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Suraj Kiran
Nakul A
Umesh U
Shinoj

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1 Abstract

To determine the atomic weight of magnesium via its reaction with oxygen and to study the stoichiometry of the reaction (as defined in 1.1):

$$2\mathrm{Mg} + \mathrm{O}_2 \longrightarrow 2\mathrm{MgO}$$

1.1 Introduction

Stoichiometry The relationship between the relative quantities of substances taking part in a reaction or forming a compound, typically a ratio of whole integers.

Atomic mass The mass of an atom of a chemical element expressed in atomic mass units. It is approximately equivalent to the number of protons and neutrons in the atom (the mass number) or to the average number allowing for the relative abundances of different isotopes.

2 Introduction

Mass of empty crucible	7.28 g
Mass of crucible and magnesium before heating	8.59 g
Mass of crucible and magnesium oxide after heating	9.46 g
Balance used	#4
Magnesium from sample bottle	#1

3 Related work

Mass of magnesium metal	$= 8.59\,\text{g}$ - $7.28\,\text{g}$
	$= 1.31\,\text{g}$
Mass of magnesium oxide	$= 9.46\,\text{g}$ - $7.28\,\text{g}$
	$= 2.18\,\text{g}$
Mass of oxygen	$= 2.18\,\text{g}$ - $1.31\,\text{g}$
	$= 0.87\,\text{g}$

Because of this reaction, the required ratio is the atomic weight of magnesium: $16.00\,\text{g}$ of oxygen as experimental mass of Mg: experimental mass of oxygen or $\frac{x}{1.31} = \frac{16}{0.87}$ from which, $M_{\text{Mg}} = 16.00 \times \frac{1.31}{0.87} = 24.1 = 24\,\text{g}\,\text{mol}^{-1}$ (to two significant figures).