

Thesis Title	Crystallization of Paraffin Waxes in Light Distillate From Fang Refinery
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Academic Year	1986

ABSTRACT

Crude oil from fang, Chiangmai contains high wax content. After distillation the wax remain in heavier fractions such as light distillate, resulting in high pour point. In this research, paraffin wax is separated from light distillate by crystallization in a rotary plate crystallizer in a continuous process. Main product is low pour point dewaxed oil and can be blended with diesel oil. In the production, paraffin wax is given off as by-product. Experiments were carried out at a feed rate of 0.5 litre per minute, cooling temperature at 16.0°C, solvents to oil ratio of 1:1 to 6:1, plate speed 0.05 to 1.28 rpm, oil temperature 30 to 34°C. The oil was passed through the crystallizer one to 10 times.

When operated at solvents to oil ratio of 5:1, plate speed of 0.5 rpm, oil temperature at 30°C the pour point of oil was decreased from 35.0 to 31.6°C when oil was passed through the crystallizer one time, and reduced further to 25.5°C after passing ten times.

A mathematical model is proposed for the growth rate of wax on a constant temperature-surface. It can be shown that this thickness of wax layer is a function of time as follows

$$\frac{dx}{dt} = \frac{1}{\sqrt{1.56 + 71.4 t}}$$

Economic analysis have shown that the production costs after passing through this crystallizer ten times, is 8.02 baht per litre of dewaxed oil.