

CRYSTAL CREATION



WARNING! Only for use by children over 10 years old. Not suitable for children under 10 years. For use under adult supervision. Contains some chemicals which present a safety hazard. 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 mouth and eyes. Keep small children and animals away from experiments. Keep the experimental set out of the reach of children under 10 years old. Eye protection for supervising adults is not included.

WARNING — Chemistry Set. This set contains chemicals and 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.

Please observe the safety information here, the first aid advice (outside back cover), the advice for supervising adults (page 2), the basic rules for safe experimentation (page 4), and the information regarding the handling of the chemicals and their environmentally sound disposal (pages 5–8).

WARNING!

- » » Only for use by children over 10 years of age. Not for use by children under 10 years of age.
- » » To be used solely under the strict supervision of adults who have studied the precautions given in the experimental set.
- » » Contains some chemicals which 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 young children and pets away from experiments.
- » » Store the chemistry set out of reach of young children (children under 10 years).
- » » Eye protection for supervising adults is not included.

Save packaging and instructions, as they contain important information.

Poison Control Centers (United States)

In case of emergency, your nearest poison control center can be reached everywhere in the United States by dialing the number:

1-800-222-1222

Local Hospital or Poison Centre (Europe)

Record the telephone number of your local hospital or poison centre here:

Write the number down now so you do not have to search for it in an emergency.

When in doubt, seek medical advice without delay. Bring the chemical and its container with you. In case of injury, always seek medical advice.

What's in your experiment kit:



First, check the labels to make sure you have the right substances.

Checklist: Find – Inspect – Check off

✓	No.	Description	Qty.	Item No.
<input type="radio"/>	1	Potassium aluminium sulfate (Alum), 50 g	1	771 061
<input type="radio"/>	2	Potassium aluminium sulfate (Alum), 20 g	1	772 060
<input type="radio"/>	3	Ammonium biphosphate (Ammonium dihydrogen phosphate), 50 g	2	774 290
<input type="radio"/>	4	Plaster powder (calcium sulfate), 200 g	1	771 052
<input type="radio"/>	5	Powdered dye (colouring), pink	1	713 190
<input type="radio"/>	6	Granite rock	1	702 849
<input type="radio"/>	7	Magic water set (aqueous solution of Potassium dihydrogen phosphate)	1	774 300
<input type="radio"/>	8	Jewelry box	3	705 726
<input type="radio"/>	9	Wooden spatula	1	000 239
<input type="radio"/>	10	Measuring cup, 30 ml	2	061 150
<input type="radio"/>	11	Pink mold	1	713 201
<input type="radio"/>	12	Safety glasses	1	052 297

Good to know! Items that are not contained in the kit are indicated in *italic type* in each experiment's "You will need" section.

You will also need:

Scissors, tap water or (preferably) distilled water (from a supermarket, hardware store, or drug store), old pot, hot pad or stove, potholders, large, empty yogurt container, clean, empty jelly jars, paper towels, paper, pencil, tape, newspaper

So nothing goes wrong: A word to parents

Advice for supervising adults

Dear Parents, With this chemistry experiment kit, you will be accompanying your child on a journey into the fascinating world of crystals.

It is natural to have questions about the safety of a kit that contains chemicals. The experimental equipment in this kit meets U.S. and European safety standards, which specify the safety requirements for chemistry experiment kits. These standards impose obligations on the manufacturer, such as forbidding the use of any particularly dangerous substances. The standards also stipulate that adults should assist their children with advice and assistance in their new hobby.

- A. Read and follow these instructions, the safety rules and the first aid information and keep them for reference.
- B. The incorrect use of chemicals can cause injury and damage to health. Only carry out those experiments which are listed in the instructions.
- C. This experiment set is for use only by children over 10 years.
- D. Because children's abilities vary so much, even within age groups, you should exercise discretion as to which experiments are suitable and safe for them. The instructions enable you to assess any experiment to establish its suitability for a particular child.

TIP!

Additionally required items from your household or from the supermarket or drug store are highlighted in *italic script* in the individual experiments. Before your child begins the experiments, he or she should carefully read through everything that will be required and make sure to have all the materials ready.

- E. You should discuss the warnings and safety information with your child or children before commencing the experiments. Particular attention should be paid to the safe handling of acids, alkalis, and flammable liquids.
- F. The area surrounding the experiment should be kept clear of any obstructions and away from the storage of food. It should be well lit and ventilated and close to a water supply. A solid table with a heat resistant top should be provided.
- G. Substances in non-reclosable packaging should be used up completely during the course of one experiment, i.e. after opening the package.

Emphasize to your child the importance of following all instructions and warnings, and the importance of carrying out only those experiments that are described in this manual. Inform your child, but do not frighten him or her — there's no need for that.

Hot water is used in the production of crystal salt solution. You should devote special care to handling it safely and assist your child when help is needed. Make sure there is no fire risk when heating water on the kitchen stove!

While experimenting, please be careful not to let the crystal salts (chemicals) come into contact with the skin, eyes, or mouth. It is also important not to let the crystal salts, their solutions, or especially the finished crystals get into the hands of young children. They could mistake them for candies and put them into their mouths.

The dye will color things very intensely and may cause stains that can't be washed out of clothing. Keep all tablecloths, curtains, and carpets away from the experiment area.

The work area should not be in the kitchen, as chemicals should be kept strictly separate from foods and kitchen equipment. A cool basement



room would be ideal. Do not use any containers or tools in the kitchen after you have used them for growing crystals.

Always get any required equipment and chemicals ready before beginning an experiment. The safety glasses are particularly important!

We hope you and your child have a lot of fun growing crystals!



Before you start experimenting, please read through the following information very carefully. This way, you can easily avoid any possible dangers.

Basic rules for safe experimentation (safety rules)

Stop! Read this first!

1. Read these instructions before use, follow them and keep them for reference.
2. Keep young children and animals away from the experimental area.
3. Store this experimental set and final crystal(s) out of the reach of children under 10 years of age.
4. Clean all equipment after use.
5. Ensure that all empty containers and non-reclosable packaging are disposed of properly.
6. Wash hands after carrying out experiments.
7. Do not eat or drink in the experimental area.
8. Do not allow chemicals to come into contact with the eyes or mouth.
9. Do not apply any substances or solutions to the body.
10. Do not grow crystals where food and drink is handled or in bedrooms.
11. Do not use any equipment which has not been supplied with the set or recommended in the instructions for use.
12. Take care while handling with hot water and hot solutions.
13. Ensure that during growing of the crystals the container with the liquid is out of reach of children under 10 years of age.
14. Do not use any eating, drinking, or other kitchen utensils for your experiments. Any containers or equipment used in your experiments should not be used in the kitchen afterward.
15. Do not return foodstuffs to their original containers. Do not consume any leftover foodstuffs. Dispose of them immediately (in the garbage or down the drain).
16. If chemicals should come in contact with eyes, mouth, or skin, follow the first aid advice (back cover of this manual) and contact a doctor if necessary.
17. Never work alone. An adult should always be present. Also, pay attention to the information on the chemical labels, the "Information about hazardous materials" on page 6, as well as the safety information provided with the individual experiments (for example, having to do with handling hot liquids).
18. Be particularly careful with hot burners, and don't forget to turn them off after use! Do not inhale hot vapors!
19. Pay special attention to the quantity specifications and the sequence of the individual steps. Only perform experiments that are described in this instruction manual.
20. Always wear eye protection. If you wear corrective eyeglasses, you will need protective goggles for those who wear corrective eyeglasses. When working, wear appropriate protective clothing.
21. Always hold containers of hot materials such that their openings are pointing away from yourself or others. Do not inhale vapors that are released while heating!

Also, note the information on the chemical packages and the information about handling the chemicals.

NOTE:

You will need the safety glasses and wooden spatula for every experiment. They will not be specifically mentioned each time in the "You will need" section.



Instructions for using the safety glasses (Item Number 052297)

Use The safety glasses are only to be used with the experiment kit. No other type of application is permitted. Wear the glasses in such a way that the eye area is protected. If necessary, adjust the elastic band to the head circumference of the child. The safety glasses should be used together with contact lenses. Wearers of corrective eyeglasses need special safety glasses for people who wear glasses.

Duration of use Always wear the safety glasses when performing your experiments. Not intended for long-term use. The duration of wear should not exceed the time of the experiment.

Storage Store safety glasses at room temperature in a dry room. After the experiment, return them to their place in the kit box, to keep them from being scratched.

Cleaning Do not clean the safety glasses when they are dry. Clean them with plain water and, if necessary, with a mild household liquid detergent, and dry them off with a soft cloth.

Maintenance In case of defective safety glasses or scratched lenses, exchange the glasses for an equivalently constructed pair.

Inspection Check the safety glasses to make sure they are in good condition, and replace them if they are damaged.

Warning Some extremely sensitive individuals may under certain circumstances experience an allergic reaction to skin contact with some substances.

Replacement These safety glasses are available as a replacement part.

The safety glasses are tested per EC guideline 89/686/EWG (personal protective equipment) and EN 71-4.

Test center: TÜV Rheinland Product Safety GmbH • Am Grauen Stein • D-51105 Köln

Manufacturer: Franckh-Kosmos Verlags-GmbH & Co. KG • Pfizerstraße 5-7 • 70184 Stuttgart

Practical Tips:

Information about handling the substances contained in this kit

Please note the following risk and safety information for the chemicals contained in this kit:

Potassium aluminium sulfate (alum):

Avoid breathing dust. Do not get in eyes, on skin, or on clothing.

Ammonium biphosphate (Ammonium dihydrogen phosphate):

Avoid breathing dust. Do not get in eyes, on skin, or on clothing.

Aqueous solution of monopotassium phosphate (magic water):

Not hazardous. Used as a food additive (E340).

Calcium sulfate (gypsum or plaster powder):

Avoid breathing dust. Do not get in eyes, in mouth, on skin, or on clothing. Do not ingest.

Dye powder (pink): Not hazardous.

>>> **CAUTION!** The following applies to all chemicals: **Keep them locked up. Do not let them get into the hands of children.**

This primarily applies to young children, but also to older children who — unlike the experimenter — have not been appropriately instructed by adults.

Also follow this safety guideline: **IF A CHEMICAL IS SWALLOWED: Immediately seek medical advice and/or attention and be ready to provide the chemical packaging label.**

If any chemicals inadvertently get onto the skin, rinse off immediately under running water. Always be careful not to inhale chemical dust or powder when experimenting.

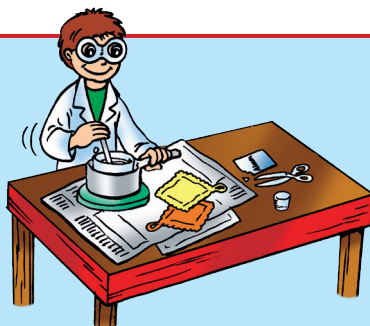
Safety

Before each experiment, always read through the instructions. Only use materials that are mentioned in the instruction manual. Never bring the substances you are handling into contact with your body, particularly with eyes or mouth.

Always wear your safety glasses when handling chemicals. Always be particularly careful with hot burners, and remember to turn them off after use!

When handling plaster, follow these rules:

- › **Do not place the materials in the mouth.**
- › **Do not inhale dust or powder.**
- › **Do not apply to the body.**



Your experiment area...

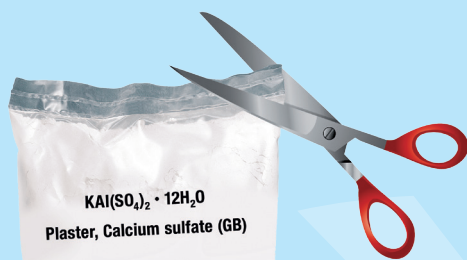
... should be set up in a quiet room. If there are any small children or pets in the house, you should be able to close off the room so they can't get to the chemicals or knock over your crystal-growing jars, which you will have to leave standing for several days. Also, the temperature in the room shouldn't vary too much (no full sun through the window, for example), since the solubility of the substances is temperature-dependent and unwanted heating can cause already-formed crystals to dissolve again.

The kitchen is not appropriate for your experiments, since there is too great a risk that chemicals will get into foods or that someone will inadvertently swallow these substances by mistaking them for food.

A small, quiet, cool, and ideally lockable basement room is much more suitable, and for your workplace you can use a sturdy table with a tough, heat-resistant surface that should always be kept covered with newspaper. Don't forget to clean up after your experiments and to wipe the work surface clean.

Opening the packets

Use a pair of scissors to cut open the packets at one corner. Never use your teeth. Make sure not to cut the printed area so it becomes unreadable.



If the crystal salt has formed clumps, it does not mean there is anything wrong with the quality of the contents. Rather, it just means that some moisture (from the air, for example) has gotten in. This will not affect its function. The age of your crystal salt will likewise make no difference.

After use, re-close plaster and dye powder packets with a clip or a piece of tape.



TIP!

When you close the box, make sure that the lid is positioned correctly. To open it, insert a small screwdriver into the slot on the side and turn carefully.

Cleaning and disposing of waste

Cleanliness is especially important in chemistry. So always clean up any used containers and your workplace immediately after finishing the experiments. Then wash the containers with clean water and dry them with a paper towel, which you should then throw into the trash. Since you will only be working with small amounts of a harmless chemical, you can simply wash any liquid waste down the sink with plenty of water. Solid waste can go into the household garbage. When disposing of dyed liquids, be careful to pour them right into the drain so you don't stain the sink.

Storing the crystals

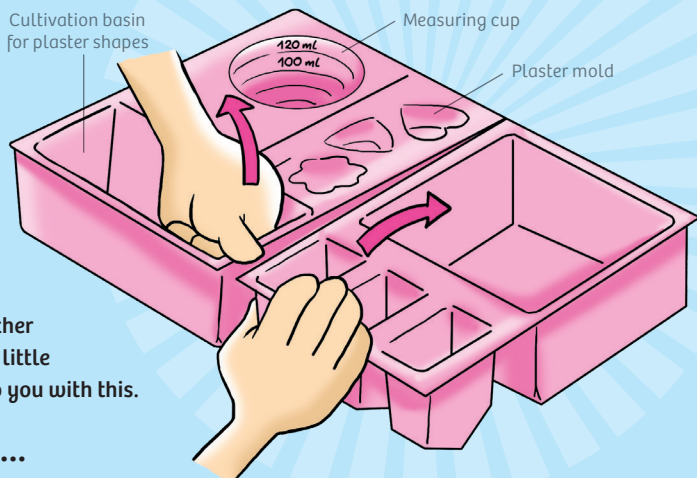
Once you have finished them and they have dried, **always** store any smaller crystals in the lockable jewelry box.

Larger specimens can be kept in a lockable cupboard or on a high shelf, out of the reach of small children.

>>> TIPS

Preparing the plastic insert

The kit's pink insert consists of various basins and containers along with a plaster mold. Separate the individual parts from one another and smooth their edges with a little sandpaper. Have an adult help you with this.



To heat the solutions...

...you should use clean, empty jelly jars. But never, under any circumstances, set the jars directly on a burner or gas flame. This would make glass containers crack and break, and plastic containers would melt.

Instead, get an old cooking pot, around 20 cm in diameter, and fill it with a few centimeters of tap water. The water level should be slightly lower than the level of liquid in the crystal-growing container. Heat the water on the burner to just under the boiling point.

Carefully carry the pot to your work area (ideally, have an adult help you), and set it on a trivet or hot pad. Now place your growing jar in the pot and stir its contents with a wooden spatula. The water will warm the jar contents, and the crystal salt will soon dissolve and completely disappear.

If the crystal salt does not dissolve well, take the growing container out of the pot with a potholder and heat the water on the burner again, and then try to dissolve the salt one more time. **Careful!** Don't burn yourself with the hot water or on the pot, and don't forget to turn the stove off again. **Wear your safety glasses!**

Always have an adult help you when heating water or solutions! Do not work alone!

Also, be very careful not to burn yourself or scald yourself with hot water, and don't spill any crystal salt solutions! Don't inhale the steam that comes off the crystal salt solutions when you heat them!



TIP!

This is how you can label your jelly jars: Write the name of the crystal salt solution with a pencil or ball-point pen on a narrow strip of paper, and secure the paper to the jar by placing a piece of tape over it. If you use self-adhesive labels, cover the label with a piece of tape as well. Get two containers with lids ready to hold your supply of alum and ammonium biphosphate solution, labeling each container with the chemical's name.

The Magical World of Crystals



Crystals are fascinating miracles of nature. They form the most varied shapes — cubes, sharp needles, regular polyhedra, and other complex shapes with smooth, glittering facets.

For a long time, people puzzled over the hidden forces responsible for creating the regular shapes of crystals. They assumed them to be beneficial forces, since they created objects of such wonderful order and beauty. Over the centuries, that gave rise to many myths and fables associated with crystals. They were assumed to hold magical healing powers, and were fashioned into good-luck charms and adornments for the crowns of powerful rulers. Among those treasured crystals were precious stones such as sapphires, emeralds, and rubies.



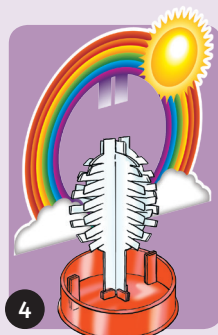
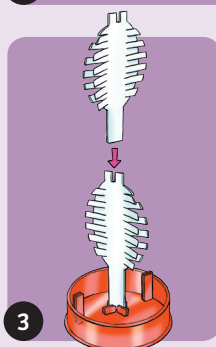
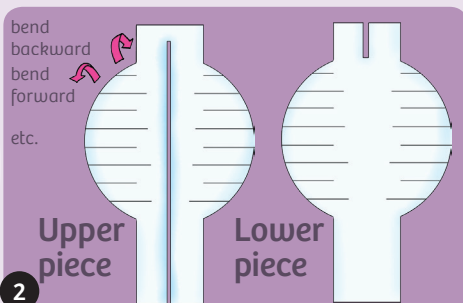
Crystal clouds

YOU WILL NEED

- › 2 white filter paper pieces
- › rainbow card
- › red growing dish
- › magic water
- › scissors

HERE'S HOW:

1. To set up your crystal cloud, find a level, out-of-the-way surface inaccessible to small children and pets. It should be cool — not in the sun or above the heater!
2. Spread apart the paper strips on both paper pieces (upper and lower parts) by bending them back and forth in alternation.
3. Then, push the lower piece into the cross-shaped mounting bracket in the red dish, hold it tight, and push the upper piece onto the lower one. Be careful not to bend the paper sections.
4. Set your rainbow card onto the paper structure and secure the clouds at the bottom to the holder slots on either side.
5. Use the scissors to cut off one corner of the magic water pouch and carefully pour the solution into the cup.



TIP!

The crystals grow especially well in a cool place. If the liquid evaporates too quickly, no crystal needles will form

WHAT'S HAPPENING?

You can quickly see how the liquid rises up the paper. The wet paper looks darker wherever this happens. After a few hours, the liquid will have disappeared from the cup and you will be able to see fine needles of crystal along the edges of the paper. Eventually, all the edges and corners of the paper will be covered with a fuzzy layer of crystals. The dissolved crystal salt was transported on the paper along with the water and crystallized out after reaching the farthest corners.

EXPERIMENT 2

Colorfully glittering crystals

YOU WILL NEED

- › 20 g alum packet
- › dye powder (pink)
- › measuring cup (pink)
- › distilled water
- › empty, labeled jelly jar
- › pot with hot water (no longer boiling)
- › paper towels, potholder, and hot pad or trivet

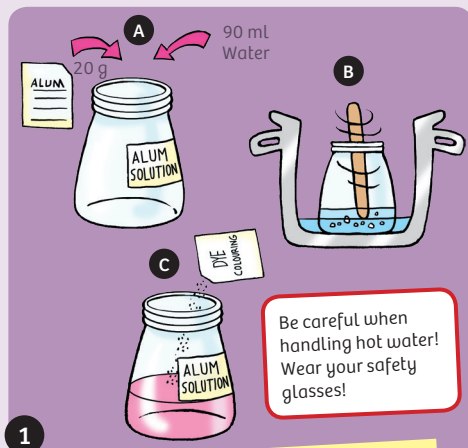
HERE'S HOW:

1. In a jelly jar, mix 20 g alum with about 90 mL distilled water. Heat the solution as described on page 8. When the alum is completely dissolved, add a spatula tip (a small amount scooped up using the tip of the wooden spatula) of dye powder.
2. Cover the jar with a paper towel and let it sit in a quiet spot for 2 days so the alum can crystallize out. Collect the crystals with the spatula and place them on a paper towel to dry. Save them in the jewelry box.

Save the remaining solution containing smaller crystals in the alum storage container.

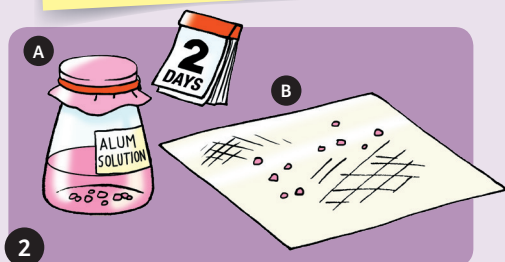
TIP!

If no crystals have formed after 2 days, add a few grains of alum salt from the other packet.



TIP!

You can change the intensity of the color by adding more or less dye powder to the solution.



WHAT'S HAPPENING?

Even though all the chemicals in this kit form colorless crystals, you have made pink-colored crystals by using the dye powder. When the crystals grow, small amounts of dye become embedded in the crystal structure — the exact amount is up to chance.

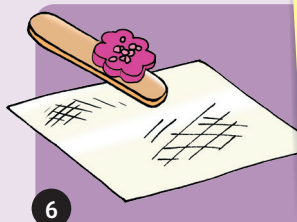
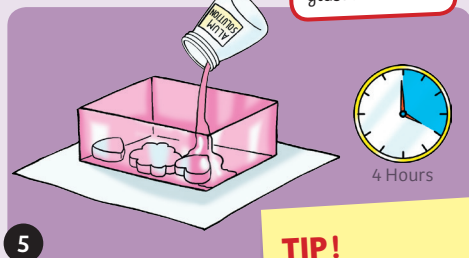
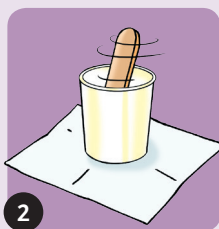
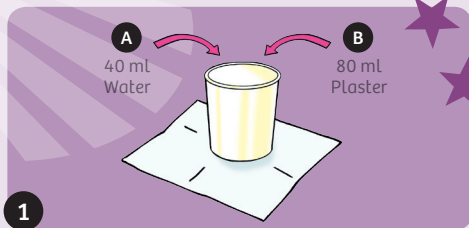
Shimmering shapes

YOU WILL NEED

- › plaster powder
- › dye powder (pink)
- › measuring cup (pink)
- › plaster mold and cultivation basin
- › 50 g alum packet
- › large, empty yogurt container (about 250 mL)
- › distilled water and tap water
- › empty, labeled jelly jar
- › pot with hot water (no longer boiling)
- › paper towels, potholder, and hot pad or trivet

HERE'S HOW:

1. Fill the measuring cup with 40 mL warm tap water. Being careful not to stir up too much dust, mix it in the yogurt container together with 80 g plaster powder (up to the 80-mL mark on the pink-colored measuring cup).
2. Carefully stir the mixture with the spatula until it is as free of clumps as possible.
3. Pour the mixture into the three depressions in the plastic mold. Let the plaster dry for at least one day.
4. Make a new solution of 50 g alum and 150 mL water. You can color the solution with a spatula tip of dye powder.
5. Carefully lift the jar of hot solution out of the pot using the potholder (careful, hot!) and let it cool. Once it has cooled, pour it into the pink basin with the plaster shapes and let it sit for a few hours.
6. Fish out the crystal-coated shapes with the wooden spatula. Caution: The crystals are not waterproof! Pour the rest of the solution into the alum storage container.



TIP!
It might bubble for a while after you pour the solution over the plaster shapes.

EXPERIMENT 4

Dazzling needles of crystal

YOU WILL NEED

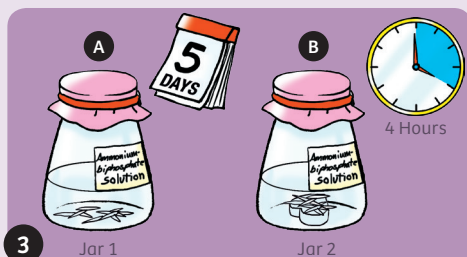
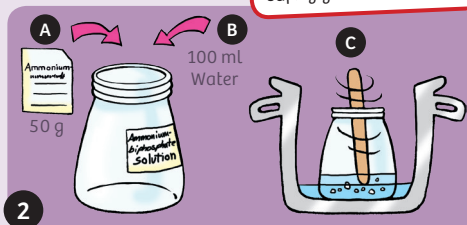
- › 50 g packet of ammonium biphosphate
- › a finished plaster figure (as described in Experiment 3)
- › measuring cup
- › 2 empty, labeled jelly jars
- › pot with hot water
- › paper towels, potholder, and hot pad or trivet

HERE'S HOW:

1. Make some more plaster figures as described in Experiment 3 and let them dry for a day.
2. Mix 50 g ammonium biphosphate and 100 mL distilled water in a jelly jar. Heat the mixture until all the salt is dissolved, as described on page 8.
3. Divide this solution between 2 jelly jars. Once the solution has cooled, place a plaster figure in one of the jars. Let both jars sit for a few hours in a quiet spot. The plaster figure will quickly become overgrown with fine needles. Carefully fish it out with the wooden spatula and let it dry on a paper towel. The other solution will still need to be left alone for a few days. Then, let its crystals dry and save them in the jewelry box.



Be careful when handling hot water! Wear your safety glasses!



WHAT'S HAPPENING?

The plaster figure has tiny pores that offer rich possibilities for the dissolved salt particles to start forming crystals, so a lot of fine crystal needles will grow very quickly.

It takes longer for crystallization to begin in the other solution, since there's no easy place for the crystals to start. Once they do get going, the crystals grow larger, but also chunkier, because there's nothing to keep their growth within specific limits.

Granite rock with crystals

YOU WILL NEED

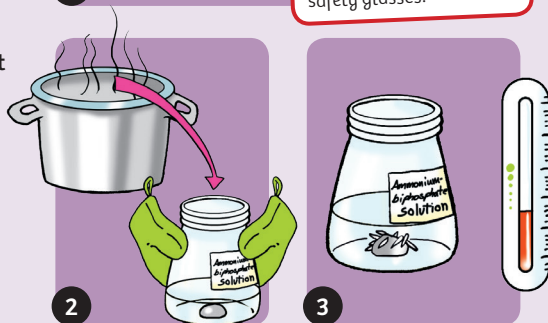
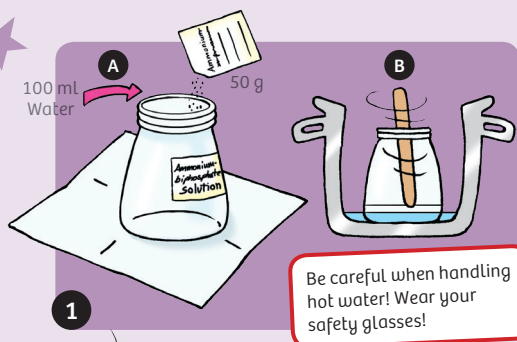
- › 50 g packet of ammonium biphosphate
- › granite rock
- › empty, labeled jelly jar
- › pot with hot water (no longer boiling)
- › paper towels, potholder, and hot pad or trivet
- › distilled water

HERE'S HOW:

1. Prepare a hot saturated solution of 50 g ammonium biphosphate and 100 mL water, as described on page 8.
2. Carefully lift the jar out of the pot with a potholder and place the rock into it (rinse the rock first). Be careful not to make the liquid splash up!
3. When the solution is allowed to cool in a quiet spot, crystals will form on the bottom of the jar and then on the rock itself.
4. Fish out the rock with a wooden spatula before it has a chance to become stuck in the crystals growing on the bottom of the jar. If you like, you can reheat the solution and repeat the process to let the crystals grow larger.
5. Finally, remove the rock and let it dry on a paper towel. Save the remaining solution in the ammonium biphosphate storage container.

TIP!

If the salt does not dissolve completely when heated, add 20 mL water.



WHAT'S HAPPENING?

When crystals separate out from the supersaturated solution, it is especially easy for them to do so on the rough surface of the rock. In nature, you can often find large crystals on chunks of rock. You have replicated this kind of natural phenomenon in your experiment.

EXPERIMENT 6

Crystal designs

YOU WILL NEED

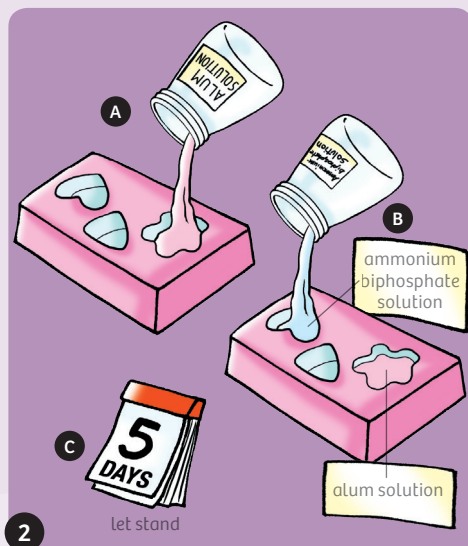
- › the remaining alum and ammonium biphosphate solutions (from the storage containers)
- › plaster mold
- › pot with hot water (no longer boiling)
- › paper towels, potholder, and hot pad or trivet

HERE'S HOW:

1. Heat the solutions again in a water bath, because more crystals will have grown in them since the last experiment.
2. Let the solutions briefly cool and pour each solution into a different mold depression. Do not mix the solutions. You can reheat the remaining solution and use it to fill the mold once it has cooled, in case too much water evaporates.
3. After several days, crystals will form on the floor of the mold. Refill the mold with more solution until it is completely filled with crystals and you have gotten a crystal heart (or other shape). Pour the rest of the solution down the drain and let the crystals dry on a sheet of paper towel. Keep them out of the reach of small children.



Be careful when handling hot water! Wear your safety glasses!



WHAT'S HAPPENING?

Crystals separate out from the solution and grow in the mold you have selected. After a few days, they will completely fill up the mold and create a design in its shape.





Basic concepts for crystal growers

Crystal Growth

A crystal is built out of very tiny building blocks, called **unit cells**. These unit cells consist of **molecules**, which are in turn made of **atoms** connected together. Atoms are the smallest building blocks of all substances. In the case of crystal salts, these unit cells are electrically charged, so they are called **ions**.

A crystal growing in a solution is a very active building site. The tiny particles whizz around and look for an ideal spot to settle, which usually tends to be an edge or a corner. If the landing spot isn't right, the particle whizzes on until it finds the right kind of place where a unit cell is being formed. Only then will it stay put and become incorporated into the emerging crystal. That is how the crystal grows, layer by layer.

Saturated Solution

A solution is said to be saturated when it contains as much of a substance as can possibly dissolve in it at a given temperature. A saturated salt solution, for example, holds 16 g of salt per 100 g of solution at 20 °C. But if you heat a saturated solution, it becomes capable of dissolving more of the substance. If, on the other hand, you cool a saturated solution, it becomes supersaturated: Now it contains more salt than it can hold at the lower temperature. The consequence: Solid salt will separate out on the bottom of the container and along the container's walls — in the form of crystals. **Crystals will only grow out of supersaturated solutions.**

How to make a supersaturated solution

1. EVAPORATION METHOD

The evaporation of a saturated solution is known as the evaporation method. By this method, just the water evaporates, reducing the quantity of water, while the amount of substance contained in it remains the same. This means that the solution gradually becomes supersaturated.

2. COOLING METHOD

The cooling of a saturated solution is known as the cooling method. The cooling method works very quickly. An alum solution that is saturated at 60 °C deposits most of its alum in the form of crystals when it is cooled to 20 °C. These crystals will be very small and not look very pretty, however.

A strongly supersaturated solution, in other words, will not produce very nice crystals. It is better to use a solution that is just barely supersaturated.

The cooling method is good, though, for quickly creating lots of small individual crystals, which you can then coax along to form larger, prettier crystals by using the evaporation method. Due to the slow evaporation of water from the container, the solution always stays just barely supersaturated. This method does require a few days, however.



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FIRST AID...

... in case any accidents should happen during experimentation. .

First Aid

Important: In case of injury, always seek medical help.

When conducting experiments with chemicals:

- »» **In case of eye contact:** Wash out eye with plenty of water, holding eye open if necessary. Seek immediate medical advice.
- »» **If swallowed:** Wash out mouth with water, drink some fresh water. Do not induce vomiting. Seek immediate medical advice.
- »» **In case of inhalation:** Remove person to fresh air. For example, move person into another room with open windows or outside.
- »» **In case of skin contact and burns:** Wash affected area with plenty of cold water for at least 10 minutes. Cover burns with a bandage. Never apply oil, powder, or flour to the wound. Do not lance blisters. For larger burns, seek immediate medical help.
- »» **In case of cuts:** Do not touch or rinse with water. Do not apply any ointments, powders, or the like. Dress the wound with a germ-free, dry first-aid bandage. Foreign objects such as glass splinters should only be removed from the wound by a doctor. Seek the advice of a doctor if you feel a sharp or throbbing pain.

In case of doubt seek medical advice without delay. Take the chemical and its container with you.

In case of injury always seek medical advice.

In case of emergency, contact the United States Poison Control Center at:

Elsewhere, record the telephone number of your local hospital or poison center here:

1-800-222-1222