

LAB REPORT

Combustion of Sucrose

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Block G1, G2, G3, G4....
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Purpose: The purpose of this lab is to determine the percent by mass of the substance(s) which are given off as part of the combustion reaction of sucrose (table sugar).

Materials:

- Triple beam balance
- Test tube
- Test tube clamp
- Sucrose
- Bunsen burner with gas tube
- Striker

Procedure:

1. Take all materials to your lab table.
2. Set up the Bunsen burner by connecting one end of the gas tube to the gas outlet and the other end to the burner.
3. Make sure the three weight sliders on the triple beam balance are all set to the far left (at the “zero” position).
4. Check the right side of the balance to make sure the two lines of the balance line up so that they are perfectly horizontal.
5. Take the test tube clamp and clamp it onto the test tube.
6. Place the test tube and clamp on the round pan of the triple beam balance.
7. Move the slider weights until the two lines on the right side of the balance are again perfectly horizontal.
8. Read the balance numbers and record answer to the 0.01 g place. Do this by adding the 100’s to the 10’s to the 1’s all together. Look carefully at the calibration (0.1 g) and then estimate to the 0.01 g place. Be sure to include the g (representing grams) to your number.
9. Scoop a small amount of sucrose into the clean, dry test tube.
10. Place the test tube and clamp and the sucrose back onto the triple beam balance pan.
11. Weigh again and record the value.
12. Light the Bunsen burner by first turning on the gas (make sure the handle of the gas outlet is lined up with the gas hose).
13. Take the striker and light the burner.
14. Adjust the flame by rotating the metal piece at the bottom of the barrel so that a blue cone is visible.
15. Using the test tube clamp and tube, gently heat the sucrose. It will start to melt and then turn quickly black. Smoke is likely to exit the test tube. The sucrose may even catch on fire.
16. Continue gently heating until no more smoke comes out of the test tube.
17. Reweigh the test tube, clamp and what is left in the test tube. Record answer to 0.01 grams.
18. Dispose of test tube in the proper location.
19. Put away all equipment.
20. Perform calculations as indicated on the data table below.

Data Table:

	Mass
A. Test tube and holder	25.67 g
B. Test tube and holder and sugar	26.95 g
C. Sugar alone before burning (B-A=C)	1.28 g
D. Test tube and holder and sugar after burning (ash in tube)	26.45 g
E. Ash only (D-A=E)	.78 g
F. Substance(s) which left the test tube as part of the burning process (C-E=F)	.50 g
G. % of the substance(s) which left the test tube (F/C * 100 = G)	39%

Calculations:

Sugar alone before burning (B-A=C)

$$26.95 \text{ g} - 25.67 \text{ g} = 1.28 \text{ g}$$

Ash only (D-A=E)

$$26.45 \text{ g} - 25.67 \text{ g} = .78 \text{ g}$$

Substance(s) which left the test tube as part of the burning process (C-E=F)

$$1.28 \text{ g} - .78 \text{ g} = .50 \text{ g}$$

% of the substance(s) which left the test tube (F/C * 100 = G)

$$(.50 \text{ g} / 1.28 \text{ g}) \times 100 = 39\%$$

Resources:

<http://answers.yahoo.com/question/index?qid=20071031111100AAQD05T>

Summary: In this experiment, substances were clearly released from table sugar as it burned. The substances were smoky and had a unique odor (smelled like burning marshmallows). The data suggests that approximately 40% of the table sugar was released into the air when it burned. The research suggests that the products given off in this reaction were carbon dioxide and water. There was some black ash-like substance still in the test tube after the reaction was complete; this likely was what was left over – perhaps the combustion reaction was incomplete.