German RepRap

Overview of filament types

The temperatures listed here are based on our printers and should be treated as a recommendation only. Please tweak them to your own needs as required.

3D printers need materials to create object from like „common" printers. Depending on the printers technology you are able to use different types of materials.

Thermoplastic, also known as a thermosoftening plastic, is a polymer that turns to a liquid when heated and freezes to a very glassy state when cooled sufficiently. Thermoplastic polymers differ from thermosetting polymers (Bakelite) in that they can be remelted and remoulded. Many thermoplastic materials are addition polymers; e.g., vinyl chain-growth polymers such as polyethylene and polypropylene.

Filament type	Melting point (C°)[1]	Extruder (C°)[2]	Printbed (C°)[3]	Surface[4]	Stable (C°)[5]
ABS	220°C	~ 230°C - 255°C	~ 110°C - 115°C	Carbon/PET/Kapton	~ 140°C
PLA - Polylactose	200°C	~ 180°C - 220°C	~ 55°C - 65°C	Carbon/PET/Kapton/Glas	~ 60°C
PS - Polystyrol	210°C	~ 190°C - 220°C	~ 80°C - 100°C	Carbon/PET/Kapton	-
PVA - Polyvinylalko-hol[6]	210°C	~ 190°C - 220°C	~ 55°C - 115°C	Carbon/PET/Kapton	-
LAYWOOD - Holz	210°C	~ 180°C - 230°C	~ 0°C - 80°C	Carbon/PET/Kapton	-
LAYBRICK - Stein	160°C	~ 165°C - 210°C	~ 0°C - 80°C	Carbon/PET/Kapton	~ 60°C
PP	210°C	~ 210°C	kalt	PP	~ 150°C
Bendlay	200°C	~ 220°C	~ 60°C	PET	-
TPU93[8]	190°C	~ 190°C - 215°C	kalt	Glas	> 120°C
Carbon20[9]	235°C	~ 252°C	~ 45°C	PET	-
PC*	N/A	~ 250°C - 270°C	~ 80°C	N/A	> 120°C
PET-G	N/A	~240°C - 260°C	~ 60°C - 70°C	N/A	-
PA6	220°C	N/A	N/A	N/A	N/A
PA666	200°C	N/A	N/A	N/A	N/A

** Polycarbonate Remark: For an optimal printing, the Build Tak film is recommended as a printing substrate.*
**PET-G Remark: The PET-G filament is food contact certified: Food Contact certificate*

German RepRap

Download Material Safety Data Sheets

German versions:
Materialsicherheits Datenblatt Übersicht

English versions:
Material Safety Data Sheet overview

Download Technical Datasheets

German versions:

Technisches Datenblatt ABS

Technisches Datenblatt ABS_EL

Technisches Datenblatt Bendlay

Technisches Datenblatt Carbon

Technisches Datenblatt HIPS Natur

Technisches Datenblatt_Laybrick

Technisches Datenblatt Laywood

Technisches Datenblatt PC

Technisches Datenblatt PETG

Technisches Datenblatt PLA

Technisches Datenblatt PP

Technisches Datenblatt TPU64D

Technisches Datenblatt TPU93_Transparent

English versions:

Technical Datasheet ABS

Technical Datasheet ABS_EL

Technical Datasheet Bendlay

Technical Datasheet Carbon

Technical Datasheet HIPS Natural

Technical Datasheet_Laybrick

Technical Datasheet Laywood

Technical Datasheet PC

Technical Datasheet PETG

Technical Datasheet PLA

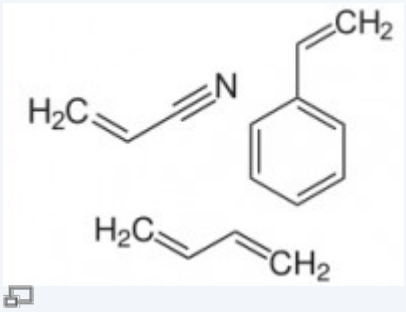
Technical Datasheet PP

Technical Datasheet TPU64D

Technical Datasheet TPU93_clear

Materialinfo

ABS (Acrylonitrile butadiene styrene-copolymer)



Acrylonitrile butadiene styrenecopolymer (ABS)

Acrylonitrile butadiene styrene-copolymer (short ABS) is a synthetic terpolymer of three different kinds of monomers, acrylonitrile, 1.3 butadiene and styrene and belongs to the amorphous thermoplastics. The proportions can vary from 15 to 35% acrylonitrile, 5 to 30% butadiene and 40 to 60%.

Specification

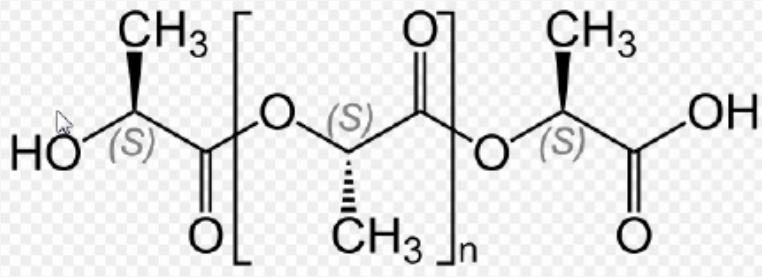
The following specification refers to the ABS distributed by us.

- **Density:** 1,05 g/cm3
- **Melt mass flow rate MFR:** 5-9 (220 °C/10 kg), g/1 0 min
- **Melt volume rate MVR:** 5-9 (220 °C/10 kg), cm 3/10 min
- **Tensile strength:** 2400 MPa (23°C)
- **Impact strentgth:** 130 (bei 23°C), 100 (bei 30 °C) kJ/ m2
- **Notchedbarimpacttestlzod:** 25 (bei 23°C),12 (bei -30°C)kJ/m2
- **Vlcat- softening temperature:** - 100 °C
- **Melting temperature:** from - 220 °C

Source

Acrylonitrile butadiene styrene

PLA (Polylactic acid)



PLA (Polylactic acid)

Polylactic acid or polylactide (short PLA) are plastics, malleable by heat supply (also called thermoplastics). They are made of many chemically bound lactic acid molecules, so they belong to the polymers. Polylactide plastics are biocompatible.

Specification

The following specification refers to the PLA distributed by us.

- **Density:** 1,24 g/cm3
- **Melt mass flow rate MFR:** n/a (220 °C/10 kg), g/10 min
- **Melt volume rate MVR:** n/a (220 °C/10 kg), cm 3/10 min
- **Tensile strength:** n/a MPa (23°C)
- **Impact strentgth:** n/a kJ/ m2
- **Notched bar impact test Izod:** n/a kJ/m2
- **Vlcat- softening temperature:** n/a* °C
- **Melting temperature:** from - 180 °C

Source

Polylactic acid

Register

1) manufacturer's information
2), 3), 5) our recommendation
4) cover of printbed
6) material is hygroscopic and therefore limited storable
7) material is hygroscopic and therefore limited storable, in case of bubbles during pint it can be dried in an oven at about 80°C for ca. 3-4 hours
8) Material kann nur mit dem DD3 Extruder verarbeitet werden!
9) Sollte dauerhaft nur mit einer Edelstahldüse verarbeitet werden, da extrem abrasiv