

## SS 410S, Type 410S, WNR 1.4000, UNS S41008, AISI 410S, Grade 410S, AFNOR Z 6 C 13

### Introduction :

Grade 410S stainless steel is a low carbon, non-hardening modification of grade 410 stainless steel, the general purpose 12% chromium martensitic stainless steel. It is a non-heat treatable version of grade 410 stainless steel. 410S stainless steel grade is annealed at 649-760°C [1200-1400°F] and then cooled in air. Cold working methods is commonly used for grade 410S stainless steel. 410S stainless steel grade can be welded by commonly used welding methods. To prevent cracking the workpiece is been preheated to 177-204°C [350-400°F]. In the annealed condition though better results are obtained in heat treated and cold drawn conditions grade 410S stainless steel can be machined. By heat treatment method grade 410S stainless steel does not respond to hardening. Between 1093 and 1204°C [2000 and 2200°F] grade 410S stainless steel can be hot worked. For grade 410S stainless steel hot working below 899°C [1650°F] is not recommended. 410S stainless steel has similar corrosion resistance to type 410. It resists corrosion in atmospheric conditions, mild organic, fresh water, mineral acids, alkalis and some chemicals. It's exposure to chlorides in everyday activities is generally satisfactory when proper cleaning is performed after exposure to use.

### Chemical Composition

|            | SS 410S   | TYPE 410S | WNR 1.4000 | UNS S41008 | AISI 410S | GRADE 410S | AFNOR Z 6 C13 |
|------------|-----------|-----------|------------|------------|-----------|------------|---------------|
| Carbon     | 0.08 max  | 0.08 max  | 0.08 max   | 0.08 max   | 0.08 max  | 0.08 max   | 0.08 max      |
| Manganese  | 1.00 max  | 1.00 max  | 1.00 max   | 1.00 max   | 1.00 max  | 1.00 max   | 1.00 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    | 1.00 max  | 1.00 max  | 1.00 max   | 1.00 max   | 1.00 max  | 1.00 max   | 1.00 max      |
| Chromium   | 11.5-14.5 | 11.5-14.5 | 11.5-14.5  | 11.5-14.5  | 11.5-14.5 | 11.5-14.5  | 11.5-14.5     |
| Titanium   | 0.20max   | 0.20max   | 0.20max    | 0.20max    | 0.20max   | 0.20max    | 0.20max       |

### Mechanical Properties

|                            | SS 410S | TYPE 410S | WNR 1.4000 | UNS S41008 | AISI 410S | GRADE 410S | AFNOR Z 6 C13 |
|----------------------------|---------|-----------|------------|------------|-----------|------------|---------------|
| UTS ksi [Mpa]              | 65[448] | 65[448]   | 65[448]    | 65[448]    | 65[448]   | 65[448]    | 65[448]       |
| 0.2% YS ksi [Mpa]          | 40[276] | 40[276]   | 40[276]    | 40[276]    | 40[276]   | 40[276]    | 40[276]       |
| Elongation% in 2" [50.8mm] | 25      | 25        | 25         | 25         | 25        | 25         | 25            |
| Reduction in Area, %       | -       | -         | -          | -          | -         | -          | -             |
| Hardness, Rockwell B       | 75      | 75        | 75         | 75         | 75        | 75         | 75            |

## 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 410S, Type 410S, WNR 1.4000, UNS S41008, AISI 410S Plates
- SS 410S, Type 410S, WNR 1.4000, UNS S41008, AISI 410S Pipes
- SS 410S, Type 410S, WNR 1.4000, UNS S41008, AISI 410S Round Bar
- SS 410S, Type 410S, WNR 1.4000, UNS S41008, AISI 410S Tube
- SS 410S, Type 410S, WNR 1.4000, UNS S41008, AISI 410S Flanges
- SS 410S, Type 410S, WNR 1.4000, UNS S41008, AISI 410S Wire
- SS 410S, Type 410S, WNR 1.4000, UNS S41008, AISI 410S Fittings

## Fabrication and Heat Treatment

### Annealing

- Grade 410S stainless steel is annealed at 649-760°C [1200-1400°F] and then cooled in air.

### Cold Working

- Commonly used cold working methods are used for grade 410S stainless steel.

### Welding

- Grade 410S stainless steel can be welded by commonly used welding methods. The workpiece is preheated to 177-204°C [350-400°F] to prevent cracking.

### Machinability

- Grade 410S stainless steel can be machined in the annealed condition though better results are obtained in heat treated and cold drawn conditions.

### Hardening

- Grade 410S stainless steel does not respond to hardening by heat treatment.

### Hot Working

- Grade 410S stainless steel can be hot worked between 1093 and 1204°C [2000 and 2200°F]. Hot working below 899°C [1650°F] is not recommended for grade 410S stainless steel.



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