



## Hard-rolled brass strip, mat. no. 2.0321

### 1. Applications:

Composed of 63% copper and 37% zinc, this material is the standard alloy for spring-tempered, rolled brass for flat springs, connectors and stamped parts. For deep-drawn parts the brass should be used in a softer condition like F30 with a tensile strength of about 300 N/mm<sup>2</sup>.

Further applications:  
pieces for electrical engineering and precision mechanics

This material is not magnetic.

### 2. Material codes:

German Norm: 2.0321, CuZn37  
AISI:  
ASTM: C 27200  
Engl. Norm: CW508L  
AFNOR: -  
Japan. Norm: -

### 3. Chemical composition: \*

Cu: 62-65.5 %  
Zn: balance  
Ni: max. 0.30 %  
Pb: max. 0.10%  
Fe: max. 0.10 %  
Sn: max. 0.10 %  
Al: max. 0.05 %  
Other: 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: temper rolled, not hardenable  
Surface: no data available  
Flatness: according to EN-Norms  
Ultimate tensile str.: 370-650 N/mm<sup>2</sup> (depending on the thickness)

Further mechanical data: see chapter 7 and 8.

### 5. Sizes:

Thicknesses: 0.01 – 1.0mm  
Standard sizes: 150 + 305mm (not in all thicknesses)  
Edges: cut  
Lengths: individual lengths from 5 to 10 000mm or as coil

The following sizes are available from stock (without obligation),  
status: October 2015:

<b>Thickness in mm</b>	<b>Width in mm</b>	<b>Tensile strength in N/mm<sup>2</sup></b>	<b>Annotation</b>
0.01	150	550-640	Only in the low tensile strength on stock!
0.020	150	>630	
0.025	150	550-640	
0.03	150	>630	
0.04	150	>630	
0,05	150 + 305	>630	
0.075	150	550-640	
0.10	150 + 305	>450	
0.15	150 + 305	480-560	
0.20	150 + 305	550-640	
0.25	150 + 305	480-560	
0.30	150 + 305	550-640	
0.40	150 + 305	550-640	
0.50	150 + 305	550.640	
0.60	150	>630	
0.70	150	370-440	
0.80	150	550-640	
0.90	150	550-640	
1.00	150 + 305	540-610	

## 6. Tolerances:

Thickness tolerance: T3

Width tolerance: DIN EN 1791

Straightness: normal

Flatness: DIN EN 1791

## 7. Further mechanical data:

Yield str. Rp0,2 : depending on the tensile strength

Elongation A 80: depending on the tensile strength

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).

## 8. Physical properties

Density: 8.44 g/cm<sup>3</sup>

Thermal conductivity: 120 W/(m °C) depending on the temperature

Spec. heat capacity: 377 J/(kg °C) mean value at 50 – 100 °C  
 Thermal expansion:  $20.2 \times 10^{-6}$  (between 30 - 100 °C)  
 Electric resistance: 15µOhm cm  
 Modus of elasticity: 110 000 MPa at 20 °C  
 Relative permeability µr: brass is non magnetisable

### 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

The alloy 2.0321 can be etched easily.

### 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 <sup>2</sup>
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 <sup>2</sup>
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.