

## Haynes 625 alloy, 30% cold reduction, 1065°C anneal for 5 minutes

Category : Metal , Nonferrous Metal , Nickel Alloy , Superalloy

### Material Notes:

Cb and Ta content 3.7% combined. Excellent strength up to 816°C, good oxidation resistance and aqueous corrosion, excellent forming and welding characteristics. Applications include a variety of high-temperature aerospace, chemical process industry and power industry uses. Widely used in sea water and power plant scrubber applications. Data provided by the manufacturer, Haynes International, Inc.

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[http://www.lookpolymers.com/polymer\\_Haynes-625-alloy-30-cold-reduction-1065C-anneal-for-5-minutes.php](http://www.lookpolymers.com/polymer_Haynes-625-alloy-30-cold-reduction-1065C-anneal-for-5-minutes.php)

Physical Properties	Metric	English	Comments
Density	8.44 g/cc	0.305 lb/in <sup>3</sup>	at RT

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	965 MPa	140000 psi	
Tensile Strength, Yield	530 MPa @Strain 0.200 %	76900 psi @Strain 0.200 %	
Elongation at Break	44 %	44 %	in 50.8 mm
Modulus of Elasticity	208 GPa	30200 ksi	RT
	126 GPa @Temperature 1000 °C	18300 ksi @Temperature 1830 °F	
	142 GPa @Temperature 900 °C	20600 ksi @Temperature 1650 °F	
	153 GPa @Temperature 800 °C	22200 ksi @Temperature 1470 °F	
	163 GPa @Temperature 700 °C	23600 ksi @Temperature 1290 °F	
	171 GPa @Temperature 600 °C	24800 ksi @Temperature 1110 °F	
	179 GPa @Temperature 500 °C	26000 ksi @Temperature 932 °F	

Mechanical Properties	186 GPa Metric	27000 ksi English	Comments
	@Temperature 400 Â°C	@Temperature 752 Â°F	
	192 GPa	27800 ksi	
	@Temperature 300 Â°C	@Temperature 572 Â°F	
	199 GPa	28900 ksi	
	@Temperature 200 Â°C	@Temperature 392 Â°F	
	201 GPa	29200 ksi	
	@Temperature 100 Â°C	@Temperature 212 Â°F	

Thermal Properties	Metric	English	Comments
CTE, linear	12.8 Âµm/m-Â°C	7.11 Âµin/in-Â°F	
	@Temperature 25.0 - 100 Â°C	@Temperature 77.0 - 212 Â°F	
	13.1 Âµm/m-Â°C	7.28 Âµin/in-Â°F	
	@Temperature 25.0 - 200 Â°C	@Temperature 77.0 - 392 Â°F	
	13.4 Âµm/m-Â°C	7.44 Âµin/in-Â°F	
	@Temperature 25.0 - 300 Â°C	@Temperature 77.0 - 572 Â°F	
	13.8 Âµm/m-Â°C	7.67 Âµin/in-Â°F	
	@Temperature 25.0 - 400 Â°C	@Temperature 77.0 - 752 Â°F	
	14.2 Âµm/m-Â°C	7.89 Âµin/in-Â°F	
	@Temperature 25.0 - 500 Â°C	@Temperature 77.0 - 932 Â°F	
	14.8 Âµm/m-Â°C	8.22 Âµin/in-Â°F	
	@Temperature 25.0 - 600 Â°C	@Temperature 77.0 - 1110 Â°F	
	15.4 Âµm/m-Â°C	8.56 Âµin/in-Â°F	
	@Temperature 25.0 - 700 Â°C	@Temperature 77.0 - 1290 Â°F	
	16.0 Âµm/m-Â°C	8.89 Âµin/in-Â°F	
	@Temperature 25.0 - 800 Â°C	@Temperature 77.0 - 1470 Â°F	
	16.7 Âµm/m-Â°C	9.28 Âµin/in-Â°F	
	@Temperature 25.0 -	@Temperature 77.0 -	

Thermal Properties	900 °C Metric	1650 °F English	Comments
	17.4 Åµm/m-Å°C	9.67 Åµin/in-Å°F	
	@Temperature 25.0 - 1000 Å°C	@Temperature 77.0 - 1830 Å°F	
Specific Heat Capacity	0.410 J/g-Å°C	0.0980 BTU/lb-Å°F	RT
	0.428 J/g-Å°C	0.102 BTU/lb-Å°F	
	@Temperature 100 Å°C	@Temperature 212 Å°F	
	0.455 J/g-Å°C	0.109 BTU/lb-Å°F	
	@Temperature 200 Å°C	@Temperature 392 Å°F	
	0.477 J/g-Å°C	0.114 BTU/lb-Å°F	
	@Temperature 300 Å°C	@Temperature 572 Å°F	
	0.503 J/g-Å°C	0.120 BTU/lb-Å°F	
	@Temperature 400 Å°C	@Temperature 752 Å°F	
	0.527 J/g-Å°C	0.126 BTU/lb-Å°F	
	@Temperature 500 Å°C	@Temperature 932 Å°F	
	0.552 J/g-Å°C	0.132 BTU/lb-Å°F	
	@Temperature 600 Å°C	@Temperature 1110 Å°F	
	0.576 J/g-Å°C	0.138 BTU/lb-Å°F	
	@Temperature 700 Å°C	@Temperature 1290 Å°F	
	0.600 J/g-Å°C	0.143 BTU/lb-Å°F	
	@Temperature 800 Å°C	@Temperature 1470 Å°F	
	0.625 J/g-Å°C	0.149 BTU/lb-Å°F	
	@Temperature 900 Å°C	@Temperature 1650 Å°F	
	0.648 J/g-Å°C	0.155 BTU/lb-Å°F	
	@Temperature 1000 Å°C	@Temperature 1830 Å°F	
Thermal Conductivity	9.80 W/m-K	68.0 BTU-in/hr-ftÅ²-Å°F	RT
	10.9 W/m-K	75.6 BTU-in/hr-ftÅ²-Å°F	
	@Temperature 100 Å°C	@Temperature 212 Å°F	

Thermal Properties	Metric	English	Comments
	@Temperature 200 Â°C	@Temperature 392 Â°F	
	13.9 W/m-K @Temperature 300 Â°C	96.5 BTU-in/hr-ftÂ²-Â°F @Temperature 572 Â°F	
	15.3 W/m-K @Temperature 400 Â°C	106 BTU-in/hr-ftÂ²-Â°F @Temperature 752 Â°F	
	16.9 W/m-K @Temperature 500 Â°C	117 BTU-in/hr-ftÂ²-Â°F @Temperature 932 Â°F	
	18.3 W/m-K @Temperature 600 Â°C	127 BTU-in/hr-ftÂ²-Â°F @Temperature 1110 Â°F	
	19.8 W/m-K @Temperature 700 Â°C	137 BTU-in/hr-ftÂ²-Â°F @Temperature 1290 Â°F	
	21.5 W/m-K @Temperature 800 Â°C	149 BTU-in/hr-ftÂ²-Â°F @Temperature 1470 Â°F	
	23.4 W/m-K @Temperature 900 Â°C	162 BTU-in/hr-ftÂ²-Â°F @Temperature 1650 Â°F	
	25.6 W/m-K @Temperature 1000 Â°C	178 BTU-in/hr-ftÂ²-Â°F @Temperature 1830 Â°F	
Melting Point	1290 - 1350 Â°C	2350 - 2460 Â°F	
Solidus	1290 Â°C	2350 Â°F	
Liquidus	1350 Â°C	2460 Â°F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	<= 0.40 %	<= 0.40 %	
Carbon, C	<= 0.10 %	<= 0.10 %	
Chromium, Cr	21 %	21 %	
Cobalt, Co	<= 1.0 %	<= 1.0 %	
Iron, Fe	<= 5.0 %	<= 5.0 %	

Component Elements Properties	Metric	English	Comments
Manganese, Mn	<= 0.30 %	<= 0.30 %	
Molybdenum, Mo	9.0 %	9.0 %	
Nickel, Ni	62 %	62 %	As Remainder

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.000129 ohm-cm	0.000129 ohm-cm	RT
	0.000132 ohm-cm	0.000132 ohm-cm	
	@Temperature 100 Â°C	@Temperature 212 Â°F	
	0.000134 ohm-cm	0.000134 ohm-cm	
	@Temperature 200 Â°C	@Temperature 392 Â°F	
	0.000135 ohm-cm	0.000135 ohm-cm	
	@Temperature 300 Â°C	@Temperature 572 Â°F	
	0.000135 ohm-cm	0.000135 ohm-cm	
	@Temperature 1000 Â°C	@Temperature 1830 Â°F	
	0.000136 ohm-cm	0.000136 ohm-cm	
	@Temperature 900 Â°C	@Temperature 1650 Â°F	
	0.000136 ohm-cm	0.000136 ohm-cm	
	@Temperature 400 Â°C	@Temperature 752 Â°F	
	0.000137 ohm-cm	0.000137 ohm-cm	
	@Temperature 500 Â°C	@Temperature 932 Â°F	
	0.000137 ohm-cm	0.000137 ohm-cm	
	@Temperature 800 Â°C	@Temperature 1470 Â°F	
	0.000138 ohm-cm	0.000138 ohm-cm	
	@Temperature 600 Â°C	@Temperature 1110 Â°F	
	0.000138 ohm-cm	0.000138 ohm-cm	
	@Temperature 700 Â°C	@Temperature 1290 Â°F	

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