PREMABRAZE® 178

**NOMINAL COMPOSITION**

<table>
<thead>
<tr>
<th>Element</th>
<th>Nominal Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palladium</td>
<td>36.0% ± 1.0%</td>
</tr>
<tr>
<td>Chromium</td>
<td>10.5% ± 1.0%</td>
</tr>
<tr>
<td>Nickel</td>
<td>Remainder</td>
</tr>
<tr>
<td>Boron</td>
<td>2.5% - 3.25%</td>
</tr>
<tr>
<td>Silicon</td>
<td>0.25% - 1.0%</td>
</tr>
<tr>
<td>Iron</td>
<td>0.50% Max</td>
</tr>
<tr>
<td>Carbon</td>
<td>0.06% Max</td>
</tr>
<tr>
<td>Other Elements (Total)</td>
<td>0.15% Max</td>
</tr>
</tbody>
</table>

(1) Elements with a vapor pressure higher than $10^{-7}$ torr at 932°F (500°C) such as Mg, Sb, K, Li, Ti, S, Cs, Rb, Se, Te, Sr and Ca

**PHYSICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Silver White</td>
</tr>
<tr>
<td>Melting Point (Solidus)</td>
<td>1510°F (821°C)</td>
</tr>
<tr>
<td>Flow Point (Liquidus)</td>
<td>1750°F (954°C)</td>
</tr>
<tr>
<td>Brazing Temperature Range</td>
<td>1750°F - 1850°F (954°C - 1010°C)</td>
</tr>
<tr>
<td>Specific Gravity (2)</td>
<td>8.67</td>
</tr>
<tr>
<td>Density (Troy oz/in³) (2)</td>
<td>4.57</td>
</tr>
<tr>
<td>Electrical Conductivity (%IACS) (3)</td>
<td>N/A</td>
</tr>
<tr>
<td>Electrical Resistivity (Microhm-cm)</td>
<td>N/A</td>
</tr>
</tbody>
</table>

(2) Density and specific gravity values were calculated using empirical data per each alloy constituent.  
(3) IACS = International Annealed Copper Standard

**PRODUCT USES**

Premabraze 178 can be used on any of the common ferrous and non-ferrous alloys. Due to its low vapor pressure compared to standard silver base filler metals, Premabraze 178 is suitable for use in all vacuum applications such as electronic valve construction, and vacuum tube construction in electronic industry. In aerospace industry, Premabraze 178 has been used in brazing of aircraft engine components.

**BRAZING CHARACTERISTICS**

At elevated temperatures, due to its Palladium and Chromium content, Premabraze 178 exhibits high corrosion and oxidation resistance properties.

**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 nickel – palladium – chromium braze alloys fall within 0.000 in. - 0.003 in. (0.00 mm - 0.08 mm.).

**AVAILABLE FORMS**

Strip, engineered preforms, specialty preforms per customer specification, powder and paste.
SPECIFICATIONS
Premabrace 178 alloy conforms to the following specifications: N/A

APPLICABLE PRODUCT CODE(S)
The applicable Lucas-Milhaupt product code(s) for this technical data sheet: 69-178.

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 Material Safety Data Sheet for Premabrace 178.

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