MANTECH Publications

Journal of Automotive Engineering and Technology
Volume 3, Issue 3, September-December, 2018

Applications Of Textiles In Transportation

Dr. Nemailal Tarafder
Emeritus Professor
Hooghly Engineering & Technology College, Hooghly-712103, W.B
Corresponding Author's Email: *Tarafdern.14@Gmail.Com*

Abstract

MOBILTECH Today Covers Not Only Isolation And Safety But Also Focuses On Comfort And Style. Textiles In Transportation Are Classified As Technical Because Of The Very High Performance Specification And Special Properties Required. Automotive Textile Is That Part Of Textiles Which Is Used In Accordance With The Vehicles, I.E, It Is Widely Used In Automotive Industry Right From Light Weight Vehicles To A Heavy Truck Or Duty Vehicles. Innovative Automotive Textiles Of The Future Will Have Offer Enhanced Foundations, While At The Same Time Being Made From Environmentally Sustainable Materials And Offering Lighter Weight, All At The Same Or Reduced Costs.

Keywords: *MOBILTECH, Technical Textiles, Acoustic Textiles*

INTRODUCTION

Technical Textiles That Are Used In The Automotive Or Transport Sector Are Called MOBILTECH. The Latest Developments In Aircrafts, Ship Building As Well As Motor Vehicles And Train Manufacture, All Can Be Largely Attributed To MOBILTECH, A Non-Apparel Textile. Among Other Sectors, The Automotive Industry Is One Of The Largest Single Markets For The Technical Textiles And One Of The Most Diverse As Well. Mobiltech Today Covers Not Only Isolation And Safety Aspect But Also Focuses On Comfort And Style [01]. Textile Components In Automobiles Consists Of Either Visible Like, Upholstery, Carpets, Seat Belts, Head Liners, Etc Or Concealed Like Tire Cords, Hoses, Belts, Air Bags, Etc. Some Of The Applications In This Industry Are Airbag Fabrics, And Fabrics Used As A Basis For Reduction In Weight Of Body Parts.

Automobile Is The Lifeline Of Present Society. Trade, Industry And Commercial Activities Are Extremely Dependent On This Sector. Therefore, It Is No Exception That Tremendous Growth And Development Is Taking Place In This Sector. The Global Consumption Of Textiles Used In Automobile Industry Is Quite Substantial. Textiles In Transportation Are Classified As Technical Because Of The Very High Performance Specifications And Special Properties Required. The Growth Of Automotive Textiles Is Very Good In Last Decades. There Are Few Driving Forces Behind The Growth Of Automotive Textiles. These Forces Could Be Improved In The Standard Of Living Of People Resulting In The Greater Demand For Personal Vehicles [02].

Textiles In Transportation Are Classified As Technical Because Of The Very High Performance Specifications And Special Properties Required. Transportation Is The Larger User Of Technical Textiles. Textiles Provide A Means Of Decoration And A Warm Soft Touch To Surfaces That Are Necessary Features For Human Well Being And Comfort, But Textiles Are Also Essential Components Of The More Functional Parts Of All Road Vehicles, Trains, Airplanes And Sea Vehicles [03].

Automotive Textile Is An Integral Aspect Of Technical Textile. Since It Cannot Be Classified In Apparel Textiles, It Is More Of A Techno Mechanical Application Of Textiles. Industrial Textiles Are Widely Used In Transportation Vehicles And Systems Including Cars, Trains, Airplanes And Marine Vehicles. The Term Automobile Textiles Means All Type Of Textile Components, E.G, Fibers, Filaments, Yarns And Fabrics Used In Automobiles [04].

In Today's Car Makers And Their Immediate Suppliers Have Wide Range Of Options With Regard To The Choice Of Interior Materials. Besides The Traditional Use Of Textiles, Leather, Wood And Metals, Modern Automobile Interiors Can Be Made From An Increasing Range Of Newer Materials, Such As Thermoplastics, Polyurethane Foam, Skins, Lacquers, Foils, Elastomers And Silicones. Innovative Automotive Textiles Of The Future Will Have To Offer Enhanced Functionalities, While At The Same Time Being Made From Environmentally Sustainable Materials And Offering Lighter Weight, All At The Same Time Or Reduced Costs [05].

Acoustic Textiles Are Used In The Transportation Industry To Reduce Interior Noise And Vibration And Improve The

Sensation Of Ride Comfort For The Passengers. Interior Noise Is Currently A Competitive Quality Characteristic Of Every Mode Of Transport Facility In Particular To Automobiles. The Use Of Acoustic Textiles In The Transportation Industry Currently Represents The Most Important Application Of Textiles In The World. Acoustic Textiles Used To Control Noise In Vehicles Must Provide Airborne Transmission Reduction, Damping And Sound Absorption [06].

In Addition To Providing An Overview Of The Global Aviation Industry And The Wide Ranging Use Of Textile Materials In Aircrafts, A New Report Covers The Latest Developments With Regard To Product Areas And Leading Players, Bringing Together The Key Themes That Are Forecast To Play A Prominent Role In The Future Generations Of Aircraft Textiles As Suggested [07]. The Articles On Automotive Textiles: Moving Towards A New Global Equilibrium By The Author [08], Provides The Latest Analysis Of The Fast Altering Automotive Textiles Industry. Featuring An Overview Of The Automotive Market And The Wide Ranging Use Of Textile Materials In Vehicles, The In Depth Report Of The Analysis Covers The Following With Reference To Automotive Industry: (I) Examines Global Automotive Industry. (Ii) Defines Automotive Fabrics And Textiles (Iii) Identifies Key Areas Of Applications (Iv) Contains Profiles Of 60 Key Users And Procedures Of Automotive Textiles.

As A Result Of Higher Demand For Increased Comfort And Improved Safety, The Use Of Textile Materials Has Increased From 20 Kg In A Mid-Size Car In 2000 To 26 Kg Today. At First Glance, China's Role As The Global Hub For The Manufacture And Supply Of Automotive Textiles In The Next Quarter Of A Century With Uninterrupted Growth Seems Assured. First, There Is The Phenomenal Rise In Domestic Vehicle Production That The Country Itself Has Engineered Over The Past Decade. In The Drive Towards Lowering Weight For Reducing Both Fuel Consumption And CO2 Emissions, Many Current Developments Are Including New Uses For Fabrics, And By 2020, It Is Predicted That The Same Sized Car Will Contain 35 Kg Of Textiles [09].

The Safety In Automobile Is Become Importance In The Modern Scenario. The Textile Products Can Be Used In This Purpose In The Form Of Various Safety Devices Like Air Bags, Seat Belts, Car Interiors, Power Steering Filters, Abs Brake Filters, Tire Cords Production, Linings,

Coverings, Cushion Components, Design Interiors, Etc. The Different Graded Textile Fibers As Polyester, Nylon, PVC, Acrylic, Viscose/Colon, Etc Can Be The Potential Options For The New Emerging Field Name Called Automotive Textiles [10].

Nonwovens And Microfilament Textiles From Freudenberg Performance Materials Make A Significant Contribution To Making Driving More Cost-Efficient, Climate-Friendly And Comfortable [11]. Materials For Automotive Absorb Sound Effectively, Ensure A Pleasant Climate Inside The Vehicle And Help Save Fuel And Reduce CO2 Emissions. Even Demanding Surfaces And A Wide Variety Of Designs Can Be Perfectly Realized. With These Intelligent Nonwoven Solutions, Environmentally Friendly Products Can Be Made.

Trevira Developed The First Polyester Qualities For The Automotive Industry At The Start Of The Seventies [12].

At Trevira, Over The Years, It Is Observed Developed Products That Meet All Requirements In Terms Of Modern Design, Engineering And Comfort. Due To The Increased Globalization Of The Automotive Industry And The Construction Of 'World Models' The Ability To Supply On A Worldwide Basis Has Become A Decisive Competitive Factor. The Range Of Products For Vehicles At Trevira Includes Flat Filament Yarns, Textured Filament Yarns, 100% Spun Polyester Fibers Or In Blends With Wool Or As Nonwovens Into Parcel Shelves.

Techtex Industrial Offers A Broad Range Of Cost Effective Nonwoven Fabrics For The Automotive Industry With The Capability To Meet Almost Any Customer Requirement [13]. Fabric Ranges And Technical Expertise Include Spun Bonded Polypropylene And Polyester, Carded Dry-Laid Nonwovens, Needle Felts, Air Laid Paper, Hydro Entangled Spun Lace And Laminates. In India, AIM Filter Tech Produce Needle Punched Fabrics For Applications Like Automotive Carpets, Head Liner, Exhibition Carpets, Filtration Products, Etc. The Fabrics Are Engineered For Applications In Filtration, Automotive And Geo-Textiles. Various Types Of Functional Textiles For Automotive Have Been Listed In The Article [14].

TRANSPORTATION TEXTILES:

Among Other Sectors, The Automotive Industry Is One Of The Largest Single Markets For Technical Textiles And One Of The Most Diverse As Well. This Market Comprises Of Automobiles, Trains, Marine

Vehicles Or Transport Sector Are Called MOBILTECH. The Latest Developments In Aircrafts, Ship Building As Well As Motor Vehicle And Train Manufacture, All Can Be Largely Attributed To MOBLTECH, A Non-Apparel Textile.

Mobiltech Today Covers Not Only Isolation And Safety Aspect But Also Focuses On Comfort And Style. The Customers Look For Aesthetically Pleasing Interiors, Great Comfort And Fuel Economy [01}.Textile Components In Automobiles Consist Of Either Visible Like Upholstery, Carpets, Seat Belts, Head Liners, Etc Or Concealed Like Tire Cords, Hoses, Belts, Air Bags, Etc. Some Of The Applications In This Industry Are Air Bags Fabrics And Fabric Used As A Basis For Reduction In Weight Of Body Parts.

Textiles In Transportation Are Classified As Technical Because Of The Very High Performance Specifications And Special Properties Required [03]. Seat Coverings, For Example, Are Not Easily Removable For Cleaning And Indeed In Automobiles They Are Fixed In Place And Must Last The Life Time Of The Car Without Ever Being Put In A Washing Machine. In Trains, Aircrafts, And Passengers Vessels They Are Exposed To Much More Rigorous Use Than Domestic Furniture. In Addition, They Have To Withstand Much Higher Exposure To Day Light And Damaging Ultraviolet Radiation And Because They Are For Public Use They Must Satisfy Stringent Safety Requirements Such As Flame Retardant. In More Functional Applications, Textiles Are Used In Articles Diverse As Tires, Heater Hoses, Battery Separators, Brake And Clutch Linings, Air Filters, Parts Of The Suspension, Gears, Drive Belts, Gaskets And Crash Helmets. They Are Present In All Forms Of Transport And Apart From Apart From Tires Are In Applications Of Which The Non-Technical Person Is Not Even Aware. Various Applications Of The Transportation Textiles Are Summarized As Follows: Upholstery, Car Interior, Carpets, Tires, Car Elements Filters, Heat, Cables And Sound Insulation, Safety Systems-Air Bags, Seat Belts, Protective Covers For Land Crafts, Boats, Aircrafts, Sailcloth, Inflatable Boats, Envelop Of Balloons, Special Equipment For Military Vehicles And Usage In Railway.

TECHNICAL TEXTILES IN AUTOMOBILES

According To The Textile Institute, ‘Textile Materials And Products Manufactured Primarily For Their Technical And Performance Properties Rather Than Their Aesthetic And

Decorative Characteristics, Are Technical Textiles. The Automotive Sector Consumes A Lot Of Textiles Materials That May Be Broadly Visible Or Concealed In Automobile. Automotive Products Are Classified Broadly Into Two Categories, Namely Visible And Concealed Components [02].

Automotive Segment Of Technical Textile Products Include Applications In Automotive And Automotive Components Including Aircrafts And Railways. The Growth Of Automotive Textiles Is Very Good In Last Decades. There Are Some Driving Forces Behind The Growth Of Automotive Textiles. A Car Interior Has Become More And More Important As People Are Spending More Time In The Car.

The Automotive Interior Carpets Are Non-Woven Technical Textiles, Made Primarily From Polypropylene Fibers. The Carpet Is Laid On The Vehicle Floor Above Which Rubber Mats Are Placed. The Desired Characteristics Of Automobile Interior Carpets Typically Are High Durability, High Abrasion Resistance, Tensile Strength Of Warp And Weft 50 Kgf X 45 Kgf, Low Inflammability, Good Compression Recovery With 500gsm Fabric And 3 Mm Thickness. The Textile Designer Must Be Able To Produce Innovative Interior Appearances Which Reflect Or Even Set Current Fashion Trend, Social And Economic Moods And Customer Life Styles. The Nylon Tire Cord Is Prepared From High Tenacity Continuous Filament Yarn By Twist And Plying And The Two Types Of Nylons Are Nylon 6,2 And Nylon 6,6. Nylon 6grey Are Dipped Tire Cord Fabrics Having High Strength, Fatigue Resistance, Impact Resistance And High Adhesion. Tire Cords Are Generally Available With The Fabric Specification Of 930 Dtex, 1400 Dtex, 1870 Dtex And 2100 Dtex And The Critical Specification And The Critical Specification Drive The Characteristics Such As Breaking Strength, Elongation, Adhesion, Ply Twists And Hot Air Shrinkage.

The Seat Belts Are Made From Nylon Filament Yarn Which Is Woven To Produce The Webbing Pattern. The Linear Density Of Man-Made Yarns Must Be Stuck Between 100 Dtex And 3000 Dtex, Preferably 550-1800 Dtex. The Filament Linear Density Should Be Between 5 Dtex And 30 Dtex, Preferably 8-20 Dtex. A Typical Seat Belt Is Made Of 320 Ends Of 1100 Dtex Polyester Each. The Critical Characteristics Of The Webbing Are Abrasion Resistance, Resistance To Light And Heat, Capable Of Being Removed

And Put Back In Place Easily And Good Retraction Behavior. The Load Bearing Capacity Of Seat Belts Is 1500 Kgs. An Air Bag Is An Elastic Bag Cushion Like Makeup Which Inflates Quickly In Some Stages In Certain Types Of Car Accidents. It Is A Safety Device Aimed At Preventing Or Minimizing Injury To Passenger When An Accident Occurred. Air Bags Have Been Efficient To Put A Stop To Severe Head And Chest Injuries In Adults When Automobile Accident Occurs. Air Bags Can Be Located In Both The Front And Rear Vehicles. At Present There Are Three Different Types Of Side Air Bags Currently Available, Like Roof-Mounted Side Air Bags Designed To Protect The Chest And Seat Mounted Air Bags Designed To Protect The Chest And Head. Air Bags Production Involves Three Different Separate Assemblies That Combine To Form The Finished End Product, The Air Bag Module. Headliners Are Used In Passenger Cars And Multi/Sports Utility Vehicles Are Non-Woven Light Weight Roofing Material. The Cars Were Earlier Fitted With Knitted/Woven Fabric With Hard Cab Board Type Of Backing. The Trend Has Changed And Increasingly Non-Woven Headliners Are Being Used In Automotive Interior. Insulation Felts Often Known As NVH Products Are Used As For Acoustic And Thermal Insulation In The Automotive Interior. Insulation Felts Often Known As NVH Products Are Used As For Acoustic And Thermal Insulation In The Automobiles. These Are Bonnet Liners, Outer Dash, Wheel House And Outer Floor Under The Shield. These Parts Are Not Only Providing Noise Protection Inside The Car But Also Reduction In The Noise Emission Outside. Uses Of NVH Parts In Automobiles Started After Introduction Of EURO Norms In The Sector.

Helmets Are Used As Protective Headgear For Two Wheelers. The Usual Motor Cycle Helmet Has An Internal Layer Of Polystyrene Or Polypropylene Foam And An External Layer Made Of Plastic, Glass And Other Man-Made Fibers.

The Principal Function Of A Helmet Is To Absorb The Shock Of A Crash And Thus Put A Stop To Major Injury To Brain Rather Than Preventing Head And Face Crack. Two Types Of Helmet Available Are Full Face Helmet And Open Face Helmet. The Critical Characteristics Of The Helmets Are Protection Of Head, Clear Vision Through The Visor, Quick Release Chin Strap And Appropriate Ventilation. The Outer Shell Is Made From Acrylonitrile-Butadiene-Styrene (ABS) Or Polypropylene Or Galss Fiber Plastic Which Is Hard In Nature. The Earliest

Developed Apollo Space Suits Contained An Inner Layer Of Nylon Fabric With Network Of Thin Walled Plastic Tubing, Which Circulated Cooling Water Around The Astronaut To Ventilation Ducts, Than A Three Layer System Formed The Pressure Garment, Net Followed Five Layers Of Aluminized Mylar For Heat Protection Mixed With Four Spacing Layers Of Dacron.

More Use Of Textiles Now Being Made In HGV Interiors, Which Are Becoming More Comfortable With Livelier Coloring, Rounder Shapes And Surfaces. Composite Materials Are Being Used To Replace Bulky Space Dividers And Doors To Create More Cab Storage Space. Heavy Goods Vehicles Are A Major User Of Tarpaulins, Which Are Made Of PVC Plastically, Coated Nylon And Polyester, Usually Plain Woven From High Tenacity Yarns. Tarpaulins Are Secured With High Tenacity Polyester Narrow Fabrics Which Must Also Be Tested Carefully For Strength And UV Resistance. Textile Materials Are Used In Automobiles For Interior Trim And For Ensuring Comfort As Well As For Reinforcement. Textiles Offer Weight Reduction Which In Turn Results In Fuel Economy.

SMART TEXTILES IN THE MANUFACTURING OF CARS

Innovative Automatic Textiles Of The Future Will Have To Offer Enhanced Functionalities, While At The Same Time Being Made From Environmentally Sustainable Materials And Offering Lighter Weight, All At The Same Or Reduced Costs. Suppliers Are Challenged By Sophisticated Consumers For Vehicles That Are More Intelligent And Original Equipment Manufacturers Needing To Be Even More Integrated [05}. Weight Is Becoming A Core Issue For Automakers As It Already Has Become In The Aviation Industry. In Recent Years Air Craft Designers Have Worked Continuously Towards Reducing Weight Through The Introduction Of New Metals, Carbon Fiber Composites And More Efficient Engines, While Seeking To Improve The Acoustic Levels Both Inside And Outside The Plans. In Particular, The Latest Generation Of Air Craft, Such As The Boeing 787, Dream Liner And Airbus A350, Are Designed To Be Lighter And More Comfortable.

Today’s Car Makers And Their Immediate Suppliers Have A Wide Range Of Options With Regard To The Choice Of Interior Materials. Besides The Traditional Use Of Textiles, Leather, Wood, And Metals, Modern Automotive Interiors Can Be Made

From An Increasing Range Of Newer Materials, Such As Thermoplastics, Polyurethane Foam, Skins, Lacquers, Foils, Elastomeric And Silicon. In November 2008, A New Product Has Been Launched, Which Is Light Attitude Features Seats, Cockpits, Doors, Acoustic Packages, Front End Modules And Exhaust Systems That Can Remove Up To 30 Kgs From A Vehicle's Mass.

Textile Fabrics Including Nonwovens Will Play A Major Role In Reducing Automobile Weight. The Light Attitude Interiors Feature Several Unique Applications, With Fabrics Replacing Many Of The Conventional Hard-Surface Structures Even The Centre Console Is Made Of Fabric. The Globe Box Lid, For Example Becomes A Sliding Fabric Cover And Traditional Hard Vents. A Door Module, Partially Trimmed With Natural Fibers, , Acts As An Acoustic Chamber, Allowing The Installation Of Smaller, Light Weight Speakers.

A Smart Integrated Docking Station Offers Both Weight Reduction And New Flexibility For Incorporating And Integrating Ever-Evolving Media Players And Nomadic Devices. The Sustainable Comfort Seating System Concept Features A Thin Sea With An Even Thinner Backrest Made Of An Injection-Mould Part With Continuous Glass-Fiber Inserts.

AUTOMOTIVE TEXTILES MANUFACTURING TECHNIQUES AND APPLICATIONS

Automotive Textiles Happens To Be The Rewarding Sector Finding Extensive Use Of Technical Textiles In The Product Categories, I.E, Interior Trims, Safety Devices Like Seat Belts And Air Bags , Carpets, Filters Battery Separators, Hood Liners, Hoses And Belt Reinforcement. Few Textile Products Found Their Applications As Design Solutions To Engineering Problems In The Form Of Composites, Tire Reinforcement, Sound Insulation And Vibration Control. Apart From Woven And Knitted Constructions, Nonwovens Also Find Applications In Transport Textiles Due To Certain Advantages Served By Them [10].

The Seat Belt Is An Energy Absorbing Device That Is Designed To Keep The Load Imposed On A Victim's Body During A Crash Down To Survivable Limits. Fundamentally, It Is Designed To Deliver Non-Recoverable Extension To Reduce The Deceleration Forces, Which The Body Encounters In A Crash. Basically, It Is Designed To Offer Non-Recoverable Extension To Decrease The Deceleration

Forces That The Body Comes Across In A Crash. Non-Recoverable Extension Is Significant To Prevent The Occupants From Being Restrained Into Their Seats And Sustaining Whiplash Injuries Right Away After A Collision. An Efficient Seat Belt Will Only Permit Its Wearer To Move Forward A Maximum Of About 30 Cm To Avoid Contact With Any Parts Of The Car. Seat Belt Was Invented Concurrently In United States And Sweden. Earlier Seat Belts Were Fixed And Adjusted Manually By The Wearer. With The Introduction Of Automatic Belts Today Wearer Has More Freedom To Move. In An Auto Smash, Seat Belts Prevents Ejection From A Moving Car And Stop People Going Through The Wind Shield As The Vehicle Comes To A Sudden Stop. Seat Belts Also Minimizes Injuries Due To Impact With The Vehicle's Hard Interior, They Ensure Better Control of the Car. Seat Belts Also Hold People In Position For The Protective Cushioning, If There Is An Air Bag. At Speeds Under 25 Mph, Seat Belts Give Adequate Protection, But At Higher Speeds, Air Bags Help To Prevent The Violent Forces Exerted On The Neck And Head In Frontal Crashes.

It Is A Simple Newton's Law Of Motion And Law Of Energy Conservation. According To Newton's First Law Of Motion An Object At Rest Tends To Be At Rest And An Object At Motion Tends To Be In Motion With The Same Speed And In The Same Direction Unless Acted Upon By An Unbalanced Force. Thus, Driver Continues In Motion, Sliding Forward Along The Seat. A Driver In Motion Tends To Stay In Motion With The Same Speed And In The Same Direction Unless Acted Upon By The Unbalanced Force Of A Seat Belt. The Seat Belt Provides The Unbalanced Force, Which Brings Driver From A State Of Motion To A State Of Rest. Raw Materials Used For Seat Belt Webbings Are Nylon, PET And Its Derivations Like HTPY. Seat Belt Structures Can Be Single Layer Or Double Layer And, Manufactured On Needle Looms With Plain Weave, Twill Weave, Satin Weave.

The Common Expectancy Of The Car User Is That The Auto-Interior Should Have Good Appearance And Aesthetics, Good Comfort, Easy To Maintain, Retention Of Good Properties Even After Prolonged Usage, Good Durability, Wrinkle Resistance, Water And Stain Proof, Having Antistatic And Oil Resistance Property, No Or Minimum Emission, Which May Hinder Driving By Fogging Or Contamination Of Inside Atmosphere, Flame Resistance For Safety, Low Costs. The Main Criteria

Involved In The Development Of Textiles And Components In Automotive Are Tensile Strength, Abrasion Resistance, Pill Resistance, Air Permeability, Compression Resistance, Elasticity, Light Fastness At High Temperatures, Stiffness, Ease Of Cleaning, Separation Force, Dimensional Stability, Flame Resistance, Anti-Fogging Resistance, Resistance To Adverse Climate Conditions. Other Processing Requirements Are Mould Ability, Susceptibility To Compression, Sew Ability, Welding Ability, Adhesive Properties, And Vulcanizing Property.

There Are Some Standard Guidelines For Comfort In A Car Seat Considering Some Parameters. Apart From Ethical And Sensual Comfort, Carpets Also Play Significant Role In Acoustic And Vibration Control. Road Noise Is Considered As An Environmental Pollution In Few Countries And Carpets Are Contributing To Solve This Problem. Sound Is Propagated Through The Air And By Vibration Of The Car Body And There Are Three Basic Methods Of Reducing It, Namely, (I) By Absorption, (Ii) By Damping Or (Iii) By Insulation. Sound Absorbency Is Influenced By Density Of The Material, Air Porosity Of The Material And Thickness Of The Material.

As In The Other Areas Of The Cars, The Vehicle Models Very Much Dictates The Fabric Type Used On Door And Side Panels. Now-A-Days, A Layer Of Foam Is Added To The Door Panel Fabrics To Get A More Luxurious Touch. Some Important Requirements Of Head Liners Are The Light Weight, Thin Profile But Rigid Without Any Tendency To Buckle, Flex Or Vibrates, Direction Stability, Aesthetically Pleasing, Soft Touch. The Trunk Liners Must Be Decorative And Functional, Yet Have Relative Cost. These Are Usually Made From Waste Fibers That Are Needled And Then Matured With Elastomeric Materials. The Dash Board Shape Being Highly Curved And Also Complex, To Accommodate Controls And Instruments, Presents Many Problems To The Textile Technologists.

PIONEERING SOLUTIONS TO GET THE MARKET MOVING

Freudenberg Performance Materials Develops Innovative Materials That Are Optimally Suited For Use In Automotive Head Liners As Well As Trunk And Rear Seat Coverings. With Their High-Quality 3D Surface These Mechanically Bonded Nonwovens Are Characteristics By Excellent Abrasion Resistance. Pioneering Printing Process Technologies Development By Our Experts Enable The

Most Demanding Design Variants To Be Realized [11]. Spun Laid Nonwovens Based On Freudenberg Technology Lead The Way As Primary And Secondary Tufted Backings For Shaped Automotive Carpets. Freudenberg Performance Materials Provide A Technical Fabric That Can Be Easily Molded Even At Low Temperatures And Therefore Enable Economical Processing. The Materials' Outstanding Stability Ensures An Exact Fit. Very Good Lay-Flat Characteristics, Non-Fray Properties And Stiffness Make These Materials The First Choice As Components For Fitted Automotive Mats. With Nonwovens Based On Lutraflor Technology, Freudenberg Performance Materials Offers The Perfect Solution For Automotive Carpets, Insert Mats And Interior And Trunk Linings. Made From Recycled Polyester, The Material Has A High Quality Appearance, An Environmentally Friendly Product Process And Excellent Formability.

Trevira [12], Over The Years Have Developed Products That Meet All Requirements In Terms Of Modern Design, Engineering And Comfort. A Particular Solution To Problems Is Supplied By Yarns For Textiles That Have To Adjust To Extreme Molding Stresses. Examples Are The Recesses For Handles In The Sky Liners Or Door Panels. Textiles In Trevira Are Processed In The Majority Of Vehicles Made In Europe. According To Maxipro Promises Strong Performance [13], The Industrial Wipes Market Has Been Strengthened With The Launch Of A New Range Of Products. Nonwovens Are Used In Car Covers, Floor Carpets, Insulation Felt, Seat Cover Fabrics, Foam Support Fabrics, Foam Support Fabrics, Shelf Tray, Door Trims, And Acoustic Filtration. AIM Filtertech [14] Fabrics Are Engineered For The Applications In Filtration, Automotive And As Geo-Textiles. A Detailed Discussion Has Been Reported With Reference To Functions In The Form Of Comfort, Decorative And Safety Purposes Are Available In The Reports [09].

CONCLUSIONS

The Textiles In Transport Are Classified As Technical Because Of The Very High Performance Specifications And Special Properties Required. The Term Automobile Textile Means All Type Of Textile Components, E.G, Fibers, Filaments, Yarns, And Fabrics Used In Automobiles. Technical Textiles That Are Used In The Automotive Or Transport Sector Are Called MOBILTECH. The Growth Of Automotive Textiles Is Very High In The Last Decades. There Are Some Driving Forces Behind The Growth Of Automotive

Textiles. Industrial Textiles Are Widely Used In Transportation Vehicles And Systems Including Cars, Trains, Airplanes And Marine Vehicles. The Textiles That Can Be Used In This Purpose Are In The Form Of Air Bags, Seat Belts, Car Interiors, Power Steering Filtered, Brake Filters, Tire Cord, Lining, Covering, Cushion, Other Components And Design Interior, Etc. The Automotive Sector Consumes A Lot Of Textile Materials That May Be Visible Or Concealed In Automobiles. The Seat Belts Are Made From Nylon Filament Yarn Which Is Woven To Produce The Webbing Pattern. The Critical Characteristics Of The Helmets Are Protection Of Head, Clear Vision Through The Visor, Quick Release Chin Strap And Appropriate Ventilation. To-Day's Car Makers And Their Immediate Suppliers Have A Wide Range Of Options With Regard To The Choice Of Interior Materials. Automotive Textiles Happens To Be The Rewarding Sector Finding Extensive Use Of Technical Textiles In The Protect Categories, I.E, Interior Trims, Safety Device Like Seat Belts, And Air Bags, Carpets, Filters, Battery Separators, Hood Liners, Hoses And Belt Reinforcement. The Common Expectancy Of The Car User Is That The Auto-Interior Should Have Good Appearance And Aesthetics, Good Comfort, Easy To Maintain And Retention Of Good Properties Even After Prolonged Usage. Road Noise Is Considered To Be An Environmental Pollution In Few Countries And Carpets Are Contributing To Solve This Problem.

REFERENCES

1. "Automotive Textiles Moving Towards A New Global Equilibrium", Http://Www.Textilemedia.Com/Textile-Reports/Technical-Textiles/Automotive-Textiles/
2. "Full Product Description", Http://Www.Textilemedia.Com/Textile-Reports/Technical-Textiles/Transport-Textiles/Aotomotive-Textiles/
3. "Aircraft Textiles"(Interior Fabrics And Air Cabin Fashion 25 Profiles), Http://Www.Textilemedia.Com/Textile-Reports/Technical-Textiles/Transport-Textiles/Aircraft-Textiles
4. "Transport Textiles", Http://Www.Bch.In/Sportstextiles.Html
5. "Application Of Acoustic Textiles In Automotive/Transportation", Http://Link.Springer.Com/Chapter 10 "Application Of Automobile Textiles: A Comparative Study",

Http://Www.Slideshare.Net/Joybut/Application-Of-Automobile-Textiles-A-Comprehensive-Study

6. "Textile In Transportation, Application Of Transportation Textiles", Http://Textilelearner.Blogspot.Com/2013/01/Textiles-In-Transportation-Applicatio.Html.
7. Shivendra Parmer And Tanveer Malik, "Application Of Automobile", Http://Www.Fibre2fashion.Com/Industry-Article/1807/Application-Of-Textiles-In-Automobile
8. "Automotive Textiles", Http://Www.Slideshare.Net/Hiteshhobbit/Automotive-Textile
9. "Automotive Textiles", Http://Www.Travira.Com/En/Textiles-Made-From-Travira/Automotive-Textiles.Html
10. "Smart Textiles Prominent In The Car Of The Future", Trends-Mobile Tex Global Transport Textiles Industry News", Http://Www.Mobile-Tex-.Com/Trends.Html
11. "Freudenberg Performance Materials",Http://Www..Freudenberg-Pm.Com/Market/Automobiles
12. Strategies For Automobile: Strategies For Using Automotive Textiles-Manufacturing Techniques And Applications, Http://Article-Sapub.Org/10.5923.J.Safety.20120101.02.Html
13. "Maxipro-Promises Strong Performance", Industrial Non-Woven Fabrics For The Automotive Industry, Http://Www.Techtex.Co.Uk/Industrial/Ma Rket-Sector/Automotive