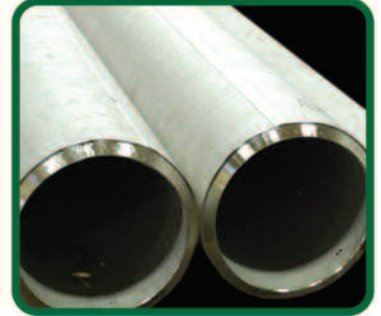
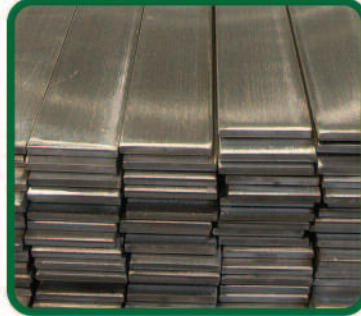
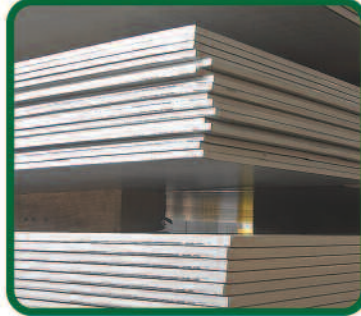
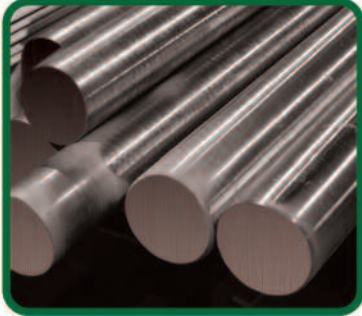




ALLOY 304/304L SPECIFICATIONS: UNS S30400 / S30403



ALLOY 304/304L – UNS S30400 / S304033

Penn Stainless inventory now includes Alloy 304/304L (UNS S30400 / S30403), in sheet, sheet coil, plate, plate coil, round bar, processed flat bar and tubular products. Alloy 304/304L is ideally suited for home and commercial applications.

GENERAL PROPERTIES

Alloy 304 / 304L a T-300 series stainless steel austenitic, which has a minimum of 18% chromium and 8% nickel. Type 304 has a maximum carbon of 0.07% while Type 304L carbon maximum is 0.030. It is the standard “18/8 stainless” that is commonly found in pans and cooking tools. Alloys 304 & 304L are the most versatile and widely used alloy in the stainless steel family. Ideal for a wide variety of home and commercial applications, Alloys 304 & 304L exhibits excellent corrosion resistance and has a high ease of fabrication, outstanding formability. The austenitic stainless steels are also considered to be the most weldable of the high-alloy steels and can be welded by all fusion and resistance welding processes.

APPLICATIONS

Alloy 304/304L Stainless Steel is used in a wide variety of home and commercial applications, including:

- Food processing equipment, particularly in beer brewing, milk processing, and wine making
- Kitchen benches, sinks, troughs, equipment, and appliances
- Architectural trim and molding
- Automotive and aerospace structural use
- Construction material in large buildings
- Chemical containers, including for transport
- Heat exchangers
- Nuts, bolts, screws, and other fasteners in the marine environment
- Dyeing industry
- Woven or welded screens for mining, quarrying & water filtration

STANDARDS 304 / 304L

| | |
|-----------------|-------------------------------|
| ASTM/ASME | UNS S30400 / S30403 |
| EURONORM | 1.4301 / 1.4303 |
| AFNOR..... | Z5 CN 18.09 / Z2 CN 18.10 |
| DIN | X5 CrNi 18 10 / X2 CrNi 19 11 |

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

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



INVENTORY:

- SHEET
- PLATE
- PERFORATED
- FLAT & EXPANDED
- ROUND BAR
- SQUARE BAR
- HEX BAR
- ROLLED FLAT BAR
- S/E PROCESSED BAR
- THREADED ROD
- HALF ROUND
- TUBULAR PRODUCTS (WELDED & SEAMLESS)
- STRUCTURALS

CORROSION RESISTANCE

- Resistance to corrosion in oxidizing environments is a result of the 18 to 19% chromium that the 304 alloys contain.
- Resistance to moderately aggressive organic acids is a result of the 9 to 11% nickel that the 304 alloys contain.
- At times, alloy 304L may show a lower corrosion rate than the higher carbon Alloy 304; otherwise, the 304, 304L, and 304H may be considered to perform uniformly in most corrosive environments.
- Alloy 304L is preferred for use in environments sufficiently corrosive to cause intergranular corrosion of welds and heat-affected zones on susceptible alloys.

HEAT RESISTANCE

- Good oxidation resistance in intermittent service to 1600°F and in continuous service to 1690°F.
- Continuous use of 304 in the 800-1580°F range is not recommended if subsequent aqueous corrosion resistance is important.
- Grade 304L is more resistant to carbide precipitation and can be heated into the above temperature range.
- Grade 304H has higher strength at elevated temperatures, so it is often used for structural and pressure-containing applications at temperatures above about 930°F and up to about 1470°F.

WELDING CHARACTERISTICS

- Excellent welding properties; post-weld annealing is not required when welding thin sections. Two important considerations in producing weld joints in the austenitic stainless steels are:
 - 1) preservation of corrosion resistance
 - 2) avoidance of cracking

PROCESSING / HOT FORMING

- To forge, heat uniformity to 2100 / 2300 °F.
- Do not forge below 1700 °F.
- Forging can be air cooled without danger of cracking

PROCESSING / COLD FORMING

- Its austenitic structure allows it to be deep-drawn without intermediate annealing, Making this the stainless steel grade of choice in the manufacturing of sinks, hollow-ware and saucepans.
- These grades work harden rapidly. To relieve stresses produced in severe forming or spinning, parts should be full annealed or stress relief annealed as soon as possible after forming.

MACHINABILITY

- The use of chip breakers is advised since the chips can be stringy. Stainless steel work harden rapidly, heavy positive feeds, sharp tooling, and a rigid set-up should be used. of cut below the work-hardened layer resulting from the previous passes.

CHEMICAL PROPERTIES

| | C | Mn | Si | P | S | Cr | Ni | N |
|------|--------------|------------|-------------|--------------|-------------|------------------------|-----------------------|-------------|
| 304 | 0.07 max | 2.0 max | 0.75 max | 0.045 max | 0.03 max | min: 18.0 max: 20.0 | min: 8.0 max: 10.5 | — |
| 304L | 0.030 max | 2.0 max | 0.75 max | 0.045 max | 0.03 max | min: 18.0 max: 20.0 | min: 8.0 max: 12.0 | 0.10 max |

MECHANICAL PROPERTIES

| Grade | Tensile Strength ksi (min) | Yield Strength 0.2% ksi (min) | Elongation % | Hardness Brinell (max) | Hardness Rockwell B (max) |
|-------|-------------------------------|----------------------------------|-----------------|---------------------------|------------------------------|
| 304 | 75 | 30 | 40 | 201 | 92 |
| 304L | 70 | 25 | 40 | 201 | 92 |

PHYSICAL PROPERTIES

| Density (lb/in ³) | Thermal Conductivity (BTU/hr·ft·°F) | Electrical Resistivity (in x 10 ⁻⁶) | Modulus of Elasticity (psi x 10 ⁶) | Coefficient of Thermal Expansion (in/in)/°F x 10 ⁻⁶ | Specific Heat (BTU/lb/°F) | Melting Range (°F) |
|----------------------------------|---|---|--|--|------------------------------|--------------------|
| at 68°F: 0.285 | 9.4 at 212 °F | 28.3 at 68 °F | 28 | 9.4 at 32 - 212°F | 0.1200 at 68°F to 212°F | 2,550 to 2,590 |
| | 12.4 at 932 °F | 39.4 at 752 °F | | 10.2 at 32 - 1000°F | | |
| | | 49.6 at 1652 °F | | 10.4 at 32 - 1200°F | | |



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