

Product Data Sheet

Luminy® LX175U

Revision date 1 Sep 2017
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Date previous version 17 Jul 2017
Version & language 6/K009 - EN
Product availability Americas only
Product status Commercial

PRODUCT DATA SHEET LUMINY LX175U

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DESCRIPTION

PLA is a biobased polymer derived from natural resources and offers a significant reduction in carbon footprint compared to oil-based plastics. Luminy LX175U is a high viscosity, low flow, amorphous, transparent PLA resin suitable for film extrusion, thermoforming or fiber spinning.

TYPICAL PROPERTIES¹

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)
Residual monomer	Total Corbion PLA method	≤ 0.3%
Water / moisture	Coulometric Karl-Fischer	≤ 400 ppm
Melting temperature	DSC	145-160°C
Glass transition temperature	DSC	55-60°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	55-60°C

¹ Typical properties, not to be interpreted as specifications
² 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.

Extruding 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).



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MOISTURE & PRE-DRYING

It is recommended to dry Luminy LX175U from 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.

PACKAGING & STORAGE CONDITIONS

Luminy LX175U is available in 1,000 kg aluminum-lined FIBCs. It is recommended to store PLA polymer in its closed, original moisture-barrier packaging at temperatures below 50°C. Storage in direct sunlight should be avoided. The supplied PLA polymer pellets are typically semi-crystalline, unless otherwise stated.

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 hums, a soil nutrient. Luminy PLA polymers are in compliance with the EN-13432 and ASTM D-6400 standards. Luminy LX175U has been certified compostable by DIN CERTCO and by European Bioplastics (Seedling) under certificate number 7W0262 up to a thickness of 2.0mm. As the compostability of the end product is also dependent on the geometry of product, it is the responsibility of the manufacturer of the end product to ensure compliance with the regulations.

FOOD CONTACT STATUS

Luminy LX175U is compliant with the requirements of Section 201(s) and Section 409 of the Federal, Drug and Cosmetic Act. Luminy LX175U is compliant with the requirements as described in Food Contact Notification (FCN) No. 178, which became effective on January 3, 2002, and is approved for use for all food types and conditions of use B through H.

Luminy LX175U is 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 Total Corbion PLA'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.

NOTICE REGARDING USE RESTRICTIONS

Unless specifically agreed to in writing, Total Corbion PLA will not knowingly market any product into any of the following commercial or developmental applications: (1) bottles or preforms, unless specific arrangements on recycling and end-of-life are in place, (2) microbeads used in personal care products, including without limitation, cosmetics or over-the-counter drugs, (3) components of products intended for human or animal consumption or (4) any application that is intended to be used inside the human body.



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