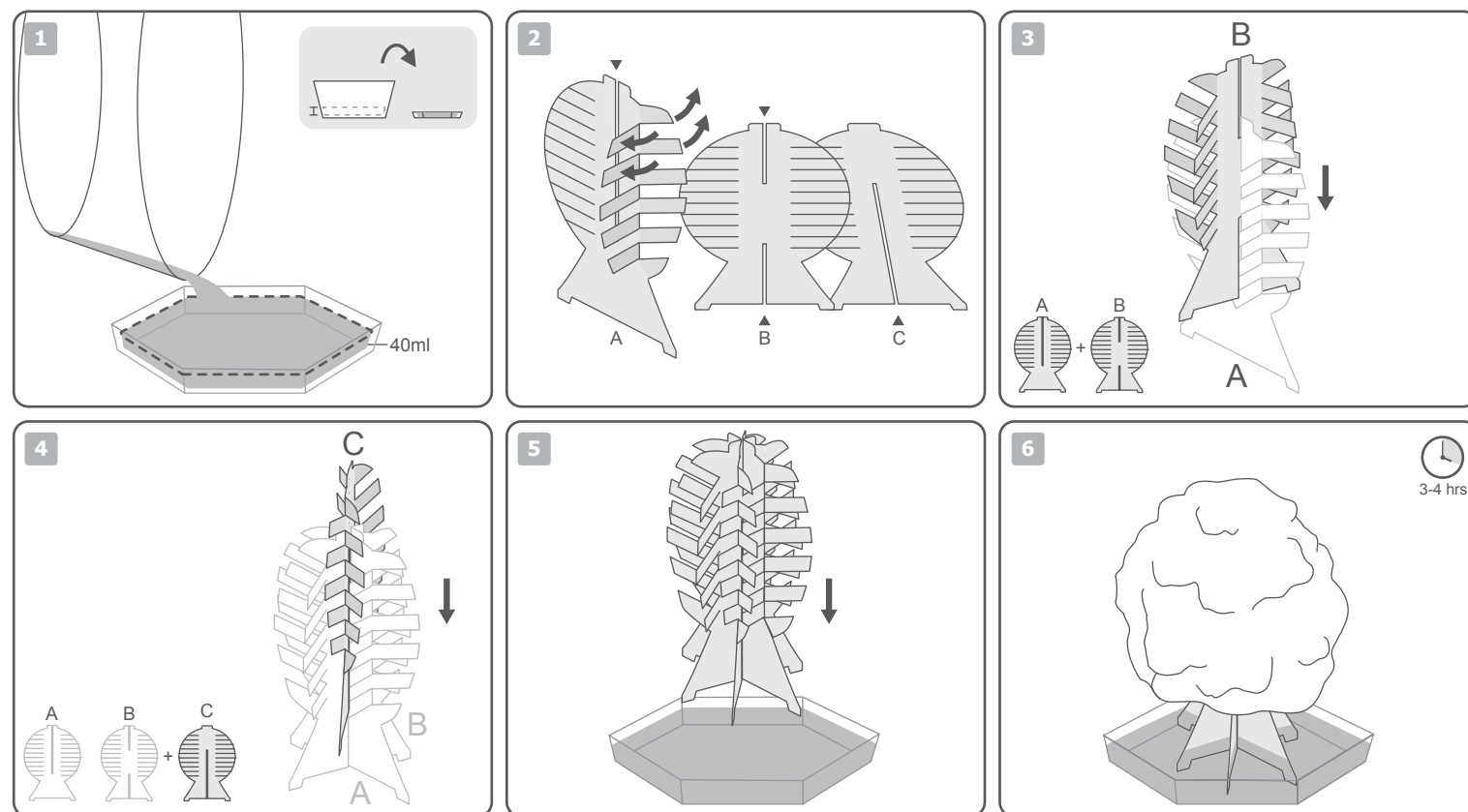


I. GROWING THE CRYSTAL SNOW TREE



1. Take the remaining solution in the bowl, left from Section G, and pour it into the shallow hexagonal container. You should have about 40 ml (1.4 fl oz) remaining; if you do not have enough solution, you may top it off using the solution from the finished Moon Crystal Cluster.
2. The three tree paper pieces, A, B and C, have different slot positions. Refer to the diagram and identify these differences. Fold the pre-cut branches to form a V-shape in an alternating manner as shown.
3. Slot A and B together first carefully.
4. Gently slot C onto A and B as well to form a complete standing tree.
5. Place it onto the centre of the container. The bottom of the tree should be soaking in the solution.
6. In 3-4 hours, crystals should start to grow on the tree branches. It will finish growing in 24 hours. The crystal tree is rather fragile when it is first grown, so try not to disturb it. It will become more solid after a few days.

This crystal snow tree can be “re-grown” several times! To re-grow it, gently scrape the crystals into the stirring bowl. Add 30 ml (1 fl oz) of boiling water to dissolve the crystals and use the solution to grow a new crystal snow tree! Note: every time you “re-grow” the tree, the crystals will be smaller in size, since some base compound is left inside the paper tree during the growing process.

HOW DO THE CRYSTALS CLIMB AND GROW ON TREE PAPER? There are tiny fibres within the paper. The saturated crystal solution is slowly wicked up these fibres into the paper, in what is known as capillary action. (Trees and plants draw water and nutrients up from soil the same way.) Slowly, the water evaporates from the paper tree, and the small particles dissolved in the water join together again, forming crystals that you can see on the branches.

J. FUN FACTS

- A crystal is a solid object made up of particles (sometimes atoms, sometimes ions, and sometimes groups of atoms called molecules) that are arranged in a neat pattern. This pattern of particles is repeated again and again throughout the crystal.
- Crystals grow in seven basic shapes, called crystal systems. Each system has a different pattern of particles. The crystal systems are called cubic, tetragonal, hexagonal, monoclinic, triclinic, orthorhombic and rhombohedral.
- Many rocks are made up of crystals of different minerals. Common minerals include quartz, feldspar, hornblende and mica.
- The precious stones that sparkle in rings and necklaces, such as diamonds, emeralds and rubies, are crystals.
- The largest diamond ever found was the Cullinan Diamond, which was dug up in South Africa in 1905. It weighed 621g.
- Amazing and beautiful giant crystals grow in spaces inside rocks. Sometimes, they are discovered by people exploring caves.
- Monoammonium Phosphate (the powder used in this kit) is an ingredient in some fertilisers used on farms. It's also used in some fire extinguishers.
- The salt that you put on your food is made up of tiny crystals of a mineral called Sodium Chloride.

QUESTIONS & COMMENTS

We value you as a customer and your satisfaction with this product is important to us. If you have 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. You will find the address printed on the package. You are also welcome to contact our Marketing Support Team: Email: infodesk@4m-ind.com, Fax (852) 25911566, Tel: (852) 28936241, Web site: WWW.4M-IND.COM

KidzLabs™ Crystal Science



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. EMAIL: info@johncoproductions.com. TEL: 61-2-94525819. BELGIUM - DAM bvba. ijzerenweglei 17, B-2640 Morstel, Belgium. WEBSITE: www.dam.be. EMAIL: info@dam.be. TEL: 32-34498811. CANADA – PLAYWELL ENTERPRISES LIMITED. EMAIL: admin@playwellcanada.com. TEL: 1-416-439-0044. MALAYSIA - ELITE TOYS (M) SDN BHD. EMAIL: info@elite-toys.com. TEL: 6017-814-3190. NEW ZEALAND – LEISURE DYNAMICS (NZ) LTD.. EMAIL: idsales@holdson.co.nz. TEL: 64-9-8287159. SINGAPORE – LANCASHIRE MARKETING PTE LTD. EMAIL: info@Lancashire-Toys.com.sg TEL: 65-6743 1184. SPAIN – BARRUTOYS S.L. WEB SITE: www.barrutoys.com. EMAIL: 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. EMAIL: enquiries@greatgizmos.co.uk. TEL: 44-1293-543221. UNITED STATES – TOYSMITH. 3101 WEST VALLEY HWY EAST, SUMNER, WA 98390, USA. WEB-SITE: www.toysmith.com. EMAIL: 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 coloured seeding dust or the crystal grains from the Crystal Snow Tree.
- 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 colour seeding, 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 colour in 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.

⚠ 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.

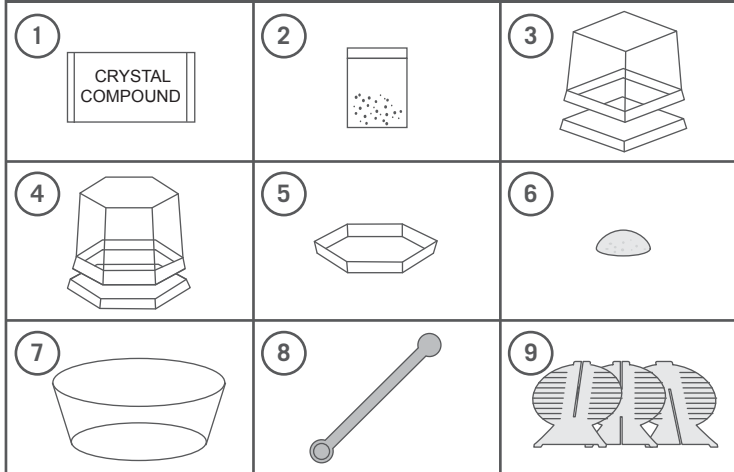
CAUTION:

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.

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: Large bag of white crystal compound* (a base compound called Monoammonium Phosphate), Part 2: Small bag of blue seeding mixture, Part 3: Square transparent base with cover, Part 4: Hexagonal transparent base with cover, Part 5: Shallow hexagonal container, Part 6: Glow-in-the-dark moon crystal base, Part 7: Stirring bowl, Part 8: Stirring spoon, Part 9: 1 set of crystal snow tree paper. Also needed, but not included in this kit: a jar of steaming hot water, an apron, protective goggles, and rubber gloves.

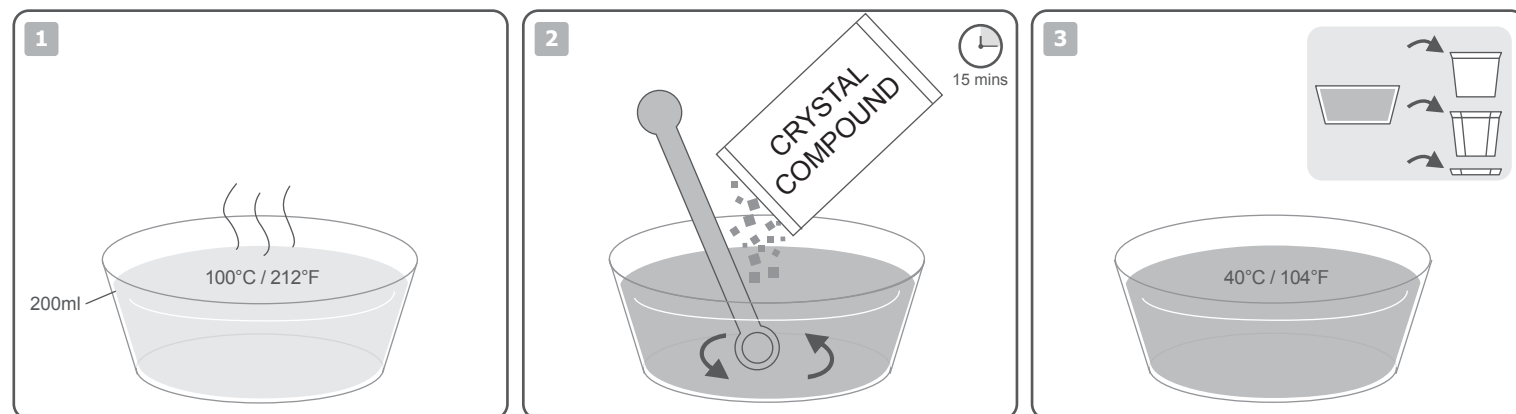
*Important Remarks:

1. The blue coloured seeding mixture contains the Aluminium Potassium Sulphate, Sodium Chloride & Brilliant Blue FCF. Please be aware that the seeding mixtures are intense colours. While it helps produce beautiful crystals, take care not to spill any coloured solution or seeding mixture! While any stains on your skin would be temporary, they may leave permanent stains on some clothing or surfaces. Therefore, please wear an apron and washing up gloves when handling coloured seeding mixtures. Cover the work surface with old newspaper, and clean it after the experiment. Dispose of the coloured solution and unused seeding mixtures properly, to avoid staining the washing sink/drain.

2. 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 (due to caking), but can very easily be separated afterwards, rather like sugar.

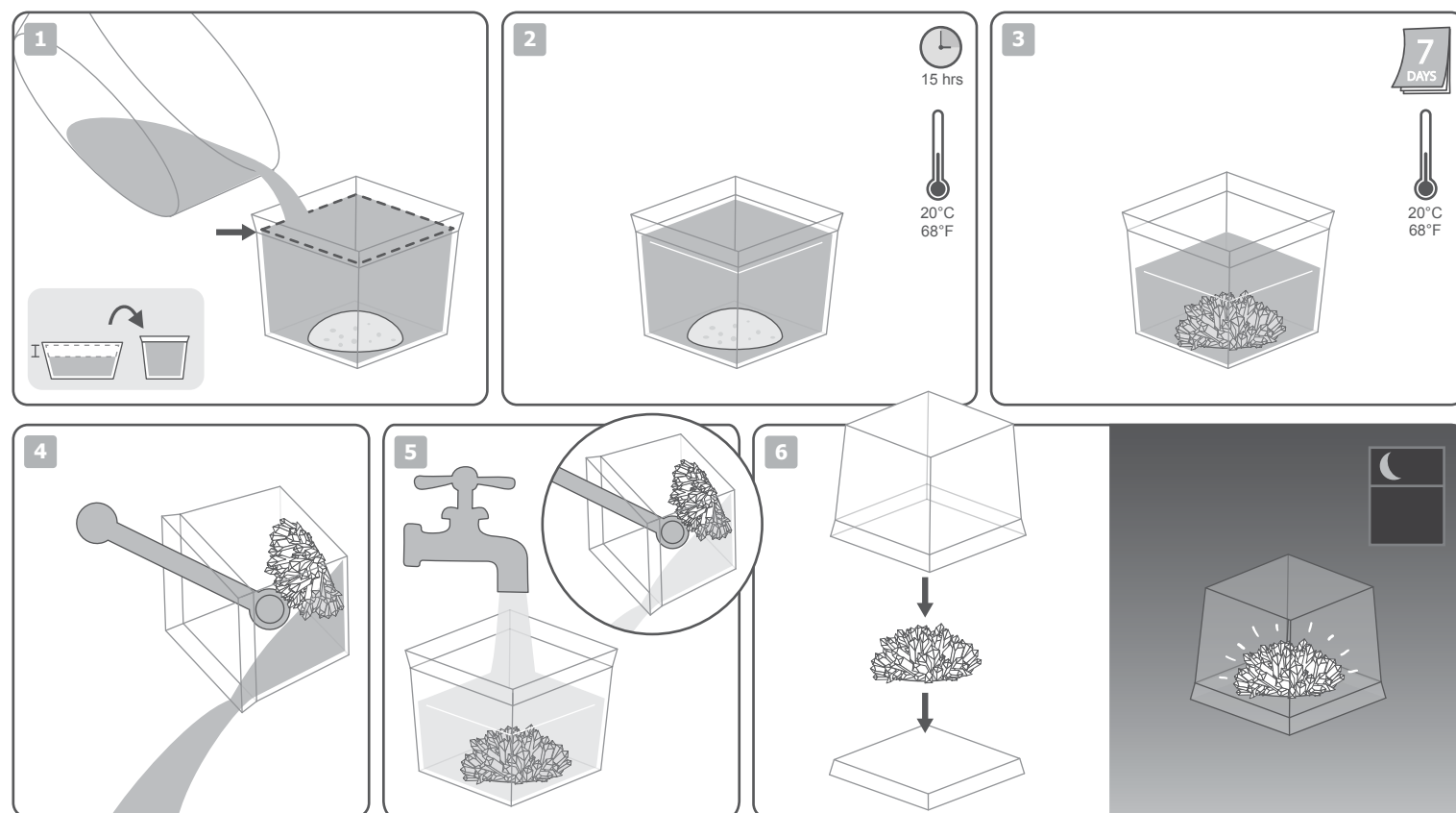
E. PREPARATION – MIXING THE CRYSTAL SOLUTION

Safety messages: Adult supervision is required at all times. As the solution and the crystals 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! Before you start, make sure you get all the materials for each section ready, as the following three activities are to be carried out one after the other.



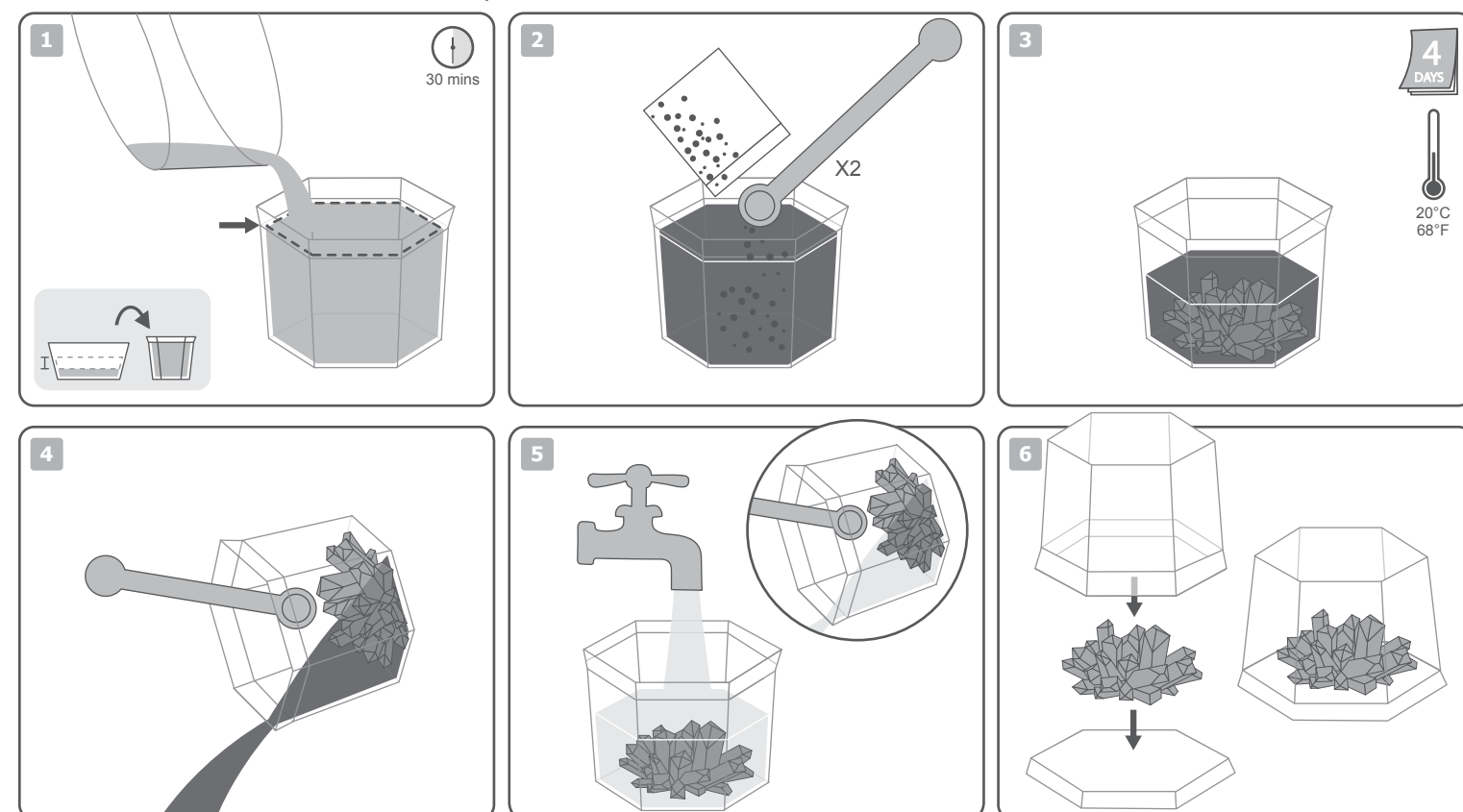
1. You need 200 ml (6.7 fl oz) of hot water to make the crystal solution. Use boiling water (at 100°C (212°F)) if possible, as this makes the crystals grow best. Use a measuring jug to measure and pour the hot water into the stirring bowl. (Do not use the other containers for this purpose, as the hot water will deform thin plastic.)
2. Add the contents of the large bag (the white crystal compound) to the water. Stir until all the powder has dissolved to make a solution.
3. Allow 15 minutes for the solution to cool in the bowl until it is just warm (ideally around 40°C (104°F), slightly warmer than body temperature). *Remarks: This solution will be used for the next three crystal growing activities, so be aware of the usage per instruction. Do not dispose of it until the last activity is done.*

F. ACTIVITY 1 – GROWING THE GLOW-IN-THE-DARK MOON CRYSTAL CLUSTER



1. Place the glow-in-the-dark moon crystal base into the square transparent cover. Next, pour the warm crystal solution into the square transparent cover until it reaches the marked level. (Note: the leftover solution will be used in Sections G & I.) The crystal base may float at first. After it soaks up some solution, it will gradually sink. Then, using the spoon, position it at the centre of the transparent cover.
2. The Glow-in-the-dark Moon Crystal Cluster needs a temperature above 20°C (68°F) to grow properly, so carefully put the transparent cover in a warm room, or on top of your refrigerator. Place a piece of kitchen paper under the transparent cover as a mat. Choose a place where it will remain warm and undisturbed for at least 15 hours, to allow the crystals to start growing.
3. The Glow-in-the-dark Moon Crystal Cluster will grow enough to be visible on the first day, and then slowly cover the whole surface of the base and reach a height of 30 mm (about 1.2 inches). The growing process takes 7-10 days. The size will vary depending on the environment in which the crystals are growing. If you prefer small crystals, you may stop the growing process earlier.
4. When the crystals have reached the size described above, drain away the remaining solution, using the spoon to hold the crystals in the transparent cover as you tip it. Once the solution is poured away, you cannot use it again, so **BE SURE YOUR CRYSTALS HAVE GROWN BEFORE YOU POUR AWAY THE SOLUTION**. Due to the rough texture of the crystal base, the grown crystals would look thin and sharp, unlike the ones you will grow in the next section.
5. Gently rinse the crystals with fresh water for a few seconds, and pour away the water. Do not wash them for too long or they will dissolve. Carefully remove the crystals and let them dry on a paper towel. Rinse the transparent cover with fresh water and set aside.
6. When the crystals and the transparent cover are completely dry, put the crystals on the square display base and cover them with the transparent cover to protect against moisture. Congratulations! Your Glow-in-the-dark Moon Crystal Cluster is complete. Display them as part of your crystal collection. Briefly expose it to the room's light or to the light of a torch for a minute and watch it glow!

G. ACTIVITY 2 - GROWING THE AQUAMARINE CRYSTALS



1. Pour the crystal solution into the hexagonal transparent cover until it reaches the marked level. (Note: the leftover solution will be used in Section I.) Allow 30 minutes for the solution to stabilise.
2. Take the small bag containing the blue seeding mixture. Using the stirring spoon (which should be clean and dry before use), gently sprinkle 2 spoonfuls of the seeding mixture over the surface of the warm solution. The particles should sink and spread evenly over the base of the container. **DO NOT STIR THE SOLUTION**. Try not to disturb any of the seeding mixture that may have fallen to the bottom of the container. Note: handle the seeding mixture with care, as the pigment may cause stains.
3. Similar to the Glow-in-the-dark Moon Crystal Cluster, the Aquamarine Crystals needs a temperature above 20°C (68°F) to grow properly. Carefully put the transparent cover somewhere warm and undisturbed. Place a paper towel under the transparent covers as a mat. In normal conditions, the crystals will start to grow on the first day and reach a width of about 30 mm (about 1.2 inches) and a height of about 25 mm (about 1 inch) in 4 to 7 days. If the environment is cold or humid, it will take longer for them to grow – even weeks, in some cases – so be patient! It will be worth the wait!
4. When the crystals have reached the size described above, drain away the remaining solution. Use the spoon to hold the crystals in the transparent cover as you tip it. Once the solution is poured away, you cannot use it again, so **BE SURE YOUR CRYSTALS HAVE GROWN BEFORE YOU POUR AWAY THE SOLUTION**. Check by shining a torch into the solution to look.
5. Gently rinse the crystals with fresh water for a few seconds, and pour away the water. Do not wash them for too long, or they will dissolve. Carefully remove the crystals and let them dry on a paper towel. Rinse the transparent cover with fresh water and set aside.
6. When the crystals and the transparent cover are completely dry, put the crystals on the hexagonal display base and cover them with the transparent cover to protect against moisture. Congratulations! Your Aquamarine Crystals set is complete. Display it as part of your crystal collection!

HOW DO THESE CRYSTALS GROW? When you add the crystal compound to hot water, it breaks up into tiny particles, far too small to see, in the water. The liquid is then called a solution of the powder. In fact, it's called a saturated solution, because if you try to stir in more powder, no more will dissolve. Slowly, as the water cools and some evaporates, it can't keep all the particles dissolved, and some begin joining together again. The particles join up in an organised way, making the crystals that you see, with straight edges and flat faces.

WHY DOES THE MOON CRYSTAL CLUSTER GLOW? The Moon Crystal Cluster glows because of its chemical components, which contain glowing pigment. This pigment absorbs and stores the energy of the light that hits it, and then slowly releases that energy over time, creating a dim glow. Since the crystals are transparent, the glow shines through them, like optic fibres.

H. WHAT IS CRYSTAL CLIMBING?

During the growing process, some small crystal flakes may start to grow around the inner wall of the transparent cover. This is known as 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 transparent cover (this movement is called capillary action), and then as the water evaporates, it allows crystal flakes to grow. If this happens, gently remove the small crystals without disturbing the solution, or these small crystal flakes eventually growing out of the transparent covers and staining the table top.

