

Starter

Why have you chosen A Level chemistry?



Learning objectives:

- To gain an understanding of the requirements of your chosen subject in preparation for a September 2023 start

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Key words:

Preparation
Organisation
Punctuality
Commitment
Success



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Explanation

Core Expectations for **Every Lesson**

1. Attend lessons on time and in professional attire
2. Be prepared for each lesson by ensuring you bring the appropriate equipment
3. Ensure all work is organised in the appropriate section of your subject folder
4. All deadlines must be met to avoid a 6 week “Risk of Failure” program
5. Respect the classroom, Replace chairs, Rubbish in bins
6. Speak to **ALL** members of the HT community with respect
7. No mobile phones/ear pods to be used in lessons or around the school
8. Starters are to be completed in silence
9. Be proactive and not reactive
10. Expect to work harder than you ever have before



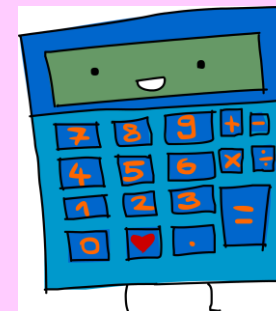
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Explanation

Task:

To determine the 'water of crystallisation' of a hydrated salt.



Calculate the Mr of:

- CuSO_4
- H_2O



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Explanation



MgSO_4 is the salt part of the hydrate

The dot indicates the water is tightly attracted to the salt part of the hydrate

The coefficient of 7 indicates seven moles of water are attracted to one mole of MgSO_4

NOTE - your task is to find the coefficient in the formula.

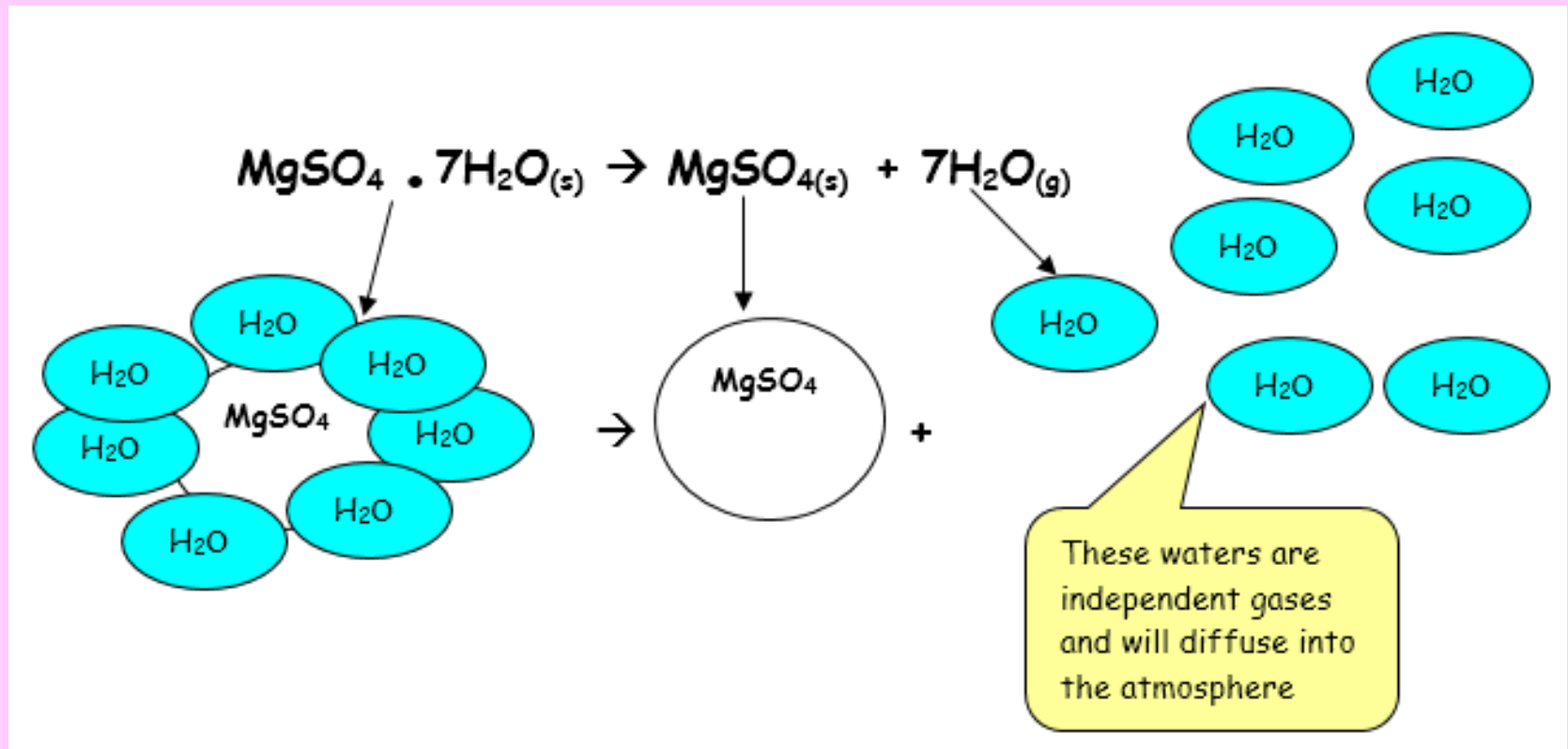
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Explanation

What conditions would you need to make these products?



Learning objectives:

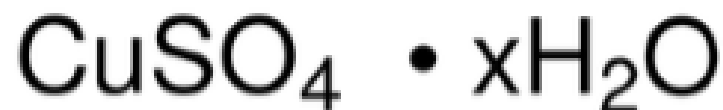
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Explanation

Your aim:

To calculate the number of water molecules bound to a copper sulphate salt. To do this you will find the mass of hydrous and anhydrous copper sulphate salt allowing you to find the number of moles of water present for each mole of the salt.



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Explanation

Heating to Constant Mass:

A cycle of

- a. Heating for two mins.
- b. Cooling for one min.
- c. Record the mass using a balance.
- d. Repeat the steps until the mass is constant for three measurements.

- 1) Record the mass of your evaporating dish.
- 2) Add the copper sulphate salt to the evaporating dish till ~ 2.0 grams have been added. Record the total mass of the evaporating dish with its contents.
- 3) Heat the evaporating dish on a ceramic triangle. It is normal for the triangle and evaporating dish to emit an orange glow. It is important to **AGITATE** the hydrate during the heating. Do this by gently shaking the evaporating dish that is cradled in evaporating dish tongs.
- 4) After heating for about three minutes, cool and record the mass of the evaporating dish with its contents. Then heat to constant mass; be certain to record each mass during the process. The anhydrous form of the salt should be white

Measurement	Mass/g
Evaporating dish	
Evaporating dish + salt	
Salt	
Constant mass of dish and salt	
Constant mass of anhydrous salt	
Water	



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Explanation

Calculate the formula of the hydrated salt

Example:

A 15.67g sample of a hydrate of magnesium carbonate was heated, without decomposing the carbonate, to drive off the water. The mass was reduced to 7.58 g. What is the formula of the hydrate?

Solution:

1) Determine mass of water driven off:

$$15.67\text{g} - 7.58\text{g} = 8.09\text{g of water}$$

2) Determine moles of MgCO_3 and water using $n = m/M_r$

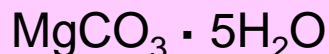
$$\text{MgCO}_3 \Rightarrow 7.58 \text{ g} / 84.313 = 0.0899 \text{ moles}$$

$$\text{H}_2\text{O} \Rightarrow 8.09 \text{ g} / 18.015 \text{ g} = 0.449 \text{ moles}$$

3) Find a whole number molar ratio:

$$\text{MgCO}_3 \Rightarrow 0.0899 \text{ mol} / 0.0899 \text{ mol} = 1$$

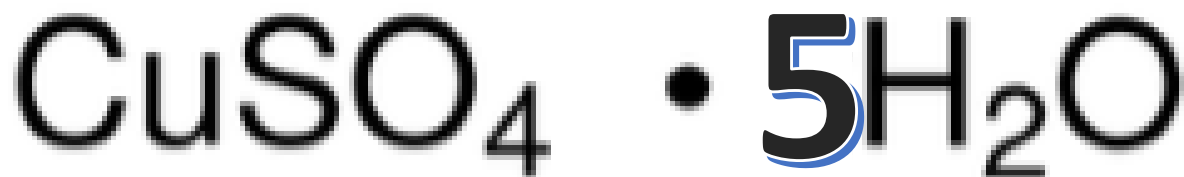
$$\text{H}_2\text{O} \Rightarrow 0.449 \text{ mol} / 0.0899 \text{ mol} = 5$$



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Checking Progress



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OCR A – A Level Chemistry Summer Task

Transition skills

0.1.2 Constructing ionic formulae

1. For each of the following ionic salts, determine the cation and anion present and use these to construct the formula of the salt. (5 marks)
 - a. Magnesium oxide
 - b. Sodium sulfate
 - c. Calcium hydroxide
 - d. Aluminium oxide
 - e. Copper(I) oxide



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