

METAL SOLUTIONS

EOS Aluminium Al2139 AM

Material Data Sheet

EOS ALUMINIUM AL2139 AM

Highest Strength Aluminium Alloy in AM

EOS Aluminium Al2139 AM is a 2000-series high strength alloy specifically designed for AM. It demonstrates outstanding performance in elevated temperatures up to 200°C. Excellent strength properties include yield and tensile strength around 500 MPa in heat treated state and allow lightweight part design. The fast and simple heat treatment procedure enables an affordable part production.

MAIN CHARACTERISTICS

- Unmatched strength in temperatures between 50-200 °C
- Robust one-step heat treatment
- Parts can be electropolished and anodized

TYPICAL APPLICATIONS

- Aerospace
- Racing
- Transportation & Mobility
- Lightweight designs

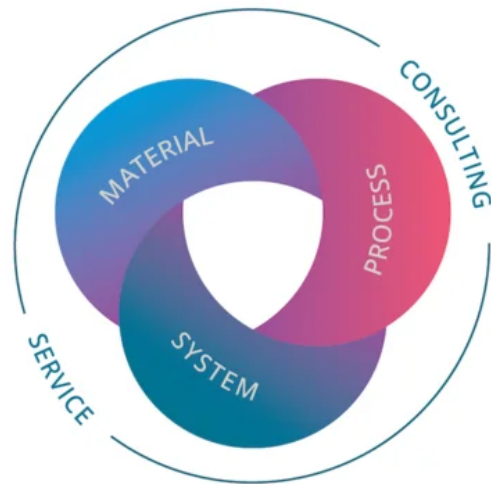
The EOS Quality Triangle

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

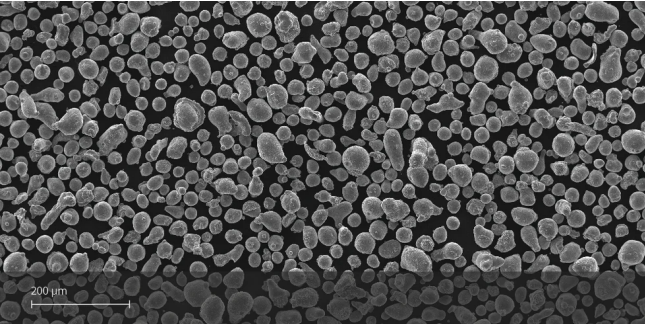
The chemical composition of the EOS Aluminium Al2139 AM powder is modified from Aluminium Association Teal Sheet for Al2139 (wrought aluminium alloys).

Powder Chemical Composition (wt.-%)

Element	Min.	Max.
Al		Balance
Cu	4.5	5.5
Mg	-	0.8
Ag	0.15	0.6
Mn	0.2	0.6
Zn	-	0.25
Si	-	0.1
Fe	-	0.15
Cr	-	0.05
V	-	0.05
Other Metallic Additions	-	4

Powder Particle Size

GENERIC PARTICLE SIZE DISTRIBUTION	20 - 63 µm
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SEM micrograph of EOS Aluminium Al2139 powder

HEAT TREATMENT

Description

EOS Aluminium Al2139 AM recommended T4 Heat Treatment

Solution annealing 45 min @ 490 °C, water quench. Natural aging 3 days in room temperature.

Steps

Step 1: Solution annealing of 45 minutes in 490 °C followed by immediate quenching to water.

Step 2: Natural aging in room temperature for 3 days.

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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