

DATA SHEET

Aluminium AlSi10Mg



Material description

AlSi10Mg is a lightweight alloy used widely in the AM industry. It comprises of 9-11 wt% Si and 0.25-0.45wt% Mg with these two giving rise to the strengthening phase, Mg_2Si . Applications are widely varied between prototypes, functional parts and small runs of cast equivalent types such as LM9.

Physical properties¹

Density (based on 2.67 g/cm³ theoretical density)	> 99%
Pore size	< 100 μm
Porosity rate	< 1%
Hardness	min. 80 HV10

Mechanical properties

	As Built	Stress Relieved ²
Tensile strength Horizontal (XY) Vertical (Z)	302 MPa ± 50 MPa 302 MPa ± 50 MPa	257 MPa ± 18 MPa 257 MPa ± 18 MPa
Proof strength (Rp 0.2%) Horizontal (XY) Vertical (Z)	177 MPa ± 50 MPa 177 MPa ± 50 MPa	154 MPa ± 21 MPa 154 MPa ± 21 MPa
Modulus of elasticity Horizontal (XY) Vertical (Z)	65 ± 8.5 GPa 65 ± 8.5 GPa	70 ± 14 GPa 70 ± 14 GPa
Elongation at break Horizontal (XY) Vertical (Z)	4.5 ± 2.1% 4.5 ± 2.1%	11.6 ± 6.5% 11.6 ± 6.5%

¹ All data gathered using ASTM E8M flat un-machined specimens that were wire EDM to profile with cross section of 2mmx6mm at the gauge section.

² Stress relief at 300°C for 2 hours in a convection air furnace with specimens on build plate. Please contact us for bespoke heat treatment to achieve different mechanical properties.



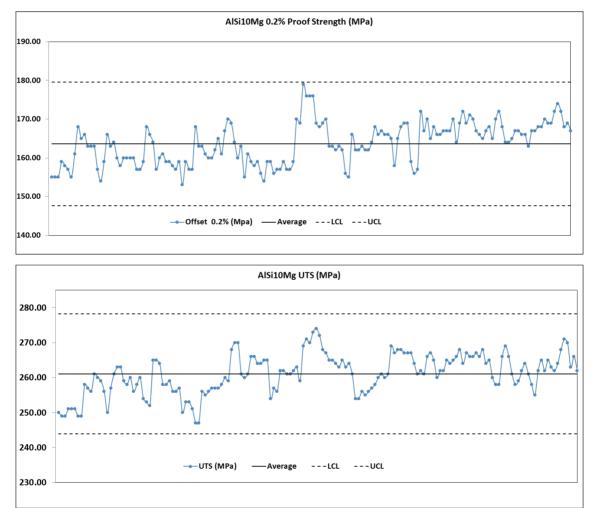
DATA SHEET

Aluminium AlSi10Mg

Chemical properties

	Al	Balance	Mn	0.45 max	Pb	0.15 max
Material	Si	9.00-11.00	Mg	0.20-0.45	Sn	0.05 max
composition wt%	Fe	0.55 max	Ni	0.05 max	Ti	0.05 max
	Cu	0.05 max	Zn	0.10 max		

Statistical Process Control Charts³



Material Properties	Applications	Finishes	Industries
 Corrosion Resistant Lightweight High Thermal Conductivity High Electrical Conductivity 	 Prototyping Engineering Lightweight Enclosures 	 Machined Spark-eroded Anodised Micro shot-peened Polished 	AutomotiveMotorsportAerospace

³ Data generated in a production environment through calibration builds, production builds and testing of powders during the goods in procedure. Specimen geometry is ASTM E8M flat with cross section of 2mmx6mm at the gauge section.