

Sports Textiles- *Requirements and Their Applications*



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A Sport is a physical activity and it is recognized as activity based in physical dexterity. Sports are major source of entertainment for many people of world and it is sector which draws larger crowds. Textile plays a major role in sports and without textiles sports existence is very difficult we can say. Sports textiles, which is technical textile component growing in wider range with sophisticated technology. Developments in technology has seen in manufacturing sportswear to ensure special features for better performance in their activities and to provide comfort to player.

The use high functional and smart textiles has proven their high level of performance and succeeded in their functional properties. Not only as sportswear, but also the textile materials are used as sports equipments and components manufacturing as well. According to the functional requirements of particular sports, special apparels for specific sports are been manufactured. Many fibres, yarns, fabrics and finishes developed to meet the needs of the sports sector.

Sportswear is clothing including footwear worn for sports or exercises, it also includes garments like t-shirts, tracksuits etc. and there also specialised apparels for wet suits for swimming, cycling etc.

THE MAIN REQUIREMENTS OF SPORTSWEAR:

1. Functional requirement
2. Moisture management and
3. Aesthetic value

There also some attributes for functional sportswear

1. Ease of care and handle.
2. Light weight and comfortability to wear.
3. Abrasion resistance
4. Water proof and water vapor permeability
5. Resistance to UVA and UVB rays which are dangerous to skin when exposed to them.
6. Highly durable.
7. Sportswear must have perspiration fastness.
8. They should be breathable and should posses' air permeability.
9. They should be fast drying.
10. Sports textile must have anti –static, anti-microbial performance and thermal insulation.

FIBRES AND FABRICS USED FOR SPORTS TEXTILES:

Cotton, nylon, polyester and some special fibres of elastomers like Spandex, Dacron, Lycra, etc are used based on functional requirements. PCM(phase change materials) and shape memory polymers also used which are new polymers for the sportswear. Generally knitted fabrics are used especially for t-shirts, socks etc. Coated, layered and push-pull fabrics are also used for sports textiles.

LAYERED FABRIC:

Layered fabrics are manufactured depending upon the functional or technical requirements. The arts in cold climates should differ from hot and dry climates because of climatic variations. Different climatic conditions desire different functional properties.

In the layered fabrics, the shell layer is the outer layer and it secure from water, wind and it should posses mechanical strength. Even though shell layer does not allow water and wind from outer atmosphere to inside it allows the moisture to let in. For example plastic rain coats, waterproof breathable (hard shell), water resistant (soft shell) are used as shell layers according to desirability.



The middle layer is to provide more insulation during winter and by making use of additional thin layers the warmth can be altered. As the middle layer provides insulation it should be loose than that of the inner layer and loosely fitted layers provide more moisture transfer through air circulation. Cotton, wool, down, PETE, polyester etc are the materials used as middle layer manufacturing.

For inner layer wickable materials or wicking materials are used, it is to transfer the sweat from skin to the next layer, so that it gives warmer and comfort feel to wearer. Due to more surface area and non-absorbent nature of clothing, the moisture evaporates rapidly. Polyester and some microfibrinous fabrics are best chosen for inner layers as they do not absorb moisture and also transfer it to good extent. To avoid odour and micro-organisms attack they can also be treated with special finishes like anti-odour finishes, anti-microbial finishes and insect repellents as well.

IMPORTANT SPORTS COMPONENTS MADE OF TEXTILES:

Inflatable balls, protective equipments, boxing equipments etc, are made of textile materials. For inflatable balls the inner layer is made with polyester or cotton fabric or blend of polyester-viscose and stitching is done with nylon threads.



The protective equipments like leg-guards, thigh pads, caps, wicket keeping gloves etc, are made of PU laminated or PVC coated fabrics. Mainly PVC coated fabrics and cotton are used for leg-guards for outer and inner layers respectively and for thigh pads we go for cotton completely. PVC laminated fabric is used for wicket keeping gloves while PU laminated fabric for batting gloves. Polyester is used for manufacturing cricket kit bags.

SLEEPING BAGS:

Cotton , wool and nylon taffeta are used in manufacturing sleeping bags , which are used as protective bags and also like closed blanket with zipper during climbing, camping, hiking etc. Its main object is to protect from chill wind and to provide thermal insulation as well.

SLEEPING BAGS



ARTIFICIAL TURFS:

Artificial turfs are also well known as synthetic grass, which are used for both indoor and outdoor fields of sports, parks etc. Pile fibres of polyethylene, polypropylene, nylon-6 or nylon-6, 6 are knitted as backing using flat-bed knitting machine.

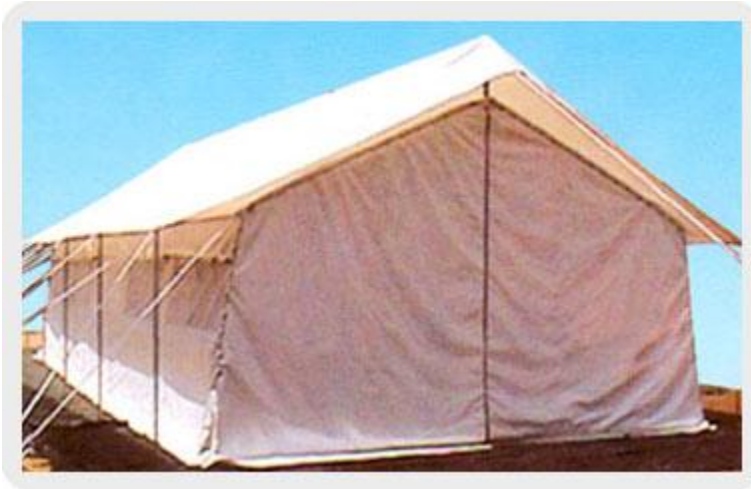




TENTS:

Cotton, polyester, nylon, Rip-stop nylon are materials used for manufacturing tents. Cotton coated with PVC and most commonly used coating for tents is polyurethane.

PVC COATED TENT



Applications of sports textiles:

Sportswear for sports like cricket, golf, foot ball, skiing, tennis etc, where we use textiles extensively. Shoes, sailing sports, climbing, flying, summer and winter sports, indoor sportswear, sports equipments etc, are textile components. In this way sports textile has varied applications.



References:

1. En.wikipedia.org
2. Textilelearner.blogspot.in
3. Indiantextilejournal.com
4. Technicaltextile.net
5. Woodheadpublishing.com
6. Fibre2fashion.com/
7. Familytentsforcamping.net

Image Courtesy:

1. Google.co.in
2. Outdoorgearlab.com
3. Sportingchanceinitiative.co.uk
4. Ecouterre.com

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