

# Science

## Tuesday 12<sup>th</sup> January

# Properties of materials

WALT compare and group together every day materials

S2S I can

- Explain the definition of different properties
- Identify properties of different materials
- Group materials together based on their properties

Watch this video clip and read the information on the webpage:

<https://youtu.be/tAEQDu7juEg>

The properties of a material are its features or the ways in which it behaves.

Use the [Materials Knowledge Organiser \(on the website\)](#) to help you match up the definitions with the properties. You don't have to write this down.

flexible
absorbent
hard
magnetic
transparent
reflective
flammable
insulating
translucent
permeable

Is attracted to magnets.
Will bounce light off its surface.
Is able to soak up liquid easily.
Will allow liquids and gasses to pass through it.
Will let some light pass through them but not enough to see detailed shapes.
Easy to bend.
Will easily catch fire and burn quickly.
Solid, firm and rigid, not easily broken, scratched or pierced.
Will stop energy such as electricity or heat from transferring through.
Light passes through easily and objects are seen clearly.

## ANSWERS

<b>magnetic</b>	Is attracted to magnets.
<b>reflective</b>	Will bounce light off its surface.
<b>absorbent</b>	Is able to soak up liquid easily.
<b>permeable</b>	Will allow liquids and gasses to pass through it.
<b>translucent</b>	Will let some light pass through them but not enough to see detailed shapes.
<b>flexible</b>	Easy to bend.
<b>hard</b>	Solid, firm and rigid, not easily broken, scratched or pierced.
<b>flammable</b>	Will easily catch fire and burn quickly.
<b>insulating</b>	Will stop energy such as electricity or heat from transferring through.
<b>transparent</b>	Light passes through easily and objects are seen clearly.

# Thermal conductors and insulators

What are **thermal insulators** and **conductors**?

- **Materials** which are good **thermal conductors** allow heat to move through easily.
- **Thermal conductors** are used to make items that require heat to travel through them easily, such as a saucepan which requires heat to travel through to cook food.
- **Thermal insulators** do not let heat travel through them easily.
- Examples of **thermal insulators** include woollen clothes and flasks for hot drinks.



thermal insulator



thermal conductor

Read the definitions of thermal insulators and conductors.

Look at the two lists below. Which are thermal insulators and which are thermal conductors?

**Thermal**

Metals

e.g. copper, silver, gold, iron, steel, aluminum



plastic

wood



rubber

fabric

polystyrene



# Thermal conductors and insulators

	<b>Good Conductors</b> allow energy to pass through	<b>Insulators</b> stop or slow down energy
<b>Thermal</b>	<p>Metals</p> <p>e.g. copper, silver, gold, iron, steel, aluminum</p> 	<p>plastic</p> <p>wood</p> <p>rubber</p> <p>fabric</p> <p>polystyrene</p> 

# Electrical conductors and insulators

What are **electrical insulators** and **conductors**?

- **Electrical conductors** allow electricity to pass through them easily while **electrical insulators** do not.
- **Electrical insulators** have a high **resistance** which means that it is hard for electricity to pass through these objects.



electrical insulator



electrical conductor

Read the definitions of electrical insulators and conductors.

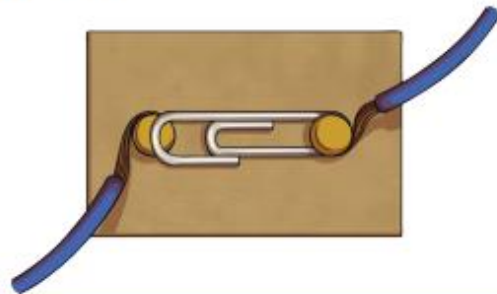
Look at the two lists below. Which are electrical insulators and which are electrical conductors?

**Electrical**

Metals

e.g. copper, silver, gold, iron, steel, aluminum

tap water



rubber

wood

plastic

glass

paper

cotton

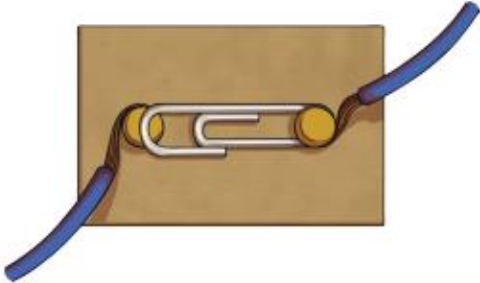

distilled water

polystyrene

fabric



# Electrical conductors and insulators

	<b>Good Conductors</b> allow energy to pass through	<b>Insulators</b> stop or slow down energy
<b>Electrical</b>	<p>Metals</p> <p>e.g. copper, silver, gold, iron, steel, aluminum</p> <p>tap water</p>  A diagram showing a metal paperclip bridging two electrical wires. The wires are blue and have yellow circular terminals. The paperclip is silver and is connected to both terminals, illustrating a good conductor.	<p>rubber</p> <p>wood</p> <p>plastic</p> <p>glass</p> <p>paper</p> <p>cotton</p> <p>distilled water</p> <p>polystyrene</p> <p>fabric</p>  An illustration of various insulating materials: a clear plastic water bottle, a white styrofoam cup, a blue and red LEGO brick, and a yellow LEGO brick.



# Super Materials Top Trumps

Look at the properties of these materials superheroes.  
Can you match each hero up with their properties?

1

Strength:	●	●	●	●	●
Flexibility:	●	●	●	○	○
Toughness:	●	●	●	●	●
Waterproofness:	●	●	●	●	○
Absorbency:	○	○	○	○	○
Magnetism:	●	●	●	●	●

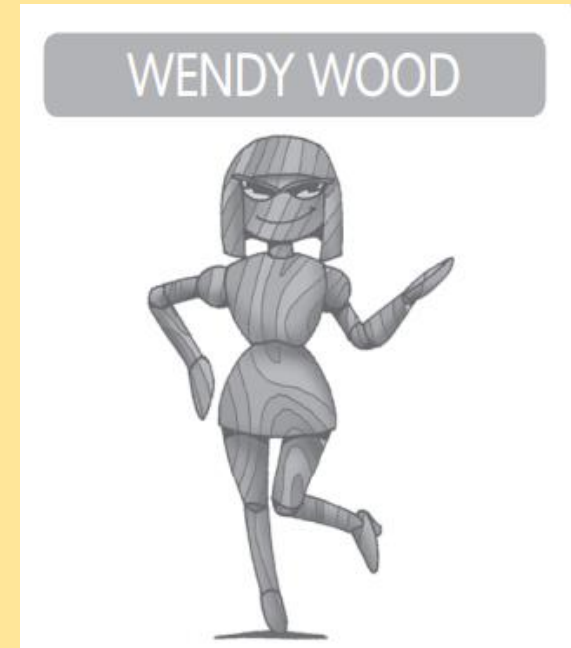
2

Strength:	●	○	○	○	○
Flexibility:	●	○	○	○	○
Toughness:	●	○	○	○	○
Waterproofness:	●	○	○	○	○
Absorbency:	●	○	○	○	○
Magnetism:	○	○	○	○	○

3

Strength:	●	●	●	●	○
Flexibility:	●	●	●	○	○
Toughness:	●	●	●	○	○
Waterproofness:	●	●	○	○	○
Absorbency:	●	●	○	○	○
Magnetism:	○	○	○	○	○

B



A



C

# ANSWERS

## Super Materials Top Trumps

B



C



A



1

Strength:	●	●	●	●	●
Flexibility:	●	●	●	○	○
Toughness:	●	●	●	●	●
Waterproofness:	●	●	●	●	○
Absorbency:	○	○	○	○	○
Magnetism:	●	●	●	●	●

2

Strength:	●	○	○	○	○
Flexibility:	●	○	○	○	○
Toughness:	●	○	○	○	○
Waterproofness:	●	○	○	○	○
Absorbency:	●	○	○	○	○
Magnetism:	○	○	○	○	○

3

Strength:	●	●	●	●	○
Flexibility:	●	●	●	○	○
Toughness:	●	●	●	○	○
Waterproofness:	●	●	○	○	○
Absorbency:	●	●	○	○	○
Magnetism:	○	○	○	○	○

# Materials Scavenger Hunt

See if you can find a different material (object) at home for each of the properties in the scavenger hunt.

e.g. stretchy = rubber band

You could take a photo of everything you find and send it in. Make sure you label each object with the property from the scavenger hunt below. Good luck!

1. waterproof	6. reflective	10. translucent
2. opaque	7. magnetic	11. smooth
3. transparent	8. flexible	12. rigid
4. absorbent	9. thermal insulator	13. dull
5. reflective	10. permeable	14. non-magnetic