

Lesson 14 - Investigation - Exo vs. Endo

Chemistry - Key Stage 3

Energetics

Miss Charlton



Task

Write a method for the exothermic practical where we react sodium hydroxide and hydrochloric acid together.

- A good method should contain:
- Named equipment
- Volumes/masses of all chemicals
- Step by step instructions
- What will be changed and measured
- What will be kept the same



Which table titles would be best? Why?

A

Time (minutes)	Amount of gas (cm ³)

C

Volume of gas (cm ³)	Time (s)

B

Time, every 20 seconds up to 2 minutes	Volume of gas produced by the reaction

D

Time (s)	Volume of gas (cm ³)



Task

Design a table for the experiment sodium hydroxide and hydrochloric acid. We will repeat the practical 3 times.

- Independent variable in left column.
- Full headings and units.
- Unless told otherwise, included repeating columns and mean column.



Answers



Method

1. Fill the polystyrene cup with **20cm³** of hydrochloric acid, measured out with a measuring cylinder.
2. Take the start temperature of the acid using a thermometer leaving it for at least 20 seconds. Record the start temperature.
3. Add **20cm³** of sodium hydroxide to the cup, stir twice and start the stop clock.
4. Take the temperature every 20 seconds up to 2 minutes. Record your results in a table.
5. We will be measuring the **change in temperature** at **20 second intervals** up to 2 minutes. We must keep the **polystyrene cup, the number of stirs and the volume of liquids** used the same.



Which table titles would be best? Why?

A	
Time (minutes)	Amount of gas (cm ³)

C	
Volume of gas (cm ³)	Time (s)

B	
Time, every 20 seconds up to 2 minutes	Volume of gas produced by the reaction

D	
Time (s)	Volume of gas (cm ³)



Tables

	Temperature change in ($^{\circ}\text{C}$)			
Time (s)	1	2	3	Mean
20				
40				
60				
80				
100				
120				

