

Lab 1: Specific Heat

Due Date: January 29

Background

Your firm has been hired to design a steam heating system for UW's new engineering building. You will determine which of three materials would be best for the underground piping conduits that will convey the steam from the steam plant to the engineering building.

Challenge

Determine the identity of three separate cubes of different materials by devising an experiment to measure their specific heat values. The website engineeringtoolbox.com may prove useful.

Available materials:

glass beakers	styrofoam containers	calipers	scale
hot plate	temperature probes	tongs	water
your phone's camera	<i>Logger Pro</i> software	metal cubes	gloves

Lab report considerations

Based on your data and experimental results, do your best to identify the three selected materials. Every number should have a corresponding uncertainty.

Compute uncertainties on the specific heats via propagation of errors.

Compute "errors" as percentage differences from their nominal specific heats.

A photo of the lab setup must be included. Also see the lab guidelines for the artificial intelligence components of the Appendix.

Which of the three materials would be best for constructing the piping in the heating system? Why?

Teacher approval of your game plan

Make sure either Prof. Dale or a TA approves your experimental plan and theoretical interpretation. These approvals will be worth 4% of the lab grade and will help to promote a successful experience.

Please be safe!

Use safety goggles, gloves, pliers, etc when handling the equipment.

Unplug hot plates after use.

Avoid burning/melting the temperature probe wires!

