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The Effect of surfactant on selectivity in extraction of aromatic hydrocarbons from lube oil

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An investigation was conducted effect of addition surfactant on solvent extraction process for light lubricating oil fraction (spindle). The solvent power and selectivity can be further increased by using surfactant as additive which facilitates the separation phase and increases raffinate yield.

In this study, we suggested the use of ethoxylated anionic surfactants (sodium lauryl ether sulfate). The aromatics in the lube oil were extracted at different temperatures (ranging from 333.15 to 343.15K) and different concentration of surfactant (ranging from 0.01 to 0.1 wt %). The extraction temperature and the amount of surfactant in furfural were investigated systematically in order to determine their optimum values. Compositions in mono-aromatics, di-aromatic, poly-aromatics and saturates were determined using UV-Vis spectrophotometry. With addition of the surfactant, the solvent acquire the ability to preferentially extract the polyaromatic instead of the monoaromatic which directly affects the required oil quality. It was found that using 0.01 wt. % surfactant at 343.15K yields the optimum extraction conditions.

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