



Core Revision

Materials and their properties

Topic 1.8 Metals Revision

METALS					
FERROUS			NON-FERROUS		
CAST IRON	STAINLESS STEEL	MILD STEEL	ALUMINIUM	BRASS	COPPER
Hard but brittle, good in compression, magnetic Used for: post boxes, radiators, g-clamps & man hole covers	Corrosion resistant, hard, tough, sometimes magnetic, resists wear, difficult to cut. Used for: cutlery, sinks, medical equipment	Tough, ductile, malleable, magnetic, high tensile strength, easily joined, poor corrosion resistance Used for: screws, bolts, girders, car body panels.	Corrosion resistant, malleable, ductile, easily machined, good heat/electrical conductor, excellent strength to weight ratio, polishes well. Used for: Aircraft, foil, window frames, drinks cans	Corrosion resist, easily machine, good heat/electrical conductor, casts well, harder than copper, polishes well Used for: plumbing fittings, door fittings, locks, musical instruments	Corrosion resistant, malleable, ductile, easily machined, good heat/electrical conductor, polishes well Used for: electrical wire, gas some water pipes, printed circuits, roofing, jewellery

Topic 1.9 Paper & Board Revision

PAPERS & BOARDS					
PAPERS			BOARDS		
COPIER PAPER	CARTRIDGE PAPER	TRACING PAPER	FOLDING BOXBOARD	CORRUGATED CARDBOARD	SOLID WHITE BOARD
Thin, lightweight, cheap, bright white paper, with a smooth, bleached, uncoated surface. Can jam printer mechanisms. Used for: writing, printing, drawing	Creamy, thick heavyweight paper, more expensive than copier paper. Used for general drawing and printing, can be used with watercolour paints without buckling.	Thin, smooth and translucent, made by beating to remove air and processing to make a dense, strong paper, usually 60 to 90 GSM. Expensive, limited ink absorption & longer drying time. Used for, art, making copies, envelope windows, overlays on working drawings.	Excellent for scoring and bending without splitting, prints well, inexpensive. Lower strength than solid whiteboard. 1. Printable bleach layer. 2. Unbleached centre layer 3. A bleached inside layer. Used for: cereal boxes, food and healthcare packaging, cartons.	Impact resistant, inexpensive, recyclable. Brown finish does not convey quality, can deform under pressure, not water resistant,. Two or more layers of fluted paper sandwich between 2 paper liners , available in different thicknesses, strong and lightweight. Used for: Protective packaging – the air pockets absorb shock & protect the product inside. Recyclable so doesn't end up in landfill.	Strong, rigid, made from pure, bleach wood pulp. Excellent printing surface. Can be expensive. Used full book covers, food, cosmetics and medicine packaging.

Topic 1.10 Polymers Revision

POLYMERS				
THERMOFORMING			THERMOSETTING	
ACRYLIC	HIGH IMPACT POLYSTYRENE	BIOPOL	POLYESTER RESIN	UREA FORMALDEHYDE
Tough, easily finished, easily cleaned, food safe and can be easily scratched. Used for: shop signs, rear car lights, baths, fish tanks and menu holders	lightweight, high stiffness, impact resistant but can be easily scratched, Go to electrical insulator, durable. Used for: toys, television parts, games controllers, refrigerator linings	lightweight, good electrical insulator, degrades overtime when in contact with soil, so can be safely disposed of at landfill sites. Used for: disposable cups, raises, cutlery and other packaging products, surgical stitches and pins	Rigid, brittle, unless laminated good electrical and heat insulation, good chemical resistance. Used for: boat holes and sports car bodies, used with glass fibre, can be cast to form decorative objects	Rigid, hard, brittle, heat resistant, excellent electrical installation. Used for electrical fittings such as plugs, sockets and switches, used in adhesives in man made boards.

Topic 1.11 Textiles Revision

FIBRES AND FABRICS					
NATURAL FIBRES			SYNTHETIC FIBRES		
ANIMAL (e.g. wool)	PLANT (e.g. cotton)		POLYESTER		ACRYLIC
WOVEN TEXTILES		NON-WOVEN TEXTILES		KNITTED TEXTILES	
PLAIN WEAVE (calico)	TWILL WEAVE (denim)	FELTED WOOL FABRIC	BONDED FIBRES/WEBS	WARP-KNITTED	WEFT-KNITTED
Strong, hardwearing, hangs well , same both sides, cheap to make, good background for printing and applied surface designs. Used for: shirts, bags, bedding, textile crafts	Hard wearing, strong, hangs well, less stiff and more interesting to look at them plain weave. Phrase, thickness makes it hard to use. Used for: jeans, jackets, curtains, blankets, soft furnishings.	Resist chemicals and fire, does not unravel or fray, can be repeatedly compressed and released without deforming, excellent sound insulator, environmentally friendly. Expensive no drape, not stretchy , deforms when wet. Used for: Pool table surfaces, hats, bags, coats, slippers, appliquer quilts, wall hangings	Does not fray, cheap to produce, stable and so retains its shape. It's weaker when wet, not very strong, does not drape. Used for: wet wipes disposable overalls	Fairly stretchy, retains heat, does not unravel. Can lose shape, curls at the edges. Used for: swimwear, geotextiles, lace, nets and fleece.	Stretchy, comfortable, fast production. That is easily. Used for: tee shirts, jumpers, tops, socks.

Topic 1.12 Timbers Revision

TIMBERS					
SOFT		HARD			
PINE	CEDAR	MAHOGANY	BEECH	BALSA	OAK
Very durable, easy to work, quite cheap as it grows quickly enough to be forested, reasonably strong, lightweight. Can warp, crack and splinter more than some other Woods. Used for: house construction, for roof joists, and floorboards. Furniture, doors, interior woodwork.	Natural oils make it resistant to water and fungal growth. More expensive than pine and not a strong. Used for: outdoor furniture, fences, sheds, boats.	House very attractive finish, quite easy to work. Is expensive, environmental problems with sourcing from tropical forests. Oils in the wood can give some people skin rashes or breathing problems. Used for: high quality furniture, jewellery boxes, windows.	A tough wood, does not crack or splinter easily, hard. Expensive, not very resistant to moisture, not suitable for exterior use. Used for : toys, cooking influence, solid unlaminated furniture.	Very lightweight and easy to cut. Much too soft and weak for most products. Used for: model making, primary school projects, surfboard course, used for rafts in ancient times.	Strong can durable, has an attractive grain when finished. Expensive, becoming rarer, harder to work with than some Woods, corrodes iron and steel. Used for: a lot of building houses and boats in the past, now used for high end furniture and wine and whiskey barrels.

- Common manufactured boards

Medium density fibreboard (MDF)	Plywood
Very dense board which makes it tough	Made up of an odd number of alternatively rotated sheets of glued wood veneers
Its smooth surface makes it suitable for veneers and finishes	Available in various forms including marine ply for greater water resistance