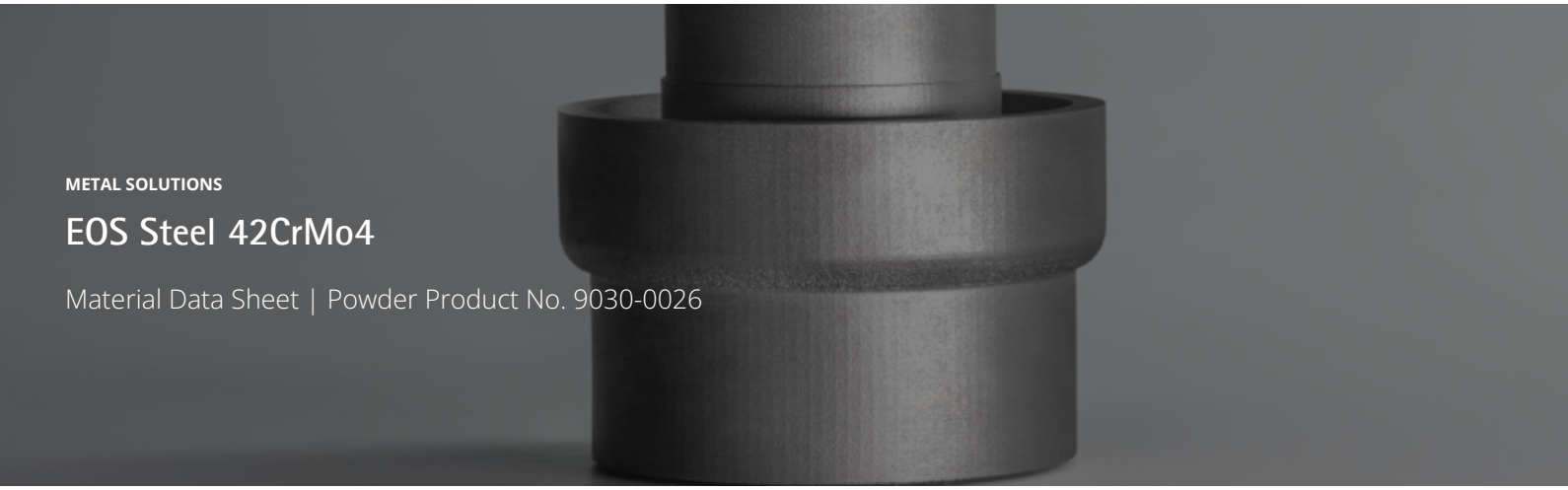


METAL SOLUTIONS

EOS Steel 42CrMo4

Material Data Sheet | Powder Product No. 9030-0026

EOS STEEL 42CRMO4

EOS Steel 42CrMo4 is a martensitic carbon hardening quench and tempering steel with high strength and toughness. EOS 42CrMo4 corresponds to EN 10083-3 (1.7225, AISI 4140). 42CrMo4 can be heat treated for use in components with different requirements.

MAIN CHARACTERISTICS

→ High strength
→ High toughness

TYPICAL APPLICATIONS

→ Engineering components
→ Shafts
→ Gears

The EOS Quality Triangle

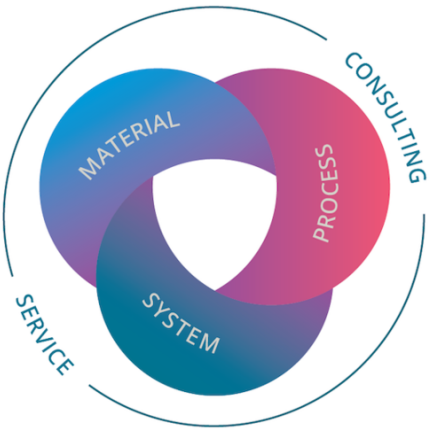
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EOS uses an approach that is unique in the AM industry, taking each of the three central technical elements of the production process into account: the system, the material and the process. The data resulting from each combination is assigned a Technology 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

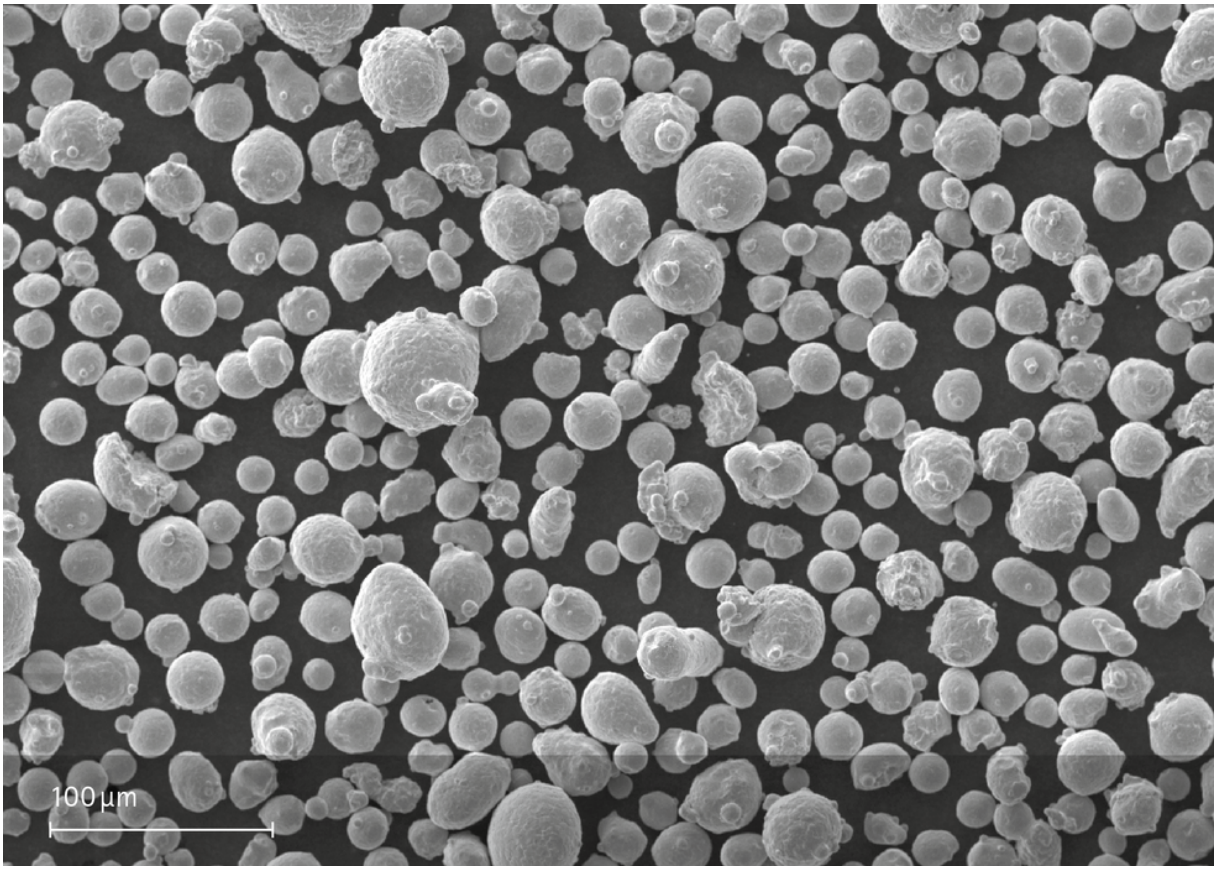
The chemical composition of EOS Steel 42CrMo4 is in compliance with EN 10083-3.

Powder Chemical Composition (wt.-%)

Element	Min.	Max.
Fe		Balance
Cr	0.9	1.2
Mn	0.6	0.9
C	0.38	0.45
Si	-	0.4
Mo	0.15	0.3
S	-	0.035
P	-	0.025

Powder Particle Size

Generic Particle Size Distribution	15 - 53 µm



SEM image of powder

HEAT TREATMENT

Description

EOS 42CrMo4 can be heat treated to match various needs of different applications. The two step heat treatment can be performed under vacuum or inert gas atmosphere. First step is austenizing and quenching to achieve martensitic structure. Second step is tempering. Optionally 42CrMo4 can be stress relieved before quench and tempering.

Steps

Optional Stress Relieve

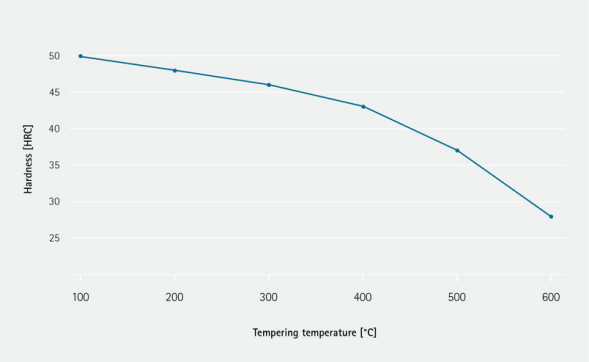
2 h at 600 °C followed by cooling in air

Quench

0.5-1 h at 860 °C (±20 °C) measured from the part followed by quenching in oil or water to room temperature (below 32 °C).

Tempering

1-2 h at 550 °C (±20 °C) followed by cooling in air. This tempering gives optimum combination of strength and toughness. Tensile data in this MDS is from this heat treatment. If other hardness is required choose tempering temperature from the graph below.



HEADQUARTERS

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Status as of 16.11.2026. Subject to technical modifications. EOS is certified according to ISO 9001.
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