

Copper-aluminium casting alloy **MEBG** alloy 1710

MEBG is a CU-AL alloy with increased nickel and reduced iron content. The material is therefore amagnetic compared to CuAl10Fe5Ni5-C. MEBG also has high strength, high cavitation, erosion and corrosion resistance. There is no risk of stress corrosion cracking. Due to its good weldability, MEBG is also suitable for composite constructions with the similar wrought material MEBz or other copper-aluminium alloys.

ZOLLERN brand	MEBG
EN designation	None
EN material no:	None

// National designations

WL	G-CuAl9Ni7
WL	2.0968

// Composition (mass fraction in %) WL 2.0968

Cu	Al	Fe	Ni	Mn
80.0 - 82.6	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)			
	R _m N/mm ²	R _{p0.2} N/mm ²	A ₅ %	HB
Sand casting WL 2.0968:2017	510	230	8	130
ZOLLERN centrifugal casting	550	230	10	140

// Strength properties at elevated temperatures (reference values)

Temperature	°C	20	150	200	250	300
Tensile strength	R _m N/mm ²	640	570	545	525	485
0.2% limit	R _{p0.2} N/mm ²	255	215	215	225	225
Elongation	A ₅ %	18	15	12	12	10

// Physical properties (reference values)

Density at 20°C	7.6 kg/dm ³
Melting temperature/range	1000 - 1060°C
Thermal conductivity at 20°C	0.63 W/cm °C
Electrical conductivity at 20°C	4 - 7 MS/m 7 - 12 % IACS
Electrical resistance at 20°C	0.14 - 0.25 Ω mm ² /m
Coefficient of linear expansion from 20°C to 200°C	16 x 10 ⁻⁶ °C ⁻¹
Shrinkage	1.5 - 2 %
Young's modulus	110 KN/mm ²
Permeability	< 1.02

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

Bending fatigue strength R _{bw} at 30 x 10 ⁶ load cycles	260 N/mm ²
Notched impact energy (ISO - V/KV)	12 joules

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Areas of application

Highly stressed parts with simultaneous demand for low permeability.

For example

- Machine parts with use of magnetic sensors
- High-pressure fittings and valves in special shipbuilding applications
- Amagnetic pump casings and impellers
- Engine parts such as cylinder heads, cooled exhaust pipes and manifolds for marine diesel engines
- Ship superstructures, crane parts, on-board harnesses and propeller parts such as hubs, blades and accessories for amagnetic ships
- When used as a bearing, a hard sliding partner with oil lubrication is advantageous

Machinability

Carbide tools are needed for turning and milling and sharp drill bits are needed for drilling and thread cutting. This results in machinability that is better than that of austenitic steel.

Shorter rolling and flowing chips are formed.

Relaxation annealing 650 – 680°C, 1 h holding time

Soft soldering not recommendable

Brazing poor, fluoride and chloride containing and chloride-containing fluxes are necessary (type F – SH 1), silver solders are advantageous, e.g. L-Ag44 or L-Ag55Sn

Welding good, both TIG, MIG and also electrode manual welding are possible. Suitable filler material S-CuAl8Ni6 to DIN 1733 material no. 2.0923 or bars with the same analytical values

Galvanisability possible, good cleaning and pretreatment necessary

