

Goodfellow Tungsten Carbide/Cobalt

Category : Ceramic , Carbide , Metal , Metal Matrix Composite

Material Notes:

Tungsten Carbide is a hard, brittle ceramic which, when combined with 6% to 10% Cobalt, forms a tough Cermet (Ceramic-Metal). This material was developed for use in cutting tools, having hard ceramic crystals of a few microns in size within a ductile metal matrix. The resulting material can withstand the high compressive stresses imposed during cutting, as well as having good wear and oxidation resistance at the high temperatures reached. Tungsten Carbide/ Cobalt has a high resistance to thermal shock, so is able to withstand the rapid temperature fluctuations. Also, this has found a use as electrodes for Electrode Discharge Machining. Information provided by Goodfellow.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Goodfellow-Tungsten-CarbideCobalt.php

Physical Properties	Metric	English	Comments
Density	14.95 g/cc	0.5401 lb/in ³	

Mechanical Properties	Metric	English	Comments
Vickers Microhardness	1550	1550	kg(f)/mm ²
Tensile Strength at Break	1440 MPa	209000 psi	
Tensile Modulus	600 GPa	87000 ksi	
Compressive Strength	5300 - 7000 MPa	769000 - 1.02e+6 psi	

Thermal Properties	Metric	English	Comments
CTE, linear	4.60 - 5.00 $\mu\text{m}/\text{m}\cdot\text{C}^\circ$	2.56 - 2.78 $\mu\text{in}/\text{in}\cdot\text{F}^\circ$	
	@Temperature 20.0 - 1000 $^\circ\text{C}$	@Temperature 68.0 - 1830 $^\circ\text{F}$	
Specific Heat Capacity	0.200 - 0.480 J/g $\cdot\text{C}^\circ$	0.0478 - 0.115 BTU/lb $\cdot\text{F}^\circ$	
Thermal Conductivity	60.0 - 80.0 W/m-K	416 - 555 BTU-in/hr-ft ² $\cdot\text{F}^\circ$	

Component Elements Properties	Metric	English	Comments
Cobalt, Co	6.0 %	6.0 %	
WC	94 %	94 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.00000200 ohm-cm	0.00000200 ohm-cm	

Electrical Properties

Metric

English

Comments

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