

1. Standards

AISI 316L
DIN 1.4404
AFNOR X2 Cr Ni Mo 17 12 2

3. Composition

⁽¹⁾ Combustion analysis ⁽²⁾ ICP analysis

%	C ⁽¹⁾	< 0,03
%	Mn ⁽²⁾	< 2
%	P ⁽²⁾	< 0,01
%	S ⁽¹⁾	< 0,005
%	Si ⁽²⁾	< 1
%	Cr ⁽²⁾	16-19
%	Ni ⁽²⁾	9-13
%	Mo ⁽²⁾	1.5-3
%	N ⁽²⁾	< 0,003
%	O ⁽²⁾	< 0,002
%	Fe	Compl.

2. Properties and uses

Austenitic stainless steel made from gas atomized powder with a maximum size of 22 microns. This alloy is stable and very resistant to corrosion and can be mirror polished. The material exhibits a slight magnetism and is dedicated to all cosmetic and medical uses (implants excluded). This alloy can be plated, welded and PVD coated.

4. Physical and chemical properties

No corrosion ⁽¹⁾ after a 96 hour salt spray test
No corrosion ⁽²⁾ after a 96 hour artificial sweat test
Nickel leaking rate inferior to 0,1 mg/cm²/week ⁽³⁾

Theoretical density : 7,96
Minimum density : 7,85
Average density : 7,92

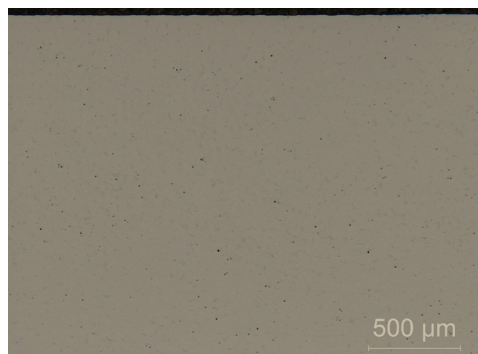
⁽¹⁾ according to NF 41-002
⁽²⁾ according to NF S 80-772
⁽³⁾ according to pr EN 1811, point b of the European directive 94/27/CE

5. Mechanical properties

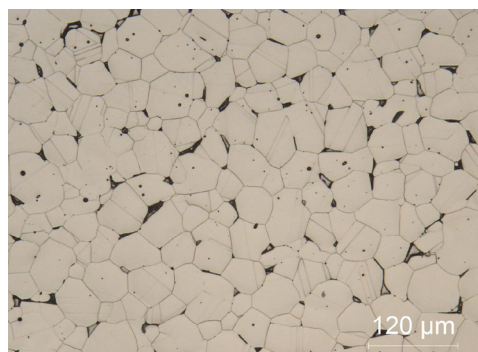
Traction : $R_m > 550$ MPa Surface hardness : 120-140 Hv₁
 $R_{p0,2} > 180$ MPa Roughness : 1 < Ra < 2 μm
 $A\% > 50$ %

6. Characteristics as sintered

Full austenitic structure with small areas of delta ferrite located in grain boundaries (maximum 4%)
Inter-granular porosities Ø < 5 μm
No intra-granular porosities. No segregation.
Very low interstitial inclusions limited to some globular manganese sulphur (~1 to 2 μm).

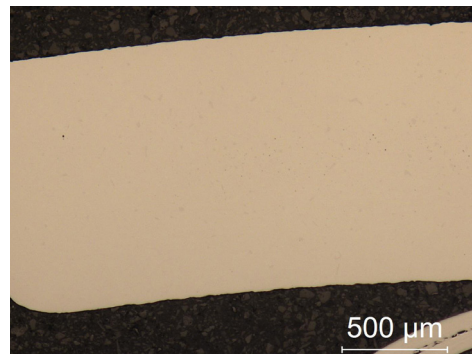


Micrograph without etching

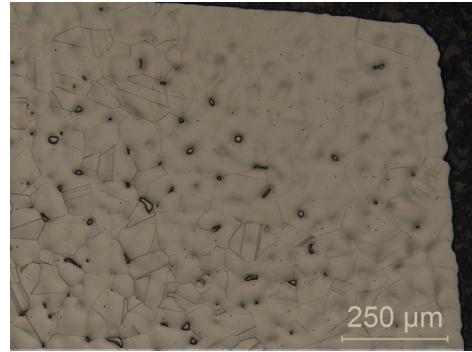


Micrograph with etching

Grain size G=6 (~ 50 μm)



Micrograph without etching



Micrograph with etching

7. Characteristics with HIP

HIP treatment allows to reach full density. This heat treatment reduces δ ferrite but increases the grain size.
Grain size G=3 (~ 125 μm)