



TECHNICAL TEXTILES – PART IX

REF: TT/ JAN 2022/ WK 2

Nonwovens in medical textiles

Nonwovens are extensively used in the medical field; they can help to reduce cross-contamination and the spread of infection in a medical or surgical environment. In hospitals, cross-contamination is one of the biggest problems caused by reusing of woven gowns, masks and other similar products which would get contaminated and spread the germs. Nonwovens facilitated the development of an alternative which was disposable and reduced the problem of cross-contamination.

The use of nonwovens in medical textiles is because of its properties like disposability, adaptability, and effectiveness. Nonwovens are environmental friendly and have wide range of applications in the healthcare industry like surgical gowns, bedding, dressings, surgical drapes, sutures, tissue structures, artificial skin, etc.

Nonwoven Fabric

Nonwoven fabric is made from staple fibers and long continuous fibers, bonded together by chemical, mechanical, heat or solvent treatment.

They are flat or tufted porous sheets that are made from separate fibers.

They are not made by weaving or knitting and do not require converting the fibers to yarn.

Below are some of the properties of nonwovens that make them suitable for medical applications -

- Porosity
- Fabric weight
- Thickness
- High performance properties like vapor transmission, air permeability, comfort etc.
- Superior barrier-providing capacity
- High tearing and abrasion resistance properties
- Less potential for cross contamination
- Wide range of customization

Wound care is the primary use for medical and surgical nonwovens. Nonwovens are used in a variety of products such as absorbent pads, apparel for patients and staff, baby diapers, bed linen and blankets, burn dressings, gowns, disposable underwear, dressings, drug delivery devices, face masks, filter media, nasal strips, pillows, shoe covers, sponges, sutures, tissue scaffolds, towels, wraps etc.



Fibers used in medical nonwovens:

The fibers used in medical nonwovens can be both natural and synthetic. The natural fibers used are wood-pulp, cotton and rayon. Wood pulp is used for its properties like absorbency and bulk. Cotton and rayon are used directly on wounds. They have good absorbency and make excellent nonwovens.

The reasons natural fibers used in medical nonwovens are:

- They are highly absorbent
- Excellent breathability
- Good aesthetic characteristics
- Can be sterilized
- Excellent dimensional stability
- Biodegradable
- Excellent drape
- Good heat resistance
- Excellent water retaining capacity
- Non-allergenic and non-irritant fibers

The synthetic fibers are used in medical industry are - Polypropylene used for its excellent rheological characteristics (**Rheological characteristic is the ability of the material to flow or be deformed**), hydrophobicity which is required in some systems where barrier properties are required.

Synthetic fibers also impart products strength, solvent resistance and static dissipation.

Medical nonwovens products are given a suitable finish for its specific end use. The different types of finishes used in medical nonwovens are:

- Soil Release Agents - For bed linens, gowns and apparel which are designed for multiple usages. May also be used on curtains, blankets etc.
- Softeners - Used for disposable undergarments, pillows, bed sheets etc.
- Water repellents - Used for bed sheets for kids, barrier apparel etc.
- Flame Retardant Finishes - Used for bed linens, curtains, apparel, lab coats etc.
- Antibacterial Finish - Applied to gauzes, dressings and sutures.
- Resin and Hand Builders - Used for apparel, gowns, bed linens etc.

References:

1. <https://atira.in/>
2. <http://technotex.gov.in/>
3. <http://www.ittaindia.org/>
4. <https://www.technicaltextile.net/>
5. <https://www.wptnonwovens.com/>

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

UNSCRAMBLE THE JUMBLE WORDS
NIMATNOCEDAT
OPETTNAIL
CALIEHROOLG
RESSUTU

Last week`s Answers: 1) COMMODITY 2) IMPLANTABLE 3) BANDAGE 4) WOUND

Wishing you a great week ahead!

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arc@resil.com | www.resil.com