

# OCR (B) Chemistry A-Level

## PAG 09 - Rates of Reaction

### Continuous Monitoring Method

Rate of decomposition of hydrogen peroxide

**(A level only)**

Flashcards

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What is the role of manganese dioxide in the decomposition of hydrogen peroxide?



What is the role of manganese dioxide in the decomposition of hydrogen peroxide?

Catalyst



# What is the purpose of catalysts?



# What is the purpose of catalysts?

- Provide an alternative reaction route with a lower activation energy
- Increase the rate of reaction



Write the word and chemical equations  
for the reaction involving manganese(IV)  
oxide and hydrogen peroxide



Write the word and chemical equations for the reaction involving manganese(IV) oxide and hydrogen peroxide

Hydrogen peroxide → water + oxygen



( $\text{MnO}_2$  isn't included as it is a catalyst)



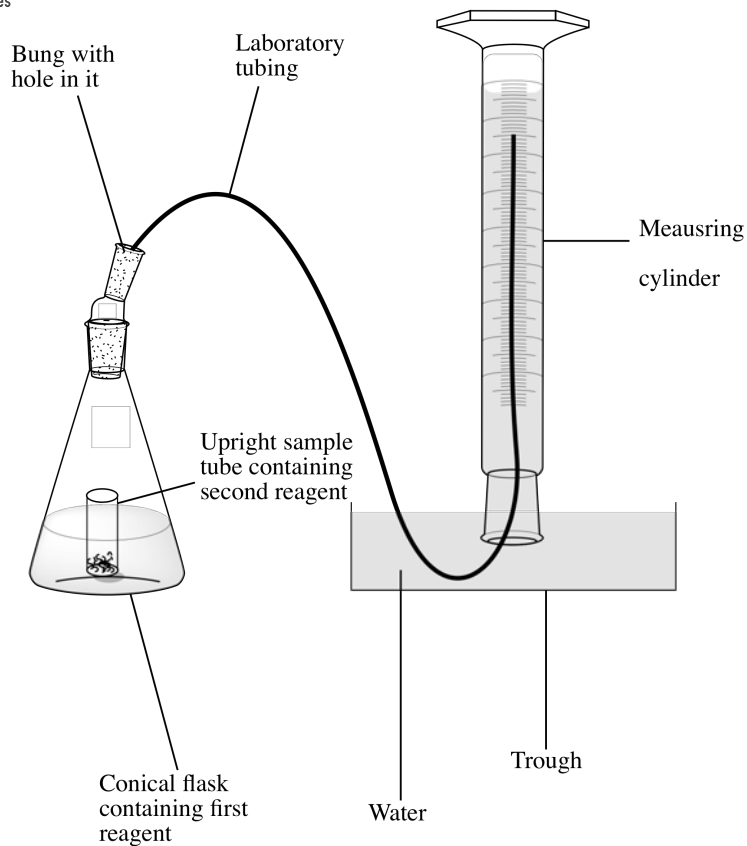
Describe how to set up the apparatus to measure the volume of gas produced during a reaction





# Describe how to set up the apparatus to measure the volume of gas produced during a reaction

A gas syringe or an upside-down water-filled measuring cylinder in a trough of water may be used to collect the gas.



What is meant by term 'half-life' for a reaction?



What is meant by term 'half-life' for a reaction?

The time taken for the reactant concentration to half



Briefly describe how to find the half-life of the decomposition of hydrogen peroxide



Briefly describe how to find the half-life of the decomposition of hydrogen peroxide

1. Set up the apparatus to collect any gas produced during the reaction
2. Record the volume of  $O_2$  collected at regular intervals and calculate  $[H_2O_2]$
3. Plot a graph of  $[H_2O_2]$  against time and use it to find 2 values for the half-life



What formula can be used to calculate  
 $[H_2O_2]$  from the volume of oxygen  
collected?



What formula can be used to calculate  $[\text{H}_2\text{O}_2]$  from the volume of oxygen collected?

$$[\text{H}_2\text{O}_2] \text{ (in mol dm}^3\text{)} = \frac{(40 - V(\text{O}_2))}{240}$$



Why is it important to rapidly put the bung in the conical flask after  $\text{H}_2\text{O}_2$  and the catalyst have been combined?





Why is it important to rapidly put the bung in the conical flask after  $\text{H}_2\text{O}_2$  and the catalyst have been combined?

The reaction will have started so  $\text{O}_2$  will be produced. If the bung is not in place, oxygen will be escape (this won't be included in the volume measurement).



Why might the volume of gas be measured in a burette rather than a measuring cylinder?



Why might the volume of gas be measured in a burette rather than a measuring cylinder?

To obtain more precise measurements

