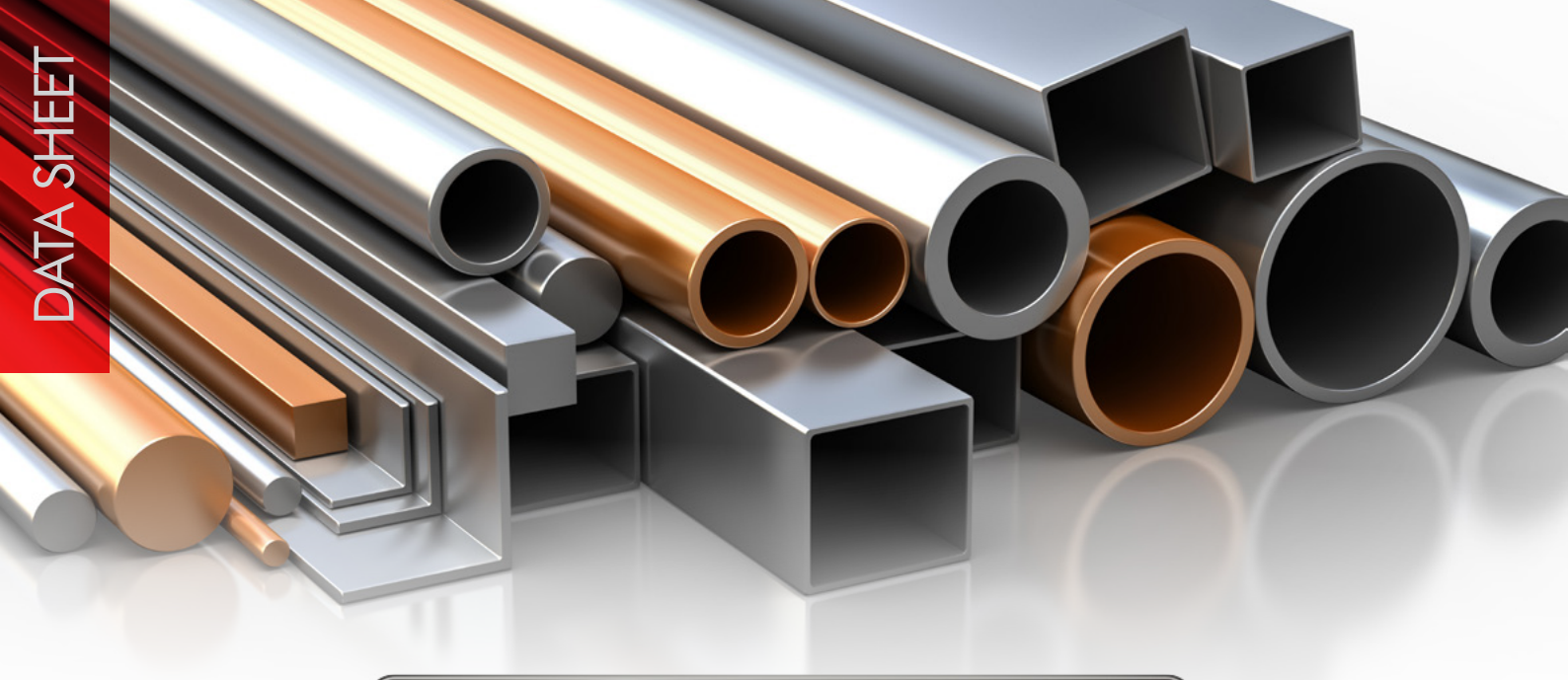
DATA SHEET



S. S. 254 SMO

UNS No - S31254

254 SMO® is a stainless steel was initially created to utilize in seawater and other aggressive chloride-bearing situations. This grade includes a very high end austenitic stainless steel; mainly comprised within 17.5% to 18.5% nickel, 19.5% and 20.5% chromium, 6% to 6.5% molybdenum and .18% to .22% nitrogen. These particular levels of Cr, Ni, Mo, and N in this "super austenitic" chemical makeup allow 31254 to join impact toughness resistance to corrosion cracking, with pitting and crevice corrosion resistance. The result is strength of almost double that of 300 series stainless steels.

UNS S31254 is treated as a "6% Moly" grade because of the molybdenum content; the 6% Moly family has the ability to withstand high temperatures and keep up strength under volatile conditions. This grade has surpassed its unique expectation and covered into many different industries demonstrating helpfulness owing to its high level of molybdenum amount other elements, which allows 31254 to be utilized effectively as a part of different applications such as flue gas desulfurization and chemical environments.

Applications

- Petroleum production
- Saltwater handling
- Food and chemical processing equipment
- Pulp mill bleach systems
- Flue gas desulphurization scrubbers
- Tall oil distillation columns
- Offshore oil & gas production equipment
- Desalination equipment

Characteristics

- Excellent resistance to pitting and crevice corrosion
- High resistance to general corrosion
- High resistance to stress corrosion cracking
- Higher strength than conventional austenitic stainless steels
- Good weldability

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Machining
An extremely high work hardening rate joins with a total inadequacy of sulfur make 254-SMO very tough to machine. Sharp tools, overpowered machine tools, ample lubrication, positive feeds and slow speeds usually offer the best results.

Forming
Because of its high initial yield strength, this alloy will require greater force than utilized in other austenitic stainless steels.

Welding
Welding with no consist of filler material results in poor strength properties. Recommended filler metal includes AWS A5.14 ERNiCrMo-3 and alloy 625. Electrodes should satisfy with AWS A5.11 ENiCrMo-12.

Hot Working
When cold forming is recommended wherever feasible, upsetting, forging and other operations can be performed at 1800-2100 F. Temperatures above this range will be the reason for scaling and a reduction in the workability of the material. Post-process annealing is needed to re-attain maximum corrosion resistant properties.

Cold Working
With this alloy most common cold work techniques are utilized successfully. It should be seen however that the material will be harder to work than other austenitic stainless steels just because of its high work hardening rate. The resulting hardening will, however, produce increases in strength and toughness which may be of value in the completed product.

Annealing
2100-2200 F (1149-1204 C), followed by a water quench.

Hardening
This alloy does not harden by heat treating. High properties might just be acquired through cold reduction.

Chemical Properties

C	N	Si	P	S	Cr	Mn	Ni	Cu	Mo
0.02 max	0.18 - 0.22	0.8 max	0.03 max	0.01 max	19.5 - 20.5	1.0 max	17.5 - 18.5	0.5 - 1.0	6.0 - 6.5

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Mechanical Properties

Tensile Strength (ksi)	0.2% Yield Strength (ksi)	Elongation% in 2 inches
94	44	35

Physical Properties

Properties	Units	Temperature in °C
Density	8.0 g/cm^3	Room
Specific Heat	0.12 Kcal/kg.C	22°
Melting Range	1320-1390 °C	-
Modulus of Elasticity	195 KN/mm^2	20°
Electrical Resistivity	85 µΩ.cm	Room
Coefficient of Expansion	16.0 µm/m °C	20-100°
Thermal Conductivity	14.0 W/m-°K	20°

ASTM Specifications

Pipe & Tube (SMLS)	Pipe & Tube (Welded)	Sheet / Plate	Bar	Forging	Fitting
A 312, A 269, A 213	A 249, A 269, A 312, A 358, A 409	A 240	A 276, A 479	A 473	A 182

Availability

MANUFACTURING	RAW MATERIALS
Fasteners	Pipes
Custom Machining	Tubes
Custom Fabrication	Bars
Piping / Spools	Sheets
Stamped Parts	Plates
B/W Fittings	
S/W Fittings	-
Flanges	-
Compression Fittings	-