Initial temperature essay sample

Health & Medicine

Data and Results:

Initial Temperature: To = 25 degrees Celsius

Final Temperature: Tf = 100 degrees Celsius

Rod| Initial length| Change in Length| Coefficient of Linear Expansion(Exp)| Coefficient of Linear Expansion(Theo)| % Error| Steel| 40| . 035| 1. 17 x 10 / C| 1. 1 x 10^-5/ C| 6. 36%| Copper| 40| . 055| 1. 8 x 10 ^-5 /C| 1. 7 x 10^-5 /C| 5. 88%|

Computation :

Conclusion:

1. A bemetalli c strip is made by joining two materials with different coefficients of thermal expansion. If given figure belo aA > aB, will the strip curl upsward or downward.

2. An aluminum rod at 18 C has a length od 2. 5 meters. At what possible temperatures will its length change by 1 cm?

3. One hot summerday a square lot was measured using a steel tape. The same lot was measured by the same steel tape on one wintry day. Will the measurement vary?

4. Two rods have the ff. Properties at 18 C

At what temp. will 2 rod equal in length

5. Given 2 brass rods, one 1 m and the other 1 cm at 4 C. At what temp. will the rods double their lengths. Will it be a common temp.?

Group No. Date:

Leader : Section:

Members:

Experiment no: 1B

Data and Results:

| 1st Rod| 2nd Rod|

Material| Copper| Aluminum|

Initial length| | 400|

Change in Temperature| | |

Change in length| | . 04|

(a) Exp| | 1. 5 x 10 ^ -5|

(a) Theo | 1. 7 x 10 ^-5| 2. 4 x 10 ^-5|

% error | | |

Computation :

Conclusion:

1. Compare the accepted values of the linear expansion coefficient for the metals used in the experiment, with the experimental values. What is the percentage diff. in eah case?

2. Based on your answers in 1, what do you think are the possible sources od error in the experiment.

3. Why is it necessary to wrap the rod and thermistor with tubular dorm?

4. What are isotorpic metals?

Group No. Date:

Leader : Section:

Members:

Experiment no: 3

Date and Results:

Mass of container, mc = 36. 72 g

| Material 1| Material 2| Material 3|

Substance| | | |

Initial diameter od ice block| | | |

Final diameter of ice block| | | |

Average diameter| | | |

Thickness| | | |

Time to melt ice| | | |

Mass of melted ice| | | |

Thermal conductivity| | | |

Thermal conductivity| | | |

% error| | | |

Computation:

Conclusion

1. Aglass window pane has an area of 5 sq. meters and a thickness of 1 cm. If the temperature diff. between its faces is 30 C, what is the rate of heat transfer by conduction through the window?

2. A steel rod has one end at 105 C anf the other at 32 C . The length of the bar is 200 cm and has a cross sectional area of 5 sq cm a) What is the rate at which heat is transferred along the rod? b) If two rods were connected in series, woth the same temperature at the ends, what would be the rate of heat transfer? c) If two rods were connected in parallel, same temperature at the ends, what would be the rate of heat transfer?

3. One end of the an insulated metal rod is maintained at 100 C and the other end at 0 C by an ice water mixture. The rod is 100 cm long and has a cross sectional area of 1. 5 sq . cm, the heat conducted by the rod melts 9 gm of ice in 15 min. Find the thermal conductivity of the metal?

Group No. Date:

Leader : Section:

Members:

Experiment no: 4

Data and results:

Mass of calorimeter:

Mass of stirrer

Specific heat of calorimeter

Specific heat of stirrer

Part I

Mass of calorimeter water and grams| |

Mas of water| |

Initial temperature of wate, calorimeter and stirrer| |

Equilibrium temperature| |

Mass of calorimeter, water and steam| |

Mass of steam| |

Computed value of heat of vaporization| |

Accepted value of heat of vaporization| |

%error| |

Part II

Mass of calorimeter water and grams| |

Mas of water| |

Initial temperature of wate, calorimeter and stirrer| |

Equilibrium temperature| |

Mass of calorimeter, water and melted ice| |

Mass of ice | |

Computed value of heat of vaporization| |

Accepted value of heat of fusion| |

%error| |

Computations

Conclusion

1. What is water trap?

2. Why is it necessary to dry the ice before adding to the water?

3. Find the amount of heat needed to completely convert 50 grams of ice at -2C to steam at 102 C?

4. Ice cube trays are filled with 1 kg of water at 18 C and placed in the freezer. Determine the amount of heat energy that must be drawn from the water to turn it into ice cubes at – 4 C?

5. The melting point of aluminum is 660 C while the boiling point of is 2450 C. The Lf and Lv are 94. 8 and 2720 cal/gm respectively. Determine the amout of heat reuired to boil 200 grams of aluminum at 20 C without converting it to vapor?

Group No. Date:

Leader : Section:

Members:

Experiment no: 2

Data and results :

Specific heat of calorimeter:

Specific heat of stirrer:

Material of metal shot specimen| |

Mass of specimen| |

Mass of calorimeter| |

Mass of stirrer| |

Mass of calorimeter and water| |

Mass of water| |

Initial temperature of cold water, calorimeter and stirrer| | Initial temperature of specimen| |

Equilibrium temperature| |

Computed specific heat of specimen| |

Specific heat of specimen| |

% error| |

Computations

Conclusion

1. The heat gained by the thermometer was neglected in the computation. How did this affect the result of the computed specific heat of the specimen?

2. Using the percentage error you made in the experiment, determine the amount of heat that was not acounted?

3. A 100g ice cube is placed into 200 g of water in styrofoam cup. The initial temperature of water is 25 C and the ice is intially at -15 C. Determine the final temperature of the drink. Use . 49(kcal/gk x C) for the specific heat of ice.

4. A kilogram od heated aluminum 100C is placed in a bucket of water 20C and allowed to reach its thermal equilibrium. A kilogram of heated brass 100 C is placed in another bucket of water at 20C and allowed to reach thermal equilibrium. Which bucket will end having higher thermal equilibrium temperature?