

High quality filaments for desktop and industrial applications



2019 
FILAMENT / **CATALOG**
Premium filament for 3D printing



High quality 3D printing filaments for each application

Spectrum Group Ltd., a family-owned company, was established at the end of May 2015. The facility is based in Pecice near Warsaw, Poland. The company is manufacturer and supplier of high quality consumables for 3D printers operating in FFF/FDM technology. Innovation, extrusion know-how and highest quality filaments are the pillars of Spectrum's philosophy. A strong team is working continuously on the development of new materials and their applications to help the customers to use their 3D printers more efficiently and remain competitive.

Individual approach

Company main goal is to provide high quality products while maintaining constant availability - the features so desired by demanding customers. One of the company's key principles is individual approach and customer satisfaction. We are able to bend over any, even the most complicated order.

Optimized materials

Our wide range of materials offer remarkable possibilities. Filaments manufactured by Spectrum are high quality materials with a comprehensive range of properties and applications, ranging from high performance to unique aesthetic solutions. Specially chosen raw materials and attention to the details in the production process lets each user to transfer even the most multidimensional project to the real world. A modern production line equipped with non-standard solutions allow us to obtain chosen color, as well as to maintain important mechanical properties for a given type of filament.

Wide product portfolio

We believe that our offer, which is divided into three segments: desktop easy-to-use materials for low cost 3D printers, industrial grade and high performance materials consisting of engineering thermoplastics, high tech ceramics and other compositions like hard materials or metal filaments targeted to high-end 3D printers users and industrial applications, will be suitable for every solution.



SPECTRUM FILAMENTS WAS CHOSEN AS THE BEST POLISH FILAMENT MANUFACTURER 2018 DURING POLISH 3D PRINTING INDUSTRY AWARDS CEREMONY.

VERIFY YOUR SPOOL

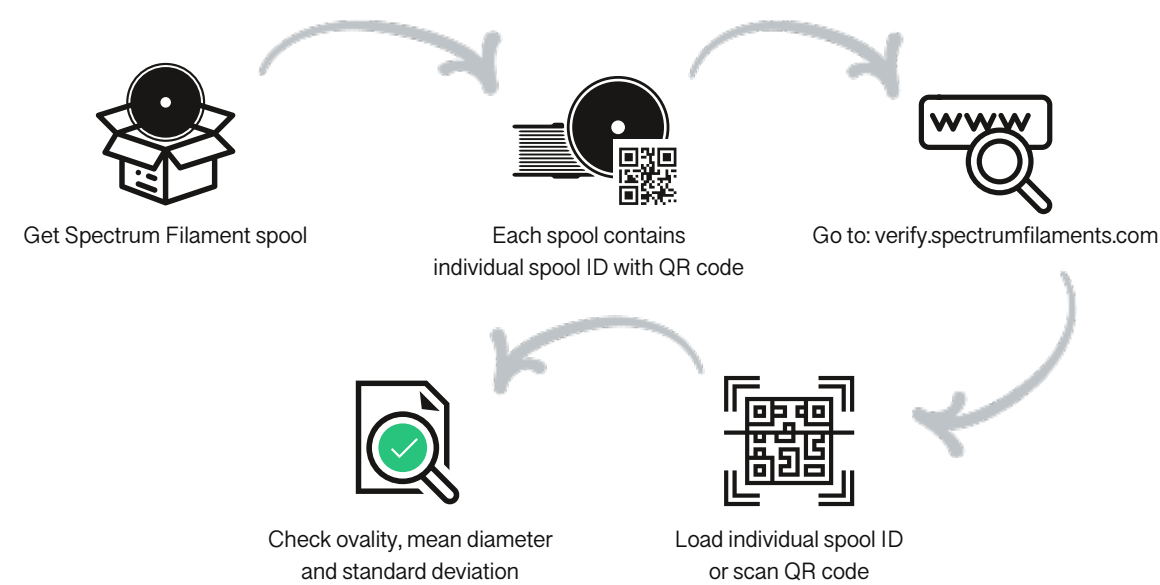
The most precise quality control system on the market

Filament for 3D printers is produced by the method of free extrusion. This is one of the most difficult processing techniques by extrusion, due to the particularly large impact of process parameters on product dimensions and material homogenization.

Our technological know-how and experience in filament production allows us to obtain a high-quality final product. As a proof of this, we have introduced, as one of the few manufacturers in the world, the possibility of presenting to our customers the course of diameter, mean diameter, ovality and standard

deviation for each manufactured spool individually.

During the production each 1mm of filament is being continuously measured in 2 axis with $\pm 0.8\mu\text{m}$ accuracy. To be sure that the measurement result is reliable we use certified laser meter devices designed by worldwide known and reputable Swiss company. In the final step collected data is transported to our database what enables end-user to check diameter online. Precise survey guarantees that our products meet rigorous market requirements.

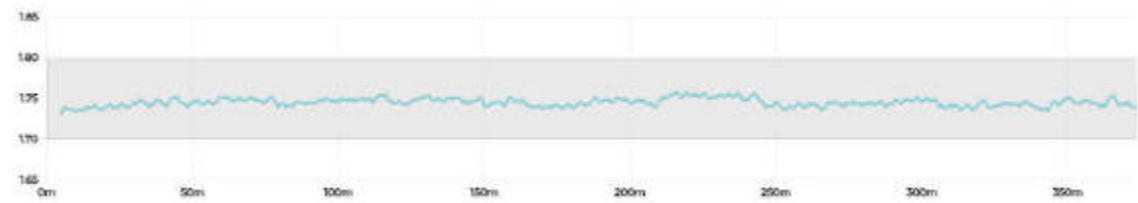


Characteristics



Attribute	Value
Diameter	1.75 mm
Material	PLA PRO
Color	LION ORANGE
Mean diameter	1.745 mm
Ovality	0.5%
Standard deviation	8.9 μm
Temperature	185–230°C
Hot pad	0–45°C
Date of production	2019-04-12

Spool graph



MATERIAL OVERVIEW

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Premium PLA

Aesthetic, biodegradable and reliable 3D printing



Premium PLA is a filament based on polylactide which belongs to aliphatic polymers. It shows full biodegradability. Carefully selected colour concentrates provide items manufactured of Premium PLA with intense colours in a broad spectrum. Moreover, the choice of an appropriate dye base for the pellets for filament extrusion ensures a highly efficient printing with an extremely good adhesion of printed items to the build beds of FDM/FFF 3D printers. An unquestionable advantage of Premium PLA is a very low processing shrinkage. Thus its is particularly useful for large-size 3D printers without a closed build chamber. Premium PLA yields excellent surface quality and detail, producing reliable results.

Key features

- made of biodegradable raw materials
- good mechanical properties (high hardness and tensile resistance)
- user friendly
- high aesthetic surface quality
- good for creating high-resolution parts
- high rigidity of printed items
- a relatively low melting point
- no shrinkage after cooling
- good for lost casting methods to create metal parts
- wide range of available colors

Applications























- household tools
- educational projects
- concept and demo prototyping of designed finished and semi-finished products
- industrial design
- interior design
- casts and molds

Filament specification

	Diameter	1.75 mm	2.85 mm
	Density	1.24 g/cm ³	
	Nozzle temperature	185–215°C	
	Bed temperature	0–45°C	
	Printing speed	40–150 mm/s	
	Verify your spool option	Yes	

Premium PLA

Available colors

										
Color	Arctic White	Polar White	Natural	Bahama Yellow	Pearl Gold	Lion Orange	Carrot Orange	Bloody Red	Dragon Red	Magenta
RAL	N/A	9003	N/A	1018	N/A	2004	9003	N/A	7011	9017
										
Color	Lime Green	Forest Green	Pastel Turquoise	Blue Lagoon	Pacific Blue	Navy Blue	Rust Copper	Military Khaki	Pearl Bronze	Dark Grey
RAL	6018	6024	6027	5018	5015	5002	8004	7008	N/A	7011
										
Color	Silver Star	Deep Black								
RAL	9007	9017								

Glitter PLA

Explore beautiful gloss effect



PLA Glitter is a highly aesthetical material blended with high-glitter particles. The particle content in the filament increases the hardness and compression resistance of printed items. These properties are improved at the cost of the higher brittleness of items. There is a possibility to control the gloss level by increasing/decreasing the wall thickness.

Tip: Due to the content of infusible particles, it is necessary to use printing nozzles with diameters of 0.4mm or more.

Key features

- not abrasive
- improved hardness and compression resistance as compared to PLA without admixtures
- user friendly
- high-gloss surfaces, which reduces the visibility of layers on the side face of the printed items
- easy to print
- no shrinkage after cooling

Applications

- interior design articles
- advertising materials
- educational projects
- any areas where it is essential to present specific geometric figures in an eye-catching manner

Filament specification

	Diameter	1.75 mm	2.85 mm
	Density	1.24 g/cm ³	
	Nozzle temperature	185–215°C	
	Bed temperature	0–45°C	
	Printing speed	40–110 mm/s	
	Verify your spool option	Yes	

Available colors

					
Color	Emerald Green	Aztec Gold	Stardust Blue	Volcano Gray	Aurora Gold
RAL	N/A	N/A	N/A	N/A	N/A

Tough PLA

Tough like ABS, easy to print like PLA



PLA Tough is a specially modified consumable material for 3D printing. Aimed at improving the properties of the material at the monomer level, the treatment has brought about an enormous range of applications. It is a perfect solution for printing functional components with mechanical properties close to those of ABS, while retaining the simplicity of printing and low shrinkage of PLA.


Key features

- more reliable than ABS for large prints
- low warping
- improved layer adhesion
- higher impact resistance of printed items as compared to their equivalents manufactured of ABS
- less brittle than classic PLA
- good for creating high-resolution parts
- more matte surfaces as compared to the unmodified PLA
- excellent alternative for styrene-based materials





Applications

- functional prototyping
- functional tools
- end-use parts
- manufacturing aids
- custom components

Filament specification

	Diameter	1.75 mm	2.85 mm
	Density	1.24 g/cm ³	
	Nozzle temperature	185–215°C	
	Bed temperature	0–45°C	
	Printing speed	40–150 mm/s	
	Verify your spool option	Yes	

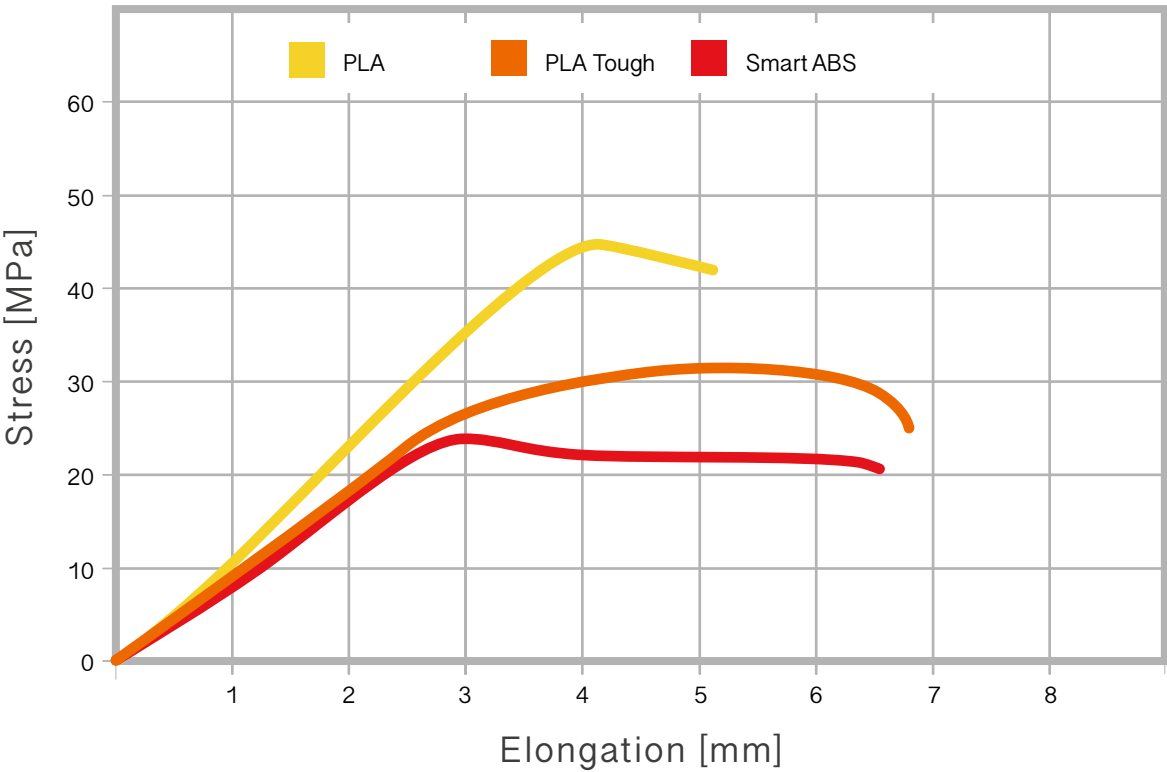
Available colors

				
Color	Polar White	Clear	Dark Grey	Deep Black
RAL	9003	N/A	7011	9017

Tough PLA

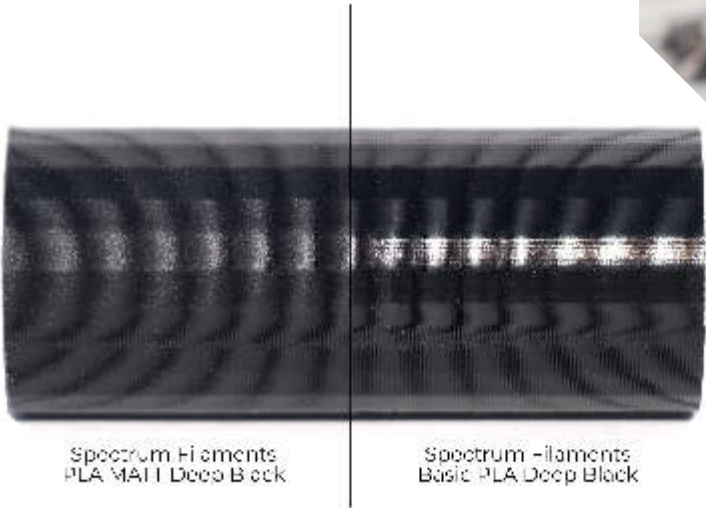
The use of unique additives which modify the polymer structure made it possible to:

- reduce shrinkage noticeably as compared to PLA-based classic materials. It will also allow you to print large-size items,
- improve the adhesion of printed items to build platforms,
- obtain a higher impact resistance of printed items as compared to their equivalents manufactured of ABS,
- retain the high rigidity typical for items manufactured of PLA without admixtures,
- eliminate the brittleness typical for printed items of PLA without admixtures. It also provides for improved adhesion between the material layers applied,
- obtain more matte surfaces as compared to the unmodified PLA,
- perform mechanical treatments of printed items which is difficult or impossible for standard PLA. Thus you may grind, mill, drill, turn etc. printed items,
- eliminate toxic or noxious vapours typical for ABS printing, and exhibit the combined advantages of PLA and ABS, while maintaining full biodegradability.



PLA MATT

No more shiny surface



PLA MATTE is a material with a chemical composition modified so that it would be possible to obtain matte surfaces of items in the additive manufacturing process. The modifications of the filament composition allowed to achieve improved mechanical strength properties as regards the impact resistance, resilience and durability as compared to items made of the standard PLA. Further, the use of admixtures has improved not only the impact resistance and lowered the brittleness of printed items, but also allowed to achieve higher temperature resistance (ca. 75°C).

Key features

- improved mechanical strenght
- highly efficient printing
- low shrinkage
- very good adhesion between layers
- high quality matte side surface with hardly visible layers
- higher temperature resistance (75°C) in comparison to the standard PLA

Applications

- interior design
- educational projects
- architectural models
- industrial design prototyping for concept visualisation

Filament specification

	Diameter	1.75 mm	2.85 mm
	Density	1.24 g/cm³	
	Nozzle temperature	185–215°C	
	Bed temperature	0–45°C	
	Printing speed	40–150 mm/s	
	Verify your spool option	Yes	

Available colors

Color	Polar White	Lime Green	Lion Orange
RAL	9003	6018	2004
Color	Navy Blue	Dark Grey	Deep Black
RAL	5002	7011	9017

PLA Pro

Improved heat resistance and high impact strengt



The filament PLA Pro is a material based on modified PLA dedicated to the manufacturing of filaments for 3D printing. It is thus feasible to obtain a high impact resistance of printed items with a high tensile resistance and substantial rigidity, which is typical for PLA-based materials. The changed chemical composition has improved the flowability of the material, making the filament suitable for industrial application which requires good mechanical strength properties, high printing efficiency and first of all the possibility to increase the printing speed in order to boost the additive manufacturing process capacity.

Key features

- a good alternative for styrene-based materials
- an extremely high impact resistance as compared to classic materials based on PLA,
- plus an impact resistance higher than in ABS by 50%,easy separation of the object from the bed
- high durability comparable to ABS prints
- A higher process capacity due to the possibility to increase the printing speed (as a consequence of improved flowability)
- a perfect side surface
- better adhesion between layers allowing for smoother side surfaces

Filament specification

	Diameter	1.75 mm	2.85 mm
	Density	1.22 g/cm³	
	Nozzle temperature	185–230°C	
	Bed temperature	0–45°C	
	Printing speed	40–150 mm/s	
	Verify your spool option:	Yes	

Applications

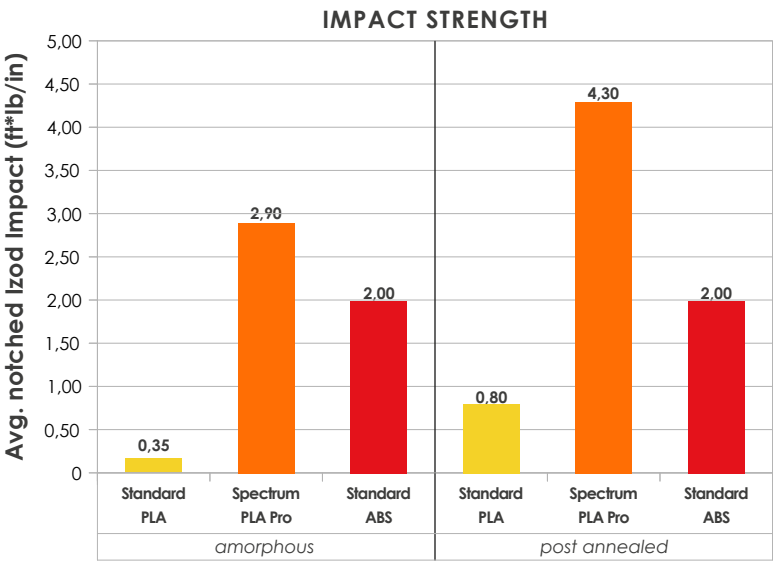
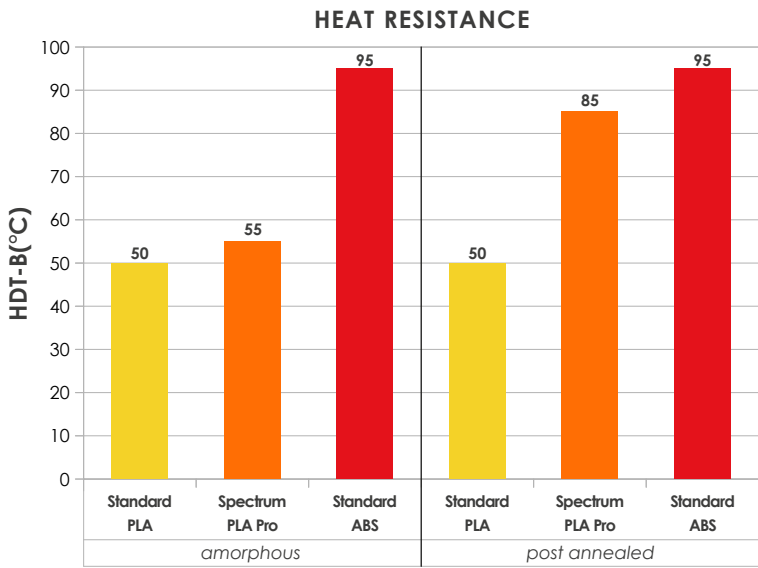
- functional prototyping
- tooling
- concept and demo prototyping of designed finished and semi-finished products
- industrial design
- parts that require high impact strenght

Post annealing:























Filament PLA Pro can be treated at high temperature using a heating chamber. After the model crystallizes, it is characterized by increased thermal resistance (up to 85°C) and almost twice higher resistance than standard ABS.

**Uneven heating can lead to unexpected deformation and sub-optimal performance of printed parts, please ensure absence of hot / cold spots in the heating chamber.*

Typical time to anneal parts with a wall thickness of approx. 3.2mm is on average 20 minutes.

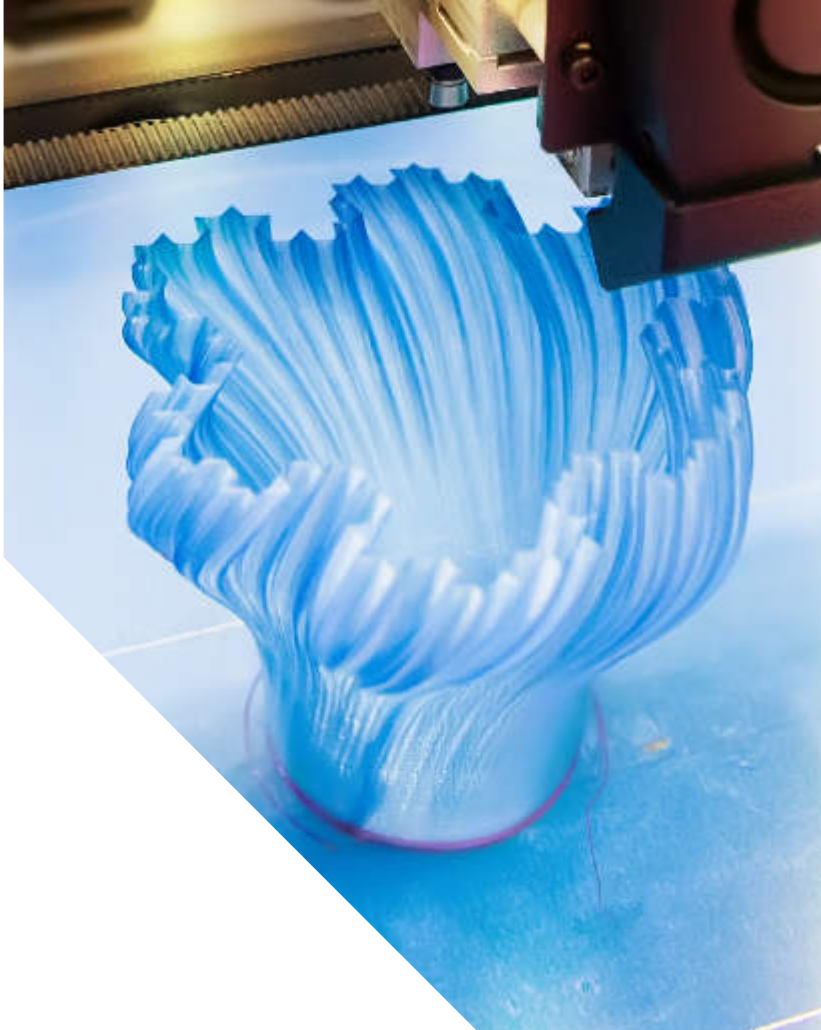


Available colors

										
Color	Arctic White	Polar White	Coral	Bahama Yellow	Pearl Gold	Lion Orange	Carrot Orange	Bloody Red	Dragon Red	Magenta
RAL	N/A	9003	N/A	1018	N/A	2004	9003	N/A	7011	9017
										
Color	Lime Green	Forest Green	Pastel Turquoise	Blue Lagoon	Pacific Blue	Navy Blue	Rust Copper	Military Khaki	Pearl Bronze	Dark Grey
RAL	6018	6024	6027	5018	5015	5002	8004	7008	N/A	7011
										
Color	Silver Star	Deep Black								
RAL	9007	9017								

PLA SILK

Glossy effect



SILK Filament is a PLA-based material for additive manufacturing with colour concentrates which imparts the satin texture effect to printed items. The surface satin texture of printed items largely reduces the visibility of layers on the side surface of printed items. Using a specially development pigment, it is possible to retain the classic properties of PLA, i.e. the simple and efficient printing, while obtaining a very low shrinkage rate and relatively high tensile strength. Thus the material is designed for those who appreciate simple printing and very high aesthetic properties.

Key features

- unique aesthetic properties
- reduced visibility of layers on the side surfaces of printed items
- satin shine on the entire surface of printed items
- maintenance of all the mechanical strength parameters of the standard PLA
- user friendly
- no shrinkage after cooling

Applications

- decorative art
- interior design
- educational projects
- concept and demo prototyping of designed finished and semi-finished products

Filament specification

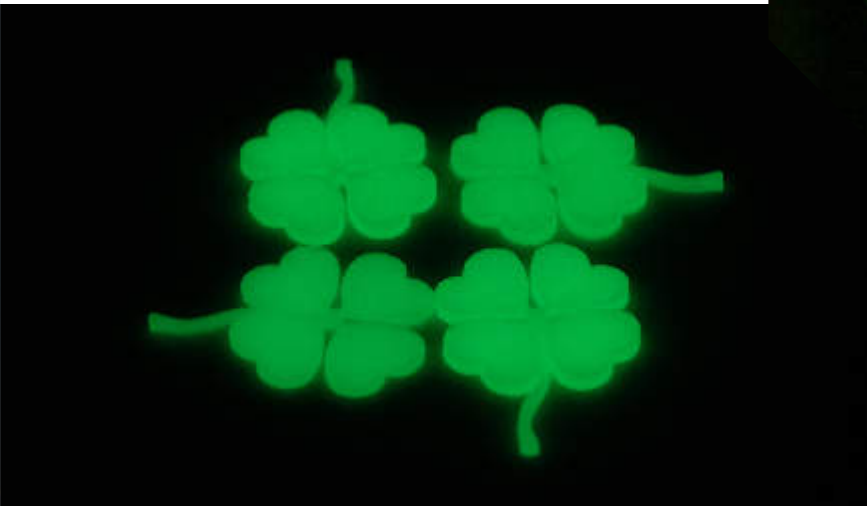
	Diameter	1.75 mm	2.85 mm
	Density	1.24 g/cm ³	
	Nozzle temperature	185–215°C	
	Bed temperature	0–45°C	
	Printing speed	40–110 mm/s	
	Verify your spool option:	Yes	

Available colors

			
Color	Unmellow Yellow	Tropical Green	Sapphire Blue
RAL	N/A	N/A	N/A

PLA Glow in Dark

Unbelievable strong after-glow effect



PLA Glow in the Dark is a PLA-based filament blended with a concentrated phosphorescent pigment which causes the phosphorescence effect. Accordingly, once the printed items are exposed to an external light source, they will emit their own light. The material has all the typical characteristics of the pure PLA – the added pigment has a neutral impact on the material's properties.

Tip: To achieve a stronger and longer lasting glowing effect, leave the model exposed to light for a longer time.

Key features

- smooth surface after printing
- warp-free printing
- perfect layer adhesion
- unbelievable strong after-glow effect
- high aesthetic surface quality
- no shrinkage after cooling

Applications

- production of items with major ornamental and artistic effects
- production of items to help identify emergency exits for power outages
- advertising and broadly defined decoration industry
- manufacturing of various souvenirs, luminous pictures, glowing gadgets and figurines

Filament specification

	Diameter	1.75 mm	2.85 mm
	Density	1.24 g/cm ³	
	Nozzle temperature	185–225°C	
	Bed temperature	0–45°C	
	Printing speed	40–110 mm/s	
	Verify your spool option	Yes	

PLA Carbon

Improved hardness and rigidity



PLA Carbon is a modified, PLA-based filament blended with carbon fibre which contributes to a considerably higher rigidity, hardness and tensile resistance, while retaining low shrinkage and very good adhesion to build platforms typical for the pure PLA. The 20% addition of carbon fibre enables you to obtain matte surfaces of printed items, which greatly improves the aesthetic properties of printed items.

Tip: Due to the essential content of shredded carbon fibre, it is recommended to use nozzles with diameters exceeding the standard value of 0.4mm. The presence of carbon fibre may also cause the wear of brass nozzle, thus it is recommended to use stainless steel nozzles for prolonged application of PLA Carbon.

Key features

- improved hardness and rigidity as compared to the pure PLA
- higher plasticisation temperature
- improved abrasion resistance
- much higher compression resistance
- good mechanical properties
- high aesthetic, matte surface quality
- no shrinkage after cooling

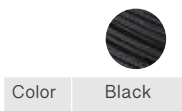
Applications

- items which need to be very rigid and hard while maintaining dimensional accuracy
- manufacturing of spacer components subject to static compressive loads
- concept and demo prototyping of designed finished and semi-finished products
- ornamental parts (aesthetic properties)
- external structural components which emphasise the product
- prototyping

Filament specification

	Diameter	1.75 mm	2.85 mm
	Density	1.24 g/cm ³	
	Nozzle temperature	185–215°C	
	Bed temperature	0–45°C	
	Printing speed	40–110 mm/s	
	Verify your spool option	Yes	

Available colors



Color Black

Stone Age

Get the unique stone look



The Stone Age filament is a series of PLA-based material with admixtures to obtain an imitation of “stony” structure of printed items. The Stone type filament, manufactured in two shades: Stone Age Light and Stone Age Dark, demonstrates excellent masking of layers, while printed items feel rough resembling real stone. The admixtures do not affect much the properties of printed items. A major aspect is the use of printing nozzles with diameters of 0.4mm or more.

Key features

- not abrasive
- beautiful, aesthetic imitation of stone
- rough surface
- high durability
- shrinkage-free printing
- layer masking
- mechanical properties of items close to those of PLA without admixtures

Applications

- decorative art
- architecture
- mock-ups
- concept and demo prototyping of designed finished and semi-finished products
- interior design

Filament specification

	Diameter	1.75 mm	2.85 mm
	Density	1.24 g/cm ³	
	Nozzle temperature	185–225°C	
	Bed temperature	0–45°C	
	Printing speed	40–80 mm/s	
	Verify your spool option:	Yes	

Available colors



Color Stone Age Dark Stone Age Light

Thermoactive PLA

Color changing ability



Thermoactive PLA is a filament based on pure PLA blended with a thermochromic pigment. Due to this extremely original addition, additive manufactured items change their colour according to the temperature. The colour changes from red to cream once the surface temperature of the item exceeds 30°C. The previous colour is restored gradually once the item reaches its initial temperature.

Key features

- smooth surface after printing
- warp-free printing
- excellent layer lamination
- color changing ability at ca. 30°C
- high aesthetic surface quality
- no shrinkage after cooling
- mechanical properties close to those of items made of pure PL

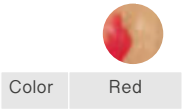
Applications

- where it is crucial to identify the condition of equipment visually based on phenomena measured organoleptically (the effects are visible with the naked eye)
- educational projects
- temperature sensors
- coating for hot beverage mugs
- coating for kettles and thermostats for other electronic devices

Filament specification

	Diameter	1.75 mm
	Density	1.24 g/cm ³
	Nozzle temperature	190–220°C
	Bed temperature	0–45°C
	Printing speed	40–110 mm/s
	Verify your spool option	Yes

Available colors



WOOD

Natural wood 3D printing



Spectrum WOOD is a material designed for 3D printing based on pure PLA blended with natural wood particles. WOOD filament is a 100% organic and biodegradable product. Besides the visual aspects which imitate the appearance of wood, items manufactured of this material have a structure resembling the one of chipboards. The material has a unique quality: not only does it look like wood but it also feels like genuine wood, because of natural wood content in the composition. You may varnish finished prints and conduct mechanical treatments. Another distinctive feature is the specific smell of wood exuded during the additive manufacturing process using this material.

Because the product contains natural wood, each batch may slightly differ in color, as in nature.

Key features

- made of biodegradable raw materials
- allows for printing with the 0.4mm printing nozzle
- natural wood content
- perfect side surface of prints
- very good thermal insulation properties
- appearance of wood after printing
- allows for grinding and varnishing
- typical smell and appearance of wooden chipboards

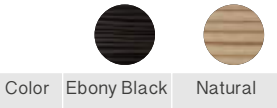
Applications

- manufacturing items which provide both good thermal insulation and very high moisture resistance
- educational projects
- interior design
- advertising materials
- decorative art

Filament specification

	Diameter	1.75 mm	2.85 mm
	Density	1.05–1.10 g/cm ³	
	Nozzle temperature	190–210°C	
	Bed temperature	0–45°C	
	Printing speed	20–60 mm/s	
	Verify your spool option	Yes	

Available colors



Smart ABS

Durable and impact resistant



The specific qualities of the filament Spectrum Smart ABS include a high impact resistance and relatively high rigidity. As compared to the classic ABS filament, the “smart” variant demonstrates improved processing parameters which considerably reduce the difficulties which accompany the additive manufacturing using the standard ABS. It is essentially the lower shrinkage and reduced emission of irritant volatiles during processing. An unquestionable advantage is that the material retains its properties at temperatures down to -40°C.

Key features

- high impact resistance and rigidity while retaining a relatively high dimensional accuracy
- high gloss of external surface
- reduced warping ratio (0.5-0.7%)
- temperature resistance (HDT 85°C)
- good interlayer adhesion, especially using 3D printer with heated chamber
- low water absorption
- easy post-processing (grinding, drilling, sawing)


Applications

- manufacturing of all kinds of enclosures, guards, protectors and other similar items subject to impacts
- possibility of mechanical treatments allows to produce items to facilitate and help conduct installations, i.e. handles, rules, gauges
- end-use parts
- industrial design
- tooling
- custom components

Filament specification

	Diameter	1.75 mm	2.85 mm
	Density	1.05 g/cm ³	
	Nozzle temperature	230–255°C	
	Bed temperature	100°C	
	Printing speed	40–100 mm/s	
	Verify your spool option	Yes	

Available colors

					
Color	Polar White	Coral	Bahama Yellow	Lion Orange	Dragon Red
RAL	9003	N/A	1018	2004	7011

					
Color	Pacific Blue	Forest Green	Silver Star	Dark Grey	Deep Black
RAL	5015	6024	9007	7011	9017

ASA 275

UV and thermal resistance



Filament ASA 275 is a professional material, designed for desktop 3D printers. The composition of ASA has been specially modified to make the material more flexible, improve flow parameters, reduce shrinkage, and increase adhesion between layers. One of the main advantages of the modification of ASA 275 material is simplification of printing parameters. ASA 275 technical material can be printed with the same ease as Premium PLA. This allows the production of large models without the risk of deformation after cooling, but also obtaining relatively high printing speeds. ASA 275 is a material resistant to UV radiation and other weather conditions.

Key features

- excellent resistance to external exposure and changing weather conditions,
- good thermal resistance (HDT 85°C)
- glossy print surface,
- resistance to UV radiation,
- perfect interlayer adhesion,
- ability to print on desktop printers without a heated chamber
- high speed printing (up to 200 mm/s)
- ease of printing comparable to classic PLA

Applications

- functional prototypes
- tooling
- production tools
- end-use parts
- custom components

Filament specification

	Diameter	1.75 mm	2.85 mm
	Density	1.07 g/cm ³	
	Nozzle temperature	200–240°C	
	Bed temperature:	40–60°C	
	Printing speed	40–200 mm/s	
	Verify your spool option	Yes	

Available colors

					
Color	Polar White	Natural	Lime Green	Lion Orange	Dragon Red
RAL	9003	N/A	6018	2004	7011

				
Color	Navy Blue	Silver Star	Dark Grey	Deep Black
RAL	5002	9007	7011	9017

HIPS-X

Support material
for ABS



HIPS-X is a consumable support material designed for additive manufacturing in the FDM/FFF technology. It is usually used as support for components manufactured with ABS, where HIPS-X supports are dissolved in the citric acid solution (D-Limonene) upon completion of the manufacturing process. Further, HIPS-X can be used as a base material for the manufacturing of components which are required to have a reduced processing shrinkage as compared to ABS.

Key features

- improved aesthetic qualities with the matte surfaces of the printed items
- lower shrinkage rate than classic ABS
- possibility of mechanical treatment (drilling, turning, milling or grinding)
- high impact resistance
- energy absorption and dissipation capabilities
- good for large prints
- light
- fully soluble in D-Limonene

Applications

- support material for ABS
- industrial applications which require impact resistant components or components with a capability for partial energy dissipation
- concept and demo prototyping of designed finished and semi-finished products
- packaging

Filament specification

	Diameter	1.75 mm
	Density	1.05 g/cm ³
	Nozzle temperature	230–255°C
	Bed temperature:	100°C
	Printing speed	40–100 mm/s
	Verify your spool option	Yes

Available colors

Color	Gypsum White	Bahama Yellow	Dragon Red	Deep Black
RAL	N/A	1018	3031	9017

Premium PET-G

High transparency and
chemical resistance



Premium PET-G is a material based on glycol-modified polyethylene terephthalate. A major advantage provided by Premium PET-G are the virtually zero shrinkage rate and low absorption of moisture as compared to other thermoplastics used for FDM/FFF 3D printing. As regards other properties of Premium PET-G, note the good creep resistance under constant load conditions. It results from the very good cohesion between the layers of the material applied.

Key features

- high transparency as compared to other materials for additive manufacturing
- very good mechanical properties as regards rigidity, hardness and impact resistance
- chemical resistant
- high dimensional accuracy
- combines the advantages of PLA and ABS
- exceptional adhesion between layers
- odour-free printing

Applications

- visual and functional prototyping
- fit testing
- concept models
- manufacturing aids
- manufacturing of semi-transparent enclosures and backlit sections of various boards and signs

Available solid colors:

Color	Arctic White	Bahama Yellow	Lion Orange	Bloody Red	Lime Green	Pacific Blue	Silver Star	Deep Black
RAL	N/A	1018	2004	N/A	6018	5015	9007	9017

Filament specification

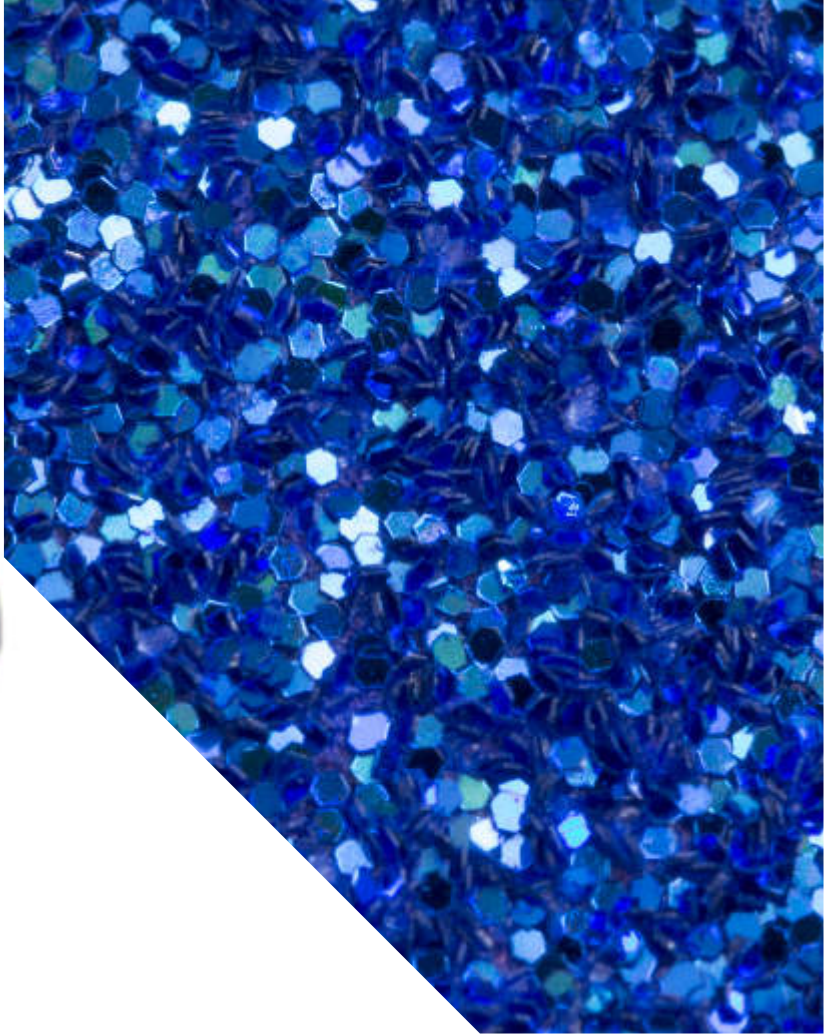
	Diameter	1.75 mm	2.85 mm
	Density	1.27 g/cm ³	
	Nozzle temperature	230–255°C	
	Bed temperature	60–80°C	
	Printing speed	40–120 mm/s	
	Verify your spool option:	Yes	

Transparent colors:

Color	Transparent Blue	Transparent Orange	Transparent Red	Transparent Yellow	Bottle Green	Glassy
RAL	N/A	N/A	N/A	N/A	N/A	N/A

Glitter PET-G

High gloss surface



Spectrum PET-G Glitter is a material doped with high gloss particles based on Premium PET-G. The content of particles in the filament contributes to the original aesthetic value of the print. The content of non-melting particles requires the use of nozzles with a diameter of not less than 0.4mm. In addition, the material is no different from pure PET-G and can be processed at the same temperatures as classic PET-G.

Key features

- hydrophobic
- chemical resistant
- high dimensional accuracy
- combines the advantages of PLA and ABS
- exceptional adhesion between layers
- odour-free printing



Applications

- production of items with major ornamental and artistic effects
- production of advertising material
- advertising and broadly defined decoration industry
- manufacturing of various souvenirs, luminous pictures, glowing gadgets and figurines

Filament specification

	Diameter	1.75 mm	2.85 mm
	Density	1.27 g/cm ³	
	Nozzle temperature	230–255°C	
	Bed temperature	60–80°C	
	Printing speed	40–80 mm/s	
	Verify your spool option:	Yes	

Available colors

		
Color	Stardust Blue	Aurora Gold

S-Flex 90A

Where durability and flexibility is essential



Spectrum S-Flex 90A is a filament designed for 3D printing, which enables you to manufacture flexible items in a much simpler way than with other materials of this type. The appropriate composition of the material provides for good adhesion both between layers and between the printed item and the build platform. Due to the resistance to hydrocarbons and good lamination between layers, you may manufacture sealing items which need to be resistant to any operating fluid and to ensure the best tightness possible.

Key features

- very good wear and tear resistance
- up to 500% elongation at break
- Shore-A hardness of 90
- low shrinkage
- high quality surface
- resistance to many common industrial oils and chemicals
- reduced stringing while the printer is running idle

Applications

- manufacturing of seals with a high chemical resistance
- production of items, which has to be used as energy adsorbents
- functional parts
- all kinds of bumpers, vibration dampers
- guides
- protective cases
- snap-fit parts
- sleeves
- hinges

Filament specification

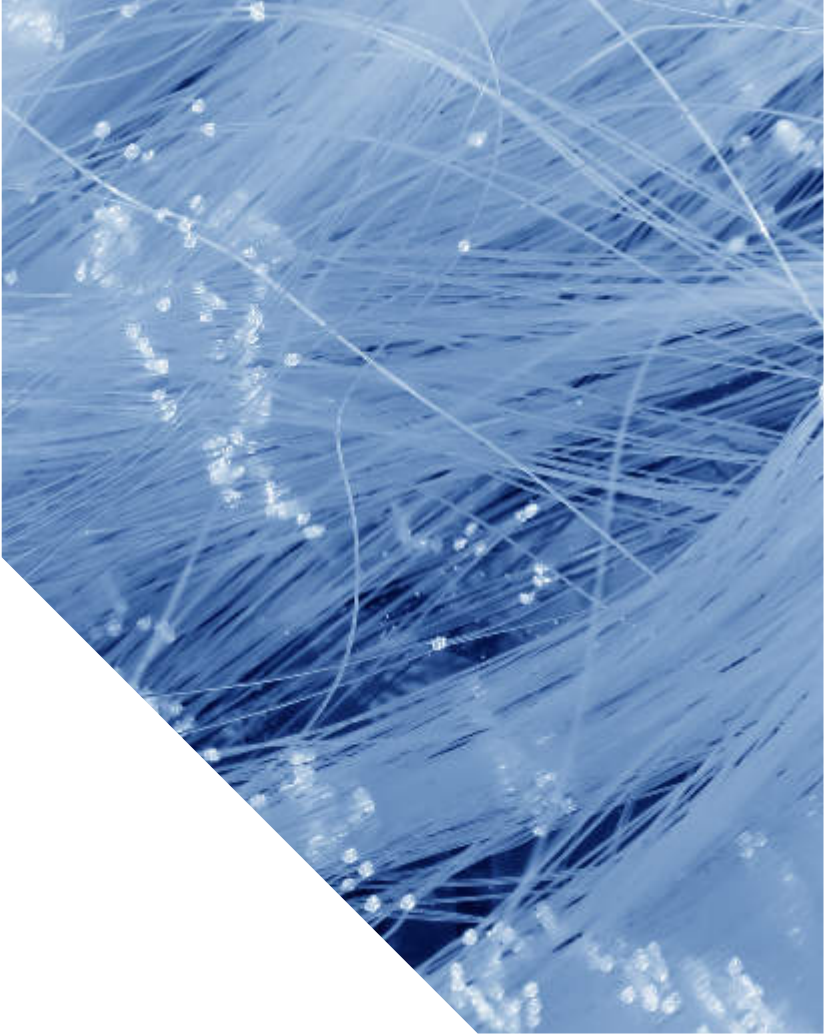
	Diameter	1.75 mm
	Density	1.22 g/cm ³
	Nozzle temperature	200–235°C
	Bed temperature:	50–70°C
	Printing speed	15–50 mm/s
	Verify your spool option:	Yes

Available colors

				
Color	Polar White	Bahama Yellow	Lion Orange	Dragon Red
RAL	9003	1018	2004	7011
				
Color	Lime Green	Pacific Blue	Deep Black	
RAL	6018	5015	9017	

PA6 Low Warp

Strong and
abrasion-resistant



Poliamide Low Warp is an extremely durable construction material based on polycaprolactam improved with admixtures to reduce the high shrinkage inherent to the processing of such materials. The material also features exceptional thermal properties, chemical resistance and a relatively high resistance to corrosion stimulators.

To attain the very attractive properties of Poliamide Low Warp, as regards the technical aspects, you need to follow the basic storage rules for such materials (in a dry and dark place with humidity below 15%). To obtain the best parameters of the printed object possible, it is recommended to dry the material prior to work.

Key features

- good tribological properties, including dry friction conditions such as in slide bearing
- high mechanical strength
- chemical resistance to lubricants and oils
- a good impact resistance and vibration dampening capabilities
- very robust lamination of layers
- a very high adhesion between layers, which minimises the risk of delamination between the layers of printed items


Applications

- all types of ring and plate seals with an increased chemical and corrosion resistance
- end-use parts
- tooling
- functional prototyping
- industrial modelling

Filament specification

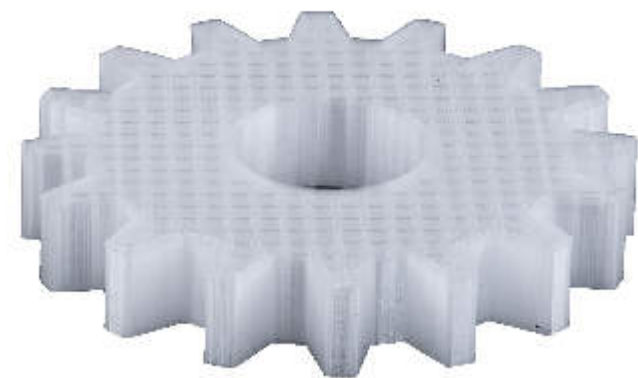
	Diameter	1.75 mm	2.85 mm
	Density	1.15 g/cm ³	
	Nozzle temperature	250–270°C	
	Bed temperature	85–100°C	
	Printing speed	30–70 mm/s	
	Verify your spool option	Yes	

Available colors

	
Color	Clear
RAL	N/A

PA6 Neat

High temperature poliamide



A major feature of the PA6 Neat is its increased mechanical strength as compared to other plastics. This makes it a perfect material for the professional user to make durable prints that need to perform. PA6 Neat belongs to the few materials with low processing shrinkage, approx. 0.3%.
To attain the very attractive properties of PA6 Neat, as regards the technical aspects, you need to follow the basic storage rules for such materials (in a dry and dark place with humidity below 15%). To obtain the best parameters of the printed object possible, it is recommended to dry the material prior to work.

Key features

- exceptionally low processing shrinkage of 0.3%
- a very wide temperature range for prolonged operation as well as a very high temperature up to 160°C for short-time operation
- good tribological properties, including dry friction conditions such as in slide bearing
- chemical resistance to lubricants and oils
- an unusually good adhesion to 3D printer build platforms as compared to other Polyamide-based filaments on the market

Applications

- production of gear wheels and racks, slide bearings, sweep-off gears and guide rolls operated in elevated temperatures up to 120°C on a prolonged basis and up to 160°C on a short-time basis
- all types of ring and plate seals with an increased chemical and corrosion resistance
- end-use parts
- tooling
- functional prototyping
- industrial modelling

Filament specification

	Diameter	1.75 mm	2.85 mm
	Density	1.14 g/cm³	
	Nozzle temperature	240–270°C	
	Bed temperature	80–100°C	
	Printing speed	30–70 mm/s	
	Heated chamber	recommended	
	Verify your spool option	Yes	

Available colors

Color	Clear	Deep Black
RAL	N/A	9017

PA6 CF15

High temperature construction material



Nylon PA6 CF15 is a high-temperature, black, PA6-based construction material. Filling with carbon fibres increases significantly the mechanical strength of the polyamide the material is based on. The filaments specific quality is the moisture absorption reduced by half and the water absorption time is four times lower than that of the pure PA6. Printing does not require a heated chamber and no deformation occurs. The material is compatible with the HIPS and PVOH support materials. In addition, Nylon PA6 CF15 features a very low linear shrinkage (up to 0.1%), a high deformation temperature (240°C), working temperature (180°C) and low thermal expansion coefficient (0.4 10–5/K).

Key features

- exceptionally low processing (linear) shrinkage of 0.1%
- high temperature and abrasion resistance
- easy separation of the object from the bed
- high mechanical strength
- chemical resistance to lubricants and oils
- a wide range of applications
- very robust lamination of layers
- a high creep resistance, high hardness and rigidity of the printed items
- a very wide temperature range for prolonged operation as well as a very high temperature up to 180°C for short-time operation

Applications

- production of gear wheels and racks, sweep-off gears and guide rolls operated in elevated temperatures up to 150°C on a prolonged basis and up to 180°C on a short-time basis
- all types of ring and plate seals with an increased chemical and corrosion resistance
- end-use parts
- tooling
- functional prototyping
- industrial modelling

Filament specification

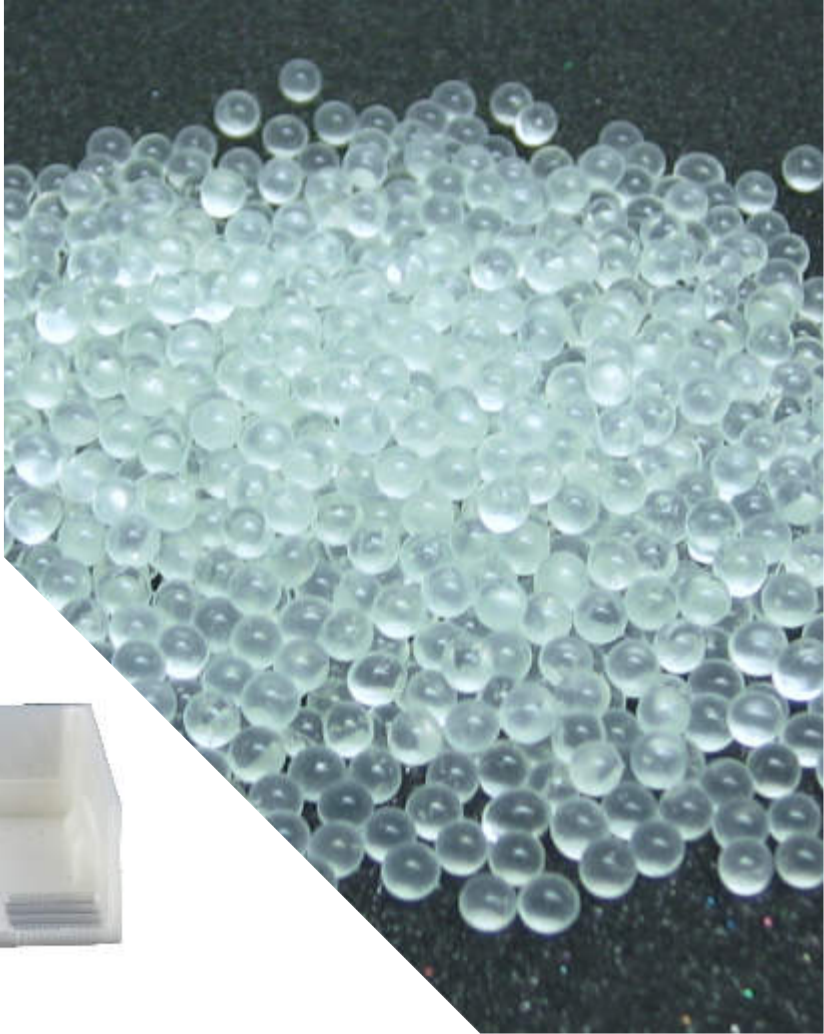
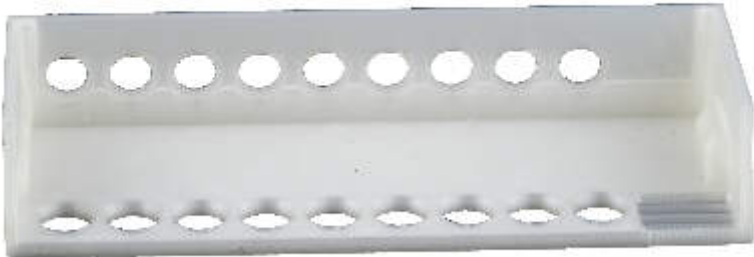
	Diameter	1.75 mm	2.85 mm
	Density	1.25 g/cm³	
	Nozzle temperature	235–260°C	
	Bed temperature	80–100°C	
	Printing speed	30–80 mm/s	
	Verify your spool option	Yes	

Available colors

Color	Black

PA6 GK10

Poliamide filled with glass micro-spheres



Nylon PA6 GK is a new, high-temperature PA6-based construction material in the natural colour. Perfect for 3D printing. Filled with glass beads, it is more flexible than the polyamide the material is based on. Its specific quality is a low impact of moisture and temperature on the measurements or electrical properties as compared to PA66. In addition, Nylon PA6 GK features a low linear shrinkage (up to 0.3–0.5%) and a relatively high working temperature (160°C).

Key features

- high temperature and abrasion resistance
- high mechanical strength
- chemical resistance to lubricants and oils
- a wide range of applications
- very robust lamination of layer
- a good impact resistance
- a very wide temperature range for prolonged operation as well as a very high temperature up to 160°C for short-time operation
- a relatively high resistance to thermal ageing

Applications

- end-use parts
- tooling
- functional prototyping
- industrial modelling
- production of slide bearings, gear wheels and racks, sweep-off gears and guide rolls operated in elevated temperatures up to 120°C on a prolonged basis and up to 160°C on a short-time basis
- all types of ring and plate seals with an increased chemical and corrosion resistance

Filament specification

	Diameter	1.75 mm	2.85 mm
	Density	1.01 g/cm³	
	Nozzle temperature	235–260°C	
	Bed temperature	80–100°C	
	Printing speed	30–80 mm/s	
	Heated chamber	recommended	
	Verify your spool option	Yes	

Available colors



PET-G HT100

Dimensional stability and high temperature resistance



PET-G HT100 is a copolyester based filament prepared for 3D printing in FFF / FDM technology. The material is intended for advanced users, who require excellent durability from printouts, when working in real conditions. PET-G HT100 does not contain styrene and is chemical resistant. Excellent dimension stability allows printing with accurate dimensions, which is particularly important for projects consisting of many different elements. One of the biggest advantages of PET-G HT100 is the increased temperature resistance.

Key features

- high temperature resistance (100°C)
- high dimensional stability
- high mechanical strength
- excellent toughness
- chemical resistance
- styrene-free
- FDA compliance
- clarity and gloss
- low odor

Applications

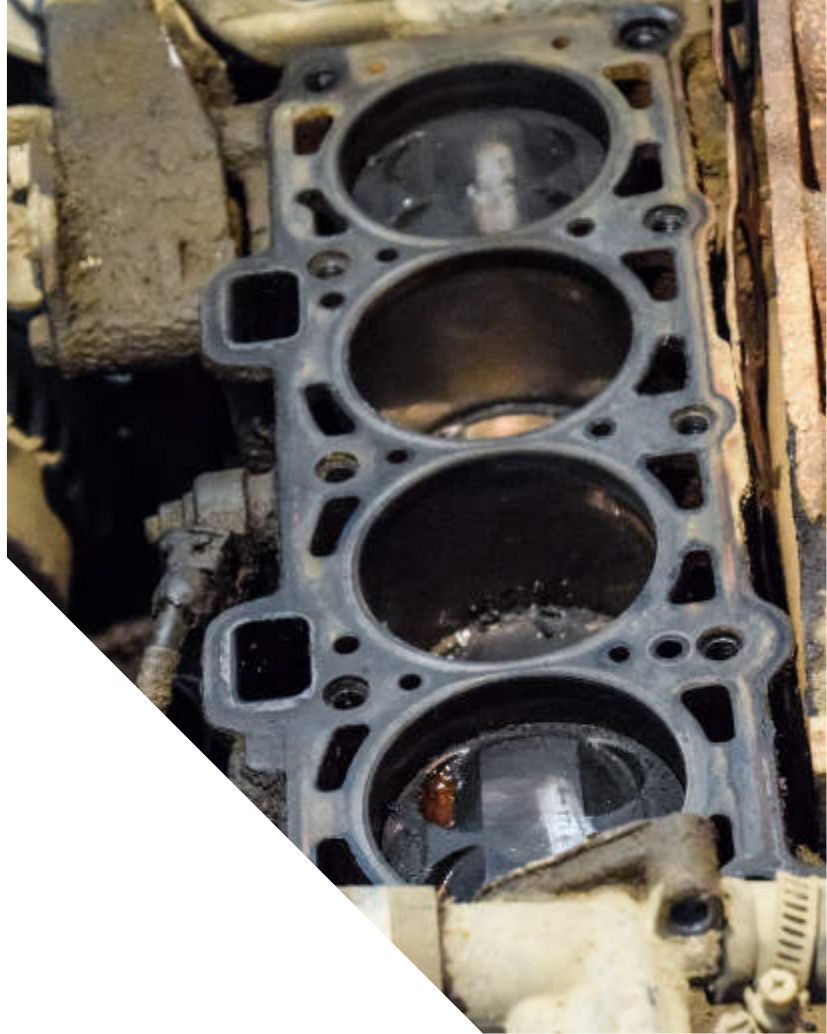
- visual and functional prototyping
- tooling
- end-use parts
- product testing
- manufacturing aids

Available colors

							
Color	Clear	Iron Grey	Obsidian Black	Pure White	Silver Steel	Traffic Red	Transparent Blue
RAL	N/A	7011	9017	N/A	9007	N/A	N/A

PET-G FX120

Excellent durability,
strength and flexibility



PET-G FX 120 is a flexible material designed especially for engineering applications. This filament is an engineering material which demonstrates excellent durability and strength, enabling designers to create rapidly truly functional parts to withstand normal use. PET-G FX120 is a highly advanced material suitable for applications which require both the durability of an engineering-class polymer as well as the comfort and usefulness of products made of a flexible material. Exceptional chemical resistance and thermal resistance up to 120°C.

Key features

- Dimensional stability
- Improved aesthetics
- Excellent temperature resistance
- Excellent durability
- A wide processing range
- Low odour
- Properties retained in 3D applications
- Possibility to steam sterilise
- Styrene-free
- 95A Shore hardness
- a very high temperature up to 160°C for short-time operation





Applications



- prosthetics, orthoses, automotive parts or other consumer goods
- production of items, which has to be used as energy adsorbents
- manufacturing of seals with a high chemical resistance
- tooling
- end-use parts
- product testing

Filament specification

	Diameter	1.75 mm	2.85 mm
	Density	1.13 g/cm ³	
	Nozzle temperature	240–260°C	
	Bed temperature	80°C	
	Printing speed	30–70 mm/s	
	Verify your spool option	Yes	

Available colors

					
Color	Clear	Iron Grey	Obsidian Black	Pure White	Silver Steel
RAL	N/A	7011	9017	N/A	9007

		
Color	Traffic Red	Navy Blue
RAL	N/A	5002

PET CF15

Very strong and rigid



PET CF15 is a black through-dyed material based on polyethylene terephthalate. It presents no retraction issues and does not require a heating chamber. It demonstrates a perfect surface finish directly from the printer, thus reducing the need for further treatments. It may undergo additional treatment to improve its mechanical properties. It is compatible with support materials such as HIPS. PET CF15 can be used to print very strong and rigid items. It features a low impact of moisture and temperature on dimensions.

Key features

- low processing (linear) shrinkage of 0.1 %
- a very wide temperature range for prolonged operation as well as a very high temperature up to 125°C for short-time operation
- a relatively high resistance to thermal ageing
- high temperature and abrasion resistance
- high mechanical strength
- chemical resistance to lubricants and oils
- good tribological properties, including dry friction conditions such as in slide bearings


Applications

- automotive industry
- components of textile
- office machines
- precision apparatus
- engineering
- end-use parts
- tooling
- functional prototyping

Filament specification

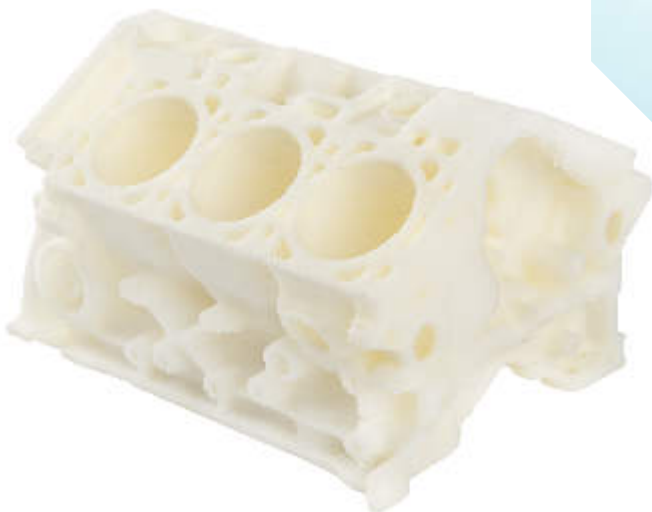
	Diameter	1.75 mm	2.85 mm
	Density	1.40 g/cm ³	
	Nozzle temperature	220–240°C	
	Bed temperature	40–60°C	
	Printing speed	30–80 mm/s	
	Verify your spool option	Yes	

Available colors

	
Color	Black

ABS GP450

Industrial grade ABS, optimized for 3D printing



ABS GP450 is an engineering grade, construction filament for 3D printing. This material is very useful for printing durable and impact resistant parts. The composition of the material was optimized for 3D printing purposes, so using ABS GP450 the user is allowed to print at high speed (up to 200mm/s) without any mechanical properties losses. ABS GP450 exhibits much higher mechanical strength than other similar materials available on the market.

Key features

- industrial grade material
- high impact resistance
- scratch resistance
- high mechanical strength
- high speed printing without quality losses
- very robust lamination of layers








Applications

- end-use parts
- functional prototyping
- end-use parts
- industrial design
- tooling
- custom components

Filament specification

	Diameter	1.75 mm	2.85 mm
	Density	1.04 g/cm ³	
	Nozzle temperature	235–255°C	
	Bed temperature	100°C	
	Printing speed	30–80 mm/s	
	Heated chamber	recommended	
	Verify your spool option	Yes	

Available colors

					
Color	Natural	Dark Blue	Obsidian Black	Pure White	Silver
RAL	N/A	5002	9017	N/A	9007
					
Color	Traffic Red	Pure Green			
RAL	N/A	6024			

PP

High impact and chemical resistance



PP is a new material based on non-filled polypropylene in the natural colour. Its specific quality is a low absorption of moisture, up to 0.3%. In addition, PP features high flexibility (ultimate elongation - 500%) and high impact resistance plus reduced moment of inertia as compared to metal parts. PP has also a good chemical, temperature and electrical resistance. With PP you are able obtain a relatively high resistance to thermal ageing, good tribological properties, including dry friction conditions such as in slide bearings. The very good mechanical properties of PP provide for a wide range of diverse applications.

Key features

- low processing (linear) shrinkage up to 0.3%
- high impact resistance
- easy separation of the object from the bed
- high mechanical strength
- chemical resistance to lubricants and oils
- a wide range of applications
- very robust lamination of layers

Applications

- end-use parts
- living hinges
- functional prototyping
- industrial modelling
- lab equipment and moldings
- packaging
- storage boxes and protective covers

Filament specification

	Diameter	1.75 mm	2.85 mm
	Density	0.89 g/cm ³	
	Nozzle temperature	235–255°C	
	Bed temperature	100°C	
	Printing speed	30–80 mm/s	
	Heated chamber	recommended	
	Verify your spool option	Yes	

Available colors

Color	Clear
RAL	N/A

High performance 3D printing materials

3D-printing is a new additive forming technology for ceramic components. It will find its application mainly for fabrication of prototypes, small series or complex geometries, with internal hollow spaces e.g., which are not able to be produced by other techniques. A big advantage is seen in the free choice of over-size factors which allows to adapt different shrinkage values during sintering. An adaption of linear shrinkage for conventional shape forming technologies such as dry pressing or injection moulding always means high costs for changing the tools. In case of 3D-printing an additional component is simply printed using modified over-size factors.

The shape forming by the printer is followed by the usual processing steps such as de-binding, sintering and hard machining, if necessary. It is always feasible to machine the printed components in green state in order to minimize the hard machining. By using a thermoplastic recipe the green components exhibit a high green strength and thus can be worked with almost no risk of pre-damages.

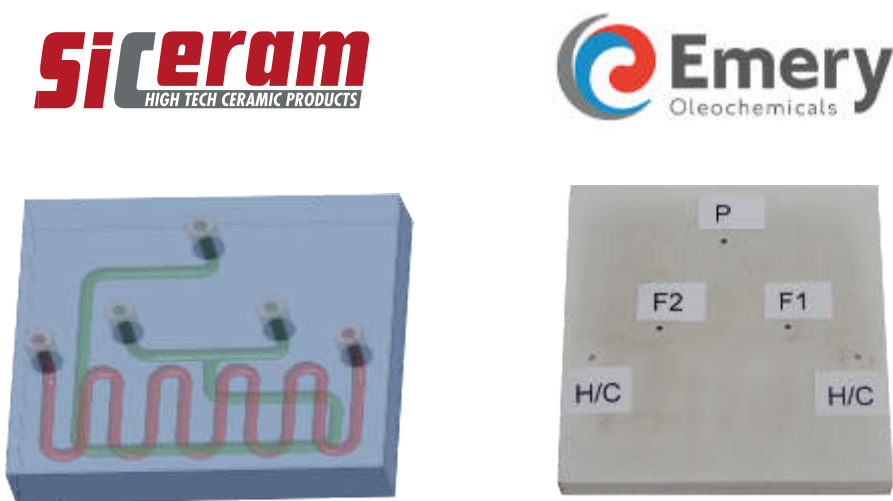
Spectrum Group produces filaments for 3D-printing on basis of the most common materials of high tech ceramics. Those are: silicon carbide, silicon nitride, aluminium oxide and zirconium oxide. Composite materials such as zirconia toughened alumina (ZTA), electrical conductive silicon nitride and many other compositions like hard materials or metals are feasible.

Spectrum Group, in cooperation with its partners, offers as well the 3D-printing services and the necessary post-processing steps such as de-binding and sintering.

Key features

- 3D-printing of customized components
- nearly any kind of complex geometries
- cost effective development, prototyping, production
- no tooling costs
- minimal surface finishing

Cooperation partners



Microcreator with meander heating / cooling
Material: Aluminium Oxide

Silicon Carbide SSiC

Spectrum Group, in cooperation with its partners, is producing pressure less sintered SiC with the sintering additives boron carbide (B4C) and carbon (C). The organics content of the filament amounts to ca. 21.5 mass-%.

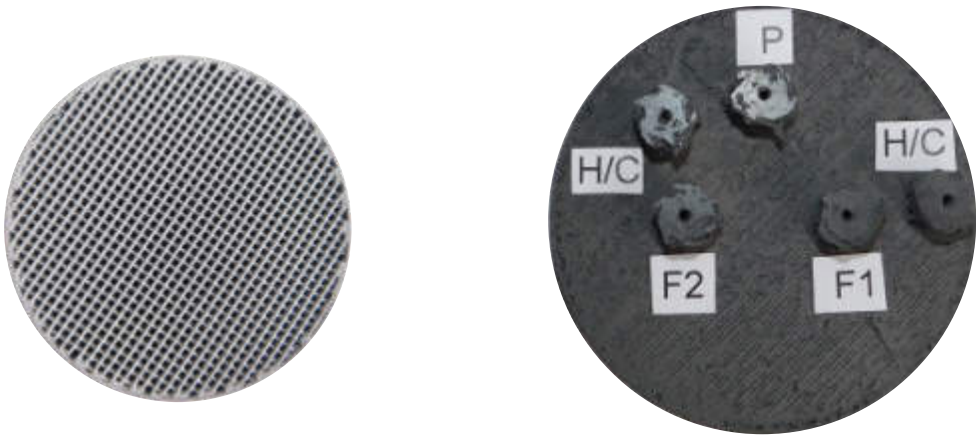
SSiC is extremely hard and exhibits excellent corrosion resistance over the whole pH-range. The strength at 1,500°C is higher than at room temperature. The material can be applied in air up to 1,550°C and up to 1,800°C in inert atmosphere. The thermal conductivity of SSiC is very high with 120 W/mK as compared to stainless steel with 30 W/mK. SSiC is an electrical semi-conductor. The very high hardness of SSiC goes along with a relatively low fracture toughness. It might be advantageous for the design of components to make use of the very high compression strength of 4,000 MPa.

Typical applications, today and future:

Wear and corrosion protection, sleeves and seal rings, ballistics, micro reactors, heat exchangers, nuclear technology, astronomy

Porcelain filament specification

	Diameter	1.75 mm	2.85 mm
	Content of organics	21.4 mass-%	
	Green density of filament	2.161 g/cm³	
	Printing temperature	155–170°C	
	Printing speed	5–30 mm/s	
	Sintering conditions	T=2100–2200°C in argon	
	Linear shrinkage from printed to sintered dimensions and scaling factor SF	x/y printing direction:	LSx/y = 16.4 % → SF = 1.196
		z printing direction:	LSz = 21.2 % → SF = 1.269



Silicon Nitride Si₃N₄

Spectrum Group, in cooperation with its partners, is producing pressure sintered Si₃N₄ with the sintering additives aluminum oxide (Al₂O₃) and yttrium oxide (Y₂O₃). The organics content of the filament amounts to ca. 20.5 mass-%.








Si₃N₄ exhibits higher strength and fracture toughness than SSiC. The very low coefficient of linear thermal expansion leads to a high thermal shock resistance.

Si₃N₄ is an electrical insulator and its thermal conductivity is 30 W/mK (25 % of SSiC). The wettability of Si₃N₄ by non-ferrous metals and glass melts is very low thus qualifying it as tooling material. The maximal operating temperature lies in the range of 1,300 – 1,400°C. Due to the oxide sintering additives aluminium and yttrium oxide good corrosion resistance is given only in the acidic range (pH < 7).

Typical applications, today and future:

Components for mechanical engineering in general, forming tools in metal industry, aeronautics and space, astronomy

Porcelain filament specification

	Diameter	1.75 mm	2.85 mm
	Content of organics	20.6 mass-%	
	Green density of filament	2.200 g/cm ³	
	Printing temperature	155–170°C	
	Printing speed	5–30 mm/s	
	Sintering conditions	T=1680–1750°C in nitrogen at elevated pressure	
	Linear shrinkage from printed to sintered dimensions and scaling factor SF	x/y printing direction:	LSx/y = 18.36 % → SF = 1.225
		z printing direction:	LSz = 20.36 % → SF = 1.256



Aluminum Oxide Al₂O₃








Spectrum Group, in cooperation with its partners, is producing aluminum oxide in different degrees of purity: 99.7% = standard quality which covers the majority of all possible applications; 99.9% = high purity and fineness and thus low grain growth at sintering which is important for high surface quality after grinding/polishing; 99.99 = very high purity for special applications. The organics content of the filament amounts to ca. 19.5 mass-%.

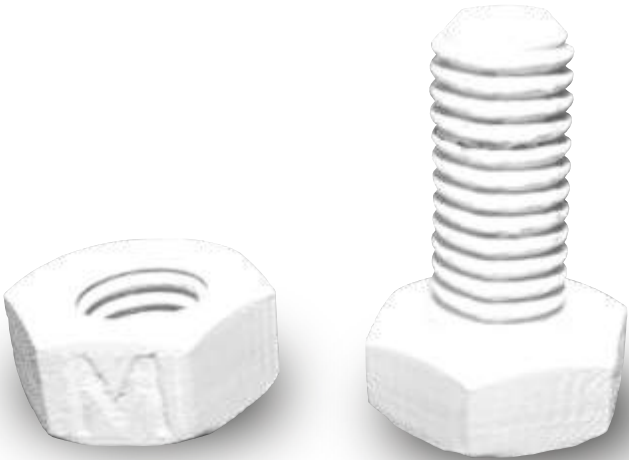
Al₂O₃ exhibits lower strength than SSiC und Si₃N₄. The strength at 1,000 °C is ca. 60% lower than at room temperature. Al₂O₃ is an electrical insulator and a fairly good heat conductor (ca. 20 – 30 W/mK). The corrosion resistance in the acidic range is good (pH < 7, but poor in the basic range (pH > 7). Due to the relatively high coefficient of linear thermal expansion (8.5*10⁻⁶K⁻¹) the thermal shock resistance of a dense material is very poor, but it can be improved considerably by targeted incorporation of porosity.

Typical applications, today and future:

Wear resistance, electrical/electronics, medical, ballistics, firing supports for sintering of metals, high temperature furnaces

Porcelain filament specification

	Diameter	1.75 mm	2.85 mm
	Content of organics	19.5 mass-%	
	Green density of filament	2.533 g/cm ³	
	Printing temperature	155–170°C	
	Printing speed	5–30 mm/s	
	Sintering conditions	T=1540°C in air	
	Linear shrinkage from printed to sintered dimensions and scaling factor SF	x/y printing direction:	LSx/y = 19.0% → SF = 1.235
		z printing direction:	LSz = 21.5% → SF = 1.274



Zirconium Oxide ZrO₂








Spectrum Group, in cooperation with its partners, is producing 3 mole-% yttrium stabilized ZrO₂. Amongst the typical materials of high performance ceramics ZrO₂ possesses the highest density with 6.05 g/cm³. It is available in different colors: crème, white, black, red, blue and green. The organics content of the filament amounts to ca. 14 mass-%.

ZrO₂ exhibits a high strength at room temperature and due to the crack induced transformation toughening a very high fracture toughness. But comparable to Al₂O₃ the strength is drastically reduced with increasing temperature. Due to its high coefficient of linear thermal expansion (10*10⁻⁶K⁻¹) ZrO₂ can be bonded to stainless steel without any problems. The corrosion resistance in the range pH < 7 is good, in the range pH > 7 very insufficient. ZrO₂ is applied in O₂-sensors because of its ion conductivity.

Typical applications, today and future:

Medical, sensors, jewellery (e.g. watch cases), metallurgy








Porcelain filament specification

	Diameter	1.75 mm	2.85 mm
	Content of organics	13.8 mass-%	
	Green density of filament	3.441 g/cm ³	
	Printing temperature	155–170°C	
	Printing speed	5–30 mm/s	
	Sintering conditions	T=1475°C in air	
	Linear shrinkage from printed to sintered dimensions and scaling factor SF	x/y printing direction:	LS = 20.3% → SF = 1.255
		(identical in the printing directions x, y and z)	



Porcelain and others

Porcelain filament specification

	Diameter	1.75 mm	2.85 mm
	Content of organics	25.3 mass-%	
	Green density of filament	1.900 g/cm ³	
	Printing temperature	155–170°C	
	Printing speed	5–30 mm/s	
	Sintering conditions	T=1240–1280°C in air	
	Linear shrinkage from printed to sintered dimensions and scaling factor SF	x/y printing direction:	LSx/y = 17.0 % → SF = 1.205
		z printing direction:	LSz = 21.0 % → SF = 1.266

Sample components porcelain figurines



- vase, height ca. 8.5cm
- tower
- Buddha statue

Other possible materials:

Composite materials with defined properties

- ZTA - zirconia toughened alumina
- ATZ - alumina toughened zirconia
- Si₃N₄ / TiN
- Hard materials

Hard porcelain

- Different colours

Metals

High performance materials comparison

PROPERTY		MATERIAL			
		SSiC	Si ₃ N ₄	AL ₂ O ₃	ZRO ₂
Sintering Temperature	[°C]	2 100–2 200	1 700–1 800	1 475–1 640	1 475–1 500
Sintering Atmosphere		Argon	Nitrogen	Air	Air
Sintered Density	[g/cm ³]	3.10–3.15	3.20–3.25	3.85–3.96	5.85–6.05
Strength at	RT	Medium	High	Low	High
	1 000°C	Very high	High	Very low	Low
Fracture toughness		Low	High	Low	Very high
Micro hardness	[GPa]	25	15–18	17–20	12
Corrosion resistance	pH < 7	Very good	Good	Good	Good
	pH > 7	Very good	Low	Low	Very low
Coeff. of lin. therm. exp.	[10-6K-1]	4.5	3.0	8.5	10
Thermal conductivity	[W/mK]	120	30	20-30	2
Electrical conductivity		Semi-conductor	Insulator	Insulator	O2-Ion-conductor

All shown data are typical properties. Users should confirm results by their own tests

Industrial materials comparison

		INDUSTRIAL MATERIAL							
		PA6 Neat	PA6 CF15	PA6 GK10	PET-G HT100	PET-G FX120	PET CF15	ABS GP	PP
Density	[g/cm³]	1,14	1,25	1,01	1,18	1,13	1,40	1,04	0,89
Durability		9/10	9/10	9/10	6/10	7/10	9/10	9/10	8/10
Hardness		6/10	8/10	6/10	2/10	1/10	8/10	5/10	4/10
Shrinkage		7/10	6/10	7/10	6/10	4/10	6/10	6/10	2/10
Printability		8/10	8/10	8/10	5/10	8/10	8/10	8/10	3/10
Biodegradability		✗	✗	✗	✗	✗	✗	✗	✗
Adhesion between layers		9/10	10/10	9/10	8/10	10/10	10/10	10/10	10/10
Adhesion to printbed		6/10	6/10	4/10	9/10	6/10	7/10	6/10	2/10
Extracting irritating fumes		4/10	4/10	4/10	1/10	2/10	2/10	9/10	6/10
Reliability of printing		3/10	4/10	4/10	6/10	5/10	6/10	7/10	2/10
Nozzle temperature	[C]	240–270	235–260	235–260	250–280	240–260	220–240	235–255	235–255
Bed temperature	[C]	80–100	80–100	80–100	100–110	80	40–60	0–45	30–80
Printing speed	[mm/s]	30–70	30–80	30–80	30–70	30–70	30–80	30–200	40–110
Heated chamber		recommended	not necessary	not necessary	recommended	favored for big prints	favored for big prints	recommended	recommended
Heat resistance	[C]	HDT A – 90	HDT A – 240	HDT A – 90	HDT – 100	HDT – 20	Service temp. (max 200h) – 125	VICAT – 95	HDT B – 80
						VICAT – 170			VST A – 135
Chemical resistance		10/10	10/10	10/10	9/10	9/10	10/10	5/10	10/10
Water resistant		7/10	7/10	7/10	8/10	8/10	7/10	5/10	8/10
UV resistance		9/10	9/10	9/10	8/10	6/10	9/10	9/10	5/10

All shown data are typical properties. Users should confirm results by their own tests

Desktop materials comparison

DESKTOP MATERIAL

		Premium PLA	PLA Glitter	PLA Tough	PLA MATT	PLA PRO	SILK PLA	Glow in the Dark	Carbon PLA
Density	[g/cm³]	1,24	1,24	1,24	1,24	1,22	1,24	1,24	1,35
Durability		5/10	5/10	7/10	5/10	6/10	5/10	5/10	7/10
Hardness		9/10	9/10	8/10	9/10	9/10	9/10	9/10	10/10
Shrinkage		2/10	2/10	1/10	2/10	2/10	2/10	2/10	1/10
Printability		9/10	9/10	10/10	9/10	10/10	9/10	9/10	9/10
Biodegradability		✓	✓	✓	✓	✓	✓		
Adhesion between layers		7/10	7/10	9/10	7/10	8/10	7/10	7/10	6/10
Adhesion to printbed		9/10	9/10	10/10	9/10	9/10	9/10	9/10	8/10
Extracting irritating fumes		1/10	1/10	1/10	1/10	1/10	1/10	1/10	2/10
Reliability of printing		9/10	9/10	10/10	9/10	9/10	9/10	9/10	7/10
Nozzle temperature	[°C]	185–215	185–215	190–230	185–215	185–230	185–215	185–225	185–215
Bed temperature	[°C]	0–45	0–45	0–45	0–45	0–45	0–45	0–45	0–45
Printing speed	[mm/s]	40–150	40–110	40–130	40–110	40–150	40–110	40–110	40–110
Heated chamber		not necessary	not necessary	not necessary	not necessary	not necessary	not necessary	not necessary	not necessary
Heat resistance	[°C]	HDT – 55	HDT – 55	HDT – 55	HDT – 65	HDT – 85 *annealed	HDT – 55	HDT – 55	HDT – 55
					VICAT – 85				
Chemical resistance		2/10	2/10	3/10	2/10	2/10	2/10	2/10	3/10
Water resistant		6/10	6/10	7/10	6/10	6/10	6/10	6/10	6/10
UV resistance		2/10	2/10	3/10	2/10	2/10	2/10	2/10	4/10

All shown data are typical properties. Users should confirm results by their own tests

Desktop materials comparison

DESKTOP MATERIAL

PLA Stone Age	Thermoactive PLA	WOOD	smart ABS	ASA 275	HIPS-X	Premium PET-G	Glitter PET-G	S-Flex 90A	PA6 Low Warp
1,24	1,24	1,04	1,05	1,08	1,05	1,27	1,27	1,22	1,15
5/10	5/10	5/10	4/10	5/10	3/10	7/10	8/10	6/10	9/10
9/10	9/10	7/10	4/10	5/10	3/10	6/10	7/10	1/10	6/10
2/10	2/10	1/10	8/10	4/10	7/10	3/10	3/10	1/10	9/10
9/10	9/10	9/10	6/10	8/10	7/10	8/10	8/10	5/10	3/10
✓	✓	✓	✗	✗	✗	✗	✗	✗	✗
7/10	7/10	6/10	4/10	6/10	3/10	9/10	8/10	7/10	8/10
9/10	9/10	9/10	5/10	6/10	5/10	8/10	8/10	10/10	2/10
1/10	1/10	3/10	9/10	7/10	8/10	1/10	1/10	1/10	4/10
9/10	9/10	7/10	6/10	6/10	6/10	8/10	8/10	3/10	2/10
185–225	190–220	190–220	230–255	200–240	230–255	230–255	230–255	200–230	250–280
0–45	0–45	0–45	100	40–60	80–100	60–80	60–80	50–70	80–100
40–80	40–110	40–70	40–100	40–200	40–100	40–120	40–70	15–50	40–70
not necessary	not necessary	not necessary	favored for big prints	not necessary	favored for big prints	not necessary	not necessary	not necessary	favored for big prints
HDT – 55	HDT – 55	HDT – 55	HDT – 85	HDT – 86	HDT – 84	HDT – 70	HDT – 70	short term working temp. up to 120°C, long term up to 80°C	HDT – 60
			VICAT – 93	VICAT – 94	VICAT – 96				VICAT – 185
2/10	2/10	1/10	5/10	6/10	5/10	9/10	8/10	9/10	9/10
6/10	6/10	4/10	5/10	7/10	5/10	10/10	9/10	8/10	6/10
2/10	2/10	4/10	6/10	10/10	6/10	7/10	7/10	8/10	9/10

All shown data are typical properties. Users should confirm results by their own tests

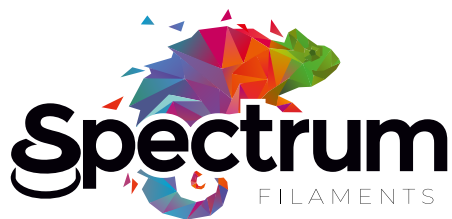
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Notes

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