

RECYCLING OF WASTE PET BOTTLES INTO RECYCLED POLYESTER

STAPLE FIBER



WASTE PET BOTTLES

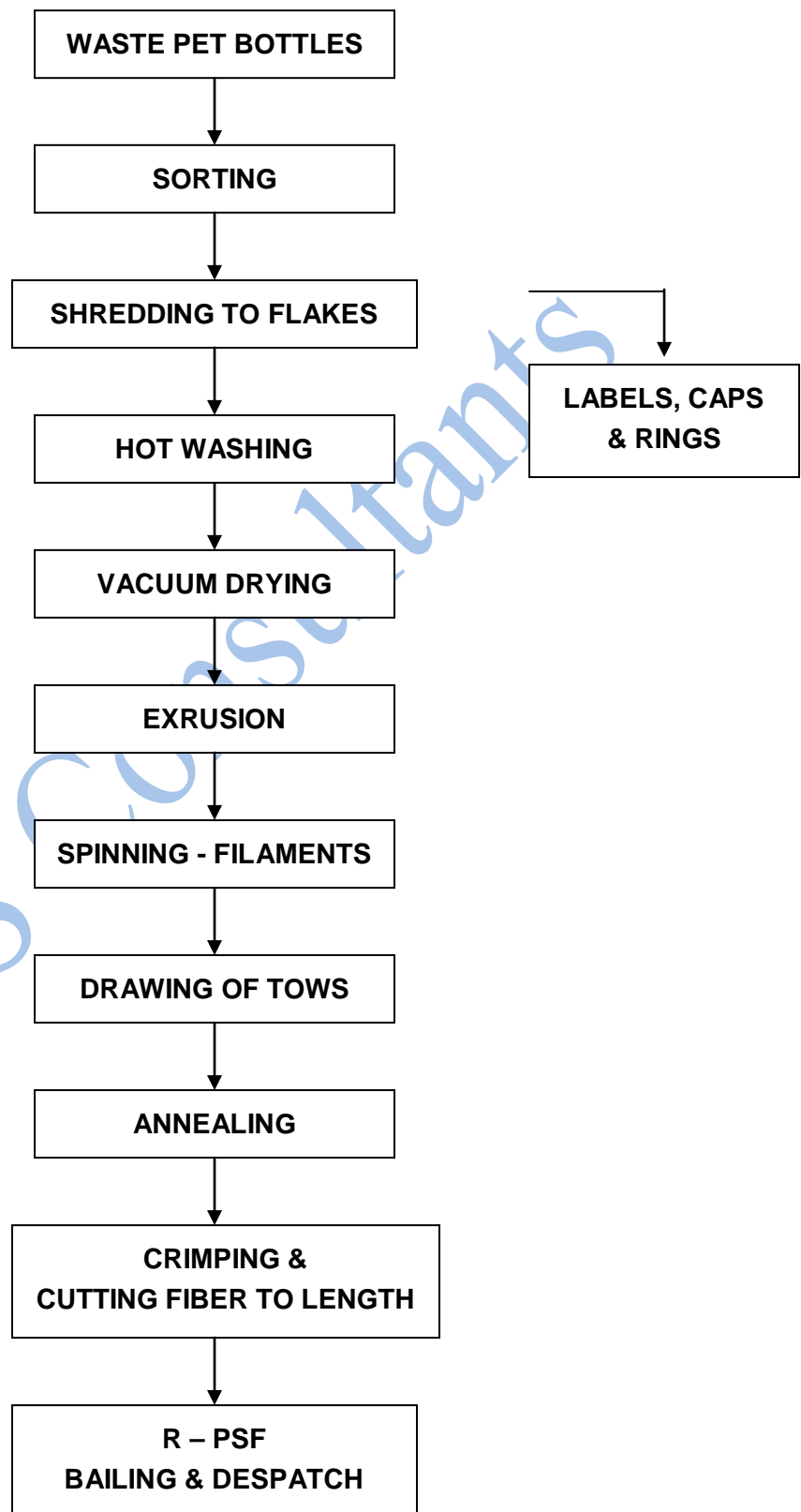


CLEAN PET FLAKES



Regenerated PSF

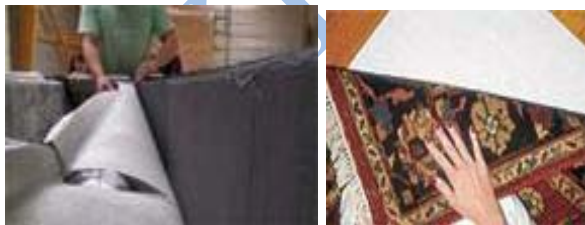
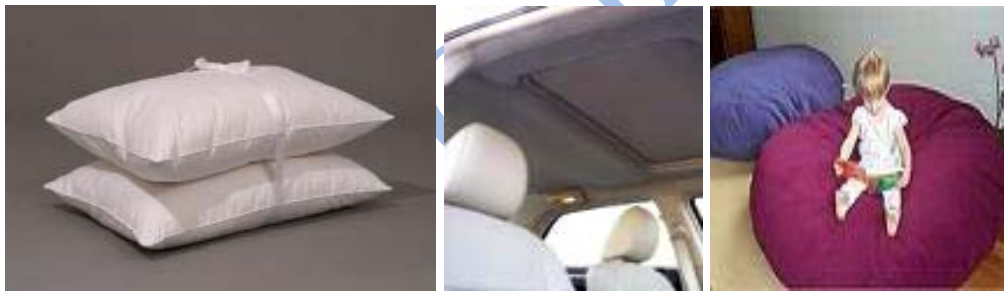
PRODUCTION PROCESS FLOW



(a) R-PSF is used in the **non-woven fabric** industry (needle punched, thermo bonded, chemical bonded etc.) Main application is in automotive segment (carpet, upholstery, trunk liner, roof insulation etc.), carpet segment (exhibition, floor, mats, carpet backing), filter fabrics and geo-textiles.

(b) **Fiber-fill and wadding** industry. End applications include stuffing for jackets, cushions, pillows, mattresses, toys, sleeping bags, quilts, fur fabrics etc.

(c) The major use of R-PSF is in the **Yarn spinning** industry. Spun yarn is used in textiles, bedspreads, pillow covers, sports wear, athletic shoes etc.



Recycled PSF / POY / DTY

India's virgin PET resin consumption is expected to be around one million metric tons in 2016-17. This represents a huge opportunity for recycling of waste PET bottles as availability of raw material is increasing with higher consumption of PET bottles and increase in the recycling rate. Natural fibers like cotton cannot fulfill India's growing fiber demand and there is huge scope for growth in consumption of synthetic fibers & yarns. PSF consumption in India is growing at a rate of 5% per annum. The medium and long term growth prospects of polyester fiber and yarn are good.

Indian Man Made Fiber (MMF) to Natural fiber ratio is 41 : 59. This will align to global ratio of 63 : 37 consumption. Hence, there is a huge scope of growth in consumption of polyester fiber in India

Raw material price for recycled PSF is insulated unlike virgin PSF which is linked to crude oil / gas prices (PTA and MEG) thereby ensuring stable margins with possibility of scale up of business.

Changing life styles and cost effectiveness is leading innovative applications of MMF. This has clearly helped to expand market share of polyester. Such trend is likely to continue in the future. Some of the notable innovations are Winter clothing, Disposables, Non-woven Fabrics, Technical textiles etc.

Recycling leads to saving of natural resources (oil, gas, water), reduces carbon footprint and reduces refuse landfills - hence is environmental friendly. End consumer perception towards use of environment friendly and recycled materials is changing rapidly and turning positive.

One can also make **Partially Oriented Yarn (POY)** and **Drawn Textured Yarn (DTY)** directly from high quality hot washed PET bottle flakes. DTY is used in dress material, home furnishing, bath towels, upholstery etc. There is good domestic and export market for both POY and DTY. **As technical & project consultant we are setting up the first R-PSF plant in Bangladesh, near Dhaka.**

As a first step we can prepare **Techno Economic Project Report** for setting-up Recycled PSF manufacturing plant. The report will provide a realistic picture, clarify all points associated with the project and help you to take an informed business decision. The report will help you to approach financial institutions for loan purpose and Govt. departments for statutory clearances. The report will cover following points

- 1.0 Introduction
- 2.0 Proposed production capacity & project parameters
- 3.0 Manufacturing Process & Technology
- 4.0 Production Flow Diagram
- 5.0 Plant & Machinery with basic specifications and indicative prices
- 6.0 Quality Control & Testing Lab with basic specifications and indicative prices
- 7.0 Utilities & Support facility with basic specifications and indicative prices
- 8.0 Estimated Project cost
- 9.0 Manpower Requirement & Cost
- 10.0 Estimated Product Cost (RM cost, Production cost, Overheads)
- 11.0 Estimated Turnover, Profitability & Project Payback Period
- 12.0 Working Capital requirement
- 13.0 Machinery & Chemicals Suppliers List
- 14.0 Different End Applications and Key Market Segments
- 15.0 Product Guiding Specifications & Testing Standards
- 16.0 Market scenario (current production, growth potential, major producers – capacity & location, virgin & recycled PSF historical price data)
- 17.0 Typical Project Implementation Schedule

Technical Consultancy Services for Project Implementation

1. Assist in selection and sourcing of machinery & equipment.
2. Detailed discussion with machinery suppliers for modifying equipment specifications to suit local operating conditions and availability of spare parts.
3. Design Factory / Plant Layout and Machinery Layout
4. Assist in selection & sourcing of utilities and support equipment
5. Provide assistance for recruiting of Technical Manpower
6. Provide Compounding & Processing know-how
7. Assist in Commissioning & Trial Run of plant
8. Assist in selection & sourcing of Additives & Chemicals
9. Assist in setting-up Quality Control & Testing systems and facilities
10. Provide information about market scenario & intelligence
11. Provide target market information's and marketing advice
12. Assist in recruiting of marketing personnel
13. Assist in developing different products like hollow conjugated / solid, dope dyed, siliconized, bright / speciality fibers etc.

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