

## SS 302HQ, Type 302HQ, WNR 1.4567, UNS S30430, AISI 302HQ, Grade 302HQ

### Introduction :

In a wide variety of corrosive media it is equal to or exceeding that of Grade 304. Subject to indentation and crevice corrosion in heat chloride environments, and to stress corrosion cracking higher than concerning 60°C. Considered immune to potable water with up to concerning 200mg/L chlorides at close temperatures, reducing to concerning 150mg/L at 60°C. It provides good oxidation resistance in intermittent service to 870°C and in continuous service to 925° C. As the grade 302HQ has a very low carbon content, Continuous use of it in a range between 425-860°C is usually safe. 302HQ grade cannot be hardened by thermal treatment. Solution Treatment - Heat to 1010-1120°C and cool rapidly. Grade 302HQ has excellent weldability by all standard fusion methods, both with and without filler metals. This grade is not often welded, because of its applications. It always has very low sulphur content as this aids formability, but unfortunately this also reduces machinability. Machining is certainly possible. It has the lowest work hardening rate of any of the common austenitic stainless steels. Approximately 8MPa/ %Ra tensile strength increases in this result. It remains essentially non-responsive to a magnet, even after substantial cold work.

### Chemical Composition

	SS 302HQ	TYPE 302HQ	WNR 1.4567	UNS S30430	AISI 302HQ	GRADE 302HQ
Carbon	0.03 max	0.03 max	0.03 max	0.03 max	0.03 max	0.03 max
Manganese	2.00 max	2.00 max	2.00 max	2.00 max	2.00 max	2.00 max
Phosphorus	0.045 max	0.045 max	0.045 max	0.045 max	0.045 max	0.045 max
Sulfur	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
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
Nickel	8.0-10.0	8.0-10.0	8.0-10.0	8.0-10.0	8.0-10.0	8.0-10.0
Copper	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0

### Mechanical Properties

	SS 302HQ	TYPE 302HQ	WNR 1.4567	UNS S30430	AISI 302HQ	GRADE 302HQ
Tensile Strength, ksi[Mpa]	75[520]	75[520]	75[520]	75[520]	75[520]	75[520]
Yield Strength, ksi[Mpa]	30[200]	30[200]	30[200]	30[200]	30[200]	30[200]
Elongation in 2 inches, %	60	60	60	60	60	60
Reduction in Area, %	70	70	70	70	70	70
Hardness, Rockwell B	-	-	-	-	-	-

## 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 302HQ, Type 302HQ, WNR 1.4567, UNS S30430 Plates
- SS 302HQ, Type 302HQ, WNR 1.4567, UNS S30430 Pipes
- SS 302HQ, Type 302HQ, WNR 1.4567, UNS S30430 Round Bar
- SS 302HQ, Type 302HQ, WNR 1.4567, UNS S30430 Tube
- SS 302HQ, Type 302HQ, WNR 1.4567, UNS S30430 Flanges
- SS 302HQ, Type 302HQ, WNR 1.4567, UNS S30430 Wire
- SS 302HQ, Type 302HQ, WNR 1.4567, UNS S30430 Fittings

## Corrosion Resistance

- Excellent.
- Equal to or exceeding that of Grade 304 in a wide variety of corrosive media.
- Subject to pitting and crevice corrosion in warm chloride environments, and to stress corrosion cracking above about 60°C.
- Considered resistant to potable water with up to about 200mg/L chlorides at ambient temperatures, reducing to about 150mg/L at 60°C.

## Heat Resistance

- Good oxidation resistance in intermittent service to 870°C and in continuous service to 925°C.
- Continuous use of Grade 302HQ in 425-860°C range is usually safe (free of carbide precipitation) as the grade has a very low carbon content.

## Heat Treatment

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

## Welding

- Use Grade 308L rods or electrodes.
- Excellent weldability by all standard fusion methods, both with and without filler metals.
- Because of its applications this grade is not often welded.
- Exceptions are resistance butt welding to join wires together during wire manufacture, and when the grade is used to make stud welding fasteners.
- 302HQ is not specifically listed in AS 1554.6.

## Machining

- 302HQ is rarely machined, because of its form and likely products.
- The grade always has very low sulphur content as this aids formability, but unfortunately this also reduces machinability.
- Machining is certainly possible.
- An Improved Machinability version of Grade 302HQ is produced, having a very high machinability.
- This version has a slightly higher sulphur content and is also calcium treated.
- This Improved Machinability grade [referred to as Ugima 4567] is available only to special order.

## Cold Work Hardening

- 302HQ has the lowest work hardening rate of any of the common austenitic stainless steels.
- This results in a tensile strength increase of approximately 8MPa/%Ra [8MPa increase in tensile strength for each 1% reduction of area of cold work - this data from wire drawing].
- Even after substantial cold work this grade remains essentially non-responsive to a magnet.

## Applications

Typical applications include:

- All severe cold heading applications
- Self-tapping screws
- Roofing bolts
- Machine screws
- Bolts
- Set screws
- Blind rivets



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