

Stainless steel 330 Alloy

Heanjia Super Metals Co., Ltd

Introduction to Stainless steel 330

Stainless steel 330 is an austenitic alloy that offers excellent resistance to heat and corrosion. It provides outstanding resistance to oxidation, thermal shock and carburization. The steel 330 is manufactured for elevated temperature industrial applications that need superior resistance to carburization and thermal cyclic oxidation. It offers excellent corrosion resistance properties at temperatures up to 2100oF. The stainless steel 330 retains austenitic configuration over wide temperature ranges and doesn't get embrittlement from sigma phase. The outstanding strength and oxidation resistance properties of steel 330 make it purposeful in the commercial heating furnace operations.



Chemical Composition of Stainless steel grade 330

Cr	Ni	Mn	Si	P	S	C	Fe
17.0-20.0	34.0-37.0	2.0	0.75-1.50	0.03	0.03	0.08	Bal.

Physical Properties of Stainless steel grade 330

Density (lb / cu. in.)	0.289
Specific Gravity	7.99
Specific Heat (Btu/lb/Deg F-[32-212 Deg F])	0.11
Magnetic Permeability	1.02
Modulus of Elasticity Tension	28.5

Mechanical properties

Property	Metric	Imperial
Tensile strength, ultimate	550 MPa	79800 psi
Tensile strength, yield (@0.2%)	260 MPa	37700 psi
Modulus of elasticity	197 GPa	28600 ksi
Poisson's ratio	0.27 – 0.30	0.27 – 0.30
Elongation at break (in 50 mm)	40%	40%
Thermal expansion co-efficient	14.4 $\mu\text{m}/\text{m}^{\circ}\text{C}$	8 $\mu\text{in}/\text{in}^{\circ}\text{F}$
Thermal conductivity	12.5 W/mK	86.8 BTU in/hr.ft ² .°F

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Stainless austenitic steel 330 has significant content of chromium that offers higher corrosion resistance features over other steels. It is categorized into martensitic, ferritic and austenitic types on the base of their crystalline structure. The stainless steels available in the form of a blend of martensitic and austenitic steels are called as precipitation-hardened steels.

Properties of Stainless steel 330

1. Excellent oxidation resistance up to 2100oF
2. Resistance to nitriding and carburizing solutions
3. Thermal shock proof
4. Chloride ion stress corrosion cracking
5. High temperature strength

Corrosion Resistance Properties

The stainless steel 330 offers great corrosion resistance specifically in aqueous conditions, oxidation, nitriding solutions and carburization. Magnitude of nickel provides resistance to reducing conditions and chloride ion stress corrosion cracking.

Fabrication of Stainless 330

Stainless steel 330 alloy is readily fabricable through normal industrial methods. As compare to carbon steel, stainless steel is tougher and gets work hardened quickly.

Machining

The solid mounts, sulfurized lubricants, feeds and slow pace are preferred for stainless steel 330 machining.

Welding of Stainless steel 330

The stainless steel 330 is welded through GAW techniques.

Hot Processing

The steel 330 is hot processed at temperatures from 1149oC to 1177oC. It can be annealed at temperatures between 1121oC to 1204oC.

Cold Processing

The cold processing of steel 330 is tough as it possesses high strength and work toughening rate, but it can be cold processed through intense forces. The alloy 330 is unalterable through heat processing and it can be hardened by only cold reduction.

ASTM Specification

Plate, Sheet	B536
Bar	B511, B512
Pipe	B535
Weld Pipe	B546, B710
Weld tube	B739

Applications for Stainless steel 330

1. Furnace containers-carburizing, carbonitriding, annealing malleablizing
2. Muffles, conveyors
3. Bar frame heat treating baskets
4. Tube hangers for crude oil heaters and Quenching fixtures
5. Salt pots and Radiant tubes
6. Furnace fans and shafts

Stainless Steel 330 Product Forms Available:

Wire, Wiremesh Screen, Strip, Sheet, Pipe, Tubing, Plate, Ribbon, Tape

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