

# m4p FeCo49V2

## Fe-base for Laser Powder Bed Fusion

### Description, properties and applications

**m4p FeCo49V2** is a **high-performance, soft magnetic** alloy based on iron, cobalt and vanadium. The material is a **vacuum-melted** alloy that is atomized into a metal powder using argon. Thanks to its high purity and fine-tuning of the alloying elements, it can be excellently processed using additive manufacturing in a laser-based powder bed process.

The material offers an outstanding **magnetic saturation** of up to 2.30 T (Tesla), which makes it ideal for use in **electric motors, generators, transformers** and **magnetic sensors**. The alloy is also characterized by its low **magnetic coercivity** and **high permeability**, making it particularly efficient in applications with changing magnetic fields.

m4p FeCo49V2 also has good **mechanical strength**, which is why additive manufacturing for the production of complex components could become an industrially viable approach for this material.

### Powder characteristics

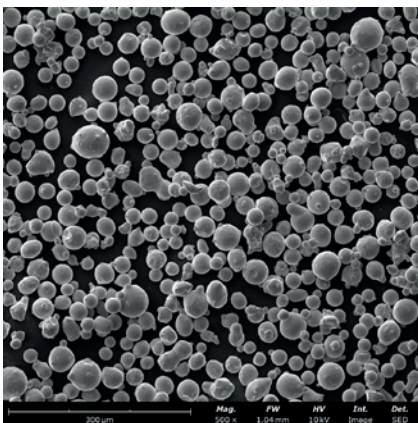


Image: SEM image of an m4p FeCo49V2 powder

Chemical analysis [wt%]		
Element	Min	Max
C		0.025
Si		<0.15
Mn		<0.15
Co	47.50	49.50
V	1.75	2.10
Fe		Rest

Other limited elements: P, S, Ni, O, N

### Additive manufacturing and material characteristics

(rel. density >99.9%; volume rate 11.1 cm<sup>3</sup>/h; layer thickness 40µm; EOS M290)

	Tensile strength Rm [N/mm <sup>2</sup> ]	Yield strength Rp0.2 [N/mm <sup>2</sup> ]	Elongation at break A <sub>5</sub> [%]	B <sub>max</sub> [T]	µ <sub>max</sub> [-]
<b>as-built</b> Sample orientation ↓ ↔	900 - 1000	800 - 900	5 - 20	2.17	307
<b>heat-treated</b> Sample orientation ↓ ↔	250 - 280	290 - 330	2 - 15	2.28	17,000

#### GERMANY

**m4p material solutions GmbH · Germany**  
Mittelweg 13, 39130 Magdeburg  
T +49 391 72149-40  
E sales@metals4printing.com

#### AUSTRIA / INTERNATIONAL

**m4p material solutions GmbH · Austria**  
Gewerbestraße 4, 9181 Feistritz i. R.  
T +43 4228 93053-0  
E sales@metals4printing.com

[www.metals4printing.com](http://www.metals4printing.com)