

Product Data Sheet

Luminy® D070

Revision date 07 May 2019
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Date previous version 01 Sep 2017
Version & language 11/0963 - EN
Product availability Global
Product status Commercial

PRODUCT DATA SHEET
LUMINY® D070

Interested in solutions for bioplastics? Please contact us at
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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. Total Corbion PLA homopolymer resins are available in a range of melt viscosities and deliver improved heat resistance over standard PLA. These grades can be used as neat resin or as part of a compound in order to further optimize overall material properties. In order to obtain improved heat resistance over standard PLA, these resins need to crystallize during processing. Luminy® D070, when combined with PLA homopolymers, will yield a compound that combines good heat resistance with excellent mechanical properties and a reduced processing cycle time.

TYPICAL PROPERTIES¹

Physical properties	Method	Typical value
Density	Literature value	1.24 g/cm ³
Melt flow index	ISO 1133-A (190°C/0.325kg)	20 g/10 min
Stereochemical purity	Total Corbion PLA method	≥ 99% (D-isomer)
Appearance	Visual	Crystalline white pellets
Residual monomer	Total Corbion PLA method	≤ 0.5%
Water / moisture	Coulometric Karl-Fischer	≤ 400 ppm
Melting temperature	DSC	175°C
Glass transition temperature	DSC	60°C
Mechanical properties	Method	Typical value
Tensile modulus	ISO 527-1	3500 MPa
Tensile strength	ISO 527-1	50 MPa
Elongation at break	ISO 527-1	≤ 5%

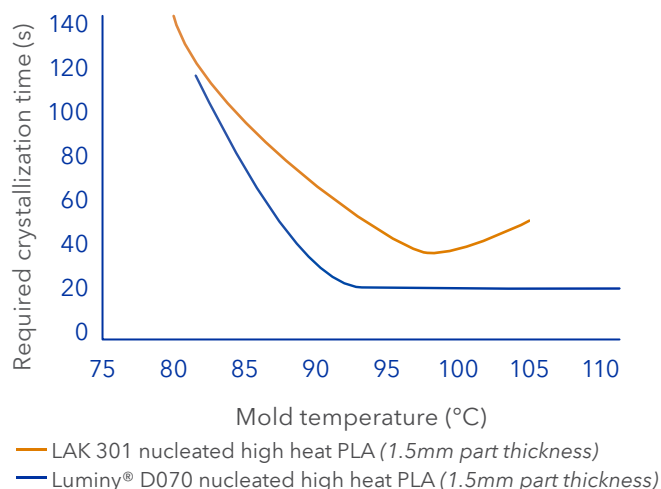
¹ Typical properties, not to be interpreted as specifications

NUCLEATING EFFECT

For crystalline resins, formulations containing PLA homopolymers are recommended to include 3-7% nucleating agent Luminy® D070 and using a 90-100°C mold. The nucleating effect of Luminy® D070 is shown in the graph on the right.

PROCESSING INFORMATION & RECOMMENDATIONS

- Extrusion:** Melt blending of PLA homopolymers and Luminy® D070 can be done on conventional compounding extrusion equipment and can be used as neat resin or as part of a compound to further optimize overall material properties. A co-rotating twin-screw extruder with a minimum L/D ratio of 28 is preferred.
- Injection Molding:** Melts of PLA homopolymers and 3-7% Luminy® D070 can be processed on conventional injection molding equipment using a hot mold of 90-110°C.



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MOISTURE & PRE-DRYING

It is recommended to dry Luminy® D070 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.

PACKAGING & STORAGE CONDITIONS

Luminy® D070 is available in 700 kg aluminum-lined octabins 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® PDLA D070 has been certified compostable by TUV Austria (OK Compost S478) and by European Bioplastics (Seedling 7W2030) up to a thickness of 2.3 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® D070 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® D070 is certified 100% biobased according to ASTM D6866 under the USDA Biopreferred program.



FOOD CONTACT STATUS

In the European Union, Luminy® PDLA 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® PDLA. 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.

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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