

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
- 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

Products Available in forms :

- SS 303, Type 303, WNR 1.4305, UNS S30300, AISI 303 Plates
- SS 303, Type 303, WNR 1.4305, UNS S30300, AISI 303 Pipes
- SS 303, Type 303, WNR 1.4305, UNS S30300, AISI 303 Round Bar
- SS 303, Type 303, WNR 1.4305, UNS S30300, AISI 303 Tube
- SS 303, Type 303, WNR 1.4305, UNS S30300, AISI 303 Flanges
- SS 303, Type 303, WNR 1.4305, UNS S30300, AISI 303 Wire
- SS 303, Type 303, WNR 1.4305, UNS S30300, AISI 303 Fittings

Corrosion Resistance

- Good resistance to mildly corrosive atmospheres, but significantly less than Grade 304 due to the sulphur addition; the sulphide inclusions act as pit initiation sites.
- Grade 303 should not be exposed to marine or other similar environments, as these will result in rapid pitting corrosion.
- Because the sulphide inclusions in 303 are primarily aligned along the rolling direction the corrosion resistance is particularly reduced in cross-sections.
- Grade 303, like other common austenitic stainless steels, is subject to stress corrosion cracking in chloride containing environments above about 60°C.

Heat Resistance

- Good oxidation resistance in intermittent service to 760°C and in continuous service to 870°C.
- Continuous use in 425-860°C range not usually recommended due to carbide precipitation - 303 usually does not have a low carbon content so is susceptible to sensitisation.

Fabrication

- As well as reducing the corrosion resistance, the sulphur additions in 303 also result in poor weldability and reduced formability compared to Grade 304.
- Sharp bends should not be attempted in 303.
- A practical compromise alternative may be a 304 Ugima Improved Machinability grade - this does not machine as readily as 303, but does offer better formability (as well as better weldability and corrosion resistance).

Heat Treatment

- Solution Treatment (Annealing) - Heat to 1010-1120°C and cool rapidly. This grade cannot be hardened by thermal treatment.

Welding

- Not generally recommended but, if unavoidable and a lower strength can be tolerated, use Grade 308L or 309 electrodes.
- AS 1554.6 does not pre-qualify welding of 303. Welds must be annealed for maximum corrosion resistance.

Machining

- A "Ugima" improved machinability version of grade 303 is available in round bar products.
- This machines significantly better even than standard 303, giving very high machining rates and lower tool wear in many operations.

Annealing

- Type 303 should be heated to 1900°F minimum and water quenched or rapidly cooled by other means.

Hardening

- Type 303 cannot be hardened by heat treatment

Cold Working

- The cold formability of Type 303 is reduced by its high sulfur content.
- Bending with a generous bend radius may be considered for Type 303.
- When cold forming is required, Type 304 should be considered.

Hot Working

- The high sulfur content, added for machinability, is detrimental to hot workability.
- If hot forming is necessary, an alternate grade such as Type 304 should be considered.
- When forging is necessary, it should be done in the 1800–2200°F range, and should be followed by annealing at 1900°F minimum and water quenching or rapid cooling by other means

Applications

- Nuts and Bolts
- Bushings
- Shafts
- Aircraft Fittings
- Electrical Switchgear Components
- Gears
- In general any component that is heavily machined and where the corrosion resistance and fabrication properties of 303 are viable.



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