Printdur® Powderfort

Wear resistant tool steel for Additive Manufacturing

GENERAL INFORMATION

Printdur® Powderfort (~1.2709) is a precipitation-hardening tool steel. The grade is similar to 1.2709 in terms of alloying, but without the elements titanium and aluminum. However, the mechanical properties are identical to those of 1.2709. Der Printdur® Powderfort is characterized by the following properties:

- Good processability with LPBF.
- High yield and tensile strength combined with good toughness.
- Simple and distortion-free heat treatment.
- High hardness of approx. 52 HRC after heat treatment.

These properties make Printdur® Powderfort the first choice when components exposed to high mechanical stresses are produced by Additive Manufacturing.

Our production is certified according to DIN EN ISO 9001 (quality management systems) and IATF 16949 (quality management automotive). Thus, we can guarantee a constant high quality of our metal powder.

POWDER PROPERTIES

The powder is produced by gas atomization. This manufacturing process ensures spherical powder particles in combination with excellent flow characteristics.

Chemical Composition [weight-%]

C	Si	Mn	Mo	Ni	Co	Fe
< 0.02	0.5	0.5	5.0	18.0	13.5	Base

Powder characterization[1]

Bulk density	Flow characteristics
4.2 ± 0,4 g/cm³	16 ± 4 s/50g

[1] The properties were determined in the particle size distribution of 20 - 53 µm. The powder properties may differ due to different particle size distributions.

ADDITIVE MANUFACTURING[2]

Der Printdur® Powderfort can be processed on LPBF systems. The process parameters are similar to those of 1.2709. Please contact us for further information.

[2] Process parameters for LPBF systems have been developed for our alloys and can be supplied on request. Depending on the system, it may be necessary to deviate from these recommendations. We would be pleased to support you in the implementation.

Printdur® Powderfort

Wear resistant tool steel for Additive Manufacturing

MECHANICAL PROPERTIES[3]

The mechanical properties listed below were achieved with a particle size distribution of 20 - 53 µm. The used system was an EOS M290 with a layer thickness of 40 µm.

As printed

$R_{p0.2}$	900 MPa ± 50 MPa
R_m	1030 MPa ± 50 MPa
$A_{5.65}$	65 %
HRC	37

Heat treated[4]

$R_{p0.2}$	2030 MPa ± 50 MPa
R_m	2100 MPa ± 50 MPa
$A_{5.65}$	5 %
HRC	52

[4] Solution annealed (vacuum, 850°C/ 1h/ gas quenching) and ageing (480°C, 4h, air cooling)

[3] The mechanical properties were determined in vertical direction and thus represent the lower limit of the properties due to the component orientation / print orientation of the alloy. A different - e.g. horizontal - orientation of the specimens / components generally leads to higher mechanical properties.

Deutsche Edelstahlwerke Specialty Steel GmbH & Co. KG
Auestr. 4
58452 Witten
Fon: +49 2151 3633-2054

printdur@dew-stahl.com
www.dew-powder.com

23-07-2020