GLOW CRYSTAL GROWING

US

⚠ WARNING:

CHOKING HAZARD - SMALL PARTS. NOT FOR CHILDREN UNDER 3 YEARS.

⚠ WARNING: THIS SET CONTAINS CHEMICALS THAT MAY BE HARMFUL IF MISUSED. READ CAUTIONS ON INDIVIDUAL CONTAINERS CAREFULLY. NOT TO BE USED BY CHILDREN EXCEPT UNDER ADULT SUPERVISION.

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 ingestion 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.
United States – Toy Investments Inc. DBA Toysmith. Website: www.toysmith.com. Email: info@toysmith.com. Tel: 800-356-0474. Australia – Johnco Production Pty Ltd. Website: 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: ldsales@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. Website: www.barrutoys.com. Email: info@barrutoys.com. Tel: 34- 937316249. United Kingdom – Great Gizmos Limited. Website: www.greatgizmos.co.uk. Email: enquiries@greatgizmos.co.uk. Tel: 44-1293-543221.

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.

SAFETY MESSAGES

- Read the instructions before use. Follow them, and keep them in a safe place for reference.
- This set is only for use by children over 10 years old.
- 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 splashes on skin, use plenty of fresh water to wash it 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 the experimental area when you are using this kit.
- Do not inhale the glow powder.
- 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 areas 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 glow powder, and when removing the crystals from the container.
- Clean all equipment after use.
- Wash hands and surrounding areas after the 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 & safety and environmental regulations.
- Always wear eye protection.

FIRST AID

If chemical or solution contacts skin, immediately rinse with soap and water. If chemical or solution contacts eye, immediately rinse with a 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, crystal, or solution is swallowed, immediately rinse mouth with water, drink a large quantity of milk or water, and seek medical attention or call your poison control centre.

CONTENTS

1 x large bag containing white crystals* (Monoammonium Phosphate), 1 x small bag containing glow powder*, 1 x crystal base, 1 x transparent crystal stand, 1 x container, 1 x stirring spoon, detailed instructions.
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 white crystals (Monoammonium Phosphate) are hygroscopic: they "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.

2. The glow powder is a chemical called Zinc sulfide (ZnS), copper chloride-doped. While it helps produce beautiful crystals, take care not to spill any solution or glow powder! 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 glow powder. Cover the work surface with old newspaper, and clean it after the experiment. Dispose of the unused materials properly to avoid staining the washing sink/drain.

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 part 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

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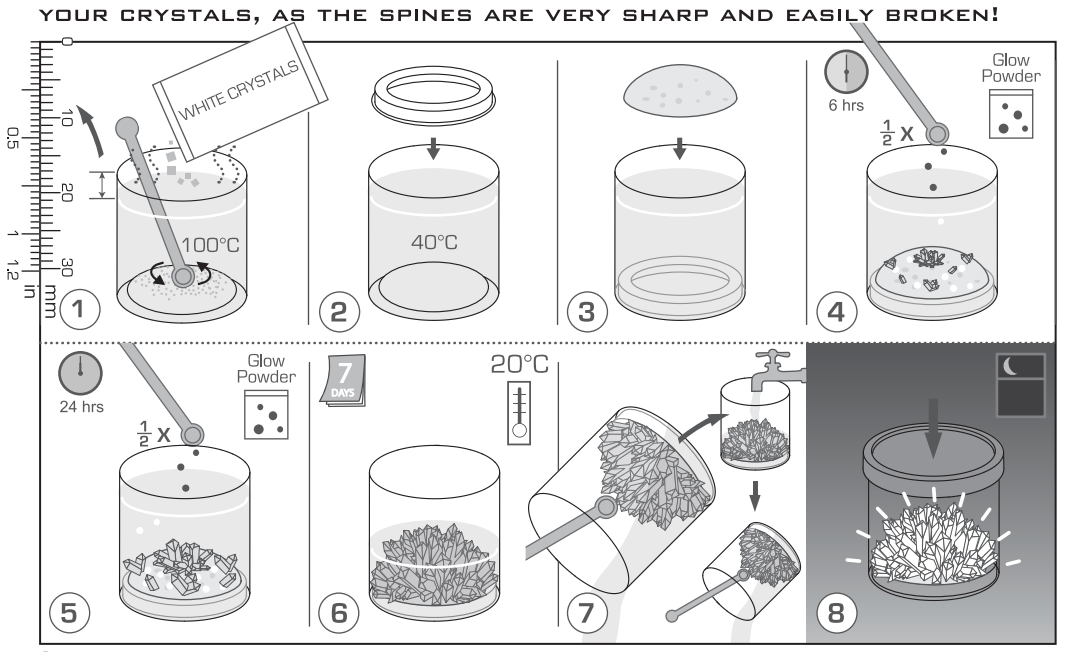
A. INSTRUCTIONS: ADULT SUPERVISION IS REQUIRED AT ALL TIMES. TAKE GREAT CARE WITH HOT WATER AND SOLUTIONS. BE CAREFUL WHEN HANDLING YOUR CRYSTALS, AS THE SPINES ARE VERY SHARP AND EASILY BROKEN!



① You will need 200 ml (6.7 fl. oz.) of hot water to grow your crystal. Use boiling water (water at 100ºC (212°F)) if possible, as this makes the crystals grow best. To measure out exactly 200 ml, pour the hot or boiling water into the container until it reaches 30 mm (about 1.2 inches) below the rim of the container. You may use the printed scale next to the diagram or a ruler to measure the distance of 30 mm (about 1.2 inches). You may now add the contents of the large bag (the white crystals) to the water. Stir until all the powder has dissolved to form a solution.
Note: alternatively you could use a measuring cup to measure the 200 ml (6.7 fl.oz.) volume of hot or boiling water, and pour this into the container.

② Allow the solution to cool in the container until it is warm (not too cool, not too hot, and ideally around 40°C (104°F)). Place the transparent crystal stand in the bottom of the container.

③ Place the crystal base over the crystal stand. Use the stirring spoon to position it at the centre. Leave the solution undisturbed for 6 hours.

④ Using the stirring spoon, gently sprinkle **HALF** a spoonful of glow powder over the surface of the solution. The particles should sink and spread evenly over the crystal base. **DO NOT STIR THE SOLUTION**. Also, try not to disturb any of the glow powder on the crystal base. Note: Handle the glow powder with care. The powder we provide is completely safe. Wash away any stains with clear water.

⑤ After 24 hours, some crystals columns should have grown on the crystal base. Sprinkle another **HALF** a spoonful of glow powder over the surface of the solution again. Leave the solution undisturbed afterwards.

⑥ The crystals require 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. **DO NOT PUT THE LID ON THE CONTAINER**. Choose a place where the container will remain undisturbed for at least 15 hours to allow the crystals to start growing. Observe the crystals every few hours. Under normal conditions, the crystals can grow to reach the surface of the solution in 7 to 10 days. The crystals' size and growing time will vary depending on the environment in which the crystals are growing. If the environment is cold or humid, it will take longer for them to grow. In some cases it could take weeks. **SO PLEASE BE PATIENT.** It will be worth the wait! Note: During the crystal growing process, small crystals may grow around the inner wall of the container. This effect is called "crystal climbing". The crystals 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), after which water evaporation allows the crystals to grow. These small crystals may eventually grow out of the container and stain the table top. You are advised to remove the small crystals gently, without disturbing the solution, when you see them beginning to grow up the inside of the container.

⑦ When the crystals have grown to reach the solution surface, drain away the remaining solution. Use the seeding 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.** Gently rinse the crystals and the transparent crystal stand using fresh water for a few seconds, and pour away the water. Do not wash the crystals for too long, or they will be dissolved by the water. Now, leave the crystals to dry.

⑧ Once the crystals are completely dry, put the lid on the container to protect your crystals from humidity. Congratulations! Your glow-in-the-dark crystals are complete. Charge the crystals with any light source for a few minutes, then put them in the dark to watch it glow like magic!

B. HOW DOES IT WORK

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. Now the water can't keep all the particles dissolved, and some begin joining together again. More particles join them, and over time, groups of particles come together. The particles join up in an organised way, making the crystals that you see, with straight edges and flat faces.
The glow powder you sprinkled is attached to the surface of the crystals and crystal base. When they are charged with any light source and then placed in darkness, the powder re-emits the light waves which pass through the clear crystals, making the crystals glow!

C. 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.
- Some natural crystals and mineral stones have the ability to temporarily absorb a small amount of light and release it in a different wave length that is visible to us. This change in wavelength causes a temporary colour change of the mineral as viewed by us. Most minerals do not have a noticeable fluorescence. Only about 15% of minerals have a fluorescence that is visible to people. Those fluorescent minerals inside are sort of like the glow powder provided in this kit.
- One example of natural glowing (or "fluorescent") crystals is fluorite. As you might have guessed, the term "fluorescence" comes from the mineral's name. Typically it fluoresces blue. Other fluorescent colours include yellow, green, red, white and purple. Some crystals even demonstrate phosphorescence.
- There are very rare examples of fluorite glowing when heated. This occurs because the mineral may contain chemical bonds that emit light when thermal energy (heat) is applied. This property of fluorite is known as thermo-luminescence.
- 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 621 grams.
- Amazing and beautiful giant crystals grow in spaces inside rocks. Sometimes, they are discovered by people exploring caves.

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