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North America Alkylate Outlook

Alkylate contributes 8-12% of gasoline blendstock. The blending volume fraction of alkylate is critical to meet RVP, aromatics, sulfur, and olefins regulations. North America imports 600 MBPD of higher octane gasoline blend stock. Almost 30% of the high octane gasoline comes from alkylate imports.

Alkylate demand is going to stay strong in the short- and long-terms. Coupled with increasing gasoline demand in the export market, increasingly stringent specifications are not just for sulfur; oxygenate, RVP, olefins, aromatics, benzene etc. are also regulated. More efficient engines (high compression and direct injected) prefer higher octane gasoline. Shale oil production yields lots of LPG (propane and butane). Due to these reasons, the US needs to import alkylate to meet the demand. Not enough alkylate capacity is getting added to meet the gasoline demand for the export market and the growing octane demand in North America.

There are several important factors that will support the health of the alkylation business:

- Lower use of ethanol as a motor gasoline blending component because of issues related to RVP and cheaper availability of butane;
- Improved refinery profitability (with higher unconventional domestic crude oil and gas production and resultant lower crude oil refinery fuel prices), which will reduce motor gasoline imports and increase export opportunities;
- Improved alkylation gross margins because of lower costs for essential raw materials (isobutane and butylene) coincident with higher domestic production of light hydrocarbons; and
- Stable octane costs, which support continued use of alkylate as a premium motor gasoline blending component.

Stratas Advisors does not expect any significant change in the refining industry's reliance on acid alkylation plants. The first solid acid catalyst system was recently licensed in May 2013 in China, but it will take several years to gain experience with this technology before it is widely adopted for new grass-roots plants. Although this new solid acid catalyst technology is a candidate to replace existing hydrofluoric acid (HF) plants if prior safety and environmental-related issues come under renewed public scrutiny, sulfuric acid technology plants do not appear to be similarly threatened.

Alon, Chevron, Marathon and Valero have combined 69 MBPD alkylation capacity addition projects to be completed in the

next two years. However, these capacities are not nearly enough to catch up to alkylate demand. North America will remain a net alkylate importer in the foreseeable future.

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