AISI 317L

Molybdenum-bearing Austenitic Stainless Steel

TYPICAL AMERICAN DENOMINATION AISI 317L

Chemical Composition

Element	C	Mn	Si	Cr	Ni	Mo	P	S	N
%	0,03	2,00	0,75	18,00 20,00	11,00 15,00	3,00 4,00	0,04	0,03	0,10

Values according to ASTM A240/A240M standard

General Characteristics

Stainless steel AISI 317L has as its main characteristic the great addition of molybdenum to its chemical composition, which guarantees an increased resistance to chemical attack when compared with chromium-nicke-molybdenuml austenitic steels of the type AISI 316L. This grade has approximately 1% more chromium, nickel and molybdenum when compared with austenitic steel AISI 316L. Grade AISI 317L offers even better creep deformation characteristics and mechanical resistance to high temperatures when compared with conventional stainless steels. The American denomination "low carbon", or simply "L", of grade AISI 317L ensures resistance to sensitization during welding or when thermal processes are applied due to the low carbon in its chemical composition. The combination of molybdenum and nitrogen in the chemical composition of this grade is particularly effective in incresing the resistance to pitting corrosion and crevice, especialy in acid medium with chlorides and sulfur compounds at high temperatures. In addition, nitrogen also contributes to increasing the mechanical strength of the alloy.

The main applications of AISI 317L are dedicated to the chemical industry, petroleum and petrochemical industries, industries producing paper and pulp, and as condenseres in power stations using fossile and nuclear fuels. It is intended where it is required to have corrosion resistance to strong organic acids, such as the naphthenic acids found in the petroleum refining.

Delivery Conditions*

- Products: coils, sheets and strips cold rolled and hot rolled

Thickness range (mm)	Mill edge width (mm)	Slitted edge width(mm)
1,00 to 5,99	1040	1000, 1020
6,00 to 8,00	1040, 1240, 1270	1000, 1020, 1200, 1219, 1220, 1250
9,00 to 11,30	1040, 1240	1000, 1020, 1200, 1219, 1220
14,00 to 50,80	1040, 1240, 1270, 1320	1000, 1020, 1200, 1219, 1220, 1250, 1300

*For further information please contact Aperam South America.

Mechanical Properties

In the annealed condition, according to standard ASTM E-8 M: longitudinal sample, parallel to rolling direction, specimen with Lo = 50 mm. Typical values.

Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness HRB
330	650	45	87

Physical Properties

Density	**8.0 g/cm³**
Modulus of Elasticity	200 GPa
Average Coefficient of Thermal Expansion	
from 0°C to 100°C	16.5 µm/m.°C
from 0°C to 538°C	**18.1 µm/m.°C**
Thermal Conductivity at 100°C	14.4 W/m.K
Specific Heat	500 J/kg.K
Electrical Resistivity	790 nW.m
Melting Point	1375°C – 1400°C

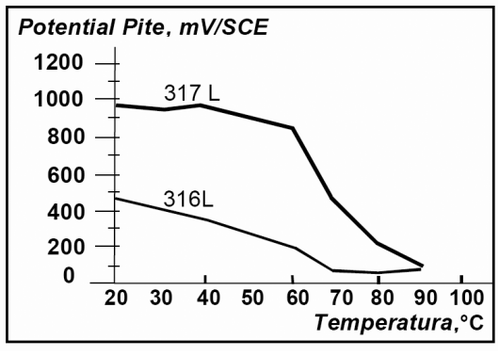
Source: ASM Specialty Handbook – Stainless Steels

Corrosion Resistance

There is a number that co-relates the chemical composition of stainless steel with the pitting potential measured in a solution containing chloride, the PREN (Pitting Resistance Equivalent Number). This number is based on an empiric mathematical equation that generates a line on the Pitting Potential x PREN graph. The increase of PRE means a better corrosion resistance in environments containing chlorides.

Element (%)	C	Cr	Ni	Mo	N (ppm)	PREN
AISI 316L	0,03	17	10,0	2,0	300	25
AISI 317L	003	18	11,5	3,0	600	30

PREN = Cr + 3.3Mo + 30N



Solution 3.5% NaCl – neutral pH

The information contained in this publication has been obtained from laboratory test results and traditional and respectable bibliographic references. The behavior of stainless steel may change due to conditions of temperature, pH, contaminants, and also the conservation of tools used in welding and conformation. For these reasons, the information contained in this publication may be used only as initial reference for tests or final specification by the custumer. Aperam South America is not responsible for any loss or damage caused by inappropriate use of the information contained in this publication.

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