MANUFACTURED FIBRES: SYNTHETIC FIBRES

AS TEXTILES THEORY

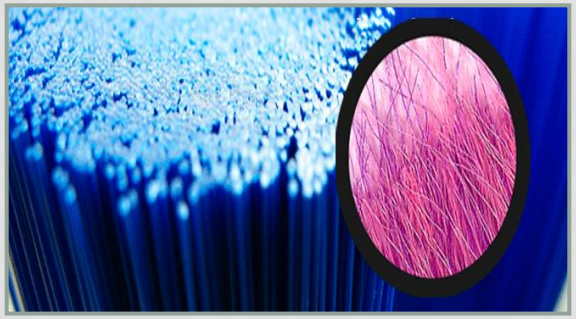
LEARNING OBJECTIVE

By the end of the lesson I should be able to…

Identify and explain a range of manufactured fibres

WHAT IS … A SYNTHETIC FIBRE?

A fibre that has been made from crude oil. The oil is processed using chemicals and solidified into a continuous fibre



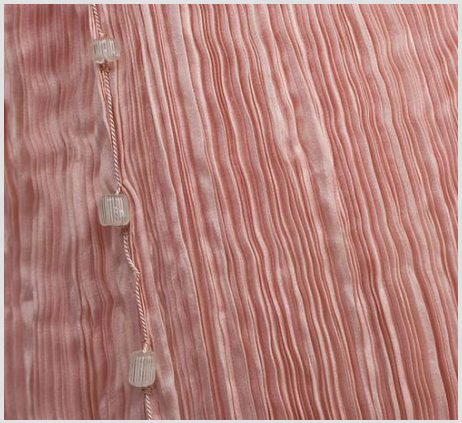
The liquid is forced through a spinneret where it solidifies

All manufactured fibres can be engineered to have different properties (through its shape and length)

WHAT IS … THERMOPLASTIC?

When a fabric is thermoplastic, it softens when heated and then when cooled it then hardens

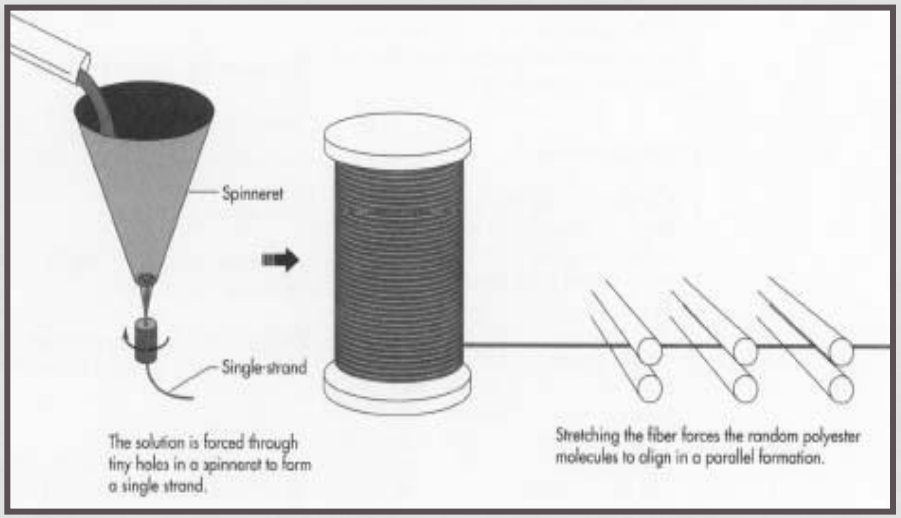
If a fibre is thermoplastic it can be altered and the final fabric can have different textures and permanent pleating



The thermoplastic properties are caused by the molecular structure of the fibres

Polyester

Polyester is the most used synthetic fibre
It was created by ICI & DuPont in 1941
It is created using the melt spinning method
It is inexpensive
It is resistant to acids, alkalis, solvents & meldew
Flame-resistant – melts when exposed to high temperature



Low absorbency so prone to being static
Strong, durable, abrasion resistant
Good Elasticity – resists creases
Thermoplastic
Wind-proof
Hydrophobic
Easy-care
Lightweight
Water-repellent
Good drape

Polyamide

Low absorbency so prone to being static
Strong, durable, abrasion resistant, tear resistant
Wind-proof
Hydrophobic
Easy-care
Lightweight
Water-repellent
Good drape & soft handle
Good elasticity to doesn't crease easily

Nylon is the most popular fibre made from polyamide
Made by the melt spinning process
Unlike polyester, it is flammable and melts when exposed to extreme heat
Thermoplastic properties which means it can be textured, crimped or permanently pleated
It is resistant to acids, alkalis, solvents & meldew

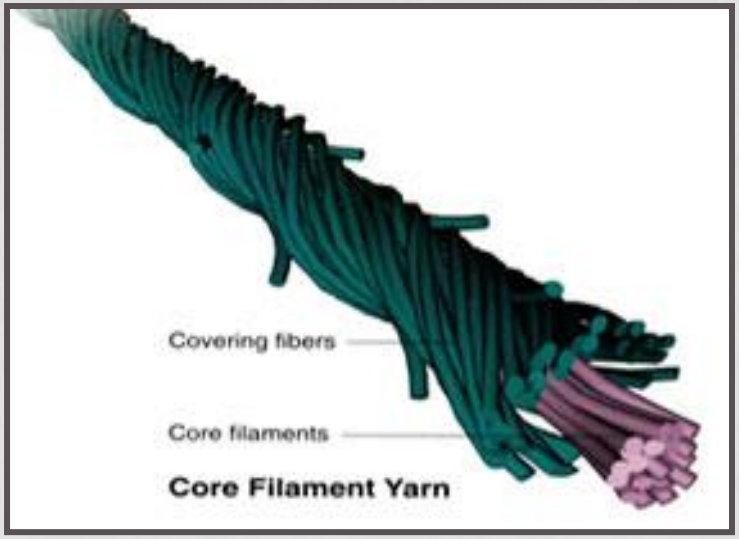
Acrylic

Cut into staple fibres to create fluffier fabric
Often use as a cheaper alternative to wool
It is resistant to sunlight and is very strong
Can be used to make scarves, hats and sportswear
Also used to make home furnishing items

Low absorbency so prone to being static and not breathable
Strong, durable, abrasion resistant
Good Elasticity – resists creases
Thermoplastic
Wind-proof
Hydrophobic
Easy-care
warm to wear; cut in staple fibres
Water-repellent
Good drape

Elastomeric Fibres; Elastane

It is made from segmented polyurethane
Elastane is always covered by another yarn (it is core-spun)
It is very similar to natural rubber – however it is stronger
They can stretch and recover to 7 times their original length
A maximum of 20% elastane is used in products that are figure hugging (such as swimsuits)
2-5% elastane is blended with cotton or viscose in knitted jersey fabrics to create close fitted garments which give support
2% elastane is blended in woven fabrics to add stretch and comfort
Lycra and spandex are trade names



Extremely stretchy
Creates crease resistance
Chlorine resistant (therefore good for swimwear)
Absorbent (therefore dyes well and easycare)
Resistant to damage from the sun & perspirants