

Luminy® L130

Description PLA is a biobased polymer derived from natural resources and offers a significant reduction in carbon footprint compared to oil-based plastics. Luminy L130 is a high heat, medium flow PLA homopolymer suitable for injection molding and fiber spinning. Compared to standard PLA, these PLA homopolymers have higher melting points and an increased rate of crystallization. As a result, compounds containing PLA homopolymers are suitable for the production of semi-crystalline parts, which exhibit a higher temperature resistance.

Physical properties	Density (literature value)	1.24 g/cm ³
	Melt flow index (ISO 1133-A at 210°C/2.16kg)	24 g/10 min
	Melt flow index (ISO 1133-A at 190°C/2.16kg)	10 g/10 min
	Stereochemical purity (Corbion method)	min. 99 (% L-isomer)
	Appearance (visual)	crystalline white pellets
	Residual monomer (Corbion method)	max. 0.3 %
	Water / moisture (Coulometric Karl-Fisher)	max. 400 ppm
	Melting temperature T_m (DSC)	175 °C
	Glass transition temp. T_g (DSC)	55-60 °C

Typical properties, not to be interpreted as specifications

Mechanical properties	Tensile modulus (ISO 527-1)	3500 MPa
	Tensile strength (ISO 527-1)	50 MPa
	Elongation at break (ISO 527-1)	max. 5 %
	Charpy notched impact, 23°C (ISO 179-1eA)	max. 5 kJ/m ²
	Heat deflection temp., amorphous (ISO 75-1)	55-60 °C ¹⁾
	Heat deflection temp., crystalline (ISO 75-1)	100-110 °C
	<i>Typical properties, not to be interpreted as specifications</i>	

Processing information and recommendations PLA homopolymers and PLA compounds can be processed on conventional injection molding equipment. To prevent or reduce the degradation of PLA during processing, it is recommended to use a barrel with a content of 3-5 times the shot weight, a (general purpose) screw with a L/D ratio of at least 20:1 and if applicable low shear hotrunners in the mold.

Startup and shutdown

1. The equipment needs to be well cleaned and purged to prevent cross contamination.
2. At the start of the run it is recommended to purge the system with a polyolefin or a purging compound (e.g. Dyna-Purge, Clean LDPE) followed by purging with the PLA homopolymer or PLA compound at its processing conditions.
3. At the completion of the run it is recommended to purge the system using a purging compound again.

After completion of the run, PLA must be removed from the whole system. PLA can degrade into lactic acid causing corrosion of the equipment.

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Recommended injection molding temperature settings	Throat	20-40 °C
	Feed zone	155-175 °C
	Compression zone	180-220 °C
	Metering zone	180-220 °C
	Nozzle	180-220 °C
	Tmelt	180-220 °C
	Tmold, amorphous	20-30 °C
	Tmold, crystalline	90-100 °C
	Back pressure (Bar, specific)	50-100 bar
	Screw speed	as slow as possible
	<i>Typical settings may require optimization</i>	

Moisture and pre-drying It is recommended to dry Luminy L130 from the packaging for 4-6 hours at 100°C. Drying of semi-crystalline PLA homopolymer 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 homopolymer during melt processing, resulting in reduced mechanical performance in the final part.

Storage conditions It is recommended to store PLA polymers in its closed, original moisture-barrier packaging at temperatures below 50°C. Storage in direct sunlight should be avoided. The supplied PLA homopolymer pellets are typically semi-crystalline, unless otherwise stated.

Packaging Luminy L130 is available in 700 kg aluminum-lined octabins.

Compostability Composting of organic waste helps to divert organic waste from landfill or incineration. Composting is a biological process in which organic wastes are degraded by microorganisms into carbon dioxide, water and humus, a soil nutrient.

Corbion PLA polymers are in compliance with the EN-13432 standard. Corbion PLA has been certified compostable by Vinçotte (OK Compost S478) and by European Bioplastics (Seedling).

Food contact status Corbion PLA polymers are compliant with EU commission regulation 10/2011 of 14 January 2011 (and amendments) on plastic materials and articles intended to come into contact with food. Given the composition of the PLA polymers they can be considered suitable for use in food contact applications.

Regarding lactic acid, it should be taken into account that it is to be considered as a dual use substance according Regulation 10/2011, since lactic acid is approved as a food additive (additive number E270). For lactic acid there are no Specific Migration Limits set in Regulation 10/2011. The regulation does include an overall migration limit of 10 mg/dm² of the overall migration from finished plastic articles into food.

It is the responsibility of the manufacturer of the final product, when intended as a food contact product, to determine that the use of the product is safe and also suitable for the intended application.

While it is Corbion's conclusion that the above mentioned polymers are permitted, it is the final product which must meet the given regulations and the manufacturer should take responsibility to check if the final product is in compliance with these Regulations.

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¹⁾ HDT B, 0.45MPa flatwise. HDT depends on processing conditions. For crystalline resins, formulation included 3 - 7% nucleating agent (D070) and molding took place in a 90 - 100°C tool