

ENVIRONMENT
ATMOSPHERIC IMMERS ED

METAL IN CONTACT	ATMOSPHERIC			IMMERS ED	
	RURAL	INDUSTRIAL/ URBAN	MARINE	FRESH WATER	SEA WATER
Aluminum and aluminum alloys	0	0 to 1	0 to 1	1	1 to 2
Aluminum bronzes and silicon bronzes	0 to 1	1	1 to 2	1 to 2	2 to 3
Brasses including high tensile (HT) brass (manganese bronze)	0 to 1	1	0 to 2	1 to 2	2 to 3
Cadmium	0	0	0	0	0
Cast irons	0 to 1	1	1 to 2	1 to 2	2 to 3
Cast iron (austenitic)	0 to 1	1	1 to 2	1 to 2	1 to 3
Chromium	0 to 1	1 to 2	1 to 2	1 to 2	2 to 3
Copper	0 to 1	1 to 2	1 to 2	1 to 2	2 to 3
Cupro-nickels	0 to 1	0 to 1	1 to 2	1 to 2	2 to 3
Gold	(0 to 1)	(1 to 2)	(1 to 2)	(1 to 2)	(2 to 3)
Gunmetals, phosphor bronzes and tin bronzes	0 to 1	1	1 to 2	1 to 2	2 to 3
Lead	0	0 to 1	0 to 1	0 to 2	(0 to 2)
Magnesium and magnesium alloys	0	0	0	0	0
Nickel	0 to 1	1	1 to 2	1 to 2	2 to 3
Nickel copper alloys	0 to 1	1	1 to 2	1 to 2	2 to 3
Nickel-chromium-iron alloys	(0 to 1)	(1)	(1 to 2)	(1 to 2)	(1 to 3)
Nickel-chromium-molybdenum alloys	(0 to 1)	(1)	(1 to 2)	(1 to 2)	(1 to 3)
Nickel silvers	0 to 1	1	1 to 2	1 to 2	1 to 3
Platinum	(0 to 1)	(1 to 2)	(1 to 2)	(1 to 2)	(2 to 3)
Rhodium	(0 to 1)	(1 to 2)	(1 to 2)	(1 to 2)	(2 to 3)
Silver	(0 to 1)	(1 to 2)	(1 to 2)	(1 to 2)	(2 to 3)
Solders hard	0 to 1	1	1 to 2	1 to 2	2 to 3
Solders soft	0	0	0	0	0
Stainless steel (austenitic and other grades containing approximately 18% chromium)	0 to 1	0 to 1	0 to 1	0 to 2	1 to 2
Stainless steel (martensitic grades containing approximately 13% chromium)	0 to 1	0 to 1	0 to 1	0 to 2	1 to 2
Steels (carbon and low alloy)	0 to 1	1	1 to 2	1 to 2	1 to 2
Tin	0	0 to 1	1	1	1 to 2
Titanium and titanium alloys	(0 to 1)	(1)	(1 to 2)	(0 to 2)	(1 to 3)

- Key 0 Zinc and galvanized steel will suffer either no additional corrosion, or at the most only very slight additional corrosion, usually tolerable in service.
- 1 Zinc and galvanized steel will suffer slight or moderate additional corrosion that may be tolerable in some circumstances.
- 2 Zinc and galvanized steel may suffer fairly severe additional corrosion and protective measures will usually be necessary.
- 3 Zinc and galvanized steel may suffer severe additional corrosion and the contact should be avoided.

General notes: Ratings in brackets are based on very limited evidence and hence are less certain than other values shown. The table is in terms of additional corrosion and the symbol "0" should not be taken to imply that the metals in contact need no protection under all conditions of exposure.

Source: British Standards Institution, pp. 6484:1979, Table 23