

## Wrought copper-nickel-aluminium alloy **NB 5** alloy 2550

**NB 5** is a construction material with very high strength and low permeability. The material is resistant to corrosion and resistant to seawater. The fouling by marine organisms is very low. NB 5 has high cavitation and erosion resistance. Compared to CuNi14Al3, the material has a higher toughness with slightly lower strength. NB 5 is very similar to WL 2.0880.

ZOLLERN brand	NB 5
EN designation	None
EN material no:	None

### // National designations

GB	DEF STAN 835
USA	C72420
WL	≈ 2.0880

≈ (substantial coherence)

### // Composition (weight by per cent in %)

Cu	Ni	Fe	Al	Mn
Rest	15.0 – 18.0 <sup>1)</sup> 13.5 – 16.5 <sup>2)</sup>	0.7– 1.2	1.0 – 2.0	3.5 – 5.5
Cr	Pb	Zn	Sn	Other
max 0.5 <sup>2)</sup>	max 0.02	max 0.2	max. 0.1	max. 0.3

<sup>1)</sup> C72420

<sup>2)</sup> DEF STAN 835

### // Strength properties at room temperature

DEF STAN 835	(minimum values)			
	R <sub>p0.2</sub> N/mm <sup>2</sup>	R <sub>m</sub> N/mm <sup>2</sup>	A <sub>5</sub> %	Izod J
Bars over 15 mm up to 125 mm thickness	430	725	18	40
Bars over 125 mm thickness	400	710	18	40
Forged pieces	400	400	18	40

### // Physical properties

Density at 20 °C	8.5 kg/dm <sup>3</sup>
Melting temperature/range	approx. 1100 - 1170°C
Coefficient of linear expansion from 20° to 200°C	16 x 10 <sup>-6</sup> °C <sup>-1</sup>
Specific heat at 20°C	0.435 J/g x °C
Thermal conductivity at 20°C	0.17 W/cm x°C
Electr. conductivity at 20°C	4 - 6 MS/m 7 - 10% IACS
Electr. resistance at 20°C	0.167 - 0.25 Ω mm <sup>2</sup> /m
Permeability	< 1.03
Young's modulus	145 KN/mm <sup>2</sup>

### // Dynamic strength values at room temperature (reference values)

Rotational bending fatigue strength R <sub>bw</sub> at 30 x 10 <sup>6</sup> load cycles	220 N/mm <sup>2</sup>
Notched impact energy (ISO - V/KV)	> 35 joules

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### Areas of application

**NB 5** is suitable due to its high strength values for highly stressed parts, even with simultaneous corrosion stress.

For example

- Valve parts such as spindles, seat rings and hydraulic parts are manufactured
- High-strength, amagnetic screws, bolts and nuts for seawater use
- Gears, bevel gears

### Machinability

**NB 5** is easy to machine.

The machining index is approx. 20 due to the high strength, whereby CuZn39Pb3 = 100. Cutting and die-sinking is possible.

NB 5 is not suitable for cold forming.

Carbide tools are used for turning and milling, and sharp drill bits for drilling and thread cutting are advantageous.

<b>Relaxation annealing</b>	300 – 450°C
<b>Soft annealing</b>	-
<b>Soft soldering</b>	suitable
<b>Brazing</b>	suitable, but fluoride and chloride containing fluxes are recommended
<b>Welding</b>	not recommended, similar additive materials of the same type are not available. Welding with non-matching filler metals such as CuAl9Ni4Fe2Mn2 = CF310G or S-CuNi30Fe = 2.0837 is possible.
<b>Surface treatment</b>	polishing and galvanic treatments are possible

