

Total acid number (TAN) reduction process of crude oil via catalytic esterification

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In recent years in the world, the high acidity crude oil production has been increasing. The presence of organic acids, especially naphthenic acids being the highest contributes to the acidity of the crude oil, which cause serious corrosion problem in oil transport pipelines and downstream processing units in oil refineries.

A numbers of approaches have been proposed to reduce the acidity of crude oil. These approaches are neutralization, solvent extraction, adsorption and thermal decomposition. However, these approaches are not fully established in the refinery; still need more efficient process to reduce total acid number (TAN) of high acidic crude oil.

In the present work, we propose catalytic esterification process for the esterification of organic acids, especially naphthenic acids with the chemicals which has hydroxyl functional group (-OH) using mixed metal oxide as heterogeneous solid catalyst to corresponding esters to reduce the total acid number (TAN) of the crude oil under efficient reaction temperature.