

Haynes Hastelloy® N, 1.14 mm sheet, heat treated at 1149°C (2100°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-114-mm-sheet-heat-treated-at-1149C-2100F.php

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

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	789 MPa	114000 psi	
	426 MPa	61800 psi	
	@Temperature 760 °C	@Temperature 1400 °F	
	482 MPa	69900 psi	
	@Temperature 704 °C	@Temperature 1300 °F	
	568 MPa	82400 psi	
	@Temperature 649 °C	@Temperature 1200 °F	
Tensile Strength, Yield	641 MPa	93000 psi	
	@Temperature 538 °C	@Temperature 1000 °F	
	641 MPa	93000 psi	
	@Temperature 593 °C	@Temperature 1100 °F	
	308 MPa	44700 psi	
	@Strain 0.200 %	@Strain 0.200 %	
Tensile Strength, Yield	181 MPa	26300 psi	
	@Strain 0.200 %, Temperature 760 °C	@Strain 0.200 %, Temperature 1400 °F	
	190 MPa	27600 psi	
@Strain 0.200 %, Temperature 649 °C	@Strain 0.200 %, Temperature 1200 °F		
Tensile Strength, Yield	193 MPa	28000 psi	
	@Strain 0.200 %, Temperature 704 °C	@Strain 0.200 %, Temperature 1300 °F	

Mechanical Properties	195 MPa Metric	28300 psi English	Comments
	@Strain 0.200 %, Temperature 538 °C	@Strain 0.200 %, Temperature 1000 °F	
	199 MPa	28900 psi	
	@Strain 0.200 %, Temperature 593 °C	@Strain 0.200 %, Temperature 1100 °F	
Elongation at Break	50 %	50 %	in 50.8 mm
	21 %	21 %	in 50.8 mm
	@Temperature 760 °C	@Temperature 1400 °F	
	24 %	24 %	in 50.8 mm
	@Temperature 704 °C	@Temperature 1300 °F	
	37 %	37 %	in 50.8 mm
	@Temperature 649 °C	@Temperature 1200 °F	
	46 %	46 %	in 50.8 mm
	@Temperature 538 °C	@Temperature 1000 °F	
	50 %	50 %	in 50.8 mm
	@Temperature 593 °C	@Temperature 1100 °F	
Modulus of Elasticity	122 GPa	17700 ksi	
	@Temperature 1049 °C	@Temperature 1920 °F	
	136 GPa	19700 ksi	
	@Temperature 1000 °C	@Temperature 1830 °F	
	143 GPa	20700 ksi	
	@Temperature 954 °C	@Temperature 1750 °F	
	151 GPa	21900 ksi	
	@Temperature 904 °C	@Temperature 1660 °F	
	157 GPa	22800 ksi	
	@Temperature 854 °C	@Temperature 1570 °F	
	163 GPa	23600 ksi	
	@Temperature 800 °C	@Temperature 1470 °F	
	171 GPa	24800 ksi	
	@Temperature 700 °C	@Temperature 1290 °F	
	181 GPa	26300 ksi	

Mechanical Properties	Metric	English	Comments
	@Temperature 577 °C	@Temperature 1070 °F	
	181 GPa	26300 ksi	
	@Temperature 632 °C	@Temperature 1170 °F	
	187 GPa	27100 ksi	
	@Temperature 500 °C	@Temperature 932 °F	
	192 GPa	27800 ksi	
	@Temperature 410 °C	@Temperature 770 °F	
	202 GPa	29300 ksi	
	@Temperature 221 °C	@Temperature 430 °F	
	219 GPa	31800 ksi	
	@Temperature 14.0 °C	@Temperature 57.2 °F	

Thermal Properties	Metric	English	Comments
CTE, linear	12.3 $\mu\text{m}/\text{m}\cdot\text{°C}$	6.83 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 21.0 - 316 °C	@Temperature 69.8 - 601 °F	
	12.7 $\mu\text{m}/\text{m}\cdot\text{°C}$	7.06 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 21.0 - 427 °C	@Temperature 69.8 - 801 °F	
	13.4 $\mu\text{m}/\text{m}\cdot\text{°C}$	7.44 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 21.0 - 538 °C	@Temperature 69.8 - 1000 °F	
	14.0 $\mu\text{m}/\text{m}\cdot\text{°C}$	7.78 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 21.0 - 649 °C	@Temperature 69.8 - 1200 °F	
Specific Heat Capacity	14.7 $\mu\text{m}/\text{m}\cdot\text{°C}$	8.17 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 21.0 - 760 °C	@Temperature 69.8 - 1400 °F	
	15.3 $\mu\text{m}/\text{m}\cdot\text{°C}$	8.50 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 21.0 - 871 °C	@Temperature 69.8 - 1600 °F	
	15.8 $\mu\text{m}/\text{m}\cdot\text{°C}$	8.78 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 21.0 - 982 °C	@Temperature 69.8 - 1800 °F	
	0.419 J/g-°C	0.100 BTU/lb-°F	

Thermal Properties	@Temperature 100 °C Metric	@Temperature 212 °F English	Comments
	0.440 J/g-°C	0.105 BTU/lb-°F	
	@Temperature 200 °C	@Temperature 392 °F	
	0.456 J/g-°C	0.109 BTU/lb-°F	
	@Temperature 300 °C	@Temperature 572 °F	
	0.469 J/g-°C	0.112 BTU/lb-°F	
	@Temperature 400 °C	@Temperature 752 °F	
	0.477 J/g-°C	0.114 BTU/lb-°F	
	@Temperature 480 °C	@Temperature 896 °F	
	0.485 J/g-°C	0.116 BTU/lb-°F	
	@Temperature 540 °C	@Temperature 1000 °F	
	0.523 J/g-°C	0.125 BTU/lb-°F	
	@Temperature 570 °C	@Temperature 1060 °F	
	0.565 J/g-°C	0.135 BTU/lb-°F	
	@Temperature 590 °C	@Temperature 1090 °F	
	0.578 J/g-°C	0.138 BTU/lb-°F	
	@Temperature 680 °C	@Temperature 1260 °F	
	0.578 J/g-°C	0.138 BTU/lb-°F	
	@Temperature 700 °C	@Temperature 1290 °F	
	0.582 J/g-°C	0.139 BTU/lb-°F	
	@Temperature 660 °C	@Temperature 1220 °F	
	0.586 J/g-°C	0.140 BTU/lb-°F	
	@Temperature 620 °C	@Temperature 1150 °F	
Thermal Conductivity	11.5 W/m-K	79.8 BTU-in/hr-ft ² -°F	RT
	13.1 W/m-K	90.9 BTU-in/hr-ft ² -°F	
	@Temperature 100 °C	@Temperature 212 °F	
	13.1 W/m-K	90.9 BTU-in/hr-ft ² -°F	
	@Temperature 200 °C	@Temperature 392 °F	
	14.4 W/m-K	99.9 BTU-in/hr-ft ² -°F	
	@Temperature 300 °C	@Temperature 572 °F	
	16.5 W/m-K	115 BTU-in/hr-ft ² -°F	

Thermal Properties	Metric	English	Comments
	@Temperature 400 °C	@Temperature 752 °F	
	18.0 W/m-K	125 BTU-in/hr-ft ² -°F	
	@Temperature 500 °C	@Temperature 932 °F	
	20.3 W/m-K	141 BTU-in/hr-ft ² -°F	
	@Temperature 600 °C	@Temperature 1110 °F	
	23.6 W/m-K	164 BTU-in/hr-ft ² -°F	
	@Temperature 700 °C	@Temperature 1290 °F	
Melting Point	1300 - 1400 °C	2370 - 2550 °F	
Solidus	1300 °C	2370 °F	
Liquidus	1400 °C	2550 °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 %	

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

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