

## AI-0340B

### Specifications

**AWS/ASME ENiCr-A**

### Description and Applications

**AI-0340B** is a premium, nickel-base alloy, as it has chromium boride crystals, (hardness DPH 4100) which are created through a proprietary two-stage exothermic process. The alloy is used for hard-surfacing parts to resist wear, heat, corrosion and galling. It has greater impact resistance and workability than **AI-0350B**, **AI-0356B** or **AI-0360B**, and displays excellent machineability. Deposits of **AI-0340B** cannot be hot or cold worked. However, they can be hot formed while in the plastic condition (between solidus and liquidus temperature). It has little tendency to warp anneal work to which it is applied.

Hard surfacing of components, primarily glass plungers, blank molds, blow molds, neck rings, bottom plates, guide rings and baffle plates. Also used in other industries for plug and gate valves, wherein fairly good machineability is required.

### 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 technical data sheet.

### Typical Weldmetal Analysis

| C    | Si   | Cr    | Ni  | Fe   | B    |
|------|------|-------|-----|------|------|
| 0.45 | 2.25 | 10.00 | Bal | 2.50 | 2.00 |

### Mechanical Properties of Weldmetal

|                         | As Welded                        |
|-------------------------|----------------------------------|
| Tensile Strength        | 10,000 psi (ave.)                |
| Density                 | 8.22g/cc                         |
| Melting Range           | Solidus 960°C Liquidus 1105°C    |
| Coefficient of Friction | 0.10 (6micro"finish)             |
| Thermal Expansion       | 50-560°C 8.56 x 10 <sup>-6</sup> |
| Heat Treatability       | NONE                             |
| Temperature °C          | 25 315 425 540 650               |
| Hardness HRC            | 40 34 33 29 26                   |

### Welding Instructions

Shielding Gas: Argon 100% or Oxy-Acetylene

Gas Rate 15-18 l/min



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**Machining** is 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 433 KC-210, work even better.) The tool should have slight lead and rake angles, and a radius of 1/32". Feed about 0.003 IPR, with depth of cut about 0.015", 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 overheating.

#### Available Sizes

4.0, 5.0 & 6.4mm Diameters

Available Forms: Sprayweld Powder, Plasma Transferred Arc (PTA) Powder, Bare Rods, MIG Wire, Castings & Ingot

#### 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](mailto:sales@alloysint.com.au)



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