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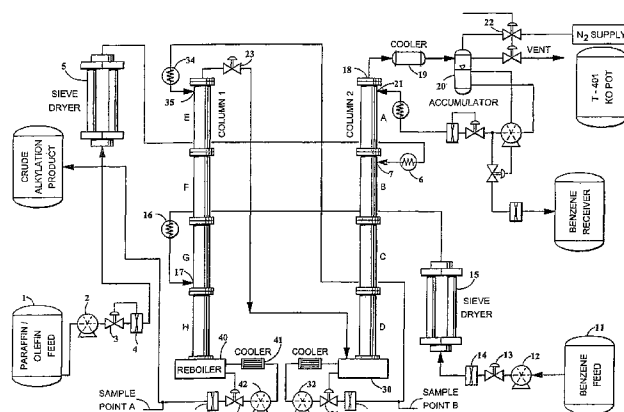
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(54) Title: A REACTIVE DISTILLATION PROCESS FOR THE ALKYLATION OF AROMATIC HYDROCARBONS



(57) Abstract: A unified process for reactive distillation under pressure for the alkylation of light aromatic hydrocarbons such as benzene and cumene with straight chain C₆-C₁₈ olefins using a solid acid alkylation catalyst supported in the reflux zone of the distillation column (column 2). The process is continuous, using a reactive distillation configuration such that at least a portion of the olefin (7) is injected below the benzene rectification zone at the top of the column. The aromatic hydrocarbon (17) is injected continuously at a low rate above the rectification zone (H) at the base of the column and above the reboiler (40). The alkylation reaction takes place primarily in the liquid phase on the solid acid catalyst and is characterized in that the molar ratio is adjustable up to about 100/1, through adjustment of the internal column operating pressure, the benzene reflux rate, the amount of benzene removed from the reflux condenser to storage or from the reboiler with the distillation column operated at or near total aromatic hydrocarbon reflux. The unexpectedly high liquid phase aromatic hydrocarbon to olefin molar ratios achieved in the reactive distillation column increases the selectivity to mono-alkylated aromatics and helps stabilize catalyst lifetime.



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