TECHNICAL TUESDAYS

TECHNICAL TEXTILES – PART XIII

REF: TT/ FEB 2022/ WK 2

Fibers in automotive industry

The textile fibers used in various components of an automobile are Polyester, nylon, rayon, glass and aramid fibers. Polyester and nylon are the most used types of materials in the automotive industry. Polyester fiber are used in many forms in the automotive industry, such as knitted, woven or nonwoven fabrics, especially needle punch and stitch bond fabrics used as facing materials. Woven fabrics are used in the airbags and seat belts; nonwoven fibers are used as a filling material to improve the sound insulation property in multilayer structures in the car interiors, spun bond or melt blown nonwoven structures either used alone or in combination with other layers in the filtration media as reinforcing material in the tire cords and engine comportment items such as V-belt and hoses and as a component for resin-impregnated composites either as a core material or as a matrix material.

MELT BLOWN NONWOVENS
Melt blowing is a conventional fabrication method of micro- and nanofibers where a polymer melt is extruded through small nozzles surrounded by high speed blowing gas. The randomly deposited fibers form a nonwoven sheet product applicable for various purposes.

In the automobiles, fibers are used in different forms of textile materials like circular knitted, warp knitted, woven and nonwoven structures. Fibers are also used as a component in multi-layer composite structures. The properties of fibers, which make it suitable for automotive interiors, include high tensile and tear strengths, low moisture absorbency, good abrasion and UV resistance.

Fibers used for automotive are expected to absorb sound, ensure a pleasant climate inside the vehicle. Nonwovens and microfilament textiles contributes towards climate-friendly and comfortability. Specially designed, mechanically bonded non-woven fibers with high-quality 3D surface have been also developed. These mechanically bonded nonwovens are characterized by excellent abrasion resistance. Made from recycled polyester, the material has a high-quality appearance, an environmentally friendly production process and excellent formability. The nonwovens are used in automotive carpets, insert mats and interior and trunk linings. Nonwovens are also lighter than woven fibers and therefore have an edge over in many areas. It gives considerable weight savings to the automotive carpets.

Spun laid nonwovens are used as primary and secondary tufted backings for shaped automotive carpets.

SPUN LAID NONWOVENS
Spun laid nonwovens are made in one continuous process. Fibers are spun and then directly dispersed into a web by deflectors or air streams.
Spun laid nonwovens are also called Spun bond nonwovens.
The spun bond technology consists of four processes i.e. spinning, drawing, web formation, and web bonding.

The advantages of using nonwovens in automotive industry are:

- Light weight
- Abrasion resistance
- Thermal protection
- Flame resistance
- Acoustic insulation
- Air filtration
- Easily molded and retains shape
- Readily sewn, seamed, coated, dyed and laminated

References:

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

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

UNSCRAMBLE THE JUMBLE WORDS
RETNIORI
PUNSDIAL
OCADET
LIYADER

Last week`s Answers: 1) KNITTED 2) TEXTURED 3) REXENE 4) NEEDLE

Wishing you a great week ahead!

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