

430 STAINLESS STEEL

UNS S43000



AK Steel Type 430 is one of the most widely used of the “non-hardenable” ferritic stainless steels. It combines good corrosion resistance and heat and oxidation resistance up to 1500°F (816°C) with good mechanical properties.

Typical consumer product applications include automotive trim and molding, furnace combustion chambers, dishwashers, range hoods, gas burners on heating units, gutters and downspouts, steam iron bases and flatware. Industrial and commercial applications range from interior architectural applications to nitric acid plant equipment, oil refinery equipment, roofing and siding and restaurant equipment.

COMPOSITION

	%
Carbon	0.12 max.
Manganese	1.00 max.
Phosphorus	0.040 max.
Sulfur	0.030 max.
Silicon	1.00 max.
Chromium	16.0 - 18.0
Nickel	0.50 max.

AVAILABLE FORMS

AK Steel produces Type 430 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 48" (1219 mm).

SPECIFICATIONS

AK Steel Type 430 Stainless Steel sheet and strip is covered by the following specifications:

AMS 5503
ASTM A 240

MECHANICAL PROPERTIES

Typical Mechanical Properties

UTS ksi (MPa)	0.2% YS ksi (MPa)	Elongation % in 2" (50.8 mm)	Hardness Rockwell
70 (483)	45 (310)	25	B85

PHYSICAL PROPERTIES

Density, 0.28 lbs/in³
7.74 g/cm³

Electrical Resistivity, microhm-in
(microhm-cm) 70°F (21°C) – 23.68 (60)

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

Thermal Conductivity, BTU/hr/ft²/ft/°F
(W/m•K)
at 212°F (100°C) – 15.1 (26.1)
at 932°F (500°C) – 15.2 (26.3)

Coefficient of Thermal Expansion,
in/in/°F (µm/m•K)
32 - 212°F (0 - 100°C) – 5.8 x 10⁻⁶ (10.4)
32 - 1000°F (0 - 538°C) – 6.3 x 10⁻⁶ (11.4)

Modulus of Elasticity, ksi (MPa)
29 x 10³ (200 x 10³)

HEAT TREATMENTS

Anneal: Heat to 1400 - 1525°F (760 - 829°C), air cool or water quench.

CORROSION AND OXIDATION RESISTANCE

AK Steel Type 430 has excellent corrosion resistance, including high resistance to nitric acid as well as to sulfur gases and many organic and food acids. This alloy does not provide the resistance to pitting by dilute reducing acids that is provided by the chromium-nickel stainless steels.

Because of its relatively high chromium content, the material provides good resistance to oxidation. Its maximum scaling temperature is 1500°F (816°C) for continuous service.

WELDABILITY

The ferritic class of stainless steels is generally considered to be weldable by the common fusion and resistance techniques. Special consideration is required to avoid brittle weld fractures during fabrication by minimizing discontinuities, maintaining low weld heat input, and occasionally warming the part somewhat before forming. This particular alloy is generally considered to have poorer weldability than the most common alloy of the stainless class, Type 409. Major differences are the higher carbon content and the lack of stabilizing elements for this alloy which require post weld annealing to restore optimum corrosion and

forming characteristics. When a weld filler is needed, AWS E/ER 308L and 430 are most often specified. Type 430 is well known in reference literature and more information can be obtained in this way.

FORMABILITY

Type 430 is readily drawn and formed. Its drawing characteristics are similar to those of low-carbon steel, although it is stronger in the annealed condition and will require stronger tooling and increased power. It is also adaptable to most hot-forming operations.

METRIC CONVERSION

Data in this publication are presented in U.S. customary units. Approximate metric equivalents may be obtained by performing the following calculations:

Length (inches to millimeters) –
Multiply by 25.4

Strength (ksi to megapascals or
mega-newtons per square meter) –
Multiply by 6.8948

Temperature (Fahrenheit to Celsius) –
(°Fahrenheit - 32) Multiply by 0.5556

Density (pounds per cubic inch to
kilograms per cubic meter) – Multiply
by 27,670

The information and data in this product data sheet are accurate to the best of our knowledge and belief, but are intended for general information only. Applications suggested for the materials are described only to help readers make their own evaluations and decisions, and are neither guarantees nor to be construed as express or implied warranties of suitability for these or other applications.

Data referring to mechanical properties and chemical analyses are the result of tests performed on specimens obtained from specific locations with prescribed sampling procedures; any warranty thereof is limited to the values obtained at such locations and by such procedures. There is no warranty with respect to values of the materials at other locations.

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