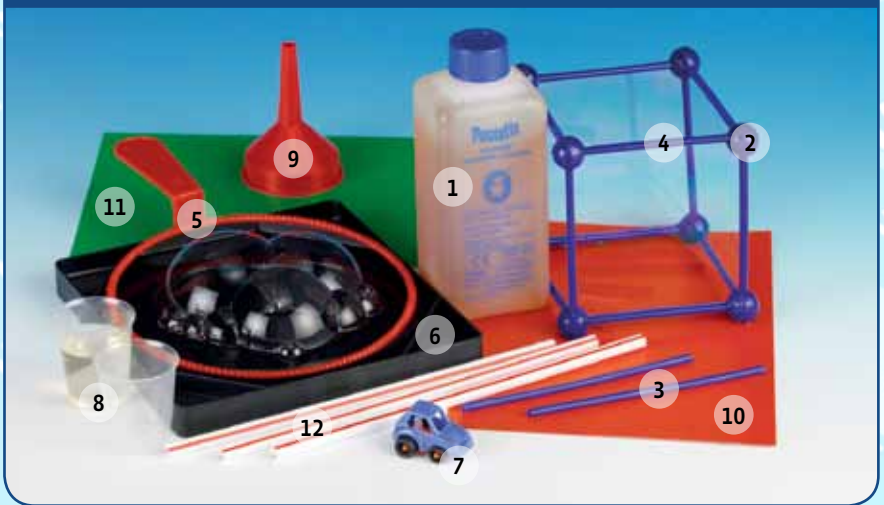


# BUBBLE SCIENCE



**WARNING** — Science Education 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.

## What's in your experiment kit



### Checklist: Find – Inspect – Check off

✓	No.	Description	Qty.	Item No.
<input type="checkbox"/>	1	PUSTEFIX concentrate	250 ml	none
<input type="checkbox"/>	2	Connector ball	8	000 401
<input type="checkbox"/>	3	Connector rod, long	2	700 230
<input type="checkbox"/>	4	Connector rod, short	12	700 231
<input type="checkbox"/>	5	Large bubble-blowing ring	1	000 404
<input type="checkbox"/>	6	Plastic tray with sockets	1	000 405
<input type="checkbox"/>	7	Toy car	1	000 406
<input type="checkbox"/>	8	Measuring cup (5 to 30 ml)	2	061 150
<input type="checkbox"/>	9	Plastic funnel	1	000 410
<input type="checkbox"/>	10	Cardboard, red	1	000 411
<input type="checkbox"/>	11	Cardboard, green	1	000 412
<input type="checkbox"/>	12	Drinking straw	3	000 414

Before doing anything else, please check all the parts against the list to make sure that nothing is missing. If you are missing any parts, please contact Thames & Kosmos customer service.

### Additional things you will need:

*empty jelly jars or preserving jars with lids, liquid soap or soap shavings, dishwashing liquid, distilled water, glycerin, sugar, pennies, paper clips, candle, matches, baking sheet, ruler, cotton thread, sewing needle, bucket or shallow bowl, 1 meter of flexible wire*

Any materials not contained in the kit are marked in *italic script* in the “You will need” boxes.

## Preparation, Tips, and Tricks Pages 3 to 7

The right recipe for a perfect soap bubble solution



## Experiments with Water and Soap • Pages 8 to 12

Investigate the difference between soap and dishwashing liquid

## Fascinating Giant Bubbles Pages 19 to 25



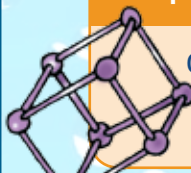
## Rainbow Colors: Shimmering Soap Bubbles Pages 26 to 29

How many colors does a soap bubble have?



## Geometric Shapes Made of Soap Film • Pages 30 to 43

Conjure up cubes, prisms, and octahedra made of soap bubbles



## Soap Fun with Friends Pages 44 to 48

Handball, tennis, and car racing with soap bubbles



## Astonishing Bubble-Blowing Experiments • Pages 13 to 18

Learn your first bubble-blowing tricks



## CHECK IT OUT

You will find supplemental information on pages 6, 7, 12, 18, 25, 29, 42, and 43.

## EXPERIMENT 3

## Doing the soap test

### YOU WILL NEED

- 2 empty jelly jars with lids
- 1 teaspoon of liquid soap or soap shavings
- 1 teaspoon of dishwashing liquid

### HERE'S HOW

1. Fill both jelly jars with water and set them in the fridge for about an hour.
2. Take both jars out of the fridge and add a teaspoon of soap to one and a teaspoon of dishwashing liquid to the other. Screw the lids tightly onto both jars.
3. Now shake both jars thoroughly. As you do this, check their contents every one or two minutes. In which jar does the soap dissolve quicker? In which jar do you get more soap bubbles?

### → WHAT'S HAPPENING?

Dishwashing liquid is a chemical that reacts just like soap to water and oil — only a little more strongly!

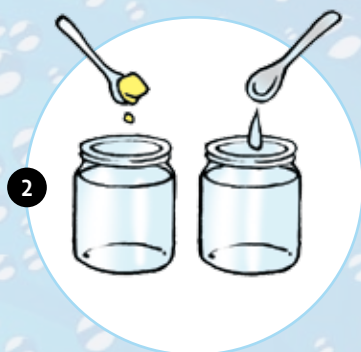
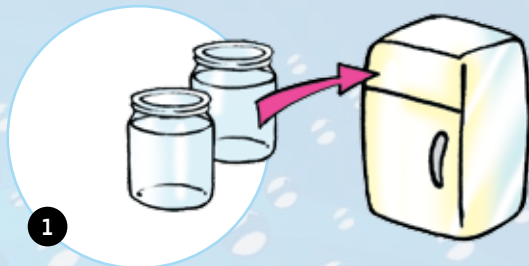




Photo: Udo Weger



## The Wonderful World of Soap Bubbles

Blowing bubbles is an age-old game. Over 5,000 years ago, the ancient Sumerians discovered soap. Since then, soap bubbles have enchanted people the world over. Soap production has improved over the centuries, with special ingredients in the soap solution allowing bubbles to be especially colorful and long-lasting.

Performing artists and clowns are particularly entranced by soap bubbles. With an inventive spirit and lots of practice, they have come up with a constant stream of feats and tricks to enchant the public: soap bubbles that dance through the air to music, long chains of bubbles, and gigantic bubbles big enough to contain a person or even a car. Some clowns and magicians have become quite famous on account of their bubble-blowing.

