
(14) **OXIDIZER placard.** The word "OXIDIZER" must be centered on the placard horizontal center line in letters $2\frac{1}{8}$ inches (63.5 mm.) high with a $\frac{1}{32}$ -inch (11.9 mm.) stroke. The base of the bar of the symbol must be $2\frac{1}{16}$ inches (52.4 mm.) above the placard horizontal center line. The overall height of the symbol must be $4\frac{1}{16}$ inches (109.5 mm.) with the bar measuring $\frac{1}{8}$ -inch (3.2 mm.) wide and $2\frac{1}{16}$ inches (55.6 mm.) long. The symbol must be $2\frac{3}{8}$ inches (60.3 mm.) across the widest part. The outer $\frac{1}{8}$ -inch (12.7 mm.) of the 10 $\frac{1}{2}$ inches (273.0 mm.) placard must be white. The placard color must be yellow, black, and white.

(15) **ORGANIC PEROXIDE placard.** The word "ORGANIC" must be across the center line of the placard with the word "PEROXIDE" centered beneath the word "ORGANIC." The letters in both words must be 2 inches (50.8 mm.) high and made with an $\frac{1}{32}$ -inch (8.7 mm.) stroke. The top of the letters in the word "ORGANIC"

must be $2\frac{1}{8}$ inches (54.0 mm.) above the placard horizontal center line, and the top of the letters in the words "PEROXIDE" must be $\frac{1}{8}$ -inch (7.9 mm.) below the placard horizontal center line. The base of the symbol bar must be $2\frac{1}{8}$ inches (73.0 mm.) above the horizontal center line. The symbol must be $3\frac{1}{16}$ inch (93.6 mm.) high and $2\frac{1}{8}$ inches (52.3 mm.) wide with the bar $\frac{1}{8}$ -inch (4.8 mm.) wide and $1\frac{1}{8}$ inches (47.6 mm.) long. The outer $\frac{1}{8}$ -inch (12.7 mm.) of the $10\frac{3}{4}$ inches (273.0 mm.) square-on-point placard must be white. The placard color must be yellow, black, and white.

(16) **POISON placard.** The word "POISON" must be centered on the placard horizontal center line in letters $3\frac{1}{16}$ inches (77.8 mm.) high and made with a $\frac{1}{16}$ -inch (14.3 mm.) stroke. The lowest point on the symbol must be $2\frac{1}{8}$ inches (54.0 mm.) above the placard horizontal center line. The symbol must be $3\frac{1}{16}$ inches (93.6 mm.) high and $4\frac{1}{16}$ inches (125.4 mm.) across the widest extremities. The $\frac{1}{8}$ -inch (3.2 mm.) black border must be $\frac{1}{2}$ -inch (12.7 mm.) in from the placard edge. The placard color must be black and white.

(17) **RADIOACTIVE placard.** The word "RADIOACTIVE" must be centered on the placard horizontal center line in letters 2 inches (50.8 mm.) with an $\frac{1}{32}$ -inch (8.7 mm.) stroke. The lower edge of the yellow triangle must be $1\frac{1}{8}$ inches (28.6 mm.) above the placard horizontal center line. The lower edge of the symbol must be $1\frac{1}{4}$ inches (31.7 mm.) above the placard horizontal center line. The symbol must be made as shown with the following dimensions:



1 = Radius of Circle —
1/2 inch (12.7 mm.)

2 = 1 1/2 Radii

3 = 4 1/2 Radii

The lower white area must have a $\frac{1}{8}$ -inch (3.2 mm.) black solid line border extended from the edge of the yellow area to indicate the outer $\frac{1}{8}$ -inch (12.7 mm.) white placard border. The placard color must be yellow, black, and white.

(18) **CORROSIVE placard.** The word "CORROSIVE" must be across the center of the placard and made with letters $2\frac{1}{16}$ inches (52.4 mm.) high with a $\frac{1}{16}$ -inch (8.7 mm.) stroke. The base of the top white triangle must be $1\frac{1}{8}$ inches (38.1 mm.) above the placard horizontal center line. The lowest part of the symbol must be $1\frac{1}{8}$ inches (41.3 mm.) above the placard horizontal center line. The height of the symbol measured from a horizontal line extended from the lowest part of the symbol must be $3\frac{1}{4}$ inches (82.5 mm.) and the width across the widest part must be $7\frac{1}{8}$ inches (187.3 mm.). The upper white area must have a $\frac{1}{8}$ -inch (3.2 mm.) black solid line border as an extension from the edge of the black area to indicate the outer $\frac{1}{8}$ -inch (12.7 mm.) white placard border. The placard color must be black and white.

(19) **BLASTING AGENTS placard.** The words **BLASTING AGENTS** must be across the center area of the placard and made with letters $1\frac{1}{8}$ inches (47.6 mm.) high with a $\frac{1}{16}$ -inch (7.9 mm.) stroke.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amtd. 172-29, 41 FR 15996, Apr. 15, 1976]

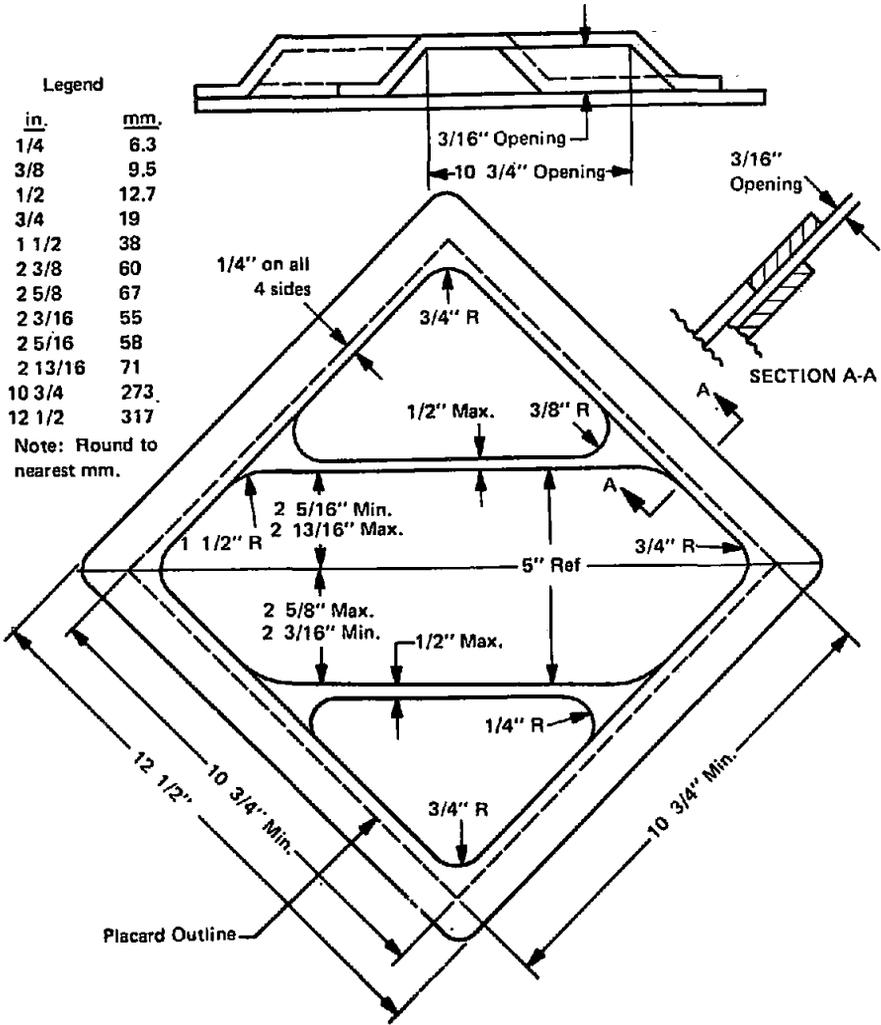
EDITORIAL NOTE: For Federal Register citations to Appendix B of Part 172, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

APPENDIX C—DIMENSIONAL SPECIFICATIONS FOR RECOMMENDED
PLACARD HOLDER

Legend

in.	mm.
1/4	6.3
3/8	9.5
1/2	12.7
3/4	19
1 1/2	38
2 3/8	60
2 5/8	67
2 3/16	55
2 5/16	58
2 13/16	71
10 3/4	273
12 1/2	317

Note: Round to nearest mm.



PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

Subpart A—General

- Sec.
- 173.1 Purpose and scope.
- 173.2 Classification of material having more than one hazard as defined in this part.
- 173.3 Packaging and exceptions.
- 173.3a Packaging; special requirements for certain poisonous materials.
- 173.4 Exceptions for small quantities.
- 173.5 Agricultural operations:
- 173.5a Oilfield service vehicles.
- 173.6 Shipments by air.
- 173.7 U.S. Government material.
- 173.9 Cars, truck bodies or trailers containing lading which has been fumigated or treated with flammable liquids, flammable gases, poisonous liquids or solids, or poisonous gases.
- 173.10 Tank car shipments.
- 173.11 Shipper's registration statement; flammable cryogenic liquids.
- 173.12 Exceptions for shipment of waste material.

Subpart B—Preparation of Hazardous Materials for Transportation

- 173.21 Forbidden materials and packages.
- 173.22 Shipper's responsibility.
- 173.22a Use of packagings authorized under exemptions.
- 173.23 Previously authorized packaging.
- 173.24 Standard requirements for all packages.
- 173.25 Authorized packages and overpacks.
- 173.26 Quantity limitations and metric measurements.
- 173.27 Aircraft quantity limitations.
- 173.28 Reuse of packagings (containers).
- 173.29 Empty packagings.
- 173.30 Loading and unloading of transport vehicles.
- 173.31 Qualification, maintenance, and use of tank cars.
- 173.32 Qualification, maintenance and use of portable tanks other than Specification IM portable tanks.
- 173.32a Approval of Specification IM portable tanks.
- 173.32b Periodic testing and inspection of Specification IM portable tanks.
- 173.32c Use of Specification IM portable tanks.
- 173.32d Additions, modifications and removals of entries in the IM Tank Table.
- 173.33 Qualification, maintenance, and use of cargo tanks.

Sec.

- 173.34 Qualification, maintenance, and use of cylinders.

Subpart C—Explosives and Blasting Agents; Definitions and Preparation

- 173.50 An explosive.
- 173.51 Forbidden explosives.
- 173.52 Acceptable explosives.

CLASS A EXPLOSIVES; DEFINITIONS

- 173.53 Definition of Class A explosives.
- 173.54 Ammunition for cannon.
- 173.55 Ammunition, nonexplosive.
- 173.56 Ammunition, projectiles, grenades, bombs, mines, gas mines, and torpedoes.
- 173.57 Rocket ammunition.
- 173.58 Ammunition for small arms.
- 173.59 Chemical ammunition, explosive.
- 173.60 Black powder and low explosives.
- 173.61 High explosives.
- 173.62 High explosives, liquid.
- 173.63 High explosive with liquid explosive ingredient.
- 173.64 High explosives with no liquid explosive ingredient and propellant explosives, Class A.
- 173.65 High explosives with no liquid explosive ingredient nor any chlorate.
- 173.66 Detonators.
- 173.68 Detonating primers.
- 173.69 Detonating fuzes, Class A, with or without radioactive components, detonating fuze parts containing an explosive, boosters, bursters, or supplementary charges.
- 173.70 Diazodinitrophenol or lead mononitroresorcinate.
- 173.71 Fulminate of mercury.
- 173.72 Guanyl nitrosamino guanylidene hydrazine.
- 173.73 Lead azide.
- 173.74 Lead styphnate.
- 173.75 Nitro mannite.
- 173.76 Nitrosoguanidine.
- 173.77 Pentaerythrite tetranitrate.
- 173.78 Tetrazene.
- 173.79 Jet thrust units (jato), Class A explosives; rocket motors, Class A explosives; igniters, jet thrust (jato), Class A explosives; and igniters, rocket motor, Class A explosives.
- 173.80 Charged well casing jet perforating guns.
- 173.81 Cord, detonating.
- 173.86 New explosives definitions; approval and notification.
- 173.87 Explosives in mixed packing.

CLASS B EXPLOSIVES; DEFINITIONS

- 173.88 Definition of Class B explosives.

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- 173.89 Ammunition for cannon with empty projectiles, inert-loaded projectiles, solid projectiles, tear gas projectiles or without projectiles.
- 173.90 Rocket ammunition with empty, inert-loaded, or solid projectiles.
- 173.91 Special fireworks.
- 173.92 Jet thrust units (jato), Class B explosives; rocket motors, Class B explosives; igniters, jet thrust (jato), Class B explosives; igniters, rocket motors, Class B explosives; and starter cartridges, jet engine, Class B explosives.
- 173.93 Propellant explosives (solid) for cannon, small arms, rockets, guided missiles, or other devices, and propellant explosives (liquid).
- 173.94 Explosive power devices, Class B.
- 173.95 Rocket engines (liquid), Class B explosives.

CLASS C EXPLOSIVES; DEFINITIONS

- 173.100 Definition of Class C explosives.
- 173.101 Small-arms ammunition.
- 173.101a Cartridges, practice ammunition.
- 173.102 Explosive cable cutters; explosive power devices, Class C; explosive release devices, or starter cartridges, jet engine, Class C explosives.
- 173.103 Detonators, Class C explosives, and detonating primers, Class C explosives.
- 173.104 Cord, detonating; fuse, mild detonating, metal clad; or flexible linear shaped charge, metal clad.
- 173.105 Percussion, tracer, combination, time fuzes and tracers.
- 173.106 Cartridge bags, empty, with black powder igniters, igniters, safety squibs, electric squibs, delay electric igniters, igniter fuse-metal clad, and fuse lighters or fuse igniters.
- 173.107 Primers, percussion caps, and grenades, empty, primed.
- 173.108 Common fireworks, signal flares, hand signal devices, smoke signals, smoke candles, smoke grenades, smoke pots, and Very signal cartridges.
- 173.109 Toy caps.
- 173.110 Charged well casing jet perforating guns, total explosive content in guns not exceeding 20 pounds per motor vehicle.
- 173.111 Cigarette loads, explosive auto alarms, toy propellant devices, toy smoke devices, trick matches, and trick noise makers, explosive.
- 173.112 Oil well cartridges.
- 173.113 Detonating fuzes, Class C explosives.
- 173.114 Actuating cartridges; explosive, fire extinguisher or valve.
- 173.114a Blasting agents.

Sec.

Subpart D—Flammable, Combustible, and Pyrophoric Liquids; Definitions and Preparation

- 173.115 Flammable, combustible, and pyrophoric liquids; definitions.
- 173.116 Outage.
- 173.117 Closing and cushioning.
- 173.118 Limited quantities of flammable liquids.
- 173.118a Exceptions for combustible liquids.
- 173.119 Flammable liquids not specifically provided for.
- 173.120 Automobiles, motorcycles, tractors, or other self-propelled vehicles.
- 173.121 Carbon bisulfide (disulfide).
- 173.122 Acrolein, inhibited.
- 173.123 Ethyl chloride.
- 173.124 Ethylene oxide.
- 173.125 Alcohol, n.o.s. (flammable liquid).
- 173.126 Nickel carbonyl.
- 173.127 Nitrocellulose or collodion cotton, fibrous, or nitrostarch, wet; nitrocellulose flakes; colloid nitrocellulose, granular, flake, or block, and lacquer base or lacquer chips, wet.
- 173.128 Paint and paint related material (flammable liquids).
- 173.130 Refrigerating machines.
- 173.131 Road asphalt, or tar, liquid.
- 173.132 Adhesive; cement; container cement; linoleum cement; pyroxylin cement; rubber cement; tile cement; wallboard cement, and coating solution.
- 173.133 Spirits of nitroglycerin.
- 173.134 Pyroforic liquids, n.o.s.
- 173.135 Diethyl dichlorosilane, dimethyl dichlorosilane, ethyl dichlorosilane, ethyl trichlorosilane, methyl trichlorosilane, trimethyl chlorosilane, and vinyl trichlorosilane.
- 173.136 Methyl dichlorosilane and trichlorosilane.
- 173.137 Lithium aluminum hydride, ethereal.
- 173.138 Pentaborane.
- 173.139 Ethylene imine, inhibited, and propylene imine, inhibited.
- 173.140 Zirconium, metallic, solutions, or mixtures thereof, liquid.
- 173.141 Amyl mercaptan, butyl mercaptan, ethyl mercaptan, isopropyl mercaptan, propyl mercaptan, and aliphatic mercaptan mixtures.
- 173.143 Methylchloromethyl ether, anhydrous.
- 173.144 Ink (flammable liquid).
- 173.145 Dimethylhydrazine, unsymmetrical, and methylhydrazine.
- 173.146 Heaters for refrigerator cars, flammable liquid fuel type.
- 173.147 Methyl vinyl ketone, inhibited.
- 173.148 Monoethylamine.

Sec.

- 173.149 Methyl magnesium bromide in ethyl ether in concentrations not over 40 percent.
173.149a Nitromethane.

Subpart E—Flammable Solids, Oxidizers, and Organic Peroxides; Definitions and Preparation

- 173.150 Flammable solid; definition.
173.151 Oxidizer; definition.
173.151a Organic peroxide; definition.
173.152 Packing.
173.153 Limited quantities of flammable solids, oxidizers and organic peroxides.
173.154 Flammable solids, organic peroxide solids and oxidizers not specifically provided for.
173.154a Fuseses.
173.156 Barium peroxide and calcium peroxide.
173.157 Benzoyl peroxide, chlorobenzoyl peroxide (para), cyclohexanone peroxide, dimethylhexane dihydroperoxide, lauroyl peroxide, or succinic acid peroxide, wet.
173.158 Benzoyl peroxide, dry; chlorobenzoyl peroxide (para) dry; cyclohexanone peroxide, dry; lauroyl peroxide, dry; or succinic acid peroxide, dry.
173.159 Burnt cotton.
173.160 Calcium chlorite and sodium chlorite.
173.161 Calcium phosphide.
173.162 Charcoal.
173.163 Chlorate of soda, chlorate of potash, and other chlorates.
173.164 Chromic acid or chromic acid mixture, dry.
173.165 Coal, ground bituminous, sea coal, coal facings.
173.166 Cobalt resinate, precipitated, calcium resinate, and calcium resinate fused.
173.168 Lithium amide, powdered.
173.171 Fish scrap or fish meal.
173.173 Aluminum dross or magnesium dross.
173.174 Iron sponge, spent oxide, spent iron mass, spent iron sponge.
173.175 Lacquer base, or lacquer chips, dry.
173.176 Safety matches.
173.176a Strike anywhere matches.
173.177 Motion-picture film and X-ray film.
173.178 Calcium carbide, calcium silicon powder, and magnesium granules, coated.
173.179 N-methyl-N'-nitro-N-nitrosoguanidine.
173.182 Nitrates.
173.183 Potassium nitrate mixed (fused) with sodium nitrite.

Sec.

- 173.184 Nitrocellulose or collodion cotton, wet; or nitrocellulose, colloid, granular, or flake, wet, or nitrostarch, wet, or nitroguanidine, wet.
173.187 Potassium peroxide; potassium superoxide; sodium peroxide or sodium superoxide.
173.188 Phosphoric anhydride.
173.189 Phosphorus, amorphous, red.
173.190 Phosphorus, white or yellow.
173.191 Phosphorus pentachloride.
173.192 Ammonium picrate, picric acid, trinitrobenzoic acid, and urea nitrate, wet.
173.193 Picric acid, trinitrobenzoic acid, or urea nitrate, wet.
173.194 Potassium permanganate.
173.195 Pyroxylin plastic scrap.
173.197 Pyroxylin plastics, in sheets, rolls, rods, or tubes.
173.197a Smokeless powder for small arms.
173.198 Sodium hydride.
173.202 Sodium metal liquid alloy, potassium metal liquid alloy, and sodium potassium liquid alloy.
173.203 Tetranitromethane.
173.204 Sodium hydrosulfite.
173.205 Sodium picramate, wet.
173.206 Sodium or potassium, metallic; sodium amide; sodium potassium alloys; sodium aluminum hydride; lithium metal; lithium silicon; lithium ferro silicon; lithium hydride; lithium borohydride; lithium aluminum hydride; lithium acetylide-ethylene diamine complex; aluminum hydride; cesium metal; rubidium metal; zirconium hydride, powdered.
173.207 Sulfide of sodium or sulfide of potassium, fused or concentrated, when ground.
173.208 Titanium metal powder, wet or dry.
173.212 Trinitrobenzene and trinitrotoluene, wet.
173.214 Hafnium metal or zirconium metal, wet, minimum 25 percent water by weight, mechanically produced, finer than 270 mesh particle size; hafnium metal or zirconium metal, dry, in an atmosphere of inert gas, mechanically produced, finer than 270 mesh particle size; hafnium metal or zirconium metal, wet, minimum 25 percent water by weight, chemically produced (See Note 1), finer than 20 mesh particle size; hafnium metal or zirconium metal, dry, in an atmosphere of inert gas, chemically produced (See Note 1), finer than 20 mesh particle size.
173.216 Zirconium picramate, wet.

Sec.

- 173.217 Calcium hypochlorite, hydrated; calcium hypochlorite, mixture, dry; lithium hypochlorite mixture, dry; mono-(trichloro) tetra-(monopotassium dichloro)-penta-s-triazinetriene, dry; potassium dichloro-s-triazine-trione, dry; sodium dichloro-s-triazinetriene, dry; trichloro-s-triazinetriene, dry.
- 173.218 Isopropyl percarbonate, unstabilized.
- 173.219 Potassium perchlorate.
- 173.220 Magnesium or zirconium scrap consisting of borings, clippings, shavings, sheets, turnings, or scalplings, and magnesium metallic (other than scrap), powder, pellets, turnings, or ribbon; magnesium aluminum powder.
- 173.221 Liquid organic peroxides, n.o.s., and liquid organic peroxide solutions, n.o.s.
- 173.222 Acetyl peroxide and acetyl benzoyl peroxide, solution.
- 173.223 Peracetic acid.
- 173.224 Cumene hydroperoxide, dicumyl peroxide, diisopropylbenzene hydroperoxide, paramenthane hydroperoxide, pinane hydroperoxide, and tertiary butylisopropyl benzene hydroperoxide.
- 173.225 Phosphorus trisulfide, phosphorus sesquisulfide, phosphorus heptasulfide, and phosphorus pentasulfide.
- 173.227 Urea peroxide.
- 173.228 Zinc ammonium nitrite.
- 173.229 Chlorate and borate mixtures or chlorate and magnesium chloride mixtures.
- 173.230 Sodium, metallic, dispersion in organic solvent.
- 173.231 Calcium, metallic, crystalline.
- 173.232 Aluminum, metallic powder.
- 173.234 Sodium nitrite and sodium nitrite mixtures.
- 173.235 Ammonium bichromate (ammonium dichromate).
- 173.236 Decaborane.
- 173.237 Chlorine dioxide hydrate, frozen; chloric acid.
- 173.238 [Reserved].
- 173.239 Barium azide—50 percent or more water wet.
- 173.239a Ammonium perchlorate.

Subpart F—Corrosive Materials: Definition and Preparation

- 173.240 Corrosive material; definition.
- 173.241 Outage.
- 173.242 Bottles containing corrosive liquids.
- 173.243 Closing and cushioning.
- 173.244 Limited quantities of corrosive materials.
- 173.245 Corrosive liquids not specifically provided for.

Sec.

- 173.245a Corrosive liquids, n.o.s. shipped in bulk.
- 173.245b Corrosive solids not specifically provided for.
- 173.246 Antimony pentafluoride, bromide pentafluoride, iodine pentafluoride, bromine trifluoride, and chlorine trifluoride.
- 173.247 Acetyl bromide; acetyl chloride; acetyl iodide; antimony pentachloride; benzoyl chloride; boron trifluoride-acetic acid complex; chromyl chloride; dichloroacetyl chloride; diphenylmethyl bromide solutions; pyrosulfuryl chloride; silicon chloride; sulfur chloride (mono and di); sulfuryl chloride; thionyl chloride; tin tetrachloride (anhydrous); titanium tetrachloride; trimethyl acetyl chloride.
- 173.247a Vanadium tetrachloride and vanadium oxytrichloride.
- 173.248 Spent sulfuric acid, or spent mixed acid.
- 173.249 Alkaline corrosive liquids, n.o.s.; alkaline liquids, n.o.s.; alkaline corrosive battery fluid; potassium fluoride solution; potassium hydrogen fluoride solution; sodium aluminate, liquid; sodium hydroxide solution; potassium hydroxide solution.
- 173.249a Cleaning compound, liquid; coal tar dye, liquid; dye intermediate, liquid; mining reagent, liquid; and textile treating compound mixture, liquid.
- 173.250 Automobiles, other self-propelled vehicles, engines or other mechanical apparatus.
- 173.250a Benzene phosphorus dichloride and benzene phosphorus thiodichloride.
- 173.251 Boron trichloride and boron tribromide.
- 173.252 Bromine.
- 173.253 Chloroacetyl chloride.
- 173.254 Chlorosulfonic acid and mixtures of chlorosulfonic acid-sulfur trioxide.
- 173.255 Dimethyl sulfate.
- 173.256 Compounds, cleaning, liquid.
- 173.257 Electrolyte (acid) and alkaline corrosive battery fluid.
- 173.258 Electrolyte, acid, or alkaline corrosive battery fluid, packed with storage batteries.
- 173.259 Electrolyte, acid, or alkaline corrosive battery fluid, packed with battery charger, radio current supply device, or electronic equipment and actuating devices.
- 173.260 Electric storage batteries, wet.
- 173.261 Fire-extinguisher charges.
- 173.262 Hydrobromic acid.

Sec.

- 173.263 Hydrochloric (muriatic) acid, hydrochloric (muriatic) acid mixtures; hydrochloric (muriatic) acid solution, inhibited; sodium chlorite solution (not exceeding 42 percent sodium chlorite); and cleaning compounds, liquids, containing hydrochloric (muriatic) acid.
- 173.264 Hydrofluoric acid; white acid.
- 173.265 Fluosilicic acid (hydrofluorosilicic acid) (hydrofluosilicic acid).
- 173.266 Hydrogen peroxide solution in water.
- 173.267 Mixed acid (nitric and sulfuric acid) (nitrating acid).
- 173.268 Nitric acid.
- 173.269 Perchloric acid.
- 173.270 Phosphorus tribromide.
- 173.271 Methyl phosphonic dichloride, phosphorus oxybromide, phosphorus oxychloride, phosphorus trichloride, and thiophosphoryl chloride.
- 173.272 Sulfuric acid.
- 173.273 Sulfur trioxide.
- 173.274 Fluosulfonic acid.
- 173.275 Difluorophosphoric acid, anhydrous, monofluorophosphoric acid, anhydrous, hexafluorophosphoric acid, and mixtures thereof.
- 173.276 Anhydrous hydrazine and hydrazine solution.
- 173.277 Hypochlorite solutions.
- 173.278 Nitrohydrochloric acid.
- 173.279 Anisoyl chloride.
- 173.280 Trichlorosilanes.
- 173.281 Benzyl bromide (bromotoluene, alpha).
- 173.282 Isopropyl percarbonate, stabilized.
- 173.283 Fluoboric acid.
- 173.284 Tungsten hexafluoride.
- 173.286 Chemical kits.
- 173.287 Chromic acid solution.
- 173.288 Chloroformates.
- 173.289 Formic acid and formic acid solutions.
- 173.290 Mixtures of hydrofluoric and sulfuric acid.
- 173.291 Flame retardant compound, liquid.
- 173.292 Hexamethylene diamine solution.
- 173.293 Iodine monochloride.
- 173.294 Chloroacetic acid, liquid or solution.
- 173.295 Benzyl chloride.
- 173.296 Di iso octyl acid phosphate.
- 173.297 Titanium sulfate solution containing not more than 45 percent sulfuric acid.
- 173.299 Etching acid liquid, n.o.s.
- 173.299a Tris-(1-aziridinyl) phosphine oxide.

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- 173.307 Exceptions for compressed gases.
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- 173.325 Classes of poisonous materials.
- 173.326 Poison A.
- 173.327 General packaging requirements for Poison A materials.
- 173.328 Poison A materials not specifically provided for.
- 173.329 Bromoacetone; chlorpicrin and methyl chloride mixtures; chlorpicrin and nonflammable, nonliquefied compressed gas mixtures.
- 173.330 Chemical ammunition.
- 173.331 Gas identification sets.
- 173.332 Hydrocyanic acid, liquid (prussic acid) and hydrocyanic acid liquefied.
- 173.333 Phosgene or diphosgene.
- 173.334 Organic phosphates mixed with compressed gas.
- 173.336 Nitrogen dioxide, liquid; nitrogen peroxide, liquid; and nitrogen tetroxide, liquid.
- 173.337 Nitric oxide.
- 173.343 Poison B.
- 173.344 General packaging requirements for Poison B liquids.
- 173.345 Limited quantities of Poison B liquids.
- 173.346 Poison B liquids not specifically provided for.
- 173.347 Aniline oil.
- 173.348 Arsenic acid.
- 173.349 Carboic acid (phenol) liquid.
- 173.350 Chemical ammunition.
- 173.351 Hydrocyanic acid solutions.

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- 173.352 Sodium and potassium cyanide solutions, and cyanide solution, n.o.s.
- 173.353 Methyl bromide and methyl bromide mixtures.
- 173.353a Methyl bromide, liquid and non-flammable, nonliquefied compressed gas mixtures.
- 173.354 Motor fuel antiknock compound or tetraethyl lead.
- 173.355 Phenylldichlorarsine.
- 173.356 Thiophosgene.
- 173.357 Chloropicrin and chloropicrin mixtures containing no compressed gas or Poison A liquid.
- 173.358 Hexaethyl tetraphosphate, methyl parathion, organic phosphate compound, organic phosphorus compound, parathion, tetraethyl dithio pyrophosphate, and tetraethyl pyrophosphate, liquid.
- 173.359 Hexaethyl tetraphosphate mixtures; methyl parathion mixtures; organic phosphorus compound mixtures; organic phosphate compound mixtures; parathion mixtures; tetraethyl dithio pyrophosphate mixtures; and tetraethyl pyrophosphate mixtures, liquid (includes solutions, emulsions, or emulsifiable liquids).
- 173.360 Perchloro-methyl-mercaptan.
- 173.361 Aldrin mixtures, liquid, with more than 60 percent aldrin.
- 173.362 4-Chloro-o-toluidine hydrochloride.
- 173.362a Dinitrophenol solutions.
- 173.363 General packaging requirements for Poison B solids.
- 173.364 Limited quantities of Poison B solids.
- 173.365 Poison B solids not specifically provided for.
- 173.366 Arsenic (arsenic trioxide) or arsenic acid (solid).
- 173.367 Arsenical compounds, n.o.s.; arsenate of lead; calcium arsenate; Paris green; and arsenical mixtures.
- 173.368 Arsenical dust, arsenical flue dust, and other poisonous noncombustible by-product dusts; also arsenic trioxide, calcium arsenate, and sodium arsenate.
- 173.369 Carboic acid (phenol), not liquid.
- 173.370 Cyanides and cyanide mixtures, dry.
- 173.371 Dinitrobenzol (dinitrobenzene).
- 173.372 Mercury bichloride (mercuric chloride).
- 173.373 Ortho-nitroaniline and para-nitroaniline.
- 173.374 Nitrochlorobenzene, meta or para.
- 173.375 Sodium azide.
- 173.376 Aldrin and aldrin mixtures, dry, with more than 65 percent aldrin.

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- 173.377 Hexaethyl tetraphosphate mixtures; methyl parathion mixtures; organic phosphorus compound mixtures; organic phosphate compound mixtures; parathion mixtures; tetraethyl dithio pyrophosphate mixtures; and tetraethyl pyrophosphate mixtures, dry.
- 173.379 Cyanogen bromide.
- 173.381 Irritating materials; definition and general packaging requirements.
- 173.382 Irritating materials, not specifically provided for.
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- 173.387 Packaging requirements for etiologic agents.
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- 173.401 Scope.
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- 173.420 Uranium hexafluoride (fissile and low specific activity).
- 173.421 Limited quantities of radioactive materials.
- 173.421-1 Additional requirements for excepted radioactive materials.
- 173.421-2 Requirements for multiple hazard limited quantity radioactive materials.
- 173.422 Exceptions for instruments and articles.
- 173.423 Table of activity limits—excepted quantities and devices.
- 173.424 Excepted article containing natural uranium or thorium.
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- 173.433 Requirements for determination of A_1 and A_2 values for radionuclides.

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- 173.434 Activity-mass relationships for uranium and natural thorium.
- 173.435 Table of A_1 and A_2 values for radionuclides.
- 173.441 Radiation level limitations.
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- 173.443 Contamination control.
- 173.444 Labeling requirements.
- 173.446 Placarding requirements.
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- 173.448 General transportation requirements.
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- 173.465 Type A packaging tests.
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- 173.474 Quality control for construction of packaging.
- 173.475 Quality control requirements prior to each shipment of radioactive materials.
- 173.476 Approval of special form radioactive materials.
- 173.477 Approval for export shipments.
- 173.478 Notification to competent authorities for export shipments.

**Subpart J—Other Regulated Material;
Definition and Preparation**

- 173.500 Definitions.
- 173.505 Exceptions for Other Regulated Material (ORM).
- 173.510 General packaging requirements.

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Subpart K—Other Regulated Material; ORM—A

- 173.605 Ammonium hydrosulfide solution, ammonium polysulfide solution, bromochloromethane, dibromodifluoromethane, dichlorodifluoroethylene, dichloromethane, 1,1,1-trichloroethane, perfluoro-2-butene, tetrachloroethylene, and trichloroethylene.
- 173.610 Camphene.
- 173.615 Carbon dioxide, solid (dry ice).
- 173.620 Carbon tetrachloride, ethylene dibromide (1,2-dibromoethane), and tetrachloroethane.
- 173.630 Chloroform.
- 173.635 Ferrophosphorus.
- 173.645 Ferrosilicon.
- 173.650 Hexachloroethane.
- 173.655 Naphthalene or naphthalin.

Subpart L—Other Regulated Material; ORM—B

- 173.800 Ammonium hydrogen sulfate, ammonium fluoride, barium oxide, chloroplatinic acid, copper chloride, ferric chloride, lead chloride, molybdenum pentachloride, potassium hydrogen sulfate, sodium aluminate, sodium hydrogen sulfate, and/or sodium hydrogen sulfite (each in solid form).
- 173.850 Lime, unslaked; quicklime; and calcium oxide.
- 173.860 Mercury, metallic.
- 173.861 Gallium metal, liquid.
- 173.862 Gallium metal, solid.

Subpart M—Other Regulated Material; ORM—C

- 173.906 Inflatable life-rafts, escape slides, and evacuation slides.
- 173.910 Ammonium sulfate nitrate.
- 173.915 Battery parts.
- 173.920 Bleaching powder.
- 173.945 Calcium cyanamide, not hydrated.
- 173.952 Castor beans and castor pomace.
- 173.955 Coconut meal pellets.
- 173.960 Copra.
- 173.965 Cotton and other fibers.
- 173.985 Exothermic ferrochrome, ferromanganese, and silicon-chrome.
- 173.995 Fish scrap and fish meal.
- 173.1010 Lead dross or scrap containing 3 percent or more free acid.
- 173.1015 Lithium batteries, for disposal.
- 173.1025 Ferrous metal borings, shavings, turnings, or cuttings (excluding stainless steel).
- 173.1040 Pesticide, water-reactive.
- 173.1045 Petroleum coke, uncalcined.
- 173.1065 Rubber curing compound, solid.
- 173.1070 Sawdust or wood shavings.
- 173.1080 Sulfur.
- 173.1090 Asbestos.

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Subpart N—Other Regulated Material; ORM-D

- 173.1200 Consumer Commodity.
- 173.1201 Small arms ammunition.

Subpart O—Other Regulated Material; ORM-E

- 173.1300 Hazardous waste, liquid or solid, n.o.s.; hazardous substance liquid or solid, n.o.s.

APPENDIX A—METHOD OF TESTING CORROSION TO SKIN

APPENDIX B—PROCEDURE FOR TESTING CHEMICAL COMPATIBILITY AND RATE OF PERMEATION IN POLYETHYLENE PACKAGING AND RECEPTACLES

AUTHORITY: 49 U.S.C. 1803, 1804, 1805, 1806, 1807, 1808; 49 CFR Part 1, unless otherwise noted.

EDITORIAL NOTE: Nomenclature changes to Part 173 appear at 43 FR 48643 Oct. 19, 1978 (Amdt. 173-121), at 47 FR 43066, Sept. 30, 1982 (Amdt. 173-158), and at 50 FR 45731, Nov. 1, 1985.

Subpart A—General

§ 173.1 Purpose and scope.

(a) This part includes:

(1) Definitions of hazardous materials for transportation purposes;

(2) Requirements to be observed in preparing hazardous materials for shipment by air, highway, rail, or water, or any combination thereof; and

(3) Inspection, testing, and retesting responsibilities for persons who retest, recondition, maintain, repair and rebuild containers used or intended for use in the transportation of hazardous materials.

(b) A shipment that is not prepared for shipment in accordance with this subchapter may not be offered for transportation by air, highway, rail, or water. It is the duty of each person who offers hazardous materials for transportation to instruct each of his officers, agents, and employees having any responsibility for preparing hazardous materials for shipment as to applicable regulations in this subchapter.

(c) When a person other than the person preparing a hazardous material for shipment performs a function required by this part, that person shall perform the function in accordance with this part.

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(49 U.S.C. 1803, 1804, 1808, and 1809; 49 CFR 1.53, App. A to Part 1)

[Amdt. 173-94, 41 FR 16062, Apr. 15, 1976, as amended by Amdt. 173-100, 41 FR 40476, Sept. 20, 1976; Amdt. 173-161, 48 FR 2655, Jan. 20, 1983]

§ 173.2 Classification of a material having more than one hazard as defined in this part.

(a) *Classification of material having more than one hazard as defined in this part.* Except as provided in paragraph (b) of this section, a hazardous material, having more than one hazard as defined in this part, must be classed according to the following order of hazards:

(1) Radioactive material (except a limited quantity).

(2) Poison A.

(3) Flammable gas.

(4) Non-flammable gas.

(5) Flammable liquid.

(6) Oxidizer.

(7) Flammable solid.

(8) Corrosive material (liquid).

(9) Poison B.

(10) Corrosive material (solid).

(11) Irritating materials.

(12) Combustible liquid (in containers having capacities exceeding 110 gallons).

(13) ORM-B.

(14) ORM-A.

(15) Combustible liquid (in containers having capacities of 110 gallons or less.)

(16) ORM-E.

(b) *Exceptions.* Paragraph (a) of this section does not apply to—(1) A material specifically identified in § 172.101 of this subchapter;

(2) An explosive required to be classed and approved under § 173.86, or a blasting agent required to be classed and approved under § 173.114a.

(3) An etiologic agent identified in § 173.386 as those materials listed in 42 CFR 72.3; or

(4) An organic peroxide. (See § 172.101 and § 173.151a of this subchapter.)

(5) A limited quantity radioactive material that also meets the definition of another hazard class (see § 173.421-2).

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 173-94, 41 FR 16062, Apr. 15, 1976, as amended by Amdt. 173-94A, 41 FR 40680, Sept. 20, 1976; Amdt. 173-124, 44 FR 31182, May 31, 1979; Amdt. 173-137, 45 FR 34702, May 22, 1980; Amdt. 173-167, 48 FR 30136, June 30, 1983; Amdt. 173-192, 50 FR 41522, Oct. 11, 1985]

§ 173.3 Packaging and exceptions.

(a) The packaging of hazardous materials for transportation by air, highway, rail, or water must be as specified in this part. Methods of manufacture, packing, and storage of hazardous materials, that affect safety in transportation, must be open to inspection by a duly authorized representative of the initial carrier or a representative of the Department. Methods of manufacture and related functions necessary for completion of a DOT specification packaging must be open to inspection by a representative of the Department.

(b) The regulations setting forth packaging requirements for a specific material apply to all modes of transportation unless otherwise stated, or unless exceptions from packaging requirements are authorized. For example, the restriction in § 173.249(b) applicable to cargoaircraft only applies only to quantities in excess of those allowable under § 173.244. Quantities covered under § 173.244 may also be shipped by cargoaircraft only.

(c) Packages of hazardous materials that are damaged or found leaking and hazardous materials that have been spilled or leaked may be placed in a metal removable head salvage drum that is compatible with the lading and shipped for repackaging or disposal under the following conditions.

(1) The drum utilized may be either a DOT specification or a non-DOT specification drum as long as the drum has equal or greater structural integrity than a package that is authorized for the respective material in this subchapter. Maximum capacity shall not exceed 110 gallons.

(2) Each drum must be provided with adequate closure and, when necessary, provided with sufficient cushioning and absorption material to prevent excessive movement of the damaged package and to absorb all free liquid. All cushioning and absorbent

material used in the drum must be compatible with the hazardous material.

(3) Each drum must be marked with the proper shipping name of the material inside the defective packaging and the name and address of the consignee. In addition, the drum must be marked "Salvage Drum".

(4) Each drum must be labeled as prescribed for the respective material.

(5) The shipper shall prepare shipping papers in accordance with Subpart C of Part 172 of this subchapter.

(6) The overpack requirements of § 173.25, and the reuse provisions of §§ 173.28(h) and 173.28(m) do not apply to drums used in accordance with this paragraph.

[Amdt. 173-94, 41 FR 16062, Apr. 15, 1976, as amended by Amdt. 173-94A, 41 FR 40680, Sept. 20, 1976; Amdt. 173-116, 43 FR 17944, Apr. 27, 1978; Amdt. 173-133, 45 FR 5738, Jan. 24, 1980; Amdt. 173-16, 48 FR 50461, Nov. 1, 1983]

§ 173.3a Packaging; special requirements for certain poisonous materials.

(a) Notwithstanding the packaging requirements and authorizations referred to in paragraph (b)(1) of this section (including exemptions referring thereto), no person may offer for transportation a material addressed by those sections that also meets the criteria of paragraph (b)(2) of this section except in a packaging:

(1) Specified in Subpart H of this part for any Poison A material if the packaging is made of materials that are chemically compatible with the hazardous materials;

(2) The basic containment unit of which has a rated capacity of one liter or less and that is otherwise offered for transportation in conformance with this Chapter; or

(3) Approved by the Associate Director for HMR based on a determination that the packaging provides a level of safety equivalent to a packaging authorized in this Chapter for Poison A materials, or to packagings authorized for a hazardous material having similar hazards addressed by a specific packaging regulation of this part.

(b) This section applies to any liquid material other than a liquefied compressed gas:

(1) Addressed by the Table in § 172.101 (Column 5b) of this subchapter to a packaging requirement prescribed in §§ 173.119, 173.125, 173.134, 173.154, 173.221, 173.245, 173.249, 173.346, or 173.352, or which is addressed by an exemption, issued under Subpart B of Part 107 of this chapter, that refers to one or more of those sections for the purpose of packaging authorization; and

(2) Having a saturated vapor concentration at 20°C(68°F) equal to or greater than ten times its LC₅₀ (vapor) value if the LC₅₀ value is 1000 parts per million (ppm) or less.

(c) For the purposes of this section:

(1) LC₅₀ means the concentration of vapor that, when administered by continuous inhalation of both male and female young albino rats for one hour, is most likely to cause death within 14 days to one half of the animals tested. The result is expressed in milliliters per cubic meter of air (ppm). Wherever practicable, the test should be conducted in accordance with the procedure described in the Organization for Economic Cooperation and Development (OECD) for Acute Inhalation Toxicity except that the periods of exposure shall be one hour instead of four hours.

(2) Saturated vapor concentration (SVC) means the concentration of vapor at equilibrium with the liquid phase at 20°C(68°F) and standard atmospheric pressure expressed in milliliters per cubic meter (expressed in ppm). This concentration may be calculated from the vapor pressure (VP) of the liquid at 20°C(68°F). The general formula is the vapor pressure divided by the standard atmospheric pressure and multiplied by a million. If the vapor pressure is expressed in millimeters (mm) of mercury the calculation would be

$$\frac{VP(\text{in mm Hg}) \times 10^6 = SVC (\text{in ppm})}{760}$$

(3) If LC₅₀ data are available based on other than a one hour exposure, a factor may be used to determine an acceptable one hour value for the purposes of this section. If the only value available is for a 4 hour exposure, that value is multiplied by 2. This method of estimating a LC₅₀ value may not be

used when a material causes death by direct pulmonary effect, i.e., by destruction of lung tissue as opposed to systemic poisoning. For these corrosive poisons, the exposure period must be one hour.

(4) LC₅₀ data published in scientific and technical handbooks, journals and texts may be used in place of new tests using animals to determine compliance with this section. Where different values for the LC₅₀ of a material are found, the most credible value must be used. The Registry of Toxic Effects of Chemical Substances (RTECS) published by NIOSH is a recommended source of these data.

(5) *Limit test.* As an alternative to determine a LC₅₀ value, the following procedure may be used to determine whether a material is subject to this section: The saturated vapor concentration at 20°C(68°F) is determined as in paragraph (c)(2) of this section. This then is divided by 10 and the resulting concentration used to test 10 animals in accordance with the OECD procedure noted in paragraph (c)(1) of this section, with a one hour exposure period. If 5 or more animals die during the 14 day observation period, the material is subject to this section. For example: If a liquid has a saturated vapor concentration of 500 ppm at 20°C, the concentration used in the test outlined in this paragraph would be 50 ppm.

(d) The requirements of this section, and other requirements of this subchapter referring to this section for application, are effective as follows:

(1) Transportation in packagings having capacities greater than 110 gallons after April 30, 1986.

(2) Transportation in packaging having capacities of 110 gallons or less after September 30, 1986.

(3) Until January 1, 1988, LC₅₀ or limit test data based on a 48 hour observation period may be used in place of a 14 day observation period.

[Amdt. 173-190, 50 FR 41096, Oct. 8, 1985; 51 FR 3788, Jan. 30, 1986]

§ 173.4 Exceptions for small quantities.

(a) Small quantities of Flammable liquids, Flammable solids, Oxidizers, Organic peroxides, Corrosive materi-

als, Poison B, and ORM A, B, C, and Radioactive materials that also meet the definition of one or more of these hazard classes are not subject to any other requirements of this subchapter if:

(1) The maximum quantity of material per inner receptacle is limited to:

(i) Thirty (30) milliliters for authorized liquids, other than poisons;

(ii) Thirty (30) grams for authorized solids, other than poisons;

(iii) One (1) gram for authorized materials classed as Poison B or subject to the "Poison-Inhalation Hazard" shipping paper description requirements of §172.203(k)(4); and

(iv) An activity level not exceeding that specified in §§ 173.421, 173.422, or 173.424, as appropriate, for a package containing a radioactive material;

(2) With the exception of temperature sensing devices, each inner receptacle:

(1) Is not liquid-full at 130°F, and

(ii) Is constructed of plastic having a minimum thickness of no less than 0.008-inch (0.2 millimeters), or earthenware, glass, or metal;

(3) Each inner receptacle with a removable closure has its closure held securely in place with wire, tape, or another positive means;

(4) Unless equivalent cushioning and absorbent material surrounds the inside packaging, each inner receptacle is securely packed in an inside packaging with cushioning and absorbent material that:

(i) Will not react chemically with the material, and

(ii) Is capable of absorbing the entire content (if a liquid) of the receptacle;

(5) The inside packaging is securely packed in a strong outside packaging;

(6) The completed package, as demonstrated by prototype testing, is capable of sustaining:

(1) Each of the following free drops made from a height of 6-feet direct onto a solid unyielding surface without breakage or leakage from any inner receptacle and without a substantial reduction in the effectiveness of the package:

(A) One drop flat on bottom;

(B) One drop flat on top;

(C) One drop flat on the long side;

(D) One drop flat on the short side; and

(E) One drop on a corner at the junction of three intersecting edges; and

(ii) A compressive load in pounds determined by multiplying by two the maximum horizontal cross section of the package (in square inches) in the position in which it would normally be transported without a substantial reduction in effectiveness; the load shall be applied continuously during a period of 24 hours, uniformly against the top and bottom of the package which is in the position in which it is intended to be normally transported.

NOTE: Each of the above tests may be performed on a different, but identical, package i.e., all tests need not be performed on the same package.

(7) Placement of the material, or packing it with different materials, in the package does not result in a violation of § 173.21;

(8) The gross weight of the completed package does not exceed 85 pounds;

(9) The shipper certifies conformance with this section by marking the outside of the package with the statement: "This package conforms to conditions and limitations specified in 49 CFR 173.4";

(10) The package is not opened or otherwise altered until it is no longer in commerce; and

(11) The package, unless approved by the Director, OHMT, does not contain a material assigned any of the following identification numbers associated with the hazardous materials description in § 172.101 or § 172.102 of this subchapter:

1092	1831
1131	1873
1259	2031
1380	2032
1397	2495
1419	2626
1422	2813
1432	2845
1433	2924
1491	2925
1504	9191
1749	9193
1798	

(b) A package containing a radioactive material also must conform with the requirements of § 173.421(a)

through (e) or § 173.422(a) through (f). After May 2, 1989, a package containing a radioactive material may not be offered for transportation aboard a passenger-carrying aircraft unless that material is intended for use in, or incident to, research, medical diagnosis or treatment.

[Amdt. 173-167, 48 FR 30136, June 30, 1983; 49 FR 19026, May 4, 1984, as amended by Amdt. 173-187, 50 FR 18667, May 2, 1985; Amdt. 173-190, 50 FR 41097, Oct. 8, 1985; Amdt. 173-202, 52 FR 15949, May 1, 1987]

§ 173.5 Agricultural operations.

(a) Formulated agricultural chemicals which are offered for transportation in less-than-case-lot quantities, or when repackaged, are not subject to Subpart D of Part 172 of this subchapter and the outside specification packaging requirements of Part 173 of this subchapter if all of the following conditions are met:

(1) Inside packagings are enclosed in strong outside packagings. Inside liquid packagings are cushioned, if necessary, to prevent breakage and leakage;

(2) Each inside packaging does not exceed 1-gallon capacity for liquids nor 25 pounds for dry materials;

(3) Gross weight of less-than-case or repackaged lots is not over 100 pounds in each vehicle;

(4) Transportation is authorized only by private motor vehicle between a final distribution point and the ultimate point of application, if that distance does not exceed one hundred miles.

(b) Formulated liquid agricultural chemicals in specification packagings of 55 gallons capacity, or less, with closures manifolded to a closed mixing system and equipped with positive dry disconnect devices may be transported by a private motor carrier between a final distribution point and an ultimate point of application or loading aboard an aircraft for aerial application.

(c) See § 173.315(m) pertaining to nurse tanks.

[Amdt. 173-166, 48 FR 28099, June 20, 1983]

§ 173.5a Oilfield service vehicles.

Notwithstanding § 173.29 of this subchapter, a cargo tank mounted on a

transport vehicle used in oilfield servicing operations is not subject to the specification requirements of this subchapter if—

(a) The cargo tank and equipment contains only residual amounts (i.e., it is emptied so far as practicable) of a flammable liquid alone or in combination with water,

(b) No flame producing device is operated during transportation, and

(c) The proper shipping name is preceded by "Residual" on the shipping paper for each movement on a public highway.

[Amdt. 173-196, 51 FR 5971, Feb. 18, 1986]

§ 173.6 Shipments by air.

(a) *General shipping requirements.* When the regulations indicate a hazardous material is forbidden aboard cargo-aircraft only, the material is also forbidden aboard passenger-carrying aircraft.

(b) *General packaging requirements.* (1) In addition to the requirements of this part and Parts 175 and 178 of this subchapter, for air shipments each packaging must be designed and constructed to prevent leakage that may be caused by changes in altitude and temperature during air transportation.

(2) Inner containers that are breakable (such as earthenware, glass, or brittle plastic), must be packaged to prevent breakage and leakage under conditions normally incident to transportation. These completed packagings must be capable of withstanding a 4-foot drop on solid concrete in the position most likely to cause damage. Cushioning and absorbent materials must not be capable of reacting dangerously with the contents. Where any plastic packaging is specified in this part, a plastic bag or pouch is not permitted unless specifically authorized.

(3) For any packaging with a capacity of 110 gallons or less containing liquids, sufficient outage (ullage) must be provided to prevent liquid contents from completely filling the packaging at 130° F. The primary packaging (which may include composite packaging), for which retention of the liquid is the basic function, must be capable of withstanding, without leakage, an internal absolute pressure of no less

than 26 lbs./sq. inch or no less than the sum of the absolute vapor pressure of the contents at 130° F. (55° C.) and the atmospheric pressure at sea level, whichever is greater.

(4) Stoppers, corks, or other such friction-type closures must be held securely, tightly, and effectively in place with wire, tape, or other positive means. Each screw-type closure on any inside plastic packaging must be secured to prevent the closure from loosening due to vibration or substantial changes in temperature.

(5) Bags permitted by regulations as outside packaging for transportation aboard aircraft must be water resistant.

(6) For any cylinder containing hazardous materials incorporating valves, sufficient protection must be provided to prevent operation and damage to such valves during transportation, by one of the following methods:

(i) By equipping each cylinder with securely attached valve caps or protective headrings, or

(ii) By boxing or crating of the cylinder.

(7) Tank cars and cargo tanks containing hazardous materials may not be transported aboard aircraft.

(c) *Special labeling requirements.* See "Magnetized materials" in §§ 172.101 and 173.1020 of this subchapter and see § 172.101 for cargo-only aircraft labeling requirements.

(d) No person may offer for transportation aboard aircraft an overpack containing hazardous materials which require segregation under the provisions of § 175.78 of this subchapter.

[Amdt. 173-94, 41 FR 16063, Apr. 15, 1976, as amended by Amdt. 173-94B, 41 FR 57068, Dec. 30, 1976; Amdt. 173-16, 48 FR 50461, Nov. 1, 1983; Amdt. 173-170, 48 FR 53712, Nov. 29, 1983; Amdt. 173-196, 51 FR 5974, Feb. 13, 1986]

§ 173.7 U.S. Government material.

(a) Hazardous materials offered for transportation by, for, or to the Department of Defense (DOD) of the U.S. Government, including commercial shipments pursuant to a DOD contract, must be packaged in accordance with the regulations in this subchapter or in packagings of equal or greater strength and efficiency as cer-

tified by DOD pursuant to the "Policies and Procedures for Hazardous Materials Packaging Certification, AFLCR 800-29/AFSCR 800-29/DARCOM-R 700-103/NAVMATINST 4030.11/DLAR 4145.37." Hazardous materials offered for transportation by DOD under this provision may be reshipped by any shipper to any consignee provided the original packaging has not been damaged or altered in any manner.

(1) Hazardous materials sold by the DOD in packagings that are not marked in accordance with the requirements of this subchapter may be shipped from DOD installations if the DOD certifies in writing that the packagings are equal to or greater in strength and efficiency than the packaging prescribed in this subchapter. The shipper shall obtain such a certification in duplicate for each shipment. He shall give one copy to the originating carrier and retain the other for no less than 1 year.

(b) Shipments of radioactive materials, made by or under the direction or supervision of the U.S. Department of Energy or the Department of Defense, and which are escorted by personnel specifically designated by or under the authority of those agencies, for the purpose of national security, are not subject to the regulations in Parts 170-189 of this subchapter.

(c) Shipments of explosive samples, not exceeding one gram net weight, offered by and consigned to the Bureau of Alcohol, Tobacco and Firearms (ATF) of the Department of the Treasury are not otherwise subject to the regulations in Parts 110-189 of this subchapter when placed in a specifically designed multi-unit assembly packed in a strong outside packaging. The packaging must be of a type accepted by ATF as capable of precluding a propagation of any explosion outside the packaging. The second component from the outside of the packaging must be marked or tagged to indicate the presence of an explosive.

(d) Notwithstanding the requirements of §§ 173.416 and 173.417 of this subchapter, packagings made by or under the direction of the U.S. Department of Energy may be used for

the transportation of radioactive materials when evaluated, approved, and certified by the Department of Energy against packaging standards equivalent to those specified in 10 CFR Part 71. Packages shipped in accordance with this paragraph shall be marked and otherwise prepared for shipment in a manner equivalent to that required by this subchapter for packagings approved by the Nuclear Regulatory Commission.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18671, Dec. 29, 1964, as amended by Order 74, 32 FR 5274, Mar. 29, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.7, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.9 Cars, truck bodies or trailers containing lading which has been fumigated or treated with flammable liquids, flammable gases, poisonous liquids or solids, or poisonous gases.

(a) Delivery of rail cars, freight container, or trailers containing lading, fumigated or treated with flammable liquid or flammable gas for transportation by rail carrier is prohibited until 48 hours have elapsed after such fumigation or treatment, or until cars, truck bodies or trailers have been ventilated so as to remove danger of fire or explosion due to the presence of flammable vapors.

(b) Rail cars, truck bodies or trailers containing lading which has been fumigated or treated with poisonous liquid, solid, or gas, such as carbolic acid, liquid or solid, chlorpicrin, hydrocyanic acid, methyl bromide, etc., must be placarded on each door or near thereto with placard as described below (for cleaning cars see § 174.615 of this subchapter):

(Reduced size)

(Red lettering on white cardboard)

10 inches DANGER The lading of this car has been FUMIGATED or TREATED with <hr style="width: 80%; margin: 10px auto;"/> (Name of poisonous liquid, solid, or gas) BEFORE UNLOADING, open both doors and DO NOT ENTER until car is free of gas. REMOVE ALL POISON- OUS MATERIAL before release of empty car.	8 inches
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[29 FR 18773, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967; Amdt. 173-94, 41 FR 16087, Apr. 15, 1976, and amended by Amdt. 173-94A, 41 FR 40684, Sept. 20, 1976. Redesignated by Amdt. 173-162, 48 FR 10226, Mar. 10, 1983]

§ 173.10 Tank car shipments.

(a) Tank cars containing any flammable gas (including a cryogenic liquid) or flammable liquid, except liquid road asphalt or tar, may not be offered for transportation unless originally consigned or subsequently re-consigned to parties having private-siding (see Note 1 of this section) or to parties using railroad siding facilities which have been equipped for piping the liquid from tank cars to permanent storage tanks of sufficient capacity to receive contents of car.

(b) A tank car containing any compressed gas must not be offered for transportation unless the car is consigned for delivery (see paragraph (c) of this section) and unloading on a private track (see Note 1 of this section) except that where no private track is available, delivery and unloading on carrier tracks is permitted provided the following conditions are complied with:

(1) Any tank car of DOT-106A or 110A type (see §§ 179.300 and 179.301 of this subchapter) may be offered for transportation and the loaded unit tanks may be removed from car frame on carrier tracks, provided the shipper has obtained from the delivering carrier

er and filed with originating carrier, written permission (see Note 2 of this section) for such removal. The consignee must furnish adequately safe mechanical hoist, obtained from the carrier if desirable, by which the tanks shall be lifted from the car and deposited directly upon vehicles furnished by the consignee for immediate removal from carrier property or tanks must be lifted by adequately safe mechanical hoist from car directly to vessels for further transportation.

(c) Any tank car of other than DOT-106A or 110A type (see §§ 179.300 and 179.301 of this subchapter), containing anhydrous ammonia, liquefied hydrocarbon or liquefied petroleum gas, and having interior pipes of liquid and gas discharge valves equipped with check valves, may be consigned for delivery and unloading on carrier tracks, if the lading is piped directly from the car to permanent storage tanks of sufficient capacity to receive the entire contents of the car. Such cars may also be consigned for storage on a private track or on a carrier track when designated by the carrier for such storage.

(d) For cars of the DOT-106A or 110A type (see §§ 179.300 and 179.301 of this subchapter), the tanks must be placed in position and attached to the car structure by the shipper.

(e) Flammable liquids and flammable gases (including a cryogenic liquid) may not be loaded into tank cars on carrier property from tank trucks or drums.

NOTE 1: For this purpose, a private track is a track outside of carrier's right-of-way, yard, and terminals, and of which the carrier does not own either the rails, ties, roadbed or right-of-way; or a track or portion of a track which is devoted to the purpose of its user, either by lease or written agreement; in which case the lease or written agreement will be considered as equivalent to ownership.

NOTE 2: Carriers should give permission for the unloading of these containers on carrier tracks only where no private siding is available within reasonable trucking distance of final destination. The danger involved is the release of compressed gases due to accidental injury to container in handling. The exposure to this danger decreases directly with the isolation of the unloading point.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18773, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and by Amdt. 173-162, 48 FR 10226, Mar. 10, 1983, and amended by Amdt. 173-180, 49 FR 42735, Oct. 24, 1984]

§ 173.11 Shipper's registration statement; flammable cryogenic liquids.

(a) No person may offer a flammable cryogenic liquid for transportation in a portable tank, cargo tank or a tank car unless he has filed a registration statement by certified mail, return receipt requested, with the Director, OHMT, RSPA, in accordance with paragraphs (b), (c) and (d) of this section.

(b) The registration statement must contain the following information:

(1) The shipper's name and principal place of business;

(2) Location where flammable cryogenic liquids are offered for transportation, including transportation by private carriage;

(3) The name and principal place of business of each initial carrier used to transport flammable cryogenic liquids and the name of each flammable cryogenic liquid the carrier is offered for transportation; and

(4) The type of packaging and the serial number or vehicle identification number of each portable tank and cargo tank, and the reporting mark and number of each tank car, owned, leased, or otherwise controlled by the shipper and used to offer a flammable cryogenic liquid for transportation.

(c) The registration statement must be filed:

(1) Initially between January 1 and February 28, 1985 (this initial statement is only required to contain information regarding operations that took place during the 90 days prior to the date of the statement); and

(2) Subsequently, between July 1 and August 31 of each odd numbered year after 1985.

(d) For operations begun between the two-year filing intervals specified in paragraph (c) of this section, the information must be provided on the registration statement filed during the next required filing period.

(Approved by the Office of Management and Budget under control number 2137-0541)

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 173-166, 48 FR 27692, 27713, June 16, 1983; 48 FR 50440, 50441, Nov. 1, 1983; Amdt. 173-201, 52 FR 13038, Apr. 20, 1987]

§ 173.12 Exceptions for shipment of waste material.

(a) *General.* Waste material meeting the hazard class definition of a flammable liquid, flammable solid, oxidizer, corrosive material, Poison B or ORM-A, B, C, and E are excepted from the specification packaging requirements of this subchapter if packaged in combination packagings in accordance with this section and transported for disposal or recovery by private or contract motor carrier by highway only. In addition, a generic proper shipping name from § 172.101 may be used in place of specific chemical names, when two or more waste materials in the same hazard class are packaged in the same outside packaging, provided the waste materials are chemically compatible.

(b) *Outside packaging.* The outside packaging must be a DOT specification metal or fiber drum. It may also be a polyethylene drum capable of withstanding:

(1) The vibration and compression tests specified in § 173.19-7(c)(1) and (2), and

(2) A four foot drop test as specified in § 173.224-2(b).

(c) *Inside packagings.* The inside packagings must be either glass packagings not exceeding 1-gallon rated capacity, or metal or plastic packagings not exceeding a rated capacity of 5 gallons.

(d) *Additional packaging requirements.* The following additional requirements are applicable:

(1) Each outside packaging may only contain one hazard class and the materials must be chemically compatible;

(2) Inside packagings of liquid must be surrounded by a compatible absorbent material capable of absorbing the total liquid contents; and

(3) Gross weight may not exceed 450 pounds or the rated capacity of the drum; whichever is less.

(e) *Prohibited materials.* The following materials are not authorized under the provisions of this section: acrolein; bromine pentafluoride; bromine tri-

fluoride; chloric acid, chlorine trifluoride, nitric acid, fuming; pyroforic liquids; and sulfuric acid, fuming.

[Amdt. 173-187, 50 FR 11702, Mar. 25, 1985, as amended by Amdt. 173-196, 51 FR 5971, Feb. 18, 1986; Amdt. 173-201, 52 FR 13038, Apr. 20, 1987]

Subpart B—Preparation of Hazardous Materials for Transportation

§ 173.21 Forbidden materials and packages.

Unless otherwise provided in this subchapter, the offering for transportation of the following is forbidden:

(a) A hazardous material in the same packaging, freight container, or overpack with another hazardous material, the mixing of which would be liable to cause a dangerous evolution of heat or gas, or produce corrosive materials, except as provided in §§ 173.152(a) and 173.242(a) and (b).

(b) A package containing a material which is liable to decompose or polymerize at a temperature of 130°F. (54.4°C.) or less with an evolution of a dangerous quantity of heat or gas unless stabilized or inhibited in a manner that will preclude such evolution.

(1) The determination of whether a material is forbidden under this paragraph may be made by one of the following methods: Standard Method of Test for Constant Temperature Stability of Chemical Materials (ASTM E-487-74) or the Self Accelerating Decomposition Temperature (SADT) Test published by the Organic Peroxide Producers' Safety Division (OPPSD).

(2) Refrigeration may be used as a means of stabilization only when approved by the Director, Office of Hazardous Materials Transportation, RSPA. (For status of approvals issued by the Bureau of Explosives, see § 171.19 of this subchapter.)

(3) For organic peroxides, the decomposition temperature of 130°F. (54.4°C) does not apply if the controlled temperature requirements specified in Chapter 11 of the UN Recommendations are applied to determine when refrigeration is required.

(c) Packages which evolve a dangerous quantity of flammable gas or vapor released from a material which would not otherwise be subject to this subchapter, i.e., the release of flammable vapor or gas in such quantities that a flammable mixture with air would be created within a transport vehicle.

(d) Packages containing materials (other than those classed as explosives) which will detonate in a fire. For the purposes of this paragraph, a detonation is a type of explosion in which a shock wave travels through the material at a speed greater than the speed of sound in the undecomposed material. When tests are required to evaluate a package under the provisions of this paragraph, the testing must be done or approved by one of the agencies specified in § 173.86.

(e) Any package containing a cigarette lighter or other similar device with fuel and equipped with an ignition element, unless the design of the device and its packaging insofar as they affect safety in transportation have been examined by the Bureau of Explosives (B of E) and approved by the Director, Office of Hazardous Materials Transportation, RSPA. (An approval which was issued by the B of E remains valid to the same extent as if it had been issued by RSPA.) For lighters containing gases, also see § 173.308.

(f) For carriage by aircraft, any material which when packaged has a measurable magnetic field of more than 0.00525 gauss when measured from any surface of the package at a distance of 15 feet.

[Amdt. 173-137, 45 FR 34702, May 22, 1980, as amended by Amdt. 173-137, 45 FR 74669, Nov. 10, 1980; Amdt. 173-158, 47 FR 43065, Sept. 30, 1982; Amdt. 173-195, 50 FR 48420, Nov. 25, 1985]

§ 173.22 Shipper's responsibility.

(a) Except as otherwise provided in this part, a person may offer a hazardous material for transportation in a packaging or container required by this part only in accordance with the following:

(1) The person shall class and describe the hazardous material in ac-

cordance with Parts 172 and 173 of this subchapter, and

(2) The person shall determine that the packaging or container has been manufactured, assembled, and marked in accordance with:

(i) Section 173.7(a) and Parts 173, 178, or 179 of this subchapter;

(ii) A specification of the Department in effect at the date of manufacture of the packaging or container;

(iii) An approval issued under this subchapter; or

(iv) An exemption issued under Subchapter B of this chapter.

(3) In making the determination under paragraph (a)(2) of this section, the person may accept:

(i) The manufacturer's certification, specification, approval, or exemption marking (see §§ 178.0-2 and 179.1 of this subchapter); or

(ii) With respect to cargo tanks provided by a carrier, the manufacturer's identification plate or a written certification of specification or exemption provided by the carrier.

(b) When a person performs a function covered by or having an effect on a specification prescribed in Part 178 or 179 of this subchapter, an approval issued under this subchapter, or an exemption issued under Subchapter B of this chapter, that person must perform the function in accordance with that specification, approval, or exemption, as appropriate.

(c) Prior to each shipment of fissile radioactive materials, and Type B or highway route controlled quantity packages of radioactive materials (see § 173.403), the shipper shall notify the consignee of the dates of shipment and expected arrival. The shipper shall also notify each consignee of any special loading/unloading instructions prior to his first shipment. For any shipment of irradiated reactor fuel, the shipper shall provide physical protection in compliance with a plan established under:

(1) Requirements prescribed by the U.S. Nuclear Regulatory Commission, or

(2) Equivalent requirements approved by the Director, Office of Hazardous Materials Transportation, RSPA.

(d) Within 90 days following acceptance by a carrier of any package containing a highway route controlled quantity of radioactive material (see § 173.403(l)) for transportation by public highway, the shipper shall file the following information with the Director, Office of Hazardous Materials Transportation, RSPA (this paragraph does not apply to packages shipped in compliance with physical security requirements of the U.S. Nuclear Regulatory Commission in 10 CFR Part 73):

(1) The route plan required under § 177.825(c) of this subchapter (any supplement to the route plan prepared in accordance with § 177.825(c) of this subchapter shall be filed within 90 days of receipt from the carrier);

(2) A statement identifying the name and address of the shipper, carrier and consignee; and

(3) A copy of the shipping paper or the description of the radioactive material required by §§ 172.202 and 172.203 of this subchapter.

(49 U.S.C. 1803, 1804, 1808, and 1809; 49 CFR 1.53, App. A to Part 1)

[Amdt. 173-100, 42 FR 2689, Jan. 13, 1977, and Amdt. 173-143, 46 FR 5316, Jan. 19, 1981, as amended by Amdt. 173-161, 48 FR 2655, Jan. 20, 1983; Amdt. 173-162, 48 FR 10226, Mar. 10, 1983; 48 FR 13431, Mar. 31, 1983; Amdt. 173-161, 48 FR 17094, Apr. 21, 1983]

§ 173.22a Use of packagings authorized under exemptions.

(a) Except as provided in paragraph (b) of this section, no person may offer a hazardous material for transportation in a packaging the use of which is dependent upon an exemption issued under Subpart B of Part 107 of this title, unless that person is the holder of or a party to the exemption.

(b) If an exemption authorizes the use of a packaging for the shipment or transportation of a hazardous material by any person or class of persons other than or in addition to the holder of the exemption, that person or a member of that class of persons may use the packaging for the purposes authorized in the exemption subject to the terms specified therein. However, no person may use a packaging under the authority of this paragraph unless he maintains a copy of the exemption

at each facility where the packaging is being used in connection with the shipment or transportation of the hazardous material concerned. Copies of exemptions may be obtained from the Office of Hazardous Materials Transportation, U.S. Department of Transportation, Washington, D.C. 20590, Attention: Docket Section.

[Amdt. 173-93, 41 FR 3478, Jan. 23, 1976, as amended by Amdt. 173-121, 43 FR 48643, Oct. 19, 1978]

§ 173.23 Previously authorized packaging.

(a) Where the regulations specify Specification 34 polyethylene drums, a polyethylene drum manufactured and marked in accordance with a DOT exemption may be used if the polyethylene drum conforms to Specification 34 except for the specification marking required by § 178.19-6(a)(2) of this subchapter and the drum is legibly marked "DOT-34" in characters at least one half inch in height in a location near the exemption marking.

(b) [Reserved]

(c) After July 2, 1982, a seamless aluminum cylinder manufactured in conformance with and for use under DOT exemption E 6498, E 7042, E 8107, E 8364, or E 8422, may be continued in use if marked before or at the time of the next retest with the specification identification "3AL" immediately above the exemption number, or the DOT mark (i.e., DOT 3AL 1800) is added in proximity to the exemption marking.

(d) Cylinders (spheres) manufactured and marked DOT-E 6616 prior to January 1, 1983, may be continued in use if marked before or at the time of the next retest with the specification identification "4BA" near the exemption marking.

(e) After October 1, 1984, cylinders manufactured for use under exemptions DOT E-6668 or E-8404 may be continued in use, and must be marked "DOT-4LXXXYY" (XXX to be replaced by the service pressure, YY to be replaced by the letters "AL", if applicable) in compliance with Specification 4L (§ 178.57 of this subchapter) on or before January 1, 1986. The "DOT-4LXXXYY" must appear in

proximity to other required specification markings.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 173-3, 33 FR 14921, Oct. 4, 1968, as amended by Amdt. 173-90, 39 FR 45240, Dec. 31, 1974; Amdt. 173-94; 41 FR 16063, Apr. 15, 1976; Amdt. 173-152, 47 FR 13817, Apr. 1, 1982; 47 FR 26633, June 21, 1982; Amdt. 173-16, 48 FR 50480, Nov. 1, 1983; Amdt. 173-176, 49 FR 24689, June 14, 1984; Amdt. 173-180, 49 FR 42735, Oct. 24, 1984]

§ 173.24 Standard requirements for all packages.

(a) Each package used for shipping hazardous materials under this subchapter shall be so designed and constructed, and its contents so limited, that under conditions normally incident to transportation:

(1) There will be no significant release of the hazardous materials to the environment;

(2) The effectiveness of the packaging will not be substantially reduced; and

(3) There will be no mixture of gases or vapors in the package which could, through any credible spontaneous increase of heat or pressure, or through an explosion, significantly reduce the effectiveness of the packaging.

(b) Materials for which detailed specifications for packaging are not set forth in this part must be securely packaged in strong, tight packages meeting the requirements of this section.

(c) Packaging used for the shipment of hazardous materials under this subchapter shall, unless otherwise specified or exempted therein, meet all of the following design and construction criteria:

(1) Each specification container must be marked as follows:

(i) In an unobstructed area with letters and numerals identifying the container specification (e.g., DOT-1A, DOT-17E-304HT, DOT-23G40). See § 178.0-2 of this subchapter.

(ii) The name and address or symbol of person making the mark specified in paragraph (c)(1)(i) of this section. Symbol letters, if used, must be registered with the Director, OHMT. Duplicate symbols are not authorized.

(iii) The markings must be stamped, embossed, burned, printed, or other-

wise marked on the packaging to provide adequate accessibility, permanency, and contrast so as to be readily apparent and understood.

(iv) Unless otherwise specified, letters and numerals must be at least ½ inch high.

(v) Packaging which does not comply with the applicable specification listed in Parts 178 and 179 of this subchapter must not be marked to indicate such compliance (see § 178.0-2 and § 179.1 of this subchapter).

(2) Steel used shall be low-carbon, commercial quality steel. Stainless, open hearth, electric, basic oxygen, or other similar quality steels are acceptable. Steel sheets of specified gauges shall comply with the following:

Gauge No.	Nominal thickness (inches)	Minimum thickness (inches)
12	0.1046	0.0946
13	0.0897	0.0817
14	0.0747	0.0677
15	0.0673	0.0603
16	0.0598	0.0533
17	0.0536	0.0478
18	0.0478	0.0428
19	0.0418	0.0378
20	0.0359	0.0324
22	0.0299	0.0269
23	0.0269	0.0239
24	0.0239	0.0209
26	0.0179	0.0159
28	0.0149	0.0129
30	0.0120	0.0110

(3) Lumber used shall be well seasoned, commercially dry, and free from decay, loose knots, knots that would interfere with nailing, and other defects that would materially lessen the strength.

(4) Welding and brazing shall be performed in a workmanlike manner using suitable and appropriate techniques, materials, and equipment.

(5) Packaging materials and contents shall be such that there will be no significant chemical or galvanic reaction among any of the materials in the package.

(6) Closures shall be adequate to prevent inadvertent leakage of the contents under normal conditions incident to transportation. Gasketed closures shall be fitted with gaskets of efficient material which will not be dete-

riorated by the contents of the container.

(7) Nails, staples, and other metallic devices shall not protrude into the interior of the outer packaging in such a manner as to be likely to cause failures.

(8) The nature and thickness of the packaging shall be such that friction during transport does not generate any heating likely to decrease the chemical stability of the contents.

(d) *Polyethylene packagings and receptacles.* (1) Polyethylene used in packagings and receptacles must be of a type compatible with the lading and may not be permeable to an extent that a hazardous condition occurs during transportation, handling or refilling.

(2) Each polyethylene packaging or receptacle which is used for liquid hazardous materials must be capable of withstanding without failure the procedure specified in Appendix B of this part ("Procedure for Testing Chemical Compatibility and Rate of Permeation in Polyethylene Packagings and Receptacles") and the maximum rate of permeation of hazardous lading through or into the polyethylene packaging or receptacles may not exceed the following rates:

(i) 0.5 percent for materials meeting the definition of a poison according to this subchapter and 2.0 percent for other hazardous materials, when subjected to temperatures no lower than 18°C. (64°F.) for 180 days in accordance with Test Method 1;

(ii) 0.5 percent for materials meeting the definition of a poison according to this subchapter and 2.0 percent for other hazardous materials, when subjected to a temperature no lower than 50°C. (122°F.) for 28 days in accordance with Test Method 2; or

(iii) 0.5 percent for materials meeting the definition of a poison according to this subchapter and 2.0 percent for other hazardous materials, when subjected to a temperature no lower than 60°C. (140°F.) for 14 days in accordance with Test Method 3.

(3) Alternative procedures or rates of permeation are permitted if they yield a level of safety equivalent to or greater than that provided by para-

graph (d)(2) of this section and are approved by the Director, OHMT.

(4) Each polyethylene packaging used as an outside packaging for materials meeting the definition of a poison according to this subchapter shall be permanently marked, by embossment or other durable means, with the word "POISON" in letters of at least ¼ inch in height. Additional text or symbols may be included in the marking. The marking shall be located within six inches of the packaging's closure. The requirements of this subparagraph do not apply prior to September 1, 1985.

(e) For specification containers, compliance with the applicable specifications in Parts 178 and 179 of this subchapter shall be required in all details, except as otherwise provided in this subchapter.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 173-3, 33 FR 14921, Oct. 4, 1968]

EDITORIAL NOTES

1. For Federal Register citations affecting § 173.24, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

2. The information collection requirements contained in § 173.24(d)(3) are pending approval by the Office of Management and Budget. Notice will be published in the Federal Register announcing the approval number and the effective date.

§ 173.25 Authorized packages and overpacks.

(a) Except as provided in paragraph (b) of this section, authorized packages containing hazardous materials may be offered for transportation when tightly packed in a strong overpack, if all of the following conditions are met:

(1) The package meets the requirements of §§ 173.21 and 173.24 of this subchapter.

(2) The overpack is marked with the proper shipping name and identification number, and labeled as required by this subchapter for each hazardous material contained therein unless markings and labels representative of each hazardous material in the overpack are visible.

(3) Each package subject to the orientation marking requirements of

§ 173.312 of this subchapter is packed in the overpack with its filling holes up and the overpack is marked "THIS END UP" or "THIS SIDE UP" (as appropriate) to indicate the upward position of closures.

(4) The overpack is marked with a statement indicating that the inside (inner) packages comply with prescribed specifications when specification packagings are required, unless specification markings on the inside packages are visible.

(b) In addition to the requirements of paragraph (a) of this section, authorized packages containing corrosive liquids must meet the following conditions:

(1) Packages containing nitric acid (over 40% concentration), perchloric acid, hydrogen peroxide solution (over 52% strength by weight), nitrohydrochloric or nitrohydrochloric acid diluted are not overpacked; and

(2) Other corrosive liquids are not to be overpacked with any other hazardous material, except as follows:

(i) As provided in §§ 173.242, 173.257, 173.258, 173.259, 173.260, 173.261, and 173.286 of this subchapter; and

(ii) Acid or alkaline battery fluid in packages prescribed by §§ 173.257 and 173.258 of this subchapter may be included in overpacks with storage batteries when packed to prevent movement within the overpack.

(c) Hazardous materials which are required to be labeled Poison, may be transported in the same motor vehicle with material that is marked or known to be foodstuffs, feed or any edible material intended for consumption by humans or animals provided the Poison B material is marked, labeled, and packaged in accordance with this subchapter, conforms to the requirements of paragraph (a) of this section and is overpacked as specified in § 177.841(e) or is in an overpack meeting the following requirements:

(1) The overpack conforms to Specification 5C (§ 178.83 of this subchapter), or

(2) The overpack is a salvage drum as prescribed in § 173.3(c) of this subchapter, and—

(i) Has a maximum rated capacity of 85 gallons;

(ii) Is constructed of steel with a minimum thickness of 16 gauge; and

(iii) It meets the requirements of Specification 17C (§ 178.115 of this subchapter) except for size and marking.

[Amdt. 173-165, 48 FR 28099, June 20, 1983, as amended by Amdt. 173-186, 51 FR 5971, Feb. 18, 1986; Amdt. 173-201, 52 FR 13039, Apr. 20, 1987]

§ 173.26 Quantity limitations and metric measurements.

(a) When quantity limitations are specified in this subchapter only by U.S. liquid measure for 110 gallons or less, or only by avoirdupois weight for 1,000 pounds or less, quantities measured in metric units may be substituted on an equivalent basis and up to and including one liter per quart and 500 grams per pound. When metric measurements are used, specification packagings must be marked to indicate their use and must be tested accordingly. Symbols for metric markings are L for liter, mL for milliliter, kg for kilogram, and g for gram.

(b) When quantity limitations do not appear in the packaging requirements of this subchapter, the permitted gross weight or capacity authorized for a container to be offered for transportation is as shown in the container specification. (See also § 173.27.)

[Amdt. 173-94, 41 FR 16064, Apr. 15, 1976, as amended by Amdt. 173-122, 43 FR 56044, Nov. 30, 1978]

§ 173.27 Aircraft quantity limitations.

(a) The maximum quantity of hazardous material that may be offered for transportation by air in a package that is required for the material by this subchapter may not exceed that quantity prescribed for the material in § 172.101 of this subchapter.

(b) When offered for transportation by air, the combined quantity of any one class of materials may not exceed the lowest maximum quantity prescribed in § 172.101 of this subchapter for any one of the materials in that class contained in the same package that meets the minimum requirements for the material contained therein.

[Amdt. 173-94, 41 FR 16064, Apr. 15, 1976]

§ 173.28 Reuse of packagings (containers).

(a) Containers used more than once (refilled and reshipped after having been previously emptied) must be in such condition, including closure devices and cushioning materials, that they comply in all respects with the prescribed requirements for those containers. Repairs must be made in an efficient manner in accordance with requirements for materials and construction as prescribed in Parts 178 and 179 of this subchapter for new containers, or as otherwise prescribed. Parts that are weak, broken, or otherwise deteriorated must be replaced.

(1) Retest of carboy packages must have been made by or for shippers, or their authorized agents, as required by applicable provisions of the specifications in Part 178 of this subchapter before carboys which are to be offered for transportation are filled.

NOTE 1: Tests not required by shipper who fills and ships or who reships filled carboys for one shipment only carboy packages which have been properly tested by another shipper or a duly authorized agency.

(b) Markings applied as prescribed by the specifications must be maintained in a legible condition.

(c) If, on account of painting or any other reason, the markings as prescribed for any container cannot be kept plain and legible, a metal plate, brazed or soldered, or otherwise securely fastened to the container, with a reproduction of the prescribed markings plainly stamped thereon, will be permitted.

(d) Packagings previously used for any hazardous material must have the old markings (other than markings which are required by this subchapter to be permanent) and labels, if any, thoroughly removed or obliterated before being used for other materials.

(e) Boxes previously used for high explosives containing a liquid explosive ingredient not contained in an inside metal container must not be again used for shipments of any character.

(1) Boxes that have been contaminated by liquid explosive composition must not again be used for shipments of any character.

(f) Kegs previously used for any chlorate must not be again used for shipments of any character.

(g) Metal kegs previously used for black powder not contained in an interior package must not be again used for shipment of any explosive.

NOTE 1: Until further order of the Department, metal kegs, previously used for the shipment of black powder not contained in an interior package, may be used provided the kegs are in good physical condition and are not liable to permit escape of contents during transportation. Empty kegs previously used for shipment of black powder must be entirely free of black powder on the inside and outside before being offered for transportation.

(h) Except as provided in paragraphs (m), (n), and (p) of this section, single-trip containers (marked STC) and nonreusable containers (marked NRC) subject to the specification requirement of Part 178 of this subchapter from which contents have been removed following use for transportation of any material, may not be used thereafter for the transportation of hazardous materials.

(i) Polyethylene packagings previously used for poisonous materials should not be reused for any materials other than poisonous materials or hazardous wastes.

(j) [Reserved]

(k) Containers used for shipments of etching acid liquid, n.o.s. must not be reused for shipment of any commodity.

(l) Cylinders used in anhydrous hydrofluoric acid service must comply with the requirements of § 173.264(b)(1) and must not be used in any other service.

(m) Specifications 17C, 17E, and 17H steel drums (§§ 178.115, 178.116, 178.118 of this subchapter) from which contents have been removed, may be reused as prescribed in this part as packagings for shipment of flammable liquids, flammable solids, organic peroxides, oxidizers, poisons covered by § 173.370, radioactive materials, and corrosive liquids covered by §§ 173.249 and 173.249a, only if the following requirements, in addition to the other requirements of this section, are complied with prior to each reuse:

(1) Each drum must be thoroughly cleaned to remove all residues and foreign matter, inspected for deterioration or defects, and returned to its original shape and contour. All closure devices and parts must be removed (if removable), inspected for defects, and replaced as necessary. Each open head cover gasket must be replaced. Any drum which shows evidence of deterioration (e.g., visible pitting; creases; significant reduction in parent metal thickness from rust, corrosion, or cleaning processes; metal fatigue; or other material defects) or which cannot be returned to its original shape and contour does not qualify for reuse.

(2) The entire surface of each closed-head drum (and after December 31, 1971, each open-head drum, except for its removable head and adjacent chime area) must be tested for leakage by constant internal air pressure. The leakage test must be conducted by submersion under water, by completely covering the surface with soap suds or oil, or by some other method that will be equally sensitive. The air pressure must be maintained for a period of time sufficient to permit a complete inspection for leaks. The minimum air pressure for the test must be as follows:

Specification No.	Capacity	Minimum test pressure p.s.i.
17C.....	All	15
17E.....	Over 12 gallons.....	7
	12 gallons or less.....	5
17H.....	Over 12 gallons.....	7
	12 gallons or less.....	5

If leaking, the drum does not qualify for reuse.

(3) Marking:

(i) All previous test markings, commodity identification markings, and labels must be removed.

(ii) The outside of each drum qualifying for reuse under this section must be marked on the body within 10 inches of the top head with the following information: "Tested" (or "Inspected" as appropriate), the month and year of the test (or inspection, if an open-head drum) and the DOT reg-

istration number of the reconditioner. For example:

TESTED 2/70

DOT R1001

The registration number required for this marking must be obtained from the Office of Hazardous Materials Transportation, Department of Transportation, Washington, D.C. 20590.

(iii) Markings must be in at least 1/4-inch figures and letters on a contrasting background.

(iv) The printed marking of the month and year of test is not required if each is clearly indicated by other means, such as perforations on a decal.

(n) A packaging marked as STC or NRC according to the specification requirements of Part 178 of this subchapter may be reused for the shipment of any corrosive solid, ORM-A, ORM-B, ORM-C, ORM-E or any material not required by this subchapter to be shipped in a DOT specification packaging. Paragraph (m) of this section does not apply to these materials.

(o) Any drum meeting one specification which has been altered to meet another specification must be capable of meeting the new specification in all respects.

(1) Each drum so altered must be inspected, tested, and marked in accordance with paragraph (m) of this section. In addition, the drum must:

(i) Bear the specification markings required by the specification under which it was originally manufactured, and

(ii) Bear both the old and the new specification identification in conjunction with the markings required by paragraph (m) of this section with the specification to which the drum is converted shown last, e.g., "17E/17H". For example:

17E/17H

TESTED 2/70

DOT R1001

(p) A packaging marked NRC or STC according to the specification requirements of Part 178 of this subchapter may be reused for the shipment of hazardous waste to designated

facilities subject to the following conditions:

(1) Except as authorized by this paragraph, the waste must be packaged in accordance with this part and offered for transportation in accordance with the requirements of this subchapter.

(2) Transportation is performed by highway only.

(3) A package is not offered for transportation less than 24 hours after it is finally closed for transportation, and each package is inspected for leakage immediately prior to being offered for transportation.

(4) Each package is loaded by the shipper and unloaded by the consignee, unless the motor carrier is a private or contract carrier.

(5) The packaging may be used only once under this paragraph and may not be used again for shipment of hazardous materials except in accordance with paragraph (m) or (n) of this section.

[29 FR 18671, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.29, see the List of CFR Sections Affected in the Finding Aids section of this volume.

§ 173.29 Empty packagings.

(a) Except as otherwise provided in this section, a packaging having a capacity of 110 gallons or less that previously contained a hazardous material may not be offered for transportation unless offered in the same manner as required when it previously contained a greater quantity of hazardous material.

(1) This paragraph does not apply to:

(i) A packaging that has been cleaned and purged of all residue, or

(ii) A packaging filled with a material that is not subject to this subchapter.

(2) The word "waste" does not have to be displayed as part of the marking required by § 172.300 of this subchapter on a packaging having a capacity of 110 gallons or less that contains only the residue of a hazardous material.

(3) Any packaging having a capacity of 110 gallons or less that contains

only the residue of a hazardous material covered by Table 2 of § 172.504 of this subchapter:

(i) Does not have to be included in determining the applicability of the placarding requirements of that section, and

(ii) Is not subject to the shipping paper requirements of this subchapter when collected and transported by a contract or private carrier for reconditioning or reuse.

(4) Notwithstanding the stowage requirements in Columns 7(a) and (b) of the Table in § 172.101 or of the Optional Table in § 172.102 of this subchapter, for transportation by water, empty drums or empty cylinders not meeting the exception in paragraph (a)(1) of this section may be stowed on deck or under deck. Also, these packagings are not subject to Subparts D through O of Part 176 of this subchapter.

(b) [Reserved]

(c) An empty portable tank, cargo tank, tank car or multi-unit tank car may not be offered for transportation unless:

(1) Each opening is tightly closed except heater coil inlet and outlet pipes of empty tank cars; and

(2) Except as otherwise specified in this subchapter it is offered for transportation in the same manner as when it previously contained a greater quantity of a hazardous material. This requirement, as well as other provisions in this subchapter, does not apply to any tank that has been cleaned or purged of all hazardous materials residue or when it is reloaded with a material not subject to this subchapter.

(d) An empty packaging bearing a label or marking that is described in this subchapter and that pertains to the identification of a hazardous material may not be offered for transportation, unless the packaging contains some of the hazardous material that previously required display of the label or marking. This prohibition does not apply to transportation in a transport vehicle or freight container if such a packaging is not visible during transportation and the packaging is loaded by the shipper and unloaded by the shipper or consignee.

(e) No person may offer for transportation, and no carrier may accept or transport, an empty packaging containing the residue of a hazardous material unless each opening is securely closed and free from leaks.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Amdt. 173-94B, 41 FR 57068, Dec. 30, 1976, as amended by Amdt. 173-137, 45 FR 34702, May 22, 1980; Amdt. 173-137, 45 FR 74689, Nov. 10, 1980; Amdt. 173-162, 48 FR 10220, Mar. 10, 1983; Amdt. 173-203, 52 FR 29528, Aug. 10, 1987]

EFFECTIVE DATE NOTE: At 52 FR 29528, Aug. 10, 1987, § 173.29 was amended by revising the section title and adding paragraph (e), effective February 1, 1988.

§ 173.30 Loading and unloading of transport vehicles.

A person who loads or unloads hazardous materials into or from a transport vehicle or vessel shall comply with the applicable loading and unloading requirements of Parts 174, 175, 176, and 177 of this subchapter.

[Amdt. 173-94, 41 FR 18084, Apr. 15, 1976]

§ 173.31 Qualification, maintenance, and use of tank cars.

(a) *General qualifications for use.*
 (1) Except as otherwise provided in paragraph (a)(2) of this section, every tank car used for the transportation of dangerous articles shall meet the requirements of the applicable specification and regulations for the transportation of the particular commodity. See paragraph (a)(3) of this section.

(2) Tanks prescribed in the following table are authorized for service provided they conform to all applicable safety requirements of this subchapter:

Specifications prescribed in current regulations	Other specifications permitted (subject to the notes)	Notes
105A200W.....	105A100W.....	1
105A 200A LW.....	105A100A LW.....	1
105A300W.....	ICC-105, 105A300.....	
105A400W.....	105A400.....	
105A500W.....	105A500.....	
105A800W.....	105A800.....	
106A500X.....	ICC-27, BE-27, 106A500.....	
106A800X.....	106A800.....	
107A * * *.....		2

NOTE 1: Tanks built as Spec. DOT-105A100-W or 105A100AL-W may be altered and reclassified as Spec. DOT 105A200W or 105A200ALW, respectively, by installing safety relief valves, retesting and stenciling in accordance with the applicable specification.

NOTE 2: The test pressures of tanks built in the United States prior to January 1, 1956, may be increased to conform with current Spec. DOT-107A except that tanks built prior to 1941 are not authorized. Original and revised test pressure must be indicated and may be shown on a plate attached to the bulkhead of the car.

(3) Unless otherwise specifically provided in this part:

(i) When class DOT-105A, 105AL, 106A, 109A-AL, 110A, 111A, 112A, 112S, 112T, 112J, 114A, 114S, 114T, or 114J tank car tanks are prescribed, the same class tanks having higher marked test pressures than those prescribed may also be used.

(ii) When class DOT-111AW1 tank car tanks are prescribed, class 111AW3 tank car tanks may also be used.

(iii) When class DOT-112A tank car tanks are prescribed, classes DOT-112S, 112T, and 112J tanks having equal or higher marked test pressures than those prescribed may also be used.

(iv) When class DOT-112S tank car tanks are prescribed, classes DOT-112T and 112J tanks having equal or higher marked test pressures than those prescribed may also be used.

(v) When class DOT-114A tank car tanks are prescribed, classes DOT-114S, 114T, and 114J tanks having equal or higher marked test pressures than those prescribed may also be used.

(vi) When class DOT-114S tank car tanks are prescribed, classes DOT-114T, and 114J tanks having equal or higher marked test pressures than those prescribed may also be used.

(vii) When a class DOT-105A tank car is prescribed, class DOT-105S and DOT-105J tank cars having equal or higher marked test pressures than those prescribed may also be used.

(viii) When class DOT-105S tank car tanks are prescribed, class DOT-105J tank cars having equal or higher marked test pressures than those prescribed may also be used.

(4) Tank cars and appurtenances may be used for the transportation of any commodity for which they are authorized. Tank cars proposed for a commodity service other than authorized, must be approved for such serv-

ice by the Association of American Railroads' Committee on Tank Cars. Transfer of a tank car from one authorized service to another may be made only by the owner or owner's authorization. Classes DOT-105A-W, 109A-W, 111A-100-W-4, 112A-W, 114A-W tank cars may be used for any commodity for which they are approved by the Committee on Tank Cars and may be stenciled accordingly. When a tank car is stenciled to indicate that it is authorized for one commodity only, it must not be used for any other service.

NOTE 1: For additional requirements for tank cars for compressed gases, see § 173.314.

(5) After December 31, 1978, each Specification 112 and 114 tank car must be equipped with shelf couplers in accordance with § 179.105-6 of this subchapter.

(6) After February 28, 1982, each Specification 105 tank car shall be equipped with a coupler vertical restraint system in accordance with § 179.105-6 of this subchapter.

(7) After February 28, 1985, no person may load a DOT Specification tank car unless it is equipped with a coupler vertical restraint system in accordance with § 179.105-6 of this subchapter.

(8) For each tank car conforming to and used under an exemption issued before October 1, 1984, which authorized the transportation of a cryogenic liquid in a tank car, the owner or operator, if not the owner, shall remove the exemption number stenciled on the car and stamp the tank car with the appropriate Class DOT-113 Specification followed by the applicable exemption number, for example, "DOT-113D60W-E * * *". (Asterisks to be replaced by the exemption number.) The owner or operator, if not the owner, of a tank car that is remarked in this manner shall retain on file a copy of the last exemption in effect during the period the tank car is in service. No modification of a tank car remarked under this paragraph is authorized unless made in conformance with an applicable requirement or provision of this subchapter.

(9) Specification DOT-113A175W, DOT-113C60W, DOT-113D60W, and

DOT-113D120W tank cars may continue in use, but new construction is not authorized.

(10) Class DOT 105A and 105S tank cars, constructed of ASTM A212B steel to ASTM A300 low temperature requirements, that were authorized under DOT E-3992 may continue in service but new construction is not authorized.

(b) *Loading and shipping*—(1) *Examination before shipping*. When tanks are loaded and prior to shipping, the shipper must determine to the extent practicable, that the tank, safety appurtenances and fittings are in proper condition for the safe transportation of the lading. Tanks with bottom discharge outlets must have their outlet caps off, or outlet cap plugs open, during the entire time tanks are being loaded. After loading, tanks with bottom outlet valves which permit more than a dropping of the liquid with the outlet caps off, or the outlet cap plugs open, must not be offered for transportation until proper repairs have been made. Tanks which show any dropping or leaking of liquid contents at seams or rivets, must not be offered for transportation until proper repairs have been made.

(2) *Loading requirements for tanks with interior heater coils*. Tank cars equipped with interior heater coils, except when coils are rendered inoperative by blocking off the inlet and outlet, must be loaded with heater coil inlet and outlet caps off during entire time tanks are being loaded and show no leakage with caps off.

(3) *Securing closures*. All closures of openings in tank cars and of their protective housings must be properly secured in place by the use of a bar, wrench, or other suitable tool. A wrench having a handle at least 36 inches long must be used to apply the outlet valve cap. Manway covers and outlet valve caps must be made tight against leakage of vapor and liquid, by use of gaskets of suitable materials, before cars are tendered to carrier for transportation. Luting materials must not be used in outlet cap or on threads of bottom outlet. All closures of openings in tank cars must be inspected to the extent practical for corrosion or damage to the gasket seating surface

and for serviceability of packing, gaskets, and hold-down bolts. All defective packing, gaskets, bolting or threaded elements must be replaced.

(4) [Reserved]

(5) A tank car is authorized for shipment of a hazardous material by water when in conformance with the requirements of Part 176 of this subchapter and the following limitations:

(i) On carfloats or trainships if the material is permitted aboard a cargo vessel by § 172.101 of this subchapter, or

(ii) On railroad car ferry vessels if the material is permitted aboard a passenger vessel by § 172.101 of this subchapter.

(c) *Periodic retest and reinspection of single-unit tank car tanks.* (1) Tanks, interior heater systems, and safety relief valves must be retested periodically as specified in Retest Table 1 of this section. Retests may be made at any time during the calendar year the retest falls due except as provided in the notes. Periodic retest of exterior heater systems is not a specification requirement.

(2) Each tank must be retested by completely filling the tank and manway nozzle or expansion dome with water or other liquid of similar viscosity except as otherwise provided for in Note (d) to Retest Table 1 and applying the specified pressure for 10 minutes if the tank is not insulated, or 20 minutes if the tank is insulated. There shall be no leakage or evidence of distress. The tank insulation and jacket need not be removed unless leakage is indicated by a drop in pressure. The liquid temperature must not exceed 100° F. during the test. Caulking of welded joints to stop leaks developed during retests is prohibited.

(3) Unless longer retest interval is authorized, tanks in service 10 years or over must be internally inspected and interior heater systems inspected for defects which would make leakage or failure probable during transit.

(4) Anchor rivet housings, if used, must not be removed during retest. They shall be retested by applying an air pressure of 100 psi through openings in the tank shell and must show no leakage.

(5) Interior heater systems must be retested hydrostatically at 200 psi and must show no leakage.

(6) Safety relief valves must be retested with air or gas and must start to discharge at the pressure prescribed within plus or minus 3 percent except that if the start-to-discharge pressure is under 100 psi, the valve must start to discharge at the pressure prescribed within plus or minus 3 psi. Valves must be vapor tight at the prescribed pressure.

(7) A DOT tank car built to one specification and authorized to be stenciled to another specification must be retested in accordance with the higher specification and the test pressure stenciled accordingly on the tank or jacket. An existing pressure tank car tank which is permanently converted to a lower pressure specification must have the new specification and conversion date permanently stamped in letters and figures at least 3/8-inch high on the outside of the manway nozzle or the edge of the manway nozzle flange on the left side of the car. Each car must be tested as designated in Retests Table 1 for the new specification. On a Class DOT-111A tank car, the last numeral of the specification number may be omitted from the stamping.

(8) Retests of tanks and safety relief devices must be reported by party making tests to car owner. Reports must show initials and numbers of cars, pressure to which tested, date and place of test, and by whom tested. Reports of latest retest must be retained by owner until the next retest has been accomplished and recorded.

(9) After repairs requiring welding, riveting, caulking of rivets, or hot or cold forming to restore tank contour, tanks must be retested at the pressure specified in Retest Table 1 of this paragraph before being returned to service. Glass, lead, rubber, elastomeric or polyvinyl chloride lined tanks must be retested before lining is renewed or after lining is removed. Interior heater systems must be retested before the tank is returned to service after repairs or renewals of any part of the system.

(10) The year of a pressure test, the pressure to which it was tested, and

tests due dates for the tank, pressure relief valve and interior heating system must be stenciled on the tank (or on the tank jacket if the tank is insulated). If a retest is required during a particular calendar month, the month and the year must be stenciled. On existing cars, the test due date stencil must be applied at the next test date or tank painting whichever comes first. Any pressure relief valve from a stock which has been tested within six months of installation may be considered as having been tested or retested in the month in which installed, providing the valve has been protected from deterioration during this period.

(11) Any glass, rubber, or lead-lined tank need not be periodically retested, but the interior heater systems and safety valves must be retested at the prescribed interval. See also paragraph (c)(9) of this section.

(12) Any tank lined with an elastomeric polyvinyl chloride at least $\frac{3}{32}$ -inch thick or an elastomeric polyurethane at least $\frac{1}{16}$ -inch thick need not be periodically retested, but the heater system and safety relief valves must be retested at the prescribed intervals. The tank must be retested before lining is renewed.

(13) *Special requirements for Class DOT-113 tank cars.* (i) A Class DOT-113 tank car need not be periodically pressure tested; however, each shipment must be monitored to determine the average daily pressure rise in the tank car. If the average daily pressure rise during any shipment exceeds 3 psi per day, the tank car must be retested for thermal integrity prior to any subsequent shipment.

(ii) *Thermal integrity retest.* Either of the following alternative thermal integrity retests may be used:

(A) *Pressure rise retest.* The pressure rise in the tank may not exceed 5 psi in 24 hours. When the pressure rise retest is performed, the absolute pressure in the annular space of the loaded tank car may not exceed 75 microns of mercury at the beginning of the retest, and may not increase more

than 25 microns during the 24 hour period; or

(B) *Calculated heat transfer rate retest.* The insulation system must be performance tested as prescribed in § 179.400-4 of this subchapter. When the calculated heat transfer rate retest is performed, the absolute pressure in the annular space of the loaded tank car may not exceed 75 microns of mercury at the beginning of the retest, and may not increase more than 25 microns during the 24 hour period. The calculated heat transfer rate in 24 hours may not exceed:

(1) 120 percent of the appropriate standard heat transfer rate specified in § 179.401-1 of this subchapter, for DOT-113A60W and DOT-113C120W tank cars;

(2) .1164 Btu/day/lb. of inner tank water capacity, for DOT-113A175W tank cars;

(3) .3272 Btu/day/lb. of inner tank water capacity, for DOT-113C60W and 113D60W tank cars; or

(4) .4740 Btu/day/lb. of inner tank water capacity, for DOT-113D120W tank cars.

(iii) If the car fails either of the retests prescribed in paragraph (c)(13)(ii) of this section, the car must be removed from service and may not be placed back in service until one of the applicable retests in paragraph (c)(13)(ii) of this section is successfully completed.

(iv) Each frangible disc must be replaced every 12 months and the replacement date stenciled on the car near the pressure relief valve information.

(v) An alternate pressure relief valve must be retested at the same time interval prescribed for the required pressure relief valve. The start-to-discharge pressure and vapor tight pressure requirements for the alternate pressure relief valve must be as specified in § 179.401-1 of this subchapter. The alternate pressure relief valve values specified in § 179.401-1 of this subchapter for the DOT-113C120W tank car apply to the DOT-113D120W tank car.

RETEST TABLE 1

Specification	Retest interval years ¹			Safety relief valve	Retest pressure—p.s.i.		
	Tank and interior heater systems				Tank	Safety relief valve	
	Up to 10 years	Over 10 to 22 years	Over 22 years			Start to discharge	Vapor tight
DOT-103		10	10	10	60	c35	28
DOT-103AL		5	5	5	60	35	28
DOT-103W		p20	10	10	60	c35	28
DOT-103ALW	10	10	10	10	60	35	28
DOT-103A		3	1	2	60	35	28
DOT-103AW	a5	3	1	2	60	35	28
DOT-103A-ALW ^a	a5	3	1	(*)	60	b35	28
DOT-103ANW	a5	3	1	2	60	35	28
DOT-103B		f3	f1	None	60		
DOT-103BW	5	f3	f1	None	60		
DOT-103C		3	1	(*)	60	35	28
DOT-103CW	a5	3	1	(*)	60	b35	28
DOT-103DW	a5	3	1	(*)	60	35	28
DOT-103EW	a5	3	1	(*)	60	35	28
DOT-104		10	10	10	60	c35	28
DOT-104A		10	10	5	100	75	
DOT-104W		p20	10	10	60	c35	28
DOT-105			a10	a5	500	#225	180
DOT-105A100 ^{uv}		10	10	5	100	75	60
DOT-105A200ALW ^{uv}	10	10	10	5	200	150	120
DOT-105A100W	10	10	10	5	100	75	60
DOT-105A200ALW	10	10	10	5	200	150	120
DOT-105A200F	10	10	10	5	200	150	120
DOT-105A200W	10	10	10	5	200	150	120
DOT-105A300 ^a		a10	a10	a5	300	#225	180
DOT-105A300ALW	10	10	10	5	300	225	180
DOT-105A300W ^{uv}	10	10	10	5	300	225	180
DOT-105A400 ^a		a10	a10	a5	400	#300	240
DOT-105A400W	a10	a10	a10	a5	400	#300	240
DOT-105A500 ^a		a10	a10	a5	500	b375	300
DOT-105A500W	a10	a10	a10	a5	500	b375	300
DOT-105A600 ^a		a10	a10	a5	600	a450	360
DOT-105A600W	a10	a10	a10	a5	600	a450	360
DOT-109A100ALW	10	10	10	5	100	75	60
DOT-109A200ALW	10	10	10	5	200	150	120
DOT-109A300ALW	10	10	10	5	300	225	180
DOT-109A300W	10	10	10	5	300	225	180
DOT-111A60ALW1 ^a	10	10	10	10	60	35	28
DOT-111A60ALW2 ^a	a5	3	1	(*)	60	35	28
DOT-111A60F1 ^a	10	10	10	10	60	35	28
DOT-111A60W1 ^a		p20	10	10	60	35	28
DOT-111A60W2 ^a	a5	3	1	2	60	35	28
DOT-111A60W5	f5	f3	f1	None	60		
DOT-111A60W7	5	3	1	(*)	60	35	28
DOT-111A100ALW1 ^a	10	10	10	10	100	75	60
DOT-111A100ALW2 ^a	5	3	1	(*)	100	75	60
DOT-111A100F1 ^a		10	10	10	100	75	60
DOT-111A100W1 ^a		p20	10	10	100	75	60
DOT-111A100F2 ^a	5	3	1	2	100	75	60
DOT-111A100W2 ^a	a5	3	1	2	100	75	60
DOT-111A100W3		p20	10	10	100	75	60
DOT-111A100W4	10	10	10	5	100	75	60
DOT-111A100W5	f5	f3	f1	None	100		
DOT-111A100W6	a5	3	1	(*)	100	75	60
DOT-112A200W	10	10	10	5	200	150	120
DOT-112A340W ^a	10	10	10	5	340	#255	#204
DOT-112A400F ^a		10	10	5	400	300	240
DOT-112A400W ^a	10	10	10	5	400	#300	#240
DOT-112A500W ^a	10	10	10	5	500	b375	300
DOT-113A60W	(*)	(*)	(*)	5	(*)	(*)30	(*)24
DOT-113A175W	(*)	(*)	(*)	5	(*)	(*)115	(*)82
DOT-113C60W	(*)	(*)	(*)	5	(*)	(*)45	(*)36
DOT-113C120W	(*)	(*)	(*)	5	(*)	(*)75	(*)60
DOT-113D60W	(*)	(*)	(*)	5	(*)	(*)45	(*)36

RETEST TABLE 1—Continued

Specification	Retest interval years ¹				Retest pressure—p.s.i.		
	Tank and interior heater systems			Safety relief valve	Tank	Safety relief valve	
	Up to 10 years	Over 10 to 22 years	Over 22 years			Start to discharge	Vapor tight
DOT-113D120W.....	(*)	(*)	(*)	5	(*)	(*)75	(*)60
DOT-114A340W ^a	10	10	10	5	340	^a 255	^a 204
DOT-114A400W ^b	10	10	10	5	400	^b 300	^b 240
DOT-115A80ALW.....	10	10	10	5	60	35	28
DOT-115A60W1.....	10	10	10	5	60	35	28
DOT-115A60W6.....	10	10	10	5	60	35	28

* Tanks and safety relief valves in chlorine service must be retested every 2 years at any time during the calendar month the retest falls due. See § 173.314(c) Note 12.

^a Specifications 103CW and 103A-ALW cars built prior to Aug. 31, 1956, equipped with safety relief valves set to discharge at 45 p.s.i., may be continued in service. Such valves may be set to discharge at 35 p.s.i. by installing a spring suitable for the lower pressure. Specifications 103A-ALW and 103CW tank cars used to transport anhydrous hydrazine or hydrazine solutions may have a safety relief valve having a start to discharge pressure of 45 p.s.i. with a tolerance of plus or minus 3 p.s.i. and a vapor tight pressure of 36 p.s.i.

^b Class 103 and 104 tank cars built before January 1, 1959 and equipped with 25 psi pressure relief valves may remain in service with start-to-discharge retested at 25 psi, vapor tight at 20 psig.

¹ A commodity for which a tank is approved may be used for filling tank and dome when retesting tanks in service not over 10 years.

² Safety relief valve retest period is same as tank retest period.

³ Nickel clad tanks in bromine service and any glass, rubber, lead, or elastomeric lined tank need not be periodically retested, but the interior heater systems and pressure relief valves must be retested at the prescribed interval. For testing requirements for glass, rubber or other lined tanks see paragraphs (c)(9), (c)(11), and (c)(12) of this section.

⁴ If safety relief valves are used in combination with breaking pins designed to break at 225 psi, the safety relief valves must be retested and must start to discharge at 213 psi plus or minus 3 percent.

⁵ If safety relief valves are used in combination with breaking pins designed to break at 375 psi, the safety relief valves must be retested and must start to discharge at 360 psi plus or minus 3 percent.

⁶ Tanks and safety relief devices in hydrocyanic acid service must be retested and inspected by a written procedure filed with and approved by the Associate Director for HMR.

⁷ When the retest interval changes due to the age of the tank, the new retest interval must be measured from the last retest date but in no case shall the time between retests exceed the interval specified in Table 1 for the age of the tank. The retest of a tank because of repairs may alter the normal retest schedule specified in the table.

⁸ Safety relief valves in bromine service must be retested every 2 years.

⁹ [Reserved]

¹⁰ When a safety relief valve is used in combination with a breaking pin device, the breaking pin device shall be designed to fail at a pressure of 75 percent of the tank test pressure and safety relief valve shall be set for a start-to-discharge pressure of 71 percent of the tank test pressure.

¹¹ If the alternate safety relief valve start-to-discharge pressure setting is used, the retest pressures of the safety relief valves must be in accordance with the provisions of § 179.102-11 of this chapter.

¹² [Reserved]

¹³ Retest period for interior heater systems on cars so equipped is 10 years.

¹⁴ Tanks must be retested at the time they are converted from existing pressure type tanks to a non-pressure specification. When tanks are converted to DOT 103A-ALW from DOT 103ALW or AAR 201A70W, the tank must be retested at the time of conversion if welding on the tank is performed. For future retests of converted tanks, the retest interval must be selected from the table based on the age of the tank computed from the date converted instead of the date built. The conversion date must be stenciled on the tank below the built date.

¹⁵ When tanks are converted to DOT-103AW from existing DOT-103W or 103BW tanks, the tank must be retested at time of conversion if welding on the tank is performed. Lined tanks must be retested before the lining is renewed or after the lining is removed. For future retests, the retest interval must be selected from the Table as though the tank were 10 years old at time of conversion. The conversion date must be stenciled on the tank below the built date.

¹⁶ See paragraph (c)(13) of this section for additional requirements for Class DOT-113 cars.

¹⁷ Tanks in sodium metal service may be visually inspected at least once every 10 years instead of being retested hydrostatically. Date of the visual inspection must be stenciled on the tank near the other required markings.

¹⁸ Tank cars stenciled 105S, 105J, 112S, 112T, 112J, 114S, 114T or 114J have the same retest requirements as 105A, 112A, or 114A, respectively.

¹⁹ Pressure tank cars authorized for corrosive materials service must have tank and pressure relief valve retested when removed from the service and prior to return to compressed gas service.

²⁰ Tank cars stenciled 105S or 105J have the same retest requirements as 105A.

(d) *Periodic retest and reinspection of tanks other than single-unit tank car tanks.* (1) Tanks designed to be removed from cars for filling and emptying and tanks to spec. DOT 107A**** and their safety relief devices must be retested periodically as specified in Retest Table 2 of this paragraph. Retests may be made at any time during the calendar year the retest falls due.

(2) Each tank, except as provided in paragraph (d)(9) of this section must be subjected to the specified hydrostatic pressure and its permanent expansion determined. Pressure must be maintained for 30 seconds and as much longer as may be necessary to secure complete expansion of the tank. Pressure gauge must permit reading to an accuracy of 1 percent.

Expansion gauge must permit reading of total expansion to an accuracy of 1 percent. Expansion must be recorded in cubic centimeters. Permanent volumetric expansion must not exceed 10 percent of total volumetric expansion at test pressure and tank must not leak or show evidence of distress.

(3) Each tank, except tanks to Spec. DOT 107A, must also be subjected to interior air pressure test of at least 100 psi under conditions favorable to detection of any leakage. No leaks shall appear.

(4) Safety relief valves must be retested by air or gas, must start to discharge at or below the prescribed pressure and must be vaportight at or above the prescribed pressure.

(5) Frangible discs or fusible plugs must be removed from the tank and visually inspected.

(6) Tanks must be retested as specified in Retest Table 2 of this paragraph before return to service after repairs involving welding or heat treatment.

RETEST TABLE 2

Specification	Retest interval— years		Retest pressure— p.s.i.		Safety relief valve pressure—p.s.i.	
	Tank	Safety relief devices ^a	Tank hydrostatic expansion ^a	Tank air test	Start-to-discharge	Vapor tight
DOT 27.....	5	2	500	100	375	300
106A500.....	5	2	500	100	375	300
106A500X.....	5	2	500	100	375	300
106A800.....	5	2	800	100	600	480
106A800X.....	5	2	800	100	600	480
106A800NCI.....	5	2	800	100	600	480
107A****.....	*5	*2	(^b)	None	None	None
110A500-W.....	5	2	500	100	375	300
110A600-W.....	5	2	600	100	450	360
110A800-W.....	5	2	800	100	600	480
110A1000-W.....	5	2	1,000	100	750	600
BE-27.....	5	2	500	100	375	300

^aIf DOT 107A**** tanks are used for transportation of flammable gases, one frangible disc from each car must be burst at the interval prescribed. The sample disc must burst at a pressure not exceeding the marked test pressure of the tank and not less than 2/10 of the marked test pressure. If the sample disc does not burst within the prescribed limits, all discs on the car must be replaced.

^bThe hydrostatic expansion test pressure must at least equal the marked test pressure.

^c[Reserved]

^dSee § 173.31(d)(9).

^eSafety relief valves of the spring-loaded type on tanks used exclusively for fluorinated hydrocarbons and mixtures thereof which are free from corroding components may be retested every 5 years.

(7) The month and year of test, followed by a "V" if visually inspected as described in paragraph (d)(9) of this section, must be plainly and permanently stamped into the metal of one head or chime of each tank passing test; for example, 1-60 for January 1960. On DOT 107A**** tanks, the date must be stamped into the metal of the marked end; except that if all tanks mounted on a car have been tested, the date may be stamped into the metal of a plate permanently applied to the bulkhead on the "A" end of the car. Date of previous tests and all prescribed markings must be kept legible.

(8) Retests of tanks and safety relief devices must be reported by party

making tests to owner of tank. Reports must show registered identifying mark and serial number, pressure to which tested, date and place of test, and by whom tested. Reports of latest retest must be retained by owner until the next retest has been accomplished and recorded.

(9) Tanks of DOT 106A and DOT 110A-W (§§ 179.300, 179.301, 179.302 of this subchapter) specifications used exclusively for transporting fluorinated hydrocarbons and mixtures thereof which are free from corroding components may be given a periodic complete internal and external visual inspection in lieu of the periodic hydrostatic retest. Visual inspections shall be made only by competent persons.

Acceptance or rejection of tanks must be based upon the methods used for cylinders in CGA Pamphlet C-6, and the results must be recorded on a suitable data sheet, the completed copies of which must be kept by the owner as a permanent record. The points to be recorded and checked on these data sheets are: Date of inspection (month and year followed by a "V" to indicate visual inspection); DOT specification number; tank identification (registered symbol and serial number, date of manufacture and ownership symbol); type of protective coating (painted, etc., and statement as to need of refinishing or recoating); conditions checked (leakage, corrosion, gouges, dents or digs, broken or damaged chime or protective ring, fire, fire damage, internal condition); disposition of tank (returned to service, returned to manufacturer for repair, or scrapped).

(e) *Tank car tanks subjected to the action of fire.* (1) Tank car tanks of other than classes DOT 106A, 107A or 110A bearing evidence of damage to the metal by fire must be withdrawn from transportation service except that if the damage to the tank is local only or confined to not more than 25 percent of the tank surface, the damaged material may be replaced. See paragraph (f)(1) of this section for the procedure for handling tank car tanks with more than 25 percent of the tank surface damaged.

(2) Tank car tanks of classes DOT 106A, 107A or 110A bearing evidence of damage to the metal by fire must be withdrawn from transportation service until they have been inspected inside and outside to determine that no reduction in wall thickness has resulted, and have been heat-treated and retested. These operations must be carried out, supervised and reported as prescribed by the specifications for original heat treatment and test.

(f) *Repairs or alterations.* (1) For procedure to be followed in making repairs or alterations to all tank car tanks and securing approval therefor, see Appendix R. Association of American Railroads Specifications for Tank Cars.

(2) After alterations of tank cars or equipment therefor from original

design, a certificate of compliance with the respective specification must be furnished to the car owner, to the Bureau of Explosives, and to the Secretary, Mechanical Division, Association of American Railroads.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18671, Dec. 29, 1964. Redesignated at 32 FR 5605, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.31, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.32 Qualification maintenance and use of portable tanks other than Specification IM portable tanks.

(a) Except as otherwise provided in this section, each portable tank used for the transportation of hazardous materials must conform to the requirements of the specification and regulations for the transportation of the particular commodity. Except for Specification 56 and 57 portable tanks, a manufacturer's data report of the portable tank must be procured and retained in the files of the owner during the time that such portable tank is used for such service.

(1) When a portable tank container is used as a cargo tank container, it shall comply with all the requirements prescribed for cargo tank containers. (See § 173.33)

(2) [Reserved]

(3) Each uninsulated portable tank used for the transportation of compressed gases, as defined in § 173.300, must have an exterior surface finish complying with § 178.245-1(c) of this subchapter.

(4) No portable tank or specification 106A or 110A tank containing a hazardous material may be offered for transportation aboard a passenger vessel unless:

(i) The vessel is operating under a change to its character of vessel certification as defined in § 171.8 of this subchapter; and

(ii) The material is permitted to be transported aboard a passenger vessel in § 172.101 of this subchapter.

(5) Where IM-101 and IM-102 portable tanks are prescribed, Specification 51 portable tanks otherwise conform-

ing to the special commodity requirements of the IM Tank Table may be used.

(b) Any portable tank container constructed prior to May 15, 1950, complying with the requirements of either the A. S. M. E. Code for Unfired Pressure Vessels, 1946 Edition, or the A. P. I.-A. S. M. E. Code for Unfired Pressure Vessels, 1943 Edition, may be used for the transportation of liquefied compressed gas, provided it fulfills all the requirements of this part and specifications for the particular gas or gases to be transported therein and shall be marked "ICC Specification 51X" on the plate required by the specification, except as modified by any or all of the following:

(1) Tanks designed and constructed in accordance with Pars. U-68, U-69, or U-201 of the A. S. M. E. Code may be used. Tanks designed and constructed in accordance with Par. U-68 or U-69 may be re-rated at a working pressure 25 percent in excess of the design pressure for which the tank was originally constructed. If advantage is taken of the increased rating, the re-rated pressure shall be marked on the plate as follows:

Re-rated working pressure—psig

NOTE 1: For purposes of setting safety relief valves, pressure control valves and establishing retest pressure, and for purposes of establishing maximum and minimum design pressures, the re-rated working pressure shall be considered as the equivalent of the design pressure as defined in the specification.

(2) Loading and unloading accessories, valves, piping, fittings, safety and gauging devices, do not have to comply with the requirements for the particular location on the tank.

(3) Specification requirements as to stress-relieving and radiographing are waived.

(c) Any portable tank container of ICC Specification 50¹ fulfilling the requirements of that specification may be continued in service for transportation of a liquefied petroleum gas if it is retested every five years in accordance with the requirements of paragraphs

(e)(3), (4), and (5) of this section: *Provided*, That it is in and can be maintained in safe operating condition for the transportation of that gas. In this case the container may retain its original markings.

(d) *Use of Specifications 52 and 53 tanks.* Continued use of an existing portable tank constructed to specification 52 or 53 is authorized only for a tank constructed before June 1, 1972.

(e) *Retest.* Each portable tank used for the transportation of a hazardous material must be successfully retested before further use in accordance with the following:

(1) *Schedule.* Each tank must be retested as prescribed in paragraph (e)(2) of this section, in accordance with the following schedule:

(i) Specification 51 (§ 178.245 of this subchapter): At least once every 5 years.

(ii) Specifications 52, 53, 56, and 57 (§§ 178.251, 178.252, 178.253 of this subchapter): At least once every 2 years.

(iii) Specification 60 (§ 178.255 of this subchapter): At the end of the first 4-year period after the original test; at least once every 2 years thereafter up to a total of 12 years of service; and at least once annually thereafter. Retesting is not required on a rubber-lined tank except before each relining.

(iv) Any other portable tank authorized by this part for transportation of compressed gases (including liquefied compressed gases): At least once every 5 years.

(2) *Test procedures.* Unless otherwise specified, each tank must be retested in accordance with the following test procedures:

(i) *Pressure.* Each Specification 60 tank must be retested in accordance with § 178.255-12 of this subchapter. A Specification 57 tank must be retested in accordance with § 178.253-5(b) of this subchapter. Any other tank must be tested by a minimum pressure (air or hydrostatic) of at least 2 pounds per square inch gage or at least one and one-half times the design pressure (maximum allowable working pressure, or re-rated pressure) of the tank, whichever is greater. During each air pressure test, the entire surface of all

¹Use of existing portable tanks authorized, but new construction not authorized.

joints under pressure must be coated with or immersed in a solution of soap and water, heavy oil, or other material suitable for the purpose of detecting leaks. The pressure must be held for a period of time sufficiently long to assure detection of leaks. During the air or hydrostatic test, relief devices may be removed, but all the closure fittings must be in place and the relief device openings plugged. Lagging need not be removed from a lagged tank if it is possible to maintain the required test pressure at constant temperature with the tank disconnected from the source of pressure.

(i) *Visual.* While under the test pressure, the tank must be visually inspected for leakage, defective fittings and welds, defective closures, significant dents, and other defects or abnormalities which indicate a potential or actual weakness that could render the tank unsafe for the transportation of a hazardous material.

(ii) *Rejection criteria.* A tank fails to meet the requirements of the pressure test if, during the test, there is permanent distortion of the tank exceeding that permitted by the applicable specification, if there is any leakage, or if any deficiencies described in paragraph (e)(2)(ii) of this section are found. Any tank that fails must be rejected and may not be used again for the transportation of a hazardous material unless the tank is adequately repaired and thereafter a successful test is conducted in accordance with the requirements of this paragraph.

(3) *Marking.* The date of the most recent periodic retest must be marked on the tank, on or near the metal certification plate. Marking must be in accordance with § 173.24.

(4) *Records.* The owner of the tank or his authorized agent must retain a written record indicating the date and results of all required tests and the name and address of the tester, until the next retest has been satisfactorily completed and recorded.

(f) *Special tanks.* Each portable tank authorized by this part including each exemption tank (other than a tank covered by paragraph (e)(1)(iv) of this section) which is not in compliance with one of the specifications listed in paragraph (e) of this section, must be

tested in accordance with the procedures prescribed in paragraph (e) of this section for the type of portable tank most nearly equivalent in design and usage. A tank constructed in accordance with paragraph U-68 or U-69 of previous editions of the ASME Code, and which has not been re-rated, must be hydrostatically retested at twice the design pressure instead of the one and one-half times prescribed in paragraph (e)(2)(i) of this section.

(g) *Deteriorated tanks.* Without regard to any other retest requirements, any tank that shows evidence at any time of bad dents, corroded areas, leakage, or other conditions that indicate weakness which could render the tank unsafe for the transportation of a hazardous material, must be retested as prescribed in paragraph (e)(2) of this section.

(h) *Damaged tanks.* Any tank that has been in an accident and that has been damaged to an extent that may adversely affect its product retention capability, must be retested as prescribed in paragraph (e)(2) of this section.

(i) *Unused tanks.* Any tank that has not been used to transport a hazardous material for a period of 1 year or more may not be returned to hazardous materials service until it has been tested successfully in accordance with the requirements of paragraph (e)(2) of this section.

(j) The Department may require the testing under prescribed conditions of any tank when probable cause appears for suspecting that such tank is in unsafe operating condition.

(k) The repair of tanks is authorized, provided such repairs are made under requirements prescribed in the "Code" for the original design and construction.

(1) In addition to any other provisions of the specification, no tank shall be repaired, or remodeled, as to cause leakage or cracks or likelihood of leakage or cracks, by areas of stress concentration due to shrinkage of cooling metal in welding operations, sharp fillets, reversal of stresses, or otherwise.

(2) No field welding shall be done except to non-pressure parts.

(l) The bursting strength of any piping and fittings shall be not less than four times the design pressure of the tank, and not less than four times that pressure to which, in any instance, it may be subjected in service, by the action of a pump or other device (not including safety relief valves) the action of which may be to subject certain portions of the tank piping to pressures greater than the design pressure of the tank.

(1) Pipe joints shall be threaded, welded or flanged. If threaded pipe is used, the pipe and pipe fittings must not be lighter than (Schedule 80) weight. Nonmalleable metals must not be used in the construction of valves or fittings. Where copper tubing is permitted, joints must be brazed or be of equally strong metal union type. The melting point of brazing material may not be lower than 1000°F. The method of joining tubing must not decrease the strength of the tubing such as by the cutting of threads.

(2) Fittings shall be extra heavy. Non-malleable metals shall not be employed in the construction of valves or fittings.

(3) Suitable provision shall be made in every case to allow for expansion, contraction, jarring and vibration of all pipe. Slip joints shall not be used for this purpose.

(4) Piping and fittings shall be grouped in the smallest practicable space and shall be protected from damage as required by the specification.

(5) All piping, valves and fittings on every tank shall be leakage tested with gas or air after installation and proved tight at not less than the design pressure of the tank on which they are used. In the event of replacement, all such piping, valves, or fittings so replaced shall be tested in accordance with the requirements of this section before the tank is returned to transportation service. The requirements of this section shall apply with equal force to all hose used on such tanks, except that such hose may be so tested either before or after installation on the tank.

(m) All materials of construction used in portable tank containers and their appurtenances shall not be sub-

ject to destructive attack by the contents of the tank.

(1) All parts of tanks and appurtenances for anhydrous ammonia shall be steel. No copper, silver, zinc, nor their alloys shall be permitted. Brazed joints shall not be permitted.

(n) Each outlet of portable tanks used for the transportation of liquefied compressed gases, except carbon dioxide, shall be provided with a suitable automatic excess-flow valve. These valves shall be located inside the tank or at a point outside the tank where the line enters or leaves the tank. The valve seat shall be located inside the tank or shall be located within a welded flange or its companion flange, or within a nozzle or within a coupling. The installation shall be made in such a manner as reasonably to assure that any undue strain which causes failure requiring functioning of the valve shall cause failure in such a manner that it will not impair the operation of the valve.

Exception. Safety device connections and liquid level gauging devices which are so constructed that the outward flow of tank contents shall not exceed that passed by a No. 54 drill size opening are not required to be equipped with excess-flow valves.

(1) Excess-flow valves shall close automatically at the rated flows of gas or liquid as specified by the valve manufacturer. The connections or lines on each side of the excess-flow valve, including valves, fittings, etc., shall have a greater capacity than the rated flow of the excess-flow valve.

(2) Excess-flow valves may be designed with a by-pass, not to exceed a No. 60 drill size opening, to allow equalization of pressures.

(3) Filling and discharge lines shall be provided with manually operated shut-off valves located as close to the tank as is practicable. The use of so-called "Stop-Check" valves to satisfy with one valve the requirements of this paragraph and of paragraph (n) of this section, is forbidden.

(o) Each tank for carbon dioxide and nitrous oxide shall be lagged with a suitable insulation material of such thickness that the overall thermal conductance is not more than 0.08 Btu per square foot per degree F. differen-

tial in temperature per hour. The conductance shall be determined at 60° F. Insulation material used on tanks for nitrous oxide shall be noncombustible.

(p) A refrigerating and/or heating coil or coils may be installed in tanks for carbon dioxide and nitrous oxide. Such coils must be tested externally to at least the same pressure as the test pressure of the tank. The coils must also be tested internally to at least twice the working pressure of the heating or refrigerating system to be used but in no case less than the test pressure of the tank. Such coils shall be securely anchored. The refrigerant or heating medium to be circulated through the coil or coils must be such as to cause no adverse chemical reaction with the tank or tank contents in case of leakage.

[29 FR 18671, Dec. 29, 1964. Redesignated at 32 FR 5808, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.32, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.32a Approval of Specification IM portable tanks.

(a) *Application for approval.* (1) An owner or manufacturer of an IM portable tank (§§ 178.270 through 178.272 of this subchapter) shall apply for approval to any approval agency designated to approve that tank in accordance with the procedures in Subpart E, Part 107 of this chapter.

(2) Each application for approval must contain the following information:

(i) Three complete copies of all engineering drawings, calculations, and test data necessary to insure that the design complies with the relevant specification.

(ii) The manufacturer's serial number that will be assigned to each portable tank.

(iii) A statement as to whether the design type has been examined by any approval agency previously and judged unacceptable. Affirmative statements must be documented with the name of the approving agency, reason for non-acceptance, and the nature of modifications made to the design type.

(b) *Action by approval agency.* The approval agency shall:

(1) Review the application for approval to determine whether it is complete and conforms with the requirements of paragraph (a) of this section. If an application is incomplete, it will be returned to the applicant and the applicant will be informed in what respects the application is incomplete.

(2) Review all drawings and calculations to ensure that the design is in compliance with all requirements of the relevant specification. If the application is approved, one set of the approved drawings, calculations, and test data shall be returned to the applicant. The second and third (inspector's copy) sets of approved drawings, calculations, and test data shall be retained by the approval agency.

(3) Witness all tests required in § 178.270-13 of this subchapter.

(4) Ensure, through appropriate inspection that each IM portable tank is fabricated in all respects in conformance with the approved drawings, calculations, and test data; and

(5) Upon successful completion of all requirements of this subpart, the approval agency shall:

(i) Apply its name, identifying mark or identifying number, and the date upon which the approval was issued, to the metal identification plate required by § 178.270-14 of this subchapter.

(ii) Issue an approval certificate for each IM portable tank or, in the case of a series of identical tanks manufactured to a single design, for the series of IM portable tanks. The approval certificate must include all the information required to be displayed on the required metal identification plate.

(c) *Disposition of approval certificates.* A copy of each approval certificate shall be retained by the approval agency and by the owner of each IM portable tank, and a copy shall be forwarded by the approval agency to the Director, OHMT.

(d) *Denial of application for approval.* If an approval agency finds that an IM portable tank cannot be approved for any reason, it shall so notify the applicant in writing and shall provide the applicant with the reasons for which the approval is denied. An applicant aggrieved by a decision of an approval agency may appeal the deci-

in writing within 90 days of receipt to the Director, OHMT.

(e) [Reserved]

(f) *Approval of other existing IM portable tanks.* Portable tanks constructed on or before May 1, 1981, that have not operated under a DOT exemption must be approved in accordance with the provisions of paragraph (b) of this section.

(g) *Modifications to approved portable tanks.* (1) Prior to modification of any approved portable tank which may affect conformance to § 178.271 or § 178.272 of this subchapter, the owner or manufacturer desiring to make such modification shall inform the approval agency that issued the initial approval of the portable tank (or if unavailable another approval agency) of the nature of the modification and request approval of the modification. The owner or manufacturer shall supply the approval agency with three sets of all revised drawings, calculations, and test data relative to the intended modification.

(2) A statement as to whether the intended modification has been examined by any approval agency previously and judged unacceptable. An affirmative statement must be documented with the name of the approving agency, the reason for nonacceptance, and the nature of changes made to the modification since its original rejection.

(3) The approval agency shall review the request for modification, and if it is determined that the proposed modification is in full compliance with the relevant DOT specification the request shall be approved and the approval agency shall:

(i) Return one set of the approved revised drawings, calculations, and test data to the applicant. The second and third sets of the approved revised drawings, calculations, and test data shall be retained by the approval agency as required in § 107.404(a)(3) of this chapter.

(ii) Ensure through appropriate inspection, that all modifications conform to the revised drawings, calculations, and test data.

(iii) Determine the extent to which retesting of the modified tank is necessary based on the nature of the pro-

posed modification, and ensure that all required retests are performed in accordance with § 178.270-13 of this subchapter.

(iv) If modification to an approved tank alters any information on the approval certificate, issue a new approval certificate for the modified tank and ensure that any necessary changes are made to the metal identification plate. A copy of each newly issued approval certificate shall be retained by the approval agency and by the owner of each portable tank.

(4) If it determined that the proposed modification is not in compliance with the relevant DOT specification, the request shall be denied. The procedures of paragraph (d) of this section apply to such denial.

(h) *Termination of Approval Certificate.* (1) The Director, OHMT may terminate an approval issued under this section if he determines that:

(i) Information upon which the approval was based is fraudulent or substantially erroneous; or

(ii) Termination of the approval is necessary to adequately protect against risks to life and property.

(iii) The approval was not issued by the approval agency in good faith.

(2) Before an approval is withdrawn, the Director, OHMT gives the owner or manufacturer and the approval agency:

(i) Written notice of the facts or conduct believed to warrant the withdrawal;

(ii) Opportunity to submit oral and written evidence, and

(iii) Opportunity to demonstrate or achieve compliance with the application requirement.

(3) If the Director, OHMT determines that a certificate of approval must be withdrawn to preclude a significant and imminent adverse affect on public safety, he shall withdraw the certificate of approval issued by a designated approval agency. In such circumstances, the procedures of paragraphs (h)(2) (i) and (iii) of this section need not be provided prior to withdrawal of the approval, but shall be provided as soon as practicable thereafter.

[Amdt. 173-144, 46 FR 9890, Jan. 29, 1981; 46 FR 24183, Apr. 30, 1981, as amended by Amdt. 173-48, 46 FR 36861, July 16, 1981; Amdt. 173-185, 50 FR 11052, Mar. 19, 1985]

§ 173.32b Periodic testing and inspection of Specification IM portable tanks.

(a) *Periodic testing*—(1) *Hydrostatic test*. Each Specification IM portable tank (§§ 178.270, 178.271 and 178.272 of this subchapter) and all piping, valves and accessories, except pressure-relief devices, shall be hydrostatically tested with water, or other liquid of similar density and viscosity, to a pressure not less than 150 percent of its maximum allowable working pressure. Testing shall be at intervals of not more than five years. While under pressure the tank shall be inspected, for leakage, distortion, or any other condition which might render the tank unsafe for service. The hydrostatic test shall be witnessed by an approval agency. Any damage or deficiency which might render the portable tank unsafe for service shall be repaired to the satisfaction of the witnessing approval agency and the tank hydrostatically retested. Upon successful completion of the hydrostatic test, the witnessing approval agency shall apply its name, identifying mark or identifying number and the date of the test on the tank as described in paragraph (d) of this section.

(2) *Pressure relief valves*. Spring loaded pressure relief valves must be removed from the tank and tested at intervals of not more than two and one-half years.

(b) *Visual inspection*. Each portable tank and all piping, valves and accessories shall be visually inspected at intervals not exceeding two and one-half years. The inspection shall be conducted by an owner or his agent or by an approval agency, except that it must be conducted by an approval agency coincident with each hydrostatic test required by paragraph (a) of this section. In the case of insulated tanks, insulation need not be removed if, in the opinion of the person performing the visual inspection, external corrosion is likely to be negligible. If evidence of any unsafe condition is discovered, the portable tank may not be returned to service until such condition has been corrected to the satisfaction of the

person performing the inspection. The inspection shall include the following:

(1) The tank shall be carefully inspected internally for corroded areas, dents, distortions, defects in welds, and other conditions that might render the tank unsafe for service;

(2) The piping, valves, and gaskets shall be carefully inspected for corroded areas, defects in welds, and other conditions, including leakage, that might render the tank unsafe for service;

(3) Devices for tightening manhole covers must be operative and there must be no leakage at manhole covers or gaskets.

(4) Missing or loose bolts or nuts on any flanged connection or blank flange must be replaced or tightened.

(5) All emergency devices and valves must be free from corrosion, distortion and any damage or defect that could prevent their normal operation.

(6) Required markings on the tank must be legible.

(7) Upon successful completion of the visual reinspection, the inspector shall mark the date of the visual reinspection on the tank as described in paragraph (d) of this section.

(c) *International shipments*. A portable tank that meets the definition of "container" in § 450.3(a)(3) of this title may not be offered for international transport unless the frame work, tank supports and lifting attachments fully comply with all applicable requirements of Parts 450—453 of this title.

(d) *Test date marking*. The month and year of the last hydrostatic test, the identification markings of the approval agency witnessing the test, and the date of the last visual inspection must be durably and legibly marked on or near the metal identification plate in letters not less than 3 mm (0.118 inches) high when on the metal identification plate and 32 mm (1.25 inches) high when on the tank.

(e) *Damaged or deteriorated portable tanks*. Without regard to any other test requirement, any tank that shows evidence at any time of damaged or corroded areas, leakage, or other deterioration that indicates a weakness that could render the tank unsafe for service, must be inspected and tested in accordance with the requirements

of paragraphs (a) and (b) of this section prior to reuse. Pressure relief devices need not be tested or replaced unless there is reason to believe the relief devices have been affected by the damage or deterioration.

(f) *Record retention.* The owner of each portable tank or his authorized agent shall retain a written record of the date and results of all required tests, (including visual inspections), and the name and address of the person performing the test, until the next retest has been satisfactorily completed and recorded.

[Amdt. 173-144, 46 FR 9891, Jan. 29, 1981]

§ 173.32c Use of Specification IM portable tanks.

(a) No person may offer a hazardous material for transportation in an IM portable tank except as authorized by this subchapter and under conditions approved by the Director, OHMT in the IM Tank Table.

(b) Except as otherwise provided in this subpart, an IM portable tank may not be used for the transportation of a hazardous material unless it meets the requirements of this subchapter and the conditions and limitations specified in the IM Tank Table for the hazardous material.

(c) An IM portable tank for which the prescribed periodic retest or reinspection under § 173.32b of this subchapter has become due may not be filled and offered for shipment until the retest or reinspection has been successfully completed. This paragraph does not apply to any tank filled prior to the test due date.

(d) Prior to filling, each IM portable tank shall be given a complete external inspection. Any unsafe condition must be corrected prior to its use. The external inspection shall include:

(1) A visual inspection of:

(i) The shell, piping, valves and other appurtenances for corroded areas, dents, defects in welds and other defects such as missing, damaged, or leaking gaskets;

(ii) All flanged connections or blank flanges for missing or loose nuts and bolts;

(iii) All emergency devices for corrosion, distortion, or any damage or

defect that could prevent their normal operation; and

(iv) All required markings on the tank for legibility.

(2) An inspection to determine that any device for tightening manhole covers is operative and adequate to prevent leakage at the manhole cover.

(e) A hazardous material may not be loaded in an IM portable tank if the part of the tank or any of its appurtenances having contact with the material during transportation would be subject to destructive attack by or a dangerous reaction with the material.

(f) A hazardous material may not be loaded in an IM portable tank unless it has pressure relief devices providing total relieving capacity meeting the requirements of § 178.270-II(d) of this subchapter.

(g) A hazardous material may not be loaded in an IM portable tank with filling or discharge connections located below the normal liquid level of the tank unless:

(1) Each filling or discharge connection located below the normal liquid level of the tank has at least two serially-mounted closures consisting of an internal discharge valve and a bolted blank flange or other suitable, liquid-tight closure on each filling or discharge connection; or

(2) When required for a hazardous material by the IM Tank Table, each filling or discharge connection located below the normal liquid level of the tank, or compartment thereof, has three serially-mounted closures consisting of an internal discharge valve capable of being closed from a location remote from the valve itself, an external valve, and a bolted blank flange or other suitable, liquid-tight closure on the outlet side of the external valve.

(h) Except during a hydrostatic test, an IM portable tank may not be subjected to a pressure greater than its maximum allowable working pressure.

(i) An IM portable tank may not be loaded to a gross weight greater than the maximum allowable gross weight specified on its identification plate.

(j) An IM portable tank or compartment thereof having a volume greater than 5,000 liters (1,900 gallons) may not be loaded to a filling density less than 80 percent by volume.

(k) The outage for an IM portable tank may not be less than 2 percent at a temperature of 122°F (50°C).

(l) Each tell-tale indicator for the space between a frangible disc and a safety relief valve mounted in series must be checked after the tank is filled and prior to transportation to ensure that the frangible disc is leak free. Any leakage through the frangible disc must be corrected prior to offering the tank for transportation. The tell-tale device must be designed to prevent the loss of any hazardous material through the device itself while the tank is in transportation.

(m) An IM portable tank containing a hazardous material may not be loaded on a highway or rail transport vehicle unless loaded entirely within the horizontal outline thereof, without overhang or projection of any part of the tank assembly.

(n) Specifications IM 101 and IM 102 portable tanks used for the transportation of flammable liquids via rail may not be fitted with nonreclosing pressure relief devices except in series with spring loaded pressure relief valves.

(o) An IM 101 tank may be used whenever an IM 102 tank is authorized provided it meets the requirements of columns (5), (6), (7) and (8) of the IM Tank Table for the material to be transported.

[Amdt. 173-144, 46 FR 9892, Jan. 29, 1981]

§ 173.32d Additions, modifications and removals of entries in the IM Tank Table.

The following requirements and conditions apply to listing of hazardous materials in the IM Tank Table (the Table):

(a) A hazardous material that is not listed or authorized in the Table may be added to the Table by the Director, OHMT.

(b) Any person may request the Director, OHMT to add a material to the Table, or to delete or modify an entry in the Table. A request should contain the information specified in the preface to the Table.

(c) The decision of the Director, OHMT to add a material to the Table, deny addition of a material to the Table, or to delete or modify an entry

in the Table, will be based on a technical analysis of available data concerning the material and analogical comparison with existing entries in the Table.

(d) Each addition of a material to the Table by the Director, OHMT has interim status until completion of his review of comments following publication in the FEDERAL REGISTER of proposed permanent addition of the material to the Table. Following consideration of all comments in response to the publication, the Director will add the material to the Table, or terminate its interim status, based on the information received.

(e) If the Director, OHMT determines that it may be necessary to remove an authorization for a material from the Table, or to modify the conditions for transportation of a material in an IM portable tank, he shall take action after subjecting the issue to public comment by publication in the FEDERAL REGISTER unless he determines that public safety requires immediate action.

(f) If the Director, OHMT denies a request for addition of a material to the Table or terminates an addition of a material under paragraphs (c) and (d) of this section, an appeal of the denial or termination may be submitted to the Administrator, Research and Special Programs Administration, within 60 days of receipt of the denial or termination. The decision of the Administrator concerning the appeal is final.

[Amdt. 173-144, 46 FR 9892, Jan. 29, 1981]

§ 173.33 Qualification, maintenance, and use of cargo tanks.

(a) *General.* Unless otherwise provided in this part, every cargo tank (or compartment) used for the transportation of hazardous materials must be an authorized packaging. Such authorized packaging shall comply with requirements as set forth in this section, in addition to those regulations applicable for the transportation of the particular material. For the purposes of this part, whenever reference is made to a Specification MC-338 insulated cargo tank, the definitions in

§ 178.338-1 (a) and (b) of this subchapter apply.

(1) A cargo tank is authorized for shipment of a hazardous material by vessel when in conformance with the requirements of Part 176 of this subchapter and the following limitations:

(i) On carfloats or trailerships if the material is permitted aboard a cargo vessel by § 172.101 of this subchapter, or

(ii) On passenger ferry vessels or railroad car ferry vessels if the material is permitted aboard a passenger vessel by § 172.101 of this subchapter.

(2) [Reserved]

(b) Cargo tank qualification as an authorized packaging requires compliance with the applicable Specification MC-300, MC-301, MC-302, MC-303, MC-304, MC-305, MC-306, MC-307, MC-310, MC-311, MC-312, MC-330, MC-331, or MC-338 (§ 178.340, § 178.341, § 178.342, § 178.343, § 178.337 or § 178.338 of this subchapter), this section, and the inspection, retest and marking requirements of § 177.824 of this subchapter. Any Specification MC-304 cargo tank on which construction began before September 2, 1967, may have the vents and outlets modified to comply with Specification MC-307 cargo tanks (See §§ 178.342-4 and 178.342-5).

(1) A cargo tank of the specification listed in Column 1 may be used when authorized in this part, provided the tank construction began before the date in Column 2:

Column 1	Column 2
MC-300.....	Sept. 2, 1967.
MC-301.....	June 12, 1961.
MC-302, MC-303, MC-304, MC-305, MC-310, MC-311.	Sept. 2, 1967.
MC-330.....	May 15, 1967.

(2) For each cargo tank conforming to and used under an exemption issued before October 1, 1984, which authorized the transportation of a cryogenic liquid in a cargo tank, the owner or operator, if not the owner, shall remove the exemption number stenciled on the cargo tank and stamp the specification plate (or a plate placed adjacent to the specification plate) "DOT MC-338" followed by the applicable

exemption number, for example, "DOT MC-338-E * * * *". (Asterisks to be replaced by the exemption number.) The owner or operator, if not the owner, of a cargo tank that is remarked in this manner shall retain on file a copy of the last exemption in effect during the period the cargo tank is in service. No modification of a cargo tank remarked under this paragraph is authorized unless made in conformance with an applicable requirement or provision of this subchapter. No new construction of such cargo tanks may be initiated after September 30, 1984.

(i) The holding time must be determined, as required in § 178.338-9 of this subchapter, on each cargo tank or on at least one cargo tank of each design. Any subsequent cargo tank manufactured to the same design, if not individually tested, must have the optional test regimen performed during the first shipment (see § 178.338-9 (b) and (c) of this subchapter). For the purpose of performing the holding time test, same design means cargo tanks having the same manufacturer, same drawings, same dimensions (of length, diameter, and volume), same materials of construction, and the same insulation system.

(ii) The holding time determined by test for one authorized cryogenic liquid may be used as the basis for establishing the holding time for other authorized cryogenic liquids.

(3) For each MC-331 cargo tank (§ 178.337 of this subchapter) conforming to and used under an exemption issued before October 1, 1984, which authorized the transportation of ethane, refrigerated liquid, ethane-propane mixture, refrigerated liquid, or hydrogen chloride, refrigerated liquid, the owner or operator, if not the owner, shall remove the exemption number stenciled on the cargo tank and stamp the exemption number on the specification plate immediately after the DOT Specification, for example, "DOT MC-331-E * * * *". (Asterisks to be replaced by the exemption number.) If there is not adequate room on the specification plate, the exemption number must be stamped on a plate placed adjacent to the specification plate. The owner or

operator, if not the owner, of a cargo tank that is remarked in this manner shall retain on file a copy of the last exemption in effect during the period the cargo tank is in service.

(c) Multipurpose cargo tanks. Multipurpose cargo tanks which have more than one compartment, each of which meets the requirements qualifying them as different container types, are authorized for use for applicable commodities.

(1) Multipurpose tanks which can be physically altered to qualify as containers to accommodate various commodities subject to the regulations in this part or commodities not subject to the regulation in this part are authorized if:

(i) All applicable provisions of the regulations in this part which are required to qualify the container as acceptable for the commodity being transported are met.

(ii) The required physical alterations to convert from one container type to another are clearly indicated on or near the certification plate.

(d) A Specification MC-330, MC-331 or MC-338 (§ 173.337 or § 173.338 of the subchapter) cargo tank may not be used unless it meets the following requirements, as applicable:

(1) Each cargo tank must be tested and inspected at least once every 5 years in accordance with paragraphs (d) (2), (3), (4), (10), (11) and (12) of this section.

(i) The tank, and each pressure relief valve, of any cargo tank used for the transportation of chlorine must be tested at least once every 2 years. Tanks used only in sodium metal service may have a complete internal visual inspection at least once every 5 years instead of a hydrostatic or pneumatic test.

(ii) Each cargo tank used to transport a flammable cryogenic liquid must be examined after each shipment to determine its actual holding time. The record required by § 177.840(h) of this subchapter may be used for this determination. If the examination indicates that the actual holding time of the cargo tank, after adjustment to reflect an average ambient temperature of 85° F., is less than 90 percent of the marked rated holding time (MRHT)

for the cryogenic liquid marked on the specification plate or adjacent thereto (§ 173.338-18(b) of this subchapter), the tank may not be refilled with any flammable cryogenic liquid until it is restored to its marked rated holding time value or it is re-marked with the actual marked rated holding time determined by this examination. If the name of the flammable cryogenic liquid that was transported and its marked rated holding time is not displayed on or adjacent to the specification plate, this requirement may be met by deriving the MRHT of the cargo tank for that flammable cryogenic liquid and comparing that derived MRHT with the actual holding time after adjustment.

(2) Each tank (less fittings) must be subjected to a minimum internal pressure as shown below:

Specification	Ratio ¹
MC-330, MC-331.....	1½
MC-338.....	1½

¹ Ratio of test pressure to the design pressure (maximum allowable working pressure or rerated pressures) of the tank.

The internal pressure may be hydraulically or pneumatically generated. If a pneumatic test is used, a suitable method must be used for detecting the existence of leaks at all joints under pressure. This method must consist either of coating the entire surface of all joints under pressure with a solution of soap and water, or using another equally sensitive method. When a pneumatic test is performed, suitable safeguards should be provided to protect employees and other persons should a failure occur.

(3) The tank shall be inspected for corroded areas, bad dents, or other conditions, including leakage under test pressure, which indicate weakness that might render the tank unsafe for transportation service, and shall be rejected if evidence of any such unsafe condition is discovered.

(4) When testing cargo tanks, the insulation and jacketing need not be removed unless it is otherwise impossible to reach test pressure and maintain a condition of pressure equilibrium after test pressure is reached, or the

vacuum integrity cannot be maintained in the insulation space.

(5) [Reserved]

(6) Without regard to any other retest requirement, any tank that shows evidence at any time of bad dents, corroded areas, leakage, or other conditions that indicate weakness which might render the tank unsafe for transportation service, shall be retested as prescribed by paragraphs (d)(2), (3), and (4) of this section.

(7) Any tank which has been in an accident and which has been damaged to an extent likely to cause it to be in unsafe condition or to an extent where such a condition is suspected, shall be tested as prescribed by paragraphs (d)(2), (3), and (4) of this section.

(8) Any tank which has been out of transportation service for a period of 1 year or more shall not be returned to or placed in such service until it shall have successfully fulfilled the testing requirements prescribed by paragraphs (d)(2), (3), and (4) of this section.

(9) The Department may require the testing under prescribed conditions of any tank when probable cause appears for suspecting that such tank is in unsafe condition.

(10) *Ammonia tanks.* Each MC 330 and MC 331 cargo tank used for anhydrous ammonia which is constructed of quenched and tempered steel or constructed of other than quenched and tempered steel but without post-weld heat treatment, must be internally inspected by the wet fluorescent magnetic particle method immediately prior to and in conjunction with the performance of any hydrostatic retest prescribed in this section. The wet fluorescent magnetic particle inspection must be in accordance with Section V of the ASME Code and CGA Technical Bulletin TB-2 titled, "Guidelines for Inspection and Repair of MC 330 and MC 331 Cargo Tanks," 1975 edition. This paragraph does not apply to cargo tanks that do not have man-holes.

(11) *Repairs.* All cracks and other defects found must be repaired in accordance with the repair procedures described in CGA Technical Bulletin TB-2, titled "Guidelines for Inspection

and Repair of MC 330 and MC 331 Cargo Tanks," 1975 edition and section VIII of the edition of the ASME Code under which the tank was built. Each tank having cracks and defects requiring welded repairs must meet all of the requirements of § 178.337-16 of this subchapter except that post-weld heat treatment after minor weld repairs is not required. When any repairs are made, including those by grinding, the tank must again be examined by the wet fluorescent magnetic particle method after hydrotest to assure that all defects have been removed.

(12) *Reports required.* Each motor carrier operating an MC 330 or MC 331 cargo tank subject to paragraph (d)(10) of this section must make a written report concerning the cargo tank following the required inspection or test. This reporting requirement does not apply to a motor carrier leasing a cargo tank for less than 30 days if the lessor has submitted the reports required by this section. The report for each cargo tank must contain the following:

(i) Carrier's name, address of principal office, and telephone number;

(ii) Complete name plate data required by specification MC 330 or MC 331, including data required by ASME Code;

(iii) Carrier's equipment number, which shall be the same as reported in accordance with § 177.824(f)(1)(iii) of this subchapter;

(iv) A statement indicating whether or not the tank was stress relieved after fabrication;

(v) Name and address of the person performing the test and date of test;

(vi) A statement of the nature and severity of defects found, if any. In particular, information must be furnished to indicate the location of defects detected, such as in a weld, a heat-affected zone, the liquid phase, the vapor phase, or the head-to-shell seam. If no defect or damage was discovered, that fact must be reported;

(vii) A statement indicating the methods employed to make repairs, who made the repairs, and the date they were completed. Also, a statement of whether or not the tank was stress relieved after repairs and, if so,

whether full or local stress relieving was performed;

(viii) A statement of the disposition of cargo tank, such as "tank scrapped," or "returned to service;" and

(ix) A statement of whether or not the cargo tank is used for transportation of anhydrous ammonia, liquefied petroleum gas or any other commodity which shall be identified. Also, if the cargo tank was used for anhydrous ammonia, a statement indicating whether each shipment of ammonia was certified by its shipper as containing 0.2 percent water by weight.

(13) *Report retention.* A copy of the report required by this section must be retained by the carrier at its principal place of business during the period the tank is in the carrier's service and for 1 year thereafter. However, upon a written request to, and with the approval of the Regional Director of Motor Carrier Safety, for the region in which a motor carrier has its principal place of business, the carrier may maintain the reports at a regional or terminal office.

(14) *Supplying reports.* Each carrier offering a MC 330 or MC 331 cargo tank for sale or lease must make available for inspection a copy of any reports made under this paragraph to each prospective purchaser or lessee. Copies of such reports must be provided for the purchaser or lessee if the cargo tank is leased for more than 30 days.

(15) *Record of inspections.* Each carrier shall prepare a record of inspections required by paragraphs (d)(10), (d)(11), and (d)(12) of this section. The inspection record shall be signed by the person conducting the inspections, and retained with the carrier's file copy of the report submitted under paragraph (d)(12) of this section. The inspection record must identify by cargo tank manufacturer's serial number each cargo tank inspected and also indicate the name of the inspecting agency and person, the nature of any defect or damage discovered, and must state by what method the defect or damage was discovered. If no defect

or damage was discovered upon inspection this fact must also be reported.

(i) The reports required of a carrier by paragraphs (d) (12) and (13) of this section may be combined in a single report.

(e) The repair of tanks is authorized, provided such repairs are made under requirements prescribed in the "Code" for its original design and construction.

(1) In addition to any other provisions of the specification, no tank shall be repaired, or remodeled, as to cause leakage or cracks or likelihood of leakage or cracks, by areas of stress concentration due to shrinkage of cooling metal in welding operations, sharp fillets, reversal of stresses, or otherwise.

(2) No field welding shall be done except to nonpressure parts.

(f) On any tank used for a compressed gas except chlorine, the bursting pressure of all piping, pipe fittings, hose and other pressure parts except pump seals and safety relief devices must be at least 4 times the design pressure of the tank. In addition, the bursting pressure may not be less than 4 times any higher pressure to which each pipe, pipe fitting, hose and other pressure part may be subjected in service by the action of a pump or other device. For tanks used in transporting chlorine, see paragraphs (f) (8) through (10) of this section.

(1) Pipe joints shall be threaded, welded or flanged. If threaded pipe is used, the pipe and pipe fittings must not be lighter than Schedule 80 weight. Nonmalleable metals must not be used in the construction of valves or fittings. Where copper tubing is permitted, joints must be brazed or be of equally strong metal union type. The melting point of brazing material must not be lower than 1000°F. The method of joining tubing must not decrease the strength of the tubing such as by the cutting of threads.

(2) Each hose coupling must be designed for a pressure at least 20 percent in excess of the hose design pres-

sure and so there will be no leakage when connected.

(3) Provision must be made to prevent damage to piping due to thermal expansion and contraction, jarring, and vibration. Slip joints may not be used for this purpose.

(4) Piping and fittings must be grouped in the smallest practicable space and be protected from damage as required by the specification.

(5) All piping, valves, and fittings on every cargo tank shall be proved free from leaks at not less than the design pressure for the tank. This condition will be considered to have been met when such piping, valves, and fittings have been tested for leakage with gas or air after installation and proved tight at not less than the design pressure marked on the cargo tank with which they are used. In the event of replacement, all such piping, valves, or fittings so replaced shall be tested in accordance with the requirements of this section before the tank is returned to transportation service. The requirements of this section shall apply with equal force to all hose used on such tanks, except that such hose may be so tested either before or after installation on the tank.

(6) Liquid pumps or gas compressors, wherever used, must be of suitable design, adequately protected against breakage by collisions, and kept in good condition. They may be driven by motor vehicle power takeoff or other mechanical, electrical, or hydraulic means. Unless they are of the centrifugal type, they shall be equipped with suitable pressure actuated by-pass valves permitting flow from discharge to suction or to the tank.

(7) Each tank used for the shipment of carbon dioxide, refrigerated liquid or nitrous oxide, refrigerated liquid shall be provided with a suitable pressure gauge. A shutoff valve must be installed between the pressure gauge and the tank. This gauge need be used only during the filling operation.

(8) *Chlorine cargo tanks.* No piping, hose, or other means of loading or unloading may be attached to any valve of a cargo tank containing chlorine except at the time of loading or unloading. No hose, piping, or tubing used for loading or unloading may be

mounted or carried on the motor vehicle. Except at the time of loading or unloading, the pipe connection of each angle valve must be closed with a screw plug which is chained or otherwise fastened to prevent misplacement.

(9) Chlorine cargo tank angle valves must be tested before installation to be leak free at not less than 225 p.s.i.g. using dry air or inert gas. The angle valves must also be tested as above once every five loadings or once a week whichever occurs first. At each loading, tanks must be inspected and the angle valves and gasketed joints must be examined and tested at a pressure of not less than 50 p.s.i.g. to determine that they are not leaking and are in proper condition for transportation. Leaks which are detected must be corrected before the cargo tank motor vehicle is shipped.

(10) Liquid chlorine pumps shall not be installed on cargo tank motor vehicles used for the shipment of chlorine.

(g) All materials of construction used in cargo tanks and their appurtenances shall not be subject to destructive attack by the contents of the tank.

(1) All parts of tanks and appurtenances for anhydrous ammonia shall be steel. No copper, silver, zinc, nor their alloys shall be permitted. Brazed joints shall not be permitted.

(h) Each outlet of cargo tanks used for the transportation of liquefied compressed gases, except carbon dioxide, refrigerated liquid shall be provided with an approved suitable automatic excess-flow valve or in lieu thereof may be fitted with an approved automatic quick-closing internal valve. These valves shall be located inside the tank or at a point outside the tank where the line enters or leaves the tank. The valve seat shall be located inside the tank or shall be located within a welded flange or its companion flange, or within a nozzle, or within a coupling. The installation shall be made in such a manner as reasonably to assure that any undue strain which causes failure requiring functioning of the valve shall cause failure in such a manner that it will not impair the operation of the valve.

EXCEPTION: Any liquid level gauging device which is constructed so that the outward flow of tank contents does not exceed that passed by a 0.060-inch diameter opening, or any safety device connection, is not required to be equipped with an excess-flow valve.

(1) Each excess-flow valve must close automatically at the rated flow of gas or liquid as specified by the valve manufacturer. The flow rating of the piping, fittings, valves, and hose on each side of the excess-flow valve must be greater than that of the excess-flow valve. If branching or any other restriction is incorporated in the system so that the flow rating is less than that of the excess-flow valve at the tank, additional excess-flow valves must be located where the flow rates are reduced.

(2) An excess-flow valve may be designed with a bypass, not to exceed 0.040-inch diameter opening, to allow equalization of pressures.

(3) Each filling and discharge line must be provided with a manual shut-off valve located as close to the tank as practicable. However, when an internal shut-off valve that closes automatically is used, a manual shut-off valve must be located in the line ahead of the hose connection. The use of a so-called "stop-check" or excess flow valve to satisfy the requirements of this rule and of paragraph (i) of this section with one valve is prohibited except as provided in § 178.337-11(c) of this subchapter.

(4) Angle valves and excess-flow valves on chlorine tank motor vehicles manufactured on or before December 31, 1974, must conform to the standards of The Chlorine Institute, Inc., as follows:

(i) An angle valve must conform to either Dwg. 104-4 dated May 5, 1958, or Dwg. 104-5, dated September 1, 1972.

(ii) An excess-flow valve conforming to either Dwg. 101-4 dated May 16, 1969, or Dwg. 101-6, dated September 1, 1973, must be installed under each liquid angle valve. An excess-flow valve conforming to either Dwg. 106-3, dated May 16, 1969, or Dwg. 106-5, dated September 1, 1973, must be installed under each gas angle valve.

(5) Angle valves and excess-flow valves on chlorine tank motor vehicles

manufactured on or after January 1, 1975, must conform to the standards of The Chlorine Institute, Inc., as follows:

(i) An angle valve must conform to Dwg. 104-5, dated September 1, 1972;

(ii) An excess-flow valve conforming with Dwg. 101-6, dated September 1, 1973, must be installed under each liquid angle valve. An excess-flow valve conforming to Dwg. 106-5, dated September 1, 1973, must be installed under each gas angle valve.

(i) Each tank for chlorine, carbon dioxide, refrigerated liquid and nitrous oxide, refrigerated liquid must be insulated with a suitable insulation material of such thickness that the overall thermal conductance is not more than 0.08 B.t.u. per square foot per degree F. differential in temperature per hour. The conductance must be determined at 60° F. Insulation material used on tanks for nitrous oxide must be noncombustible. Insulation material used on tanks for chlorine must be corkboard or self-extinguishing polyurethane foam with minimum thickness of 4 inches.

(j) A refrigerating and/or heating coil or coils may be installed in tanks for carbon dioxide, refrigerated liquid and nitrous oxide, refrigerated liquid. Such coils must be tested externally to at least the same pressure as the test pressure of the tank. The coils must also be tested internally to at least twice the working pressure of the heating or refrigerating system to be used but in no case less than the test pressure of the tank. Such coils shall be securely anchored. The refrigerant or heating medium to be circulated through the coil or coils must be such as to cause no adverse chemical reaction with the tank or tank contents in case of leakage. If desired, the unit furnishing refrigeration may be mounted on the motor vehicle.

(k) Each MC 330 cargo tank used for flammable compressed gas or anhydrous ammonia must be equipped with liquid discharge controls that conform to the requirements of § 178.337-11(c) of this subchapter at each liquid discharge opening. The controls required by this paragraph must be installed not later than the date the tests pre-

scribed by paragraph (d) of this section are required.

(49 U.S.C. 1655; 49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[Order 73, 32 FR 3453, Mar. 2, 1967. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.33, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.34 Qualification, maintenance and use of cylinders.

(a) *General qualification for use of cylinders.* (See §§ 173.1 through 173.30 for requirements applying to all shipments.)

(1) No person may charge or fill a cylinder unless it is as specified in this part and Part 178 of this subchapter. A cylinder that leaks, is bulged, has defective valves or safety devices, bears evidence of physical abuse, fire or heat damage, or detrimental rusting or corrosion, must not be used unless it is properly repaired and requalified as prescribed in these regulations.

(2) When cylinders with a marked pressure limit are prescribed, other cylinders made under the same specification but with a higher marked service pressure limit are authorized. For example, cylinders marked DOT-4B500 may be used where DOT-4B300 is specified.

(b) *Grandfather clause.* A cylinder in domestic use previous to the date upon which the specification therefor was first made effective in these regulations may be used if the cylinder has been properly tested and otherwise complies with the requirements applicable for the gas with which it is charged.

(c) *Cylinder marking.* Each required marking on a cylinder must be maintained so that it is legible. Retest markings and original markings which are becoming illegible may be reproduced by stamping on a metal plate which must be permanently secured to the cylinder.

(1) Additional information not affecting the markings prescribed in the applicable cylinder specification may be placed on the cylinder. No indentation may be made in the sidewall of the cylinder unless specifically permitted in the applicable specification.

(2) When the space originally provided for dates of subsequent retests becomes filled, the stamping of additional test dates into the external surface of the footing of a cylinder is authorized.

(3) Except for marked service pressure, markings required on cylinders may not be altered or removed. The marked service pressure may be changed only upon application to the Director, Office of Hazardous Materials Transportation and receipt of written instructions as to the procedure to be followed. A service pressure change is not authorized for a cylinder which fails to pass the prescribed periodic hydrostatic retest, unless it is reheat treated and requalified in accordance with this section.

(d) *Pressure relief device systems.* No person may offer a cylinder charged with a compressed gas for transportation unless the cylinder is equipped with one or more pressure relief devices sized and selected as to type, location, and quantity and tested in accordance with CGA Pamphlet S-1.1. The pressure relief device system must be capable of preventing rupture of the normally charged cylinder when subjected to a fire test conducted in accordance with CGA Pamphlet C-14, or in the case of an acetylene cylinder, CGA Pamphlet C-12. Cylinders shall not be shipped with leaking safety relief devices. Safety relief devices must be tested for leaks before the charged cylinder is shipped from the cylinder filling plant; it is expressly forbidden to repair leaking fuse plug devices, where leak is through the fusible metal or between the fusible metal and the opening in the plug body, (except by removal of the device and replacement of the fusible metal.) Exceptions are as follows:

(1) Except as provided in Notes 1, 2, and 3, safety relief devices are not required on cylinders 12 inches or less in length, exclusive of neck, and 4½ inches or less in outside diameter.

NOTE 1: Safety relief devices are required on specifications 9, 40, 41, and 39 (§ 178.65 of this subchapter) cylinders. Metal safety relief valves are required on specification 39 cylinders used for liquefied flammable gases. Fusible safety relief devices are not

authorized on specification 39 cylinders containing liquefied compressed gases.

NOTE 2: Safety relief devices are required on cylinders charged with a liquefied gas for which this part requires a service pressure of 1,800 psi or higher.

NOTE 3: Safety relief devices are required on cylinders charged with nonliquefied gases to a pressure of 1,800 psi or higher at 70° F.

(2) Except for specification 39 cylinders and cylinders for acetylene in solution, safety relief devices are not required on cylinders charged with nonliquefied gas under pressure of 300 p.s.i. or less at 70° F.

(3) Safety relief devices are prohibited on cylinders charged with Poison A gas or liquid.

(4) Safety relief devices are prohibited on cylinders charged with fluorine.

(5) Safety relief devices are not required on cylinders charged with methyl mercaptan; with mono-, di-, or trimethylamine, anhydrous; with not over 10 pounds of nitrosyl chloride; or with less than 165 pounds of anhydrous ammonia.

(6) [Reserved]

(7) Safety relief devices, if used, must be in the vapor space of cylinders containing pyroforic liquids, n.o.s., covered by § 173.134.

(e) *Periodic retesting, reinspection and marking of cylinders.* Each cylinder that becomes due for periodic retest as specified in the following table and exceptions, must be retested and marked in conformance with the applicable requirements of this paragraph.

Specification under which cylinder was made	Minimum retest pressure (p.s.i.)	Retest period (years)
DOT-3	3,000 p.s.i.	5.
DOT-3A, 3AA, 3AL	5/3 times service pressure, except noncorrosive service (see § 173.34 (e)(10)).	5 or 10 (see § 173.34(e)(11), (e)(14), and (e)(15)).
DOT-3AX, 3AAX	5/3 times service pressure	5.
3B, 3BN	2 times service pressure (see § 173.34 (e)(10))	5 or 10 (see § 173.34(e)(14)).
3C	Retest not required.	
3D	5/3 times service pressure	5.
3E	Retest not required.	
3HT	5/3 times service pressure	3 (see § 173.34(e)(13)).
3T	5/3 times service pressure	5.
4	700 p.s.i.	10.
4A	5/3 times service pressure (see § 173.34(e)(10))	5 or 10 (see § 173.34(e)(14)).
4AA480	2 times service pressure (see § 173.34 (e)(10))	5 or 10 (see § 173.34(e)(11)).
4B, 4BA, 4BW, 4B-240ET	2 times service pressure, except non-corrosive service (see § 173.34(e) (10)).	5 or 10 (see § 173.34(e)(9) and (e)(14)).
4C	Retest not required.	
4D, 4DA, 4DS	2 times service pressure	5.
DOT-4E	2 times service pressure, except non-corrosive service (see § 173.34(e) (10)).	5.
4L	Retest not required.	
8, 8AL	Retest not required.	
DOT-9	400 p.s.i. (maximum 600 p.s.i.)	5.
25	500 p.s.i.	5.
26 for filling at over 450 p.s.i.	5/3 times service pressure	5.
26 for filling at 450 p.s.i. and below	2 times service pressure, except non-corrosive service (see § 173.34(e) (10)).	5 or 10 (see § 173.34(e)(9)).
33	800 p.s.i.	5.
38	500 p.s.i.	5.
Any cylinder with marked test pressure.	Retest at marked test pressure	5.
Foreign cylinder charged for export	As marked on the cylinder, but not less than 5/3 of any service or working pressure marking.	See § 173.301(f).

NOTE 1: For cylinders not marked with a service pressure, see § 173.301(e)(1).

(1) The periodic retest must be performed by an authorized retester and must include a visual internal and external examination in accordance with CGA Pamphlet C-6, and a test by interior hydrostatic pressure in a water jacket or other apparatus suitable for

determination of the expansion of the cylinder. The internal inspection may be omitted for cylinders of the type and in the service described under paragraphs (e)(9) and (10) of this section.

(i) No person may represent that he has retested a DOT specification cylinder under this section, by marking the cylinder with a test date or by any other means unless that person holds a current retester's identification number issued by the RSPA.

(ii) The marking of a test date on a DOT specification cylinder is the certification by the person affixing the date that all applicable requirements of this section have been met with respect to that cylinder.

(iii) No cylinder required to be retested in accordance with this paragraph, or paragraph (e)(9) or (10) of this section, may be used for the transportation of a hazardous material unless it has been retested successfully under this section, and the retester has marked the cylinder by stamping the cylinder retester identification number and date of retest plainly and permanently into the metal of the cylinder or on a metal plate which must be permanently secured to the cylinder.

(iv) RSPA may issue a retester's identification number based on an application and an inspection report of the applicant's facility and qualifications performed by an independent inspection agency approved pursuant to § 173.300a, and any other information available to RSPA. A retester's identification number is valid for five years from the date of issuance and may be renewed upon application to RSPA. Applications for renewal must be submitted at least 50 days prior to expiration of the number. An initial or renewal application may be obtained from the Office of Hazardous Materials Transportation, U.S. Department of Transportation, Washington, D.C. 20590.

(v) Authority to perform retesting under this section, as reflected by assignment of a current retester identification number, remains valid as long as the level of personnel qualifications, and equipment used, is maintained at least equivalent to the level observed at the time of inspection by the independent inspection agency.

(2) Cylinders of DOT 4 series, without regard to date of previous test, that show bad dents or other evidence of rough usage, or that are corroded

locally to such extent as to indicate possible weakness, or that have lost as much as 5 percent of their official tare weight, must be retested before being again charged and shipped. After any retest, the actual tare weight for those cylinders passing the test may be recorded as their new official tare weight.

(3) In hydrostatic retesting of a cylinder the pressure must be maintained for at least 30 seconds and as much longer as may be necessary to secure complete expansion of the cylinder. The gauge indicating the total expansion of the cylinder must be such that the total expansion can be read with an accuracy of 1 percent, except that a reading to 0.1 cubic centimeter shall be acceptable. The gauge indicating the pressure must be capable of being read to within 1 percent of the test pressure. Any internal pressure applied previous to the test pressure shall not exceed 90 percent of the test pressure. If, due to failure of the test apparatus, the test pressure cannot be maintained, the test may be repeated at a pressure increased by 10 percent or 100 psi, whichever is the lower value.

(4) A cylinder must be condemned when it leaks, or when internal or external corrosion, denting, bulging, or evidence of rough usage exists to the extent that the cylinder is likely to be weakened appreciably, or when the permanent expansion exceeds 10 percent of the total expansion, except that for DOT 4E aluminum cylinders, when the permanent expansion exceeds 12 percent of the total expansion. Except for DOT 3AL and DOT 4E aluminum cylinders, a cylinder condemned for excessive permanent expansion may be reheat-treated. (See paragraph (g) of this section.) DOT 4 series cylinders, condemned for other than excessive permanent expansion, may be repaired and rebuilt as otherwise provided in this section.

(5) Records showing the result of reinspection and retest must be kept by the owner or his authorized agent until either expiration of the retest period, or until the cylinder is again reinspected or retested, whichever occurs first.

(6) Each cylinder passing retest must be marked with the cylinder retester's identification number set in a square pattern, between the month and year of the retest date, in characters not less than 1/8-inch high with the first character occupying the upper left corner of the square pattern. The second character must be in the upper right, the third in the lower right, and the fourth in the lower left. Example: A cylinder retested in May, 1984, and approved by a retester who has been issued identification number A123 would be stamped:

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      A 1
    5  3  2  84
  
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Variations from the marking requirements may be permitted upon written request to, and approval issued by, the Director, OEHMT. Stamping must be in accordance with the location requirements of the cylinder specification. Date of previous tests must not be obliterated. Cylinders which are subject to the requirements under subparagraphs (8), (9) (modified hydrostatic test only), (10), and (12) are not required to be marked with a retester's identification number.

(7) Cylinders in chlorine or sulfur dioxide service made before April 20, 1915 must be retested at 500 psi.

(8) For cylinders of not over twelve pounds water capacity which are authorized for service pressures not over 300 psi, the hydrostatic testing portion of the retest procedure may consist of application of the prescribed internal hydrostatic test pressure without the use of special apparatus and without the determination of total and permanent expansions. In this test the cylinders shall be examined while under pressure and must show no leak or other harmful defect as enumerated in paragraph (e)(4) of this section.

(9) Cylinders made in compliance with specifications DOT 4B, DOT 4BA, DOT 4BW, DOT 4E, and ICC-26-

300¹ (§§ 178.50, 178.51, 178.61, 178.68 of this subchapter) which are used exclusively for anhydrous dimethylamine; anhydrous monomethylamine; anhydrous trimethylamine; methyl chloride; liquefied petroleum gas; methylacetylene-propadiene stabilized; or dichlorodifluoromethane, difluoroethane, difluoromonochloroethane, monochlorodifluoromethane, monochlorotetrafluoroethane, monochlorotrifluoroethylene, or mixture thereof, or mixtures of one or more with trichloromonofluoromethane; and which are commercially free from corroding components and protected externally by suitable corrosion resisting coatings (such as galvanizing, painting, etc.) may be retested decennially (see Note 2) instead of quinquennially, or, as an alternative such cylinders may be subjected to an internal hydrostatic pressure equal to at least two times the marked service pressure without determination of expansions (see Note 1), but this latter type of test must be repeated quinquennially after expiration of the first 10-year period (see Note 2). When subjected to this latter test, cylinders must be carefully examined under the test pressure and removed from service if leaks or other harmful defects exist.

NOTE 1: Cylinders requalified by the modified hydrostatic test method or external inspection shall be marked after each retest or reinspection by stamping the date of retest or reinspection on the cylinders followed by the symbol E (external inspection) or S (modified hydrostatic test method) as appropriate.

NOTE 2: Until further order of the Department, the decennial retest period may be extended to a 12-year period, and the quinquennial retest period may be extended to a 7-year period after expiration of the first 12-year period.

(10) Cylinders made in compliance with the specifications listed in the table below and used exclusively in the service indicated may, in lieu of the periodic hydrostatic retest, be given a complete external visual inspection at the time such periodic retest becomes due. External visual inspection as de-

¹Use of existing cylinders authorized but new construction not authorized.

scribed in CGA Pamphlet C-6 will, in addition to the following requirements prescribed herein, meet the requirements for visual inspection.

When this inspection is used in lieu of hydrostatic retesting, subsequent inspections are required 5 years after the first such inspection and periodically at 5-year intervals thereafter. Inspections shall be made only by competent persons and the results shall be recorded on a suitable data sheet, the completed copies which shall be kept in accordance with the requirements of paragraph (e)(5) of this section. The points to be recorded and checked on these data sheets are: Date of inspection (month and year); DOT specification number; cylinders identification (registered symbol and serial

number, date of manufacture, and ownership symbol (if needed for adequate identification)); type cylinder protective coating (painted, etc., and statement as to need of refinishing or recoating); conditions checked (leakage, corrosion, gouges, dents or digs in shell or heads, broken or damaged footing or protective ring or fire damage); disposition of cylinders (returned to service, to cylinder manufacturer for repairs or scrapped); a cylinder which passes the inspection prescribed shall have the date recorded in the manner presently prescribed for the recording of the retest date, except that an "E" is to follow the date (month and year) indicating requalification by the external inspection method.

Cylinders made in compliance with—	Used exclusively for—
DOT-4, DOT-3A, DOT-3AA, DOT-3A480X, DOT-4A, DOT-4AA480.	Anhydrous ammonia of at least 99.85% purity.
DOT-3A, DOT-3AA, DOT-3A480X, DOT-3B, DOT-4B, DOT-4BA, DOT-4BW, ICC-28-240, ¹ ICC-28-300 ¹ .	Butadiene, inhibited, which is commercially free from corroding components.
DOT-3A, DOT-3A480X, DOT-3AA, DOT-3B, DOT-4A, DOT-4AA480, DOT-4B, DOT-4BA, DOT-4BW.	Cyclopropane which is commercially free from corroding components.
DOT-3A, DOT-3AA, DOT-3A480X, DOT-4B, DOT-4BA, DOT-4BW, DOT-4E.	Fluorinated hydrocarbons and mixtures thereof which are commercially free from corroding components.
DOT-3A, DOT-3AA, DOT-3A480X, DOT-3B, DOT-4B, DOT-4BA, DOT-4BW, DOT-4E, ICC-28-240, ¹ ICC-28-300 ¹ .	Liquefied hydrocarbon gas which is commercially free from corroding components.
DOT-3A, DOT-3AA, DOT-3A480X, DOT-3B, DOT-4B, DOT-4BA, DOT-4BW, DOT-4E, ICC-28-240, ¹ ICC-28-300 ¹ .	Liquefied petroleum gas which is commercially free from corroding components.
DOT-3A, DOT-3AA, DOT-3B, DOT-4B, DOT-4BA, DOT-4BW, DOT-4E.	Methylacetylene-propadiene, stabilized, which is commercially free from corroding components.
DOT-3A, DOT-3AA, DOT-3B, DOT-4B, DOT-4BA, DOT-4BW..	Anhydrous mono, di, trimethylamines which are commercially free from corroding components.
DOT-4B240, DOT-4BW240.....	Ethylene imine, inhibited.

¹ Use of existing cylinders authorized, but new construction not authorized.

(11) A cylinder made in compliance with specification DOT-3A, DOT-3A 480X, or DOT-4AA480 used exclusively for anhydrous ammonia, commercially free from corroding components, and protected externally by suitable corrosion resisting coatings (such as painting, etc.) may be retested every 10 years instead of every 5 years.

(12) All cylinders not exceeding 2 inches outside diameter and length less than 2 feet are exempted from hydrostatic retest.

(13) In addition to the requirements of this paragraph (e), cylinders marked DOT-3HT must be requalified in accordance with CGA Pamphlet C-8 and must comply with the following:

(i) Cylinders shall be subjected, at least once in three years, to a test by hydrostatic pressure in a water jacket, for the determination of the expansion of the cylinder. A cylinder must be condemned if the elastic expansion exceeds the marked rejection elastic expansion.

(ii) A cylinder must be condemned if there is evidence of any denting or bulging.

(iii) A cylinder must be condemned at the termination of a 24-year period following the date of the original test or after 4,380 pressurizations, whichever occurs first. If a cylinder is recharged more than an average of once every other day, an accurate record of

the number of rechargings must be maintained by its owner, or his agent.

(iv) Retest dates shall be applied by low stress type steel stamping to a depth no greater than that of the original marking at the time of manufacture. Stamping on sidewall not authorized.

(v) A cylinder made before January 17, 1978 and not yet marked with a rejection elastic expansion (REE) in cubic centimeters near the marked original elastic expansion prior to the next retest date. The REE for a cylinder is 1.05 times its original elastic expansion.

(14) Cylinders made in compliance with specifications DOT-3A, DOT-3AA, DOT-3B, DOT-4A, DOT-4BA, and DOT-4BW (§§ 178.36, 178.37, 178.38, 178.49, 178.51, 178.61 of this chapter) having service pressures up to and including 300 p.s.i. which are used exclusively for methyl bromide, liquid; mixtures of methyl bromide and ethylene dibromide, liquid; mixtures of methyl bromide and chlorpicrin, liquid; mixtures of methyl bromide and petroleum solvents, liquid; or methyl bromide and nonflammable, nonliquefied compressed gas mixtures, liquid; which are commercially free from corroding components, and which are protected externally by suitable corrosion resisting coatings (such as galvanizing, painting, etc.) and internally by a suitable corrosion resisting lining (galvanized, etc.) may be tested decennially instead of quinquennially. All tests must be supplemented by a visual internal and external examination of the cylinder quinquennially. Examination must be as required by CGA Pamphlet C-6. All tests must be supplemented by a very careful examination of the cylinder at each filling, and the cylinder must be rejected if evidence is found of bad dents, corroded areas, a leak, or other conditions that indicate possible weakness which would render the cylinder unfit for service.

(15) A cylinder made in compliance with specification DOT-3A or 3AA, not exceeding 125 pounds water capacity and removed from any cluster, bank, group, rack, or vehicle each time it is filled, may be retested every 10 years instead of every 5 years, provid-

ed the cylinder complies with all of the following:

(i) The cylinder is not over 35 years old when it is retested.

(ii) The cylinder is used exclusively for: Air, argon, cyclopropane, ethylene, helium, hydrogen, krypton, neon, nitrogen, nitrous oxide, oxygen, sulfur hexafluoride, xenon, and permitted mixtures thereof (see § 173.301(a)) and permitted mixtures of these gases with up to 30 percent by volume of carbon dioxide. These commodities must have a dewpoint at or below minus 52° F. at 1 atmosphere.

(iii) Prior to each refill, the cylinder is subjected to, and passes the hammer test specified in CGA Pamphlet C-6.

(iv) A cylinder currently in compliance with paragraphs (e)(15)(i), (ii), and (iii) of this section but which has not been confined to the exclusive use service specified since the last required hydrostatic retest is retested and examined in accordance with the requirements of § 173.302(c) (2), (3), and (4) before the periodic retest interval is extended to 10 years.

(v) Each cylinder less than 35 years old is stamped with a five pointed star at least one-fourth of an inch high following the test date. If at any time a cylinder marked with the star is used other than as specified in this paragraph, the star following the most recent test date is obliterated and subsequent tests are made every 5 years.

(vi) The cylinder is dried immediately following hydrostatic testing to remove all traces of free water.

(vii) The cylinder is not used for underwater breathing.

(16) A cylinder that previously contained a hazardous material classified as a "corrosive material" must not be used for the transportation of any compressed gas unless the following requirements are complied with before the subsequent initial filling with the compressed gas.

(i) The cylinder must be visually inspected, internally and externally, in accordance with the CGA Pamphlet C-6.

(ii) Regardless of the previous test or retest date, the cylinder must be tested by interior hydrostatic pressure and must meet the acceptance criteria

as specified in paragraphs (e)(1), (2), (3), and (4) of this section.

(iii) In addition to the record prescribed in paragraph (e)(5) of this section, the record of the inspection and test shall include the date (month and year) of the inspection and test; the cylinder identification (including ICC or DOT specification number, registered symbol, serial number, date of manufacture, and ownership symbol); the conditions checked (leakage, corrosion, gouges, dents, or digs in shell or heads, broken or damaged footings, or fire damage) and the disposition of the cylinder (returned to service, returned to the manufacturer for repairs, or scrapped).

(iv) A cylinder requalified for compressed gas service in accordance with this paragraph may have its next retest and inspection scheduled from the date of the inspection and retest prescribed herein.

(v) A cylinder that contained any corrosive liquid, for which decontamination methods cannot remove all significant residue or impregnation by the former corrosive content must not be used for the transportation of any compressed gas.

(f) *Cylinders subjected to the action of fire.* A cylinder which has been subjected to the action of fire must not again be placed in service until it has been properly reconditioned as follows:

(1) A cylinder made of plain carbon steel with not over 0.25 percent carbon nor over 0.90 manganese need not be reheat-treated but must pass the periodic retest requirements as specified in paragraph (e) of this section.

(2) DOT-8 cylinders made of plain carbon steel with not over 0.25 percent carbon nor over 0.90 percent manganese must be reinspected to determine the condition of the cylinder and the porous filling. If the cylinder is undamaged and the filler is unchanged and intact, the cylinder may be returned to service without reheat treatment or test.

(3) The inner cylinders made under specification DOT-4L (§ 178.57 of this chapter) may be used after again passing the original hydrostatic test.

(4) DOT 3AL and DOT 4E aluminum cylinders may not be reheat treated and must be removed from service.

(5) Other cylinders must be reheat treated and reconditioned as specified in paragraph (g) of this section.

(g) *Reheat treatment.* (1) Previous to the reheat treatment procedure hereinafter prescribed, each cylinder must be subjected to a careful internal and external inspection.

(2) Cylinders must be segregated for reheat treatment in lots of 100 or less cylinders of the same general size having practically the same chemical composition.

(3) The reheat treatment operation must be carried out, supervised, and reported as prescribed for the heat treatment in the specification covering the manufacture of the cylinder in question. Data from the original reports of manufacture of the cylinders must be available.

(4) The reheat treatment must be followed by hydrostatic retest, such retest to be carried out, supervised, and reported as prescribed for the hydrostatic tests in the specification covering the manufacture of the cylinder in question. The results of the retest must meet either of the following conditions:

(i) The permanent expansion shall be from zero to 10 percent of the total expansion in the hydrostatic retest and one cylinder from each lot shall pass the requirements of the flattening and physical tests prescribed. Failure to pass the flattening or physical tests will reject the lot or:

(ii) The permanent expansion shall not be less than 3 percent nor more than 10 percent of the total expansion in the hydrostatic retest, in which case the flattening and physical tests are not required. For this alternative method the hydrostatic retest pressure may not exceed 115 percent of the minimum prescribed test pressure.

(h) *Repair by welding or brazing of specifications DOT-3A, 3AA, 3B, 3C cylinders.* Repair of specifications DOT-3A, 3AA, 3B or 3C (§§ 178.36, 178.37, 178.38, or 178.40 of this subchapter) cylinders by welding or brazing authorized, but only for the removal and replacement of neckrings and footings attached to cylinders

originally manufactured to conform to §§ 178.36-9(a), 178.37-9(a), 178.38-9(a), and 178.40-9(a) of this subchapter. Removal and replacement must be done by a regular manufacturer of this type of cylinder. After removal and before replacement of such parts, cylinders must be inspected, and defective ones rejected. Cylinders, neckrings, footrings, and method of replacement must conform to § 178.36-9(a), § 178.37-9(a), § 178.38-9(a), or § 178.40-9(a) of this subchapter whichever applies. Replacement must be followed by reheat treating, testing, inspection, and supervised and reported as prescribed by the specification covering their original manufacture. Inspector's reports must conform with that required by the specification covering original manufacture with the word "repaired" substituted for "manufactured." Show original markings and the new additional markings added, and statement: "Cylinders were carefully inspected for defects after removal of neckrings and footrings and after replacement, which replacement was made by process of _____ (Welding-brazing)."

(i) *Repair by welding or brazing of DOT-4 series and DOT-8, welded or brazed cylinders.* Repairs on DOT-4 series and DOT-8 series welded or brazed cylinders are authorized to be made by welding or brazing. Such repairs must be made by a manufacturer of these types of DOT cylinders or by a repair facility approved by the Director, OHMT and by a process similar to that used in its manufacture and under the following specific requirements:

(1) Cylinders with injurious defects in welded joints in or on pressure parts must be repaired by completely removing the defect prior to rewelding.

(2) Cylinders with injurious defects in brazed joints in or on pressure parts must be repaired by rebrazing.

(3) Cylinders during welding must be free of materials in contact with the welded joint that may impair the serviceability of the metal in or adjacent to the weld. (Precautions must be taken to prevent acetylene cylinder steels from picking up carbon during repair.)

(4) Neckrings, footrings, or other nonpressure attachments authorized by the specification may be replaced or repaired. Repair or replacement of footrings, neckrings, or other nonpressure attachments authorized by the specification for DOT-4BA and 8AL (§§ 178.51 and 178.60 of this subchapter) cylinders may be made without conforming to the requirements of paragraph (i)(6) of this section provided the following requirements are met:

(i) Must be done by a manufacturer of these types of DOT cylinders or by a repair facility approved by the Director, OHMT.

(ii) The welder shall have available to him information as to the procedure equipment, and rod used during manufacture and shall use a similar method for repair.

(iii) Repairs must be by metal arc welding only. Welds shall be 3 inches maximum length and spaced at least 3 inches apart.

(iv) Welds shall not be made on or near a brazed joint (to prevent the possibility of copper penetration).

(v) After repair the welds are to be inspected visually for weld quality.

(vi) After repair the weld area is to be leak tested at the service pressure of the cylinder.

(5) After removal, and before replacement of attachments, cylinders must be inspected and defective ones rejected, repaired or rebuilt.

(6) After repair, cylinders must be reheat-treated, tested, inspected and reported when and as prescribed by the specification covering their original manufacture when welding or brazing seams in a pressure part of a cylinder; or when welding or brazing on pressure parts of cylinders of plain carbon steels with carbon over 0.25 percent or manganese over 1.00 percent or of alloy steels except as provided in § 173.34(i)(7).

NOTE 1: Heat-treatment is not required after welding or brazing weldable low carbon parts to attachments of similar material which has been previously welded or brazed to the top or bottom of cylinders and properly heat-treated, provided such subsequent welding or brazing does not produce a temperature in excess of 400° F. in any part of the top or bottom material.

(7) Repair of cylinders must be followed by a proof pressure leakage test at prescribed test pressure and visual examination for weld quality when welding on pressure parts of cylinders of plain carbon 0.25 percent or less and manganese 1.00 percent or less, or when repairing steel types 1315, NAX and GLX by the following procedure:

(i) Leakage through the welding metal may be repaired without subsequent reheat treatment of the cylinder.

(ii) Repair permitted only by either the metal arc or tungsten inert gas shielded arc process. E7015, 7016, or 7018 electrodes not larger than 1/8 inch diameter shall be used for the metal arc process.

(iii) Weld defects must be removed by grinding or chipping before repair by the metal arc process. The tungsten inert gas shielded arc process may be used for repair only when such repair can be made by puddling. Repair weld shall not exceed 1 inch in length nor be closer than 3 inches to the next repair area.

(iv) Repair of weld defects which have any cracking is not permitted.

(j) *Repair of non-pressure attachments.* Repair of non-pressure attachments by welding or brazing without affecting a pressure part of the cylinder must be followed by visual examination for weld quality.

(k) *Prohibited repairs.* Walls, heads or bottoms of cylinders with injurious defects or leaks in base metal shall not be repaired, but may be replaced as provided for in paragraph (l) of this section.

(l) *Rebuilding of DOT-4 series and DOT-8, welded or brazed cylinders.* Rebuilding of DOT-4 series and DOT-8 series, welded or brazed cylinders is authorized. Such rebuilding must be done by a manufacturer of these types of DOT cylinders or by a repair facility approved by the Director, OHMT and by a process similar to that used in its original manufacture and under the following specific requirements:

(1) The replacement of a pressure part such as wall, heads, or bottoms of cylinders or the replacement of the porous filling material, shall be considered as rebuilding.

(2) Rebuilt cylinders shall be considered as new cylinders and shall conform to all the requirements of the specifications applying, including verification of material, examination, inspection, etc., and the rendering of the proper reports to the purchaser, cylinder rebuilder, and the Director, OHMT. Report must show that cylinders were rebuilt.

(3) Information in sufficient detail regarding previous serial numbers and identification symbols must be filed with the Director, OHMT.

(Approved by the Office of Management and Budget under control number 2137-0022)

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18671, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.34, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

Subpart C—Explosives and Blasting Agents; Definitions and Preparation

SOURCE: 29 FR 18683, Dec. 29, 1964, unless otherwise noted. Redesignated at 32 FR 5606, Apr. 5, 1967.

§ 173.50 An explosive.

(a) For the purpose of Parts 170-189 of this subchapter an explosive is defined as any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion, i.e., with substantially instantaneous release of gas and heat, unless such compound, mixture, or device is otherwise specifically classified in Parts 170-189 of this subchapter.

§ 173.51 Forbidden explosives.

Unless otherwise provided in this subchapter, the transportation of the following explosives is forbidden:

(a) Explosive compounds, mixtures or devices which ignite spontaneously or undergo marked decomposition when subjected to a temperature of 167° F. (75° C.) for 48 consecutive hours.

(b) New explosive compounds, mixtures or devices except as provided for in § 173.86.

(c) Explosive mixtures or devices containing an ammonium salt and a chlorate.

(d) Explosive mixtures or devices containing an acidic metal salt and a chlorate.

(e) Leaking or damaged packages of explosives.

(f) Nitroglycerin, diethylene glycol dinitrate or other liquid explosives not authorized by § 173.53(e) or (h). (For shipment by motor vehicle other than by common carrier, see § 177.822(b) of this subchapter.)

(g) Loaded firearms (except as provided in 14 CFR 108.11).

(h) Fireworks that combine an explosive and a detonator or blasting cap.

(i) Fireworks containing yellow or white phosphorus.

(j) Toy torpedoes, the maximum outside dimension of which exceeds 3/8-inch, or toy torpedoes containing a mixture of potassium chlorate, black antimony, and sulfur with an average weight of explosive composition in each torpedo exceeding four grains.

[Amdt. 173-137, 45 FR 34703, May 22, 1980, as amended by Amdt. 173-201, 52 FR 13039, Apr. 20, 1987]

§ 173.52 Acceptable explosives.

(a) For the purposes of this subchapter, acceptable explosives are divided into three classes as follows (acceptable military explosives must be transported on board vessels in accordance with 46 CFR 146.29):

(1) Class A explosives; detonating or otherwise of maximum hazard.

(2) Class B explosives; flammable hazard.

(3) Class C explosives; minimum hazard.

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5806, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16064, Apr. 15, 1976]

CLASS A EXPLOSIVES; DEFINITIONS

§ 173.53 Definition of Class A explosives.

(a) *Type 1.* Solid explosives which can be caused to deflagrate by contact with sparks or flame such as produced by safety fuse or an electric squib, but

cannot be detonated (see Note 1) by means of a No. 8 test blasting cap (see Note 2). Example: Black powder and low explosives.

(b) *Type 2.* Solid explosives which contain a liquid explosive ingredient, and which, when unconfined (see Note 3), can be detonated by means of a No. 8 test blasting cap (see Note 2); or which can be exploded in at least 50 percent of the trials in the Bureau of Explosives' Impact Apparatus (see Note 4) under a drop of 4 inches or more, but cannot be exploded in more than 50 percent of the trials under a drop of less than 4 inches. Example: High explosives, commercial dynamite containing a liquid explosive ingredient.

(c) *Type 3.* Solid explosives which contain no liquid explosive ingredient and which can be detonated, when unconfined (see Note 3), by means of a No. 8 test blasting cap (see Note 2); or which can be exploded in at least 50 percent of the trials in the Bureau of Explosives' Impact Apparatus (see Note 4) under a drop of 4 inches or more, but cannot be exploded in more than 50 percent of the trials under a drop of less than 4 inches. Example: High explosives, commercial dynamite containing no liquid explosive ingredient, trinitrotoluene, amatol, tetryl, picric acid, urea nitrate, pentolite, and commercial boosters.

(d) *Type 4.* Solid explosives which can be caused to detonate when unconfined (see Note 3), by contact with sparks or flame such as produced by safety fuse or an electric squib; or which can be exploded in the Bureau of Explosives' Impact Apparatus (see Note 4), in more than 50 percent of the trials under a drop of less than 4 inches. Example: Initiating and priming explosives, lead azide, fulminate of mercury, etc., and high explosives.

(e) *Type 5.* Desensitized liquid explosives are explosives which may be detonated separately or when absorbed in sterile absorbent cotton, by a No. 8 test blasting cap (see Note 2); but which cannot be exploded in the Bureau of Explosives' Impact Apparatus (see Note 4), by a drop of less than 10 inches. The desensitizer must not be significantly more volatile than nitroglycerine and the desensitized ex-

plosive must not freeze at temperatures above minus 10° F. Example: High explosives, desensitized nitroglycerine.

(f) *Type 6.* Liquid explosives that can be exploded in the Bureau of Explosives' Impact Apparatus (see Note 4) under a drop of less than 10 inches. Example: Nitroglycerin. (See § 173.51(a)(3).)

(g) *Type 7.* An initiating device is a metal or plastic casing containing initiating or priming explosives, Class A-Type 4, either with or without other explosives. It is activated by any one of several means, including an electrical pulse, a flame, a shock or detonation wave, mechanical impact (percussion) pressurized gas, or high intensity light beam. It produces an explosive output that may be used to initiate another explosive or to perform work. A time delay may be incorporated in the means of applying the stimulus, or in the initiating device itself.

(1) A detonator (see Note 5) is an initiating device (other than one properly described as a detonating fuze) which contains no more than 10 grams of total explosives weight, excluding ignition and delay charges per unit. There are different kinds of detonators including the following:

(i) Blasting caps which are activated by safety fuse.

(ii) Blasting caps which are percussion activated.

(iii) Blasting caps which are activated by flexible detonating cord, including:

(A) Delay connectors in plastic sheaths which consist of a plastic sleeve that contains a suitable delay system with receptor and donor explosive charges in the center portion. Each end of the sleeve is made so that flexible detonating cord can be inserted into and locked to the connector;

(B) Delay connectors in metal tubes which consist of a system with a receptor and donor charge positioned between two detonators with the entire assembly placed in a metal tube having both ends open for the insertion of flexible detonating cord;

(C) Delay connectors with detonating cord pigtails which consist of delay connectors as described in paragraph (g)(1)(iii)(B) of this section that have

short lengths of detonating cord inserted into both ends and crimped in place; and

(D) Nonelectric instantaneous and delay caps which consist of blasting caps to which is assembled a length of detonating cord that may have a transfer explosive charge at the opposite end.

(iv) Blasting caps which are activated by gas pressurization or reaction.

(v) Blasting caps which are activated by a shock tube.

(vi) Electric blasting caps which are activated by an electric current.

(2) A detonating primer (see Note 6) is an initiation device for commercial use which contains more than 10 grams of total explosives weight, excluding ignition and delay charges per unit.

(3) Detonating fuzes, class A, are used in the military service to detonate the high explosive bursting charges of projectiles, mines, bombs, torpedoes, and grenades. In addition to a powerful detonator, they may contain several ounces of a high explosive, such as tetryl or dry nitrocellulose, all assembled in a heavy steel envelope. They may also contain a small amount of radioactive component. Those that are so made and packed that they will not cause functioning of other fuzes, explosives, or explosive devices in the same or adjacent containers are classed as class C explosives.

(h) *Type 8.* Any device or solid or liquid compound or mixture which is not specifically included in any of the above types, and which under special conditions may be so designated and examined by the Bureau of Explosives or the Bureau of Mines, U.S. Department of the Interior, and approved by the Director, OHMT. Example: Shaped charges, commercial.

(1) A shaped charge, commercial, consists of a plastic, paper, or other suitable container comprising a charge of not to exceed 8 ounces of a high explosive containing no liquid explosive ingredient and with a hollowed-out portion (cavity) lined with a rigid material. Detonators or other initiating elements may not be assembled in the device unless examined by the Bureau

of Explosives and approved by the Director, OHMT.

(i) *Ammunition for cannon.* Ammunition for cannon is fixed, semi-fixed or separate loading ammunition which is fired from a cannon, mortar, gun, howitzer or recoilless rifle.

(j) *Ammunition for cannon with projectiles.* Ammunition for cannon with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles, or shell is fixed ammunition assembled in a unit consisting of the cartridge case containing the propelling charge and primer, and the projectiles, or shell, fuze or unfuzed. Detonating fuzes, tracer fuzes, explosive or ignition devices, or fuze parts with explosives contained therein may not be assembled in ammunition or included in the same outside package unless shipped by or for the Department of Defense (DOD) and in accordance with established practices and procedures specified by DOD.

(k) *Explosive projectiles.* Explosive projectiles are shells, projectiles, warheads, or rocket heads, loaded with explosives or bursting charges, with or without other materials, for use in cannons, guns, tubes, mortars or other firing or launching devices.

(l) *Grenades.* Grenades, hand or rifle, are small metal or other containers designed to be thrown by hand or projected from a rifle. They are filled with an explosive or a liquid, gas, or solid material such as a toxic or tear gas or an incendiary or smoke producing material and a bursting charge. When shipped without explosives or bursting charges, see §§ 173.100(y), 173.330, 173.350, and 173.385.

(m) *Explosive bombs.* Explosive bombs are metal or other containers filled with explosives. They are used in warfare and include aeroplane bombs and depth bombs.

(n) *Explosive mines.* Explosive mines are metal or composition containers filled with a high explosive.

(o) *Explosive torpedoes.* Explosive torpedoes, such as are used in warfare, are metal devices containing a means of propulsion and a quantity of high explosives.

(p) *Rocket ammunition.* Rocket ammunition (including guided missiles) is

ammunition designed for launching from a tube, launcher, rails, trough, or other launching device, in which the propellant material is a solid propellant explosive. It consists of an igniter, rocket motor, and projectile (warhead) either fuze or unfuzed, containing high explosives or chemicals. Rocket ammunition may be shipped completely assembled or may be shipped unassembled in one outside container.

(q) *Ammunition for small arms with explosive projectiles or incendiary projectiles.* Ammunition for small arms with explosive projectiles and ammunition for small arms with incendiary projectiles is fixed ammunition of caliber 20 millimeters to be used in machine guns or cannons, and consists of a metallic cartridge case, the primer and the propelling charge, with explosive projectile or incendiary projectile with or without detonating fuze; the component parts necessary for one firing being all in one assembly. Detonating fuzes, tracer fuzes, explosive or ignition devices or fuze parts with explosives contained therein must not be assembled in ammunition or included in the same outside package unless shipped by, for or to the Departments of the Army, Navy, and Air Force of the U.S. Government or unless of a type approved by the Department.

(r) *Chemical ammunition.* Chemical ammunition used in warfare is all kinds of explosive chemical projectiles, shells, bombs, grenades, etc., loaded with toxic, tear, or other gas, smoke or incendiary agent, also such miscellaneous apparatus as cloud-gas cylinders, smoke generators, etc., that may be utilized to project chemicals.

(s) *Boosters, bursters, and supplementary charges.* Boosters and supplementary charges consist of a casing containing a high explosive and are used to increase the intensity of explosion of the detonator of a detonating fuze. Bursters consist of a casing containing a high explosive and are used to rupture a projectile or bomb to permit release of its contents.

(t) *Jet thrust units (jato), class A explosives; rocket motors, class A explosives; igniters, jet thrust (jato), class A explosives; and igniters, rocket motor, class A explosives.* (1) Jet thrust units (jato), class A explosives, are metal

cylinders containing a mixture of chemicals capable of burning rapidly and producing considerable pressure. Under certain conditions the chemical fuel with which the unit is loaded may explode. Jet thrust units are designed to be ignited by an electric igniter. They are used to assist aeroplanes to take off.

(2) Rocket motor, class A explosives, is a device containing a propelling charge and consisting of one or more continuous type combustion unit(s) closed at one end (closure may be an igniter with a thrust plate) and with a nozzle(s) at the other end. (The rocket motor carries its own solid oxidizer-fuel combination.) The propelling charge consists of a mixture of chemicals and/or chemical compounds which when ignited is capable of burning rapidly and producing considerable pressure and which will sustain a detonation. Rocket motors, class A explosives, should be nonpropulsive in shipment (see paragraphs (t)(2) (i) and (ii) of this section). Rocket motors, class A explosives, are designed to be ignited by an electrically actuated device which may be an igniter, or by other means. They are used to propel and/or provide thrust for guided missiles, rockets, or spacecraft.

(i) A rocket motor to be considered "nonpropulsive" must be capable of unrestrained burning and will not move appreciably in any direction when ignited by any means. Blast deflectors, thrust neutralizers, or other similar devices must be proven adequate by test prior to authorization for use.

(ii) Rocket motors, class A explosives may be shipped in a propulsive state only under conditions approved by the Department of Defense.

(3) Igniters, jet thrust (jato), class A explosives, and igniters, rocket motor, class A explosives, are devices consisting of an electrically operated or remotely controlled ignition element and a charge of fast-burning composition meeting the definition prescribed for Type 1 class A explosives (see paragraph (a) of this section), assembled in a unit for use in igniting the propelling charge of jet thrust units or rocket motors.

(u) *Charged well casing jet perforating guns.* Charged well casing jet perforating guns are steel tubes or metallic strips into which are inserted shaped charges connected in series by primacord. Shaped charges must be of a type described in paragraph (h)(1) of this section, except that each shaped charge installed in the steel tube or metallic strip shall contain not over 4 ounces of high explosive. Charged well casing jet perforating guns must not be transported with blasting caps, electric blasting caps, or other firing devices affixed to or installed in the guns.

(v) *Type 9.* Propellant explosives, class A, are solid chemicals or solid chemical mixtures which are designed to function by rapid combustion of successive layers, generally with little or no smoke. The combustion is controlled by composition, size, and form of grain. Propellant explosives, class A, include some types of smokeless powder and some types of solid propellant explosives for jet thrust units, rockets, or other devices. Any propellant explosive is class A which detonates in any one out of five trials when tested in the packages in which it is offered for transportation. In conducting the test, one propellant container shall be surrounded by inert loaded containers of the same weight, including one inert container placed on top of the propellant container. The propellant shall be ignited by means of a commercial electric squib placed within 4 inches of the bottom of the container. The presence of a crater and absence of flame shall be considered as evidences of detonation.

(w) Detonating cord is a device consisting of a core of pentaerythrite tetranitrate, cyclotrimethylene-trinitramine or similar explosive overspun with tapes, yarns and plastics or waterproofing compounds without wire counteracting.

NOTE 1: The detonation test is performed by placing the sample in an open-end fiber tube which is set on the end of a lead block approximately 1½ inches in diameter and 4 inches high which, in turn, is placed on a solid base. A steel plate may be placed between the fiber tube and the lead block.

NOTE 2: A No. 8 test blasting cap is one containing two grams of a mixture of 80 per-

cent mercury fulminate and 20 percent potassium chlorate, or a cap of equivalent strength.

NOTE 3: "Unconfined" as used in this section does not exclude the use of a paper or soft fiber tube wrapping to facilitate tests.

NOTE 4: The Bureau of Explosives Impact Apparatus is a testing device designed so that a guided 8-pound weight may be dropped from predetermined heights so as to impact specific quantities of liquid or solid materials under fixed conditions. Detailed prints may be obtained from the Bureau of Explosives, 1920 L Street, N.W., Washington, D.C. 20036

NOTE 5: See § 173.100 (gg) for criteria that determine whether a particular type of detonator can be classed as a Class C explosive.

NOTE 6: See § 173.100 (hh) for criteria that determine whether a particular type of detonating primer can be classed as a Class C explosive.

[29 FR 18683, Dec. 29, 1964, as amended by Order 72, 31 FR 6423, Apr. 28, 1966; Order 71, 31 FR 9069, July 1, 1966. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.53, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.54 Ammunition for cannon.

(a) Ammunition for cannon with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles, or tear gas projectiles must be packed and properly secured in strong wooden or metal containers, or in plastic containers of approved military specifications complying with § 173.7(a).

(b) Each outside package must be plainly marked "AMMUNITION FOR CANNON WITH EXPLOSIVE PROJECTILES," "AMMUNITION FOR CANNON WITH GAS PROJECTILES," "AMMUNITION FOR CANNON WITH SMOKE PROJECTILES," "AMMUNITION FOR CANNON WITH INCENDIARY PROJECTILES," "AMMUNITION FOR CANNON WITH ILLUMINATING PROJECTILES," OR "AMMUNITION FOR CANNON WITH TEAR GAS PROJECTILES, CLASS A EXPLOSIVES," as appropriate.

[Amdt. 173-110, 42 FR 57965, Nov. 7, 1977]

§ 173.55 Ammunition, nonexplosive.

(a) Nonexplosive ammunition is defined as a device which contains no ex-

plosives or other hazardous materials, such as cartridge cases, dummy or drill cartridges; empty, sand loaded or solid projectiles with or without tracers (containing not in excess of one ounce of tracer composition), empty mines, empty bombs, solid projectiles, empty torpedoes, or practice bombs. It also includes devices containing no explosives, or other hazardous materials, except installed electric squibs, primers, propellants or thermal batteries required for the activation of the device, provided that it has been proven by test that when initiated the full energy release is contained within the outside shipping container. Such ammunition is exempt from Parts 170-189 of this chapter. Rotating bands should be protected against deformation by method of packing or loading.

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-158, 47 FR 43065, Sept. 30, 1982]

§ 173.56 Ammunition, projectiles, grenades, bombs, mines, gas mines, and torpedoes.

(a) Detonating fuzes, tracer fuzes, explosive or ignition devices, bou-chons, or fuze parts with explosives contained therein, must not be assembled in explosive projectiles, grenades, explosive bombs, explosive mines, or explosive torpedoes, or included in the same outside package with them unless shipped by or for the Department of Defense (DOD) and in accordance with established practices and procedures specified by DOD.

(b) Explosive projectiles, explosive torpedoes, explosive mines, explosive bombs, or explosive grenades except as provided in paragraph (c) of this section, must be packed and properly secured in strong wooden or metal boxes.

(c) The following explosives may be shipped without being boxed when shipped by or for the Department of Defense (DOD) and in accordance with established practices and procedures specified by DOD:

(1) Explosive projectiles, explosive torpedoes, explosive mines, or explosive bombs, exceeding 90 pounds in weight, and explosive projectiles of

not less than 4½ inches when palletized.

(2) Explosive projectiles less than 4¼ inches when palletized.

(d) Gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles, gas bombs, smoke bombs, incendiary bombs, gas grenades, smoke grenades, incendiary grenades, and gas mines, explosive, containing a bursting charge must be packed and properly secured in strong wooden boxes. Detonating fuzes, boosters or bursters, bouchons or ignition elements may not be assembled in these articles or included in the same package with them unless shipped by or for the Department of Defense (DOD) and in accordance with established practices and procedures specified by DOD.

(e) The gross weight of a box containing more than one projectile, mine, grenade, or bomb must not exceed 250 pounds.

(1) Explosive bombs packed more than one in shipping containers having gross weights not in excess of 1,400 pounds may be shipped by, for or to the Departments of the Army, Navy, and Air Force of the U.S. Government.

(f) Each exterior package or projectile, bomb, or mine must be plainly marked "Explosive Projectile," "Explosive Torpedo," "Explosive Mine," "Explosive Bomb," "Hand Grenades," or "Rifle Grenades," as the case may be, except that each device need not be so marked when palletized and the palletized units are plainly marked and shipped as carload or truckload shipments.

(g) Bombs, projectiles, grenades, ammunition for cannon with gas projectiles, or other packagings loaded with Poison A, and an explosive charge, either boxed or unboxed (see paragraph (c) of this section) must bear the POISON GAS label in addition to the EXPLOSIVE label.

(h) For regulations for shipping ammunition containing chemicals but no explosives or bursting charges, see chemical ammunition, §§ 173.330, 173.350, and 173.383.

EDITORIAL NOTE: For Federal Register citations affecting § 173.56, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.57 Rocket ammunition.

(a) Rocket ammunition with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, or illuminating projectiles, must be well packed and properly secured in strong wooden, metal, preformed fiber glass resin impregnated container, or other packagings or approved military specifications which comply with § 173.7(a).

(b) [Reserved]

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16065, Apr. 15, 1976; Amdt. 173-138, 45 FR 32693, May 19, 1980; Amdt. 173-201, 52 FR 13039, Apr. 20, 1987]

§ 173.58 Ammunition for small arms.

(a) Ammunition for small arms with explosive projectiles or incendiary projectiles must be well packed and properly secured in strong metal or wooden containers. The gross weight of the outside package must not exceed 175 pounds.

(b) [Reserved]

[Order 71, 31 FR 9069, July 1, 1966. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16065, Apr. 15, 1976; Amdt. 173-201, 52 FR 13039, Apr. 20, 1987]

§ 173.59 Chemical ammunition, explosive.

(a) When chemical elements of ammunition are shipped assembled with their detonating fuzes or bursting charges, they must be shipped in conformity with the regulations prescribed for explosive articles, class A, see § 173.56. For shipment of these articles not containing ignition elements, bursting charges, detonating fuzes, or other explosive components, see § 173.330, § 173.350, and § 173.383. For shipment of these articles assembled with their ignition elements or expelling charges but without any detonating or bursting charge see § 173.88(d).

[29 FR 18683, Dec. 29, 1964, as amended by Order 71, 31 FR 9069, July 1, 1966. Redesignated at 32 FR 5606, Apr. 5, 1967]

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16065, Apr. 15, 1976]

§ 173.60 Black powder and low explosives.

(a) Black powder and low explosives must be packed in containers complying with the following specifications:

(1) Specification 13 (§ 178.140 of this subchapter). Metal kegs, not less than 7 inches long. Net weight not less than 6¼ pounds nor more than 150 pounds.

(2)—(3) [Reserved]

(4) Specification 14, 15A, 16A, or 19B (§ 178.165, § 178.168, § 178.185, or § 178.191 of this subchapter). Wooden boxes with inside fiber or metal containers not over 1½ pounds capacity each, or cotton bags of at least 4 ounce cotton duck not over 25 pounds capacity each. The gross weight of Specification 14 boxes may not exceed 140 pounds and the gross weight of Specification 15A or 16A boxes may not exceed 200 pounds.

(5) Spec. 14, 15A, 16A, or 19B (§ 178.165, § 178.168, § 178.185, or § 178.191 of this subchapter). Wooden boxes with inside cylindrical fiber cartridges not over 5 inches diameter nor over 18 inches long with fiber at least 0.05 inch thick paraffined on outer surface with joints securely glued or cemented, or strong paraffined paper cartridges not over 12 inches long authorized only for compressed pellets (cylindrical block) ⅜ inch or more in diameter. Boxes must be completely lined with strong paraffined paper or other suitable waterproofed material without joints or other openings at the bottom or sides. Authorized gross weight not to exceed 75 pounds.

(6) Spec. 12H, 23F, or 23H (§ 178.209, § 178.214, or § 178.219 of this subchapter). Fiberboard boxes with inside cylindrical fiber cartridges not over 5 inches diameter nor over 18 inches long with fiber at least 0.05 inch thick paraffined on outer surface with joints securely glued or cemented, or strong paraffined paper cartridges not over 12 inches long authorized only for compressed pellets (cylindrical block) ⅜ inch or more in diameter. Authorized gross weight not to exceed 65 pounds.

(b) Black powder (not low explosives) in addition to containers specified in paragraph (a) of this section, must be shipped in containers complying with the following specifications:

(1) Spec. 14, 15A, 16A, or 19B (§ 178.165, § 178.168, § 178.185, or § 178.191 of this subchapter). Wooden boxes with inside containers which must be cloth or paper bags of capacity not exceeding 25 pounds net weight, provided the completed shipping package shall be capable of standing a drop of 4 feet without rupture of inner or outer containers. The completed package must not exceed 50 pounds, net weight of black powder.

(2) Spec. 12H, 23F, or 23H (§ 178.209, § 178.214, or § 178.219 of this subchapter). Fiberboard boxes with inside containers which must be cloth, paper, or securely closed polyethylene bags constructed of material not less than 0.004 inch thick of capacity not exceeding 25 pounds net weight for cloth or paper bags and not exceeding 50 pounds net weight for polyethylene bags, or inside fiber or metal containers having not over 1 pound capacity each, provided the completed shipping package shall be capable of withstanding a drop of 4 feet without rupture of inner or outer containers. The tubes of the box may be eliminated and a single tube as specified in spec. 23F (§ 178.214 of this subchapter) may be substituted. The completed package shall not contain more than 50 pounds net weight of black powder.

(3) Spec. 17E (§ 178.116 of this subchapter). Metal drums (single-trip), not over 5 gallons capacity each, without opening except bunghole not exceeding 2.3 inches in diameter. Authorized for carload or truckload shipments only.

(c) Black pellet powder primed with an electric squib secured inside the coaxial hole of the pellet powder with loose ends of the wires of the squib effectively short-circuited may be shipped in containers complying with the following specifications:

(1) Spec. 14, 15A, 16A, or 19B (§ 178.165, § 178.168, § 178.185, or § 178.191 of this subchapter). Wooden boxes with inside cartridges which must be strong paraffined paper cartridges not over 12 inches long authorized only for compressed pellets (cylindrical block) ⅜ inch or more in diameter. Boxes must be lined as prescribed for cylindrical fiber cartridges. Gross weight not to exceed 65 pounds.

(d) Low explosives (not black powder) may in addition to the containers specified in paragraph (a) of this section, be shipped in containers complying with the following specifications:

(1) Spec. 14, 15A, 16A, or 19B (§ 178.165, § 178.168, § 178.185, or § 178.191 of this subchapter). Wooden boxes with inside containers which must be strong paper bags of capacity not exceeding 25 pounds. Gross weight of spec. 14 box must not exceed 140 pounds. Gross weight of spec. 15A or 16A box must not exceed 200 pounds.

(2) Spec. 12H, 23F, or 23H (§ 178.209, § 178.214 or § 178.219 of this subchapter). Fiberboard boxes with inside containers which must be strong paper bags of capacity not exceeding 25 pounds. Gross weight must not exceed 65 pounds.

(3) Spec. 15A, or 19B (§§ 178.168, 178.191 of this subchapter). Wooden boxes, lined, spec. 2L (§ 178.30 of this subchapter). Authorized only for low explosives in the form of hard non-plastic rods or cylinders not less than 5/8-inch diameter.

(e) Each outside package must be plainly marked, stamped, or stenciled "BLACK POWDER" or "LOW EXPLOSIVES," and may also show "BLASTING," "RIFLE," etc., as "BLACK BLASTING POWDER," "BLACK RIFLE POWDER," "LOW BLASTING EXPLOSIVE" or "BLACK PELLET POWDER," as the case may be.

(1) Inside containers of over 1½ pounds capacity each in boxes, must be packed with filling holes up, and the boxes must be marked on top "THIS SIDE UP."

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 18065, Apr. 15, 1976; Amdt. 173-14, 45 FR 59888, Sept. 11, 1980; Amdt. 173-149, 46 FR 49892, Oct. 8, 1981; Amdt. 173-159, 47 FR 54826, Dec. 6, 1982]

§ 173.61 High explosives.

(a) High explosives (dynamite), except gelatin dynamite, when offered for transportation by rail freight or highway must not contain in excess of 60 percent of liquid explosive ingredient and when offered for transportation by carrier by water must not con-

tain in excess of 75 percent of liquid explosive ingredient. Maximum limit of liquid explosive ingredient specified for transportation by carrier by water applies only for such explosives as consist principally of wood pulp or other satisfactory absorbent and liquid explosive, which are comparable with good commercial dynamite under tests as to leakage of liquid ingredient and sensitiveness to the shocks of transportation, and for shipments that are otherwise in compliance with the regulations in Parts 170-189 of this subchapter, for the transportation of high explosives.

(b) High explosives consisting of a liquid mixed with an absorbent material must have the absorbent (wood pulp or similar material) in sufficient quantity and of satisfactory quality, properly dried at the time of mixing; nitrate of soda must be dried at the time of mixing to less than 1 percent of moisture; and the ingredients must be uniformly mixed so that the liquid will remain thoroughly absorbed under the most unfavorable conditions incident to transportation.

(c) High explosives containing nitroglycerin or other liquid explosive ingredients must have uniformly mixed with an absorbent material a satisfactory antacid, which must be in quantity sufficient to have the acid neutralizing power of an amount of magnesium carbonate equal to 1 percent of the nitroglycerin or other liquid explosive ingredient.

(d) Cartridges shall consist of a column of explosives completely enclosed in a shell made of strong paper or polyethylene or a combination of paper and polyethylene, so treated that it will not absorb the liquid ingredient of the explosive.

(e) Bags shall be made of strong paper or equally efficient material so treated or of such nature that it will not absorb the liquid ingredient of the explosive.

(f) All boxes in which high explosives are packed must be lined with strong paraffined paper or other suitable material, except as provided in paragraph (j) of this section, § 173.64(a)(5), and § 173.65(a)(5). Lining must be without joints or other openings or with cemented joints at

the bottom, ends or sides of boxes, and for explosives with liquid ingredients must be impervious to such ingredient and also to water. Covers of boxes must be protected from contact with explosives by lining paper or other suitable material. (See spec. 2L (§ 173.30 of this subchapter), for authorized lining material.)

(g) Before cartridges or bags of gelatin explosives are packed in boxes, lined in accordance with paragraph (f) of this section, dry fine wood pulp or sawdust at least $\frac{1}{4}$ inch in depth must be spread over the bottom of box or bottom of box may have a full area pad formed of absorptive cellulose sheet having nitroglycerin absorptive value equivalent to sawdust as specified; similar materials are required in boxes for packing all non-gelatinous types of explosives containing 30 percent or more liquid explosive ingredient.

(h) Except for cartridges containing gelatin dynamite, all cartridges of high explosives exceeding 4 inches in length and containing more than 10 percent of a liquid explosive ingredient must be placed horizontally in boxes. Bags must be packed with their filling holes up.

(i) Movement of cartridges and bags of high explosives within the boxes shall be prevented by sufficiently tight packing.

(j) High explosives (dynamite), except gelatin dynamite, packed in bags or in cartridges in excess of 2 inches in diameter and containing not more than 30 percent liquid explosive ingredients may be packed in outside containers without sawdust and without lining paper provided either each inside or outside container is sift-proof and is so treated as to prevent penetration by the commodity with which the container is filled for shipping.

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967 and amended by, Amdt. 173-94, 41 FR 16065, Apr. 15, 1976]

§ 173.62 High explosives, liquid.

(a) Liquid explosives as defined in § 173.53(e) must be packed in specification containers as follows:

(1) Spec. 15L (§ 178.176 of this subchapter). Wooden boxes which must be plainly marked on top and one one

side or end "HIGH EXPLOSIVES—DANGEROUS" in letters not less than $\frac{1}{16}$ inch in height. The tops of boxes must be marked "THIS SIDE UP".

(2) Spec. 15M (§ 178.177 of this subchapter.) Wooden boxes. Metal inside containers shall contain not more than 10 quarts liquid explosives each. Boxes must be plainly marked on top and on one side or end "HIGH EXPLOSIVES—DANGEROUS" in letters not less than $\frac{1}{16}$ inch in height. The tops of boxes must be marked "THIS SIDE UP".

(3) Spec. MC-200 (§ 178.315 of this subchapter). Motor vehicle container.

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16065, Apr. 15, 1976]

§ 173.63 High explosive with liquid explosive ingredient.

(a) High explosives (dynamite) containing not more than 30 percent liquid explosive ingredients must be prepared as prescribed in § 173.61, except as otherwise specified, and packed in containers complying with the following specifications:

(1) Spec. 23G (§ 178.218 of this subchapter.) Fiberboard boxes. Not more than one cartridge in each box. High explosives packed in boxes consisting of more than one tube joined circumferentially are exempt from the requirements of § 173.61 (f) and (g). High explosives packed in boxes consisting of one tube closed at the ends are exempt from the requirements of § 173.61 (d), (f), and (g). Gross weight of boxes not to exceed 65 pounds.

(2) Spec. 14, 15A, 16A, or 19B (§ 178.165, § 178.168, § 178.185, or § 178.191 of this subchapter). Wooden boxes, or spec. 12H, 23F, or 23H (§ 178.209, § 178.214, or § 178.219 of this subchapter) fiberboard boxes, with inside containers which must be cartridges not exceeding 12 inches in diameter or 50 pounds in weight with length not to exceed 36 inches, or bags not exceeding 50 pounds each securely closed so as to prevent leakage therefrom. Gross weight of wooden boxes not to exceed 75 pounds and gross weight of fiberboard boxes not to exceed 65 pounds.

(3) Specification 23F or 23H (§ 178.214 or § 178.219 of this subchapter). Fiberboard boxes having one inside 26-gauge metal container, measuring not over 8 inches in diameter and 31 inches long, containing high explosives (ammonium dynamite core) surrounded by a material classed as a blasting agent. Authorized gross weight not to exceed 65 pounds.

(b) High explosives (dynamite) containing 10 percent or less of a liquid explosive ingredient in cartridges or bags as prescribed in § 173.61 (d) and (e) may be packed in wooden boxes, Specification 14, 15A, 16A, or 19B (§ 178.165, § 178.168, § 178.185, or § 178.191 of this subchapter), gross weight not to exceed 140 pounds, or fiberboard boxes, Specification 12H, 23F, or 23H (§§ 178.209, 178.214, 178.219 of this subchapter), gross weight not to exceed 65 pounds.

(1) High explosives (dynamite) containing 10 percent or less of a liquid explosive ingredient may be packed in fiberboard boxes, spec. 23G (§ 178.218 of this subchapter). Not more than one cartridge in each box. High explosives packed in boxes consisting of more than one tube joined circumferentially are exempt from the requirements of § 173.61 (f) and (g). High explosives packed in boxes consisting of one tube closed at the ends are exempt from the requirements of § 173.61 (d), (f), and (g). Gross weight of boxes not to exceed 65 pounds.

(c) High explosives (dynamite) containing more than 30 percent liquid explosive ingredients must be prepared as prescribed in § 173.61 (a) to (i), inclusive, except as otherwise specified, and in containers complying with the following specifications:

(1) Spec. 14, 15A, 16A, or 19B (§ 178.165, § 178.168, § 178.185, or § 178.191 of this subchapter) wooden boxes or spec. 12H, 23F, or 23H (§§ 178.209, 178.214, or 178.219 of this subchapter) fiberboard boxes. Inside containers must consist of:

(i) Cartridges not exceeding 4 inches in diameter and not exceeding 8 inches in length.

(ii) Cartridges exceeding 4 inches in diameter and not exceeding 5 inches in diameter and between 8 inches and not exceeding 10 inches in length must

be redipped in melted paraffin or equivalent material.

(iii) Two or more cartridges that must be redipped because of their size may be enclosed in another strong paper shell to form a completed cartridge not exceeding 30 inches in length. The resulting cartridge must be dipped in melted paraffin or equivalent material.

(iv) Gross weight of wooden boxes not to exceed 75 pounds and gross weight of fiberboard boxes not to exceed 65 pounds.

(2) Spec. 14, 15A, 16A, or 19B (§ 178.165, § 178.168, § 178.185, or § 178.191 of this subchapter) wooden boxes, or spec. 12H, 23F, or 23H (§ 178.209, § 178.214, or § 178.219 of this subchapter), fiberboard boxes, with inside containers which must be paraffined two-ply paper bags not exceeding 12½ pounds capacity, securely closed by folding the tops and securing the fold by tape, with not more than two such bags inserted into another two-ply paper bag which must be securely closed and dipped in paraffin after closing, or with not more than two inside containers which must be securely closed polyethylene bags not less than 0.004 inch in thickness of not more than 12½ pounds capacity each packed in a securely closed polyethylene or paper bag and packed in polyethylene lined outside fiberboard boxes. Gross weight of wooden boxes not to exceed 75 pounds and gross weight of fiberboard boxes not to exceed 65 pounds.

(d) High explosives (gelatin dynamite and blasting gelatin) must be prepared as prescribed in § 173.61 (a) to (i) inclusive, except as otherwise specified, and in containers complying with the following specifications:

(1) Spec. 23G (§ 178.218 of this subchapter). Fiberboard boxes. Not more than one cartridge in each box. High explosives packed in boxes consisting of more than one tube joined circumferentially are exempt from the requirements of § 173.61 (f) and (g) or when packed in boxes consisting of one tube closed at the ends are exempt from the requirements of § 173.61 (d) to (g), inclusive. Gross weight of boxes not to exceed 65 pounds.

(2) Spec. 14, 15A, 16A, or 19B (§ 178.165, § 178.168, § 178.185, or § 178.191 of this subchapter). Wooden boxes, or spec. 12H, 23F, or 23H (§ 178.209, § 178.214, or § 178.219 of this subchapter), fiberboard boxes, with inside containers which must be cartridges not exceeding 12 inches in diameter or 50 pounds in weight with length not to exceed 36 inches, or bags not exceeding 12½ pounds each. Bags if not completely sealed against leakage by method of closure must be packed with filling holes up. Gross weight of wooden boxes not to exceed 75 pounds and gross weight of fiberboard boxes not to exceed 65 pounds.

(3) High explosives (gelatin dynamite or blasting gelatin) may be shipped in a package consisting of not more than 6 cartridges of such explosives, each not exceeding 32 inches in length or 5 inches in diameter, cartridge with heavy paper in such manner as to have the approximate strength of a spec. 23G (§ 178.218 of this subchapter) container, which cartridges shall in turn be placed in a 10-ply paper tube not exceeding 11 feet in length. The outer paper tube must be equipped with a metal cone or equally efficient device on one end which shall serve to close that end of the tube and to the metal cone shall be affixed a wire threaded through fiber tubes running through the center of each of the 6 cartridges; or as an alternative to the single wire running through the cartridges in the outer tube at the center, two wires may be applied, one on each side of the cartridges and between the outside of the cartridges and the inside of the outer tube. In either event, cartridges and the outer tube shall be securely closed so as to prevent spilling of any loose explosive under any conditions normally incident to transportation and cartridges shall be so loaded and stayed within the car or motor vehicle as to prevent damage to individual containers. The total gross weight of each completed package shall not exceed 125 pounds. Shipments are authorized in carload or truckload lots only without transfer of packages other than such transfers as may be necessary in the event of mechanical failure of the car or vehicle in which originally loaded.

(e) High explosives (straight gelatin dynamites of 80 percent strength and over and blasting gelatin) must be packed in cartridges or in bulk in outside boxes. When packed in bulk in boxes double lining paper throughout must be used. Containers must comply with the following specifications:

(1) Specification 14, 15A, 16A, or 19B (§§ 178.165, 178.168, 178.185, or 178.191 of this subchapter). Wooden boxes.

(2) Specification 12H, 23F, 23G, or 23H (§§ 178.209, 178.214, 178.218, 178.219 of this subchapter). Fiberboard boxes. Specification 23G must be packed in an outer container consisting of at least 7-ply heavy kraft paper (see § 173.25 for additional required marking). Two 3-mil polyethylene bags (one within the other) may be used in place of the double lining paper when Specification 12H is the outside container. Not more than one such double bag may be packed in the Specification 12H fiberboard box.

(3) Gross weight of wooden boxes not to exceed 75 pounds. Gross weight of fiberboard boxes not to exceed 65 pounds.

(f) Boxes containing high explosives must be plainly marked on top and on one side or end, except those made in compliance with spec. 23G which must be marked on the side or end, and kegs, drums, or barrels containing high explosives must be marked on both ends "HIGH EXPLOSIVES—DANGEROUS" in letters not less than ⅜ inch in height. The tops of boxes, except those made in compliance with spec. 23G, must be marked "THIS SIDE UP".

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-94, 41 FR 16065, Apr. 15, 1976; Amdt. 173-105, 42 FR 28133, June 2, 1977; Amdt. 173-141, 45 FR 62081, Sept. 18, 1980; Amdt. 173-149, 46 FR 49892, Oct. 8, 1981]

§ 173.64 High explosives with no liquid explosive ingredient and propellant explosives, Class A.

(a) High explosives containing no liquid explosive ingredients if their sensitiveness to percussion is not greater than that measured by the blow delivered by an 8-pound weight dropping from a distance of 7 inches on a compressed pellet of the explo-

sive three-hundredths of an inch thick and two-tenths of an inch in diameter, confined rigidly between hard steel surfaces as in the standard Impact Testing Apparatus of the Bureau of Explosives, must be packed in cartridges or in bags in outside boxes. They must be packed in cartridges when their sensitiveness is greater than the limit prescribed herein. Such explosives when dry may be packed in strong sift-proof cloth or paper bags of capacity not exceeding 25 pounds. These explosives must be packed in outside containers complying with the following specifications:

(1) Specification 14, 15A, 16A, or 19B (§ 178.165, § 178.168, § 178.185, or § 178.191 of this subchapter). Wooden boxes.

(2) Spec. 12H, 23F, or 23H (§ 178.209, § 178.214, or § 178.219 of this subchapter). Fiberboard boxes.

(3) [Reserved]

(4) Gross weight of wooden boxes not to exceed 140 pounds. Gross weight of fiberboard boxes not to exceed 65 pounds.

(5) When such explosives contain over 5 percent moisture, box must have an inside polyethylene bag having a minimum thickness of 6 mils; or the box must be lined with strong paraffined paper or other authorized material, spec. 2L (§ 178.30 of this subchapter). Box handholes are not authorized.

(6) When such explosives are in combination cartridges, consisting of column of explosives with core of dynamite, they may be shipped when packed in outside boxes with 65 pounds as the maximum gross weight. The column of explosives must be completely inclosed in waterproofed cloth or strong waterproofed paper and must not exceed 6 inches in diameter, 20 inches in length, or gross weight of 25 pounds.

(7) Spec. 23G (§ 178.218 of this subchapter). Fiberboard boxes. Such explosives when packed in boxes consisting of more than one tube joined circumferentially are exempt from requirements of § 173.61 (f) and (g) or when packed in boxes consisting of one tube closed at the ends are exempt from requirements of § 173.61 (d) to

(g) inclusive. The gross weight of boxes not to exceed 65 pounds.

(b) Boxes containing high explosives must be plainly marked on top and on one side or end, except those made in compliance with spec. 23G which must be marked on the side or end, and kegs, drums, or barrels containing high explosives must be marked on both ends "HIGH EXPLOSIVES—DANGEROUS" in letter not less than $\frac{3}{16}$ inch in height.

(c) [Reserved]

(d) Propellant explosives, class A must be packed in containers as prescribed in § 173.93. Each outside container must be plainly marked "PROPELLANT EXPLOSIVES, CLASS A".

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5806, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.65, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.65 High explosives with no liquid explosive ingredient nor any chlorate.

(a) High explosives containing no liquid explosive ingredient nor any chlorate if their sensitiveness to percussion is not greater than that measured by the blow delivered by an 8-pound weight dropping from a distance of 7 inches on a compressed pellet of the explosive three-hundredths of an inch thick and two-tenths of an inch in diameter, confined rigidly between hard steel surfaces as in the standard Impact Testing Apparatus of the Bureau of Explosives, must be packed in cartridges, or in bags or metal containers in outside boxes, except that the requirement of packaging in cartridges, bags or metal containers does not apply to plastic-bonded explosives, but they must be packed and cushioned so as to prevent movement of individual pieces within the outside shipping container. They must be packed in cartridges when their sensitiveness is greater than the limit prescribed in this section. Such explosives when dry may be packed in strong sift-proof bags securely closed so as to prevent leakage therefrom or metal containers of capacity not exceeding 60 pounds. These explosives must be packed in outside containers

complying with the following specifications:

(1) Specification 14, 15A, 16A, or 19B (§§ 178.165, 178.168, 178.185, 178.191 of this subchapter). Wooden boxes.

NOTE 1: Wooden boxes, having inside metal containers which are tightly and securely closed, may be equipped with hand holes in each end which must be not more than one inch by four inches and centered laterally not nearer than 1½ inches from top edge of end of box.

(2) Spec. 12H, 23F, or 23H (§ 178.209, § 178.214, or § 178.219 of this subchapter). Fiberboard boxes.

(3) Specification 17H or 37A (§§ 178.118 and 178.131 of this subchapter). Metal drums (single-trip) having a minimum 0.003-inch thick polyethylene liner. Authorized only for ammonium perchlorate with particle size of 5 to 15 microns. Maximum capacity is 30 gallons.

(4) Gross weight of wooden boxes not to exceed 140 pounds. Gross weight of fiberboard boxes not to exceed 65 pounds.

(5) When these explosives contain over 5 percent moisture, each box must have inside securely closed polyethylene bags having a minimum wall thickness of 0.006-inch, or must incorporate a specification 2L (§ 178.30 of this subchapter) lining. Polyethylene is authorized only for materials that will not, react with, or cause decomposition of the plastic.

(6) When such explosives are in combination cartridges, consisting of column of explosives with core of dynamite, they may be shipped when packed in outside boxes with 65 pounds as the maximum gross weight. The column of explosives must be completely inclosed in waterproofed cloth or strong waterproofed paper and must not exceed 6 inches in diameter, 20 inches in length, or gross weight of 25 pounds.

(7) Spec. 23G (§ 178.218 of this subchapter). Fiberboard boxes. Such explosives when packed in boxes consisting of more than one tube joined circumferentially are exempt from requirements of § 173.61 (f) and (g) or when packed in boxes consisting of one tube closed at the ends are exempt from requirements of § 173.61 (d) to

(g) inclusive. The gross weight of boxes not to exceed 65 pounds.

(b) Amatol consisting of 80 percent ammonium nitrate and 20 percent trinitrotoluene, ammonium picrate, nitroguanidine, nitrourea, urea nitrate, picric acid, tetryl, trinitroresorcinol, trinitrotoluene, pentolite, cyclotri-methylenetrinitramine (desensitized), and soda amatol, in dry condition, in addition to containers prescribed in paragraphs (a) (1) to (5) and (7) of this section, may be shipped in containers complying with the following specifications:

(1) Specification 14, 15A, 16A, or 19B (§§ 178.165, 178.168, 178.185, 178.191 of this subchapter). Wooden boxes with inside strong paper or cloth bags not over 50 pounds capacity each, packed with filling holes up.

(2) Spec. 21C (§ 178.224 of this subchapter). Fiber drums. Net weight not to exceed 200 pounds.

(c) Trinitrotoluene and pentolite, in dry condition, in addition to containers prescribed in paragraphs (a) (1) to (5) and (b) (1) and (2) of this section, may be shipped in specification containers as follows:

(1) Specification 14, 15A, 16A, or 19B (§§ 178.165, 178.168, 178.185, 178.191 of this subchapter). Wooden boxes with inside strong paper or cloth bags not over 100 pounds capacity each, packed with filling holes up.

(2) Specification 14, 15A, 16A, or 19B (§§ 178.165, 178.168, 178.185, 178.191 of this subchapter). Wooden boxes with strong siftproof liners, Specification 2L (§ 178.30 of this subchapter).

(d) The following materials may be shipped dry as drugs, n.o.s. or medicines, n.o.s. without any other requirements by rail freight or highway if the amount in one outside package does not exceed 4 ounces, and the materials are packed in securely closed bottles or jars that are cushioned to prevent breakage:

- (1) Ammonium picrate.
- (2) Dipicrylamine.
- (3) Dipicryl sulfide.
- (4) Dinitrophenylhydrazine.
- (5) Nitroguanidine.
- (6) Picramide.
- (7) Picric acid.
- (8) Picryl chloride.
- (9) Trinitroanisole.

- (10) Trinitrobenzene.
- (11) Trinitrobenzoic acid.
- (12) Trinitro-m-cresol.
- (13) Trinitronaphthalene.
- (14) Trinitroresorcinol.
- (15) Trinitrotoluene.
- (16) Urea nitrate.
- (17) Triaminotrinitrobenzene.
- (18) Trichlorotrinitrobenzene.
- (19) Hexanitrostilbene.

(e) Ammonium picrate, cyclo-tetra-methylenetetranitramine, cyclo-trimethylenetrinitramine, pentaerythrite tetrani- tritate (desensitized), picric acid, trinitrobenzene, trinitrobenzoic acid, trinitroresorcinol, trinitrotoluene, or urea nitrate, when wet with not less than 10 pounds of water to each 90 pounds of dry material must be shipped in packagings as follows:

- (1) [Reserved]
- (2) (See § 173.192 for shipments of wet ammonium picrate, wet picric acid, wet trinitrobenzoic acid, and wet urea nitrate not in excess of 16 ounces and § 173.193 for shipments of wet picric acid, wet trinitrobenzoic acid, and wet urea nitrate not in excess of 25 pounds.) (See § 173.212 for shipments of wet trinitrobenzene and wet trinitrotoluene not in excess of 16 ounces.)

(3) Specification 5B (§ 178.82 of this subchapter). Metal barrels or drums or Spec. 21C (§ 178.224 of this subchapter) fiber drums. Authorized only for cyclotetramethylenetetra- nitramine, or cyclotrimethylenetrinitra- mine, each wet with not less than 10 pounds of water to each 90 pounds of dry material in inside containers which must be bags made of at least 10-ounce cotton duck, plastic bags not less than 4 mils thick, rubber, or rubberized cloth and securely closed. The dry weight of cyclotrimethylenetrinitra- mine or cyclotetramethyl- enetetranitramine in one metal barrel or drum must not exceed 300 pounds and not more than 225 pounds in fiber drums. These bags containing the cyclo- trimethylenetri- nitramine or cyclo- tetramethylenetri- nitramine must then be placed in a rubber bag, rubber- ized cloth bag, or bag made of suitable water-tight material which must be se- curely closed and then placed in the drum. If shipment of cyclotrimethy- lenetetranitramine is to take place at a time freezing weather is to be antici-

pated, it must be wet with a mixture of denatured ethyl alcohol or other suitable antifreeze and water of such proportions that freezing will not occur in transit.

(4) Specification 21C (§ 178.224 of this subchapter). Fiber drum with an inside polyethylene bag having 0.004 inch minimum thickness and liquid-tight closure. Net weight not to exceed 200 pounds. Authorized only for wet desensitized pentaerythrite tetra- nitate.

(f) Amatol when cast or pressed in a block or column, in addition to the containers prescribed in paragraphs (a) (1) to (5) and (7) of this section, may be shipped in specification con- tainers as follows:

- (1) Spec. 13A (§ 178.141 of this sub- chapter). Metal drums not exceeding 90 pounds gross weight.

(g) Nitrocellulose must be packed in wooden boxes complying with Specifi- cation 14, 15A, 16A, or 19B) (§§ 178.165, 178.168, 178.185, 178.191 of this subchapter), with inside packages which must be:

(1) Inside packages containing not more than 1 pound each of dry, un- compressed nitrocellulose, wrapped in strong paraffined paper or suitable sparkproof material. Completed out- side package not to contain more than 10 pounds dry nitrocellulose.

(2) Inside packages containing com- pressed sticks or blocks of dry nitrocel- lulose wrapped in strong paraffined paper. Gross weight not to exceed 75 pounds.

(h) Shaped charges, commercial, having exposed lined conical cavities must have such cavities effectively filled. Those having conical cavities that are covered shall be paired to- gether with the cavities facing each other and with one or more pairs in a fiber tube, or so arranged that the conical cavities of the shaped charges at the ends of the column face toward the center of the tube. The shaped charges in the fiber tubes must fit snugly with no excess space and the fiber tubes containing the shaped charges must be packed snugly with no excess space in the outside contain- ers. Other methods of packaging for devices of which shaped charges are a component part may be employed

when examined by the Bureau of Explosives and approved by the Director, OHMT. Shaped charges, commercial, must be packed in specification containers as follows:

(1) Specification 14, 15A, 16A, or 19B (§§ 178.165, 178.168, 178.185, 178.191 of this subchapter). Wooden boxes. Gross weight not to exceed 140 pounds.

(2) Spec. 12H, 23F, or 23H (§ 178.209, § 178.214, or § 178.219 of this subchapter). Fiberboard boxes. Gross weight not to exceed 65 pounds.

(3) Spec. 12B (§ 178.205 of this subchapter). Fiberboard boxes which must be manufactured of at least 275-pound strength (Mullen or Cady test) double-wall corrugated fiberboard and shall be provided with double-faced corrugated lining board (see § 178.205-15 of this subchapter) having minimum strength (Mullen or Cady test) of 200 pounds. Individual charges of explosives shall be packed in inside securely closed, waterproof plastic containers, or in securely closed waterproof fiberboard containers having metal ends. Gross weight not to exceed 65 pounds. Inside individual containers shall be separated by means of double-faced corrugated fiberboard partitions of material not less than 175-pound Mullen or Cady test.

(i) Cyclotrimethylenetrinitramine (de-sensitized) in pellet form, dry, in addition to provisions of paragraphs (a) and (b) of this section may be packed in specification containers as follows:

(1) Specification 15A, or 19B (§§ 178.168, 178.191 of this subchapter). Wooden boxes. For pellets $\frac{1}{4}$ inch or less in diameter; pellets must be packed in a slide-type fiber carton with perforated fillers. All openings of the fiber carton shall be securely closed with pressure-sensitive tape. Inside containers shall be cushioned with at least 2 inches of sawdust between inner containers and outside box. No inside container shall contain more than one-half pound net weight of explosive composition and not more than 10 pounds net weight of explosive composition shall be packed in one outside box.

(2) Specification 15A, or 19B (§§ 178.168, 178.191 of this subchap-

ter). Wooden boxes. For pellets exceeding $\frac{1}{4}$ inch in diameter; pellets must be packed in a fiber tube with positive closures at both ends, which shall be packed in a fiber carton having not more than one-half pound net weight of explosive composition. Fiber carton shall be cushioned with not less than 2 inches of sawdust in the outside box. Not more than 10 pounds net weight of explosive composition shall be packed in one outside box.

(j) Boxes containing high explosives must be plainly marked on top and on one side or end, except those made in compliance with spec. 23G (§ 178.218 of this subchapter) which must be marked on the side or end, and kegs, drums, or barrels containing high explosives must be marked on both ends "HIGH EXPLOSIVES—DANGEROUS" in letters not less than $\frac{1}{16}$ inch in height. When space will not permit such marking on ends of kegs or drums, it may be applied to the side of the container. The tops of boxes, except those referred to in paragraph (a)(1) to (7) of this section, must be marked "THIS SIDE UP".

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.66, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.66 Detonators.

(a) Unless otherwise specified in this section, detonators must be packed in accordance with the following:

(1) They must be snugly packed in strong inside packagings.

(2) Inside packagings must be snugly packed in an outside packaging specified in paragraph (e) of this section.

(3) For devices containing no more than 10 grams of explosive (excluding ignition and delay charges):

(i) No more than 50 devices may be packed in one inside packaging;

(ii) No more than 500 devices may be packed in one outside packaging; and

(iii) The gross weight of the completed package may not exceed 150 pounds or the gross weight permitted by the specification for the outside packaging used, whichever is less.

(b) Detonators that are blasting caps (including percussion activated) or delay connectors in metal tubes, must be packed as specified in paragraph (a) of this section. In addition:

(1) They must be packed in inside packagings with the open ends of any device covered with an appropriate cushioning material;

(2) Inside packagings must be snugly packed in intermediate packagings consisting of cartons, or wrappings made of paper, plastic, or pasteboard;

(3) Intermediate packagings must be separated from the outside packaging by at least 1 inch of cushioning material; and

(4) For devices containing no more than 3 grams of explosive (excluding ignition and delay charges):

(i) No more than 110 devices may be packed in one inside packaging; and

(ii) No more than 5,000 devices may be packed in one outside packaging.

(c) Detonators that are electric blasting caps, delay connectors in plastic sheaths, or blasting caps with empty plastic tubing, must be packed as specified in paragraph (a) of this section, except that:

(1) Devices containing no more than 3 grams of explosive (excluding ignition and delay charges) may be packed as follows:

(i) No more than 100 devices may be packed in one inside packaging; and

(ii) No more than 1,000 devices may be packed in one outside packaging.

(2) Devices that are electric blasting caps with leg wires 4 feet long or longer, delay connectors in plastic sheaths, or blasting caps with empty plastic tubing 12 feet long or longer, and contain no more than 1 gram of explosive (excluding ignition and delay charges) may be offered for transportation and transported in an IME Standard 22 container or compartment without the outside packaging specified in paragraph (e)(1) or (e)(2) of this section if:

(i) The devices are packed as specified in paragraph (a)(1) and (a)(3)(1) of this section;

(ii) There are no more than 1000 detonators in the IME Standard 22 container or compartment; and

(iii) No material is loaded on top of the IME Standard 22 container, or no

material is loaded against the outside of the door of the IME Standard 22 compartment.

(3) Inside packaging is not required for electric blasting caps when packed in inside pasteboard tubes, or when their leg wires are wound on spools with the caps either placed inside the spool or securely taped to the wire on the spool, so as to restrict freedom of movement of the caps and to protect them from impact forces.

(d) Detonators that are blasting caps with safety fuse, blasting caps with metal clad mild detonating cord, blasting caps with detonating cord, or blasting caps with shock tubes, must be packed in accordance with the requirements of paragraph (a) of this section, except that:

(1) The blasting caps are not required to be attached to the safety fuse, metal clad mild detonating cord, detonating cord, or shock tube; and

(2) Inside packagings are not required if the packing configuration restricts freedom of movement of the caps and protects them from impact forces.

(e) Detonators with or without inside packaging as provided for in paragraphs (a) through (d) of this section, must be packed in the following outside packagings.

(1) Specification 14, 15A, 16A, or 19B (§§ 178.165, 178.168, 178.185, 178.191 of this subchapter). Wooden boxes.

(2) DOT Specification 12H, 23F, or 23H (§§ 178.209, 178.214, 178.219 of this subchapter) fiberboard box.

(3) IME Standard 22 container or compartment when the detonators conform with conditions and limitations specified in paragraph (c)(2) of this section.

(f) Each outside packaging containing detonators must be plainly marked "DETONATORS—HANDLE CAREFULLY" and bear the appropriate explosives label specified in § 172.411 of this subchapter.

(g) Devices subject to this section and approved by an agency listed in § 173.86(b) before January 1, 1980, may be transported subject to conditions of the approval and in accordance with regulations in effect on October 31, 1979, until December 31, 1985. Applicability of this paragraph is

further limited to detonators packaged for transportation prior to January 1, 1985.

[Amdt. 173-134, 44 FR 70730, Dec. 10, 1979, as amended by Amdt. 173-149, 46 FR 49892, Oct. 8, 1981; Amdt. 173-182, 50 FR 804, Jan. 7, 1985]

§ 173.68 Detonating primers.

(a) Detonating primers that are blasting caps with detonating cord, and delay connectors with detonating cord pigtails, must be packed in accordance with the following:

(1) They must be snugly packed in inside packagings;

(2) Inside packagings must be snugly packed in an outside packaging specified in paragraph (d) of this section;

(3) No more than 50 devices may be packed in one inside packaging;

(4) No more than 500 devices may be packed in one outside packaging; and

(5) The gross weight of the completed package may not exceed 150 pounds or the maximum gross weight permitted by the specification for the outside packaging used, whichever is less.

(b) Detonating primers that are blasting caps with detonating cord in a coil configuration must be packed as specified in paragraph (a) of this section, except the use of inside packaging is not required if the packing configuration restricts movement of the caps and protects them from impact forces.

(c) All other unspecified types of detonating primers may only be offered for transportation if they are packed in accordance with the requirements of paragraph (a) of this section, except that inside packagings are not required for devices that are packed in individual pasteboard, metal, plastic, or wooden tubes.

(d) Detonating primers, with or without inside packagings, as provided for in paragraphs (a) through (c) of this section, must be packed in one of the following outside packagings:

(1) Specification 14, 15A, 16A, or 19B (§§ 178.165, 178.168, 178.185, 178.191 of this subchapter). Wooden boxes.

(2) DOT specification 12H, 23F, or 23H (§§ 178.209, 178.214, 178.219 of this subchapter) fiberboard box.

(e) Each outside packaging of detonating primers must be plainly

marked "DETONATING PRIMERS—HANDLE CAREFULLY" and must bear the appropriate label specified in § 172.411 of this subchapter.

(f) Devices subject to this section, which have been approved by an agency listed in § 173.86(b) before January 1, 1980, may be transported subject to the conditions of the approval and in accordance with the regulations in effect on October 31, 1979, until December 31, 1984.

[Amdt. 173-134, 44 FR 70731, Dec. 10, 1979, as amended by Amdt. 173-149, 46 FR 49892, Oct. 8, 1981]

§ 173.69 Detonating fuzes, Class A, with or without radioactive components, detonating fuze parts containing an explosive, boosters, bursters, or supplementary charges.

(a) Detonating fuzes, class A with or without radioactive components, detonating fuze parts containing an explosive, boosters, bursters, or supplementary charges, when shipped not assembled in projectiles, bombs, etc., must be packed and well secured in strong, tight wooden or metal boxes.

NOTE 1: A fuze with any radioactive component is also subject to the applicable provisions of Subpart I of this part for the radioactive material.

(b) The gross weight of one outside package containing detonating fuzes class A, must not exceed 190 pounds. Boosters, bursters and supplementary charges, without detonators, when shipped separately, must not exceed a gross weight of 300 pounds.

(c) Each outside package must be plainly marked "DETONATING FUZES CLASS A EXPLOSIVES—HANDLE CAREFULLY—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVES," or "DETONATING FUZES, CLASS A EXPLOSIVES, RADIOACTIVE—HANDLE CAREFULLY—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVES," or "BOOSTERS (EXPLOSIVE)—HANDLE CAREFULLY," or "BURSTERS (EXPLOSIVE)—HANDLE CAREFULLY," or "SUPPLEMENTARY CHARGES (EXPLOSIVE)—HANDLE CAREFULLY," as the case may be.

(49 U.S.C. 1655(c); 49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1)

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.69, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.70 Diazodinitrophenol or lead mononitroresorcinate.

(a) The offering of diazodinitrophenol or lead mononitroresorcinate in a dry condition for transportation is forbidden except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders.

(b) Diazodinitrophenol or lead mononitroresorcinate must be packed wet with not less than 40 percent by weight of water in a specification container 5 or 5B (§§ 178.80, 178.82 of this subchapter) metal barrel or drum, with inside containers which must be bags made of at least 10-ounce cotton duck, rubber, or rubberized cloth. Each bag must be securely closed. The bags containing diazodinitrophenol or lead mononitroresorcinate must be placed in a rubber bag, rubberized cloth bag, or bag made of suitable watertight material and then placed in the barrel or drum. Any empty space in the outside bag must be filled with water and this bag securely closed. The dry weight of diazodinitrophenol in one outside container must not exceed 220 pounds and the dry weight of lead mononitroresorcinate in one outside container must not exceed 100 pounds.

(c) Sufficient outage in outside container must be allowed to prevent rupturing of container in freezing weather, or a mixture of denatured alcohol and water may be used to prevent freezing in transit.

(d) Each barrel or drum must be plainly marked "INITIATING EXPLOSIVE—DANGEROUS—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE."

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967]

EDITORIAL NOTE: For Federal Register citations affecting § 173.70, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

§ 173.71 Fulminate of mercury.

(a) The offering of fulminate of mercury in a dry condition for transportation is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders.

(b) Fulminate of mercury must be packed wet with not less than 25 percent by weight of water in a specification container 5 or 5B (§§ 178.80, 178.82 of this subchapter) metal barrel or drum, 17H (§ 178.118 of this subchapter) metal drum (single-trip), with an inside container which must be a bag made of 4-ounce duck. Inside the bag and over the fulminate, there must be placed a cap of the same fabric and of the same diameter as the bag. The bag must be securely tied and placed in a strong grain bag. The grain bag must also be securely tied. The bag and contents must be packed in the center of the metal barrel or drum and must be entirely surrounded by not less than three inches of well-packed sawdust saturated with water. The metal barrel or drum must be lined with a heavy, close-fitting, jute bag closed by secure sewing to prevent escape of sawdust. The barrel or drum must be inspected carefully and all leaks stopped. The dry weight of fulminate in one outside container must not exceed 150 pounds.

(c) If shipment of fulminate is to take place at a time that freezing weather is to be anticipated, a mixture of denatured ethyl alcohol and water of such proportions that freezing will not occur in transit must be used.

(d) Each barrel or drum must be plainly marked "INITIATING EXPLOSIVE—DANGEROUS—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE."

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-81, 39 FR 17315, May 15, 1974; 39 FR 17847, May 21, 1974; Amdt. 173-94, 41 FR 16065, Apr. 15, 1976]

§ 173.72 Guanyl nitrosamino guanylidene hydrazine.

(a) The offering of guanyl nitrosamino guanylidene hydrazine in a dry condition for transportation is forbidden, except as a component of manu-

factured articles such as percussion caps, detonators, blasting caps, and exploders.

(b) Guanyl nitrosamino guanylidene hydrazine must be packed wet with not less than 30 percent by weight of water in a specification container 5 or 5B (§§ 178.80, 178.82 of this subchapter) metal barrel or drum, 17H (§ 178.118 of this subchapter) metal drum (single-trip), with an inside container which must be a bag made of 4-ounce duck. Inside the bag and over the guanyl nitrosamino guanylidene hydrazine, there must be placed a cap of the same fabric and of the same diameter as the bag. The bag must be securely tied and placed in a strong grain bag. This grain bag must also be securely tied. The bag and contents must be packed in the center of the metal barrel or drum, and must be entirely surrounded by not less than three inches of well-packed sawdust saturated with water. The metal barrel or drum must be lined with a heavy, close-fitting, jute bag closed by secure sewing to prevent escape of sawdust. The barrel or drum must be inspected carefully and all leaks stopped. The dry weight of guanyl nitrosamino guanylidene hydrazine in one outside container must not exceed 75 pounds.

(c) If shipment of guanyl nitrosamino guanylidene hydrazine is to take place at a time that freezing weather is to be anticipated, a mixture of denatured ethyl alcohol and water of such proportions that freezing will not occur in transit must be used.

(d) Each barrel or drum must be plainly marked "INITIATING EXPLOSIVE—DANGEROUS—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE."

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-81, 39 FR 17315, May 15, 1974; Amdt. 173-94, 41 FR 18065, Apr. 15, 1976]

§ 173.73 Lead azide.

(a) The offering of lead azide in a dry condition for transportation is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders.

(b) Lead azide, dextrinated type, or otherwise prepared to effectively control grain size, must be packed wet with not less than 20 percent by weight of water in a specification container 5 or 5B (§§ 178.80, 178.82 of this subchapter) metal barrel or drum, 17H (§ 178.118 of this subchapter) metal drum (single-trip), with an inside container which must be a bag made of 4-ounce duck. Inside the bag and over the lead azide, there must be placed a cap of the same fabric and of the same diameter as the bag. The bag must be securely tied and placed in a strong grain bag. This grain bag must also be securely tied. The bag and contents must be packed in the center of the metal barrel or drum, and must be entirely surrounded by not less than three inches of well-packed sawdust saturated with water. The metal barrel or drum must be lined with a heavy, close-fitting, jute bag closed by secure sewing to prevent escape of sawdust. The barrel or drum must be inspected carefully and all leaks stopped. The dry weight of lead azide in one container must not exceed 150 pounds.

(c) If shipment of lead azide is to take place at a time that freezing weather is to be anticipated, a mixture of denatured ethyl alcohol or other suitable antifreeze and water of such proportions that freezing will not occur in transit must be used.

(d) Each barrel or drum must be plainly marked "INITIATING EXPLOSIVE—DANGEROUS—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE."

[29 FR 18683, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 173-81, 39 FR 17315, May 15, 1974; Amdt. 173-94, 41 FR 18065, Apr. 15, 1976]

§ 173.74 Lead styphnate.

(a) The offering of lead styphnate (lead trinitroresorcinate) or barium styphnate, monohydrate in a dry condition for transportation is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders.

(b) Lead styphnate (lead trinitroresorcinate) or barium styphnate, mono-