

# Corrosion Protection

There are many ways of fastening one component to another and the need for this implies the need for them to remain fastened together. There is also the additional requirement that the parts may, from time to time, have to be disassembled, e.g. for maintenance.

Corrosion mainly affects the durability of fasteners, (i.e. their lasting strength, appearance and ease of dismantling) and may be caused by exposure to a particular environment during service.

Many types of environment are encountered. For example, atmospheric conditions may involve exposure to salt spray near the sea, Sulphur dioxide, sulphuric acid and a high concentration of solids in industrial regions, high concentrations of airborne contaminants near chemical plants, high temperatures and humidity in tropical regions and extreme cold in others.

## Use of resistant coatings or finishes

Finish	Specification	Typical Application
Electro-deposited zinc	BS 3382 Part 2	Usually bright finish on steel screws. Used for short term protection of all steel fasteners. Satisfactory for standard threads.
	BS 1706 DTD903C	For all parts requiring heavy coatings up to 38.1 microns deposit thickness.
Electro-deposited cadmium	BS 3382 Part 1	Usually semi-bright finish on steel screws. Satisfactory for standard threads.
	BS 1706 DTD 904C	For all parts requiring heavier coatings up to 10.6 microns cadmium.
Electro-deposited nickel and nickel plus chromium	BS 3382 Part 3 and 4	Onto steel and copper alloy screws. Satisfactory short term protection and bright finish on standard threads.
	BS 1224 1965	For all parts requiring protective and decorative finish. Different grades provide for long term interior and outdoor performance.
Hot dip zinc (galvanizing)	SABS 763 (Related to spec. BS 729 Pt.1)	Heavy zinc deposits 38.1 - 76.2 microns on steel for long term outdoor protection. Uneven coatings unsuitable for many small threaded parts.
Diffusion coated zinc (sheradizing)	BS 729 Part 2	Dull grey protective finish equivalent to approximately 25.4 microns zinc. Fairly even finish on threads. Develops rusty color on initial weathering.
Phosphate coating	BS 3189 DEF 29	Dark, almost black, finish suitable for short term protection of all steel threaded parts. Coating must be sealed with oil, wax or lacquer to be effective.
Chromate passivation (for zinc and cadmium coatings)	DEF 3189 Included in BS 3382 Parts 1 and 2	Provides an improvement on the performance of normal zinc and cadmium finishes, usually green-brown in color.
Anodising ( for aluminum alloys)	DTD 910C BS 1615	Provides additional corrosion protection for aluminum, but the coating must be sealed with oil or lanolin to

		prevent screw thread seizure.
Organic finishes - plastic dip coatings, resins and lacquers		Applied over BS 3382 Zn coatings for the best performance. Wide choice of finishes, colors and performance.