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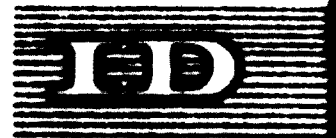
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**THE PRESENT STATUS AND FUTURE PLANS  
FOR DEVELOPMENT OF THE PLASTIC INDUSTRY IN  
THE REPUBLIC OF KOREA<sup>1/</sup>**

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## Introduction

1 With the launching of the First Five-year Economic Development Plan in 1962, the Korean economy took a bold step towards industrialization to shed the old crust of underdevelopment, and manufacturing surfaced as the dynamic element in the economy which was once largely dominated by agriculture. During this period of 1962-1966, the rate of growth of GNP has increased from 3.5% per year to 13.4%. In the Second Five-Year Plan that followed in the years of 1967-1971, this high rate of growth was maintained steadily to put Korea among the nations who are galloping towards industrialization. With the heavy emphasis given to petrochemical and heavy industries in the Third Five Year Plan, Korea's chemical industry is also growing and contributing heavily to nation's economic life.

2 In particular, the years of 1972 and 1973 were remarkable years for plastics industry in that these were the years that Korea's petrochemical complex began to put on stream such important plants as high density polyethylene, polypropylene, vinyl chloride monomer and acrylonitrile monomer. This event therefore changes the scene of Korean plastics industry rather drastically which was once dominated by PVC up to a year ago. In fact, the demand for these raw materials are so high that a second large scale petrochemical complex is actively being contemplated. It is not hard to imagine that the plastics industry will undoubtedly play an important role during this exciting period of growth.

Production Facilities:

3 The plastics industries have experienced a marked expansion of production facilities during the recent years. As stated, in the early phase of development, the successive construction of PVC plants has played a leading part in the capacity expansion of the industry. The total PVC capacity at present is about 44,200 tons a year. This was followed by the construction of a relatively small polystyrene <sup>plant</sup> with a capacity of about 12,300 tons per year. Other capacity figures are shown in Table I.

Table I Thermoplastics Production Capacities

( Unit: M/T per year )

	1965	1966	1967	1968	1969	1970	1971	1972
PVC	-	6,600	12,600	34,200	44,200	44,200	44,200	44,200
Polystyrene	-	-	-	3,000	8,300	12,300	12,300	12,300
Polyethylene	-	-	-	-	-	-	-	50,000
Polypropylene	-	-	-	-	-	-	-	30,000
Total	-	6,600	12,600	37,200	52,500	56,500	56,500	136,500

4 The production capacities for thermosets as of 1970 in tons per year are: 4,000 for urea resins, 1,000 for melamine resins, 2,000 for phenolics and 1,000 for polyesters. The figures for melamine will be increased considerably within this year because of a new plant with a capacity of 6,000 tons per year of melamine.

Supply and Demand

5 The demand for plastic resins in 1970 totalled about 115,000 M/T. This figure should be compared to that of 10,000 M/T in 1962 and that of 1966 which was 27,000 M/T. The demand therefore grew about tenfold in ten years' time. The average growth rate was about 36.1 % per year. It must be mentioned that the growth was largely due to thermoplastics as shown in Table II.

Table II Domestic Demand of Synthetic Resins

( Unit : M/T )

	P.V.C.	P.E.	P.P.	P.S.	Others	Total
1962	3,496	2,100	-	1,732	2,473	9,801
1963	3,508	3,000	-	540	5,769	12,817
1964	3,657	3,100	-	704	6,953	14,414
1965	4,500	4,100	180	616	19,453	28,849
1966	6,451	6,637	425	793	13,090	27,396
1967	11,385	13,341	1,118	1,400	8,318	35,562
1968	16,822	24,111	1,641	2,844	14,199	59,617
1969	27,382	33,535	3,586	4,613	21,787	90,903
1970	29,360	42,421	9,265	7,327	26,994	115,367

6 On the other hand, the supply of these resins up to 1972 depended very much on imports as shown in Table III. For example the domestic production could only supply about 38.9% of the demand. We believe this picture has changed considerably because of the new plants that were built recently. The export drive, however, continue to push the demand higher still so that it is envisaged that a sizable gap between supply and demand will continue to exist for at least for a few more years. The data for resins supply up to 1970 is shown in Table III.

Table III Synthetic Resins Supply

( Unit: M/T)

	Domestic production	Import	Export	Domestic demand	Supply as % of demand
1962	79	9,722	-	9,801	0.8
1963	743	12,074	-	12,817	5.8
1964	1,991	12,423	-	14,414	13.8
1965	4,208	24,641	-	28,849	14.6
1966	2,666	24,730	-	27,396	9.7
1967	8,680	26,882	-	35,562	24.4
1968	20,125	40,193	701	59,617	33.8
1969	40,441	56,426	5,904	90,903	44.5
1970	44,851	78,969	8,453	115,367	38.9



7           As it can be seen, during the 8 years between 1963 and 1970, Korea's resin production increased at an average rate of 7.1%. This can be compared with Japan's 30.1% between 1955 and 1964, and England's 12.3% during the same period.

8           If we were now to examine the import of plastic resin into Korea, the import amount from 1963 to 1970 increased at a rate of 13.1% per year. The largest import item in 1970 was PE which amounted to 42,421 K/1. This is about 53.7% of total import. The import of PP was also very high. The current demand is such that Korea is planning to build a new low density PE plant.

9           Other items that were imported include polyvinyl alcohol, acrylics and polyisobutylene. Thermosets that were imported include polyamides, polyurethanes, epoxies and silicones. Of the total imports, thermoplastic resins accounted for about 98 percent. The decreased relative importance of thermosetting resin is closely related with the consumption trend in Korea.

### Demand Forecast

10           If we were to accept the following formula deduced by the Korea Development Bank:

$$Y = - 1,733.11 + 21.30 x$$

where Y = plastic consumption per person in  
Korea ( ga )

x = GNP per capita,

we can see that the per capita consumption of plastics in Korea in 1971 is 6,511 K/T per annum. This figure multiplied by number of people expected to use plastics will give forecast demand of 725,000 K/T per year for Korea. The rate of growth within the years of 1972-1976 is expected to be around 15%. This figure should be compared with that of 1942-1967 which was around 30%.

11 Korea on the other hand will also be needing plastics to support her locally export industry. This amount is estimated to be about 91,000 K/T. The total demand in 1976 therefore should be around 816,000 K/T. The yearly forecast for plastics demand is shown in Table IV.

Table IV Plastics Demand Forecast

( units: K/T )

	Domestic ( A )	Export ( B )	Total ( C )	Export ratio ( B/C ) %
1971	113,733	33,000	146,733	23.2
1972	132,009	43,000	175,009	25.5
1973	151,942	50,000	201,942	27.3
1974	173,715	65,000	238,715	28.3
1975	197,946	77,000	274,946	29.1
1976	225,063	91,000	316,063	29.9
Ave. Rate Increase	(14.6)	(22.8)	(16.6)	(16.2)

- 12 Supply of plastics in Korea on the other hand is estimated to be about 150,500 M/T at the present time. This figure therefore barely meets the domestic demand and the extra amount required for must be imported from abroad. So unless new plants are built, we can expect the plastic shortage of about 166,000 M/T. PVC demand, for example, is about 60,800 M/T now which exceed the current capacity of 44,200 M/T.


Need for Technical Service and R & D

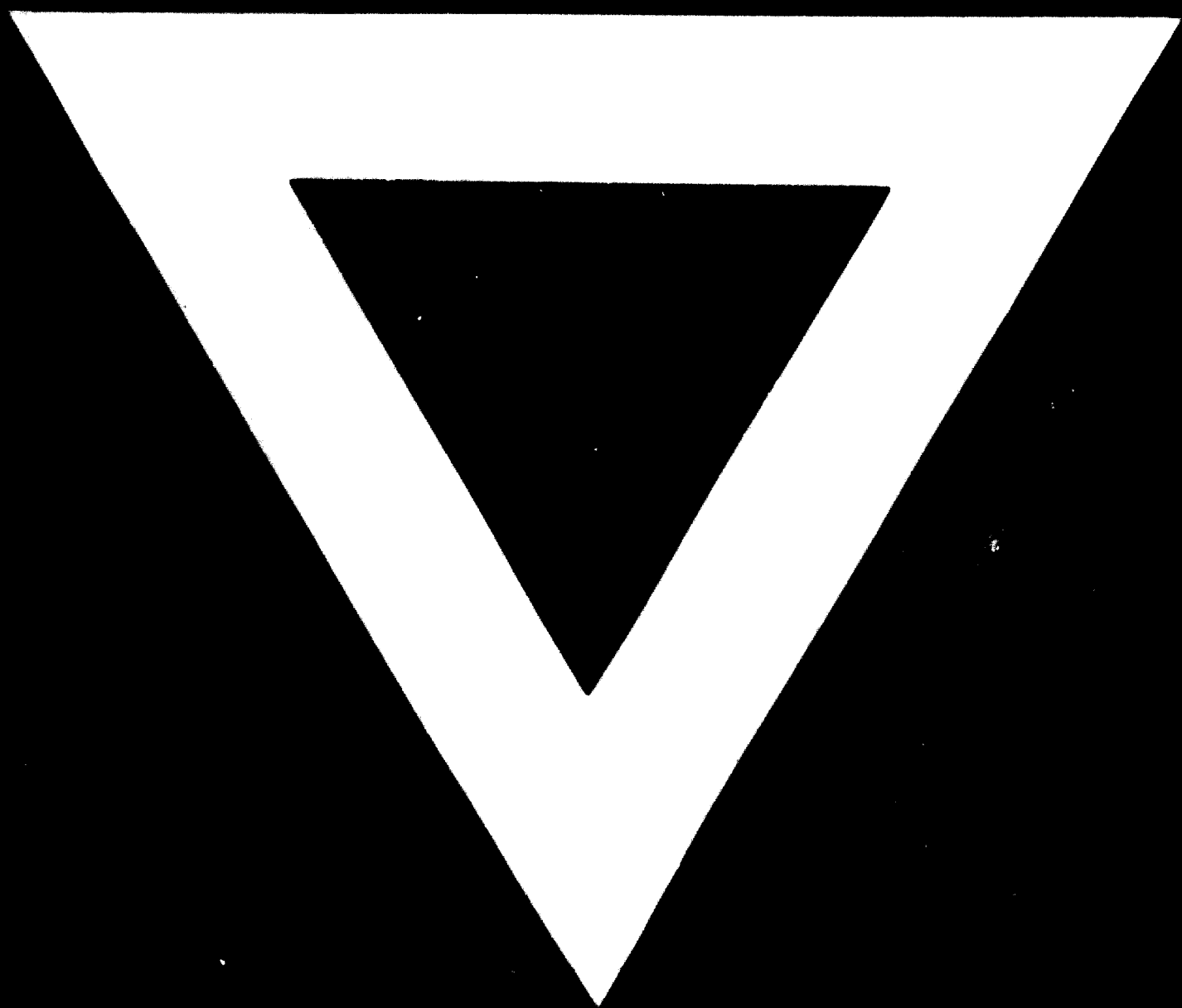
- 1) As in most of the developing countries, the plastics manufacturers normally do not back up their product with any kind of technical services. The requirements are quite often filled with sale brochures and technical bulletins supplied by import-export agents. Although this is satisfactory for some cases, it is believed that a more vigorous technical services activities can create many new markets for Korea. Furthermore, it is suggested that INIIC and foreign firms look into the possibilities of asking Korea Institute of Science and Technology (KIST) to be a partner in this endeavor. KIST is the largest contract research organization in Korea. KIST maintains a close relationship with industry and such key government agencies as Ministry of Science and Technology (MST) and Ministry of Commerce and Industry (MCI). KIST is currently active in the plastic processing and resin synthesis, and has undertaken many developmental research for Korean business community.

Prospectus and Conclusion

14           As is well known, the world wide trend has been for the plastics industry to enjoy a most rapid rate of growth in conjunction with the rapid technical developments in petrochemicals. This has been indeed the case for Korea. Also, the establishment of sizable new plants will bring certain diversification of the industry. With capacity expansion fanned by increasing demand, the plastics industry in the 1970s is likely to claim the lion's share of petrochemical output.

**Note :** All statistics are quoted from the surveys made by Korea Development Bank.





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