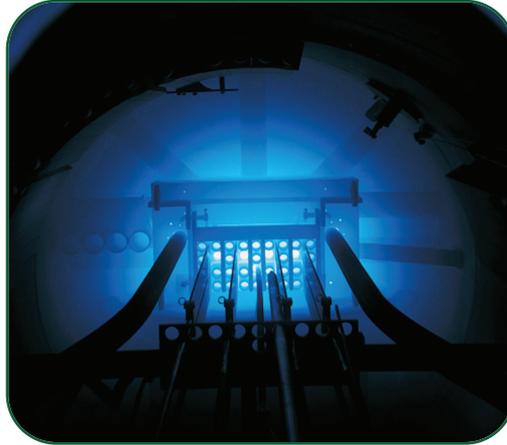




330 PLATE AND PROCESSED FLAT BAR



Penn Stainless inventory now includes 330 Plate and Processed Flat Bar (Alloy 330 UNS N08330), ideally suited for demanding, high-temperature, high-pressure applications such as chemical and petrochemical processing, thermal processing, ore processing, and power generation.

Alloy 330 is an austenitic, nickel-chromium-iron-silicon alloy that has outstanding resistance to oxidation and carburization up to 2200°F with high strength. The excellent resistance to oxidation and carburization is provided by the high nickel and chromium content of the alloy, further enhanced by its silicon content. Alloy 330's ultra high nickel content also provides high resistance to chloride stress corrosion cracking and embrittlement from the precipitation of sigma phase in most furnace atmospheres. Alloy 330 also has a low coefficient of expansion, excellent ductility, and high strength.

Applications

Alloy 330 is extensively used in high temperature environments where resistance to the combined effects of thermal cycling and carburization is necessary. Applications include:

- **Chemical and Petrochemical Processing** — cracked ammonia components, petrochemical furnace parts, heat exchangers, flares, etc.
- **Thermal Processing** — heat-treat furnace containers & compartments, high temperature fans, salt pots, etc.
- **Ore Processing** — perlite system and equipment
- **Power Generation** — boiler fixtures, gas turbine components, etc.

PENN STAINLESS CAN PROVIDE YOU WITH CUSTOM CUT, SIZED AND PROCESSED ALLOY 330 THROUGH ANY OF OUR AVAILABLE PROCESSING METHODS:

- **SHEAR CUTTING**
- **PLASMA CUTTING**
- **HQ PLASMA CUTTING**
- **DYNAMIC WATER JET CUTTING**
- **SAW CUTTING**
- **GAUER PROCESSING**
- **MACHINE CUTTING**



PENN STAINLESS ALSO STOCKS 309 AND 310, OTHER GRADES THAT ARE TYPICALLY USED IN HIGH-TEMP APPLICATIONS.

Penn Stainless Alloy 330 Plate and Processed Flat Bar provides superior resistance to corrosion and heat exposure, in even the most demanding environments.

Corrosion Resistance

- Provides high level of corrosion resistance especially with regards to oxidation, carburization, and nitridation
- Has great oxidation resistance and resists scale formation up to about 2200°F due to its chromium and nickel content
- Excellent resistance to carburization due to its high nickel and silicon content
- Exhibits resistance to nitrogen containing atmospheres where the oxygen content is low
- High nickel content also makes it highly resistant to chloride stress corrosion cracking and sigma phase embrittlement

Hardening

- Alloy 330 will not respond to heat treatment; will only harden upon cold work

Chemical Properties

Element	Average Nominal %
Chromium	18.00 – 22.00
Nickel	34.00 – 37.00
Carbon	0.08 Max
Silicon	1.00 – 1.50
Manganese	2.00 Max
Phosphorus	0.03 Max
Sulfur	0.03 Max
Carbon	1.00 Max
Iron	Balance

Mechanical Properties (at room temperature)

Tensile Strength - ksi (min.)	0.2% Offset Yield Strength - ksi (min.)	Elongation in 2 inches - % (min.)	Hardness - Rockwell B
70	30	30	70 – 90

Physical Properties

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



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