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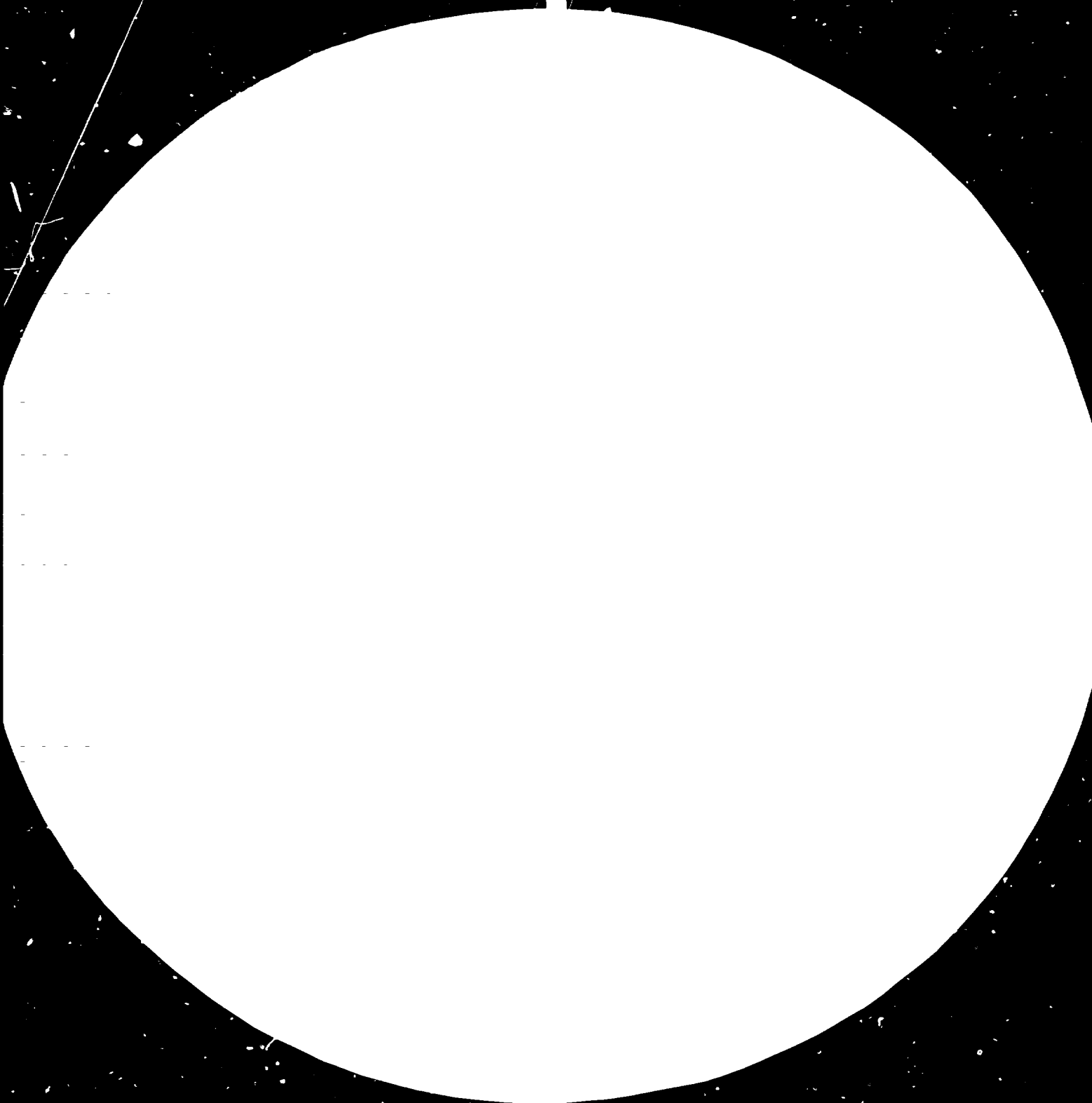
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Minimum Resolution Test Chart

Resolution Test Chart

Resolution Test Chart



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THE SITUATION OF THE SYNTHETIC FIBRE INDUSTRY IN CHINA\*

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The development of the chemical fibre industry in the People's Republic of China initiated in the sixties. In the fifties, only some preparatory work had been done for this development, such as setting up small chemical fibre plants, and establishing special schools for training technical personnel, etc.

In the early sixties, a group of medium-sized viscose fibre plants were built, this caused the viscose fibre industry to develop to a fair scale. In the meantime, synthetic fibre industry also made some progress. Complete sets of equipment for manufacturing polyamide fibre, polyvinyl alcohol fibre and acrylic fibre were introduced from abroad. In 1965, output of chemical fibre amounted to 50,000 tons, among which, about 45,000 tons of man-made fibre and about 5,000 tons of synthetic fibre.

In the seventies, synthetic fibre industry in China achieved comparatively rapid progress, a group of vinylon plants were set up, technology and equipment for producing synthetic fibres with petroleum and natural gas as raw material were also introduced. Four large-sized modern synthetic fibre plants were set up in Shanghai, Tianjin, Liaoyang and Sichuan. In 1980, the output of chemical fibre amounted to 450,000 tons, with about 14,000 tons of man-made fibre and about 340,000 tons of synthetic fibre.

The average Annual Growth Rate  
of Chemical Fibres Output

From 1966 to 1970, 15%; 1971-1975, 8.9%; 1976-1980, 23.8%. The average annual growth rate was 15.76%.

Now the production capacity of the chemical fibre industry in China is 650,000 tons, with 130,000 tons for viscose fibre, 520,000 tons for synthetic fibre. The ratio between viscose fibre and synthetic fibre is 20:80.

The varieties of viscose fibre now available are ordinary viscose-cotton type and viscose-wool type, polynosic, filament and strong viscose.

Pure viscose fibre "artificial cotton" and "artificial wool" may make up the inadequacy of natural fibre resources of cotton and wool. "Artificial wool" can be used for producing blanket. "Artificial silk" can be used for weaving silk suitable for top covering of quilt and material for clothing. Another main usage of viscose fibre is as material for blending. We have a kind of fabric which is the blend fabric of viscose fibre with polyester, and the other kind called "three in one" worsted is the blend fabric of viscose fibre, wool and nylon.

Synthetic fibre in China now mainly consists of polyester, polyamide, acrylic and vinylon, there are also small amount of polyvinyl chloride fibre and polypropylene fibre.

"Polyester-cotton cloth" made of 65% polyester staple and 35% cotton has been widely used for clothing.

"Wool-polyester" made of blend yarn of wool-type polyester staple and wool, and the "three in one" made of blend yarn of wool-type polyester staple, wool and viscose fibre, are used for principal material of outer clothing.

Stretch knitted fabrics and stretch woven fabrics are used for principal material of outer clothing too.

The varieties of nylon includes filament, high stretch and staple.

Because of its fine durability, polyamide gaberdine made of blend of staple, wool and viscose once had a good market. However, as wool/polyester/viscose "three-in-one" fabric came in, the demand for them was much greater than that for polyamide gaberdine for their fine stiffness and lower price. So more usage of polyamide staple has to be sought.

High-stretch polyamide yarn is mainly used for knitting stretch hoses.

Filament is used for tyre cord, conveyer, rope and fishingnet, etc.

Acrylic fibres are mainly staples : wool type and cotton type. Pure acrylic or blended with wool are used for knitting yarn and artificial fur. It also can be blended with viscose or cotton for clothes and sportswear.

Polyvinyl alcohol fibres now available are staples and stretch-breaking yarn. the latter is used to manufacture conveyers and tyre cords.

Pure polyvinyl alcohol staples or blended with 50% cotton are mostly used for denims, a small amount is used for quilt lining and underwears.

Polyvinyl chloride staples are mainly used for filter gauze of industrial use.

The varieties of polypropylene fibres now available are split-fibre, cotton-type, filament and stretch yarn.

Split fibres are used for plait, packing material and rope.

Staple blended with 50% cotton can be used for clothes. Filament for mosquito net and top covering of quilt. Stretch yarn is used to manufacture bedspreads, carpets and towelling socks. The usage of polypropylene fibres is being developed.

Scope of Chemical Fibre Plants  
(According to planned max.  
production capacity):

Raw material manufacturer:

Pulp	35,000 tons/year
Caprolactam	6,500 tons/year
Nylon-66 salt	46,500 tons/year
Dimethyl terephthalate(DMT)	91,000 tons/year
Acrylic nitrile	50,000 tons/year
Polyvinyl alcohol	45,000 tons/year
Polypropylene	35,000 tons/year

Spinning-mills:

Viscose staple	15,000 tons/year
Viscose filament	7,000 tons/year
Polyester filament	3,000 tons/year
Polyamide staple	5,000 tons/year
Acrylic staple	47,000 tons/year
Polyvinyl alcohol staple	33,000 tons/year

Production velocity at present:

Spinning process:	Wet spinning	45-80 m/m
	Melting spinning	1200-1300 m/m(staple)
		1500 m/m (filament)
Drawing spinning:	Multifilament	
	drafting twist	1000 m/m
False twisting process:	Spindle twist	320,000-400,000r.p.m.
	Linear velocity:	140 m/m

Average labour productivity in the country:	7 tons/person/year
In better areas:	33 tons/person/year

With the development of chemical fibre production, the scientific research system of chemical fibres in China has primarily been established. But an integral research structure has not been formed yet.

The basic studies are mainly in regard to structure and properties of chemical fibres: polymerization, spinning and mechanism of finishing.

Applied studies includes: aromatic polyamide fibre, elastic fibre, polyacrylonitrile having fine hygroscopic property, polyester high speed spinning, polyacrylic high speed spinning, profiled fibre, etc. Greater progress has been made in research work on composite, profiled, finish, dry spinning polyvinyl alcohol filament, POY DTY process, etc.

In order to meet the market demands, great attention has been devoted to research work on quality, design and variety of chemical fibrefabrics, and also to the development of new type fabrics such as wool-like, lenin-like and silk-like fabrics.

Owing to the close combination of scientific research work on chemical fibre with production, chemical fibre production in China has gained considerable benefit. But the scientific and technological work still can not meet the increasing demand of chemical fibre production, and a rather great gap exists between the world advanced level and ours.

The Chinese government and UNIDO have agreed to cooperate to set up a synthetic fibre research centre, this will play a good role in developing scientific research work on synthetic fibre and in training technical personnel. It is in line with the needs of the modernization construction in China as well.

Through over twenty years efforts, a foundation has been laid for chemical fibre industry in China. Together with the development of chemical fibre industry, the structure of



raw material for textiles in China has already been changing, the proportion of chemical fibre in the raw materials for textiles has been gradually increasing. Now natural fibre constitutes 80% of the total, and chemical fibre constitutes 20%. To solve the problem of clothing of a population of 1,000 million people, besides the increasing of natural fibre production, great efforts are still needed in the future to raise the output of chemical fibre, so as to meet the increasing needs of the growing population. Therefore, the development of chemical fibre industry in China has its broad prospects.



