

HI-TEMP® 950

NOMINAL COMPOSITION

Iron	Remainder
Nickel	20.0% ± 2%
Chromium	25.0% ± 2.0%
Phosphorous	7.0% ± 1.0%
Silicon	5.5% ± 1.0%
Molybdenum	2.0% ± 0.5%
Carbon	0.06% Max
Sulfur	0.02% Max
Cobalt	0.10% Max
Titanium	0.05% Max
Aluminum	0.05% Max
Zirconium	0.05% Max
Selenium	0.005% Max
Lead	0.10% Max
Cadmium	0.01% Max

PHYSICAL PROPERTIES

Color	Iron Gray
Melting Point (Solidus) ⁽¹⁾	1886°F (1030°C)
Flow Point (Liquidus) ⁽¹⁾	1985°F (1085°C)
Brazing Temperature Range	2050°F - 2085°F (1120°C - 1140°C)
Specific Gravity	5.83
Density (Lbs/in ³)	0.211

⁽¹⁾ Determined by differential thermal analysis (DTA)

PRODUCT USES

Hi-Temp 950 is an iron-based brazing alloy powder with relatively low joining temperatures. It provides high temperature joint strength plus oxidation, corrosion, and abrasion resistance on thick sections of stainless steel, ductile nickel, and cobalt base alloys. Typical applications would include structural members in jet engines, turbines, chemical processing and heat exchanger applications including exhaust gas recirculation (EGR).

BRAZING CHARACTERISTICS

Hi-Temp 950 will flow into long, narrow joints, particularly at the higher brazing temperature, in reducing atmospheres (- 60°F dew point or lower) or vacuum. In atmosphere brazing, base metals containing more than 0.5% aluminum and/or titanium (i.e. Inconel X and A286) are often nickel-plated (0.0005 in. to 0.0015 in. thick depending upon brazing temperature and cycle), if difficulties in wetting and bonding are encountered. On thinner sections or less ductile base metals, brazing should be done at the low end of the brazing range with small clearances, fast heating/cooling cycles, and a minimum quantity of brazing alloy. Suggested joint clearance at brazing temperature for Hi-Temp 950 is 0.002 in. – 0.005 in. (0.05 mm – 0.12 mm).

PROPERTIES OF BRAZED JOINTS

The properties of a brazed joint are dependent upon numerous factors including base metal properties, joint design, metallurgical interaction between the base metal and the filler metal. Joint ductility, strength and high temperature properties, and alloy re-melt temperature, increase with increasing temperature and heating cycles, and decreasing joint clearances. The hardness decreases, due to diffusion of the boron onto the base metal and greater brazing-alloy/base-metal alloying.

AVAILABLE FORMS

Powder and paste.

SPECIFICATIONS

Hi-Temp 950 alloy conforms to the following specifications: N/A

APPLICABLE PRODUCT CODE(S)

The applicable Lucas-Milhaupt product code(s) for this technical data sheet: 77-950.

SAFETY INFORMATION

The operation and maintenance of brazing equipment or facility should conform to the provisions of American National Standard (ANSI) Z49.1, "Safety in Welding and Cutting". For more complete information refer to the Material Safety Data Sheet for Hi-Temp 950.

WARRANTY CLAUSE

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