



TOGETHER
for a sustainable future

OCCASION

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



TOGETHER
for a sustainable future

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



06155



Distr.
LIMITED

ID/WG.192/5
15 October 1974

Original: ENGLISH

United Nations Industrial Development Organization

First Training Programme on the Production and
Application of Synthetic Fibres

Vienna, Austria, 7 - 30 October 1974

PRESENT STATUS AND FUTURE PLANS OF THE
DEVELOPMENT OF THE SYNTHETIC FIBRE INDUSTRY
IN BRAZIL^{1/}

by

M. Souto Lyra*

* Engineer, Department of Industry and Commerce, Rio de Janeiro.

^{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.

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.

THE TEXTILE INDUSTRY

The major problem faced by the Brazilian textile industry was the shortage of raw material. Foreign market prices in cotton, wool, silk, artificial and synthetic yarns reflected on domestic prices and to compensate this the Government gave the industry fiscal and other tax incentives, benefits to textile exports, duty-free machinery and equipment imports and easier financing.

To reduce price of imported raw material the Customs Policy Board (CPA) reduced the custom duties up to 55% for a period of six to twelve months.

In 1973 the textile production was dropping by 20 percent. After those incentives it went up again and artificial and synthetic fabrics productions increased by 10,5 percent.

The textile industry in Brazil has been leading industrial sector in investment, in equipment and new machinery.

This means 4.000 textile plants employing 300.000 people.

The Projection for 1975 is 11,5 billion cruzeiros (1.640.000 dollars) production value compared with 8,6 billion cruzeiros (1.230.000 dollars) in 1970.

Consumption per capita in Brazil is one of the lowest in the world. it was 4,7 kilograms in 1970, went up to 5,6 kilograms in 1973, and an optimistic projection estimates 6,3 kilograms for 1975.

Natural fibers represents 69,8% of the total consumption against 10,0% for the rayons and 20,2 percent for the synthetics.

Although the cotton fibers are still the leader on the market synthetic fibers are getting better position the same as it happened in other Countries. The percent increase from 1963 to 1973 was 24,8 percent for cotton and 218,4 percent for artificial (rayons) and synthetics.

Many incentives are given to foreign investments. One of those incentives is a liberal law (Decree 1236) which allows the physical transfer to Brazil of the complete operational unit entirely exempt of duties and taxes. The only compromise to be assumed by the owners of the unit is to export from Brazil at least 50% of its production after the unit is installed.

A Government department, the C.P.I. - Industrial Development Board controls and fixes the selection for new industries to be implanted or to be modernised.

Any company intending to modernise its equipment may have this equipment imported paying no duties.

= Also foreign technology and know-how are welcome to Brazil.

The bulk of imported technology has been applied in the capital and intermediate goods industries. In the table of distribution of foreign technology by branch of industry the textiles is included with, 8,5% on the total, in 1973.

In 1973, in what refers to imported "know-how", the imported technology cost Brazil approximately one billion dollars as compared with 785 million dollars in 1972.

LABOUR -

Some years ago one of Brazil's major concerns was the labour shift problem . The massive migration from the rural to the urban areas and the high population growth in the hinterland were regarded as the spectre of unemployment in the large cities .

Doubts were frequently expressed as to the industry's capacity to keep on absorbing the big flow of labour to the extent that proposals were made to give a new form to the Brazilian development model in favor of greater utilization of cheap and plentiful labour rather than of expensive and hard-to-get capital .

Although Brazilian economic growth has been extremely rapid over the last five years it's not to say that the problem concerning the labour market has been solved . However , the outlook for the social improvement of labour, especially the skilled one , is now much more real .

A good majority of skilled worker is, by now , enjoying incomes that are staying ahead of the average increase in industrial productivity - a new problem to be studied -

Textile industry employs 300.000 workers, which represent 12% of the industrial labour force and the synthetic industry employs about 19.000 people .

EXPORTS

In 1973 Brazil exported 170 million dollars , 19 percent more than in 1972.

The European market has been a major buyer of Brazilian Textiles specially for ready-made clothings .

In 1971, Brazil exported to Europe 6,3 million dollars and in 1973 exported 50 million dollars .

Brazil signed bilateral agreements on textiles with the United States, Canada , Great Britain and France.

We had quota problems with the United States , that after the first agreements imposed some custom duties to the Brazilian textiles and shoes . Even so , we still can compete in price and quality not only in what refers to yarns but specially on ready-made clothing .

R A W M A T E R I A L

The major part of the raw material used in the synthetic fibres industry is still imported .

The actual producers of polyester use imported DMT as raw material (Rhodia , Soutex , Sudantex , CBC / HOECHST) . In 1974 RHODIA will produce terephthalic acid for its own use .

The MATARAZZO Company , in connection with Toray is already using imported TPA as raw material .

Polyquimica Co. (AKZO) is using polyester chips but will produce its own DMT in 1975.

For the production of Nylon the majority of producers uses coprolactoma (MATARAZZO , NAILONSIX/ROHM & HASS , SOUTEX , CBC, FIBRA/SNIA-VISCOVA).

The Celanese do Brazil uses "N" salt and RHODIA uses adipic acid and hexamethylenediamide .

All the acrylic fibres are produced from the monomer humid process -

Fisiba will use for acrylic fibres production , the MITSUBISHI know-how with dry process .

A relatively small percentage of petrochemical product connected to the synthetic fibres industry is being produced in Brazil as follows :

SELECTED PETROCHEMICALS

Production capacity (tons) of main synthetic fibres raw materials .

PRODUCTS	ACTUAL PRODUCTION CAPACITY	Planned Production CAPACITY
Acrylonitrile	-----	24.000
Terephthalic acid	200.000	08.000
Benzene	158.800	---
Caprolactam	-----	35.000
DMT	-----	60.000
Monoethylene-glycol	-----	170.600
Paraxylene	-----	30.000
Polyethylene HD & LD	196.000	162.000
Polypropylene	-----	50.000
Propylene-glycol	-----	15.000

Four companies asked the Government, through the Industrial Development Board, permission and incentives to produce terephthalic acid , (75.000 tons/year in 1976) ;

Acrylonitrile (24.000 tons/year in 1977) .

Caprolactam (35.000 Tons/year in 1976) .

Dimethyl-terephthalate (60.000 tons/year in 1976)

and Monoethyleneglycol (130.600 tons/year in 1974/1977)

(Please report to table nº 8) .

Up to 1973 only two companies, Phodia and Soutex, were the ones in those conditions.

Almost all plants produce different types of synthetic fiber and as they are medium-sized industry, this program of production has a negative interference in the cost prices.

Nylon 6 is being produced in ten plants, nylon 66 in three plants, polyester in nine and polypropylene in six plants.

The production of synthetic fibers is growing from year to year.

Nylon increased from 10.600 tons/year in 1965 to 40.000 tons/year in 1973.

The polyester production, from 3.900 tons/year in 1965 went up to 53.900 tons/year in 1973.

The production of acrylic fibers started in 1968 with 700 tons/year going up to 9.200 tons/year in 1973. Also the polypropylene starting in 1968 with 100 tons/year, went to 116.200 tons in 1973.

In the last three years (1971 - 1973) the production of nylon filament increased in 296% and the nylon staple increased in 210%.

The production of polyester filament increased from 5.700 tons/year to 27.218 tons/years growing 477% and the polyester in 175%.

The acrylic production in the three last years had increased in 224% for the staple. (From 4.105 tons/1971 up to 12.400 tons in 1973)

The production of polypropylene tape for industry (bags) went from 3.462 tons/1971 to 11.897 tons/1973 - growing 343%.

SYNTHETIC FIBERS

PRODUCTION

fibres

The Brazilian synthetic industry includes 30 plants very well equipped with modern machinery and, in spite of difficulties connected with raw-material and lack of skilled labour, its productivity is high.

Many of the companies use foreign technology and know-how. Many pay royalties and licences, many are multi-national enterprises.

The largest company is the Rhodia Indústria Química e Têxtil (Rhône-Poulenc) one of the first producers of synthetic fibers in Brazil.

Rhodia produces nylon 66 in filament and staple for textiles, nylon 66 in filament for industrial purposes, polyester filament (tergal, Drogal) and staple and acrylic staple (Crylor, Tercryl).

Two North American groups invested in Brazil: Celanese do Brasil - Fibras Químicas, are producing, nylon 66 with North-American know-how, using the trade mark Celtril and Du Pont do Brasil being installed to produce Lycra (lycra).

The Japanese are also making big investments, not only for producing synthetic fibers, but also in textiles in general.

Safron-Teijin S/A Indústria Brasileira de Fibras, a Japanese-Brazilian group is producing Polyester filament and staple (Toroton).

From Europe we have Rhom & Hass Brasil S/A producing nylon 6 and polyester (filament only).

The major number of companies is still with its capacity of production below ten "minimum economic production size" and that is one of many reasons why Brazil is not able to compete in the international market of synthetic fibers and yarns.

According to the opinion of the UNIDO experts (6), the minimum economical size should be 5.000 tons/year of staple plus 3.500 tons/year of filament.

Consumption

An UNIDO expert, Mrs. Braunsteiner in her report about the synthetic fibers industry in Brazil (1972) estimated the following numbers for the consumption of those fibres in 1975 (1.000 tons/year):

Polyester (staple and filament) -	121,0
Polyamid (staple and filament) -	55,0
Acrylic (staple and filament) -	20,5
<u>T o t a l</u>	<u>196,5</u>

In last 1972 the, consumption of synthetic fibres was as follow: (1.000 tons/year - Not included polypropylene)

Polyester (staple and filament) -	48,6
Polyamid (staple and filament) -	39,1
Acrylic (staple and filament) -	14,7
<u>T o t a l</u>	<u>102,4</u>

(See table n° 6)

The numbers taken from the project presented to approval of the Industrial Development Board give the following effective production for the new plants to be producing in 1975 - (2)

Polyester (staple and filament) -	25,3
Polyamid (staple and filament) -	19,4
Acrylic (staple and filament) -	17,1
<u>T o t a l</u>	<u>55,8</u>

Then, adding these numbers to the production of 1973 we will have the following figures for consumption: in 1975(1.000 tons/year):

Polyester (staple and filament) -	73.9
Polyamid (staple and filament) -	58,5
Acrylic (staple and filament) -	31.8
<hr/>	<hr/>
T o t a l	164,2

The table nº 6 gives us an illustration of textile fibres consumption in the period of tons/year, from 1963 to 1973.

In any way the total production of synthetic fibres plus the imported amount has been at present time totally absorbed for domestic and export uses. We are short of yarn.

The knitting industry consumption of texturized synthetic yarn increased fantastically as our weaving capacity of production is going up with new imported machinery. From 1968 to 1973 were imported 3.952 wide diameter circular knitting looms, 1.008 stocking and hose looms. For regular weaving Brazil imported, in that period, 3.372 looms.

In 1970 Brazil started production of non-woven in synthetic fibres. In the beginning of this year, because of the new government anti-inflation policies, the textile industry had some difficult days and reduced drastically the production. Now production is going up again and almost all mills are working an average of 20 hours a day. Because of difficulties in getting raw material (nylon) the two largest carpet mills in Brazil are still working ten hours a day.

This is a very brief collection of data on the synthetic fibres industry in Brazil - We gave special emphasis to the production of fibres and did not refer to yarn and cloth manufacturing .

Any question on the Brazilian textile industry will be welcome at any time not only during our meetings but also after we will be back in our countries .

Our gratefulness to UNIDO for the opportunity given to us to meet each other .

Mario Souto Lyra
Av. Nilo Peçanha, 50- Gr.2612
RIO DE JANEIRO - BRAZIL .

TABLE No 1

PART II
WORLD PRODUCTION OF TEXTILE FIBERS AND CORRESPONDING RELATIVE PERCENTAGE

PERIOD	1930	1935	1938	1935	1940	1945	1950	1955	1960	1965	1970	1972	1978
Cotton	4,650	6,183	5,290	6,038	6,930	4,800	6,600	9,530	10,300	11,640	11,400	12,800	12,300
Artificial													
Fibers	0,015	0,085	0,210	0,490	1,100	0,660	1,600	2,300	2,600	3,400	3,480	3,500	4,300
Synthetics													
Fibers					0,805	0,020	0,070	0,260	0,700	2,000	1,700	6,300	12,300
% of cotton in the total	85	86	83	80	76	74	70	71	68	63	54	53	40
% of artificial													
In 1978 total	0.2	1	3	7	12	19	17	17	17	18	16	14	14
% of synthetics													
In the total							1	2	5	11	22	27	40

WORLD NON-CELLULOSIC FIBER PRODUCTION & PRODUCING CAPACITY BY COUNTRY (EXCEPT OLEFIN)

THOUSAND METERS

YEAR			WEST EUROPE																					EAST EUROPE & CHINA (INCL. ANA 7)																										
			IRELAND			FRANCE			WEST GERMANY			GREECE			ITALY/PALTA			PORTUGAL			BULGARIA		YUGOSLAVIA		ROMANIA		CZECH REPUBLIC																							
Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT
1966	0	103.6	38.2	57.0	0	0	0	124.4	16.7	241.1	247.0	222.7	469.7	0.7	0	0	0	157.6	130.2	290.8	2.5	7.8	5.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
1967	2.2	108.6	53.4	63.0	0	0	151.1	116.4	241.5	292.1	262.4	554.5	0.9	0	0	0	160.3	146.2	306.5	2.7	4.4	7.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
1968	8.3	108.6	81.0	296.9	0	0	141.7	151.4	291.8	428.8	367.4	786.2	1.4	0	0	0	170.2	160.8	326.3	2.4	5.5	7.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
1969	10.6	103.6	111.6	275.2	0	0	164.1	178.6	344.5	526.5	470.6	997.1	3.8	0	0	0	184.4	173.6	351.2	2.4	4.7	6.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
1970	13.2	142.5	104.7	267.3	0	0	180.1	208.1	388.2	599.7	468.3	1063.4	5.0	0	0	0	194.4	183.3	372.7	2.2	5.1	7.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
1971	22.2	168.7	114.2	304.3	0	0	197.3	226.7	414.6	632.6	500.0	1262.6	5.3	0	0	0	208.8	197.2	405.0	2.9	6.0	8.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
1972	25.6	167.6	111.8	288.9	7.9	0	216.3	235.3	417.6	632.6	500.0	1362.6	5.3	0	0	0	208.8	197.2	405.0	2.9	6.0	8.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
1973	25.5	187.9	131.9	399.8	14.5	7	216.5	245.5	435.2	677.5	501.7	1398.4	7.2	0	0	0	208.8	197.2	405.0	2.9	6.0	8.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
PRODUCING CAPACITY																																																		
1974	37.8	262.2	174.2	457.4	36.5	12.1	281.6	314.9	406.5	616.7	725.3	901.1	994.3	2066.4	11.7	0	11.7	446.4	549.0	895.4	5.6	21.8	26.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0											
1975	43.8	274.3	213.8	519.1	39.7	20.0	271.1	314.9	413.8	632.3	755.3	1125.2	1168.1	2342.5	22.1	33.0	55.1	561.1	685.5	1129.7	5.4	21.6	27.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0										

YEAR			WEST EUROPE																					EAST EUROPE & CHINA (INCL. ANA 7)																													
			IRELAND			FRANCE			WEST GERMANY			GREECE			ITALY/PALTA			PORTUGAL			BULGARIA		YUGOSLAVIA		ROMANIA		CZECH REPUBLIC																										
Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT
1965	26.6	79.5	52.1	3.8	40.0	14.8	54.8	2.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0														
1966	31.7	78.5	59.2	1.1	47.1	20.4	67.9	3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0														
1967	40.4	64.6	87.3	1.3	53.2	24.7	71.4	7.8	2	8	31.6	23.6	58.1	1343.3	1151.5	2094.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0														
1968	54.9	61.3	121.0	1.5	67.4	31.5	92.4	10.2	5.2	16.4	34.3	286.7	542.4	1371.7	1634.9	2060.6	11.0	23.2	34.2	4.4	13.0	17.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0														
1969	63.7	74.5	141.8	2.2	72.0	37.8	107.9	16.2	9.9	35.0	38.2	742.5	1066.8	1968.5	2366.1	0	17.5	35.4	52.9	4.5	10	14.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0														
1970	64.8	100.3	88.9	2.9	75.1	47.6	132.0	20.3	13.3	45.0	42.1	366.2	744.7	2037.2	1824.9	2678.1	22.0	50.0	62.0	10.0	11	15.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
1971	88.5	153.7	238.2	2.9	82.2	50.9	54.1	29.3	24.3	55.8	43.0	36.3	524.3	2091.1	1212.2	4123.3	32.0	41.9	63.9	11.5	28	40.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
1972	174.1	164.5	298.0	3.1	78.5	54.6	65.8	30.1	25.1	66.2	51.3	487.0	1030.7	2942.7	2619.5	5202.2	54.3	41.9	63.9	11.5	28	40.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
PRODUCING CAPACITY																																																					
1973	205.5	229.3	360.9	4.4	143.3	96.2	211.1	110.5	53.5	91.0	566.9	545.0	1146.8	3962.8	3158.7	7119.5	28.6	52.9	63.7	28.7	214.9	143.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
1974	232.1	283.7	424.2	4.1	124.5	92.2	253.7	68.3	22	124.5	634.5	503.5	1479.8	3400.4	4082.9	7483.3	28.6	52.9	63.7	28.7	214.9	143.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													

YEAR			WEST EUROPE & CANADA (INCL. ANA 7)															EAST EUROPE & CHINA (INCL. ANA 7)																																						
			IRELAND			FRANCE			WEST GERMANY			GREECE			ITALY/PALTA			PORTUGAL			BULGARIA		YUGOSLAVIA		ROMANIA		CZECH REPUBLIC																													
Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT	Y	S	WT
1967	5	8.4	24.3	18.6	27.1	33.7	1.4	30	16	1.3	86.4	27.7	9.1	17.0	153.9	56.4	212.3	0.4	6.4	6.8	217.1	146.8	43.5																																	
1968	20	1.5	30.4	48.0	29.6	57.6	2.7	5.3	6.0	32.0	55.3	43.3	5.2	23.3	177.9	67.5	255.4	1.9	6.6	10.5	264.1	197.7	43.8																																	
1969	37	3	10.4	37.1	27.0	39.2	5.8	7.5	9.4	27.4	67.3	61.9	1.1	21.2	217.2	78.3	288.5	2.4	6.2	10.9	302.7	230.5	53.2																																	
1970	48	5	17.9	5.8	27.8	39.6	6.0	5.0	10	32.5	74.5	103.6	6.6	24.9	36.5	227.5	96.2	313.7	5.5	12.4	17.9	361.0	296.0	637.8																																
1971	48	5	20.1	66.6	39.0	54.3	66.3	4.4	5.6	11.0	62.8	60	52.0	67.0	253.7	113.4	384.7	5.7	13.5	18.2	418.1	399.8	817.9																																	
1972	52	5	24.7	37.2	37.0	61.5	72.5	5.5	3	10.9	62.7	65.4	46	56.4	201.1	146.8	447.6	6.5	16.6	23.1	499.8	460.8	978.0																																	
1973	54	5	28.8	65.3	42.9	68.6	91.6	6.2	12.8	17.9	66.6	57.4	25.4	72.8	248.2	179.2	525.8	9.9	21.4	31.3	609.8	532.9	1182.6																																	
1974	54	5	30.4	39.5	39.5	130.7	7.3	11.9	15.2	62.4	76	30.6	87.8	114.7	368.4	244.1	632.5	8.7	29.3	39.0	666.3	672.0	1391.8																																	
PRODUCING CAPACITY																																																								
1975	67	5	120.1	62.3	111.3	184.8	6.5	17.9	24.4	116.8	177.9	233.7	32.3	55.4	607.7	460.2	897.6	23.1	33.1	56.3	967.6	963.3	1870.1																																	
1976	67	5	120.1	62.3	111.3	184.8	6.5	17.9	24.4	116.8	177.9	233.7	32.3	55.4	607.7	460.2	897.6	23.1	33.1	56.3	967.6	963.3	1870.1																																	

These totals do not include output from Denmark and the Soviet Union for fibers produced in North Korea. Note the directory listing of these countries regarding any available information.

1. Figures include Belgium, Netherlands and Luxembourg.

TABLE NO. 4

REVENUE	CAPACITY	PROG	EXPEND	PROG	EXPEND	PROG	EXPEND	PROG	EXPEND	PROG	EXPEND	PROG	EXPEND
10,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
15,000	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
20,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
25,000	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
30,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
35,000	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500
40,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
45,000	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
50,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
55,000	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500
60,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
65,000	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500
70,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000	7,000
75,000	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500
80,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000
85,000	8,500	8,500	8,500	8,500	8,500	8,500	8,500	8,500	8,500	8,500	8,500	8,500	8,500
90,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000
95,000	9,500	9,500	9,500	9,500	9,500	9,500	9,500	9,500	9,500	9,500	9,500	9,500	9,500
100,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000

REMARKS

TABLE NO 5

ITEM	1976	1977	PROJECTS FOR 1977			1978	1979	1980
			1976	1977	1978			
...	3,348	3,280	3,440	...	...	...
...	1,200	1,200	...	...	...	...
...	2,168	2,208	2,208	...	...	...
...	4,224	4,024	4,224	...	...	...
...	12,660	13,075	13,750	3,900(2)	4,200(2)	...
...	1,100	1,100	1,100	2,000(2)	2,000(2)	...
...	11,908	12,568	13,500	9,860(2)	10,800(2)	...
...	800	5,200	7,400	2,400	...	...
...	10	500	300	...	...	...
...	6,240	3,120	2,368	...	...	...
...	800	500	3,000	...	...	...
...
...	5,560	13,750	18,900	18,900	5,200(N)	...
...	29,240	30,930	63,650	26,680(4)	4,200(4)	22,800(4)
...	900	5,200	2,400	...	...	...
...	100	500	300	...	...	...
...	7,000	5,600	...	...	...	...
...	7,540	60,960	79,300	84,990	31,860(N)	4,200(4)
...	7,360	3,480	...	...	...	...
...	1,200	2,360	3,480	...	...	...
...	1,200	2,360	3,480	...	...	...
...	5,280	62,668	82,918	87,500	85,860(2)	4,200(2)

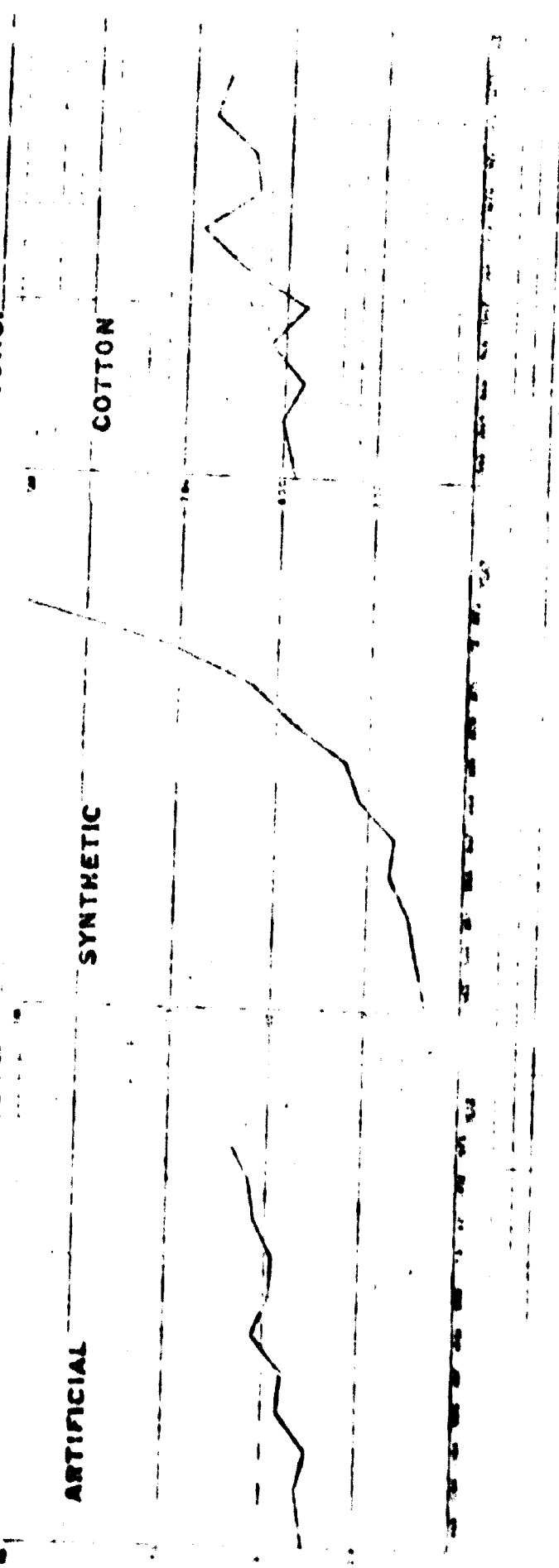
Prepared by ... on ... for ... approval ... being used

TEXTILE FIBERS PRODUCTION 1953/1973 1000 TONS

ARTIFICIAL

SYNTHETIC

COTTON



INDUSTRIAL CONSUMPTION OF TEXTILE FIBERS AND PERCENTAGE OF CHEMICAL AND COTTON FIBERS

(1963 / 1973 in '000 tons)

PERIODO	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
NATURAL FIBERS	295.1	285.7	288.2	284.2	293.2	313.4	320.1	328.2	338.3	356.0	423.0
Wool	274.8	267.7	276.7	263.0	277.1	283.5	285.0	291.3	295.5	315.0	388.8
Silk	20.3	18.0	11.5	21.2	23.2	29.9	35.1	36.9	39.7	41.0	34.2
ARTIFICIAL FIBERS	39	40.8	38.2	45.4	55.7	55.4	49.1	50.6	57.5	52.5	60.8
Wool	5.5	6.0	5.9	7.0	8	8.9	8.7	8.6	8.7	8.7	9.3
Acrylic	33.7	34.8	32.4	38.4	37.5	46.3	40.7	42.0	45.2	43.8	51.5
SYNTHETIC FIBERS	10.8	12.9	14.6	19.9	24.7	36.7	38.8	61.5	82.1	106.4	141.9
Rayon	8.6	9.6	10.2	13.4	13.8	20.3	18.7	28.7	30.9	39.1	45.8
Polyester	2.2	3.2	3.5	6.1	6.3	11.4	14.5	22.5	37.2	48.5	63.3
Others	0.0	0.1	0.9	0.4	4.2	4.9	4.3	8.7	10.1	14.7	18.2
Chemicals	-	-	-	-	-	0.1	0.7	1.6	3.9	4.0	3.1
Total	305.8	322.4	341.7	350.0	363.2	405.3	408.0	440.3	478.3	524.9	625.7
% of cotton in the total	77.7	70.9	75.7	75	74.2	70.0	70.8	66.2	62.4	61.5	62.1
% of artificial fibers in the total	11.3	12.0	11.2	13.1	12.6	13.6	12.0	11.5	12.1	10.0	9.7
% of synthetic fibers in the total	3.4	3.0	4.3	5.7	6.7	9.1	9.5	14.0	17.2	20.3	22.7

TABLE No 7

BRAZIL

APPORTIONMENT OF TEXTILE PRODUCTS AND PERCENTAGE OF CHEMICAL AND COTTON PRODUCTS IN THE TOTAL

PERIOD	TONS				US\$ 1 000 CIF			
	1970	1971	1972	1973	1970	1971	1972	1973
Chemical Fibers	4,340.10	17,121.00	27,052.80	33,123.30	4,753.00	11,332.10	17,381.20	20,095.30
Nylon	-	67.10	45.30	131.50	-	31.00	27.00	157.10
Polyester	923.30	5,310.00	5,111.00	7,076.30	912.00	4,971.00	5,051.00	5,061.70
Acrylic	2,203.30	4,600.00	6,243.00	7,822.00	712.00	1,110.00	2,111.00	2,305.30
Viscose	1,237.50	3,063.00	2,551.00	1,122.50	873.00	2,061.00	121.00	6,522.50
Acetate	-	76.00	2,091.00	115.00	-	72.00	2,501.00	167.00
P. Aliphatic	-	2.00	-	60.00	-	2.00	-	75.00
Natural Fibers	10,212.00	8,262.00	8,003.00	12,320.00	5,255.00	5,205.00	6,155.00	2,407.50
Cotton	652.00	4,350.00	1,210.00	12.50	573.00	3,750.00	1,324.00	90.00
Others	10,259.00	1,902.00	7,193.00	12,277.50	4,712.00	1,475.00	4,866.00	2,315.50
Total of Chemical and Natural Fibers	15,276.70	25,383.00	35,055.80	45,443.30	9,918.00	16,537.10	23,536.20	22,512.80
% of Chemical Fibers in the total	28.6	62.1	53.3	53.8	40.1	51.9	73.1	77.6
% of Cotton Fibers in the total	4.3	21.5	3.8	0.1	6.7	28.2	5.5	0.3
Yarns and Filaments	5,552.10	9,412.00	10,042.00	12,211.10	15,015.00	12,000.00	25,597.00	18,359.10
Nylon	1,000.00	2,100.00	1,500.00	2,500.00	1,000.00	1,500.00	2,500.00	6,961.00
Polyester	1,211.12	6,100.00	5,400.00	8,100.00	8,100.00	10,000.00	12,000.00	11,000.00
Acrylic	53.00	700.00	1,200.00	1,000.00	200.00	1,000.00	675.00	500.00
Viscose	240.00	140.00	240.00	200.00	150.00	200.00	40.00	100.00
Acetate	-	172.00	160.00	600.00	-	50.00	170.00	1,000.00
Total of Chemical Yarns and Filaments	5,303.10	9,550.00	10,330.00	11,815.00	13,255.00	14,050.00	21,767.00	18,051.10
Cotton yarns	23.00	21.00	12.00	10.00	12.00	20.00	70.00	90.00
% of Chemical yarns and filaments	96.30	95.00	93.00	95.00	95.00	95.00	88.00	90.00
% of Cotton yarns	0.6	0.3	0.4	0.2	0.4	1.0	1.2	1.0
Woven								
of synthetic and artificial	385.00	220.00	840.00	2,000.00	1,000.00	1,000.00	2,000.00	5,000.00
of cotton	500.00	1,100.00	1,200.00	1,200.00	1,000.00	1,000.00	1,000.00	1,000.00
% of synthetic and artificial wovens	21.0	16.0	21.6	25.0	20.0	16.0	21.0	18.0
% of cotton wovens	21.2	22.5	17.2	18.1	18.1	18.1	18.1	18.1

B R A Z I L

1 - COMPANIES ACTUALLY PRODUCING SYNTHETICS FIBRES

1. BANYLSA TECELAGEM DO BRASIL S/A - Aracú - Bahia
 - nylon 6 fil. (Banylsa Nylon)
2. BRASIL VISCOSE S/A - Jundiapéba - São Paulo
 - nylon 6 staple fibres
 - polypropylene staple fibres
3. CELANESE DO BRASIL - FIBRAS QUÍMICAS LTDA - São Bernardo do Campo - São Paulo
 - nylon 66 (Celtrac, Celtrac BCF)
4. CIA. BRASILEIRA DE SINTÉTICOS - Osasco - São Paulo
 - nylon 6 fil.
 - polyester fil. (Trevira)
5. CIA. SOUTEX DE ROUPAS - Rio de Janeiro - Guanabara
 - nylon 6 fil. (Demilon)
 - polyester fil.
6. FIBRÃO BRASILEIRA DE RAYON-FIBRA S/A - Americana - São Paulo
 - nylon 6 fil. (Lilion)
7. FISIDA - FIBRAS SINTÉTICAS DA UAMIA S/A - Camaçari - Bahia
 - acrylic staple (Triana)
8. POLYENKA S/A INDÚSTRIA QUÍMICA E TÊXTIL - Americana - São Paulo
 - polyester fil. (Diaten)
9. POLYNOR S/A INDÚSTRIA E COMÉRCIO DE FIBRAS SINTÉTICAS DA PARAÍBA - João Pessoa - PB
 - polyester fil. (Polynor, Anilon)
 - polyester staple
10. RHOZIA INDÚSTRIAS QUÍMICAS E TÊXTEIS S/A - Santo André - São Paulo
 - nylon 66 fil. (Rhodlanyl)
 - nylon 66 staple

21. EQUIPESCA - EQUIPAMENTOS DE PESCA S/A - Campinas - São Paulo
- nylon Industrial fil.
- polypropylene (tape)
22. IBIS DE PLÁSTICOS S/A - São Paulo - SP
- polypropylene (tape)
23. IRMÃOS MALZAFERRO & CIA LTDA - São Bernardo do Campo - São Paulo
- nylon 6 Industrial fil. (Grilon, Trilon)
24. M. LEPPER & CIA. LTDA - Joinville - Santa Catarina
- polypropylene (tape)
25. MONOFIL - CIA. INDUSTRIAL DE MONOFILAMENTOS - São Paulo - SP
- nylon 6 Industrial fil.
- polypropylene (tape)
26. NOVELSPUM - ESPUMA DE NYLON S/A - São Paulo - SP
- nylon 6 fil.
- nylon 6 Industrial fil.
27. PLÁSTICOS DO PARANÁ LTDA - Londrina - Paraná
- polypropylene (tape)
28. PLASTIRAL - INDÚSTRIA E COMÉRCIO LTDA - São Paulo - SP
- polypropylene (tape)
29. TEXTIPLAST - Joinville - Santa Catarina
- polypropylene (tape)
30. TONCE - INDÚSTRIA E COMÉRCIO DE PLÁSTICOS LTDA - São Paulo
- polypropylene (tape)
- II - COMPANIES BEING INSTALLED FOR STARTING PRODUCTION IN NEAR FUTURE
1. C.A.T.A. - Belém - Pará
- polypropylene (tape)

2. COMPANHIA BAHIANA DE FIBRAS S/A - Camaçari - Bahia
 - polyester fil.
 - polyester staple
 - nylon 6 fil.
 - nylon 6 industrial fil.

3. DU PONT DO BRASIL S/A INDÚSTRIAS QUÍMICAS - Paulínia - São Paulo
 - spandex (lycra) (August/74)

4. ETRURIA S/A INDÚSTRIA DE FIBRAS E FIOS SINTÉTICOS - São Paulo - SP
 - polypropylene staple

5. FÁBRICA YOLANDA - Recife - Pernambuco
 - polypropylene (tape)

6. FIBROTEX TECELAGEM DE FIBRAS S/A - São Paulo - SP
 - polypropylene (tape)

7. FITESA S/A - Rio Grande do Sul
 - polypropylene (tape)

8. INDÚSTRIA TÊXTIL TSUZUKI LTDA - Suzano - São Paulo
 - nylon 6 fil.

9. MANAP - MANUFATURA NACIONAL DE PLÁSTICOS - Osasco - São Paulo
 - polypropylene (tape)

10. NORACRYL S/A FIBRAS ACRÍLICAS - PARATIÁ - João Pessoa, PB.
 - acrylic staple

11. OSCAR BERGRIN & CIA. LTDA - São Paulo - SP
 - polypropylene (staple)

12. SARONH EMBALAGENS PLÁSTICAS LTDA - São Paulo - SP
 - polypropylene (tape)

13. UNIÃO MANUFATURA - Caxias - Estado do Rio de Janeiro
 - polypropylene (tape)

TABLE Nº 8

**BRAZIL
NEW PRODUCTS FOR SYNTHETIC FIBERS
NEW PLANTS**

PRODUCTS	ADDRESS	PREVISION FOR STARTING PRODUCTION	NOMINAL CAPACITY (T/YEAR)
1. Terephthalic acid	RHOIACO INDUSTRIAS QUIMICAS S/A Paulínea - SP	1976	75.000
2. Acrylonitrile	FISIPETRO S/A Camaçari - BA	1977	24.000
3. Caprolactam	NITROCAMBONO S/A Camaçari - BA	1976	35.060
4. Dimethyl-terephthalate	FRONOR - PRODUTOS ORGANICOS S/A Camaçari - BA	1976	60.000
5. Monoethyleneglycol	GRITENO S/A IND. E COM. Capuaçu - SP	1974	20.700
	OXITEMO NORDESTE (em constituição) Camaçari - BA	1977	109.900

A.I.C. Brazil

/dm.

TABLE NO. 10

1973 MAN-MADE FIBER PRODUCTION, IMPORT, EXPORT & NET AVAILABLE SUPPLY BY COUNTRY (EXCEPT OLEFIN)

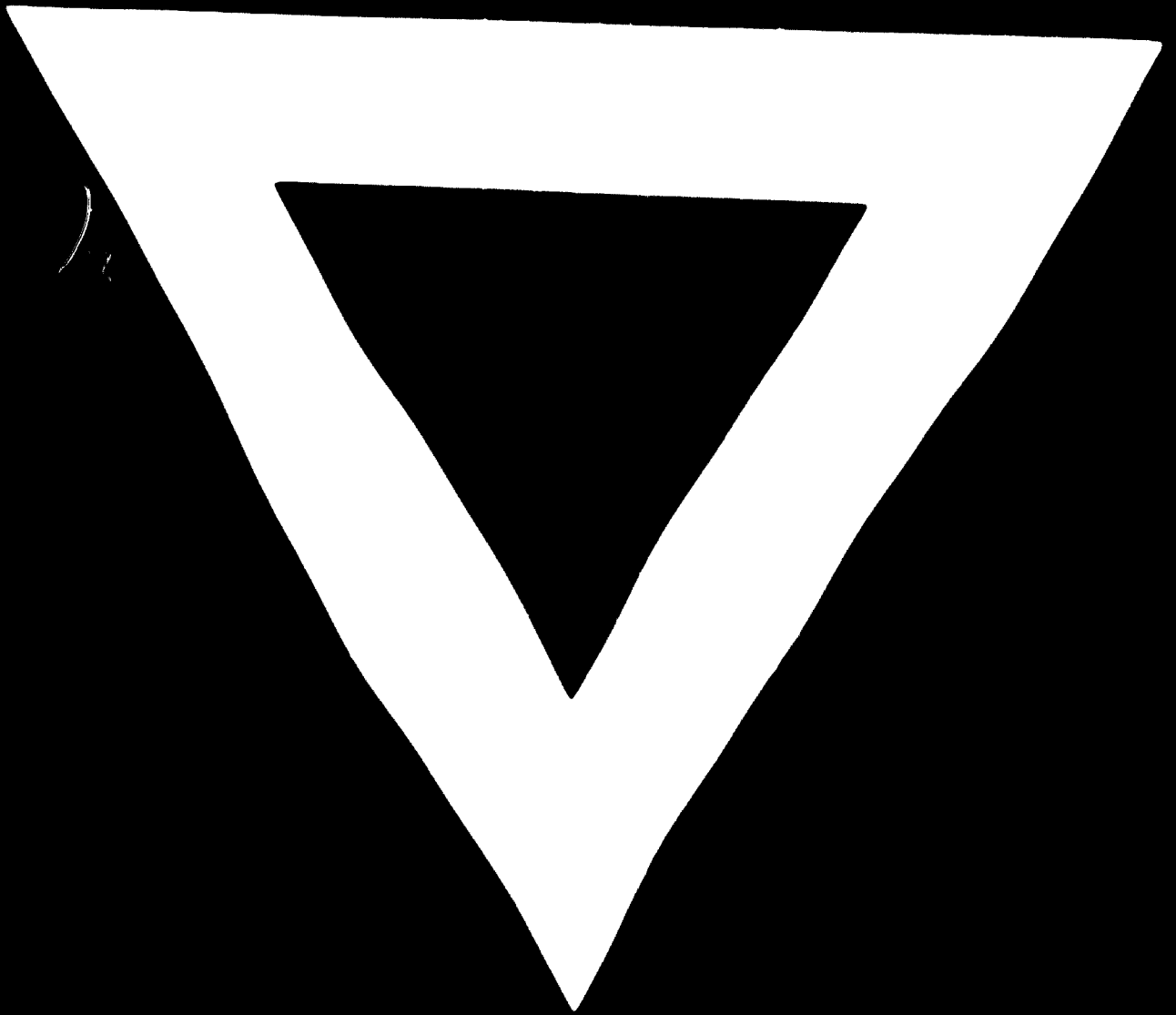
MILLION POUNDS

COUNTRY & AREA	RAYON-ACETATE YARN			RAYON-ACETATE STAPLE			NON-CELLULOSIC YARN			NON-CELLULOSIC STAPLE			TOTAL MAN-MADE FIBER		
	PROD	IMPORT	EXPORT	PROD	IMPORT	EXPORT	PROD	IMPORT	EXPORT	PROD	IMPORT	EXPORT	PROD	IMPORT	EXPORT
WEST EUROPE															
Austria	3	2	27	31	5	5	89	0	5	14	4	20	16	5	1
Belgium	103	29	94	39	5	60	64	2	4	42	6	15	15	2	1
France	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Germany	2	0	2	2	2	2	2	2	2	2	2	2	2	2	2
Italy	20	5	47	103	7	60	2	3	73	6	2	4	14	1	1
Spain	15	7	59	30	4	44	76	1	10	6	4	3	21	0	0
U.K.	1	1	4	3	8	4	1	0	1	1	1	1	1	1	1
WEST ASIA															
India	48	1	21	51	2	70	7	3	68	4	1	1	15	0	0
Japan	5	0	1	3	6	3	6	3	4	0	0	0	1	0	0
OTHER ASIA & OCEANIA															
Philippines	4	5	7	11	0	1	4	0	1	0	0	0	1	0	0
AMERICA															
U.S.A.	190	3	905	633	7	543	0	67	2	704	5	2	2	135	0
OTHER AMERICAS															
Canada	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	790	37	1005	633	7	543	0	67	2	704	5	2	2	135	0
U.S.A.	190	3	905	633	7	543	0	67	2	704	5	2	2	135	0
OTHER AMERICAS	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0
WEST EUROPE	137	32	171	51	1	63	10	1	10	1	1	1	1	1	1
WEST ASIA	49	1	22	54	2	74	7	3	69	4	1	1	15	0	0
OTHER ASIA & OCEANIA	24	6	58	14	0	11	1	4	16	1	0	0	1	0	0
AMERICA	193	3	906	634	7	544	0	67	2	705	5	2	2	135	0
TOTAL	797	37	1006	634	7	544	0	67	2	705	5	2	2	135	0
U.S.A.	190	3	905	633	7	543	0	67	2	704	5	2	2	135	0
OTHER AMERICAS	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0
WEST EUROPE	137	32	171	51	1	63	10	1	10	1	1	1	1	1	1
WEST ASIA	49	1	22	54	2	74	7	3	69	4	1	1	15	0	0
OTHER ASIA & OCEANIA	24	6	58	14	0	11	1	4	16	1	0	0	1	0	0
AMERICA	193	3	906	634	7	544	0	67	2	705	5	2	2	135	0
TOTAL	797	37	1006	634	7	544	0	67	2	705	5	2	2	135	0
U.S.A.	190	3	905	633	7	543	0	67	2	704	5	2	2	135	0
OTHER AMERICAS	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0
WEST EUROPE	137	32	171	51	1	63	10	1	10	1	1	1	1	1	1
WEST ASIA	49	1	22	54	2	74	7	3	69	4	1	1	15	0	0
OTHER ASIA & OCEANIA	24	6	58	14	0	11	1	4	16	1	0	0	1	0	0
AMERICA	193	3	906	634	7	544	0	67	2	705	5	2	2	135	0
TOTAL	797	37	1006	634	7	544	0	67	2	705	5	2	2	135	0
U.S.A.	190	3	905	633	7	543	0	67	2	704	5	2	2	135	0
OTHER AMERICAS	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0
WEST EUROPE	137	32	171	51	1	63	10	1	10	1	1	1	1	1	1
WEST ASIA	49	1	22	54	2	74	7	3	69	4	1	1	15	0	0
OTHER ASIA & OCEANIA	24	6	58	14	0	11	1	4	16	1	0	0	1	0	0
AMERICA	193	3	906	634	7	544	0	67	2	705	5	2	2	135	0
TOTAL	797	37	1006	634	7	544	0	67	2	705	5	2	2	135	0
U.S.A.	190	3	905	633	7	543	0	67	2	704	5	2	2	135	0
OTHER AMERICAS	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0
WEST EUROPE	137	32	171	51	1	63	10	1	10	1	1	1	1	1	1
WEST ASIA	49	1	22	54	2	74	7	3	69	4	1	1	15	0	0
OTHER ASIA & OCEANIA	24	6	58	14	0	11	1	4	16	1	0	0	1	0	0
AMERICA	193	3	906	634	7	544	0	67	2	705	5	2	2	135	0
TOTAL	797	37	1006	634	7	544	0	67	2	705	5	2	2	135	0
U.S.A.	190	3	905	633	7	543	0	67	2	704	5	2	2	135	0
OTHER AMERICAS	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0
WEST EUROPE	137	32	171	51	1	63	10	1	10	1	1	1	1	1	1
WEST ASIA	49	1	22	54	2	74	7	3	69	4	1	1	15	0	0
OTHER ASIA & OCEANIA	24	6	58	14	0	11	1	4	16	1	0	0	1	0	0
AMERICA	193	3	906	634	7	544	0	67	2	705	5	2	2	135	0
TOTAL	797	37	1006	634	7	544	0	67	2	705	5	2	2	135	0
U.S.A.	190	3	905	633	7	543	0	67	2	704	5	2	2	135	0
OTHER AMERICAS	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0
WEST EUROPE	137	32	171	51	1	63	10	1	10	1	1	1	1	1	1
WEST ASIA	49	1	22	54	2	74	7	3	69	4	1	1	15	0	0
OTHER ASIA & OCEANIA	24	6	58	14	0	11	1	4	16	1	0	0	1	0	0
AMERICA	193	3	906	634	7	544	0	67	2	705	5	2	2	135	0
TOTAL	797	37	1006	634	7	544	0	67	2	705	5	2	2	135	0
U.S.A.	190	3	905	633	7	543	0	67	2	704	5	2	2	135	0
OTHER AMERICAS	3	0	1												

BIBLIOGRAPHY

- (1) **Banan - Brasil Industrial**
- (2) **INGE/CDI - Dados Estatísticos**
- (3) **Sindicato das Industrias Químicas**
- (4) **Associação Brasileira dos Produtores de
Fibras artificiais e Sintéticas .**
- (5) **Textile Organon**
- (6) **(INTIX) Mrs. E. Braunsteiner - Synthetic Fibres
in Brazil .**





75.06.06