Technical Data Sheet

Filament-Eco Carbon

FILAMENT-Eco Carbon is a composite material of conductive graphite particles dispersed in a PLA matrix. Filaments conductivity can be tailored by inorganic content. The colloidal approach used to prepare **FILAMENT-Eco Carbon** allow obtaining high dispersion degree of carbon particles into the polymer matrix s high dispersion degree of carbon particles.

FILAMENT-Eco Carbon is ideal for applications where a reinforced material is needed. In addition, the graphite used has properties that are distinctive, so it can be used as an electrode substrate, structural health monitoring.

Filament features

Particle	Graphite
Polymeric matrix	PLA-based
Particle loading (wt.%/vol.%)	39 wt.%/ 25 vol.%
Diameter	1.75 ± 0.15 mm
Density	1.49 g/cm^3
Linear Density	0.036 g/cm
Format	Spool vacuum packed

Thermal Properties

Glass Transition Temp.	58 ºC
Melting Temp.	154ºC
Degradation Temp.	298ºC

Printing Recommendations

Printing Temp.	155-165 ºC
Stand-by Temp.	<140 ºC
Hot Pad	50-60 ºC
Printing Speed	10-60 mm/s
Layer Height	> 0.15 mm
Nozzle Diameter	> 0.4 mm
Head travel speed	< 150 mm/s

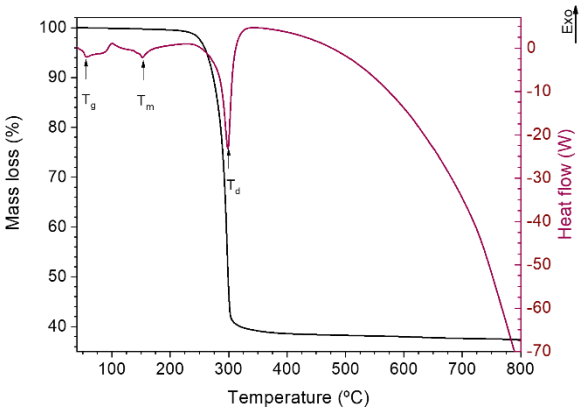
Storage Conditions

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

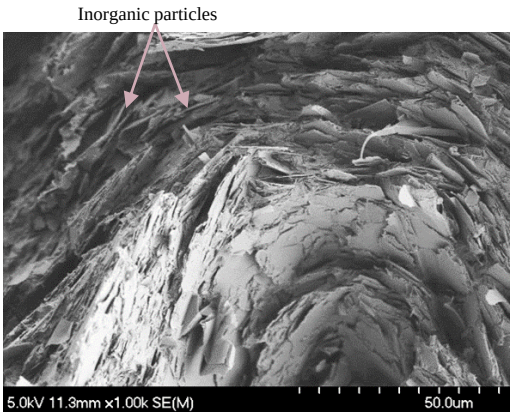
Specific properties

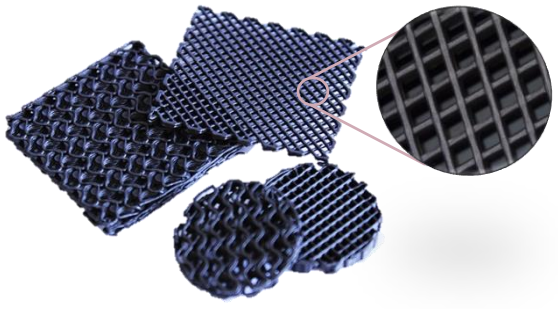
Filament conductivity measured by four points probe 11Sm^{-1}
Sterilized by UV.

Thermal behavior



Filament cross-section





Scaffolds printed with Filament-Eco 25Carbon

Powder Specifications

Graphite Powder

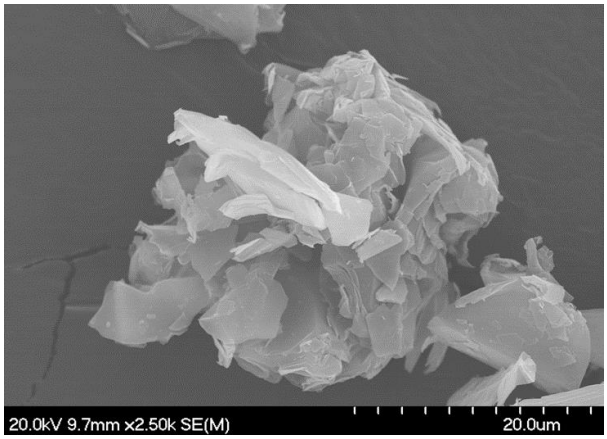
Identification Product

Commercial name	CMO3
Appearance	Black powder
Supplier	Imerys, Group Timcal.
Characteristics/ Description	TIMREX® SFG44 Primary Synthetic Graphite

Chemical composition

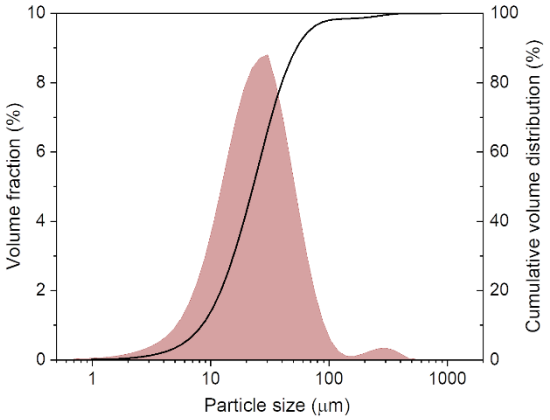
Density	2.31 g/cm^3	Helium picnometry
Spec. Surf. area	4.82 m^2/g	N_2 adsorption-desorption
Purity	>99 %	
Nº layers		

Particle morphology



Scanning electron microscope image

Particle size distribution



D_{10}: 9 µm D_{50}: 23 µm D_{90}: 56 µm
Measured by Laser Diffraction at small angles