



800-722-5029
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410S Stainless Steel

DESCRIPTION

410S Stainless Steel is a non-hardening modification of Type 410. Control of the chemistry balance (low carbon and optional additions of Ti or Nb) minimizes austenite formation at high temperatures, restricting the alloy's ability to harden. The material remains soft and ductile even when the material is rapidly cooled from above the critical temperature. This low hardening characteristic helps to prevent cracking when the steel is welded or exposed to high temperatures. The alloy is ferritic in the annealed condition and ferromagnetic.

PRODUCT FORMS

Sheet, Strip

SPECIFICATIONS

ASTM A240

TYPICAL APPLICATIONS

Because 410S cools from elevated temperatures without hardening, it is particularly useful for annealing boxes, quenching racks, oxidation resistant partitions and other high-temperature units. It also is used in the petrochemical industry for tower packing and distillation trays.

PROCESSING

410S is not hardenable by heat treatment. It is annealed in the 1600 – 1650°F (871 – 899°C) range and then air cooled, mainly to relieve cold working strains.

FORMING

410S Stainless Steel can be easily formed by drawing, spinning, bending and roll forming.

WELDING

410S is generally considered to be weldable by the common fusion and resistance techniques. Special consideration is required to avoid brittle weld fracture. When a weld filler is required, AWS E/ER 309L or 430 filler material is most often specified.

CORROSION

Type 410S provides adequate resistance to atmospheric corrosion, fresh water, mild acids and alkalies, and some other chemicals.



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CHEMICAL COMPOSITION

Element	Type 410S
Carbon	0.08 max.
Manganese	1.00 max.
Sulfur	0.030 max.
Phosphorus	0.040 max.
Silicon	1.00 max.
Chromium	11.5 - 13.5
Nickel	0.60 max.

MECHANICAL PROPERTIES: ASTM A240

Type	Yield Strength 0.2% offset (KSI)	Tensile Strength (KSI)	% Elongation (2" Gauge Length)
410S Ann	30 min.	60 min.	22 min.



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PHYSICAL PROPERTIES

Density (lb./in ³) @ RT		0.28
Modulus of Elasticity in Tension (psi x 10 ⁶)		29.0
Specific Heat (BTU/o F/lb.)	32 to 212 oF	0.11
Thermal Conductivity (BTU/hr/ft ² /ft)	212 oF	15.6
Mean Coefficient of Thermal Expansion (in. x 10 ⁻⁶ per oF)	32 to 212 oF	6.0
	32 to 600 oF	6.4
	32 to 1,000 oF	6.7
	32 to 1,200 oF	7.5
Electrical Resistivity (micro ohms - cm)	at 70 oF	23.7
Melting Point Range (oF)		2700-2790
Oxidation Resistance - Continuous Service (oF)		1300