

420 W

1. Standards

AISI 420F
DIN 1.4028
AFNOR X30 C 13

3. Composition

⁽¹⁾ Combustion analysis ⁽²⁾ ICP analysis

%	C ⁽¹⁾	0,35-0,50
%	Mn ⁽²⁾	< 2
%	P ⁽²⁾	< 0,04
%	S ⁽¹⁾	< 0,03
%	Si ⁽²⁾	< 1
%	Cr ⁽²⁾	12-13
%	Ni ⁽²⁾	< 0,6
%	Mo ⁽²⁾	< 0,65
%	Nb	1 - 2
%	Fe	Compl.

2. Description and use

Martensitic stainless steel made from water atomized powder with a maximum size of 20 microns. This alloy exhibits good resistance to corrosion in salty / corrosive atmosphere and steam and can be heat treated. It is typically used for blades and cutting tools especially for surgical instruments.

4. Chemical and physical properties

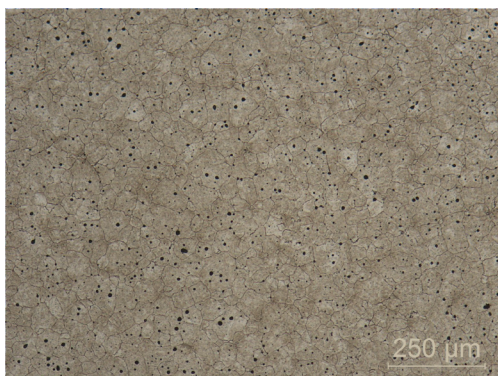
No corrosion ⁽¹⁾ after a 96 hour salt spray test

Minimum density : 7,60

Full density : 7,77

⁽¹⁾ according to NF 41-002

5. As sintered microstructure

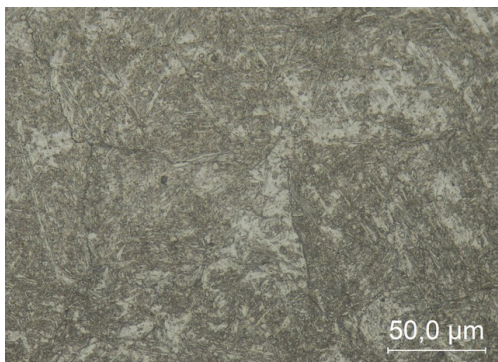


Micrograph with etching

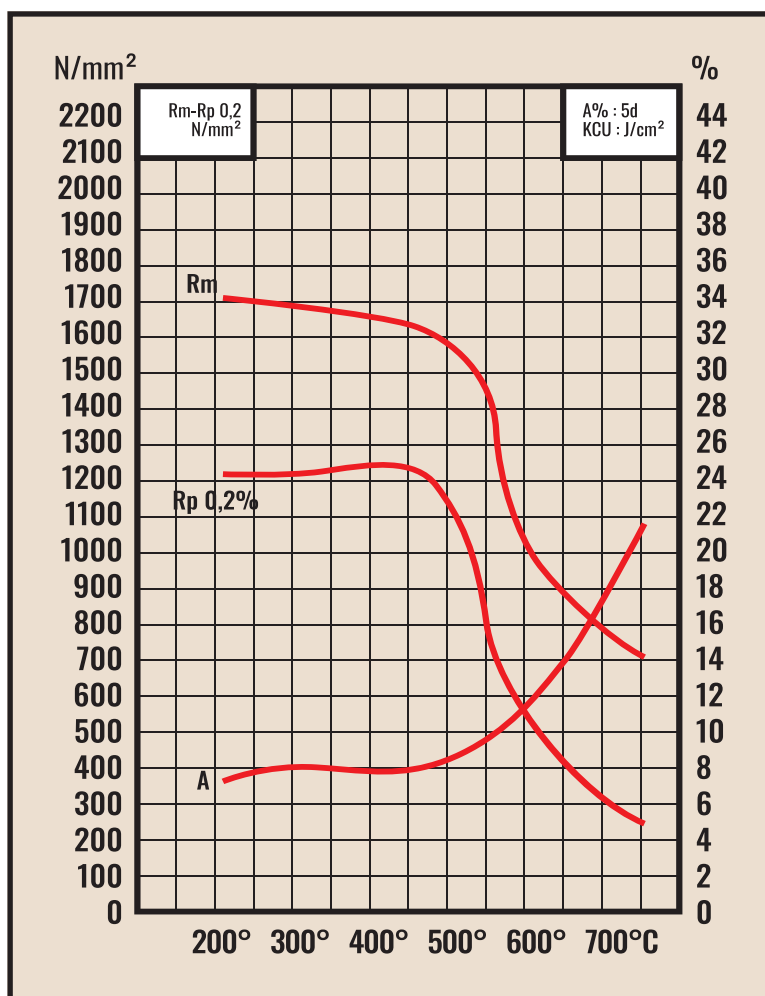
Grain size G=6 (~ 50 µm)

6. Mechanical properties after treatments (HIP + quench and annealing 160 °C)

Traction :
 $R_m > 1900 \text{ MPa}$
 $R_{p0,2} > 1250 \text{ MPa}$
 $A\% > 7 \%$
 Surface hardness : 560 Hv₁ (51 HRC)
 Roughness : $1 < Ra < 2 \text{ µm}$



Micrograph with etching



Properties after quenching and annealing