Growing Salt Crystals

(to show how minerals grow)
Table salt or sodium chloride crystals are great crystals to try if you've never grown crystals before because it's easy to find salt and water (the ingredients), the crystals are non-toxic, and no special equipment is required. Let's get started!

Difficulty: Easy

Time Required: a few hours to several days, depending on your method

Salt Crystal Materials

- table salt — sodium chloride
- water
- clean clear container
- piece of cardboard (optional)
- string and pencil or butter knife (optional)

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- Stir salt into boiling hot water until no more salt will dissolve (crystals start to appear at the bottom of the container). Be sure the water is as close to boiling as possible. Hot tap water is not sufficient for making the solution.
- If you want crystals quickly, you can soak a piece of cardboard in this supersaturated salt solution. Once it is soggy, place it on a plate or pan and set it in a warm and sunny location to dry out. Numerous small salt crystals will form.
- If you are trying to form a larger, perfect cubic crystal, you will want to make a seed crystal (a small crystal introduced into a liquid to act as a nucleus for crystallization).
- To grow a big crystal from a seed crystal, carefully pour the supersaturated salt solution into a clean container (so no undissolved salt gets in), allow the solution to cool, then hang the seed crystal in the solution from a pencil or knife placed across the top of the container. You could cover the container with a coffee filter if you like.
- Set the container in a location where it can remain undisturbed. You are more likely to get a perfect crystal instead of a mass of crystals if you allow the crystal to grow slowly (cooler temperature, shaded location) in a place free of vibrations.

Tips for Success

1. Experiment with different types of table salt. Try iodized salt, uniodized salt, sea salt, or even salt substitutes. Try using different types of water, such as tap water compared with distilled water. See if there is any difference in the appearance of the crystals.

2. If you are trying for the “perfect crystal,”' use uniodized salt and distilled water. Impurities in either the salt or water can aid dislocation, where new crystals don't stack perfectly on top of previous crystals.
3. The solubility of table salt (or any kind of salt) increases greatly with temperature. You'll get the quickest results if you start with a saturated saline solution, which means you want to dissolve salt in the hottest water available. One trick to increase the amount of salt you can dissolve is to microwave the salt solution. Stir in more salt until it stops dissolving and starts to accumulate at the bottom of the container. Use the clear liquid to grow your crystals. You can filter out the solids using a coffee filter or paper towel.

—Anne Marie Helminstine, PhD, chemistry expert