Technical Data Sheet

Filament-Eco Graphene

FILAMENT-Eco Graphene is a composite material of conductive graphene particles dispersed in a PLA matrix. Filaments conductivity can be tailored by inorganic content. **FILAMENT-Eco Graphene** is the most conductive graphene filament in/on the market.

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

Filament features

Particle	Graphene oxide
Polymeric matrix	PLA-based
Particle loading (wt.%/vol.%)	26 wt.%/ 15 vol.%
Diameter	1.75 ± 0.15 mm
Density	1.38 g/cm^3
Linear Density	0.033 g/cm
Format	Spool vacuum packed

Thermal Properties

Glass Transition Temp.	61 ºC
Melting Temp.	152 ºC
Degradation Temp.	313 ºC

Printing Recommendations

Printing Temp.	170-180 ºC
Stand-by Temp.	<140 ºC
Hot Pad	50-60 ºC
Printing Speed	5-20 mm/s
Layer Height	≥ 0.15 mm
Nozzle Diameter	≥ 0.8 mm
Head travel speed	< 150 mm/s

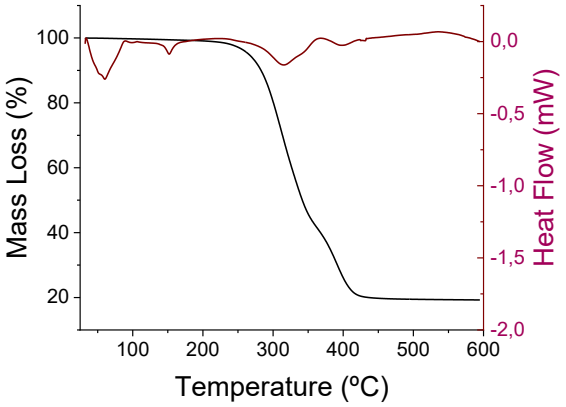
Storage Conditions

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

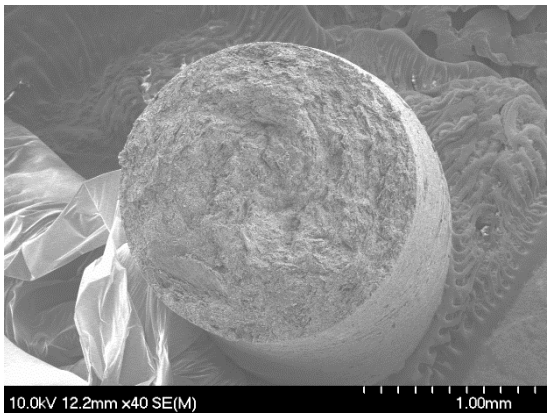
Specific properties

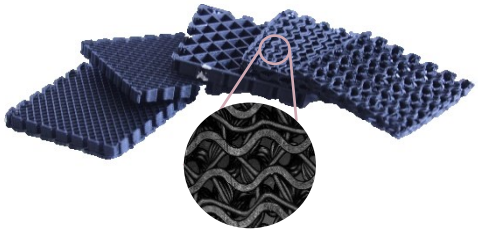
Filament conductivity by four points probe measurements: 900-1100 S·m^{-1}
Can be sterilized by UV.

Thermal behavior



Filament cross-section





Scaffolds printed with Filament-Eco Graphene

Powder Specifications

Graphene Oxide Powder

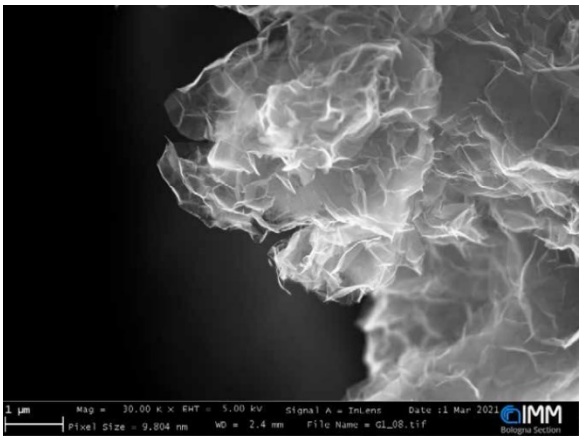
Identification Product

Commercial name	GPU
Appearance	Black powder
Characteristics/ Description	**GUP Nanoplatelets** consist of high-quality powder based on graphene nanoplatelets. GUP has been manufactured using "top-down" exfoliation method.

Chemical composition

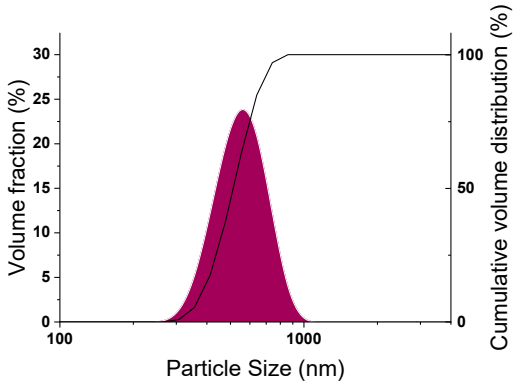
Density	NA	Helium picnometry
Spec. Surf. area	180 m^2/g	N_2 adsorption-desorption
Purity	>99 %	
Nº layers	2-5 nanosheet	

Particle morphology



Scanning electron microscope image

Particle size distribution



D_{10}: 310nm D_{50}: 503.3nm D_{90}: 681.2nm
Measured by Laser Diffraction at small angles

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