

Packaging Textiles- Woven and Non-woven Polypropylene Fabric

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Abstract: A study on manufacturing units of Packaging Textiles was taken up to obtain information regarding various aspects of packaging textiles such as products covered under packaging textiles, setup of units, raw materials, manufacturing process, distribution and marketing, problems faced by unit owners and remedial measures. Information and data obtained from various units as per the set interview schedule was coded, tabulated and analyze. Packaging Textiles include various products such as Flexible Intermediate Bulk Container (FIBC), leno bags, Polyolefin woven sacks, tea bags and coffee filters; wrapping fabric; soft luggage products; jute hessian and sacks. The study was limited to the products manufactured from Polypropylene (synthetic fibers) only.

Keywords: Technical Textiles, Packaging Textiles, Polypropylene

Introduction: The Textile industry is initially considered as an industry which fulfills the demand like climate protection, increase in the aesthetic sense, overall apparel need. However, due to increase in human demands, textile has been molded with new technology for specific use and this sector is known as Technical textiles. Textile products manufactured primary for their technical performance and functional properties comes under technical textiles.

Packaging Textiles is one of the most important areas in technical textile applications. It includes all significant innovations in the packing, covering and transportation of goods. Thus, it is used to contain, carry, store, and secure goods. The natural fibers used for Packaging Textiles are cotton, flax and jute and are available in India in large quantities at cheaper rate. They are durable and biodegradable. Polyamide, polyolefin and polypropylene are the synthetic fibers used for making packaging products.

Polypropylene bags are stronger and withstand much higher impact loads. These sacks are easy to clean and resist fungal attack. These are quite competitive in price and have good appearance. Thus, it finds an extensive variety of uses from sacking and large industrial bags to high tech medical applications. These bags require less energy to manufacture than paper or jute bags. These bags are reusable. The raw material and process used for manufacturing these packaging textiles has a low impact on both energy consumption and on the environment.

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 doors for textile products in this market.

Objectives:

- To study various types of packaging textiles and the units involved in manufacturing of these textiles.
- To find out the raw materials used and steps involved in manufacturing of these textiles.
- To acquire knowledge about the distribution and marketing of pack-tech textiles.
- To examine the problems faced by the unit owners and remedial measures.

Methodology:

Keeping the objectives in mind, the study was carried out in two phases.

Phase 1- Exploratory phase

Locale of data, sample design, method selection, development of research tool and collection of data were the different steps taken in an exploratory phase. For this study interview schedule cum observation method was used.

Phase 2 – compilation and analysis of data.

Average and Percentage techniques were used to summarize the data.

Results and discussions:

Raw Material used- PP granules were used for making woven and non woven fabric, PP woven fabric were used for making sacks, FIBC, leno bags and wrapping fabric. PP non woven fabric was used for making shopping bags and tea bags. PP woven and non woven fabric were sandwiched with plastic or metal film in order to make BOPP bags or wraps. PP granules of different grades were used in the manufacturing of PP woven or Non-woven fabric. These grades were given according to quality.

Table-1 Specifications of the PP granules

Grade	MFI(12)	Product
1030 RG	3	Woven sacks and wraps
1020 RU	2	FIBC
1030 FG or 1030 FGP	3	BOPP bags
3250 EG	25	Extrusion coating
350	35	PP non woven fabric

Table-2 Machines used in Packaging Textiles

Name of the machine	Mode	Purpose
PP/HDPE tape plant	Automatic	Extrusion of PP granules in the form of yarns
Non woven fabric making machine	Automatic	Manufacture PP non woven fabric.
Circular weaving looms	Automatic	Manufacture of PP woven fabric and leno bags.
Laminating machine	Automatic	Used to laminate the fabric
Flexo printing machine	Automatic	Used for printing PP woven and non-woven fabric
9 roller or 8 roller printing machine	Automatic	Used for printing plastic films
Cutting machines	Manual, semi automatic and automatic	Used to cut the fabric
Sewing machines	Semi-automatic	Used to stitch the fabric
Tubor	Automatic	Used to make BOPP bags
Inspecting machine	Semi-automatic	Used to inspect the printing defects
Special packing and bale pressing machine	Semi automatic	Used to press the and pack the bundles

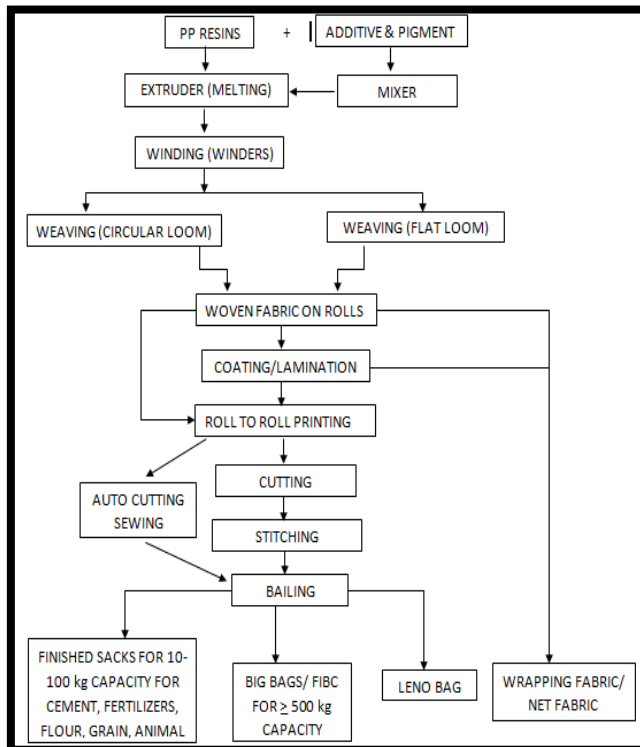


Fig. 1- Manufacturing Process of PP WOVEN FABRIC AND SACKS

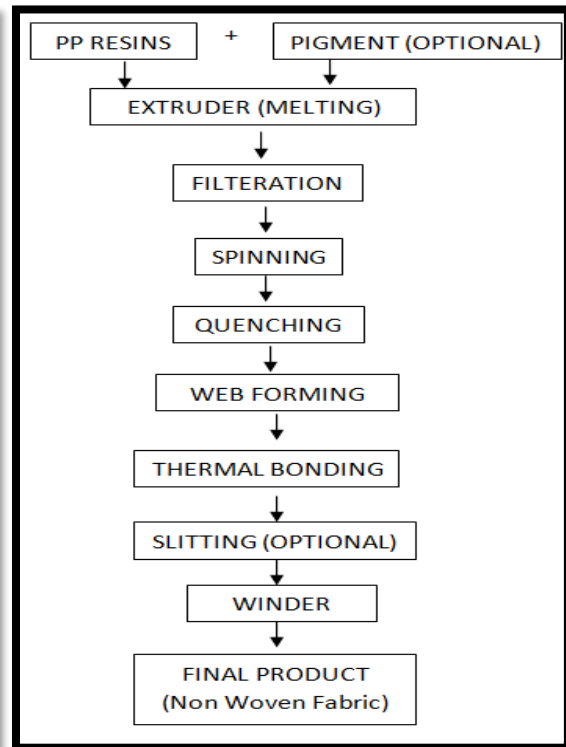


Fig.2- Manufacturing Process of PP Non-WOVEN FABRIC AND SACKS

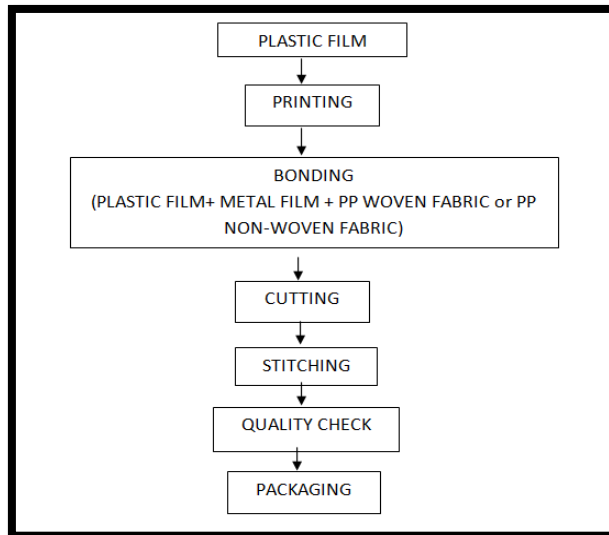
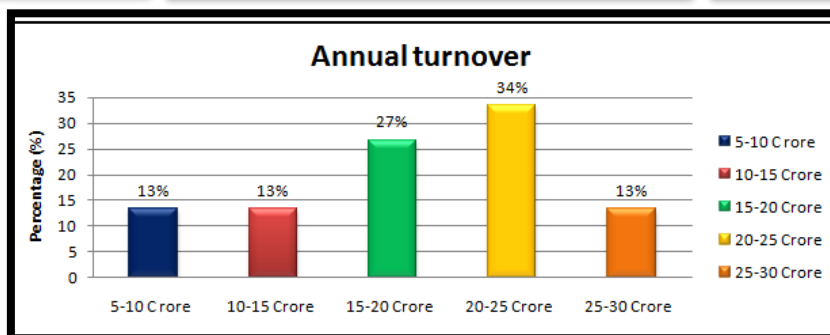
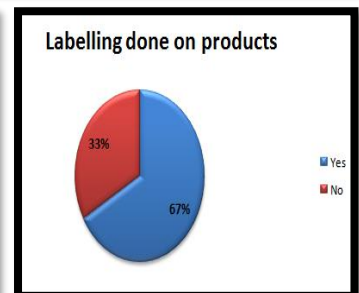
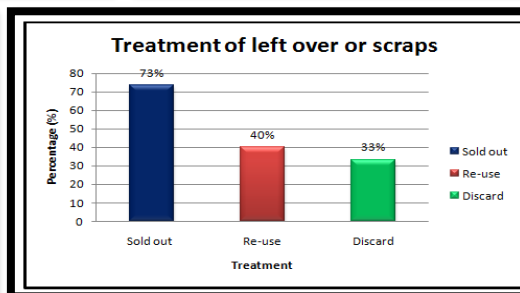
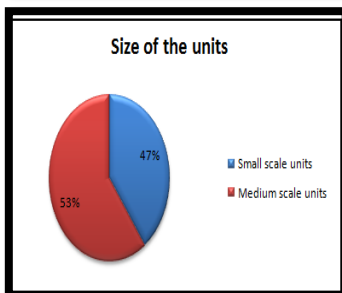
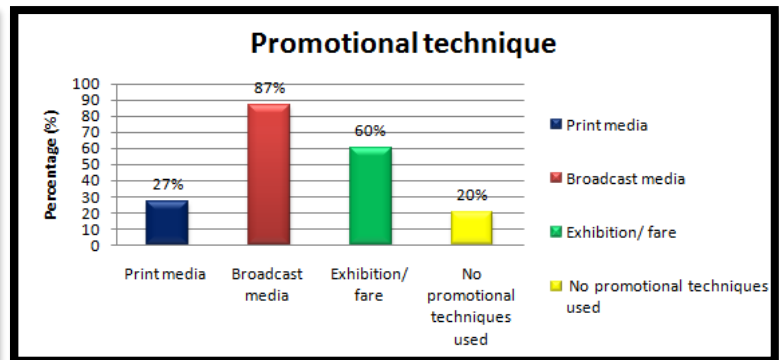
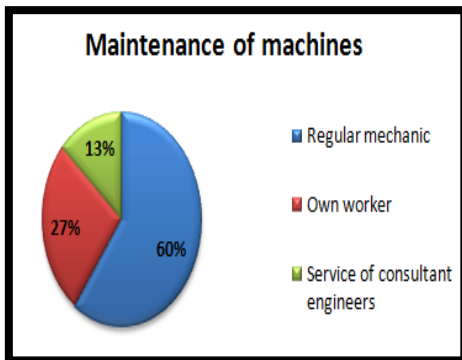


Fig 3- Manufacturing Process of Biaxillary Oriented Polypropylene Bags

Survey Statistics-



Conclusion:

Packaging textiles forms the largest segment and holds forty two% of the market share of Technical Textile in India. PP Woven sacks (excluding FIBC) represent around half of the technical textiles utilization under Packaging textiles. Woven polypropylene fabric is used for making sacks, FIBCs, BOPP, leno bags and (un)laminated wrapping fabric whereas polypropylene nonwoven fabric is used in manufacturing of shopping bags, BOPP bags, tea bags and (un)laminated wrapping fabric. PP nonwoven fabric manufacturing units were small scale units using non woven fabric making machine whereas PP woven fabric manufacturing units were medium scale units using PP/HDPE tape plant and Circular weaving loom. Packaging textile industry manufacturing PP woven and non-woven fabric was a combination of textiles and plastic industry. The automatic cutting and sewing machines aided with computer numerical control can produce huge quantity of bags with variation in size; with a tremendous speed and efficiency in short period. A common testing facility center should be setup by the Government for manufacturing units to provide necessary testing and certification to meet international demand. The increasing demand for these products ensured a bright future for this industry which had plans to expand and compete in the international market.

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