

KIDS FIRST CHEMISTRY SET



THAMES & KOSMOS



WARNING. Not suitable for children under 8 years. For use under adult supervision. Read the instructions before use, follow them and keep them for reference.

WARNING — Chemistry Set. This set contains chemicals and/or parts that may be harmful if misused. Read cautions on individual containers and in manual carefully. Not to be used by children except under adult supervision.

GOOD TO KNOW! If you are missing any parts, please contact Thames & Kosmos customer service.

Any materials not included in the kit are indicated in *italic script* under the "You will need" heading.

What's in your experiment kit:



Checklist: Find – Inspect – Check off

✓ No.	Description	Qty.	Item No.
<input type="checkbox"/> 1	Plaster (gypsum)	1	770 800
<input type="checkbox"/> 2	Measuring spoon	1	035 017
<input type="checkbox"/> 3	Narrow measuring cup (100 mL)	1	701 206
<input type="checkbox"/> 4	Large measuring cup (200 mL)	1	702 810
<input type="checkbox"/> 5	Sheet of labels	1	046 020
<input type="checkbox"/> 6	Plaster mold (for test tube stand)	1	702 776
<input type="checkbox"/> 7	Rubber stopper	1	071 078
<input type="checkbox"/> 8	Test strips (pH)	5	702 811
<input type="checkbox"/> 9	Magnifying lens	1	311 137

✓ No.	Description	Qty.	Item No.
<input type="checkbox"/> 10	Petri dish with lid	1	702 184
<input type="checkbox"/> 11	Pipette	2	232 134
<input type="checkbox"/> 12	Test tube	3	062 118
<input type="checkbox"/> 13	Filter paper, round	15	702 842
<input type="checkbox"/> 14	Vial with spoon built into the lid	3	702 781
<input type="checkbox"/> 15	Funnel	1	702 215
<input type="checkbox"/> 16	Bendable drinking straw	1	712 081
<input type="checkbox"/> 17	Wooden spatula	1	000 239

You will also need: Several screw-top jars with lids (jelly jars); sugar; powdered sugar; rock sugar; salt; rock salt, dishwasher salt or pure sea salt; tweezers; non-permanent felt-tip pens; pencil; wooden sticks; clothespins; string; multi-colored candy-coated chocolates (such as M&M's®); charcoal tablets (or barbecue charcoal); fresh lemon; lemon juicer; household vinegar; transparent plastic bag; red cabbage; baking soda (sodium bicarbonate); bar soap; dish soap; limestone, marble, egg- or seashells; baking powder; tealight candle; matches or lighter; heat-resistant support (e.g., old saucer); mineral water; drinking glasses; sand; teaspoon and tablespoon; metal spoon; fresh grapes; effervescent powder or tablets (vitamin tablets); glass bowl; plastic container with lid; hammer; aluminum foil and plastic wrap; bottle with lid; hair dryer or paper towels; cutting board; black cardboard; corn starch; scissors; long matches; cotton swab.

>>> CONTENTS

TIP!
Find additional information on the "Check It Out" pages: Page 17, 25, 36, 37, 44, 45, and 49



First Aid Information..... Inside front cover
 Poison Control Center Contact Info..... Inside front cover
Experiment to help you hit the ground running..... 1
 Kit Contents..... 2
 Table of Contents..... 3
 Advice for Supervising Adults..... 4
 The ABC's of Experimenting..... 6
 Safety Rules..... 8
 Introduction to Chemistry..... 9
Initial Preparation: Test tube stand made of plaster..... 10



EXPERIMENTS

Crystal Lab: Mysterious Formations 12
 Dive into the fascinating world of crystals by making your own sugar and salt crystals.

Color Lab: Mixing, Separating, and Dissolving 18
 All colors appear red, yellow, green, and blue... Make your colors "run" and decipher the cleaning secret of charcoal.

Acid Lab: Acidic, Alkaline, or Neutral..... 26
 What exactly is acid, where can you find it, and what can you do with it? All these questions are answered in this chapter.

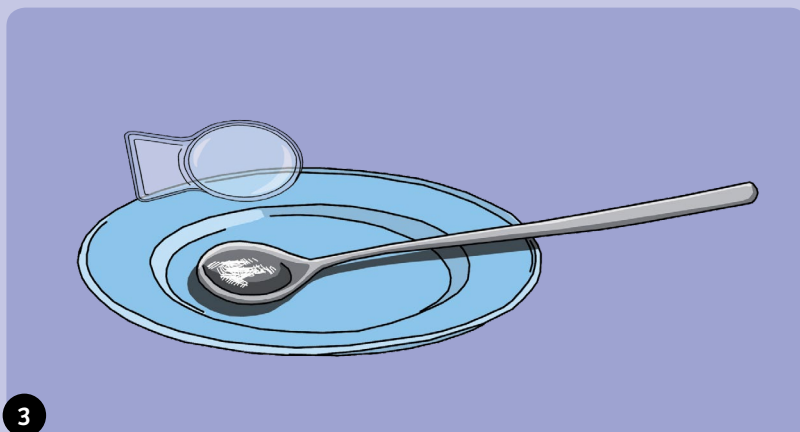
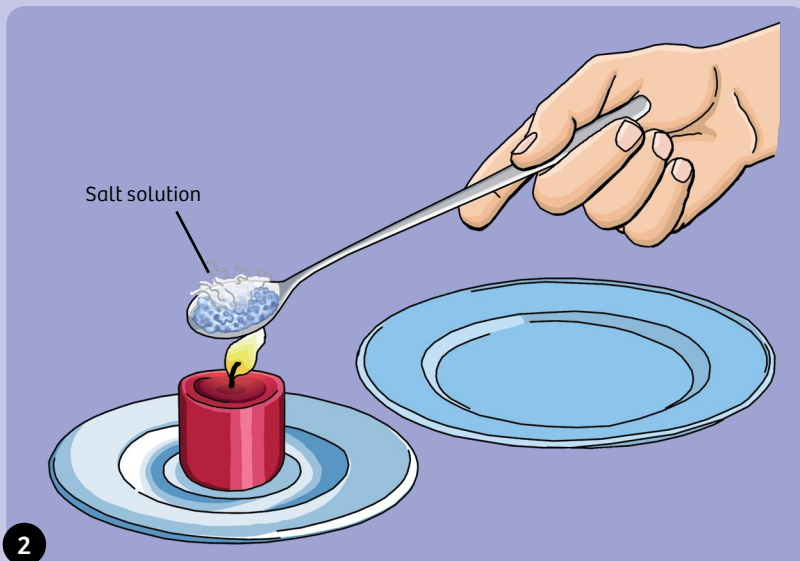
Gas Lab: Where Things Bubble and Hiss..... 38
 Air isn't exactly air – in the "gas lab" experiments, you will find out why that's so.

Analytic Lab: Identifying Substances 46
 How do chemists distinguish similar-looking substances from one another? Learn about chemical analysis in this chapter.





EXPERIMENT 2



Evaporating the salt and sugar solutions

YOU WILL NEED

- > Magnifying lens (note safety information on p. 13),
- > Salt and sugar solutions from Experiment 1
- > Old ice cream spoon or tablespoon made of metal
- > Tealight candle, old saucer
- > Plate
- > Lighter or matches

HERE'S HOW

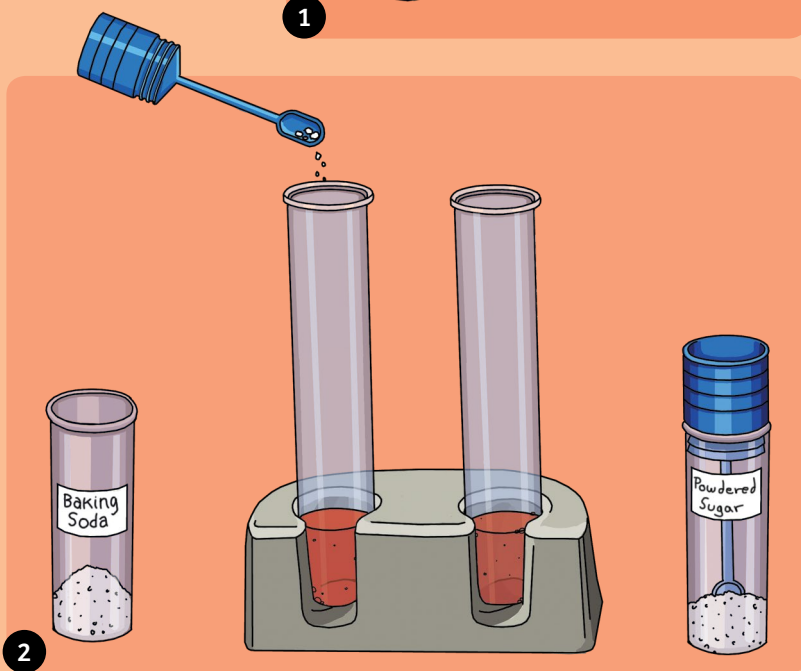
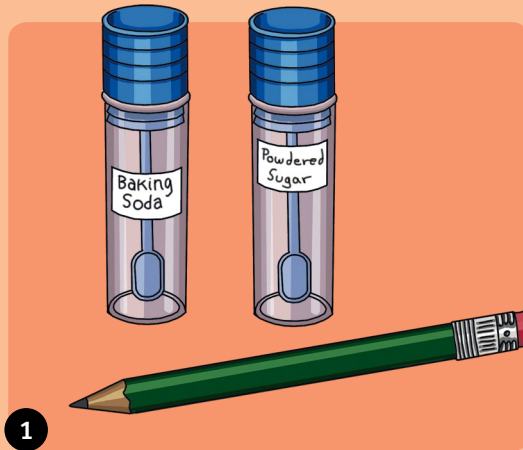
1. Perform this experiment with the help of an adult. Set the tealight candle on the saucer, and have the adult light it.
2. Hold the long metal spoon filled with salt solution just over the flame. This will let you carefully evaporate the salt water from the spoon. A long spoon is necessary so the handle doesn't get too hot.
3. Set the hot spoon on the plate and blow out the candle. Examine the result under the magnifying lens. What happens when you evaporate sugar water? Try it! Just be careful, because the sugar solution might spit.

WHAT'S HAPPENING?

When you evaporate the salt solution over the candle flame it leaves behind a white coating in the spoon, because the salt quickly crystallizes out. With the sugar, on the other hand, things look different. You gradually get a brown caramel coloration. Eventually, the sugar mass will even carbonize and burn.



EXPERIMENT 13



What is the opposite of sour?

You can use the “opponents” of acids to reverse the color changes. To a chemist, these “opponents” are known as bases or alkalis, a category that also includes baking ingredients such as baking soda. You will experiment with those now.

YOU WILL NEED

- > Test tube stand
- > 2 Test tubes with the red cabbage juice from Experiment 12
- > 2 Vials with built-in spoons
- > Self-adhesive labels
- > Powdered sugar and baking soda (sodium bicarbonate), pen

HERE'S HOW

1. Fill one vial with baking soda and one with powdered sugar, and label them.
2. Add a spoonful (using the spoon built into the lid of the vial) of baking soda to the first test tube from the previous experiment (the one containing the red cabbage juice with a few drops of lemon juice). Shake the test tube a little. Careful: it might foam up. Watch carefully to see what happens.
3. Also add a spoonful of baking soda to the other test tube from the previous experiment (the one containing the red cabbage juice with a few drops of vinegar), and watch what happens.
4. Clean one of the test tubes, and add a little more red cabbage juice to it acidified with a little lemon juice or vinegar. Add a spoonful of powdered sugar.
5. Compare and note your observations. The table to the left will help you get a quick overview.

Added	a lot of acid	a little acid	water	powdered sugar	baking soda
Color of the red cabbage juice					
	acidic		neutral		alkaline (basic)

WHAT'S HAPPENING?

When you add one of acid's opponents, such as baking soda (sodium bicarbonate), red cabbage juice turns blue. These substances are called “bases” or “alkalis” by chemists. The opposite of acidic is basic or alkaline. But there are also substances like powdered sugar that look almost identical to baking soda, yet they do not cause a change in the color of the indicator. These substances are called “neutral.”