

# m4p Fe-7225

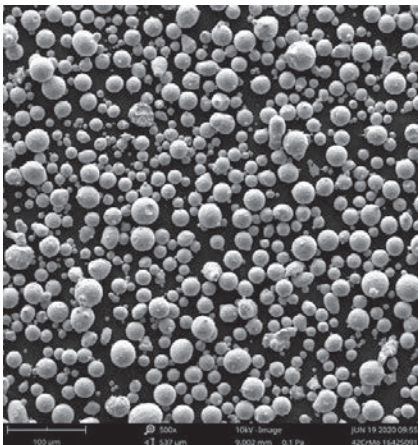
## Fe base for laser-based powder bed fusion

### Description, properties and applications

**m4p™ Fe-7225** is a **steel alloy** that is also widely used in general industry under the designation **42CrMo4**. It is a steel alloyed with chromium and molybdenum, which belongs to the group of **quenched and tempered steels**. A broad profile of strength properties can be set by means of an adapted heat treatment. In addition, **surface hardening** can be applied.

In automotive engineering, but also in general mechanical engineering, the achievable **high strength properties** combined with **high ductility values** are valued for highly stressed components such as transmission components or connecting rods. With an optimized processing strategy, even complex components can be manufactured using the laser-based powder bed process on conventional machine systems (preheating of powder bed <200°C). With suitable parameter selection, the components already show an excellent surface with low roughness (Ra ~ 8-13µm) in the as-built state and achieve hardness values of approx. **43HRC**.

### Powder characteristics



#### Chemical analysis [wt%]

Element	Min	Max
C	0,38	0,42
Si	<0,40	
Mn	0,60	0,90
Cr	1,00	1,20
Mo	0,15	0,30
Fe	Base	

further more limited are: O, N, P, S

### Material characteristics

(>99,9% rel. density; volume rate 13 cm<sup>3</sup>/h; layer thickness 40µm; EOS M290)

#### Mechanical properties

	Tensile strength Rm [N/mm <sup>2</sup> ]	Yield strength Re [N/mm <sup>2</sup> ]	Elongation at break A <sub>5</sub> [%]
<b>As-built</b> Sample orientation ↑ ↔	1250 ±30	1100 ±5	12 ±1

#### 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)