

AI-0360B

Specifications

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

Description and Applications

AI-0360B is the original nickel-base hard-surfacing alloy. It was the successful largely because it contained chromium boride crystals, which have a hardness of DPH 4100. They are created through a proprietary two-stage exothermic process. The chemistry has been duplicated by others; none have duplicated the peculiar microstructure with its diamond-like chromium borides.

AI-0360B is rated excellent in resistance to abrasion, corrosion, and galling and good on impact. It has excellent red hardness and has no peer in weldability. A very stable alloy, it does not anneal. Its low coefficient of friction makes it excel in areas of metal-to-metal wear. It can be hot-formed while in the plastic condition (between the solidus and liquidus temperatures).

AI-0360B is applicable to the hard surfacing of shafts, sleeves, valve trim and the like. A few specific examples of successful uses include:

Ball Joints	Bearings	Brick augers, dies	Bushings
Cams	Centre Tips	Chuck jaws	Conveyor Belts
Deep hole Drills	Feeder Shoes	Glass Plungers	Mill Guides
Mixing Blades	Pistons	Plug gauges	Pump shafts
Rocker arms	Screw Conveyors	Sprockets	Valve seats, disks

Base Metals that can be Overlaid

All steels having less than 0.25% carbon, and gray cast iron, Meehanite, malleable, ingot and wrought iron, nickel, Monel alloy 400, Inconel alloy 600, Nichrome, Chromel 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.

Typical Weldmetal Analysis

C	Si	Cr	Ni	Fe	B
0.75	4.35	13.5	Bal	4	3



Mechanical Properties of Weldmetal

	As Welded
Tensile Strength	30,000PSI
Density	7.8g/cc
Coefficient of friction	0.1
Heat treatability	None
Electrical Resistivity @ Temperature	Similar to Inconel™ 600
Hardness* (HRc)	61 55 52 48 44
Temperature °C	20 315 425 540 650

*These hardnesses also apply to Sprayweld deposits and castings. Deposits by electric arc, TIG (GTAW) and PTA processes have lower hardnesses, depending on extent of base metal dilution.

Welding Instructions

Shielding Gas: Argon 100% or Oxy-Acetylene

Gas Rate 15-18 l/min

Welding Finishes

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 - 0.010 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.

Available Sizes

3.2, 4.0, 5.0 and 6.4 mm

Also available as MIG Wire AI-1760, PTA Powder, Sprayweld Powder, Castings & Ingots

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

