

TECHNICAL TEXTILES – PART VIII

REF: TT/ JAN 2022/ WK 1

MedTech or Medical Textiles

Medical textiles are an important part of technical textile products. It ranges from high-volume disposable products for baby diapers, sanitary pads to high-value textile products for use in blood filtration, surgical sutures, prostheses and scaffolds for new tissue growth. Textiles materials that are used in medical applications include fibers, yarns, fabrics and composites. Depending upon the application, the major requirements of medical textiles are absorbency, tenacity, flexibility, softness and biodegradability. These fibers are non-toxic, non-carcinogenic, and non-allergenic; these fibers possess anti-microbial properties as well. These textiles are versatile fibrous fabrics designed to treat wounds and medical conditions. The two main groups of fibers are utilized in medical textiles - **commodity fibers and specialty fibers**. **Commodity fibers** are made out of materials such as cotton, polyester, or nylon. Specialty fibers are also known as high-performance fibers. **Specialty fibers** are specifically designed to have a wider range of technical uses when compared to commodity fibers. These fibers are characterized by high strength, heat resistant, and chemical resistant.

Important characteristics of medical fibers are -

- **Mechanical properties** - These properties include durability, strength and elasticity of the fibers.
- **Non-toxicity** - This is the most important property considered during the production of medical textiles. It is ensured that the material used should not cause rise in the body temperature, allergic reaction, any kind of inflammation and should be non-toxic in nature.
- **Ability to be sterilized** - This property deals with the clean ability of the material as it may be contaminated with bacteria.
- **Biocompatibility and optical properties** - The materials used should be bio-inert and bioactive.
- **Diffusion properties** - It is an essential property for controlled drug delivery systems and membranes like in the artificial kidneys.



Since there is large range of applications for medical textiles, they are categorized into four different categories –

- a) **Implantable** - These medical textiles are biocompatible and designed to be used within the human body. Are used to replace damaged blood vessels, suture wounds, stand in as artificial skin, or replace damaged heart valves.
- b) **Non-Implantable** - Non-implantable textiles are safe for use on the skin but they are not implanted within the body. Examples of non-implantable materials are bandages, surgical dressings, and gauze. Any type of textile that comes into direct contact with a wound but is not absorbed into the body.
- c) **Extracorporeal Devices** - This type of medical textile is used as a stand-in for essential organs that are not functioning correctly. Generally, these devices are made from hollow fibers. Examples are mechanical lungs, artificial kidneys, artificial livers etc.
- d) **Healthcare and Hygiene** - Healthcare and hygiene products are designed to either be washable or disposable after a single use. These textiles help to prevent infection and contamination in a broad range of healthcare applications. Few examples are: Body slings, surgical gowns, masks, wipes etc.

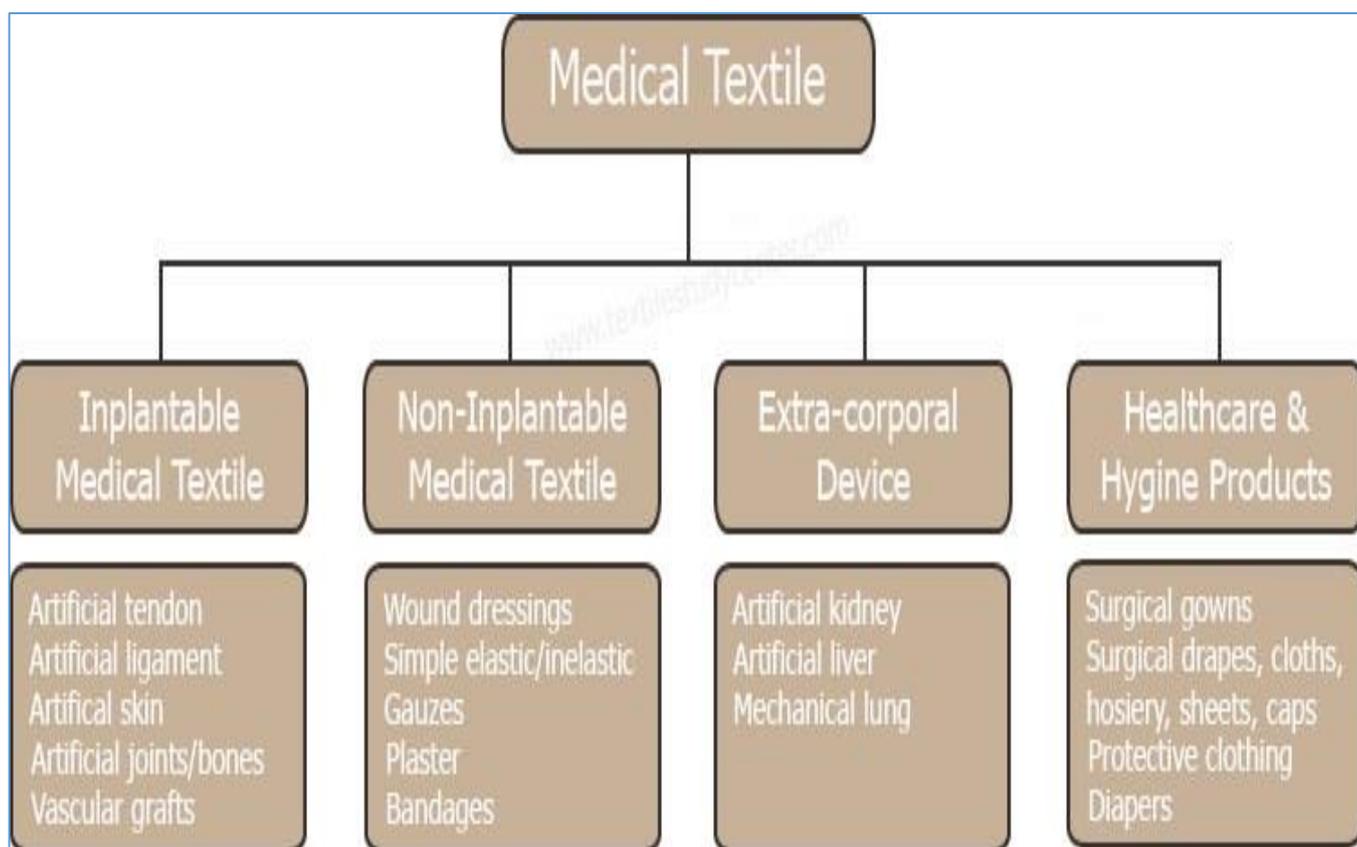


Fig 1.1 Categories of medical textiles

Ref: textilestudycenter.com



References:

1. <https://atira.in/>
2. <http://technotex.gov.in/>
3. <https://www.jasonmills.com/>
4. <http://www.ittaindia.org/>

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

UNSCRAMBLE THE JUMBLE WORDS
MOCMODYTI
ANPLIMABLET
BAGEDAN
DNOUW

Last week`s Answers: 1) HYDRAULIC 2) RETAINING 3) CONSTRUCTION 4) MIXTURE

Wishing you a great week ahead!

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