

Alloy 410

A martensitic chromium stainless steel, Alloy 410 is one of the most widely used hardenable grades.

Heat treated 410 has mechanical properties comparable to alloy steel 4130, coupled with the additional benefit of good corrosion resistance.

PRODUCT FORMS

PRODUCT FORM	SIZE RANGE FROM	SIZE RANGE TO
Alloy 410 sheet & plate	0.5 mm	152.4 mm

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CHEMICAL ANALYSIS

%	CR	MN	NI	C	SI	P	S	FE
Min	11.5	-	-	0.08	-	-	-	-
Max	13.5	1	0.75	0.15	1	0.04	0.03	Balance

APPLICATIONS

- Press plates
- Petrochemical equipment
- Valves and pumps
- Mechanical seals
- Mining machinery
- Distillation trays
- Packed columns

ABOUT ALLOY 410

410 stainless steel is a martensitic stainless steel grade which is routinely supplied in a hardened condition. The alloy is specified where high strength and moderate heat and corrosion resistance are required. Alloy 410S stainless steel is a low carbon modification of 410 stainless. Low carbon and a small addition of titanium and or niobium minimise austenite formation at high temperatures. This restricts the alloy ability's to harden. NeoNickel stocks and supplies both 410 and 410S grades. The material remains soft and ductile even when it is rapidly cooled. This low hardening characteristic helps to prevent cracking when the steel is welded or exposed to high temperatures. The alloy is fully ferritic in anneal condition. 410S is ferro-magnetic.

PROPERTIES

Density:	7.64 g/cm ³
Melting point:	1495°C
Electrical resistivity:	5.7x10 ⁻⁷ Ωm

MECHANICAL & PHYSICAL PROPERTIES

MECHANICAL & PHYSICAL PROPERTIES	21°C	100°C	500°C	649°C	788°C
Coefficient of Thermal Expansion, $\mu\text{m}/\text{m}^\circ\text{C}$	-	9.8	11.2	11.7	11.9
Thermal Conductivity/ $\text{kcal}/(\text{hr.m.}^\circ\text{C})$	-	21.4	24.7	-	-
Modulus of Elasticity/ $\times 10^5 \text{ MPa}$	2	-	-	-	-

TENSILE PROPERTIES, TYPICAL ANNEALED CONDITION

TENSILE STRENGTH, KSI	60-75
0.2% Yield Strength, ksi	32-42
Elongation, %	20-40
Reduction of Area, %	50-75

HEAT TREATED CONDITION - 1" ROUND BAR

TEMPERING TEMPERATURE, °C	-	149°C	260°C	371°C	566°C	621°C	649°C	704°C	760°C	816°C
Tensile Strength, ksi	193.5	188.5	181.6	181.4	124.1	117.5	113	101.8	96.5	131.8
0.2% Yield Strength	149.8	148.6	143.6	144.7	110.3	103.7	99.1	84.2	77.9	88.6
Elongation, %	17	17.3	16.8	16	20.8	21.3	22	23.5	25	19.5
Reduction of Area, %	56.8	59.7	61.1	61.1	67.2	66.1	66.5	68.8	69.9	59.6
Hardness, Brinell	388	388	361	361	255	235	229	207	189	257

SPECIFICATIONS

UNS Number: UNS S41000 (410) / UNS S41008 (410S)

Werkstoff Number: 1.4006 (410) / 1.4000 (410S)

Standards: ASTM A240