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THE DEVELOPMENT OF THE PLASTICS INDUSTRY  
IN THAILAND<sup>1/</sup>

by

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<sup>1/</sup> The views and opinions expressed in this paper are those of the author and do not represent the views of the secretariat of UNIDO.  
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### Introduction :

At the present time, plastics are well known in Thailand. Plastics are used in many purposes such as containers, toys, trays, table ware, rope and tape, bottle cap, comb, ruler, pipe and hose, both rigid and flexible, film and bags for packaging, moulded foot wear etc. Plastic articles are produced in Thailand, but the quantities are not sufficient. Therefore, large quantities of plastics are imported from foreign countries, such as Japan, Taiwan and Europe. Exports from Japan to Thailand were about 84.7% of the imports of thermoplastic raw materials and semi finished products in 1970 and 96% and 84.1% of the imports of Polyethylene, PVC and other Polyvinyl derivatives.

Nowadays, plastic containers are also used in food packaging. These plastic containers are used in many forms such as films, bags, pouches, bottles, boxes etc. Polyethylene and Polypropylene are very well known. People will purchase them in the forms of bags. They are available in almost every shop. Besides these, PVC, saran, nylon, cellulose acetate are also well known

Plastic toys for babies or children and plastic food containers must be considered and analysed carefully. They must be not toxic to babies or children and to foodconsumers respectively.

### The Present Status of the Plastic Industry

In Thailand, there are about 400 separate firms producing plastics. Fifty percent of these firms are small. There are about 10 workers and few machines in each firm. The plastic industry is concentrated in Bangkok - Thonburi area. Thirty larger companies are found in this area. In these factories, modern machines are used for producing plastics. Some produce plastics from raw materials. Some produce plastics from used plastics.

In foreign countries, there is the problem about plastic wastes. Plastic wastes can cause pollution. In Thailand, this problem is being solved. Some factories try to solve it by producing plastic product from used plastics. Used plastics are collected, cleaned,

selected, dried, melted and finally extruded into pellets. Pellets are used as raw materials for producing plastics again.

The quantities of plastics produced in Thailand are not sufficient. The growth rate of plastic consumption is increased every year. The consumption of plastics is shown in the following tables.

Table 1 : Current Thermoplastic Consumption in Thailand

(The figures are for the calendar year 1971)

<u>Material</u>	<u>Metric tons</u>
LDPE	31,000
HDPE	15,000
PP	7,500
PS (All Grades)	6,500
PVC (100% resin basis)	15,500
PV Acetate (100% resin basis)	2,200
PV Alcohol	700
Polymethyl Methacrylate	1,000
Miscellaneous	<u>1,600</u>
Total	<u>81,500</u>

Table 2 : Current Consumption of Thermosetting Resins

(The figures are for the calendar year 1971)

<u>Resin Type</u>	<u>Metric tons</u>
Hot hardening wood glues	4,500
P.F. and U.F. Moulding powders	3,500
Melamine decorated sheets	600
Alkyd Resins for paints	2,500
Miscellaneous (P.F. and U.F. in semi-manufactured forms, unacetylated polyesters, silicones, polyurethanes, epoxies etc.	<u>1,500</u>
Total	<u>12,600</u>

Table 1 : Summary of Forecasts

<u>Material</u>	<u>1976</u>		<u>1981</u>	
	<u>Metric</u> <u>Tons</u>	<u>Annual Growth</u> <u>As Since</u> <u>1971</u>	<u>Metric</u> <u>Tons</u>	<u>Annual Growth</u> <u>As Since</u> <u>1976</u>
LDPE	57,900	14%	111,600	14%
HDPE	32,600	16%	68,400	16%
PP	22,900	25%	46,000	15%
PS (All Grades)	13,400	15%	26,900	15%
PVC (100% Resin Basis)	38,600	20%	77,600	15%
PV Acetate (100% Resin Basis)	4,400	15%	8,800	15%
Polymethylmetha- crylate	2,000	15%	4,000	15%
Miscellaneous Thermoplastics inc.				
PV Alcohol	7,300	15%	14,700	15%
P.F., U.F., and M.F. Resins inc. Wood				
Glues	19,600	18%	39,600	15%
Miscellaneous Thermosets	8,000	15%	16,000	15%
Finished Articles	<u>4,000</u>	<u>-</u>	<u>4,000</u>	<u>-</u>
<b>Total</b>	<b><u>210,700</u></b>	<b><u>15.2%</u></b>	<b><u>417,000</u></b>	<b><u>14.9%</u></b>

Reference : Investment Opportunities In Plastics, Board of Investment  
Bangkok Thailand, 1972.

Plastics Materials are imported from foreign countries, mainly from Japan. The following table shows the enormous growth rate in plastic market.

Table 4 : Quantities of Plastic Materials in Metric tons  
Imported from Foreign Countries

<u>Year</u>	<u>Raw Materials &amp; Semi-Finished Products</u>	<u>Finished Articles</u>	<u>Total</u>
1959	3,291	312	3,603
1960	5,521	487	6,008
1961	6,523	626	7,149
1962	10,464	369	10,829
1963	13,644	609	14,253
1964	19,327	623	19,950
1965	24,403	711	25,114
1966	37,408	1,197	38,605
1967	47,163	1,313	48,476
1968	57,756	1,584	59,340
1969	86,264	2,440	88,704
1970	78,480	5,126	83,606
1971	97,502	4,586	102,091

Reference : Investment Opportunities in Plastics, Board of Investment  
Bangkok Thailand, 1972.

Future Plans of the Development of Plastic Industry in Thailand.

The future plans of the development of plastic industry are as follows:

1) Factories :

The factories will be improved. Modern machines and modern methods used for producing plastics. Workers in the factories will be trained in the Quality Control course. There will be quality control laboratories in the factory.

2) Suggestion :

The official experts from Thai department or from foreign countries will give suggestions and assist in solving the problems. This programme should be accompanied by UNCTAD.

3) Training :

In future, there will be plastic technology courses for training persons. It will be very useful if UNIDO take part in training programme.

4. Future plans :

In Thailand, the plans for the installation of a petrochemicals complex in 1976 are at an advanced stage. The project is divided into two parts. The upstream section consists of a crude oil distillation unit, which will produce a number of oil products for the home and foreign market and naphtha feedstock for a thermal cracker engaged in the production of ethylene. The downstream sections will produce, in the first instance, 70,000 metric tons per annum LDPE, 40,000 m.t./a HDPE, 40,000 m.t./a PVC and 20,000 m.t./a benzene for detergents. Further processing of cracker products to acrylic resins, synthetic fibres, plasticisers and synthetic rubber will follow at a later date.

The effect of the installation of the petrochemicals complex will change the plastics processing from a labour intensive industry to a primarily capital intensive one.

5) Research work on plastics and analysis of plastics

1. There will be research works on plastics in many aspects, especially in toxicity aspects of plastics. At the present time, plastic food containers are used widely in food packaging. Plastic food containers must be analyzed before using for containing foods. The ingredients of plastics such as plasticisers, heavy metals, fillers, stabilisers etc. may migrate into foods.

Used plastic containers must be analysed before using again for containing foods.

2. Industrial Standards for plastics such as plastic food containers will be established.

3. Development of qualities of plastics materials and plastics products.

4. Determination the properties and the qualities of



plastics.

Conclusion :

The plastics industry in Thailand is developing. Plastic materials are used widely. The factories are being developed. A good way to develop the plastics industry is to train people in Plastic Technology course. People who obtain knowledge from the course can train the other people, suggest useful ideas about development and assist in solving problems. Quality control laboratories are very useful in controlling the qualities of plastic products. Industrial Standards of plastic materials and plastic products are needed for controlling the qualities of plastics also.

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Problems for discussion with plastics manufacturers in Europe

- 1) Plastics Waste Now, Thailand is facing with the problem about plastics waste. Some people wash used plastics with water and detergent and use them as food containers again. Reuse of used plastic is not safe. Therefore, there must be suggestion about re-using of used plastics for containers from used plastics by cleaning used plastic, selecting, treating with chemicals for killing micro organisms, drying, melting, extending to long rope and pellets, melting again, and making into containers. Food containers produced from used plastics by the method mentioned previously must be analysed before using as food containers.
- 2) Plastic pollution I would like to discuss also about solving the problem of pollution caused by plastic waste.
- 3) Q.C. Standardization of plastics & Q.C.
- 4) Analysis Modern methods for determining plasticizers, and other ingredients in plastics.
- 5) Specification Specification of food plastic materials, containers, limits of ingredients in plastics.
- 6) Fabrication





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