Haynes Hastelloy® G-30® alloy, 0.71 mm thick sheet

Categories: 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.

HASTELLY 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.

Key Words: ASME SB622, ASME SB626, ASME SB366, UNS N06030, ASME SB581, ASME SB582, ASME SB619

Vendors: **Click here to view all available suppliers for this material.**

Please click here if you are a supplier and would like information on how to add your listing to this material.

Physical Properties	Metric	English	Comments
Density	8.22 g/cc	0.297 lb/in³	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	690 MPa	100000 psi	
Tensile Strength, Yield	324 MPa @Strain 0.200 %	47000 psi @Strain 0.200 %	
Elongation at Break	56 %	56 %	in 50.8 mm
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 @Temperature 204 °C	28400 ksi @Temperature 399 °F	plate heat treated to 1177°C and rapid quenched
Charpy Impact	353 J	260 ft-lb	mill annealed

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

Thermal Properties	Metric	English	Comments
CTE, linear	14.4 µm/m-°C	8.00 µin/in-°F	

	@Temperature 30.0 - 316 °C	@Temperature 86.0 - 601 °F
	14.9 µm/m-°C @Temperature 30.0 - 427 °C	8.28 µin/in-°F @Temperature 86.0 - 801 °F
	15.5 µm/m-°C @Temperature 30.0 - 538 °C	8.61 µin/in-°F @Temperature 86.0 - 1000 °F
	16.0 µm/m-°C @Temperature 30.0 - 760 °C	8.89 µin/in-°F @Temperature 86.0 - 1400 °F
	16.0 µm/m-°C @Temperature 30.0 - 649 °C	8.89 µin/in-°F @Temperature 86.0 - 1200 °F
Thermal Conductivity	10.2 W/m-K @Temperature 24.0 °C	70.8 BTU-in/hr-ft²-°F @Temperature 75.2 °F
	11.9 W/m-K @Temperature 100 °C	82.6 BTU-in/hr-ft²-°F @Temperature 212 °F
	14.4 W/m-K @Temperature 200 °C	99.9 BTU-in/hr-ft²-°F @Temperature 392 °F
	16.7 W/m-K @Temperature 300 °C	116 BTU-in/hr-ft²-°F @Temperature 572 °F
	18.7 W/m-K @Temperature 400 °C	130 BTU-in/hr-ft²-°F @Temperature 752 °F
	20.3 W/m-K @Temperature 500 °C	141 BTU-in/hr-ft²-°F @Temperature 932 °F
	21.4 W/m-K @Temperature 600 °C	149 BTU-in/hr-ft²-°F @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 %	