



## GASES & BALLOONS

A collection of experiments to develop investigative and working scientifically skills, using the topic of gases and chemical reactions.

---

### Curriculum Links:

**Sc1** Testing ideas, planning investigations, collecting & using evidence, making observations & measurements, evaluating & presenting results

**Sc3** Changing materials, properties of solids, liquids & gases, reversible & non-reversible changes

**Sc4** Forces & motion, friction, gravity & upthrust, measuring force

---

### Summary of Experiments

**General Format:** *Whole-class activities (pupils work in pairs/small groups) and some teacher demonstrations.*

- MEASURING CARBON DIOXIDE GAS ~ Group Investigation into volume
- MAKING 3 COMMON GASES ~ Teacher Demo using microscale chemistry
- SODA SNAKE FIREWORKS ~ Teacher Demo of chemical reactions
- BALLOON ROCKETS ~ Group Investigation to measure accurately
- FLOATING BUBBLES ~ Small Group Experiment to produce & observe CO<sub>2</sub>
- HELIUM BALLOON FLOAT ~ Group Investigation into properties of gases

---

### Health & Safety Considerations

SOME EXPERIMENTS REQUIRE LAB-COATS (OR SIMILAR E.G. PAINTING APRONS) & EYE-PROTECTION – SAFETY GLASSES OR GOGGLES

**CLOSELY SUPERVISE CHILDREN TO ENSURE THEY DO NOT INHALE GASES** – DANGER OF ASPHYXIATION FROM HELIUM & CARBON DIOXIDE

! NO EATING OR DRINKING IN THE LABORATORY

! ALWAYS WASH YOUR HANDS AFTER DOING SCIENCE

---

**Box Development by:** *Jane Graham, St Bonaventure's Primary School*

**EQUIPMENT LIST**

Item	Number in Box	For Experiment/s	Returned?
Measuring Tapes	10	MAKING CO <sub>2</sub> GAS BALLOON ROCKETS	
Plastic Funnels (small)	10	MAKING CO <sub>2</sub> GAS	
Plastic Measuring Cylinders - 500ml	10	MAKING CO <sub>2</sub> GAS	
Plastic Measuring Jugs – 1 litre	5	MAKING CO <sub>2</sub> GAS	
	1	FLOATING BUBBLES	
Plastic Syringes 60ml (with LuerLOK fitting)	3	MAKING 3 GASES	
Syringe Caps - to cap syringes	3	MAKING 3 GASES	
Vial Caps - to fit inside syringes	3	MAKING 3 GASES	
Latex Tubing – 3cm lengths	3	MAKING 3 GASES	
Latex Tubing – 15cm lengths	3	MAKING 3 GASES	
Test tubes	3	MAKING 3 GASES	
Plastic Beakers (250ml)	3	MAKING 3 GASES	
Plastic Petri Dishes	3	MAKING 3 GASES	
Small metal spatula	1	MAKING 3 GASES	
Heat proof mat (cork)	1	MAKING 3 GASES	
Sensitive Balance (scales)	1	MAKING 3 GASES HELIUM BALLOON FLOAT	
Flameproof mat (white)	1	SODA SNAKE FIREWORKS	
Metal teaspoon	1	SODA SNAKE FIREWORKS	
Balloon pumps	5	BALLOON ROCKETS	
Large Plastic Container (small Aquarium)	1	FLOATING BUBBLES	

**CONSUMABLES LIST**

Item	Amount in Box	For Experiment/s	Returned?
Weighing Boats - 30ml	11	MAKING CO <sub>2</sub> GAS	
	10	SODA SNAKE FIREWORKS	
	1	MAKING CO <sub>2</sub> GAS	
Plastic Pipettes - 3ml	8 total	MAKING 3 GASES	
	5	MAKING 3 GASES	
	3	MAKING 3 GASES	
Matches	1 box	MAKING 3 GASES SODA SNAKE FIREWORKS	
Wooden Splints	30 total	MAKING 3 GASES	
	20	SODA SNAKE FIREWORKS	
	10	SODA SNAKE FIREWORKS	
String of different types	5 balls	BALLOON ROCKETS	
Paper clips	50	BALLOON ROCKETS	
Plastic Tablespoons	6	FLOATING BUBBLES	
Plastic Cups	6	FLOATING BUBBLES	



## GASES & BALLOONS

### CONSUMABLES CONT.

Blu-tac	5 large packs	HELIUM BALLOON FLOAT	
Assorted balloons – different colours, sizes, shapes ( <i>not Helium Quality</i> )	100	BALLOON ROCKETS	
Large Balloons ( <i>Latex, not Helium Quality</i> )	20	MAKING CO <sub>2</sub> GAS	
Balloons ( <i>Helium Quality latex or foil</i> )	20	HELIUM BALLOON FLOAT	
Balloon Ribbon	1 Ball	HELIUM BALLOON FLOAT	
Helium Balloon Weights	6	HELIUM BALLOON FLOAT	
Helium Canister	1	HELIUM BALLOON FLOAT	
Sodium Bicarbonate (NaHCO <sub>3</sub> ) solid powder	1605g	1000g	MAKING CO <sub>2</sub> GAS
		5g	MAKING 3 GASES
		100g	SODA SNAKE FIREWORKS
		500g	FLOATING BUBBLES
Citric Acid solution (0.25M)	15 litres	MAKING CO <sub>2</sub> GAS	
Universal Indicator Solution	50ml	MAKING CO <sub>2</sub> GAS	
Acetic Acid (CH <sub>3</sub> COOH) 1M solution	50ml	MAKING 3 GASES	
Limewater (Ca(OH) <sub>2</sub> ) Calcium Hydroxide saturated solution	50ml	MAKING 3 GASES	
Universal Indicator Solution	20ml	MAKING 3 GASES	
Magnesium ribbon, in 6 cm strips	5g	MAKING 3 GASES	
Hydrochloric Acid (HCl) 2M solution	50ml	MAKING 3 GASES	
Potassium Iodide (KI) solid powder	5g	MAKING 3 GASES	
Hydrogen Peroxide (H <sub>2</sub> O <sub>2</sub> ) 6% solution <b>! Keep in a cool, dark place</b>	50ml	MAKING 3 GASES	
Isopropyl Alcohol (Propan-2-ol)	100ml	SODA SNAKE FIREWORKS	
Sand	200g	SODA SNAKE FIREWORKS	
Icing Sugar	100g	SODA SNAKE FIREWORKS	
Citric Acid powder	250g	FLOATING BUBBLES	
Bubble Mix (ready-made)	2 pots	FLOATING BUBBLES	

### TO BE PROVIDED BY SCHOOL

Item	Number / Amount required	For Experiment/s
2-litre Plastic Drink Bottles	10	MAKING CO <sub>2</sub> GAS
Scissors	1 pair per group	BALLOON ROCKETS
Sellotape	1 roll per group	BALLOON ROCKETS
Card	2 A4 sheets per group	BALLOON ROCKETS
Drinking Straws	Approx 100	BALLOON ROCKETS
Water	Approx 2 litres	FLOATING BUBBLES
A3 sheets of Paper	2	FLOATING BUBBLES