**Textile fibres**

* Fibre is a long, thin thread that is used in the manufacture of other materials, fibres are twisted together to make yarns and fabrics
* Fabric is a cloth material made by weaving or knitting fibres together
* Classification:
  + Natural fibre
    - natural vegetable
    - natural animal
    - natural mineral
    - asbestos
  + Man-made fibre
    - regenerated manmade fibre
    - synthetic
    - other

**Plant fibres**

* Cotton
  + It is a seed fabric, produced in the USA, India, China, Brazil
  + + strong, soft, easy to clean, keeps body cool in hot weather, absorbs moisture
  + – wrinkles, fades, shrinks, dries slowly
  + Can be washed, bleached, ironed, dry-cleaned
  + Use:
    - Clothing – shirts, socks, underwear
    - Home furnishing – rugs pillows, bed sheets
    - Cosmetics and medicine – cotton wool, pads, Q-tips
* Flax
  + Oldest fibre
  + Comes from the stem of flax plant
  + Produced in Belgium, Ireland, Poland, Slovakia
  + When made into fabric - Linen
  + + absorbent, smooth, stronger than cotton, dyes well, coolest fibre
  + – not elastic, wrinkles, not very tough
  + Can be washed, bleached, ironed
  + Use:
    - Clothing – suits, blouses, summer pants
    - Home furnishing – tablecloths, towels, bed sheets
* Jute
  + Long, soft and thin fibre extracted from the bark of Jute plant
  + It is a partially textile and wood fibre
  + + cheapest plant fibre, comfortable, biodegradable, strong, antistatic
  + – will rot, fades, is brittle
  + Can be hand washed or dry-cleaned
  + Use:
    - Bags, wrapping material, ropes, carpets, rugs
    - Geotextiles
* Bamboo
  + Comes from bamboo plant, that grows very rapidly
  + + soft, cheap, cool in summer, warm in winter, biodegradable, anti-bacterial
  + Can be hand washed or dry-cleaned
  + Use:
    - Bath towels, underwear or socks
    - Face masks, toothbrushes
    - Bedsheets, tablecloths
    - Hygiene materials, napkins, pads
    - Alternative to plastic

**Animal fibres**

* Silk
  + Produced by silkworm, fed on mulberry leaves, it produces liquid silk to form its cocoon
  + + soft, smooth, elastic, dyes well, resist wrinkles, luxurious in appearance
  + – expensive, decomposes in sun and moisture
  + Can be dry-cleaned or hand washed
  + Use:
    - Scarves, ties, hair accessories
    - Luxurious dresses, evening gouse, pyjamas, pillows, draperies, wall coverings
* Wool
  + comes from fleece of sheep, raised in Australia, China, New Zealand, Russia
  + + warmest fibre, comfortable for wear, strong, dyes well, durable, biodegradable, elastic, absorbent, natural heat insulator, fire resistant
  + – itchy, can be damaged by insects, some people are allergic to wool
  + Can be dry-cleaned or hand washed
  + Use:
    - Scarves, hats, coats, sweaters, socks, active sportswear
    - Rugs, carpets, blankets
    - Cosmetic pads
    - Thermal and acoustic insulation

**Man-made fibres**

* Are created by a process called POLYMERIZATION
* Scientists can make man-made fibres in a lab
* 3 categories:
  + Synthetic
    - Polyester, nylon, elastane
    - Are made from chemicals
  + Regenerated
    - Viscose, rayon
    - Are made by transforming natural polymers through chemical-based process
  + Inorganic
    - Fibreglass
    - Are made from raw materials (carbon, petrochemicals)
    - Are cheaper to produce compared to plant fibres
* Polyester
  + Is a thermoplastic polymer
  + + lightweight, strong, weather resistant, easy to wash, resistant to stretching, shrinking, wrinkles, recyclable
  + – stains are hard to remove, melts at high temperature
  + Can be washed, dry-cleaned
  + Use:
    - Clothing – belts, trousers, outdoor clothing
    - Home furnishing – curtains, pillows, upholstery
* Nylon
  + Second most used fibre
  + + lightweight, stronger and softer than PES, elastic, shiny, water and stain resistant
  + – not recyclable, high temperatures melt nylon, it fades
  + Cold water wash, low temperature dying
  + Use:
    - Clothing – stockings, swimwear, raincoats
    - Parachutes, airbags, tents, ropes
    - Machine parts
* Acrylic
  + +lightweight, durable, soft, has warm and dry hand feel, greater insulating power than wool
  + – can form little balls on the surface (pilling)
  + Use:
    - Clothing – sweaters, sock, fleece jackets, sportswear
    - Home furnishing – blankets, rugs, carpets, upholstery
    - Industrial use – car batteries, filtration materials
* Rayon
  + Semi-synthetic – made of cellulose and chemicals
  + Alternative to silk
  + + highly absorbent, comfortable to wear, dyes easily
  + – shrinks, not very durable, catches on fire easily
  + Need to be dry cleaned
* Inorganic
  + Metallic fibre – can be drawn from metals such as copper, gold or silver and extruded from nickel, aluminium or iron
  + Carbon fibre – the body of mobile phones
  + Optical fibre/fibreglass – comes from natural raw materials (quartz, silica)

**Blends**

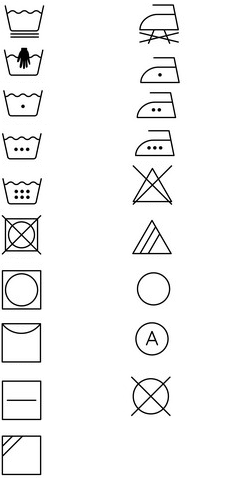
* Fabrics containing two or more fibres to combine the best qualities of each fibre
* Example: Polyester-Cotton blend contains the moisture absorbency of cotton and the strength and wrinkle-resistance of polyester

**Yarns and fabrics**

* Fibres are the raw materials from which yarns are made. This process is called spinning
* Yarns are converted to fabrics by weaving (on looms) or knitting (by hands or machines)
* 3 main types of fabrics:
  + Woven fabrics – from yarns
  + Non-woven fabrics – from fibres
  + Knitted fabrics – from yarns
* Fabric finishes
  + Colouring
  + Flame-resistant
  + Permanent or durable press
  + Stain resistant
  + Waterproof
  + Water-repellent

**Laundry care symbols**

* Pictograms written on labels and attached to clothing
* Provide care instructions – how to take care of clothing and linen
* The international community uses five basic shapes for washing, drying, bleaching, ironing, dry cleaning
* An X through any symbol means – DO NOT DO THIS!



No steam

Iron low heat

Iron medium heat

Iron high heat

Do not bleach

Non chlorine bleach

Dry clean

Dry clean – any solvent

Do not dry clean

Machine wash – gentle cycle

Hand wash

Not above 30°

Not above 50°

Not above 95°

Do not tumble dry

Tumble dry

Hang to dry

Dry flat

Dry in shade