

## HI-TEMP<sup>®</sup> 910

### ***NOMINAL COMPOSITION***

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Nickel	Remainder
Boron	2.75% - 3.50%
Silicon	4.5% ± 0.5%
Iron	0.5% Max
Phosphorous	0.02% Max
Carbon	0.06% Max
Sulfur	0.02% Max
Titanium	0.05% Max
Aluminum	0.05% Max
Zirconium	0.05% Max
Cobalt	0.10% Max
Selenium	0.005% Max
Other Elements (Total)	0.50% Max

### ***PHYSICAL PROPERTIES***

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Color	Iron Gray
Melting Point (Solidus)	1800°F (982°C)
Flow Point (Liquidus)	1900°F (1038°C)
Brazing Temperature Range	1850°F - 2150°F (1010°C - 1175°C)
Specific Gravity	7.33
Density (Lbs/in <sup>3</sup> )	0.265
Electrical Conductivity (%IACS) <sup>(1)</sup>	N/A
Electrical Resistivity (Microhm-cm)	N/A

<sup>(1)</sup> IACS = International Annealed Copper Standard

### ***PRODUCT USES***

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Hi-Temp 910 is a nickel -silicon-boron-iron brazing alloy powder with low joining temperature. 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 nuclear equipment (not exposed to radiation) requiring lower brazing/heat treatment temperatures.

### ***BRAZING CHARACTERISTICS***

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Hi-Temp 910 will flow into long, narrow joints, in marginal atmospheres but will flow particularly well at the higher brazing temperature, in reducing atmospheres (-60°F dew point or lower) or inert atmospheres (-80°F dew point or lower). 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. Recommended joint clearance at brazing temperature for Hi-Temp 910 is 0.000 in. – 0.002 in. (0.00 mm – 0.05 mm).

## ***PROPERTIES OF BRAZED JOINTS***

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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 into the base metal and greater brazing-alloy/base-metal alloying. This alloy shows satisfactory oxidation resistance at temperatures as high as 2000°F (1093°F).

## ***AVAILABLE FORMS***

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Powder and paste.

Available mesh sizes for powder:

<u>140F</u>	<u>325</u>
+100 Mesh: 0.5% Max	+200 Mesh: 0.5% Max
+140 Mesh: 10% Max	+325 Mesh: 10% Max
-325 Mesh: 55% Max	-325 Mesh: 90% Min

\*Mesh sizes per AWS A5.8M/A5.8

## ***SPECIFICATIONS***

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Hi-Temp 910 alloy conforms to the following specifications:

- American Welding Society (AWS) A5.8/A5.8M BNi-3
- Society of Automotive Engineers (SAE) / AMS 4778

## ***APPLICABLE PRODUCT CODE(S)***

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The applicable Lucas-Milhaupt product code(s) for this technical data sheet: 77-910.

## ***SAFETY INFORMATION***

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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 910.

## ***WARRANTY CLAUSE***

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