TECHNICAL TUESDAYS

TECHNICAL TEXTILES – PART XII

REF: TT/ FEB 2022/ WK 1

Mobiltech

Mobiltech or Automotive textile is one of the biggest fields in technical textiles. An Automotive textile is a technical textile used in the transportation and automotive industries. These textiles are used in the construction of automobiles, railways, ships, aircraft and spacecraft. They have wide range of applications in the industry, like interior fittings, safety features, sound insulation, and tyre

reinforcement. Excellent tensile strength, good abrasion resistant, high stretch and recovery, superior colorfastness to light and rub properties are some of the properties required for the textiles used in automotive industry.

Different areas of application of MobilTech are:

- **Seat Belt** - Seat belts are woven narrow fabric made from nylon filament yarns or high tensile polyester filament yarn. These yarns are woven to produce the webbing pattern. Main 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 properties. The seat belts used in the cars, are called three-point which has single continuous length of webbing. They are called three-point because these belts help spread out energy of the moving body in a collision over the chest, pelvis and shoulders. Seat belt webbing is generally woven according to 2x2 twill design. The twill weave is preferred because warp threads lie parallel to the face and back of the webbing and as a result, the material has a high warp ways strength and low elongation. Seat Belts need to be as soft and flexible as possible along the length direction but as rigid as possible in the width direction so they can slide easily through buckles and to retract smoothly into housing. The edges must be scuff resistant and resistant to UV degradation.

- **Upholstery -** Woven seat cover is one of the important upholstery in an automobile. Seat covers are made from cotton, vinyl, velvet and leather. The properties required for this are durability, UV and wear resistance, water-proofing, flexibility and stretch ability. One of the most traditional forms of automobile upholstery is plain woven cloth manufactured from air-jet textured and spun polyester. The textured yarns have good abrasion resistance because of their tight loop structure. Use of weft knitted fabrics for upholstery has is also gaining popularity. These fabrics are

manufactured on circular knitting machines and process sequence follows yarn dye route. The formation of automotive upholstery involves the amalgamation of three layers i.e. face fabric, foam and backing material. The conventional method used for this purpose is flame lamination. But this process is not environmentally friendly. The laminates lack porosity which affect the sound absorption and comfort. Hence, new technologies such as hot melt adhesive application are being introduced.

In Railways, the material for seat berths fabric is the key technical textile usage. Material used in the berths is polyurethane foam and Rexene cloth. These materials are fire retardant coated fabric. The Rexene material is constructed from single or multiple poly vinyl film layers with choice of backing cloth. Synthetic cloth like polyester and rayon is used.

- **Nylon tyre cord** - This fabric provides strength to the tyre. Nylon tyre cord fabric gradually replaced the usage of rayon and polyester cords in the tyre industry. These fabrics are characterized by high strength, resistance, abrasion resistance and high adhesion properties. These are mainly used as reinforcements of bus/truck tyres.

- **Textiles for noise control** – Textile materials are used to control the noise produced due to vibration of the car body. There are number of layers of materials are used to reduce the noise. These materials are fitted in small pieces. The layers used are: Top decorative layer – They are tufted Nylon or needle punched polyester or polypropylene; Thermoforming layer and Caustic layers - Heavy layers of EPDM (ethylene propylene diene monomer), Shoddy fibers or polyurethane foam.

References:

1. https://atira.in/
2. http://technotex.gov.in/
3. http://www.ittaindia.org/
4. https://www.technicaltextile.net/

.....To be continued.....

UNSCRAMBLE THE JUMBLE WORDS
TINKDET
RUTEDEXT
RXNEEE
DLNEEE

Last week`s Answers: 1) SUNSCREEN 2) PROTECTION 3) HORTICULTURE 4) VEGETABLES

Wishing you a great week ahead!

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