

Masters for transparencies

5.1 Term 1



materie en materiale

Eliminasie-reaksie

- Dehidrohalogenering
Hitte; basis opgelos in etanol → Alkeen + water + haliedsout
- Dehidrerings
Hitte; suwewebuur → Alkeen + water
- Termiese kraging
Toestand: hoë temperatuur; hoë druk; geen katalisator → Mengsel van alkene vorm.
- Katalitiese kraging
Laer temperatuur; 'n katalisator; gematigde las druk → Kort ketting alkene vorm.

1.7.2.1 Dehidrohalogenering

Reaksie-toestand:
Temperatuur: Word sterk verhit;
Toerwoordig: Stank bakke; NaOH of KOH in suwer etanol opgelos; warm etanoliese NaOH of KOH.
Produk: Alkeen + water +

$\begin{array}{c} \text{---C---C---} \\ | \quad | \\ \text{H} \quad \text{Y} \end{array}$

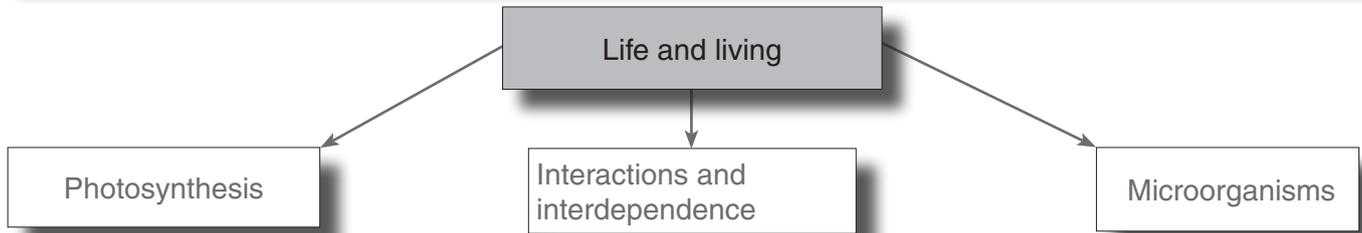
Voorbeelde:

$\begin{array}{c} \text{H} \quad \text{H} \\ | \quad | \\ \text{H---C---C---H} \\ | \quad | \\ \text{H} \quad \text{Br} \\ \text{bromostaan} \end{array} + \text{Na---O} \xrightarrow[\Delta]{\text{stans}} \begin{array}{c} \text{H} \quad \quad \text{H} \\ \quad \backslash \quad / \\ \text{C} = \text{C} \\ \quad / \quad \backslash \\ \text{H} \quad \quad \text{H} \\ \text{eteen} \end{array} + \text{Na---Br} + \text{H---O}$

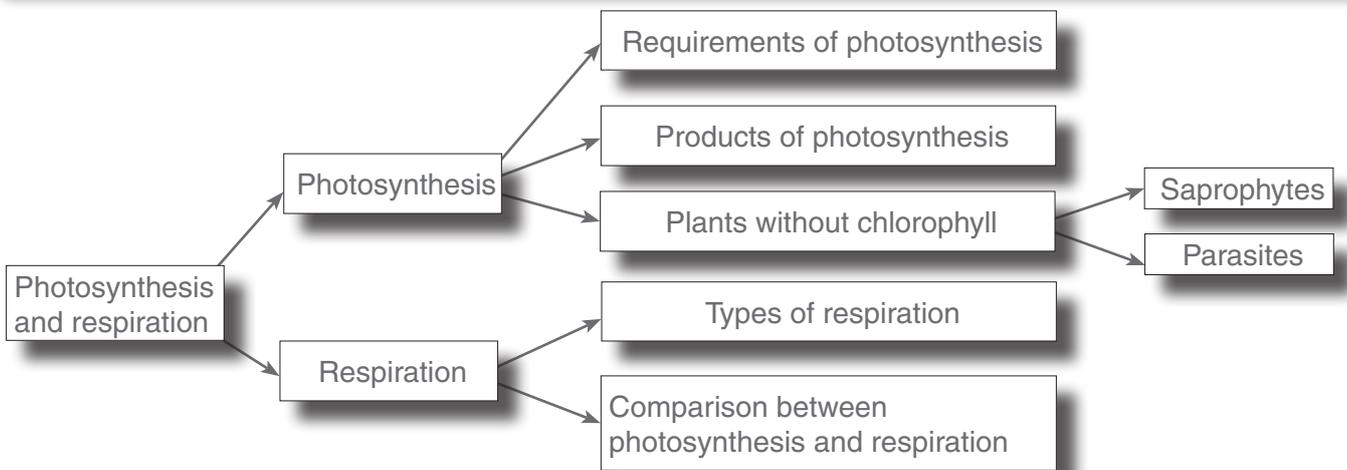
196 CHEMIE voorbereidingsêër - Graad 12 Die Boekwêreld



TERM 1: LIFE AND LIVING



UNIT 1 PHOTOSYNTHESIS AND RESPIRATION



1.2 Photosynthesis

Photosynthesis is the process whereby plants use carbon dioxide, water and light energy in a series of chemical reactions to produce glucose (food).

1.2.1 Requirements

Light energy 	Light energy is provided by the sun.
Carbon dioxide 	Plants obtain carbon dioxide (CO ₂) from the atmosphere.



<p>Water</p> 	<p>Plants obtain water from the ground.</p>
<p>Chlorophyll</p> 	<p>Green plants contain the pigment chlorophyll.</p>

Activity 1: Page 14

Do further research and write a short report on the requirements for photosynthesis, as well as the products that are produced during photosynthesis.

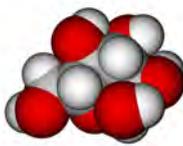
Requirements:

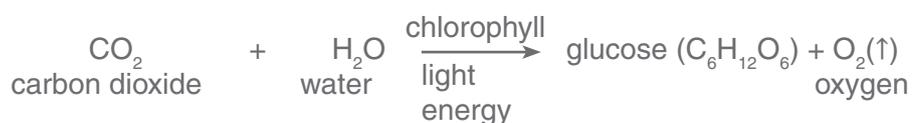
- **Green plants (plants containing chlorophyll) in the presence of:**
 - **sufficient light energy.**
 - **sufficient water.**
 - **carbon dioxide.**
 - **soil rich in minerals.**

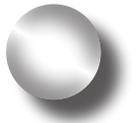
Products that form:

- **Glucose (sugar) is used to form cellulose and is used in other chemical processes. Excess glucose is stored as starch.**
- **Oxygen that is released into the atmosphere.**

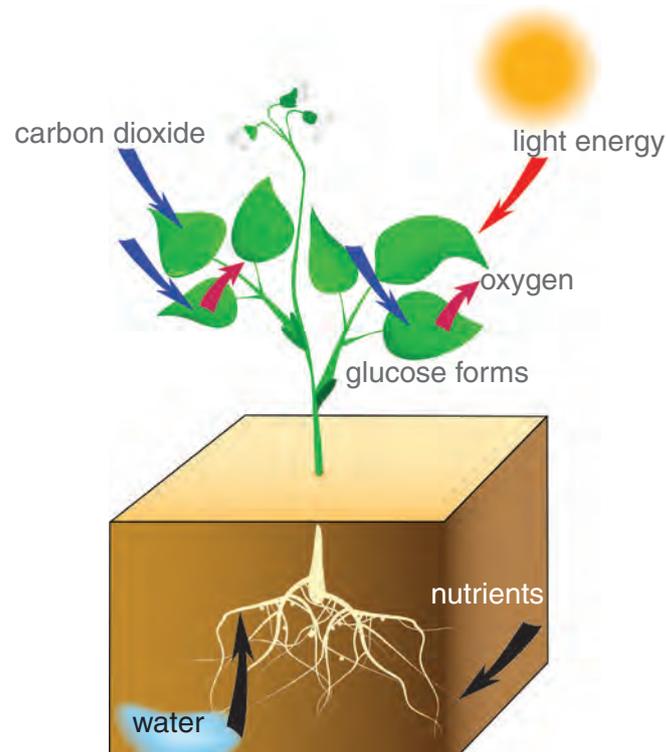
1.2.2 Products of photosynthesis

<p>Glucose</p> 	<p>Glucose (a simplified form of sugar) is produced by plants.</p>
<p>Oxygen</p> 	<p>Oxygen (O₂) is produced as a by-product, and plants release it into the atmosphere.</p>





A simple representation of photosynthesis:



Plants absorb carbon dioxide and release oxygen.
Gaseous exchange is the absorption and emission of gases.

Plants use glucose to respire.

The energy that is released during respiration is used for the following life processes:

- Propagation
- Cell division
- Growth
- Other life processes

Green plants are autotrophs.

Distinguish between saprophytic plants and parasitic plants.

Saprophytes

Survive on dead organic tissue, e.g. sugarcane, Indian pipe and certain orchids.



Photos: Derrick Ditchburn, Victoria, Canada





Parasites

Live on living organic tissue.

Examples: dodder and mistletoe



Practical investigation 1: Page 17

Aim: To prove that green plants produce starch when exposed to sunlight.

Investigative question:

What do green plants produce when it is exposed to sunlight?

Hypothesis:

Green plants that are exposed to sunlight produce starch by means of photosynthesis.

Questions:

1. Why do you have to boil the leaf in water first, before boiling it in alcohol/ethanol?

The leaf is first boiled in water to soften the leaf tissue or to break the cell walls.

2. Why do you have to heat alcohol/ethanol over water and not over an open flame?

It is very dangerous to heat it over an open flame, because alcohol/ethanol is highly flammable.

3. Why do you need to boil the leaf in alcohol/ethanol?

Alcohol/ethanol dissolves the chlorophyll that is present in the green leaf.

4. What do you observe after the leaf has been boiled in alcohol/ethanol?

The green leaf becomes hard and turns yellow-white.

5. Why do you have to boil the leaf in water the second time?

To soften the leaf.

6. What variables must remain constant during this practical investigation?

Type of leaves; time leaves are boiled

7. What is the difference in the results between the two different leaves that were tested?

Leaf exposed to sunlight: turns blue-black.

Leaf not exposed to sunlight: a brown iodine colour.

Results:

After the leaf has been covered with iodine, it turned blue-black.

Conclusions:

Green plants that have been exposed to sunlight, photosynthesise and produce starch and turn blue-black in the presence of iodine solution.