

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 416, Type 416, WNR 1.4005, UNS S41600, AISI 416 Plates
- SS 416, Type 416, WNR 1.4005, UNS S41600, AISI 416 Pipes
- SS 416, Type 416, WNR 1.4005, UNS S41600, AISI 416 Round Bar
- SS 416, Type 416, WNR 1.4005, UNS S41600, AISI 416 Tube
- SS 416, Type 416, WNR 1.4005, UNS S41600, AISI 416 Flanges
- SS 416, Type 416, WNR 1.4005, UNS S41600, AISI 416 Wire
- SS 416, Type 416, WNR 1.4005, UNS S41600, AISI 416 Fittings

Corrosion Resistance

- Grade 416 steels are highly resistant to acids, alkalis, fresh water and dry air.
- However, they are less corrosion resistant than non-free-machining steels, austenitic grades and grade 430 Ferritic alloys with 17% chromium.
- These steels are hardened to obtain maximum corrosion resistance and smooth surface.
- 416 free-machining grades with high sulphur content are inappropriate for chloride and marine environments.

Heat Resistance

- Scaling resistance of grade 416 steels under intermittent conditions can be extended up to 760°C, and up to 675°C under continuous operations.
- Considering the sustainability of mechanical properties, 416 steels should not be employed at temperatures greater than the standard tempering temperatures.

Heat Treatment

Full Annealing -

- Grade 416 steel can be annealed at temperatures of 815 to 900°C for ½ h.
- This process is followed by cooling at 30°C for an hour and air-cooling.

Sub-Critical Annealing -

- Grade 416 steel is heated to 650 to 760°C and air-cooled.

Hardening -

- This process involves heating grade 416 steels to 925 to 1010°C, oil quenching and tempering to improve mechanical properties.
- Tempering should not be carried out at temperatures ranging from 400 to 580°C, owing to poor ductility of grade 416.

Welding

- Grade 416 steel exhibits poor weldability.
- Welding can be carried by pre-heating 416 steels to 200 to 300°C, followed by re-hardening, annealing or stress relieving at 650 to 675°C.
- Grade 410 low hydrogen electrodes can be used for welding purposes.
- Grade 309 filler rods can also be used for materials that require moderate hardening.

Machining

- Grade 416 steels offer the highest machinability of any stainless steel in their sub-critical annealed condition.

Applications

Some of the major applications of grade 416 stainless steels are listed below:

- Valves, pump shafts and motor shafts
- Parts of washing machines
- Gears, bolts, nuts and studs
- Automatic screw-machined components



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