

METALIZING

Metalizing FAQ's

What is metalizing?

Metalizing or Thermal Sprayed Coatings (TSC) is the process of applying a metallic coating to a substrate to protect against corrosion or as a slip resistant coating. The first step is to prepare the substrate by abrasive blast to ensure strong adhesion. Second, a heat source melts the metallic material as an atomizer propels the material onto the substrate. As the metallic material contacts the substrate the metallic particles flatten into tightly woven splats to form a mechanical bond to the substrate. Subsequent layers can be applied to meet the desired thickness.



*Aluminum, Zinc and
Zinc Aluminum*

What are the commonly used specifications for metalizing?

AWS C2.23M/C.23:2003, NACE No. 12, SSPC-CS 23.00, Joint Specification for the Application of Thermal Spray Coatings (Metalizing) of Aluminum, Zinc, and Their Alloys and Composites for the Corrosion Protection of Steel

AWS C2.16/C2.16M:2002, Guide for Thermal Spray Operator Qualification

AWS C2.25/C2.25M:2012, Specification for Thermal Spray Feedstock - Wire and Rods

AWS C2.21M/C2.21, Specification for Thermal Spray Equipment Acceptance Inspection (Supersedes: AWS C2.2, Recommended Practices for Metalizing with Aluminum and Zinc for Protection of Iron)

ANSI/AWS C2.18-93R, Guide for the Protection of Steel with Thermal Sprayed Coatings of Aluminum and Zinc and their Alloys and Composites

What materials can be metalized?

Typically metalizing is sprayed onto metal substrates; however, it can be applied to wood, concrete, and some plastics.

What materials or "feedstock" can be used for metalizing?

There are a large range of materials that can be used for metalizing. AZZ primarily uses zinc, aluminum, 85/15 zinc/aluminum, ceramic core (anti-skid product with corrosion protection) and iron carbide (a hot-dip galvanize friendly anti-skid product).



Metalizing Process

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What are some common applications of metalizing?

Metalizing is best served for when products or materials are too large or heavy for hot-dip galvanizing. Metalizing does not have size or weight limitations and can easily be applied in the field or shop. It is an approved repair method for hot-dip galvanizing and can be a great alternative to pro-long service life of an existing product. Metalized anti-skid products provide a minimum 10-year slip-resistant coating for those slip hazard areas.



What advantages does metalizing have over other coating technologies?

Similarly to hot-dip galvanizing, metalizing offers cathodic protection; meaning a metalized coating will self-sacrifice before allowing the base material to corrode. There are multiple case studies of metalized coatings lasting more than 40 years in service. There is no cure time for metalized coatings and can even be applied in cold temperatures.

Are thermal stresses in metalized coatings a problem?

Spraying with zinc or zinc alloys is considered a cold process and does not create thermal stresses when applied. These coatings generally are cool enough to touch immediately after application. However, aluminum and both anti-skid products can generate thermal stresses due to their high melting points.

How thick are typical coatings deposited by thermal spray processes?

Coating thickness is specified by in-service environment conditions, required service life, and selected metallic coating (Zinc, Aluminum, or 85/15 Zinc/Aluminum). Thicknesses can range from 0.004"-0.016" dependent on requirements; reference ANSI/AWS C2.18-93R Annex B, Recommendations for the Selection of Thermal Spray Coatings of Aluminum and Zinc and Their Alloys and Composites for the Protection of Steel in Various Environments and Service.



*Tested bendable with
no cracking or peeling.*

What factors influence bond strength?

Surface prep is critical. Substrate must be clean, free of oil and grease. Abrasive blast to near-white metal unless for marine and immersion service, which require white metal finish. If required coating thickness is in excess of 0.004" it is recommended that thin, multiple layers are sprayed to influence a stronger bond.

Can you paint over a metalized surface?

Absolutely! Surface preparation is minimal as the metalized coating provides an excellent anchor profile without the need to abrasive blast.



We Protect More Than Steel.



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