ATOMET FeAM

ATOMET FeAM is a high purity iron powder suitable for additive manufacturing applications.

Typical physical properties

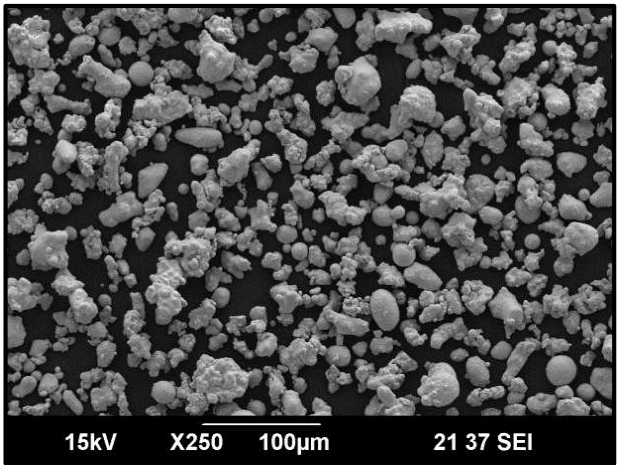
Apparent density	3.10 g/cm³

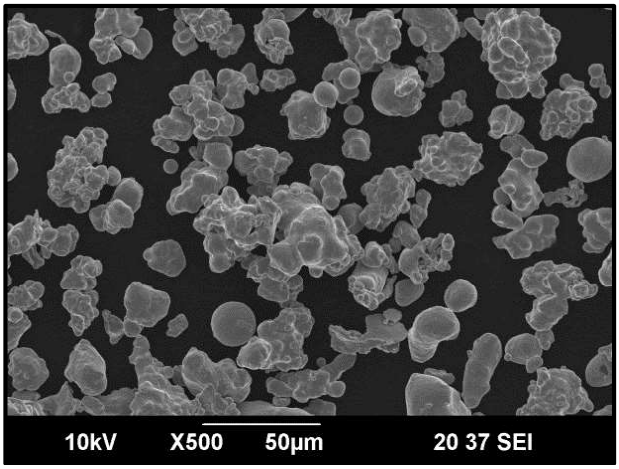
Typical chemical composition (%w)

Iron	> 99.5%
Manganese	0.04%
Carbon	0.004%
Oxygen	0.08%
Sulfur	0.007%
Nitrogen	0.004%

Typical particle size distribution

d_{10}	15 µm
d_{50}	30 µm
d_{90}	45 µm
d_{99}	60 µm





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Technical data

The following technical data are provided for information purposes only. The properties reported here were obtained by printing ATOMET FeAM with an EOSINT M 280 printing machine (powder-bed selective laser melting) with optimised process parameters.

General process data

Typical achievable part accuracy (small part < 80 x 80 mm)[1]	Approx. ± 30 µm
Minimal wall thickness	Approx. 0.2 mm
Surface roughness (as manufactured) - Layer plane (xy) - Build direction (z)	 R_a 4 µm (0°) R_a 8 µm (90°)
Surface roughness (after shot-peening) - Layer plane (xy) - Build direction (z)	 R_a 5 µm (0°) R_a 5 µm (90°)
Volume rate (total build speed including recoating)	8 cm³/h
Achievable density	7.80+ g/cm³

Mechanical properties

	As-build	Stress-relieved[2]
Yield strength - Layer plane (xy) - Build direction (z)	 550 MPa 450 MPa	 460 MPa 450 MPa
Tensile strength - Layer plane (xy) - Build direction (z)	 600 MPa 500 MPa	 510 MPa 490 MPa
Elongation - Layer plane (xy) - Build direction (z)	 Approx. 13% Approx. 13%	 Approx. 19% Approx. 16%
Modulus of elasticity - Layer plane (xy) - Build direction (z)	Typ. 210 GPa	

[1] Following a standard EOS calibration procedure (optimised beam-offset).
[2] Stress-relief heat treatment : 30 minutes at 600°C.