

Thermal Conversion Technologies - An Answer to Recycling Plastic Waste?



Background

For many years, plastics have been recycled using conventional (i.e., mechanical) recycling methods. Since increasing recycling rates is a priority as an approach to reduce plastic pollution, new focus is being placed on advanced recycling technologies that can complement mechanical recycling.

Thermal conversion processes (mainly pyrolysis and hydrothermal treatment) can process mixed plastics, a key problem for other recycling methods. These advanced recycling processes continue to gain momentum due to their ability to process hard-to-recycle plastics (including mixed plastics waste) and produce hydrocarbon products suitable for use as petrochemical feedstocks, by breaking down plastic waste.

Objective

The purpose of this report is to provide a strategic analysis of thermal conversion processes and how viable they are for olefins production from mixed plastics waste.

This detailed study examines the thermal conversion (i.e., pyrolysis and hydrothermal treatment) of mixed plastics waste by:

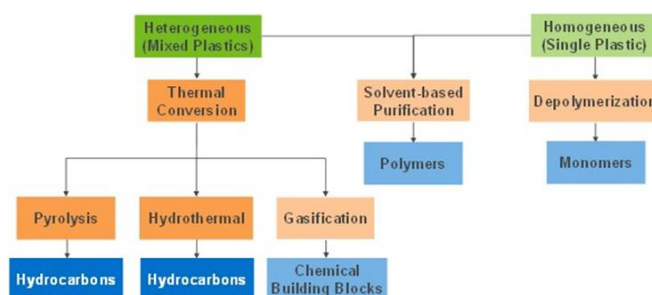
- Profiling thermal conversion technologies currently being used and considered for recycling of mixed plastics waste, including a ranking of these technologies
- Economic analysis of generic thermal conversion technologies and olefins production, including cost of production estimates and sensitivity analysis to key factors such as raw material pricing

This report incorporates expertise NexantECA has gained over many years of examining polymer technology developments as well as the knowledge gained during recent recycling studies. Thus, the information used to develop this report is derived from in-house sources as well as information provided by technology developers, conversations with experts in the area, and publicly available resources.

What is Included in the Report?

- High level profiles of pyrolysis and hydrothermal treatment technology developers
- A ranking of the profiled companies based on criteria such as:
 - Investments cost (ISBL)
 - Technology status
 - Feedstock flexibility
 - Product usefulness
 - Patent protection
- Overview of post-treatment of thermal conversion products
- Economics for pyrolysis and hydrothermal treatment products and ethylene from plastic-based products in 2Q 2022 for USGC, Western Europe, China, Japan, and Southeast Asia locations
- Carbon capture and sequestration analysis
- Delivered cost competitiveness to Western Europe
- Analysis of the carbon intensity of ethylene
- Strategic and business considerations (e.g., SWOT, crude oil price environment effect on thermal conversion profitability, potential applications for thermal conversion technologies, etc.)

Products from Advanced Recycling Processes





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