



REPORT OVERVIEW

Subjects addressed

- A review and description of developing technologies for acrylic acid production using renewable feedstocks and new petroleum-based feedstocks
- Description of conventional propylene-based route to acrylic acid presently in commercial operation
- Economic analysis of the cash cost of production to produce acrylic acid using sugar or glycerol feedstock versus petrochemical sources
- Commercial evaluation for acrylic acid, commodity acrylates, and super absorbent polymers (SAP)

From Diapers to Paints- Is Bio-Acrylic Acid on The Way?

Acrylic acid and its esters are among the most versatile monomers for providing performance properties to a wide variety of polymers. The major application for acrylic acid is a feedstock for acrylate esters which are used in applications that include surface coating, adhesives and sealants, textiles, plastic additives, and paper treatment.

At the moment, the two-stage oxidation of propylene is now virtually the only route to crude acrylic acid in commercial operation. Ongoing developments by major producers in petroleum-based acrylic acid include those by Arkema, BASF, and Novomer.

However, in light of global oil prices having reached unprecedented levels, many acrylic acid producers and/or licensors are trying to deviate from petroleum-based feedstocks. Companies such as Arkema, Cargill, Genomatica, Metabolix, Nippon Shokubai, and OPX Biotechnologies are currently developing technologies that will produce acrylic acid and acrylates from renewable resources (such as sugar and glycerol) using biotransformation techniques.

Nexant has published a new multi-client report that provides technology and economic analyses for acrylic acid produced via renewable sources versus petrochemical sources (including propylene, propane, and ethylene oxide). The report also provides an overview of the technology available for commodity acrylates and super absorbent polymers (SAP), and economic comparisons of the production of these from acrylic acid and bio-acrylic acid.

The report, "From Diapers to Paints- Is Bio-Acrylic Acid on The Way?", is a comprehensive study which investigates, evaluates and compares the following routes:

Developing Bio-Based Acrylic Acid Technologies:

- From lactic acid
- From 3-hydroxypropionic acid (3-HP)
- From fumaric acid
- From biomass
- From glycerol

Developing Petroleum-Based Acrylic Acid Technologies:

- From propane
- From ethylene oxide

Conventional Acrylic Acid Technologies:

- From propylene
- From acetylene

Acrylic Acid Production Economics based on:

- Renewable feedstocks (biomass, sugar, and glycerol)
- Petrochemicals (propylene, propane, and ethylene oxide)
- Acetylene

This study investigates renewable feedstocks (such as sugar, glycerol, biomass, and PHA), as well as petroleum-based feedstocks (such as ethylene oxide, propane, and propylene).

Nexant's multi-client report will be useful to acrylic acid producers and end-users seeking to move into the world of renewables, as well as those who may be looking for alternative uses of renewable resources.

"From Diapers to Paints- Is Bio-Acrylic Acid on The Way?" provides an independent, unbiased assessment on selected acrylic acid technologies. These assessments are critical to acrylic acid producers and investors seeking to enhance their business by incorporating technologies based on renewable feedstocks.

Nexant® is a proprietary trademark of Nexant, Inc.

Contact: Marisabel Dolan, Consultant, Nexant, Inc.
44 South Broadway, 4th Floor, White Plains, NY 10601-4425
tel: +1 914 609 0342; **fax:** +1 914 609 0399
email: mdolan@nexant.com

www.chemsystems.com