

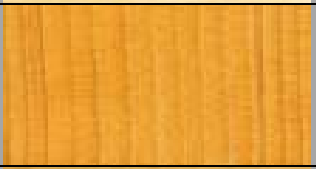















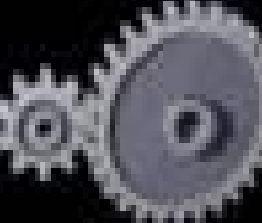



 TECHNOLOGY SUBJECTS SUPPORT SERVICE	MATERIALS REFERENCE CHART PLASTICS		
NAME	PROPERTIES	APPLICATIONS	
PVC- Polyvinyl chloride (Rigid)	Thermoplastic – Light, resists acid and alkali, rigid, available in a variety of colours. Can be used outdoors if stabilised against UV light.	Fabrication, window frames, doors, pipes, gutters, containers, bottles, curtain rails, brush heads, shoe soles.	
PVC- Polyvinyl chloride (Plasticised)	Thermoplastic –Soft, excellent insulator, available in a variety of colours.	Electric wire insulation, wall and floor covering, imitation leather, suitcases, tubing.	
Acrylic	Thermoplastic – Rigid, clear or opaque, ten times the impact resistance of glass, easily scratched, machines easily, easily joined, will splinter when shattered.	Signs, light lenses, baths, skylights, furniture, shop displays, aircraft canopies.	
Polyethylene (PET or PETE)	Thermoplastic – Clear, tough, impact resistant, provides a barrier to oxygen, carbon dioxide and water.	Soft drinks and water bottles, microwaveable food trays, blister packs.	
High Density Polyethylene (HDPE)	Thermoplastic – Relatively stiff, high tensile strength, resistant to most solvents.	Bottles - milk, shampoo, detergent, motor oil, antifreeze. Shopping bags, cereal box liners.	
Low Density Polyethylene (LDPE)	Thermoplastic – Tough, flexible, good transparency, resists acids, bases and vegetable oils.	Bin liners, dry cleaning bags, shrink wrap, coatings for milk cartons, coffee cups, etc.	
Polypropylene (PP)	Thermoplastic – Strong, tough, resists fatigue, excellent transparency, resists heat, acids, alkali's and solvents.	Margarine tubs, yoghurt containers, bottle caps, flip top lids, car battery cases, jug kettles, shower gel bottles.	
Polystyrene (PS) Rigid	Thermoplastic – Stiffness, good moisture barrier.	Takeaway trays, cups, plates, cutlery, disposable cameras, CD cases, video cassette cases, pens.	
Polystyrene (PS) Foamed	Thermoplastic – Low density/high stiffness ratio, excellent insulator.	Protective packaging.	
Nylon	Thermoplastic – Tough, self lubricating, resists abrasion.	Gears, curtain slides, ropes, fishing line, zips.	
Acrylonitrile Butadiene Styrene (ABS)	Thermoplastic – Medium strength, light, rigid, easily moulded.	Telephones, car trim, cams, wheels, lego bricks.	
Polyester Resin	Thermosetting - Brittle on its own but strong when reinforced with glass fibre, resistant to UV light.	Cold casting, embedding and encapsulating. With glass fibre – car panels, boat hulls, ducting.	
Melamine Formaldehyde	Thermosetting - Hard, scratch and heat resistant, brittle.	Kitchen worktops, Formica, laminate flooring, trays, plates, cups, bowls etc.	
Phenol Formaldehyde	Thermosetting – Excellent insulator, hard, brittle.	Handles for cookware, electrical fittings, plugs, sockets, connectors.	







	MATERIALS REFERENCE CHART SOFTWOODS		
	PROPERTIES	APPLICATIONS	
Scots Pine	Cream/pale brown – Strong, durable, straight grained but knotty, easy to work. Also known as red deal.	All inside work, turning, suitable for outside if preserved.	
Cedar	Dark red/brown – Resistant to infestation and water due to natural preservative oils, durable, knot free and easy to work.	Cladding the outside of buildings, sauna and steam rooms.	
Douglas Fir	Reddish brown – Durable, knot free, resistant to water, easy to work.	External construction, ladders, masts for boats.	
Spruce	Creamy white – Resists splitting, fairly strong, has small hard knots.	Furniture, indoor work.	
Parana Pine	Pale yellow streaky appearance – Works easily, not very tough, tends to warp. One of the few timbers that stretches in length.	Staircases, door saddles, furniture, general internal work.	

	MATERIALS REFERENCE CHART MANUFACTURED BOARD		
	NAME	PROPERTIES	APPLICATIONS
	Medium Density Fibreboard (MDF)	Made from wood fibres glued under heat and pressure. It has no grain so does not tend to split; traditional woodwork joints can be formed. Because of the presence of urea formaldehyde precautions must be taken when sanding or cutting, will blunt tools quickly, not resistant to water.	Kitchens, wall panels, storage units, door skins, architraves. Varieties are available for water or fire resistant applications.
	Plywood	Made by gluing together thin veneers of softwood or hardwood. Strength is	Wall panelling, flooring, furniture, shuttering boxes, marine ply may be

 TECHNOLOGY SUBJECTS SUPPORT SERVICE	MATERIALS REFERENCE CHART NON-FERROUS METALS		
NAME	PROPERTIES	APPLICATIONS	
Copper	Reddish colour, excellent conductor of heat and electricity, high resistance to oxidation, tough, malleable and ductile, work hardens requires frequent annealing. Distinctive green patina when oxidised.	Electrical wire, water and central heating pipes and cylinders, roofs and cladding on buildings.	
Aluminium	Greyish white colour, initial oxide layer prevents further oxidation, soft malleable and ductile, excellent conductor of heat and electricity. Difficult to weld.	Window frames, aircraft construction, boats, vehicle parts, utensils, beverage cans, aerials, satellite dishes.	
Brass	Yellow/red in colour, corrodes to form a blue/green oxide or patina that protects the metal from further corrosion, harder than copper and is a very good conductor of electricity.	Ornaments, ships fittings, castings, valves, brazing rods.	
Lead	Dull grey but bright and shiny when cut, very heavy, soft and malleable, resists corrosion.	X-Ray and nuclear shielding, roof flashing, paints, batteries, crystal glass, cable shielding.	
Zinc	Bluish white forms an initial oxide layer that protects the metal from further corrosion, tough and ductile, easily worked.	Cladding on buildings, roofs, coating for steel, alloyed with copper to make brass, galvanised sheeting, tanks, buckets.	

 TECHNOLOGY SUBJECTS SUPPORT SERVICE	MATERIALS REFERENCE CHART FERROUS METALS		
NAME	PROPERTIES	APPLICATIONS	
Mild Steel	Tough, strong in tension, can not be hardened and tempered due to low carbon content (0.15-0.30% carbon).	Structural supports, vehicles, shipbuilding, appliances, nuts bolts, rivets, general purpose use.	
Stainless Steel	Corrosion resistant, strong, ductile, contains 10 to 12% chromium. Forms a thin hard film of chromium oxide to prevent further corrosion.	Food processing equipment, cutlery, sinks, aircraft fittings.	
High Carbon Steel	Strong, hard, wear resistant.	Cutting tools, cable, string instruments, springs.	
High Speed Steel	Maintain strength and hardness at high temperatures, alloyed with molybdenum and tungsten.	Machine cutting tools.	
High Tensile Steel	Tough and strong, low carbon content but alloyed with nickel and chromium. Twice the tensile strength of mild steel.	Engine parts, gears, shafts, cams etc.	
Cast Iron	Hard, brittle, self-lubricating, easily cast into intricate shapes.	Machine beds, brake drums, engine blocks, valve housings, bench vices, lathe beds, machine tables, surface plates.	

MATERIALS REFERENCE CHART HARDWOODS

NAME	PROPERTIES	APPLICATIONS	
Oak	Light brown - Hard, tough and strong with an open grain structure, prone to splitting, contains an acid that corrodes steel.	Furniture, floors, boats, veneering.	
Ash	Light brown/cream – Tough, flexible and elastic, open grained. Absorbs shocks.	Hurley's, tool handles, veneering and laminating.	
Beech	White/pink with brown dashes. Strong and tough with a close grain. Not suitable for outside, prone to warping.	Furniture, floors, veneering, steam bending.	
Elm	Light reddish brown – Durable, tough and elastic, difficult to work because of cross grained structure, does not split easily, good in water.	Turning, furniture, garden furniture.	
Balsa	Pale white – Soft and light with a coarse open grain, low density but relatively high strength.	Model building, small aircraft, table tennis bats.	
Mahogany	Reddish brown – Strong, durable, high resistance to water, interlocking grain structure, prone to warping.	Panelling, furniture, veneers.	
Teak	Golden brown – Resistant to water, acids and alkalis due to its high oil content, difficult to glue, very hard and durable, blunts tools easily.	Laboratory equipment and fittings, furniture, boat decks and veneering.	