

Powder for additive manufacturing
Fe-based, corrosion and tempering resistant with high hardness

Chemical composition

Printdur[®] HCT is a patent-pending new development of Swiss Steel Group.

Standard analysis in mass -%

C + N	Mn	Cr	Mo	Fe
0.4	3.0	13.0	1.0	basis

Standards and certificates

ISO 9001 (quality management system)

IATF 16949 (automotive quality management)

DIN EN ISO 13485 (quality management for medical products)

Properties

- Excellent processing properties in LPBF process
- Very high hardness of 53 HRC in as printed condition
- Applying deep freezing, a hardness of up to 57HRC can be achieved
- High tempering resistance up to 540 °C (1000 °F)
- Good corrosion resistance, especially against pitting
- Good mechanical properties
- Low safety requirements during processing compared to Ni and/or Co alloyed powders

Application

- Universally applicable powder for printing jobs
- Dies and inserts for die casting, due to high tempering resistance and high hardness
- Plastic injection with requirements for corrosion resistance (similar to Formadur[®] 2083)
- Medical purposes due to missing Ni and Co contents

Powder Properties

Printdur[®] HCT is manufactured by means of gas atomization. This technology ensures spherical powder of good flowability.

Measured with a particle distribution of 10 – 53 µm

Apparent density	Flow rate
4.3 g/cm ³	15.5 s / 50 g

Mechanical Properties

The below listed mechanical properties were achieved with a particle size distribution of 10 – 53 µm. The specimens were printed with a layer thickness of 40 µm in EOS M290 – printer.

The mechanical properties were determined in compression tests in vertical direction and thus represent the minimum of values obtainable. A different, e.g. horizontal orientation of the specimen or component usually results in better mechanical properties.

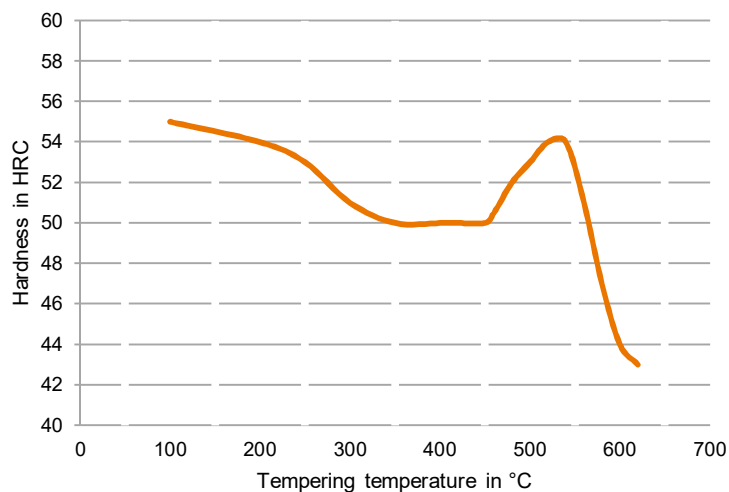
Heat treatment condition	Hardness	Compression limit $\sigma_{0,2}$	Impact strength A_v
As printed	53 HRC	2130 MPa	5 J
As printed + deep freezing	57 HRC	2270 MPa	5 J
As printed + tempering	54 HRC	1440 MPa	10 J

Processing

Printdur[®] HCT can easily be processed on LPBF systems at a preheating temperature of 150°C. Typical process parameters are available upon request.

Tempering

In order to obtain maximum tempering resistance, tempering in the secondary hardness range (beyond 500°C) is recommended. Preliminary austenitizing is not necessary.



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