

PREMABRAZE[®] 131

NOMINAL COMPOSITION

Gold	82.0% ± 0.5%
Nickel	Remainder
Zinc	0.001% Max
Cadmium	0.001% Max
Lead	0.002% Max
Phosphorus	0.002% Max
Carbon	0.005% Max
Other high vapor pressure elements each ⁽¹⁾	0.001% Max
Total all high vapor pressure elements (Including zinc, cadmium, and lead)	0.010% Max
Total all other impurity elements	0.01% Max

⁽¹⁾ Elements with a vapor pressure higher than 10⁻⁷ Torr (1.3 x 10⁻⁵ Pa) at 932°F (500°C)

PHYSICAL PROPERTIES

Color	Nickel Gray
Melting Point (Solidus)	1740°F (949°C)
Flow Point (Liquidus)	1740°F (949°C)
Brazing Temperature Range	1740°F - 1840°F (949°C - 1004°C)
Specific Gravity	15.96
Density (Troy oz/in ³)	8.41
Electrical Conductivity (%IACS) ⁽²⁾	5.85
Electrical Resistivity (Microhm-cm)	29.3

⁽²⁾ IACS = International Annealed Copper Standard

PRODUCT USES

Premabraze 131 can be used on any of the common nickel and iron base heat-resistant alloys, such as in jet engines, etc. Because of its low penetration of the base metal, it is well suited for brazing thin section, such as thin-wall tubing or electronic vacuum tubes. It has also been used extensively for nuclear power applications, except in high flux regions and in contact with such liquid metals as sodium and potassium.

BRAZING CHARACTERISTICS

Premabraze 131 wets a wide range of high temperature iron and nickel based alloys such as the stainless steels, A286, Incomer and Inconel X very well. It does not alloy excessively with these materials nor does it produce the severe intergranular penetration normally associated with the nickel based brazing alloys contained boron. A minimum brazing temperature of 1800°F (980°C) is suggested for furnace brazing in hydrogen or dissociated ammonia having a -40°F dew point or drier on 300 and 400 series stainless steels which do not contain additions of Ti or Al. Stainless steels of the 17-7 PH variety require dew points of -70°F or drier for furnace brazing. Brazing is done in inert atmospheres or in vacuum. For torch brazing, protection with Handy Hi-Temp[®] Flux is recommended. Where base metals containing elements which produce refractory oxides are encountered, Handy Hi-Temp[®] Flux Boron Modified will promote better wetting.

BRAZING CHARACTERISTICS (CONT.)

Joint clearances of 0.000 in. - 0.002 in. (0.00 mm - 0.05 mm) per side are normally suggested for Premabraz 131. Gold and nickel are completely soluble in all proportions at temperatures above 1490°F (810°C) and this specific composition (82% Au / 18% Ni) represents the minimum in this system so that the solidus (melting point) and the liquidus (flow point) are identical. Normally, Premabraz 131 would not be used for joining copper based and silver based alloys. In addition to have a flow point very close to the melting point of silver, and above that of the silver-copper eutectic, it would alloy quite readily with copper based alloys.

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. Premabraz 131 joints are ductile and provide resistance to oxidation and to hot sulphur-bearing gases and compounds up to 1500°F (815°C). This filler metal has good room temperature strengths on stainless steel joints, and results similar to the following limited short time elevated temperature tensile tests on type 304 stainless steel butt joints can be obtained.

Test Temperature		Tensile Strength (lbs/in ²)
°F	°C	
Room		62,000
800	425	50,000
1200	650	40,000
1600	870	20,000

AVAILABLE FORMS

Wire, strip, engineered preforms, specialty preforms per customer specification, powder and paste.

SPECIFICATIONS

Premabraz 131 alloy conforms to the following specifications:

- American Welding Society (AWS) A5.8/A5.8M BAu-4
- American Welding Society (AWS) A5.8/A5.8 M BV Au-4 Grade 1 and Grade 2
- ASME Boiler & Pressure Vessel Code, Sec II-C, SFA-5.8 BAu-4
- Society of Automotive Engineers (SAE) / AMS 4787

APPLICABLE PRODUCT CODE(S)

The applicable Lucas-Milhaupt product code(s) for Premabraz 131: 18-131.

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 Safety Data Sheet for Premabraz 131.

WARRANTY CLAUSE

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