

# Design and Technology Knowledge Organiser

## Year Three Waterproofs

### Surface Finishes

- **printing** - an image inkjet printed onto specially treated paper can be heat pressed onto fabric to provide a permanent image
- **flame retardant** - chemical additives can be sprayed onto fabric to slow down its burn time
- **water repellent** - silicone-based chemicals can be sprayed on to provide a protective barrier
- **crease resistant** - a resin can be applied to stop creases setting
- **stain resistant** - a silicone-based spray can stop stains being absorbed into the fabric
- **calendering** - calendering sends fabric through heated rollers and makes it smooth
- **brushing** - fabric is sent through a series of fine wire-toothed rollers, which gives it a soft, fluffy surface
- **embossing** - synthetic fibres are sent through heated, decorative rollers pressing the pattern texture into the fabric
- **biostoning** - adding a cellulose enzyme to the washing process causes a stone-washed, distressed effect, mainly used on denim

### Design Brief

Materials have many different properties and those properties are very useful when used in different situations. In hospitals, items of clothing and protective equipment need to retain different properties in order to be effective. One key property of such clothing and material is their ability to be waterproof. Your task is to create a waterproof shirt which could be utilised within

### What makes something waterproof?

The modern airy **waterproof** fabrics are made with two layers of polymers with different properties: a first layer of a micro-porous polymer that is hydrophobic, i.e. it repels water, and a layer of polyurethane, turned inwards, closer to the skin and which is hydrophilic (i.e. it attracts water).

Waterproof fabrics are usually natural or synthetic fabrics that are laminated to or coated with a **waterproofing material** such as rubber, polyvinyl chloride (PVC), polyurethane (PU), silicone elastomer, fluoropolymers, and wax.

