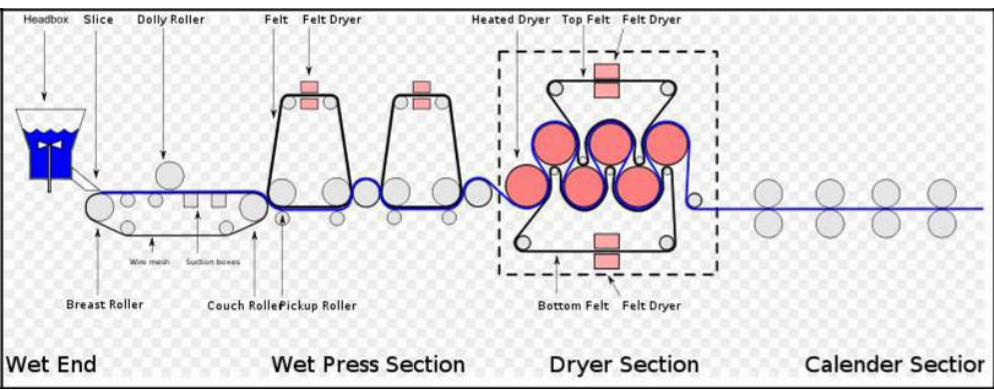


HOW PAPER IS MADE. Paper & Boards

The Fourdrinier Machine



| Stage of the process | What happens |
|----------------------|---|
| 1. Wet end | where paper pulp from trees is mixed up |
| 2. Press section | where the pulp is first squeezed to shape between rollers to remove water |
| 3. Dryer section | heater remove most of the remaining water |
| 4. Calendar section | lots of rollers are used to get to the correct thickness and texture |



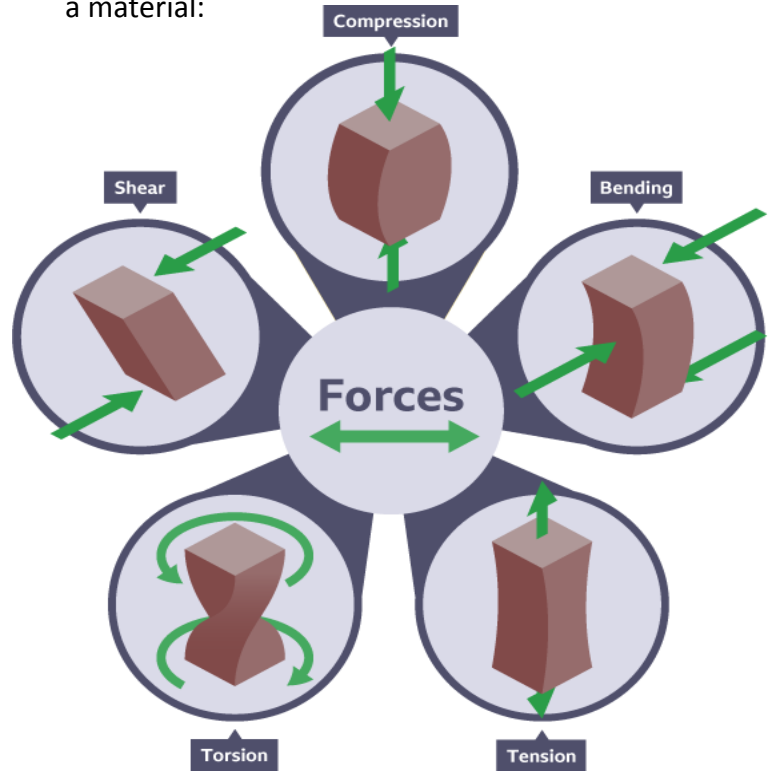
| | |
|------------------------|---|
| Corrugated Card | Is usually three thin layers of low cost card glued together to give a triangular structure inside for strength & impact resistance |
|------------------------|---|

Paper strength

The tensile strength is the maximum stress to break a strip of paper sheet. It is one of the most important basic physical properties of paper and paperboard.

Forces and stresses

Forces act on materials all the time - even if a material appears stationary it still has a force acting on it. There are five terms used to describe what type of force can act on a material:



| | |
|--------------|------------------------------------|
| •tension | a pulling force |
| •compression | a pushing force |
| •bending | forces at an angle to the material |
| •torsion | a twisting force |
| •shear | forces acting across the material |

Paper & Boards

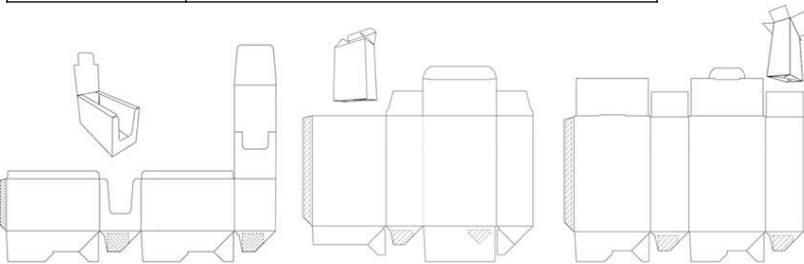
| Types of paper | Use and description |
|-----------------|--|
| | |
| Layout paper | · low cost |
| | · lightweight, thin white paper |
| | · used for initial ideas |
| Tracing paper | · high cost |
| | · thin translucent paper |
| | · used to make copies of drawings |
| Cartridge paper | · medium cost |
| | · good quality white paper |
| | · available in different weights |
| | · can be used to make simple models |
| Coloured paper | · low to medium cost |
| | · available in different thicknesses |
| | · used for mounting finished work |
| | · used to apply coloured surfaces to models |
| Grid paper | · low cost |
| | · printed square and isometric grids |
| | · good guide for quick sketches and model-making |

| Type of Card | Use and description |
|-----------------|--|
| Board | range of thicknesses (from 300 microns to 650 microns) |
| | range of colours |
| | used for models |
| Corrugated card | strong and lightweight |
| | used for packaging protection and point of sale stands |
| | available in different thicknesses |
| Mounting board | good quality thick card |
| | coloured surface |
| | used for final models |
| | used for mounting work |

Point of sale display the place near the till where items are sold in a shop - displays are put here to get customers to buy extra products



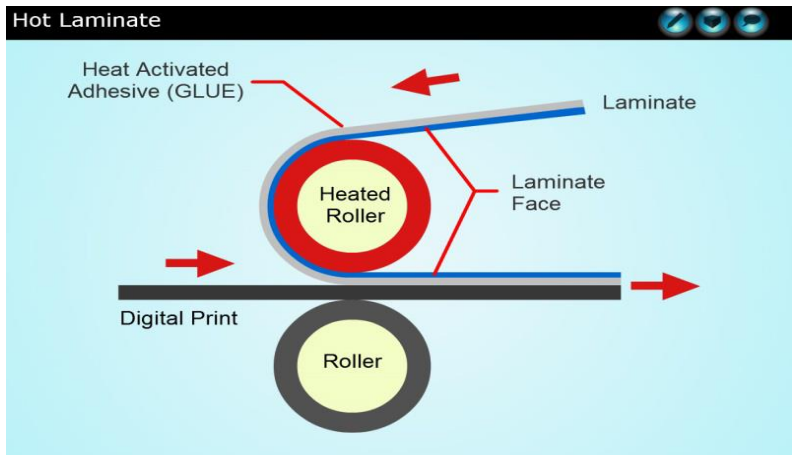
| | |
|---------------------|---|
| self locking | these are tabs that hold a box / net together without needing glue |
| crash lock | boxes designed to be folded out with one push into shape from flat - with no glue needed. For example a cardboard happy meal box. |



Processes and Packaging & Finishing using Paper & Boards

Laminating

Laminating is the process of gluing a thin layer of plastic from 5 to 20 microns thick onto a printed document. Laminating is an expensive process but can give a stronger, heat resistant, waterproof, scratch resistant high gloss finish.



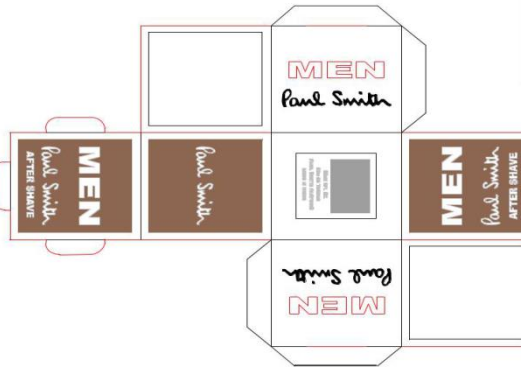
| Advantages | Disadvantages |
|---------------------------------|------------------|
| o Waterproof highly protective | o Time consuming |
| o Prolong the life of the print | o Expensive |
| o Glossy appeal | |

| Material for laminating | best used for |
|--------------------------|---|
| Orientated Polypropylene | maps, brochures, catalogues, book covers, cards, POS displays, carrier bags |
| Polyester | When heat resistance is needed e.g. table mats |
| Nylon | Where scuff resistance is needed e.g. workshop manuals |
| Acetate | Where gluing and blocking is needed e.g. car |

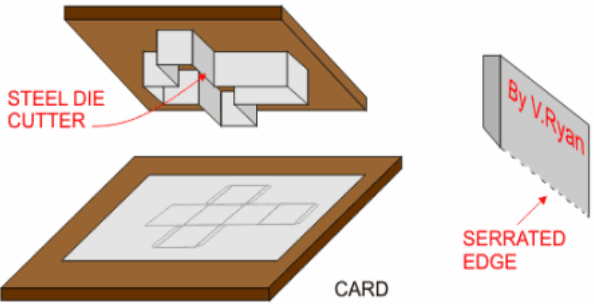
| | |
|-------------------|--|
| Net / Development | is designed as a 3D shape and then opened / folded out flat with tabs for gluing and closure tabs. It also has fold lines and an outline that is cut out |
|-------------------|--|



| | |
|--|---|
| Blister Packaging or Bubble Packaging | usually involves moulding clear plastic over a mould the same shape as the product. |
| | |



| | |
|--------------------|--|
| Die cutting | uses a set of blades accurately put together to cut out complicated nets in one go by pressing the die onto the card. A serrated blade can put tear open lines of holes in packaging nets. |
|--------------------|--|



| | |
|------------------|--|
| Embossing | Where a shape is pushed into the back of the card (using a metal die) so the shape appears raised on the front |
| Debossing | is the opposite of embossing leaving an lowered image on the card |

