

Materials (1) - Health and Safety

General

Teach children to use tools such as scissors appropriately.

Ensure good classroom management.

Tools or materials donated by parents, industry or brought in by staff may be unsuitable for school use.

Cover/smooth sharp metal edges.

Glass

Teach children how to handle glass appropriately.

Do not use glass as a norm but, if you do, complete a risk assessment which considers the maturity of the children and the supervision available.

Do not use glass containers for hot materials unless it is ovenware/Pyrex that can cope with the heat.

Use plastic mirrors but if you are using glad mirrors, bind the edges and cover the back with a strong adhesive tape.

Avoid all glass with younger or less-reliable children. If there is a non-glass alternative, you should use it.

When collecting things outside, never use glass bottles or jars.

If you must use glass, teach children how to handle it safely and be prepared for breakages (dustpan and brush), ensuring that the children and adults know what to do if one occurs.

Equipment

If using D&T/Art equipment/methods, see D&T/Art health and safety guidance.

When using balloons, balloon-powered toys or party blowers, etc, which are blown by mouth – observe hygienic procedures – children should not share.

Syringe use – discuss dangers of handling syringes and needles found outside of classroom.

Young children to be observed closely with small objects such as beads, wood cut-offs, components from construction kits.

Expanded polystyrene best avoided with young children because it is so easy to squash it may end up inserted into ears or a nose.

Containers

Thin, plastic containers, such as yoghurt pots, may soften or collapse under heat.

Light containers may fall over easily, particularly if tall.

Handling broken glass

Train children how to deal with broken glass.

Wrap broken glass in thick layers of newspaper or seal it in a plastic or cardboard box before disposing of it carefully.

Materials (2) - Health and Safety

Heating

Hot water is the best source of heat. (Below 50C)

If very hot water is needed, an adult should carry it in a closed container such as a kettle or Thermos flask. Do not use hot-water bottles but DO use heat packs.

Hair driers can be used for filling hot-air balloons and for drying materials but they must not be used where water can enter the drier.

Microwaves ovens, stoves, electric boiling rings and popcorn makers are useful for exploring the science of cooking. Suitable trained children can use these with close supervision.

Do not use: spirit burners, oil lamps, picnic stoves, bottled gas burners or hot air paint strippers.

All heating should be closely supervised by an adult.

How to heat – Children should stand.

Don't use closed containers.

Use small samples to be heated or burnt.

Avoid inhaling fumes when heating.

Beware that some materials (such as salt) can spit when heated.

Heating liquids

Put the liquid container in a container of hot water rather than over an open flame.

Do not fill test tube more than 1/5th full.

Measuring temperature

Use: spirit-filled thermometers, forehead thermometers, mugs which change colour, dial types, digital thermometers, dataloggers.

Do not put thermometers into a flame.

Do not use mercury thermometers.

Open flames

Tea lights can be used. They should stand on a layer of sand, inside a large container (such as a baking tray). Keep hair tied back and be aware of clothing.

Close adult supervision required.

Do not carry lit candles or tea lights around.

Only adults should light tea lights/candles.

Ensure adequate ventilation.

Substances can be heated in metal spoons or small aluminium foil containers. Never use more than half a teaspoon of the substance.

Use a wooden clothes peg fixed to the end of a handle to hold material over a tea light flame.

Do not leave flames unattended.

Warn children about the dangers of fire, hot apparatus, steam and hot liquids, including hot water from a tap.

Check the temperature of hot water before using.

Teach children what to do if they get burnt.

Materials Language Mat

Year 1 (KS1)	
wood plastic glass paper metal Rock brick	types of materials
breaks/ tears	separate into pieces pull a thing apart or to pieces with force
hard	not easily broken, bent, or pierced
soft	easy to mould, cut, compress, or fold
bendy	soft and flexible.
rough	having an uneven or irregular surface
smooth	having an even and regular surface
material	what something is made from
stiff	not easily bent or moved
see-through	something you can see through to the other side of
not see-through	something you cannot see through to other side of

Year 2	
stretchy	Something that can be pulled into a new shape without breaking
rigid	not easily bent or moved
shiny	reflecting light, typically because very clean or polished.
dull	lacking brightness
fabric	Cloth or material made by weaving or knitting fibres
elastic	Stretchy material
foil	Thin metal usually aluminium
waterproof	Doesn't allow water to pass through it
absorbent	soaks up liquid easily.
opaque	not able to be seen through
transparent	able to be seen through
reflective	capable of reflecting light
non-reflective	Not capable of reflecting light
squash	crush or squeeze with force so that something becomes flat, soft, or out of shape
twist	form into a bent, curling, or distorted shape
flexible	capable of bending easily without breaking.

Everyday Materials Knowledge Organiser



Key Knowledge

Name a range of objects made of each material type on the vocabulary list.

Know difference between object and its material.

Name and identify materials including wood, plastic, glass, metal, water and rock.

Describe properties of everyday materials.

Compare/group materials based on their properties.

Creates own method for sorting materials.

Know that material does not just talk about fabric.

Name objects that a particular material could be used to make.

Distinguish between some different metals – gold, silver, etc.

Some objects can be made from different materials e.g. plastic, metal or wooden spoons



Linked careers

Geologist, builder, colour technologist, architect, textile producer, welder, engineer.

Famous figures

Charles Macintosh (waterproof coat)

John Dunlop (pneumatic tyre)

Ongoing assessment

What are the things I use made from?

Draw and label the materials of these objects.

What properties of metal can you name?



Enquiry types

Research: How are bricks made? Which materials can be recycled?

Identifying/classifying: We need to make an umbrella – which materials are waterproof?

Comparative testing: Which materials are the most absorbent?

Observation over time: What happens to shaving foam over time?

Pattern seeking: Is there a pattern in the types of materials that are used to make school objects?

Use of Everyday Materials Knowledge Organiser (Y2) *Also

Key Knowledge

Explain why a material might or might not be used for a specific job

Suggest suitable materials for particular uses.

Objects made of some materials can be changed in shape by bending, stretching, squashing and twisting. For example, clay can be shaped by squashing, stretching, rolling, pressing etc.

Explain how materials can be changed by squashing, bending, twisting and stretching.

A material can be suitable for different purposes and an object can be made of different materials.

Plastics can vary and have different properties.



Linked careers

Geologist, builder, colour technologist, architect, textile producer, welder, engineer.

Ongoing assessment

Which material is best for making a bag?

Can I make my paper stronger?

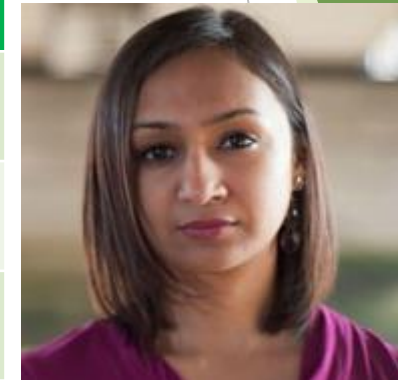
Why don't we live in houses made of just glass?

Famous figures

William Addis
(toothbrush)

John MacAdam (roads)

Roma Agrawal
(engineer)



Enquiry types

Research: How have materials changed since the Great Fire of London?

Identifying/classifying: Which materials are shiny and which are dull?

Comparative testing: Which shapes make the strongest paper bridge?

Observation over time: Would a paper boat float forever?

Pattern seeking: How does the amount of water affect the strength of the kitchen roll?