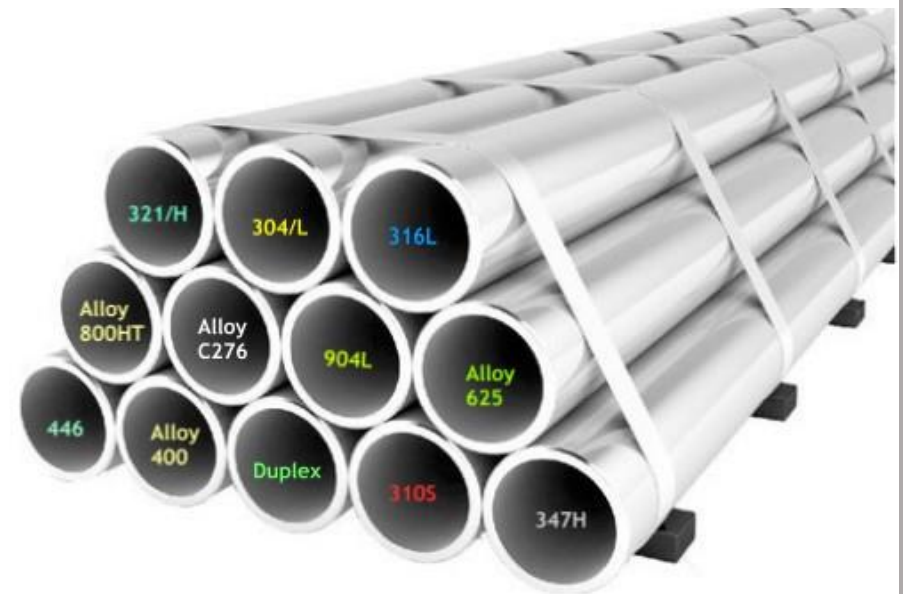


254 SMO STAINLESS STEEL

Datasheet for Stainless Steel 254 SMO

- Pipes & Tubes
- Sheets & Plates
- Bars & Rods, Forgings
- Fittings & Flanges
- Nuts & Bolts
- Valves



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Datasheet for Stainless Steel 254 SMO

UNS S31254 (1.4547)

What is 304/304L Stainless Steel?

- Stainless Steel 254 SMO is a high-alloy austenitic chromium-nickel-molybdenum stainless steel developed for use in seawater, pulp and paper industry, brackish water and other aggressive chloride-bearing media. The specific levels of Cr, Ni, Mo, and N in this “super austenitic” chemical makeup allow 31254 to combine impact toughness resistance to corrosion cracking, with pitting and crevice corrosion resistance. The result is strength of nearly twice that of 300 series stainless steels.
- UNS S31254 is often referred to as a “6% Moly” grade due to the molybdenum content; the 6% Moly family has the ability to withstand high temperatures and maintain strength under volatile conditions. This grade has surpassed its original intent and overlapped into many industries proving useful owing to its high level of molybdenum amount other elements, which allows 31254 to be used successfully in various applications such as flue gas desulfurization and chemical environments. In some applications it has even been found to be a more cost effective substitute for high nickel and titanium alloys.

Product Forms and Standards of 304/304L Stainless Steel

Product Forms	Material Standards
Plates, Sheets & Strips	ASTM A240, A666
Billets, Bars & Rods	ASTM A276, A314, A479
Forgings (Flanges & Fittings)	ASTM A182, A473.
Wires	ASTM A313, A368, A478, A492, A493, A580.
Seamless and Welded Pipes	ASTM A312, A358, A813, A814.
Wrought Pipe Fittings	ASTM A403
Castings (Cast Fittings & Valve Parts)	ASTM A351, A743, A744

Properties and Processing Characteristics of Stainless Steel 254 SMO

- Excellent resistance to pitting and crevice corrosion, PRE = $\geq 42.5^*$. (*The PRE is defined as, in weight-%, PRE = %Cr + 3.3 x %Mo + 16 x %N)
- High resistance to general corrosion
- High resistance to stress corrosion cracking
- Higher strength than conventional austenitic stainless steels
- Good weldability

Chemical Properties of Stainless Steel 254 SMO

Grade	C	Cr	Mn	Mo	N	Ni	P	Si	S
254 SMO	0.02 max	min: 19.5	1.00 max	min: 6.0	min: 0.18	min: 17.5	0.03 max	0.80 max	1.01 max
		max:20.0		max: 6.5	max: 0.20	max: 18.0			

Mechanical Properties of Stainless Steel 254 SMO

Grade	Tensile Strength ksi (MPa) min	Yield Strength 0.2% Offset ksi (MPa) min	Elongation - % in 50 mm (min.)	Hardness	
				(Brinell) MAX	(Rockwell B) MAX
254 SMO Sheet & Strip	100 (690)	45 (310)	35	223	96
254 SMO Plate	95 (655)	45 (310)	35	223	96

Physical Properties of Stainless Steel 254 SMO

Grade	Stainless Steel 254 SMO
Density	8.0 kg/dm ³
Modulus of Elasticity	195 GPa
Linear Expansion at 68 to 212°F (20 to 100°C)	16.5 X10 ⁻⁶ /°C
Thermal Conductivity	14 w/m°C
Thermal Capacity	500 J/kg°C
Electrical Resistivity	0.85 μΩm

Applications of Stainless Steel 254 SMO Plates, Pipes, Fasteners & Forgings

- Saltwater handling
- Tall oil distillation columns
- Flue gas desulfurization scrubbers
- Components used in petroleum production
- Food processing equipment
- Process equipment in chemical industry
- Bleaching equipment in the pulp and paper industry
- Flue-gas cleaning
- Desalination
- Heat exchangers

Stainless Steel 304/304L Product Specification

Product	Stainless Steel 254 SMO
ASTM Standard	ASTM A182 (F44), ASTM A240, ASTM A249, ASTM A269, ASTM A276, ASTM A312, ASTM A469, ASTM A479, ASTM A484, ASTM A813, ASTM A814
Equivalents	UNS S31254, 1.4547, X1CrNiMoCuN20-18-7, 1.4529
Items	Pipe, Tubes, Tubing, Fittings, Flanges, Valves, Fasteners, Sheets, Plates, Bars, Forged Parts, Cast Parts
Size	Diameter: 1" to 11", Length: upto 24"
Pipe Type	Seamless, Welded, ERW, Fabricated, Custom Size Pipes
Specifications	ASTM, ASME, DIN, GOST, JIS
Certification	EN 10204 3.1
Fittings Type	Butt Weld, Screwed & Socket Weld, Flanges, Instrumentation
Other Fittings	Elbows, Tees, Reducers, Caps, Stub Ends, Flanges (ANSI, Table E, D and H), Nuts, Bolts, Screws, Threaded Bars

Fabrication Data & Other Properties of Stainless Steel 254 SMO

Avoid abrasion against copper/copper alloys or other similar metals which, if present in metallic form, can cause cracks during subsequent welding, hot processing or heat treatment.

Machinability

Stainless steel grade 254 SMO™ is quite tough to machine due to the extremely high work hardening rate and lack of sulfur content; however using sharp tools, overpowered machine tools, positive feeds, good amount of lubrication, and slow speeds tend to provide good machining results.

Bending

The excellent formability of 254 SMO permits cold bending to very tight bending radii. Annealing is not normally necessary after cold bending.

Welding

Welding of stainless steel grade 254 SMO™ requires filler material without which it results in poor strength properties. Filler metals such as AWS A5.14 ERNiCrMo-3, and alloy 625 are recommended. Electrodes used in the process, have to match with AWS A5.11 ENiCrMo-12.

Annealing

Annealing of this material should be performed at 1149-1204°C (2100-2200°F), which should be followed by a water quench.

Hot Working

Forging, upsetting and other operations relating to this material can be performed at 982 - 1149°C (1800 - 2100°F). It is recommended that temperatures do not exceed this range as it would result in scaling and reduction in the workability of the material. To re-attain maximum corrosion resistant properties, it is advisable to perform post-process annealing.

Cold Working

Cold working can be carried out using all the traditional methods; however, the process would be tough due to its high work hardening rate. The result will provide the material with increased strength and toughness.

Hardening

Stainless steel grade 254 SMO™ does not respond to heat treatment. Hardening is possible only through cold reduction.

Forging

This is a highly alloyed material and the recommended forging temperature range is 2370/1920°F (1300/1050°C), followed by a solution anneal at 2100°F (1150°C) minimum temperature.

Corrosion Resistant Properties of Stainless Steel 254 SMO

- Excellent resistance to pitting and crevice corrosion due to its high chromium, molybdenum, and nitrogen content
- Has a very low carbon content, which means there is very little risk of carbide precipitation during heating
- Possesses very good resistance in water containing chlorides, therefore, it is suitable for use in seawater as it can be exposed to it for prolonged periods without suffering from crevice corrosion

Our Key Products

Stainless Steel 254 SMO Sheet	Stainless Steel 254 SMO Plate Cuttings/Profiles	Stainless Steel 254 SMO Nuts, Bolts and Fasteners
Stainless Steel 254 SMO Plate	Stainless Steel 254 SMO Foil, Coil	Stainless Steel 254 SMO Wire
Stainless Steel 254 SMO Blocks/Slabs	Stainless Steel 254 SMO Strip	Stainless Steel 254 SMO Ingot
Stainless Steel 254 SMO Rod/Bar	Stainless Steel 254 SMO Pipes and Tubes	Stainless Steel 254 SMO Forgings and Castings
Stainless Steel 254 SMO Flanges	Stainless Steel 254 SMO Forged Fittings	Stainless Steel 254 SMO Buttweld Fittings

About Metallica Metals – The Steel Pipes Factory

- Established in 1975, the Metallica Metals Group (The Steel Pipes Factory) has its operations spread across major cities in India. We are a pioneer in the stainless steel pipes, nickel alloy products, titanium products, carbon steel pipes and alloy steel pipes manufacturing and processing industry. Our products including pipe fittings, flanges, pipes, sheet plates and valves are exported to over 70 countries across the world, while in India we have supplied to even the remote areas. With over 250 tons of sale in stainless steel and carbon steel pipes every day, Metallica has emerged as a prominent vendor for many buyers in India and Overseas
- **More than 3000 tons ready from stock and new production ready in just a few weeks.**
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Our Key Products

STAINLESS STEEL & NICKEL ALLOYS

Pure Nickel Alloys

Monel Alloys (Ni-Cu Alloys)

Inconel (Ni-Cr-Mo) Alloys

Incoloy Alloys (Ni-Cr-Fe)

Hastelloy Alloys

Stainless Steel 304/304L

Stainless Steel 309S/309H

Stainless Steel 310/310S

Stainless Steel 316/316L

Stainless Steel 316Ti

Stainless Steel 317/317L

Stainless Steel 321/321H

Stainless Steel 347/347H

Stainless Steel 904L

Duplex Steels (UNS S32205, UNS S31803)

Super Duplex Steels (UNS S32760 / UNS
S32750)

Stainless Steel 254 SMO (UNS S31254 / 1.4547)

INSTRUMENTATION TUBES & FITTINGS

Instrumentation Tube

Hydraulic Tubing

Seamless Tubing

Instrumentation Tube Fittings

Double Compression Tube Fittings

Precision Pipe Fittings

Needle & Gauge Valves

Manifold Valves

PRODUCTS

Steel Sheet & Plate

Steel Coil & Strip

Steel Pipes

Steel Tubes

Electropolish Tube

Heat Exchanger Tubes

Steel Bars/Rods & Wire

Fasteners (Nut, Bolt, Washer)

Steel Angle Bars

Hex Steel Bars

Round Steel Bars & Rod

Flat Steel Bars

Forgings, Rings & Forged Blocks

Stainless Steel Pipe

Stainless Steel Seamless Pipe

Stainless Steel Welded Pipe

Stainless Steel Tubes

Stainless Steel Furnace Tubes

Stainless Steel Seamless Tubing

Stainless Steel Heat Exchanger Tubes

Large Diameter Pipe

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