

FICCI

Concept paper
on

Medical Textiles



Workshop on Medical Textiles
May 24, 2007, Mumbai

Prepared by

sasmira



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1. Introduction

The textile industry in this century is dominated by technical application of various textile materials in different form. Clothing has become just one, but, not the only purpose of textiles. Today, presence of textiles can be felt in simplest product like a doormat to a sophisticated cloth for missile head fabrication.

All this has been possible with globalisation of science and technology. Three emerging technologies, viz. biotechnology, microelectronics and material science have a great potential. While biotechnology and microelectronics have helped to restructure the global pattern of production and trade in a significant manner, new technologies like fine chemicals, optical fibres, high polymer plastics and resins, temperature resistant textile fibres, fibre-reinforced composites etc. have offered better substitutes in the form of technical textiles. Technical textiles can be defined as materials and products manufactured primarily for their technical and performance properties rather than their aesthetic or decorative characteristics. One of the important areas of technical textile application is medical textile.

All textiles used in the operative and post operative tasks in and around a patient and the medical practitioners are termed as medical textiles. Medical textile products are based on fabrics, of which there are four types: woven, knitted, braided, and nonwoven (see Figure 1) The first three of these are made from yarns, whereas the fourth can be made directly from fibers, or even from polymers. There is, therefore, a hierarchy of structure: the performance of the final textile product is affected by the properties of polymers whose structures are modified in between two and four different levels of organization.

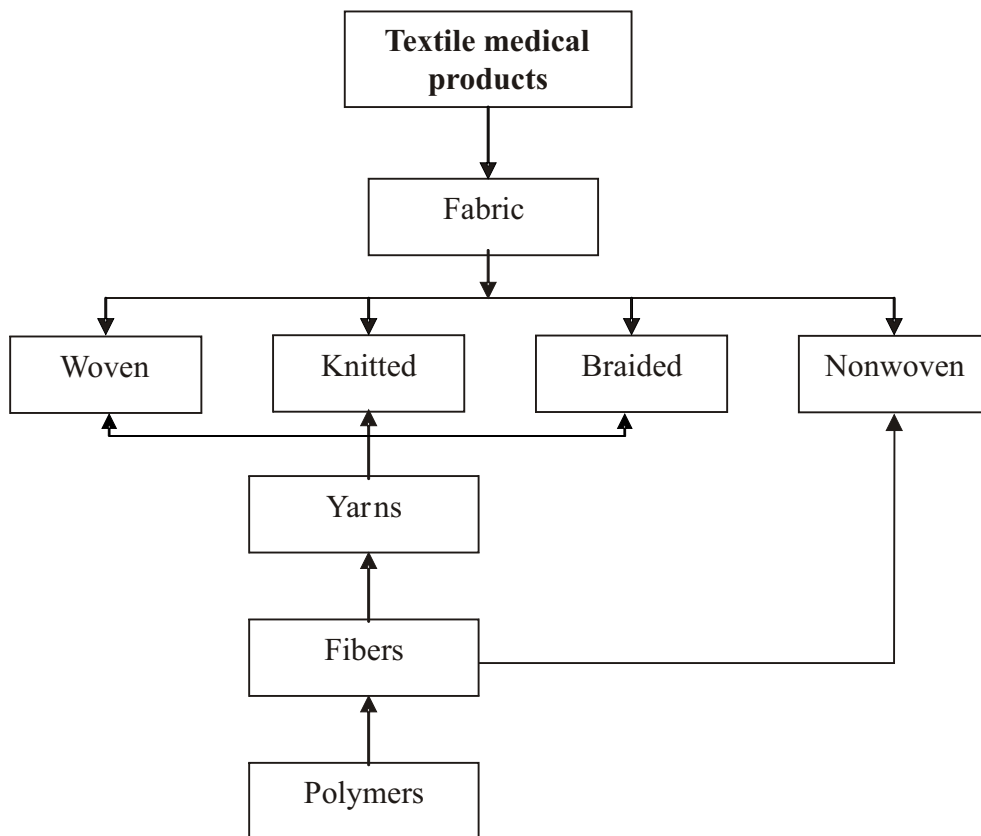


Fig. 1. Constituent elements of medical textile products

2. Fibres used in Medical textiles

Fibres used in medicine and surgery may be classified depending on whether the materials from which they are made are natural or synthetic, biodegradable or non-biodegradable. All fibres used in medical applications must be non-toxic, non-allergenic non-carcinogenic and be able to be sterilised without imparting any change in the physical or chemical characteristics. A wide range of fibers, both natural and synthetic, is used in medical textiles. Materials used include monofilament and multifilament yarns, woven, knitted & non-woven fabrics and composite structures. A particular fibre will be used when its mix of properties represents the best compromise for the spectrum of properties required by the application.

The natural fibers used in medicine include cotton, linen, silk and collagen (catgut). All find applications as sutures, and cotton finds wide applications in dressings, operating