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Solid metals. Fine solutions.

Wrought copper-aluminium-manganese alloy **AMB 2** alloy 1520

AMB 2 is a copper-aluminium alloy with increased manganese addition and reduced iron content. This results in amagnetic material with high toughness that is corrosion resistant to seawater. AMB2 complies with the material performance sheet WL 2.0958 and has been approved by the Shipbuilding and Ocean Engineering Standards Body for the shipbuilding sector in accordance with VG 81245. The alloy tolerances of 2.0958 and the casting material 2.0962 are identical.

ZOLLERN brand	AMB2
EN designation	None
EN material no:	None

// National designations / ISO

WL	CuAl8Mn
WL	2.0958

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

Cu	Al	Ni	Mn	Fe
Rest	7.0 – 9.0	1.0 – 2.0	5.0 – 6.5	max . 1.5

Zn	Si	Pb
max. 0.3	max. 0.1	max. 0.1

// Strength properties at room temperature

	(minimum values)			
WL 2.0958:2017	$R_{p0.2}$ N/mm²	R_m N/mm²	A_5 %	HB
Forged pieces up to 80 mm thickness	240	540	20	130
Forged pieces over 80 mm thickness	220	540	23	120
Rods, drawn to 25 mm Ø thickness or SW	270	590	18	140

// Strength properties at elevated temperatures (reference values)

Temperature	°C	20	100	200	300	400
0.2% limit	$R_{p0.2}$ N/mm²	290	290	270	200	100
Tensile strength	R_m N/mm²	590	590	550	490	350

// Physical properties

Density at 20 °C	7.6 kg/dm³
Melting temperature/range	1030 – 1050°C
Coefficient of linear expansion from 20° to 100°C	18 x 10^{-6} °C^{-1}
Specific heat at 20°C	0.431 J/g x °C
Thermal conductivity at 20°C	0.34 W/cm x°C
Electr. conductivity at 20°C	2 - 4 MS/m 7 - 10 % IACS
Alloy 1605 for rotor bars	3.5 - 4 MS/m 3.5 - 7 % IACS
Electr. resistance at 20°C	0.25 - 0.50 Ω mm²/m
Permeability	< 1.03
Young's modulus	103 KN/mm²

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

Rotational bending fatigue strength R_{bw} at 20 x 10^6 load cycles	140 N/mm²
Notched impact energy (ISO - V/KV)	40 joules

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Areas of application

Due to its low permeability and resistance to sea water, **AMB 2** is suitable for components in the

- shipbuilding and marine technology.
- Forged fittings and valve housings
- Components for valves such as shut-off cones, spindles and flanges are in use.
- Other applications are amagnetic ship shafts, screws and nuts.
- Generally seawater-resistant components.

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	approx. 550 - 580°C
Soft annealing	700 - 720°C with subsequent cooling in air
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 preferable but MIG welding is also possible. Filler material e.g. CF309G = CuAl8, S-CuAl8Ni2 or bars of the same analysis
Surface treatment	polish, chemical structuring and galvanic treatments are possible. For galvanic coatings, a copper backup bar is advisable

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