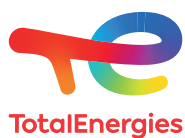


PLA bioplastics for a brighter future

Biobased • Recyclable • Compostable • Innovative



| TotalEnergies Corbion

TotalEnergies Corbion is a global technology leader in Poly Lactic Acid (PLA). PLA is a biobased and biodegradable polymer made from annually renewable resources, offering a reduced carbon footprint versus many traditional plastics.

Why bioplastics?



Friendly to our planet

Bioplastics made from annually renewable biomass offer a reduced carbon footprint and reduce our dependency on fossil-based resources. They also offer multiple end-of-life options.



Positive business impact

Consumers are becoming increasingly aware of their impact on our planet and favor more environmentally friendly alternatives.

Why TotalEnergies Corbion?



World leading PLA producer

TotalEnergies Corbion has mastered the production technology to make high purity, high performance PLA resins at industrial scale in our 75 kTpa production plant.



Comprehensive & global portfolio

The Luminy® portfolio offers products tailored to a broad range of markets and applications. Luminy® is available from warehouses across the globe. With sales offices on every continent, we are always close by to help you with your application development.



Advanced technology and R&D

At TotalEnergies Corbion, we are committed to the future of PLA. We are driving the breakthrough into high heat PLA and dedicated R&D will continue to deliver PLA with improved properties and processing economics.



Why PLA?

Biobased with multiple end-of-life options

PLA resins are made from renewable resources and are 100% biobased according to EN16785-1. At the end of its useful life, PLA applications can be mechanically or chemically recycled. PLA is also compostable according to EN13432. Compostable applications such as bin liners help to divert valuable organic waste from landfill and incineration.



Highly efficient use of feedstocks

PLA is a highly efficient plastic: to make 1kg of PLA requires just 1.6 kg of sugar. Other types of bioplastics can require significantly more natural resources to produce the same amount of end-product.



Available on an industrial scale

PLA is commercially available at industrial volumes from multiple large-scale plants across the globe.

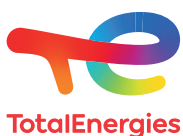


Proven applications

Commercial products made of PLA can already be found in a broad range of established markets. Whether you are interested in molded parts, film, foam, 3D printing or fiber, just ask us for application development support.

Luminy® recycled rPLA

The Luminy® recycled PLA grades boast the same properties, characteristics and regulatory approvals as virgin Luminy® PLA, but are partially made from post-industrial and post-consumer PLA waste. Using rPLA can contribute to meeting the recycled content targets of brand owners.



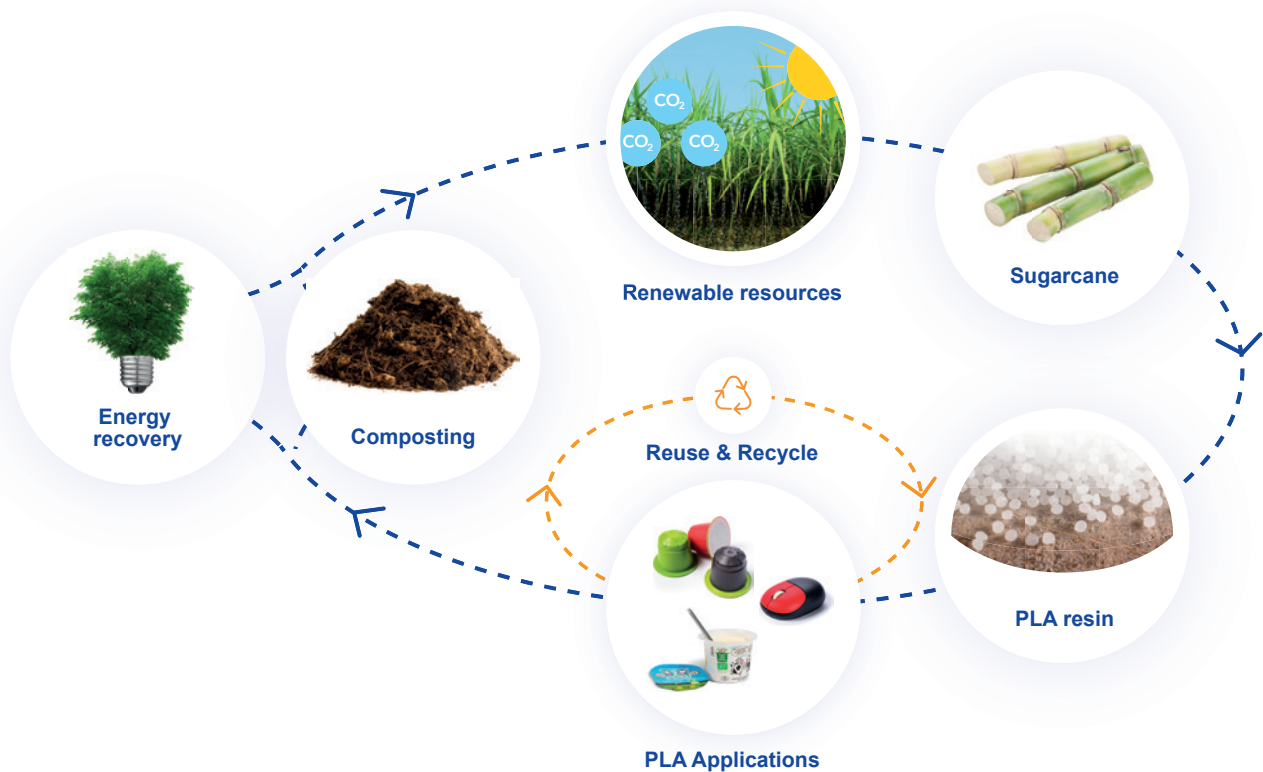
| PLA and the circular economy

In the circular economy, so-called 'waste streams' and products at their 'end-of-life' form the basis for new products, instead of being disposed of. 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.

Multiple Circular end of life options (dependent on application and regional infrastructure):

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

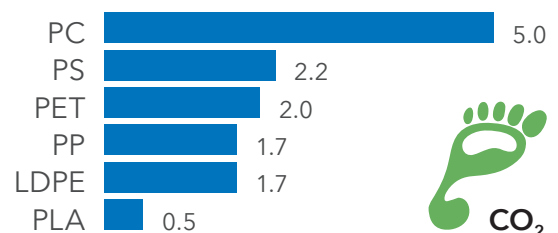


| Low carbon footprint

PLA bioplastics offer a significantly reduced carbon footprint versus traditional oil-based plastics. This is important for the health of our planet and is a growing concern amongst consumers, who are examining the sustainability aspects of their purchases ever more critically. As media attention increases and regulatory activity gains momentum, biocontent in plastic will become a more and more relevant issue for producers to address.

Emissions from production of common polymers

*(kg CO₂ eq per kg of polymer - cradle to gate)



*Source: www.lca.plasticseurope.org & TotalEnergies Corbion

High heat PLA technology

TotalEnergies Corbion has developed a range of high heat PLA compounds. This opens up a multitude of possibilities for applications that require improved heat resistance, such as coffee cups and lids, tea bags and coffee capsules.



Standard PLA
Coffee at 100°C



Luminy® high heat PLA
Coffee at 100°C

Luminy®

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TotalEnergies Corbion's Luminy® portfolio includes a number of PLA products tailored to specific market needs and conversion processes, including:

- High heat PLA
- Standard PLA
- PDLA

Markets & applications



Packaging & disposables

Yoghurt pots, coffee cups & lids, disposable serveware.

- Transparent
- Compostable
- Biobased
- Recyclable



Automotive

For interiors & under-the-hood parts.

- High heat resistance
- Durable
- Hydrolytic stability



3D printing & consumer products

Injection molded casings & housings.

- High heat resistance
- Excellent surface appearance
- Durable
- Good impact resistance



Fibers & non wovens

Fibers for apparel, wipes, diapers and technical fibers & filters.

- High heat resistance
- Good breathability
- Soft & tactile feel
- Biodegradable/Compostable



Sustainable agricultural practices

TotalEnergies Corbion's approach to a sustainable supply chain and responsible sourcing is founded on principles of ethical business practices, human and labor rights and environmental protection. Our key agricultural material is raw sugar from cane that is grown in Thailand. A code of conduct for sustainable sourcing of sugarcane describes our expectations of our cane sugar suppliers to fulfill our responsible sourcing commitment.

The cane sugar code of conduct is applicable to all of our cane sugar suppliers and is embedded in our supplier qualification process. The code is publicly available.

At TotalEnergies Corbion, we offer our customers PLA produced from GMO-free feedstocks.

Bonsucro

Bonsucro is a global, non-profit, multi-stakeholder organization founded by WWF in 2005 to advance a more economically, environmentally, and socially responsible sugarcane sector. The Bonsucro Production Standard covers the following 5 key principles: obey the law, respect human rights and labor standards, manage input, production and processing efficiencies to enhance sustainability, actively manage biodiversity and ecosystem services and lastly, continuously improve key areas of the social, environmental and economic sustainability.

Luminy® PLA made from Bonsucro certified cane sugar is available for those customers that require it.

About TotalEnergies Corbion

TotalEnergies Corbion is a global technology leader in Poly Lactic Acid (PLA) and lactide monomers. PLA is a biobased and biodegradable polymer made from annually renewable resources, offering a reduced carbon footprint versus many traditional plastics. The Luminy® PLA portfolio, which includes both high heat and standard PLA grades, is an innovative material that is used in a wide range of markets from packaging to consumer goods, fibers and automotive. TotalEnergies Corbion, headquartered in the Netherlands, operates a 75,000 tons per year PLA production facility in Rayong, Thailand. The company is a 50/50 joint venture between TotalEnergies and Corbion.

www.totalenergies-corbion.com

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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.

