



430

STAINLESS STEEL

DATA SHEET



Moderate to Good Corrosion Resistance

Formable

Minimal Hardening When Heated

Oxidation resistance equivalent to Type 409 and superior corrosion resistance under atmospheric conditions make Type 430 a good upgrade. Type 430 is ductile with a low work hardening rate making it a good choice for many formed applications.

Typical consumer product applications include automotive trim and molding, furnace combustion chambers, dishwashers, range hoods, gas burners on heating units, gutters and downspouts 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.

PRODUCT DESCRIPTION

AK Steel Type 430 is one of the most widely used of the “non-hardenable” ferritic stainless steels. With nominal 16% chromium it combines good corrosion resistance and heat and oxidation resistance up to 1500 °F (816 °C) with good mechanical properties. Type 430 is a non-stabilized stainless steel and as such is not suitable for all welded applications.

SPECIFICATIONS

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

AMS 5503

ASTM A240

AVAILABLE FORMS

AK Steel produces Type 430 Stainless Steel in coils and cut lengths in thicknesses 0.010 – 0.145 in. (0.25 – 3.68 mm) and widths up to and including 48 in. (1219 mm).

Values shown in this bulletin were established in U.S. customary units. The metric equivalents may be approximate.

COMPOSITION		(wt %)
Carbon	(C)	0.12 max.
Manganese	(Mn)	1.00 max.
Phosphorus	(P)	0.04 max.
Sulfur	(S)	0.03 max.
Silicon	(Si)	1.00 max.
Chromium	(Cr)	16.0 – 18.0
Nickel	(Ni)	0.75 max.

PHYSICAL PROPERTIES

Density, lbs./in. ³ (g/cm ³)	0.28 (7.74)
Electrical Resistivity, μΩ·in. (μΩ·cm) 70 °F (21 °C)	23.68 (60)
Specific Heat, BTU/lbs./°F (kJ/kg/K) 32 – 212 °F (0 – 100 °C)	0.11 (0.46)
Thermal Conductivity, BTU/hr./ft ² /ft./°F (W/m/K)	212 °F (100 °C) 15.1 (26.1) 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 10 ³ (200 x 10 ³)

PROPERTIES

TABLE 1 – TYPICAL MECHANICAL PROPERTIES

UTS ksi. (MPa)	0.2% YS ksi. (MPa)	Elongation % in 2" (50.8 mm)	Rockwell Hardness
70 (483)	45 (310)	28	B78

CORROSION 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.

HEAT TREATMENTS

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

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.

