TAKE & MAKE KIT
Crystal Suncatcher

TIME: 20 min + dry time

ADULT SUPERVISION ADVISED

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What's in this kit?

Crystals are really awesome to look at, but they're super interesting too. We're going to take a look at how they form, what type of crystals you get, and way more.

You will learn:

- Geology
- Crystals
- Chemical Reactions

Let's Get Started!

Materials

Epsom salt
3 clear recycled plastic lids
Plastic cup
String
Push pin

Tools

Bowl or glass measuring cup
Fork
Microwave (optional)
Tray
Water

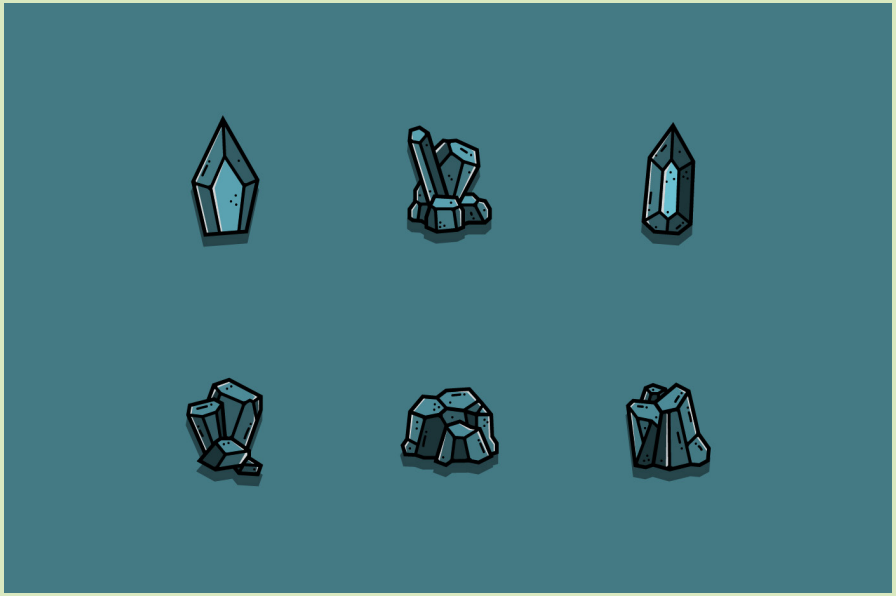
What Are Crystals?

Crystals are a special kind of solid material where the molecules fit together in a pattern that keeps repeating itself. Because of these patterns, crystals form all sorts of unique shapes.

How Do Crystals Form?

The process of crystals forming is called crystallization. Crystals mostly form in nature when liquids cool, and then start to harden slowly. Atoms in the liquid cling to each other by electrical forces as they try to become stable. They do this in patterns that repeat themselves.

Another way crystals form is when water evaporates from a chemical mixture. Salt crystals often form as salt water evaporates. This is the type of crystallization you'll be experimenting with in this kit!



Step 1 - Prep crystal solution

You will be using a ratio of 1:1 water to epsom salt for this project.

Add 1 cup of epsom salt to the empty plastic cup.

Add 1 cup of water to a microwave safe bowl. Heat the water in the microwave for 45 seconds. Alternatively use very hot tap water and skip the microwave. Be careful and ask an adult for help handling materials if you need to.

Note: Don't overheat the water! If the water is too hot or too cold, the crystals won't develop. Boiling hot is too hot and room temperature is too cold. If your water has large bubbles out of the microwave it is too hot. Let it sit for a few seconds to cool off.

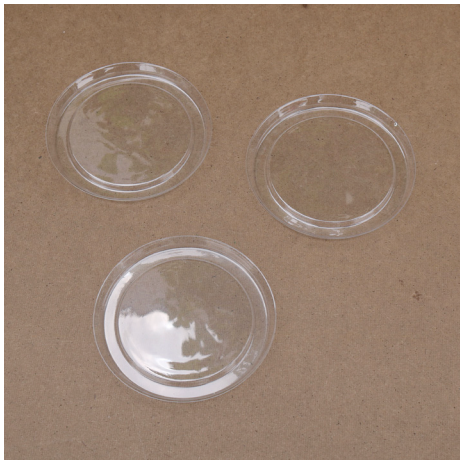
Step 2 - Create crystal solution

Pour the water into the cup with the salt. Do this quickly while the water is still warm. Stir the solution for 1-2 minutes to dissolve as much of the salt as possible.

Note: You can add a few drops of food coloring to the water to make the crystals a different color.

Step 3 - Prep workspace

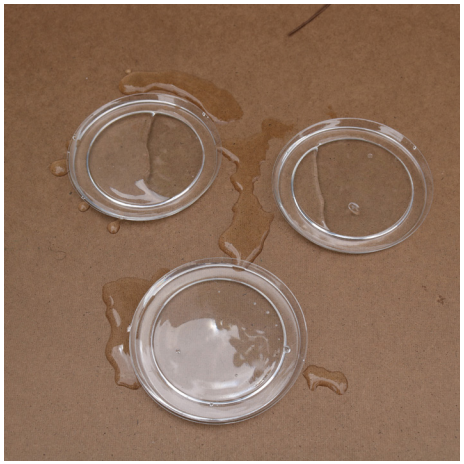
Place several plastic lids on a flat-bottomed tray (like a baking sheet) in a sunny location where they can remain undisturbed (up to one day).



Note: Make sure this is a space that can get a little bit messy. You may spill some of the crystal solution on your workspace.

Step 4 - Fill suncatchers

Pour some of the crystal solution from your cup into the recycled plastic lids. Use just enough to cover the bottom of the lid and DO NOT overfill!

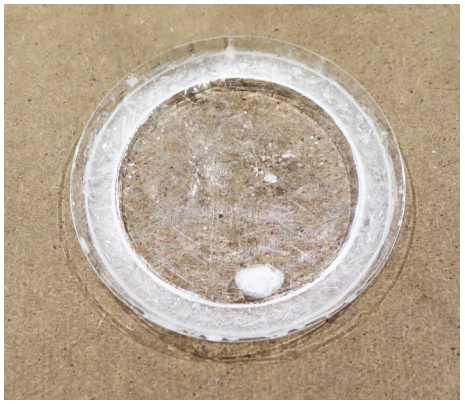


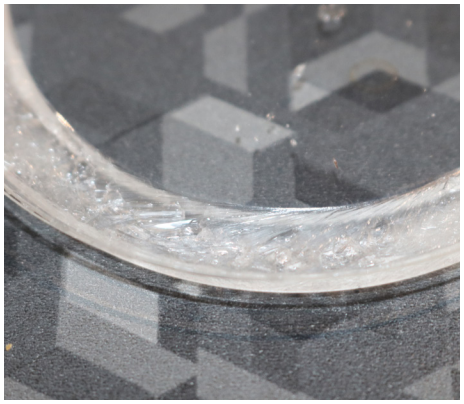
Step 5 - Crystallization

Leave the lids in your sunny workspace and wait for the magic to happen. Depending on the precise amount of the crystal solution you added to your lids, it will take a few hours and up to a day to dry. At first it will look like the lids only contain water but over time the water will evaporate and the crystals will remain.

When the water has completely evaporated your crystal suncatcher is ready!

You will be able to see lovely crystal structures from both sides of the lid.



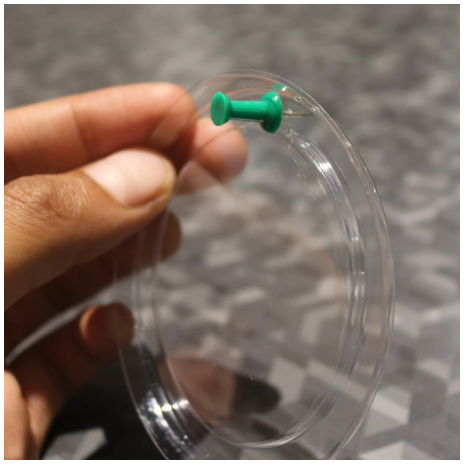


Step 6 - Hang your suncatcher

VERY carefully poke a small hole in the edge of the lid and thread a piece of string through the hole. Tie in a knot and hang your suncatcher up!

These are super fragile. One big bump and your crystal suncatcher may crumble. Have an adult help with this part of the project. Make a few in case you lose one!

Note: Over time your crystals will begin to dry out and harden even more. Eventually they will whiten as the salt dries out completely. These suncatchers will have a limited lifespan. They will last for a week or two before they deteriorate. This is normal for this kind of crystal.



Challenge!

Take a picture of your Crystal garden and suncatchers you created and post it on Instagram with the hashtag #MPLCreates to show off your amazing project!

Go Beyond

Use the rest of the mixture to create a crystal garden!

Keep the rest of the liquid in the cup and add a few grains of sand or a pebble to it. Crystals need something to grow on and one little impurity in the water like a grain of sand will help ensure they have a place to nucleate (begin forming bonds that create crystal formations).

Place the jar in the back of the refrigerator. Alternatively, quickly cool the mixture for 10 minutes in the freezer and then move it to the refrigerator. There is a slightly lower success rate going straight from mixing to the fridge.

Leave the mixture overnight in the fridge. Crystals may start forming in as little as 3 hours but the best results typically show when the gardens are left to sit undisturbed overnight.

WHAT SHAPE DO CRYSTALS FORM?

There are all sorts of shapes that make crystals so cool.

Cubic shape – These look like a box and can have 6, 8 or even 12 sides.

Hexagonal or trigonal shape – These have 3 or 6 sides.

Monoclinic shape – These form a rectangular prism with a parallelogram as its base.

Orthorhombic shape – These have three mutually perpendicular axes that are unequal in length, appearing as if two pyramids are stuck together at their base.

Tetragonal shape – These are a a rectangular prism with a square base.

Triclinic crystals – These have random and irregular shapes with vectors and angles of unequal length.

When you experiment with your salt crystal creations, see if you can decipher what shape of crystal they resemble the most!

HANG OUT, MESS AROUND, GEEK OUT.

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We'd love to see what you come up with. Please share and tag us with your creations at **@MPLCreates** on Instagram or email us at **MPLCreates@milwaukee.gov**