

# Concept Paper on Automotive Textiles

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## 1. INTRODUCTION

Automobile is the lifeline of present society. Trade, Industry and Commercial activity extremely dependent on this sector. Therefore, it is no exception that tremendous growth and development is taking place in this sector. This automotive sector consumes a lot of textile materials that may be visible or concealed in automobile. The global consumption of textiles used in automobile industry is estimated to be over 4.5 lakh tonnes. The percentage of textile material used in motor car amounts to 2.2% of the overall weight of the car. Apart from traditional uses as interior fabrics, carpets, headliners, etc., textiles are also being used as tyre cord, fuel filters, safety belts, air bags and as a reinforcement material for composites.

These automotive textiles form the components of Mobiltech segment of Technical textiles. Hence the growth and potential of this technical textile segment is evident. As per the DRA report on “*World Market for Technical Textiles, 2010*”, of the 12 sectors of technical textiles, Mobiltech is one of the growing areas. About 14 % of the market for technical textile is composed of Mobiltech products. Table 1 depicts the growth of automotive textile segment as percentage of technical textile components as projected in DRA Report.

**Table 1: Market Potential of Mobiltech vis-à-vis the Market for Technical Textiles**

Technical Textile Segments	Market potential ( volume in Kilo tonnes)	
	2005	2010
Mobiltech	2,828	3,338
Total TT	19,683	23,774
% Share of Mobiltech in TT	14.36	14

Source: Rigby Associates<sup>1</sup>, Manchester

In the global growth scenario, Asian countries are expected to get a major share of this demand, as compared to other developed countries. The big players will be in the market and hence there will be a great deal of sourcing material from the local market. India has a great potential to grab its due share of this rapidly growing market once we are able to harness mature technology in this field.

With this focus, the subsequent sections of this paper depict the technology of development of these products and their market scenario, globally as well as nationally.

## 2. WHAT IS AUTOMOTIVE TEXTILE?

After a brief introduction to the Mobiltech segment of technical textiles, it is essential to identify what products does this segment include. Automotive textile means all types of textile components e.g. fibres, filaments, yarns and fabrics used in automobiles. Some of these components are visible while the others are concealed. They are as follows:

- A. VISIBLE Components: Upholstery, Carpets Seat belts, Roof liners, etc
- B. CONCEALED Components: Tyre cords, Composites (bumpers, side panels etc.) and rubber reinforced components (hose and filters), Airbags,etc

It is estimated that approximately 45 square metres of textile material is used in an average car for interior trim (seating area, headliners, side panels, carpets and trunk). As this is a fast growing market in Asia, it gains opportunities for new developments in the area of technology and processing. According to a survey <sup>1</sup>, the percentage of textile in a motor car amounts to 2 % of overall weight of car. Of this, visible textile component (excluding hidden components such as in tyres and composites, hoses and filters) amount to 10 - 11 kg per vehicle in absolute terms. This data is mainly for the European cars and it is expected that these figures can vary from region to region. The main areas of application are described in Table 2 along with main performance prerequisites and raw materials used.

**Table 2: Application Areas & Prerequisites of Automotive Textiles**

<b>Sr. No.</b>	<b>Application areas</b>	<b>Main performance prerequisites</b>	<b>Fibres / Products used</b>
1	<b>UPHOLSTERY</b>	Abrasion & UV resistance, attractive design & texture	Polyester, wool, nylon, acrylic
2.	<b>TYRE CORDS &amp; FABRICS</b>	Tensile strength, adhesion to rubber, fatigue resistance	Polyester, Nylon, HT * rayon, steel & aramid
3.	<b>COMPOSITE</b>	Stiffness, strength, light weight, energy absorbing,	Glass, carbon, aramid, HT polyester &

		thermal stability	polyethylene
4.	<b>RUBBER REIN-FORCEMENT</b> (hoses,belts, air springs)	Heat resistance, tensile strength, dimensional stability, adhesion to rubber, chemical resistance	HT polyester, aramid
5.	<b>SEAT BELTS</b>	Tensile strength, abrasion and UV resistance	HT polyester
6.	<b>AIRBAGS</b>	Ability to withstand high temperature inflation gases, durability to storage in compacted state over many years	Nylon - 6,6, nylon - 4,6
7.	<b>CARPETS</b>	Light fastness, mouldability	Nylon, polyester, polypropylene

Source: Rigby Associates, Manchester <sup>1</sup>

\* HT: High tenacity

Typical break up of the components used in European cars is given in Table 3.

**Table 3: Break Up of Textile Components Used in Cars**

COMPONENT	IN EUROPE (Kg.) <sup>1</sup>	Av. MODERN CAR (%) <sup>3</sup>
CARPETS	2.1	18.9
UPHOLSTERY	5.9	54.0
SAFETY BELTS	0.8	7.5
AIRBAG (DRIVER)	1.2	10.8
BELTS, HOSES, TYRES etc.	0.6	5.9
FILTERS	0.3	2.7

Region-wise consumption of automotive textiles is given in Table 4 with projections for the years 2005 and 2009.

**Table 4: Regionwise Consumption (Kilotons) of Mobiltech including Automotive Textiles**

	1999	2004	2009
<b>W. Europe</b>	17075	16196	17580