P R O D U C T D A T A S H E E T

444 STAINLESS STEEL

UNS S44400

AK Steel

AK Steel Type 444 is a low-carbon, low nitrogen, ferritic stainless steel that provides pitting and crevice corrosion resistance superior to most ferritic stainless steels.

Applications requiring superior corrosion resistance and resistance to chloride stress corrosion cracking are ideal for this alloy. Current uses include food processing, brewery and wine-making equipment; hot-water tanks and heat-exchanger tubing and automotive components.

COMPOSITION

	%
Carbon	0.025 max.
Manganese	1.00 max.
Phosphorus	0.040 max.
Sulfur	0.030 max.
Silicon	1.00 max.
Nitrogen	0.035 max.
Chromium	17.50 - 19.50
Nickel	1.00 max.
Molybdenum	1.75 - 2.50
Titanium + Columbium 0.20+4 x(C+N) min.–0.80 max.	

AVAILABLE FORMS

AK Steel produces Type 444 Stainless Steel in coils and cut lengths in thicknesses 0.010" to 0.090" (0.25 mm to 2.29 mm) and widths up to and including 48" (1219 mm).

SPECIFICATIONS

AK Steel Type 444 Stainless Steel sheet and strip is covered by the following specifications:

ASTM A 268
ASTM A 240

MECHANICAL PROPERTIES

Typical Mechanical Properties

UTS ksi (MPa)	0.2% YS ksi (MPa)	Elongation % in 2" (50.8 mm)	Hardness Rockwell
75 (515)	52 (360)	27	B85

Properties Acceptable for Material Specification

UTS ksi (MPa)	0.2% YS ksi (MPa)	Elongation % in 2" (50.8 mm)	Hardness Rockwell
60 (414) min.	40 (276) min.	20 min.	B90 max.

PHYSICAL PROPERTIES

Density, 0.28 lbs/in^3
7.75 g/cm^3

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) – 0.102 (0.427)

Thermal Conductivity, BTU/hr/ft^2/ft/°F (W/m•K)
at 212°F (100°C) – 15.5 (26.8)

Coefficient of Thermal Expansion, in/in/°F (µm/m•K)
32 - 212°F (0 - 100°C) – 6.1 x 10^{-6} (11.0)

AK STEEL 444 STAINLESS STEEL DATA SHEET

CORROSION RESISTANCE

AK Steel Type 444 provides excellent corrosion resistance in moderately severe environments of many types that include chlorides and organic acids found in foods and beverages. It also provides satisfactory resistance to dilute sulfuric acid solutions and to highly concentrated sodium hydroxide.

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. A major difference is the higher chromium plus molybdenum and columbium additions for this alloy which requires even greater care to avoid brittle weld fractures during forming in cold weather. When a weld filler is needed, AWS E/ER 316L is most often specified. Type 444, or 18 Cr-2 Mo, is well known in reference literature and more information can be obtained in this way.

FORMABILITY

AK Steel Type 444 provides excellent formability and can be readily deep drawn and spin formed. Stretch forming, however, is limited in application for this material.

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 meganewtons per square meter) – Multiply by 6.8948

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

Density (pounds per cubic inch to kilo-grams per cubic meter) – Multiply by 27,670

AK Steel

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Stainless Steel The Value Option

7100-0096 7/07