

HM Wire International, Inc.

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Alloy 400 - Nickel Alloy

Description: Alloy 400 is a ductile nickel-copper alloy with resistance to a variety of corrosive conditions. The alloy has a history of use as a corrosion resistant material, dating back to the early 20th century when it was developed as an attempt to use a high copper content nickel ore.

Applications: Nickel Alloy 400 is used for Marine and chemical processing equipment, Valves, pumps, propeller shafts, Marine fixtures and fasteners, Gasoline and fresh water tanks, Heat exchangers and Process vessels and piping.

Nominal Composition:	C%	Mn%	P%	S%	Si%	Al%	Cu%
	0.10	0.50	0.005	0.005	0.25	0.02	32.0
	Fe%	Ni% + Co%		*By difference - For material furnished to QQ-N-281, lead, tin and zinc are each typically <0.003.			
	1.0	Balance*					

Physical Properties

Specific Gravity	8.83
Density	0.319 lb/cu in
Mean Specific Heat	0.10 Btu/lb/°F
Electrical Resistivity - 70°F	51.0 Mircohm - cm

Linear Coefficient of Thermal Expansion

Average From 70°F (21°C) to °F(°C)		10 ⁻⁶ / °F	10 ⁻⁶ / °F
200	(93)	7.7	13.9
400	(204)	8.6	15.5
600	(316)	8.8	15.8
800	(427)	8.9	16.0
1000	(538)	9.1	16.4

Mechanical Properties

Elastic Modules		Ultimate Tensile Strength		Yield Strength		% Elongation in 2"	Annealed Condition
psi	Mpa	psi	Mpa	psi	Mpa		
26 x 10 ⁶	180	75,000	520	35,000	240	45	
Elastic Modules		Ultimate Tensile Strength		Yield Strength		% Elongation in 2"	Hot Rolled Condition
psi	Mpa	psi	Mpa	psi	Mpa		
26 x 10 ⁶	180	80,000	550	45,000	310	30	

*To be used as a guideline only.

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