



# MATERIALS FOR 3D PRINTING

## **METAL DETECTABLE NYLON**



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# Metal Detectable PA (MDP)

## Metal detectable nylon

MDP is a strong type of plastic designed to replace parts that would otherwise be CNC milled or injection molded. The material was developed by Danish Technological Institute. 3S surface treated MDP is approved as food contact material (FCM) and can be detected by metal detectors in a production line as it contains metal.

We print with Selective Laser Sintering (SLS). The technology prints in powder and uses a laser to sinter the powder layers together. 3D printing with SLS offers a great deal of design freedom, as the parts do not need support material.

The technology can print parts that meet ISO 2768-m 1 - however, the tolerances depend a lot on the geometry of the part.

MATERIAL PROPERTIES (STANDARD)	MDP
TENSILE STRENGTH [Rm]	48 MPa
YOUNG'S MODULUS [E]	1700 MPa
YIELD STRENGTH [Rp0,2]	43 MPa
ELONGATION AT BREAK [A]	15 %
ELONGATION AT YIELD	6,5 %
VICKERS HARDNESS [Shore D]	80
PART DENSITY	1,043 g/cm <sup>3</sup>

SURFACE TEXTURE	Raw	3S surface sealing
Average roughness [Ra]	16	1,2

### Danish Technological Institute - Industrial 3D printing

Email: [3dprint@dti.dk](mailto:3dprint@dti.dk)  
Phone: 7220 1701  
[www.dti.dk/3dprinting](http://www.dti.dk/3dprinting)



#### Technology:

- Selective Laser Sintering

#### Printers:

- EOS - P396

#### Build volume:

- 340 x 340 x 600 mm

#### Layer thickness:

- 0,10 - 0,12 mm

#### Possible post-processing:

- Deburring
- Media blasting
- 3S surface sealing
- Colouring
- Lacquering

#### Design features:

- Minimum feature size 0,8 mm
- Minimum channel size Ø1,5 mm
- Minimum wall thickness 0,7 mm
- Support not necessary
- Hole for emptying powder Ø5 mm

#### Design guides:

- Minimize the volume of the part as much as possible
- Avoid large changes in the cross-sectional area of the part
- Use camphors and roundings - they are "free"
- Consider the print orientation in your design



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