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AIM OF THE WORK

This study aims to evaluate the some of local vacuum residues delivered from two different arias. The evaluation process includes the extraction of the residue constituent aiming to know how much the contain saturates (n-, and Cyclo-paraffins), aromatics and resins.

The feedstock composition plays an important role in the upgrading process of the vacuum residues. The reaction studies on the deasphalted oil indicate that most of gasoline yield originates from the saturate fraction of the deasphalted oil, while the aromatic fraction of the deasphalted oil contributes to gasoline and diesel yields.

Therefore, it is important to study the composition of the vacuum residue in order to know accurately how much saturates and how much aromatic it contains. In the same time the resin play an important role in the production of most of the coke, while the aromatics and saturates produce only a small amounts of coke. So the goal our study here is to evaluate the vacuum residues from different localities to choose the correct one to meet our purpose. Also, it is important to generalize empirical correlations predicting the gasoline, diesel, light oil and coke yields as a function of feedstock SARA (Saturates, Aromatics, and Resins).

<u>SUMMARY</u>

A general survey of the literature dealing with the study of the general properties of the petroleum crude oil and its constituents, especially the heavy fractions and their compositions. The survey also includes the different methods that deals with upgrading of the petroleum heavy residues in order to get useful products.

The experimental part deals with the study of the chemical compositions of two petroleum heavy residues, one delivered from Alexandria Petroleum Refining Company, the other was delivered from Suez Company for Petroleum Industry.

The two heavy residues were subjected to solvent extraction using n-pentane, n-heptane and ethyl acetate. The process of solvent extraction aims to separate Maltenes, asphaltenes.

The Maltenes were further subjected to liquid chromatography (column Chromatograph) in order to separate them to saturates and aromatic (Mon-, Di- and Poly-) and resin.

The UV-Vis spectroscopic technique was applied to the aromatic fraction to know how much mono-, di-, and poly aromatics are present in the aromatic fraction.

Infrared spectroscopic technique was applied to study the two vacuum residues, the Maltenes, asphaltenes and aromatics.

The saturates which were separated from the Maltenes of the two vacuum residues with different solvents are studied by gas chromatography in order to know how much they contain n-paraffins and cyclo-paraffins.