

AI-1760

Specifications

AWS/ASME A5.13-80 : ERNiCr-C

Description and Applications

AI-1760 is a premium nickel-based hard-surfacing MIG Wire. It is rated as excellent in resistance to abrasion, corrosion, and galling and good on impact. It has excellent red hardness. A very stable alloy, it does not anneal. Its low coefficient of friction makes it excellent in metal-to-metal wear. It can be hot-formed while in the plastic condition (between the solidus and liquidus temperatures).

Applications include: **AI-1760** is applicable to hard surfacing of shafts, sleeves, valve trim and the like. A few specific examples of successful uses include:

Ball joints	Conveyor belts	Plug gauges
Bearings	Deep hole drills	Pump shafts
Brick augers, dies	Feeder shoes	Rocker arms
Bushings	Glass plungers	Screw conveyors
Cams	Mill guides	Sprockets
Center tips	Mixing blades	Trip dogs
Chuck jaws	Pistons	Valves, disks, seats

Typical Weldmetal Analysis

C	Si	Cr	Ni	Fe	B
0.70	4.35	13.50	Bal	4.00	3.00

Mechanical Properties of Weldmetal

	As Welded
Tensile Strength	207MPa (30,000psi)
Density	7.8g/cc
Melting Range	Solidus 950°C Liquidus 1040°C
Heat Treatability	None
Hardness °C	25 315 425 540 650
Hardness HRc	61 55 52 48 44
Electrical Resistivity	Similar to Inconel Alloy 600
Shielding Gas	98% Ar + O₂ or 100% Ar

* Special specimens having 12mm radius notch, and polished to remove all possibility of stress concentrations.



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 data sheet.

Finishing

Machining can be done, using cubic boron nitride tooling. Use GE's BZN compacts (such as BRNG-43T) or Kennametal's CNMA 433KC-210. Use a negative rake tool, with a 15° lead angle. It should have a 3/64" radius and T-land edge preparation. Set tool at centerline of work. Feed at 0.005 - 0.10 IPR, with depth of cut up to 0.125" at 200 - 300 SFM.

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.

Welding Parameters

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

Also available as: Sparyweld 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

