

PACKING TEXTILES AND THEIR APPLICATION AREAS

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ABSTRACT

The technical textiles, used in packaging and subsequent transportation are called “Packtech”. Packaging textiles include all textile packing material for industrial, agricultural and other goods. Packtech includes heavyweight, dense woven fabrics (used for bags, sacks, flexible intermediate bulk carriers and wrappings for textile bales and carpets) and on the other end, it includes lightweight non wovens used as durable papers, tea bags and other food and industrial product wrappings. In this study, packing textiles, their properties and their application areas have been investigated.

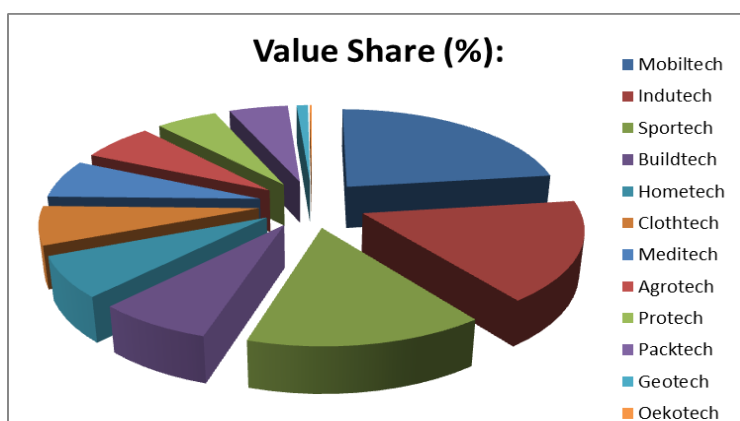
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1. INTRODUCTION

Technical textiles refer to textile materials and products used primarily for their technical performance and functional properties rather than their aesthetic or decorative characteristics. Today, technical textiles use 25 million tons of fibres, accounting for a third of global production. Since 1960, the technical textiles market has increased five times faster than traditional textiles. The nonwovens and composite markets are also set to increase significantly.

Technical textiles are so versatile and can be used for so many different areas of application that, to offer a better overview, they have been divided into nine product groups and twelve areas of application such as 'Buildtech', 'Geotech', 'Mobiltech' and 'Sporttech' [1]

Table 1. Technical textile market (2010)



Textile packaging is used to contain, carry, store, and protect goods [2]. Packaging textiles include all textile packing material for industrial, agricultural and other goods [3]. The demand for packing material is directly proportional to economic growth, industrial production and trade as goods are produced and then distributed both locally and

internationally. The growing (environmental) need for reusable packages and containers is opening new opportunities for textile products in this market. Sacks and bags made of traditional jute, cotton or natural fiber are gradually casting way for modern synthetic fibers. These technical textiles, used in packaging and subsequent transportation are called “Packtech”. The use of textile materials in consumer packaging is exhibited in the following products [4]:

1. Flexible Intermediate Bulk Containers big bags (FIBC)
2. Laundry bags and other bulk packaging products
3. Sacks for storage etc
4. Twine and string for tying packages, etc (excludes agricultural applications)
5. Non-paper tea bags and coffee filters
6. Food soaker pads
7. Net packaging for storing, packing, transporting, retailing foodstuffs, toys,
8. Woven fiber strapping, lightweight mailbags.: They are:
9. Soft luggage.

1.1 Flexible Intermediate Bulk Containers

FIBC’s are one of the most cost effective and ideal types of packaging for shipping and storing dry bulk products. They are available for powdered and granular materials like chemicals, foodstuffs, minerals, grain, building materials and etc. Big bags are produced from either tubular or flat polypropylene (PP) woven fabrics. These fabrics can be both coated or uncoated and vary in different weights. FIBCs can vary from 900 gms to 3 kgs in weight depending upon the bag properties and weight to be carried.

There are three types of FIBC bags: Panel type, circular woven type, baffle type (Square bag). These bags have capacities ranging from 500-4000 kgs.



Figure 1. FIBC bags

Advantages of FIBC:

- 1.Low cost of material handling from the manufacturer to the end user, inclusive of wastage of material
- 2.Easy filling and discharge
- 3.Savings in loading/unloading time due to ease of handling
- 4.Low weight packing for transport
- 5.Built in safety factor of at least 5:1 on nominal load
- 6.Transportation of empty FIBCs is cheap and space saving
- 7.No requirement of pallets when compared to small bags – self supporting
- 8.Good chemical and organic resistance

9. Eco-friendly, since product is recyclable

10. Can be used for storage in open air (if UV stabilised)

1.2. Sacks for storage (Polyolefin woven sacks and jute sack bags)

Polyolefin woven sacks are versatile packing materials used extensively in the packing of cement, fertilizers, thermo plastic raw materials, food grains, sugar, fertilizers, chemicals, food grains, cattle feed, salt. Advantages of polyolefin woven sacks bags are: Higher strength, light weight, minimal seepage, moisture proof, long lasting (durable) and cheaper.

Jute sack bag is popular and environmental friendly packaging solution for agricultural industry. It is ideal for packaging of potato, onion, vegetables or other agricultural product [5]. Because this bag is reusable, long lasting, breathable and environmental friendly bag. Jute sack bag also called jute Hydro Carbon bag which is specially made from Agro based product it has no contamination of hydrocarbons and it is completely free from kerosene smell. These bags are high standard international quality jute bag.

1.3. Twine and string for tying packages, etc (excludes agricultural applications)

It is used for all type of packaging. High knot strength prevents ravelling with its high loading strength and low elongation it does not break when lifting high loads. It is resistant to friction.



Figure 2. Polyolefin woven sacks



Figure 3. Jute sacks



Figure 4. Twine

1.4. Non-Paper Tea Bags and Coffee Filters

Tea and coffee bags are produced from the cellulose fibers of Abaca tree that is widely grown in the Philippines.

Heat-sealed tea bag paper usually has a heat-sealable thermoplastic such as PVC or polypropylene, as a component fiber (100% non-woven technical textile) on inner side of the teabag surface. The filter paper used for making tea-bags is a 12-17 GSM non-woven material. The heat-sealing type tea-bag paper is of 16.5 to 17 GSM approx while the non-heat sealed tea-bag paper is around 12 – 13 GSM.

1.5. Food soaker pads

Soaker pads are designed to soak excess blood and moisture from produce in food trays. This prevents the product leaking onto or out of the packaging.

1.6. Net packaging for storing, packing, transporting, retailing foodstuffs, toys, etc. (Leno Bags)

Leno Bags can be widely used for packing of various agricultural products such as : Onion, garlic, potato, carrot, ginger, orange, pineapple etc. Leno Bags being permeable allow the air to pass through the bag which help to keep the the product fresh. With their low weights and cost effective nature, they provide a superior packaging alternative to other materials. Advantages of a Leno Bag are : Superior aesthetics, excellent mechanical properties,

chemically inert, ease in handling and storage, reuse and recyclable, cost effective, suitable for dry skin vegetables (Potato, Onion, Garlic etc.), suitable for cold storage.



Figure 5. Tea Bag



Figure 6. Food soaker pads



Figure 7. Leno bags

1.7. Woven fiber strap

Woven strapping are also using to pack bales.



Figure 8. Woven strap



Figure 9. Soft luggage

1.8. Soft Luggage

Soft luggage is made out of woven fabrics like nylon and polyester. It comprises of uprights, totes, duffel and sky bags which can be with or without wheels and handles. The soft luggage today is becoming very popular due to the ease of carry as it is light and flexible. It includes handbags, military backpacks, athletic backpacks, wallets, briefcases and other soft sided luggage items [6].

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