

Submittal: Brazing Rod (Silphos or Silver Solder)

Job Name:		Location:	
Purchaser:		Engineer:	
Submitted To:		For:	
Unit Designation:		Schedule No.:	
Date:			

1. Product Description and Application

a. Silver Brazing Filler Metals

Silver brazing filler metals have low melting point, good wettability, and filling performance. They also have features of high mechanical strength, fine plasticity, electrical conductivity, and corrosion resistance. Silver concentrations of 0-15% are used in the brazing of copper and copper alloys (without flux). Silver concentrations of 45% (with brazing flux) are used in the brazing of stainless steel, carbon steel, hard alloys, etc.

b. Flux Coated Brazing Alloy

The rods are composed of an inner brazing alloy and an outer brazing flux. These products have the advantages of:

- Enhancing brazing automation and efficiency.
- Reducing and controlling the usage of flux as well as improved quality stability.
- The flux coated brazing alloy can be used in the welding of copper and brass with ferrous metals.
- They simplify the process for braze joint cleaning, as problems associated with conventional technologies such as flux wasting and difficulties in slag removal are largely solved.

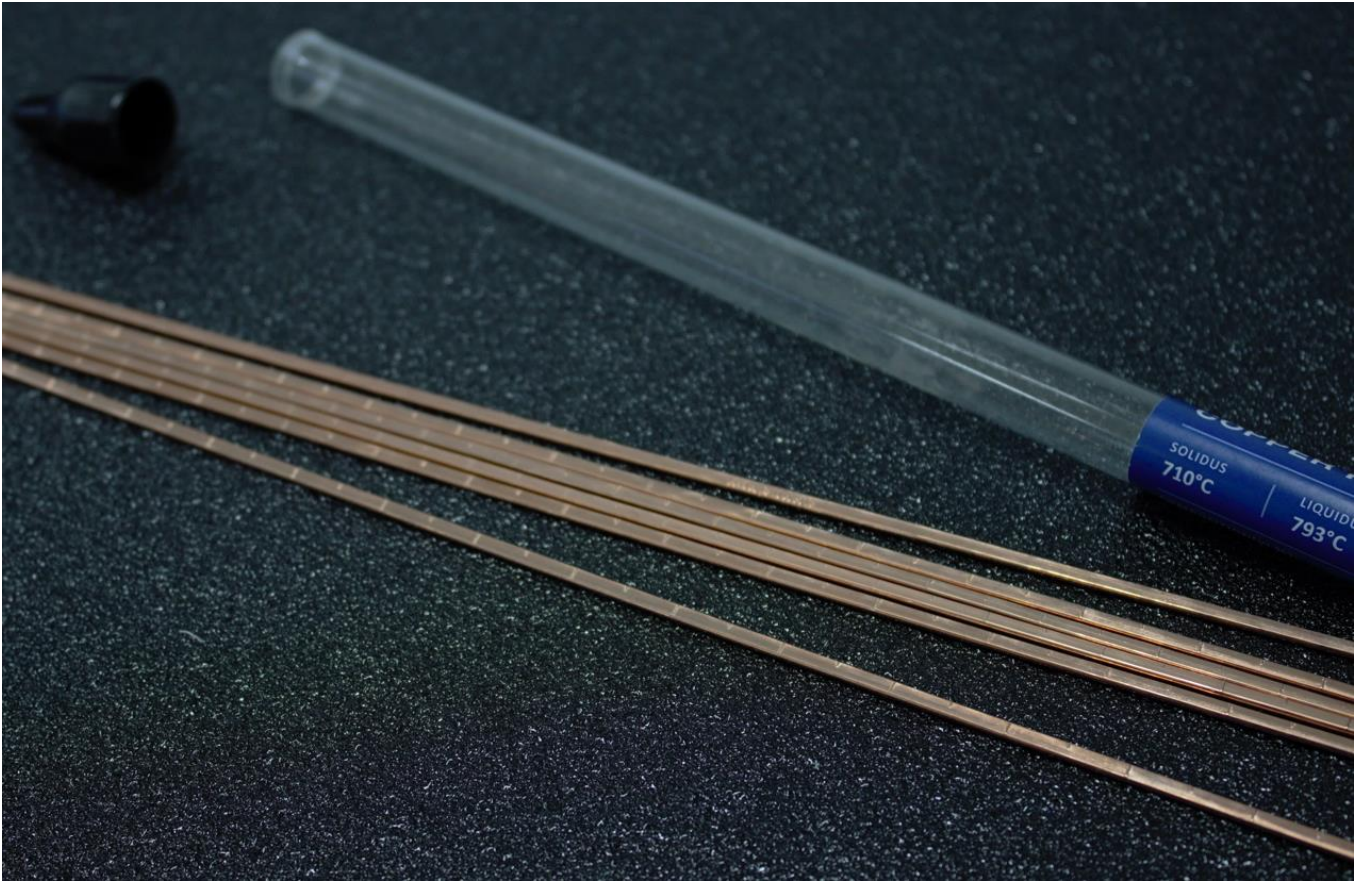
Goldstone HVACR Inc. is currently supplying 45% silver, flux coated brazing products.

c. Copper-Phosphorus Brazing Filler Metals

Copper and phosphorus are the two main elements in copper-phosphorus brazing alloys. The alloys have good fluidity, low melting temperature and the ability to self-flux. They are used in the brazing of copper and copper alloys in resistance and flame brazing without the addition of brazing flux. As phosphorus is likely to form compounds with iron, the brazing alloys are rarely used in the brazing of ferrous metals.

BRAZING ROD - (SILPHOS OR SILVER SOLDER)

P/N	DESCRIPTION
2031000	SILPHOS RECT. ROD (0% SILVER 1 LB. TUBE) SILV 0P7
2031001	SILPHOS RECT. ROD (5% SILVER 1 LB. TUBE) SILV 5
2031002	SILPHOS RECT. ROD (15% SILVER 1 LB. TUBE) SILV 15
2031003	SILVER SOLDER ROD (45% 1 LB. TUBE) SILV 45 SN FC
2031004	BULK PACK SILPHOS RECT. ROD (0% SILVER 20 LB. BOX) SILV 0
2031005	BULK PACK SILPHOS RECT. ROD (5% SILVER 20 LB. BOX) SILV 5
2031006	BULK PACK SILPHOS RECT. ROD (15% SILVER 20 LB. BOX) SILV 15
2031007	GSIFLOW RECT. ROD (6% SILVER 1 LB. TUBE) SILV 6



GSI SILV OP7

Brazing Alloy Specifications

STANDARD

- ISO 17672 Standard: CuP 181
- AWS A5.8 Standard: BCuP-2

COMPOSITION (w.%)

- Cu: Remainder | P: 7.2-7.5 | Other: ≤0.25

PROPERTIES

- | | |
|------------------------------------|---------------------------------------|
| · Solidus (°C): 710 | · Liquidus (°C): 793 |
| · Solidus (°F): 1310 | · Liquidus (°F): 1459.4 |
| · Brazing Temperature (°C):823-843 | · Brazing Temperature (°F): 1513-1581 |

APPLICATIONS

- Application: Used for the brazing of copper and copper alloys.
- Characteristics: This alloy has good fluidity. It is suited for the brazing of narrow gaps within the 0.025-0.076 mm range.

STORAGE

The products shall be stored in its package with proper sealing. The warehouse where the brazing alloys are stored shall be dry and well-ventilated. Do not store the products with volatile and corrosive substances, such as acid and alkali.

GSI SILV 5

Brazing Alloy Specifications

STANDARD

- ISO 17672 Standard: CuP 281
- AWS A5.8 Standard: BCuP-3

COMPOSITION (w.%)

- Ag: 4.8-5.2 | Cu: Remainder | P: 5.8-6.2 | Other: ≤0.25

PROPERTIES

- | | |
|------------------------------------|--------------------------------------|
| · Solidus (°C):645 | · Liquidus (°C):815 |
| · Solidus (°F):1193 | · Liquidus (°F):1499 |
| · Brazing Temperature (°C):845-865 | · Brazing Temperature (°F):1553-1624 |

APPLICATIONS

- Application: Used for the brazing of copper and copper alloys.
- Characteristics: Recommended gap width is in the range of 0.06-0.13mm.

STORAGE

The products shall be stored in its package with proper sealing. The warehouse where the brazing alloys are stored shall be dry and well-ventilated. Do not store the products with volatile and corrosive substances, such as acid and alkali.

GSI SILV 15

Brazing Alloy Specifications

STANDARD

- ISO 17672 Standard: CuP 284
- AWS A5.8 Standard: BCuP-5

COMPOSITION (w.%)

- Ag: 14.5-15.5 | Cu: Remainder | P: 4.8-5.2 | Other: ≤0.15

PROPERTIES

- | | |
|--|--------------------------------------|
| · Solidus (°C):645 | · Liquidus (°C):800 |
| · Solidus (°F):1193 | · Liquidus (°F):1472 |
| · Brazing Temperature (°C):830-850 | · Brazing Temperature (°F):1526-1594 |
| · Electrical Conductivity (%IACS): 9.9 | · Resistance (microohm-cm): 17.4 |
| · Elongation: 10% | · Tensile Strength (MPa): 530 |

APPLICATIONS

- Application: Used for the brazing of copper and copper alloys.
- Characteristics: This alloy is suited for the brazing of wide gaps within the 0.05-0.178mm range. This alloy has strong overall properties, including ductility, strength, and its ability to fill uneven gaps.

STORAGE

The products shall be stored in its package with proper sealing. The warehouse where the brazing alloys are stored shall be dry and well-ventilated. Do not store the products with volatile and corrosive substances, such as acid and alkali.

GSI 45Sn**Brazing Alloy Specifications****STANDARD**

- ISO 17672 Standard: Ag 245
- AWS A5.8 Standard: BAg-5

COMPOSITION (w.%)

- Ag: 44-46 | Cu: 26-28 | Zn: 23.5-27.5 | Sn: 2.0-3.0 | Other: ≤0.15

PROPERTIES

- Solidus (°C): 640
- Solidus (°F): 1184
- Brazing Temperature (°C): 775-795
- Electrical Conductivity (%IACS): 19
- Elongation: 25%
- Density (g/cm³): 9.08
- Liquidus (°C): 680
- Liquidus (°F): 1256
- Brazing Temperature (°F): 1427-1495
- Resistance (microhm-cm): 9.1
- Tensile Strength (MPa): 410

APPLICATIONS

- Application: Used for the brazing of copper and copper alloys, as well as for copper and ferrous metals.
- Characteristics: As this alloy has a relatively high silver content, it has low liquidus and small crystal spacing. It is used as an alternative to cadmium-bearing alloys for the brazing of joints with high property requirements.

STORAGE

The products shall be stored in its package with proper sealing. The warehouse where the brazing alloys are stored shall be dry and well-ventilated. Do not store the products with volatile and corrosive substances, such as acid and alkali.