



Grow some crystals

Activity

CLASS LEVEL	Fourth - Sixth classes
SKILLS	Observing, Experimenting
CONTENT	Materials
CROSS - CURRICULAR LINKS	Geography – Natural Environments, Rocks and soil
EQUIPMENT	Sodium bicarbonate (<i>bread soda</i>), cream of tartar (<i>or Bextartar</i>) (<i>both obtainable in supermarkets</i>), plastic container, stirrer (<i>e.g. plastic spoon</i>), cold water, bowl of hot tap water. Hand lens to look at crystals.
PREPARATION BACKGROUND INFORMATION	<p>Collection of materials</p> <p>Most solids are made up of lots of crystals. Crystals come in many shapes and sizes. Sometimes you cannot see them because they are too small or are stuck together. If you look at sugar under a magnifying glass you will see tiny glassy cubes. These are sugar crystals. We sprinkle tiny crystals of salt on our food. Diamonds are probably the most beautiful crystals of all. Their clear flat faces sparkle in the light.</p> <p>Crystals of a substance have a regular pattern; there are seven main crystal shapes. Crystals of the same substance are always the same shape.</p> <p>To make good crystals you need to make a concentrated solution of the substance, i.e. keep adding the substance to the water until no more will dissolve. Sometimes putting a small crystal of itself into the solution can act as a 'seed' to produce a large crystal.</p>
TRIGGER QUESTIONS	<p>Here are some questions to ask the children to set the scene for the activity</p> <p>What is a crystal? How would you describe a crystal? (<i>A crystal is a substance with a regular shape</i>).</p> <p>Do you know of any crystals? Where would you find crystals at home? (<i>salt, sugar, washing soda (take care), jewellery</i>)</p> <p>What shape are they?</p>



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ACTIVITY

Put one level teaspoon of bread soda into a plastic container. Add about 50 ml of water and stir well. Add one level teaspoonful of cream of tartar and stir well. What happens? (*Bubbles form. The two chemicals react together to form Rochelle salt*). Add a second level teaspoonful of cream of tartar and stir well. Repeat with a third level teaspoonful of cream of tartar. Stir well. To make sure the reaction has fully taken place put the container into a shallow bowl of hot tap water.

Some solid will be left on the bottom; you can let it settle and pour off the clear liquid or else filter it. Leave the solution in a cupboard for several days for the water to evaporate and you should get some crystals of Rochelle Salt. Growing crystals takes time but the crystals are worth it.

SAFETY

Sodium bicarbonate and cream of tartar are low-hazard chemicals, but, as with all chemicals, take care.

Wash hands after activity

FOLLOW-UP ACTIVITIES

1. Try 'growing' your own sugar crystals as follows:

Tie a piece of string (*not nylon*) to the middle of a pencil and lie the pencil horizontally over the top of a jar with the string dangling into the jar (*but not touching the bottom or sides of the jar*). Fill a second jar with hot water and stir in sugar, a teaspoon at a time, until no more will dissolve. If you want coloured crystals add a few drops of food colouring. Now pour this solution into the first jar with the string. Put this jar in a place where it will not get disturbed. It could take a few days or weeks for the crystals to grow depending on the environment.

2. If you want to grow a mass of crystals or a crystal garden:

Pour your saturated solution over a rock, brick or sponge, cover with kitchen paper to keep out the dust and allow the liquid to evaporate slowly.