

SS 310MoLN, WNR 1.4466, UNS S31050, AISI 310MoLN, Grade 310MoLN, AFNOR Z 1 CND25.22AZ

Introduction :

310moln stainless steel grade is a fully austenitic stainless steel that does not have intermetallic phases such as intergranular carbide precipitations. For applications in urea plants 310MoLN steel grade has a specifically designed optimized chemical composition. To stabilize and strengthen the austenitic phase the nitrogen in the chemical composition helps. 310 MoLN, material gives excellent corrosion-resistance in urea carbamate environments such as high-pressure strippers. Among wrought austenitic stainless steels it has a fairly high base cost. And it has a fairly high embodied energy and a fairly low ductility.

Chemical Composition

	SS 310MoLN	WNR 1.4466	UNS S31050	AISI 310MoLN	GRADE 310MoLN	AFNOR Z 1 CND25.22AZ
Carbon	0.020max	0.020max	0.020max	0.020max	0.020max	0.020max
Manganese	2.00max	2.00max	2.00max	2.00max	2.00max	2.00max
Chromium	24.0-26.0	24.0-26.0	24.0-26.0	24.0-26.0	24.0-26.0	24.0-26.0
Phosphorus	0.025max	0.025max	0.025max	0.025max	0.025max	0.025max
Sulfur	0.010max	0.010max	0.010max	0.010max	0.010max	0.010max
Molybdenum	2-2.50	2-2.50	2-2.50	2-2.50	2-2.50	2-2.50
Nickel	21.0-23.0	21.0-23.0	21.0-23.0	21.0-23.0	21.0-23.0	21.0-23.0
Nitrogen	0.10-0.16	0.10-0.16	0.10-0.16	0.10-0.16	0.10-0.16	0.10-0.16
Silicon	0.70max	0.70max	0.70max	0.70max	0.70max	0.70max
Iron	Bal	Bal	Bal	Bal	Bal	Bal

Mechanical Properties

	SS 310MoLN	WNR 1.4466	UNS S31050	AISI 310MoLN	GRADE 310MoLN	AFNOR Z 1 CND25.22AZ
Tensile Strength, Mpa[psi]	540-740 (78320-107327)	540-740 (78320-107327)	540-740 (78320-107327)	540-740 (78320-107327)	540-740 (78320-107327)	540-740 (78320-107327)
Yield Strength, Mpa[psi]	250(36259)	250(36259)	250(36259)	250(36259)	250(36259)	250(36259)
Elongation %	40	40	40	40	40	40
Reduction in Area, %	-	-	-	-	-	-
Hardness, Brinell	95	95	95	95	95	95

Products Available in forms :

- SS 310MoLN, WNR 1.4466, UNS S31050, AISI 310MoLN Plates
- SS 310MoLN, WNR 1.4466, UNS S31050, AISI 310MoLN Pipes
- SS 310MoLN, WNR 1.4466, UNS S31050, AISI 310MoLN Round Bar
- SS 310MoLN, WNR 1.4466, UNS S31050, AISI 310MoLN Tube
- SS 310MoLN, WNR 1.4466, UNS S31050, AISI 310MoLN Flanges
- SS 310MoLN, WNR 1.4466, UNS S31050, AISI 310MoLN Wire
- SS 310MoLN, WNR 1.4466, UNS S31050, AISI 310MoLN Fittings

Standard Available in forms :

- ASTM A213 / ASME SA213
- ASTM A312 / ASME SA312

The grade is characterized by :

- Excellent resistance to corrosion in ammonium carbamate and nitric acid
- Excellent resistance to intergranular corrosion
- High resistance to pitting and crevice corrosion
- Good weldability

Applications:

- Stripper Tubes
- Outerlayer of bimetallic
- Ferrules
- Carbamate Condensers
- Decomposers
- Reactor Coils

General corrosion

- S31050 was originally developed for stripper tubes used in the production of urea.
- S31050 has excellent corrosion resistance in urea/carbamate solutions at high pressures and temperatures.
- S31050 is also highly resistant to inorganic acids

Intergranular corrosion

- S31050 is highly resistant to intergranular corrosion after welding.

Pitting and crevice corrosion

- S31050 has very good resistance to pitting, and is also far more resistant to crevice corrosion than ASTM 316L.

Stress corrosion cracking (SCC)

- Conventional austenitic stainless steels of type ASTM 304 and 316 are susceptible to stress corrosion cracking (SCC) in chloride-bearing solutions at temperatures exceeding about 60°C (140°F). The higher nickel content makes S31050 slightly more resistant

Erosion corrosion

- The good mechanical strength of S31050 makes it resistant to erosion-corrosion. Ferrules for urea strippers are one application where this property is utilised.

Weldability

- The weldability of S31050 is good. Welding must be carried out without preheating, and normally there is no need for any subsequent heat treatment.
- S31050 has low thermal conductivity and high thermal expansion.



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