

# 410 STAINLESS STEEL

UNS S41000



AK Steel Type 410 is a martensitic stainless steel that provides good corrosion resistance plus high strength and hardness. It is magnetic in both the annealed and hardened conditions. A wide range of properties can be developed with different heat treatments.

Applications requiring moderate corrosion resistance and high mechanical properties are ideal for this alloy. Typical uses include flat springs, knives, kitchen utensils and hand tools.

## COMPOSITION

	%
Carbon	0.15 max.
Manganese	1.00 max.
Phosphorus	0.040 max.
Sulfur	0.030 max.
Silicon	1.00 max.
Chromium	11.50 - 13.50

## AVAILABLE FORMS

AK Steel produces Type 410 Stainless Steel in coils and cut lengths in thicknesses 0.010" to 0.145" (0.25 mm to 3.68 mm) and widths up to and including 26" (660 mm).

## SPECIFICATIONS

AK Steel Type 410 Stainless Steel sheet and strip is covered by the following specifications:

AMS 5504  
ASTM A 240

## MECHANICAL PROPERTIES

Typical Annealed Mechanical Properties

UTS ksi (MPa)	0.2% YS ksi (MPa)	Elongation % in 2" (50.8 mm)	Hardness Rockwell
75 (517)	45 (310)	25	B80

## Fatigue Strength\*

Test Temperature °F (°C)	Endurance Limit ksi (MPa) - 10 <sup>7</sup> cycles
70 (21)	58.0 (400)
700 (371)	49.0 (338)
850 (454)	43.5 (296)
1000 (538)	27.0 (186)

\*Heat treated to 110 ksi (758 MPa) YS.

## PHYSICAL PROPERTIES

Density, 0.28 lbs/in<sup>3</sup>  
7.74 g/cm<sup>3</sup>

Electrical Resistivity, microhm-in  
(microhm-cm) 70°F (21°C) – 22.50 (57)

Specific Heat, BTU/lb/°F (kJ/kg•K)  
32 - 212°F (0 - 100°C) – 0.11 (0.46)

Thermal Conductivity, BTU/hr/ft<sup>2</sup>/ft/°F  
(W/m•K)  
at 212°F (100°C) – 14.4 (24.9)  
at 932°F (500°C) – 16.6 (28.7)

Coefficient of Thermal Expansion,  
in/in/°F (µm/m•K)  
32 - 212°F (0 - 100°C) – 5.5 x 10<sup>-6</sup> (9.9)  
32 - 1200°F (0 - 649°C) – 6.5 x 10<sup>-6</sup> (11.6)

Modulus of Elasticity, ksi (MPa)  
29 x 10<sup>3</sup> (200 x 10<sup>3</sup>)

## CORROSION RESISTANCE

AK Steel Type 410 provides good corrosion resistance to air, water and some chemicals. It shows satisfactory resistance to nitric acid, concentrated sulfuric acid, dilute acetic acid and naphtha. Resistance to food acids is good.

