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NICKEL 99.99% TECHNICAL DATA

NOMINAL COMPOSITION	Nickel	99.99%
	Other Elements, Total	0.01% Max
PHYSICAL PROPERTIES	Color	Grey
	Melting Point	2651°F (1455°C)
	Recommended Brazing Temperature	2651- 2751°F (1455- 1555°C)
	Density (Troy. oz/in³)	4.68
	Thermal Conductivity (W/m•K)	60.7
	Heat of Fusion (J/g)	305.6
	Heat of Vaporization (J/g)	5862
	CTE, linear	7.28 µin/in•°F (13.1 µm/m•°C)
	Specific Heat Capacity (J/g•°C)	0.46
	Electrical Resistivity (µohm•cm)	6.4
	Magnetic Permeability	1240
	Curie Temperature	676°F (358°C)
	Ultimate Tensile Strength (MPa)	45.0 (annealed), 317 (typical)
	Yield Strength (MPa)	59.0 (typical)
USES	Elongation at Break	30.0% (annealed)
	Shear Modulus (GPa)	76.0
BRAZING CHARACTERISTICS	Nickel based alloys are the mainstay of many high performance markets in which corrosion resistance and/or heat resistance is required. Example applications include furnace components, chemical processing vessels, exchangers, high temperature aerospace components, nuclear reactors and turbines.	
	Pure nickel has no melt range and can thus be treated as a eutectic. Upon reaching the melting point this material will exhibit free flowing characteristics and therefore does not need to be held at brazing temperature for an extended period of time. Brazing in a dry reducing atmosphere or inert atmosphere is generally recommended to prevent oxidation at higher temperatures. It is recommended that base materials containing more than 0.5% of highly reactive elements such as titanium and aluminum be electrolytically nickel plated prior to brazing.	
PROPERTIES OF BRAZED JOINTS	The properties of a brazed joint are dependent upon numerous factors including base metal properties, joint design and metallurgical interaction between base metals and filler metal. This alloy shows satisfactory oxidation resistance at temperatures as high as 2000°F. For atmospheric brazing the recommended radial joint clearance for nickel-base alloys fall within .000-.002" range for atmosphere brazing.	
SPECIFICATIONS	Nickel 99.99% conforms to: NA	
AVAILABLE FORMS	Powder and Paste	

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 GOLDBRAZE 5050.

Individuals requiring further information and Engineering Specification Documents may wish to contact the Engineering Society for Advanced Mobility, Land Sea Air and Space, The Society of Automotive Engineers <http://www.sae.org/> (SAE AMS) or The American Welding Society (AWS) <http://aws.org/>

NOTE:

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