

METAL SOLUTIONS

EOS Aluminium Al5X1

Material Data Sheet

EOS ALUMINIUM AL5X1

High Strength & High Elongation Aluminium for AM

EOS Aluminium Al5X1 is a heat-treatable aluminium alloy designed for AM to offer a compelling combination of high strength and high elongation. Al5X1 exhibits excellent mechanical properties with a strength above 400 MPa and an elongation exceeding 13% after heat treatment. The recommended single-step heat treatment does not require a water quench and enables robust part production.

MAIN CHARACTERISTICS

- Excellent combination of strength & elongation
- Good corrosion resistance
- Parts can be anodized

TYPICAL APPLICATIONS

- Aerospace
- Automotive
- Marine
- Lightweight designs

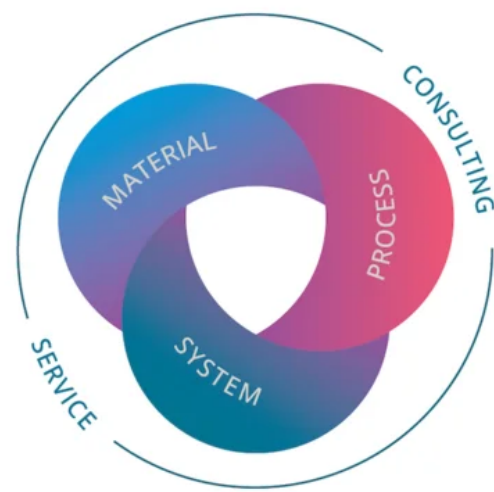
The EOS Quality Triangle

EOS uses an approach that is unique in the AM industry, taking each of the three central technical elements of the production process into account: the system, the material and the process. The data resulting from each combination is assigned a Technology Readiness Level (TRL) which makes the expected performance and production capability of the solution transparent.

EOS incorporates these TRLs into the following two categories:

- Premium products (TRL 7-9): offer highly validated data, proven capability and reproducible part properties.
- Core products (TRL 3 and 5): enable early customer access to newest technology still under development and are therefore less mature with less data.

All of the data stated in this material data sheet is produced according to EOS Quality Management System and international standards



POWDER PROPERTIES

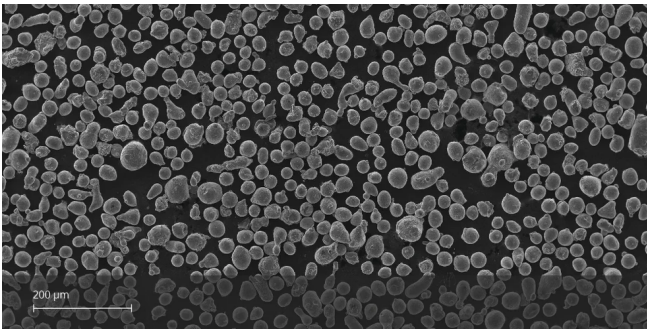
The chemical composition of EOS Aluminium Al5X1 is specially designed for AM. Powder composition values shown below are typical.

Powder Chemical Composition (wt.-%)

Element	Min.	Max.
Al		Balance
Mg	2.5	4.2
Zr	0.6	1.8
Mn	0.1	1
Fe	-	1
Si	-	1
Ti	-	1

Powder Particle Size

GENERIC PARTICLE SIZE DISTRIBUTION	20 - 63 µm
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SEM micrograph of EOS Aluminium Al5X1 powder

HEAT TREATMENT

Description

Heat treatment procedure

Steps

Direct ageing heat treatment

6 hours at 400 °C. Immediate gas quenching (air cooling with maximal air flow).

Preferred inert atmosphere during furnace treatment.

HEADQUARTERS

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Status as of 03.09.2024. Subject to technical modifications. EOS is certified according to ISO 9001.

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