

jects are then tumbled with zinc powder and certain activating chemicals.

Zinc is usually deposited in layers with thicknesses between 12 and 15 µm, although thicker layers of about 75 µm are said to be obtainable. When coatings thicker than 30µm are applied, low temperature heat treatment is necessary after plating, to avoid flaking. The coatings are very uniform, even on objects of complex geometry. The surface is matt. The iron/zinc alloys produced by the hot dip galvanizing process are absent in mechanically plated zinc coatings and unlike hot dip galvanizing, the coating on edges and corners is thinner than that on flat surfaces. This is due to impact during the tumbling process and for this reason, products with a mass of more than 0,25kg are not recommended for coating by this method. When thicker coatings are applied, >20µm, oversizing of internal threads or undercutting of external threads, is necessary. Since there is little risk of hydrogen embrittlement even hardened steels can be treated in this way.

**ASTM-B695** may be applied.

### 3.6 COATING WITH ZINC-RICH EPOXY PAINT

As with zinc metal spraying, steel components should be cleaned by means of careful abrasive blasting - at least to Sa 2 1/2, according to **ISO 8501-1**. Scraping or wire-brushing alone does not give satisfactory results when coating an entire component. However, when reconditioning a coating on site, proper abrasive paper cleaning or wire brushing can be quite successful.

Zinc-rich paint consists of fine grained zinc powder in an organic or inorganic bonding agent. Both one and two-component paints are available. The zinc content in the dry paint film should be at least 80% by mass, which corresponds to 54% by volume. This is necessary to en-

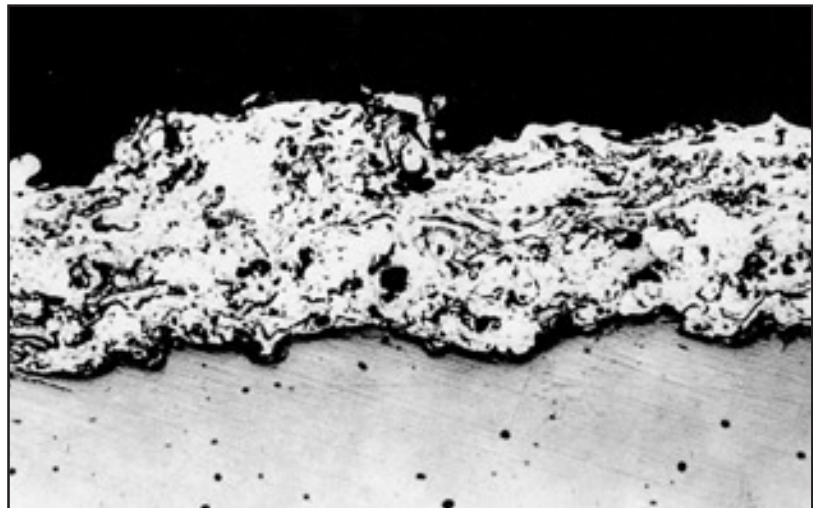


Figure 9. Section through zinc metal sprayed coating.

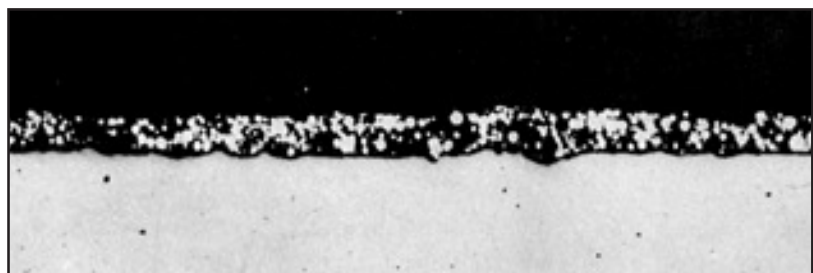


Figure 10. Section through zinc rich paint layer.

able the individual zinc particles to make good electrical contact with each other and with the steel surface. The paint is applied by brush or spray gun, depending on paint formulation.

Painting with zinc-rich paint is sometimes called "cold galvanizing", which gives the impression that zinc-rich paints provide zinc coatings with similar properties to those obtained by hot dip galvanizing. This is not so, compare figure 10 to figure 23.

The designation "cold galvanizing" has been legally tested in Germany. Zivilse-

nats des Bundesgerichtshof, said in a verdict dated 12th March 1969 that "cold galvanizing" was an illegal product description.

Coating with zinc-rich paint is a painting procedure and not a method of metal coating.

The properties of zinc coatings applied by these various methods are given in figure 11.

Refer to Chapter 15 - "Reconditioning Coatings Damaged or On-site Modified Hot Dip Galvanized Components".

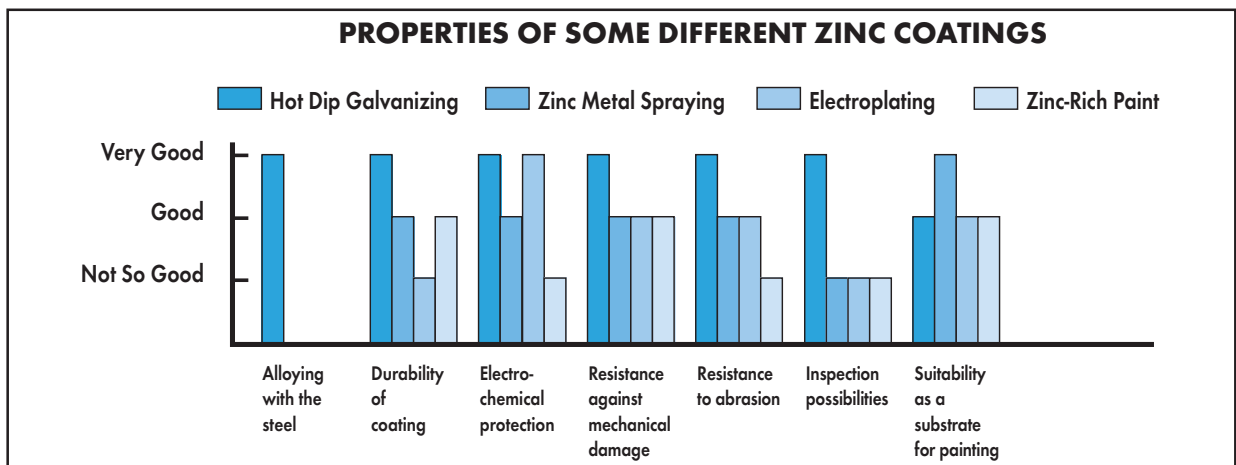


Figure 11. Comparison between the properties of different zinc coatings.