

309/309S

STAINLESS STEEL

UNS S30900 AND UNS S30908



Types 309 and 309S are austenitic chromium-nickel stainless steels that provide excellent corrosion resistance and heat resistance plus good strength at room and elevated temperatures. Type 309S is identical to Type 309 except for a lower carbon content that minimizes carbide precipitation and improves weldability. They are essentially non-magnetic as annealed and become slightly magnetic when cold worked.

Typical uses include furnace parts, heating elements, aircraft and jet engine parts, heat exchangers, carburizing-annealing boxes, sulfite liquor handling equipment, kiln liners, boiler baffles, refinery and chemical processing equipment, and auto exhaust parts.

COMPOSITION

	Type 309 %	Type 309S %
Carbon	0.20 max.	0.08 max.
Manganese	2.00 max.	2.00 max.
Phosphorus	0.045 max.	0.045 max.
Sulfur	0.030 max.	0.03 max.
Silicon	0.75 max.	0.75 max.
Chromium	22.00 - 24.00	22.00 - 24.00
Nickel	12.00 - 15.00	12.00 - 15.00
Iron	Balance	Balance

AVAILABLE FORMS

AK Steel produces Types 309 and 309S Stainless Steels in thicknesses from 0.01" to 0.1874" (0.25 to 4.76 mm) and widths up to 48" (1219 mm). For other thicknesses and widths, inquire.

SPECIFICATIONS

Type 309	Type 309S
ASTM A 167	AMS 5523 ASTM A 240

PHYSICAL PROPERTIES

Density, 0.29 lbs/in³
9.01 g/cm³

Electrical Resistivity, microhm-in
(microhm-cm) 68°F (28.4°C) - 39.8 (78)

Thermal Conductivity, BTU/hr/ft²/ft²/°F
(W/m•K)

212°F (100°C) - 9.0 (15.6)
932°F (500°C) - 10.8 (18.7)

Mean Coefficient of Thermal Expansion,
in/in/°F (μm/m•K)

32 - 212°F (0 - 100°C) 8.3 x 10⁻⁶ (14.9)
32 - 600°F (0 - 315°C) 9.3 x 10⁻⁶ (16.7)
32 - 1000°F (0 - 538°C) 9.6 x 10⁻⁶ (17.3)
32 - 1200°F (0 - 649°C) 10.0 x 10⁻⁶ (18.0)

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

Magnetic Permeability, (H = 200
Oersteds), Annealed 1.02 max.

Specific Heat, BTU/lb/°F (kJ/kg•K)
0.12 (0.50) 32 - 212°F (0 - 100°C)

Melting Range, °F (°C) - 2550 - 2650
(1399 - 1454)

