Print this page 3D Printing **New Businesses**

PA6/66-GF20 FR Using Exolit®

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3D printer filament

Product Description

Clariant's Exolit® non-halogenated flame retardants provide environmental friendly and sustainable solutions for products used in a variety of industries. Clariant's flame retardant 20% glass fiber reinforced polyamide 6/66 using Exolit® (PA6/66-GF20 FR) 3D printer filament is an exceptionally printing material that has good mechanical properties and achieves UL 94 V-0 flammability standards.

Benefits

- Flame retardant material
- Semi-crystalline thermoplastic
- Good impact strength and stiffness
- Outstanding wear resistance
- Good temperature resistance
- Reduced thermo-oxidative degradation
- Improved long term heat and stability to ultraviolet and visible light

Applications*

- Functional end use parts
- Functional prototypes

*Subject to detailed product specifications.

Color Range
Standard

- White
- Black
- Grey
- Red

ColorWorks® ColorForward® consumer color directions 2019

- MADE IN HUMAN - Protect the core (red)
- DO NOT DISTURB - ἀταραξία von has fidanken (green blue)

ColorWorks® ColorForward® consumer color directions 2020

- EYE AM WATCHED - Catch me if you can (orange)

Custom colors available upon request.

Printing Parameters

- Print Temperature = 230-250°C
- Print Speed = 20-50 mm/s
- Bed Adhesion = A polyvinylpyrrolidone (PVP) based glue coated on a glass or carbon fiber surface
- Bed Temperature = 80°C
- Fan Settings = off to low

Note: parameters are dependent on printer used; Clariant tests were performed on Ultimaker S5 and 3ntr A4 V3 printers.

Typical Property Values

Property	Typical Values				Units	Test Method	Test Specimen
	white	black	red[a]	natural			
MECHANICAL PROPERTIES							
Tensile stress at yield, 50 mm/min					MPa	ISO 527	Injection molded
		53			MPa	ISO 527	3D printed XY / flat at 235°C

		MPa	ISO 527	3D printed XZ / on edge at 235°C
	15	MPa	ISO 527	3D printed ZX / upright at 235°C
Tensile stress at break, 50 mm/min	94	MPa	ISO 527	Injection molded
	54	MPa	ISO 527	3D printed XY / flat at 235°C
		MPa	ISO 527	3D printed XZ / on edge at 235°C
	15	MPa	ISO 527	3D printed ZX / upright at 235°C
Tensile elongation at yield, 50 mm/min	3.7	%	ISO 527	3D printed XY / flat at 235°C
		%	ISO 527	3D printed XZ / on edge at 255°C
	0.8	%	ISO 527	3D printed ZX / upright at 235°C
Tensile elongation at break, 50 mm/min		%	ISO 527	Injection molded
	2.3	%	ISO 527	3D printed XY / flat at 235°C
		%	ISO 527	3D printed XZ / on edge at 235°C
	0.8	%	ISO 527	3D printed ZX / upright at 235°C
Tensile modulus (modulus of elasticity), 1 mm/min		MPa	ISO 527	Injection molded
	4963	MPa	ISO 527	3D printed XY / flat at 235°C
		MPa	ISO 527	3D printed XZ / on edge at 235°C
	1714	MPa	ISO 527	3D printed ZX / upright at 235°C

Flexural modulus	6410	MPa	ISO 178	Injection molded
Flexural strength	145	MPa	ISO 178	Injection molded
Izod impact notched	12	MPa	ISO 180	Injection molded
Charpy impact notched	12	MPa	ISO 179	Injection molded
FLAMMABILITY PROPERTIES				
UL 94 flammability rating	V-0 at 0.4 mm		UL 94	3D printed XY / flat at 235°C
	V-0 at 0.8 mm		UL 94	Injection molded
	V-0 at 0.8 mm		UL 94	3D printed XY / flat at 235°C
	V-0 at 1.6 mm		UL 94	Injection molded
	V-0 at 3.2 mm		UL 94	Injection molded
THERMAL PROPERTIES				
Melting point			ISO 11357, DSC[b]	
Glass transition temperature		°C	ISO 11357, DSC[b]	
Heat deflection temperature at 1.8 MPa (A)	160	°C	ISO 75	Injection molded
	125	°C	ISO 75	3D printed XY / flat at 235°C
Heat deflection temperature at 0.45 MPa (B)	188	°C	ISO 75	Injection molded
	173	°C	ISO 75	3D printed XY / flat at 235°C
GENERAL PROPERTIES				
Density	1328	kg/m^3	ISO 1183	
pH				1% in H_2O
Water absorption	4	%	ISO 62	24 hours at 23°C
Water content - coulometric Karl Fischer		µg/g	ISO 12937	

Water content	0.12	%	ISO 15512	after drying at 120°C for 2 hours
non-volatile-matter content		%	ISO 3251	

[a]. Organic based color. [b]. DSC = Differential Scanning Calorimetry at 10°C/minute.

Note: results are generated according to the valid testing standards indicated above and the standard operating procedures used by the testing facilities.

Packaging and Handling

Delivery Form
1.75 mm and 2.85 mm diameter 3D printer filament.

Packaging
1 kg and 5 kg spools of 3D printer filament. Custom sizes are available upon request.

Storage
Ideally store the 3D printer filament in a cool, dry place at temperatures between 5 to 25°C in a sealed container with the provided Clariant Desi Pak® desiccant bag. If the 3D printer filament has been exposed to moisture, please dry at 80°C for 3-4 hours with a vacuum or desiccant drying system if possible. Minimum shelf life is 1 year from the date of shipping when properly stored.

Safety & MSDS

Contact Us;
Please contact us for safety and regulatory details or the Material Safety Data Sheet (MSDS).

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