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## PERP 2016S8: Advances in Plastics Recycling

**Advances in Plastics Recycling” is one in a series of reports published as part of the 2016 Process Evaluation/Research Planning (PERP) Program.**

### Report Overview

There are several approaches to dealing with the problem of waste disposal. These include source reduction, recycling, incineration, and landfilling. Recycling is considered the best option to reducing the volume of solid waste, second only to source reduction. Recycling reduces landfill requirements and the consumption of virgin material resources. More importantly, the energy required to recycle many materials is substantially less than the energy consumed in producing them from virgin resources.

This PERP Report provides an overview of the various technologies used to recycle different types of polymers:

- Plastic bottles (PET and HDPE)
- Film (PE, PP and others)
- Foam (polyurethane, polystyrene)
- Fiber (PP, nylon, PET)
- PVC

The following issues are addressed in the report:

- What are the major steps involved in recycling plastic products? How do the chemical recycling processes compare with the mechanical recycling processes?
- Which companies are the major technology holders/equipment providers for recycling technologies?
- What is the cost of production of recycled products in the low price environment? Is the recycling business profitable?
- What are the major challenges in different recycling businesses?
- What are the end use applications for recycled resins? What are the recycling rates of the polymers in the major global regions?

### Recycling Technologies

The report focuses on secondary and tertiary recycling, which involve the conversion of post-consumer and post-industrial plastic waste into products with similar or lower quality, and into monomers for re-polymerization respectively. Plastic to fuel (PTF) technologies are also highlighted.

A qualitative comparison of physical and chemical recycling processes is provided where applicable, such as for nylon and polyurethane recycling. In addition, the report examines the strategic business considerations for entering each recycling business, including technology, economics and market aspects.

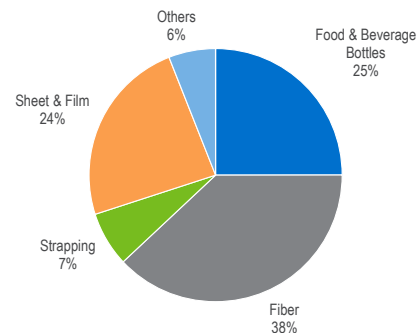
### Process Economics

Detailed cost of production estimates for plastics recycling technologies are presented, including a comparison of the cost of production of each technology with U.S. market prices in the second quarter of 2016. The economics of making synthetic crude from plastic waste are also evaluated.

### Commercial Market Review

The report provides an overview of the virgin and recycled market volumes and end use applications for PET bottles, PVC, polyethylene films, PP and nylon fibers, polyurethane and EPS foam in China, U.S. and Western Europe.

SAMPLE: U.S. RECYCLED PET END USE APPLICATIONS



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