Technical Textiles – Growth Potential and Prospects in India

(1) Neetesh Bhargava, (2) Vijay Shivankar
(1) Manager(Technical), Colorant India, Ahmedabad, India
(2) CTF, MPSTME, SVKM’s NMIMS, Dhule, Maharashtra, India.

Abstract
Technical textiles are defined as textile materials and products used primarily for their technical performance and functional properties rather than their aesthetic or decorative characteristics. Depending on the product characteristics, functional requirements and end-user applications, these have been grouped into 12 segments. One of the most promising and faster growing areas for global and Indian textile industry Indispensable part of human life encompasses immense range and diversity of raw materials, processes, products and applications accounts for over one-quarter of all textile consumption in weight terms plays crucial role in Indian economy and infrastructural development.

I. Introduction
Approximate world market for technical textiles at 30 MN tonnes (US$ 180 billion) during 2013 is expected to increase to 50 MN tonnes (US$ 250 billion) by 2018 with a capacity of 4 - 5 % depending on the area of application. Fibre consumption in technical textiles was 24 % of total fibres consumed in 2009. The drivers for future growth are expected to be Asian countries like china and India. The growth in Asia is expected to be 6.5 percent while it would be merely 2.2 percent in developed countries. Sector-wise higher growth rates are for industrial technical Textile, building technical Textile, medical technical Textile, geotechnical Textile, packaging technical Textile and agro technical Textile. But protection technical Textile is important in view of safety.

Figure 1: Technical Textile Consumption by Region
Figure 2: Fiber wise consumption worldwide in technical textiles

- Fabric - 67%
- Unspun fibres - 24%
- Yarns - 09%

Fibre products include fibre reinforced concrete and composites, cushioning, fillings, insulation & sports equipment, toys. Yarn products include sutures, ropes, fishing gears, shoe laces, swings. Fabrics can be woven, knitted and non-woven and cover all sectors of technical textiles. Fiber wise consumption worldwide in technical textiles is shown in Figure 2.

II. Indian progress in technical textiles:

Indigenous production of technical textiles is limited and scattered mainly in small & medium sectors, the demand for many items is met through imports e.g. defence and police. Large untapped potential exists for potential investors. Some of the products can be produced by minor alteration in existing set up. in many developed countries (e.g. USA and Japan) technical textiles account for over 35 percent of the textile industry's output as against 19% for China and 5% for India. Primarily active in the clothtech, packtech and sporttech sectors limited to commodity products and very little presence in high tech segments. There is a general perception that technical textiles are predominantly produced in large scale sector but it is true only to limited extent. Indigenous production and 'value for money' pricing concept will explode the market. India, the fourth largest economy in terms of purchasing power parity (PPP) (after USA, China & Japan) is a growing market of one billion plus people, of which 300 million people are middle class consumers. The consumption of disposable segment of technical textiles is directly related to the disposable income. The value addition in technical textiles is steadily shifting from raw materials and intermediate products to downstream industries where India has a strong base. Low cost skilled labour is highly competitive as compared to developed countries. Decentralised sector's contribution in technical textiles is significant for their growth in India.

III. Products /areas for standardization

Depending on the product characteristics, functional requirements and end-user applications, these have been grouped into 12 segments, they are Agro technical Textile (agriculture, horticulture and forestry), building technical textile (building and construction), cloth technical textile (shoes and clothing), geotechnical textile (geotechnical textiles, civil engineering), home technical textile (furniture, upholstery, interior furnishing, household textiles, floor covering), industrial technical textile (filtration, cleaning and other industrial uses), medical technical textile (medical, healthcare and hygiene), automobile technical textile (automobiles, shipping, railways and aerospace), oeko tech (environmental protection), packaging technical textile (packaging), protection technical textile (person and property protection), sport tech (sport and leisure)
IV. Geotechnical Textiles
Geotechnical textiles and Geotechnical grids for reinforcement of base and sub base in pavement structures, Geotechnical textiles for subsurface drainage, sub grade separation and stabilisation, protection (cushioning), permanent erosion control, pavement overlays, slope protection and silt fence Geotechnical textiles for sediment control, Geotechnical synthetic clay liners, gabions for prevention of soil erosion, Geotechnical grids for mse systems, Geotechnical synthetic mats, Geotechnical nets and Geotechnical composites for waste containment, geo composites / Geotechnical cells / Geotechnical membranes / Geotechnical foams, prefabricated Geotechnical synthetic edge and vertical drains, Geotechnical synthetics for waste containment

V. Building Technical Textiles
geo-membranes for waterproofing of roofs, controlled permeability textiles for concrete formwork lining, fibres for reinforced concrete, synthetic fibre insulation blanket, reflective vapour breathable textile substrate as radiant barrier in building envelope, house wraps, vapour breathable textile substrate as mineral wool insulation facing for buildings, technical textiles as honeycombs for landscaping, architectural fabric/ tensile structures (temporary and permanent), hoardings for buildings are the examples of building Technical Textiles

VI. Protection Technical Textiles & Agro Technical Textiles
bullet proof fabric/jacket, protective clothing for agricultural workers, mechanical/chemical / nuclear / biological protection, hi-visibility / high altitude warning clothing, dust protection, acoustic protection, biological protection electric arc welding, fire retardant upholstery, curtains, bed nets, beddings, uniform fabrics, bed linens, etc are the examples of Protection Technical Textiles and Crop covers, greenhouse covers, row covers, poly-house films/membranes, shade-nets, mulch mats, bale twines, polyester/PP/HDPE nets for fishing, waterproof lining are the examples of Agro Technical Textiles

VII. Medical Technical Textiles
Medical technical textiles can be classified into four categories there are Extracorporeal devices like artificial kidney, liver, lung, heart pacer. Non-implantable textile materials like absorbent pad, bandages, compression bandages, plasters, absorbent gauges, lint and wadding. Implantable textile materials like tendons, ligaments, cartilage, skin, contact lenses, cornea, joints, vascular grafts, heart valves. healthcare and hygiene products like surgical gowns, caps, gloves, masks; surgical covers drapes, aprons; beddings (blankets, sheets, pillow covers); clothing (uniform); incontinence/baby/adult diapers; cloth wiper, surgical hosiery, sanitary napkins, medical mattress, sterilization wraps, head and shoe covers, panty shield, wadding; wipes.

VIII. Other Technical Textiles
IX. Conclusion

Indian textile industry is fundamentally strong which can be useful in commodity markets of technical textiles through cost competitive structure. In the high niche market, India has advantage of network of R&D institutions for developing new technologies like Dominance of decentralised sector - inadequate resources and finance, absence of regulatory legislation, absence of required standards on quality of products and codes of practices, deterrents for entrepreneurs: doubt about future market potential of technical textiles in view of absence of regulation and needed consumption, huge capital costs involved for machinery, raw materials and equipment, sustained promotional efforts and substantial investment needed for market development, limited experience in production and use of technical textiles, outdated existing regulatory mechanism, lack of basic infrastructure, skilled manpower, testing facilities, training & educational facilities, negligible investment in R&D on technical textiles, lack of comprehensive database on technical textiles, lack of awareness and benefits of using technical textiles among users, hesitation in accepting world proven cost effective technologies, poor understanding of product properties in regard to its constructability, durability, structural integrity, functional utility, fibre composition and its installation and handling.

References