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PAL 5 (BVAg-30)

TECHNICAL DATA

NOMINAL COMPOSITION

Silver	68.0% ± 1.0
Copper	27.0% ± 1.0
Palladium	5.0% ± 0.5
Vacuum Grade Trace Elements	
Cadmium	0.001% max.
Zinc	0.001% max.
Phosphorus	0.002% max.
Lead	0.002% max.
Carbon	0.005% max.
Other volatile elements each*	0.002% max.
Volatile elements total	0.010% max.
Total non-volatile elements (Grade 1)	0.01% max.
Total non-volatile elements (Grade 2)	0.05% max.

*Elements with a vapor pressure higher than 10^{-7} torr at 932ºF (such as Mg, Sb, K, Li, Tl, S, Cs, Rb, Se, Te, Sr, and Ca) are limited to 0.001% each for Grade 1 and 0.002% for Grade 2.

PHYSICAL PROPERTIES

Color	Silver White
Solidus	1485°F (807°C)
Liquidus	1490°F (810°C)
Recommended Brazing Temperature	1540-1590°F (838-866°C)
Density (Toz/in^3)	5.32
CTE (x10^{-6}/°C)	17.2
Thermal Conductivity (W/(m•K))	208
Electrical Conductivity (x10^6/(ohm•m))	27
Electrical Resistivity (x10^{-9} ohm•m)	37
Yield Strength (MPa)	333
Tensile Strength (MPa)	380
Elongation (%)	11

USES

PAL 5 can be used on any of the common ferrous and non-ferrous alloys. The most common base materials joined are kovar and Mo/Mn seals. Due to its low vapor pressure compared to standard silver base filler metals, PAL 5 is suitable for use in all vacuum applications such as electronic valve construction, and vacuum tube construction in electronic industry. Often this alloy is used in brazing of metalized ceramics to nickel-cobalt-iron assemblies and in glass to metal seals.

BRAZING CHARACTERISTICS	The palladium content in PAL 5 inhibits the potential of stress corrosion cracking in iron-nickel base metals in comparison to standard silver-copper alloys. PAL 5 exhibits higher corrosion and oxidation resistance than standard silver-copper alloys.
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 falls within 0.000in – 0.002in (0.00mm – 0.05mm) range.
SPECIFICATIONS	PAL 5 alloy conforms to: Unified Numbering System (UNS) P07687 and American Welding Society (AWS) A5.8/A5.8M BVAg-30 Grade 1 and Grade 2.
AVAILABLE FORMS	Wire, strip, engineered preforms and specialty preforms per customer specification, powder and paste.
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 http://www.sae.org/ (SAE AMS) or The American Welding Society (AWS) http://aws.org/

NOTE:

DISCLAIMER