Heat lost lab

**Procedure**

1. **Safety precautions:** Watch for water spilled on the floor and quickly clean up. Students should wear safety goggles.
2. Each group will receive one container (plastic test tube, glass test tube with lid, metal pipe with caps, or PVC pipe with caps). Find the volume of this test container by filling the container to the top and then pouring this volume of water into a graduated cylinder. Because 1 mL of water equals 1 g of water, you can easily convert the milliliters to grams.
3. Prepare a bath of cold water in which the container can be submerged. A large bucket or 64-quart (60.57 L) storage tote works well for the water bath.
4. Fill the container with hot water from the tap.
5. Right before you are ready to put the container’s cap on and submerge the container, take the temperature of the water within the container and record it as T1.
6. Let the container sit for 10 minutes. All containers should be put in the cold water bath at the same time.
7. After 10 minutes, remove the cap and measure the temperature again. This is T2.
8. Calculate the heat lost.

Heat lost for plastic, glass, metal, and PVC containers

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Container | Volume of water (mL) | Mass of water (g) | Temperature of water before cold water bath (T1; °C) | Temperature of water after ice bath (T2; °C) | Difference in temperature (T1 – T2) | Heat lost  (mass\*[T1 – T2]\*joules) |
| Plastic test tube |  |  |  |  |  |  |
| Glass test tube |  |  |  |  |  |  |
| Metal tube/pipe |  |  |  |  |  |  |
| PVC tube/pipe |  |  |  |  |  |  |

1 joule = 4.184 calories