

Material Specification

Aluminium AlSi10Mg

Building Success
Layer by Layer™



Application: Aluminium AlSi10Mg is a typical casting alloy used for parts with thin walls and complex geometry. It offers good strength, hardness and dynamic properties and is therefore also used for parts subject to high loads. Parts in Aluminium AlSi10Mg are ideal for applications which require a combination of good thermal properties and low weight. They can be machined, spark-eroded, welded, micro shot-peened, polished and coated if required. Parts are fully dense, with similar properties to cast or wrought parts.

Conventionally cast components in this type of aluminium alloy are often heat treated to improve the mechanical properties, for example using the T6 cycle of solution annealing, quenching and age hardening.

- Typical applications:**
- Prototype castings
 - Lightweight enclosures



Physical and Chemical Properties:			
Relative Density with Standard Parameters		approx. 100% (2.67 g/cm ³)	
Material composition	Al	Balance	
	Si	9.0-11.0 wt%	Mn ≤ 0.45 wt%
	Fe	≤ 0.55 wt%	Mg 0.2-0.45 wt%
	Cu	≤ 0.05 wt%	Ni ≤ 0.05 wt%
		Zn ≤ 0.10 wt%	Pb ≤ 0.05 wt%
			Sn ≤ 0.05 wt%
			Ti ≤ 0.15 wt%
Mechanical Properties:			
		As built	
Tensile Strength	- horizontal direction (XY)	typ. 265 MPa ± 35 MPa	
	- vertical direction (Z)	typ. 265 MPa ± 35 MPa	
Yield strength (Rp 0.2%)	- horizontal direction (XY)	typ. 170 MPa ± 40 MPa	
	- vertical direction (Z)	typ. 150 MPa ± 40 MPa	
Modulus of elasticity	- horizontal direction (XY)	typ. 65 ± 10 GPa	
	- vertical direction (Z)	typ. 60 ± 10 GPa	
Elongation at break	- horizontal direction (XY)	typ. 4 ± 2%	
	- vertical direction (Z)	typ. 4 ± 2%	
Hardness		typ. 100 ± 20 HBW	
Thermal Properties:			
Thermal conductivity (at 20°C)	- horizontal direction (XY)	approx. 103 ± 5 W/m°C	
	- vertical direction (Z)	approx. 119 ± 5 W/m°C	
Specific heat capacity	- horizontal direction (XY)	approx. 920 ± 50 J/kg°C	
	- vertical direction (Z)	approx. 910 ± 50 J/kg°C	

HIP and T6 can be carried out at customer request

For further technical information or to obtain a quotation for your parts, please contact us on +44 (0)1635 580284 or email your 3D CAD data to enquiries@3trpd.co.uk

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