



Snowy Science Recipe Book

A collection of snow-like substances you
can create at home!

More about Crystals:

Crystal- a solid substance that has naturally formed into a regular shape (like a cube or hexagon) with symmetrical flat planes.

Crystals are formed in nature when liquids cool, allowing the minerals in the liquid to gather together and form crystal structures.

This is usually a slow process, like when quartz crystals form in slowly cooling magma. However, it can also happen quickly, like when water quickly cools to ice, forming a snowflake.

Instructions:

Pour 2 tsp Insta-Snow powder into your container. Add 4 oz of water.

Now watch closely as the powder absorbs the liquid. It happens fast so pay attention!

After a few moments you can touch and play with your new instant snow.

What happened??

Insta-Snow is a special kind of polymer called a **crosslinked polymer**. It is made up of many small parts which link together to make something bigger and stronger.

This substance is also **hydrophilic**, which means it sticks to water. Because of its special polymer shape, Insta-Snow can expand a lot as it absorbs water. For more info on Insta-Snow, visit stevespanglerscience.com/lab/experiments/insta-snow-polymer

Instant Snow

Materials Needed:

2 teaspoons(tsp.) Insta-Snow powder (hydrogel)

4 ounces (oz) of water- room temperature works best

A container, like a cup or bowl- preferably clear

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Different crystals have different shapes. Take a look at some crystals of quartz, salt, sugar, and ice with a magnifier to see if you find differences.

Sugar crystals



Ice crystal

Quartz crystals



Salt crystals



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Snow Dough

Materials Needed:

1 cup (c.) cornstarch

2 Tablespoons (Tbs) vegetable oil

Optional add-ins: oil-based scents

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More about Snow Dough:

Hydrophobic- Some materials repel, or push away water molecules. Oil does not have a polar charge like water does so the two substance don't have any way to stick to each other.

More about Slime:

Polymer- A substance made up of many identical small parts which link together to make something bigger and stronger. It may have different properties than the smaller parts by themselves.

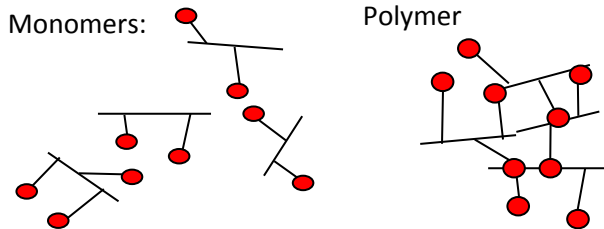
Monomer- A molecule that can be bonded to other identical molecules to form a polymer.

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There's more to know!

More about Hydrogel:

Crosslinked Polymer- This is a special kind of polymer that creates a kind of microscopic netting. This structure is what allows hydrogel to hold so much water!



Hydrophilic- Water is a special kind of molecule with a positive charge. That means substances with negative molecular charges, like hydrogel, will stick to water the same way negative and positive magnets stick together

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Instructions:

Mix all the materials together in a large bowl. It will seem like there is not enough moisture for all the cornstarch, but keep mixing.

Put your finished snow dough in the refrigerator for 10 minutes or so if you want extra snowy sensory play!

It's like kinetic sand:

This dough is crumbly and soft like snow, and you can shape and mold it, too. The oil in the recipe makes this dough **hydrophobic** so it behaves like wet sand or snow while staying dry.

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Puffy Snow Paint

Materials Needed:

½ cup (c.) shaving cream

½ cup (c.) White or clear liquid glue

Optional add ins: food coloring, glitter

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Instructions:

Pour the shaving cream and glue into a large container.

Mix the ingredients until everything is fully combined and you have a fluffy substance.

Now, pour or scoop your paint into smaller containers and add whatever colors or other add ins you'd like to each. You could scoop your paint into a small plastic bag. Seal the bag and cut off a corner. Use the bag of puffy paint like a frosting bag to create designs on your paper. Try creating a snowflake!

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Snowy Slime

Materials Needed:

¼ cup (c.) white liquid glue

1 teaspoon (tsp.) baking powder

2-5 Tablespoons (Tbs) contact solution

Optional Add-ins: glitter, food coloring

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Add more salt 1 tablespoon at a time until it will not dissolve anymore.

Let the salt water cool for 3 or 4 minutes before carefully pouring it into a tall glass or jar.

Then, tie your string around the middle of your pencil or popsicle stick. The string should be long enough to almost, but not actually, touch the bottom of your glass. Tie a paperclip to the end of your string to keep it from floating.

Balance your pencil across the opening of your glass or jar so the string hangs into the center (be sure it isn't touching the sides or bottom). Loosely cover the jar with a cloth or plastic wrap and wait.

You should see crystals beginning to grow after a day or two. Use a magnifier to get a closer look at their shape.

Let them grow for up to two weeks for bigger crystals!

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“Ice” Crystals

Materials Needed:

2 cup (c.) water

¼ - ¾ cup (c.) salt (you could also use borax powder or sugar, the amount may be different)

A pencil or popsicle stick

String

A tall cup or glass, preferably clear

Instructions:

First, bring the water to almost boiling.

Next, add the salt about starting with ¼ cup. Stir well until all the salt is completely dissolved. The water should appear completely clear.

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Instructions:

First combine the glue, baking powder, and any add-ins you want.

Next, add the contact solution. Start with 2 tablespoons and then add more until the slime isn't sticky anymore and you have the consistency you want.

You'll need to use your hands to make sure everything gets mixed together really well.

Fun Fact:

This slime is also a **polymer**, although a different kind than our Insta-Snow. It is made of a long chain of repeating molecules called **monomers**.

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