



STAINLESS

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

1.4028
AISI 420B
X30Cr13
UNS S42000

GENERALITIES

Grade 1.4028 is a martensitic steel with good corrosion resistance in moderately aggressive environments and high mechanical properties after hardening with a hardness of about 48HRC. It is generally produced in air (EAF+AOD).

Stainless has several sources in stock as well as different formats or product states to best suit your processing needs. This product can also be made to measure or cut into slabs by our service centres.

APPLICATIONS

Due to its corrosion resistance and high hardness in the hardened condition, the grade is used in the manufacture of medical instruments and cutlery. The material is available in the annealed condition as well as in the QT (quenched and tempered) condition.

STANDARDS AND DESIGNATIONS

Numerical designations:

W. Nr 1.4028 – AISI 420B – UNS S42000

Standards:

NF S 94-090 - ASTM F 899 – NF EN 10088-3

Brands:

UGI4028@,...

X30Cr13 (formerly Z30C13)

TYPICAL CHEMICAL ANALYSIS (mass %)

	Carbon	Manganese	Phosphorus	Sulfur	Silicium	Chrome	Nickel	Cobalt	Iron
MIN	0.26	---	---	---	---	12.0	---	---	BALANCE
MAX	0.35	1.0	0.040	0.030	1.0	14.0	1.0	0.10	

METALLURGY

The melting processes combined with the transformation processes allow a homogeneous microstructure to be obtained. 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 ⁻⁶ m/m.°C
Young's modulus	215 x 10 ³ MPa
Thermal conductivity	30 W.m ⁻¹ K ⁻¹

Ferromagnetic grade that can be magnetized

MECHANICAL PROPERTIES OF THE BARS

The grade can be offered in the annealed or QT (quenched and tempered) state with the following properties:

Delivery status	Rm (Mpa)	Rp0.2% (MPa)	E5d%	HB
Annealing	---	---	---	245-300
QT 850	>850	>650	>7	---

PROCESSIES

Forgeability

The grade can be hot forged in the temperature range 950/1180°C.

Polishability

Polishable grade in the treated condition with a structure consisting of martensite and carbides. The laser marking can lead to a reduction in corrosion resistance, especially in the event of overheating.

Typical heat treatments

Hardening is carried out from 980°C followed by tempering from 200°C, avoiding the 400-600°C zone.

CORROSION RESISTANCE

The grade has good resistance to general corrosion in the treated condition. Its resistance to corrosion in non-chloride environments is even better when the surfaces are polished, pickled and passivated. Corrosion resistance is strongly degraded in the annealed condition or after welding, which is not recommended.

STANDARD SHAPE

- Round bars in annealed or QT condition depending on the diameter - Hardened or ground surface
- Flat bars made to measure in the annealed condition (consult us)
- Other formats: please contact 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