

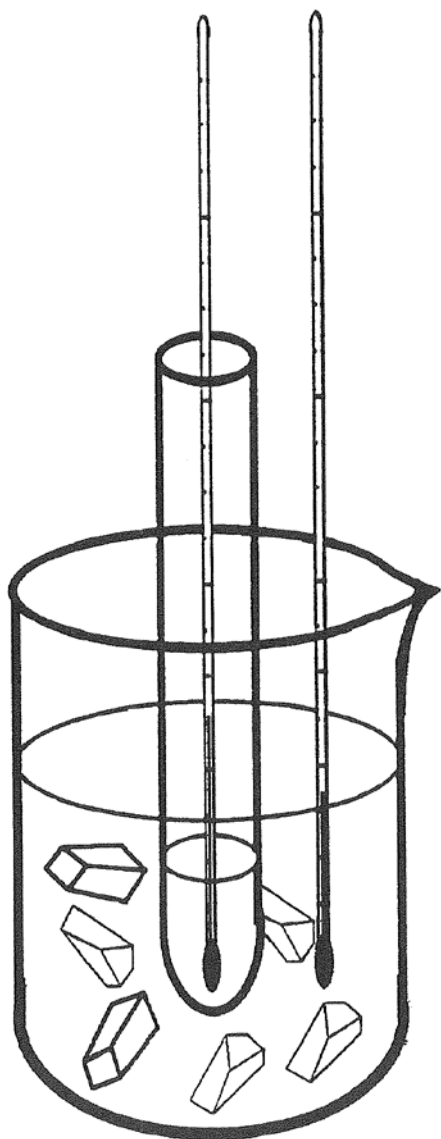


Mission 7 Logbook Water !

SETI INSTITUTE How Can We Recognize Water?

Ice Bath - Image

Figure 7.1—Ice Bath





Water! How Can We Recognize Water?

SETI INSTITUTE Making an Ice Bath!-Directions

1. You will make an ice bath to attempt to freeze various Mystery Liquid samples.
2. Obtain a beaker (or another clear glass container), a thermometer, and two or more test tubes.
3. Take your beaker to the work station and fill it one-third full of alcohol.
4. Use tongs, a scoop, or gloves to add two or three small pieces of dry ice to the alcohol. Do not handle the dry ice with your bare hands; it will burn you.
5. Measure the temperature of your ice bath. It should be near -10°C . If it is not, use tongs, a scoop, or gloves to add more dry ice. Do not stick your fingers into the ice bath!
6. Be sure to rinse the thermometer with water and wipe it each time you use it so that you do not contaminate any samples or the ice bath itself.
7. Take a test tube up to the work station and fill it one-third full with any one of the Mystery Liquid samples. Keep track of each sample's number.
8. Put the clean thermometer into the Mystery Liquid and then put the test tube into the ice bath. Make sure that the Mystery Liquid is below the level of the alcohol. Monitor its temperature as it drops.
9. Record the temperature at which each Mystery Liquid freezes. If a Mystery Liquid is still liquid at -10°C , which is the coldest this ice bath can be, record "still liquid at -10°C ."
10. You will need to monitor the temperature of the bath throughout the investigation to make sure it remains at about -10°C . Clean the thermometer and check the temperature of the ice bath. If the temperature rises, add more dry ice.
11. Test the other available Mystery Liquids, one at a time. Always use clean, rinsed test tubes to get new samples.
12. After each sample either freezes or reaches -10°C without freezing, set that test tube aside to let it warm up to room temperature. If your teacher permits it, return the re-warmed Mystery Liquids to their proper containers at the work station. Keep track of each sample's number. If so instructed, dispose of the Mystery Liquid samples in another way.

13. When you are finished, make sure that all your equipment is rinsed, wiped dry, and returned to your teacher.



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Mystery Liquids—Worksheet

Name: _____ Date: _____

1. Describe the appearance of each Mystery Liquid sample before you put it into the ice bath. Can you tell by sight if any of your Mystery Liquids are water?

Table 7.2.

“Mystery Liquid” Sample Number	Original Appearance of the “Mystery Liquid”	Temperature at which the “Mystery Liquid” Freezes

2. Which Mystery Liquid samples did not freeze at the lowest temperature the ice cold bath could produce? Do you think they would freeze at lower temperatures?
3. What is the freezing point of water?
4. Is any of your Mystery Liquid samples water? If so, which one? Why do you think so?