

Name: _____ BU ID: _____ Lab Section: _____
Partner's name: _____ BU ID: _____ Date: _____
TF's signature: _____

PY105 Specific Heat and Latent Heat

Report Sheet

Fill in all the blanks and answer all the questions. Attach your graph (see below) with this report. Check with your TF to make sure that you have done everything before you leave.

Part 1. Specific heat C

Mass of STP is: $m =$ _____ kg (0.1 pt)

The inner diameter of the test tube is: $d_{in} =$ _____ m (0.1 pt)

The outer diameter of the test tube is: $d_{out} =$ _____ m (0.1 pt)

The thickness of the test tube is: $d = (d_{in}-d_{out})/2$ _____ m

Length of the test tube submerged in the water/ice mixture, not counting the rounded bottom is: $L =$ _____ (0.1 pt)

The estimated surface area of the tube is: $A =$ _____ m^2 (0.1 pt)

Show your work (0.1 pt):

Record below the temperature of the sodium thiosulfate pentahydrate (STP) sample at different times as it is cooled over one minute. (0.2 pt \times 14)

Time (s)	0	10	20	30	40	50	60
Temperature($^{\circ}$ C)							

Use your data to plot a temperature ($^{\circ}$ C) vs. time (s) graph on the semi-log paper provided. Attach the graph with your report. (2 points)

1. From the plot, the time, Δt , for the temperature (in $^{\circ}\text{C}$) to drop by a factor of 10 and its unit is _____ (____). (0.5 pt + 0.5 pt).
2. Calculate the specific heat C using the time Δt above. (1.5 point)

Part2. Latent heat L.

1. The temperature rise of the STP during crystallization, $\Delta T =$ _____ K. (0.5 point)
2. From eq.(6), L (unit) = $C\Delta T =$ _____ (____). (1 point)
3. A typical house uses approximately 5 kW-hr of energy per day. If we made a solar collection system with STP, using the latent heat for energy storage, how much STP would we need to store enough energy to run a house for one day? Show your work. (2 points)

Pre-lab: _____ (10 \times 20% = 2 points)

Lab: _____ (10 \times 80% = 8 points)

{ Punctuality (1 point) + performance (1point): _____ (2 points)
 { Report sheet _____ (10 points \times 80% = 8 points)

Total: _____

TF: _____ Grader: _____