

MxMo XCIX – Ice Baby!

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I though I'd take this opportunity to discuss my favorite toy, er, tool. *The ice sphere maker.*

Making Clear Ice at Home

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Other than a few
bubbles in the bottom,
this is a clear ice
sphere.

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- Impurities – dirt, etc.
- Dissolved salts and other minerals
- Bubbles
- Compression fractures

To avoid the first two, use filtered water. We use tap water run through a reverse osmosis filter. The last two are harder. To control bubble formation and fractures, you need to control the speed, direction and time of freezing.



This cube was frozen in the center of a 6 cube tray. It

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froze from the side (left),
top and bottom. You can see
that the fractures and
bubbles formed where the ice
began to meet.

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Compression fractures are caused by ice expanding as it freezes. If the water is freezing from one direction, it will remain clear. When the freezing ice meets the bottom of the container, or ice freezing from another direction, it will fracture.

So to make clear ice:

- Use filtered water – removes impurities and dissolved minerals
- Freeze it from one direction – prevents fracturing
- Avoid freezing it quickly – reduces bubbles
- Stop it before it freezes to the bottom of the container – reduces bubbles and fractures



These 3 pieces of ice are sitting top down. All used filtered water. Left: there was a small amount of unfrozen water in the bottom. Fractures and bubbles had started to form. There is plenty of usable clear ice in this piece. Center: the ice has frozen

to the bottom. Fractures take up half of the ice. Right: this piece froze from all directions and is heavily fractured.

To freeze from one direction, put the water in an insulated container without a lid into your freezer. The closer the temperature of your freezer is to 32°F (0°C), the slower your ice will freeze. And the faster your food will spoil. Since we also like to eat, and I don't feel like having a dedicated freezer to make clear ice, I just pressed on at -6°F.

Here is how I solved the issue in the 1/2 Gal. Cooler and the Cup/Foam/Foil assembly that fits inside and contains it. On this



The 1/2 Gal. Cooler and the Cup/Foam/Foil assembly that fits inside

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Here you can see through
the plastic that the
foam is now near the top

of the cup.

To prevent this, I lined the bottom of the cooler with aluminum foil, (plastic wrap would be better, but I couldn't get it to stay down in the bottom). I then put about 3 inches of spray foam insulation into the bottom of the foil lined cooler and shoved 1 Hefty cup down into the foam. Looking through the clear plastic, I could see gaps in the foam near the top of the cup. I carefully removed the foil, foam and cup and gently squirted additional foam between the foil and the plastic. I then put it all back into the cooler. This was allowed to dry for 24 hours. I again pulled out the foil, cup and insulation and trimmed the excess foil and insulation from the top of the cup. The plastic cup now fit snugly into the cooler and my contraption was ready for use.



A clear ice plug next to its Hefty cup. It is sitting top down. You can see the freeze line in the center. The bottom and lower sides of the cup had begun to freeze.

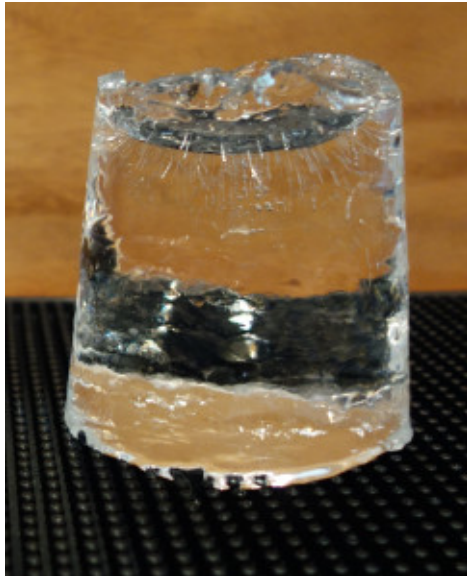
Since I refuse to raise the temperature of our freezer, I found that the ice still froze to the bottom of the container too quickly. It was not frozen enough overnight, but was

frozen to the bottom before I got home from work. My solution was to first pour very hot water into the cooler and let it sit for 5 minutes. I then drained and dried the cooler and pushed my cup/foil/insulation assembly into the bottom. Next, a single clean Hefty cup was filled with filtered water and set down into the cup/foil/insulation assembly in the bottom of the warm cooler.



To remove the partially frozen bottom, hold the ice with a towel and tap it with a heavy knife.

This set up froze the water nearly to the bottom in 22 hours. I broke the bottom of the ice to remove a small amount of water, and then saved the ice in the freezer in a plastic bag. This ice “plug” can be used to make an ice sphere or a large ice cube. Of course, as you can see in the above video, the ice plug can shatter even if you allow it to temper before shaping.



Clear ice plug ready to shape. Always allow the ice to 'temper' – let the surface warm to room temperature. The ice will then appear clear rather than frosty. Otherwise, it is more likely to fracture when you shape it.



Clear ice sphere that shattered in the ice

sphere maker, even though it was tempered. These fracture lines are on the surface and disappear quickly in the drink.

Cheers!