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## Technology and Costs

# TECH 2019-3: Polypropylene

**Polypropylene is one in a series of reports published as part of Nexant's 2019 Technoeconomics – Energy & Chemicals (TECH) program.**

## Overview

Polypropylene (PP) is one of a number of polyolefins that are commodity plastics, which are used globally in a wide range of market segments including packaging, consumer products, automotive, and building and construction.

This TECH report provides an updated overview of the technological, economic, and market aspects for polypropylene. The following issues are addressed in this report:

- What are the major technologies for polypropylene production and how do they differ? Which technologies are available for license?
- How do the process economics compare across processes and different geographic regions?
- Who are the top 10 producers of polypropylene and how will this change over the next five years?
- What is the current market environment for polypropylene? How does its growth compare with other polyolefins? Where will new capacity be added?

## Commercial Technologies

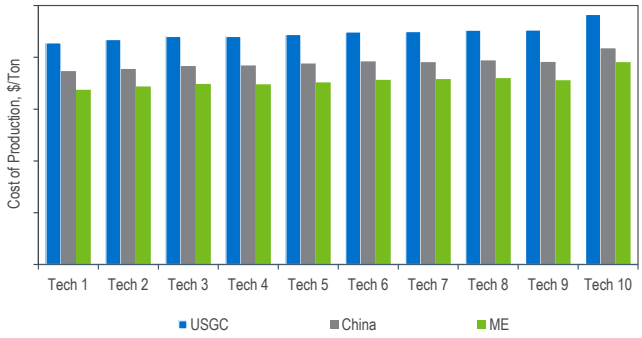
Polypropylene technologies can be grouped into three main categories: gas phase, bulk, and slurry, which generally refers to the first reactor system, as all state-of-the-art processes employ either a gas phase or bulk reactor system for the production of homopolymer and random copolymer, followed by a gas phase reactor system for the sequential production of impact copolymer.

Technologies developed by Borealis (BORSTAR), ExxonMobil, Grace (UNIPOL), INEOS (INNOVENE), Japan Polypropylene (HORIZONE), Lummus Novolen Technology (NOVOLEN), LyondellBasell (SPHERIPOL and SPHERIZONE), Mitsui (HYPOL), and Sumitomo are described and analyzed, with a focus on recent developments. A list of licensees is included for each technology.

## Process Economics

Detailed cost of production estimates for various technologies are presented for USGC, coastal China, and Middle East locations. Estimates are developed for homopolymer and impact copolymer polypropylene resins.

**Regional Cost of Production Comparison for Impact Copolymer Polypropylene Resins**




## Commercial Overview

Global polypropylene consumption was 71 million tons in 2018. Injection molding and fiber applications are the major end-uses, followed by film and other extrusion (including pipe and conduit, thermoform packaging, and sheet). With new global capacity, demand growth of 4.6 percent per year through 2023 is expected. An overview of the supply, demand, and trade of polypropylene on a global and regional (North America, Western Europe, and Asia Pacific) basis is provided in this TECH report.

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