ZOLLERN

Solid metals. Fine solutions.

Wrought copper-aluminium alloy **MEBz** alloy 1700

MEBz is a copper-aluminium alloy with increased nickel addition and reduced iron content. This results in an amagnetic material with high strength that is corrosion resistant to seawater as well as neutral and acidic media. MEBz complies with the material performance sheet WL 2.0967 and has been approved by the Shipbuilding and Ocean Engineering Standards Body for the shipbuilding sector in accordance with VG 81245. The composition of 2.0967 and the casting material 2.0968 are similar.

ZOLLERN brand	MEBz
EN designation	None
EN material no:	None

// National designations / ISO

WL	CuAl9Ni7
WL	2.0967

// Composition (weight by percent in %, reference values)

Cu	Al	Fe	Ni	Mn
Rest	9.0 – 9.5	0.9 – 1.3	6.7 – 7.3	0.8 – 1.2

Zn	Si
max. 0.3	max. 0.1

// Strength properties at room temperature

	(minimum values)			
WL 2.0967:2017	$R_{p0.2}$ N/mm²	R_m N/mm²	A_5 %	HB
Forged pieces up to 80 mm thickness	300	620	15	150
Forged pieces over 80 mm thickness	260	570	15	140
Rods, drawn to 25 mm Ø thickness or SW	320	650	12	150

// Strength properties at elevated temperatures (reference values)

Temperature	°C	20	100	200	300	400
0.2% limit	$R_{p0.2}$ N/mm²	300	300	280	250	190
Tensile strength	R_m N/mm²	650	630	610	550	320

// Physical properties

Density at 20 °C	7.6 kg/dm³
Melting temperature/range	1060 – 1080 °C
Coefficient of linear expansion from 20° to 100°C	16 x 10^{-6} °C^{-1}
Specific heat at 20°C	0.44 J/g x °C
Thermal conductivity at 20°C	0.638 W/cm x°C
Electr. conductivity at 20°C	4 - 6 MS/m 7 - 10% IACS
Electr. resistance at 20°C	0.17 - 0.25 Ω mm²/m
Permeability	< 1.03
Young's modulus	120 KN/mm²

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

Rotational bending fatigue strength R_{bw} at 20 x 10^6 load cycles	210 N/mm²
Notched impact energy (ISO - V/KV)	20 joules

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Areas of application

Due to its low permeability, **MEBz** is suitable for amagnetic components that must be corrosion-resistant and of high strength at the same time.

Besides the use in

- measuring and control devices with magnetic sensors, the material is often used in shipbuilding.
- Fittings and valve bodies, including high-pressure valves, are made of forged material.
- Screws, bolts, shafts and nuts for pumps are also manufactured
- such as housings, bushings or pistons z. e.g. for valve control systems.
- Filter housings, distributors and heat exchangers can also be produced as construction welding from several parts.
- Composite welding with castings of the same type are possible without any problems.

There is no risk of stress corrosion cracking and there is very good cavitation and erosion resistance. The material has good scaling resistance and does not become brittle in the cold.

Machinability

Carbide tools are needed for turning and milling and sharp tools are needed for drilling and thread cutting. This results in a machinability that is better than that of austenitic stainless steel. Shorter rolling and flowing chips are formed. Cutting and die-sinking is easily possible.

Relaxation annealing	650 – 680°C
Soft annealing	800 - 850°C with subsequent furnace cooling down to 650°C, then air cooling
Soft soldering	not recommendable
Brazing	poor, fluxes containing fluoride and chloride of type F - SH1 and silver solders are advantageous
Welding	good, TIG welding is preferred, but MIG welding is also possible, filler metal e.g. CuAl10Fe1 = CF305G, S-CuAl8Ni2, S-CuAl8Ni6 or bars of the same analysis.
Surface treatment	good for polishing. For galvanic coatings, a copper backup bar is advisable

ZOLLERN GmbH & Co. KG

Hitzkofer Strasse 1
72517 Sigmaringendorf-
Laucherthal
Germany
T +49 7571 70-984
F +49 7571 70-82984
zgm@zollern.com
www.zollern.com