Material Data Sheet
PLA

General Information

Extruded Polylactic Acid (PLA) for easy 3D printing from renewable resources. This high definition filament conforms to tight diameter and ovality tolerances and enables print details with precision, very good surface and high resolution. Its high quality and resiliency (non-brittleness) avoid unwanted breakages or deformation of the filament on the spool. This odourless material is available in various colours and exhibits excellent colour coverage and batch-to-batch colour consistency. It is industrially compostable.

3D processing method: FFF (Fused Filament Fabrication)

Diameter (mm): 1.75 and 2.85

Form: wound on a spool (app 333/125 m per 1 kg of 1,75/2,85 filament)

Diameter tolerance (mm): ± 0,05/0,06 on 100 % of the 1,75/2,85 filament length

Packaging: packed in a hermetically sealed plastic bag with silica gel

Colours (with RAL code where applicable): Translucent, White (9016), Light Concrete Grey, Elephant Grey, Metallic Grey, Dark Grey (7011), Black (9017), Dark Blue (5002), Light Blue (5015), Light Green (6018), Dark Green (6002), Red (3020), Orange (2008), Yellow (1023), Coral Pink

Physical Properties	Standard	Value	Unit
Density	ISO 1183	**1,25**	g/cm^3

Thermal Properties	Standard	Value XY (Flat)	Value	Unit
Heat Deflection Temperature	ISO-75-2 (0,45 MPa)	**56,7**		°C
Vicat Softening Temperature	ISO 306:2023, B/50	**55,4**		°C
Glass Transition Temperature	DSC (10°C/min)		**60,2**	°C
Melting Temperature	DSC (10°C/min)		**151**	°C

Mechanical Properties	Standard	Value XY (Flat)	Value Z (Up)	Unit
Tensile Modulus	ISO 527-2:2012 (1 mm/min)	**2.769**	**2.741**	MPa
Tensile Stress at Yield	ISO 527-2:2012 (50 mm/min)	**46,5**	**36,3**	MPa
Tensile Stress at Break	ISO 527-2:2012 (50 mm/min)	**39,5**	**34,8**	MPa
Elongation at Yield	ISO 527-2:2012 (50 mm/min)	**2,1**	**1,6**	%
Elongation at Break	ISO 527-2:2012 (50 mm/min)	**6,5**	**2,9**	%
Flexural Modulus	ISO 178:2019 (1 mm/min)	**2.744**	**2.685**	MPa
Flexural Strength	ISO 178:2019 (5 mm/min)	**74,8**	**57,4**	MPa
Charpy Impact Strength Notched	ISO 179-1:2011 (2,9 m/s; 0,5 J)	**3,3 (C)***	**2,9 (C)***	kJ/m^2
Hardness	ISO 868:2004	**73,4**		Shore D

The tests were performed on material in black colour either on filament or 3D printed parts (XY/Flat or Z/Up). **Printing conditions (3D specimens):** Prusa i3MKS3, nozzle: 220 °C, nozzle type: brass, nozzle diameter: 0,4 mm, bed temperature: 60 °C, layer height 0,2 mm, infill: 100 %, active cooling fan: 100 %, perimeter No: 3, printing speed: 45 mm/s, chamber: closed. Printed parts were conditioned. * C = complete break.

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Printing Conditions

Processing Method: FFF (Fused Filament Fabrication)

Drying: Not necessary if packed properly and contact with moisture prevented.

Dry box: n/a

Nozzle Temperature (°C): 210 ± 20

Speed (mm/s): up to 300

Bed temperature (°C): 35 – 60 (depending on the conditions and complexity of the print, bed heating can be turned off).

Compliance

This material is compliant with:

- **REACH**: Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the *Registration, Evaluation, Authorisation and Restriction of Chemicals* (REACH)
- **RoHS 2**: Directive 2011/65/EU

Contact Information

Roffelsen Plastics
Lichttoren 32
5611 BJ Eindhoven
The Netherlands
Europe
Telephone / +31 (0) 492 59 2800
Email / post@roffelsen.com
Website / www.roffelsen3d.com

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