

CHAPTER 3

EXPERIMENTAL METHODS

Chemicals

-Waxes were separated from heavy distillate obtained from Fang Oil Refinery.

-Methyl ethyl ketone (MEK) Commercial grade Grand Chemical

-Fullers earth Lab grade Fluka

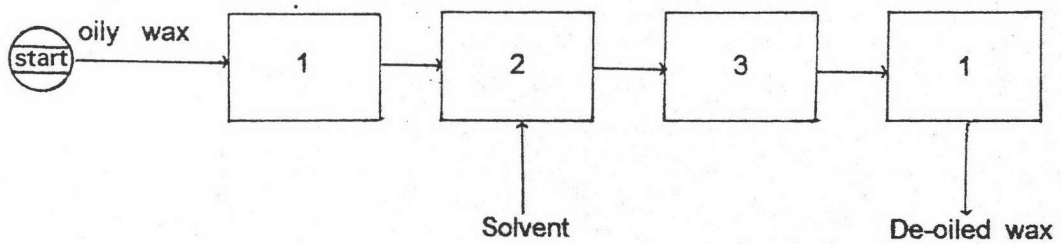
-Activated carbon Lab grade Merck

-Clay Commercial grade

-Isooctane Local supplied PTT

Equipments for experiment

A. Equipments for de-oiling



1. press oil device

2. crystallizer

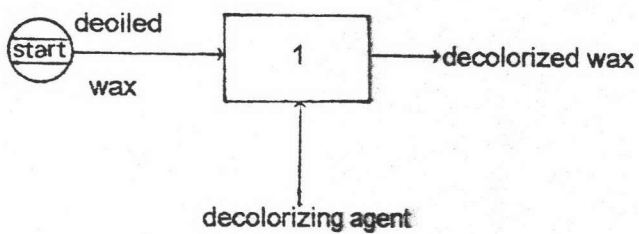
3. chiller

Figure 3.1 Deoiling process



Fig. 3.2 Press oil device

B. Equipment for decolorizing



1. Stirrer

Figure 3.3 Decolorizing process

Instruments for testing properties

1. Colorimeter (ASTM D 1500)
2. Differential scanning calorimeter : DSC 901 S Du Pont
3. Penetrometer (ASTM D 1321)
4. UV spectrometer : Milton Roy spectronic 3000 ARRAY
5. GC : Shimadzu GC 7AG
6. GC-MS : Jeol JMSDX - 3000

Procedure

A. Deoiling by MEK

In this procedure an amount of 100 grams of wax was weighed and added to 100 ml of MEK in a beaker. The temperature was raised until the wax was completely dissolved in the MEK. With vigorous stirring of the mixture, the beaker was cooled in ice until a uniform mixture resulted. At this point, temperature reduction rate was increased by cooling in refrigerator. Until the temperature was lowered to -10°C . The mixture was pressed by press oil device to remove MEK. The wax cake was formed, removed from the press oil device and weighed. The cake was then heated under vacuum to remove MEK was evaporated. The yield of wax was then determined by weighing. The amount of MEK was varied from 100 ml to 300, 500, 700 and 900 ml, respectively.

B. Decolorizing by decolorizing agent

Fifty grams of deoiled wax was melted in beaker and 0.1 grams of a decolorizing agent was added. The admixture was agitated for 60 minutes at 70°C . The decolorizing agent was filtered from the admixture by hot filtration at 70°C . The decolored wax was cooled at room temperature. Amount of decolorizing agents were varied until the wax has no color. Decolorizing agents for this study were activated carbon, fullers earth and clay.

C. Test of wax properties

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| 1. Melting point | ASTM D 87 |
| 2. Color | ASTM D 1500 |
| 3. Hardness | ASTM D 1321 |
| 4. Congealing point | ASTM D 938 |
| 5. Benzene content | UV absorption |
| 6. Carbon distribution of wax | GC and GC-MS |