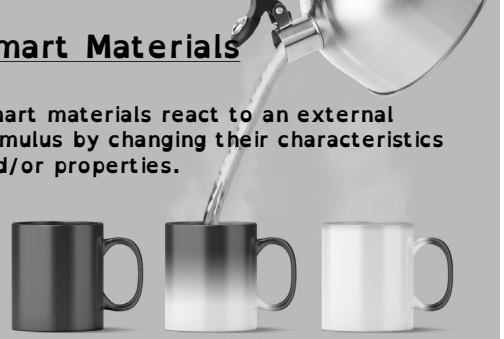
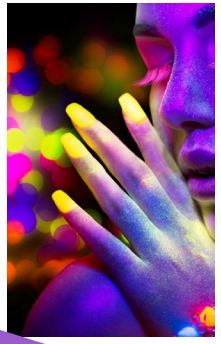
Smart Materials

Smart materials react to an external stimulus by changing their characteristics and/or properties.



Photochromic particles

- UV light stimulates particles in a special pigment.
- The effect only lasts as long as strong UV light is present.
- These pigments are mainly used for novelty goods and colour changing paints.



LANTERN

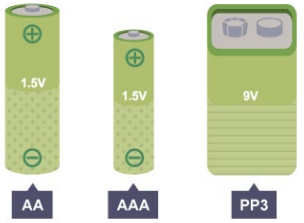
Batteries

The two main types of batteries that are commonly used are single-use and rechargeable. All batteries are available in a range of sizes and shapes.

Button cell batteries in a calculator

Common forms of batteries used in homes are AA and AAA, and both typically produce around 1.5 volts (V) per battery. A larger PP3 battery, often used for smoke alarms and medical equipment, typically produces 9 volts (V) per battery.

Once a battery runs out it has to be replaced unless it is rechargeable, in which case it is connected to a mains power source to be recharged.



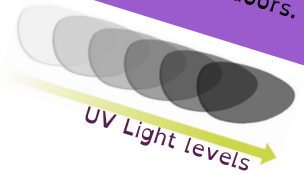
Thermochromic Pigments

Hot and cold temperatures trigger a change of colour in special thermochromic dyes.

Applications include:

- Fever scan strips used on infants
- Room thermometers
- Children's cutlery and crockery
- Novelty goods and colour changing clothing

This reaction is commonly seen in prescription sunglass lenses that darken in bright sunlight and return to clear indoors.



Composite Materials

Composite materials are made up of different materials which are combined to improve their properties. They can be a combination of natural and synthetic materials but fall into three main categories:

- fibre-based composites
- particle-based composites
- sheet-based composites

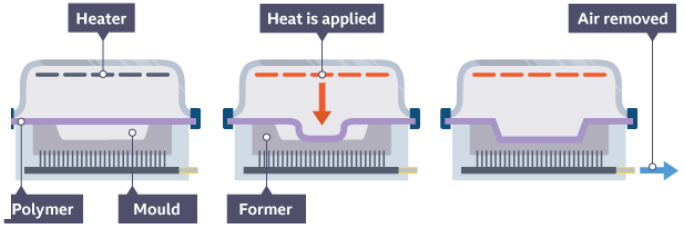
Concrete is a particle based composite and has been used to create your lantern base.

Particle-based composite	Materials	Uses
Concrete	Cement, sand and aggregate	Buildings, street furniture

Moulding and forming

Plastics can be formed using a variety of processes. Your moulds were manufactured using Vacuum forming - sheet of softened plastic forced onto a mould.

1. The HIPS is heated,
2. once hot, the solid former is pressed into the HIPS from a bed that can rise,
3. the vacuum is turned on, removing all the air from around the former,
4. the HIPS takes the form of the solid former.



The Work of Others

Philippe Starck 1949 -

French product designer and architect:

A prolific designer of kitchen appliances, furniture and lighting, through to motorbikes and yachts.

Stark's flamboyant personality is often reflected in his products as he adds an element of humour to everyday items.

Some say the *Juicy Salif* may be celebrated more for its form over function.

"It's not meant to squeeze lemons, it is meant to start conversations"

High Impact Polystyrene

HIPS is shatterproof and a good insulator.

- ✓ It's flexible and lightweight so ideal for vacuum forming
- ✓ Impact resistant, it is suitable for food containers particularly yoghurt pots and fast food containers
- ✓ HIPS is easily mouldable and has a good gloss finish

6
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