



Beryllium's Unique Properties



Comparative Typical Properties of Beryllium to Other Metals

Beryllium's Advantages

- **Lowest Stiffness/Weight Ratio of Any Metal**
- **Very Low Specific Heat at Cryogenic Temperatures**
- **High Thermal Conductivity**
- **Very Low Neutron Capture Cross Section**
- **Very High Sound Velocity**
- **Very High Modulus of Elasticity**
- **Very High Specific Heat at Normal and Elevated Temperatures**
- **Very Low Specific Gravity**
- **Low Electrical Resistivity**
- **High Melting Point**

Health and Safety

Handling beryllium 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 beryllium, contact Brush Wellman Inc. - Electrofusion Products.

Properties	Beryllium		Magnesium Alloys	Aluminum Alloys	Titanium Alloys	Steels
Density (lb/in. ³)	-	0.066	0.066	0.101	0.164	0.286
Melting Point (°F)	-	2350	1100 to 1200	900 to 1200	2700 to 3000	2500 to 2800
Specific Heat (Btu/lb°F)	RT 500°F 1000°F	0.42 0.56 0.65	0.25 0.26 0.26	0.22 0.25 0.30	0.13 0.14 0.17	0.14 0.15 0.15
Thermal Conductivity (Btu ft/ft ² hr-°F)	RT 500°F 1000°F	105 80 56	80 - 40	100 - 50	4.5 5.5 7.5	9 11 13
Linear Coefficient of Thermal Expansion (in./in./°F x 10 ⁻⁶)	RT 500°F 1000°F	6.5 7.5 8.5	15 16 17	12.5 14.0	5 5.5 5.75	6.0 to 9.5
Electrical Resistivity (microhm/cm)		4.1	10	5.7	150	70
Modulus of Elasticity (psi x 10 ⁶)	RT 500°F 1000°F	44 39 26	6.0 5.0	10.3 7.0	16 14 9	30 26 23
Typical Ultimate Tensile Strength (Wrought Forms) (psi x 10 ³)	RT 500°F 1000°F	80 ⁽¹⁾ 62 34	34 ⁽²⁾ 15	76 ⁽³⁾ 24	170 ⁽⁴⁾ 125 40	200 ⁽⁵⁾ 175 135

¹SR-200 cross-rolled sheet

²HM-21-8A

³7075-T6 sheet

⁴Ti-6Al-4V, solution treated; aged at 1000°F four hours

⁵PH 17-4-H-900

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