

AI-1888

Description and Applications

AI-1888 1.6 mm dia is made exclusively for Arc Spraying. This wire produces a superior coating because of its high bond strength even without blasting.

Characteristics of the coating are its ability to produce a dense, wear resistant surface, advantageous for machine element work. The use of 1.6mm wire with this material has the added advantage of fume reduction during spraying. The pre-alloyed wire produces superior bond coats that are dense, resistant to corrosion, mechanical and thermal shock.

AI-1888 is equally suitable as a one-coat system, e.g.: a finish of 5 micro inch is attainable. The unusual self-bonding ability of the alloy is attributable to the exceptionally high temperatures the alloy reaches (3,870-6,650°C - which produce superheated particles) and which on impact with the base material, diffuses to form a metallurgical bond.

Measured bond strengths have been determined to be far greater than those formed by exothermic reactions of nickel and aluminium mixtures - the previous materials available to demonstrate such self-bonding characteristics.

One of the major problems in achieving high quality, well-bonded coatings in any thermal spray process is the expensive and extensive preparation of the substrate. **AI-1888** eliminates the problem. The coating, through extensive testing, has been found to be far superior to that produced by the exothermic materials in sharp edge and impact loading.

AI-1888 is self-bonding to a broad range of smooth metal surfaces including annealed or hardened carbon steels, hardened alloy steels, stainless steels and cast iron.

Applications: Recommended for all general metallizing work with bronze. This material is extremely effective where surface preparation may be less than optimum; **eg:** on cast iron or steel.

It is also used as a coating in its own right and has the highest corrosion resistance and maximum wear resistance of the Arc Spray bronzes. Major uses, in addition to bond coats, are for bearings in the steel industry and for reclaiming aluminium/bronze components, including propeller shafts for operation in seawater. **AI-1888** can be machined but, again, grinding will give a better surface.

Arc Sprayed coats from 0.01 mm to 0.015 mm can be readily applied in one pass. Thicker coatings up to 6.5 mm have been applied by continuous spraying. Thus, in some cases, **AI-1888** can be used as a one-coat system. **AI-1888** coatings can be machined to a medium finish with high-speed tools or ground to smooth finish with aluminium oxide or silicon carbide wheels. It can be sprayed directly on a chemically clean surface without conventional blasting, turning or roughing, thereby eliminating the need for expensive preparation equipment and the associated labour and quality control.

Typical Analysis

Fe	Al	Cu
0.50	9.50	90.00



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Mechanical Data

Coating Tensile Strength	:	215 MPa (31,200 psi)
Wire Strength	:	1.6 mm
Deposit Efficiency	:	80%
Melting Point	:	982°C
Bond Strength	:	41.8 MPa clean surface
	:	46.5 MPa blasted surface
Coating Texture (as sprayed)	:	Variable*
Texture (as machined)	:	3-100 Microinches aa**
Hardness	:	65-68 HRb
	:	144 (Knoop 100)
Coating Density	:	6.3 gm/cm ³ **
Shrink	:	0.0055 cm/cm
Impact, Sharp Edge & Bend	:	Excellent Resistance

* Depends on air pressure - fine with high psi, average with medium psi, and rough with low psi.

** Depends on atomizing air pressure.

Spraying Arc

Spray Rate	:	4.1 kg/hr/100 amps
Coverage (wire consumption)	:	1.10 kg/m ² /100 microns

Spray Parameters

	VOLTS	AMPS	AIR	DISTANCE
BOND PASS	33-35	150-350	350kPa (50 psi)	100-150mm
BUILD UP	33-35	150-350	414-621kPa (60-90psi)	150-200mm

Finishing

AI-1888 coatings can be machined or ground to achieve a desired finish. Excellent finishes have been obtained on coatings of **AI-1888** using tungsten carbide tool bits with a nose radius of 1/32", a work speed of 225 -250 surface feet per minute, and a traverse of 0.0025" per revolution. Best results are obtained with cuts of 0.010"

Disclaimer

All figures in this datasheet should be considered indicative only. No guarantee is made as to their accuracy.

All figures subject to change without notice. Batch analysis is available for all products sold. Should you require any further information, please contact us at sales@alloysint.com.au

