

Textiles: Properties

When textiles are selected for manufacture, it is important to consider the different properties (e.g. strength, insulation, elasticity) that make them suited to different purposes.

Sportswear

The following factors should be considered when designing sportswear:

Elasticity

Stretchy fabrics provide comfort and flexibility during physical activity. Tight-fitting garments also improve aerodynamics, which is important in sports involving speed.

Temperature Regulation

Winter sports often require clothing that keeps the performer warm. Conversely, many sports require sportswear that keeps the performer cool.

Absorbency

Many sports require fabrics that absorb very little water to keep the wearer cool. Wicking fabrics are those which draw moisture (sweat) away from the body.

Abrasion Resistance

Sportswear is often subject to a lot of wear and tear. Therefore, it needs to be hardwearing.



Elastane



Elastane is used with other materials to make stretchy fabrics, such as Lycra®. It is not very absorbent, so it helps draw moisture (sweat) away from the body.

Polyester



Polyester is often used in sportswear for its excellent wicking properties. Wicking keeps the wearer dry and cool when exercising. Polyester is also very durable.

PU Coating



Polyurethane coating is sometimes added to sports jackets and tracksuit bottoms to add waterproofing for outdoor sports. It is lightweight and flexible.

Furnishings

When purchasing furnishings, people base their decisions not only on aesthetics, but also on properties such as **durability**, **softness** and **resistance to wear**. Upholstery, for example, is available in various natural and synthetic fabrics, each with different properties.

Natural Fabrics

Cotton provides good resistance to wear, fading and 'pilling' (bobbling). This makes it durable and suitable for regular use.

Linen provides good resistance to stretching and fading. It is strong and durable but can wrinkle easily.

Synthetic Fabrics

Acrylic is often used as an alternative to wool. It is usually blended with other fibres and provides softness, insulation and good resistance to wear.

Nylon is often blended with other fabrics to give it strength. It is very lightweight and durable, making it ideal for regular use.



Modification of Properties

Fabrics can have their properties modified to improve their characteristics. This can be for aesthetic and/or functional purposes.

Flame Retardants

Textile-based products that are used in the home and in public spaces can pose potential fire hazards. As a result, there are strict regulations on products such as upholstery and children's nightwear.

Fabrics can either be treated with a flame-retardant chemical or have flame resistance built into their structure to make them less prone to catching fire. However, treating fabrics with flame retardants can make the materials stiffer and weaker. Also, if a fabric has been chemically treated, the flame retardant can be washed out.



Flame retardants are used in a wide variety of products, including:

Stage Drapery



Theatres and halls require fire-resistant materials, particularly if there are shows in which flames may be used.

Workwear



People who work with flames and hot materials need protective clothing to reduce the risk of burns.

Photography Backdrops



In photography studios, hot lamps are extensively used, so backdrops must be able to resist the heat.

Lamination

Layers of the same material or different materials can be sewn or bonded together to improve their physical properties, such as water resistance or stain protection.

For example, Gore-Tex® is a breathable fabric that uses layers of different materials bonded together to create a lightweight, waterproof fabric for all-weather use.



