

Improving the Technology of Sewing Sportswear From Non-Woven Fabrics

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Abstract: Through this article, it is going to discover important facts about Non-woven fabrics, its types and ways of using it in manufacture. Moreover, the process of making non-woven fabrics and peculiarities of improving its quality were discussed.

Key Words: Non-woven, moisture-proof, recyclable, long fibre, thermally, washability, cushioning, thermal insulation, acoustic insulation.

We know that nonwoven fabrics are one of the oldest and simplest textile fabrics. Its classic example is felt. The first well documented discovery of felt dates back 3500-3000 BC. It was made from hairs of various animals. Primarily nonwoven fabrics were utilized only in protective clothing and shelters (tents), but since last few years nonwoven industry has grown abruptly and this unconventional trend fabric apart from its application in geo-textiles, nappies, filters, bags, etc. have now started to find its application into the fashion apparel industry also. This has become possible due to the research and development in the properties of nonwoven fabrics. Unlike traditional fabric manufacturing process where fibers are converted into the yarn and then weaved to form a fabric, nonwoven fabrics are directly obtained from fibers.

Apparels are the articles often wear by human's also known as clothing, dress, garments or attire on the body. In its broadest sense, clothing includes coverings for the trunk and limbs as well as coverings for hands, feet and head. Primarily nonwoven fabrics were utilized only in protective clothing and shelters (tents), but since last few years nonwoven industry has grown abruptly. The properties of nonwoven varies from crisp to fluid, soft to harsh, strong to extremely weak. Due to the vast variation in fabrics properties it has application in geo-textiles, nappies, filters, bags, etc. Nonwovens have now started to find its application into the apparel industry also.

Nonwovens are used extensively in the apparel industry for interlinings, clothing and glove insulation, bra and shoulder padding, handbag components and shoe components. In the late 1960's there were a few attempts to market disposable dresses but with little success. This occurred due to the uncomfortable properties of fabrics. But with the recent research a new trend of fabrics has been produced with better comfort, drape, hand, durability, stretch and recovery. These enhanced characteristics have compelled some to push aside the prejudices associated with these nonwoven fabrics and seek new unexpected venues.

Recently many patterns of fashion garments are developed by using these newly developed nonwoven fabrics. Some non-woven materials lack sufficient strength unless densified or reinforced by a backing. In recent years, non-wovens have become an alternative to polyurethane foam. Nonwoven fabrics are broadly defined as sheet or web structures bonded together by entangling fiber or filaments (and by perforating films) mechanically, thermally or chemically. They are flat or tufted porous sheets that are made directly from separate fibres, molten plastic or plastic film. They are not made by weaving or knitting and do not require converting the fibres to yarn. Typically, a certain percentage of recycled fabrics and oil-based materials are used in nonwoven fabrics. The percentage of recycled fabrics varies based upon the strength of material needed for the specific use. In addition, some nonwoven fabrics can be recycled after use, given the proper treatment and facilities. For this reason, some consider non-woven a more ecological fabric for certain applications, especially in fields and industries where disposable or single use products are important, such as hospitals, schools, nursing homes and luxury accommodations.

A nonwoven material offers number of advantages over traditional fabrics, cost savings being the most obvious. In the late 1960's there were few attempts to market disposable dresses but could not succeed. Recent research has resulted in fabrics with better drape, hand, durability, stretch and recovery. So, now it is extensively finding its application in the apparel industry for interlinings, clothing and glove insulation, bra and shoulder padding components. These enhanced characteristics have compelled us to push aside the prejudices associated with this unconventional fabric and move towards the modern concept. Nonwoven fabrics are engineered fabrics that may be single-use, have a limited life, or be very durable. Nonwoven fabrics provide specific functions such as absorbency, liquid repellence, resilience, stretch, softness, strength, flame retardancy, wash ability, cushioning, thermal insulation, acoustic insulation, filtration, use as a bacterial barrier and sterility. These properties are often combined to create fabrics suited for specific jobs, while achieving a good balance between product use-life and cost. They can mimic the appearance, texture and strength of a woven fabric and can

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be as bulky as the thickest paddings. In combination with other materials they provide a spectrum of products with diverse properties, and are used alone or as components of apparel, home furnishings, health care, engineering, industrial and consumer goods. Nonwovens are typically manufactured by putting small fibers together in the form of a sheet or web (similar to paper on a paper machine), and then binding them either mechanically (as in the case of felt, by interlocking them with serrated needles such that the inter-fiber friction results in a stronger fabric), with an adhesive, or thermally (by applying binder (in the form of powder, paste, or polymer melt) and melting the binder onto the web by increasing temperature).

Nowadays, production of clothes from nonwoven fabrics is developing day by day because of its durability and quality. From nonwovens different kinds of sportswear, surgical gowns, various protective clothing, disinfectant wipes, masks, pads, handkerchiefs, towels, beauty products, hygiene pads, disposable items, sanitary ware are made and they help us in our daily life. Spun laid, also called spun bond, nonwovens are made in one continuous process. Fibers are spun and then directly dispersed into a web by deflectors or can be directed with air streams. This technique leads to faster belt speeds, and cheaper costs. Several variants of this concept are available, such as the reicofil machinery. PP spun bonds run faster and at lower temperatures than PET spun bonds, mostly due to the difference in melting points. Spun bond has been combined with melt-blown nonwovens, conforming them into a layered product called SMS (spun-melt-spun). Melt-blown nonwovens have extremely fine fiber diameters but are not strong fabrics. SMS fabrics, made completely from PP are water-repellent and fine enough to serve as disposable fabrics. Melt-blown is often used as filter media, being able to capture very fine particles. Spun laid is bonded by either resin or thermally. Regarding the bonding of Spun laid, Rieter has launched a new generation of nonwovens called Spun jet. In fact, Spun jet is the bonding of the Spun laid filaments thanks to the hydro entanglement

Summing up all fact given above it should be noted that nonwovens are used not only making clothes but also they are useful in multitudes of household applications that range from filtering and cleaning to providing aesthetic enhancements to a home. When used in kitchens, bedrooms, living rooms and dining rooms, high-quality and performance nonwovens make possible practical, comfortable, safe, hygienic and, most important of all, attractive solutions for modern home life.

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