

SS 305, Type 305, WNR 1.4303, UNS S30500, AISI 305, Grade 305, AFNOR Z 8 CN 18-12, ASTM 305

Introduction :

Stainless steel 305 is an austenitic stainless steel. It cannot be hardened by heat treatment and it is non-magnetic. 305 stainless steel is similar to stainless steel 304 with respect to corrosion resistance. Between the temperature range of 900 - 1600°F if the grade is heated or cooled slowly, at the grain boundaries the carbide network may form, thereby decreasing corrosion resistance. Annealing followed by rapid cooling, alleviates the situation. Up to about 1650 °F Grade 305 provides good oxidation resistance in air and it can be used for intermittent exposure to about 1500°F. It can be quickly formed and deep drawn into complex shapes. 305 stainless steel requires less power to form the as compared to 301 stainless steel or 304 stainless steel, due to its lower strength and work hardening rate. After cold work it remains non-magnetic. By the common fusion method and resistance techniques the austenitic stainless steel considered to be weldable. Stainless steel 305 grade can be machined through heavy feeds and slow speeds.

Chemical Composition

	SS 305	WNR 1.4303	UNS S30500	AISI 305	GRADE 305	AFNOR Z 8 CN 18-12	ASTM 305
Carbon	0.12 max	0.12 max	0.12 max	0.12 max	0.12 max	0.12 max	0.12 max
Manganese	2.00 max	2.00 max	2.00 max	2.00 max	2.00 max	2.00 max	2.00 max
Phosphorus	0.040 max	0.040 max	0.040 max	0.040 max	0.040 max	0.040 max	0.040 max
Sulfur	0.030 max	0.030 max	0.030 max	0.030 max	0.030 max	0.030 max	0.030 max
Silicon	1.00max	1.00max	1.00max	1.00max	1.00max	1.00max	1.00max
Chromium	17.0-19.0	17.0-19.0	17.0-19.0	17.0-19.0	17.0-19.0	17.0-19.0	17.0-19.0
Molybdenum	0.75max	0.75max	0.75max	0.75max	0.75max	0.75max	0.75max
Nickel	10.0-13.0	10.0-13.0	10.0-13.0	10.0-13.0	10.0-13.0	10.0-13.0	10.0-13.0
Copper	0.75max	0.75max	0.75max	0.75max	0.75max	0.75max	0.75max

Mechanical Properties

	SS 305	WNR 1.4303	UNS S30500	AISI 305	GRADE 305	AFNOR Z 8 CN 18-12	ASTM 305
Tensile Strength, ksi[Mpa]	70[520]	70[520]	70[520]	70[520]	70[520]	70[520]	70[520]
Yield Strength, ksi[Mpa]	30[210]	30[210]	30[210]	30[210]	30[210]	30[210]	30[210]
Elongation %	65	65	65	65	65	65	65
Reduction in Area, %	75	75	75	75	75	75	75
Hardness, HRB	115	115	115	115	115	115	115

Standard Available in forms :

ASTM A182/ ASME SA182 Stainless Steel Pipe Fittings
 ASTM A213 / ASME SA213 Seamless Stainless Steel Pipes
 ASTM A240/ ASME SA240 Stainless Steels Sheets / Plates
 ASTM A249/ ASME SA249 Stainless Steel Welded Tubes
 ASTM A269/ ASME SA269 Stainless Steel Tubes
 ASTM A270/ ASME SA270 Stainless Steel Sanitary Tubes
 ASTM A312/ ASME SA312 Stainless Steel Pipes

Products Available in forms :

- SS 305, Type 305, WNR 1.4303, UNS S30500, AISI 305 Plates
- SS 305, Type 305, WNR 1.4303, UNS S30500, AISI 305 Pipes
- SS 305, Type 305, WNR 1.4303, UNS S30500, AISI 305 Round Bar
- SS 305, Type 305, WNR 1.4303, UNS S30500, AISI 305 Tube
- SS 305, Type 305, WNR 1.4303, UNS S30500, AISI 305 Flanges
- SS 305, Type 305, WNR 1.4303, UNS S30500, AISI 305 Wire
- SS 305, Type 305, WNR 1.4303, UNS S30500, AISI 305 Fittings

ASTM A403/ ASME SA403 Stainless Steel Pipe Fittings
ASTM A554/ ASME SA554 Stainless Steel Welded Tubes
ASTM A731/ ASME SA731 Stainless Steel Pipes
ASTM A789/ ASME SA789 Stainless Steel Tubes
ASTM A790/ ASME SA790 Stainless Steel Pipes
ASTM A791/ ASME SA791 Stainless Steel Tubes

Fabrication and Heat Treatment

Machinability

- Grade 305 stainless steel can be machined through slow speeds and heavy feeds.

Welding

- Grade 305 stainless steel can be welded using most of the resistance and fusion methods. Oxyacetylene welding is not preferred for this steel.

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- Hot working of grade 305 stainless steel can be done at 1149 to 1260°C (2100 to 2300°F). This process is followed by rapid cooling to obtain maximum corrosion resistance.

Cold Working

- Grade 305 stainless steel can be drawn, spun, headed and blanked due to its low work hardening rate.

Annealing

- Grade 305 stainless steel can be annealed at temperature ranging from 1010 to 1121°C (1850 to 2050°F) followed by rapid cooling.

Hardening

- Grade 305 stainless steel is unresponsive to heat treatment. The hardness and strength of the steel can be increased through cold working.

Applications

- Spun or deep drawn eyelets
- Barrels
- Shells
- Cold headed rivets or screws



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