

Product Data Sheet

Luminy® LX975

Revision date 07 May 2019
Page 1 of 3
Date previous version 24 Jul 2018
Version & language 2/0979 - EN
Product availability Global
Product status Developmental

PRODUCT DATA SHEET
LUMINY® LX975

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www.total-corbion.com pla@total-corbion.com

DESCRIPTION

PLA is a biobased polymer derived from natural resources and offers a significant reduction in carbon footprint compared to oil-based plastics. Luminy® LX975 is a high viscosity resin suitable for use as a heat-seal layer in film applications or as a low melting component in sheath-core configurations.

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)	10 g/10 min
Melt flow index	ISO 1133-A (190°C/2.16kg)	4 g/10 min
Stereochemical purity	Total Corbion PLA method	88% (L-isomer)
Appearance	Visual	Amorphous pellets
Residual monomer	Total Corbion PLA method	≤ 0.3%
Water / moisture	Coulometric Karl-Fischer	≤ 400 ppm
Melting temperature	DSC	130°C
Glass transition temperature	DSC	60°C
Mechanical properties	Method	Typical value
Tensile modulus	ISO 527-1	3500 MPa
Tensile strength	ISO 527-1	40 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

¹ Typical properties, not to be interpreted as specifications
² HDT B, 0.45MPa flatwise. HDT depends on processing conditions.

PROCESSING INFORMATION & RECOMMENDATIONS

Luminy® LX975 can be processed on conventional extrusion equipment. It is recommended to use a general purpose screw with L/D ratios between 24 and 32. As the resin is amorphous and can start to become sticky at temperatures around 50°C, it is necessary to have screw cooling capabilities in the feed section. Luminy® LX975 is used only as a heat seal layer in coextrusion processes with other Luminy® PLA grades. Pre-drying of the resin is recommended.

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).

Recommended extruder temperature settings	
Predrying	24 hours at 40°C
Feed throat	20-40°C
Feed zone	180-190°C
Melt zone	180-190°C
Metering zone	190-210°C
Screen	190-210°C
Melt pump	190-210°C
Die	190-210°C

Typical settings, may require optimization



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Product Data Sheet

Luminy® LX975

Revision date 07 May 2019
Page 2 of 3
Version & language 2/0979 - EN

MOISTURE AND PRE-DRYING

It is recommended to dry Luminy® LX975 from the packaging for 24 hours at 40°C. Drying of standard PLA can be performed in a desiccant hot air dryer, with a dew point of -40°C or less. Drying at higher temperatures can result in pellet sticking and clogging of drying and conveying equipment. It is recommended to reduce the moisture content before spinning to a level preferably less than 100 ppm, measured by e.g. Karl-Fischer or Brabender aquatrac method. Moisture causes hydrolysis of the PLA polymer during melt processing, resulting in process instabilities and possibly decreased mechanical properties.

PACKAGING & STORAGE CONDITIONS

Luminy® LX975 is available in 1250 kg form-stable aluminum-lined big bags and 25 kg sample bags (moisture level not guaranteed for sample bags). 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 humus, a soil nutrient. Luminy® PLA polymers are in compliance with the EN-13432 standard. Luminy® LX975 has been certified compostable by TUV Austria (OK Compost S478) and by European Bioplastics (Seedling 7W2030) up to a thickness of 3.5 mm. 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.



BIOBASED CONTENT

Luminy® LX975 has a biobased content of 100% (confidence level 1) and a biobased carbon content of 100% according to EN16785-1 under certificate number DIC-00001. Luminy® LX975 is certified 100% biobased according to ASTM D6866 under the USDA Biopreferred program.



FOOD CONTACT STATUS

In the European Union, Luminy® 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. Lactic acid is considered a dual use substance, since lactic acid is approved as a food additive (additive number E270). There are no SMLs or SML(T)s for the ingredients used to produce Luminy® PLA. The regulation does include a migration limit of 10 mg/dm² on 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

In the United States of America, Luminy® PLA as supplied by Total Corbion PLA has been evaluated and was found to be suitable for use in food contact applications. On 30 November 2018, FCN 001926 as applied for by Total Corbion PLA to the FDA became effective. It is included in the list of effective notifications for FCNs on the website of the FDA. The evaluation performed was in line with the requirements of Section 201(s) and Section 409 of the Federal, Drug and Cosmetic Act, and Parts 182, 184 and 186 of the Food Additive Regulations. Luminy® PLA neat resin is approved for all food types and conditions of use B through H.



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Product Data Sheet

Luminy® LX975

Revision date 07 May 2019
Page 3 of 3
Version & language 2/0979 - EN

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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