Technical datasheet

allPHA

colorFabb

Date of issue: April 4, 2022
Version: v1.0

Our allPHA 3D printing filament (pronounced as all-PHA) is the ultimate bioplastic. **P**oly**H**ydroxy**A**lkanoates abbreviated PHA, is created by a naturally occurring process called fermentation. By feeding bacteria natural sugars and oils, the bacteria create “fat” cells (the PHA). The best thing about PHA? Micro-organisms can eat it again at the end of the products’ lifetime.

AllPHA is 100% biobased and 100% biodegradable in any biotope, without leaving microplastics.

AllPHA is a great material for any project which requires a more sustainable approach. With various end-of-life options and an inherent fade-into-nature property allPHA is a truly circular material.

TYPICAL MATERIAL PROPERTIES – 3D Printed

Physical properties	Unit	Value	Method
Tensile modulus	MPa	2510	ISO 527
Yield strength	MPa	26	ISO 527
Yield strain	%	3,5	ISO 527
Tensile strength	MPa	26	ISO 527
Tensile strain at tensile strength	%	3,5	ISO 527
Tensile stress at break	MPa	24	ISO 527
Tensile strain at break	%	4,5	ISO 527
Flexural modulus	MPa	1820	ISO 178
Flexural strain at standard deflection	MPa	37	ISO 178
Flexural strength	MPa	41	ISO 178
Flexural strain at flexural strength	%	6,4	ISO 178
Flexural stress at break	MPa	-	ISO 178
Flexural strain at break	%	-	ISO 178
Charpy unnotched impact strength	kJ/m2	25,4	ISO 179-1/1 eU
Charpy notched impact strength	kJ/m2	3,4	ISO 179-1/1 eU
Shore D	Shore D	62	ISO 7619
HDT	°C	153	ISO 75

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FILAMENT SPECIFICATION

Nominal diameter:	Diameter tolerance	Ovality
1,75 mm	± 0.1mm	≥ 95%
2,85 mm	± 0.1mm	≥ 95%

Netto filament weight 750g

GUIDELINE FOR PRINT SETTINGS

Nozzle temperature	180 - 200ºC
Bed temperature	Room temperature / not heated
Bed surface / modification	3DLac / Diluted wood glue
Bed adhesion slicer settings	Brim (for small parts brim is not needed)
Cooling	100% fan speed on the 2nd or 3rd layer.
Print speed	30-60 mm/s
Layerheight	0.1mm / 0.27 mm (for 0.4mm nozzle)

Contrary to most 3D printing materials allPHA is best printed on a cold plate, so no active heating is required. A heated plate will induce crystallization, which will lead to warping of the bottom layers.
We advise using 100% cooling starting on the second layer. This helps set the model by slowing down crystallization of the allPHA matrix.

Removal of 3D print

Bigger parts with large flat bottom surface area can adhere quite strong to the substrate, glass / PEI or flexplate. In this case it's adviced to heat-up the plate to 90c and wait 15 minutes for the bottom layers to heat through. The heat induces crystallization which makes it easier for the 3D printed part to release from the plate. With the substrate still hot you need to carefully release the model with a sharp and thin scraper and make your way underneath the model all around.

Smaller parts with less bottom surface will release easier, especially if a brim is not used. You can still use the same technique as described above if the part adheres too much or if it's very delicate.

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