



CELETTÉ

3D PRINTING SERVICES

Technical Datasheets



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PLA-CF

Polylactic Acid, Carbon Fiber

PLA-CF is a specifically formulated PLA reinforced with carbon fibers to enhance stiffness and rigidity while maintaining the ease of printing and dimensional stability of standard PLA. The material produces parts with a smooth matte finish and minimal visible layer lines, making it an excellent choice for high-quality prototypes requiring premium, non-glossary appearance.

Material Properties 1|2

Physical Properties

Density	ISO 1183	1.22g/cm ³
Water Absorption At Saturation	25°C, 55% RH	0.42%
Heat Deflection Temperature 0.45	ISO 75 0.45 MPa	55°C
Heat Deflection Temperature 1.8	ISO 75 1.8 MPa	54°C
Vicat Softening Temperature	ISO 306, GB/T 1633	69°C
Melting Temperature	DSC, 10°C/min	165°C

Mechanical Properties

Tensile Strength (X-Y) (Z)	ISO 527, GB/T 1040	38 ± 4 26 ± 2 MPa
Breaking Elongation rate (X-Y) (Z)	ISO 527, GB/T 1040	8.4 ± 3.2 3.6 ± 0.7 %
Young's Modulus (X-Y) (Z)	ISO 527, GB/T 1040	2790 ± 120 2160 ± 90 MPa
Bending Modulus (X-Y) (Z)	ISO 178, GB/T 9341	3950 ± 190 2260 ± 180 MPa
Impact Strength(X-Y) (Z)	ISO 179, GB/T 1043	23.2 ± 3.7 7.8 ± 0.7 kJ/m ²

The performance values are tested by standard samples at our supplier. To the maximum extent permitted by law, Celette – 3D Printing Services will not be responsible for damages of any nature resulting from the use or reliance upon the information contained in this data sheet. No express or implied warranties are given other than those implies mandatory by law.

PLA-CF

Polylactic Acid, Carbon Fiber

Material Properties 2|2

Other Physical and Chemical Properties

Odor	Odorless
Composition	Polylactic acid, Carbon Fiber
Skin Hazards	No hazard
Chemical Stability	Stable under normal storage and handling conditions
Solubility	Insoluble in water
Resistance to Acid	Not resistant
Resistance to Alkali	Not resistant
Resistance to Organic Solvent	Not resistant to some organic solvents
Resistance to Oil and Grease	Resistant to most kind of oil and grease
Flammability	Flammable
Combustion Products	Water, carbon oxides
Odor of Combustion Products	Odorless

Printing Layer Height

0.08mm – 0.12mm – 0.2mm – 0.28mm

Maximum Dimensions

240mm x 200mm x 200mm

Tolerances

± 0.2mm

Applications

For functional prototypes and final parts. Excellent chemical resistance to oil and grease. Combine Light weight with High Strength.

Example of Applications : Drone Frames, Cable Clips, Low-load Structural parts.

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PETG-CF

Polyethylene Terephthalate, Glycol-modified, Carbon Fiber

PETG-CF is a specifically formulated PETG reinforced with carbon fibers to enhance performance and appearance compared to traditional PETG. Addition of carbon fiber brings distinctive texture and improved strength to the material, making it ideal for high-stress models requiring premium finish.

Material Properties 1|2

Physical Properties

Density	ISO 1183	1.25g/cm ³
Water Absorption At Saturation	25°C, 55% RH	0.30%
Heat Deflection Temperature 0.45	ISO 75 0.45 MPa	74°C
Heat Deflection Temperature 1.8	ISO 75 1.8 MPa	68°C
Vicat Softening Temperature	ISO 306, GB/T 1633	85°C
Melting Temperature	DSC, 10°C/min	225°C

Mechanical Properties

Tensile Strength (X-Y) (Z)	ISO 527, GB/T 1040	35 ± 5 29 ± 4 MPa
Breaking Elongation rate (X-Y) (Z)	ISO 527, GB/T 1040	10.4 ± 0.6 4.7 ± 0.4 %
Young's Modulus (X-Y) (Z)	ISO 527, GB/T 1040	2460 ± 230 1340 ± 150 MPa
Bending Modulus (X-Y) (Z)	ISO 178, GB/T 9341	70 ± 5 48 ± 4 MPa
Impact Strength(X-Y) (Z)	ISO 179, GB/T 1043	41.2 ± 2.6 10.7 ± 1.6 kJ/m ²

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PETG-CF

Polyethylene Terephthalate, Glycol-modified, Carbon Fiber

Material Properties 2|2

Other Physical and Chemical Properties

Odor	Odorless
Composition	Polyethylene Terephthalate, Glycol-modified, Carbon Fiber
Skin Hazards	No hazard
Chemical Stability	Stable under normal storage and handling conditions
Solubility	Insoluble in water
Resistance to Acid	Not resistant
Resistance to Alkali	Not resistant
Resistance to Organic Solvent	Not resistant to some organic solvents
Resistance to Oil and Grease	Resistant to most kind of oil and grease
Flammability	Flammable
Combustion Products	Water, carbon oxides
Odor of Combustion Products	Odorless

Printing Layer Height

0.08mm – 0.12mm – 0.2mm – 0.28mm

Maximum Dimensions

240mm x 200mm x 200mm

Tolerances

± 0.2mm

Applications

For functional prototypes and end-use parts. Good stiffness, dimensional stability, and chemical resistance.

Example of Applications : Brackets, housings, jigs, fixtures, cable clips.

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PPA-CF

Polyphthalamide, Carbon Fiber

PPA-CF is a specifically formulated PPA reinforced with carbon fibers that delivers industrial-grade printing quality with precise 1:1 reproduction. PPA-CF delivers excellent mechanical performance and dimensional stability in humid and elevated-temperature environments, making it suitable for a wide range of engineering applications, from mechanical prototypes to automotive components.

Material Properties 1|2

Physical Properties

Density	ISO 1183	1.25g/cm ³
Water Absorption At Saturation	25°C, 55% RH	1.30%
Heat Deflection Temperature 0.45	ISO 75 0.45 MPa	227°C
Heat Deflection Temperature 1.8	ISO 75 1.8 MPa	196°C
Vicat Softening Temperature	ISO 306, GB/T 1633	232°C
Melting Temperature	DSC, 10°C/min	258°C

Mechanical Properties

Tensile Strength (X-Y) (Z)	ISO 527, GB/T 1040	168 ± 4 57 ± 5 MPa
Breaking Elongation rate (X-Y) (Z)	ISO 527, GB/T 1040	3.2 ± 0.4 0.9 ± 0.2 %
Young's Modulus (X-Y) (Z)	ISO 527, GB/T 1040	11800 ± 670 4300 ± 340 MPa
Bending Modulus (X-Y) (Z)	ISO 178, GB/T 9341	9860 ± 480 3240 ± 360 MPa
Impact Strength(X-Y) (Z)	ISO 179, GB/T 1043	41.7 ± 2.8 4.3 ± 0.4 kJ/m ²

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PPA-CF

Polyphthalamide, Carbon Fiber

Material Properties 2|2

Other Physical and Chemical Properties

Odor	Odorless
Composition	Polyphthalamide, Carbon Fiber
Skin Hazards	No hazard
Chemical Stability	Stable under normal storage and handling conditions
Solubility	Insoluble in water
Resistance to Acid	Resistant to weak acids only
Resistance to Alkali	Resistant to strong alkalis only
Resistance to Organic Solvent	Resistant to most kinds of organic solvents
Resistance to Oil and Grease	Resistant to most kinds of oil and grease
Flammability	Flammable
Combustion Products	Water, carbon oxides, nitrogen oxides, etc.
Odor of Combustion Products	Pungent Odor

Printing Layer Height

0.08mm – 0.12mm – 0.2mm – 0.28mm

Maximum Dimensions

240mm x 200mm x 200mm

Tolerances

± 0.2mm

Applications

For engineering parts exposed to heat and chemicals. High strength and thermal stability.
Example of Applications : Industrial tooling, structural brackets, automotive components.

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PPS-CF

Polyphenylene Sulfide, Carbon Fiber

PPS-CF is a specifically formulated PPS reinforced with carbon fibers that gives exceptional properties, including resistance to solvents, corrosion, heat and flames. It offers superior strength, stiffness, and dimensional stability, making it a specialized engineering plastic that meets the demands of unique and challenging applications.

Material Properties 1|2

Physical Properties

Density	ISO 1183	1.26g/cm ³
Water Absorption At Saturation	25°C, 55% RH	0.05%
Heat Deflection Temperature 0.45	ISO 75 0.45 MPa	264°C
Heat Deflection Temperature 1.8	ISO 75 1.8 MPa	235°C
Vicat Softening Temperature	ISO 306, GB/T 1633	268°C
Melting Temperature	DSC, 10°C/min	284°C

Mechanical Properties

Tensile Strength (X-Y) (Z)	ISO 527, GB/T 1040	87 ± 5 24 ± 3 MPa
Breaking Elongation rate (X-Y) (Z)	ISO 527, GB/T 1040	1.2 ± 0.4 0.7 ± 0.3 %
Young's Modulus (X-Y) (Z)	ISO 527, GB/T 1040	8230 ± 270 2850 ± 160 MPa
Bending Modulus (X-Y) (Z)	ISO 178, GB/T 9341	7160 ± 280 2460 ± 190 MPa
Impact Strength(X-Y) (Z)	ISO 179, GB/T 1043	27.8 ± 2.3 2.8 ± 0.4 kJ/m ²

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PPS-CF

Polyphenylene Sulfide, Carbon Fiber

Material Properties 2|2

Other Physical and Chemical Properties

Odor	Odorless
Composition	Polyphenylene Sulfide, Carbon Fiber
Skin Hazards	No hazard
Chemical Stability	Stable under normal storage and handling conditions
Solubility	Insoluble in water
Resistance to Acid	Resistant
Resistance to Alkali	Resistant
Resistance to Organic Solvent	Resistant
Resistance to Oil and Grease	Resistant
Flammability	Self-extinguishing when away from fire; flame-retardant
Combustion Products	Hydrocarbons, water, carbon oxides, sulfur dioxide, sulfides
Odor of Combustion Products	Characterized Odor

Printing Layer Height

0.08mm – 0.12mm – 0.2mm – 0.28mm

Maximum Dimensions

240mm x 200mm x 200mm

Tolerances

± 0.2mm

Applications

For high-performance parts in harsh environments. Exceptional chemical and heat resistance.

Example of Applications : Aerospace components, pump parts, industrial fixtures.

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PA-CF

Polyamide 6, Carbon Fiber

PA-CF is a specifically formulated PA reinforced with carbon fibers that gives exceptional properties, including high stiffness and strength properties in dry environments. It offers superior mechanical properties making it an ideal choice for printing fixtures, clamps automotive and mechanical components.

Material Properties 1|2

Physical Properties

Density	ISO 1183	0.96g/cm ³
Heat Deflection Temperature 0.45	ASTM D648 0.45 MPa	95°C
Vicat Softening Temperature	ISO 306, GB/T 1633	179°C
Melting Temperature	DSC, 10°C/min	192°C

Mechanical Properties

Tensile Strength (X-Y)	ISO 527, GB/T 1040	58 MPa
Breaking Elongation rate (X-Y)	ISO 527, GB/T 1040	8 %
Bending Modulus (X-Y) (Z)	ISO 178	3593 1330 MPa
Impact Strength(X-Y) (Z)	ISO 180	45 12 kJ/m ²

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PA-CF

Polyamide 6, Carbon Fiber

Material Properties 2|2

Other Physical and Chemical Properties

Odor	Odorless
Composition	Polyamide 6, Carbon Fiber
Skin Hazards	No hazard
Chemical Stability	Stable under normal storage and handling conditions
Solubility	Insoluble in water
Resistance to Acid	Not Resistant
Resistance to Alkali	Not Resistant
Resistance to Organic Solvent	Not Resistant to some organic solvents
Resistance to Oil and Grease	Resistant to most kinds of oil and grease
Flammability	Flammable
Combustion Products	Water, carbon oxides, nitrogen oxides
Odor of Combustion Products	Pungent odor

Printing Layer Height

0.08mm – 0.12mm – 0.2mm – 0.28mm

Maximum Dimensions

240mm x 200mm x 200mm

Tolerances

± 0.2mm

Applications

For lightweight, high-strength structural parts. Excellent toughness and wear resistance. Example of Applications : Drone frames, robotic parts, automotive brackets, machine components.

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PC-CF

Polycarbonate, Carbon Fiber

PC-CF is a specifically formulated PC reinforced with carbon fibers, extremely tough and durable material for 3D printing, with good temperature and impact resistance. It is highly recommended for high strength 3D printing applications.

Material Properties 1|2

Physical Properties

Density	ISO 1183	0.96g/cm ³
Heat Deflection Temperature 0.45	ASTM D648 0.45 MPa	138°C
Melting Temperature	DSC, 10°C/min	220°C

Mechanical Properties

Tensile Strength (X-Y)	ISO 527, GB/T 1040	85 MPa
Breaking Elongation rate (X-Y)	ISO 527, GB/T 1040	1.5 %
Bending Modulus (X-Y) (Z)	ISO 178	5800 1820 MPa
Impact Strength (X-Y) (Z)	ISO 180	22 10 kJ/m ²

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PC-CF

Polycarbonate, Carbon Fiber

Material Properties 2|2

Other Physical and Chemical Properties

Odor	Odorless
Composition	Polycarbonate, Carbon Fiber
Skin Hazards	No hazard
Chemical Stability	Stable under normal storage and handling conditions
Solubility	Insoluble in water
Resistance to Acid	Not Resistant
Resistance to Alkali	Not Resistant
Resistance to Organic Solvent	Not Resistant to some organic solvents
Resistance to Oil and Grease	Resistant to most kinds of oil and grease
Flammability	Flammable
Combustion Products	Water, carbon oxides
Odor of Combustion Products	Light phenol-flavored odor

Printing Layer Height

0.08mm – 0.12mm – 0.2mm – 0.28mm

Maximum Dimensions

240mm x 200mm x 200mm

Tolerances

± 0.2mm

Applications

For rigid, impact-resistant parts requiring dimensional accuracy.

Example of Applications : Functional prototypes, fixtures, machine guards, enclosures.

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Onyx

Nylon, Chopped Carbon Fiber

PC-CF is a specifically formulated nylon reinforced with carbon fibers, engineered for exceptional strength, dimensional accuracy, and impact resistance. It is widely valued for its superior, professional-grade matte finish that typically requires no post-processing.

Material Properties 1|2

Physical Properties

Density	ISO 1183	1.2g/cm ³
Heat Deflection Temperature 0.45	ASTM D648 0.45 MPa	145°C

Mechanical Properties

Tensile Strength (X-Y)	D638	40 MPa
Breaking Elongation rate (X-Y)	D638	25 %
Bending Modulus (X-Y)	D790	3000 MPa

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Onyx

Nylon, Chopped Carbon Fiber

Material Properties 2|2

Other Physical and Chemical Properties

Odor	Odorless
Composition	Nylon and Chopped Carbon Fiber
Skin Hazards	No hazard
Chemical Stability	Stable under normal storage and handling conditions
Solubility	Insoluble in water
Resistance to Acid	Not Resistant
Resistance to Alkali	Limited Resistance (varies by concentration)
Resistance to Organic Solvent	Not Resistant to some organic solvents
Resistance to Oil and Grease	Resistant to most kinds of oil and grease
Flammability	Flammable
Combustion Products	Carbon Oxides, Nitrogen Oxides and traces of hydrogen cyanide
Odor of Combustion Products	Light phenol-flavored odor

Printing Layer Height

0.08mm – 0.12mm – 0.2mm – 0.28mm

Maximum Dimensions

240mm x 200mm x 200mm

Tolerances

± 0.2mm

Applications

Parts that require high strength and durability during testing.

Example of Applications : Brackets, Enclosures and machine guards in industrial settings

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