

# m4p Fe-7131

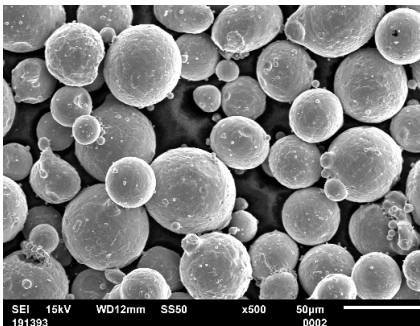
## Fe base for laser-based powder bed fusion

### Description, properties and applications

**m4p™ Fe-7131** is a low alloyed metal powder belonging to the family of case hardening steel grades. Traditionally mechanical engineering, especially construction components or highly stressed machine parts count to their application field. Printed parts are usually also subject to a heat treatment (case hardening) later on to achieve an enhanced hardness in the closer surface area whereas the core material remains in its high strength condition. This way wear resistance is improved combined with good fatigue strength (Residual pressure at the outer boundary layers) which gives an advantage to components such as general gear parts or shafts. A tight coordinated metallurgical adjustment of this material interacting with special preparations at the melting stage and also final atomizing, generates highly spherical metal powders with high packing density.

Metal powders in grade **m4p™ Fe-7131** have been developed and fine tuned to meet the conditions of additive manufacturing and to enable a wide range of parameters being used to print reproducible, crack-free parts with a low level of pores.

### Powder characteristics



#### Chemical analysis [wt%]

Element	Min	Max
C	0,14	0,19
Si		<1,00
Mn	1,00	1,30
Cr	0,80	1,10
Fe		Base

further more limited are: P, S

### Additive manufacturing and strength properties

#### Typical characteristics of tensile test (>99,9% rel. density, m4p™ Fe-7131)

	Tensile strength Rm [N/mm <sup>2</sup> ]	Yield strength Re [N/mm <sup>2</sup> ]	Elongation at break A <sub>5</sub> [%]
as-built	1095	1040	10
after stress relieving	700	641	18

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