

CHAPTER V CONCLUSIONS



An attempt was made to separate 500SW and 600SW slack waxes into fractions by solvent fractionation-extraction and crystallization in MEK. The fractions isolated were :- normal paraffin, branched-chain paraffin, and naphthenic waxes. The hydrocarbon groups and fractionation temperature of the wax fractions have the following relationships :

- 1) High molecular weight normal-paraffin waxes were separated by using solvent fractionation extraction at high temperature, i.e. 60 °C+.
- 2) Waxes which were rich in highly-branched hydrocarbons were isolated by using solvent fractionation-extraction at intermediate extracting temperatures (30, 40 and 50 °C). It appeared that the highly-branched paraffins impressed their form in obtained waxes at low temperature (30 °C) better than at high temperature (50 °C).
- 3) Naphthenic waxes were separated from intermediate waxes by using fractionation crystallization at 0 and 10 °C. The hydrocarbon components in both waxy and residual oils were also naphthenic in structure.
- 4) Each wax type obtained had different texture. Normal paraffin waxes were hard and opaque white. Highly-branched paraffin waxes were soft and opalescent. Naphthenic waxes were sticky and pale yellow.
- 5) If the solvent fractionation-extraction and fractionation crystallization conditions were changed, the amount of each components in the fractions obtained also varied.

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Suggestions for Future Works

- 1) More physical properties of the isolated waxes and oils should be measured to enable classification for manufacturing. For pharmaceutical application, sulfur must be removed. Desired properties of waxes can be acquired by varying the separating conditions.
- 2) HT GC and microscope can be used to characterize the commercial petroleum wax products into normal & branched paraffin, and naphthenic waxes and prepare their carbon distribution curves.
- 3) Higher purity normal paraffin from the wax cakes can be obtained by fractionation extraction at 70 °C using a solvent which has higher boiling point than MEK.
- 4) The separation of micro-crystalline waxes from intermediate waxes is an alternative way for the production of micro-crystalline waxes from crude oil tank sludges.



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