PEAK Werkstoff DISPAL S270 Aluminum Alloy, AlSi25Fe4Ni3CuMgMnCrTi, Condition F

Category : Metal , Nonferrous Metal , Aluminum Alloy

Material Notes:

Excellent properties:abrasive stabilityhigh stiffness (E-modulus)resistance even at high temperaturesgood grindabilityPEAK DISPAL materials allow the manufacturing of pistons for highest operational demands.Information provided by PEAK Werkstoff GmbH

Order this product through the following link:
http://www.lookpolymers.com/polymer_PEAK-Werkstoff-DISPAL-S270-Aluminum-Alloy-AlSi25Fe4Ni3CuMgMnCrTi-Condition-F.php

Physical Properties	Metric	English	Comments
Density	2.651 - 2.930 g/cc	0.09576 - 0.1058 lb/in³	

Mechanical Properties	Metric	English	Comments
Hardness, Vickers	>= 160	>= 160	HV30
Tensile Strength at Break	>= 138 MPa @Temperature 300 °C	>= 20000 psi @Temperature 572 °F	
	>= 252 MPa @Temperature 250 °C	>= 36500 psi @Temperature 482 °F	
	>= 296 MPa @Temperature 200 °C	>= 42900 psi @Temperature 392 °F	
	>= 370 MPa @Temperature 20.0 °C	>= 53700 psi @Temperature 68.0 °F	
	>= 398 MPa @Temperature 150 °C	>= 57700 psi @Temperature 302 °F	
Tensile Strength, Yield	>= 72.0 MPa @Temperature 300 °C	>= 10400 psi @Temperature 572 °F	
	>= 167 MPa @Temperature 250 °C	>= 24200 psi @Temperature 482 °F	
	>= 220 MPa @Temperature 200 °C	>= 31900 psi @Temperature 392 °F	
	>= 240 MPa @Temperature 20.0 °C	>= 34800 psi @Temperature 68.0 °F	
	>= 260 MPa	>= 37700 psi	

Mechanical Properties	Metric	English	Comments
	@Temperature 150 °C	@Temperature 302 °F	
Elongation at Break	>= 0.80 %	>= 0.80 %	
	@Temperature 20.0 °C	@Temperature 68.0 °F	
	>= 1.6 %	>= 1.6 %	
	@Temperature 150 °C	@Temperature 302 °F	
	>= 1.8 %	>= 1.8 %	
	@Temperature 200 °C	@Temperature 392 °F	
	>= 8.0 %	>= 8.0 %	
	@Temperature 250 °C	@Temperature 482 °F	
	>= 11.6 %	>= 11.6 %	
	@Temperature 300 °C	@Temperature 572 °F	
Modulus of Elasticity	>= 61.0 GPa	>= 8850 ksi	
	@Temperature 300 °C	@Temperature 572 °F	
	>= 78.0 GPa	>= 11300 ksi	
	@Temperature 150 °C	@Temperature 302 °F	
	>= 81.0 GPa	>= 11700 ksi	
	@Temperature 200 °C	@Temperature 392 °F	
	>= 89.0 GPa	>= 12900 ksi	
	@Temperature 150 °C	@Temperature 302 °F	
	>= 90.0 GPa	>= 13100 ksi	
	@Temperature 20.0 °C	@Temperature 68.0 °F	
Poissons Ratio	0.284	0.284	
	@Temperature 20.0 °C	@Temperature 68.0 °F	
	0.286	0.286	
	@Temperature 100 °C	@Temperature 212 °F	
	0.288	0.288	
	@Temperature 150 °C	@Temperature 302 °F	
	0.289	0.289	
	@Temperature 200 °C	@Temperature 392 °F	
	0.291	0.291	
	@Temperature 250 °C	@Temperature 482 °F	

Mechanical Properties	Metric	English	Comments
	0.292	0.292	
	@Temperature 300 °C	@Temperature 572 °F	
Fatigue Strength	78.6 MPa @Temperature 300 °C	11400 psi @Temperature 572 °F	P50% rotary bending values for 5X10⁷ cycles
	102.2 MPa @Temperature 250 °C	14820 psi @Temperature 482 °F	P50% rotary bending values for 5X10⁷ cycles
	115.3 MPa @Temperature 150 °C	16720 psi @Temperature 302 °F	P50% rotary bending values for 5X10⁷ cycles
	214 MPa @Temperature 20.0 °C	31000 psi @Temperature 68.0 °F	P50% rotary bending values for 5X10⁷ cycles
Shear Modulus	36.0 GPa @Temperature 300 °C	5220 ksi @Temperature 572 °F	
	37.0 GPa @Temperature 250 °C	5370 ksi @Temperature 482 °F	
	38.0 GPa @Temperature 200 °C	5510 ksi @Temperature 392 °F	
	39.0 GPa @Temperature 150 °C	5660 ksi @Temperature 302 °F	
	40.0 GPa @Temperature 100 °C	5800 ksi @Temperature 212 °F	
	41.0 GPa @Temperature 20.0 °C	5950 ksi @Temperature 68.0 °F	

Thermal Properties	Metric	English	Comments
CTE, linear	15.2 - 16.2 µm/m-°C @Temperature 20.0 - 100 °C	8.44 - 9.00 µin/in-°F @Temperature 68.0 - 212 °F	
	15.7 - 16.7 µm/m-°C @Temperature 20.0 - 200 °C	8.72 - 9.28 µin/in-°F @Temperature 68.0 - 392 °F	
	16.3 - 17.3 µm/m-°C @Temperature 20.0 - 300 °C	9.06 - 9.61 µin/in-°F @Temperature 68.0 - 572 °F	

Thermal Properties	Metric	English	Comments
Specific Heat Capacity	0.800 - 0.840 J/g-°C	0.191 - 0.201 BTU/lb-°F	
Thermal Conductivity	89.60 W/m-K @Temperature 400 °C	621.8 BTU-in/hr-ft²-°F @Temperature 752 °F	
	93.70 W/m-K @Temperature 300 °C	650.3 BTU-in/hr-ft²-°F @Temperature 572 °F	
	94.90 W/m-K @Temperature 200 °C	658.6 BTU-in/hr-ft²-°F @Temperature 392 °F	
	96.30 W/m-K @Temperature 100 °C	668.3 BTU-in/hr-ft²-°F @Temperature 212 °F	
	98.40 W/m-K @Temperature 30.0 °C	682.9 BTU-in/hr-ft²-°F @Temperature 86.0 °F	
Melting Point	536 - 777 °C	997 - 1430 °F	
Solidus	536.3 - 542.3 °C	997.3 - 1008 °F	
Liquidus	770.9 - 776.9 °C	1420 - 1430 °F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	63 %	63 %	As Balance
Chromium, Cr	1.0 %	1.0 %	
Copper, Cu	1.0 %	1.0 %	
Iron, Fe	4.0 %	4.0 %	
Magnesium, Mg	1.0 %	1.0 %	
Manganese, Mn	1.0 %	1.0 %	
Nickel, Ni	3.0 %	3.0 %	
Silicon, Si	25 %	25 %	
Titanium, Ti	1.0 %	1.0 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.00000940 - 0.0000104 ohm-cm	0.00000940 - 0.0000104 ohm-cm	

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