



TECH 2022S1: Polyester Polyols

Polyester Polyols is one in a series of reports published as part of NexantECA's 2022 Technoeconomics – Energy & Chemicals (TECH) program.

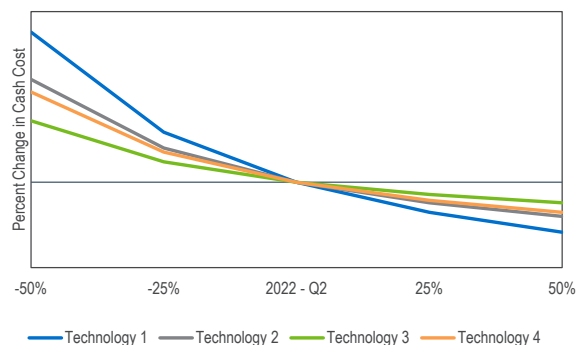
Overview

The ability to produce a diverse range of polyester polyols (aliphatic or aromatic) allows them to be utilized in various applications. The largest end-use of polyester polyols is as a precursor to polyurethanes. Polyester polyols chemistry can be altered to provide different properties – for instance, highly branched polyester polyols give rigid foams whereas, less branched polyester polyols give polyurethane with good flexibility and low chemical resistance.

Most polyester polyols are consumed in CASE (Coatings, Adhesives, Sealants, Elastomers) applications and the ability to create a cellular structure with polyurethane also allows for their use in rigid foams for insulation (construction and appliances industry).

This report provides an overview of technological, economic and market aspects of the polyurethane industry.

Cost Sensitivity of Polyester Polyol to Plant Scale
(US\$, United States, 2Q 2022)



The following issues are addressed in the report:

- What are the major types of polyester polyols and what are the formulations and technologies required to produce them?
- How much does it cost to produce each type of polyester polyol and what are the key cost sensitivities?
- What are the key end-uses and market drivers for polyester polyols currently?
- Which is the most carbon intensive processes from the analyzed technologies?

Commercial Technologies

NexantECA has analyzed the process technologies required to produce aromatic and aliphatic polyester polyols as well as the specific formulation of raw materials required for each. An introduction is made to the polyester polyols value chain and the key feedstocks required for the production of polyester polyols.

Process Economics

The economic analysis provides an overview of production costs for four different polyester polyols in Western Europe, the United States and China in 2Q2022.

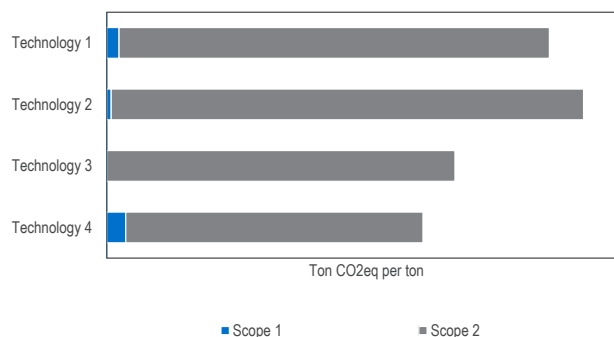
Commercial Overview

Polyester polyols are available in a range of forms which are then consumed for various uses in the polyurethane industry as outlined in this report. The largest sources of demand for polyurethane are from the construction, appliance, automotive, furniture and bedding markets. An evaluation of the production capacities per type of polyester polyol across the globe was conducted in the report.

Carbon Intensity

NexantECA has analyzed the scope 1 & 2 emissions associated with the evaluated technologies. Scope 3 emissions are excluded in this analysis.

Carbon Intensity Comparison
(Scope 1 and 2, United States, 2022)



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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.

NexantECA serves its clients from over 10 offices located throughout the Americas, Europe, the Middle East, Africa, and Asia.

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