Corbion's Luminy® portfolio includes a number of PLA neat resin grades based on stereochemically pure monomers. The portfolio includes products in four categories:

- High heat PLA for injection molding (L105, L130),
- High heat PLA (L175) and standard PLA (LX175) for extrusion/thermoforming,
- High heat PLA (L130, L175) and standard PLA (LX175) for fiber spinning,
- PDLA as a nucleating agent for high heat PLA (D070) and PDLA in medium viscosity (D120).

Luminy® neat PLA resins from Corbion are compliant with the most relevant regulations and requirements related to bioplastics:

- Approved for use in food contact applications (EU Framework Regulation EC No. 1935/2004 and No. 10/2011),
- Compliant with EN13432 standard for industrial composting,
- Biobased content of 100%,
- REACH compliant,
- Reduced carbon footprint - peer reviewed LCA study available.
- Made from European sugar beet and Thai sugarcane: these are always GMO-free crops.

[Image: Luminy® PLA portfolio from Corbion]

Biobased
Reduced carbon footprint
Multiple end-of-life options
Proven in durable applications
Luminy® PLA neat resins

The Luminy® portfolio of neat PLA resins are available in a range of PLA categories and viscosities (see fig. 2 and table below).

**High heat PLA**

High heat PLA resins in the Luminy® portfolio 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® PLA L105** is a high flow resin suitable for injection molding.
- **Luminy® PLA L130** is a medium flow resin suitable for injection molding and fiber spinning.
- **Luminy® PLA L175** is a high viscosity resin suitable for film extrusion, thermoforming or fiber spinning.

**Standard PLA**

- **Luminy® PLA LX175** is a high viscosity, amorphous, transparent resin, suitable for film extrusion, thermoforming or fiber spinning.

**PDLA**

PDLA, when combined with high heat PLA, will yield a compound that combines good heat resistance with excellent mechanical properties and a reduced processing cycle time (see figure 3). Typical nucleated formulations should include 3-7% PDLA.

- **Luminy® PDLA D070** is a general purpose nucleating agent for PLA homopolymer resins.
- **Luminy® PDLA D120** is a medium viscosity PDLA resin.

### Table: Luminy® neat PLA properties

<table>
<thead>
<tr>
<th>Application</th>
<th>Density (g/cm³)</th>
<th>Optical purity</th>
<th>Melting temperature (Tm) (°C)</th>
<th>Glass transition (Tg) (°C)</th>
<th>Pre-drying before processing</th>
<th>Tensile modulus (MPa)</th>
<th>Tensile strength (MPa)</th>
<th>Elongation at break (%)</th>
<th>Impact (Charpy notch, 23°C) (kJ/m²)</th>
<th>Heat (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>L105</strong></td>
<td>1.24</td>
<td>&gt;99% L</td>
<td>175</td>
<td>57</td>
<td>Yes</td>
<td>3500</td>
<td>50</td>
<td>&lt;5%</td>
<td>&lt;5</td>
<td>55 - 60</td>
</tr>
<tr>
<td><strong>L130</strong></td>
<td>1.24</td>
<td>&gt;99% L</td>
<td>175</td>
<td>57</td>
<td>Yes</td>
<td>3500</td>
<td>50</td>
<td>&lt;5%</td>
<td>&lt;5</td>
<td>55 - 60</td>
</tr>
<tr>
<td><strong>L175</strong></td>
<td>1.24</td>
<td>&gt;99% L</td>
<td>175</td>
<td>57</td>
<td>Yes</td>
<td>3500</td>
<td>50</td>
<td>&lt;5%</td>
<td>&lt;5</td>
<td>55 - 60</td>
</tr>
<tr>
<td><strong>LX175</strong></td>
<td>1.24</td>
<td>&gt;99% L</td>
<td>175</td>
<td>57</td>
<td>Yes</td>
<td>3500</td>
<td>50</td>
<td>&lt;5%</td>
<td>&lt;5</td>
<td>55 - 60</td>
</tr>
<tr>
<td><strong>D070</strong></td>
<td>1.24</td>
<td>&gt;99% D</td>
<td>175</td>
<td>57</td>
<td>Yes</td>
<td>3500</td>
<td>50</td>
<td>&lt;5%</td>
<td>&lt;5</td>
<td>55 - 60</td>
</tr>
<tr>
<td><strong>D120</strong></td>
<td>1.24</td>
<td>&gt;99% D</td>
<td>175</td>
<td>57</td>
<td>Yes</td>
<td>3500</td>
<td>50</td>
<td>&lt;5%</td>
<td>&lt;5</td>
<td>55 - 60</td>
</tr>
</tbody>
</table>

**Fig 2. Luminy® high heat PLA compared to standard PLA**

**Fig 3. Effect of nucleating package and mold temperature on crystallization time**

Corbion is the global market leader in lactic acid, lactic acid derivatives and lactides, and a leading company in emulsifiers, functional enzyme blends, minerals and vitamins. For the plastics industry, Corbion offers PLA resins for general purpose and high performance bioplastics. PLA (Poly Lactic Acid) is a biobased plastic with a low carbon footprint and is used in packaging, disposables, fibers, electronics and automotive markets. Corbion operates 11 production plants, in the USA, the Netherlands, Spain, Brazil and Thailand, and markets its products through a worldwide network of sales offices and distributors.

---

**Interested in our solutions for PLA bioplastics? Go to corbion.com/bioplastics**

© Copyright 2016 Corbion. All rights reserved. No part of this publication may be copied, downloaded, reproduced, stored in a retrieval system or transmitted in any form by any means, electronic, mechanical, photocopied, recorded or otherwise, without permission of the publisher. No representation or warranty is made as to the truth or accuracy of any data, information or opinions contained herein or as to their suitability for any purpose, condition or application. None of the data, information or opinions herein may be relied upon for any purpose or reason. Corbion disclaims any liability, damages, losses or other consequences suffered or incurred in connection with the use of the data, information or opinions contained herein, in addition nothing contained herein shall be construed as a recommendation to use any products in conflict with existing patents covering any material or its use.