Petroleum and Petrochemicals Economics Program: Petrochemical Market Dynamics

Polyester and Intermediates 2012

Polyester and Intermediates 2012 is one in a series of reports published annually as part of the Petroleum and Petrochemical Economics program.

This report provides an in-depth analysis of the polyester chain including:

- Purified Terephthalic Acid (PTA)
- Dimethyl Terephthalate (DMT)
- Ethylene Oxide (EO)
- Mono Ethylene Glycol (MEG)
- PET Melt Phase
- PET Bottle Grade

Note: *para*-Xylene, which is the main raw material for PTA and DMT is covered separately in the Aromatics Report

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Abstract

The PET chain continues to show great volatility in both demand and supply. External issues such as cotton pricing have recently come to the fore, creating a boom in demand for PET fibre and intermediates between 2010 and 2011. This factor contributed to a massive increase of fibre and PTA capacity, although cotton prices have already plummeted before most of the new capacity has come on-line.

Purified Terephthalic Acid (PTA)

Having been extremely short at some times over 2010 and 2011, the PTA market is already buckling under the weight of new capacity additions. Margins have plummeted below sustainable levels, leading to production cutbacks in some regions. Most of the capacity addition is consumers building very large plants in China. While much of the world's capacity is comprised of plants in the 300 000 - 600 000 tons per year range, the new units have capacities of up to 2.2 million tons per year. These new plants are likely to run at fairly high levels, and the smaller export-based plants in other regions will be most exposed to the oversupply, triggering the expected closure of some laggard plants.

Dimethyl Terephthalate (DMT)

The DMT market continues to contract, mainly as a result of non-integrated, DMT-based PET fibre producers exiting the market. Applications such as PBT production in Europe have a comparatively stable footing, although conventional PET production from DMT remains in inexorable decline. Teijin is developing its chemical PET recycling technology, which will produce DMT from PET fibre scrap in China. The DMT will then be consumed in a "closed loop" process to produce more fibre. Ethylene Oxide (EO)

Ethylene Oxide (EO)

Investments in other EO (ethylene oxide) derivatives such as ethanolamines, ethoxylates and glycol ethers are again underway. Producers basing sites close to market in regions such as China, and close to low-cost feedstock in areas such as the United States and Saudi Arabia.

Mono Ethylene Glycol (MEG)

The MEG market has not seen the same level of over-investment as PTA. Capacity addition in the Middle East has declined, and attention is focused on the numerous coal-based developments in China. So far, the coal/oxalate units have not been capable of producing fibre-grade purity MEG, and have run at low rates during the first years of operation. Higher rates and high purity have now been achieved, potentially opening the flood gates for a massive build of coal-based capacity in China.

PET Melt Phase

The PET bottle grade industry continues to evolve rapidly in terms of technology and capacity. Although consumption growth has dropped in the developed markets, there is a major capacity build underway in both Western Europe and the United States. The new capacity has a much greater focus on cost leadership, with most of the new projects co-siting with PTA, and several using single-step processes such as MTR. The new capacity is effectively directed at replacing imports from Asia and the Middle East, and another period of intense competition in the PET bottle grade market is therefore in prospect.

PET Bottle Grade

PET bottle resin demand has been undermined by lightweighting in recent years, whereby improvements in design and processing have allowed producers to radically decrease bottle weights. With some standard bottle weights dropping by up to 50 percent over the past ten years, lightweighting has offset growth in beverage consumption and substitution of other materials. The lightweighting and resultant cost savings are arguably a driver for the substitution for other materials.

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Chapter's 3 to 7 are segmented by geography and further segmented into three main sections:

- Consumption: Assesses historic and forecast consumption; forecasts are based on projections of end-use and economic activity in each region.
- Supply: Includes a list of all producers, their production capacity, location, etc., and discussion of the status of new projects.
- Supply, Demand and Trade: Provides historical analysis and forecasts to 2030 of consumption, production, imports/exports, inventory build-up/decline, capacity and capacity utilisation for each region.

This analysis will identify the issues shaping the industry, as well as provide an independent appraisal of the market.

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