

## Haynes Hastelloy® G-30® alloy, 12.7 mm (1/2 in.) thick plate

Category : Metal , Nonferrous Metal , Nickel Alloy , Superalloy

### Material Notes:

HASTELLOY® G-30® alloy is a high chromium nickel-base alloy which shows superior corrosion resistance in commercial phosphoric acids as well as many complex environments containing highly oxidizing acids such as nitric/hydrochloric, nitric/hydrofluoric and sulfuric acids. The resistance of G-30 alloy to the formation of grain boundary precipitates in the heat-affected zone makes it suitable for use in most chemical process applications in the as-welded condition. HASTELLOY G-30 alloy is available in the form of plate, sheet, strip, billet, bar, wire, covered electrodes, pipe and tubing. Typical Applications: Phosphoric Acid Service Sulfuric Acid Service Nitric Acid Service Nuclear Fuel Reprocessing Nuclear Waste Processing Pickling Operations Petrochemicals Fertilizer Manufacture Pesticide Manufacture Gold Ore Extraction Heat Treatment: The standard solution heat treatment consists of heating to 2150°F (1177°C) followed by rapid air-cooling or water quenching. Parts which have been hot formed should be solution heat-treated prior to final fabrication or installation. Forming: G-30 alloy has excellent forming characteristics and cold forming is the preferred method of forming. Because of its good ductility, it can be easily cold-worked. The alloy is generally stiffer than the austenitic stainless steels so more energy is required during cold forming. Data provided by the manufacturer, Haynes International, Inc.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Haynes-Hastelloy-G-30-alloy-127-mm-12-in-thick-plate.php](http://www.lookpolymers.com/polymer_Haynes-Hastelloy-G-30-alloy-127-mm-12-in-thick-plate.php)

Physical Properties	Metric	English	Comments
Density	8.22 g/cc	0.297 lb/in <sup>3</sup>	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	690 MPa	100000 psi	
Tensile Strength, Yield	317 MPa @Strain 0.200 %	46000 psi @Strain 0.200 %	
Elongation at Break	64 %	64 %	in 50.8 mm
Reduction of Area	77 %	77 %	
Modulus of Elasticity	202 GPa	29300 ksi	plate heat treated to 1177°C, rapid quenched
	184 GPa @Temperature 538 °C	26700 ksi @Temperature 1000 °F	plate heat treated to 1177°C and rapid quenched
	192 GPa @Temperature 427 °C	27800 ksi @Temperature 801 °F	plate heat treated to 1177°C and rapid quenched
	194 GPa @Temperature 316 °C	28100 ksi @Temperature 601 °F	plate heat treated to 1177°C and rapid quenched
	196 GPa	28400 ksi	

Mechanical Properties	Metric @ Temperature 204 °C	English @ Temperature 399 °F	Comments plate heat treated to 1177°C and rapidly quenched
Charpy Impact	353 J	260 ft-lb	mill annealed

Thermal Properties	Metric	English	Comments
CTE, linear	14.4 $\mu\text{m}/\text{m}\cdot\text{°C}$	8.00 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 30.0 - 316 °C	@Temperature 86.0 - 601 °F	
	14.9 $\mu\text{m}/\text{m}\cdot\text{°C}$	8.28 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 30.0 - 427 °C	@Temperature 86.0 - 801 °F	
	15.5 $\mu\text{m}/\text{m}\cdot\text{°C}$	8.61 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 30.0 - 538 °C	@Temperature 86.0 - 1000 °F	
	16.0 $\mu\text{m}/\text{m}\cdot\text{°C}$	8.89 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 30.0 - 760 °C	@Temperature 86.0 - 1400 °F	
	16.0 $\mu\text{m}/\text{m}\cdot\text{°C}$	8.89 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 30.0 - 649 °C	@Temperature 86.0 - 1200 °F	
Thermal Conductivity	10.2 W/m-K	70.8 BTU-in/hr-ft <sup>2</sup> -°F	
	@Temperature 24.0 °C	@Temperature 75.2 °F	
	11.9 W/m-K	82.6 BTU-in/hr-ft <sup>2</sup> -°F	
	@Temperature 100 °C	@Temperature 212 °F	
	14.4 W/m-K	99.9 BTU-in/hr-ft <sup>2</sup> -°F	
	@Temperature 200 °C	@Temperature 392 °F	
	16.7 W/m-K	116 BTU-in/hr-ft <sup>2</sup> -°F	
	@Temperature 300 °C	@Temperature 572 °F	
18.7 W/m-K	130 BTU-in/hr-ft <sup>2</sup> -°F		
@Temperature 400 °C	@Temperature 752 °F		
20.3 W/m-K	141 BTU-in/hr-ft <sup>2</sup> -°F		
@Temperature 500 °C	@Temperature 932 °F		
21.4 W/m-K	149 BTU-in/hr-ft <sup>2</sup> -°F		
@Temperature 600 °C	@Temperature 1110 °F		

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.030 %	<= 0.030 %	
Chromium, Cr	28 - 31.5 %	28 - 31.5 %	
Cobalt, Co	<= 5.0 %	<= 5.0 %	
Copper, Cu	1.0 - 2.4 %	1.0 - 2.4 %	
Iron, Fe	13 - 17 %	13 - 17 %	
Manganese, Mn	<= 1.5 %	<= 1.5 %	
Molybdenum, Mo	4.0 - 6.0 %	4.0 - 6.0 %	
Nb + Ta	0.30 - 1.5 %	0.30 - 1.5 %	
Nickel, Ni	43 %	43 %	As Remainder
Phosphorous, P	<= 0.040 %	<= 0.040 %	
Silicon, Si	0.80 %	0.80 %	
Sulfur, S	<= 0.020 %	<= 0.020 %	
Tungsten, W	1.5 - 4.0 %	1.5 - 4.0 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.000116 ohm-cm	0.000116 ohm-cm	
	@Temperature 24.0 °C	@Temperature 75.2 °F	
	0.000117 ohm-cm	0.000117 ohm-cm	
	@Temperature 100 °C	@Temperature 212 °F	
	0.000119 ohm-cm	0.000119 ohm-cm	
	@Temperature 200 °C	@Temperature 392 °F	
	0.000119 ohm-cm	0.000119 ohm-cm	
	@Temperature 300 °C	@Temperature 572 °F	
0.000123 ohm-cm	@Temperature 400 °C	@Temperature 752 °F	
	0.000124 ohm-cm	0.000124 ohm-cm	
@Temperature 500 °C	@Temperature 932 °F		
0.000125 ohm-cm	0.000125 ohm-cm		
@Temperature 600 °C	@Temperature 1110 °F		

Electrical Properties

Metric

English

Comments

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