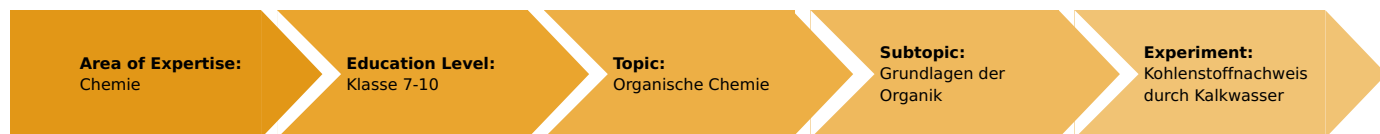


# The detection of carbon with limewater (Item No.: P7170100)

## Curricular Relevance



### Difficulty



Easy

### Preparation Time



10 Minutes

### Execution Time



10 Minutes

### Recommended Group Size



2 Students

### Additional Requirements:

### Experiment Variations:

### Keywords:

organic compounds, tests for carbon, detection with lime-water

## Task and equipment

## Information for teachers

## Learning objectives

- As organic substances contain carbon, carbon dioxide is always formed during their combustion.
- Carbon dioxide can be detected with limewater.

## Notes on setup and procedure

### Preparation:

Since the detection works better with fresh limewater you should provide freshly prepared limewater if possible.

### Remarks on the students experiments:

To keep the danger of burnings as low as possible, the experiment should be stopped as soon as the limewater begins to show turbidity.



## Hazard and Precautionary statements

Petrol:	
H225:	Highly flammable liquid and vapour.
H304:	May be fatal if swallowed and enters airways.
H350:	May cause cancer.
H361:	Suspected of damaging fertility or the unborn child.
H373:	May cause damage to organs through prolonged or repeated exposure.
H412:	Harmful to aquatic life with long lasting effects.
P201:	Obtain special instructions before use.
P210:	Keep away from heat/sparks/open flames/hot surfaces – No smoking.
P273:	Avoid release to the environment.
P281:	Use personal protective equipment as required.
P301 + P310:	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P308 + P313:	IF exposed or concerned: Get medical advice/attention.
P501:	Dispose of contents/ containers to be collected by a licensed contractor in accordance with national and local regulations.
P403 + P235:	Store in a well ventilated place.

## Denaturated alcohol:

H225:	Highly flammable liquid and vapour.
P210:	Keep away from heat/sparks/open flames/hot surfaces – No smoking.
P233:	Keep container tightly closed.
P240:	Ground/bond container and receiving equipment.
P403 + P235:	Store in a well ventilated place. Keep cool.

## Hazards

- Petrol and raw alcohol are highly inflammable. Extinguish all open flames! When the liquid has been taken out, close the bottles and remove them!
- Calcium hydroxide solution is caustic. Do not allow it to contact skin!
- Wear protective glasses and gloves!

## Waste disposal

- Collect the limewater for further similar experiments.
- Transfer contents of the beakers to the container for acid and alkali wastes.

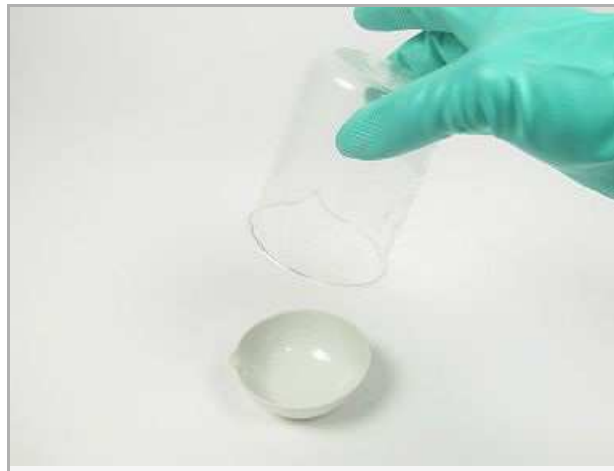
# The detection of carbon with limewater (Item No.: P7170100)

## Task and equipment

### Task

**Which substance is always formed when organic matter is burnt?**

Examine the combustion of organic substances.



## Equipment



Position No.	Material	Order No.	Quantity
1	Wash bottle, 250 ml, plastic	33930-00	1
2	Porcelain dish, 75ml, d = 80 mm	32516-00	2
3	Protecting glasses, clear glass	39316-00	1
4	Rubber gloves, size S (7)	39325-00	1
5	Glass beaker DURAN®, short, 150 ml	36012-00	1
6	Glass beaker DURAN®, short, 250 ml	36013-00	1
7	Pipette with rubber bulb	64701-00	2
	Stand.petrol b.p.65-95 C 1000 ml	31311-70	1
	Water, distilled 5 l	31246-81	1
	Denaturated alcohol (spirit for burning), 1000 ml	31150-70	1
	Calcium hydroxide solution 1000ml	31458-70	1
	Wood splints, package of 100	39126-10	1
Additional material			
	Lighter or something similar		
	Candle (Tealights)		

## Set-up and procedure

### Set-up

### Hazards

- Petrol and raw alcohol are highly inflammable. Extinguish all open flames! When the liquid has been taken out, close the bottles and remove them!
- Calcium hydroxide solution (limewater) is caustic. Do not allow it to contact skin!
- Wear protective glasses and gloves!



### Procedure

Pour a little calcium hydroxide solution in the 250 ml beakers and swivel it around so that the inner surface is wetted with the solution and drops of solution adhere to it (Fig. 1). Do not swivel the beaker too heavily to prevent the solution from splashing. Pour the remaining solution into the 150 ml beaker.



Fig. 1

Use the pipette to transfer about 10 drops of petrol to one of the porcelain dishes (Fig. 2). Ignite the petrol with a wood splint and hold the inverted beaker above it (Fig. 3+4). (Take care not to burn your hands!)



Fig. 2



Fig. 3

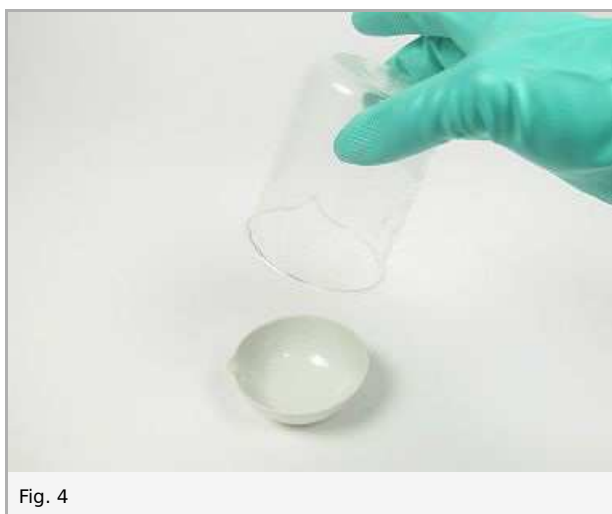


Fig. 4

Rinse the beaker with distilled water and wet the surface with calcium hydroxide solution again. Use the second pipette and porcelain dish to carry out the same procedure as before using denaturated alcohol instead of petrol.

Rinse the beaker with distilled water and wet the surface with calcium hydroxide solution again. Light a candle and hold the inverted beaker above it (Fig. 5).

At the end of the experiment collect the remaining calcium hydroxide solution in an appropriately labelled container.



Fig. 5

## Waste disposal

- Collect the limewater for further similar experiments.
- Transfer contents of the beakers to the container for acid and alkali wastes.

## Report: The detection of carbon with limewater

### Result - Observations

Note your observations on

- a) Petrol.
- b) Denaturated alcohol.
- c) Candle.

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### Evaluation - Question 1

Draw conclusions from your observations and thereby answer the question in the header.

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## Evaluation - Question 2

Formulate the equation for the reaction which took place.

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