



From the Spangler Science Labs

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<http://www.stevespanglerscience.com/content/experiment/insta-snow-polymer>

## Instant Snow - Erupting Snow Polymer

### Just add water and watch the Insta-Snow powder erupt.

You won't believe your eyes. Just add water to the mysterious white powder and, in seconds, the transformation begins. The liquid magically changes into a fluffy white powder that looks just like snow. It's actually a safe, non-toxic polymer that absorbs water and fluffs up to look like snow.

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### Materials

- [Insta-Snow polymer](#)
- 2 plastic cups
- Measuring cups
- Measuring scoop (teaspoon)
- Water

1. Use the blue scoop that came in your kit to measure out 1 teaspoon (about 5 grams) of Insta-Snow powder into the empty mixing cup.
2. Measure 8 ounces of room temperature water into a second cup.
3. Quickly pour all of the water into the cup with the Insta-Snow powder. Don't take your eyes off the erupting snow!
4. Go ahead... put your fingers in the fluffy fake snow. It looks so real that special effects artists are now using it in movies. If you let the snow sit out, the water will evaporate and the once fluffy snow will turn back into the dry powder. That's right... it's reusable!!!

### How does it work?

Insta-Snow® is actually derived from the superabsorbent polymer found in baby diapers. The only difference (and it's a big one) is that the Insta-Snow polymer not only absorbs water but the long chains of molecules swell to an enormous size. The polymer 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 it to swell. The polymer chains have an elastic quality, but they can stretch only so far and hold just so much water.

The Insta-Snow reaction is a great example of a physical reaction - a reaction where the substance itself does not change. When an ice cube melts, a physical reaction takes place where the solid ice turns into a liquid, but the substance (water) never changes - it's still water! However, in a chemical reaction, a new substance is formed and energy is either given off or absorbed.

If you think of the Insta-Snow powder as millions of tiny sponges, it's easy to see that neither the Insta-Snow powder or the water was changed. If you allow the water to evaporate, the Insta-Snow powder dries out and returns to its previous state, ready to be used again.

### Use Insta-Snow to Teach Conservation of Mass

Great Science Fair Idea - Use Insta-Snow to learn about the conservation of mass. Start by accurately weighing 1 blue scoop of the snow polymer (about 3 grams). Perform the experiment described above by adding 2 ounces (60 mL) water to the powder to make snow. Accurately weigh the snow. Place the snow in an open container and allow the water to evaporate. This may take several days,

depending on the humidity. When all of the water has completely evaporated, accurately weigh the remaining powder. If the law of conservation of mass is correct, you should have recovered the same amount of Insta-Snow powder you started with at the beginning of the experiment. This proves that the reaction that took place was a physical reaction and not a chemical reaction since the Insta-Snow powder never actually changed.

### **Additional Info**

Insta-Snow® is a synthetic polymer with super water-absorbing properties. It's the only faux snow on the market today that erupts when water is added. Similar superabsorbent polymers have been used in the past to absorb moisture in disposable baby diapers... without the incredible expanding property! Insta-Snow is so realistic that it is now being used in indoor snowboarding parks throughout the world.

### **What are the best mixing proportions?**

Mixing 1 teaspoon of Insta-Snow powder with 2 ounces of room temperature water produces the best quality snow. It is always recommended to make the snow in small quantities to achieve the greatest amount of mixing. Insta-Snow powder expands to 100 times its original volume. Just a small amount of powder is needed to make an impressive quantity of snow. On a much larger scale, 1 pound of Insta-Snow powder makes nearly 8 gallons of fluffy snow!

### **How long does the hydrated snow last?**

The snow will start to dehydrate after a few days due to evaporation. Just spray the top of the snow with water and fluff the snow with your fingers to give it a fresh, fluffy look. You can also let the snow completely dry out to use it again. The dry form of Insta-Snow powder will last forever!

### **Why does the snow feel cold to the touch?**

Since the snow is almost entirely made up of water, the water is bound to evaporate. The process of evaporation produces a constant cooling effect. That's why it's so much fun to touch!

Will the snow ever turn back into water? No, the fake snow will not melt since it is not really ice. However, the water can be released from the superabsorbent polymer by adding salt. The addition of salt destroys the water absorbing properties of Insta-Snow® forever.

### **Does Insta-Snow have to be on a special surface?**

No, Insta-Snow can be used on almost any surface except untreated wood. Keep the snow off of any surface that might be damaged by water. Surfaces that are ideal include tile, plastic, and glass. Insta-Snow will not stain fabric, but normal care should be taken when applying this water-based material.

### **Can Insta-Snow be colored?**

Yes! Just add a few drops of food coloring to the water before mixing it with the Insta-Snow powder.

### **Can Insta-Snow be thrown away in the trash?**

Insta-Snow is very easy to clean up and can be disposed of in the trash. Just brush the surface clean or use a vacuum to pick up the snow. Eventually the hydrated snow will turn back into the dry powder and can be easily swept or vacuumed. Insta-Snow powder is a non-hazardous, non-toxic, environmentally safe polymer.

### **Is Insta-Snow safe to use outside?**

Yes! Insta-Snow looks so real that it is being used by special effects artists in movies to snow outdoor scenes without damaging the plants and grass. Sprinkle the hydrated snow on evergreen trees to produce a realistic snow effect. In fact, the water absorbing properties of the snow are actually beneficial to the plants. Remember, Insta-Snow® is very slippery when wet. Use special care to keep the snow off of any walking surface.

### **Is there more than one Insta-Snow on the market?**

There is only one Insta-Snow® as indicated by that "circle R" thing. We don't use the ® everywhere because it becomes somewhat annoying, but the name Insta-Snow is a federally registered trademark of Steve Spangler Inc. (Federal Trademark Registration #2928946). But that hasn't stopped the knock-off companies from branding their own versions of a snow polymer. Our favorite knock-offs are the companies who believe that Insta-Snow is the same superabsorbent polymer found in a baby's diaper. If this were true, every time the baby went potty, the diaper would erupt to an enormous size and explode! Might be a great way to potty

train the kid, but it's not true. Insta-Snow® is the only polymer that instantly ERUPTS when it comes in contact with water. The knock-off "snow" companies tell their customers to "...add water and stir the mixture for 20-30 seconds to make snow." All you have after 30 seconds is a tired hand and a cup of baby diaper goo.



[Insta-Snow Ideas](#)