Properties, applications and uses of Technical Textiles
Some years ago. Old definition
“Technical textiles are considered all fabrics that can not be addressed within the traditional sectors of clothing, home and decoration”

specialisation

Now
“Materials designed for specific applications requiring concrete and demanding properties (mechanical resistance, tenacity, insulation, thermal resistance, acids, UV, IR….)”
APPLICATIONS

- Mechanical functions
- Exchange functions
- Functionalities for living beings
- Protective functions
Mechanical functions

- Mechanical resistance
- Reinforcement of materials
- Elasticity
- Tenacity
Exchange functions

- Filtration
- Insulation and conductivity
- Drainage
- Impermeability
- Absorption
Functionalities for living beings

- Antibacteria
- Antidustmites
- Biocompatibility (hypoallergenic textiles)
- Biodegradability / bioresorption

aureus staphylococcus
Protective functions

- Thermal
- Fire
- Mechanical
- Chemicals
- Impermeable - Breathable
- Antistatic
- Particles antirelease
- Electrical insulation,
- IR and UV rays,
- NBC (Nuclear, biological and chemical)
- High visibility
- Electromagnetic fields …
Functional or Functionalized Textiles = Textile + something for adding value

By chemical or physical modifications to create new functions such as:

• Antidustmites (Microcapsules)
• Adaptative or smart functions (Plasma)
• Compatibility with environment or other materials (Natural Fibers)
Dissemination of the Technical Textile Knowledge implies a multidisciplinary approach

For all future engineers:
textile has to be used as a material comparatively with iron, wood, glass, ceramics, plastics...

For all future textile technicians, engineers or managers:
textile has to be used as a multifunctional material having high level of physical, mechanical, thermal, chemical properties…
Main groups of technical textiles

1. Technical textiles for PPE (Personal Protection Equipment)
   a) Protech (Protective textiles)
   b) Military textiles and cloth
2. Buildtech (Construction Textiles)
3. Indutech (Industrial Textiles)
4. Medtech (Medical Textiles)
5. Mobiltech (Textiles used in transport)
6. Packtech (Packaging textiles)
7. Agrotech (Agro-textiles)
8. Ecotech (Environmentally-friendly textiles)
9. Sporttech (Sports textiles)
Main groups of technical textiles

Technical textiles for PPE (Personal Protection Equipment)

a) Protech (Protective textiles)
b) Military textiles and clothing
Main groups of technical textiles

Buildtech (Construction Textiles)

Building spaces

Drainage and water containment

Insulation Aerogel
Main groups of technical textiles

Indutech (Industrial Textiles)

- Tubular knitting or waving

Epoxi

Woven space fabric Composite
Main groups of technical textiles

Medtech (Medical textiles)

REQUIREMENTS

- proof against liquids, viruses, bacteria and other microorganisms
- low linting
- good draping properties
- protection against cooling of patient
- wear comfort
- appearance and hand
- profitability

ex: Construction of Reusable Surgical Fabrics

- barrier membrane between two layers of fabric
- usually PTFE, PET or PU
- layers punctiform bonded, usually by PU adhesive
Main groups of technical textiles

Mobiltech (Textiles used in transport)

Truck covers (PVC coated PES fabrics), car trunk coverings (often needle felts), seat covers (knitted materials), seat belts, non-wovens for cabin air filtration (also covered in induitech), airbags, parachutes, boats (inflatable), air-bags, canvas covers, marquee tents …etc

Air filter
Main groups of technical textiles

Packtech (Packaging textiles)

silos, containers, bags, canvas covers, marquee tents…

Construction trash containers

Textile silos
Main groups of technical textiles

Agrotech (Agro-textiles)

- Roots containers
- Composting process control
- Weed protection
Main groups of technical textiles

Ecotech (Environmentally-friendly textiles)

floor sealing, erosion protection, air cleaning, prevention of water pollution, water cleaning, waste treatment/recycling, depositing area construction, product extraction, domestic water sewerage plants, etc…
Main groups of technical textiles

**Sporttech (Sports textiles)**
Shoes, sports equipment, flying and sailing sports, climbing, fishing, cycling, winter and summer sports, indoor sports, raquets, bow wires, etc..

Swimming suit
Motocross protection garment
Below zero protection
Thanks for your attention
Thanks!!

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