



Biorenewable Insights: PLA

PLA is one in a series of reports published as part of NexantECA's 2022 Biorenewable Insights program.

Overview

Poly(lactic acid) (PLA) is a biopolymer derived from lactic acid, which in turn, is commercially produced from the fermentation of sugar feedstocks.

In recent years, the issue of plastic waste and pollution have gained much attention globally, governments and major companies including various stakeholders are now increasingly stepping up efforts to improve their sustainability profiles and green credentials.

PLA is made from biorenewable raw materials with industrial compostability properties; it has strong potential to displace traditional fossil fuel-based polymers in certain applications such as packaging, although the PLA market is still growing from a relatively small base.

This report aims to answer the following strategic questions:

- What are the commercially available technologies to produce lactic acid and PLA? Who are the key technology holders and producers?
- What are the recent industry developments in lactic acid and PLA?
- On a high-level basis, what are the cost competitiveness between existing PLA technologies?
- What are the strategic and commercial implications of PLA on the overall plastics industry as a whole?

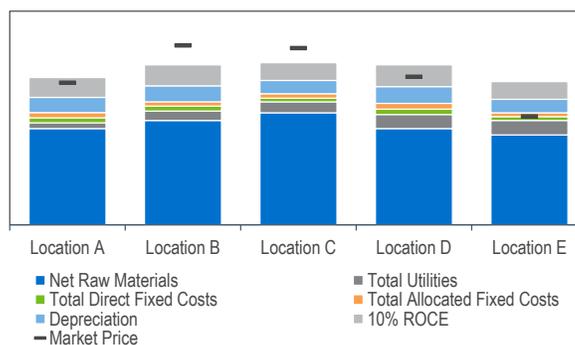
Technologies

This report covers lactic acid and/or PLA technologies by existing and potential major licensor/producers:

- NatureWorks
- Corbion/TotalEnergies Corbion
- thyssenkrupp
- Galactic/Futerra
- Sulzer
- Other key players (e.g. Zhejiang Hisun, Henan Jindan, COFCO, etc.)

Process Economics

Estimates of overall competitiveness for lactic acid, lactic acid esters and PLA technology are presented for five locations (USGC, Brazil, Western Europe, China and Southeast Asia). Regional pricing is set on Q1 2022 basis. Different sugar feedstocks have been assumed for each region based on the availability of major carbohydrate crop (e.g. corn dextrose in USGC and China, cane sucrose in Brazil and Southeast Asia, beet sucrose in Western Europe).



Commercial Impact

This report covers the strategic implications of PLA developments on the overall plastics industry.

There is considerable potential for PLA market growth, driven by stricter environmental regulations, rising push from consumers for improved sustainability of plastics and packaging. However, the growth of PLA may be hindered by its high costs relative to traditional plastics, although producers are continuously improving their respective processes to achieve production costs reduction.

Despite the hurdles it faces, PLA is a leading alternative for many single-use plastics applications and is expected to continue to gain market share because of its environmental attributes and desired properties in selected applications.



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Technology and Costs comprises the Technoeconomics – Energy & Chemicals (TECH) program, the Biorenewable Insights program (BI), and the new Cost Curve Analysis. These programs provide comparative economics of different process routes and technologies in various geographic regions.

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