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Recommendation for use Hofmann voltameter for educational purposes

Product number: 44285010 and 44286010

A water decomposition apparatus is used for the demonstration of electrolysis, i. e. for the decomposition of water into hydrogen and oxygen by means of electric current.

The apparatus is consisting of a glass tube with pear-shaped funnel and two lateral measuring tubes 60 ml : 0.2 ml with glass stopcocks.

There are two versions available:

Product number **44285010**

Spare parts

Glass part No. 44287010

Metal tripod

2 Clamps No. 40870010

2 Platinum electrodes No. 44288010

Product number **44286010**

Spare parts

Glass part No. 44287010

Metal tripod

2 Clamps No. 40870010

2 Carbon electrodes No. 44289010



Experimental setup and test procedure

Attach the voltameter with two clamps to the support. Insert the carbon or platinum electrodes into the measuring tubes. **The stoppers have to be firmly in position in order to avoid leakage of liquid.** For safety reasons place the apparatus into a glass tray.

Pour in the electrolyte through the funnel while stopcocks are both open to let the air escape. Close the stopcocks as soon as the electrolyte has reached the level of stopcock bores. Connect the electrodes and the pole terminals at the tripod by means of two short connecting cables. Connect a DC voltage source and supply with electrical energy. The required direct voltage is about 10 V to 20 V at max. 500 mA.



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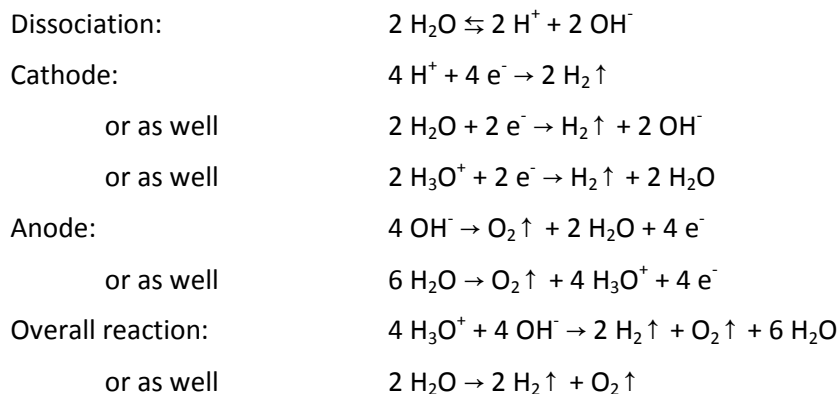
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Basic principle of the water electrolysis



Since only a few dissociated water molecules are present in pure water, the above conversion is very low. Therefore various additives are used which favor the overall conversion.

Experiment with diluted sulphuric acid

Insert **platinum electrodes** into the voltameter.

Pour in diluted sulphuric acid (approx. 2 mmol/l) through the pear-shaped funnel.

After applying voltage to the electrodes, gas is collecting in the measuring tubes when stopcocks are closed. After a few minutes the gas volume in the cathode tube is twice as large as the volume in the anode tube.

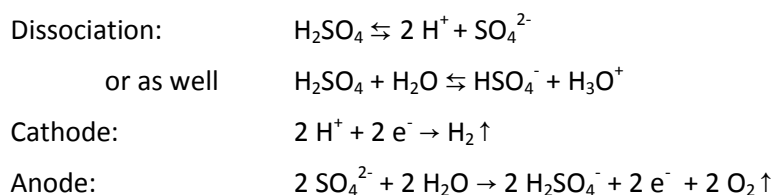
Oxyhydrogen test

If the gas formed at the cathode is ignited, it burns with a faint flame. If the gas is mixed with air in a test tube, the mixture burns with a whistling sound when the opening of the test tube is held to a flame. It is **hydrogen**. The resulting water is in the test tube.

Glowing splint test

The gas formed at the anode does not burn itself. But it ignites a glowing wooden stick held to the opening of the measuring tube while the stopcock is opened.

The **oxygen** ignites the wooden stick.





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Cleaning

1. Empty the apparatus after use and clean it - the electrodes and stopcocks as well.
Then rinse the parts with distilled water.
2. Use hot detergent solution to remove grease residue from the stopcocks.
3. Lubricate the well dried stopcocks with silicone grease. Make sure that no grease enters the stopcock bores. The stoppers of the electrodes **must never** be treated with grease.

Hazard and safety information

Please observe the necessary precautions for use of laboratory reagents. Applications should be performed by qualified personnel only. Follow the national and internal laboratory guidelines for safety at work. Wear suitable protective clothing and gloves during handling.

Accessories

	Product number
Beaker of glass, 400 ml	e.g. 41929148
diluted sulphuric acid	
Glass tank	e.g. 40070011 30 x 22 x 15 cm
DC voltage source and connecting cable	
Test tube	e. g. 42770051
Wooden applicator	e. g. 44300020
Silicone stopcock grease	41480035

The information contained herein is based on our present knowledge. It shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. In particular the information does not replace the due diligence of the performer who is required to observe all legal safety regulations and, where applicable, further measures for personal protection.