

# SS 353MA, Type 353MA, WNR 1.4854, UNS S35315, AISI 353MA, ASTM 353MA, Grade 353MA, ALLOY 353MA

## Introduction :

Stainless steel 353MA grade is an austenitic and heat resistant steel. It is an alloy with higher nickel content than the other steels. This alloy the max service temperature in air is 1150°C. But service below 950°C (1742°F) could cause reduced temperature impact toughness. It is useful in applications such as where components require creep resistance and heat. And for use over 550°C for equipment and components in iron, steel, and non-ferrous industries, engineering industry, cement industry, energy conservation plants.

## Chemical Composition

	SS 353MA	TYPE 353MA	WNR 1.4854	UNS S35315	AISI 353MA	ASTM 353MA	GRADE 353MA	ALLOY 353MA
Carbon, C	0.07max	0.07max	0.07max	0.07max	0.07max	0.07max	0.07max	0.07max
Silicon, Si	1.30max	1.30max	1.30max	1.30max	1.30max	1.30max	1.30max	1.30max
Manganese, Mn	1.50max	1.50max	1.50max	1.50max	1.50max	1.50max	1.50max	1.50max
Phosphorus, P	0.040max	0.040max	0.040max	0.040max	0.040max	0.040max	0.040max	0.040max
Sulphur, S	0.015max	0.015max	0.015max	0.015max	0.015max	0.015max	0.015max	0.015max
Chromium, Cr	24.0-26.0	24.0-26.0	24.0-26.0	24.0-26.0	24.0-26.0	24.0-26.0	24.0-26.0	24.0-26.0
Nickel, Ni	34.0-36.0	34.0-36.0	34.0-36.0	34.0-36.0	34.0-36.0	34.0-36.0	34.0-36.0	34.0-36.0
Nitrogen, N	0.17max	0.17max	0.17max	0.17max	0.17max	0.17max	0.17max	0.17max
Cerium, Ce	0.03-0.08	0.03-0.08	0.03-0.08	0.03-0.08	0.03-0.08	0.03-0.08	0.03-0.08	0.03-0.08

## Mechanical Properties

	SS 353MA	TYPE 353MA	WNR 1.4854	UNS S35315	AISI 353MA	ASTM 353MA	GRADE 353MA	ALLOY 353MA
Tensile Strength	720Mpa, 104000psi	720Mpa, 104000psi	720Mpa, 104000psi	720Mpa, 104000psi	720Mpa, 104000psi	720Mpa, 104000psi	720Mpa, 104000psi	720Mpa, 104000psi
Yield Strength	360Mpa, 52200psi	360Mpa, 52200psi	360Mpa, 52200psi	360Mpa, 52200psi	360Mpa, 52200psi	360Mpa, 52200psi	360Mpa, 52200psi	360Mpa, 52200psi
Elongation %	50	50	50	50	50	50	50	50

## 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 353MA, Type 353MA, WNR 1.4854, UNS S35315, AISI 353MA Plates
- SS 353MA, Type 353MA, WNR 1.4854, UNS S35315, AISI 353MA Pipes
- SS 353MA, Type 353MA, WNR 1.4854, UNS S35315, AISI 353MA Round Bar
- SS 353MA, Type 353MA, WNR 1.4854, UNS S35315, AISI 353MA Tube
- SS 353MA, Type 353MA, WNR 1.4854, UNS S35315, AISI 353MA Flanges
- SS 353MA, Type 353MA, WNR 1.4854, UNS S35315, AISI 353MA Wire
- SS 353MA, Type 353MA, WNR 1.4854, UNS S35315, AISI 353MA Fittings

## Applications

Stainless steel grade 353MA is used in the following application areas:

- Components requiring heat and creep resistance.
- For use over 550°C for equipment and components in iron, steel, and non-ferrous industries, cement industry, engineering industry, and energy conservation plants.

## Corrosion resistance

- Owing to the high silicon content and the addition of rare earth metals (REM), Grade 353 MA has very high resistance to oxidation.
- Due to its ability to form a dense chromium oxide and its high nickel content, Grade 353 MA also has good resistance to carburization and nitrogen pick-up.

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## Heat treatment

• Tubes are delivered in the heat treated condition. If another heat treatment is needed after further processing, the following is recommended:

### • Stress relieving

1000–1100°C (1830–2010°F), 10–15 minutes, cooling in air.

### • Solution annealing

1100–1200°C (2010–2190°F), 5–20 minutes, rapid cooling in air or water.

## Welding

- The weldability of Grade 353 MA is good.
- Suitable welding methods are manual metal-arc welding with covered electrodes and gas-shielded arc welding, with the TIG method as first choice.
- Preheating and post-weld heat treatment are not normally necessary.
- Since the material has low thermal conductivity and high thermal expansion, welding should be carried out with low heat input and with welding plans well thought out in advance, so that the deformation of the welded joint can be kept under control.

## Bending

- Due to its higher strength compared with conventional stainless steels, higher deformation forces are required for cold bending of Grade 353 MA.
- Annealing after cold bending is not normally necessary, but this decision should be made taking account of the degree of bending and the service conditions.



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