Worksheet 6.6

Dehydrating barium chloride crystals

Barium chloride is a hydrated salt. It contains water of crystallisation and has the formula $BaCl_2.xH_2O$.

The value of x can be found by experiment.

Some barium chloride crystals were heated in a crucible. The results are shown below.

mass of empty crucible = 117.8 g

mass of crucible plus $BaCl_2.xH_2O$ = 125.9 g

mass of crucible plus $BaCl_2$ after heating = 124.7 g

1 **a** Why was the empty crucible weighed?

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b Calculate the mass of $BaCl_2.xH_2O$.

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c Calculate the mass of $BaCl_2$ after heating.

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d Calculate the mass of water lost.

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e Calculate the percentage of water in the $BaCl_2.xH_2O$.

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2 What could be done to ensure that all the water had been lost?

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3 Calculate the relative molecular masses of:

a $BaCl_2$

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b H_2O

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Relative atomic masses: H = 1, O = 16, Cl = 35.5, Ba = 137

4 Use the earlier answers to find the value of x in $BaCl_2.xH_2O$.

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