

TECHNICAL INFORMATION

ALUMINIUM SPECIFICATIONS

ALUMINIUM ALLOYS FOR CONNECTION HEADS

Aluminium connection heads are used in industry as rugged terminal junction boxes for building temperature sensors, pressure transmitter, level transmitter, electronic transmitter housing, etc. Aluminium enclosure are also often exposed to conditions which can cause corrosion and they must be protected against this.

ALUMINIUM CASTING METHOD

Limatherm uses to produce aluminium enclosure pressure die-casting method.

ALUMINIUM ALLOYS

Limatherm uses as a standard alloy

Polish Standard	Comparable to the Polish Standard		Cost Factor
	Germany Standard	European Standard	
AK 93 lc	GD-AISi9Cu3 No. 226	EN AC – AISi9Cu3	1
		EN AC – 46 000	

Limatherm can use on request alloy

Polish Standard	Comparable to the Polish Standard		Cost Factor
	Germany Standard	European Standard	
AK 11 lc	GD-AISi12(Cu) No. 231	EN AC – AISi12Cu1	1.06
		EN AC - 47100	

Limatherm can use on request copper free alloy

Polish Standard	Comparable to the Polish Standard		Cost Factor
	Germany Standard	European Standard	
AK 11 B lc	GD-AISi12 No. 230	EN AC – AISi12 mod	1.32
		EN AC – 44200 mod	

mod – modified, with increased content of Fe = 0,8 ÷ 1,2

COPPER FREE ALUMINIUM

Limatherm can use also copper free alloy. The term „Copper Free„ is used to describe aluminium alloys which contain less than 0,4% copper.

The copper content for pressure die casting not exceed 0,05%. It is the reduction in the copper content which, increases the natural corrosion resistant properties of aluminium.

Copper Free aluminium is particularly resistant to salt atmosphere, sulphur gases and ammonium nitrate. Above a level of 0,4 % copper the range of corrosion due to galvanic action within the structure of the metal increases rapidly.

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Standard aluminium alloy													
Standard	Alloy	Si (%)	Fe (%)	Cu (%)	Mn (%)	Mg (%)	Ni (%)	Pb (%)	Sn (%)	Ti (%)	Zn (%)	AL	
ZN-86/MH-MN-260-14	AK 93 lc	8 ÷ 11	1.2	2 ÷ 3.5	0.1 ÷ 0.5	0.1 ÷ 0.5	0.3	0.2	0.1	0.15	1.2	Rest	
DIN 1725 t 2:1986	GD-AISI9Cu3 3.2163.05 Alloy No 226	8 ÷ 11	1.2	2 ÷ 3.5	0.1 ÷ 0.5	0.1 ÷ 0.5	0.3	0.2	0.1	0.15	1.2		
EN 1706:1998	EN AC-AISI9Cu3	8 ÷ 11	1.3	2 ÷ 4	0.55	0.05 ÷ 0.55	0.55	0.35	0.25	0.25	1.2		
On request: aluminium alloy													
PN-76/H-88027	AK 11 lc	10 ÷ 13	1.4	0.8	0.5	0.3	0.5	-	-	-	0.3		
DIN 1725 t 2:1986	GD-AISI12(Cu) 3.2982.05 Alloy No 231	10.5 ÷ 13.5	1.2	1.2	0.1 ÷ 0.5	0.1 ÷ 0.5	0.2	0.2	0.1	0.15	0.5		
EN 1706:1998	EN AC-AISI12Cu1	10.5 ÷ 13.5	1.3	0.7 ÷ 1.2	0.55	0.35	0.3	0.1	0.2	0.2	0.55		
On request: Copper free aluminium alloy													
PN-76/H-88027	AK 11B lc	10.5 ÷ 13.5	0.8 ÷ 1.2	0.05	0.5	0.3	0.5	-	-	-	0.3		
DIN 1725 t 2:1986	GD-AISI12 3.2586 Alloy No 230	10.5 ÷ 13.5	1.0	0.10	0.1 ÷ 0.5	0.4	0.2	0.2	0.1	0.15	0.5		
EN 1706:1998	EN AC-AISI12	10.5 ÷ 13.5	0.55	0.05	0.35	-	-	-	-	0.15	0.1		

MECHANICAL PROPERTIES						
Alloy	AK 93 lc		AK 11 lc		AK 11B lc	
	Value	Unit	Value	Unit	Value	Unit
Tensile strength R _m (min)	240 ÷ 310	MPa	220 ÷ 280	MPa	170	MPa
0,2 % Proof stress R _{p0.2} (min)	140 ÷ 240	MPa	140 ÷ 200	MPa	80	MPa
Elongation A ₅ (min)	0.5 ÷ 3	%	1 ÷ 4	%	6	%
Brinell Hardness	80 ÷ 120	HB	60 ÷ 80	HB	55 ÷ 95	HB
Density	2.65	G/mm ²	2.65	G/mm ²	2.65	G/mm ²
Castability	Good		Very Good		Very Good	
Polishability	Adequate		Adequate		Bad	
Machinability	Good		Adequate		Adequate	
Weldability	Inadequate		Inadequate		Very Good	
ELECTRICAL AND THERMAL PROPERTIES						
Electrical Conductivity	13 ÷ 17	MS/m	15 ÷ 20	MS/m	17 ÷ 24	MS/m
Thermal Conductivity	110 ÷ 120	W/m · K	120 ÷ 150	W/m · K	140 ÷ 170	W/m · K
Heat Resistance	+ 300°C					
Cold Resistance	- 100°C					
CHEMICAL PROPERTIES						
Corrosion resistance	Bad		Adequate		Good	