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POLYESTER

The development of fibres from polyester has had to travel a full circle, from the time it was first produced by scientists at ICI, United Kingdom, from ethylene glycol and terephthalic acid. This compound was known as dimethyl terephthalate. Subsequent years saw the arrival of this new fibre in the market, chemically known as polyethylene terephthalate.

Independent of this research, companies like DuPont from US and Hoechst from Germany were also in the forefront of the development of this synthetic fibre, which by today's standards is the most versatile synthetic fibre ever invented, as it lends itself beautifully to be used as a textile fibre alone or even as blends with cotton, viscose, polynosic, linen, silk, wool or hemp, etc.

There are several characteristic benefits of this fibre that one could list. The most important ones being-

- Very good crease recovery
- Good shape retention
- High bulking capacity
- Good abrasion
- Tear resistance
- Good dye ability
- Acceptable moisture absorption
- No strength loss during wetting and other chemical treatments
- Resistance to microorganism, insects, mildew, etc.

STRUCTURE AND MODIFICATIONS

Majority of polyester is manufactured by the direct reaction of terephthalic acid and ethylene glycol. This fibre is devoid of any functional groups. Polyester modifications are made to alter the inner structure of the fibre. These modifications are physical, using special methods, or they contain copolymers or different chemical components, giving the desired end results like low pilling, dyeing behavior to anionic and cationic dyes, etc.

A particularly interesting modification is by the process known as “texturising”, which is derived by stretching molten fibre and then cooling the same. This results in extra shine and gives bulk to the fibre, giving the resultant fabrics a luxurious bulkiness and softness.

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Technical Tuesdays

Dull polyester is produced by adding a delustreing agent, usually titanium dioxide, and white fibre by adding an optical whitener to the fibre before spinning. All these additions and modifications affect the performance of the fibre/fabric. Many such modifications are possible with these fibres.

PHYSICAL PROPERTIES

- Density - 1.38 - 1.5
- Melting point - 252 - 256°C
- Softening point - 230 - 250°C
- Glass transition temperature - 68°C

DRAWBACKS

One of the main drawbacks of polyester fibres is poor wearer comfort because of low moisture regain. Hence blends - with cotton: 67/33% provides excellent fabrics by including the best properties of both fibres.

Polyester fabrics are also easily soiled by oils, fats, grease, etc., due to the build up of electrostatic charges. The fibre tends to pill. Hence processing should take care of this problem by adding a singeing process to burn off the surface fibre.

DREAM COME TRUE

In the 90's the advent of polyester micro fibres was a commercial break-through in the world of synthetic textiles. Till then, it had been a cherished dream of synthetic fibre technologists to develop a fibre of polyester with exceptional soft feel, comfort, and rich appearance. And this turned into a reality with the advent of micro fibres.

WHAT IS SO SPECIAL?

- EXCELLENT SOFTNESS
- HIGH DRAPE
- SILKY HANDLE
- GOOD BREATHABILITY
- SUPER COMFORT
- RICH APPEARANCE

As a natural consequence, the use of polyester fabrics is rapidly growing in fashion apparel sector as well as technical textile sectors, which itself is growing at the rate of 35% in India. And considering the rapidly increasing, versatile uses of polyester microfilament fabrics, it might be worthwhile to conduct a study on different aspects of its wet processing. Including problems in colouration of microfilament textiles, especially in large-scale production.

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