METALS FOR PRINTING

m4p type10-SDX

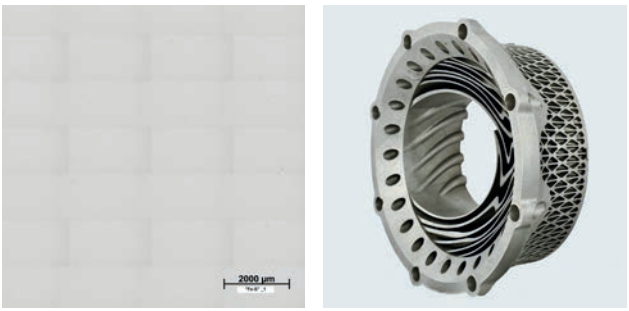
Fe-base for laser-based powder bed fusion

Description, properties and applications

m4p™ type10-SDX is a steel alloy from the category **Superduplex**. Duplex is a term used in materials science for microstructures that have a two-phase structure of ferrite and austenite. Thus, they combine the advantages of both microstructures and enable materials with the best mechanical strength properties and excellent corrosion resistance. The increase in „Duplex" grades leads to the „Superduplex" steel grade of m4p™ type10-SDX, whose pitting corrosion resistance reaches **PRE_N values >40** due to the highest chromium and molybdenum contents in combination with nitrogen. Due to the ferrite content, the strength values - in particular higher yield strengths - are significantly higher than for fully austenitic materials. The combination of highest corrosion resistance and high strength is a major aspect in some demanding applications (**oil and gas industry or onshore and offshore industry**) to design safety relevant components. With the aid of m4p™ type10-SDX, for example, wall thicknesses can be reduced or the service life of components can be increased, with significantly higher corrosion resistance or strength compared to standard stainless grades.

m4p™ type10-SDX can be processed very well in the laser-based powder bedding process and by varying the process temperature or optional post heat treatment, the material properties can be adjusted as required. For further information, m4p will be happy to assist you.

Powder characteristics



Images: Microsection; Outlet body O&G ball valve

Chemical analysis [wt.%]		
Element	**Min**	**Max**
C	<0,03	
Si	<0,80	
Mn	<1,20	
Cr	24,0	26,0
Ni	6,0	8,0
Mo	3,00	5,00
N	0,24	0,32
Fe	Base	

Other limited elements: O, Cu, P, S

Material characteristics

(>99,9% rel. density; volume rate 13,7 cm³/h, layer thickness 40µm; EOS M290)

Mechanical properties			
	Tensile strength Rm [N/mm²]	**Yield strength Re [N/mm²]**	**Elongation at break A_5 [%]**
Heat-treated - Z	900 ±50	620 ±40	39 ±4

www.metals4printing.com

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

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