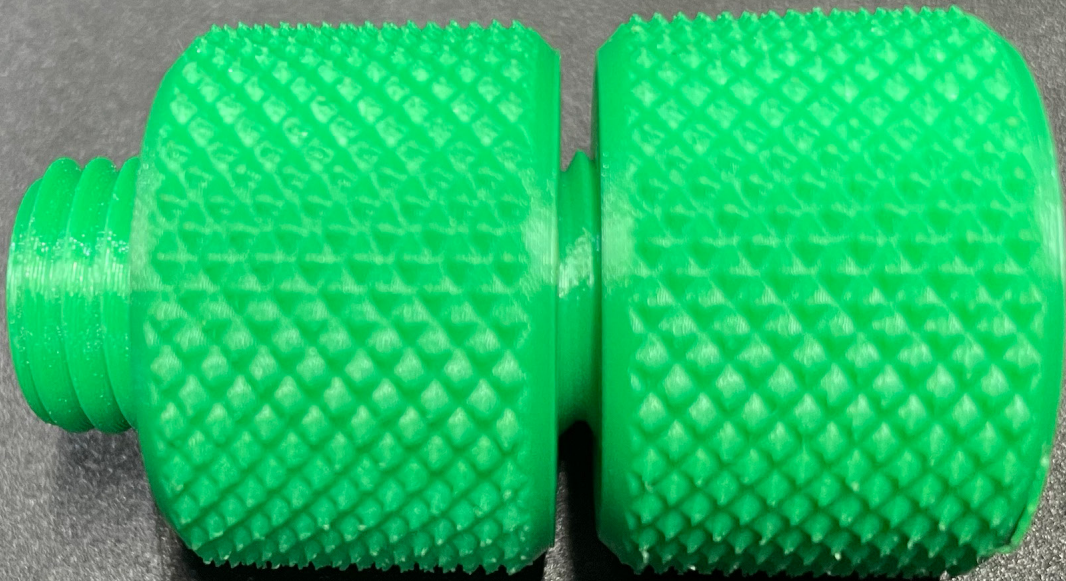


PLA

P r o d u c t D e m o n s t r a t i o n



■ Material Overview

PLA is a biobased polymer derived from natural resources and offers a significant reduction in carbon footprint compared to oil-based plastics. PLA is a high viscosity, low flow, amorphous, transparent PLA resin suitable for film extrusion, thermoforming or fiber spinning.

Advantages

- **Biobased and Eco-Friendly:**
PLA is derived from renewable resources, reducing the carbon footprint compared to petroleum-based plastics.
- **High Viscosity, Low Flow:**
PLA offers optimal processing control for film extrusion and thermoforming.
- **Transparent and Amorphous:**
Provides excellent clarity and a smooth, consistent finish for high-quality products.
- **Versatile Application:**
Suitable for a range of processes including fiber spinning and thermoforming.

Applications



Typical Properties

Physical properties	Method	Typical value
Density	Literature value	1.24 g/cm ³
Melt flow index	ISO 1133-A (210°C/2.16kg)	6 g/10 min
Melt flow index	ISO 1133-A (190°C/2.16kg)	3 g/10 min
Stereochemical purity	Total Corbion PLA method	96% (L-isomer)
Appearance	Visual	Crystalline white pellets
Residual monomer	Total Corbion PLA method	≤ 0.3%
Water / moisture	Coulometric Karl-Fischer	≤ 400 ppm
Melting temperature	DSC	155°C
Glass transition temperature	DSC	60°C
Mechanical properties	Method	Typical value
Tensile modulus	ISO 527-1	3500 MPa
Tensile strength	ISO 527-1	45 MPa
Elongation at break	ISO 527-1	≤ 5%
Charpy notched impact, 23°C	ISO 179-1eA	≤ 5 kJ/m ²
Heat deflection temp., amorphous ²	ISO 75-1	60°C

* Typical properties, not to be interpreted as specifications

* HDT B, 0.45MPa flatwise. HDT depends on processing conditions.

■ Processing Information & Recommendations

Standard PLA can be processed on conventional extrusion equipment and can be used as neat resin or as part of a compound to further optimize overall material properties. It is recommended to use a general purpose screw with L/D ratios between 24 and 32. Pre-drying of the resin is recommended.

Processing Recommendations	
Predrying	4-6 hours at 85°C
Feed zone	20-40°C
Melt zone	170-190°C
Mixing & conveying	190-210°C
Die head temperature	190-210°C
Typical settings, may require optimization	

■ Start-up and Shutdown

1. Purge the system with a polyolefin or a purging compound (e.g. Dyna-Purge, Clean LDPE) at its recommended temperature settings.
2. Reset the temperature settings to the recommended PLA temperature profile.
3. Purge with PLA resin or PLA compound until stable processing is obtained free of contaminants.
4. Reset the temperature settings to the recommended purging compound temperature profile.
5. Purge with a polyolefin or a purging compound for 5 times the average residence time.

After completion of the run, PLA must be removed from the whole system. PLA can degrade into lactic acid causing corrosion of the equipment (e.g. die plates).

■ Moisture & Pre-drying

It is recommended to dry the packaging for 4-6 hours at 85°C. Drying of standard PLA can be performed in a desiccant hot air dryer, with a dew point of -40°C or less. It is recommended to reduce the moisture content before melt processing to a level less than 250ppm and preferably less than 100 ppm, measured by e.g. Karl-Fischer or Brabender aquatrac method. Predrying is in particular important prior to injection molding, film and sheet production. Moisture causes hydrolysis of the PLA polymer during melt processing, resulting in reduced mechanical performance in the final part.