

Special Metals UDIMET® alloy 520 Superalloy

Category : Metal , Nonferrous Metal , Nickel Alloy , Superalloy

Material Notes:

UDIMET® alloy 520 is a precipitation-hardenable nickel base superalloy with an exceptional combination of high-temperature mechanical properties, corrosion resistance and forgeability characteristics. Developed for use in the 1400-1700°F (760-927°C) temperature range, the alloy has excellent structural stability and unusually good fabricability. The primary application for alloy 520 is blading for aircraft and land-based gas turbines. Information Provided by Special Metals Corporation

Order this product through the following link:

http://www.lookpolymers.com/polymer_Special-Metals-UDIMET-alloy-520-Superalloy.php

Physical Properties	Metric	English	Comments
Density	8.21 g/cc	0.297 lb/in ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength at Break	350 MPa	50800 psi	
	@Temperature 950 Â°C	@Temperature 1740 Â°F	
	1150 MPa	167000 psi	
	@Temperature 700 Â°C	@Temperature 1290 Â°F	
Tensile Strength, Yield	1250 MPa	181000 psi	
	@Temperature 400 Â°C	@Temperature 752 Â°F	
	1300 MPa	189000 psi	
	@Temperature 50.0 Â°C	@Temperature 122 Â°F	
Tensile Strength, Yield	500 MPa	72500 psi	
	@Strain 0.200 %, Temperature 850 Â°C	@Strain 0.200 %, Temperature 1560 Â°F	
	700 MPa	102000 psi	
	@Strain 0.200 %, Temperature 700 Â°C	@Strain 0.200 %, Temperature 1290 Â°F	
Tensile Strength, Yield	850 MPa	123000 psi	
	@Strain 0.200 %, Temperature 50.0 Â°C	@Strain 0.200 %, Temperature 122 Â°F	
	850 MPa	123000 psi	
	@Strain 0.200 %, Temperature 400 Â°C	@Strain 0.200 %, Temperature 752 Â°F	

Mechanical Properties	Metric	English	Comments
Elongation at Break	@Temperature 50.0 Â°C	@Temperature 122 Â°F	
	100 %	100 %	
	@Temperature 400 Â°C	@Temperature 752 Â°F	
	100 %	100 %	
	@Temperature 700 Â°C	@Temperature 1290 Â°F	
Rupture Strength	150 MPa	21800 psi	
	@Temperature 871 Â°C, Time 3.60e+6 sec	@Temperature 1600 Â°F, Time 1000 hour	
	230 MPa	33400 psi	
	@Temperature 816 Â°C, Time 3.60e+6 sec	@Temperature 1500 Â°F, Time 1000 hour	
	345 MPa	50000 psi	
	@Temperature 760 Â°C, Time 3.60e+6 sec	@Temperature 1400 Â°F, Time 1000 hour	
	475 MPa	68900 psi	
	@Temperature 704 Â°C, Time 3.60e+6 sec	@Temperature 1300 Â°F, Time 1000 hour	
	585 MPa	84800 psi	
	@Temperature 649 Â°C, Time 3.60e+6 sec	@Temperature 1200 Â°F, Time 1000 hour	

Thermal Properties	Metric	English	Comments
Melting Point	1260 - 1405 Â°C	2300 - 2561 Â°F	
Solidus	1260 Â°C	2300 Â°F	
Liquidus	1405 Â°C	2561 Â°F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	1.8 - 2.3 %	1.8 - 2.3 %	
Boron, B	0.0040 - 0.010 %	0.0040 - 0.010 %	
Carbon, C	0.020 - 0.060 %	0.020 - 0.060 %	

Component Elements Properties	Metric 	English 	Comments
Cobalt, Co	11 - 14 %	11 - 14 %	
Molybdenum, Mo	5.5 - 7.0 %	5.5 - 7.0 %	
Nickel, Ni	52.18 - 59.976 %	52.18 - 59.976 %	Balance
Titanium, Ti	2.9 - 3.25 %	2.9 - 3.25 %	
Tungsten, W	0.80 - 1.2 %	0.80 - 1.2 %	

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