

## Grow Your Crystal Geodes

**WARNING: THIS IS NOT A TOY. THIS IS INTENDED TO BE AN EDUCATIONAL KIT WHICH DEMONSTRATES A SCIENCE PRINCIPLE IN A FUN WAY. ALL ASSEMBLY AND OPERATION OF THE PROJECT SHOULD BE DONE AND SUPERVISED BY AN ADULT OR AGED 14 AND UP. READ ALL INSTRUCTIONS BEFORE YOU START. NOT SUITABLE FOR CHILDREN UNDER 3 YEARS DUE TO SMALL PARTS. CHOKING HAZARD.**

**WARNING: THIS SET CONTAINS CHEMICALS THAT MAY BE HARMFUL IF MISUSED. READ CAUTIONS ON INDIVIDUAL CONTAINERS CAREFULLY.**

**CAUTION! CONTAINS SOME CHEMICALS THAT ARE CLASSIFIED AS SAFETY HAZARDS. READ THE INSTRUCTIONS BEFORE USE, FOLLOW THEM AND KEEP THEM FOR REFERENCE. DO NOT ALLOW CHEMICALS TO COME INTO CONTACT WITH ANY PART OF THE BODY, PARTICULARLY THE MOUTH AND EYES. KEEP SMALL CHILDREN AND ANIMALS AWAY FROM EXPERIMENTS. STORE THE CHEMICALS OUT OF REACH OF SMALL CHILDREN.**

Please read the following instructions, safety messages, and first aid information provided in case of accidents. Keep them for reference.

In case of accidental swallowing of dangerous substances, please call the local poison centre (central office for first aid information), or your local hospital. Please write your local emergency telephone number here for quick reference: \_\_\_\_\_.

**KEEP THIS DISTRIBUTOR CONTACT INFORMATION FOR FUTURE REFERENCE. AUSTRALIA – JOHNCO PRODUCTION PTY LTD. WEB SITE: [www.johncoproductions.com](http://www.johncoproductions.com). EMAIL: [info@johncoproductions.com](mailto:info@johncoproductions.com). TEL: 61-2-94525819. BELGIUM - DAM bvba. ijzerenweglei 17, B-2640 Morstel, Belgium. WEBSITE: [www.dam.be](http://www.dam.be). EMAIL: [info@dam.be](mailto:info@dam.be). TEL: 32-34498811. CANADA – PLAYWELL ENTERPRISES LIMITED. EMAIL: [admin@playwellcanada.com](mailto:admin@playwellcanada.com). TEL: 1-416-439-0044. MALAYSIA - ELITE TOYS ( M ) SDN BHD. EMAIL: [info@elite-toys.com](mailto:info@elite-toys.com). TEL: 6017-814-3190. NEW ZEALAND – LEISURE DYNAMICS (NZ) LTD. EMAIL: [ldsales@holdson.co.nz](mailto:ldsales@holdson.co.nz). TEL: 64-9-8287159. SINGAPORE – LANCASHIRE MARKETING PTE LTD. EMAIL: [info@Lancashire-Toys.com.sg](mailto:info@Lancashire-Toys.com.sg) TEL: 65-6743 1184. SPAIN – BARRUTOYS S.L. WEB SITE: [www.barrutoys.com](http://www.barrutoys.com). EMAIL: [info@barrutoys.com](mailto:info@barrutoys.com). TEL: 34-937316249. UNITED KINGDOM - GREAT GIZMOS LIMITED, BARLOW HOUSE, CROMPTON FIELDS, CRAWLEY, RH10 9QB, UK. WEB SITE: [www.greatgizmos.co.uk](http://www.greatgizmos.co.uk). EMAIL: [enquiries@greatgizmos.co.uk](mailto:enquiries@greatgizmos.co.uk). TEL: 44-1293-543221. UNITED STATES –TOYSMITH. 3101 WEST VALLEY HWY EAST, SUMNER, WA 98390, USA. WEBSITE: [www.toysmith.com](http://www.toysmith.com). EMAIL: [info@toysmith.com](mailto:info@toysmith.com). TEL: 800-356-0474.**

### A. SAFETY ADVICE FOR SUPERVISING ADULTS

The supervising adult should be satisfied that this kit is suitable and safe for the child's abilities before proceeding.

Because children's abilities vary so much, even within age groups, supervising adults should exercise discretion as to which activities are suitable for which child.

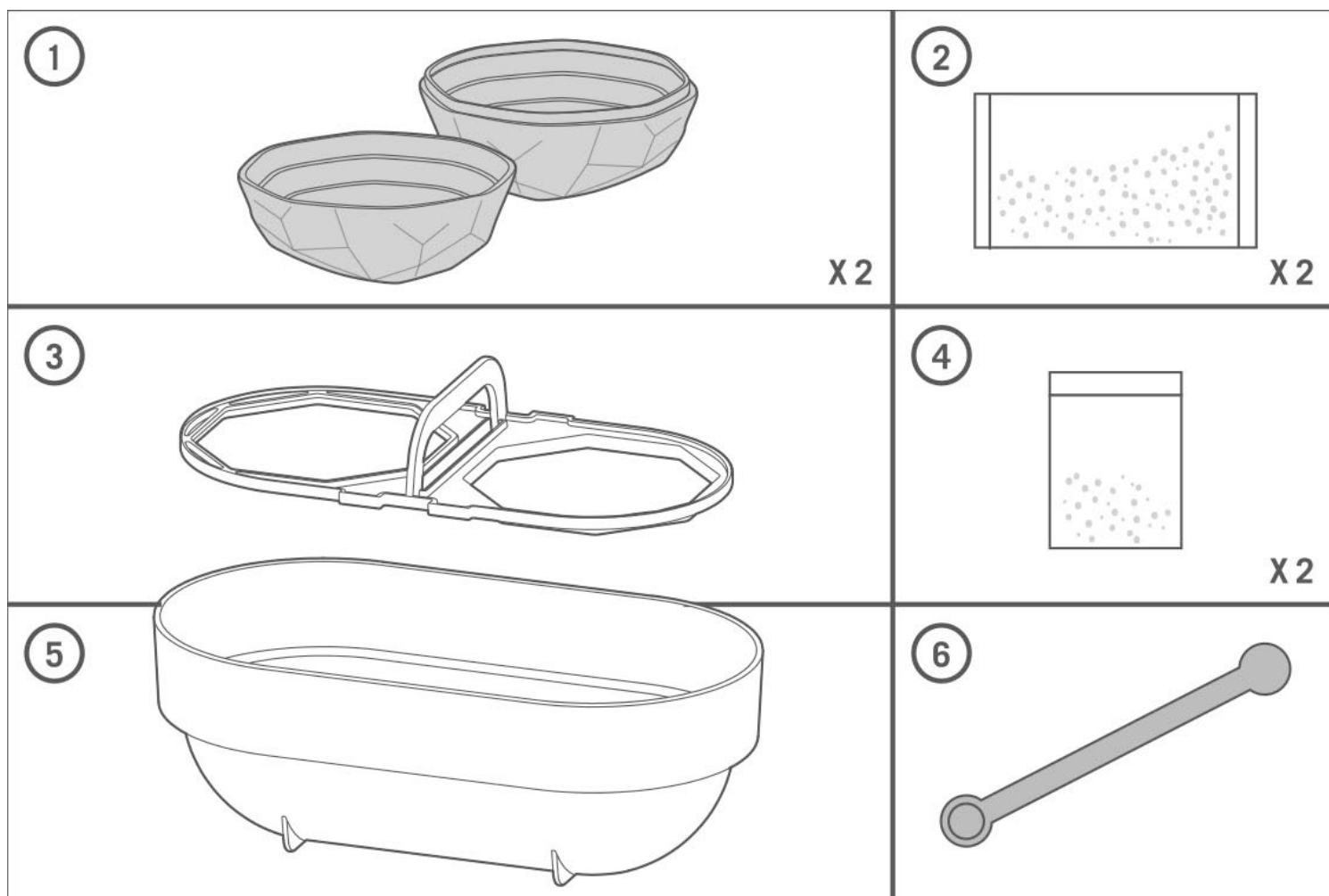
The supervising adult should discuss the warnings and safety information with the child or children before commencing.

### B. SAFETY MESSAGES

- Read the instructions before use. Follow them, and keep them in a safe place for reference.
- Adult supervision and assistance are required at all times.
- The incorrect use of chemicals can cause injury and damage to health. Only carry out the procedure as described.
- Do not allow chemicals to come into contact with eyes, mouth, or any other part of the body. If any splash on the skin, use plenty of fresh water to wash them away (see first aid instructions below).
- Keep boiling water, solutions and crystals out of reach of small children. In case of burns and scalds, cool affected area with plenty of water for 5 minutes. In case of doubt, seek medical advice without delay.
- Keep small children and animals away from experimental area when you are using this kit.
- Do not inhale the crystal compound.
- Do not eat, drink or smoke in the experimental area.
- Do not use equipment that has not been supplied with this kit unless advised.
- Keep surrounding area clear of obstructions, well lit, and ventilated. Work near a sink or other water supply.
- Wear suitable clothing, gloves and eye/face protection when handling the crystals, and when removing the crystals from the container.
- Clean all equipment after use.
- Wash hands and surrounding area after experiment and after handling chemicals or crystals.
- Make sure that all containers are fully closed and properly stored after use.
- Do not use any containers that have been used in the experiment for foodstuffs.
- Store this set in a safe place, out of reach of small children, when not in use.
- Place completed crystals on a plate or non-porous material, as the crystals will remain soluble and may stain surfaces.
- Dispose of materials according to your country's health and safety, and environmental regulations.
- Do always wear eye protection.

### C. FIRST AID

If chemical or solution contacts skin, immediately rinse with soap and water. If chemical or solution contacts eye, immediately rinse with large amount of water for at least 15 minutes. If irritation occurs, seek medical attention. If chemical is inhaled, breathe fresh air. If symptom occurs, seek medical attention. If chemical or crystal, or solution is swallowed, immediately rinse mouth with water, drink large quantity of milk or water, and seek medical attention or call your poison control centre.



### D. CONTENTS

Part 1: Crystal shell set x 2,

Part 2: Large bag of white crystal compound\* (a base compound called Monoammonium Phosphate) x 2,

Part 3: Crystal shell stand,

Part 4: Small bag of white crystal compound\* x 2,

Part 5: Crystal container,

Part 6: Stirring spoon.

Detailed instructions.

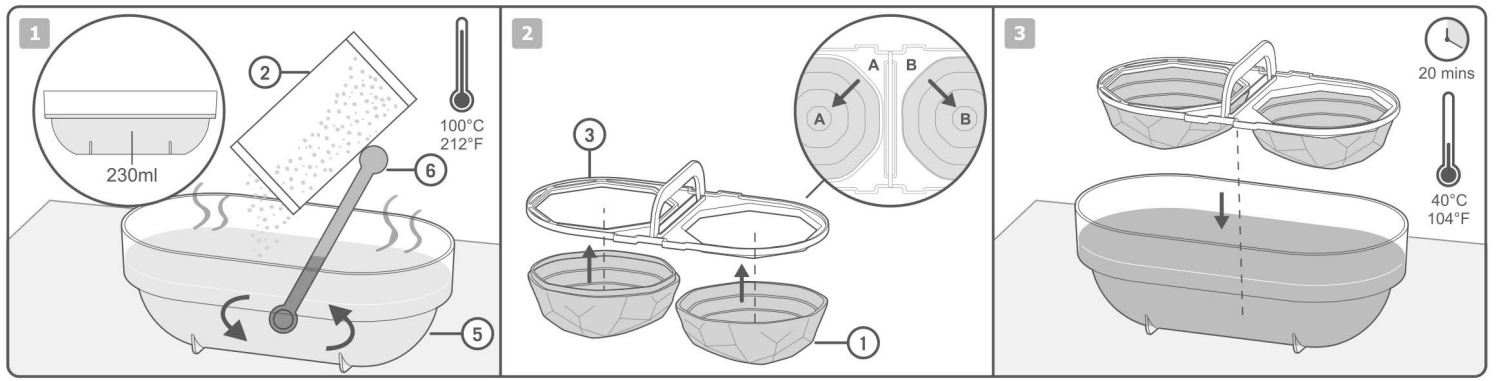
Also needed, but not included in this kit: a jar of steaming hot water, a measuring jug, an apron, protective goggles, and rubber gloves.

\*Important Remarks:

The white crystal compound (Monoammonium Phosphate) is hygroscopic: it tends to "capture" humidity contained in the air, and this phenomenon creates links between crystals. The material may become hard (caking), but can very easily be separated afterwards, rather like sugar.

### E. OPERATION

Adult supervision is required at all times. As the solution and the crystal may stain, cover your work area with old newspaper beforehand. Take great care with hot water and solutions. Be careful when handling your crystals, as the spines are very sharp and are easily broken!



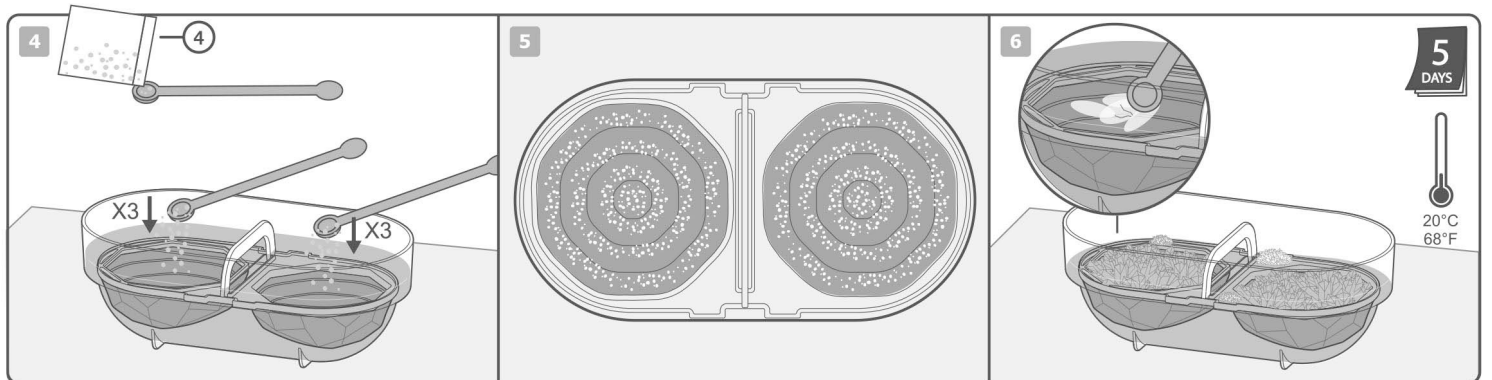
**Remarks:** The contents included are for making 2 sets of crystal geodes (4 crystal shells). The instructions below are for making 1 set of crystal geodes only. Please only use ONE large bag and ONE small bag of white crystal compounds for growing your first geode, and reserve the other 2 bags for the second geode.

**1.** You will need 230 ml (7.7 fl. oz.) of hot water to grow your crystals. Use boiling water (water at 100°C (212°F)) if possible, as this makes the crystals grow best.

Fill the container with the hot water, then add the large bag of white crystal compound to the water, and stir with the spoon until all the powder has dissolved to form a solution.

**2.** Slot the crystal shell on the stand in accordance with the marks (A and B).

**3.** Wait for 20 minutes for the solution to cool in the container until it is warm (not too cool but not too hot - ideally around 40°C (104°F)). Slowly place the stand with the crystal shells in the container until it is secured, so that the stand and the crystal shells can be covered with the solution.



**4.** Using the stirring spoon, gently sprinkle 3 spoonfuls from the small bag of white crystal compound over the surface of EACH side of the shell.

**5.** The particles should sink and spread EVENLY on the shell. DO NOT STIR THE SOLUTION.

**6.** The crystals need a temperature above 20°C (68°F) to grow properly. Carefully put the container in a warm room, or on top of your refrigerator, where it will be warm.

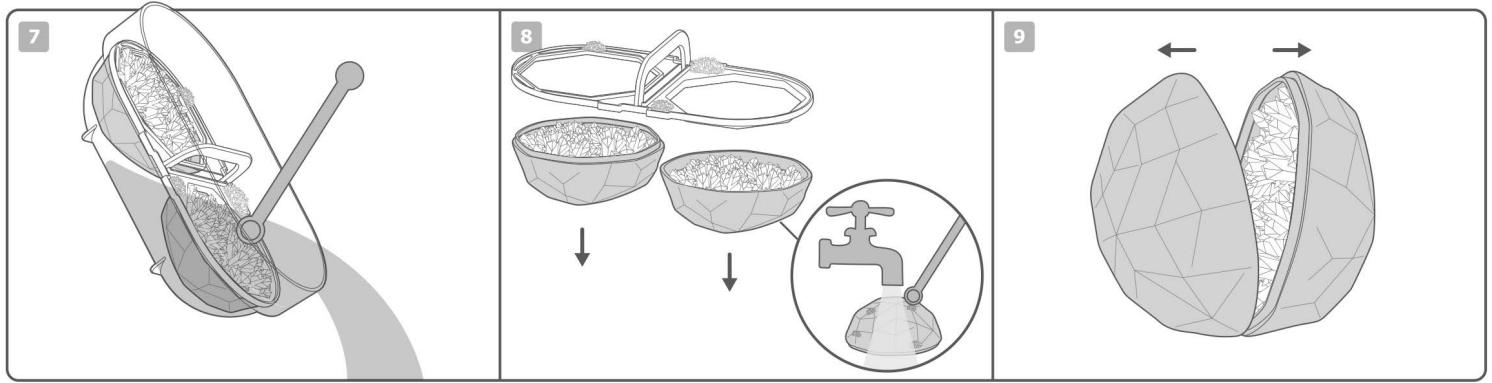
Choose a place where the container will remain undisturbed for at least 15 hours to allow the crystals to start growing. Under normal conditions, the whole growing process takes 5-8 days.

The size will vary depending on the environment in which the crystals are growing. If the environment is cold or humid, it will take longer for the crystals to grow completely. SO PLEASE BE PATIENT.

If you prefer small crystals, you may stop the growing process earlier.

**Note:** During the crystal growing process, some crystal flakes may develop on the solution surface and may grow around the inner wall of the container. This is normal. Just gently break and remove them with the spoon.

This effect is called "crystal climbing". The crystal flakes are formed because liquid moves up through the tiny gaps between the crystals themselves and between the crystals and the container (this movement is called capillary action). The water then evaporates, allowing the crystal flakes to grow.



**7. When the crystals have grown completely, drain away the remaining solution. Use the stirring spoon to hold the crystals in the container as you tip it. Once the solution is poured away, you cannot use it again, so BE SURE THAT YOUR CRYSTALS HAVE GROWN TO THE PROPER SIZE BEFORE YOU POUR AWAY THE SOLUTION.**

**8. Gently take the stand with the crystal shells out of the container and take out the crystal shells from the stand. Put the shell upside down and gently rinse the shell using fresh water for a few seconds. Do not wash the crystals for too long, or they will be dissolved by the water.**

**Gently remove any crystal flakes on the surface of the crystal shell with the stirring spoon and put the shell upside down on the kitchen towel for drying. Carefully rinse the crystal shell stand and crystal container using fresh water and remove any crystal flakes on the surface.**

**9. Are you ready to amaze your friends? Slot two halves of the crystal shell together as a rock, when your friends open it, they will be surprised by the shining crystals! Repeat the steps above for your second crystal geode.**

#### **F. HOW IT WORKS**

**When you add the powder to hot water, it breaks up into tiny particles in the water. These particles are far too small to see. The liquid is then called a solution of the powder. In fact, it's called a supersaturated solution, because if you stir in more powder, no more will dissolve.**

**As the water cools, some evaporates. More particles join them, and over time, groups of particles come together. The particles join up in an organised way, making the crystal that you see, with straight edges and flat faces.**

#### **QUESTIONS & COMMENTS**

**We treasure you as a customer and your satisfaction with this product is important to us. If you have any comments or questions, or you find any parts of this kit missing or defective, please do not hesitate to contact our distributor in your country, whose address is printed on the package. You are also welcome to contact our marketing support team via email: [infodesk@4M-IND.com](mailto:infodesk@4M-IND.com), fax (852) 25911566, telephone (852) 28936241, or our website: [WWW.4M-IND.COM](http://WWW.4M-IND.COM).**