عنوان مقاله:

Deactivation of Activated Alumina Adsorbents Used for H۲S Removal from Olefin-containing Streams

محل انتشار:

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خلاصه مقاله:

An oligomer produced from unsaturated and reactive components (green oil) is formed when hydrogen sulfide (H۲S) is removed from the exhaust stream of the methyl tert-butyl ether (MTBE) plant. A remedy to minimize this contaminant formation is using adsorbents with low reactivity toward the olefinic precursors. Here, the green oil formation on the surface of different types of commercial alumina is studied. Results confirm that the regular commercially activated alumina has low H۲S adsorption capacity. Still, the alumina alkalized with ۳.۹۸ wt.% of Na۲O has a breakthrough time of more than ۲۹ h and stable performance in a cyclic operation. Moreover, the promoted alumina with a wide pore diameter (about ۹ nm) and low surface area (about ۲۱۵ m۲/g) is less susceptible to deactivation by forming green oil. It is supposed that the capillary condensation of C۳/C۴ unsaturated compounds and acidic sites of the alumina intensify the oligomerization inside the pores of an adsorbent.

کلمات کلیدی:

Green oil, Activated alumina, Adsorption, Methyl tert-butyl ether, Hydrogen Sulfide