

Term Project Report Format

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Winter 2006

You are expected to submit one report for each group. The report must be typed.

I. Objectives

II. Hypothesis to be tested in the study

III. Material Balance Calculations

IV. Materials

V. Methods

a) **Ice cream procedure**

b) **Density measurement**

c) **Expansion of ice cream mix by freezing**

VI. Data collected

a) Volume and weight data for ice cream mix

b) Record the volume of mix placed in deep freezer

c) Temperature

d) Rotational speed

e) Weight

f) Volume and weight data for ice cream

g) Record the volume frozen mix in the freezer

VII. Calculations:

a) Calculate the density of ice cream mixture and ice cream

b) Calculate the overrun

c) Calculate the percent change in volume of due to freezing expansion

d) Calculate heat energy removed prior to, during, and after freezing

e) Calculate the power.

f) Estimate the viscosity of ice cream

VIII. Results and Discussion

IX. Conclusions

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X. Report Appendix:

- 1) Original data typed
- 2) A table showing the ingredients used and their amounts.
- 3) m-file and MATLAB print out for your mass balances(s)
- 4) Figures
 - a. Cooling and freezing curves for three levels of the variable studied
 - b. Enthalpy of cooling and freezing as a function of variable
 - c. Viscosity as a function of variable

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Ice cream experiment