

CHAPTER I

INTRODUCTION

Plastic has made a major contribution to the high standard of living and lifestyles in Thailand because it has not only replaced many wood, leather, paper, metal, glass and natural fiber products in many applications, but also have facilitated the development of entirely new types of products.

The plastic industry in Thailand is growing rapidly with economic expansion. There is a huge demand for plastic material both in commodity and engineering plastics. The plastic consumption trends of Thailand and other countries are shown in Figure 1.1. and PE, PP and PVC demand in Thailand is shown in Figure 1.2. It can be seen that plastic consumption is high and increasing continuously.

One of the general plastics known to pose some of the greatest advantages to use is HDPE. Typical products made from HDPE are bottles for medicine, foodstuff and shampoo, petrol tanks, chemical tanks, plastic pipes and joints, insulation for electrical wire and cables, household gas water pipes, shopping bag, hot foodstuff bags, rope, net and mesh

As a result of the rapid development of HDPE industry, increasing discharge of HDPE wax has brought an urgent need for destruction. It is undesirable component for landfilling, since they are not presently biodegradable. Their destruction by incineration poses air pollution problems due to the release of airborne particles and carbon dioxide into atmosphere. In recent years there has been increased interest in both environmental protection

and the conservation of both natural resources and synthetic material through recycling. An alternative would be true recycling. This thesis is concentrated on convert HDPE wax into fuel. The beneficial characteristic in HDPE wax recycling process is the ability to carry out the presence of waste.

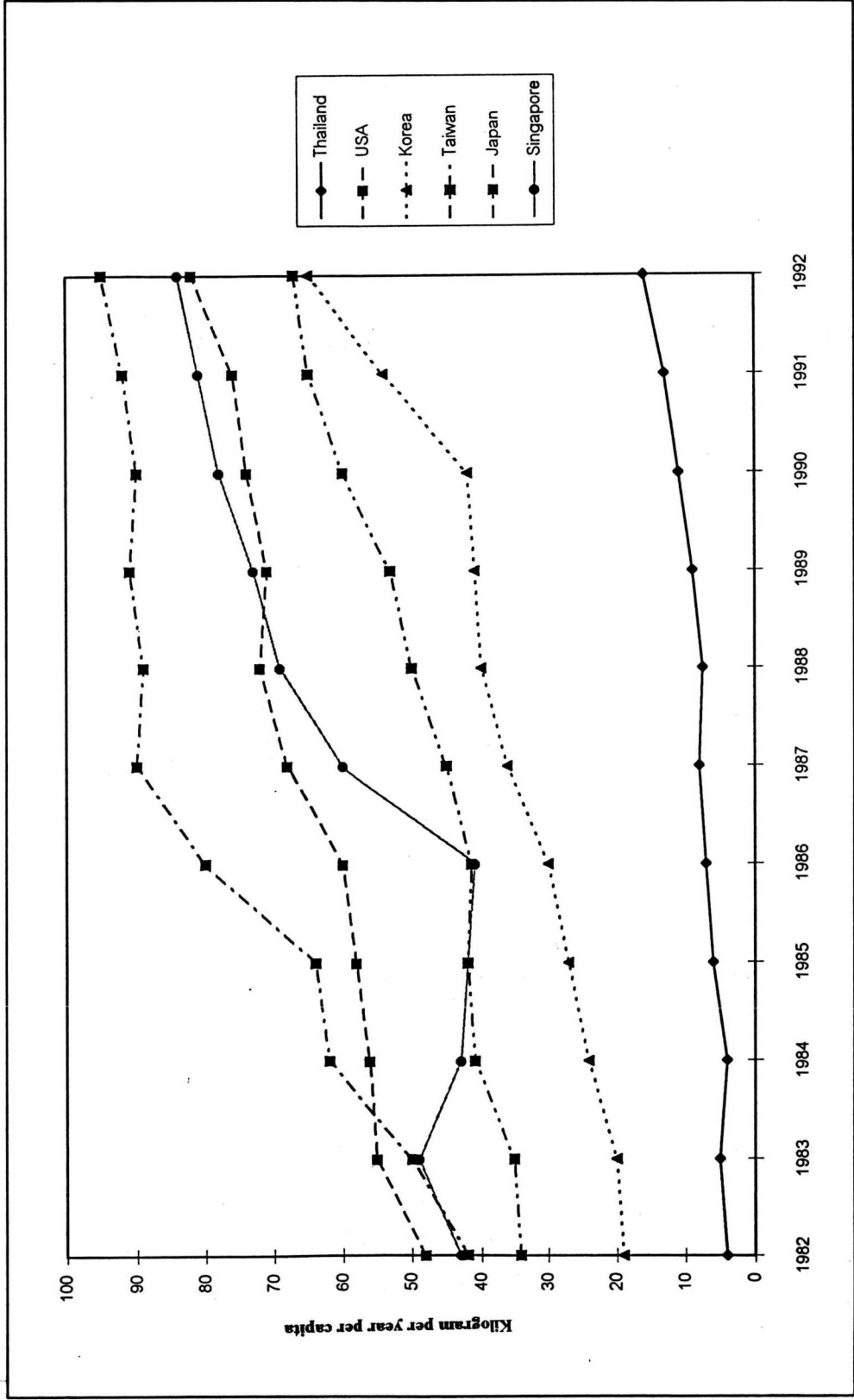


Figure 1.1 The plastic consumption trend of Thailand and other countries [1]

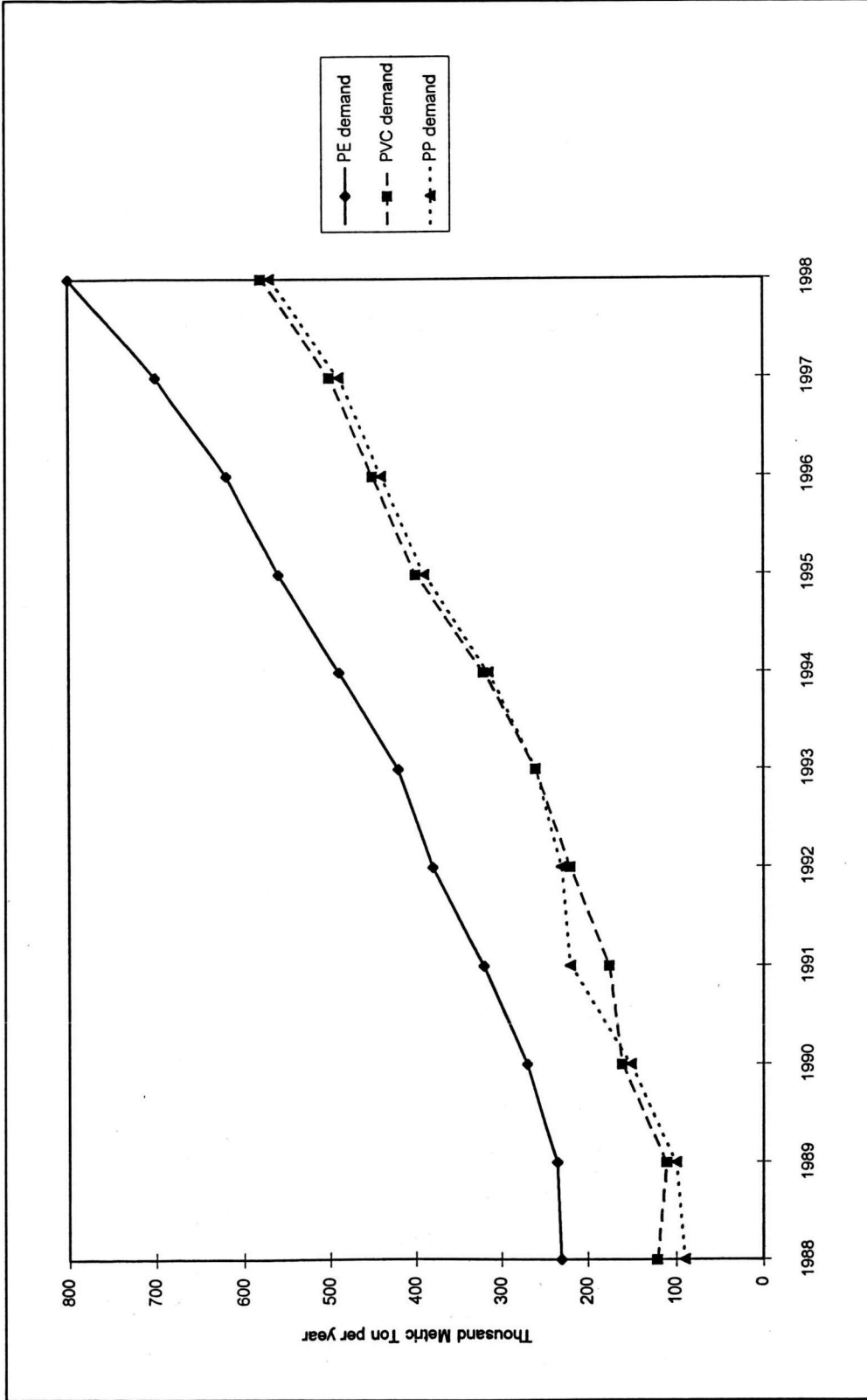


Figure 1.2 PE, PP and PVC demand in Thailand [1]

Objectives and Scope of the Research

The principle objective of this research was to transform HDPE wax to higher value products. The conversion was performed by hydroisomerization with platinum fluorided alumina catalyst concentrations, reaction temperatures, hydrogen pressures and reaction times. In addition, the Diesel properties of the product from the optimum condition were determined.