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Infralloy™ S7412Z-SR Tungsten Carbide/Cobalt Sink Roller Thermal Spray Powder

SUMMARY

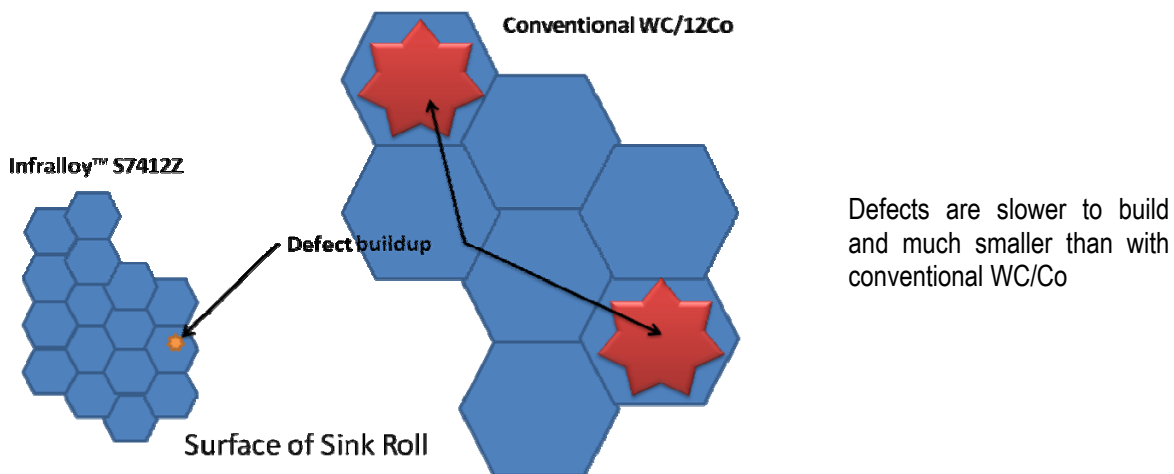
Infralloy™ S7412Z is a Tungsten Carbide/Cobalt (88WC/12Co) powder. It is a composite 88WC/12Co with grain structure and chemical composition designed suitable for sink rollers to be used in continuous galvanizing lines (CGL) of zinc coatings for steel production. Particle size is in the range of -45 to +15 microns.

Infralloy™ S7412Z coatings are recommended for CGL resistance to wear and corrosion, or growth of zinc-metal tumors growing onto the surface of the rollers, at temperatures up to ~ 1020°F (550°C). Coatings have excellent properties, including insoluble in zinc molten metal and can be used for corrosive chemical environments, and have high wear and erosion resistance.

(1). The special S7412Z sink roller WC/Co is effective by 2 primary means

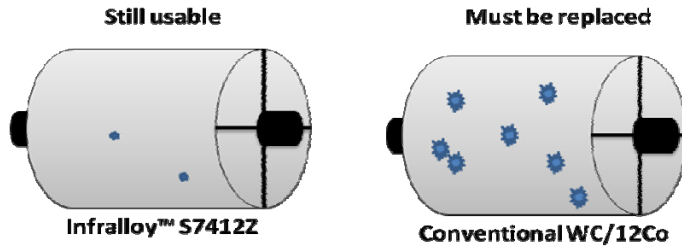
- The composition of the cobalt and carbide phases are less likely to accept buildup of the dross from the zinc bath
- The nucleation sites of zinc on the surfaces are much smaller than those in traditional micro-grained coatings

(2). When defects occur they are fewer in number and much smaller (3-orders of magnitude smaller) which allows for longer use of the sink roll before replacement





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Comparison of Infralloy™ S7412Z coated sink roll with the conventional WC/12Co coated sink roller after 10-14 days usage

SUGGESTED COATING SPRAY SYSTEMS

HVOF Metco DJ Hybrid or Praxair JP 5000, etc.

POWDER CHARACTERISTICS

Typical Composition:	Cobalt (Co)	12%
	Carbon	4.85-5.1%
	Tungsten (W)	Balance
	Alloy additives	<1%
Particle size:	-45 to +15 microns	
Eutectic Temperature	1320°C	

TYPICAL STARTING SPRAYING PARAMETERS

Hybrid DJ 2700 using Propylene

Hardware	Pressure psig			Flowmeter Reading (FMR)			Flow (SCFH)			Powder Feeder (DJP)			Spray	
	O ₂	C ₃ H ₆	Air	O ₂	C ₃ H ₆	Air	O ₂	C ₃ H ₆	Air	N ₂ FMR	N ₂ SCFH	Air psig	Rate lbs/h	Dist inch
DJ2701	150	100	100	46	40	48	664	176	857	55	28.5	20	5	8-10



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TYPICAL PHYSICAL PROPERTIES OF THE COATINGS

Textures of as-sprayed	120-200 microinches
Ground surface	2-4 microinches
Cross Section Microhardness	1050-1250 VH ₃₀₀
Bond strength (low carbon steel coupons)	>12,000 psi

WEAR RESISTANCE

This coating is suitable for high wear resistant surface application where high toughness is required

POST SPRAY FINISHING

Coatings of Infralloy™ S7412Z are best finished by grinding. Finishing of 2-4 micro-inch of surface can be achieved. The roller needs to be sealed by using a higher temperature sealant before put into a zinc bath

ROLL HANDLING

It is recommended that the roller to be preheated to the neighborhood of the zinc bath temperature before placing it into the bath in order to avoid coating cracks or delamination due to too rapid heating of the roller in the bath.

POWDER HANDLING

Wear a mask and gloves when pouring powders into the feeder or discharging from the feeder

SAFETY MEASURES IN SPRAYING

Thermal (plasma) spray is a completely safe process when performed in accordance with Equipment Safety Measures. Familiarize with yourself with local safety regulations before start spray operations. When spraying it is recommended always have at least two personnel on sight.

DISREGARDING TO THESE SAFETY INSTRUCTION MAYBE DANGEROUS TO YOUR HEALTH