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THE DEVELOPMENT OF THE PLASTICS INDUSTRY/  
IN YUGOSLAVIA/1/

by

N. Novicevic\*

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\* Research Engineer, Chemical Industry "Milan Blagojevic", 12240 Ljuban, Yugoslavia

We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards even though the best possible copy was used for preparing the master fiche.

## Current Status of the Plastics Industry and its Future Prospects for Development in Yugoslavia

In last ten years production and processing plastic materials were developed significantly in Yugoslavia. Among the most important plastics it was produced in 1972 as follows:

|               |        |       |
|---------------|--------|-------|
| PE            | 20.000 | tones |
| PVC           | 19.000 | "     |
| PS            | 13.000 | "     |
| PVA 100%      | 12.000 | "     |
| Cellulosics   | 5.000  | "     |
| Reg.cellulose | 9.500  | "     |
| Thermostab.   | 16.000 | "     |
| Polyesters    | 2.500  | "     |
| Others        | 18.000 | "     |

Meanwhile, processing outputs, particularly for the main thermoplastics, were increased more than production ones. So in 1972 over 50.000 t. PE, PVC, and PS were imported. Capacities in construction are going to provide the country needs for polyolefines PVC and PS at least until 1980. As it is known, Hemijska Industrija Panjevo is building output of 100.000 t. PE high and low density and 40.000 t. PVC, Organsko Hemijska Industrija Skoplje - 40.000 t. PVC and Organsko Hemijska Industrija Zagreb - 35.000 t. PS. At Zadar the output of 20.000 t. - 25.000 t. has recently been put on stream, while Jugovinil Split also plans significantly increase of its PVC production.

Our consumption of plastic materials is rather low in comparison with developed West-European countries and some socialistic ones, for example, Tchechoslovakia and DDR.

It should be mentioned that the consumption of plastic materials depends on many factors but the national income takes an important place.

On diagram it can be seen clearly how consumption of plastic per capita increases with raising of national income. From the same diagram some exception are seen in the case of Japan and

Italy. In these countries consumption of plastics is remarkably higher than it would correspond to their national incomes. It can be explained by lack of natural raw materials. In USA, there is a completely reversed case.

In a forecast from 1972, on the base of a foreseen increase of the national income of about 8%, by a rate of growth for whole industry at 9,3% and chemical industry at 11,2% per annum, and on base of analogy with countries as Italy, Austria, Spain, we supposed a rate of plastics consumption in three alternatives: 10, 13 and 16% for period from 1970 to 1985. But it can be considered that the rate of 13% is the most real, and according to it production and consumption of plastics would be:

|      |       |            |       |       |     |     |        |
|------|-------|------------|-------|-------|-----|-----|--------|
| 1975 | ----- | 291.000 t. | ----- | 15,25 | kg. | per | capita |
| 1980 | ----- | 535.000    | ----- | 23,4  | "   | "   |        |
| 1985 | ----- | 988.000    | ----- | 41,4  | "   | "   |        |

This indicates that we would reach French consumption from 1972 in 1985. There are some other forecast, foreseeing a faster rate of growth, but they are thought as too ambitious.

In Yugoslavia about 20.000 people are occupied by processing of plastic materials in about 200 enterprises. They run a business in one of four organized forms:

- Separate OOUR (The basical organisation of associated work) in the frame of the plastics producers, as it is case at Jugovinil, OKI, OHIS and Viniplastika.
- Separate enterprises or OOUR which are occupied only by processing . This is the most numerous organized form.
- Processing in the frame of enterprise or OOUR from the others branches of industry, where the plastics processing present only a part of technology (for instance lamination in industry of paper.).
- Separate OOUR or processing department whose products are intended as constructive elements (radio and TV, auto apparatus industries), or present inseparable part of final product (electro-industry) or as packaging material (industry of fertilizers).

It is very difficult to establish the total existing processing capacities because they depend on the sort and the assortment of processed plastic materials. They are foreseen at about 200.000 to 250.000 t. Part of the machinery is almost out of date physically and technically and new equipments are purchased everyday without any evidence. Otherwise, in our country there are at disposal all basic techniques for processing, and its structure is seemed to develop following the streams in developed countries.

Essential difference lies maybe on a factor that at us there are still insufficient studied fields of application, for instance building, agriculture, where an important development could be expected for the future.

Use of plastic materials in our country becomes more and more industrial use as defined engineering materials where the properties are looked for according technical specifications.

This almost requires high skilled people, well equipped centres for semi - industrial processing and to have a suitable institution for studying of plastics use in different fields of economy. Also, it is appeared on need of standardisation and correct control of products quality.

Finally we have to undertake serious analyses and measures as we could rise this branch on higher technical and economical level as the distance between us and industrial developed countries would be reduced.

Today, we are interested in new techniques which follow plastics application in agriculture and building.

Celuka and OMF Chimia processes for production of profiles and pipes on standard extruder from PS, PVC and PE are very interesting. I would like know all in connection with these products and their application, particularly pipes for waste home water.

Something completely new for us, production unwaved plastic webs and their ennobling with PU, PVC and so on.

Informations about use some filers and any modifications in aim of stretching of plastic materials.

Solutions in fight against pollution of environment in connection with plastics waste.





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