

18: A Magic Box

Some chemical reactions can appear to be magical. This one involves the colourful development of a picture when copper and ammonia solution come together.



eye protection
must be worn



HARMFUL
copper sulphate
(crystals and
solution)

What you will need

weighing balance
pestle and mortar
pen with steel nib
100 cm³ measuring cylinder
150 cm³ beaker

cardboard box - shoe box or similar
fine paint brush
crystallising dish
2 sheets of absorbent paper
spatula

ammonia solution
copper sulphate crystals

eye protection

What you do

- 1.

Grind up 10 g of copper sulphate crystals to powder and dissolve the powder in 100 cm³ of water. This is the light blue 'ink'.

- On one sheet of paper paint a picture with this blue ink - a zebra is a good picture to consider.
- On the other sheet of paper write with the blue ink using a steel-nibbed pen.
- When they have dried the text and the picture will be invisible.
- Cut a slit in the lid of the cardboard box big enough to allow the paper through.
- Put a small amount of ammonia into the crystallising dish.
Put the dish into the cardboard box and replace the lid.
- Push the paper through the slit and leave for 5 minutes.
- When you remove the paper you should be able to see the zebra and the writing.

OTHER THINGS TO TRY

Use different 'ink' – try cobalt chloride solution. Ask your teacher for advice about safety.

Tree Variation

- Draw a tree outline in pencil.
- Paint the leaves on with the blue ink.
- Then put it in the magic box.