

Chem Systems' Process Evaluation/Research Planning program has published a new report, ***Detergent Alcohols (98/99S5)***.

Detergent range alcohols lie in the C₁₂-C₁₆ carbon number range, providing the primary feedstock for detergent intermediates for detergents manufactured in developed economies.

The global market for detergent alcohols was 1.47 million tons in 2000. Over the medium term demand growth will amount to around 3.1 percent per year. Currently global operating rates are sub-optimal and likely to fall further as very large capacity increases occur in 2002 (Shell, Sasol and Kao). The current downturn in the global economy (compounded by the unprecedented events of September 11, 2001) has resulted in reduced margins for all participants in the detergent alcohol's value chain.

Detergent alcohols are called "synthetic" and "natural" depending on raw material source. So-called synthetic alcohols are derived from ethylene either via alpha olefins and subsequent hydroformylation/hydrogenation (e.g., NEODOL™) or via Ziegler chain growth processes (e.g., ALFOL™). Alternatively synthetic alcohols can be produced from n-paraffins via PACOL™/OLEX™ process (to provide an olefin feedstock) followed by hydroformylation/hydrogenation (e.g., Sasol at Augusta). The figure on the next page illustrates the various routes to synthetic detergent alcohols. Natural alcohols are produced from natural oil components, e.g., from palm kernel, coconut and tallow. After fat splitting, cuts or individual oil fractions can be processed via esterification/hydrogenation (Kvaerner) or acid-hydrolysis and hydrogenation (Lurgi).

There is no simple answer as to which production route is more economic as both are strongly linked to feedstock price. Both ethylene and natural prices cycle for different reasons. The production costs of both natural and synthetic alcohols are comparable within the sensitivity ranges explored in this report. However, synthetic alcohols require back-integration, e.g., alpha olefin production for economic operation while natural producers need to handle the logistics of multiple natural oil feedstocks and selling/converting by-products, e.g., glycerol.

In order to compete in this market strategies are essential to position an alcohols producer in the value chain to be able to ride the economic cycle. Certain producers like Shell and Sasol are fully integrated from raw materials through alcohol production and downstream to

ethoxylates and sulfonates. Cost competitiveness and the correct market and technology strategy will be essential in order to ride out the likely storms ahead for this industry.

PETROCHEMICAL ROUTES TO SYNTHETIC ALCOHOLS

