

MATERIAL DATASHEET

ALLOY 430

Designation		Composition (mass as %, reference values)	
Diehl Brass Solutions	430	Cu	76.0
DIN EN symbol	CuZn21Si3P	Si	3.3
DIN EN	CW724R(-DW)	P	0.05
UNS	C69300	Zn	remainder

Application

- Lead-free machining alloy with very good hot formability. High-strength engineering material.
- The dezincification resistance of the material is impaired during processing operations above a temperature of 580 °C. The dezincification resistance is restored by heat treatment at 550 – 580 °C over a period of 2-3 hours. For further information, please contact the manufacturer.

Products and relevant standards

Rods (general purposes)	EN 12163
Rods (free machining purposes)	EN 12164
Rods (forging stock)	EN 12165
Hollow rods (free machining purposes)	EN 12168
Profiles (general purposes)	EN 12167

Physical properties

Density	g/cm ³	8.3
Coefficient of linear thermal expansion: 20 – 200 °C	• 10 ⁻⁶ /K	19.6
Thermal conductivity		
RT	W/(m · K)	28.0
200 °C	W/(m · K)	44.4
Specific thermal capacity		
RT	J/(g · K)	0.35
200 °C	J/(g · K)	0.41
Electrical conductivity	m/(Ω · mm ²)	5.3
Specific electrical resistance	(Ω · mm ²)/m	0.19
Young's modulus	GPa	106.0
Shear modulus	GPa	39.0
Poisson's ratio		0.32

Mechanical properties

- The mechanical properties are specified in the relevant product standards (see products).
- The properties depend on the product, the condition and the dimensions.

Additional mechanical properties

(reference values: standard production for information, drawn and annealed condition)

Bending fatigue strength	MPa	320
High-temperature strength (350 °C)	MPa	350
Notched bar impact work acc. to EN 10045		
U notch	J	14.0
V notch	J	18.0

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Processing properties

Forming

Machinability (CuZn39Pb3 = 100%)	very good
Hot formability	very good
Cold formability	moderate

Surface treatment

Polishing	good
Electroplating	good

Joining

Inert gas welding / resistance welding	good
Soft solderability	very good
Hard solderability	very good

Heat treatment

Hot forming	700 – 750 °C
Soft annealing	550 – 700 °C
Stress relief annealing	200 – 300 °C

Corrosion resistance

- Generally good resistance to neutral, alkaline and organic aqueous solutions.
- Dezincification-resistant according to relevant standards.

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Risk Disclosure

The tests took place under the test conditions mentioned here. In these tests, selected properties of the alloy can be investigated. The test results are based on the test setup shown, which has specific laboratory conditions. Deviating conditions in the field may have significant effects. Aspects which play a decisive role include, in particular, but not exhaustively, the design of the components, the further processing of the alloy, the processing of the finished parts made with the alloy, transport and storage, the manner and location of use, the installation and the installation situation.

When it comes to properties, the corrosion resistance of the material is a key factor. The DIN standard DIN EN ISO 8044 (formerly DIN 50900) defines corrosion as a reaction of a metallic material with its environment that causes a measurable change in the material and can impair the function of a metal component or an entire system. From a technical point of view, corrosion is a reaction of a material with its environment that causes a measurable change in the material. Corrosion can impair the function of a component or system. Corrosion, as a complex system of interactions, depends on a large number of factors which, in their multifactoriality, cannot be fully reproduced under test conditions. The type of corrosion known as dezincification, which occurs with zinc-containing copper alloys that are in contact with drinking water, is familiar to the broad expert public.

The purchaser of the alloy is responsible for determining and testing the design, further processing, application areas of products made from the alloy, and any other relevant factors. This is also applicable when determining the dezincification depth that is considered reasonable for the selected area of application. Diehl cannot accept any liability for this, but solely for the information contained in the enclosed product data sheet.