

## Wrought copper-nickel alloy **NB 30** alloy 2320

**NB 30** is a construction material with very good corrosion resistance, especially in contact with fuels, lubricants and seawater. The fouling by marine organisms is very low. The material does not tend to stress corrosion cracking. NB 30 has a high toughness at low temperatures and is therefore very suitable for cryogenics.

ZOLLERN brand	NB 30
EN designation	CuNi30Mn1Fe
EN material no:	CW354H

EN 12420, 12163  
AD 2000 "Pressure vessel" - AD W 6/2  
EN 1653 "Plates, circular blanks"  
ASTM B151 and B171

### // National designations / ISO

DIN	CuNi30Mn1Fe
DIN / WL	2.0882
ISO	CuNi30Mn1Fe
USA	C71500
GB	CN107 DEF STAN 02-879
F	U - N30M1Fe

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

Cu	Ni	Fe	Mn	C
Rest	30.0 – 32.0 29.0 – 33.0 <sup>1)</sup>	0.4 – 1.0	0.5 – 1.5 max 1.0 <sup>1)</sup>	max. 0.05
Co	P, Pb	S	Zn	Other
max. 0.1	max. 0.02	max. 0.05	max. 0.5	max. 0.2

<sup>1)</sup> ASTM B151 and B171 / ASME B151 and B171

### // Strength properties at room temperature

	(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> %	HB
[ 1 ] EN 12420:1999 [ 2 ] EN 12163:2016 min. 200 Kg [ 3 ] AD 2000 W 6/2 [ 4 ] EN 1653:2000 [ 5 ] ASTM B151 / ASME B 151 [ 6 ] ASTM B171 / ASME B 171				
[ 1 ] Forged pieces and die-cast parts	120	340	25	90
[ 2 ] Rods, drawn up to 20 mm Ø thickness or SW	180	420	14	110
[ 2 ] Rods, drawn up to 80 mm Ø thickness or SW	120	340	30	80 - 110
[ 3 ] Forgings up to 100 mm	120	340	30	90
[ 4 ] Forgings up to 125 mm	120	320	30	~100
[ 5 ] Bars all wall thicknesses [ 6 ] Plates from 60 mm thickness	125	310	30	-
[ 6 ] Plates up to 60 mm thickness	140	345	30	-

### // Strength properties at elevated temperatures (reference values)

Temperature	°C	20	200	300	400	500
0.2% limit	R <sub>p0.2</sub> N/mm <sup>2</sup>	140	115	105	100	90
Tensile strength	R <sub>m</sub> N/mm <sup>2</sup>	370	310	300	290	230
Elongation	A <sub>5</sub> %	52	43	42	40	38

### // Physical properties

Density at 20 °C	8.95 kg/dm <sup>3</sup>
Melting temperature/range	approx. 1170 - 1240°C
Coefficient of linear expansion	
from -200° to 20°C	12 x 10 <sup>-6</sup> °C <sup>-1</sup>
from 20° to 300°C	16 x 10 <sup>-6</sup> °C <sup>-1</sup>
Specific heat at 20°C	0.40 J/g x °C
Thermal conductivity at 20°C	0.29 W/cm x°C
Electr. conductivity at 20°C	2 - 4 MS/m 3.5 - 7 % IACS
Electr. resistance at 20°C	0.25 - 0.50 Ω mm <sup>2</sup> /m
Temperature coefficient of the electrical resistance (0 - 100°C)	0.0005 °C <sup>-1</sup>
Permeability	< 1.1
Young's modulus	151 KN/mm <sup>2</sup>

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

Rotational bending fatigue strength R <sub>bw</sub> at 100 x10 <sup>6</sup> load cycles, 30% cold-formed	240 N/mm <sup>2</sup>
Notched impact energy (ISO - V/KV)	140 joules

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### Areas of application

- Pipeline parts such as flanges and weld neck collars for seawater transport with calculated flow velocities of up to up to approx. 4.5 m/s
- Tube sheet plate for heat exchanger
- Parts for oil and water coolers
- Apparatus construction
- Cryogenics
- Drinking water production plants from seawater
- corrosion-resistant screws, bolts and nuts.

### Machinability

**NB 30** has good hot and cold formability. Hot forming range approx. 850 - 1,100°C. Long flow chips result during machining due to the high toughness. The machinability index is 20 where CuZn39Pb3 = 100.

<b>Relaxation annealing</b>	300 – 450°C
<b>Soft annealing</b>	650 – 850°C
<b>Soft soldering</b>	very easily possible
<b>Brazing</b>	very easily possible
<b>Welding</b>	Gas-shielded welding TIG, MIG or manual electrode welding is possible. Suitable filler materials S-CuNi30Fe = 2.0837 or rod electrode S-CuNi30Mn = 2.0838
<b>Surface treatment</b>	good mechanical and electrochemically electrochemical polishing, galvanic coatings are easily executable

