

## PREMABRAZE<sup>®</sup> 409

### ***NOMINAL COMPOSITION***

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Gold	81.5% ± 0.5%
Copper	Remainder
Nickel	2.0% ± 0.25%
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 <sup>(1)</sup>	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

<sup>(1)</sup> Elements with a vapor pressure higher than 10<sup>-7</sup> Torr (1.3 x 10<sup>-5</sup> Pa) at 932°F (500°C)

### ***PHYSICAL PROPERTIES***

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Color	Gold Gray
Melting Point (Solidus)	1670°F (910°C)
Flow Point (Liquidus)	1697°F (925°C)
Brazing Temperature Range	1670°F - 1797°F (910°C - 981°C)
Specific Gravity	15.9
Density (Troy oz/in <sup>3</sup> )	8.38
Electrical Conductivity (%IACS) <sup>(2)</sup>	9.20
Electrical Resistivity (Microhm-cm)	18.7

<sup>(2)</sup> IACS = International Annealed Copper Standard

### ***PRODUCT USES***

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Premabraz 409 can be used on any of the common nickel, molybdenum and iron base heat resistant alloys. Because of its low penetration of the base metal, it is well suited for brazing of thin sections, such as thin-wall tubing or electronic vacuum devices. Premabraz 409 is readily used in brazing of nickel-cobalt-iron alloys and metallized ceramics.

### ***BRAZING CHARACTERISTICS***

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Premabraz 409 is a modified gold-copper alloy. The addition of nickel renders this alloy somewhat more sluggish in flow characteristics but improves wettability on ferrous alloys. Premabraz 409 is generally used in reducing, vacuum, or inert atmosphere. It is a more ductile, low vapor pressure alloy than standard gold-copper alloys. The composition of the alloy allows for use in applications where braze filler metals low in volatile constituents are required. A minimum brazing temperature of 1850°F (1010°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 contain any intentionally added Ti or Al elements.

## ***PROPERTIES OF BRAZED JOINTS***

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The properties of a brazed joint are dependent upon the base metal, joint design and brazing technique. For controlled atmosphere brazing or vacuum brazing the recommended radial joint clearance for gold base alloys fall within 0.000 in. - 0.002 in. (0.00 mm - 0.05 mm.) range.

## ***AVAILABLE FORMS***

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

## ***SPECIFICATIONS***

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Premabraz 409 alloy conforms to the following specifications: N/A

## ***APPLICABLE PRODUCT CODE(S)***

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The applicable Lucas-Milhaupt product code(s) for Premabraz 409: A00000296, Legacy Code: 18-409.

## ***SAFETY INFORMATION***

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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 409.

## ***WARRANTY CLAUSE***

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