



## GENERAL INFORMATION

**Grade 1.4123** is a very high hardness martensitic stainless steel with good abrasion resistance and corrosion resistance far superior to that of the 17% Cr to 1% C range (type 440C). It is manufactured using ESR remelting to optimize fatigue life and corrosion resistance. STAINLESS offers the X15TN® grade, developed by Aubert & Duval and also 1.4123 from another european source.

Stainless has a variety of sizes in stock to meet your application needs. This product can also be custom manufactured or cut into slabs by our service centers.

## APPLICATIONS

Due to its good resistance to corrosion and its high hardness in the treated state (>58HRC), the grade is used in particular in the manufacture of instruments for the medical sector (screwdrivers, drills, cutting guides, etc.), in bearings and in the cutlery sector.

## STANDARDS AND DESIGNATIONS

### Numerical designations:

W. Nr 1.4123 – AISI 420Mod – UNS S42025

### Standards :

NF S 94-090 – ASTM F 899 – NF EN 10088-3 - ISO 7153-1 X40CrMoVN16.02 (formerly Z40 CDV 16.02)

### Brands:

X15TN®,...



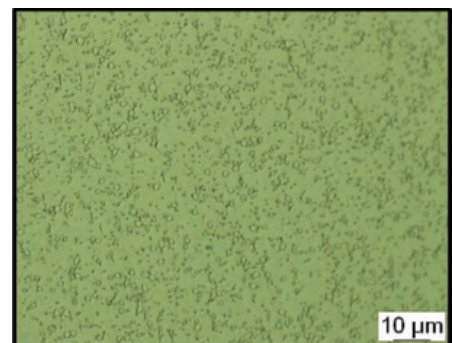
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## TYPICAL CHEMICAL ANALYSIS (mass %)

	Carbon	Manganese	Phosphorus	sulfur	Silicium	Chrom	Molybdenum	Nickel	Vanadium	Nitrogen	Cobalt	Iron
min	0.37	---	---	---	---	15.0	1.50	---	0.20	0.16	---	BALANCE
max	0.45	0.60	0.020	0.0050	0.60	16.0	1.90	0.50	0.40	0.25	0.10	

## METALLURGY

The elaboration processes combined with the transformation processes offer a homogeneous microstructure with a uniform distribution of the carbides. In the quenched temper, the microstructure consists of martensite and undissolved carbides (see photo below):



1.4123

X15TN®

AISI 420MOD

X40CrMoVN16-2

### PHYSICAL PROPERTIES AT 20°C

Density.....7,7 g.cm-3.  
 Coefficient of thermal expansion (between 20 and 200°C).....10,5 x 10<sup>-6</sup>m/m.°C  
 Young's modulus.....195x 10<sup>3</sup> MPa  
 Thermal conductivity.....30 W.m<sup>-1</sup>K<sup>-1</sup>

Ferromagnetic grade that can be magnetized

### MECHANICAL PROPERTIES OF THE BARS

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

Temper	Hardness
Annealing	< 280 HBW

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

### PROCESSES

#### Forgeability

The grade can be hot forged in the temperature range 1000/1200°C.

#### Polishability

Polishable grade in the treated condition with a structure consisting of martensite and carbides. The high level of cleanliness increases the polishability of this grade. The laser marking may introduce a local decrease in corrosion resistance especially in the case of overheating.

#### Typical heat treatments

For a target hardness ≥ 58HRC	For a target hardness ≥ 55HRC (without cryogenic treatment)
<ul style="list-style-type: none"> <li>• Heating 1050°C</li> <li>• Oil or gas quenching under pressure</li> <li>• Deep freezing -80°C /2h min</li> <li>• Tempering 180°C /2h</li> </ul>	<ul style="list-style-type: none"> <li>• Heating 1010°C</li> <li>• Oil or gas quenching under pressure</li> <li>• Tempering 180°C / 2h</li> </ul>

### CORROSION RESISTANCE

The grade contains molybdenum as well as nitrogen, which improves the resistance to generalized or pitting corrosion in the treated condition. Its resistance to corrosion in non-chloride media is further enhanced by polished, pickled and passivated surfaces. The corrosion resistance is strongly reduced in the annealed temper or after welding, which is not recommended.

### STANDARD SHAPE

- Round bars in annealed condition (Condition A) - Surface hardened or ground according to diameter
- Flat bars customized in the annealed temper (consult us)
- Other formats: please contact us

The information, data and photos presented in this document are given in good faith and for guidance only. If you need more precise information, our technical department is at your disposal.

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