

AISI 347/347H

Niobium Stabilized Austenitic Stainless

INTERNATIONAL DENOMINATION AISI 347/347H

Chemical Composition

Element	C	Mn	Si	Cr	Ni	P	S	N	Nb
%	0,04 0,08	2,00	0,75	17,00 19,00	9,00 13,00	0,045	0,03	0,02	10xC min 1,00 máx

Values according to ASTM A240/A240M standard for AISI 347

General Characteristics

Grade 347 from Aperam South America is a stainless steel elaborated to meet the international standards AISI 347 and AISI 347H. Due to the stabilization with niobium, this grade has the corrosion resistance at high temperatures as its main characteristic. When submitted to temperatures ranging from 450-900 °C, some grades tend to form chromium carbide precipitate in the grain boundary region, and the material becomes susceptible to intergranular corrosion. The stabilization with niobium inhibits the formation of chromium carbide, and consequently increases the resistance to this type of corrosion.

Grade AISI 347 has excellent weldability, a characteristic common to austenitic steels, as well as high mechanical properties, which guarantees good ductability, and it is recommended for some cold forming processes.

The application of grade AISI 347 is mainly intended for corrosive environments and high temperatures. It is currently being used in the manufacture of collector rings for aircrafts, engine components for rockets, exhaust manifold for cars, expansion joints and equipment for chemical processing at high temperatures.

Delivery conditions*

- Products: coils and sheets cold rolled and hot rolled

Thickness range (mm)	Mill edge width (mm)	Slitted edge width(mm)
0,40 to 4,84	1040, 1240, 1270, 1320	1000, 1020, 1200, 1219, 1220, 1250, 1300
4,85 to 50,80	1040, 1240, 1270, 1320, 1540	1000, 1020, 1200, 1219, 1220, 1250, 1300, 1500, 1524

* For further information please contact Aperam South America

Mechanical Properties

The following table presents the typical values of the material in the annealed condition for tests according to standard ASTM E-8 M (longitudinal sample, parallel to rolling direction, specimen with $L_0 = 50$ mm).

Yield Strength - 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HRB)
345	645	51	87

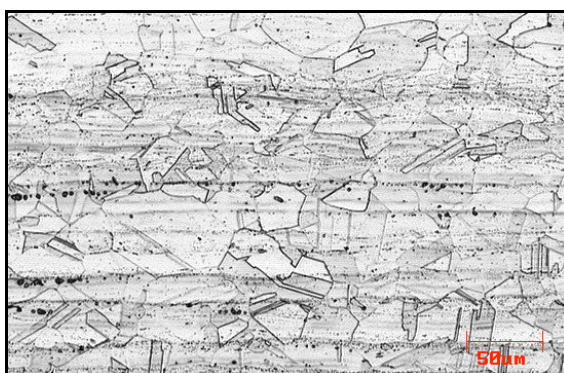
Physical Properties

Density	8.0 g/cm ³
Modulus of Elasticity	193 GPa
Average Coefficient of Thermal Expansion from 0°C to 100°C	16.6 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$
from 0°C to 538°C	18.6 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$
Thermal Conductivity at 100°C	16.1 W/m.K
Specific Heat	500 J/kg.K
Electrical Resistivity	730 nW.m
Melting Point	1400-1425°C

Source: ASM Specialty Handbook - Stainless Steels

Microstructure

Grade AISI 347 presents a re-crystallized austenitic structure with sparse niobium carbonitrides and grain size of about 7 ASTM.



Microstructure of the hot rolled material after annealing

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 customer. 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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