

COMPARATIVE ANALYSIS AND APPLICATIONS OF NATURAL AND SYNTHETIC FABRICS

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Abstract: This scientific article presents about natural and synthetic fabrics, comparative analysis and areas of use, chemical salts of natural and synthetic fabrics, structural properties, and their areas of use in different areas. The article analyzes the differences between natural fabrics and synthetic fabrics and their interaction.

Key words: Natural fabrics, synthetic fabrics, chemical salts, structural properties, areas of use, effect, chemistry.

The fashion industry is in the midst of a sustainability revolution, and natural fiber fabrics are playing a leading role in this evolution. Consumers are now more aware of the environmental impact of fast fashion and are looking for ethical and sustainable alternatives to synthetic fabrics. Silk, linen, and cotton are three natural fibers that have been used for clothing for centuries and have proven to be beneficial over synthetic fibers. These natural fiber fabrics are comfortable, breathable, hypoallergenic and durable. They have a timeless appeal and are easy to care for, making them a perfect choice for everyday wear. Natural fibers, also known as organic fibers, are derived from plants, animals, and minerals. These fibers include cotton, wool, silk and linen. They are breathable, comfortable and biodegradable, making them environmentally friendly. Natural fibers have been used for centuries due to their durability and versatility. Artificial fibers, also called semi-synthetic fibers, are derived from natural materials but have undergone processing and modification. Examples of artificial fibers are rayon and bamboo fiber. These fibers are cheaper to produce and have properties similar to natural fibers. In addition, man-made fibers are easy to care for and often have the advantages of wrinkle resistance and shrink resistance. A comparative analysis of natural and synthetic fabrics and consideration of their areas of use involves several factors. These factors include aspects such as their composition, characteristics, advantages and disadvantages, as well as their application in specific fields.

Types of natural fabrics:

1. Cotton fabric is the most common natural fabric. It is obtained from the fibers of the cotton plant. Cotton, Lightness, softness, hygroscopicity (absorbs moisture well), low susceptibility to allergies. Fields of use: Casual clothes, blankets and towels, sports clothes.

2. Wool fabric is obtained from the wool of sheep or other animals. Wool, Holds heat well, absorbs moisture poorly, is prone to allergies. Fields of use: Winter clothes, blankets, carpets

3. Silk tissue is produced by the silkworm. Silk, Durability, smoothness, luster, absorbs moisture well. Fields of use: Wedding clothes, pillow covers, decorative items

4. Lino fabric is obtained from the flax plant. Lino, Durability, hygroscopicity, good grip of cold, low susceptibility to allergies. Fields of use: Summer clothes, towels, fabrics and sheets.

Synthetic fibers are made from polymers synthetically produced from chemical elements or compounds developed by the petrochemical industry. Unlike natural fibers (wool, cotton, and silk), which date back to antiquity, synthetic fibers have a relatively short history, dating back to the perfecting of the viscose process in 1891 by two British scientists, Cross and Bevan. A few years later, rayon production began on a limited basis, and by the early 1900s it was being produced commercially. Since then, a variety of synthetic fibers have been developed, each with unique properties that make it suitable for a specific type of fabric, either alone or in combination with other fibers. Tracking them down is made difficult by the fact that the same fiber may have different trade names in different countries.

Fibers are made by forcing liquid polymers through the holes of a spinneret to form a continuous filament. The filament can be woven directly into the fabric, or it can be textured to give it the properties of natural fibers, such as to increase volume, or it can be cut into staples and spun. Types of synthetic fabrics

1. Polyester - Fabric obtained from petroleum products. Durability, does not wrinkle, absorbs moisture poorly, is less prone to allergies. Fields of use: Sportswear, shirts, home textiles.

2. Nylon - Made from polyamide fiber. Durability, lightness, moisture resistance, quick drying. Fields of use: Socks, sportswear, shirts.

3. Acrylic - created on the basis of acrylic fibers. replaces wool, lightness, good heat retention, low susceptibility to allergies. Fields of use: Sweaters, winter clothes, woolen items.

4. Spandex (Elastan) - Made from polyurethane fiber. Very elastic, keeps its shape well, does not wrinkle, absorbs moisture poorly. Fields of use: Sports clothes, fitness clothes, knitwear.

The main advantages when doing a comparative analysis, Natural fabrics: hygroscopic, skin-friendly, environmentally friendly. Synthetic fabrics: Durability, easy care, lightness, multi-functionality.

Disadvantages and problems: Natural fabrics: Less durable, more difficult to maintain, more susceptible to allergies. Synthetic fabrics: Not hygroscopic, restricts skin breathing, environmental damage.

Conclusion: Natural and synthetic fabrics have their own unique properties and areas of use. Natural fabrics are hygroscopic and skin-friendly, and are often used in everyday clothing. Synthetic fabrics are widely used in sports and special clothes due to their durability and easy care. Which fabric to choose depends on the purpose of use and personal needs. Adopting the use of natural fiber fabrics in the fashion industry is essential to ensure environmental protection. These fabrics have great advantages over synthetic fibers, from durability to feel. In addition, the use of environmentally friendly dyeing methods, such as waterless dyeing, is essential for a more sustainable future for our planet. By promoting natural fiber fabrics and waterless dyeing technologies, we can create an ethical and sustainable fashion industry that benefits the environment and our health.

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