

Material Data sheet

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Cold-rolled, spring-hard brass foil and brass band W.-Nr. 2.0321**1. Application examples**

With a composition of 63% copper and 37% zinc, this material is the standard grade for spring-hard rolled brass for leaf springs, connectors and stamped parts.

This material is not magnetizable.

Further application examples:

Components of electrical engineering and precision mechanics (watch industry)

2. Material codes

German Norm: 2.0321, CuZn37

AISI:

UNS: C 27200

English Norm: CW508L

Frech Norm:

Japanese Norm:

3. Alloy Composition *

Cu: 62,0-65,5%

Zn: balance

Ni: max. 0,30%

Pb: max. 0,10%

Fe: max. 0,10%

Sn: max. 0,10%

Al: max. 0,05%

others: max. 0,10%

* the exact composition of each batch can be documented by a material certificate 2.2 or 3.1 according to DIN EN 10 204.

4. Delivery condition

Condition: cold rolled, not hardenable

Surface: not data available

Ultimate tensile strength: 370-650 N/mm² (depending on the thicknesses)

Further mechanical data: see chapter 7 and 8.

5. Sizes

thicknesses: 0,006-1,00 mm

raw material width: depending on the thicknesses 150 or 305 mm

Standardbreite: 150,0 and 305 mm (not in all thicknesses)

Lengths: individual lengths from 5 to 10 000mm or as coil

The following sizes are available from stock (without obligation)

<i>thickness in mm</i>	<i>width in mm</i>	<i>Ultimate tensile strength</i>	<i>Annotation</i>
0,006	150,0	>550	
0,010	150,0	>550	
0,020	150,0	>550	
0,025	150,0	>550	
0,030	150,0	>550	
0,040	150,0	>550	
0,050	150,0+305	>550	
0,075	150,0+305	>550	
0,10	150,0+305	480-560 (R480)	
0,15	150,0+305	550-640 (R550)	
0,20	150,0+305	550-640 (R550)	
0,25	150,0+305	550-640 (R550)	
0,30	150,0+305	550-640 (R550)	
0,40	150,0+305	550-640 (R550)	
0,50	150,0+305	550-640 (R550)	
0,60	150,0	550-640 (R550)	
0,70	150,0	550-640 (R550)	
0,80	150,0	550-640 (R550)	
0,90	150,0	550-640 (R550)	
1,00	150,0+305	550-640 (R550)	

without obligation, Issue: July 2023

6. Tolerances

thickness tolerance: T3
width tolerance: DIN EN 1791
straightness: normal
flatness: DIN EN 1791

7. Further mechanical data

Yield strength $R_{p0,2}$: >500 N/mm² bei R550
Elongation A80: not specified at R550

If good tumbling is done, the following values can be achieved:

Reversed bending stress (Mean stress = 0):

The maximum value is approx. 1/3 of the tensile strength for brass if bending direction is at a 90° angle to the rolling direction

Fluctuating bending stress (Minimum stress = 0):

no data available, but the maximum value is lower than for the reversed bending stress.

As the fatigue strength depends on different factors like the corrosive conditions and the edge treatment, no definitive endurance limit values can be guaranteed.

At high forces or bending not in the right angle to the rolling direction the alloy CuBe2 is recommended (or hardened steels like 1.1274 or 1.4031Mo).

The highest application temperature is around 100° Celsius, depending on the load.

Please note that Young's modulus values drop as temperature increases.

8. Physical properties

Density:	8,44 g/cm ³
Thermal conductivity:	120 W/(m °C) depending on the temperature
Heat capacity:	377 J/(kg °C) medium value at 50 – 100 °C
Thermal expansion:	20,2 x 10 ⁻⁶ (between 20 - 200 °C)
Electric resistance:	15µOhmcm
Modus of elasticity:	110 000 MPa at 20 °C

9. Blanking

We recommend a punch-to-die clearance of 4-10 % of the strip thickness. The corner radius should be at least 0.25 mm and the punching die should be at least twice the strip thickness. The pieces should then be tumbled to receive a good edge roundness.

10. Laser cutting

This alloy can be laser cut by solid state lasers.

11. Photo etching

This alloy is very easy to etch.

12. Bending

As this material is supplied in the temper rolled condition, the rolling direction is important regarding the bending. The suggested minimum bending radius depends on the tensile strength of the material.

Bending at right angle (90°) to the rolling direction:

	410-490	480-560	550-640	>630 N/mm ²
Up to 0,50 mm	ca. 0,5 x t	ca. 0,75 x t	ca. 1,0 x t	ca. 2,0 x t
0,50-1,00 mm	No data available	No data available	No data available	No data available

t = strip thickness

Bending parallel to the rolling direction:

	410-490	480-560	550-640	>630 N/mm ²
Up to 0,50 mm	ca. 0,5 x t	ca. 0,5 x t	ca. 2,0 x t	ca. 6,0 x t
0,50-1,00 mm	No data available	No data available	No data available	No data available

t = strip thickness

13. Flat grinding

Brass is not magnetic and can not be hold by magnetic clamping devices of flat grinding machines.

14. Welding

Brass is not suitable for welding due to a low evaporating temperature of zinc at 906°C. Hard and soft soldering can be done easily.

15. Corrosion resistance

Brass has a good resistance against most organic fluids, water and water steam and different salt solutions, but at high chloride contents a corrosion due to “dezincification” can occur.

Important Annotation

The specifications which are given in this technical information sheet about the condition and application of the alloys are only for reference and are no confirmation about certain performances and characteristics.

The information correspond to our own experiences and experiences of our suppliers. We can not guarantee for the results during processing and utilisation.