

Do Now

- Get goggles first.
- Find your sample under the fume hood and weigh it. Record the mass.
- Return it to the fume hood and wash your hands.
- Finish the lab.

Finished??

- Put the lab in your lab book.
- Get the handout for today's lab along with the directions for setting up logger pro.
- Begin reading it over.

Homework

- Answers:
- 4: the calculated specific heat of copper is 0.384J/gC .
- 5: if your value for the specific heat of glass was 0.84J/gC , the mass of water was about 181g or 181ml .

Make a Prediction

- I have two beakers that I will 300ml of hot water into.
- I will pour 100ml of cold water into one beaker after 10 seconds.
- I will pour 100ml of cold water into the other after after 60 seconds.
- Which will be colder after 90 seconds?

Setting Up Logger Pro

- Open logger pro.
- Once it is open, plug the temperature probe into the USB port.
- Wait for the probe to be recognized by the computer.
- Set the time to 600 seconds.



Demo

Today

- You will be calculating the specific heat of two metals.
- You will use a process called calorimetry to do this.
- A calorimeter is a container that is designed to trap heat.

Process

- Get a temperature probe and a laptop.
- Get a 250ml beaker, two styrofoam cups with no holes in them and one cup with a small hole in the center of the base.

Mass of Dry Calorimeter

- Mass the **dry** cups (all 3) and record on your data sheet.
- Water to the two base cups until it is about $2/3$ the way up the cup.
- You should be able to lift the top cup on without the water coming out the sides.

Next

- Mass the water and calorimeter and record it.
- Determine the mass of water in the cup.
- Use the temperature probe to determine the initial temperature of the water.

Get Medal

- Carry your calorimeter with water over to the fume hood.
- Be careful not to spill any water.
- I have 2 samples of water in boiling water.

Readings

- Once you have your sample in the calorimeter, cover it **immediately**.
- Take it back to your station and place the calorimeter in the 250ml beaker.
- Place the temperature probe into the calorimeter.
- Stir it slowly for about 1 minute.

Temperature Readings

- Record the peak (highest) temperature that the water reaches **after** you have been stirring.
- The temperature will fluctuate before that.
- Record the peak temperature.
- This is the final temp for both materials.

Mass of Metal

- Once your temperature reading have been recorded, take the metal out of the calorimeter.
- Dry it thoroughly and mass it.
- Record this in your data table.

Repeat

- Do this same process for the other piece of metal.
- There is a tall thin metal and a short stout metal.
- After you have determined the specific heat of each metal, compare them to the real world values.

Actual Values

- Tall thin:
- Short stout:

Clean Up

- Dry out the calorimeters.
- Dry off the temperature probes.
- Put all equipment back where you got it.