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COLIN A. HOUSTON & ASSOCIATES, INC.

Contact: Joel Houston
JHouston@colinhouston.com
+1-845-721-0353

262 Eastgate Drive #323
Aiken, SC 29803

T +1-803-226-0350
F +1-803-693-0707
info@colinhouston.com

colin-houston.com

NEW HIGHER ALCOHOL CAPACITY TO CREATE COMPETITIVE SURFACTANT MARKET

Second Million-Ton Wave Expected During Next 18 Months

Aiken, SC - May 8, 2013 - The 2.5 million ton higher alcohols market has expanded rapidly in the past seven years as new supply has come onstream. The consumption of alcohols has expanded at a rate of more than 4.5 percent per year between 2005 and 2012. This impressive performance has been the result of new supplies reaching markets after a similar massive addition of oleo-based alcohol capacity between 2005 and 2010. Supply is forecast to grow at twice the rate of demand between 2012 and 2015 with an expectation that the existing industry footprint will require some adjustment, according to a new study on higher alcohols by Colin A. Houston & Associates, Inc. (CAHA), a U.S. consulting firm in Aiken, South Carolina.

"Over the next few years, use of alcohol-based anionic surfactants may be favored in detergent formulations, as nonionics and alkylbenzene sulfonates face respective supply constraints and competitive cost pressure," according to CAHA president Joel Houston. "Purified ethylene oxide capacity expansions are not keeping up with the new oleo alcohol capacity, hindering the growth of ethoxylated products in the short term," he added.

Demand for alcohol-based products in Asia has exhibited strong growth over the past few years, with new demand developing from the additional requirements of liquid laundry detergent products. Greater consumption of alcohols in personal care products continues to drive growth as well. While surplus alcohols are currently being exported to Western markets, trade barriers, duties and new technology could disrupt this trend.

Raw Materials

The recent de-linkage of prices for oil palm biofuels and distillate fuels like kerosene has resulted in a growing advantage for oleo-based chemicals versus other chemical intermediates of significance. Shale gas economics in North America have improved the cost position of synthetic alcohols to oleos. The shale gas opportunity is generating new investments (particularly by Sasol and Shell) in projects which will continue to support the cost position of synthetic alcohols. Recent process developments in sugar-based higher alcohols have been evaluated in the report. Several of these new projects, including LS9 and Codexis, are on the brink of commercialization which offer a new supply chain route for the future.

Wave of New Capacity

A wave of new capacity is set to come onstream during the next 18 months which will create a flood of alcohol products. Some producers are slating output to selectively produce mid-cut alcohols, avoiding short and long-chain co-product economic challenges. More than 1 million tons of planned capacity is expected to start up, and other capacity will potentially join the race. It remains to be seen if older, less economical units will be forced into rationalization.

NEAR TERM OUTLOOK FOR C_{12} AND HIGHER DETERGENT ALCOHOL: ANNOUNCED CAPACITY ADDITIONS BY PRODUCER
(thousand tons)

Producer	Location	Type	2013	2014+	Net Addition
Codexis	United States	Micro		60	60
Wilmar	Netherlands	Davy	150		150
Jiaxiang Sanjiang	China	Oleo	100		100
Wuhan/HoTung JV	China	Oleo		160	160
KLK Oleomas	Malaysia	Davy	100		100
Ecogreen	Indonesia	Davy		180	180
Musim Mas	Indonesia	Davy	111		111
Bakrie Sumatra	Indonesia	Davy	40		40
Wilmar	Indonesia	Davy	120		120
Pilipinas Kao	Philippines		34		34
SABIC	Saudi Arabia	Lurgi	85		85
		TOTAL	740	400	1140

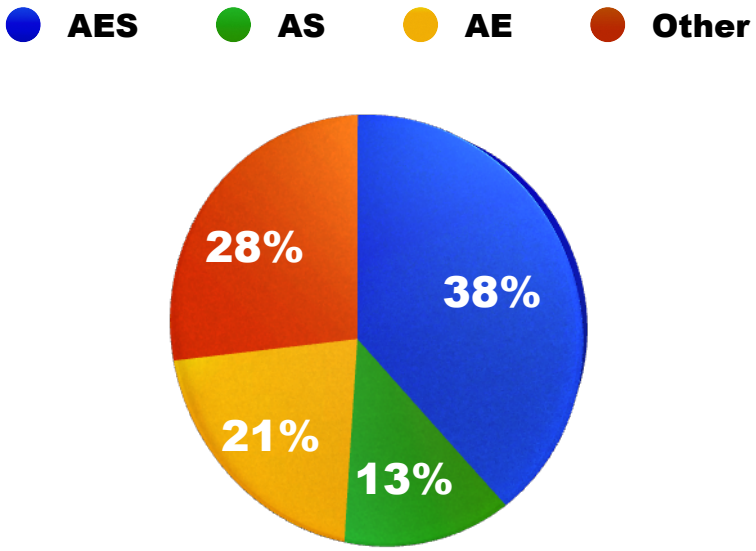
With over 60 percent of the new capacity intended for Malaysia and Indonesia, new surfactant plants in Singapore, Shell and Solvay for instance, will couple the alcohols with ethylene oxide to make surfactant products which can be used around the world.

Consolidation of the Industry

The degree of integration in the alcohols arena has been expanding through forward integration. Oil palm planters have expanded into alcohol production. In addition, Asian alcohol producers have increased participation in the surfactant space through acquisition and grass root activities: Ecogreen, Emery, KLK Oleomas, Musim Mas and Wilmar, for example. Furthermore, the acquisition of Cognis by BASF has brought together their respective strengths in alcohols and ethylene oxide, while expanding the company's product offerings into a range of specialty products.

Derivative Markets

Three surfactants accounted for over two-thirds of the 2.5 million tons of higher alcohols consumed in 2012: alcohol ether sulfates (AES) - 38%, alcohol ethoxylates (AE) - 21%, alcohol sulfates (AS) - 13%, and they will continue to dominate alcohol use in every region. The balance of products include tertiary amine derivatives (betaines, amine oxides and quaternary ammonium compounds), and other derivatives including alkyl polyglycosides, methacrylate esters, as well as direct end uses.



The higher alcohols market is growing at a base level of 4.9 percent per year to 2025, but any substitutions for linear alkylbenzene and methyl ester sulfonates will drive the market above this rate. The CAHA study evaluates and forecasts demand for primary surfactants by end use. It analyzes market trends and issues, and includes a discussion regarding surfactant producers and customers in every region. A series of 22 producer profiles are included, including capacity and integration analysis.

The new 700-page report just issued by CAHA entitled, *Higher Alcohols to 2025,* is available in both print and electronic versions. For more information contact Colin A. Houston & Associates, Inc., phone +1-803-226-0350, info@colinhouston.com or visit www.colin-houston.com.

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Notes:

Higher alcohols are mainly used in the production of surfactants and detergents. Alcohols with 12 or more carbon atoms are classified as higher alcohols.

Colin A. Houston & Associates (CAHA), Inc. is a chemical market research firm based in Aiken, South Carolina, USA. CAHA conducts chemical market surveys and develops databases to identify trends and developments within the industry. The company compares government and industry statistics with results from personal and telephone interviews with key industry contacts to produce comprehensive multi-client studies. The marketing research studies are designed to give clients the in-depth knowledge to carry out supply/ demand and positioning analyses, capture market opportunities, identify potential markets, and new technology, and orient major research efforts. From insight provided, clients have supported the CAHA approach for over 40 years.