

Appendix 4 - Fire Endurance Requirements Matrix

Table 1 Fire Endurance Requirements Matrix

	Piping systems	Location										
		A	B	C	D	E	F	G	H	I	J	K
		Machinery spaces of category A	Other machinery spaces and pump rooms	Cargo pump-rooms	Ro-ro cargo holds	Other dry cargo holds	Cargo tanks	Fuel oil tanks	Ballast water tanks	Cofferdams, void spaces pipe tunnels and ducts	Accommodation, service and control spaces	Open decks
1	CARGO (FLAMMABLE CARGOES f.p ≤ 60°C) Cargo lines	NA	NA	L1	NA	NA	0	NA	0 ¹⁰	0	NA	L1 ²
2	Crude oil washing lines	NA	NA	L1	NA	NA	0	NA	0 ¹⁰	0	NA	L1 ²
3	Vent lines	NA	NA	NA	NA	NA	0	NA	0 ¹⁰	0	NA	X
4	INERT GAS Water seal effluent line	NA	NA	0 ¹	NA	NA	0 ¹	0 ¹	0 ¹	0 ¹	NA	0
5	Scrubber effluent line	0 ¹	0 ¹	NA	NA	NA	NA	NA	0 ¹	0 ¹	NA	0
6	Main line	0	0	L1	NA	NA	NA	NA	NA	0	NA	L1 ⁶
7	Distribution lines	NA	NA	L1	NA	NA	0	NA	NA	0	NA	L1 ²
8	FLAMMABLE LIQUIDS (F.P. > 60°C) Cargo lines	X	X	L1	X	X	NA ³	0	0 ¹⁰	0	NA	L1
9	Fuel oil	X	X	L1	X	X	NA ³	0	0	0	L1	L1
10	Lubricating oil	X	X	L1	X	X	NA	NA	NA	0	L1	L1
11	Hydraulic oil	X	X	L1	X	X	0	0	0	0	L1	L1
12	SEAWATER ¹ Bilge main and branches	L1 ⁷	L1 ⁷	L1	X	X	NA	0	0	0	NA	L1
13	Fire main and water spray	L1	L1	L1	X	NA	NA	NA	0	0	X	L1
14	Foam system	L1	L1	L1	NA	NA	NA	NA	NA	0	L1	L1
15	Sprinkler system	L1	L1	L3	X	NA	NA	NA	0	0	L3	L3
16	Ballast	L3	L3	L3	L3	X	0 ¹⁰	0	0	0	L2	L2
17	Cooling water, essential services	L3	L3	NA	NA	NA	NA	NA	0	0	NA	L2
18	Tank cleaning services fixed machines	NA	NA	L3	NA	NA	0	NA	0	0	NA	L3 ²
19	Non-essential systems	0	0	0	0	0	NA	0	0	0	0	0
20	FRESH WATER Cooling water essential services	L3	L3	NA	NA	NA	NA	0	0	0	L3	L3
21	Condensate return	L3	L3	L3	0	0	NA	NA	NA	0	0	0
22	Non-essential systems	0	0	0	0	0	NA	0	0	0	0	0
23	SANITARY/DRAINS/SCUPPERS Deck drains (internal)	L1 ⁴	L1 ⁴	NA	L1 ⁴	0	L1 ⁴	0	0	0	0	0
24	Sanitary drains (internal)	0	0	NA	0	0	NA	0	0	0	0	0
25	Scuppers and discharges (overboard)	0 ^{1,8}	0 ^{1,8}	0 ^{1,8}	0 ^{1,8}	0 ^{1,8}	0	0	0	0	0 ^{1,8}	0
26	SOUNDING/AIR Water tanks/dry spaces	0	0	0	0	0	0 ¹⁰	0	0	0	0	0
27	Oil tanks (f.p. > 60°C)	X	X	X	X	X	X ³	0	0 ¹⁰	0	X	X
28	MISCELLANEOUS Control air	L1 ⁵	L1 ⁵	L1 ⁵	L1 ⁵	L1 ⁵	NA	0	0	0	L1 ⁵	L1 ⁵
29	Service air (non-essential)	0	0	0	0	0	NA	0	0	0	0	0
30	Brine	0	0	NA	0	0	NA	NA	NA	0	0	0
31	Auxiliary low-pressure steam (≤ 7 bar)	L2	L2	0 ⁹	0 ⁹	0 ⁹	0	0	0	0	0 ⁹	0 ⁹

. ABBREVIATIONS:

L1. Fire endurance test ([appendix 1](#)) in dry conditions, 60 minutes

L2. Fire endurance test ([appendix 1](#)) in dry conditions 30 minutes

L3. Fire endurance test ([appendix 2](#)) in wet conditions, 30 minutes

0. No fire endurance test required

NA. Not applicable

X. Metallic materials having a melting point greater than 925°C

. FOOTNOTES:

1/. Where non-metallic piping is used, remotely controlled valves to be provided at ship' s side (valve is to be controlled from outside space).

2/. Remote closing valves to be provided at the cargo tanks.

3/. When cargo tanks contain flammable liquids with f.p. > 60°C, "0" may replace "NA" or "X" .

4/. For drains serving only the space concerned, "0" may replace "L1" .

5/. When controlling functions are not required by statutory requirements of guidelines, "0" may replace "L1" .

6/. For pipe between machinery spaces and deck water seal, "0" may replace "L1" .

7/. For passenger vessels, "X" is to replace "L1" .

8/. Scuppers serving open decks in positions 1 and 2, as defined in [Regulation 13](#) of the International Convention on Load Lines, 1966, should be "X" throughout unless fitted at the upper end with the means of closing capable of being operated from a position above the freeboard deck in order to prevent downflooding.

9/. For essential services , such as fuel oil tank heating and ship' s whistle, "X" is to replace "0" .

10/. For tankers where compliance with paragraph 3(f) of [Regulation 13F](#) of annex I of MARPOL 73/78 is required, "NA" is to replace "0" .

. LOCATION DEFINITIONS:

Location	Definition
A Machinery spaces of category A	Machinery spaces of category A as defined in SOLAS Regulation II-2/3.19 .
B Other machinery spaces and pump rooms	Spaces, other than category A machinery spaces and cargo pump rooms, containing propulsion machinery, boilers, steam and internal combustion engines, generators and major electrical machinery, pumps, oil filling stations, refrigerating, stabilizing, ventilation and air-conditioning machinery, and similar spaces, and trunks or such spaces.
C Cargo pump rooms	Spaces containing cargo pumps and entrances and trunks to such spaces.
D Ro-ro pump holds	Ro-ro cargo holds are ro-ro cargo spaces and special category spaces as defined in SOLAS Regulation II-2/3.14 and 3.18 .
E Other dry cargo holds	All spaces other than ro-ro cargo holds used for non-liquid cargo and trunks to such spaces.
F Cargo tanks	All spaces used for liquid cargo and trunks to such spaces.
G Fuel oil tanks	All spaces used for fuel oil (excluding cargo tanks) and trunks to such spaces.
H Ballast water tanks	All spaces used for ballast water and trunks to such spaces.
I - Cofferdams, voids, etc	Cofferdams and voids are those empty spaces between two bulkheads separating two adjacent compartments.
J Accommodation, service	Accommodation spaces, service spaces and control stations as defined in SOLAS see footnote Regulation II-2/3.10, 3.12, 3.22 .
K Open decks	Open deck spaces as defined in SOLAS see footnote Regulation II-2/26.2.2.(5) .