

1 Magnesium nitrate, $\text{Mg}(\text{NO}_3)_2$, and strontium nitrate, $\text{Sr}(\text{NO}_3)_2$, both decompose when heated to form the metal oxide and a mixture of gases.

(a) Write an equation for the thermal decomposition of $\text{Mg}(\text{NO}_3)_2$.

..... [1]

(b) State which of $\text{Mg}(\text{NO}_3)_2$ or $\text{Sr}(\text{NO}_3)_2$ decomposes at a lower temperature.

Explain your answer.

compound that decomposes at a lower temperature

explanation

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..... [2]

(c) Magnesium oxide, MgO , and strontium oxide, SrO , both react with dilute sulfuric acid.

MgO forms a soluble salt, **A**.

SrO forms an insoluble salt, **B**.

(i) Identify the products formed when MgO reacts with dilute sulfuric acid.

..... [1]

(ii) Explain why **A** is more soluble than **B**.

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..... [3]

[Total: 7]