



# North American Stainless

Long Products Stainless Steel Grade Sheet

**AISI 302**  
**UNS S30200**  
**EN 1.4319**

## INTRODUCTION

This grade is widely used where higher strengths and higher work-hardening rates are desired, such as springs, at a relatively lower cost compared to 304/304L. This grade has good corrosion/oxidation resistance and weldability.

The carefully controlled chemical composition of various sub-grades provides a large range of cold-work hardenability, enabling them to suit for specific application for direct draw to specific mechanical properties. Contact us to suggest a suitable NAS grade to satisfy your specification.

## PRODUCTS AVAILABLE

Wire Rod. See product sheet for dimensions, tolerances, finishes available and other details.

## Standard Chemical Composition

Elements		C	MN	P	S	SI	CR	NI	N
UNS S30200	AISI 302	Min					17.00	8.00	
		Max	0.15	2.00	0.045	0.030	1.00	19.00	10.00

## Nominal Mechanical Properties (annealed condition)

Tensile Strength ksi[MPa]	Yield Strength ksi[MPa]	% Elongation 4d	% Reduction in Area	Hardness HRB
90[620]	40[275]	60	70	140

Nominal Physical properties: The values are at room temperature, unless otherwise specified.

Density	7.9 kg/m <sup>3</sup>	Mean Co-efficient of Thermal Expansion 0-100°C	17.2 um/mK
Modulus of Elasticity	193	Melting Range	1400-1450°C
Specific Heat Capacity	500J/kgK	Relative Permeability*	1.02
Thermal Conductivity @100°C	16.2W/mK		

\*Note: This grade is non-magnetic in annealed condition but becomes moderately magnetic after heavy cold working.

## ANNEALING

Parts can be annealed at 1900°F–2050°F held for minimum 60 minutes per inch of thickness and water quenched. Prolonged exposure between 800°F–1500°F must be avoided to prevent embrittlement and loss of corrosion properties.

This grade does not harden with heat treatment.

## MACHINABILITY

Like most other austenitic steels, this grade machines with rough and stringy chips. Therefore chip curlers can be beneficial.

## WELDABILITY

This grade is readily weldable by any conventional methods employed for austenitic stainless steels. Type 308L/308LSi stainless steel filler is generally recommended. For specific application, contacting a welding expert is advised. For maximum corrosion resistance, annealing after welding is recommended. In hard condition, resistance welding is recommended to prevent softening.

## COLD WORKABILITY

This grade can be readily cold worked. This is a high strain-hardening grade. Operations such as wire drawing, forging, upsetting and bending are common. Severe forming may require intermediate annealing.

## HOT WORKABILITY

This grade can readily be hot worked. Heat initially to 2100°F–2300°F and can be finished as low as 1500°F. Severe reductions below 1700°F should be avoided.

Parts should be water quenched after hot working for good corrosion resistance. For maximum corrosion resistance, parts should be annealed and water quenched.

## CORROSION RESISTANCE

This grade has good corrosion resistance in a wide variety of corrosive media, such as foodstuffs, sterilizing solutions, most organic chemicals and dyes, most petroleum products, steam and combustion gases. It resists nitric acid well, sulfuric acid moderately and halogen acids and halogen compounds poorly. For maximum corrosion resistance, material should be used in annealed condition and parts should be passivated.

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