TotalEnergies Corbion

Luminy®

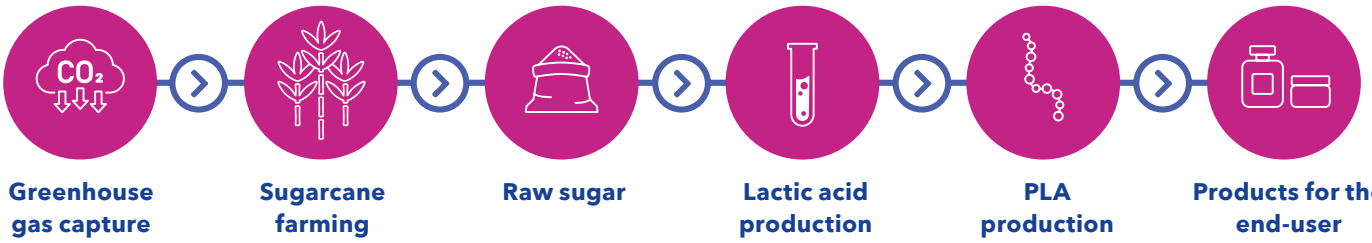
PLA bioplastics

Biobased • Recyclable • Compostable • Innovative

What is Luminy® PLA?

Luminy® PLA (Polylactic Acid) is a 100% biobased and biodegradable plastic, made from ethically farmed sugarcane. It offers a significant reduction in carbon footprint compared to conventional plastics. PLA is being used in packaging, food serviceware, nonwovens, 3D printing, and consumer goods, and is increasingly becoming the material of choice for more durable applications. Products made with Luminy® are industrially compostable and can be mechanically or chemically recycled, contributing to a circular economy.

How is Luminy® PLA made?



Why Luminy® PLA?

At TotalEnergies Corbion we believe everyday products can contribute to a sustainable and circular economy. That is why we made Luminy® PLA bioplastics, offering 100% biobased, recyclable, and industrially compostable solutions across industries.

- **100% biobased with multiple end-of-life options**
- **Highly efficient use of feedstocks**
- **Available on an industrial scale**
- **Sustainable alternative to conventional plastics**
- **Reduces carbon footprints**

100% Biobased

75,000-ton production / year

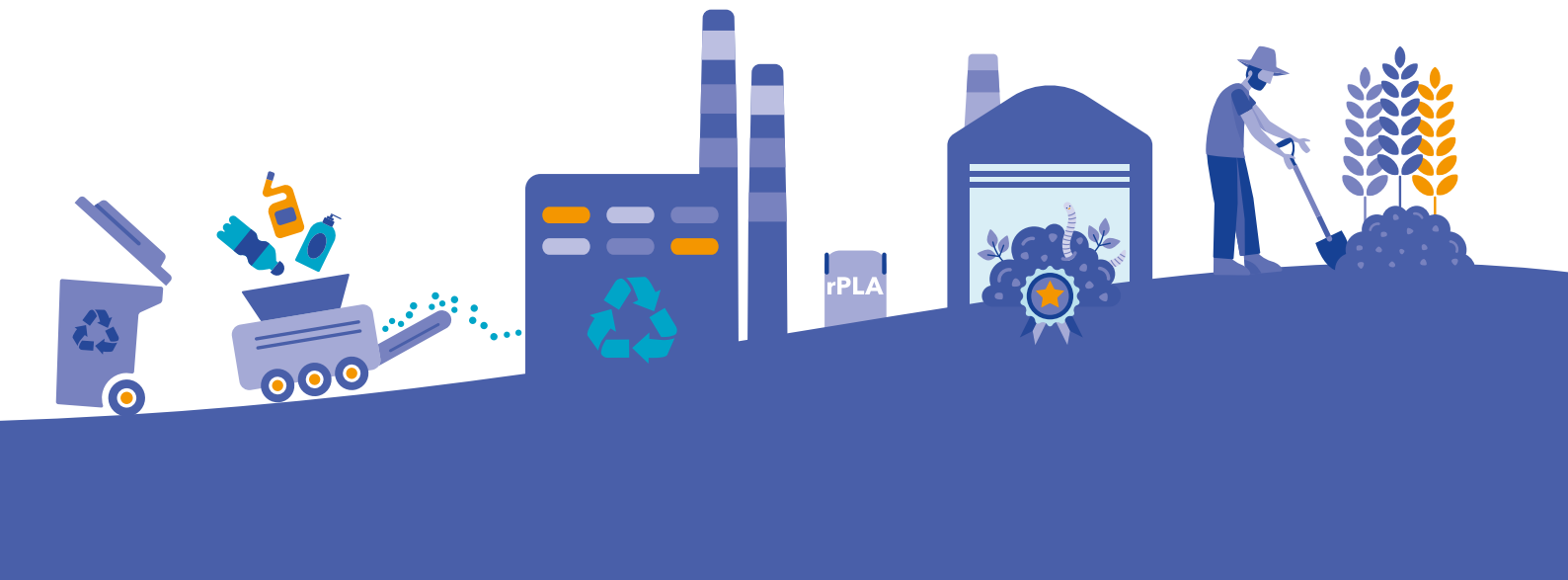
Advanced recycling of PLA since 2021

Industrially compostable

Compliant with standards & regulations

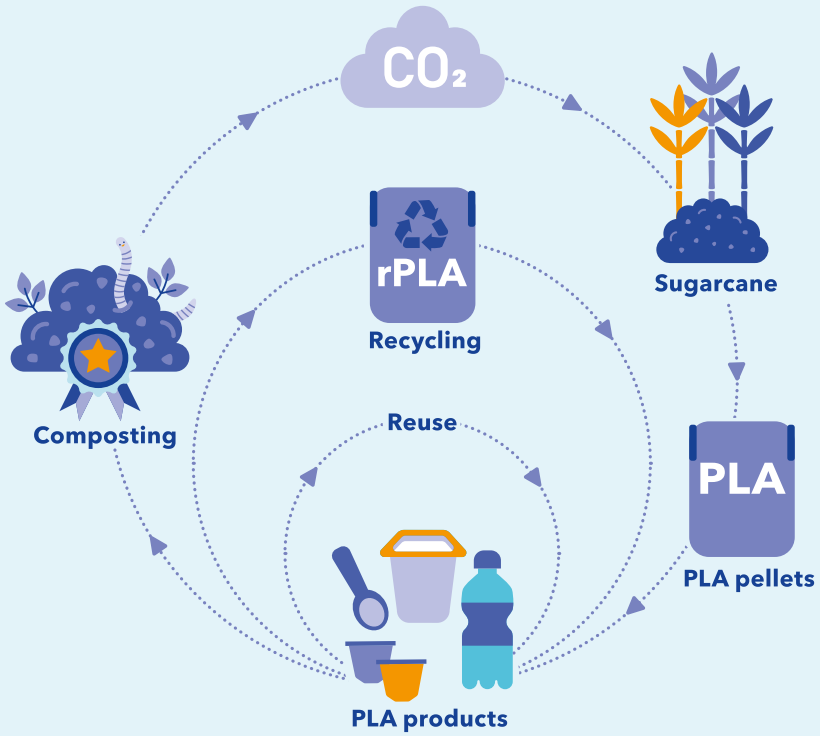
Luminy® neat resins are compliant with the relevant regulations and standards related to bioplastics:

- Approved for use in food contact applications in EU (EC No. 10/2011), USA (FDA 21 CFR) and China (GB 9685-2016 and GB4806.7-2023)
- Certified with EN13432 and ASTM D6400 standards for industrial composting
- Biobased content of 100% according to EN16785-1 and ASTM D6866
- REACH compliant
- Made from GMO-free crops



PLA and the circular economy

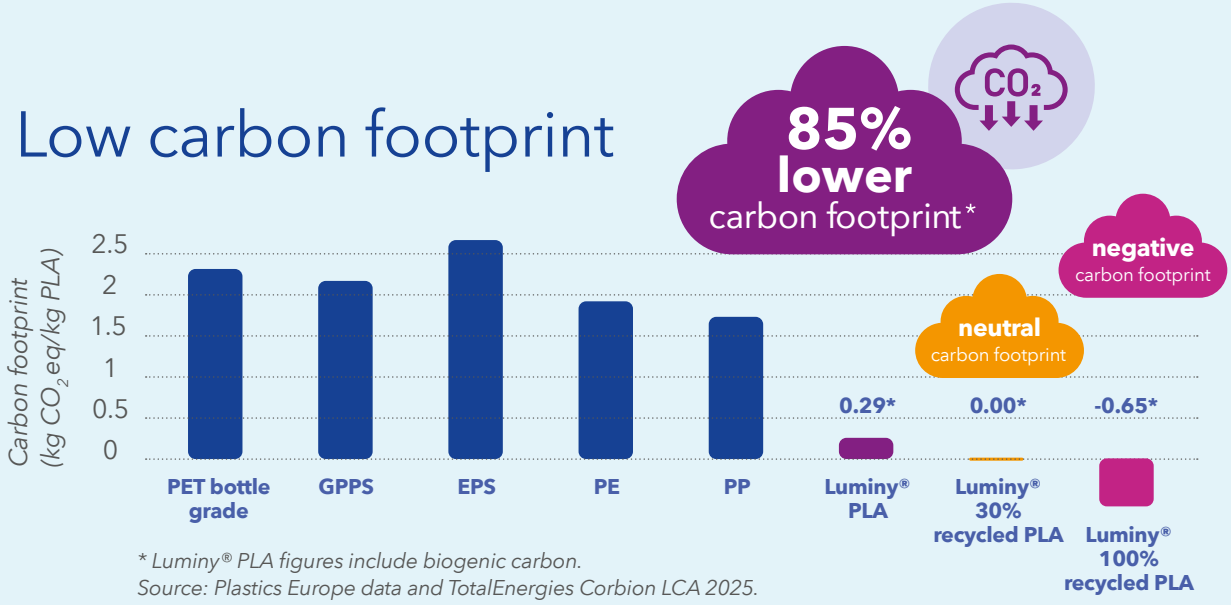
In the circular economy, waste streams and products at their end-of-life serve as the foundation for creating new products rather than being discarded. This more comprehensive, sustainable approach replaces the linear economy with a circular, biobased economy where products are produced from sustainable, natural resources and are reused and recycled as much as possible. At their end-of-life, these products then have a range of options to transform them back into feedstock for new, added value product life cycles.



Circular end-of-life options tailored to application and regional infrastructure

- **Anaerobic digestion**
- **Chemical recycled feedstock recover**
- **Composting biodegradation**
- **Incineration with renewable energy recovery**
- **Mechanical recycling**

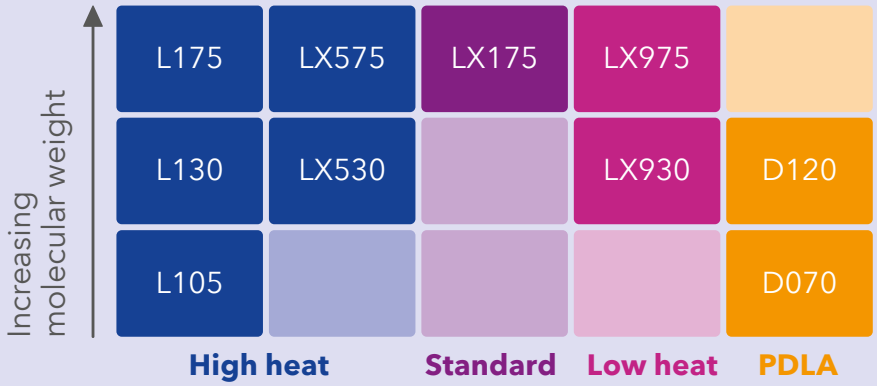
Low carbon footprint



** Luminy® PLA figures include biogenic carbon.*
Source: Plastics Europe data and TotalEnergies Corbion LCA 2025.

Luminy® PLA portfolio

Our range of specially developed high-performance bioplastics



Recycled Luminy® PLA is available in all grades at 30% or 100% recycled content.

			PLA								PDLA	
			L105*	L130*	L175*	LX530	LX575	LX175	LX930	LX975	D070	D120
Applications	Injection moulding		•	•								•
	Fiber spinning			•	•	•		•	•			•
	Extrusion /thermoforming				•		•	•		•		•
	Nucleating agent										•	
Physical	Density	g/cm3	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
	Optical purity	% isomer	>99%L	>99%L	>99%L	98%L	98%L	96%L	90%L	88%L	>99%D	>99%D
Processing	MFI (Flow, 210°C/2.16 kg)	g/10min	70	23	8	23	7	6	18	10	>100	23
	MFI (Flow, 190°C/2.16 kg)	g/10min	30	10	3	10	3	3	8	4	>50	10
	Melting temperature (T_m)	°C	175	175	175	165	165	155	130	130	175	175
	Glass transition temperature (T_g)	°C	60	60	60	60	60	60	60	60	60	60
	Pre-drying before processing	yes/no	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mechanical	Tensile modulus	MPa	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
	Tensile strength	MPa	50	50	50	50	50	45	40	40	50	50
	Elongating at break	%	<5%	<5%	<5%	<5%	<5%	<5%	<5%	<5%	<5%	<5%
Impact	Charpy notched, 23°C	kJ/m2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Heat**	HDTB (amorphous)	°C	60	60	60	60	60	60	60	60		
	HDTB (crystalline)	°C	105	105	105							

*Values listed are typical values, not to be interpreted as specifications. * Values listed are for resins in crystalline state, for more detailed information please refer to specific datasheets. ** HDT B, 0.45MPa, flatwise. HDT depends on processing conditions. For crystalline resins, formulation included 3 - 7% nucleating agent (Luminy ® D070) and molding took place in a 90 - 100°C tool*

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 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 L175 is a high viscosity resin suitable for film extrusion, thermoforming, or fiber spinning.

Luminy® PLA L130 is a medium flow resin suitable for injection molding and fiber spinning.

Luminy® PLA L105 is a high flow resin suitable for thin-wall injection molding.

Luminy® PLA LX575 is a high viscosity resin suitable for extrusion processes.

Luminy® PLA LX530 is a medium flow fiber-grade resin suitable for staple fiber or spunbond applications.

Standard PLA

Luminy® PLA LX175 is a high viscosity, amorphous, transparent resin, suitable for film extrusion, thermoforming, or fiber spinning. Also used to add strength to PBAT/starch compounds.

Low heat PLA

Luminy® PLA LX975 is a high viscosity resin suitable for use as a heat-seal layer in film applications.

Luminy® PLA LX930 is a medium flow resin suitable for use as low melting component in sheath-core configuration.

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. Typical nucleated formulations should include 3-7% PDLA.

Luminy® PDLA D120 is a medium viscosity PDLA resin for use in full stereocomplex PLA compounds.

Luminy® PDLA D070 is a general purpose nucleating agent for high heat PLA resins.

Collaboration

From product development to end-of-life

Across the value chain, our scientists and experts collaborate closely with partners to accelerate the adoption of PLA bioplastics, transforming industries and fostering a more sustainable future.

The TotalEnergies Corbion team offers:

- **Trusted guidance and innovation**
- **Seamless technical implementation**
- **Strategic market partnership**

Solutions

Rigid packaging

- High stiffness
- Ease of printing
- Good transparency
- Excellent oil/grease resistance
- Good flavor barrier

Food serviceware

- Food contact approved
- Good heat resistance
- Zero flavor transfer

Flexible packaging

- Good transparency
- Excellent dead-folding & twist properties
- Good grease/oil resistance
- High aroma barriers

Fibers & nonwovens

- Seamlessly compatible with the most common conversion technologies for fiber and nonwovens

Durable goods

- Good processability
- Great scratch resistance
- Dimensional stability
- High gloss

3D Printing

- Enables fast printing speed
- Good layer adhesion
- Dimensional stability and accuracy

About TotalEnergies Corbion

TotalEnergies Corbion is a global leader in driving sustainable innovation with Poly Lactic Acid (PLA), reducing carbon footprints while fostering circularity. The biobased nature and compostability of our PLA mean it has a lower carbon footprint while also contributing to the circular economy through mechanical and chemical recycling. The 50/50 joint venture between TotalEnergies and Corbion, headquartered in the Netherlands, operates a cutting-edge PLA facility in Rayong, Thailand. Through the application of PLA across various sectors and collaboration throughout the value chain, TotalEnergies Corbion drives widespread adoption of bioplastics, envisioning a future where it revolutionizes industries and nurtures a healthier planet.

www.totalenergies-corbion.com

Our certifications

Throughout our communications, unless otherwise specified, the terms 'biobased' and 'compostable' refer to the EN16785-1 and EN13432 standards respectively. It is the responsibility of the article producer to ensure that claims on final products are substantiated by testing against the relevant standards. Check your locally available end-of-life infrastructure to ensure that legitimate end-of-life claims are made on the final product.