

Haynes 188 alloy, 10% cold reduction, 3.2 mm thick sheet

Category : Metal , Nonferrous Metal , Cobalt Alloy , Superalloy

Material Notes:

Excellent high temperature strength and very good resistance to oxidizing environments up to 1095Å°C for prolonged exposure, and excellent resistance to sulfate deposit hot corrosion. Readily fabricated and formed, excellent resistance to molten chloride salts, and good resistance to gaseous sulfidation. Applications include a variety of fabricated component applications in the aerospace industry, commercial gas turbine engines for combustion cans, transition ducts and afterburner components. Data provided by the manufacturer, Haynes International, Inc.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Haynes-188-alloy-10-cold-reduction-32-mm-thick-sheet.php

| Physical Properties | Metric | English | Comments |
|---------------------|-----------|---------------|----------|
| Density | 8.98 g/cc | 0.324 lb/inÅ³ | at RT. |

| Mechanical Properties | Metric | English | Comments |
|----------------------------|----------------------------------|------------------------------------|-------------------------------------|
| Hardness, Brinell | 286 | 286 | Converted from Rockwell C hardness. |
| Hardness, Knoop | 330 | 330 | Converted from Rockwell C hardness. |
| Hardness, Rockwell C | 32.1 | 32.1 | |
| Hardness, Vickers | 316 | 316 | Converted from Rockwell C hardness. |
| Tensile Strength, Ultimate | 1045 MPa | 151600 psi | |
| Tensile Strength, Yield | 730 MPa @Strain 0.200 % | 106000 psi @Strain 0.200 % | |
| Elongation at Break | 45.1 % | 45.1 % | in 51 mm |
| Modulus of Elasticity | 232 GPa | 33600 ksi | RT |
| | 153 GPa @Temperature 1000 Å°C | 22200 ksi @Temperature 1830 Å°F | |
| | 161 GPa @Temperature 900 Å°C | 23400 ksi @Temperature 1650 Å°F | |
| | 169 GPa @Temperature 800 Å°C | 24500 ksi @Temperature 1470 Å°F | |
| | 176 GPa | 25500 ksi | |

| Mechanical Properties | Metric @Temperature 700 Â°C | English @Temperature 1290 Â°F | Comments |
|-----------------------|--------------------------------|-------------------------------------|----------|
| | 184 GPa | 26700 ksi | |
| | @Temperature 600 Â°C | @Temperature 1110 Â°F | |
| | 193 GPa | 28000 ksi | |
| | @Temperature 500 Â°C | @Temperature 932 Â°F | |
| | 201 GPa | 29200 ksi | |
| | @Temperature 400 Â°C | @Temperature 752 Â°F | |
| | 209 GPa | 30300 ksi | |
| | @Temperature 300 Â°C | @Temperature 572 Â°F | |
| | 217 GPa | 31500 ksi | |
| | @Temperature 200 Â°C | @Temperature 392 Â°F | |
| | 225 GPa | 32600 ksi | |
| | @Temperature 100 Â°C | @Temperature 212 Â°F | |

| Thermal Properties | Metric | English | Comments |
|--------------------------------|---------------------------------|--------------------------------|----------|
| CTE, linear | 11.9 Âµm/m-Â°C | 6.61 Âµin/in-Â°F | |
| | @Temperature 25.0 - 100 Â°C | @Temperature 77.0 - 212 Â°F | |
| | 12.6 Âµm/m-Â°C | 7.00 Âµin/in-Â°F | |
| | @Temperature 25.0 - 200 Â°C | @Temperature 77.0 - 392 Â°F | |
| | 13.2 Âµm/m-Â°C | 7.33 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 | |
| 14.5 Âµm/m-Â°C | 8.06 Âµin/in-Â°F | | |
| @Temperature 25.0 - 500 Â°C | @Temperature 77.0 - 932 Â°F | | |
| 15.2 Âµm/m-Â°C | 8.44 Âµin/in-Â°F | | |
| @Temperature 25.0 - 600 Â°C | @Temperature 77.0 - 1110 Â°F | | |
| 15.8 Âµm/m-Â°C | 8.78 Âµin/in-Â°F | | |

| Thermal Properties | Metric | English | Comments |
|------------------------|------------------------------|-------------------------------|----------|
| | @ Temperature 25.0 - 700 Â°C | @ Temperature 77.0 - 1290 Â°F | |
| | 16.5 Âµm/m-Â°C | 9.17 Âµin/in-Â°F | |
| | @Temperature 25.0 - 800 Â°C | @Temperature 77.0 - 1470 Â°F | |
| | 17.1 Âµm/m-Â°C | 9.50 Âµin/in-Â°F | |
| | @Temperature 25.0 - 800 Â°C | @Temperature 77.0 - 1470 Â°F | |
| | 17.9 Âµm/m-Â°C | 9.94 Âµin/in-Â°F | |
| | @Temperature 25.0 - 1000 Â°C | @Temperature 77.0 - 1830 Â°F | |
| Specific Heat Capacity | 0.403 J/g-Â°C | 0.0963 BTU/lb-Â°F | RT |
| | 0.423 J/g-Â°C | 0.101 BTU/lb-Â°F | |
| | @Temperature 100 Â°C | @Temperature 212 Â°F | |
| | 0.444 J/g-Â°C | 0.106 BTU/lb-Â°F | |
| | @Temperature 200 Â°C | @Temperature 392 Â°F | |
| | 0.465 J/g-Â°C | 0.111 BTU/lb-Â°F | |
| | @Temperature 300 Â°C | @Temperature 572 Â°F | |
| | 0.486 J/g-Â°C | 0.116 BTU/lb-Â°F | |
| | @Temperature 400 Â°C | @Temperature 752 Â°F | |
| | 0.502 J/g-Â°C | 0.120 BTU/lb-Â°F | |
| | @Temperature 500 Â°C | @Temperature 932 Â°F | |
| | 0.523 J/g-Â°C | 0.125 BTU/lb-Â°F | |
| | @Temperature 600 Â°C | @Temperature 1110 Â°F | |
| | 0.540 J/g-Â°C | 0.129 BTU/lb-Â°F | |
| | @Temperature 700 Â°C | @Temperature 1290 Â°F | |
| | 0.557 J/g-Â°C | 0.133 BTU/lb-Â°F | |
| | @Temperature 800 Â°C | @Temperature 1470 Â°F | |
| | 0.573 J/g-Â°C | 0.137 BTU/lb-Â°F | |
| | @Temperature 900 Â°C | @Temperature 1650 Â°F | |
| | 0.590 J/g-Â°C | 0.141 BTU/lb-Â°F | |

| Thermal Properties | Metric @ Temperature 1000 °C | English @ Temperature 1830 °F | Comments |
|----------------------------------|---------------------------------------|---|----------|
| Thermal Conductivity | 10.4 W/m-K | 72.2 BTU-in/hr-ft ² - °F | RT |
| | 12.2 W/m-K @Temperature 100 °C | 84.7 BTU-in/hr-ft ² - °F @Temperature 212 °F | |
| | 14.3 W/m-K @Temperature 200 °C | 99.2 BTU-in/hr-ft ² - °F @Temperature 392 °F | |
| | 15.9 W/m-K @Temperature 300 °C | 110 BTU-in/hr-ft ² -°F @Temperature 572 °F | |
| | 17.5 W/m-K @Temperature 400 °C | 121 BTU-in/hr-ft ² -°F @Temperature 752 °F | |
| | 19.3 W/m-K @Temperature 500 °C | 134 BTU-in/hr-ft ² -°F @Temperature 932 °F | |
| | 21.1 W/m-K @Temperature 600 °C | 146 BTU-in/hr-ft ² -°F @Temperature 1110 °F | |
| | 23.0 W/m-K @Temperature 700 °C | 160 BTU-in/hr-ft ² -°F @Temperature 1290 °F | |
| | 24.8 W/m-K @Temperature 800 °C | 172 BTU-in/hr-ft ² -°F @Temperature 1470 °F | |
| | 25.5 W/m-K @Temperature 900 °C | 177 BTU-in/hr-ft ² -°F @Temperature 1650 °F | |
| | 27.6 W/m-K @Temperature 1000 °C | 192 BTU-in/hr-ft ² -°F @Temperature 1830 °F | |
| Melting Point | 1315 - 1410 °C | 2399 - 2570 °F | |
| Solidus | 1315 °C | 2399 °F | |
| Liquidus | 1410 °C | 2570 °F | |
| Maximum Service Temperature, Air | 1095 °C | 2003 °F | |

| Component Elements Properties | Metric | English | Comments |
|-------------------------------|----------------|----------------|----------|
| Boron, B | <= 0.015 % | <= 0.015 % | |
| Carbon, C | 0.050 - 0.15 % | 0.050 - 0.15 % | |

| Electrical Properties | Metric | English | Comments |
|------------------------|--------------------------|--------------------------|----------|
| Electrical Resistivity | 0.000101 ohm-cm | 0.000101 ohm-cm | RT |
| | 0.000103 ohm-cm | 0.000103 ohm-cm | |
| | @Temperature 100 Â°C | @Temperature 212 Â°F | |
| | 0.000105 ohm-cm | 0.000105 ohm-cm | |
| | @Temperature 200 Â°C | @Temperature 392 Â°F | |
| | 0.0001077 ohm-cm | 0.0001077 ohm-cm | |
| | @Temperature 300 Â°C | @Temperature 572 Â°F | |
| | 0.0001105 ohm-cm | 0.0001105 ohm-cm | |
| | @Temperature 400 Â°C | @Temperature 752 Â°F | |
| | 0.0001127 ohm-cm | 0.0001127 ohm-cm | |
| | @Temperature 500 Â°C | @Temperature 932 Â°F | |
| | 0.0001148 ohm-cm | 0.0001148 ohm-cm | |
| | @Temperature 600 Â°C | @Temperature 1110 Â°F | |
| | 0.0001164 ohm-cm | 0.0001164 ohm-cm | |
| | @Temperature 700 Â°C | @Temperature 1290 Â°F | |
| | 0.0001175 ohm-cm | 0.0001175 ohm-cm | |
| | @Temperature 800 Â°C | @Temperature 1470 Â°F | |
| | 0.0001183 ohm-cm | 0.0001183 ohm-cm | |
| | @Temperature 900 Â°C | @Temperature 1650 Â°F | |
| | 0.0001191 ohm-cm | 0.0001191 ohm-cm | |
| | @Temperature 1000 Â°C | @Temperature 1830 Â°F | |

Contact Songhan Plastic Technology Co.,Ltd.

Website : www.lookpolymers.com

Email : sales@lookpolymers.com

Tel : +86 021-51131842

Mobile : +86 13061808058

Skype : lookpolymers

Address : United North Road 215, Fengxian District, Shanghai City, China