

4.1.12-00 Faraday's law



What you can learn about ...

- Electrolysis
- Coulometry
- Charge
- Amount of substance
- Faraday's law
- Faraday's constant
- Avogadro's number
- General equation of state for ideal gases

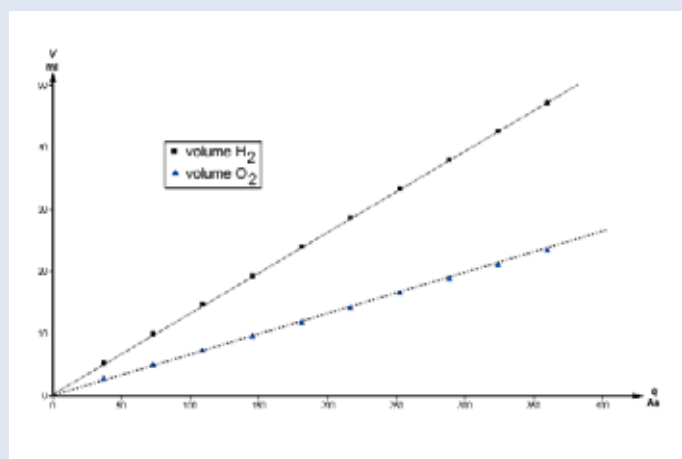
Principle:

The correlation between the amounts of substances transformed in the electrode reaction and the applied charge (amount of electricity) is described by Faraday's law. Faraday's constant, which appears as a proportionality factor, can be determined experimentally from this dependence.

What you need:

Power supply, universal	13500.93	1
Digital multimeter 2010	07128.00	1
Electrolysis apparatus - Hofmann	44518.00	1
Platinum electrode in protective tube, $d = 8$ mm	45206.00	2
On/Off switch	06034.01	1
Connecting cable, 4 mm plug, 32 A, blue, $l = 75$ cm	07362.04	1
Connecting cable, 4 mm plug, 32 A, red, $l = 50$ cm	07361.01	1
Connecting cable, 4 mm plug, 32 A, red, $l = 25$ cm	07360.01	2
Retort stand, $h = 750$ mm	37694.00	1
Right angle clamp	37697.00	4
Universal clamp	37718.00	3
Stopwatch, digital, 1/100 s	03071.01	1
Barometer/Manometer, hand-held	07136.00	1
Digital thermometer, NiCr-Ni	07050.00	1
Beaker, DURAN®, short form, 600 ml	36015.00	1
Precision Balance, Sartorius LE 623P	45023.93	1
Pasteur pipettes, $l = 145$ ml	36590.00	1
Rubber caps, 10 pcs	39275.03	1
Funnel, glass, $d = 80$ mm	34459.00	1
Wash bottle, plastic, 500 ml	33931.00	1
Sulphuric acid, 95-98%, 500 ml	30219.50	1
Water, distilled 5 l	31246.81	1
Weather monitor, 6 lines LCD	87997.10	1
Precision Balance, Sartorius LE 623P	48852.93	1

Complete Equipment Set, Manual on CD-ROM included
Faraday's law P2411200



Correlations between the transferred charge and the evolved volumes of hydrogen and oxygen in the electrolysis of diluted sulphuric acid ($T = 296.05$ K and $p = 100.4$ kPa)

Tasks:

Determine Faraday's constant from the dependence of the volumes of hydrogen and oxygen evolved on the applied charge in the hydrolysis of diluted sulphuric acid.