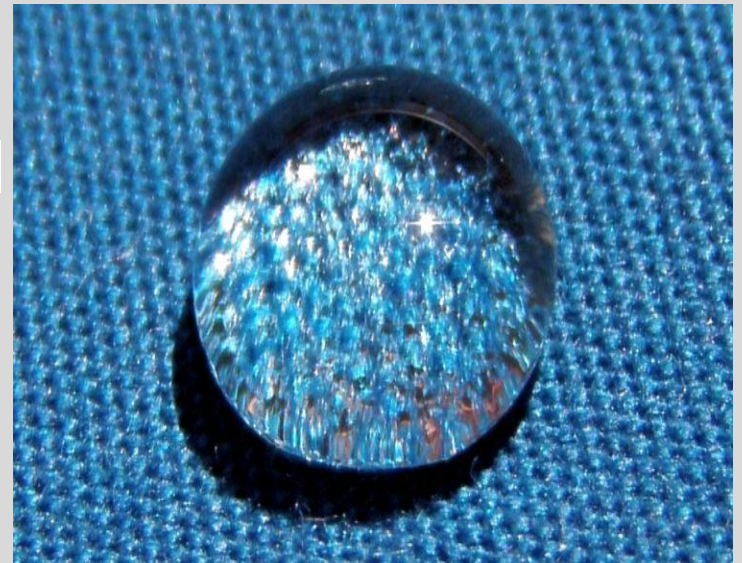
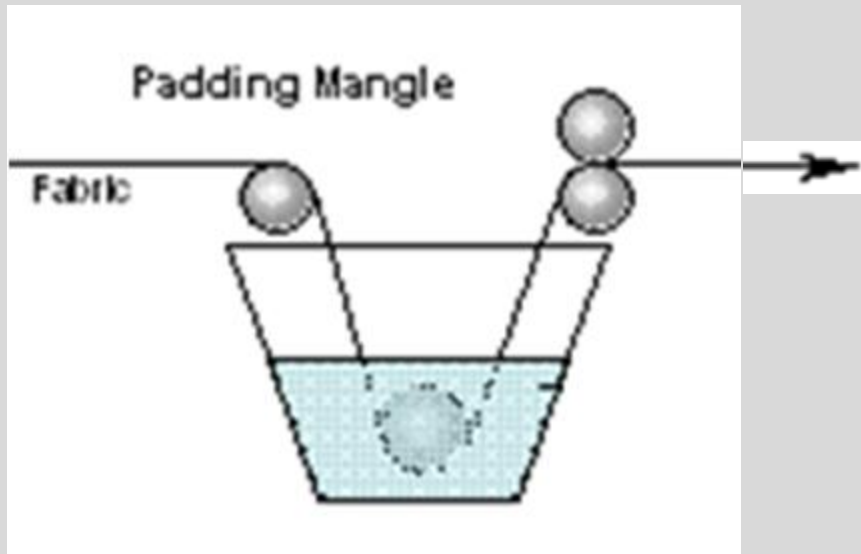


TEXTILES CHEMICAL FINISHES



According to the nature of Finish

- In Chemical Finish, Chemicals are used followed by curing or drying, Also known as wet finish

1. Mercerization
2. Stiffening finish
3. Water Proof/Repellant
4. Easy care/Crease resistant/Durable Press finish
5. Flame Resistant finish
6. Soil Release finish
7. Softening finish
8. Antistatic finish
9. Fuller fabric finish
10. Plisse finish
11. SeerSucker finish
12. Antimicrobial/Antiseptic finish

Stiffening

- **Some fabrics need to be made stiffer and more crisp as per as the end use**
- **Stiffening agents are applied to the cloth to build up the following properties**
 - **To improve/increase the weight, thickness and lustre of fabric**
 - **Starches – finishing of cotton cloth. (Potato , wheat, corn)**
 - **Dextrines – used for dyed and printed fabrics**
 - **Natural gum – mainly used in printing/finishing process**
 - **Modified cellulose – CMC (finishing of synthetics)**
 - **Resins - (finishing of natural and synthetics)**

However, their effect is temporary and once the fabric is washed, most of the finishes are removed

Water Repellent Finish

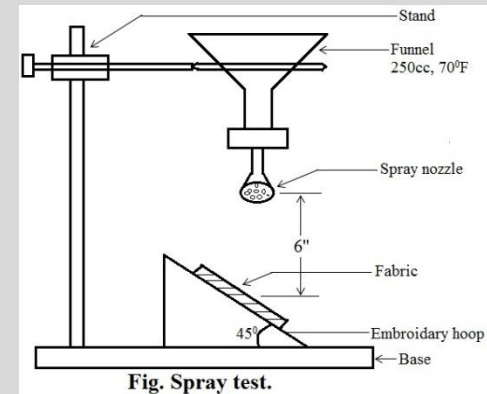
- A chemical finish that resist penetration of water through the fabric, however permit passage of air and moisture.

- Non-durable repellents: (Waxes)

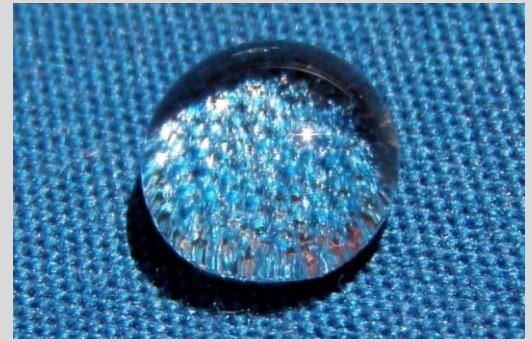
1. Easily removed in laundering or dry-cleaning
2. Do not provide satisfactory resistance to oil

- Durable repellent finish (Silicon & fluorocarbon)

1. Excellent durability to both dry-cleaning and laundering
2. Fluorochemical repellents offer both oil and water repellency.
 - Silicone repellents are used to make upholstered furniture stain repellent through spray method. The fabric is resistant to stains such as coffee and soft drinks.



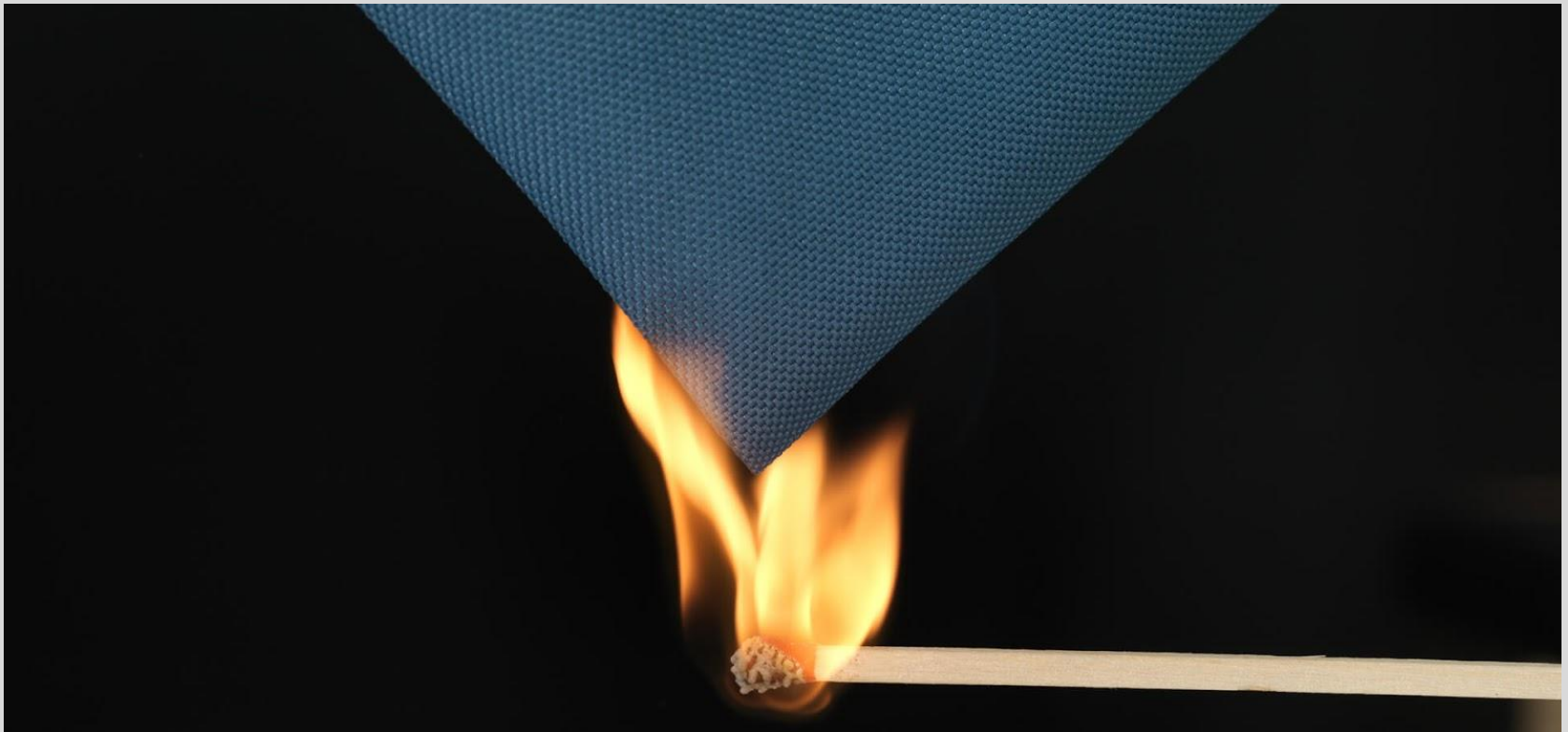
Water Proof Finish



- A water-proof fabric, unlike a water repellent fabric, is completely moisture proofed
- The fabric is coated or laminated with a film of natural or synthetic rubber or plastic, such as vinyl or polyurethane
- Water proof fabrics are not necessarily more desirable than water-repellent fabrics
- Water proof fabrics are uncomfortable and possesses stiff handle.

Flame Retardant Finish

- When solid materials are heated, physical and chemical changes occur at specific temperatures depending on the chemical make-up of the solid.



Flame Retardant Finish

- It is measured as Limiting Oxygen Index (LOI) by passing a mixture of oxygen and nitrogen over a burning specimen, and reducing the oxygen level until a critical level is reached.
- LOI: This is the amount of oxygen in the fuel mix needed to support combustion. The higher the number, the more difficult it is for combustion to occur.



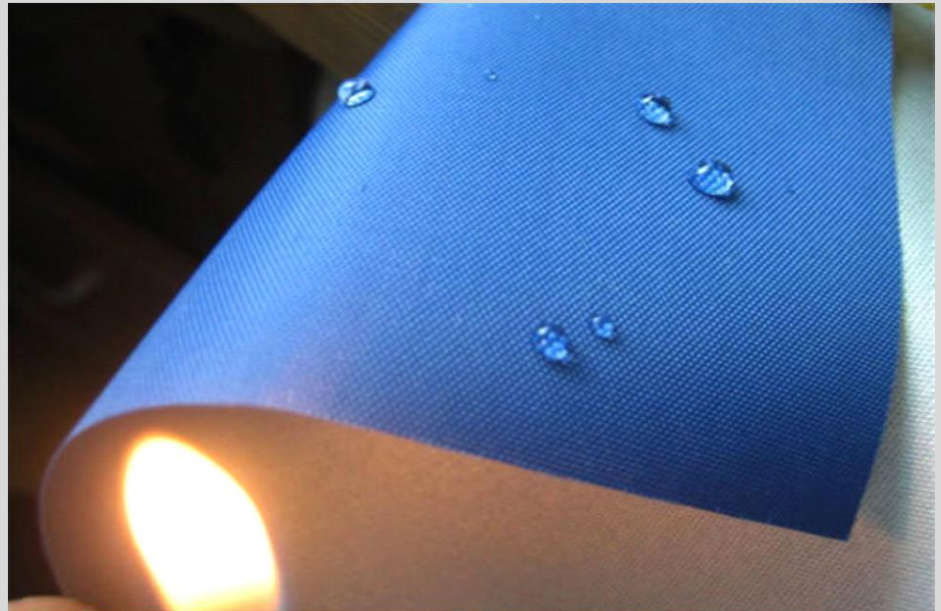
Flame Retardant Finish Agents

- **Non-durable Flame Retardants:**

- Boric Acid/Borax.
- Di-ammonium Phosphate
- Phosphoric Acid
- Sulfamic Acid
- Ammonium Sulfamate

- **Durable Flame Retardants:**

- Tetra Phosphonium
- Pyrovatex
- Phosphonic and
- Phosphoric Acid Derivatives



Chemical Softening

- Silicone compounds are used mostly as softener
- Silicone finish is a durable finish and require curing
- Different types of oils and waxes can be used but they are semi-durable finish
- Emulsion softeners (Durable and give fuller appearance and give resistance against tearing length loss)
- Silicon softeners (Durable and most used finish)

SOIL RELEASE FINISH

- Making the fibres more absorbent (hydrophilic)
 - Permitting better wet-ability for improved soil removal
 - Done by using hydrophilic finishes
 - Facilitates soil release during washing
 - Prevent soil redeposit
 - Reduce static charge by maintaining moisture on the fabric surface, thus soil attraction during wear can be reduced

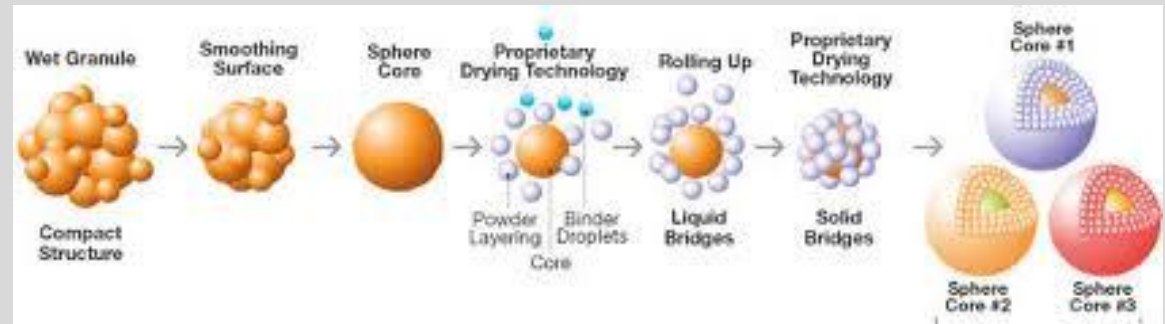


Wrinkle resistance finish



- The ability of the fabric to resist the formation of crease or wrinkle when slightly squeezed is known as 'crease resistance' fabrics.
 - Wrinkle occurs due to heat or moisture that break hydrogen bonds of the cellulosic molecules in the amorphous region and formed bonds in new dimensions
- The ability of a fabric to recover from a definite degree from creasing is called crease recovery
- Finish to reduce the undue wrinkles on fabric or garments.
- Cotton, rayon and flax are more susceptible to wrinkle
- Wrinkle resistance agent used are Formaldehyde Resins and DMU (Di-methylol urea)

Fragrance Finish

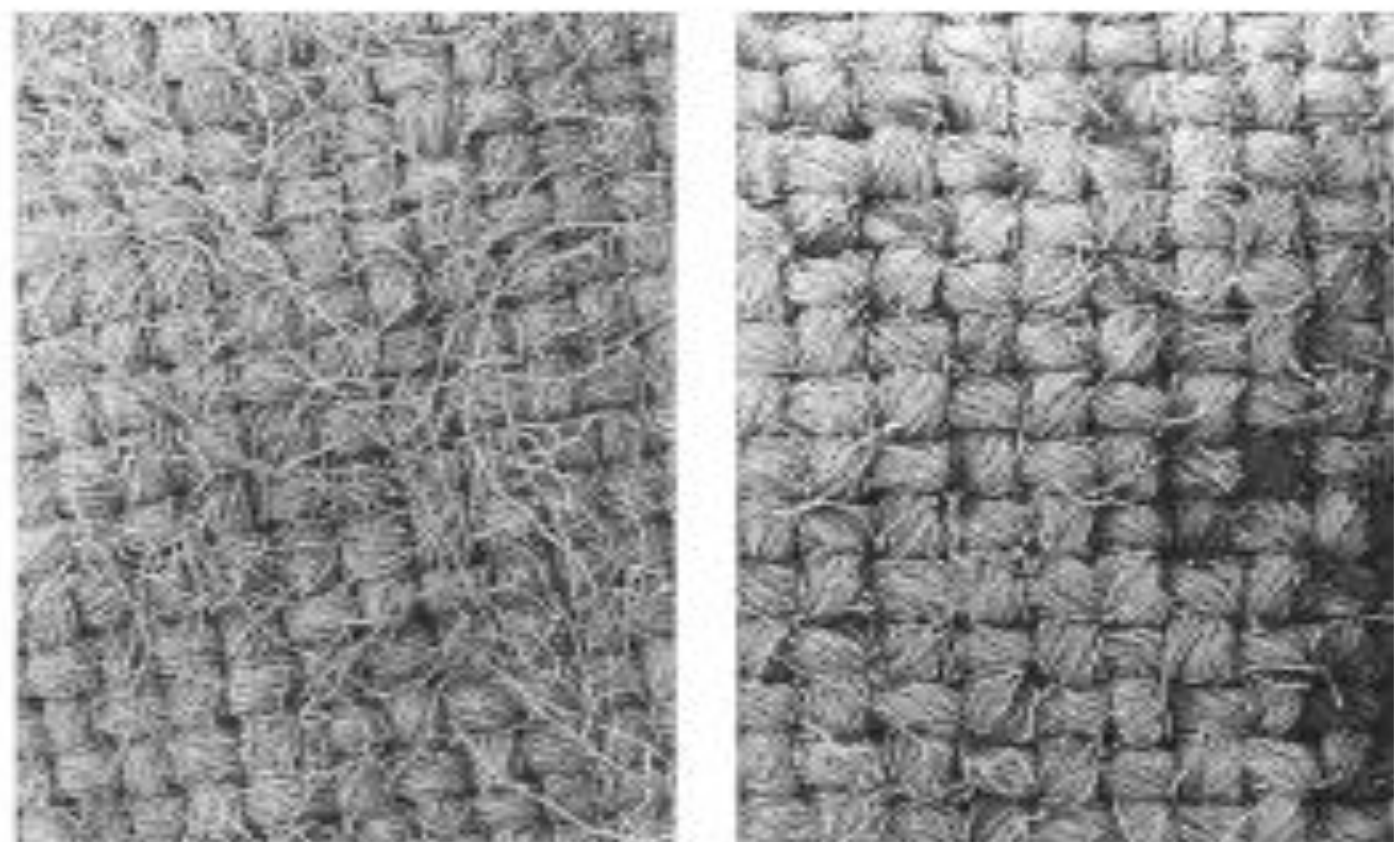


- The application of fragrance finish to fabric. Conventional fixation is a thermal process, in which a fabric is cured at 130-170°C for 1-10 minutes to make the components of the binder cross-link together, and tightly fix fragrance capsules on the fabric.
- Now microencapsulation is a useful method for protecting various functional finishes on textiles.
- **Micro-encapsulation** is a process in which tiny particles or droplets are surrounded by a coating to give small capsules of many useful properties.
- As the capsules do not have affinity to fabrics, a binder should be used to fix the capsules for the purpose of finish durability.
- Scents of flowers, fruits, coffee, chocolate etc are used.

Anti-Pilling Finishes:

- ▶ Pilling is an unpleasant phenomenon associated with spun yarn fabrics especially when they contain synthetics.
- ▶ Synthetic fibres are more readily brought to the surface of fabric due to their smooth surface and circular cross section and due to their higher tensile strength and abrasion resistance.





*Picture 157 - Effect of biopolishing:
before (left) and after (right) the enzyme
treatment.*

Antistatic finish



- **Antistatic agents** are chemical **additives** which prevent or reduce the accumulation of electric charges on a surface by imparting some electrical conductivity to it. They should be able to increase the rate of charge dissipation.
- Synthetic fibres of hydrophobic nature are prone to generation of static charges. This problem is very troublesome while processing the fabric at high speed in dry state.
- Antistatic agents (hygroscopic nature) are used that absorb small amount of moisture from the atmosphere, thus reducing the dryness of the fabric.
- Antistatic finishes are semi-durable nature includes surfactants, organic salts, glycols, polyethylene glycols.
- Permanent antistatic effects are obtainable manufactured fibres which are specially modified for this purpose by using polyamines reacted with polyglycols.

Plissé Finish

- Plissé is the name of the chemical finish as well as the fabric produced with this finish
- Sodium hydroxide is printed on cotton fabric as a paste, the Fabric shrinks only where the sodium hydroxide is applied, producing a puckered effect of permanent nature.
- Plissé fabric do not require ironing



Seer-Sucker Finish

- When the sodium hydroxide is applied as lengthwise stripes, the fabric puckers and takes on the appearance of seersucker. So its lengthwise stripped puckered effect
- Produced by alternative stripes of loose and tight warp yarns
- The Plisse finish is a cheaper imitation of seersucker
- The Plisse does not have that depth degree of pucker that is common to seersucker
- Plisse puckers stretched out flat but seersucker do not



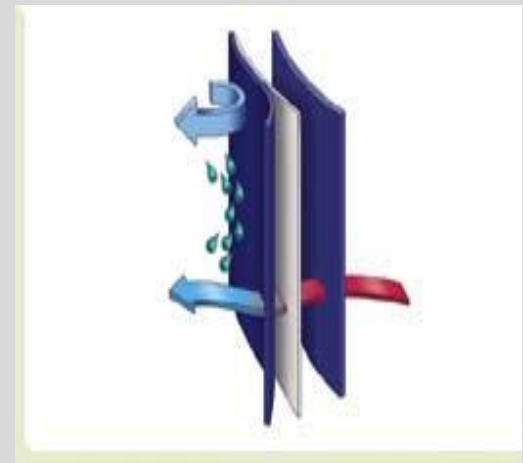
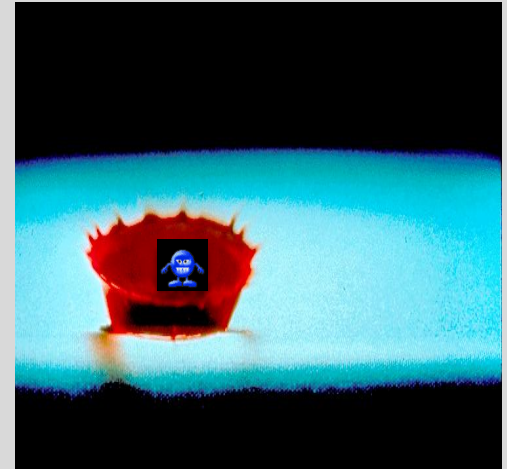
Fuller Finish or Fulling

- During the traditional milling operation, fabrics of combed, carded or blended wool (non-scoured, scoured or carbonized and neutralized), at about 40°C, are soaked and in presence of surfactants.
- This process subjected to continuous pressure both in weft and warp direction.
- Under these conditions, wool fibres tend to felt, thus causing fabric shrinkage and a subsequent dynamic compacting. After this operation, the material must be washed to remove dirty water and the chemicals used.

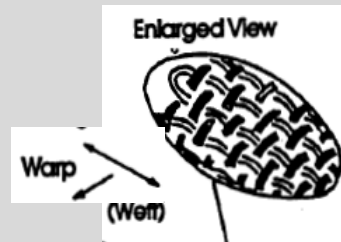


Antimicrobial Finish

- Antimicrobial finish is defined as aseptic barrier i.e, a protection that free from pathogenic micro-organisms or ability of a finishing agent which can **inhibit the growth (-static)** or **to kill (-cidal)** at least few types of microorganisms through contact with the fabric surface.



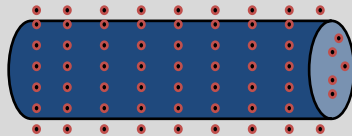
How Textiles can Combat with Pathogens?



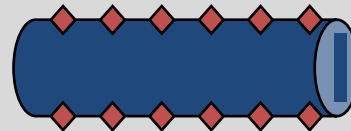
1. Compact pore size



2. Coating technique.



3. Inherent antimicrobial



4. Antimicrobial Finishing

Antimicrobials Finishing agents

Chitosan, PHMB, Gentamincin and Triclosan and plant extracts such as Naeem, Aleovera, Pine apple, lemon and Ginkogo biloba

Garment Finishing (washes)

- Alters the look by different washing procedures.
- Mainly used for denim and similar items to have a faded and worn appearance
- Common garment washes used are
 - Stone washing
 - Acid washing
 - Enzyme washing



Stone washing



Acid washing



Enzyme washing

Thank
you

