OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as "developed", "industrialized" and "developing" are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

03937

Distribution
LIMITED

ID/WG.137/20
18 September 1972

Original: ENGLISH

United Nations Industrial Development Organization

Symposium on the Development of the Plastics Fabrication Industry in Latin America

Bogotà, Colombia, 20 November - 1 December 1972

PRESENT STATUS AND FUTURE PLANS OF THE PLASTICS INDUSTRY IN BRAZIL [1]

by

J.M. de OLIVEIRA RAMOS

Brazil

[1] The views and opinions expressed in this paper are those of the author and do not necessarily reflect the views of the secretariat of UNIDO. This document has been reproduced without formal editing.

id.72-6022

INTRODUCTION

THE PETROCHEMICAL INDUSTRY IS THE MAIN RESPONSIBLE FOR THE BOOMING OF OUR PLASTIC INDUSTRY WHICH HAS THE POSSIBILITY IN A NEAR FUTURE, TO BE INDEPENDENT FROM THE IMPORT OF RAW MATERIAL (RESIN) TO SUPPLY THE LOCAL TRANSFORMERS.

FROM 1966 TO 1970, BRAZIL HAD AN INCREASE FROM 29.000 TONS TO 120.000 TONS OF IMPORTED RESINS, BEING THE POLYETHYLENE OF LOW DENSITY, THE MAIN ITEM. THE PVC TRANSFORMERS, SPECIALLY RIGID PVC PIPES, WHICH REPRESENTS 60 PERCENT OF THE TOTAL PVC CONSUMPTION, WILL INCREASE ITS CONSUMPTION ALSO, FROM 50.000 TONS TO 110.000 TONS IS EXPECTED THIS YEAR.

ELCLOR IS THE LARGEST MANUFACTURER OF PVC AND PRODUCES 40.000 TONS PER YEAR; THEIR FORECAST FOR 1972, IS 65.000 TONS. THEY STARTED THE PRODUCTION IN 1941, AND 95,2 PERCENT OF THE STOCKS BELONGS TO SOLVAY.

THE SECOND MANUFACTURER IS GEON (BELONGS TO MATARRAZZO GROUP) WITH 11.000 TONS PRODUCED IN 1971. THEY ARE FORECASTING 18.000 TONS FOR 1972. FURTHERMORE, THEY HAVE A INSTALLED CAPACITY TO PRODUCE 70 TONS PER MONTH OF CO-POLYMER VINYL ACETATE, WHICH PRESENT PRODUCTION IS NEAR 50 TONS PER MONTH. THE TECHNICAL ASSISTANCE IS GIVEN BY B.F. GOODRICH TO MATARRAZZO.

IF WE CONSIDER THE INVESTMENT OF US$ 18,000.000:

- UNIPAR - INDÚSTRIAS PETROQUÍMICAS S.A.	-	50 %	OF STOCKS
- CHEMISCHE WERKE HULS A.G.	-	33,33%	"
- BAYER DO BRASIL	-	16,66%	"

THE PRODUCTION OF SUSPENSION PVC IS EXPECTED, THIS YEAR, TO BE NEAR 30.000 TONS TO SUPPLY THE APPROXIMATE 110 CUSTOMERS. THE INSTALLED CAPACITY OF 40.000 TONS PER YEAR, FORECASTED AN IMMEDIATE INCREASE TO 60.000 TONS.

CONSIDERING THAT, IN 1973 THE NATIONAL PRODUCTION OF PVC, IS EXPECTED TO REACH 143.000 TONS AND THE CONSUMPTION IS FORECASTED FOR 120.000 TONS, WE CAN EASILY SEE ANOTHER GAP FOR THE COMING YEAR FOR THIS TYPE OF RESIN.

CONSIDERATIONS ON POLYETYLENE - (LOW DENSITY)

FOLLOWING THE DATA RECEIVED FROM THE "SÃO PAULO PLASTIC ASSOCIATION", THE PRODUCTION IN 1971, WAS 30.000 TONS, TO SUPPLY A MARKET OF 85.000 TONS. OBVIOUSLY, THE GAP OF 55.000 TONS WAS FILLED BY IMPORTED RESIN.

APPROXIMATELY, 70 PERCENT OF THIS RESIN IS CONSUMED BY THE PACKAGING INDUSTRY. IT IS FORECASTED FOR 1972, A CONSUMPTION OF 105.000 TONS OF THIS RESIN.

THE EXCLUSIVE PRODUCER IS UNION CARBIDE, INSTALLED IN CUBATÃO, SÃO PAULO, IN 1970, TO PRODUCE 130.000 TONS OF ETHYLENE, 37.000 TONS OF ACETHYLENE AND 19.000 TONS OF BENZENE. THEY ARE HAVING SOME TECHNICAL PROBLEMS AND WILL RECEIVE FROM PETROQUÍMICA UNIÃO, AN INJECTION OF 60.000 TONS OF ETHYLENE, TO OVERCOME THIS TEMPORARY SITUATION.

POLIOLEFINAS S.A., IS THE GREAT HOPE FOR THE TRANSFORMERS OF POLYETHYLENE; THE INAUGURATION OF THIS COMPANY WAS ON AUGUST 4, THIS YEAR, IN SANTO ANDRÉ, SÃO PAULO.

A DEAL WAS MADE BETWEEN POLIOLEFINAS S.A. AND NATIONAL DISTILLERS CHEMICAL CORP., PAYING THE RIGHTS TO PRODUCE POLYETHYLENE, ACCORDINGLY THE PROCESS OF HIGH PRESSURE, WITH PERMISSION TO SELL ALL OVER THE WORLD, EXCEPT JAPAN. THE FORECAST FOR 1974 OF THE PRODUCTION OF POLYETHYLENE IS 80.000 TONS PER YEAR.

POLYETHYLENE - (HIGH DENSITY)

IN 1971, BRAZIL HAVE PRODUCED 9.000 TONS OF POLYETHYLENE OF HIGH DENSITY. THE EXCLUSIVE PRODUCER OF THIS TYPE OF RESIN - ELETROTENO,

EXPECTS TO PRODUCE THREE TIMES MORE IN 1972. THIS COMPANY WAS INSTALLED IN 1957, HOWEVER, STARTED WITH THE PRODUCTION IN 1962. ITS ACTUAL CAPITAL IS 7,5 MILLION DOLLARS, AND THIS CAPITAL IS DIVIDED BETWEEN ELCLOR - 76 % AND

SOLVAY - 24 %

DOW CHEMICAL IS PLANNING FOR 1974, IN THE STATE OF BAHIA, A PRODUCTION OF 20.000 TONS PER YEAR OF THIS RESIN. THE PROJECT FOR THIS INSTALLATION WAS APPROVED IN DECEMBER 1971 BY C.D.I.

CONSIDERATIONS ON POLYSTHYRENE

IN 1971, THE THREE COMPANIES - DOW CHEMICAL, KOPPERS AND B.A.S.F., SUPPLIED THE MARKET WITH 30.000 TONS OF RESIN, WHICH WAS EXACTLY THE CONSUMPTION. NO GAP IN THIS AREA.

DOW CHEMICAL IS INVESTING US$ 40,000.000 TO DOUBLE ITS ACTUAL CAPACITY OF 15.000 TONS.

KOPPERS STARTED IN 1950, AND HAVE FORECASTED FOR THIS YEAR, A PRODUCTION OF 20.000 TONS AND THEY ARE PLANNING TO PRODUCE IN 1973, 41.000 TONS. KOPPERS SUPPLY BOTH TYPES OF POLYSTYRENE, THE REGULAR ONE AND THE ATOXIC. APPROXIMATELY 1.000 CUSTOMERS ARE SUPPLIED BY THEM.

THEY PLAN TO PRODUCE IN 1973, THE EXPANDED POLYSTYRENE FOR THE PACKAGING AND CONSTRUCTION INDUSTRIES. SO FAR, THIS TYPE OF RESIN IS ONLY PRODUCED BY B.A.S.F., IN THEIR PLANT IN GUARATINGUETÁ, SÃO PAULO. THE PRESENT PRODUCTION OF B.A.S.F. IS 7.000 TONS PER YEAR.

THE MARKET OF EXPANDED POLYSTYRENE IS GROWING 40 PERCENT PER YEAR. BESIDES THE THREE MENTIONED MANUFACTURERS, THERE IS ANOTHER ONE, NAMED BAKOLAR, IN ARATU, BAHIA, WITH A FORECAST OF 30.000 TONS PER YEAR OF STYRENE AND 6.000 TONS OF POLYSTYRENE.

OBVIOUSLY, TO SUPPLY ALL MANUFACTURERS OF POLYSTYRENE, THE COMPANY C.B.S. (COMPANHIA BRASILEIRA DE ESTIRENO) HAD TO EXPAND. IN 1971, THEY STARTED WITH A UNIT IN CUBATÃO, PRODUCING 60.000 TONS PER YEAR. THIS COMPANY HAS KOPPERS AS ITS PRINCIPAL STOCKHOLDER.

THERMOSETTINGS - (CONSIDERATIONS)

"RESINA SINTÉTICA DE GRAVATAÍ", BELONGS TO THE SINTEKO GROUP, HAS PRODUCED IN 1971, 20.000 TONS OF FORMALDEHYDE. THEY ARE INSTALLING IN ARATU THE RESIBA, AND IT IS FORECASTED A PRODUCTION OF 10.000 TONS OF FORMALDEHYDE, 5.000 TONS OF UREA AND 1.500 TONS OF PHENOLICS. ALBA INDUSTRIAS QUÍMICAS, IS INSTALLING IN THE NORTHEAST, A COMPLEX TO PRODUCE THE SAME TYPE OF RESIN.

COMMENTS ON POLYESTERS AND FIBERGLASS

TWO MAIN ENTERPRISES ARE FIGHTING FOR THIS BRAZILIAN MARKET. ALBA AND RESANA S.A. THE MONTHLY CONSUMPTION OF THIS RESIN IS 600 TONS. THE FUTURE OF THIS LINE DEPENDS ON THE PRODUCTION IN BRAZIL OF FIBERGLASS, WHICH IS PROJECTED BY OWENS CORNING, IN SÃO PAULO.

EPOXY SITUATION

THE TWO LOCAL PRODUCERS - DOW QUÍMICA S.A. AND INDUSQUIMA S.A., ARE NOT VERY OPTIMISTIC REGARDING THE MARKET POTENTIALITY. THE TOTAL PRODUCTION OF DOW IS 1.500 TONS PER YEAR AND THE MARKET HARDLY ABSORBS THIS QUANTITY. THE RAW MATERIALS TO PRODUCE THE EPOXY RESINS ARE IMPORTED FROM THE UNITED STATES AND CANADA.

ACRYLIC SITUATION

THE LOCAL PRODUCERS ARE STILL STRUGGLING WITH THE SMALL EXISTENT MARKET.

THE PRODUCTION IN 1971 WAS 410 TONS. FOR 1972 IS FORECASTED 600 TONS. THE COMPANY PROQUIGEL IS MANUFACTURING 50 TONS PER MONTH OF ACRYLIC RESINS, FOR INJECTION AND EXTRUSION LINES. EVEN WITH THE CUSTOM PROTECTION (30 PERCENT OF TAXES), THE ACRYLIC RESINS PRODUCED IN BRAZIL HAS HIGHER PRICES COMPARED WITH THE IMPORTED MATERIAL. ONE COMPANY, IN BAHIA, WITH A KNOW-HOW FROM THE JAPAN GAS COMPANY, invested US$ 30,000.000 and expects to produce in 1973, 5,000 tons per year of methyl methacrylate.

Polypropylene and ABS

In the Northeast, there is a project for 30,000 tons per year named Agrabrazil with the know-how from Anisiem. Montecatini intends to manufacture in Capuava, São Paulo, 35.000 tons of polypropylene.

With regard to ABS, we hope that Koppers until 1973, will be in production. The quantity was announced yet.

Polyether and TDI

Propenasa - Produtos Químicos Nacionais, with a capital of 11 million dollars, installed in Guarujá, São Paulo, (80% - Dow Chemical and 20% - Pirâmides Brasília), will produce 14,000 tons of polypropylene glycol.

In Aratu, Bahia, DuPont de Nemours will produce early 1974, 23,000 tons of TDI.

ables I

PRODUCTION AND CONSUMPTION OF THE PLASTIC RESINS FOR THE YEARS 1970/1971/197[illegible]

	1970		1971		1972	
	PRODUCTION	CONSUMPTION	PRODUCTION	CONSUMPTION	PRODUCTION	CONSUMPTION
	TONS		TONS		TONS	
A B S	-	1.500	-	2.400	-	3.600
CO-POLYMER CHLORINE POLYVINYL ACETATE	1.418	3.740	1.420	4.300	3.470	4.730
P V C.	43.500	75.000	46.700	93.300	49.000	114.000
POLYSTYRENE	26.600	26.600	32.000	32.000	38.000	38.000
POLYETHYLENE - LOW DENSITY	-	-	30.000	85.000	57.000	105.000
POLYETHYLENE - HIGH DENSITY	9.000	15.000	9.000	17.600	17.400	22.000
POLYPROPYLENE	-	3.000	-	4.500	-	6.500
T O T A L	80.518	124.840	119.120	239.100	164.870	293.830

Table II

DISTRIBUTION OF ELASTOMERS CONSUMPTION IN BRAZIL BY PRODUCT LINE

ELASTOMER TYPE	HEAVY INDUSTRY																		LIGHT INDUSTRY MECH.GOODS		TOTAL
	AUTO TIRES		AUTO TUBES		CAMEL PACK		CABLES		HOSES		BELTS		BICYCLE TIRES		BICYCLE TUBES		OTHERS				
	TONS	%	TONS	%	TONS	%	TONS	%	TONS	%	TONS	%	TONS	%	TONS	%	TONS	%	TONS	%	TONS
Nat. Rubber	26,555	90,7	85	0,3	1,074	3,4	20	0,1	38	0,1	782	2,7	271	1,0	111	0,3	359	1,2	5,556	16	34,831
Nat. Latex	26	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,882	99	1,908
Synth.Elastomers	37,478	70,5	4,645	8,7	9,129	17,2	474	0,8	482	0,9	401	0,8	239	0,5	192	0,4	111	0,2	30,068	36	83,219
Synth.Latex	672	97,5	-	-	-	-	-	-	4	0,6	13	1,0	-	-	-	-	-	-	1,446	68	2,135
Reclaim	4,551	67,5	-	-	968	14,4	-	-	21	0,3	32	0,5	782	11,6	-	-	387	5,7	13,861	67	20,602
T O T A L	69,282	77,0	4,730	5,3	11,171	12,4	494	0,6	545	0,6	1208	1,4	1,292	1,4	303	0,3	857	1,0	52,813	37	142,695

Table 1.I

ELASTOMERS	1972	1973	1974	1975	1976	1977	1978	1979	1980
1. <u>SYNTHETICS</u>									
SBR	73 000	78 000	84 000	89 000	95 000	104 000	110 000	121 000	130 000
STEREO TYPES	13 100	14 200	16 500	17 500	20 400	22 200	25 600	30 200	35 000
BUTYL	7 100	7 600	8 200	9 100	9 500	9 000	9 600	10 800	12 000
CHLOROPRENE	3 600	3 800	4 100	4 400	4 700	5 200	5 600	6 200	6 800
NITRILE	1 000	1 100	1 200	1 300	1 400	1 500	1 600	1 800	2 000
OTHERS	5 200	4 300	4 000	3 700	5 000	6 100	7 600	8 000	9 200
SUB-TOTAL	102 000	109 000	118 000	125 000	136 000	148 000	160 000	178 000	195 000
2. <u>NATURALS</u>	41 000	44 000	45 000	49 000	51 000	54 000	55 000	52 000	51 000
3. <u>RECLAIM</u>	23 000	25 000	27 000	29 000	31 000	33 000	35 000	37 000	40 000
TOTAL	166 000	178 000	190 000	203 000	218 000	235 000	250 000	267 000	286 000

Table IV

DEMAND X AVAILABILITY OF

SYNTHETIC ELASTOMERS

ELASTOMERS	AVAILA - BILITY 1976/80	DEMAND		BALANCE + A -	
		1976	1980	1976	1980
S B R	110 000	95 000	130 000	+ 15 000	-20 000
STEREOTYPES	27 500	20 400	35 000	+ 7 100	- 7 500
BUTYL	-	9 500	12 000	- 9 500	-12 000
CHLOROPRENE	-	4 700	6 800	- 4 700	- 6 800
NITRILE	-	1 400	2 000	- 1 400	- 2 000
OTHERS	-	5 000	9 200	- 5 000	- 9 200
T O T A L	137 500	136 000	195 000	+ 500	-57 500

Figure 1

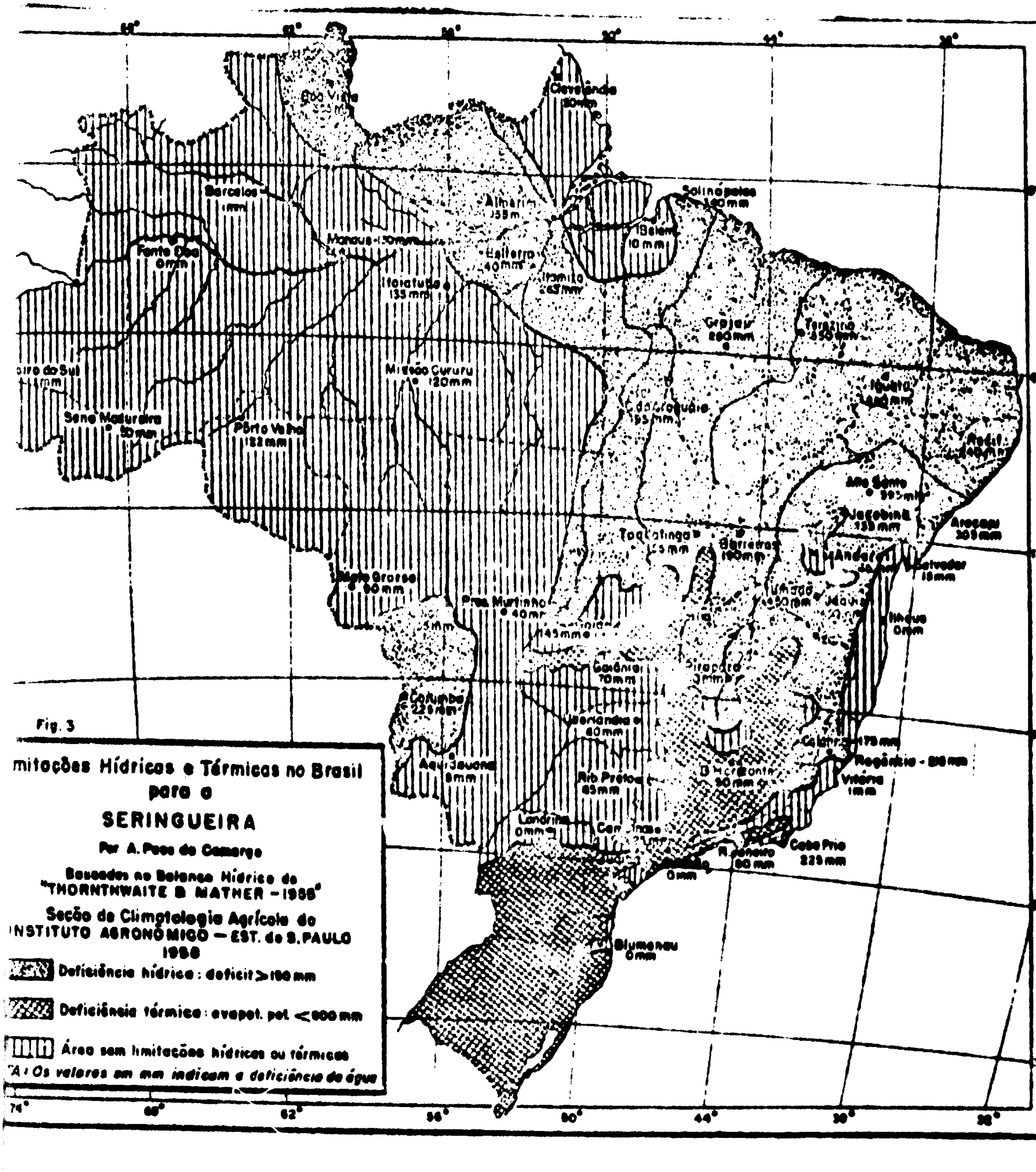
Fig. 3
mitações Hídricas e Térmicas no Brasil
para a
SERINGUEIRA
Por A. Paes de Camargo
Baseados no Balanço Hídrico de
"THORNTHWAITE & MATHER - 1955"
Secção de Climatologia Agrícola do
INSTITUTO AGRONÔMICO - EST. de S. PAULO
1958
Deficiência hídrica: deficit > 150 mm
Deficiência térmica: evapot. pot. < 900 mm
Área sem limitações hídricas ou térmicas
A: Os valores em mm indicam a deficiência de água
Barcelos
Manaus
Almeirim
Belém
Porto Velho
Missão Cururu
Goiânia
Uberlândia
Rio Preto
Blumenau
Cabo Frio
Salvador
Recife
Vitória
Corumbá
Aquidauana
Jacobina
Grajaú
Barreiras
Cleveland
Solinópolis
Ilhéus

COMMERCIALIZATION OF PLASTIC PRODUCTS IN BRAZIL

BUYERS

1.- RETAILERS
2.- WHOLESALERS
3.- SPECIALIZED SUPPLIERS
4.- AUTOMOBILE INDUSTRY
5.- FURNITURE INDUSTRY
6.- BUSES AND BODY FRAMES
7.- CONSTRUCTION COMPANIES
8.- SHOES
9.- BOOK BINDERS
10.- OTHERS

1.- RETAILERS

THEY ARE A GREAT NUMBER OF SMALL SHOPS.

2.- WHOLESALERS

ABOUT 120 WHICH IS CONSIDERED A REDUCED NUMBER OF FIRMS SPECIALIZE IN THE SALES OF HEAVY SUPPORTED VINYLS, MAINLY FOR THE FURNITURE LINE.

3.- SPECIALIZED SUPPLIERS

DEDICATED NORMALLY TO THE SALES OF BUILDING MATERIAL, MAINLY FLOORING AND WALL COVERING.

4.- AUTOMOBILE INDUSTRY - MARKET PARTICIPATION

- VOLKSWAGEN .... 50 %
- FORD .... 25 %
- CHRYSLER .... 4 %
- GENERAL MOTORS ...... 16 %
- MERCEDES BENZ .... 4 %
- ALFA ROMEO .... 0,8 %

./.

THE TOTAL PRODUCTION IN THE LAST FIVE YEARS WERE:

- 1971 .... 500,000 UNITS
- 1970 .... 400,000 "
- 1969 .... 350,000 "
- 1968 .... 280,000 "
- 1967 .... 220,000 "

5.- FURNITURE INDUSTRY

THE MARKET IS DIVIDED AMONG 10 LARGE MANUFACTURERS, UNDER A TENSE SITUATION AND LONG RETURN OF PAYMENTS.

6.- BUSSES AND BODY FRAMES

THE PRODUCTION IN BRAZIL IS AROUND 8,000 TO 8,500 BODIES PER YEAR. THE MARKET IS DIVIDED AMONG SIX BIG MANUFACTURERS: FIVE INDEPENDENT AND ONE ASSOCIATED WITH MERCEDES BENZ.

7.- CONSTRUCTION COMPANIES

IT SEEMS TO BE ONE OF THE BIGGEST LINES IN BRAZIL. IN 1971, AROUND 13,000 SQMETERS OF FLOORING WERE LICENSED BY THE GOVERNMENT FOR HOUSING:

- SÃO PAULO .... 50 %
- GUANABARA .... 20 %
- BRASILIA .... 10 %
- PORTO ALEGRE .... 10 %
- OTHERS .... 10 %

THE GOVERNMENT IS ANOTHER LARGE BUILDER. THE LOW COST OF WOOD FLOORING, IS THE BIGGEST COMPETITOR OF VINYL AND RUBBER.

- VINYL FLOORING .... US$ 3,00/SQM
- WOOD .... US$ 1,60/SQM
- RUBBER .... US$ 5,60/SQM
- RUBBER PVC .... US$ 5,60/SQM

8.- SHOES

DUE TO THE GOVERNMENT POLICY TO EXPORT, LEATHER HAS BEEN ONE OF THE PREFERRED ITEMS BEING EXPORTED, OPENING A NEW FIELD FOR PLASTIC SHOES.

./.

BREAKDOWN BY TYPE OF PRODUCT

	%	GROSS PROFIT
- SUPPORTED	40	.40
- UNSUPPORTED	30	.40
- EXPANDED	20	.20
- CONSUMERS	63	.40
- SELF-ADHESIVE	65	.50

SUPPORTED

- WALL COVERING - A MARKET OF OVER 1,000,000 SQMETERS IS OPEN IN BRAZIL.

UNSUPPORTED

GOOD MARGIN AND REQUIRE A HEAVY INVESTMENT SUCH AS HIGH QUALITY CALANDER REDUCING THE AMOUNT OF COMPETITORS. MAINLY THE 0.004" TYPES ARE THE MOST POPULAR, PLAIN AND PRINTED.

EXPANDED

LOW MARGIN PRODUCTS, HIGHLY COMPETITIVE AND LOW MARGIN.

13. 8. 74