

AI-1756

Description and Applications

AI-1756 is a premium, nickel-based MIG wire, used for hard surfacing parts to resist wear, heat, corrosion and galling. It has better ductility and impact resistance than **AI-1760** for plastic extrusion screws, shafts and sleeves.

Deposits of **AI-1756** should not be applied to base metals which will subsequently be hardened or tempered. The deposits also cannot be hot or cold worked; however, they can be hot formed while in the plastic condition (between solidus and liquidus temperatures). It has little tendency to warp annealed work to which it is applied.

Applications include: Hard surfacing of plastic and rubber extrusion screws, wear rings, shafts, sleeves, cement gate valves, forming and drawing dies, and centrifugal pump parts.

Typical Weldmetal Analysis

C	Si	Cr	Ni	Fe	W
0.60	4.35	13.50	Bal	4.00	2.60

Mechanical Properties of Weldmetal

	As Welded
Tensile Strength	310 MPa (45,000psi)
Specific Gravity	7.95
Density	0.285lbs/cu.in
Melting Range	Solidus 950°C Liquidus 1050°C
Resistivity, Specific Heat	Similar to Inconel Alloy 600
Heat Treatability	None
Hardness °C	25 315 425 540 650
Hardness HRC	55 50 48 44 41
Shielding Gas	98% Ar + O₂ or 100% Ar

Welding Instructions

All steels having less than 0.25% carbon, and gray cast iron; Meenanite, malleable, ingot and wrought iron; nickel, Monel alloy 400, Inconel alloy 600, Nichrome, Chrome and most high-temperature alloys can be overlaid without special precautions. Steel having more than 0.25% carbon can also be overlaid, but requires controlled slow cooling after fusion, in suitable insulation such as Sil-O-Cel, mica, etc. For overlaying martensitic steel, see Alloys International.



Finishing

Machining readily done with carbide tipped tools such as Carboloy 883 or Kennametal K68. (The more costly cubic boron nitride tools, such as BZN compacts or Kennametal CNMA 433KC-210, work even better.) The tools should have slight lead and rake angles, and a radius of 1/32". Feed about 0.003 IPR, with depth of cut about .015", at 15 to 45 SFM. It is recommended that the last 0.005" be removed by grinding. A near frictionless mirror finish is possible.

Grinding should be done wet, whenever possible. Due to the abrasive resistant qualities of the alloy, considerable pressure is required to remove stock, resulting in high surface temperature which may produce surface checks. In general, economical grinding of this alloy can best be done by taking light fast cuts with a green silicon carbide wheel; roughly dressed for roughing, medium dressed for finishing.

Lapping should be done dry. Silicon carbide, boron carbide and diamond dust will do a good cutting job provided they are embedded in a cast-iron or steel wheel. Used loose they will cut the nickel matrix before the chromium borides and carbides, giving the surface an etched appearance. Apply with steady pressure and avoid over-heating. See data sheet for additional finishing information.

Welding Parameters

Diameter (mm)	Current type	Amps
1.2	DC(+)	150-220
1.6	DC(+)	180-300

Also available as Sprayweld Powder, Fuseweld Powder, Plasma Transferred Arc (PTA) Powder, Bare Rod, Castings and Ingot.

Welding Positions

(1G, 1F) Downhand/flat position, (2F) Horizontal position, (2G) Horizontal vertical position.

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

