

## **SILVALOY<sup>®</sup> 090** **(BRAZE<sup>™</sup> 090, SILVALOY<sup>®</sup> A9)**

### ***NOMINAL COMPOSITION***

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Silver	9.0% ± 0.5%
Copper	53.0% ± 1.0%
Zinc	38.0% ± 1.0%
Other Elements (Total)	0.15% Max

### ***PHYSICAL PROPERTIES***

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Color	Brass Yellow
Melting Point (Solidus)	1410°F (765°C)
Flow Point (Liquidus)	1565°F (850°C)
Brazing Temperature Range	1565°F - 1665°F (850°C - 905°C)
Specific Gravity	8.26
Density (Troy oz/in <sup>3</sup> )	4.35
Electrical Conductivity (%IACS) <sup>(1)</sup>	20.5
Electrical Resistivity (Microhm-cm)	8.43

<sup>(1)</sup> IACS = International Annealed Copper Standard

### ***PRODUCT USES***

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Silvaloy 090 is used mostly on non-ferrous alloys such as copper base alloys where low cost and color match are primary factors. It also is a useful filler metal for brazing ferrous metals where post-braze heat treating is performed or where brazing and heat treating are to be accomplished simultaneously.

### ***BRAZING CHARACTERISTICS***

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Silvaloy 090 is a low cost, intermediate temperature silver brazing filler metal suitable for joining various ferrous and non-ferrous alloys that can be heated to 1600°F without damage. The relatively high flow point of this filler metal, combined with its high zinc content, tends to cause a rapid alloying of Silvaloy 090 with nonferrous alloys. For this reason the time the brazing filler metal is kept molten, in contact with the base metal, should be kept to a minimum. In furnace brazing the heating cycle should be kept short to avoid excessive volatilization of the zinc with resultant formation of pinholes in the brazing filler metal layer.

Handy<sup>®</sup> Flux Type B-1 is preferred for use with this filler metal since the brazing temperature required is at the upper limit of the Handy<sup>®</sup> Flux performance range.

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

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The properties of a brazed joint are dependent upon numerous factors including base metal properties, joint design, metallurgical interaction between the base metal and the filler metal.

# Technical Data Sheet

Butt joints have been brazed and tested for tensile strength at room temperature, on the listed metals, with the following typical results:

	Tensile Strength (lbs/in <sup>2</sup> )	Elongation (% in 2 in.)
Copper	20,000 - 30,000	20.0 - 31.7
Brass	30,000 - 45,000	14.0 - 25.0
Nickel-Silver	40,000 - 50,000	11.0 - 22.0
18-8 Stainless Steel	45,000 - 50,000	----

## ***CORROSION RESISTANCE***

Silvaloy 090 is not considered as corrosion resistant as the higher silver content braze filler metals, but the following results were obtained from corrosion tests on this filler metal:

Solution	Test Temp.	Conditions	Loss in Weight Mgs/dcm <sup>2</sup> /Day
1% Acetic Acid	205°F	In vapor	-14.0
10% Acetic Acid	205°F	In vapor	158.0
5% Sulphuric Acid	Room	Constant immersion	18.06
5% Sulphuric Acid	160°F	Constant immersion	74.0
10% Sulphuric Acid	Room	Constant immersion	14.3
10% Sulphuric Acid	160°F	Constant immersion	69.5
20% Sulphuric Acid	Room	Constant immersion	7.2
20% Sulphuric Acid	160°F	Constant immersion	40.9

## ***AVAILABLE FORMS***

Wire, strip, engineered preforms, specialty preforms per customer specification.

## ***SPECIFICATIONS***

Silvaloy 090 alloy conforms to the following specifications: N/A

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

The applicable Lucas-Milhaupt product code(s) for this technical data sheet: 32-090, 6049.

## ***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 Silvaloy 090.

## ***WARRANTY CLAUSE***

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