

Question 6
Not yet answered
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Flag question

In the empirical formula experiment, which one of the following cases will decrease the mole ratio of magnesium to oxygen:

- Water was stuck to the outside surface of the crucible and the student did not dry it before measuring the final weight.
- Formation of magnesium nitride as a side product.
- Insufficient air to react with all magnesium.
- The student mistakenly recorded the mass of magnesium as 1.8 g instead of 0.18 g.
- Rapid oxidation of magnesium which causes a loss of some Mg.

[Clear my choice](#)

Given the following set of data for the determination of empirical formula of magnesium oxide:

- Mass of empty crucible = 15.79 g
- Mass of crucible + magnesium = 16.43 g
- Mass of crucible + magnesium oxide = 16.79 g
- Molar mass (g/mol): Mg = 24.4; O = 16.0

The molar ratio of Mg to O is

- 0.95
- 1.17
- 0.79
- 0.86
- 1.27

Finish attempt ...

$$\boxed{2} \quad \text{mol of Mg} = \frac{16.43 - 15.79}{24.4} = 0.0262$$

$$\text{mol of O} = \frac{(16.79 - 15.79) - 0.64}{16} = 0.0225$$

$$\frac{\text{mol Mg}}{\text{mol O}} = \frac{0.0262}{0.0225} = 1.16$$

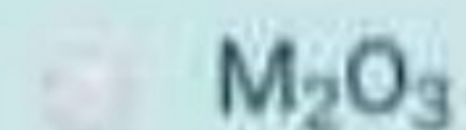
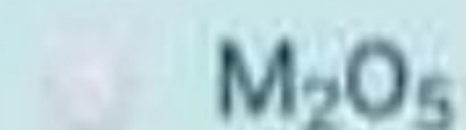
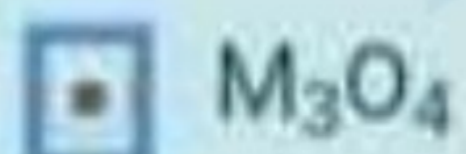
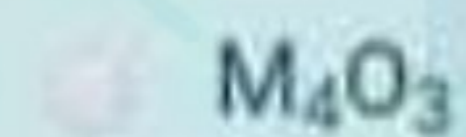
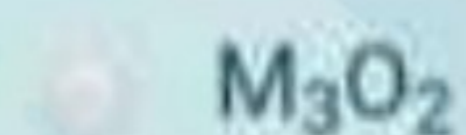
A metal oxide was produced in the lab by heating a metal (M) (molar mass = 199.99 g/mol) in an atmosphere of oxygen (molar mass = 16.00 g/mol). The following data was collected:

Mass of crucible: 10.37 g

Mass of crucible and metal: 11.37 g

Mass of crucible and metal oxide:
11.49 g

What is the empirical formula of this compound?



Clear my choice

[3]

mass

$$11.37 - 10.37 \quad (11.49 - 10.37) - (11.37 - 10.37)$$

mol

$$\frac{1}{149.99}$$

$$\frac{0.12}{16}$$

ratio

$$\left(\frac{0.005}{0.005} = 1 \right)$$

$$\frac{0.0075}{0.005} = 1.5$$

$$2 \rightarrow$$



In the empirical formula experiment, which one of the following cases will decrease the mole ratio of magnesium to oxygen:

- Formation of magnesium nitride as a side product.
- Rapid oxidation of magnesium which causes a loss of some Mg.
- Insufficient air to react with all magnesium.
- The added water was not completely evaporated due to insufficient heating.
- The student mistakenly recorded the mass of magnesium as 1.2 g instead of 0.12 g.

Clear my choice

In the empirical formula experiment, which one of the following cases will decrease the mole ratio of magnesium to oxygen:

- Rapid oxidation of magnesium which causes a loss of some Mg.
- In the final step, the student weighed the crucible with its cover on it.
- Insufficient air to react with all magnesium.
- Formation of magnesium nitride as a side product.
- The student mistakenly recorded the mass of magnesium as 1.6 g instead of 0.16 g.

In the empirical formula of an oxide experiment, the value of x in Mg_xO was found to be 0.5; Calculate the mass (in grams) of Mg_xO if the mass of magnesium used was 0.94 g. (Molar masses (g/mol): Mg = 24.3, O = 16.0)

2.87

1.95

2.18

2.41

2.64

[6]

Mg

O

mass

1.04

y

mol

$\frac{1.04}{24.3}$

$\frac{y}{16}$

$$\frac{0.0428}{y/16} = x \frac{y/16}{y/16} = 1$$

#

$$0.5 = \frac{0.0428}{y/16} \rightarrow y = \underline{\underline{1.37 \text{ g of O}_2}}$$

$$\text{Mass of MgO} = \text{Mass of Mg} + \text{Mass of O}$$

$$= 1.04 + 1.37$$

$$= \underline{\underline{2.41 \text{ g}}} \quad \#$$

In the empirical formula experiment, which one of the following cases will increase the mole ratio of oxygen to magnesium?

- Rapid oxidation of magnesium which causes loss of some Mg.
- The student mistakenly recorded the mass of magnesium as 1.8 g instead of 0.18 g.
- The added H₂O was not completely evaporated due to insufficient heating.
- Insufficient air to react with all magnesium.
- Formation of magnesium nitride as a side product.

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