WOW at Home Lesson Plan

How to Make Frost

Program Duration:
10 minutes

Recommended Grade Levels:
Grades K-5

Materials Needed:
- Aluminum cans (2)
- Salt
- Crushed ice

Learning Objectives
Students will be able to determine how frost is formed

Preparation
- Discuss with your child what condensation is
- Ask them how they think condensation forms
- Provide examples of condensation
- Ask them what they think frost is
- Ask them when they think frost forms
- Ask them how salt will impact temperature of ice

Background
The amount of water on Earth stays the same throughout time. It cycles through Earth in stages of the water cycle: evaporation, condensation, and precipitation. For this experiment, we will be focusing on condensation. Condensation is when water vapor (water that has evaporated into a gas) turns back into its liquid state. When the temperature falls below freezing, water vapor that condenses actually turns into frost. Salt has a very interesting reaction with ice. It lowers the melting point (temperature where a solid will melt) of ice. In this experiment, we will see how condensation and frost forms, and what happens when you add salt to ice.

Activity
How to Make Frost
1. In one aluminum can, place freshly crushed ice.
2. In the other aluminum can, place crushed ice and salt.
3. Observe which can forms condensation or if either form frost.

Additional Questions
1. If more salt is used, what happens?
2. If you shake the can with salt, what happens?
3. Which results were surprising or unexpected?
4. Why is it important to know what salt does to ice?
5. Why do we use salt on walkways in the winter?

Summary
Water vapor is all around us in the air we breathe. Thus, when the water vapor around the can condenses and turns liquid, you can see the water drops. In very cold instances, the condensed vapor turns into frost, the coating of ice we see on the ground and objects in winter. Salt is a very useful tool, especially in the wintertime. Salt lowers the melting point of ice so that water vapor in the surrounding can will fall below freezing as well and turn into frost. Understanding condensation and the impact of salt will allow you to have a better understanding of the physical states of water. Now in the wintertime, you will understand why we use salt to treat icy walkways!

Will frost form?		
Ice	**Your Guess (Y/N)**	**Actual (Y/N)**
With Salt		
Without Salt		

Adapted from How to Make Frost in a Can at
https://www.steamsational.com/how-to-make-frost/