



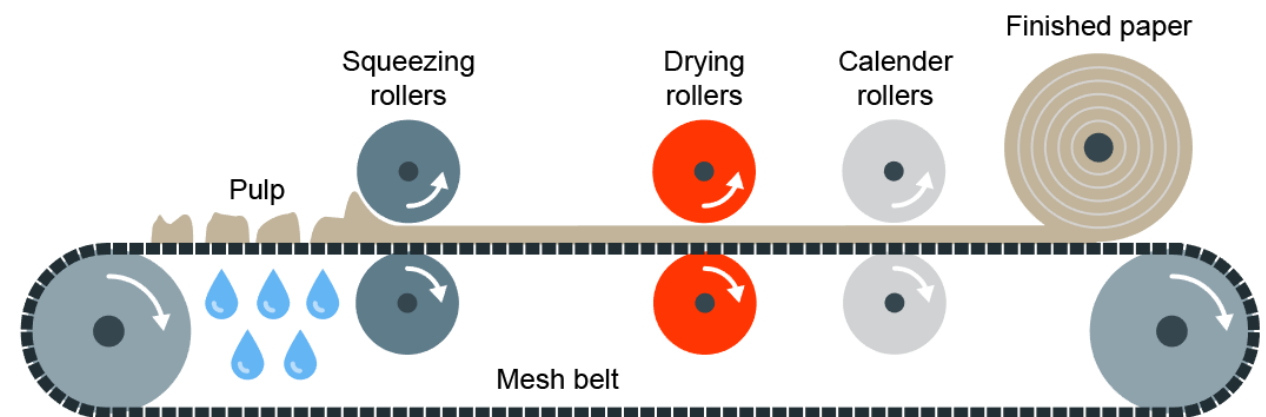
Papers and Boards

Modern Materials are materials that have been developed recently		
Material	Key info	Examples
<b>Corn-starch Polymers</b>	These are plant-based polymers that are a replacement for plastics that are <b>biodegradable</b> but cannot be recycled.	Plastic bottles, tubs, food containers, etc
<b>Flexible MDF</b>	Made in the same way as normal MDF but with grooves cut into the surface so it is flexible. <b>Flexiply</b> is the same but for Plywood. These can easily be shaped into curves	Modern furniture, interior walls and room dividers
<b>Titanium</b>	High strength to weight ratio. Doesn't corrode or rust. Suitable for medical use as its hypo-allergenic	Prosthetics, medical applications, sports cars, etc
<b>Kevlar</b>	A woven polymer with a high strength to weight ratio.	Bullet-proof vests, tyres, helmets, etc

Papers and Boards come from trees. The Stock forms for papers are: rolls, sheets, A4, A3, etc		
Material	Key info	Uses/ Examples
<b>Cartridge Paper</b>	Thick white paper, completely opaque and more expensive than photocopy paper	Sketching, ink drawings
<b>Layout Paper</b>	Light, semi-translucent, good for blending inks and artist markers	Sketching, drawing and some tracing
<b>Corrugated Cardboard</b>	Strong but light. Rigid triangles of card sandwiched between a top and bottom layer.	Outer packaging, food packaging
<b>Duplex Board</b>	Light card with white outside layers. Waxy coating can be added	Cheap packaging. If waxy coating is applied, can be used for food
<b>Foil-lined Board</b>	White card coated with a thin aluminium layer. Foil is great for insulation and water resistance	Takeaway containers
<b>Solid White Board</b>	High-quality white card with a smooth finish. Stiff and holds colours well	Greetings cards, packaging and advertising

Smart Materials are materials that change and react to the stimuli		
Material	Key info	Examples
<b>Thermochromic Pigments</b>	Change colour in reaction to heat	Kettles, baby bottles, etc
<b>Photochromic Pigments</b>	Change colour in reaction to light	Colour changing glasses, windows, etc
<b>Shape Memory Alloy</b>	Returns to its original shape, in reaction to heat	Braces and glasses
<b>Polymorph</b>	Granules that once exposed to hot water, become a modelling material (like a dough or clay)	Modelling and repairs

Primary Processing of Papers and Boards



Paper is made by first making pulp. Pulp is a mix of tree fibres and water. This is cooked and bleached white, and adding any other additives. The pulp is then drained and goes through **Calendering** where the pulp is drained and goes through rollers to convert it to its stock forms