

BRASS ALLOY CW625N

Free cutting and forging brass in the form of rod. The alloy has very good dezincification resistance and machinability. The hot forgeability is also good. The alloy is listed and approved on the Hygienic Copper Alloys Composition List for use in Drinking Water in EU. The alloy is also approved by Kiwa Sverige AB according to Type approval 1181 for components with contact with drinking water.

Composition

CW625N	Cu	Zn	Pb	Sn
Gränser	63,0-64,0%	Rest	1,2-1,5%	≤0,3%

Fe	Al	Ni	Mn	As	Others
≤0,1%	0,5-0,6%	≤0,2%	≤0,1%	0,02-0,05%	≤0,2%

Standardization

The alloy is equivalent to the international norm

CW625N	CuZn35Pb1,5AlAs
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The alloy has been used for long time for casting purposes, CC770S, according to following standard.

SS-EN 1982, Ingots and castings

The alloy, CW625N, is now used for extruded products according to following standards.

SS-EN 12164, Rod for free machining purposes

SS-EN 12165, Wrought and unwrought forging stock

SS-EN 12167, Profiles and bars for general purposes

The structure of the material is mainly α -phase together with lead phase. Some β -phase may occur. The material is dezincification resistance.

The alloy has been used for applications where dezincification resistance has been in demand, inter alia applications for drinking water.

Rods of this alloy can be used for the same applications as rods of the alloy CW602N, which is not allowed in drinking water situations according Hygienic Alloys Composition List.

By experience it is known that CW625N fulfils the same requirements as CW602N regarding the mechanical properties and dezincification resistance.

Heat treatment

Stress-relief annealing. Temperature 330-350°C. Time 1-2 hours (max). Stress-relief annealing should be carried out after all cold working which gives high residual tensile stresses in the material. It may also be justified after machining. This eliminates the risk of stress corrosion cracking caused by internal stresses.

DZR Heat Treatment. Temperature 500-550°C. Time 1-2 hours.

The temperature must not be exceeded if the requirements in the sanitary water standard for dezincification resistance shall be met.

Dezincification resistance

The alloy is dezincification resistant, according to ISO 6509 and AS 2345-2006, appendix C.

Copper is a relatively noble metal. Copper and its alloys therefore show little tendency to react with the environment. As a result of this, the copper materials generally have good corrosion resistance. However, corrosion may occur under disadvantageous unfavorable conditions. The type of corrosion which may occur depends on both the environment and the composition of the alloy.

The corrosion resistance of CW625N is

Corrosion types	Corrosion resistance	Comment
Stress Corrosion Cracking, SCC	Satisfactory	This type of corrosion only occurs in the simultaneous presence of high stresses in the material and a corrosive medium containing ammonia and moisture. (See Heat treatment.)
Dezincification, DZR	Very good	
Erosion corrosion	Quite good	

Machinability

High surface quality is easy to achieve.

The chips are short.

The alloy is suitable for machining in automated machines.

Mechanical properties

CW625N from Nordic Brass Gusum meets and exceeds the quality demands defined in the standards. To give an idea of the mechanical properties some empirical values, according to the material grade "M" in the EN standard, are listed below. These values are to be considered as guideline values for the delivered material.

Property	Value	Unit
Rm, Tensile strength	>400	MPa
Rp02, Yield strength	~300	MPa
A5, Fracture elongation	>30	%
Brinell hardness	~110	HB