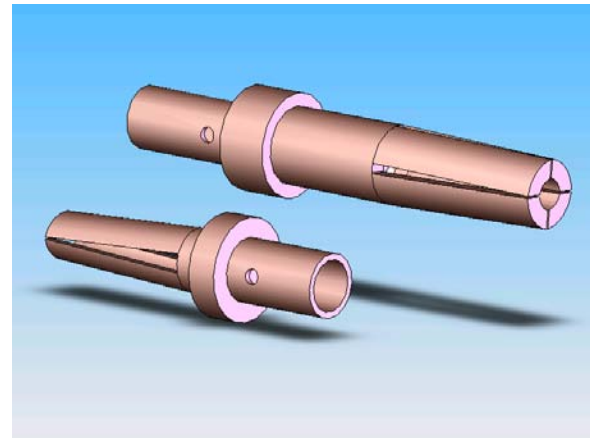


## Brush 1915<sup>®</sup> The Machinable Copper Nickel Alloy

Brush 1915 is a heat-treatable leaded copper alloy engineered specifically for automatic screw machine and cold forming applications. With a machinability index of 70, Brush 1915 also provides high strength, good machinability, good conductivity, excellent surface finish, close diameter control, and microstructural consistency. The properties of Brush 1915 make it an ideal material for machined or formed electrical contacts, connector pins and sockets.



**FIGURE 1: CHEMICAL COMPOSITION (WEIGHT %)**

UNS NO.	NICKEL	LEAD	PHOSPHORUS	COPPER
C19150	0.8-1.2	0.5-1.0	0.15-0.35	Balance

**FIGURE 2: PHYSICAL PROPERTIES**

Density	Coefficient of thermal expansion (68 to 212 °F, 20 to 100 °C)	Thermal conductivity (68 °F, 20 °C)	Electrical conductivity (HT condition)
0.320 lb/in <sup>3</sup> 8.88 g/cm <sup>3</sup>	9.8 × 10 <sup>-6</sup> °F <sup>-1</sup> 17.7 × 10 <sup>-6</sup> °C <sup>-1</sup>	120 BTU/ft hr °F 210 W/m °C	50% IACS 29 × 10 <sup>6</sup> S/m

**FIGURE 3: MECHANICAL PROPERTIES**

TEMPER	SIZE RANGE (inch)	ROD			WIRE		
		ULTIMATE TENSILE STRENGTH (ksi)	YIELD STRENGTH 0.2% OFFSET (ksi)	ELONGATION (%)	ULTIMATE TENSILE STRENGTH (ksi)	YIELD STRENGTH 0.2% OFFSET (ksi)	ELONGATION (%)
A	0.030-0.625	30-50	10-40	35-55	25-50	5-25	40-60
AT	0.030-0.625	50-70	25-50	20-45	50-70	25-50	25-45
H	0.030-0.4375	55-75	45-70	1-20	50-75	35-65	1-20
	> 0.4375-0.625	40-65	25-55	1-20	40-65	25-55	1-20
HT	0.030-0.4375	80-105	70-95	4-30	80-105	70-100	4-30
	> 0.4375-0.625	70-100	55-85	4-30	75-105	65-90	4-30

Annealed Temper (A) is the softest form available for applications where maximum formability is required. Precipitation hardened (AT) properties are obtained by heat treatment, performed by the customer, after forming.

Hard Temper (H) is cold worked to increase strength; however, formability is decreased. H temper material can also be heat treated to obtain peak (HT) properties after forming. H tempers are commonly used for cold-heading operations.

Heat Treated Temper (HT) provides maximum properties after heat treatment. H temper product can be heat treated by the user to obtain HT properties. Mill hardened HT material can also be purchased from Brush Wellman and is generally the most cost effective temper.

### Heat Treatment

The recommended heat treatment cycle for Brush 1915 is 700 °F for 3½ hours. Additional heat treatment information is available from Brush Wellman.

### Machining

The addition of lead in the Brush 1915 alloy composition allows for chip control in turning and drilling operations, making the alloy ideal for automatic machining. Brush 1915 machines readily at feeds and speeds used for other leaded copper alloys. High speed steel and carbide tools are recommended for all machining operations.

### Availability

Brush 1915 is available in rod or wire in diameters beginning at 0.030" and up to 0.625". Diameter tolerances are closely held, usually within ½ of the allowable limits defined in ASTM B 249 and B 250.

Diameter Tolerance, inches			
Over	to Incl	Diameter (+/-) O.O.R.	
0.0300	0.0800	0.0005	0.0005
0.0800	0.2500	0.0008	0.0008
0.2500	0.3125	0.0010	0.0010
0.3125	0.4375	0.0015	0.0015
0.4375	0.6250	0.0020	0.0020

Wire is available in coils up to 300 pounds and rod is provided in straight lengths up to 12 feet. Rod straightness is 0.010" per 18" length.

Custom shapes are available upon request.



### Technical Assistance

Detailed information regarding Brush 1915, its properties and characteristics, as well as specific application and fabrication assistance, is available from Materion Brush Performance Alloys Customer Technical Service Department in Mayfield, Ohio, 1-800-375-4205

Brush 1915® is a registered trademark of Materion Brush Performance Alloys.

### North American Service Centers – Sales Inquiries

For strip, wire and rod under 0.4" (10 mm) diameter  
**Elmhurst, IL**  
 TOLL FREE: 800.323.2438  
 LOCAL: +(1) 630.832.9650  
 FAX: +(1) 630.832.9657

For plate, tube, bar, and rod 0.4" (10 mm) diameter and over  
**Warren, MI**  
 TOLL FREE: 800.521.8800  
 LOCAL: +(1) 586.772.2700  
 FAX: +(1) 586.772.2472

### International Sales Offices

**CHINA/HONG KONG**  
 TEL: +852.2318.1960/1907  
[brushalloysHK-info@materion.com](mailto:brushalloysHK-info@materion.com)

**INDIA/PUNE**  
 TEL: +(91) 99606.33744  
[brushalloysIN-info@materion.com](mailto:brushalloysIN-info@materion.com)

**SINGAPORE/ASEAN**  
 TEL: +(65) 6842.4456  
[brushalloysSG-info@materion.com](mailto:brushalloysSG-info@materion.com)

**CHINA/SHANGHAI**  
 TEL: +(86) 21.5237.2328  
[brushalloysCN-info@materion.com](mailto:brushalloysCN-info@materion.com)

**JAPAN**  
 TEL: +(81) 33.230.2961  
[brushalloysJP-info@materion.com](mailto:brushalloysJP-info@materion.com)

**TAIWAN, R.O.C.**  
 TEL: +(886) 2.2747.8800x121  
[brushalloysTW-info@materion.com](mailto:brushalloysTW-info@materion.com)

**GERMANY**  
 TEL: +(49) 711.830.930  
[brushalloysDE-info@materion.com](mailto:brushalloysDE-info@materion.com)

**REPUBLIC OF KOREA**  
 TEL: +(82) 32.811.2171  
[brushalloysKR-info@materion.com](mailto:brushalloysKR-info@materion.com)

**UNITED KINGDOM @ IRELAND**  
 TEL: +(44) 118.930.3733  
[brushalloysUK-info@materion.com](mailto:brushalloysUK-info@materion.com)

To obtain a complete list of Materion's global distributor/agent network, visit us online at [www.materion.com/BrushAlloys/ContactUs](http://www.materion.com/BrushAlloys/ContactUs).

**Materion Brush Performance Alloys**  
 6070 Parkland Boulevard  
 Mayfield Heights, OH 44124 USA  
 phone: 216.486.4200 fax: 216.383.4005  
 e: [BrushAlloys-Info@Materion.com](mailto:BrushAlloys-Info@Materion.com)

**MATERION CORPORATION**  
[www.materion.com](http://www.materion.com)

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