



FILAMENT-Cer ZrO₂

Technical Data Sheet

FILAMENT-Cer ZrO₂ is an easily printable filament with a high content of 3 mol.% yttria stabilized zirconia (Y-TZP) nanoparticles. After printing your desired shape, the sintering process provides you a 100% zirconia piece or scaffold.

FILAMENT-Cer ZrO₂ can be sintered. Furthermore, it remains easily printable by FFF, without clogging problems. **FILAMENT-Cer ZrO₂** is specifically formulated to allow 100% inorganic parts to be obtained through 3D printing, allowing easy manufacturing of dense pieces and scaffolds with custom shapes.

Filament features

Particle	ZrO ₂ (3 mol% Y ₂ O ₃)
Polymeric matrix	PLA
Particle loading (wt./vol.%)	78 wt.% (±3)/ 42 vol.% (±1)
Diameter	1.75 ± 0.15 mm
Density	3.23 g/cm ³
Linear Density	0.078 g/cm
Format	Spool vacuum packed

Thermal Properties

Glass Transition	54 °C
Melting	153 °C
Degradation	327 °C

Printing Recommendations

Printing Temp.	158-170 °C
Hot Pad	30-60 °C
Printing Speed	10-20 mm/s
Layer Height	> 0.15 mm
Nozzle Diameter	> 0.4 mm
Head travel speed	< 50 mm/s
Stand-by Temp.	<140 °C

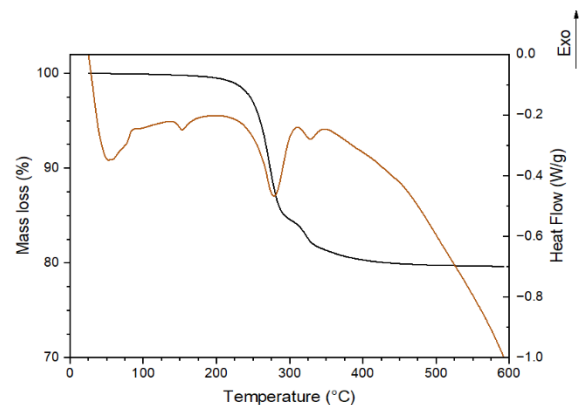
Storage Conditions

Keep in dry place
Protect from direct sunlight
Storage between 5°C- 30°C

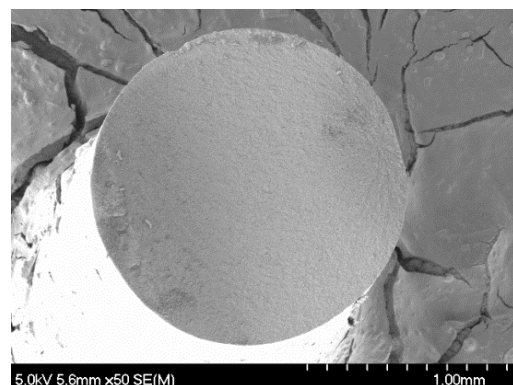
Specific properties

Sinterable with high density after sintering

Thermal behavior



Filament cross-section



Sintered (Left) and green (right) samples, printed with **FILAMENT-Cer ZrO₂**

Powder Specifications

ZrO₂ (Y-TZP)

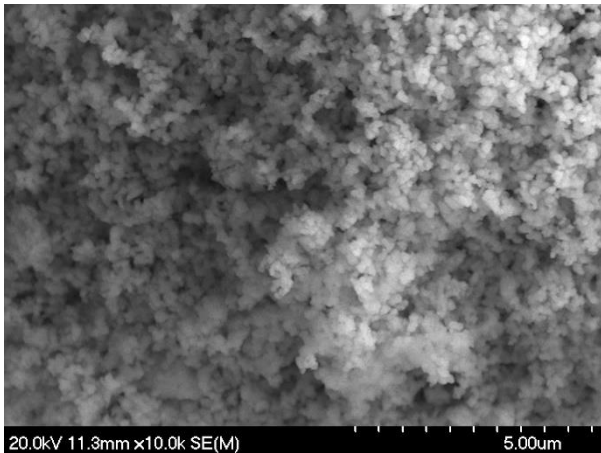
Identification Product

Commercial name	TZ-3YS-E
Chemical formula	ZrO ₂ (3 mol% Y ₂ O ₃)
Supplier	Tosoh Zirconia
Characteristics/Description	Partially-stabilized zirconia powder with uniform dispersion of 3 mol % yttria. TZ-3Y-E exhibits superior sintering properties.

Chemical composition

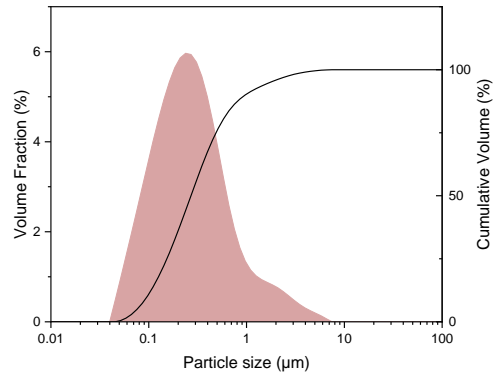
Purity (wt%)	(99.5-99.8)	X-Ray Fluorescence
Y₂O₃ (wt%)	5.2 ± 0.5	
Density	6.03 g/cm ³	Helium picnometry
Spec. Surf. area	6.50 m ² /g	N ₂ adsorption- desorption

Particle morphology



Scanning electron microscope image

Particle size distribution



D₁₀: 0.09 µm D₅₀: 0.27 µm D₉₀: 0.97 µm
Measured by Laser Diffraction

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