Kennametal Stellite StelliteÂ® STAR with P/M Processing

Category : Metal , Nonferrous Metal , Cobalt Alloy , Superalloy

Material Notes:

Applications: Vane plugs, fuel metering pins, spacer bushings, ball bearing blanks, race bearing blanks, diesel engine exhaust, fluid valve seats, saw cutter inserts, wear pads, pins, balls, hardfaces when crack free deposits are not required.Corrosion: Corrosion resistance similar to Stellite alloy 3, but inferior to Stellite alloy 6. Excellent oxidation resistance at low temperatures, but not recommended for reducing environments. Corrosion will vary depending on concentration, temperature, stress, and type of contaminants so exposure tests are recommended.Machinability: Stress relieve before and during machining by holding at 900Â°C (1650Â°F) for four hours and slow cool.Wear: High tungsten content results in excellent hot hardness and low stress abrasion resistance superior to Stellite alloy 3. Wear resistance is similar to Stellite alloy 3 and is non-galling when mated with other Stellite alloys.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-STAR-with-PM-Processing.php

Physical Properties	Metric	English	Comments
Density	8.58 g/cc	0.310 lb/inÂ³	P/M (98%)
	8.76 g/cc	0.316 lb/inÂ³	Theoretical

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	291 @Temperature 760 Â°C	291 @Temperature 1400 Â°F	Converted from Rockwell C hardness
	394 @Temperature 649 Â°C	394 @Temperature 1200 Â°F	Converted from Rockwell C hardness
Hardness, Knoop	345 @Temperature 760 Â°C	345 @Temperature 1400 Â°F	Converted from Rockwell C hardness
	473 @Temperature 649 Â°C	473 @Temperature 1200 Â°F	Converted from Rockwell C hardness
Hardness, Rockwell A	66 @Temperature 760 Â°C	66 @Temperature 1400 Â°F	Converted from Rockwell C hardness
	72 @Temperature 649 Â°C	72 @Temperature 1200 Â°F	Converted from Rockwell C hardness

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	56	56	Hot hardness.
	31 @Temperature 760 Â°C	31 @Temperature 1400 Â°F	Hot hardness.
	43 @Temperature 649 Â°C	43 @Temperature 1200 Â°F	Hot hardness.
	52 @Temperature 538 Â°C	52 @Temperature 1000 Â°F	Hot hardness.
Hardness, Vickers	302 @Temperature 760 Â°C	302 @Temperature 1400 Â°F	Converted from Rockwell C hardness
	416 @Temperature 649 Â°C	416 @Temperature 1200 Â°F	Converted from Rockwell C hardness
Tensile Strength, Ultimate	523 MPa	75900 psi	
	539 MPa @Temperature 538 Â°C	78200 psi @Temperature 1000 Â°F	
	569 MPa @Temperature 649 Â°C	82500 psi @Temperature 1200 Â°F	
	573 MPa @Temperature 760 Â°C	83100 psi @Temperature 1400 Â°F	
Elongation at Break	0.10 %	0.10 %	in 25.4 mm
	0.10 % @Temperature 538 Â°C	0.10 % @Temperature 1000 Â°F	in 25.4 mm
	0.10 % @Temperature 649 Â°C	0.10 % @Temperature 1200 Â°F	in 25.4 mm
	0.10 % @Temperature 760 Â°C	0.10 % @Temperature 1400 Â°F	in 25.4 mm
Modulus of Elasticity	258 GPa	37400 ksi	

Mechanical Properties	Metric	English	Comments
Thermal Properties	**Metric**	**English**	**Comments**
CTE, linear	12.0 Âµm/m-Â°C @Temperature 0.000 - 100 Â°C	6.67 Âµin/in-Â°F @Temperature 32.0 - 212 Â°F	
	12.1 Âµm/m-Â°C @Temperature 0.000 - 200 Â°C	6.72 Âµin/in-Â°F @Temperature 32.0 - 392 Â°F	
	12.2 Âµm/m-Â°C @Temperature 0.000 - 300 Â°C	6.78 Âµin/in-Â°F @Temperature 32.0 - 572 Â°F	
	12.3 Âµm/m-Â°C @Temperature 0.000 - 400 Â°C	6.83 Âµin/in-Â°F @Temperature 32.0 - 752 Â°F	
	12.6 Âµm/m-Â°C @Temperature 0.000 - 500 Â°C	7.00 Âµin/in-Â°F @Temperature 32.0 - 932 Â°F	
	12.8 Âµm/m-Â°C @Temperature 0.000 - 600 Â°C	7.11 Âµin/in-Â°F @Temperature 32.0 - 1110 Â°F	
	13.2 Âµm/m-Â°C @Temperature 0.000 - 700 Â°C	7.33 Âµin/in-Â°F @Temperature 32.0 - 1290 Â°F	
	13.6 Âµm/m-Â°C @Temperature 0.000 - 800 Â°C	7.56 Âµin/in-Â°F @Temperature 32.0 - 1470 Â°F	
	14.3 Âµm/m-Â°C @Temperature 0.000 - 900 Â°C	7.94 Âµin/in-Â°F @Temperature 32.0 - 1650 Â°F	
	15.1 Âµm/m-Â°C @Temperature 0.000 - 1000 Â°C	8.39 Âµin/in-Â°F @Temperature 32.0 - 1830 Â°F	
Melting Point	1215 - 1299 Â°C	2219 - 2370 Â°F	
Solidus	1215 Â°C	2219 Â°F	
Liquidus	1299 Â°C	2370 Â°F	

Component Elements Properties	Metric	English	Comments
Boron, B	<= 1.0 %	<= 1.0 %	
Carbon, C	2.5 %	2.5 %	
Chromium, Cr	32.5 %	32.5 %	
Cobalt, Co	36.5 %	36.5 %	As remainder
Iron, Fe	3.0 %	3.0 %	
Manganese, Mn	1.0 %	1.0 %	
Nickel, Ni	3.0 %	3.0 %	
Other	<= 2.0 %	<= 2.0 %	
Silicon, Si	1.0 %	1.0 %	
Tungsten, W	17.5 %	17.5 %	

Electrical Properties	Metric	English	Comments
Magnetic Permeability	<= 1.20 @Temperature 22.0 Â°C	<= 1.20 @Temperature 71.6 Â°F	200 Oersted

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