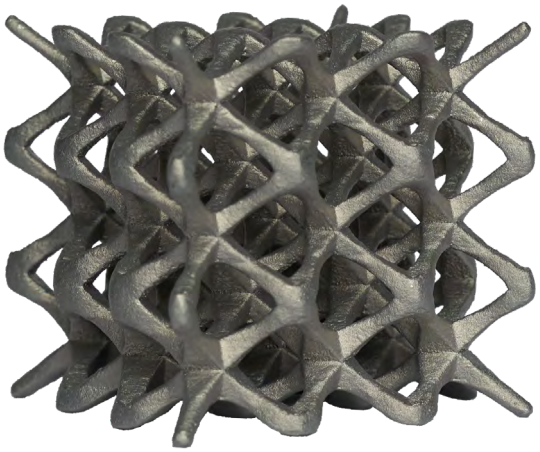
DIRECT METAL LASER SINTERING

ALUMINIUM AlSi10Mg



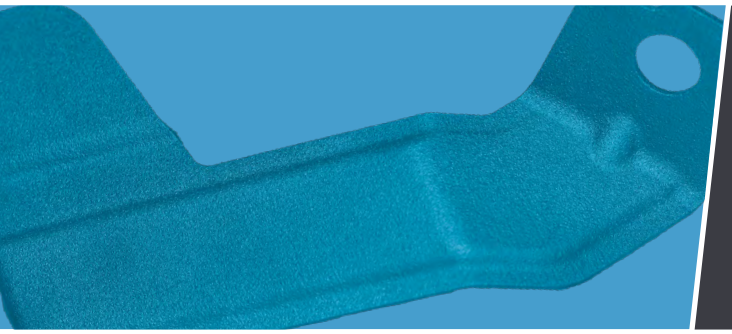
PRODUCT SPECIFICATIONS

PRODUCT DESCRIPTION:

AlSi10Mg is a typical casting alloy with good casting properties and is typically used for cast 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.

APPLICATIONS:

AlSi10Mg is an excellent choice for lightweight parts with good thermal properties, also as an substitution of casted parts.



KEY PRODUCT BENEFITS

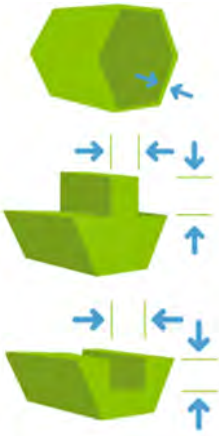
- Good Thermal properties
- Low Weight
- Good Strength

CHEMICAL COMPOSITION:

According EN-AC-AlSi10Mg(Cu)

Al (balance)
Si (9.0 - 11.0 wt-%)
Fe (≤ 0.55 wt-1\lb)
Cu (≤ 0.05 wt-I\(,))
Mn (≤ 0.45 wt-%)
Mg (0.2 - 0.45 wt-%)
Ni (≤ 0.05 wt-%)
Zn (≤ 0.10 wt-%)
Pb (≤ 0.05 wt-%)
Sn (≤ 0.05 wt-%)
Ti (≤ 0.15 wt-%)

GEOMETRICAL LIMITS:



Min Wall thickness 1.00 mm - Min. Feature Size 1,00 mm

Min. embossed details 0.5mm high and wide and 0.8mm for readable text and clear images

Min. engraved details 0.5mm deep and 0.6mm wide; 1.0mm wide for readable text and clear images

PROPERTIES:

Heat Treatment	Tensile Strength MPa	Yield Strength 0,2% MPa	Elongation %	Hardness	Density
/	360 MPa +/- 30 MPa	240 MPa +/- +/- 30 MPa	6 +/- 5%	120 +/- 5 HBW	>99,8%
Heat Treatment	Tensile Strength MPa	Yield Strength 0,2% MPa	Elongation %	Hardness	Density
Heat Treated	>267 MPa	>200 MPa	10 +/- 2%	-	>99,8%

	As Built	Heat Treated
Thermal conductivity	approx. 100 +/- 5 W/m°C	approx. 170 +/- 5 W/m°C
Specific Heat Capacity	approx. 900 +/- 50 J/kg°C	approx. 890 +/- 50 J/kg°C

RESOLUTION:

	Layer Thickness	Build Envelope	Min. Feature Size
High Resolution	0,03 mm	250x250x300mm	1,00mm
Normal Resolution	0,06 mm	250x250x300mm	1,00mm

SURFACE:

	0 °	45 ° bottom	45 ° top	90 °
High Resolution	Ra 6,3 µm Rz 30,7 µm	Ra 8,2 µm Rz 36 µm	Ra 9,9 µm Rz 45,5 µm	Ra 6,6 µm Rz 32 µm
Normal Resolution	Ra 6,3 µm Rz 30,7 µm	Ra 15 µm Rz 60 µm	Ra 4 µm Rz 20 µm	Ra 3,5 µm Rz 18 µm

High Resolution 30 µm

Normal Resolution 60 µm

STANDARD TOLERANCES:

Typically, for well-designed parts, with a designated build direction, tolerances of +/- 0.1 mm to +/- 0.2 mm + 0.005 mm/mm are expected and achieved.
Certain geometries may cause distortions due to internal stress which may lead to higher deviations.