



# STAINLESS

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

1.4472  
UNS S31675

## GENERALITIES

The 1.4472 grade has superior corrosion resistance and mechanical properties to the 1.4441 grade (316LVM). The mastery of its EAF/AOD production method followed by ESR remelting gives it a high level of cleanliness and homogeneity, which are essential to guarantee high fatigue strength and quality processing.

Stainless has several sources in stock Stainless has a number of qualified **European** sources in stock, as well as different formats or product states to suit your processing needs. This product can also be manufactured to order or cut into pieces by our service centres. by our service centres.



**Each material is delivered with its certificate of certificate of origin** in order to guarantee you total transparency and complete traceability.

## APPLICATIONS

Due to its recognised biocompatibility in the medical field, the grade is mainly used in the manufacture of implants obtained by forging and/or machining. The material is available in the annealed state but also in the hardened state for smaller dimensions.

## STANDARDS AND DESIGNATIONS

### Numerical designations:

W. Nr 1.4472 - UNS S31675

### Standards :

ISO 5832-9 - ASTM F 1586 - X4CrNiMnMo 21-9-4 - NF S 94-090 - NF EN 10088-3

### Brands:

M30NW®, UGI4472®, REX734®,...

## TYPICAL CHEMICAL ANALYSIS (mass %)

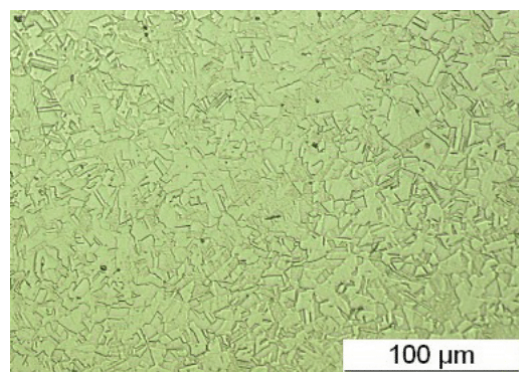
	Carbon	Manganese	Phosphorus	Sulfur	Silicium	Chrom	Nickel	Molybdenum	Nitrogen	Niobium	Copper	Cobalt	Iron
MIN	---	2.0	---	---	---	19.5	9.0	2.0	0.25	0.25	---	---	BALANCE
MAX	0.08	4.25	0.025	0.008	0.75	22.0	11.0	3.0	0.50	0.80	0.25	0.10	

Other elements: <0.1% each

## METALLURGY

The production processes combined with the transformation processes make it possible to obtain a homogeneous microstructure with a fine grain of at least index 5. See micrograph below:

The microstructure consists of austenitic grains and does not show any delta ferrite or Chi phase under standard observation conditions (X 100). conditions (X 100).



## PHYSICAL PROPERTIES AT 20°C

Density.....	7,9 g.cm-3.
Coefficient of thermal expansion (between 20 et 200°C).....	16,6 x 10 <sup>-6</sup> m/m.°C
Young's modulus.....	195x 10 <sup>3</sup> MPa
Thermal conductivity.....	14 W.m/m <sup>2</sup> .°C
Relative magnetic permeability.....	≤ 1.01

## MECHANICAL PROPERTIES OF THE BARS

The grade can be offered in the annealed or work-hardened (hard or medium-hard) condition with the following properties:

Temper	UTS (MPa)	YS 0.2% (MPa)	E5d%
Annealing	> 330	> 430	>35
Medium-hard	>1000	>700	>20
Hard	>1100	>1000	>10

## PROCESSIES

### Forgeability

The grade can be hot forged in the temperature range 1000/1150°C.

### Polishability

The high level of inclusionary cleanliness and the homogeneity of the microstructure of this grade allows optimum polishing.

### Typical Heat Treatments

Annealing at 1050-1080°C followed by rapid quenching can be carried out after forging to restore corrosion resistance, but no heat treatment is used to harden the grade.

## CORROSION RESISTANCE

The grade is highly resistant to generalized and pitting corrosion due to its high molybdenum and nitrogen content combined with its low inclusion rate.

## 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)