



# STAINLESS

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

1.4543

XM16

ASTM F899

NFS S 94090

## GÉNÉRALITÉS

Alloy 1.4543 is a structurally hardened martensitic stainless steel that combines a hardness of approx. 48 HRC and good corrosion resistance. HRC and good corrosion resistance. This grade has a hardening peak at 480°C at 480°C, which makes it easy to perform aging after machining on a condition initially in solution. The grade is remelted in order to improve the cleanliness and homogeneity of the material. Stainless has several sources in stock sources and different formats or product states to meet your processing needs. to meet your processing requirements. This product can also be made to measure or or cut to size by our service centres. service centres.

## APPLICATIONS

Due to its good resistance to corrosion, its good hardness in the treated state (48HRC) and its resilience, the grade is used in particular in the manufacture of instruments for the medical sector (drills, etc.), in general mechanics, in the food industry and in the automotive sector.

## STANDARDS AND DESIGNATIONS

### Numerical designations:

W. Nr 1.4543 – XM16 – UNS S45500

### Standards :

NF S 94-090 - ASTM F 899 – ISO 7153-1 -ASTM A564 - X3CrNiCuTiNb12-9

### Brands:

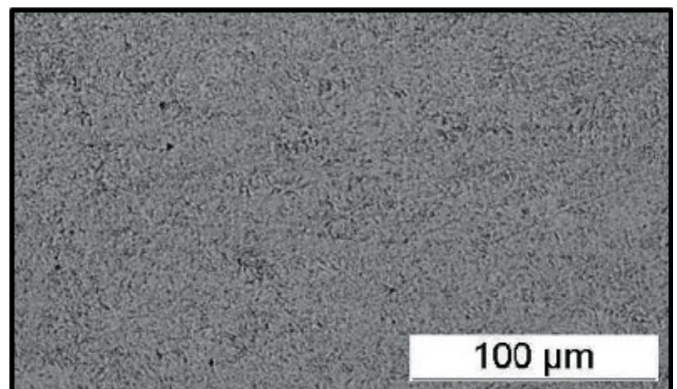
Custom455®, MX455®...

## TYPICAL CHEMICAL ANALYSIS (mass %)

	Carbon	Manganese	Phosphorus	Sulfur	Molybdenum	Silicium	Chrom	Nickel	Copper	Niobium + Tantalum	Titanium	Cobalt	Iron
MIN	---	---	---	---	---	---	11.0	7.50	1.50	0.10	0.90	---	BALANCE
MAX	0.03	0.50	0.015	0.015	0.50	0.50	12.50	9.50	2.50	0.50	1.40	0.10	

## METALLURGY

The melting processes combined with the transformation processes result in a homogeneous microstructure. In the processed state, the microstructure consists of martensite and nanometric intermetallic precipitates (Ni<sub>3</sub>Cu) which germinate during ageing.



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## PHYSICAL PROPERTIES AT 20°C

Density.....7,8 g.cm-3.  
 Coefficient of thermal expansion (between 20 et 200°C).....10,6 x 10<sup>-6</sup> m/m.°C  
 Young's modulus.....200x 10<sup>3</sup> MPa  
 Thermal conductivity.....18 W.m<sup>-1</sup>.K<sup>-1</sup>  
**Ferromagnetic grade that can be magnetized**

## MECHANICAL PROPERTIES OF THE BARS

In particular, the grade is offered in the annealed (solution annealed) state with the following properties:

Temper	Hardness
Annealing (cond A or AT)	< 330 HBW

## PROCESSIES

### Forgeability

The grade can be hot forged in the 900/1250°C temperature range. A re-solution will be necessary to achieve to achieve maximum hardness.

### Weldability

The grade can be welded using most processes. Welding should preferably be carried out before ageing to avoid embrittlement of the heat affected zone.

### Typical heat treatments

For a target hardness ≥ 47HRC (>1620MPa)
- Heating 810/850°C - Oil quenching - Ageing H900 (480°C /4h)

A volume contraction of up to about 0.07% is to be expected during to be expected during the ageing process.

## CORROSION RESISTANCE

The grade has very good corrosion resistance but must be passivated. The microstructure contains little or no chromium carbides, which makes it less susceptible to intergranular corrosion.

## STANDARD SHAPE

- Round or flat bars annealed (Condition A or AT) or pre-treated Hardened or ground surface depending on the diameter
- Flat bars made to measure in the annealed condition (consult us)
- Other formats: sheets

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](mailto:t.turpin@stainless.eu)