

Description

Grade **430/1.4016** stainless steel is a ferritic, non-hardenable chromium stainless steel known for its good corrosion resistance, formability, and aesthetic finish. It is commonly used in applications where moderate corrosion resistance is required, along with good mechanical properties.

Chemical Composition

The typical chemical composition of Grade 430 stainless steel is as follows:

Element	Composition (%)
Carbon (C)	0.0 - 0.12
Manganese (Mn)	0.0 - 1.0
Silicon (Si)	0.0 - 1.0
Phosphorus (P)	0.0 - 0.04
Sulfur (S)	0.0 - 0.03
Chromium (Cr)	16.0 - 18.0
Nickel (Ni)	0.0 - 0.75

Iron (Fe)	Balance
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Mechanical Properties

The mechanical properties of Grade 430 stainless steel in the annealed condition are:

Property	Value
Tensile Strength (UTS)	Minimum 450 MPa (65 ksi)
Yield Strength (0.2% YS)	Minimum 205 MPa (30 ksi)
Elongation	Minimum 22% in 50.8 mm (2 in)
Hardness	Maximum 89 HRBW

Thermal & Physical Properties

The thermal and physical properties are as follows:

Property	Value
Density	7.74 g/cm ³ (0.28 lb/in ³)
Modulus of Elasticity	200 GPa (29 x 10 ³ ksi)

Coefficient of Thermal Expansion	10.4 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ (20-300 $^\circ\text{C}$)
Electrical Resistivity	60 μ ohm.cm
Thermal Conductivity	26.1 W/m-K

Other Designations

Grade 430 corresponds to several designations, including:

- UNS S43000
- EN-DIN 1.4016
- BS 430S17

Fabrication and Heat Treatment

Grade **430/1.4016** stainless steel can be easily fabricated using standard methods. Key points include:

- Machining: It is relatively easy to machine but requires sharp cutting tools to prevent work hardening.
- Welding: It can be welded using common techniques, but preheating to 150-200 $^\circ\text{C}$ is recommended to prevent embrittlement.
- Heat Treatment: Annealing is performed at 815 $^\circ\text{C}$, followed by air cooling. It cannot be hardened by heat treatment.

Applications

Grade **430/1.4016** stainless steel is widely used in:

- Domestic appliances (e.g., washing machines, dishwashers, refrigerators)
- Automotive trim
- Decorative applications
- Scientific apparatus
- Fasteners and flue linings

Supplied Form

Grade **430/1.4016** stainless steel is available in various forms, including:

- Sheets
- Coils
- Strips

Features

- Good corrosion resistance in mild environments
- Aesthetic appeal due to its finish quality
- Fair formability and weldability
- Excellent resistance to nitric attack

This datasheet provides a comprehensive overview of Grade 430 stainless steel, highlighting its properties, applications, and processing requirements.

