

**Zinc metallizing** is a versatile process which first melts *zinc* or *zinc alloy metals* and then rapidly propels the molten zinc particles onto a prepared substrate, creating a lamellar or layered coating. Metallizing (or "thermal spraying" as it is often called) is a highly effective and proven method of corrosion prevention. It provides both galvanic protection and a barrier coating to iron and steel.

## **How Does It Work?**

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Most protective coating systems for steel function solely as a barrier between the steel and the corrosive environment. If these passive and permeable barriers are damaged or penetrated, moisture and oxygen can reach the steel surface, causing rust and eventual coating failure. A zinc metallized coating also offers barrier protection; however, the electrochemical relationship between zinc and steel allows a zinc coating to give cathodic protection as well. A zinc metallized coating will protect the steel galvanically - it will corrode in preference to steel, continuing to protect as long as any zinc remains in the immediate area.

The surface of a metallized coating permits excellent adhesion of sealers and topcoats. The effect of this combination is a synergistic coating system which will protect the underlying steel and require little or no maintenance for many years.

## **Method of Application**

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As with any coating process, proper surface preparation is essential. The blast abrasive used must remove from the metal surface old paint, rust or mill scale, then provide a surface profile of about 2.0 to 4.0 mils (50-100 microns). Such preparation will permit a mechanical bond of several thousand pounds per square inch between the substrate and the coating.

The zinc is sprayed by using a combustion flame spray gun. An oxy-fuel flame gun melts a single wire which is then atomized and deposited onto the surface.

Applications of zinc coatings can be easily controlled to provide almost any thickness, from 0.002" to 0.020". This is important since atmospheric conditions will dictate the protective thickness required. For a very long life, or under highly corrosive conditions, the coating thickness is increased. Edge build-up, a particularly difficult job for all coating systems, is effectively achieved with zinc metallizing. The use of sealers and/or topcoats (vinyl, urethane or phenolic, for example) on a zinc metallized coating will further protect the surface.

Environmental conditions will determine the appropriate use and type of sealer.