

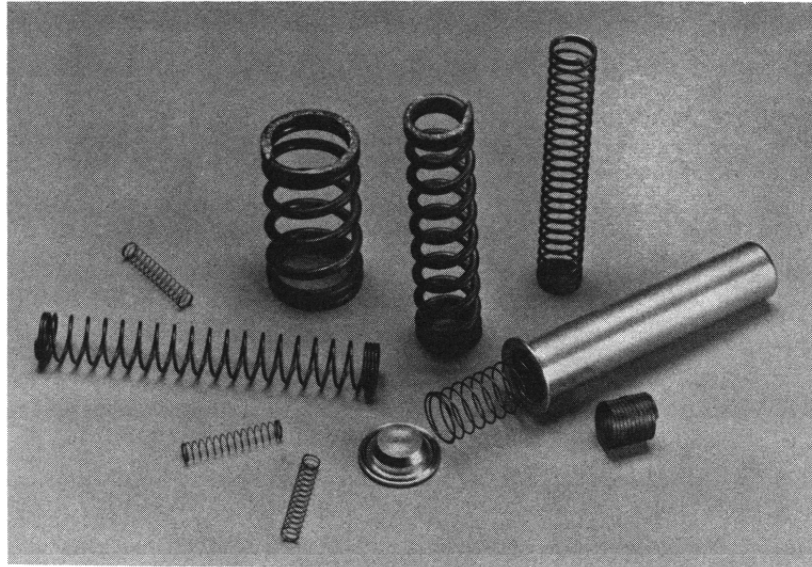
# Application Report

**BRUSHWELLMAN**  
ENGINEERED MATERIALS

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**Industry: Instrumentation**

**Product: Beryllium Copper Rod And Wire**



A common application for beryllium copper wire is high performance helical compression springs. These parts are widely used in instrumentation as well as automotive electrical controls.

Most of these springs are formed in drawn tempers and later precipitation hardened to provide high strength and performance in the most critical applications.

## Engineering Requirements

- Excellent Formability
- Resistance To Stress Relaxation
- Low Modulus Of Elasticity
- Heat Treatable
- Good Corrosion Resistance
- Excellent Stability
- High Electrical And Thermal Conductivity

Beryllium copper springs exhibit minimum drift and hysteresis. The high strength beryllium copper Alloys 25 and 165 provide 22 to 25% IACS electrical conductivity, tensile strengths from 150 to 215 ksi, and corrosion resistance that is comparable to copper. These materials can be electroplated without danger of hydrogen embrittlement. Resistance to stress relaxation of beryllium

copper also permits operation at higher temperatures than other copper alloy springs.

The combination of properties inherent in beryllium copper provides coil springs with close tolerances, high strength, excellent stability, and long design life. For these applications, Brush Wellman beryllium copper Alloys 25 and 165 are available in an assortment of tempers.

Annealed and drawn tempers require an age-hardening treatment after forming the springs to impart high strength. Mill-hardened wire and rod, for which heat treatment after forming is not required, are also available. The selection of annealed, drawn, or mill-hardened beryllium copper rod and wire depends upon the design of the spring and its anticipated use.

For additional information, contact:

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