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## Data Sheet

# Alloy 174 (C17410) Strip

Brush Wellman's Alloy 174 strip is a mill hardened copper beryllium strip alloy designed for use in the Automotive, Appliance, and DataCom/TeleCom markets. It provides high yield and fatigue strength with high electrical conductivity and good resistance to stress relaxation. Typical applications include high reliability automotive terminals and spring contacts for switches and relays.

### CHEMICAL COMPOSITION (weight percent)

Alloy	Beryllium	Cobalt	Copper
C17410	0.15-0.50	0.35-0.60	Balance

### PHYSICAL PROPERTIES\*

Elastic Modulus	Melting Point (Solidus)	Electrical Conductivity / resistivity	Density	Thermal Expansion Coefficient	Thermal Conductivity (25 °C)
20,000 ksi 138 GPa	1880°F 1020 °C	45-60% IACS 2.9-3.8 μΩ-cm	0.318 lb/in <sup>3</sup> 8.80 g/cm <sup>3</sup>	9.8x10 <sup>-6</sup> in/in °F 18.0x10 <sup>-6</sup> m/m °C	135 BTU/ft hr °F 230 W/ m K

\*Properties specified for the precipitation age hardened (heat treated) condition

### MECHANICAL PROPERTIES\*\*

Temper	0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation***	Hardness	Formability (Minimum Bend Radius to Thickness Ratio for a 90° Bend)****	
	ksi	MPa	ksi	MPa			Percent	DPH
½ HT (TH02)	80-100	550-690	95-115	665-790	10-20	180-230	0.5	0.5
HT (TH04)	100-120	690-825	110-130	760-895	7-17	210-278	1.2	5.0

\*\*Properties may vary by thickness. Percent elongation numbers are valid for strip thicker than 0.004" (0.10 mm). Formability numbers valid for strip 0.010" (0.25 mm) and thinner.

Temper	10 <sup>8</sup> Cycle R=0 (Unidirectional) Fatigue Strength		10 <sup>8</sup> Cycle R=-1 (Fully Reversed) Fatigue Strength		1000 Hour Stress Relaxation Resistance*****		
	ksi	MPa	ksi	MPa	100°C	150°C	200°C
½ HT (TH02)	75-85	515-585	35-45	240-310	94%	82%	64%
HT (TH04)	85-95	585-655	55-65	380-450	95%	85%	77%

\*\*\*\*\*Stress remaining after 1000 hours exposure. Initial stress = 75% of the 0.2% offset yield strength

### FORMS AVAILABLE

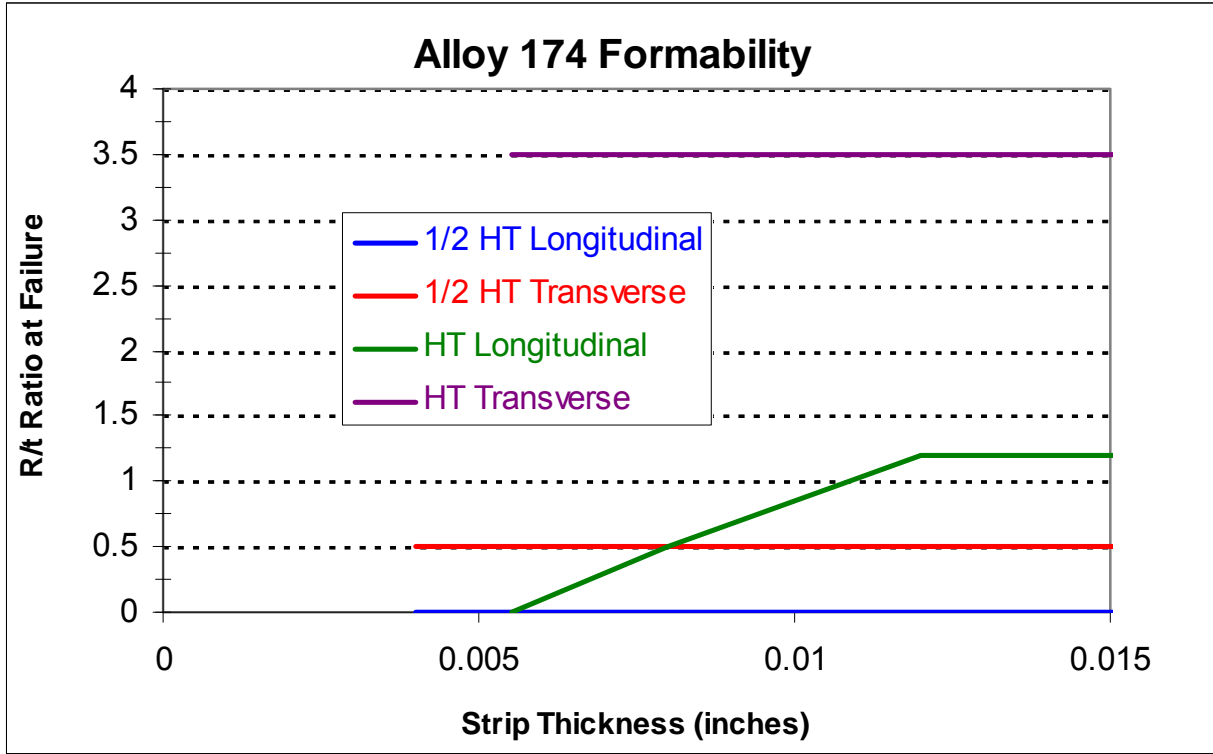
Alloy 174 mill hardened strip is available in widths ranging from 0.050" to 16" (1.27 mm to 452.7 mm) and in thicknesses ranging from 0.002" to 0.0787" (0.05 mm to 2.00 mm).

### RELATED INFORMATION

Additional information on Alloy 174 may be obtained by phoning 800-375-4205.

### SPECIFICATIONS

C17410, ASTM B-768



**HEALTH AND SAFETY**

Handling Alloy 174 strip in solid form poses no special health risk. Like many industrial materials, beryllium-containing materials may pose a health risk if recommended safe handling practices are not followed. Inhalation of airborne beryllium may cause a serious lung disorder in susceptible individuals. The Occupational Safety and Health Administration (OSHA) has set mandatory limits on occupational respiratory exposures. Read and follow the guidance in the Material Safety Data Sheet (MSDS) before working with this material. For additional information on safe handling practices or technical data on Alloy 174, contact Brush Wellman Inc. at 1-800-375-4205.