MACSTEEL VRN

STAINLESS STEEL PLATE, SHEET & COIL

317L Technical Data

Summary

To improve pitting and crevice corrosion resistance in aggressive environments, 317L is alloyed with between 3.0 and 4.0%, molybdenum. To counteract the ferrite-forming tendency of molybdenum, more nickel must be added, which results in improved general corrosion resistance. It has excellent formability and fabricability.

317L is not prone to intergranular corrosion in the heat affected zone after welding.

Typical Applications

Applications for 317L are generally in process equipment in the pulp and paper, fertilizer and chemical industries. In the pharmaceutical industry, 317L is sometimes recommended because of the necessity to avoid metallic contamination.

Chemical Composition (SATM A240)

	C	Mn	P	S	Si	Cr	Ni	Mo
317L	0.03 max	2.00 max	0.045 max	0.030 max	1.00 max	18.0 - 20.0	11.0 - 15.0	3.0 - 4.0

Typical Properties in the Annealed Condition

The properties quoted in this publication are typical of mill production and unless indicated should not be regarded as guaranteed minimum values for specification purposes.

1. Mechanical Properties at Room Temperature

	Typical	Mn
Tensile Strength MPa	570	515
Proof Stress (0.2% Offset) MPa	330	205
Elongation (Percent in 50 mm)	50	40
Hardness (Brinell)	165	-
Endurance (fatigue) Limit MPa	260	-

2. Corrosion Resistance

As a rough guide the following examples are given for pure acid/water mixtures.

Temperature ^{o} C	20				80			
Concentration - % by mass	10	20	40	60	10	20	40	60
	80	100			80	100		
Sulphuric Acid	2	2	2	2	2	2	2	2
	1	0			2	2		
Nitric Acid	0	0	0	0	0	0	0	0
	2	0			1	2		
Phosphoric Acid	0	0	0	0	0	0	0	0
	0	2			1	2		
Formic Acid	0	0	0	0	0	1	2	2
	0	0			1	0		

Key: *0 = resistant - corrosion rate less than 100 mm/year*
1 = partly resistant - corrosion rate between 100 mm and 100 ..m/year
2 = non-resistant - corrosion rate greater than 100 mm/year

Thermal Processing

1. Annealing. 317L is annealed at 1 050 - 1 150°C and water quenched, although thin sections may be air cooled. Optimum corrosion resistance is obtained after quenching from above 1 100°C .

2. Stress Relieving. 200-400°C followed by air cooling.

3. Hot working

Initial forging and pressing:- 1 170°C

Finishing:- 950°C

Note: Soaking times to ensure uniformity of temperature are up to 12 times that required for carbon steel.