

**Project FOCUS
Best Lessons
SECOND GRADE**

Title of Lesson: Making Frost

Theme: Physical Science

Unit Number: 1 Unit Title: Properties of Matter

Performance Standard(s) Covered (enter codes):

S2P1

S2CS4

Enduring Standards (objectives of activity):

Habits of Mind

- Asks questions
- Uses numbers to quantify
- Works in a group
- Uses tools to measure and view
- Looks at how parts of things are needed
- Describes and compares using physical attributes
- Observes using senses
- Draws and describes observations

Content (key terms and topics covered):

Essential addressed: What are the properties of matter?

- Enduring understandings and key terms: The properties of matter are observable and usually exist in one of three forms: solid, liquid, or gas.

- Key terms: water, cycle, freezing, condensation

Learning Activity (Description in Steps)

Abstract (limit 100 characters): The importance of this experiment was to demonstrate the freezing properties of water.

Details: Frost can be made with an empty can, crushed ice, and salt. First, fill an empty can (soup can, coffee can, etc) 2/3 full with the crushed ice. Spread about a teaspoon full of water on a piece of paper. Place underneath the can. Next, fill the remainder of the can with salt and mix with the ice. Keep mixing for a few minutes or until well mixed. Frost will start to appear on the outside of the can.

Frost forming on the can after salt is mixed with ice

Materials Needed (Type and Quantity):

-Ice

-Can (soup/coffee - remove label)

-Salt

-Stirrers (wooden spoon / popsicle stick)

-Paper

-Teaspoon of water

Notes and Tips (suggested changes, alternative methods, cautions):

You can get one can to do the demonstration yourself or have multiple cans so that each group of 4-5 students can take turns stirring their can. Mix for 5 minutes and allow the can to sit for an additional 5 minutes to allow further frost to develop on the outside of the can.

Possible discussion questions to can ask:

- (1) We have been talking about matter. Can anyone name the three different types of matter?**
- (2) Who has been outside when it's really cold and seen snow?! What type of matter is this?**
- (3) CONNECTION: "Have you ever seen road workers sprinkle ice on the roads in the winter time?!"**

After the experiment:

- (4) What happened?!**

Explanation: Salt lowers freezing point, will make the can cooler! /// water will creep up the container and form frost!

Further explanation:

Why does this happen? The salt wants to absorb water to make a salt solution. To do that, the salt has to melt the ice into water. The heat required to melt the ice comes from the ice itself. The strange effect is caused by the chemical reaction between the salt and the ice. Strange as it seems, melting the ice actually makes the mixture cooler. The salt water mixture inside the can gets below freezing, so the moisture from the air that collects on the outside of the can will freeze. This is why frost forms!

Cautions:

Outside of the can can get very cold, advise the students to not hold the can for a long period of time while they stir.

Sources/References:

- 1) <http://cocopreme.hubpages.com/hub/Easy-Snow-and-Ice-Experiments>**
- 2)**
- 3)**