

A MINIMALIST FERMENTATION COOLER

(Or: How to brew lager for as little as \$11.87 (2 for \$16.92) plus tax.)

I have built a minimalist version of Ken Schwartz's "Son of a Fermentation Chiller." Ken's design is very clever and has been popular. See Ken's plans at <http://www.blackcanyonbrewers.com/BCHA-PDF-Files/chiller.pdf> and photos at <http://www.olderascal.com/brewing/fermentationchiller/index.html> for photos. There's U-Tube videos, too! <http://www.youtube.com/watch?v=Mb226sT6qEc>

I wanted something quick and cheap, without the fan and thermostat, to see if a minimal approach was practical. It is.

Constructed out of 1½ inch polystyrene foam insulation. This is the cheap stuff. There is higher quality construction insulation board available. The 1½ inch thickness is sturdy enough that a wood is not necessary. I used "Liquid Nails" adhesive, as suggested by Ken Schwartz. It is easy to use and plenty strong. Caulk and toothpicks are probably unnecessary, but are a nice touch for optimal strength and insulation. I have also tried 2 inch styrofoam, but it was harder to work with. Using construction insulation board, 1 inch would probably be strong enough.

Interior dimensions are 16" wide, 13" deep, 24" tall. Be sure your system fits. Modify plans as needed. Use these plans as a starting point, and modify to suit your taste. For example, a side panel could be removable so you wouldn't have to lift the carboy.

Materials (From Home Depot)

Two 2' x 4' sheets of 1.5 inch Styrofoam insulation board (\$4.70 each). This is the cheap white stuff. At 1.5 inches, it is strong enough for the box. One 4' x 8' (\$14.45) sheet will build two, but it may be tricky bringing home from the store.

One tube of Liquid Nails Extra Strength (\$2.47). (Plus a caulk gun if you don't have one)

Optional: Bamboo BBQ skewers or long toothpicks, silicone caulk.

Assembly:

1. Measure and cut pieces with fine toothed saw, or serrated knife.
2. Assemble box by gluing. Hold together with tape while assembling. Let glue dry, preferably overnight, "clamped" with weight or elastic. (I didn't do this, but you could "nail" everything together with toothpicks before the glue sets to hold it together.)
3. Cut the 4 top edge pieces and check that they will make a snug fit in the box. Glue to the box lid. Reinforce with 8 toothpicks and let dry overnight under a little weight.
4. Optional: When glue is dry, reinforce box with large toothpicks or equivalent. (I cut bamboo BBQ skewers in half, and hammered them in like nails.)
5. Optional: Caulk joints inside the box after the glue is cured. Outside too if you want.

Done!

To use:

Place carboy in the box. Place 2 to 4 bottles of ice in the corners of the box. Almost any quart or one-half gallon sized plastic bottles can be used

Tape a thermometer to the carboy or inside of the box, or suspend through a hole in the lid or side. Keep track of temperature. Once to twice a day, exchange fresh ice, as needed.

Notes: I found temperature dropped 4-5 degrees a day at first, later 2 degrees a day. More ice, faster. Reduce ice as needed when target temperature is reached.

Easily held 50 degrees while room was 70, refreshing ice once or twice a day. I didn't try to go cooler, but I am confident I could.



Finished box. I cut a small hole in the top, because the fermentation lock didn't quite fit. Adjust for your own situation.

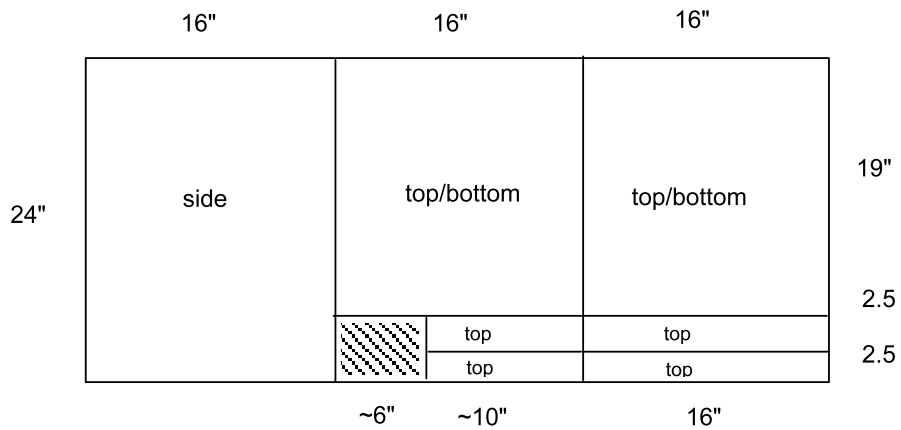
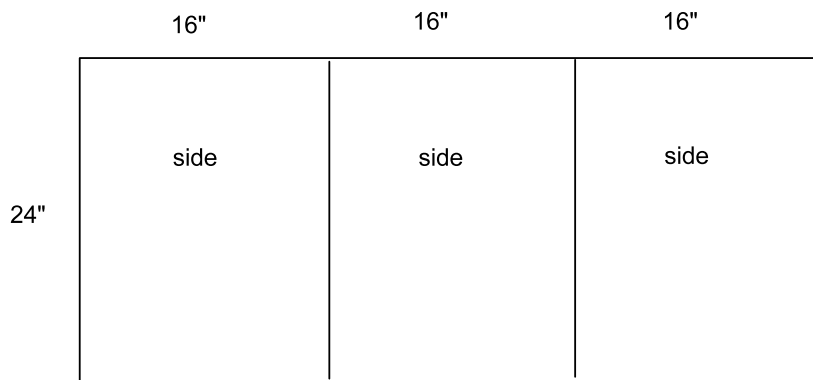


The assembled lid. Snugly fits for good insulation. Note removable plug to allow for extra height as needed.



View from above. I use a 1 liter water bottle in each corner. Swap out with frozen bottles daily or as needed. Room for a second layer of bottles. Larger bottles can fit.

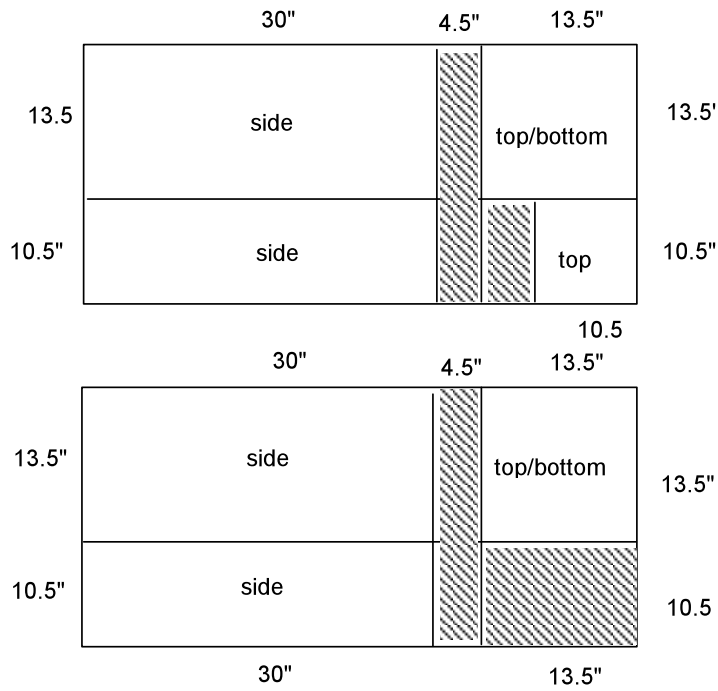
Plans for cutting the two 2x4 foot 1½ inch thick styrofoam sheets. I had good results with a fine toothed saw (an electric jigsaw). A serrated knife will work. Experiment with the tools you have.



Here is a similar box designed to hold a Cornelius keg. The same construction method was used. Here I used 2 inch thick Styrofoam sheet for maximum insulation, but I recommend a 1 ½ thick sheet to be easier to handle and give slightly more interior space. With this design, frozen water bottles can be stacked in just one corner.



For keg: Plans for cutting two 2x4 foot sheets of 1½ inch styrofoam sheets.



For Keg: Plans for cutting two 2x4 foot sheets of 2 inch styrofoam sheets.

