

# Subscribe to NexantThinking™



## Special Report - Is Bio-Butanediol Here to Stay?

### Report Overview

#### Subjects addressed:

- A review and description of developing technologies for BDO production using renewable feedstocks
- Description of conventional routes to BDO presently in commercial operation
- Economic analysis of the cash cost of production to produce BDO using renewable resources versus conventional petrochemical routes
- Commercial evaluation for BDO, tetrahydrofuran, and  $\gamma$ -butyrolactone

The global butanediol (BDO) industry appears to be on the cusp of a technological revolution. Biological routes to BDO are being perfected which offer tremendous promise to new participants, but threaten to dramatically alter the business from the perspective of established producers. Indeed, the opportunities are of such great magnitude that even established participants are taking a hard look at bio-based routes. For example, Davy Process Technology is working with Myriant on ways that bio-succinic acid can be employed in Davy's well-established process to co-produce BDO/GBL/THF. Further, at least on paper, there may even be an advantage to bio routes in the Davy process as the process can potentially utilize filtered fermentation broth thus avoiding the costs associated with purification and recovery of succinic acid. Another example of an arrangement between bio-firms and established BDO producers is the Memorandum of Understanding between Genomatica and Mitsubishi Chemical to study bio-BDO and derivatives production in Asia.

Nexant published a multi-client report that analyzed developing technologies for the production of butanediol via renewable feedstocks, investigated renewable feedstock sources, and provided an economic comparison of renewable and conventional routes to butanediol.

The report, "*Is Bio-Butanediol Here to Stay?*", is a comprehensive study which investigates, evaluates, and compares the following routes:

#### Bio-Based BDO Technologies:

- From bio-succinic acid
- Direct fermentation of sugar substrates
- From polyhydroxyalkanoate (PHA)

#### Conventional BDO Technologies:

- From *n*-butane (via maleic anhydride)
- From acetylene
- From butadiene
- From propylene oxide
- From allyl alcohol

#### BDO Production Economics based on:

- Bio-succinic acid
- Directly from sugar substrates
- Conventional petrochemicals (*n*-butane via maleic anhydride, butadiene, propylene oxide, allyl alcohol and acetylene)

The study investigates renewable feedstocks (such as sugar, biosuccinic acid, biomass, and PHA), as well as traditional feedstocks (such as maleic anhydride, acetylene, butadiene, propylene oxide, and allyl acetate).

Nexant's multi-client report will be of interest to those seeking to move into the world of renewables, as well as those who may be looking for alternative uses of renewable resources. This report evaluates the technology, economics, and cost competitiveness of such processes compared to conventional petrochemical routes, providing an independent, unbiased assessment of such technologies. These judgments are critical to butanediol producers and investors seeking to enhance their business by incorporating technologies based on renewable feedstocks.

For further information or to purchase the "*Is Bio-Butanediol Here to Stay?*" report, please contact [STMC@nexant.com](mailto:STMC@nexant.com).

# NexantThinking™

The future of energy and chemicals

**NexantThinking** is a suite of advisory services and products with exclusive *focus* on the energy, chemicals and related industries. This includes a portfolio of multiclient programs, formerly known as ChemSystems®, which provides comprehensive reports, analysis and planning tools to support decision making with a focus on markets, economics and technology.

Global in scope, Nexant serves its clients from over 30 offices located throughout the Americas, Europe, the Middle East, Africa, and Asia.

**Subscribe to our thought leadership today and explore our products and services at:**

[www.nexant.com/nexant-thinking](http://www.nexant.com/nexant-thinking)



#### **Nexant Headquarters**

##### **Nexant, Inc.**

Tel: +1 415 369 1000  
101 2nd St Suite 1000  
San Francisco  
CA 94105-3651  
USA

#### **Americas**

##### **Nexant, Inc.**

Tel: +1 914 609 0300  
44 S Broadway, 4th Floor  
White Plains  
NY 10601-4425  
USA

#### **Europe, Middle East & Africa**

##### **Nexant Limited**

Tel: +44 20 7950 1600  
1 King's Arms Yard  
London EC2R 7AF  
United Kingdom

#### **Asia Pacific**

##### **Nexant Asia Limited**

Tel: +662 793 4600  
22nd Floor, Rasa Tower I  
555 Phahonyothin Road  
Kwaeng Chatuchak  
Khet Chatuchak  
Bangkok 10900  
Thailand