HSM Wire International, Inc

Ph: 330-244-8501 Fax: 330-244-8561

www.hsmwire.com

REQUEST A QUOTATION

Alloy 410 Stainless Steel

Description: Alloy 410 is a hardenable, straight-chromium stainless steel which combines the superior wear resistance of high carbon alloys with the excellent corrosion resistance of chromium stainless steels. Oil quenching this alloy from temperatures between 1800°F to 1950°F (982-1066°C) produces the highest strength and/or wear resistance as well as corrosion resistance. A range of as-quenched hardnesses is achieved by varying the carbon level from .15% maximum in Alloy 410.

Applications: Includes dental and surgical instruments, nozzles, valve parts, hardened steel balls and seats for oil well pumps, separating screens and strainers, springs, shears, and wear surfaces.

Nominal Composition:	C	Mn	Si	Cr	Ni	S	P
	0.15 max	1.00 max	1.00 max	11.5 - 13.5	0.50 max	0.03 max	0.04 max

Mechanical Properties (Annealed)

HRB	0.2% offset Yield Strength	Tensile Strength	Elongation % in 2"	HRC
82	42 Ksi / 290 MPa	74 Ksi / 510 MPa	34	38 - 45

Heat Treatment	410 (0.14%C) Hardened 1800°F (982°C)		
	Rockwell Hardness	0.2% offset Yield Strength	Ultimate Yield Strength
Annealed	**81 HRB**	**45.4 Ksi / 313 MPa**	**80.4 Ksi / 554 MPa**
Hardened & Tempered 400°F (204°C)	43 HRC	156.1 Ksi / 1076 MPa	202.9 Ksi / 1399 Mpa
Hardened & Tempered 550°F (288°C)	40 HRC	148.3 Ksi / 1022 Mpa	187.0 Ksi / 1289 Mpa
Hardened & Tempered 600°F (316°C)	40 HRC	148.8 Ksi / 1026 Mpa	186.1 Ksi / 1283 Mpa
Hardened & Tempered 800°F (427°C)	41 HRC	132.9 Ksi / 916 Mpa	188.5 Ksi / 1300 Mpa
Hardened & Tempered 900°F (482°C)	41 HRC	122.6 Ksi / 845 Mpa	188.3 Ksi / 1298 Mpa

*To be used as a guideline only.

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Heat Treatment	410 (0.14%C) Hardened 1800°F (982°C)		
	Rockwell Hardness	0.2% offset Yield Strength	Ultimate Yield Strength
Hardened & Tempered 1000°F (538°C)	35 HRC	127.9 Ksi / 882 Mpa	154.3 Ksi / 1063 Mpa
Hardened & Tempered 1200°F (649°C)	98 HRB	85.5 Ksi / 589 Mpa	111.2 Ksi / 767 Mpa

Physical Properties (Annealed)		
Modulus of elasticity in tension	29 x 10 psi	200 GPa
Specific Gravity	7.65	
Density	0.276 Lbs/cu in	
Specific Heat	0.11 Btu/lb. Σ °F	
Thermal Conductivity at 212°F	14.4 Btu/(hr Σ ft Σ °F) / 24.9 W/m Σ K	
Electrical Resistivity	56 Microhm-cm 68°F (20°C)	
Melting Range	2700 - 2790°F / 1482 - 1532°C	
Coefficient of Thermal Expansion		
68 - 392°F	5.9 x 10 in/in/°F	
20 - 200°C	10.5 x 10 cm/cm/°C	
68 - 1112°F	6.5 x 10 in/in/°F	
20 - 600°C	11.6 x 10 cm/cm/°C	

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