



Technical Data Sheet

Filament-Eco TiO₂

FILAMENT-Eco TiO₂ is a composite material of PLA and titanium dioxide nanoparticles with a large specific surface area and high content of anatase phase. Filaments with 15 vol.% TiO₂ have a kinetics constant of $6.57 \cdot 10^{-2} \text{ h}^{-1}$ (3ppm NM pH2)

FILAMENT-Eco TiO₂ is suitable for many catalytic and photocatalytic applications. Its structure also makes it suitable for use as an effective filter.

Filament features

Particle	Titanium Dioxide
Polymeric matrix	PLA
Particle loading (wt.%/vol.%)	36 wt.%/ 15 vol.%
Diameter	1.75 ± 0.15 mm
Density	1.60 g/cm ³
Linear Density	0.039 g/cm
Format	Spool vacuum packed

Thermal Properties

Glass Transition Temp.	53 °C
Melting Temp.	150 °C
Degradation Temp.	367 °C

Printing Recommendations

Printing Temp.	160-170 °C
Hot Pad	30-60 °C
Printing Speed	20-50 mm/s
Layer Height	> 0.15 mm
Nozzle Diameter	> 0.4 mm
Head travel speed	< 150 mm/s
Stand-by Temp.	30 °C lower than the used printing temperature or <140 °C

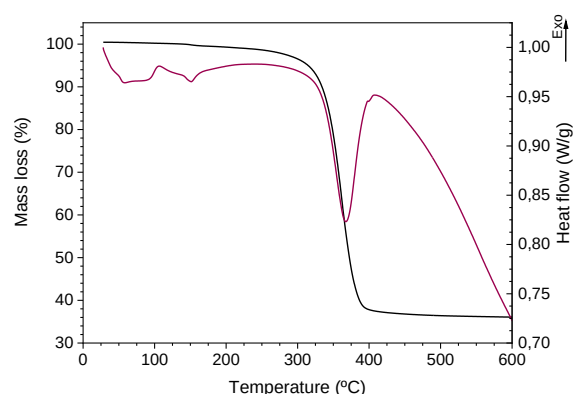
Storage Conditions

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

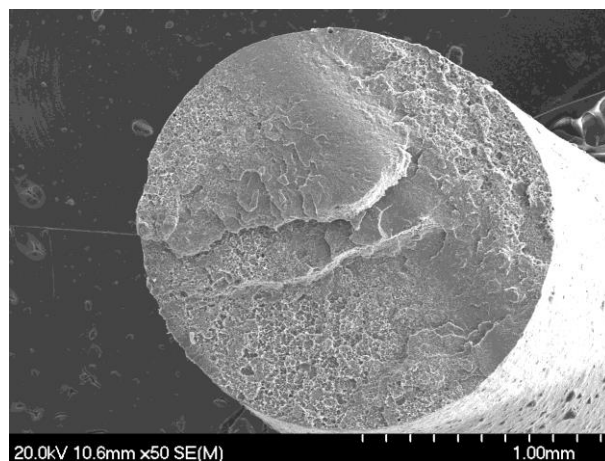
Specific properties

Suitable for many catalytic and photocatalytic applications. Its structure also makes it suitable for use as an effective filter.

Thermal behavior



Filament cross-section



Samples printed with Filament-Eco 15TiO₂

Powder Specifications

Titanium Dioxide Powder

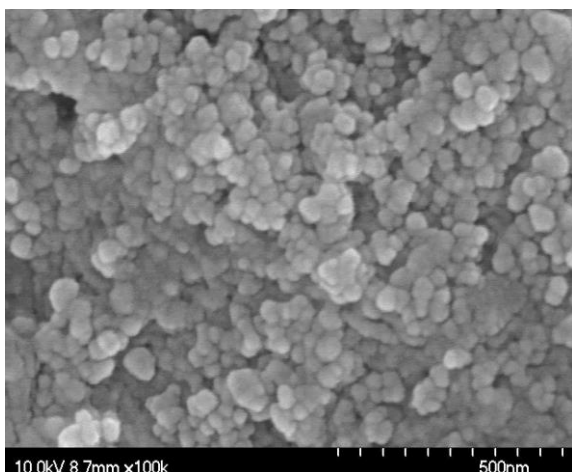
Identification Product

Commercial name	TiO ₂ -P25
Chemical formula	TiO ₂
Supplier	AEROXIDE®
Characteristics/Description	High specific surface area, high purity and unique combination of anatase and rutile crystal structure. Suitable for many catalytic and photocatalytic applications. Its structure also makes it suitable for use as an effective UV filter.

Chemical composition

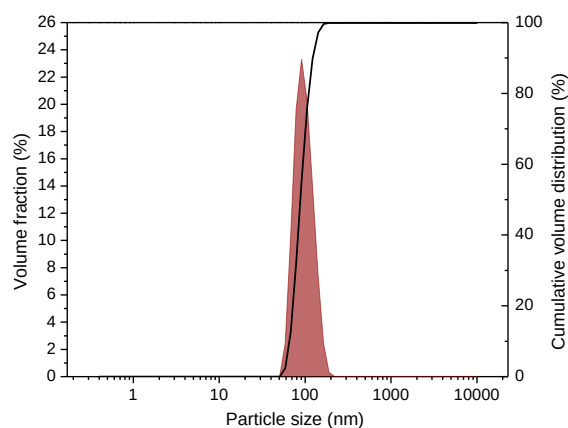
Anatase/Rutile	80/20	X-Ray Fluorescence
Purity	99.5 %	
Density	3.87 g/cm ³	Helium pycnometry
Spec. Surf. area	52.29 m ² /g	N ₂ adsorption-desorption

Particle morphology



Scanning electron microscope image

Particle size distribution



D₁₀: 65 nm D₅₀: 90 nm D₉₀: 126 nm
Measured by Laser Diffraction at small angles

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