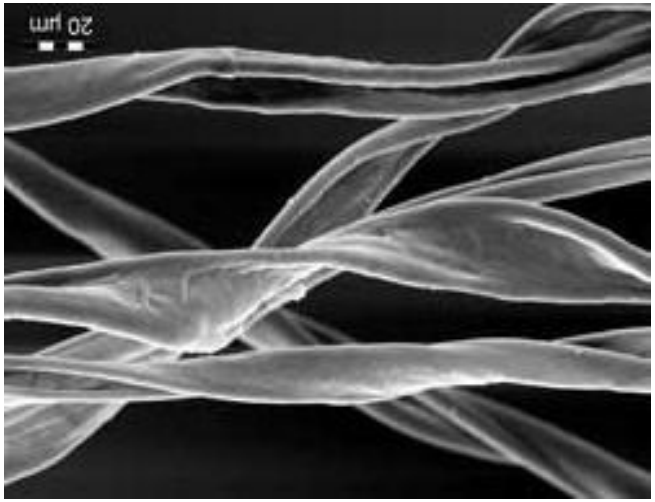
FIBRES IDENTIFICATION



Fibre identification

1. Physical identification of fibres

    e.g Microscopic Assessment

2. Chemical identification of fibres

    e.g Staining test of fibre/fabric

Fibre identification

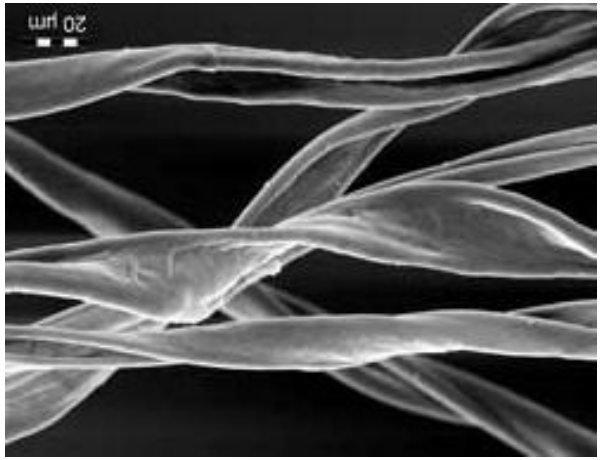
1. Physical Methods/ tests

1) Visual assessment under microscope (Longitudinal and Cross-sectional Structure)
2) Burning test
3) Visual assessment color under UV light
4) Visual assessment and Surface Feel of fibre/fabric
5) Visual assessment of Fibre twist
6) Floatation test 1, 1.54 cotton

Fibre identification (Physical)

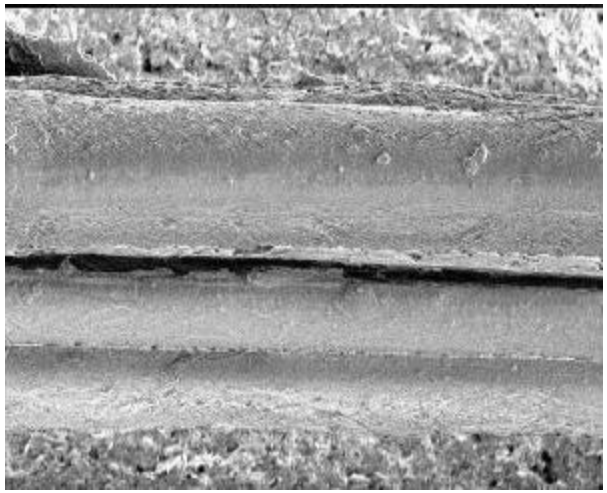
Cotton:

It resembles like collapsed spirally twisted tube with surface. A thin cell wall of the fibre has 200 to 400 convolutions per inch.



Flax/Linen:

Hair like shows several sided cylindrical filament with pointed fine ends. Fibre somewhat resemble with a straight, smooth rod.



Fibre identification (Physical)

Wool:

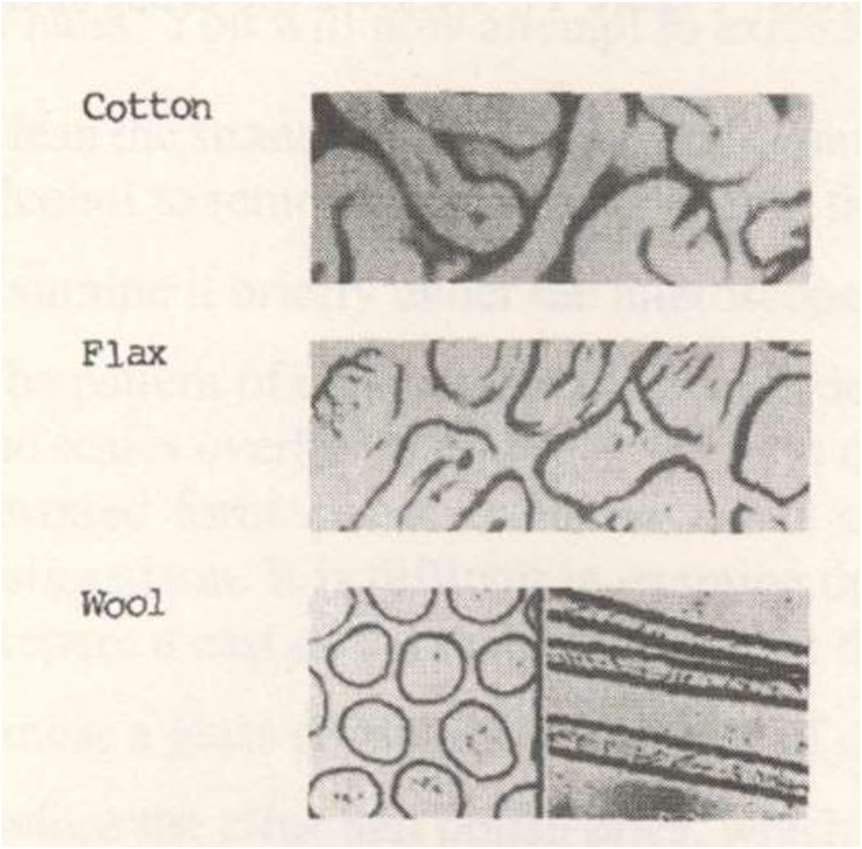
Wool shows a three layers scale surfaced tube. Scale height, shape and thickness differentiate wool fibre from others fibres.

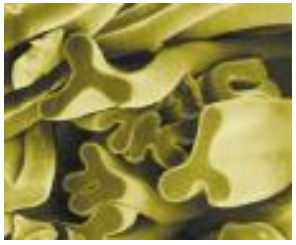
Silk:

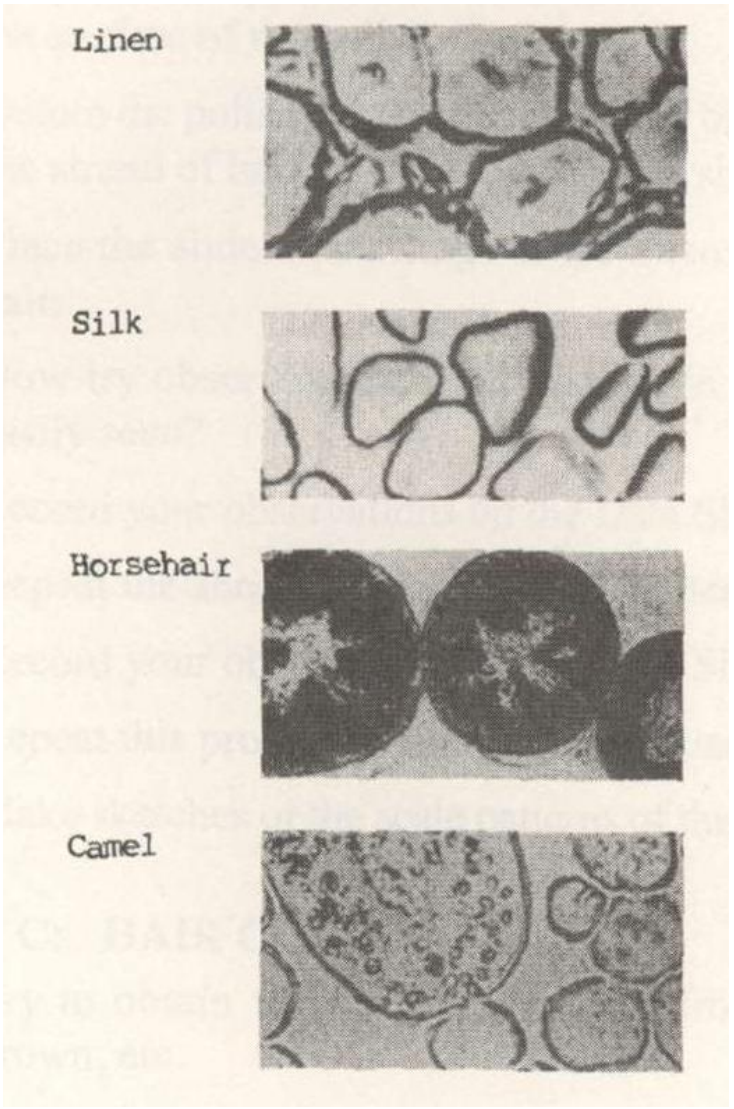
Silk shows somewhat elliptical and triangular cross section under microscope. It composed of fibroin-two filaments which held together with “Sericin” gum.

Electron micrograph of Silk Fiber

Fibre identification
(Microscopic Cross-section view)







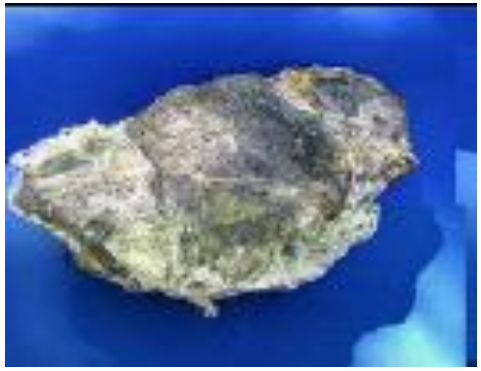
Fibre identification (Physical)

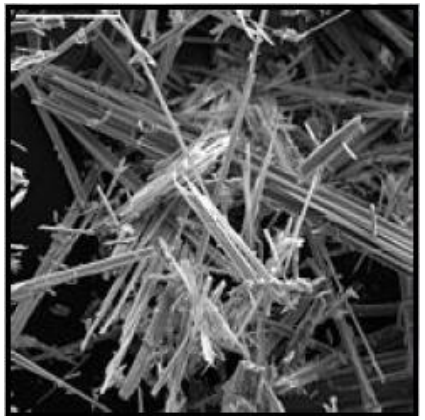
Polyester:

Generally , polyester fibres are smooth and straight and its cross-section is round. This general characteristics may be altered to achieve certain characteristics.

Asbestos:

It shows a crystal tubular structure with evidence of coating or many attached particles.

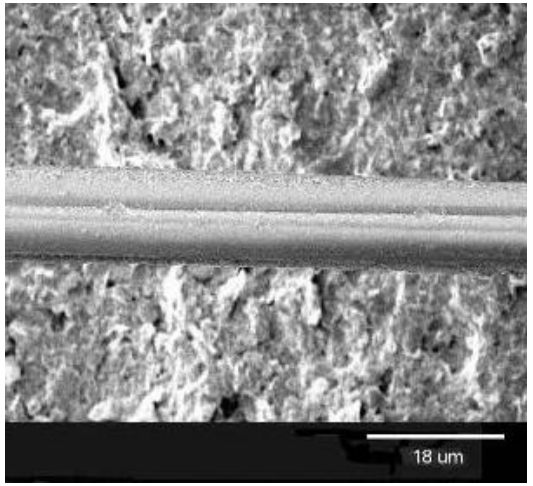




Fibre identification (Physical)

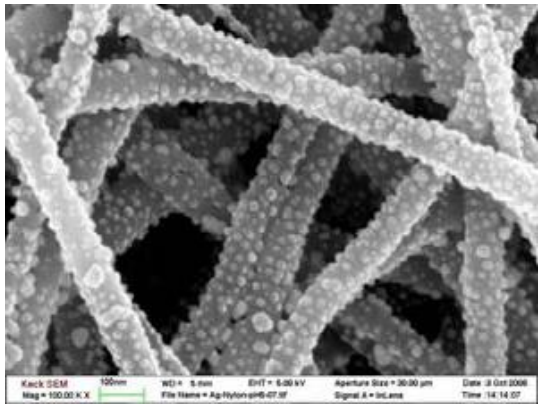
Rayon:

Rayon fibres have a glass like lustre under the microscope and appear to have a uniform diameter when viewed longitudinally.

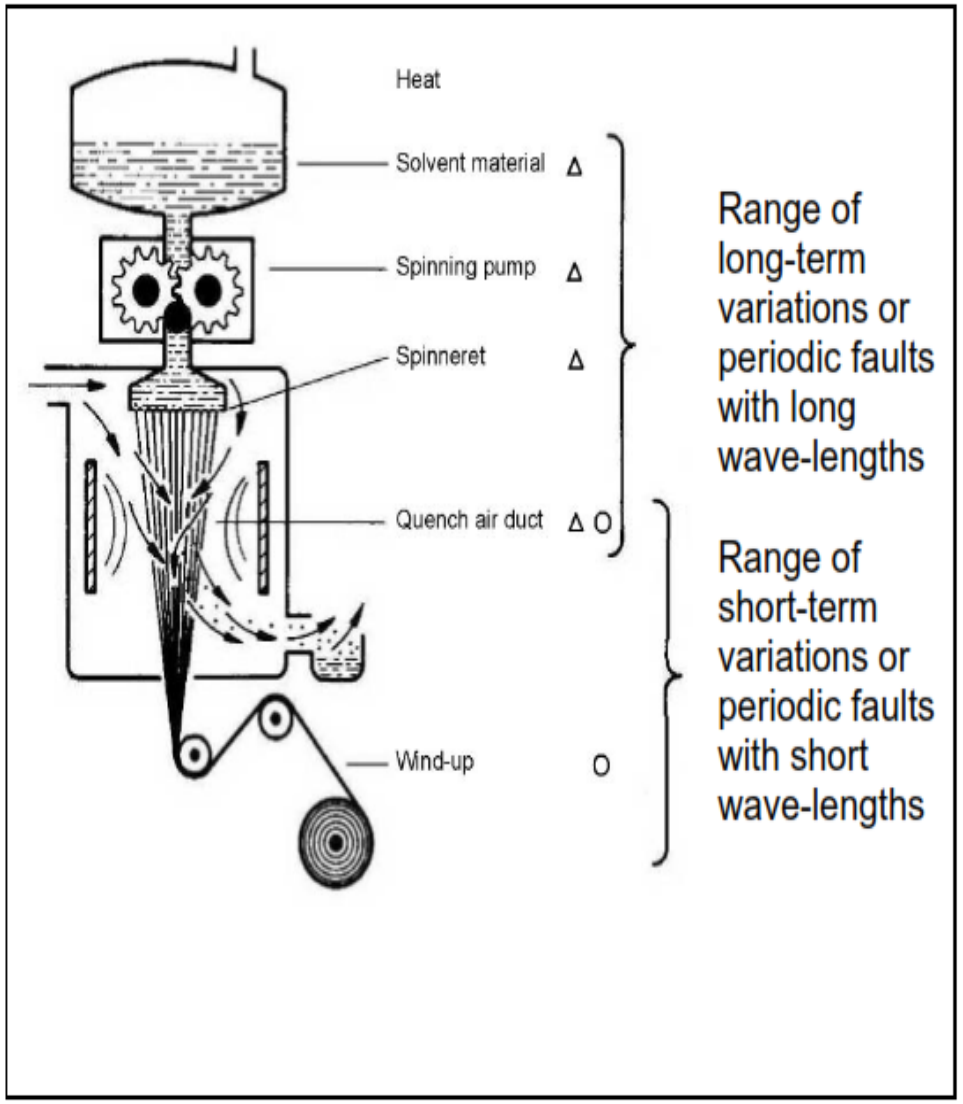


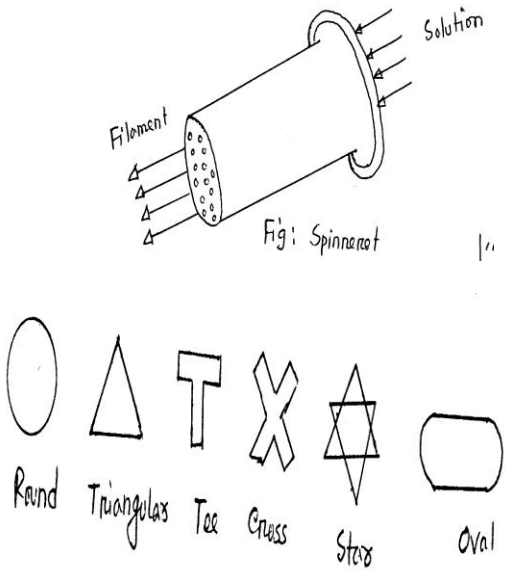
Nylon:

The basic appearance is generally fine round, smooth and semi-transparent. It is also produce muti-lobal cross-sectional types.

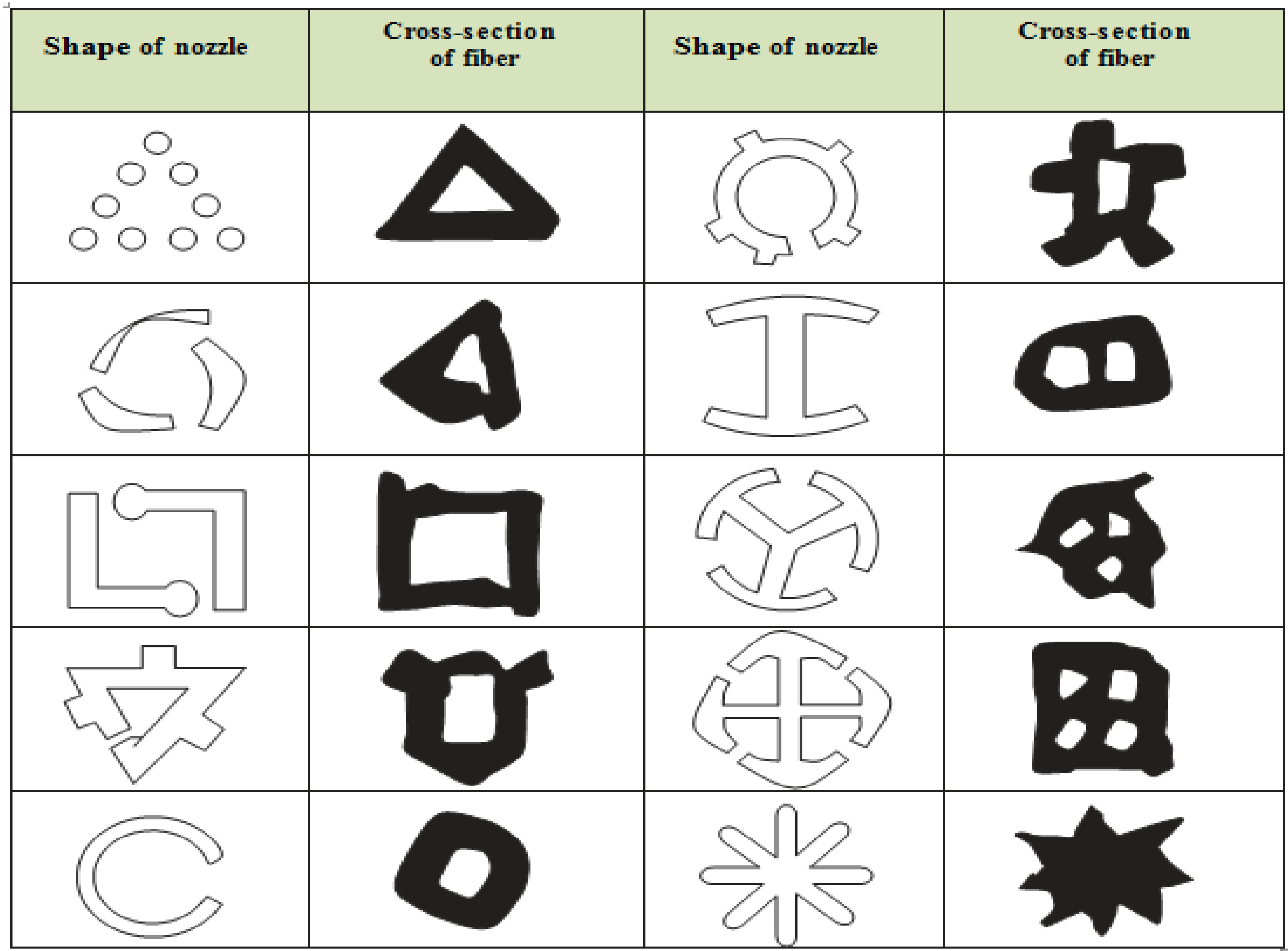


Filament Cross-Sections



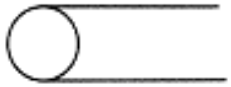


Synthetic fibers are forced out of a nozzle when they are hot, and then they are woven. The holes of the nozzle are not necessarily round; therefore, the fiber filament may have a unique shape in cross-section.



Shape of spinneret and cross-section of fiber.

Filament Longitudinal Structure



Circular, uniform in diameter

Nylon, Polyester, Lyocell

Polygonal, lumen

Flax

Oval to round, overlapping scales

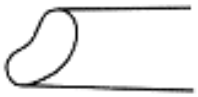
Wool

Flat, oval, lumen, convolutions

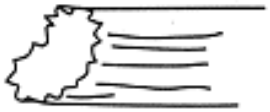
Cotton

Circular, serrated, lengthwise striations

Rayon



Lima bean, smooth

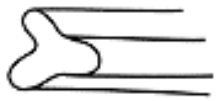


Lima bean, serrated

Avril™ rayon

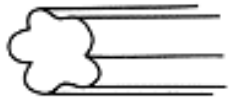
Triangular, rounded edges

Silk



Trilobal

Antron™ nylon



Lobular, lengthwise striations

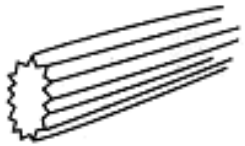
Acetate

Dog-bone

Acrylic, Spandex

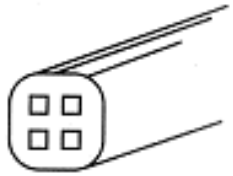
Flat, broad

Acetate



Star or concertina

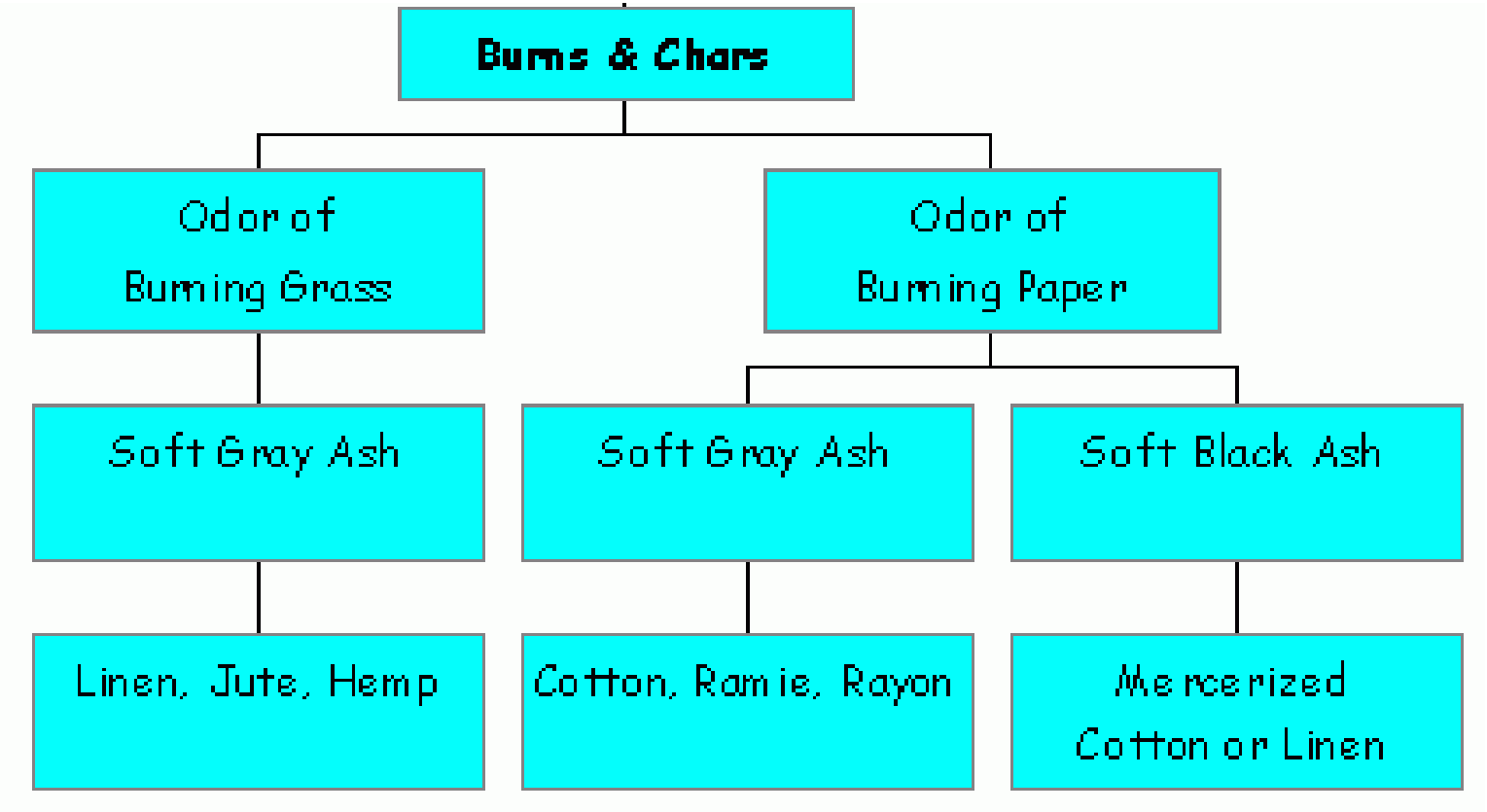
Collapsed tube, hollow center



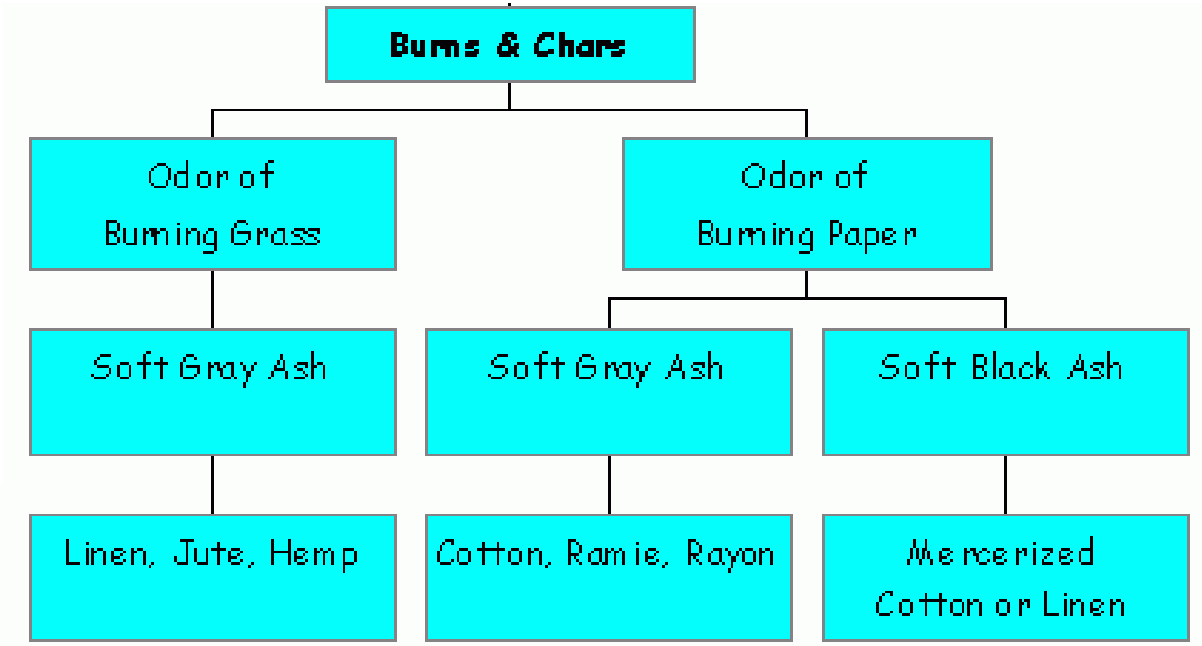
Square with voids

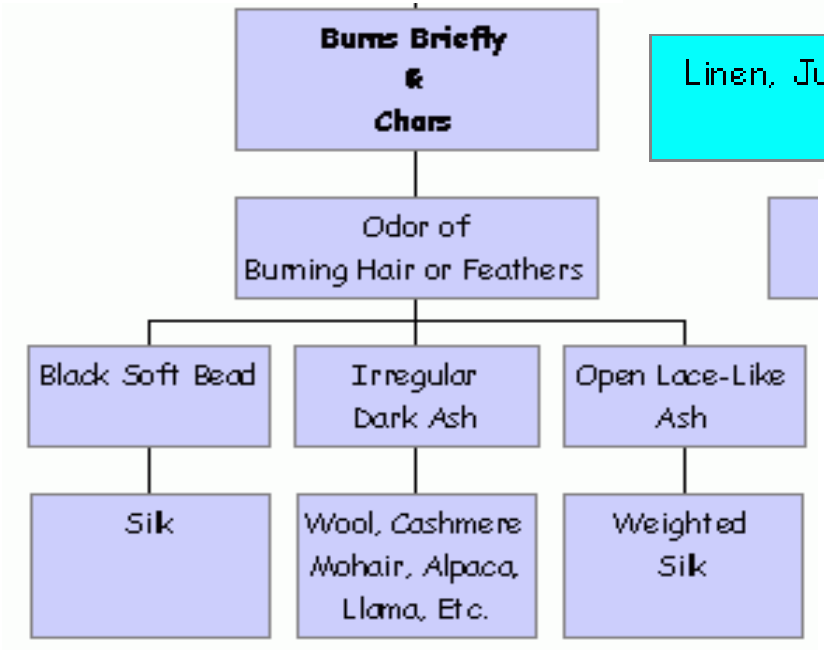
Anso IV™ nylon

Fibre identification (Burning Test)

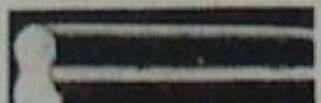


Fibre identification





Fibre identification Man-made Fibre

viscose, modal	regenerated cellulose	 dep. on spinning conditions	B: rapid, bright, afterglow S: like burning paper R: pale grey powder
acetate	cellulose acetate	 dep. on spinning conditions	B: melts, burns, drips S: pungent, vinegar R: sets hard
polyester	poly(ethylene-terephthalate)	 depends on spinneret	B: shrinks, melts, burns, drips in filaments R: sets hard
nylon	polyamide	 depends on spinneret	B: shrinks, melts, burns, drips in filaments R: sets hard
acrylic	polyacrylo-nitrile		B: shrinks, melts, burns (sooty), drips