

Haynes Hastelloy® N, weld metal, aged 500 hours at 649°C (1200°F)

Category : Metal , Nonferrous Metal , Nickel Alloy , Superalloy

Material Notes:

Applications include containers for molten fluoride salts. Good oxidation resistance to hot fluoride salts at 705-870°C (1300-1600°F), good oxidation resistance in air. Data provided by the manufacturer, Haynes International, Inc.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Haynes-Hastelloy-N-weld-metal-aged-500-hours-at-649C-1200F.php

| Physical Properties | Metric | English | Comments |
|---------------------|-----------|--------------------------|----------|
| Density | 8.86 g/cc | 0.320 lb/in ³ | |

| Mechanical Properties | Metric | English | Comments |
|----------------------------|----------------------------------|------------------------------------|------------|
| Tensile Strength, Ultimate | 805 MPa | 117000 psi | |
| | 570 MPa @Temperature 649 Å°C | 82700 psi @Temperature 1200 Å°F | |
| Elongation at Break | 38.6 % | 38.6 % | in 25.4 mm |
| | 26.5 % @Temperature 649 Å°C | 26.5 % @Temperature 1200 Å°F | in 25.4 mm |
| Modulus of Elasticity | 122 GPa @Temperature 1049 Å°C | 17700 ksi @Temperature 1920 Å°F | |
| | 136 GPa @Temperature 1000 Å°C | 19700 ksi @Temperature 1830 Å°F | |
| | 143 GPa @Temperature 954 Å°C | 20700 ksi @Temperature 1750 Å°F | |
| | 151 GPa @Temperature 904 Å°C | 21900 ksi @Temperature 1660 Å°F | |
| | 157 GPa @Temperature 854 Å°C | 22800 ksi @Temperature 1570 Å°F | |
| | 163 GPa | 23600 ksi | |

| Mechanical Properties | Metric @Temperature 800 Â°C | English @Temperature 1470 Â°F | Comments |
|-----------------------|--------------------------------|-------------------------------------|----------|
| | 171 GPa | 24800 ksi | |
| | @Temperature 700 Â°C | @Temperature 1290 Â°F | |
| | 181 GPa | 26300 ksi | |
| | @Temperature 577 Â°C | @Temperature 1070 Â°F | |
| | 181 GPa | 26300 ksi | |
| | @Temperature 632 Â°C | @Temperature 1170 Â°F | |
| | 187 GPa | 27100 ksi | |
| | @Temperature 500 Â°C | @Temperature 932 Â°F | |
| | 192 GPa | 27800 ksi | |
| | @Temperature 410 Â°C | @Temperature 770 Â°F | |
| | 202 GPa | 29300 ksi | |
| | @Temperature 221 Â°C | @Temperature 430 Â°F | |
| | 219 GPa | 31800 ksi | |
| | @Temperature 14.0 Â°C | @Temperature 57.2 Â°F | |

| Thermal Properties | Metric | English | Comments |
|--------------------|--------------------------------|---------------------------------|----------|
| CTE, linear | 12.3 Âµm/m-Â°C | 6.83 Âµin/in-Â°F | |
| | @Temperature 21.0 - 316 Â°C | @Temperature 69.8 - 601 Â°F | |
| | 12.7 Âµm/m-Â°C | 7.06 Âµin/in-Â°F | |
| | @Temperature 21.0 - 427 Â°C | @Temperature 69.8 - 801 Â°F | |
| | 13.4 Âµm/m-Â°C | 7.44 Âµin/in-Â°F | |
| | @Temperature 21.0 - 538 Â°C | @Temperature 69.8 - 1000 Â°F | |
| 14.0 Âµm/m-Â°C | @Temperature 21.0 - 649 Â°C | @Temperature 69.8 - 1200 Â°F | |
| | 14.7 Âµm/m-Â°C | 8.17 Âµin/in-Â°F | |
| | @Temperature 21.0 - 760 Â°C | @Temperature 69.8 - 1400 Â°F | |

| Thermal Properties | 15.3 Åµm/m-Å°C Metric | 8.50 Åµin/in-Å°F English | Comments |
|------------------------|-----------------------------|------------------------------|----------|
| | @Temperature 21.0 - 871 Å°C | @Temperature 69.8 - 1600 Å°F | |
| | 15.8 Åµm/m-Å°C | 8.78 Åµin/in-Å°F | |
| | @Temperature 21.0 - 982 Å°C | @Temperature 69.8 - 1800 Å°F | |
| Specific Heat Capacity | 0.419 J/g-Å°C | 0.100 BTU/lb-Å°F | |
| | @Temperature 100 Å°C | @Temperature 212 Å°F | |
| | 0.440 J/g-Å°C | 0.105 BTU/lb-Å°F | |
| | @Temperature 200 Å°C | @Temperature 392 Å°F | |
| | 0.456 J/g-Å°C | 0.109 BTU/lb-Å°F | |
| | @Temperature 300 Å°C | @Temperature 572 Å°F | |
| | 0.469 J/g-Å°C | 0.112 BTU/lb-Å°F | |
| | @Temperature 400 Å°C | @Temperature 752 Å°F | |
| | 0.477 J/g-Å°C | 0.114 BTU/lb-Å°F | |
| | @Temperature 480 Å°C | @Temperature 896 Å°F | |
| | 0.485 J/g-Å°C | 0.116 BTU/lb-Å°F | |
| | @Temperature 540 Å°C | @Temperature 1000 Å°F | |
| | 0.523 J/g-Å°C | 0.125 BTU/lb-Å°F | |
| | @Temperature 570 Å°C | @Temperature 1060 Å°F | |
| | 0.565 J/g-Å°C | 0.135 BTU/lb-Å°F | |
| | @Temperature 590 Å°C | @Temperature 1090 Å°F | |
| | 0.578 J/g-Å°C | 0.138 BTU/lb-Å°F | |
| | @Temperature 680 Å°C | @Temperature 1260 Å°F | |
| | 0.578 J/g-Å°C | 0.138 BTU/lb-Å°F | |
| | @Temperature 700 Å°C | @Temperature 1290 Å°F | |
| | 0.582 J/g-Å°C | 0.139 BTU/lb-Å°F | |
| | @Temperature 660 Å°C | @Temperature 1220 Å°F | |
| | 0.586 J/g-Å°C | 0.140 BTU/lb-Å°F | |

| Thermal Properties | @Temperature 620 Â°C Metric | @Temperature 1150 English | Comments |
|----------------------|------------------------------------|---|----------|
| Thermal Conductivity | 11.5 W/m-K | 79.8 BTU-in/hr-ftÂ²- Â°F | RT |
| | 13.1 W/m-K @Temperature 100 Â°C | 90.9 BTU-in/hr-ftÂ²- Â°F @Temperature 212 Â°F | |
| | 13.1 W/m-K @Temperature 200 Â°C | 90.9 BTU-in/hr-ftÂ²- Â°F @Temperature 392 Â°F | |
| | 14.4 W/m-K @Temperature 300 Â°C | 99.9 BTU-in/hr-ftÂ²- Â°F @Temperature 572 Â°F | |
| | 16.5 W/m-K @Temperature 400 Â°C | 115 BTU-in/hr-ftÂ²-Â°F @Temperature 752 Â°F | |
| | 18.0 W/m-K @Temperature 500 Â°C | 125 BTU-in/hr-ftÂ²-Â°F @Temperature 932 Â°F | |
| | 20.3 W/m-K @Temperature 600 Â°C | 141 BTU-in/hr-ftÂ²-Â°F @Temperature 1110 Â°F | |
| | 23.6 W/m-K @Temperature 700 Â°C | 164 BTU-in/hr-ftÂ²-Â°F @Temperature 1290 Â°F | |
| Melting Point | 1300 - 1400 Â°C | 2370 - 2550 Â°F | |
| Solidus | 1300 Â°C | 2370 Â°F | |
| Liquidus | 1400 Â°C | 2550 Â°F | |

| Component Elements Properties | Metric | English | Comments |
|-------------------------------|------------|------------|----------|
| Al + Ti | <= 0.50 % | <= 0.50 % | |
| Carbon, C | <= 0.080 % | <= 0.080 % | |
| Chromium, Cr | 7.0 % | 7.0 % | |
| Cobalt, Co | <= 0.20 % | <= 0.20 % | |
| Copper, Cu | <= 0.35 % | <= 0.35 % | |
| Iron, Fe | <= 5.0 % | <= 5.0 % | |

| Manganese Mn Component Elements Properties | ≤ 0.80 % Metric | ≤ 0.80 % English | Comments |
|---|-------------------------|--------------------------|----------|
| Molybdenum, Mo | 16 % | 16 % | |
| Nickel, Ni | 71 % | 71 % | |
| Silicon, Si | ≤ 1.0 % | ≤ 1.0 % | |
| Tungsten, W | ≤ 0.50 % | ≤ 0.50 % | |

| Electrical Properties | Metric | English | Comments |
|------------------------|---|---|----------|
| Electrical Resistivity | 0.000120 ohm-cm | 0.000120 ohm-cm | RT |
| | 0.000124 ohm-cm @Temperature 815 Â°C | 0.000124 ohm-cm @Temperature 1500 Â°F | |
| | 0.000126 ohm-cm @Temperature 705 Â°C | 0.000126 ohm-cm @Temperature 1300 Â°F | |

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