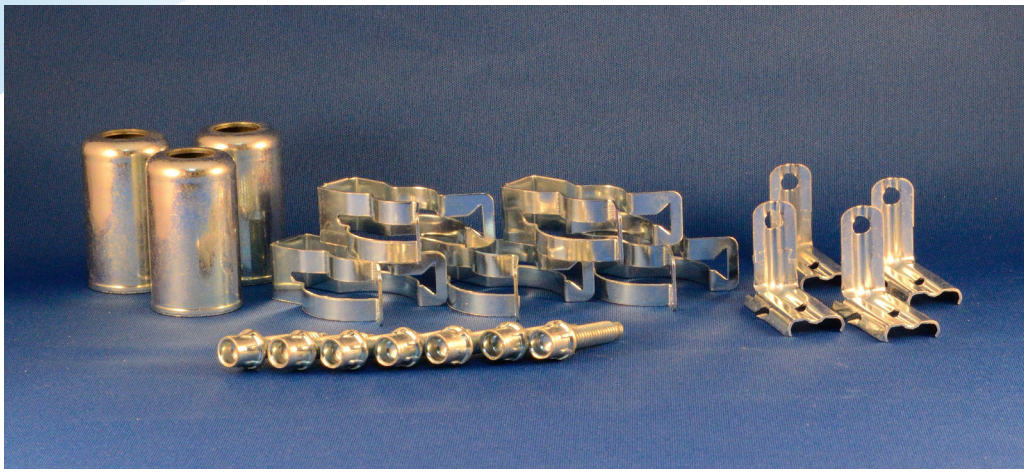
Zinc Electroplating



Widely used by industry in general, electro deposited zinc gives sacrificial protection to the underlying iron or steel, that is the zinc corrodes in preference to the substrate. This has the additional benefit that steel exposed at cut or abraded areas will not easily rust.

Bright zinc gives reasonable protection at fairly low thicknesses, typically 8 μ, so is ideal for small components such as machine screws with fine threads.

The corrosion resistance of zinc can be enhanced by a post plating dip called a passivate (or more correctly, a conversion coating). This applies a thin coating on the zinc surface. The types of solutions used have been improved and extended because of the ELV Directives requirement for hexavalent chromium free coatings and better corrosion performance.

The new trivalent passivates developed fall into two categories – a clear(light) coating or an iridescent (light yellow, or heavyweight) coating. These coatings can be improved by using a seal (often including a lubricant) which will extend the corrosion performance.

The performance of zinc coatings (and others) is often assessed by neutral salt spray testing. The typical performances from the common zinc based finishes are as below.

The Anochrome Group are approved to carry out the MacDermid processes.

Neutral Salt Spray Resistance – BS 7479 (ASTMB117) ISO 3768DIN 5002155 8 μZinc thickness:

	Salt Spray (hrs)			
	Barrel		Vat	
Passivate Coating Without Cr6+	Zinc Corrosion	Rust	Zinc Corrosion	Rust
Trivalent Clear	24	96	24	96
Trivalent Iridescent (heavy)	96	240	96	240
Trivalent iridescent +seal	96	384	-	-
Lanthane + Finigard	200	600		

Testing

It is important that all alloy coatings are supplied with the correct amount of alloying metal, which can now be tested non-destructively using X-ray fluorescence techniques. The equipment also determines thickness to an accuracy of ±5% which is better than any other means of non-destructive testing. Anochrome Group has XRF equipment to ensure the quality of its production.

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