

# Y10-KO5-GCSE DESIGN AND TECHNOLOGY: MATERIAL PROPERTIES

A MATERIAL PROPERTIES		
	Property	Definition
1	Physical Property	An inherent property of the material.
2	Working Property	How a material responds to use in a certain environment or way.

B PHYSICAL PROPERTIES		
	Property	Definition
1	Absorbency	The ability of a material to absorb/take on liquid, light or heat.
2	Density	The mass of a material per unit of volume; how compact a material is.
3	Fusibility	The ability of materials (usually the same) to be joined using heat. Both materials are converted into a liquid by heat and combine in liquid form before cooling (returning to a solid) as one material.
4	Electrical conductivity	The ability to conduct (transfer) electricity.
5	Thermal conductivity	The ability to conduct (transfer) heat.

C WORKING (MECHANICAL) PROPERTIES		
	Property	Definition
1	Strength	The ability of a material to withstand a range of forces. A material should NOT be described as 'strong' as it may be resistant to one type of force but not another.
2	Hardness	The ability of a material to resist abrasive wear and indentation through impact. Hard materials are often brittle (can crack, snap or shatter).
3	Toughness	The ability of a material to resist impact forces (absorb energy through shock) without fracturing.
4	Malleability	The ability of a material to change shape (deform under compression) without cracking, splitting or tearing.
5	Ductility	The ability of a material to be stretched or drawn out into a long strand without snapping.
6	Elasticity	The ability of a material to return to its original shape after being compressed or stretched.

D FORCES						
		Tensile	Compressive	Bending	Shear	Torsional
1	Definition	Pulling force.	Compressive (squeezing) force.	Bending Force.	Sliding forces.	Twisting force.
2	Application	Chains/Cables/Ropes.	A pillar, table/Chair leg.	Table tops and benches need to resist bending forces.	Present in hinges, scissors, manual clippers etc.	Turning a tap/screwdriver/spanner.
3	Image					