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PRESENT STATUS AND FUTURE PLANS OF THE DEVELOPMENT OF THE SYNTHETIC FIBRE INDUSTRY IN INDIA[1/]

by

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I HISTORICAL BACKGROUND

A brief history of man-made fibre industry in India is outlined below.

Cellulosics

India entered the age of man-made fibres in March 1951 when National Rayon Corporation started production of viscose filament yarn. Only 3,000 tonnes of rayon filament yarn was produced in that year. The next stage was when Gwalior Rayon and Silk Mfg. Co. Ltd., startsd production of viscose staple fibre in February, 1954. At present, there are 12 units manufacturing rayon filament yarn staple fibre. India produced nearly 130 million kgs., cellulosic fibre/yarn in 1973 and ranks as tenth largest producer of cellulosic fibre in the world.

Nylon

The next phase was the production of synthetic fibre. M/s. J.K. Synthetics and M/s. Nirlon Synthetic Fibres and Chemicals made a small beginning in 1962 by producing nylon filament yarn. At present, thsre are nine units manufacturing nylon filament yarn, nylon tyre yarn and nylon staple fibre. In 1973, production of nylon was about 14 million kgs.

Polyester

The production of polyester staple fibre was started in 1965 by M/s. Chemicals and Fibres of India Ltd., and at present there are five units manufacturing polyester staple fibre. The production of polyester staple fibre in 1973 was about 11.5 million kgs. Polyester filament yarn production started in a small way in 1969 and five manufacturers produce polyester filament in a small way. The production of polyester filament yarn is still restricted and was about 1.8 million kgs. in 1973. However, a new unit with a capacity of 3.5 million kgs. is likely to commence production in 1976-77. The other units are also likely to expand.

Acrylic

There is no manufacturing capacity at present for Acrylic fibre, however, Indian Petrochemicals Corporation Limited, with a capacity of 12 million kgs. per year and M/s. J.K. Synthetics Limited, with a capacity of 4 million kgs. per year are likely to go on stream in 1976-77.

Polypropylene

There is no manufacturing capacity at present for polypropylene fibre. However, M/s. Neomer Limited is licenced to produce 6.0 million kgs. of polypropylene fibre.

The production figures for various fibres from 1969-1973 are given in Table-1.

II PRESENT STATUS AND FUTURE PROSPECTS

a) Manufacturing Facilities

A detailed statement regarding existing manufacturing facilities of man-made fibres for each type is given in Table-2.

b) Raw Material Supply

India is trying to achieve self sufficiency in the field of raw materials supply for man-made fibres and has succeeded to a considerable extent in that direction. Raw material supply position is outlined below:

i) Rayon grade wood pulp

There are four units with an installed capacity of 135 million kgs. However, the actual production is not sufficient to meet the requirements. Also the grade of pulp suitable for making rayon tyre yarn is not yet available and has to be imported. However, vigorous efforts are being made to achieve self-sufficiency in the near future.

ii) Caprolactum

One unit with an installed capacity of 20 million kgs/year has commenced production in 1975. Once this unit starts producing at full capacity it will go a long way to meeting the requirements of the nylon industry. At present, caprolactum requires to be imported in substantial quantities and again if nylon industry starts utilizing the full capacity, the existing caprolactum unit, even at full capacity, is not likely to meet all the requirements. The prospects are that the country will continue to import caprolactum for some time to come.

iii) D M T

The Indian Petrochemicals Corporation Ltd., is the only unit manufacturing DMT, with a capacity of 24 million kgs. Although the production of DMT is not at full capacity, it is sufficient to meet the requirements of polyester fibre/yarn industry at present. However, if the fibre/yarn plants operate at full

capacity, the present capacity of DMT plant will be inadequate.

The Bongaigaon refinery and petrochemical complex is licenced to produce 30 million kgs. of DMT. The same unit has also planned to produce 20 million kg. polyester fibre using its own DMT. The plant is likely to go on stream towards the end of this decade.

iv) Import of Raw Materials

The value of imports of various raw materials during 1974 is given below:

Caprolactum	Rs. 57.6 Million	$. 7.2 Million
D M T	Nil	Nil
Rayon grade wood pulp	Rs. 17.8 Million	$. 2.2 Million

(Source: Modern Fibres Annual Number 1974, p.45)

The present status and future plans regarding raw materials capacity in India is given in Table-3.

c) Demand for Synthetic Fibres

Table-4 gives information regarding indigenous production and imports and total availability of man-made fibres in India from 1969-1973. Exports of man-made fibres are negligible if any.

The task force for synthetic fibre industry appointed by the Government of India has given estimates of demand for man-made fibres as shown in Table-5.

The major outlet for all man-made fibres is clothing. However, some quantities do go into industrial applications like tyres, rubber goods, filter fabrics, etc. The figures for production of tyre yarn, both rayon and nylon, are given in Table-1(B) separately.

Although production of man-made fibres has increased over the years, the share of man-mades in total production of all fibres is only 11%. Cotton claims the lion's share with 86%; the rest is by other fibres like wool and silk. Table-6 illustrates how over a period of years man-mades have not only expanded quantity-wise but also have been claiming a larger share of the total market. In future, also the trend is likely to continue as has happened over the rest of the world. India is still predominantly an agricultural country, however, there are limits to increasing cotton output. It is evident, therefore, that the country's increasing requirements

of fibres for the growing population and per capita consumption will have to be met largely by switching over to man-made fibres. But as man-made fibre industry is capital intensive, there are severe constraints in raising enough capital to finance this industry in a poor country like India.

d) Infra-structure for synthetic fibre industry

Generally all man-made fibre/yarn manufacturers have testing and quality control facilities to ensure that fibre/yarn quality is within standards laid down by the individual manufacturer or which are generally acceptable to consuming industry. In the case of staple fibre manufacturers they also have fibre quality monitoring facilities comprising of fibre to yarn spinning equipment, weaving equipment as well as facilities to test dyeability of fibre/yarn and fabric.

Some fibre manufacturers have extensive facilities for product application development where they try to develop newer or modified applications of the fibre produced by them. Here, the facilities consist of complete spinning, weaving, dyeing and finishing equipment similar to those used by mills.

Besides the testing, quality control and production application facilities some of the leading manufacturers have established research and development facilities which have contributed to development of indigenous technology, equipment fabrication, and development of raw material (especially wood pulp) from local forest resources. This research and development efforts have contributed to development of indigenous technology and equipment fabrication facilities as outlined below.

As far as cellulosic fibres are concerned, the industry is pretty advanced and the expansion or establishment of newer capacities are done through the use of indigenous technology and equipment fabricated in the country. The industry has even succeeded in getting a contract for viscose staple fibre plant on a turn-key basis in an Asian country in face of international competition. However, the industry can derive benefit from knowhow offered in the field of High performance rayon etc.

Nylon filament yarn industry (some units) did avail of foreign technical knowhow from various countries till now but has reached a level when it can undertake expansion on its own although part of the equipment may be imported. Some of the equipment is locally fabricated.

Polyester staple fibre industry has relied sor far on foreign technical know-how and equipment. In case of polyester filament yarn although the capacity is limited the technology for spinning of yarn from chips has been developed indigenously by nylon yarn manufacture with some of the imported equipment. However, the equipment has generally to be imported. In case of acrylic fibre both the plants which are coming up will be with foreign know-how and equipment.

In addition to the facilities at the disposal of individual fibre manufacturer there are a few research institutions jointly supported by council of scientific and industrial research and the industry who render services in the fields of testing, surveys, collection of statistical information. They also undertake contract research work.

III PROBLEMS AND NEEDS FOR TECHNICAL ASSISTANCE

The information provided in previous pages will indicate that India has entered into the field of production of major cellulosic and synthetic fibres. However, the industry faces a number of problems, the important ones being outlined below:

a) Acrylic fibre will be produced for the first time in the country in 1977. The total capacity to be established in 1977 will be 16.0 million kgs. Last year (1974) the imports were of the order of about 1.0 million kgs. which may go up to 2.0 million kgs. this year (1975). Still there is a long way to go if the capacity is to be utilized fully.
India is a tropical country and there are limits to which acrylic fibre can be used in the conventional applications of acrylic fibre like sweaters, cardigan, hand knitting yarn etc.

It is evident therefore that other applications of acrylic fibre need to be developed in a big way. It is in this area UNIDO can render vital help by providing technical assistance in establishing product application facilities, technical services, etc. Even the hosiery industry will need a lot of help to raise its quality standards to those prevailing in other parts of the world.

b) In the case of polyester staple fibre the capacity utilization is much less. Last year (1974) the capacity utilization was less than 50%. Further the capacity is likely to be expanded from present 25.0 million kgs. to about 50.0 million kgs. by 1980. So, unless steps are taken to create enough demand, the capacity utilization is likely to be quite low. UNIDO can help by:

   i) Carrying out market surveys to establish demand for next five years for polyester fibre; and

   ii) Development of demand by providing facilities for product development to popularize the polyester fabrics.

c) India can be said to have entered the field of first generation of man-made fibres, and is well poised to develop second generation of fibres of the main basic types which are more suitable for the local conditions. For example, all synthetic fibres are hydrophobic in nature and in a tropical country like India they pose some problems like comfort to the wearer. If they can be modified to absorb moisture to a greater extent they will add to the comfort and will be widely used. Similarly work can be done to impart properties like anti-static, non-pilling, modified dyeability etc., to make fibres acceptable to wider sections of populations. This requires establishment of facilities for research in the field of polymer research and fibre engineering. UNIDO can render effective help in this direction.

PRODUCTION OF MAN-MADE FIBRE IN INDIA

TABLE 1 (A)

(Million Kgs)

Year	Viscose rayon		Acetate rayon		Total cehlulosic man-made fibres	Nylon		Polyester		Total Synthetic fibres
	Filament	Staple fibres	Filament	Staple fibres		Filament	Staple fibres	Filament	Staple fibres	
1969	36.516	58.178	1.536	0.461	96.691	7.922	-	0.199	5.737	13.893
1970	36.012	63.14[illegible]	1.752	0.217	101.127	09.745	-	0.585	5331	15.854
1971	36.819	60.740	1.622	0.328	99.509	10.296	0.020	0.532	5.729	17.061
1972	39.633	70.337	1.541	0.359	111.870	11.729	0.047	0.681	[illegible].634	1[illegible].061
1973	36.366	66.430	1.584	0.512	104.892	11.106	N.A.	1.800	13.100	24.382
1974	36.654	77.346	2.010	0.226	116.236	9.154		1.312	7.731	18.197

PRODUCTION OF VISCOSE AND NYLON TYRE YARN

TABLE 1 (B)

Million kgs.

Year	Rayon Tyre Yarn	Nylon Tyre Yarn
1969	14.7	-
1970	17.4	-
1971	17.1	0.6
1972	19.3	2.1

SOURCE : (1) Statistics Man-made Textiles published by SASMIRA [illegible]

(2) Modern Fibres Vol. No.2. 1975. [illegible]

TABLE No.2

MANUFACTURING FACILITIES FOR MAN-MADE FIBRES IN INDIA

(in million kgs/year)

Name of the Unit	Year of starting production	Present installed capacity	Foreign Collaboration	Expansion plans to
1	2	3	4	5
Nylon Filament Yarn :				
J.K. Synthetic Ltd., Kota, Rajasthan.	1962	3.84		Nil
Garware Nylons Ltd., Poona, Maharashtra.	1962	2.00	-Nil-	3.84
Nirlon Synthetic Fibres & Chemicals Ltd., Bombay	1962	2.52	-Nil-	4.2
Modipon Ltd., Modinagar, Uttar Pradesh	1968	3.50	Rohm Hass & Co., U.S.A.	Nil
Century Enka Ltd., Poona, Maharashtra.	1969	0.72	A K Z O NV, Holland Enka Glanzstoff, Germany	2.1
Shree Synthetics Ltd., Ujjain, Madhya Pradesh	1972	1.10	Chemtex Fibres U.S.A	2.1

Contd.....2/-

1.	2.	3.	4.	5.
Stretch Fibres (india) Ltd., Nagpur.	1974	0.54	M/s Zimmers A G Germany	Nil
Guptalon Ltd., Hoshiarpur, Punjab	----	1.00*	-Nil-	Nil
Baroda Rayon Cropn. Ltd., Udhna, Surat.	1974	1.8	M/s Italviscosa, Italy	4.2
Nylon Staple Fibre :				
J. K. Synthetics Ltd., Kota, Rajasthan.	1971	1.35	-Nil-	Nil
Nylon Tyre Cord :				
J. K Synthetics Ltd., Kota, Rajasthan.	1971	1.60	-Nil-	Nil
Nirlon Synthetic Fibres & Chemicals Ltd., Bombay.	1971	2.14	-Nil-	Nil
Shriram Fibres Ltd., Kota, Rajasthan.	1975	2.00	M/s Chemtex Inc. U. S. A.	Nil

Cont.....3.....

(1)	(2)	(3)	(4)	(5)
National Rayon Corpn.Ltd.	1975	2.20	M/s. Chemtex Inc., U.S.A.	--
Baroda Rayon Corpn. Ltd., Udhna. Surat. (Gujarat)	--	8.00 *	M/s. Unitika, Japan.	--
ACRYLIC STAPLE FIBRE :				
J.K. Synthetics Ltd., Kota. Rajasthan.	1977	4.00 *	M/s.Monte Edison, Italy.	--
Indian Petrochemicals Corpn.Ltd., Baroda. (Gujarat)	1977	12.00 *	M/s.Asahi Chemicals, Japan.	--
POLYESTER STAPLE FIBRE :				
Chemicals & Fibres of India Ltd., Bombay.	1965	6.10	M/s. I.C.I.Ltd., U.K.	--
The Ahmedabad Manufacturing & Calico Printing Co.Ltd., Baroda. Gujarat.	1974	6.10	M/s. I.C.I.Ltd., U.K.	--
Swadeshi Polytex Ltd., Ghaziabad. Uttar Pradesh.	1973	6.10	M/s. Vickers Zimmer AG., West Germany.	--
Indian Organic Chemicals Ltd., Manali. Tamil Nadu.	1973	6.10	M/s Chemtex Inc., U.S.A.	--
J.K. Synthetics Ltd., Kota. Rajasthan.	1971	0.90	--	--

continued 4/

(1)	(2)	(3)	(4)	(5)
Bongaigaon Refinery & Petrochemicals Ltd.,	1980 (Expecte)	20.0*	---	---
Punjab State Industrial Development Corporation		6.1*		
POLYESTER FILAMENT YARN :				
Nirlon Synthetic Fibres & Chemicals Ltd., Bombay	1970	0.57	---	---
J. K. Synthetics Ltd., Kota, Rajasthan	1971	0.6	---	---
Garware Nylons Ltd., Poona, Maharashtra	1971	0.36	---	---
Modipon Ltd., Modinagar Uttar Pradesh.	1975	0.36	---	---
Petrofils Co.operatives Ltd., Baroda, Gujarat	1977 (Expected)	3.50*	Equipment to be supplied by Karl Fischer, Germany.	700
Shree Synthetics Ltd., Ujjain, Madhya Pradesh	1974	0.28	---	---
POLYPROPYLENE STAPLE FIBRE :				
Neomer Ltd., Baroda, Gujarat	1977 (Expected)	6.00*	James Mackie & Sons N. Ireland	---

Continued.....5/

(1)	(2)	(3)	(4)	(5)
VISCOSE RAYON FILAMENT YARN :				
Travancore Rayons Ltd., Rayonpuram, P.O. Rayonpuram. Kerala State	1950	3.3	--	5.1
National Rayon Corporation Ltd., Kalyan. Dist. Thane. Maharashtra State.	1951	9.0	--	--
Century Rayon, Kalyan. Dist. Thane. Maharashtra State.	1956	7.0	--	--
J. K. Rayon, Kanpur. Uttar Pradesh	1959	3.0	--	4.0
Kesoram Rayon, Tribeni. West Bengal.	1960	4.5	--	--
South India Viscose Ltd., Mettupalayam. Coimbatore. Tamil Nadu.	1961	4.0	M/s.Italviscosa, Italy.	--
Baroda Rayon Corporation Ltd., Udhna. Dist. Surat. Gujarat State.	1962	3.0	Asahi Chemical, Japan. Mitsuibushi Heavy Industry, Japan.	--
Indian Rayon Corporation Ltd., Veraval, Gujarat State.	1973	4.1	--	--

continued 6/

(1)	(2)	(3)	(4)	(5)
VISCOSE RAYON FILAMENT TYRE YARN :				
National Rayon Corporation Ltd., Kalyan. Dist.Thana (Maharashtra)	1962	7.0	--	--
Century Rayon, Kalyan. Dist.Thana (Maharashtra State)	1963	7.0	--	--
Shriram Rayon, Kota (Rajasthan)	1965	5.0	Chemtex Inc., U.S.A.	--
VISCOSE RAYON STAPLE FIBRE :				
Gwalior Rayon, Birlagram. Nagda (Madhya Pradesh)	1954	78.0	--	--
South India Viscose Ltd., Mettupalayam, Coimbatore (Tamil Nadu).	1961	11.0	--	--
ACETATE RAYON FILAMENT YARD & STAPLE FIBRE :				
Sirsilk Ltd., Sirpur-Kaghaznagar. Andhra Pradesh.	1954	3.2 (Yarn) 0.8 (Fibre)	--	--
POLYNOSIC STAPLE FIBRE:				
South India Viscose Ltd., Mettupalayam. Coimbatore. Tamilnadu.	--	6.0 *	--	--
Gwalior Rayon, Birlagram, Nagda. Madhya Pradesh.	--	30.0 *	--	--

* LICENCED BUT NOT INSTALLED.

TABLE NO 3

MAN-MADE FIBRE RAW MATERIAL PRODUCTION CAPACITY IN INDIA

Million kgs. per annum.

Name of the Unit	Installed	Letter of intent issued	License issued
Rayon Grade Wood Pulp :			
Gwalior Rayon Silk Mfg. (Wvg)Co. Ltd., Mavoor, Kerala.	70.0		
Harihar Polyfibres Ltd., Harihar, Karnataka.	36.0		
South India Viscose Ltd., Mettupalayam, Coimbatore, Tamil Nadu.	21.6		20.4
Travancore Rayons Ltd., Rayonpuram, Kerala.	7.2		
Century Pulp Nainital, Uttar Pradesh.		20.0	
Modipon Ltd., J. & K. State.		30.0	
Suraj Industrial Packing Ltd., Mailani, Uttar Pradesh.		30.0	
Andhra Pradesh Industrial Development Corpn. Ltd.,		25.0	
Caprolactum :			
Gujarat State Fertilizer Co. Ltd., Baroda.	20.0		
D M T			
Indian Petrochemicals Corpn. Ltd., Baroda.	24.0		
Pondicherry Refinery & Petrochemicals Ltd.			30.0

(Source : Statistics Man-Made Textiles Published by SAMIRA - P - 60)

TABLE NO : 4

INDIGENOUS PRODUCTION AND IMPORTS OF MAN-MADE FIBRES IN INDIA

(Quantity in tonnes)

Year	Particulars	YARN			STAPLE				TOTAL
		Cellulosic Yarn		Non-Cellulosic Yarn	Cellulosic	Non-Cellulosic Staple Fibres			
		Viscose Filament Yarn	Acetate Filament Yarn	Other Filament Yarn including Nylon/Acrylic, Polyester Polypropylene P.V.C. and P.V.A. Filament Yarn etc.	Viscose Acetate Staple Fibre	Nylon Staple Fibre	Polyester Staple Fibre	Acrylic Poly-propylene P.V.A., P.V.C. etc.	(Yarn+ Staple)
1969	Production	36,602	1,537	8,1[illegible] (N+P)	58,640 (V+A)	-	5,738	-	1,10,646
	Imports	14	-	2,210	-	121	[illegible]	784	4,0[illegible]
	Availability	36,616	1,[illegible]37	10,[illegible]	58,640	121	6,677	784	1,14,73[illegible]
1970	Production	35,914	1,751	10,34[illegible]	63,530 (V+A)	-	[illegible],332	-	1,16,676
	Imports	-	-	2,[illegible]	[illegible],388	130	2,589	1,285	12,361
	Availability	35,914	1,751	13,318	68,918	130	7,921	1,285	1,28,[illegible]37
1971	Production	36,848	1,622	11,[illegible]	61,068 (V+A)	-	5,729	-	1,16,630
	Imports	-	-	[illegible],150	10,1[illegible]3	144	[illegible],821	2,741	22,04[illegible]
	Availability	36,848	1,622	1[illegible],513	71,261	144	9,550	2,741	1,38,679
1972	Production	39,591	1,604	14,512 (N+P)	70,727 (V+A)	58	6,604	[illegible]	1,33,096
	Imports	28	-	3,778	4[illegible]6	330	2,207	[illegible],365	[illegible],164
	Availability	39,619	1,604	18,2[illegible]0	71,183	388	8,811	[illegible],365	1,42,[illegible]60
1973	Production	[illegible]7,214	1,[illegible]30	14,92[illegible] (N+P)	6[illegible],165 (V+A)	-	13,1[illegible]	-	1,27,465
	Imports	-	[illegible]	[illegible],339	1,120	848	1,[illegible]	4,002	10,317
	Availability	[illegible]7,214	1,639	17,268	64,285	848	15,09[illegible]	4,002	1,32,282

Note : N=Nylon. V=Viscose. A=Acetate. P=Polyester.

Source : Man-made Fibres Vol. No. 1, 1974 [illegible]

TABLE NO : 5

FUTURE DEMAND FOR MAN-MADE FIBRES IN INDIA

(in million Kgs.)

Cellulosics :	Production Required in 1978-79.
Viscose Filament	50
Acetate Filament	3
Viscose Staple Fibre	107
Polynosic Fibre	36
	196
Synthetics :	
Nylon Filament	32
Polyester Filament	8
Polyester Staple Fibre	60
Acrylic Staple	15
	115

(Source : Report of Task Force for Synthetic Fibres P. 22)

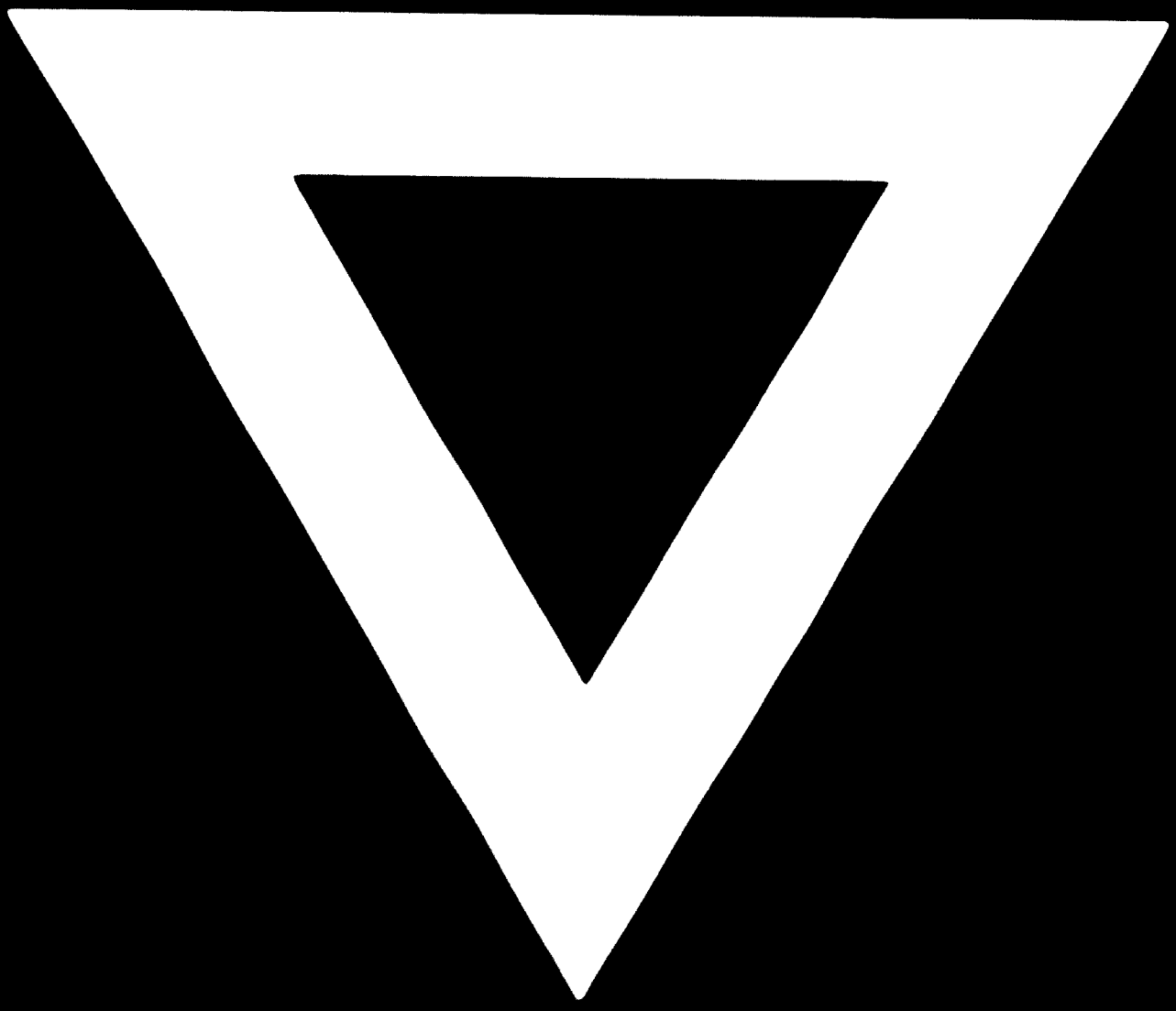
TABLE NO : 6

PRODUCTION OF TEXTILE FIBRES IN INDIA

million kgs. (%)

Year	Man-made fibres		Cotton		Wool		Silk		Grand total	
1960	42.502	(5)	787.459	(93)	12.70	(2)	1.50	(-)	846.721	(100)
1965	77.284	(8)	939.236	(90)	18.13	(2)	2.15	(-)	1036.800	(100)
1970	116.481	(11)	964.756	(87)	19.57	(2)	2.26	(-)	1103.567	(100)
1973	129.265	(11)	977.11	(86)	32.66	(3)	3.02	(-)	1142.055	(100)

(Source : Statistics Man-Made Textiles Published by S.S.M.I. P. 30-31)



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