

Kennametal Stellite Stellite® 6B solution heat-treated at 1232°C, 1.6 mm thick sheet

Category : Metal , Nonferrous Metal , Cobalt Alloy , Superalloy

Material Notes:

Machined with tungsten-carbide tools. Inherent wear resistance, resistant to the wearing effects of hard, sharp particles such as in screw conveyors, rock crushing rollers, tile-making machines, and cement and steel-mill equipment. Resistant to the effects of seizing or galling, low coefficient of friction alloys sliding contact with other metals. Used in equipment where no lubricants are used. Outstanding resistance to cavitation-erosion. Combines wear and corrosion resistance with good impact strength and resistance to thermal shock. Retains high hardness, even at red heat. Electrical conductivity 1.90% compared to Copper. 2360 MPa average modulus of rupture of sheet at room temperature. Data provided by the manufacturer, Deloro Stellite, Inc. Product of former Deloro Stellite Inc.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Kennametal-Stellite-Stellite-6B-solution-heat-treated-at-1232C-16-mm-thick-sheet.php

Physical Properties	Metric	English	Comments
Density	8.387 g/cc	0.3030 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	102	102	Mutual indentation method
	@Temperature 871 °C	@Temperature 1600 °F	
	167	167	
Hardness, Brinell	@Temperature 760 °C	@Temperature 1400 °F	Mutual indentation method
	203	203	
	@Temperature 649 °C	@Temperature 1200 °F	
Hardness, Brinell	226	226	Mutual indentation method
	@Temperature 538 °C	@Temperature 1000 °F	
	117	117	
Hardness, Knoop	@Temperature 871 °C	@Temperature 1600 °F	Converted from Brinell Hardnesses
	194	194	
	@Temperature 760 °C	@Temperature 1400 °F	
Hardness, Knoop	237	237	Converted from Brinell Hardnesses
	@Temperature 649 °C	@Temperature 1200 °F	

Mechanical Properties	Metric	English	Comments
	@Temperature 538 Å°C	@Temperature 1000 Å°F	Converted from Brinell Hardnesses
Hardness, Rockwell A	36	36	Converted from Brinell Hardnesses
	@Temperature 871 Å°C	@Temperature 1600 Å°F	
	52	52	Converted from Brinell Hardnesses
	@Temperature 760 Å°C	@Temperature 1400 Å°F	
	58	58	Converted from Brinell Hardnesses
	@Temperature 649 Å°C	@Temperature 1200 Å°F	
	60	60	Converted from Brinell Hardnesses
	@Temperature 538 Å°C	@Temperature 1000 Å°F	
Hardness, Rockwell B	55	55	Converted from Brinell Hardnesses
	@Temperature 871 Å°C	@Temperature 1600 Å°F	
	86	86	Converted from Brinell Hardnesses
	@Temperature 760 Å°C	@Temperature 1400 Å°F	
	94	94	Converted from Brinell Hardnesses
	@Temperature 649 Å°C	@Temperature 1200 Å°F	
	98	98	Converted from Brinell Hardnesses
	@Temperature 538 Å°C	@Temperature 1000 Å°F	
Hardness, Vickers	102	102	Converted from Brinell Hardnesses
	@Temperature 871 Å°C	@Temperature 1600 Å°F	
	170	170	Converted from Brinell Hardnesses
	@Temperature 760 Å°C	@Temperature 1400 Å°F	
	208	208	Converted from Brinell Hardnesses
	@Temperature 649 Å°C	@Temperature 1200 Å°F	
	232	232	

Mechanical Properties	@Temperature 538 Â°C Metric	@Temperature 1000 English	Converted from Brinell Hardnesses Comments
Tensile Strength, Ultimate	1007 MPa	146100 psi	
	92.0 MPa	13300 psi	
	@Temperature 1150 Â°C	@Temperature 2100 Â°F	
	134 MPa	19400 psi	
	@Temperature 1090 Â°C	@Temperature 2000 Â°F	
	225 MPa	32600 psi	
	@Temperature 982 Â°C	@Temperature 1800 Â°F	
	385 MPa	55800 psi	
	@Temperature 871 Â°C	@Temperature 1600 Â°F	
	509 MPa	73800 psi	
	@Temperature 816 Â°C	@Temperature 1500 Â°F	
Tensile Strength, Yield	632 MPa	91700 psi	
	@Strain 0.200 %	@Strain 0.200 %	
	53.0 MPa	7690 psi	
	@Strain 0.200 %, Temperature 1150 Â°C	@Strain 0.200 %, Temperature 2100 Â°F	
	75.0 MPa	10900 psi	
	@Strain 0.200 %, Temperature 1090 Â°C	@Strain 0.200 %, Temperature 2000 Â°F	
	137 MPa	19900 psi	
	@Strain 0.200 %, Temperature 982 Â°C	@Strain 0.200 %, Temperature 1800 Â°F	
	270 MPa	39200 psi	
	@Strain 0.200 %, Temperature 871 Â°C	@Strain 0.200 %, Temperature 1600 Â°F	
	313 MPa	45400 psi	
	@Strain 0.200 %, Temperature 816 Â°C	@Strain 0.200 %, Temperature 1500 Â°F	
Elongation at Break	11 %	11 %	in 50.8 mm
	17 %	17 %	

Mechanical Properties	Metric @Temperature 816 Å°C	English @Temperature 1500 Å°F	in 50.8 mm Comments
	18 %	18 %	in 50.8 mm
	@Temperature 871 Å°C	@Temperature 1600 Å°F	
	22 %	22 %	in 50.8 mm
	@Temperature 1150 Å°C	@Temperature 2100 Å°F	
	36 %	36 %	in 50.8 mm
	@Temperature 982 Å°C	@Temperature 1800 Å°F	
	44 %	44 %	in 50.8 mm
	@Temperature 1090 Å°C	@Temperature 2000 Å°F	
Modulus of Elasticity	214 GPa	31000 ksi	sheet at RT
	210 GPa	30500 ksi	bar
	@Diameter 15.9 mm, Temperature 23.0 Å°C	@Diameter 0.626 in, Temperature 73.4 Å°F	
Izod Impact Unnotched	84.0 J	62.0 ft-lb	plate, solution heat-treated at 1232Å°C (2250Å°F), air cooled, tested at RT.
	@Thickness 12.7 mm	@Thickness 0.500 in	
Charpy Impact	8.00 J	5.90 ft-lb	Longitudinal
	@Temperature 23.0 Å°C	@Temperature 73.4 Å°F	
	20.0 J	14.8 ft-lb	Longitudinal
	@Temperature 538 - 816 Å°C	@Temperature 1000 - 1500 Å°F	
Charpy Impact, Unnotched	88.0 J	64.9 ft-lb	Transverse
	98.0 J	72.3 ft-lb	Longitudinal
	@Temperature 22.2 Å°C	@Temperature 72.0 Å°F	
	110 J	81.1 ft-lb	Longitudinal
	@Temperature 538 Å°C	@Temperature 1000 Å°F	
	157 J	116 ft-lb	Longitudinal
	@Temperature 677 Å°C	@Temperature 1250 Å°F	

Mechanical Properties	Metric 171 J	English 126 ft-lb	Comments Longitudinal
	@Temperature 816 Å°C	@Temperature 1500 Å°F	

Thermal Properties	Metric	English	Comments
CTE, linear	13.9 Åµm/m-Å°C	7.72 Åµin/in-Å°F	
	@Temperature 0.000 - 100 Å°C	@Temperature 32.0 - 212 Å°F	
	14.1 Åµm/m-Å°C	7.83 Åµin/in-Å°F	
	@Temperature 0.000 - 200 Å°C	@Temperature 32.0 - 392 Å°F	
	14.5 Åµm/m-Å°C	8.06 Åµin/in-Å°F	
	@Temperature 0.000 - 300 Å°C	@Temperature 32.0 - 572 Å°F	
	14.7 Åµm/m-Å°C	8.17 Åµin/in-Å°F	
	@Temperature 0.000 - 400 Å°C	@Temperature 32.0 - 752 Å°F	
	15.0 Åµm/m-Å°C	8.33 Åµin/in-Å°F	
	@Temperature 0.000 - 500 Å°C	@Temperature 32.0 - 932 Å°F	
15.3 Åµm/m-Å°C	8.50 Åµin/in-Å°F		
@Temperature 0.000 - 600 Å°C	@Temperature 32.0 - 1110 Å°F		
15.8 Åµm/m-Å°C	8.78 Åµin/in-Å°F		
@Temperature 0.000 - 700 Å°C	@Temperature 32.0 - 1290 Å°F		
16.3 Åµm/m-Å°C	9.06 Åµin/in-Å°F		
@Temperature 0.000 - 800 Å°C	@Temperature 32.0 - 1470 Å°F		
16.9 Åµm/m-Å°C	9.39 Åµin/in-Å°F		
@Temperature 0.000 - 900 Å°C	@Temperature 32.0 - 1650 Å°F		
17.4 Åµm/m-Å°C	9.67 Åµin/in-Å°F		
@Temperature 0.000 - 1000 Å°C	@Temperature 32.0 - 1830 Å°F		
Specific Heat Capacity	0.423 J/g-Å°C	0.101 BTU/lb-Å°F	at RT (calculated)
Thermal Conductivity	14.85 W/m-K	103.1 BTU-in/hr-ftÅ²-Å°F	

Thermal Properties	Metric	English	Comments
Solidus	1265 Å°C	2309 Å°F	
Liquidus	1354 Å°C	2469 Å°F	

Optical Properties	Metric	English	Comments
Reflection Coefficient, Visible (0-1)	0.57 - 0.70	0.57 - 0.70	reflecting power

Component Elements Properties	Metric	English	Comments
Carbon, C	0.90 - 1.4 %	0.90 - 1.4 %	
Chromium, Cr	28 - 32 %	28 - 32 %	
Cobalt, Co	50 - 67 %	50 - 67 %	As remainder
Iron, Fe	<= 3.0 %	<= 3.0 %	
Manganese, Mn	<= 2.0 %	<= 2.0 %	
Molybdenum, Mo	<= 1.5 %	<= 1.5 %	
Nickel, Ni	<= 3.0 %	<= 3.0 %	
Silicon, Si	<= 2.0 %	<= 2.0 %	
Tungsten, W	3.5 - 5.5 %	3.5 - 5.5 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000910 ohm-cm @Temperature 22.0 Å°C	0.0000910 ohm-cm @Temperature 71.6 Å°F	
Magnetic Permeability	<= 1.20 @Temperature 22.0 Å°C	<= 1.20 @Temperature 71.6 Å°F	200 Oersted (15.900 A/m)

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