

6D – EMPIRICAL FORMULA OF MAGNESIUM OXIDE

Analysis

Table 1 – Observations before and after heating

Mass of crucible and cover (g)	Initial mass of crucible, cover and Mg (g)	Mass of Mg present (g)	Moles of Mg present (mole)	First mass of crucible, cover and heated Mg (g)	Second mass of crucible, cover and heated Mg (g)	Final mass of crucible, cover and MgO (g)	Mass of O added (final mass – initial mass) (g)	Moles of O present (mol)
Observations before heating					Observations after heating			

1. Use the molar mass of magnesium to determine the moles of Mg in the original sample. Show work below. Enter your answer in Table 1.
2. Determine the mass of oxygen added by subtracting the mass of crucible, cover and magnesium by the stabilized mass of crucible, cover, and magnesium oxide. Show work below. Enter your answer in Table 1.
3. Use the molar mass of oxygen to determine the moles of O in the final sample. Show work below. Enter your answer in Table 1.

Questions

1. Using the mole amounts from Table 1, what is the ratio of Mg to O? Round to whole numbers.

2. Use the magnesium : oxygen ratio to write a chemical formula for the compound produced.
3. Is the mole ratio of Mg and O the same as the mass ratio of Mg and O? Why or why not?
4. Why shouldn't you touch the crucible, cover or magnesium with your hands?
5. Magnesium oxide is an ionic compound. Use the periodic table to determine the charges for magnesium and oxygen. Write the ions with charges and then perform a crisscross to determine the formula for magnesium oxide.
- Magnesium ion: Oxygen ion:
- Formula for magnesium oxide by crisscross:
6. The accepted, actual molar mass of the compound formed in the crucible is 40.304 g/mol. Compare this molar mass to the molar mass of the formula you determined in Question #2. Is the actual chemical formula different from the empirical formula? Explain your answer.
7. What factors may have impacted your results?
8. As you are conducting experiments in chemistry, why is it important to know the empirical formula of a compound?