

AI-1884

Description and Applications

AI-1884 1.6 mm diameter is made exclusively for Arc Spraying. This wire produces a superior coating because of its high bond strength.

AI-1884 is a copper aluminium multi bronze with a high Ni and Fe addition. It is used for arc spray cladding primarily on cast iron materials and steel. It is resistant to sea water and is cavitation resistant.

Characteristics of the coating are its ability to produce a dense, wear and corrosion 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-1884 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. 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.

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-1884** 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 6.0 - 10.0 mm have been applied by continuous spraying. Thus, in some cases, **AI-1884** can be used as a one-coat system. AI 1884 coatings can be machined to a medium finish with high-speed/carbide tools or ground to smooth finish with aluminium oxide or silicon carbide wheels.

Typical Analysis

Ni	Mn	Al	Cu	Fe
4.5	1.0	9.0	Bal	3.5



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Mechanical Data

Coating Tensile Strength	215 MPa (31,200 psi)
Wire Strength	1.6mm
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	4.1kg/hr/100amps
Coverage (wire consumption)	1.10kg/m ² /100 microns

Spray Parameters

	Volts	Amps	Air	Distance
Bond Pass	33-35	150-350	350 kPa (50psi)	100-150mm
Build Up	33-35	150-350	414-621kPa (60-90psi)	150-200mm

Finishing

Al-1884 coatings can be machined or ground to achieve a desired finish. Excellent finishes have been obtained on coatings of Al 1884 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



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