# Technical datasheet
# allPHA

colorFabb

Date of issue: September 18th , 2023
Version: v1.0

## Description

Our allPHA 3D printing filament (pronounced as Alpha) is the ultimate bioplastic. **P**oly**H**ydroxy **A**lkanoates (PHA) is created by a natural 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 product's life.

**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 Properties

**Mechanical Properties – 3D Printed**

| | *Method* | *Value* | *Unit* |
|---|---|---|---|
| Youngs Modulus | Tensile, ISO 527-1A | 2500 | MPa |
| Tensile Strength | Tensile, ISO 527-1A | 26 | MPa |
| Elongation at break | Tensile, ISO 527-1A | 4.5 | % |
| Flexural Modulus | Flexural, ISO 178 | 1820 | MPa |
| Flexural Strength | Flexural, ISO 178 | 41 | MPa |
| Impact Strength | Charpy Notch, ISO 179 | 3.4 | $kJ/m^2$ |
| Hardness | Shore D, ISO 7619 | 62 | Shore D |

**Mechanical Properties – Injection Molded***

| | *Method* | *Value* | *Unit* |
|---|---|---|---|
| Youngs Modulus | Tensile, ISO 527-1A | 1950 | MPa |
| Tensile Strength | Tensile, ISO 527-1A | 25 | MPa |
| Elongation at break | Tensile, ISO 527-1A | 10.4 | % |
| Flexural Modulus | Flexural, ISO 178 | 1760 | MPa |
| Flexural Strength | Flexural, ISO 178 | 41 | MPa |
| Charpy Impact Strength | Charpy Notch, ISO 179 | 5.9 | $kJ/m^2$ |
| Density | ISO 1183 | N/A | $g/cm^3$ |

**Thermal Properties***

| | *Method* | *Value* | *Unit* |
|---|---|---|---|
| Glass Transition Temp. | DSC, ISO 11357 | N/A | ˚C |
| Melting Temp. | DSC, ISO 11357 | N/A | ˚C |
| Decomposition Temp. | TGA, ISO 11358 | N/A | ˚C |
| Heat Deflection Temp. | HDT-B, ISO 75 | 130 | ˚C |
| Melt Flow Index | MFI, (210˚C/2.16 kg), ISO 1133-A | N/A | g/10min |
| Melt Flow Index | MFI, (190˚C/1,16 kg), ISO 1133-A | N/A | g/10 min |

*These results are obtained from the information provided by the supplier of the raw material

colorFabb B.V.
Bremweg 7
5951 DK Belfeld
The Netherlands

T +31 (0)77 – 4664015
F +31 (0)77 – 3971414
E sales@colorfabb.com
I colorfabb.com

KvK nr: 53498607
VAT nr: NL850902770B01
IBAN:
NL54RABO0151849188
BIC: RABONL2U

# Technical datasheet
# allPHA

colorFabb

Date of issue: September 18th , 2023
Version: v1.0

**Filament Specifications**

| | *Unit* | | |
|---|---|---|---|
| Diameter | mm | 1.75 | 2.85 |
| Max. roundness deviation | mm | ± 0.05 | ± 0.1 |
| Net. Filament weight | g | 750 | 750 |

**Guideline for print settings**

| | *Unit* | |
|---|---|---|
| Nozzle Temp. | ˚C | 190-200 |
| Bed Temp. | ˚C | 0 / RT / not heated |
| Bed / surface modification | - | 3DLac / Diluted wood glue |
| Active cooling fan | % | 100** |
| Print Speed | mm/s | 40-80 |
| Layer Height | mm | 0.1 / 0.27*** |

**On the second or third layer
*** For 0.4 mm nozzle

## Notes

The reported properties are an average of a batch of 3D specimens.
Contrary to most 3D printing materials, allPHA is best printed on a cold plate, so no active heating is required. A heating plate will induce crystallization, which leads to warping of the bottom layers.
The specimens have been printed in XY plane, using 0.2 mm layer height, 100% infill, 0.4 mm nozzle, 200˚C nozzle temperature and 0˚C bed temperature.

**Removal of 3D print**

Bigger parts with large, flat bottom surface areas can adhere quite strong to the surface, glass / PEI, or flexplate. In this case, it is advised to heat up the plate to 90˚C and wait roughly 15 minutes for the bottom layer to heat through. The heat induces crystallization, which makes it easier for the 3D printed part to release from the plate. With the surface 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 the brim is not used. You can still use the same technique as described above if the 3D printed part adheres too much, or if it is very delicate.



colorFabb B.V.
Bremweg 7
5951 DK Belfeld
The Netherlands

T +31 (0)77 – 4664015
F +31 (0)77 – 3971414
E sales@colorfabb.com
I colorfabb.com

KvK nr: 53498607
VAT nr: NL850902770B01
IBAN:
NL54RABO0151849188
BIC: RABONL2U