

5: King Kong's Hand

You have probably heard of King Kong, the giant gorilla in the film of the same name with large, hairy hands. Sodium bicarbonate is a compound made up of the elements hydrogen, sodium, oxygen and carbon. When vinegar (ethanoic acid and water) is added, a chemical reaction takes place. The elements carbon and oxygen link together to make a new compound called carbon dioxide.



eye protection
must be worn

What you will need

disposable latex glove
sodium bicarbonate (sodium hydrogencarbonate)
colourless vinegar
permanent felt tip pen in black or brown
small beaker
50 cm³ measuring cylinder
funnel

eye protection

What you do

Work over a sink - this is messy!

- 1 Work in pairs. You can draw 'hairs' on the glove to make it look like the hairy hand of King Kong.
- 2  Use the balance to weigh out 10 g of sodium bicarbonate. One person should hold open the glove. The other person can then pour the sodium bicarbonate into the thumb section of the glove.
- 3 Measure out 50 cm³ of colourless vinegar using the measuring cylinder.
- 4 One person now holds open the glove, containing the sodium bicarbonate. Then the other person pours the vinegar via the funnel into the three fingers of the glove furthest from the thumb. Then one of you must **VERY CAREFULLY** pull together the top of the glove and hold it firmly to make an airtight seal, making sure the vinegar and sodium bicarbonate do not mix until you are ready.
- 6 Shake the glove so that the sodium bicarbonate and vinegar mix. Hold it for several minutes.
- 7 Watch what happens!



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● Basic level

● 30 minutes

N.B. This activity demonstrates in a different way the same reaction as 4: A Gas Cannon

Requirements

50 cm ³ colourless vinegar	funnel
10 g sodium hydrogencarbonate, NaHCO ₃	
50 cm ³ measuring cylinder	eye protection
150 cm ³ beaker	
disposable latex glove	
permanent felt tip pen in black or brown	

Method

See pupils' sheet.

Pupils must hold the glove closed to prevent the now fizzing and foaming mixture from spilling out. If the pupils keep the glove tightly sealed, the gas will be trapped and the glove will inflate. Eventually the reaction slows down, the gas begins to escape and the glove returns to its normal size.

Safety advice

Eye protection should be worn.

Pupils must be carefully supervised to prevent inappropriate behaviour, e.g. squirting at each other. Although the chemicals are relatively low hazard, vinegar in the eyes might necessitate a trip to hospital.

Chemical background

This is an exothermic reaction - pupils should notice a change in the temperature of the 'hand'.

sodium hydrogencarbonate + ethanoic acid → sodium ethanoate + carbonic acid



decomposes → carbon dioxide + water