METALS FOR PRINTING

m4p Fe-7225

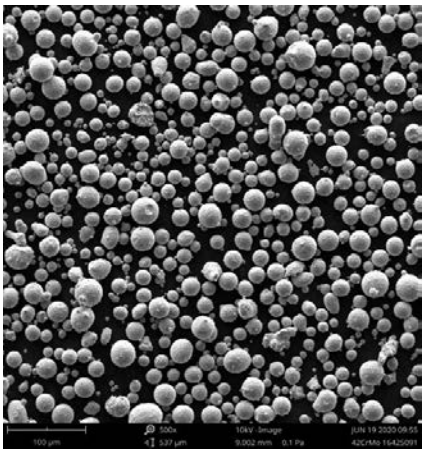
Fe base for laser-based powder bed fusion

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 14 cm³/h; layer thickness 30µm; specimen orientation vertical / Z-axis , EOS M290)

Mechanical properties			
	Tensile strength Rm [N/mm²]	Yield strength Re [N/mm²]	Elongation at break A_5 [%]
Heat treated quenched and tempered	1250 ±30	1100 ±5	12 ±1

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