

## Prince & Izant Company

12999 Plaza Drive  
Cleveland, Ohio 44130  
T: 216-362-7000  
F: 216-362-7456  
[princeizant.com](http://princeizant.com)



## AMS 4779 (BNi-4) TECHNICAL DATA

<b>NOMINAL COMPOSITION</b>	<b>Nickel</b>	Remaining
	<b>Boron</b>	1.85% ± 0.35
	<b>Silicon</b>	3.5% ± 0.5
	<b>Iron</b>	1.5% Max
	<b>Phosphorus</b>	0.02% Max
	<b>Carbon</b>	0.06% Max
	<b>Sulfur</b>	0.02% Max
	<b>Titanium</b>	0.05% Max
	<b>Aluminum</b>	0.05% Max
	<b>Zirconium</b>	0.05% Max
	<b>Cobalt</b>	0.10% Max
	<b>Selenium</b>	0.005% Max
<b>Other Elements, Total</b>	0.50% Max	
<b>PHYSICAL PROPERTIES</b>	<b>Color</b>	Iron Gray
	<b>Solidus</b>	1800°F (982°C)
	<b>Liquidus</b>	1950°F (1065°C)
	<b>Recommended Brazing Temperature</b>	2000-2050°F (1093-1121°C)
	<b>Density (Lbs/in<sup>3</sup>)</b>	0.30
	<b>Specific Gravity</b>	8.30
	<b>Electrical Conductivity (%IACS)</b>	N/A
	<b>Electrical Resistivity (Microhm-cm)</b>	N/A
<b>USES</b>	<p>AMS 4779 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. AMS 4779 exhibits lower base metal penetration compared to alloys like AMS 4777 and AMS 4778. 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.</p>	
	<p>AMS 4779 will flow into long, narrow joints, in marginal atmospheres but will flow particularly well at the higher brazing temperature, in reducing atmospheres (-60F dew point or lower) or inert atmospheres (-80F dew point or lower). In atmosphere brazing, base metals containing more than 0.5% aluminum and/or titanium 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 AMS 4779 is 0.002 in. – 0.004 in. (0.05 mm – 0.10 mm). Recommended joint clearance at brazing temperature for AMS 4778 is 0.000 in. – 0.002 in. (0.00 mm – 0.05 mm).</p>	
<b>BRAZING CHARACTERISTICS</b>		

**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 into the base metal and greater brazing-alloy/base-metal alloying. This alloy shows satisfactory oxidation resistance at temperatures as high as 1800F (982C).

**SPECIFICATIONS**

AMS 4779 conforms to: Unified Numbering System (UNS) N99640, American Welding Society (AWS) A5.8/A5.8M BNi-4 and Society of Automotive Engineers (SAE) AMS 4779

**AVAILABLE FORMS**

Powder and Paste

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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