

Special Metals INCOLOY® 25-6HN Super-Austenitic Stainless Steel

Category : Metal , Ferrous Metal , Austenitic , Stainless Steel

Material Notes:

INCOLOY alloy 25-6HN is a super-austenitic stainless steel containing 6% molybdenum and with properties enhanced by its content of nitrogen. Its high content of nickel results in thermal stability and resistance to stress corrosion cracking. Designated as UNS N08367, alloy 25-6HN directly competes with alloy AL6XN®. The same ASTM, ASME, and NACE specifications cover the alloys. Alloy 25-6HN is a new addition to special Metals existing line of high performance, super-austenitic stainless steels, INCOLOY alloys 25-6MO and 27-7MO. Alloy 25-6HN offers significantly improved strength and corrosion resistance in most environments over conventional austenitic stainless steels such as AISI 304 or 316L. Typical applications include welded tubes for heat exchangers for chemical processing and marine applications and for desalination systems, flue gas desulfurization equipment for coal-fired power plants, and reaction vessels for pharmaceutical production. Information Provided by Special Metals Corporation

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http://www.lookpolymers.com/polymer_Special-Metals-INCOLOY-25-6HN-Super-Austenitic-Stainless-Steel.php

Physical Properties	Metric	English	Comments
Density	8.02 g/cc	0.290 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell B	90	90	Plate
Tensile Strength, Ultimate	552 MPa	80000 psi	
	@Temperature 538 °C	@Temperature 1000 °F	
	579 MPa	84000 psi	
	@Temperature 427 °C	@Temperature 800 °F	
	593 MPa	86000 psi	
	@Temperature 260 °C	@Temperature 500 °F	
	600 MPa	87000 psi	
	@Temperature 316 °C	@Temperature 600 °F	
Tensile Strength, Yield	614 MPa	89000 psi	
	@Temperature 204 °C	@Temperature 400 °F	
Tensile Strength, 0.2% Offset	641 MPa	93000 psi	
	@Temperature 149 °C	@Temperature 300 °F	
Tensile Strength, Proof	738 MPa	107000 psi	Plate
	@Temperature 21.1 °C	@Temperature 70.0 °F	

Mechanical Properties Tensile Strength, Yield	Metric 276 MPa	English 40000 psi	Comments
	@Temperature 427 Â°C	@Temperature 800 Â°F	
	296 MPa	43000 psi	
	@Temperature 538 Â°C	@Temperature 1000 Â°F	
	296 MPa	43000 psi	
	@Temperature 316 Â°C	@Temperature 600 Â°F	
	317 MPa	46000 psi	
	@Temperature 204 Â°C	@Temperature 400 Â°F	
	317 MPa	46000 psi	
	@Temperature 260 Â°C	@Temperature 500 Â°F	
	338 MPa	49000 psi	
	@Temperature 149 Â°C	@Temperature 300 Â°F	
	379 MPa	55000 psi	
	@Strain 2.00 %, Temperature 21.1 Â°C	@Strain 2.00 %, Temperature 70.0 Â°F	
Elongation at Break	45 %	45 %	
	@Temperature 217 Â°C	@Temperature 423 Â°F	
	46 %	46 %	
	@Temperature 316 Â°C	@Temperature 601 Â°F	
	47 %	47 %	
	@Temperature 149 Â°C	@Temperature 300 Â°F	
	47 %	47 %	
	@Temperature 204 Â°C	@Temperature 399 Â°F	
	47 %	47 %	
	@Temperature 260 Â°C	@Temperature 500 Â°F	
	48 %	48 %	Plate
	@Temperature 20.0 Â°C	@Temperature 68.0 Â°F	
	48 %	48 %	
	@Temperature 538 Â°C	@Temperature 1000 Â°F	

Thermal Properties	Metric	English	Comments
CTE, linear	15.3 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	8.49 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 100 $\text{Å}^\circ\text{C}$	@Temperature 212 $\text{Å}^\circ\text{F}$	
	15.59 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	8.661 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 100 $\text{Å}^\circ\text{C}$	@Temperature 212 $\text{Å}^\circ\text{F}$	
	15.98 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	8.878 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
@Temperature 300 $\text{Å}^\circ\text{C}$	@Temperature 572 $\text{Å}^\circ\text{F}$		
16.45 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	9.139 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$		
@Temperature 500 $\text{Å}^\circ\text{C}$	@Temperature 932 $\text{Å}^\circ\text{F}$		
17.35 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	9.639 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$		
@Temperature 700 $\text{Å}^\circ\text{C}$	@Temperature 1290 $\text{Å}^\circ\text{F}$		
Melting Point	1350 - 1400 $\text{Å}^\circ\text{C}$	2470 - 2560 $\text{Å}^\circ\text{F}$	
Solidus	1350 $\text{Å}^\circ\text{C}$	2470 $\text{Å}^\circ\text{F}$	
Liquidus	1400 $\text{Å}^\circ\text{C}$	2560 $\text{Å}^\circ\text{F}$	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.010 %	0.010 %	
Chromium, Cr	20.6 %	20.6 %	
Copper, Cu	0.25 %	0.25 %	
Iron, Fe	41.309 %	41.309 %	Balance
Manganese, Mn	0.40 %	0.40 %	
Molybdenum, Mo	6.3 %	6.3 %	
Nickel, Ni	24.3 %	24.3 %	
Nitrogen, N	0.21 %	0.21 %	
Phosphorous, P	0.020 %	0.020 %	
Silicon, Si	0.30 %	0.30 %	
Sulfur, S	0.0010 %	0.0010 %	

Electrical Properties	Metric	English	Comments
	1.003	1.003	

Electrical Properties	Metric	English	Comments
	@ Temperature 20.0 Â°C	@ Temperature 68.0 Â°F	

Descriptive Properties	Value	Comments
Crevice Corrosion Temperature (Â°C)	35	per G48-D
	50	in Green Death; Duration is 24 hours
Critical Pitting Temperature (Â°C)	55	Filler Metal: INCONEL 625; Welded Sample
	60	Filler Metal: INCONEL 686; Welded Sample
	70	in Green Death; Duration is 72 hours
	75	per G48-C
Depth of Cut (in)	0.15	High Speed Steel Machining
	0.15	Carbide Machining
Feed (in/rev)	0.005	High Speed Steel Drilling
	0.018	High Speed Steel Machining
	0.018	Carbide Machining
Pitting Resistance Equivalent Number	48.3	
Speed (SFPM)	25	High Speed Steel Machining
	25	High Speed Steel Drilling
	350	Carbide Machining

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