

# 301 STAINLESS STEEL

Type 301 is an austenitic chromium-nickel stainless steel. This alloy is nonmagnetic in the annealed condition, but becomes magnetic when cold worked. 301 has a nominal composition of 17 percent chromium and 7 percent nickel. Type 301 is available annealed and in a variety of temper-rolled conditions.

High strength and excellent corrosion resistance make this versatile grade suitable for automobile trim, hose clamps, springs etc.

## Resistance to oxidation

Type 301 possesses good resistance to oxidation at temperatures up to 1550°F (840°C). At 1600°F (871°C), Type 301 exhibits an oxidation weight gain of 10mg/cm<sup>2</sup> in 1,000 hours. Therefore, this stainless steel is not suggested for use at 1600°F.

## Chemical composition

Represented by ASTM A240 and A666

Element	Percent by Weight
Carbon	0.15 maximum
Manganese	2.00 maximum
Phosphorus	0.045 maximum
Sulfur	0.030 maximum
Silicon	0.75 maximum
Chromium	16.00-18.00
Nickel	6.00-8.00
Nitrogen	0.10 maximum
Iron	Balance





## Hardness

Typical hardness values for annealed and cold-rolled Type 301 are given in the following table:

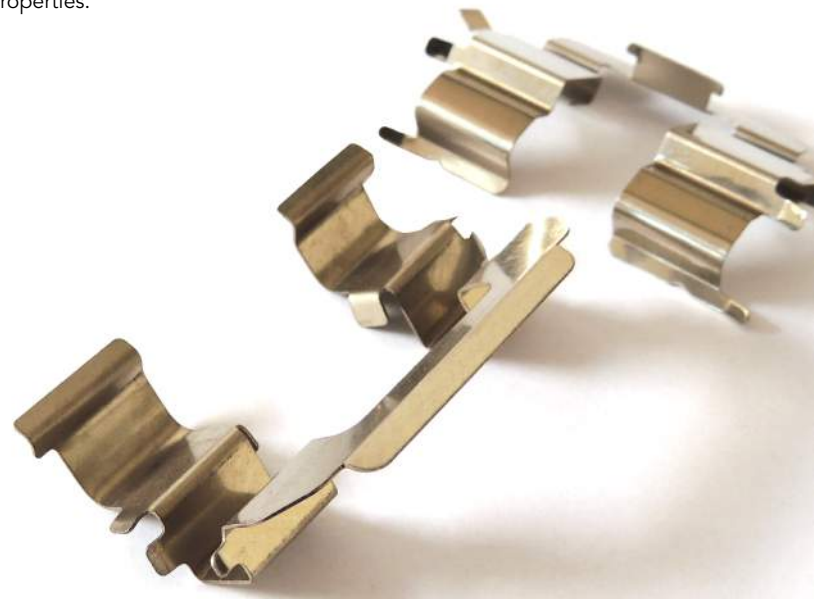
Temper	Brinell Hardness	Rockwell Hardness
Annealed	165	B86
1/4 Hard	255	B25
1/2 Hard	297	B32
3/4 Hard	342	B37
Full Hard	383	B41



## Mechanical properties

Condition	UTS ksi (MPa) min*	0.2% YS ksi (MPa) min*	Elongation % in 2" (50.8 mm)
Annealed	120 (827)	45 (310)	60
1/4 Hard	125 (862)	75 (517)	25
1/2 Hard	150 (1034)	110 (758)	18
3/4 Hard	175 (1207)	135 (931)	12
Full Hard	185 (1276)	140 (965)	9

\* Minimum - standard practice is to produce to either minimum tensile strength, minimum yield strength or minimum hardness, but not to combinations of these properties.





## Physical properties

Density, lbs./in.3 (g/cm3)	0.285 (7.88)
Electrical Resistivity, $\mu\Omega\cdot\text{in.}$ ( $\mu\Omega\cdot\text{cm}$ )	27.4 (69.5)
Thermal Conductivity, BTU/hr./ft./°F (W/m/K)	
212 °F (100 °C)	9.4 (16.2)
932 °F (500 °C)	12.4 (21.4)
Modulus of Elasticity, ksi (MPa)	
in tension	$28.0 \times 10^3$ ( $193 \times 10^3$ )
Shear modulus in torsion	$11.2 \times 10^3$ ( $178 \times 10^3$ )
Poissons ratio	0.24
Magnetic Permeability, (H/m at 200 Oersteds)	Annealed 1.02 max
Specific Heat, BTU/lbs./°F (kJ/kg/K)	
32–212 °F (0–100°C)	0.12 (0.50)
Melting Range, °F (°C)	2250 – 2590 (1399 – 1421)

## Heat Treatments

Type 301 is non-hardenable by heat treatment.

Annealing: Heat to 1900 – 2050 °F (1038 – 1121 °C), then water quench. Stress Relief Annealing: Heat to 500 – 900 °F (260 – 482 °C), then air cool.





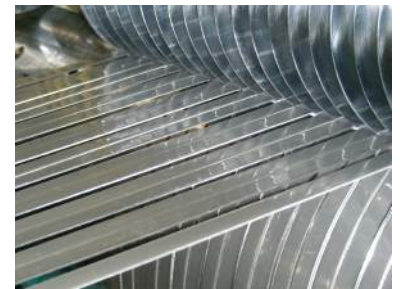
## Facility information

- 50 000 square foot operating facility
- 18 feet under the crane rail
- Main coil bay 280 feet in length
- Crane capacity 15 Ton



## Delivery format

<b>Thickness</b>	0.012" – 0.40"
<b>Thickness tolerance</b>	Normal +/- 10 % Improved +/- 5 %
<b>Minimum slit width</b>	0.6"
<b>Width tolerance</b>	+/- 0.005"
<b>Max weight</b>	Payoff 35 000 lbs Recoil 35 000 lbs
<b>Max coil OD</b>	Up to 72"
<b>Inner diameter</b>	16" and 20"
<b>Burrs</b>	Less than 10 % of strip thickness
<b>Papper interleave / plastic</b>	With or without
<b>Cardboard core</b>	With or without
<b>Delivery form</b>	Pancake coils
<b>Flatness</b>	Tension leveled material
<b>* Camber</b>	Max 0.5" / 8 feet
<b>Surface</b>	2B or 2H



\*

**Edge camber** = the greatest deviation of a side edge from a straight line, the measurement being taken on the concave side with a straight edge

