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Synthetic Fibres

A few practical details

Not being a technical review, « *Textiles Suisses* » has never devoted scientific articles to artificial and synthetic fibres. However it appears fitting to us to publish here a few particulars of a practical nature which are likely to be of interest to our readers, as Swiss manufacturers are using more and more of these new textiles in spinning, weaving, knitting, hosiery and ready-to-wear clothing.

The Editors

In addition to the natural textile fibres that are either animal in origin (silk, wool or hair) or vegetable (cotton, linen, etc.), we now have, since the beginning of the century, the so-called « artificial » fibres and, since the last war, the « synthetic » or « man-made » fibres. The artificial fibres are made of materials already found in nature (cellulose, protein) which have been given artificially a form enabling them to be used in the textile industry (e.g. viscose and acetate rayon and staple fibre, ardil, etc.), while the synthetic fibres are entirely new substances not found in nature and produced synthetically from components completely different from the final product. It is with these synthetic fibres that we wish to deal here. They are divided, according to their manufacturing process and their chemical composition, into polyamide, polyacrylic and polyester fibres; here, briefly outlined, are their main characteristics.

I. Polyamides

There are two types of polyamides :

- a) polyamide 66, generally known under the name of *nylon*, an American product manufactured in Switzerland under license by the Swiss Viscose Rayon Co. Ltd. at Emmenbrücke ;
- b) polyamide 6, a rival product, manufactured in Switzerland by Fibron Co. Ltd. at Ems, under the name of *grilon* (see *Textiles Suisses* No. 2/1954, p. 96) and under the name of *perlon* by Feldmühle Co. Ltd., at Rorschach (see *Textiles Suisses* No. 2/1954, p. 9).

The fibres of these products are circular in section ; they are smooth and possess great tensile strength and resistance to friction (fig. 1). The disadvantages sometimes caused by the wearing of nylon are due to the fabrics having too close a weave, thus preventing the skin from breathing and the evaporation of perspiration. Consequently, for wearing next to the skin, it is best to choose porous nylon fabrics or nylon tricot (charmeuse type).

Just as rayon gave birth to staple fibre, the polyamides have produced their spun varieties, in which the filament is no longer continuous but cut into short lengths of varying sizes and spun in the same way as cotton or

wool. Spun polyamides are used either mixed with natural fibres whose strength they increase, particularly in hosiery, or for weaving, because their handle is more agreeable than that of continuous filament synthetic yarns, or again in the form of knitting yarns sold under various trade names (Mirlon, Edlon, etc.).

Among the variations of polyamide fibres, we must also mention *Helanca* (see *Textiles Suisses* No. 4/1953, p. 73), a continuous filament yarn (of nylon or grilon) with extraordinary stretching powers. This yarn makes possible the manufacture of hosiery and knitted wear (underwear, socks, bathing suits, gloves) that are hard wearing, that automatically stretch to fit various sizes, thanks to the high degree of elasticity of the yarn, and are very comfortable to wear.

II. Polyacrylic fibres

The best known of these fibres is *orlon*. Orlon fibres are elongated in section, rather like a figure eight (see fig. 2), thus giving more voluminous yarns, and fabrics and knitwear that have more bulk and are softer than those of nylon. The spun quality is made in Switzerland according to the process used in the spinning of schappe, and put on the market under the name of *super-orlon*. This product dries more quickly than nylon, creases less, stands higher temperatures, is resistant to the rays of the sun and is not a food for insects (moths, etc.) ; it shrinks little when washed, does not fluff like other synthetic fibres and does not felt ; for equal weight it is appreciably more bulky than wool. These different properties make it extremely useful, either mixed with wool, or alone, particularly for knitting when it has a feel similar to cashmere.

III. Polyester fibres

These fibres are known as *terylene* (Great Britain) and *dacron* (United States). Their properties are practically the same as those of other synthetic fibres. However they are less widely found on the market and consequently less well known, whether in the form of continuous filaments or spun ; all use they offer are not yet known.

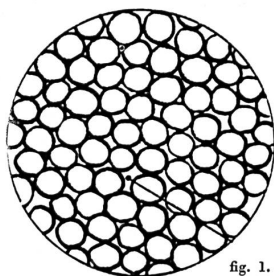


fig. 1.

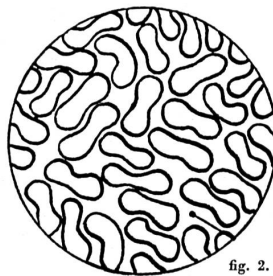


fig. 2.

Information and photographs kindly supplied by Haster & Co., Frauenfeld (« Habella »).