Barbie
FUNDAMENTAL CHEMISTRY SET

Storybook and Experiment Manual

CHEMISTRY FUN FOR EVERYONE!

WARNING — Chemistry Set. This set contains chemicals 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.

THAMES & KOSMOS

Franckh-Kosmos Verlags-GmbH & Co. KG, Pfizerstr. 5-7, 70184 Stuttgart, Germany | +49 (0) 711 2191-0 | www.kosmos.de
Thames & Kosmos, 301 Friendship St., Providence, RI, 02903, USA | 1-800-587-2872 | www.thamesandkosmos.com

Kit Contents

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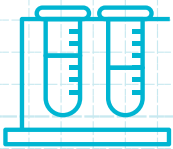
✔	No.	Description	Quantity	Item No.
❍	1	Chemistry set case	1	719 145
❍	2	Large test tube	2	717 120
❍	3	Small test tube	1	717 119
❍	4	Test tube lid	3	719 688
❍	5	Test tube stand	1	719 687
❍	6	Measuring cup	2	714 771
❍	7	Pipette	4	714 772
❍	8	Toy safety glasses	1	719 129
❍	9	Wooden spatula	2	717 692
❍	10	Polymer slime powder, 6.5-7.5g	1	719 149
❍	11	Color-changing putty powder, 6.5-7.5g	1	719 157
❍	12	Acid powder, 4.5-5.5g	1	719 167
❍	13	Base powder, 4.5-5.5g	1	719 166
❍	14	Fizzing reaction tablets, 3 pieces	1	719 169
❍	15	Crystal feather solution, 19.5-20.5g	1	719 168
❍	16	Die-cut paper feather	1	719 150
❍	17	Golden putty, 14.5-15.5g	1	719 165
❍	18	Sticker sheet	1	719 148

For some experiments, you will also need: *water, scissors, cooking pot with hot water, marker, tape, dye (optional), cooking oil*



Please check to make sure you have all of the correct parts and chemicals. If you are missing any parts, please contact Thames & Kosmos customer service at: techsupport@thamesandkosmos.com

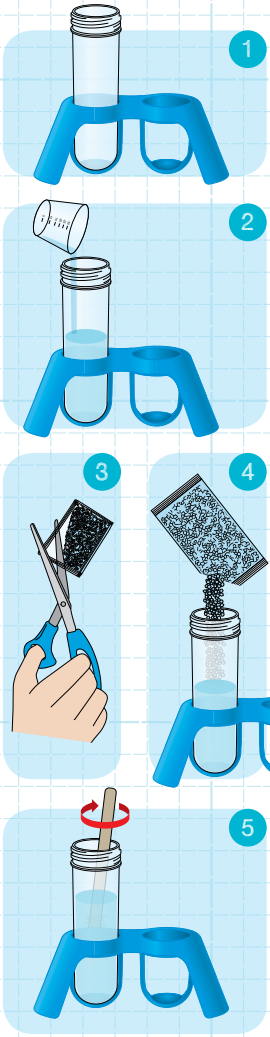
Use the materials carefully, as they may stick to or stain fabric, wood, carpet, or other materials. Clean with water.

EXPERIMENT

Changing Colors

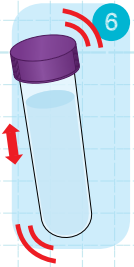
You will need: Large test tube, lid, stand, measuring cup, color-changing putty powder, spatula, *water, scissors, pot of hot water*

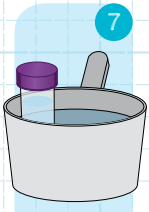
1. Place a large test tube in the test tube stand.
2. Using the measuring cup, measure 75 ml of water (30 + 30 + 15 ml) and pour it into the test tube.
3. Open the packet of slime powder using a pair of scissors. Do not use your teeth. Be careful not to get any of the powder in your eyes or mouth.
4. Pour all of the powder slowly into the tube and avoid creating airborne dust.
5. Use the wooden spatula to mix the powder into the water.
6. After the powder is mixed with the water, close the test tube with the lid and shake it for 30 seconds. Let the contents sit, shaking the tube every few minutes, until they have solidified. This takes about 15–20 minutes.



7 Put the slime in the test tube and place the test tube in a pot of hot water. Have an adult help you heat the water safely. Be careful not to burn yourself. Observe the slime for a period of five to ten minutes. What do you notice?

8 Remove the test tube from the hot water, wipe it dry, and place it into the holder. Let the slime cool down to room temperature. What happens when the slime has cooled down?





Safety Note: Caution! High temperatures. There is a risk of burns. Adult supervision is required.

WHAT'S HAPPENING?

Mood ring

A material that changes color due to a change in temperature is called **thermochromic.** A thermochromic material changes color because when it is heated the way that its molecules absorb and release light changes. This process is reversible because it does not involve a change in the structure of the molecules in the material. This type of change is called a **physical change.** A classic example of a thermochromic material is a mood ring which changes color in response to the wearer's body heat. There are two common groups of thermochromic materials: liquid crystals and leuco dyes. As the name suggests, liquid crystals are materials that are in a state between a liquid and a crystal solid. A common use for liquid crystals is in liquid crystal displays (LCDs), which are used in TVs and computer monitors. Leuco dyes are chemicals that can switch between two different forms, one of which is colorless, depending on exposure to light, heat, or pH.

LCD screen

The girls then made their way to the third-grade classroom. The third graders were learning about the states of matter: solids, liquids, and gases. Barbie and Nikki showed them how a gas can be formed from a liquid by a chemical reaction caused by mixing an acid and a base material in a test tube.

Ms. Morris explained that the acid and the base react with each other, which releases carbon dioxide gas, which is what fizzes up in the test tube.