

Deep hydrodesulphurisation of gas oils from different origin in batch reactor

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Abstract It has submitted to hydrodesulfurization three gas oils having the same boiling range but obtained from different crude oils. A commercial NiMo catalyst was employed. The total content of sulphur in gas oil was determined using X-ray fluorescence. Quantitative determination of individual sulphur compounds was obtained using a chromatographic analysis. The results were evaluated in the form of conversion as a function of time. The behaviour of the most nonreactive sulphur compounds (dibenzothiophene (DBT), 4-methyldibenzothiophene (4-MDBT), 4,6-dimethyldibenzothiophene (4,6-DMDBT) was taken in consideration. In batch reactor the oil matrix does not cause differences in the total conversion of all sulphur compounds, and also in the conversion of refractory sulphur compounds. The individual kinetic behaviour of the three sulphur compounds was analysed, and first order rate constants were obtained. The constant of reaction rate decrease in order: $k_{DBT} > k_{4-MDBT} > k_{4,6-DMDBT}$.

Keywords: Deep hydrodesulfurization, batch reactor, refractory sulfur compounds
