

## Haynes 556<sup>®</sup> alloy, all-weld metal GTAW

Category : Metal , Superalloy , Iron Base

### Material Notes:

Effective resistance to sulfidizing, carburizing, and chlorine-bearing environments at high temperature; good oxidation resistance, fabricability, and excellent high-temperature strength; resists corrosion by molten chloride salts and is resistant to corrosion from molten zinc. Excellent forming and welding characteristics. Applications include tubing and structural members in municipal and industrial waste incinerators, rotary calciners and kilns for minerals processing, and non-rotating components in land-based gas turbines burning low-grade fuels; carbon regenerators, and in processes involving high-sulfur petroleum feedstocks; widely used for hot-dip galvanizing fixtures, spinners, and baskets, high speed furnace fans, air preheaters of diesel engines, the inner covers of coil annealing furnaces, and various high temperature applications in the aerospace industry. Data provided by the manufacturer, Haynes International, Inc.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Haynes-556-alloy-all-weld-metal-GTAW.php](http://www.lookpolymers.com/polymer_Haynes-556-alloy-all-weld-metal-GTAW.php)

Physical Properties	Metric	English	Comments
Density	8.23 g/cc	0.297 lb/in <sup>3</sup>	at RT

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	740 MPa	107000 psi	
	200 MPa	29000 psi	
	@Temperature 982 Â°C	@Temperature 1800 Â°F	
	225 MPa	32600 psi	
	@Temperature 871 Â°C	@Temperature 1600 Â°F	
Tensile Strength, Yield	380 MPa	55100 psi	
	@Temperature 760 Â°C	@Temperature 1400 Â°F	
	490 MPa	71100 psi	
Tensile Strength, Yield	@Temperature 648 Â°C	@Temperature 1200 Â°F	
	465 MPa	67400 psi	
	@Strain 0.200 %	@Strain 0.200 %	
	145 MPa	21000 psi	
Tensile Strength, Yield	@Strain 0.200 %, Temperature 982 Â°C	@Strain 0.200 %, Temperature 1800 Â°F	
	200 MPa	29000 psi	

Mechanical Properties	Metric @Strain 0.200 %, Temperature 871 Å°C	English @Strain 0.200 %, Temperature 1600 Å°F	Comments
	290 MPa	42100 psi	
	@Strain 0.200 %, Temperature 760 Å°C	@Strain 0.200 %, Temperature 1400 Å°F	
	310 MPa	45000 psi	
	@Strain 0.200 %, Temperature 648 Å°C	@Strain 0.200 %, Temperature 1200 Å°F	
Elongation at Break	43.1 %	43.1 %	in 50.8 mm
	38.9 %	38.9 %	
	@Temperature 760 Å°C	@Temperature 1400 Å°F	in 50.8 mm
	39.4 %	39.4 %	
	@Temperature 648 Å°C	@Temperature 1200 Å°F	in 50.8 mm
	51.9 %	51.9 %	
	@Temperature 871 Å°C	@Temperature 1600 Å°F	in 50.8 mm
	125.7 %	125.7 %	
	@Temperature 982 Å°C	@Temperature 1800 Å°F	in 50.8 mm
Modulus of Elasticity	205 GPa	29700 ksi	RT
	138 GPa	20000 ksi	
	@Temperature 1000 Å°C	@Temperature 1830 Å°F	
	143 GPa	20700 ksi	
	@Temperature 900 Å°C	@Temperature 1650 Å°F	
	148 GPa	21500 ksi	
	@Temperature 800 Å°C	@Temperature 1470 Å°F	
	155 GPa	22500 ksi	
	@Temperature 700 Å°C	@Temperature 1290 Å°F	
	164 GPa	23800 ksi	
	@Temperature 600 Å°C	@Temperature 1110 Å°F	

Mechanical Properties	172 GPa Metric	24900 ksi English	Comments
	@Temperature 500 Â°C	@Temperature 932 Â°F	
	179 GPa	26000 ksi	
	@Temperature 400 Â°C	@Temperature 752 Â°F	
	187 GPa	27100 ksi	
	@Temperature 300 Â°C	@Temperature 572 Â°F	
	195 GPa	28300 ksi	
	@Temperature 200 Â°C	@Temperature 392 Â°F	
	200 GPa	29000 ksi	
	@Temperature 100 Â°C	@Temperature 212 Â°F	
Charpy Impact	240 J	177 ft-lb	Samples did not break. Average of 4 or more tests.

Thermal Properties	Metric	English	Comments
CTE, linear	14.7 Âµm/m-Â°C	8.17 Âµin/in-Â°F	
	@Temperature 25.0 - 100 Â°C	@Temperature 77.0 - 212 Â°F	
	14.9 Âµm/m-Â°C	8.28 Âµin/in-Â°F	
	@Temperature 25.0 - 200 Â°C	@Temperature 77.0 - 392 Â°F	
	15.1 Âµm/m-Â°C	8.39 Âµin/in-Â°F	
	@Temperature 25.0 - 300 Â°C	@Temperature 77.0 - 572 Â°F	
	15.4 Âµm/m-Â°C	8.56 Âµin/in-Â°F	
	@Temperature 25.0 - 400 Â°C	@Temperature 77.0 - 752 Â°F	
	15.7 Âµm/m-Â°C	8.72 Âµin/in-Â°F	
	@Temperature 25.0 - 500 Â°C	@Temperature 77.0 - 932 Â°F	
	16.1 Âµm/m-Â°C	8.94 Âµin/in-Â°F	
	@Temperature 25.0 - 600 Â°C	@Temperature 77.0 - 1110 Â°F	
	16.4 Âµm/m-Â°C	9.11 Âµin/in-Â°F	
	@Temperature 25.0 - 700 Â°C	@Temperature 77.0 - 1290 Â°F	
	16.7 Âµm/m-Â°C	9.28 Âµin/in-Â°F	

Thermal Properties	Metric @Temperature 25.0 - 900 Â°C	English @Temperature 77.0 - 1650 Â°F	Comments
	17.0 Âµm/m-Â°C	9.44 Âµin/in-Â°F	
	@Temperature 25.0 - 900 Â°C	@Temperature 77.0 - 1650 Â°F	
	17.1 Âµm/m-Â°C	9.50 Âµin/in-Â°F	
	@Temperature 25.0 - 1000 Â°C	@Temperature 77.0 - 1830 Â°F	
Specific Heat Capacity	0.464 J/g-Â°C	0.111 BTU/lb-Â°F	RT
	0.475 J/g-Â°C	0.114 BTU/lb-Â°F	
	@Temperature 100 Â°C	@Temperature 212 Â°F	
	0.493 J/g-Â°C	0.118 BTU/lb-Â°F	
	@Temperature 200 Â°C	@Temperature 392 Â°F	
	0.508 J/g-Â°C	0.121 BTU/lb-Â°F	
	@Temperature 300 Â°C	@Temperature 572 Â°F	
	0.523 J/g-Â°C	0.125 BTU/lb-Â°F	
	@Temperature 400 Â°C	@Temperature 752 Â°F	
	0.538 J/g-Â°C	0.129 BTU/lb-Â°F	
	@Temperature 500 Â°C	@Temperature 932 Â°F	
	0.552 J/g-Â°C	0.132 BTU/lb-Â°F	
	@Temperature 600 Â°C	@Temperature 1110 Â°F	
	0.561 J/g-Â°C	0.134 BTU/lb-Â°F	
	@Temperature 700 Â°C	@Temperature 1290 Â°F	
	0.570 J/g-Â°C	0.136 BTU/lb-Â°F	
	@Temperature 800 Â°C	@Temperature 1470 Â°F	
	0.595 J/g-Â°C	0.142 BTU/lb-Â°F	
	@Temperature 900 Â°C	@Temperature 1650 Â°F	
	0.618 J/g-Â°C	0.148 BTU/lb-Â°F	
	@Temperature 1000 Â°C	@Temperature 1830 Â°F	
	0.638 J/g-Â°C	0.152 BTU/lb-Â°F	

Thermal Properties	@Temperature 1100 Metric °C	@Temperature 2010 English °F	Comments
Thermal Conductivity	11.1 W/m-K	77.0 BTU-in/hr-ft <sup>2</sup> - °F	RT
	13.1 W/m-K @Temperature 100 °C	90.9 BTU-in/hr-ft <sup>2</sup> - °F @Temperature 212 °F	
	15.4 W/m-K @Temperature 200 °C	107 BTU-in/hr-ft <sup>2</sup> - °F @Temperature 392 °F	
	17.3 W/m-K @Temperature 300 °C	120 BTU-in/hr-ft <sup>2</sup> - °F @Temperature 572 °F	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000952 ohm-cm	0.0000952 ohm-cm	RT
	0.0000986 ohm-cm @Temperature 100 °C	0.0000986 ohm-cm @Temperature 212 °F	
	0.0001026 ohm-cm @Temperature 200 °C	0.0001026 ohm-cm @Temperature 392 °F	
	0.0001065 ohm-cm @Temperature 300 °C	0.0001065 ohm-cm @Temperature 572 °F	
	0.0001095 ohm-cm @Temperature 400 °C	0.0001095 ohm-cm @Temperature 752 °F	
	0.0001125 ohm-cm @Temperature 500 °C	0.0001125 ohm-cm @Temperature 932 °F	
	0.0001151 ohm-cm @Temperature 600 °C	0.0001151 ohm-cm @Temperature 1110 °F	
	0.0001172 ohm-cm @Temperature 700 °C	0.0001172 ohm-cm @Temperature 1290 °F	
	0.000119 ohm-cm @Temperature 800 °C	0.000119 ohm-cm @Temperature 1470 °F	
	0.0001207 ohm-cm	0.0001207 ohm-cm	

Electrical Properties	@Temperature 900 Å°C Metric	@Temperature 1650 Å°F English	Comments
	0.0001223 ohm-cm	0.0001223 ohm-cm	
	@Temperature 1000 Å°C	@Temperature 1830 Å°F	
	0.0001237 ohm-cm	0.0001237 ohm-cm	
	@Temperature 1100 Å°C	@Temperature 2010 Å°F	

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