

## Science: Salt Crystal Eggs



### **YOU WILL NEED:**

- Card, coloured if you have it
- Water
- Salt
- Container and Spoon {for mixing salt solution}
- Tray or Plate
- Egg Shape {for tracing}, Scissors, Pencil
- Hole Puncher and String {optional if you want to hang them when you are finished}

### **SALT CRYSTALS SET UP**

STEP 1: Start by making as many egg shaped cut outs as you would like. Or you can just make one giant egg if you prefer that fills your tray. You will want the shapes to lay as flat as possible, so we used a baking tray.

At this point, go ahead and punch a hole in the top of the egg cutout if you plan to use your salt crystal eggs as an ornament!

STEP 2: Place your egg cutouts on your tray and get ready to mix your super saturated solution (see below).

### **MAKING A SUPER SATURATED SOLUTION FOR GROWING SALT CRYSTALS**

First you need to start with hot water, so this is an adult only step if needed. We microwaved about 2 cups of water for 2 minutes. We did not need all of our solution for our tray.

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Now, it's time to add the salt. We added one tablespoon at a time, stirring very well until completely dissolved. You can feel the point at which it's not gritty as you stir. {Close to 6 tablespoons for us}

Do this with each tablespoon until you can't get rid of that gritty feeling. You will see a bit of salt on the bottom of the container. **This is your super saturated solution!**

### **WHAT IS A SUPERSATURATED SOLUTION?**

A supersaturated solution is a mixture that can't hold any more particles. Like with the salt here, we have filled all the space in the water with salt and the rest is left behind.

Water molecules are close together in cold water, but when you heat the water up, the molecules spread away from each other. This is what allows you to dissolve more salt in the water than you normally could. It even appears cloudy.

You can try this experiment with cold water to compare the differences in the amount of salt needed to get this mixture, and you can compare the results of the crystals afterward.

**BEFORE** you pour the solution, move your tray to a quiet location that won't be disturbed. It's easier than trying to do it after you have added the liquid. We know! Go ahead and pour your mixture over the eggs just covering them with a thin layer of the solution.

Our egg cutouts had a bit of a tough time staying separated and we didn't try to fix it too much. You could experiment with different methods like tape to stick them down first or an object to block their movement.

Now you just need to give your eggs time to form the salt crystals. We set this up mid-morning and started seeing results by late evening and definitely the next day. Plan to allow approximately 3 days for this activity. Once the water has evaporated, they will be ready.

We transfer our salt crystal covered egg cutouts to paper towels and let them dry out for awhile. Plus the crystals really seem to bond nicely as everything dries out more.

When they are nice and dry, add a string if you wish. Examine the salt crystals with a magnifying glass too. You can explore one single crystal as well like we did below.

These crystals are so cool and they will always be cubed shaped whether they are by themselves or in a cluster. This is because a crystal is made of molecules that come together in a repeating pattern. Check out our single crystal above!

### **HOW DO SALT CRYSTALS FORM**

You have already learned a bit about a supersaturated solution and how it's made and you have also learned that a crystal is made up of molecules that will form a specific pattern if properly grown.

So how do the salt crystals grow? As the solution cools the water molecules start to come back together, the particles of salt in the solution fall out of place and onto the

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paper. More will connect with the molecules that have already fallen out of the solution.

As the salt solution cools and the water evaporates, the atoms (niacin and chlorine) are no longer separated by water molecules. They begin to bond together and then bond further forming the special cube-shaped crystal for salt.

### **THE CRUCIAL FACTOR: WATER TEMPERATURE**

In order to grow the best crystals, the solution has to cool slowly. This allows any impurities that are also caught up in the solution to be rejected by the forming crystals. Remember the crystal molecules are all the same and are looking for more of the same!

If the water cools too quickly the impurities are trapped creating an unstable, misshapen crystal.

### **SALT CRYSTALS SCIENCE PROJECT**

You could experiment with different water temperatures, different trays or plates, or covering the crystals slightly to minimize heat loss.

You could also vary the type of salt used. What happens to drying time or crystal formation if you use rock salt or Epsom salt?