

# m4p CXplus

## Corrosion-resistant maraging steel for L-PBF

### Description, properties and application

**m4p™ CXplus** is a high-performance powder that was developed to meet the special needs of additive manufacturing. It combines the excellent processing properties of maraging steel (like m4p™ Fe-2709) with the corrosion resistance of stainless steel material (like m4p™ 316l). The user is thus provided with a unique combination of material properties in just one powder quality, comprising very good powder bed processability, a high level of corrosion resistance with adjustable high hardness values of up to 54HRC (52HRC+2HRC maximum hardness).

The setting of the described advantageous properties of the m4p™ CXplus takes place already in the powder manufacturing process, which is characterized by the fine tuning of the alloying elements and the metallurgical processing of the melted mass under vacuum. The hardness values can be set in a targeted manner by means of a heat treatment following the additive manufacturing.

Due to the special material properties, m4p™ CXplus is suitable for a variety of applications - but was especially developed for model and mold making. The molds made from the material are polishable and corrosion-resistant, which emphasizes the suitability for molds with a medical background or for molds exposed to corrosive plastics. Additionally, the application range comprises highly stressed components in mechanical and plant engineering as well as everyday objects such as knives.

### Powder characteristics



Img.: additive manufactured knife, design by Midgards-Messer®

#### Chemical analysis [wt%]

Element	Min	Max
C	<<<	
Cr	11,5	13,5
Ni	9,0	11,0
Mo	<2,0	
Ti	<2,0	
Al	<2,0	
Fe	Base	

### Material characteristics

(rel. density >99,9%; volume rate 15,2cm<sup>3</sup>/h; layer thickness 40µm; EOS M290)

#### Mechanische Kennwerte

	Tensile strength Rm [N/mm <sup>2</sup> ]	Yield strength Rp0.2 [N/mm <sup>2</sup> ]	Elongation at break A <sub>5</sub> [%]	Hardness [HRC]
<b>As-built - Z</b>	1.011	743	14	34
<b>Heat-treated - Z</b>	1.667	1.508	9	52

#### GERMANY

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

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

#### AUSTRIA / INTERNATIONAL

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