

Subscribe to NexantThinking™



PERP 2016-1: Oxo Alcohols

“Oxo Alcohols” is one in a series of reports published as part of the 2016 Process Evaluation/Research Planning (PERP) Program.

Report Objective:

The oxo alcohols sector is entering a transitional period facing an uncertain economic environment and disruption from market and regulatory forces. Global consumption patterns are changing, while established technology licensors are seeing new competition.

Meanwhile, technology developers in the global oxo alcohols sector work behind the scenes. Some technology developers are actively looking to change the inner workings of the global oxo alcohols industry with a new generation of conventional catalysts and a variety of innovative process improvements. Others are looking to completely change the industry's face by pursuing alternative feedstocks and potentially disruptive processes.

This PERP report provides a clear, up-to-date overview of the market, economic, and technological aspects of the oxo alcohols sector. The focus is on *n*-butanol and 2-ethylhexanol, the two largest volume oxo alcohols, along with the fast-growing 2-propylheptanol and isononanol sectors. The following issues are addressed in the report:

- What is the current market environment for oxo alcohols?
- What are the major technologies for oxo alcohols production? How do these technologies differ?
- What oxo alcohols technologies are available for license, and how competitive are they for new market entrants?
- What are the potentially disruptive technologies being developed for the oxo alcohols industry, and what are their potentials for commercialization?
- What are the current and likely future states of regulatory threats to the oxo alcohols industry?

Commercial and Developing Technologies

The oxo process is based on the hydroformylation reaction involving an olefin, carbon monoxide and hydrogen to produce an aldehyde with the help of a homogeneous catalyst. The resulting aldehyde can be optionally condensed to form a larger aldehyde and then hydrogenated to produce the corresponding alcohol. The core oxo process is common to all technology holders and feedstock types, albeit with some variations in process configuration and catalyst type.

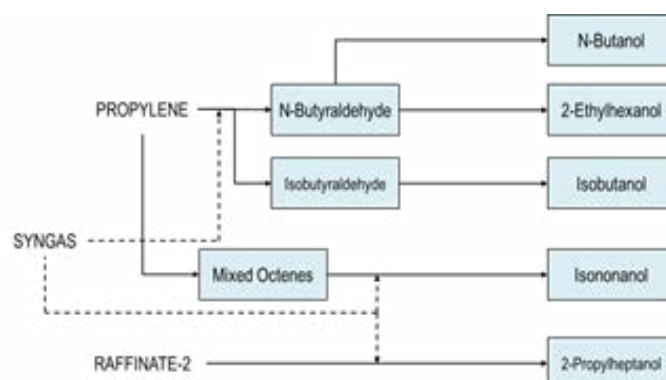
This PERP report covers both significant technologies available for license such as those by JM Davy/Dow and Eastman, as well as key proprietary processes including those used by Oxea, Mitsubishi Chemical and BASF. New catalyst developments that modify the normal/iso ratio of the aldehydes produced, including the dedicated production of isobutyraldehyde, are also discussed.

Process Economics

Detailed cost of production estimates for different geographic regions are presented for:

- Representative DAVY/Dow process for producing *n*-butanol using the SELECTOR 10 (third-generation) and SELECTOR 30 (fourth-generation) processes
- Representative DAVY/Dow process for producing 2-ethylhexanol using the SELECTOR 10 (third-generation) and SELECTOR 30 (fourth-generation) processes
- Generic production of 2-propylheptanol from raffinate-2
- Production of isononanol from mixed octenes

SIMPLIFIED OXO ALCOHOLS VALUE CHAIN



Commercial Market Review

Global consumption of the two largest oxo alcohols, *n*-butanol and 2-ethylhexanol, reached 3.7 million tons each in 2015. This PERP report highlights the historical and projected supply, demand and trade of these two oxo alcohols on a global and regional basis. A list of key producers in each region is also provided.

PERP Subscription Options

PERP Reports can be purchased as an annual subscription to the full program or on an individual basis, including reports from earlier program years. For a complete list of PERP Reports, please visit us at thinking.nexant.com.

NexantThinking™

NexantThinking reports and subscription programs provide clients with comprehensive analytics, forecasts and insights for the chemicals, polymers, energy and cleantech industries. Using a combination of business and technical expertise, with deep and broad understanding of markets, technologies and economics, NexantThinking provides solutions that our clients have relied upon for over 50 years.

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:

thinking.nexant.com

Corporate Headquarters

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

Americas

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

Europe, Middle East & Africa

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

Asia Pacific

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

