

Changes in a burning candle- absent student page

1. Observations/ Data Table

| Procedure | Observations (Physical) | Observations (Chemical) |
|-----------------------------|--|--|
| Candle burning (Step 2) | Melting wax, solidifying wax | Flame: heat light given off is sign that chemical bonds are breaking/forming. Smoke produced. Wax disappears as candle burns |
| Beaker above flame (Step 3) | •Water drops form on glass [$\text{H}_2\text{O}(\text{gas}) \rightarrow \text{H}_2\text{O}(\text{liquid})$: condensation] | The H_2O drops observed came from water vapor produced in the combustion reaction: $\text{Wax} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$ Black soot on beaker a sign of a new substance |
| Flask over candle (Step 4) | • The flame goes out (no more oxygen) • Flask feels warm from heat of candle flame | Water rises to fill the space as O_2 is used in the reaction (see above) Note: more O_2 is used than CO_2 is produced |
| Limewater in flask (Step 5) | •CO produced in the combustion reaction dissolved in the bromothymol when mixed. | Bromothymol blue reacts with the CO_2 to produce HCO_3 (like an acid). This turns the mixture green. |

CONCLUSIONS:

1. Pick one of the physical changes that you observed and explain WHY is it a physical change.
2. Pick one of the chemical changes that you observed and explain WHY is it a chemical change.
3. Define combustion. (pg. 243 PH). List two reactants (substances needed) for combustion.
 - a
 - b
4. List two chemical products (new substances) that are formed during combustion of a candle?
 - a
 - b
5. You can use an equation to describe a chemical reaction. For a one-way reaction, the part of the equation to the left of the arrow gives the ingredients, and the part of the equation to the right of the arrow gives the products. For example, an equation for the chemical reaction that produces mayonnaise is
Eggs + Vinegar + Salad Oil \rightarrow Mayonnaise.
Write an equation for the combustion of a candle in oxygen. Hint: There are two ingredients and two products.