

Al-Si Alloy

Binder Jetting Technology (BJT)



A high-performance aluminium alloy for scalable, cost-efficient metal additive manufacturing.

Ricoh's Aluminium-Silicon (Al-Si) alloy, developed specifically for Binder Jetting Technology (BJT), enables the production of complex metal parts with excellent thermal performance, strong mechanical properties, and high productivity.

By combining Ricoh's proprietary aluminium alloy powder and binder system, this material supports high-volume production at a significantly lower cost compared to laser-based metal additive manufacturing, while maintaining fine feature resolution and strong structural integrity.

Why choose Al-Si?

- Developed by Ricoh – proprietary aluminium alloy powder and binder system
- High production scalability – suited to volume manufacturing compared to PBF technologies
- Cost-efficient – significantly lower production cost versus laser-based processes
- Fine feature resolution – 0.2 mm minimum (depending on geometry)
- High green strength (10 MPa) – enables safe handling and easy de-powdering
- Optimised for assembly – suitable for brazing and joining processes
- Flexible part sizing – for 5–200 mm parts; larger via joining
- Excellent thermal conductivity – ideal for heat management applications

Applications

- Heat exchangers and thermal management components
- Electronics housings and heat sinks
- Automotive and motorsport components
- Lightweight structural parts
- Complex internal channel geometries
- Industrial components for high-volume production
- Assemblies requiring brazing or joining



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General Properties	Value	Notes
Material type	Aluminium-Silicon alloy (Al-Si)	-
Process	Binder Jetting Technology (BJT)	-
Relative density	96%	Post-sintered
Minimum wall thickness	0.2 mm*	*Depends on geometry
Minimum clearance	0.5 mm*	*Depends on geometry
Typical part size	5 - 200 mm	Larger via joining

Mechanical Properties	Value	Notes
Tensile strength	110 MPa	-
Elongation at break	23%	-

Thermal Properties	Value	Notes
Thermal conductivity	170 W/mK	High heat transfer performance

Process Characteristics	Value	Notes
Green strength	10 MPa	Enables safe handling pre-sintering
Surface detail	High	Fine features achievable
Post-processing	Machining, brazing, anodising	-

Specifications are subject to change without notice.
Values are for reference only and are not guaranteed.