

GCSE Graphic Products

Mr Price

Components

- Individual pieces of a product that are connected to another piece during assembly to make the final product
- Bought in components have not been made but brought in for your project.
- HDPE: high density polyethylene is a thermoplastic, used for strong containers, bottles and garden furniture.



- Fastenings:** items such as brass paper fasteners that produce a linkage or simple mechanism.

Ergonomics anthropometrics

- Ergonomics** – the study of how products can be shaped and sized to work well with the human body
- Anthropometrics** – the study of the varying sizes of all the parts of a human body.
- LEDS** – light emitting diodes
- Polymorph** – special plastic often used for modelling stays hard & white at room temperature but can be softened at 60 degrees Celsius



Product lifecycle

- The stages through which a product goes once it's on sale
- Introduction to the market** – slow sales & high costs
- Growth** – popularity increases, boost of profits
- Maturity** – hits peak, competitors introduce new products
- Decline** – slows down profits reduced.



Packaging

- Main reasons for packaging** – stacking & storage, information, protect, preserve & promote
- Primary packaging** – protects product and gives key information
- Secondary packaging** – contains actual product and gives detailed information to consumer
- RFID tags** – radio frequency id
- Micro-chip combined with an antenna
- Tags antenna picks up signals from reader or scanner

Environmental issues & sustainability

- Renewable** – materials that can be easily replaced, reproduced or grown.
- Bioplast** – plastics made from animal and Veg matter, and are totally biodegradable
- Recycle** – break down used material into a reusable state
- FSC** – the Forest Stewardship Council logo
- Barcode** – first 2 numbers show products country of origin. Next 5 numbers show manufacturers reference. Last 5/6 numbers show specific product number.



The 6 R's-

- Rethink
- Refuse
- Reduce
- Reuse
- Repair
- recycle



Patents & copyright

- Trademark** – distinctive logo or slogan cannot be copied
- Copyright** – A legal protection the designer has for their design to prevent it from being copied for up to 20 years.
- Patent criteria** – you will only be granted this if your design is new, inventive, able to make in industry & it must be physical product.
- Registered design** – protects aesthetics or look of design from being copied
- Spot varnishing – only certain part is varnished
- UV set
- Smooth & glossy finish



Modern materials

- A material invented in the last 50 years
- Cornstarch polymer** – alternative to some oil based thermoplastics made from vegetable starch
- Paperfoam** – combination of Cornstarch polymers and paper fibres, used to make scratch resistant inserts for packaging
- Lyocell** – high strength paper fibre made from wood pulp.
- Totally biodegradable in 8 days
- Used to make special paper for tea bags & coffee filters

FMC: Precious metal clays 99.9% gold or silver and 0.1% clay. These can be shaped at room temperature. Usually used by jewellery designers – very expensive

- One off** – easy to set up & change, very high cost. Examples are paintings and sculptures.

Production processes

- Batch** – 1-10,000, easy to make changes but expensive to set up
- Mass production** – 10,000+, cost of individual item is low, more expensive than batch to set up. Example would be a car.
- Continuous** – millions, easy to make same item cheaply to a very high standard. Examples are paper production, blank packaging such as cans.

Polymorph – can be classed as a smart material because it returns to its hardened form when the heat is removed.

Smart Materials

- Materials that interact with their environment and return to their original state once the stimulus is removed e.g. light or heat
- Photochromic materials** – changes colour depending on the amount of light e.g. sunglasses
- Electrochromic** – changes colour according to varying electrical input e.g. car rear view mirrors
- Hydrochromic** – changes colour according to the amount of water e.g. plant pots
- Phosphorescent** – inks are able to absorb light during the day and then glow at night e.g. fire exit sign

Paper engineering

- Floating pivot** – a point at which two or more lever are joined together
- Fixed pivot** – normally attached to base card with a split pin
- Laminating (encapsulation)** – Improves strength & appearance
- Wipe off surface
- Pre-press** – the stages needed before actual printing takes place; check artwork, colour separation, quality control & plate or screen production.
- Print** – process of actually printing the design.

Printing finishes

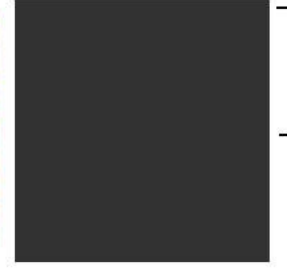
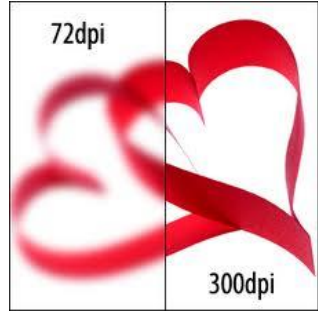
- Foil blocking** – Looks expensive
- Works by stamping pre glued metallic foil onto printed surface using heat & pressure**
- Used on cards and expensive packaging**
- Die cutting** – Works like a pastry cutter
- Embossing** – Raises part of surface
- Gives effective subtle visual & textural addition**
- 3d effect adds interest**

Printing

- Finishing** – Any additional process required after the main four colours, embossing, varnishing, die cutting etc.
- Colour separation** – the process through which the original image is separated into 4 colours by a computer program.
- DPI** – dots per inch, smaller dots, lots of them when merged together give a better quality image.
- Print quality controls** – Registration marks: a very clear mark about 10mm across of a circle and lines, which is used to check whether printing plates are aligned.
- Colour bar** – strip shows CMYK, used to check density of 4 colours.
- Crop marks** – found at the 4 corners of the page,

Types of printing

- Offset lithography** – used to print magazines, newspapers & books.
- Most common method, high quality, fast, but expensive set up cost.
- Screen printing** – used for short print runs on t-shirts and poster.
- Can print on absorbent surfaces
- Not as good quality & slow.
- Gravure** – expensive, high quality magazines & stamps. Fast & best quality print process but very expensive set up cost.
- Laser** – one off printing, immediate print but expensive individual prints.
- Flexography** – very fast but expensive to set up. Used to print packaging, corrugated boxes, shopping bags and 3d surfaces like bottles.



Registration Mark

Drawing Techniques

- Sectional drawing** – produced by cutting through an object
- Exploded drawing** – 3d drawing used to show how a product is assembled
- Site plan** – a drawing showing a piece of land from above with existing and/or new buildings and features.
- Schematic drawing** – a drawing of an electrical or mechanical system
- Floor plan** – a scaled down drawing to represent how the floor space in a building is to be laid out.
- Sequential illustration** – a series of drawings to show the steps in a process of making something
- Schematic maps** – use straight lines to simplify routes

- One & two point perspective**
- Freehand sketching** – 2D or 3D drawing completed without aid.
- Isometric drawing** – shows objects in 3D, lines are at 30degrees to horizontal
- Crating** – drawing using crates
- Third angle**
- Third angle orthographic drawing** – A standard technique for producing detail and working drawings that everyone can understand, usually used for manufacturing purposes.

- Front view** – a view looking towards the front of your product
- Plan view** – a view looking down at the top of the product
- End/side view** – a view looking at the side or end of your product
- Hidden detail** – lines which you know exist but cannot see, these are shown by dotted lines.

- Bar charts** – show comparison between data.
- Pie charts** – show proportion within data.

Information drawing

- Collate** – collect & put number or letters into order.
- Analyse** – examine info by looking at its separate parts.
- Labels** – attached to everything that we buy and explain a lot about the product.

- Signs** – there to give instructions or warnings. They should be clear & eye-catching.

Food packaging

legal requirement to label all food products except fresh meats and veg, with the following: name of food, manufacturers address, storage instructions, use by, best before, weight or volume 'e' means estimated, list of ingredients, starting with the largest or main ingredient, list of special claims & warnings & nutritional information.

- Pictographs** – similar to bar charts but easier to understand because they use symbols.

Typography – The art form of letter style & design

- Font** – specific letter type e.g. regular, italics, bold
- Typeface** – the style of text you use e.g. comic sans
- Kerning** – letter space
- Uppercase** – Capitals & **Lowercase** – small letters

Risk assessment

produced to identify and reduce risks

- Hazards** – something that could possibly harm you if you pay no attention to danger.
- Example:** hazard – bags or equipment on the floor.
- Risk** could be reduced by ensuring all areas are clear of obstructions and by making sure all things put out of the way.

- CAD** – computer aided design
- CAM** – computer aided manufacture

CAD/CAM

- CAD advantages** – fast once you are familiar with it, designs can be altered easily, standard components can be combined quickly to create new products, designs can be seen in 3d, orthographic drawing can be produced once design has been finalised.
- CAD disadvantages** – Staff need to be trained and expensive to set up.
- CAM advantages** – components made same size, time and time again, machines can work non-stop and provides flexible production.
- CAM disadvantages** – repairs may be expensive, specialists engineers needed, if machine breaks down it stops production, if your design has flaws the component will have too and without regular checks any mistake will be repeated in large numbers, wasting material & money.

Symbols, ideograms & pictograms

- Symbolic or abstract symbols** – used to represent something that we can recognise from the concept they are portraying.
- Symbols** – visual devices used to communicate.
- Enactive/action symbol** – these show something happening e.g. pedestrian crossing.
- Ideograms** – pictorial symbols used to communicate a message without words.
- Pictograms** – wordless, used in public places and packaging to convey information.
- Quality assurance** – the process through which the designer actually states what quality he/she wants the product to have when it's finally made.
- Quality control** – the measures that are put into place to ensure the quality standards are met at critical points of the making process.
- Tolerance** – acceptable range of accuracy

Quality assurance & control

- Quality assurance standard;** card is accurately cut & folded. **Quality control check;** the die cutting process will need to be checked for accuracy on a sample card.

Materials

- Carton board** – multi-layered material with three or more layers
- Solid bleached board (SBB)** – highest quality white top printable surface, used for perfume, chocolate & cigarettes
- Solid bleached board (SUB)** – Brown, very strong used for drinks.
- Folding Boxboard (FBB)** – White top layer with cream bottom layer used for toys & games.
- White lined chipboard (WLC)** – Recycled white board used for detergent powders.
- gsm** – grams per square metre – paper thickness is measured in gsm, which is the weight in grams of a whole square metre of paper.
- Microns** – card thickness is measured in microns. A micron is 1/1000th of a millimetre.
- Paper is made from vegetable fibres found in wood.**
- Paper comes in a huge variety of colours, weights and textures.**
- Paper makers change the properties using 3 methods coatings, sizing (absorbency to accept ink) and laminating (sticking together)**
- Virgin paper** – made with just wood pulp with no recycled paper added

Health & safety

- Safety precautions** – things you can do in advance to protect against possible dangers or accidents.
- Personal protective equipment** – safety clothing to protect you while at work e.g. goggles.
- Rotary cutter** – used to cut paper, thin card & plastic. Use safety rule and cut away from yourself.
- Scalpel/ craft knife** – must be used with a cutting mat and raised edge steel rule.

Flow charts

Information that informs the operator what is happening during the process.

- Input** is what you add to the process, **output** is final outcome of process.
- Process** – what is done in the process, or the steps involved.
- Operator** – the person who is controlling the process.
- Page connectors** used to continue the flow chart to another page.
- Feedback Loop** – the part of a flowchart which shows the operator where to go back to if necessary.
- Trademark** – a unique mark that helps you to identify a product or range of goods by the same producer.
- Corporate identity** – the images, colour & slogan that help you recognise a company.
- Logo** – an image that is associated with an organisation.
- Logogram** – a logo that uses the initials of the company.

Key graphic designers

- Wally Olins** – brand consultant, helps companies produce corporate images.
- Wally Olins approach** to branding is that it includes an organisation's brands, values and relationship with the public.
- Robert Sabuda** – author, illustrator & pop-up book designer.
- Thermoplastics**
 - PVC** – polyvinyl chloride, blister packs & game pieces
 - PET** – polyethylene terephthalate used for fizzy drink bottles. Good for keeping in fizz.
 - PP** – polypropylene – used for crisp packets
 - PS** – polystyrene, yogurt pots & CD cases.
- Bioplastic** – biodegradable, based on plants. Used for all sorts of packaging.
- Acrylic** – used for point of sale stands, available as tubes as well as sheets.