



STAINLESS

High performance Alloys - Medical - Aerospace - Microtechnics - Motorsport - Industry

1.4112 X90CRMOV18

GENERALITIES

Grade **1.4112** is a very high hardness martensitic stainless steel with good abrasion resistance and superior corrosion resistance to the 17% Cr to 1% C range (type 440C). The grade can also be ESR remelted to improve its inclusion cleanliness and corrosion resistance.

Stainless has a range of sizes in stock to suit your processing requirements. This product can also be custom made or cut into slugs by our service centres.

APPLICATIONS

Due to its good corrosion resistance and high hardness in the treated state (>56HRC), the grade is used in the manufacture of medical instruments (screwdrivers, drills, cutting guides, etc.), in bearings, in the chemical and food industries and in the cutlery industry.

STANDARDS AND DESIGNATIONS

Numerical designations:

W. Nr 1.4112 – X90CrMoV18 - Similar to AISI 440B

Standards :

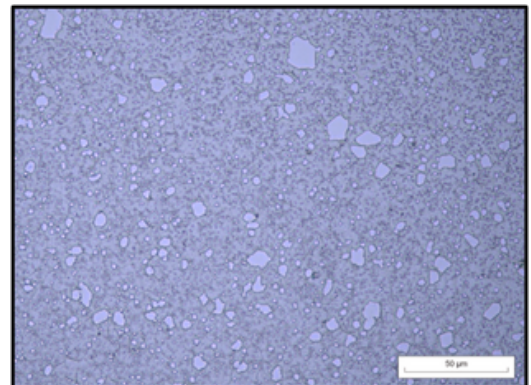
NF S 94-090 - NF EN 10088-3 – ISO 7153-1

TYPICAL CHEMICAL ANALYSIS (mass %)

	Carbon	Manganese	Phosphorus	Sulphur	Silicium	Chromium	Molybdenum	Vanadium	Cobalt	Iron
MIN	0.85	---	---	---	---	17.0	0.90	0.07	---	BALANCE
MAX	0.95	1.0	0.040	0.030	1.0	19.0	1.30	0.12	0.10	

METALLURGY

The melting processes combined with the transformation processes make it possible to obtain a homogeneous microstructure with a homogeneous distribution of carbides. In the processed state, the microstructure consists of martensite and undissolved carbides (see photo below):



PHYSICAL PROPERTIES AT 20°C

Density.....7.7 g.cm⁻³
 Coefficient of thermal expansion (between 20 et 200°C).....11 x 10⁻⁶m/m.°C
 Young's modulus.....215 x 10³MPa
 Thermal conductivity.....1.59 W.m K⁻¹
Ferromagnetic grade that can be magnetised

MECHANICAL PROPERTIES OF THE BARS

The grade is offered in the annealed condition (cond A) with the following properties:

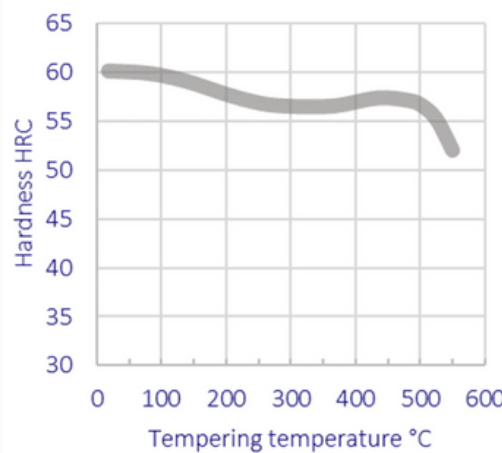
Delivery	Hardness HBW
Annealing	< 265

The microstructure in the annealed state consists of ferrite and carbides.

PROCESSIES

Typical heat treatments

Heating: 1000-1050°C / oil then tempering according to the curve below:



CORROSION RESISTANCE

The corrosion resistance is strongly degraded in the annealed state or after welding, which is not recommended.

STANDARD SHAPE

Rolled or forged round bars, annealed condition (Condition A) up to approx. 300mm, forged blocks - Surface ground or peeled according to diameters.

Other formats: please consult us

The information, data and photos presented in this document are given in good faith and for information purposes only. If you need more precise data, our technical department is at your disposal.
 Click on the link : t.turpin@stainless.eu