

Key Words: Hardwood, Softwood, Grain, Durable, Thermoplastic, Thermoset, Smart material, Automation, Production, Manufacturing, Fixings, Data exchange, Just in time, Batch production, One Off production, Technology Push, market Pull, Electronic Data Exchange, Laser Printer, Silk Screen Printer, Inkjet Printer, Flexography,

Knowledge Area	What You Must Know
Hardwood	Dense grain expensive wood from deciduous trees which resists moisture and rotting well (oak, Mahogany, Beech).
Softwood	Fast growing wood from pine (evergreen) trees that is cheap, grows fast but is poor outdoors. (Spruce, Fir, Redwood).
Thermoplastics	Plastics that can be re-shaped using a heat process such as vacuum forming, strip heating, injection moulding.
Thermoplastic examples	Acrylic, ABS, Rigid Polystyrene, Polythene, Polypropylene.
Thermosetting examples	Urea Formaldehyde, UPVC, Resin Plastics, Polyester.
Smart materials	Special materials with at least one property that can be changed by a stimulus such as heat, light, moisture or magnetic fields.
Smart material examples:	Thermo-chromic plastics (change colour with heat) Polymorph (becomes malleable with heat), Shape memory alloys (SMA)
Automation	When manufacturing has automatic systems that make products with very little human intervention.
Smart technology	Technology that helps run a factory using a series of sensors that make machines and systems run without people.
Flexible Manufacturing systems (FMS)	An automated production line of different processes where extra processes can be easily added or removed to make changes for a certain batch. : A machine which fits a tow-bar can be temporarily added to a car production line until batch is finished.
Lean Manufacturing	Where ALL the waste is taken out of a production process, this includes waste material, wasted time, wasted processes.
Just in time	Where products arrive on the production line just as they are needed which eliminates large storage areas for stock of parts.
Mass Production, /	This is where a limitless amount of a product are made usually on a CONTINUOUS production line.
Batch production	This is where a set amount of a product are made, such as 12 bakers buns or 100 car engines.
One Off production	This is where a special product is hand made for one person or a prototype (first one) in a factory.
Permanent fixing method	Welding, Brazing, Gluing, Nailing, riveting, dowelling.
Semi-permanent fixing	Bolting, Screwing, Clamping, CAM locks, knock down fittings,
QC (Quality Control)	These are checks that are made on a production line (say every 100 products) to check they are still perfect.
QA (Quality assurance)	This is a promise of quality that a manufacturer can make to its customers because its quality control works.
British Standards Kite	This is a high British standard to show a product is made to a high standard
CE (conformity European)	This is the BASIC legal safety standard that products need to meet to be sold in the E.U.
Technology Push	This is where manufacturers make us buy things we did not demand (but want) by introducing them. (I-Pads)
market Pull	This is where consumers bring products on to the market because of their buying habits. (economical cars)
Electronic Data Exchange	This means sending pictures, drawings, emails and other files by cable, or email. Rather than posting paper.
CAD CAM advantages	CAD CAM is: Neater, More accurate, less wasteful, quicker, requires less skill, less humans, less wages to worker.
CAD CAM disadvantages	This means it needs money investment, can break, needs skill training, needs maintaining.
Paper types	Cartridge Paper, Greaseproof Paper, Tracing Paper, Laser Copier Paper. Layout Paper, Bleed proof paper.
Cardboard Types	Corrugated Card, Solid White Board, Foam-board, Duplex Board, Foil Lined Board.
Card and paper sizes	A0, A1 A2, A3, A4 (text books), A5, A6. The higher the number the smaller the size, each size is half the size of one above.
Standard paper and board components,	Velcro pads (Tiny hooks and eyes that link when pressed together), Treasury tags, Prong fasteners, Staples, drawing pins.
Binding methods	Comb Binding, Spiral Binding, Wire Binding, Perfect Binding, Thread - Sewing , Case Binding.
Large Scale Printing	Lithography (printing thousands of packages or books) Flexography (Printing onto flexible surfaces like carrier bags). Gravure.
Small Scale Printing	Laser Printers (similar to ones we have in school), Silk -Screen Printing (similar to what we do in Art), Inkjet printing (home).

Subject: Industry Issues
Year: 10
Term: 3
Topic: Materials and Technology in industry

1. Revisit materials
2. Standard components
3. Smart materials / new materials
4. Technology in manufacturing
5. Printing methods
6. Fixing methods
7. Paper and Card and printing.

- Key Assessments**
TBA
1. February exam
 2. Materials practical
 3. April exam
 4. Printing Practical

Core Texts
Ebbsfleet Revision Pack 3

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