

## PREMABRAZE<sup>®</sup> 616

### NOMINAL COMPOSITION

	Premabraz 616 Grade 1
Silver	61.5% ±1.0%
Copper	Remainder
Indium	14.5% ±0.5%
Zinc	0.001% Max
Cadmium	0.001% Max
Lead	0.002% Max
Phosphorous	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

Color	Silver White
Melting Point (Solidus)	1155°F (624°C)
Flow Point (Liquidus)	1305°F (707°C)
Brazing Temperature Range	1305°F - 1450°F (710°C - 790°C)
Specific Gravity	9.50
Density (Troy oz/in <sup>3</sup> )	5.00
Electrical Conductivity (% IACS) <sup>(2)</sup>	16.0
Electrical Resistivity (Microhm-cm)	10.7

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

### PRODUCT USES

Application is found in all types of moderate temperature low pressure systems, and most notably the electronic vacuum tube.

### BRAZING CHARACTERISTICS

Premabraz 616 is a low temperature, slightly sluggish brazing filler metal with a tendency to liquate (i.e. separate into low and high melting constituents) if heated slowly through their melting range. This low vapor pressure brazing filler metal was formulated to meet the need for a composition free from volatile constituents, particularly in the brazing of vacuum tubes. This filler metal can be successfully used in hydrogen, inert atmospheres or vacuum without flux. The indium content improves the alloy wetting tendency on ferrous alloys over wetting characteristics obtainable with binary silver-copper. Some nickel base alloys are susceptible to stress cracking. To prevent this, the parts should be stress-relieved prior to brazing. Special attention should also be given to dissimilar metal joints where stresses can occur from differences in thermal expansion.

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

---

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 silver base alloys fall within 0.000 in. - 0.002 in. (0.00 mm - 0.05 mm) range.

## ***AVAILABLE FORMS***

---

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

## ***SPECIFICATIONS***

---

Premabraz 616 Grade 1 alloy conforms to the following specifications:

- American Welding Society (AWS) A5.8M/A5.8 BVAg-29 Grade 1
- ASME Boiler & Pressure Vessel Code, Sec II-C, SFA-5.8 BVAg-29 Grade 1

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

---

The applicable Lucas-Milhaupt product code(s) for Premabraz 616:

- Grade 1: A00000306 27-616

## ***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 616.

## ***WARRANTY CLAUSE***

---

Lucas-Milhaupt, Inc. believes the information contained herein to be reliable. However, the information is given by Lucas-Milhaupt, Inc. without charge and the user shall use such information at its own discretion and risk. This information is provided on an "AS IS" AND "AS AVAILABLE" basis and Lucas-Milhaupt, Inc. specifically disclaims warranties of any kind, either express or implied, including, but not limited to, warranties of title or implied warranties of merchantability or fitness for a particular purpose. No oral advice or written or electronically delivered information given by Lucas-Milhaupt, Inc. or any of its officers, directors, employees, or agents shall create any warranty. Lucas-Milhaupt, Inc. assumes no responsibility for results obtained or damages incurred from the use of such information in whole or in part.