



## 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 409, Type 409, WNR 1.4512, UNS S40900, AISI 409 Plates
- SS 409, Type 409, WNR 1.4512, UNS S40900, AISI 409 Pipes
- SS 409, Type 409, WNR 1.4512, UNS S40900, AISI 409 Round Bar
- SS 409, Type 409, WNR 1.4512, UNS S40900, AISI 409 Tube
- SS 409, Type 409, WNR 1.4512, UNS S40900, AISI 409 Flanges
- SS 409, Type 409, WNR 1.4512, UNS S40900, AISI 409 Wire
- SS 409, Type 409, WNR 1.4512, UNS S40900, AISI 409 Fittings

## Corrosion Resistance

- Grade 409 stainless steels have excellent resistance to exhaust gas and atmospheric corrosion, superior to that of 410 martensitic grades with 12% chromium and 3CR12.
- However, the corrosion resistance is lower than that of grade 430 steels containing 17% chromium.
- The surface of grade 409 steels is liable to mild corrosion, which limits the usage of steels for decorative purposes.

## Heat Resistance

- Grade 409 stainless steels offer scaling resistance at temperatures up to 675°C during continuous operation, and up to 815°C under intermittent conditions.
- These temperatures pertain to specific service environments.

## Heat Treatment

- Annealing of grade 409 steels is carried out at temperatures ranging from 790 to 900°C, followed by air-cooling.
- Thermal treatment does not harden grade 409 steels.

## Welding

- Grade 409 steels must be pre-heated to temperatures of 150 to 260°C before welding.
- Although grade 430 and 409 filler rods or electrodes can be used during welding of grade 409 steels, grade 309 electrodes or filler rods are strongly recommended by AS 1554.6.
- Care should be taken to weld grade 409 steels with minimum heat, in order to mitigate grain growth.
- Ductility of the welded products can be improved by annealing post-welding at temperatures of 760 to 815°C.
- However, this is not required for thin welded products. Welding of exhaust tubing of automobiles is carried out without filler rods.

## Applications

The typical applications of grade 409 stainless steels are listed below:

- Automotive exhaust tubing
- Catalytic converter systems
- Mufflers



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