



CHAPTER I

INTRODUCTION

Para rubber is an important agricultural product of Thailand and most are planted in the Southern and the Eastern parts of the country. The total rubber area under rubber cultivation in Thailand is reported to be 8.86 million rais or 3.54 million acres in 1978.

The main product of para rubber tree is rubber latex, which is the main ingredients in the manufacturing of many essential rubber products. The other parts of this tree are also useful such as stem and branch for construction, making charcoal, packaging, and furniture; the rubber seed oil for the production of soap, cosmetics, drugs, electrical insulators, lubricants, and products of paint industry.

The production of natural rubber in Thailand is the third of the world or about 11.68% of the world production. The tendency of the production still increases because of the world market demands. In each year there are about 1.8 million tons of this seed, which contains a large percentage of oil, is produced but only 1,483 tons or 0.08% is extracted. This is a great loss for our country. In order to increase the quantity of use, this oil should be developed.

Therefore, the objective of this thesis is try to search the way to make rubber seed oil more useful by hydrogenation.

1.1 The Objectives of the Thesis

The objectives of this thesis are as follow :

1.1.1 To study the catalyst preparation technology (precipitated nickel-supported catalysts)

1.1.2 To find the optimum operating condition for the hydrogenation of rubber seed oil.

1.1.3 To study the reaction rate of the hydrogenation of rubber seed oil.

1.1.4 To compare the in-house catalysts with the commercial catalyst in the hydrogenation of rubber seed oil.

1.1.5 To study the application of the hydrogenated rubber seed wax.

1.2 The Scope of the Thesis

The scope of this thesis is covered the followings :

1.2.1 Preparing various loadings of nickel - supported catalyst by precipitation method.

1.2.2 Screening of commercial catalysts.

1.2.3 Selection of the optimum condition by varying these following parameters :

- Reaction temperature 120, 140, 160, 180 °C
- Hydrogen pressure 60, 90, 120, 150 psig

- Nickel catalyst 0.05, 0.1, 0.2, 0.4 %
concentration in oil
- Agitation 200, 400, 600, 700 rpm

1.2.4 Study the kinetics of rubber seed oil hydrogenation.

1.2.5 Comparison of the in-house catalysts with the best commercial catalyst for this reaction.

1.2.6 Study the application of the hydrogenated rubber seed wax.