Haynes UltimetÂ® alloy, 6.3-38.1 mm plate

Category : Metal , Nonferrous Metal , Cobalt Alloy , Superalloy

Material Notes:

Co content as balance, excellent corrosion resistance, outstanding wear resistance, high tensile strength combined with excellent impact toughness and ductility. Ideal welding material with exceptional ductility and resistance to weld cracking, very easy to apply as an overlay, multiple layers appliable with little to no preheat. Applications include agitators, blenders, bolts, dies, extruders, fan blades, filters, glass plungers, nozzles, pumps, rolls, screw conveyors, and valve parts.Data provided by the manufacturer, Haynes International, Inc.

Order this product through the following link:
http://www.lookpolymers.com/polymer_Haynes-Ultimet-alloy-63-381-mm-plate.php

Physical Properties	Metric	English	Comments
Density	8.47 g/cc	0.306 lb/inÂ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	1020 MPa	148000 psi	
	214 MPa @Temperature 982 Â°C	31000 psi @Temperature 1800 Â°F	
	352 MPa @Temperature 871 Â°C	51100 psi @Temperature 1600 Â°F	
	524 MPa @Temperature 760 Â°C	76000 psi @Temperature 1400 Â°F	
	683 MPa @Temperature 649 Â°C	99100 psi @Temperature 1200 Â°F	
	862 MPa @Temperature 538 Â°C	125000 psi @Temperature 1000 Â°F	
	917 MPa @Temperature 427 Â°C	133000 psi @Temperature 801 Â°F	
	952 MPa @Temperature 316 Â°C	138000 psi @Temperature 601 Â°F	
	986 MPa @Temperature 93.0	143000 psi	

Mechanical Properties	Metric	English	Comments
	Â°C	@Temperature 199 Â°F	
	986 MPa @Temperature 204 Â°C	143000 psi @Temperature 399 Â°F	
Tensile Strength, Yield	545 MPa @Strain 0.200 %	79000 psi @Strain 0.200 %	
	110 MPa @Strain 0.200 %, Temperature 982 Â°C	16000 psi @Strain 0.200 %, Temperature 1800 Â°F	
	193 MPa @Strain 0.200 %, Temperature 871 Â°C	28000 psi @Strain 0.200 %, Temperature 1600 Â°F	
	255 MPa @Strain 0.200 %, Temperature 649 Â°C	37000 psi @Strain 0.200 %, Temperature 1200 Â°F	
	262 MPa @Strain 0.200 %, Temperature 538 Â°C	38000 psi @Strain 0.200 %, Temperature 1000 Â°F	
	269 MPa @Strain 0.200 %, Temperature 760 Â°C	39000 psi @Strain 0.200 %, Temperature 1400 Â°F	
	310 MPa @Strain 0.200 %, Temperature 427 Â°C	45000 psi @Strain 0.200 %, Temperature 801 Â°F	
	331 MPa @Strain 0.200 %, Temperature 316 Â°C	48000 psi @Strain 0.200 %, Temperature 601 Â°F	
	379 MPa @Strain 0.200 %, Temperature 204 Â°C	55000 psi @Strain 0.200 %, Temperature 399 Â°F	
	483 MPa @Strain 0.200 %, Temperature 93.0 Â°C	70100 psi @Strain 0.200 %, Temperature 199 Â°F	
Elongation at Break	36 %	36 %	in 50.8 mm
	40 % @Temperature 93.0 Â°C	40 % @Temperature 199 Â°F	in 50.8 mm

Mechanical Properties	Metric	English	Comments
	61 % @Temperature 204 Â°C	61 % @Temperature 399 Â°F	in 50.8 mm
	66 % @Temperature 649 Â°C	66 % @Temperature 1200 Â°F	in 50.8 mm
	70 % @Temperature 760 Â°C	70 % @Temperature 1400 Â°F	in 50.8 mm
	70 % @Temperature 316 Â°C	70 % @Temperature 601 Â°F	in 50.8 mm
	70 % @Temperature 427 Â°C	70 % @Temperature 801 Â°F	in 50.8 mm
	70 % @Temperature 538 Â°C	70 % @Temperature 1000 Â°F	in 50.8 mm
	77 % @Temperature 871 Â°C	77 % @Temperature 1600 Â°F	in 50.8 mm
	100 % @Temperature 982 Â°C	100 % @Temperature 1800 Â°F	in 50.8 mm
Modulus of Elasticity	180 GPa @Temperature 649 Â°C	26100 ksi @Temperature 1200 Â°F	(heat treated at 1121Â°C (2050Â°F), water quenched plate)
	189 GPa @Temperature 538 Â°C	27400 ksi @Temperature 1000 Â°F	(heat treated at 1121Â°C (2050Â°F), water quenched plate)
	197 GPa @Temperature 427 Â°C	28600 ksi @Temperature 801 Â°F	(heat treated at 1121Â°C (2050Â°F), water quenched plate)
	206 GPa @Temperature 316 Â°C	29900 ksi @Temperature 601 Â°F	(heat treated at 1121Â°C (2050Â°F), water quenched plate)
	215 GPa @Temperature 204 Â°C	31200 ksi @Temperature 399 Â°F	(heat treated at 1121Â°C (2050Â°F), water quenched plate)
Charpy Impact	176 J @Temperature 23.0 Â°C	130 ft-lb @Temperature 73.4 Â°F	

Thermal Properties	Metric	English	Comments
CTE, linear	14.0 Âµm/m-Â°C @Temperature 26.0 - 316 Â°C	7.78 Âµin/in-Â°F @Temperature 78.8 - 601 Â°F	
	14.5 Âµm/m-Â°C @Temperature 26.0 - 427 Â°C	8.06 Âµin/in-Â°F @Temperature 78.8 - 801 Â°F	
	14.8 Âµm/m-Â°C @Temperature 26.0 - 538 Â°C	8.22 Âµin/in-Â°F @Temperature 78.8 - 1000 Â°F	
	15.1 Âµm/m-Â°C @Temperature 26.0 - 649 Â°C	8.39 Âµin/in-Â°F @Temperature 78.8 - 1200 Â°F	
	15.9 Âµm/m-Â°C @Temperature 26.0 - 760 Â°C	8.83 Âµin/in-Â°F @Temperature 78.8 - 1400 Â°F	
	16.4 Âµm/m-Â°C @Temperature 26.0 - 871 Â°C	9.11 Âµin/in-Â°F @Temperature 78.8 - 1600 Â°F	
	16.9 Âµm/m-Â°C @Temperature 26.0 - 982 Â°C	9.39 Âµin/in-Â°F @Temperature 78.8 - 1800 Â°F	
Specific Heat Capacity	0.456 J/g-Â°C @Temperature 23.0 Â°C	0.109 BTU/lb-Â°F @Temperature 73.4 Â°F	
	0.470 J/g-Â°C @Temperature 100 Â°C	0.112 BTU/lb-Â°F @Temperature 212 Â°F	
	0.482 J/g-Â°C @Temperature 200 Â°C	0.115 BTU/lb-Â°F @Temperature 392 Â°F	
	0.504 J/g-Â°C @Temperature 300 Â°C	0.120 BTU/lb-Â°F @Temperature 572 Â°F	
	0.525 J/g-Â°C @Temperature 400 Â°C	0.125 BTU/lb-Â°F @Temperature 752 Â°F	
	0.545 J/g-Â°C @Temperature 500 Â°C	0.130 BTU/lb-Â°F @Temperature 932 Â°F	

Thermal Properties	Metric	English	Comments
	0.573 J/g-Â°C @Temperature 600 Â°C	0.137 BTU/lb-Â°F @Temperature 1110 Â°F	
Thermal Conductivity	12.3 W/m-K @Temperature 23.0 Â°C	85.4 BTU-in/hr-ftÂ²-Â°F @Temperature 73.4 Â°F	
	13.8 W/m-K @Temperature 100 Â°C	95.8 BTU-in/hr-ftÂ²-Â°F @Temperature 212 Â°F	
	15.6 W/m-K @Temperature 200 Â°C	108 BTU-in/hr-ftÂ²-Â°F @Temperature 392 Â°F	
	17.5 W/m-K @Temperature 300 Â°C	121 BTU-in/hr-ftÂ²-Â°F @Temperature 572 Â°F	
	19.4 W/m-K @Temperature 400 Â°C	135 BTU-in/hr-ftÂ²-Â°F @Temperature 752 Â°F	
	21.5 W/m-K @Temperature 500 Â°C	149 BTU-in/hr-ftÂ²-Â°F @Temperature 932 Â°F	
	23.9 W/m-K @Temperature 600 Â°C	166 BTU-in/hr-ftÂ²-Â°F @Temperature 1110 Â°F	
Melting Point	1332 - 1354 Â°C	2430 - 2469 Â°F	
Solidus	1332 Â°C	2430 Â°F	
Liquidus	1354 Â°C	2469 Â°F	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000870 ohm-cm @Temperature 23.0 Â°C	0.0000870 ohm-cm @Temperature 73.4 Â°F	
	0.0000890 ohm-cm @Temperature 100 Â°C	0.0000890 ohm-cm @Temperature 212 Â°F	
	0.0000930 ohm-cm @Temperature 200 Â°C	0.0000930 ohm-cm @Temperature 392 Â°F	
	0.0000960 ohm-cm @Temperature 300 Â°C	0.0000960 ohm-cm @Temperature 572 Â°F	

Electrical Properties	Metric	English	Comments
	0.000100 ohm-cm @Temperature 400 Â°C	0.000100 ohm-cm @Temperature 752 Â°F	
	0.000103 ohm-cm @Temperature 500 Â°C	0.000103 ohm-cm @Temperature 932 Â°F	
	0.000105 ohm-cm @Temperature 600 Â°C	0.000105 ohm-cm @Temperature 1110 Â°F	

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