



Albemarle's AlkyStar™ catalyst successfully employed in the world's first solid acid alkylation unit in Shandong, China, facility

December 17, 2015

Trade News Bulletin -- Albemarle Corporation today announced that its zeolite-based AlkyStar™ catalyst successfully produced high-quality alkylate after start-up of the world's first solid acid catalyst alkylation unit at the Shandong, China, plant of Zibo Haiyi Fine Chemical Co., LTD, a subsidiary of Shandong Wonfull Petrochemical Group Co., Ltd.

The unit uses the breakthrough AlkyClean® process technology jointly developed by Albemarle Corporation, CB&I and Neste Oil. Start-up of the unit, which has a capacity of 2,700 barrels per stream day of alkylate production, was on August 18.

Albemarle's AlkyStar catalyst, together with CB&I's novel reactor scheme, produces high-quality alkylate product without the use of liquid acid catalysts in the alkylate manufacturing process. Not only is AlkyClean technology inherently safer when compared to technologies employing liquid acids, there are also environmental benefits due to the reduction of waste streams such as spent acids and acid-soluble oils.

"Start-up has gone smoothly and the alkylate product has demonstrated excellent quality, including consistently high octane values between 96 and 98," said Annemie Donkers, Albemarle's vice president of Clean Fuels Technologies. "The high octane value and the absence of sulfur and aromatics are a good indicator of the high value of alkylate as a clean gasoline blending component."

Albemarle's AlkyStar catalyst, for use exclusively with the AlkyClean alkylation process, is based on an advanced new zeolite concept developed by Albemarle's R&D and is optimized to further improve the economics of the AlkyClean technology.

"The first commercial application of Albemarle's AlkyStar catalyst technology is the latest milestone in our relentless pursuit of cutting-edge catalyst innovation that spans more than 60 years," said Edwin Berends, vice president of Albemarle's Refining Solutions Research and Technology group. "The AlkyClean process gives our refining customers an attractive, commercially viable and safe option to produce high-quality alkylate without the use of liquid acid catalysts."



PHOTO CAPTION: Albemarle's zeolite-based AlkyStar™ catalyst has successfully produced high-quality alkylate at the world's first solid acid alkylation unit in Shandong, China. Photo provided by Shandong Wonfull Petrochemical Group Co., Ltd.

About CB&I

[CB&I](#) is the most complete energy infrastructure focused company in the world and a major provider of government services. Drawing upon more than a century of experience and the expertise of approximately 50,000 employees, CB&I provides reliable solutions while maintaining a relentless focus on safety and an uncompromising standard of quality. For more information, visit www.cbi.com.

About Albemarle

Albemarle Corporation, headquartered in Baton Rouge, Louisiana, is a premier specialty chemicals company with leading positions in attractive end markets around the world. With a broad customer reach and diverse end markets, Albemarle develops, manufactures and markets technologically advanced and high value added products, including lithium and lithium compounds, bromine and bromine derivatives, catalysts and surface treatment chemistries used in a wide range of

applications including consumer electronics, flame retardants, metal processing, plastics, contemporary and alternative transportation vehicles, refining, pharmaceuticals, agriculture, construction and custom chemistry services. Albemarle is focused on delivering differentiated, performance-based technologies that deliver innovative and sustainable solutions to its customers. The Company employs approximately 6,900 people and serves customers in approximately 100 countries.

Contacts:

Albemarle Media Contact: Ben Bourgeois, (225) 388-7652, Ben.Bourgeois@albemarle.com

AlkyStar is a trademark of Albemarle Corporation. AlkyClean is a registered trademark of CB&I.