



Grow Your Own Crystals!

A mini-book of fun science experiments (5 pages)

From HomeschoolFreebieOfTheDay.com

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Growing your own crystals

THE CLASSIC MAGIC SALT CRYSTAL GARDEN

Materials:

Something hard but porous: a piece of brick, lump of charcoal, charcoal briquets, or piece of cement. (Charcoal briquets are best if they are not the quick-start type, with added chemicals.)

Table salt; 2 Tbsp.

Water; 2 Tbsp.

Laundry bluing; 2 Tbsp.

Household ammonia; 2 Tbsp.

Procedure:

1. Put the charcoal briquets into a shallow dish or pie pan.
2. Mix the four chemicals. (The pre-mixed chemicals are in the rubber balloon in this package. Do not splash on clothing, as it may stain. Do not drink, as ammonia is poisonous.)
3. Pour the mixture over the cement. Add a couple drops of food coloring onto briquets if desired. Crystals will begin forming in just a few hours, and will continue to grow over several days. Don't touch or bump, as crystals are very fragile.
4. If you wish to, you may add the same amount of the chemicals every few days to keep crystals growing. Pour gently into dish (not on top of crystals).

Why do crystals form?

*As the water in your solutions evaporates, the molecules of solid substances in the liquid (solute) link back together in patterns that reflect the shape of the molecules. (For instance, salt crystals are cube-shaped, because salt molecules are cube-shaped; sugar crystals are oblong and flat, because sugar molecules are oblong and flat; bluing crystals are feathery, etc.) Solid materials in which the molecules are arranged in repeating patterns like this are **crystals**.*

COOL CAVE STALAGTITES

Needed:

washing soda (get at grocery)

hot tap water

foot-long piece of string

2 baby food jars

two washers

small dish

Tie a washer to each end of the string. Fill the two jars with hot water and stir in washing soda until no more will dissolve in the water. Place the ends of your string into the two jars, with the ends of the string touching the bottom of the jars. Put the dish between the two jars so you have a loose, drooping string "bridge" hanging over it, from one jar to the other. Let sit for 4 or 5 days. A cave-like stalagtite (formation that grows down from the ceiling) and stalagmite (formation that grows up from the floor) will start to grow over the dish at its lowest point.

CREEPING CRYSTALS

Needs:

1 T epsom salt

1 T water

1/4 t food color (any but yellow)

2 2" jar lids

spoon

Pour epsom salt & water into saucepan. Stir & cook over medium heat until salt dissolves. Remove from heat and stir in food coloring. Pour into first jar lid until almost full. Pour any extra into second lid. As liquid evaporates, crystals will start to form. Over several days, they will grow up and over the lid. They will last for months.

CREEPING CRYSTAL PAINT

Make the Creeping Crystal formula given above. Add an extra 1/4 t of food color to the mix. Brush onto paper, cardboard or glass -- as it dries, frost-like, feathery crystals will appear on the painted surface.

SALT CRYSTAL CUBES

Needed:

1/2 cup table salt

1 cup water

glass

cotton string

paper clip

pencil

Mix salt and water until salt is dissolved. Pour into drinking glass. Tie a paper clip to one end of a short piece of string and tie the other end around a pencil. Lay the pencil across the top of the glass and suspend the string and paper clip in the salt water solution. Put in a place (a sunny window is best) where it will not be shaken or disturbed and observe for two or three weeks. As the water evaporates, salt rock crystals will form on the string and paper clip. The longer you wait, the bigger the crystals will get. The salt crystals will be cube shaped, which reflects the molecular structure of salt.

(For colored crystals, add a few drops of food coloring when first mixing your salt solution.)

ROCK CANDY (aka: the experiment you EAT)

Needed:

1/2 cup sugar

1 cup hot tap water

glass

cotton string

pencil

food coloring

Mix sugar and water until sugar is dissolved. Add 2-3 drops of food coloring if you want colored candy. Pour into drinking glass. Tie a knot in one end of a short piece of string and tie the other end around a pencil. Lay the pencil across the top of the glass and suspend the string in the sugar water solution. Put in a place (a sunny window is best) where it will not be shaken or disturbed and observe for two or three weeks. As the water evaporates, sugar crystals will form on the string and paper clip. The longer you wait, the bigger the crystals will get. Sugar crystals will have long, flat slanted sides.

The End