## **Prince & Izant Company**

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## AL 4104 (BAISi-11) TECHNICAL DATA

NOMINAL COMPOSITION  NOMINAL COMPOSITION  NOMINAL COMPOSITION  Copper		Aluminum	Balance
NOMINAL COMPOSITION    For		Silicon	9.75% ± 0.75
Copper		Magnesium	$1.5\% \pm 0.5$
Iron		Bismuth	$0.11\% \pm 0.09$
Manganese Zinc Other Elements, Each Other Elements, Total Other Elements O	NOMINAL	Copper	0.25% Max
PHYSICAL PROPERTIES   Calculation   Conference   Confer	COMPOSITION	Iron	0.8% Max
Other Elements, Each Other Elements, Total  Color Solidus Liquidus 1038°F (559°C) Liquidus 1105°F (596°C) Recommended Brazing Temperature Pensity (Lbs/in³) Specific Gravity Electrical Conductivity (%IACS) Electrical Resistivity (Microhm-cm)  AL 4104 is a general purpose filler metal for joining aluminum and aluminum alloys. Corrosion resistance of AL 4104 is less than that of AL 718. Solution temperature during heat treating must be below the solidus of the braze alloy in order to ensure integrity of the joint is maintained.  AL 4104 has a low melting point and narrow melt range which makes it suitable for brazing aluminum alloys. In addition, the increased silicon content compared to other aluminum filler metals provides increased fluidity as well as reduced shrinkage. The use of AL 4104 also significantly reduces hot cracking during the braze surface during heating.  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 clearances of 0.003-0.005" (0.076-0.127 mm) per side ideal for achieving the highest joint strength in aluminum brazed assemblies.  SPECIFICATIONS  Other Elements, Total  Crayish-White  Grayish-White  Grayish-White  1038°F (559°C)  1038°F (559°C)  1040°F (596-652°C)  1050°F (596-652°C)  1040°F (596-652°C)  104		Manganese	0.1% Max
Color Grayish-White Solidus 1038°F (559°C) Liquidus 1105°F (599°C) PROPERTIES Recommended Brazing Temperature 1105-1205°F (596-652°C) Specific Gravity 2.66 Electrical Conductivity (%IACS) N/A Electrical Resistivity (Microhm-cm) N/A  AL 4104 is a general purpose filler metal for joining aluminum and aluminum alloys. Corrosion resistance of AL 4104 is less than that of AL 718. Solution temperature during heat treating must be below the solidus of the braze alloy in order to ensure integrity of the joint is maintained.  BRAZING CHARACTERISTICS  BRAZING CHARACTERISTICS  PROPERTIES OF BRAZED JOINTS  PROPERTIES OF BRAZED JOINTS  PROPERTIES OF BRAZED JOINTS  AL 4104 alloy conforms to: Unified Numbering System (UNS) A94104, American Welding Society (AWS) A5.8/A5.8M BAISi-11 and Aluminum Association, 4104  AVAILABLE FORMS  Vire, strip, engineered preforms, specialty preforms per customer specification,		Zinc	0.2% Max
PHYSICAL PROPERTIES  PHYSICAL PROPERTIES  PROPERTIES  PROPERTIES  PROPERTIES  Color  Solidus  Liquidus  Recommended Brazing Temperature Density (Lbs/in³) Specific Gravity Specific Gravity Electrical Conductivity (%IACS) Electrical Resistivity (Microhm-cm) N/A  AL 4104 is a general purpose filler metal for joining aluminum and aluminum alloys. Corrosion resistance of AL 4104 is less than that of AL 718. Solution temperature during heat treating must be below the solidus of the braze alloy in order to ensure integrity of the joint is maintained.  AL 4104 has a low melting point and narrow melt range which makes it suitable for brazing aluminum alloys. In addition, the increased silicon content compared to other aluminum filler metals provides increased fluidity as well as reduced shrinkage. The use of AL 4104 also significantly reduces hot cracking during the brazing process. The increased magnesium content aids in preventing oxidation of the braze surface during heating.  PROPERTIES OF BRAZED JOINTS  PROPERTIES OF BRAZED JOINTS  AL 4104 alloy conforms to: Unified Numbering System (UNS) A94104, American Welding Society (AWS) A5.8/A5.8M BAISi-11 and Aluminum Association 4104  Wire, strip, engineered preforms, specialty preforms per customer specification,		Other Elements, Each	0.05% Max
PHYSICAL PROPERTIES    Recommended Brazing Temperature		Other Elements, Total	0.15% Max
PHYSICAL PROPERTIES    Recommended Brazing Temperature		Color	Gravish-White
PHYSICAL PROPERTIES    Density (Lbs/in³)   0.096			•
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USES    Electrical Conductivity (%IACS)   N/A		• • •	
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AVAILABLE I OIVING	SPECIFICATIONS		
	AVAILABLE FORMS		

# 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."

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 <a href="http://www.sae.org/">http://www.sae.org/</a> (SAE AMS) or The American Welding Society (AWS) <a href="http://aws.org/">http://aws.org/</a>

### NOTE:

#### **DISCLAIMER**

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