



Ethylene is used in the manufacture of polyethylene (PE), polyester, polyvinyl chloride (PVC), polystyrene (PS) and ethylene oxide (EO), as well as fibres and other organic chemicals. PE accounts for 60% of global ethylene demand.

## SUPPLY/DEMAND

US ethylene inventories increased significantly in the fourth quarter of 2011 ahead of a busy turnaround season that includes the shutdown of up to 11 US crackers in 2012.

Ethylene inventories in the fourth quarter stood at 1.51bn lb (685,000 tonnes), more than twice the 645.9m lb in the same quarter of 2010, according to data from the American Fuel & Petrochemical Manufacturers (AFPM). Fourth-quarter ethylene stockpiles rose by 45% compared with 1.04bn lb in the third quarter, the group said.

US ethylene production also rose in the fourth quarter compared with a year earlier, climbing by 2.2% to 13.41bn lb (6.1m tonnes). However, fourth-quarter production was down by 2.4% from the third quarter, likely as a result of maintenance at two large crackers late in 2011.

## TECHNOLOGY

Commercial production of ethylene is done by steam cracking hydrocarbon feedstocks. Ethane and propane are the primary feedstocks in the US.

## OUTLOOK

US ethylene capacity could grow by around 27% in the next few years, driven by a boom in shale gas production that is expected to make the US one of the most competitive ethylene producers in the world. The capacity additions will come through new world-scale crackers, as well as restarts, expansions and debottlenecks.

Four producers are committed to building new world-scale crackers - Chevron Phillips Chemical, Shell Chemicals, Dow Chemical and Formosa Plastics. Chevron Phillips Chemical plans to build in Cedar Bayou, Texas, and Formosa will build in Point Comfort, Texas. Shell will select a location in the Northeast US, and Dow on the US Gulf Coast. These four new crackers will range at between 800,000 to 1.5m tonnes/year of capacity each and come on stream in 2016-2017.

Dow Chemical also plans to restart its 390,000 tonne/year cracker in St. Charles, Louisiana, by the end of 2012, while Westlake, LyondellBasell and INEOS are planning expansions or debottlenecks at existing sites.

The total additional capacity from these expansions are planned to come on line by 2014.

The new crackers, debottlenecks and expansions could add an estimated 7.2m tonnes/year of ethylene capacity to the US in five years. Total US capacity is now estimated at 26.6m tonnes/year.

Ethane, which accounts for around 60% of the US cracker feedstocks, will be the dominant feed of the new units that are being planned or expanded, keeping with the trend of a number of US crackers that have gone "light" in the past three years.

At least two more US units plan to increase feedstock flexibility in the next few months, including one cracker that will switch some of its naphtha furnaces to ethane during a turnaround in April.

It is estimated that ethane could account for as much as 70% of the US ethylene feedstocks by 2015.

*By William Lemos and Feliza Mirasol*



**Find out more about our olefins coverage, request a sample report >>**

