

Product design (a) papers and boards

Categories of papers and boards

Papers and boards are made from wood pulp which originates from trees. Wood pulp is rolled out into thin sheets at an industrial setting called a papermill.

- Paper density is measured by weight in grams per square metre (gsm).
- Paper comes in standard sizes, A0 is the largest, down to A10 (postal stamp size). In schools, A4 and A3 are very common paper sizes.

Types of paper

- Tracing paper (40 – 90 gsm) – translucent, smooth and strong, non-absorbent. Used for copying sketches and drawings, used as an overlay.
- Layout paper (50 gsm) – smooth, translucent and cheap to purchase. Great for designing, sketching and developing ideas.
- Copier paper (80gsm) – smooth, opaque, clean white finish. Uncoated and finishes well when printed on. Also used for photocopying.
- Cartridge paper (80 – 140 gsm) – thick, textured surface finish, a creamy off-white colour. Works well with paints, watercolours, pastels and inks.

Boards

Board is categorised by weight as well as thickness. The thickness of board is measured in microns, with one micron equal to 1/1000th of a mm.

Corrugated cardboard (3000 microns) – strong and lightweight, with two or more layers of wavy ‘fluted’ sheets to provide additional rigidity. Corrugated card is available in different thicknesses, making it perfect for packaging various items. It is fully recyclable, but not water-resistant.

Mounting board (1400 microns) – has a rigid and smooth surface, normally black and white in colour but available in other colours. It is popular for framing mounts, scale architectural modelling and concept designs.

Folding boxboard (300 – 1699 microns) – This is a stiff board normally made from recycled paper. It scores and folds well, bending without splitting, perfect for packaging supermarket foods.

Laminating papers, cards and boards

Some materials can be coated to add thickness, weight and strength for specific purposes. This additional layer is known as laminating. Many food containers and drinks cartons are laminated to ensure food and drinks are retained effectively and hygienically, and to keep produce fresh. Laminated cardboard is also good for book binding.

Adding surface finishes to papers, cards and boards

Surface finishes can be aesthetic and functional. Varnish can be added to card to give a glossy finish. Sometimes, part of a logo or brand name is varnished so that it stands out to the customer from the rest of the detail. Edge staining is another finishing process where dye is applied to the edge of a book to improve visual quality. UV (ultraviolet) varnishing produces a high-gloss finish on card, which is great for marketing materials like business cards. Embossing is a process that can create raised patterns or shapes in card and paper, usually by stamping. This is popular in greetings cards, perfume boxes and invitations.

Folding ability and absorbency

Some uses require materials to remain rigid, and to resist folding or creasing, such as corrugated cardboard coffee cups. These need to insulate heat, retain hot liquid, and must not leak. Other products, like sandwich containers, are die cut, flat packed items that erect easily to provide display, packaging and keep food stuffs fresh. These have crease lines, fold easily, and are again waxed inside to resist absorbency.

Greener solutions

A lot of paper-, card- and board-based packaging is designed to be easily fully recycled. This provides a ‘cradle to cradle’ approach and reduces waste and the need for new materials. Reusability is also high, where containers can be washed and used again for the same or similar purposes.