

Really Good Stuff 



INSTA-SNOW[®]
POWDER - 5 lb (2.27 kg)
ACTIVITY GUIDE

OVERVIEW:

Easy to Mix, Amazing to Watch! You won't believe your eyes! Just mix a scoop of Insta-Snow Powder with water to make an eruption of fluffy snow that will not melt and lasts for weeks. It's safe to touch, non-toxic, and guaranteed to amaze your friends. It's amazing!



a Really Good Stuff brand

AGES 4+

SKU: WSNO-750
RGS: 800223

Adult supervision required. Do not ingest.

VOCABULARY

Young scientists love to learn and use scientific words and you will too! So here's the chance to impress your friends and family as the demonstrations are completed. Just use these bold words to help everyone understand the fun, scientific "magic" of the demonstrations.

absorb – to take in

artificial – made or produced by human beings

cross-linking – linking long polymer chains together

dehydrate – to remove water from something

elastic qualities – capable of returning to original shape or size after being stretched, pressed, or squeezed together

eruption – the sudden occurrence or appearance of something

molecule – the smallest particle of a substance having all the characteristics of the substance

non-toxic – not poisonous

osmosis – water molecules pass through a barrier from one side to the other

polymer – long chains of molecules

sodium polyacrylate – a superabsorbent powder

solid – a substance that keeps its size and shape

superabsorbent – capable of taking in a lot of water

transformation – a complete or major change in something's appearance or form

MATERIALS | What's included

- 1 Insta-Snow® Powder – 5 lb (2.27 kg)
- 1 Blue scoop
- 1 Insta-Snow® Powder activity guide

MATERIALS | What you'll need to get

- 1 Styrofoam™ cup
- 2 Clear plastic cups
- 1 Measuring cup
- 1 Large bowl or tray
- Water
- Salt



ACTIVITY: Amaze Your Friends With Insta-Snow®!

TIME: 10 minutes

MATERIALS

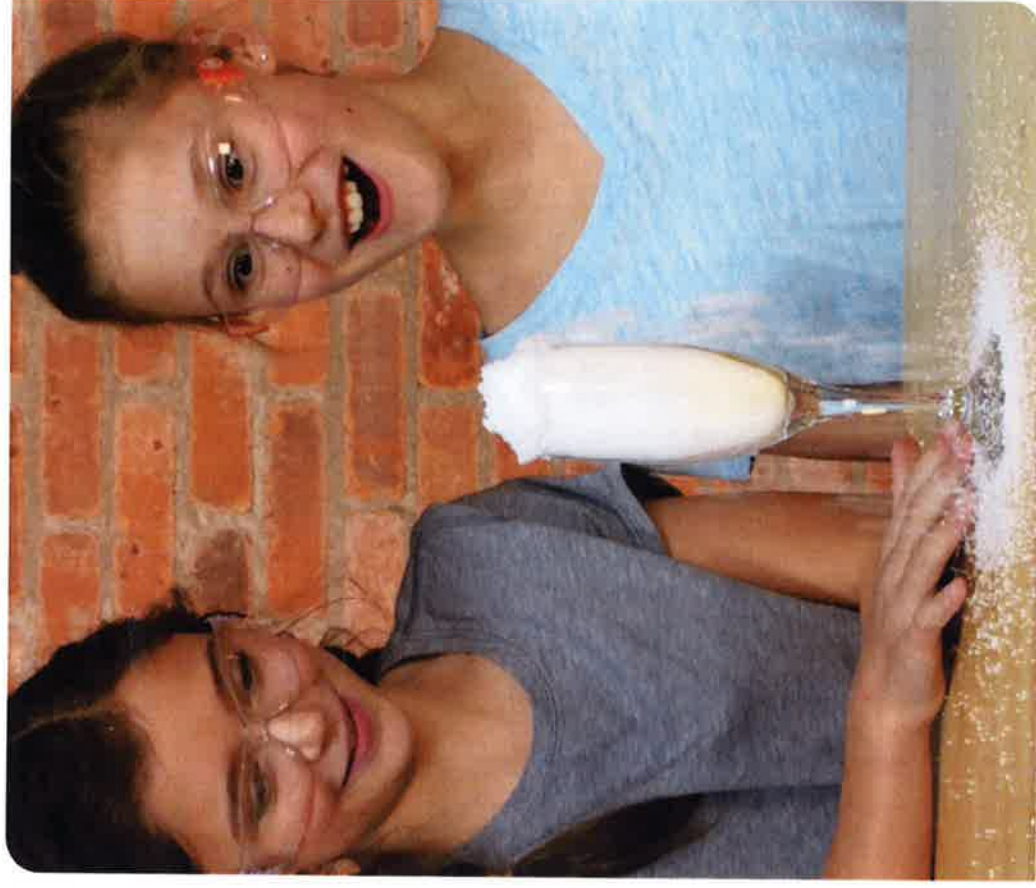
- 1 Blue scoop
- Insta-Snow®
- 1 Styrofoam cup
- 1 Clear cup
- 1 Measuring cup
- 1 Large bowl or tray
- Water

STEP-BY-STEP INSTRUCTIONS

1. Secretly place 1 blue scoop of Insta-Snow® into the Styrofoam cup.
2. Use a measuring cup to measure out exactly 2 fl oz (59 mL) of water into a clear cup. Too much water will result in the powder **absorbing** the water but not producing the “fluffy flake” effect.
3. It’s show time! Have a little fun with your audience by telling them this tall tale: “For years, everyone believed that water only turned to ice when the temperature dropped below 32°F (0°C). However, my recent scientific discovery of **dehydrated** snow will change the ski industry forever.” Yadda - yadda - yadda! You get the idea.
4. Quickly pour the water from the clear cup into the Styrofoam cup. Ask a volunteer to assist you as you slowly pour the “snow” into cupped hands. Place a large bowl or tray underneath your volunteer’s hands to catch any of the snow **polymer** that falls.
5. Repeat the experiment, but this time use two clear plastic cups so that the audience can see the magical **transformation**. Watch their mouths drop to the floor when they see how quickly Insta-Snow® works.

? HOW DOES IT WORK?

While they are squeezing, poking, and running the snow through their fingers, casually mention that the fake snow is actually a variation of the **superabsorbent polymer** found in the lining of baby diapers. It’s amazing how fast they will put it down when you say that! Take this opportunity to explain the science behind the magic as you introduce your audience to the amazing properties of **superabsorbent polymers**.



? HOW DOES IT WORK? Continued

Insta-Snow® is an amazing **superabsorbent polymer** that turns ordinary water into fluffy snow. In fact, this faux snow is so realistic that it is now being used in indoor snowboarding parks throughout the world. Unlike traditional **artificial** snow, Insta-Snow® will not melt or ice up. It also costs half as much to maintain, feels surprisingly realistic, and keeps snowboarders dry when they fall.

Aside from indoor snow parks, just imagine the unlimited uses for this safe, **non-toxic** chemical for parties, holiday displays, decorations, movie sets, toys or in the school science lab as a way to turn students onto the industrial applications of **superabsorbents**. Get ready for a blast of arctic “snow”. You won’t believe your eyes!

Insta-Snow® is perfectly safe to touch and squeeze through your fingers. As with any chemical, do not put Insta-Snow® in your mouth or get it in your eyes. If you get Insta-Snow® in your eyes or mouth, flush with generous amounts of water.



? HOW DOES IT WORK? Continued

The Mix-ologists at Steve Spangler Science coined the name Insta-Snow®. The official name for this fine, white powder is **sodium polyacrylate**. This chemical is better known as the **superabsorbent powder (polymer)** hidden in the lining of baby diapers. However, scientists accidentally created a variation of the diaper **polymer** that was far more fluffy when it **absorbed** water. Voila! That’s Insta-Snow®. Insta-Snow® is in a classification of chemicals called a **polymer**. The word **polymer** simply means long chains of **molecules** (“poly” means many and “mer” is a unit or **molecule**). Insta-Snow® soaks up water using the process of **osmosis** (water **molecules** pass through a barrier from one side to the other). When water comes in contact with the **polymer**, it moves from outside the **polymer** to the inside and causes the **polymer** to swell. The **polymer** chains have an **elastic quality**, but they can stretch only so far and hold just so much water. Otherwise, your container of Insta-Snow® would grow as big as a house! Hey, that would be cool!

For the scientists in the audience, there are several different kinds of sodium **polyacrylate**. When water is added to a diaper, the **polymer** quickly turns into a gel-like **solid**. Insta-Snow®, on the other hand, becomes very fluffy when water is added. Both **polymers** look and feel the same before water is added; however, Insta-Snow® has a much higher degree of **cross-linking** between the long chains of **molecules**. This tightly **cross-linked** network rapidly unfolds when it comes in contact with water which accounts for its greater ability to swell up into a fluffy material. So now you know!



TAKE IT FURTHER

- Experiment with different mixing ratios of powder to water, to find the perfect, fluffy snow mixture.
- Dissect a baby diaper to find the **superabsorbent polymer** hiding in the middle layer. Collect the diaper **polymer** (you'll be able to extract about 1 teaspoon) and add 2 ounces of water. Compare the features of this **polymer** to Insta-Snow®. Chemically speaking, these two **polymers** are cousins.
- Pour a little salt in the fluffy "snow" mixture. Within seconds, the snow appears to melt. Why? Salt permanently breaks down the **superabsorbent polymer** and releases the water.
- After making up the perfect batch of fake snow, put some in the freezer. The snow should freeze in about 8 hours and it feels like real snow!



DRYING INSTRUCTIONS

Insta-Snow® is reusable! Make sure you and anyone else who will be handling the snow wash their hands before touching it. To turn the Insta-Snow® back into powder, dry out the fluffy white snow. Don't leave the snow in a container where it will be piled on top of itself and never cover your Insta-Snow®, unless it is back in the powder state. If it is covered, it is almost guaranteed to result in gray and moldy snow. Yuck! Use a flat surface and spread the Insta-Snow® in as thin a layer as possible. No more than a half-inch thick. After a few days, your Insta-Snow® will be back in its original powdery state.



NGSS CONNECTIONS

And just for teachers – as you know, the Next Generation Science Standards (NGSS) set expectations for what science concepts that students should understand. These Insta-Snow® Powder demonstrations start young scientists on the way to meeting those standards. Take a look and see what can be accomplished!

Young scientists (**grades K-2**) who demonstrate understanding can:

- Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. (NGSS **2-PS1-1**.)
- Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose. (NGSS **2-PS1-2**.)

Young scientists (**grades 3-5**) who demonstrate understanding can:

- Conduct an investigation to determine whether the mixing of two or more substances results in new substances. (NGSS **5-PS1-4**.)

Young scientists (**grades 6-8**) who demonstrate understanding can:

- Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. (NGSS **MS-PS1-2**.)

! NOW... A WORD ABOUT SAFETY

Disclaimer: Insta-Snow® is non-toxic and safe to touch and is slippery when wet. Recommended for ages 4 and up. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct or consequential arising out of the use or the inability to use the product. Manufacturer's and seller's liability is limited to replacement of this product.

STEM CONNECTIONS

FOR TEACHERS, PARENTS, GRANDPARENTS, & ALL-AROUND SCIENCE ADULTS

We haven't forgotten about the new STEM and STEAM initiatives you've been hearing about in our schools, bringing Science, Technology, Engineering, (Art), and Math together to make young scientists real thinkers! Look what your young scientists integrated into the Insta-Snow® Powder demonstrations.

- **S**cience – transformation, dehydration, absorption, polymers, molecules, osmosis
- **T**echnology – have young scientists research real-world uses of sodium polyacrylate, the chemical found in Insta-Snow® Powder
- **E**ngineering – challenge young scientists to build a miniature ski slope covered with Insta-Snow®, and test kid-created snowboards, skis, and sleds
- **A**rt – have students create a poster to entice people to come to an indoor snowboard course with Insta-Snow®
- **M**ath – measuring, volume



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