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## TiBraze-590

### TECHNICAL DATA

<b>NOMINAL COMPOSITION</b>	Titanium	15.0% ± 1.0
	Nickel	20% ± 1.0
	Hafnium	0.8% ± 0.7
	Zirconium	Balance
	Oxygen	0.125% max.
<b>PHYSICAL PROPERTIES</b>	Nitrogen	0.006% max.
	Solidus	1465°F (796°C)
	Liquidus	1495°F (813°C)
	Recommended Brazing Temperature	1550-1645°F (843-896°C)
	Density (Troy g/cm <sup>3</sup> )	6.7
<b>USES</b>	CTE [m/(m•°C)]	8.8 x10 <sup>-6</sup>
	TiBraze-590 is a corrosion resistant filler metal suitable for brazing titanium, niobium, refractory metals, aluminides and stainless steels. It can also be used to join ceramics, graphite and carbon composites to metals and other non-metallic components without the need for prior metallization of the contact surface. Joints brazed with TiBraze-590 can be used in service temperatures up to 1022°F (550°C) for long term exposure.	
<b>BRAZING CHARACTERISTICS</b>	Suitable for use in all vacuum brazing applications as well as under partial pressure of argon gas. Brazing of alloys containing active components under protective nitrogen atmosphere is not recommended. It is important to maintain a high purity, oxygen-free environment; any oxidation of reactive elements will limit alloy wettability across the non-metallic surface. A vacuum of 10 <sup>-4</sup> torr or better is required to successfully braze with TiBraze-590. For controlled atmosphere brazing or vacuum brazing the recommended radial joint clearance for active alloys ranges between 0-0.002 in (0-0.05 mm).	
	The properties of a brazed joint are dependent upon the base metal, joint design and brazing technique. Below are several examples of shear strengths recorded for joints brazed with TiBraze-590:	
<b>PROPERTIES OF BRAZED JOINTS</b>	<b>Base Material</b>	<b>Shear Strength</b>
	Titanium Grade 2	200-235 MPa
	Ti-6Al-4V	180-207 MPa
	Titanium to Stainless	62-97 MPa
	Titanium to Copper	83-110 MPa
	Titanium to Nickel-plated Steel	95-124 MPa
<b>SPECIFICATIONS</b>	TiBraze-590 conforms to: N/A	
<b>AVAILABLE FORMS</b>	Amorphous foil and specialty preforms per customer specifications	

**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."

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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:****DISCLAIMER**

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