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ALLOY TECHNICAL DATA SHEET

TYPE 430 STAINLESS STEEL

Ferritic Stainless Steel · UNS S43000

GENERAL PROPERTIES

Type 430 is a low-carbon ferritic stainless steel. In mildly corrosive environments or atmospheric exposures, its corrosion resistance approaches that of some nickel-bearing stainless steels. It is also oxidation resistant at elevated temperatures.

It is ductile, does not work-harden readily, and can be formed using a variety of roll forming or mild stretch bending operations, as well as the more common drawing and bending processes. It is chosen where economy and corrosion resistance matter more than high strength — appliance and interior trim, sinks and sink rims, range hoods, dishwashers, flatware, restaurant equipment and architectural parts.

CHEMICAL COMPOSITION

Percent by weight, maximum unless range is specified — ASTM A240

Element	430
Carbon	0.12
Manganese	1.00
Phosphorus	0.040
Sulfur	0.030
Silicon	1.00
Chromium	16.00–18.00
Nickel	0.75
Iron	Balance

MECHANICAL PROPERTIES

Minimum properties, annealed sheet & strip — ASTM A240

Property	Type 430
Tensile strength, ksi (MPa)	65 (450)
0.2% Yield strength, ksi (MPa)	30 (205)
Elongation in 2" (51 mm), %	22
Hardness, max.	Rockwell B89 / Brinell 183

Typical properties, cold-rolled & annealed sheet and strip

Property	.020–.060"	.040–.115"
Tensile, ksi	70–79	66–78
0.2% Yield, ksi	44–54	43–56
Elongation in 2", %	21–34	23–37
Hardness	62–70 (30T)	B75–83

Fatigue strength (10^7 cycles) is about 35–45% of tensile strength. Data are typical and do not necessarily represent minimum or maximum values. Each lot may vary.

PHYSICAL PROPERTIES

Melting range	2600–2750 °F (1425–1510 °C)
Density	0.278 lb/in³ (7.70 g/cm³)
Specific gravity	7.70
Modulus of elasticity (tension)	29×10^6 psi (200 GPa)
Specific heat, 32–212 °F	0.11 Btu/lb·°F (460 J/kg·K)
Magnetic	Yes — ferromagnetic

THERMAL EXPANSION

°F	°C	in/in/°F	cm/cm/°C
68–212	20–100	5.7×10^{-6}	10.3×10^{-6}
68–932	20–500	6.2×10^{-6}	11.2×10^{-6}
68–1450	20–787	6.6×10^{-6}	11.9×10^{-6}

Lower expansion than the austenitic 300 series — closer to carbon steel.

THERMAL CONDUCTIVITY

°F	°C	Btu/hr·ft·°F	W/m·K
68–212	20–100	13.8	23.9
68–932	20–500	15.0	26.0

ELECTRICAL RESISTIVITY

°F	°C	Microhm-in	Microhm-cm
68	20	23.6	60.0
212	100	26.6	67.5
392	200	30.3	77.0
752	400	36.4	92.5
1112	600	41.3	105.0
1472	800	45.3	115.0

CORROSION & OXIDATION RESISTANCE

Type 430 resists a wide variety of corrosive media, including nitric acid and many organic acids. Resistance is best with a highly polished or bright-annealed surface.

It resists oxidation up to about 1600 °F (870 °C) in intermittent service and 1450–1500 °F (790–815 °C) in continuous service, forming a tightly adherent scale that holds up to sudden temperature changes.

STRUCTURE & HEAT TREATMENT

Below about 1650 °F (900 °C) the structure is ferritic with dispersed chromium carbides. Heating above that temperature forms small amounts of austenite that may transform to martensite on cooling — typically in welds and heat-affected zones — which annealing converts back to ferrite and carbides. Long holds at 800–1000 °F (425–540 °C) reduce impact toughness; annealing restores it.

Values are typical or specification minimums as noted, provided for information only, and should not be used as design limits or as a guarantee of properties for any particular lot or application. Certified test reports are supplied with each order.

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