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(m) *Provisions for segregation groups:* (1) For the purpose of segregation, materials having certain similar chemical properties have been grouped together in segregation groups. The segregation groups (such as ''acids'', ''chlorates'', ''permanganates'') and the entries allocated to each of these groups include the substances identified in section 3.1.4 of the IMDG Code. When column (10B) of the §172.101 Table refers to a numbered stowage provision set forth in §176.84(b) such as ''Stow 'away from' acids'', that particular stowage/segregation requirement applies to all the materials allocated to the respective segregation group.

(2) Not all hazardous materials falling within a segregation group are listed by name in the regulations. These materials are shipped under ''n.o.s.'' entries. Although these ''n.o.s.'' entries are not listed themselves in the above groups, the shipper must decide whether allocation under a segregation group is appropriate. Mixtures, solutions or preparations containing hazardous materials falling within a segregation group and shipped under an ''n.o.s.'' entry are also considered to fall within that segregation group.

(3) The segregation groups described above do not address materials which fall outside the classification criteria of the hazardous materials regulations although it is recognized that some non-hazardous materials have certain chemical properties similar to hazardous materials listed in the segregation groups. A shipper or the person responsible for packing the materials into a cargo transport unit who does have knowledge of the chemical properties of such non-hazardous materials may identify a relevant segregation group and apply the segregation requirements for that segregation group.

[Amdt. 176–30, 55 FR 52690, Dec. 21, 1990]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting §176.83, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at *www.fdsys.gov*.

§ 176.84 Other requirements for stowage and segregation for cargo vessels and passenger vessels.

(a) *General.* When Column 10B of the §172.101 Table refers to a numbered or alpha-numeric stowage provision for water shipments, the meaning and requirements of that provision are set forth in this section. Terms in quotation marks are defined in §176.83. Other terms used in the table in this section such as ''acids'', ''chlorates'' and ''permanganates'' indicate different chemical groups referred to here as segregation groups. Materials falling within a segregation group are considered to have certain similar chemical properties and, although not exhaustive in nature, the materials belonging to each group include those substances identified in section 3.1.4 of the IMDG Code as set forth in §176.83(m).

(b) *Table of provisions:*

Code	Provisions
1	[Reserved]
2	Temperature controlled material.
3	Do not stow with high explosives.
4	Stow ''Separated from'' liquid organic materials.
5	Stow ''Separated from'' powdered metals and their compounds.
6	Emergency temperature material.
7	[Reserved]
8	Glass carboys not permitted on passenger vessels.
9	Glass carboys not permitted under deck.
10	Glass bottles not permitted under deck.
11	Keep away from heat and open flame.
12	Keep as cool as reasonably practicable.
13	Keep as dry as reasonably practicable.
14	For metal drums, stowage permitted under deck on cargo vessels.
15	May be stowed in portable magazine or metal locker.
16	No other cargo may be stowed in the same hold with this material.
17	Segregation same as for flammable gases but ''away from'' dangerous when wet.
18	Prohibited on any vessel carrying explosives (except explosives in Division 1.4, Compatibility group S).
19	Protect from sparks and open flames.
20	Segregation same as for corrosives.
21	Segregation same as for flammable liquids.
22	Segregation same as for flammable liquids if flash point is below 60 °C (140 °F).
23	Segregation same as for flammable liquids if flash point is between 23 °C (73 °F) and 60 °C (140 °F).
24	Segregation same as for flammable solids.
25	Shade from radiant heat.
26	Stow ''away from'' acids.[2]
27	Stow ''away from'' alkaline compounds. [2]
28	Stow ''away from'' flammable liquids.
29	Stow ''away from'' ammonium compounds.
30	Stow ''away from'' animal or vegetable oils.
31	Stow ''away from'' combustible materials.
32	Stow ''away from'' copper, its alloys and its salts.
33	Stow ''away from'' fluorides.
34	Stow ''away from'' foodstuffs.
35	Stow ''away from'' all odor-absorbing cargo.

Code	Provisions
36	Stow ''away from'' heavy metals and their compounds.
37	Stow ''away from'' hydrazine.
38	Stow ''away from'' all other corrosives.
39	Stow ''away from'' liquid halogenated hydrocarbons.
40	Stow ''clear of living quarters''.
41	Stow ''away from'' mercury and its compounds.
42	Stow ''away from'' nitric acids and perchloric acids not exceeding 50 percent acid by weight.
43	Stow ''away from'' organic materials.
44	Stow ''away from'' oxidizers.
45	Stow ''away from'' permanganates.
46	Stow ''away from'' powdered metals.
47	Stow ''away from'' sodium compounds.
48	Stow ''away from'' sources of heat.
49	Stow ''away from'' corrosives.
50	Stow ''away from'' sources of heat where temperatures in excess of 55 °C (131 °F) for a period of 24 hours or more will be encountered.
51	Stow ''separated from'' acetylene.
52	Stow ''separated from'' acids.[1, 2]
53	Stow ''separated from'' alkaline compounds.[2]
54	Stow ''separated from'' animal or vegetable oils.
55	Stow ''separated from'' ammonia.
56	Stow ''separated from'' ammonium compounds.
57	Stow ''separated from'' chlorine.
58	Stow ''separated from'' cyanides.
59	Stow ''separated from'' combustible materials.
60	Stow ''separated from'' chlorates, chlorites, hypochlorites, nitrites, perchlorates, permanganates, and metallic powders.
61	Stow ''separated from'' corrosive materials.
62	Stow ''separated from'' diborane.
63	Stow ''separated from'' diethylene triamine.
64	Stow ''separated from'' explosives.
65	Stow ''separated from'' flammable substances.
66	Stow ''separated from'' flammable solids.
67	Stow ''separated from'' halides.
68	Stow ''separated from'' hydrogen.
69	Stow ''separated from'' hydrogen peroxide.
70	Stow ''separated from'' mercury salts.
71	Stow ''separated from'' nitric acid.
72	Stow ''separated from'' nitrogen compounds.
73	Stow ''separated from'' chlorates.
74	Stow ''separated from'' oxidizers.
75	Stow ''separated from'' permanganates.
76	Stow ''separated by a complete compartment or hold from'' organic peroxides.
77	Stow ''separated longitudinally by a complete compartment or hold from'' explosives.
78	Stow ''separated longitudinally by an intervening complete compartment or hold from'' explosives.
79	The maximum net quantity in one package for this material shipped aboard a passenger vessel is limited to 22.7 kg (50 pounds).
80	Toy torpedoes must not be packed with other special fireworks.
81	Under deck stowage permitted only if an indicating substance such as chloropicrin has been added.
82	Under deck stowage is permitted only if containing not more than 36 percent by weight of hydrazine.
83	[Reserved]
84	Under deck stowage must be in well-ventilated space.
85	Under deck stowage must be in mechanically ventilated space.
86	Stow ''separated by a complete compartment or hold from'' explosives Division 1.3.
87	Stow ''separated from'' Class 1 (explosives) except Division 1.4.
88	Stow ''separated by a complete compartment or hold from'' Class 1 (explosives) except Division 1.4.
89	Segregation same as for oxidizers.
90	Stow ''separated from'' radioactive materials.
91	Stow ''separated from'' flammable liquids.
92	Stow ''separated from'' powdered materials.
93	Stow not accessible to unauthorized persons on passenger vessels.
94	Plastic jerricans and plastic drums not permitted under deck.
95	Stow ''separated from'' foodstuffs.
96	Glass carboys not permitted under deck on passenger vessels.
97	Stow ''away from'' azides.
98	Stow ''away from'' all flammable materials.
99	Only new metal drums permitted on passenger vessels.
100	Stow ''away from'' flammable solids.
101	Stow ''separated from'' iron oxide.
102	Stow ''separated from'' all odor absorbing cargoes.
103	Only to be loaded under dry weather conditions.
104	Stow ''separated from'' bromine.
105	As approved by the Competent Authority of the country concerned.
106	Stow ''separated from'' powdered metal.
107	Stow ''separated from'' peroxides and superoxides.
108	The transport temperature should be indicated on the tank.
109	Label as a flammable liquid if flash point is 60 °C (140 °F) or below.
110	Packaging Group II if concentration does not exceed 70 percent acid.
111	If concentration exceeds 50 percent acid, notes 66, 74, 89, and 90 apply.
112	Packaging Group II for concentrations not less that 50 percent and Packaging Group III for concentrations less than 50 percent.
113	Packaging Group II if concentrations does not exceed 60 percent acid.
114	Corrosive subsidiary risk label required unless concentration is less than 80 percent.
115	If packaged in glass or earthenware inner packagings in wooden or fiberboard outer packagings, the maximum quantity on any vessel is 500 kg (equivalent to 450 L).
116	In a cargo space capable of being opened up in an emergency. The possible need to open hatches in case of fire to provide maximum ventilation and to apply water in an emergency and the consequent risk to the stability of the ship through flooding of the cargo space should be considered before loading.

Code	Provisions
117	In a clean cargo space capable of being opened up in an emergency. In the case of bagged fertilizer in freight containers, it is sufficient if in the case of an emergency, the cargo is accessible through free approaches (hatch entries) and mechanical ventilation enables the master to exhaust any gases or fumes resulting from decomposition. The possible need to open hatches in case of fire to provide maximum ventilation and to apply water in an emergency and the consequent risk to the stability of the ship through flooding of the cargo space should be considered before loading.
118	Stowage—Category D, Category E freight containers and pallet boxes only. Ventilation may be required. The possible need to open hatches in a case of fire to provide maximum ventilation and to supply water in an emergency, and the consequent risk to the stability of the ship through flooding of the cargo space, should be considered before loading.
119	Double strip stowage recommended.
120	Provide good surface and through ventilation.
121	Packaging group III when the flash point of the flammable liquid is 23 °C (73 °F) or above.
122	Stow ''separated from'' infectious substances.
123	Stow ''away from'' infectious substances.
124	Stow ''separated from'' bromates.
125	Segregation same as for flammable liquids, but also ''away from'' flammable solids.
126	Segregation same as for Class 9, miscellaneous hazardous materials.
127	For packages carrying a subsidiary risk of Class 1 (explosives), segregation same as for Class 1, Division 1.3.
128	Stow in accordance with the IMDG Code, Sub-section 7.1.10.3 (incorporated by reference; see § 171.7 of this subchapter).
129	Stowage Category A applies, except for uranyl nitrate hexahydrate solution for which Category D applies.
130	Stowage Category A applies, except for uranyl nitrate hexahydrate solution, uranium metal hexahydrate solution, uranium metal pyrophoric and thorium metal pyrophoric for which Category D applies.
131	Stowage Category A applies, except for uranyl nitrate hexahydrate solution, uranium metal pyrophoric and thorium metal pyrophoric for which Category D applies, and taking into account any supplementary requirements specified in the transport documents.
132	Stowage A applies, taking into account any supplementary requirements specified in the transport documents.
133	Stow ''separated from'' sulfur.
134	Stow ''separated from'' UN2716.
135	Stow ''Separated from'' mercury and mercury compounds.
136	Stow ''Separated from'' carbon tetrachloride.
137	For arsenic sulphides, Stow ''separated from'' acids.
138	Stow ''Separated from'' peroxides.
141	Stow ''away from'' radioactive materials.
142	Packages in cargo transport units must be stowed so as to allow for adequate air circulation throughout the cargo.
144	When stowed under deck, mechanical ventilation shall be in accordance with SOLAS, Chapter II–2/Regulation 19 (IBR, see § 171.7 of this subchapter) for flammable liquids with flashpoint below 23 °C (73 °F).
145	Stow ''separated from'' ammonium compounds except for UN1444.
146	Category B stowage applies for unit loads in open cargo transport units.
M1—M6	[Reserved]

[1] For waste cyanides or waste cyanide mixtures or solutions, refer to § 173.12(e) of this subchapter.

[2] Class 8 materials in PG II or III that otherwise are required to be segregated from one another may be transported in the same cargo transport unit, whether in the same packaging or not, provided the substances do not react dangerously with each other to cause combustion and/or evolution of considerable heat, or of flammable, toxic or asphyxiant gases, or the formation of corrosive or unstable substances; and the package does not contain more than 30 L (7.8 gallons) for liquids or 30 kg (66 lbs.) for solids.

(c) *Provisions for the stowage of Class 1 (explosive) materials:* (1) Explosive substances and explosive articles must be stowed in accordance with Column (10A) and Column (10B) of the 172.101 Table of this subchapter.

(2) The following notes in column 10B of the § 172.101 Table apply to the transport of Class 1 (explosive) materials by vessel:

Notes	Provisions
5E	Stow ''away from'' lead and its compounds.
7E	Stowage category ''04'' for projectiles or cartridges for guns, cannons or mortars; Stowage category ''08'' for other types.
8E	When under deck, special stowage is required.
14E	On deck, cargo transport unit must be steel.
15E	On deck, cargo transport unit must be leakproof.
17E	On deck stowage is recommended.
19E	''Away from'' explosives containing chlorates or perchlorates.
20E	Stowage category ''03'' for projectiles or cartridges for guns, cannons or mortars; Stowage category ''07'' for other types; magazines must be of steel construction that prevents leakage.
21E	Cargo space ventilation must be carefully controlled to avoid excessive condensation.
22E	''Away from'' ammonium compounds and explosives containing ammonium compounds or salts.
23E	''Separated from'' Division 1.4 and ''separated longitudinally by an intervening complete compartment or hold from'' Division 1.1, 1.2, 1.3, 1.5, and 1.6 except from explosives of compatibility group J.
26E	Stowage category ''13'' and, for on deck stowage, non-metallic lining of closed cargo transport unit is required when not in effectively sealed, sift-proof packages; Stowage category ''10'' permitted when in effectively sealed, sift-proof packages.
27E	For closed cargo transport units, a non-metallic lining is required.

[Amdt. 176–30, 55 FR 52693, Dec. 21, 1990, as amended at 56 FR 66282, Dec. 20, 1991; Amdt. 176–43, 62 FR 24742, May 6, 1997; 66 FR 33438, June 21, 2001; 66 FR 45185, 45384, Aug. 28, 2001; 67 FR 15744, Apr. 3, 2002; 68 FR 45040, July 31, 2003; 69 FR 76183, Dec. 20, 2004; 70 FR 3310, Jan. 24, 2005; 71 FR 78634, Dec. 29, 2006; 74 FR 2268, Jan. 14, 2009; 76 FR 3384, Jan. 19, 2011]

Subpart E—Special Requirements for Transport Vehicles Loaded With Hazardous Materials and Transported on Board Ferry Vessels

§ 176.88 Applicability.

The requirements in this subpart are applicable to transport vehicles containing hazardous materials being transported on board ferry vessels and are in addition to any prescribed elsewhere in this subchapter. Vessels in a service similar to a ferry service, but not over a designated ferry route, may be treated as a ferry vessel for the purpose of this subpart if approved in writing by the District Commander.

[Amdt. 176–1, 41 FR 16110, Apr. 15, 1976, as amended by Amdt. 176–1A, 41 FR 40690, Sept. 20, 1976]

§ 176.89 Control of transport vehicles.

(a) A transport vehicle containing hazardous materials may be transported on board a ferry vessel, subject to the following conditions:

(1) The operator or person in charge of the vehicle shall deliver to the vessel's representative a copy of the shipping papers and certificate required by §§ 176.24 and 176.27;

(2) The vehicle shall be placed at the location indicated by the vessel's representative;

(3) The parking brakes of the vehicle shall be set securely to prevent movement;

(4) The motor of a highway vehicle shall be shut off and not restarted until the vessel has completed its voyage and docked;

(5) All vehicle lights shall be cut off and not relighted until the vessel has completed its voyage and docked;

(6) The operator of a highway vehicle shall remain with the vehicle;

(7) No repairs or adjustments must be made to the vehicle while it is on the vessel;

(8) No hazardous materials are to be released from the vehicle; and

(9) Any instructions given by the vessel's representative during the voyage, and during ''roll on'' and ''roll off'' operations must be observed.

(b) Smoking by any person in or around a vehicle is prohibited.

§ 176.90 Private automobiles.

A private automobile which is carrying any Class 1 (explosive) material (except permitted fireworks or small arms ammunition) may not be transported on a passenger-carrying ferry vessel unless the Class 1 (explosive) material is in compliance with packaging, labeling, marking, and certification requirements of this subchapter. Permitted fireworks and small arms ammunition may be carried without the required packaging, labeling, marking, or certification if they are in tight containers.

[Amdt. 176–1, 41 FR 16110, Apr. 15, 1976, as amended by Amdt. 176–30, 55 FR 52695, Dec. 21, 1990]

§ 176.91 Motorboats.

A motorboat may be transported on board a ferry vessel with gasoline in the tank and two other containers not exceeding 23 L (six gallons) capacity each if they are in the motorboat, closed, and in good condition.

[Amdt. 176–1, 41 FR 16110, Apr. 15, 1976, as amended by Amdt. 176–30, 55 FR 52695, Dec. 21, 1990]

§ 176.92 Cylinders laden in vehicles.

Any cylinder of Class 2 (compressed gas) material which is required to have a valve protection cap fitted in place may be transported on board a ferry vessel without having the valve protection cap in place when it is laden in a transport vehicle and is not removed from the vehicle while on the vessel.

[Amdt. 176–1, 41 FR 16110, Apr. 15, 1976, as amended by Amdt. 176–30, 55 FR 52695, Dec. 21, 1990]

§ 176.93 Vehicles having refrigerating or heating equipment.

(a) A transport vehicle fitted with refrigerating or heating equipment using a flammable liquid or Division 2.1 (flammable gas) material, or diesel oil