

BCN3D Filaments

Unlock a wide range of applications with new industrial-grade BCN3D Filaments.

V1.2

This document includes:

- Summary & Graphics
- Explanation on the BCN3D Filaments

Note 1:

All this documentation is [under embargo until the 12th of november at 5pm CET time.](#)

Note 2:

All the photos on this document can be found in the Photos folder.

Summary

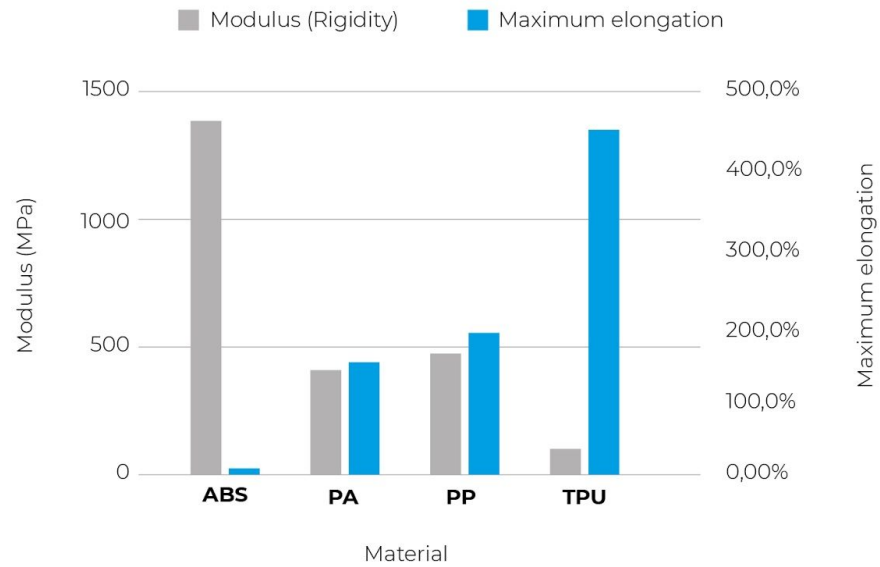
BCN3D has partnered with renowned chemical companies BASF and Mitsubishi Chemical (MCPM) to develop new references for the BCN3D Filaments and revamp the portfolio.



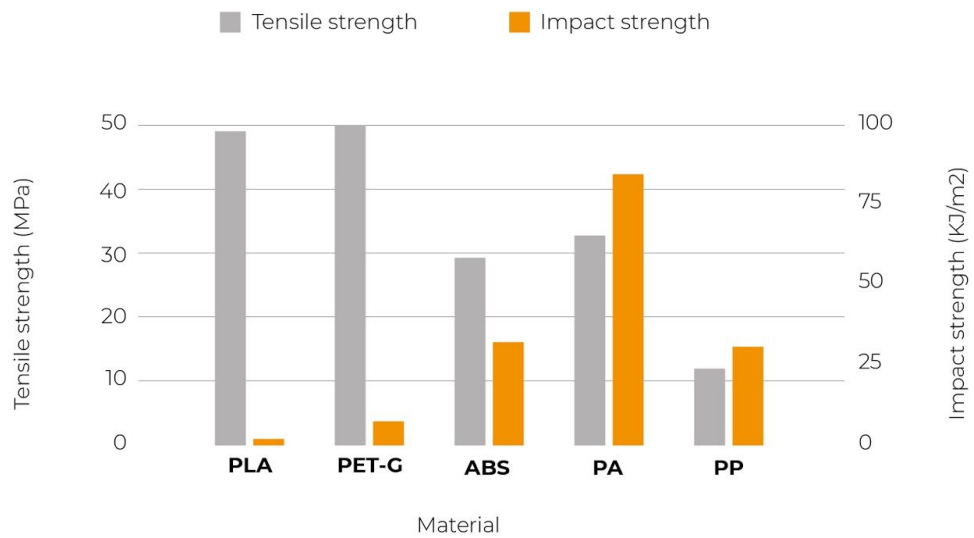
Basic and advanced materials are fully-compatible with all BCN3D 3D Printers and the Pro references will be only compatible with the BCN3D Epsilon when paired with the new Hotend X.

BASIC	ADVANCED	PRO
PLA	ABS	PP GF30
PVA	TPU	PAHT CF15
PET-G	PP	
	PA	

Rigidity vs. Elongation



Tensile strength vs. Impact strength



- Industrial applications within reach with the new Hotend X.

Industrial applications are also within reach thanks to the new Hotend X, made from a special alloy of tool steel. When paired with the BCN3D Epsilon, it allows you to print with fiber filled materials, so you can print stiffer parts for the most demanding jobs. Thanks to BASF manufacturer, and exclusively for the BCN3D Epsilon, users will have the possibility to print with PP GF30 and PAHT CF15.

PLA.

- Overview.

PLA (Polylactic Acid) is a biodegradable, sustainable and food safe polymer made from organic sources.

It is the most common used filament in FFF 3D printers for its ease of use and wide range of applications, specially those not mechanically or thermally demanding. Definitely a good starting point to learn about the 3D Printing manufacturing process.

Compatibility: All BCN3D Printers.

- Applications.
 - Architectural mockups
 - Aesthetic, concept models
 - Investment casting molds
 - Low mechanically demanding prototypes
- Properties.
 - Detailed and glossy surface quality
 - Good tensile strength
 - Rigid, fragile behaviour
 - Good UV resistance
 - Withstand operating temperatures up to 50°C
 - Odor-free, ideal for educational and office environments
 - Compatible with PVA supports
 - Low solvent and water resistance
- Recommendations.
 - Use preset profiles on BCN3D Cura developed by BCN3D.
 - Store it in an airtight container with desiccant
 - Apply Magigoo adhesive on the build plate

ABS.

- Overview.

ABS (acrylonitrile butadiene styrene) is one of the most common technical materials in several industries around the globe. It is an engineering material which combines rigidity and resistance to impacts. It is the ideal material for technical applications and moving parts.

Traditionally a challenging material to print with FFF printers, it has been re-formulated to ensure good interlayer adhesion and to reduce warping. Our grade allows for excellent dimensional accuracy and high durability.

Compatibility: All BCN3D Printers.

- Applications.
 - Parts under high mechanical stress
 - Strong prototypes and end-use parts
 - Aesthetic models
 - Commonly used on electronic or appliances cases, suitcases and phones
 - Precision fits, knobs, lids and buttons
 - Rigid models with snap-fit joints
- Properties.
 - Attractive matt surface quality
 - Good stiffness and dimensional stability
 - High impact resistance, even at low temperature (-10 °C)
 - Good heat resistance, up to 100 °C
 - Improved printability
 - Water resistant
 - Low resistance to organic solvents
- Recommendations.
 - Use preset profiles on BCN3D Cura developed by BCN3D
 - Store it in an airtight container with desiccant
 - Enclosure is required for BCN3D Sigma and Sigmax printers.

- Prints well on clean glass or use Magigoo adhesive
- Once the part is printed, remove carefully the piece to avoid chipping the glass. The removal of the object is easier if you just apply water on the glass

TPU.

- Overview.

TPU (Thermoplastic polyurethane) is an elastomeric copolymer, made up of alternating soft and hard blocks, which give rigidity and flexibility at the same time. This material is ideal for those applications where flexibility and durability are highly desired.

With Shore-A hardness of 98, TPU is a resistant material for several industrial applications, both mechanical or chemical. Moreover, it's been especially designed to improve the 3D printing experience.

Compatibility: All BCN3D Printers.

- Applications.

- Industrial seals, gaskets, sleeves or hinges
- Soft-touch multi-material models or handles
- Flexible-joined multi-material models
- Protective cases
- Shoe soles, non-slip surfaces
- Springs, seals and shock absorbers
- Wheels and rollers

- Properties.

- Great flexibility, rubbery behaviour
- High resistance to abrasion, wear and tear
- Great resistance to oils and chemicals
- Excellent impact resistance
- Maximum elongation of 450%
- Withstand operating temperatures up to 60°C
- Compatible with PVA supports

- Recommendations.

- Use preset profiles on BCN3D Cura developed by BCN3D.
- Store it in an airtight container with desiccant

- Dry filament before printing. Place it in an oven or in a dehydrator at 60-70°C for 6 to 8 hours
- Prints well on clean glass or use Magigoo adhesive
- Recommended sequential printing: print one object at a time because travels leave residual material

PVA.

- Overview.

PVA (Polyvinyl alcohol) is a water-soluble thermoplastic, widely adopted as a support material for FFF 3D printers.

Optimized for the FFF manufacturing process, our PVA is compatible with most of BCN3D filaments and can be easily printed to create the support and then dissolved with ordinary water.

PVA supports allow to achieve better surface quality, to orientate the part to get better mechanical properties and even to print multi-component models and mechanisms.

Compatibility: All BCN3D Printers.

- Applications.
 - Water-soluble support material
 - Water-soluble supports for partially enclosed cavities and complex geometries
 - Sacrificial moulds
- Properties.
 - Improved thermal stability to avoid jamming and degradation issues
 - Dissolves easily with ordinary water
 - Compatible with most 3D printing filaments
 - Better printability
 - Moisture sensitive
 - Biodegradable
- Recommendations.
 - Use preset profiles on BCN3D Cura developed by BCN3D.
 - Store it in an airtight container with desiccant
 - Dry filament before printing. Place it in an oven or in a dehydrator at 50°C for 6 to 8 hours
 - Apply Magigoo adhesive on the build plate
 - Clean the hotend after you've used PVA, before starting printing with other materials.

PET-G.

- Overview.

PET-G (Polyethylene terephthalate glycol-modified) is a polyester thermoplastic characterised by a good balance of tensile strength and elongation at break. Its high resistance to water and chemicals makes it the material of choice for water-tight containers and protective cases.

PET-G is a versatile technical material, as easy to print as PLA, but with an improved balance of mechanical, chemical and thermal properties.

Compatibility: All BCN3D Printers.

- Applications.

- Parts in contact with salts, acids and alkalis
- Functional prototypes and mechanical parts
- Waterproof applications
- Structural parts subject to mild stress
- Snap-fit joints
- Commonly used in beverage bottles

- Properties.

- Resistance to corrosive chemicals
- Good balance of strength, impact resistance and elongation at break
- Great dimensional stability and toughness
- Good glossy surface quality
- Good abrasion resistance
- Water and moisture barrier
- Withstand operating temperatures up to 70°C
- Low rate of ultrafine particles (UFP) and volatile organic compounds (VOC)
- Compatible with PVA supports

- Recommendations.

- Use preset profiles on BCN3D Cura developed by BCN3D.

- Store it in an airtight container with desiccant
- Enclosure is recommended for BCN3D Sigma and Sigmax printers
- Apply Magigoo adhesive on the build plate

PP.

- Overview.

PP (Polypropylene) is a semi-crystalline thermoplastic, known for its resistance to chemical agents. It is completely inert and does not easily interact with any substance, for this reason it is commonly used for the packaging of food and chemicals.

It is a flexible and durable material, with a high resistance to impacts and wear.

Compatibility: All BCN3D Printers.

- Applications.
 - Ideal for light parts
 - Commonly used in bottles, packaging and containers
 - In automotive for non-structural areas of the body
 - Plugs and stoppers
 - Chemically aggressive environments
 - Living hinges
 - Pipes, joints and elements in contact with water
- Properties.
 - Exceptional resistance to aggressive chemicals such as alkali, acids and organic solvents
 - Lightweight and clear
 - Flexible and resistant to impacts
 - Durable and resistant to fatigue, even at low temperature (-20 °C)
 - Good thermal resistance, up to 100 °C
 - Hydrophobic, non-stick surface
- Recommendations.
 - Use preset profiles on BCN3D Cura developed by BCN3D.
 - Store it in an airtight container with desiccant
 - Enclosure is required for BCN3D Sigma and Sigmax printers.
 - Apply Magigoo PP adhesive on the build plate

PP GF30.

- Overview.

PP GF30 (Polypropylene 30% glass fibre) is a composite filament, filled with glass fibre for chemically resistant, lightweight and dimensionally stable parts. It is amongst the most used filled materials in the automotive industry, characterised by a long service life and able to resist to all weather conditions.

Compatibility: Only with BCN3D Epsilon 3D printer.

- Applications.
 - Parts exposed to aggressive and humid environments or in contact with chemicals
 - Rigid structural elements such as brackets, bars, shafts and frames.
 - Automotive and aerospace industry
- Properties.
 - Combination of excellent chemical resistance, strength and stiffness
 - Lightweight
 - Water and UV resistant
 - Resistant to aggressive environments and high temperature, up to 120 °C.
- Recommendations.
 - Use preset profiles on BCN3D Cura developed by BCN3D
 - Only compatible with BCN3D Epsilon when paired with the Hotend X
 - Apply Magigoo PPGF adhesive on the build plate
 - Build surface must be very well calibrated due to strong warping
 - Important to print the model vertical or angled, no flat surfaces to avoid warping.

PA.

- Overview.

PA (Polyamide) is an engineering plastic, characterised by its great resistance to impact and able to work continuously at a temperature of up to 120 °C for an extended period of time.

Its semi-flexible behaviour derives from a semicrystalline structure, which impart strength and durability, best suited for the most demanding technical applications. A low coefficient of friction allows for a short-term use in contact with moving parts.

Compatibility: All BCN3D Printers.

- Applications.
 - Strong and flexible parts
 - Structural components exposed to a harsh environment
 - Parts demanding high fatigue endurance
 - Bearings, nuts, rivets, washers and gears
 - Cams, rollers, snap-fit joints and sliding components
 - Plugs, connectors, jigs and fixtures
 - Electronic covers and tool handles
- Properties.
 - Exceptional impact resistance and good strength
 - Low friction coefficient
 - High abrasion resistance
 - Thermal resistance (upt to 120°C)
 - Good resistance to oil and alkali
 - Strongly hygroscopic
 - Thermomechanical properties dependent on environmental humidity
- Recommendations.
 - Use preset profiles on BCN3D Cura developed by BCN3D
 - Store it in an airtight container with desiccant

- Dry filament before printing. Place it in an oven or in a dehydrator at 50°C for 6 to 8 hours
- Enclosure is required for BCN3D Sigma and Sigmax printers
- Apply Magigoo PA adhesive on the build plate

PAHT CF15.

- Overview.

PAHT CF15 (High Temperature Polyamide carbon fiber reinforced) combines high temperature and chemical resistance with extreme mechanical properties.

It allows to work under 150°C continuous temperatures with the peak temperature of 180°C in comparison to a standard PA. 15% carbon fiber reinforcement makes it stiffer thus open new fields for the printing of demanding applications.

Compatibility: Only with BCN3D Epsilon 3D printer.

- Applications.
 - Structural and functional parts subject to high temperatures and aggressive environments
 - Metal replacement in the automotive industry
- Properties.
 - High resistance to heat (up to 180°C)
 - Stiff and impact resistant
 - As strong as annealed aluminium
 - High wear and abrasion resistance
 - Resistant to solvents and corrosive chemicals
 - Low moisture absorption
 - High dimensional stability
 - Easy to process
- Recommendations.
 - Use preset profiles on BCN3D Cura developed by BCN3D
 - Only compatible with BCN3D Epsilon when paired with the Hotend X
 - Store it in an airtight container with desiccant
 - Feed it cautiously into the machine: it's very fragile and can break easily
 - Preheat the machine with the filament inside to soften up the material
 - Prints well on clean glass