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Teaching guide in digital format

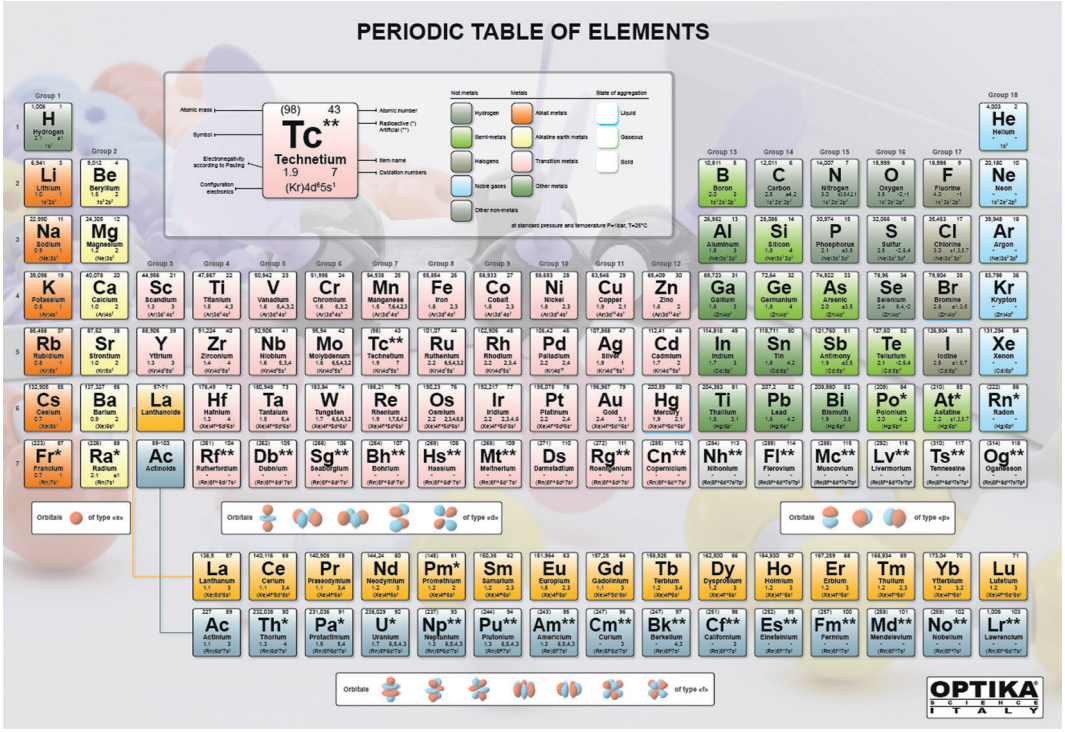
Minimum invoiced order: € 130,00 + VAT

Periodic table 6300.2

Updated periodic table, laminated and fitted with support bars. The main physical and chemical features of every element are mentioned, essential for every laboratory.
A graphic illustrates the energetic level of the orbitals which determines the sequence of the periodic table's blocks. It is very interesting to notice the mathematically correct represantation of the orbitals s, p, d and f. Even the recent chemical elements are present. The numerical data are updated according to the IUPAC recommendations.
Size 100 x 70 cm.

Periodic table for students 6301.2

Periodic table, graphically the same as code 6300.2, but with A3 (42x29,7 cm) format. This model is not fitted with support bars.



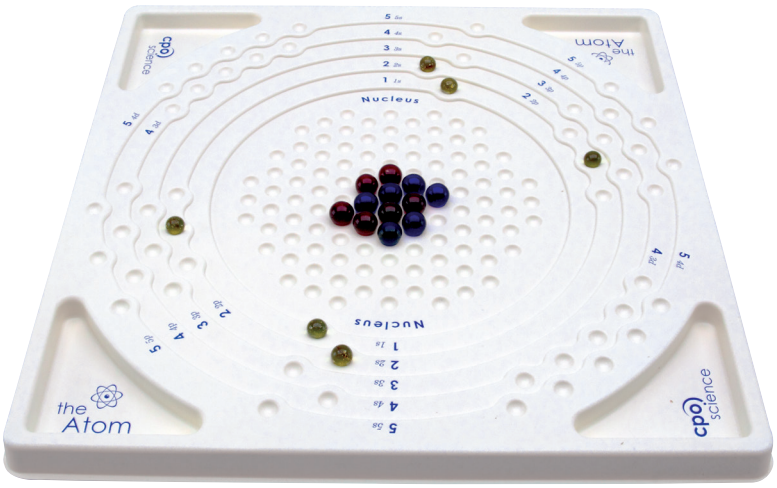
6300.2 - 6301.2

Atom model 5716

This model helps the students to understand the atom, because it permits them to create different atoms using coloured spheres which represent the protons, the neutrons and the electrons. The holes on the plate are ordered according to the different energetic levels of the orbit. In this way it is possible to understand the chemical links, the isotopes, the emission spectra and other matters concerning the atom. Size: 475x475 mm.

Topics

- Periodic table of elements
- When an atom has no charge
- Energy levels and principal quantum number (n)
- Energy levels and secondary quantum number
- Orbitals and magnetic quantum number (m)
- Electronics configurations
- How energy levels vary
- Electronics configuration at fundamental state
- Interaction between atoms
- Natural radioactivity
- Natural radioactivity transformations
- Nuclear reactions



Equipment supplied

1 Atom model (table)
48 Electrons (yellow spheres)
57 Protons (red or green spheres)
57 Neutrons (black spheres)
48 Cards regarding photons absorption
48 Cards regarding nuclear reactions
2 Periodic table of elements

5716

Organic chemistry (teachers) MM003

In this box you can find: 40 Hydrogen atoms, 38 Carbon atoms, 12 Oxygen atoms, 4 Nitrogen atoms, 2 Sulfur atoms, 4 Phosphorous atoms, 8 Chlorine atoms, 3 Metal atoms, 55 simple bond, 25 complex bonds, 60 bonds, 1 key for bonds.

MM003

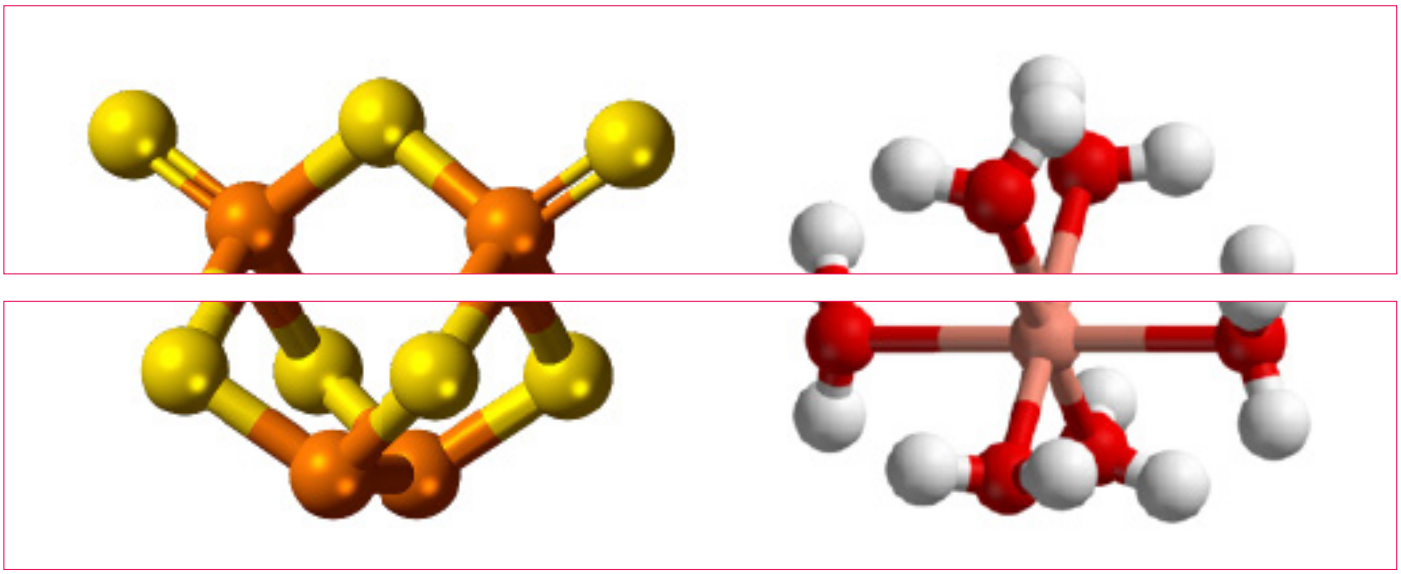
Organic chemistry (students) MM051

This kit is recommended for group of students: 30 Hydrogen atoms, 20 Carbon atoms, 6 Oxygen atoms, 8 Chlorine atoms, 2 Bromine atoms, 2 Iodine atoms, 2 Metal atoms, 4 Nitrogen atoms, 12 orbitals, 40 simple bonds, 12 complex bonds, 50 tie points, 1 key for bonds.

MM051

Organic and inorganic chemistry MM004

Fitted with organic and inorganic molecules, complex ions and covalent hydrogen.
The package consists of: 14 metal atoms; 14 hydrogen atoms; 8 halogen atoms; 22 oxygen atoms; 13 sulphur atoms; 10 nitrogen atoms; 12 carbon; 7 phosphorus; 50 bridges for simple connection; 36 bridges for double and triple connection.



MM004

Organic and inorganic chemistry 7041

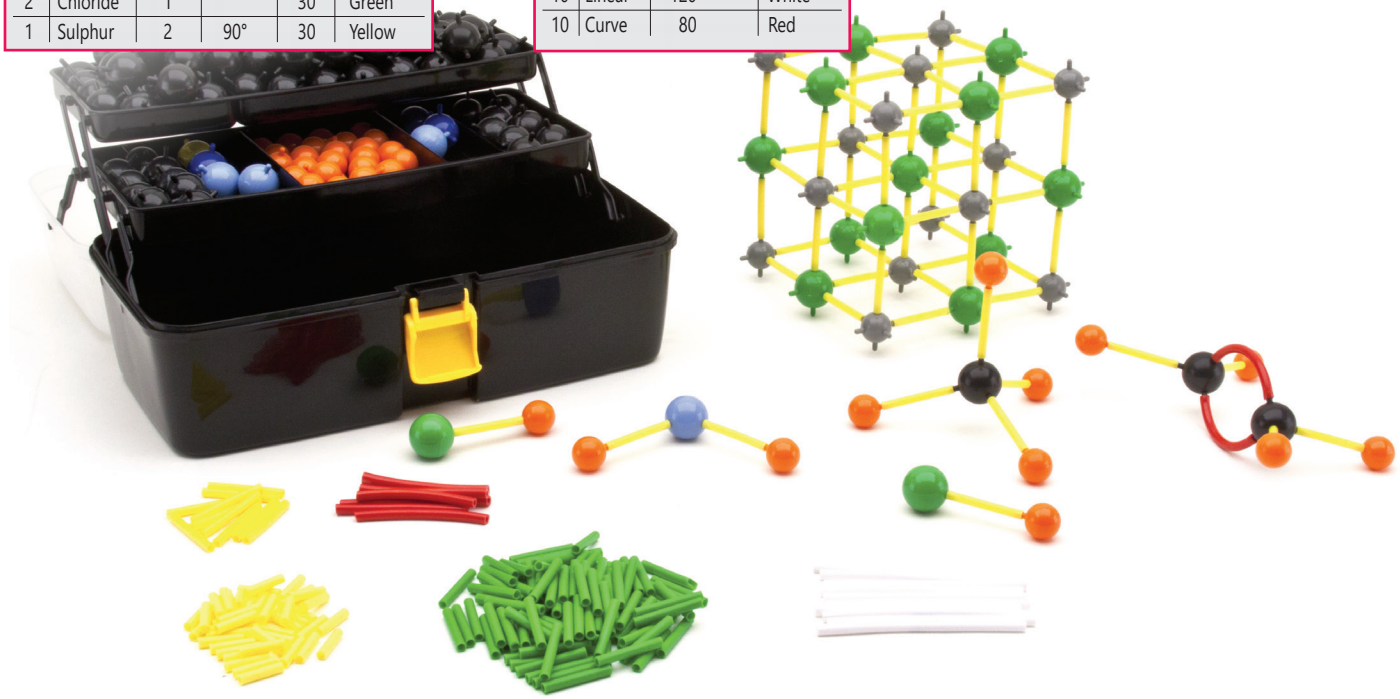
The different components of this set allow creation of a wide range of inorganic and organic compounds' molecules and rystalline structures.
The size of the components allows both the teacher to use them for desk demonstration and the students to perform group practical experiments.
The components contained in a wooden box are as follows:

ATOMS

N.	Descrip.	Bond	Angles	(mm)	Colour
50	Carbon	4	109°	30	Black
48	Carbon	5	120°,90°	30	Black
40	Hydrogen	1		23	Orange
14	Sodium	6	90°	23	Grey
13	Chlorine	6	90°	30	Green
4	Oxygen	2	105°	30	Sky-blu
2	Nitrogen	4	109°	30	Blue
2	Chloride	1		30	Green
1	Sulphur	2	90°	30	Yellow

LEGAMI

N.	Bond	Lenght (mm)	Colour
100	Linear	40	Green
75	Linear	50	Yellow
40	Linear	25	Yellow
10	Linear	120	White
10	Curve	80	Red



7041

Replacement plates for chromatography on thin layer 6237

Pack of 10 plates, 100x100 mm.

6237

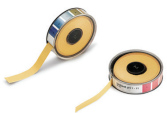
Paper for chromatography 6261

Pack of 100 pieces, 110x140 mm sheets.

6261

Roll paper universal pH 1-14

Blue litmus	**RA2001**
Red litmus	**RA2002**
Neutral litmus	**RA2003**
Universal pH 1-14	**RA2004**



RA2001 - RA2002 - RA2003 - RA2004

Pocket pH Tester — PH-2

Suitable for measuring water's and soil's pH. To perform the measurement, just immerse the electrode in the sample to be examined. At the cost of a few litmus papers, you can have the most convenient pocket pH meter available on the market. This tool allows you to perform fast and accurate measurements from 0 to 14 pH with a resolution of 0.1, immediately reading the measurement on the liquid crystal display.
The instrument can be manually calibrated on 2 points. a fast, accurate, practical and light instrument; It works with batteries of common type for over 1000 hours of work.

pH range	0.0 to 14.0 pH
pH resolution	0.1 pH
pH accuracy (at 20°C)	±0.2 pH
pH calibration	automatic with 1 or 2 points
Auto off	after 8 or 60 minutes or disabled
Power supply	1.5V CR2032 (1) / ca 1000 hours of continuous use
Condizioni di Utilizzo	0 to 50°C (32 to 122°F); R.H. max 95%

PH-2

Electrode for PH-2 — HI1271

Replacement electrode for PH-2.

HI1271

pH Electrode with Bluetooth — HI12302

Flexibility and simplicity of use, no cables, no tools. Simply download the free app to turn your compatible Apple or Android device (not included) into a full-featured pH meter. HI12302 is equipped with a combined pH electrode with plastic body (PEI), double junction, gel filling, for general use. The high quality electrode is equipped with a built-in temperature sensor that ensures automatic temperature compensation both during measurement and during calibration.
HI12302 is able to perform pH measurements on a scale ranging from 0.00 to 13.00 pH, measurements in mV and temperature measurements on a scale ranging from -5.0 to 70.0 °C. It can be used almost anywhere: in the laboratory, on the field, in production or in the classroom.

Reference system	Double, Ag/AgCl
Junction	Ceramic
Electrolyte	gel
pH range	0.00 to 13.00 pH
mV range	±420 mV
Temperature scale	-5.0 to 70.0°C
Operating temperature	-5.0 to 70.0°C
Tip	spherical
Temperature sensor	yes
Body	PEI
Probe dimensions	Tip diameter 12 mm
Power supply	CR2032 3V lithium ion/ about 500 hours
Connection	Bluetooth 4.0, 10 m

Tablet and stand are not included

HI12302

pH Tester — HI98107

The pocket tester is robust and reliable and is ideal for both laboratory and field use. This new tester has a thickness of less than 2 cm and is extremely ergonomic, comfortable to hold in your hand. The instrument is simple to use because it is equipped with only 2 buttons: one dedicated to switching on and off; the other dedicated to calibration.

Range	0.0 to 14.0 pH
pH resolution	0.1 pH
pH accuracy (at 20°C)	±0.1 pH
Temperature range	0.0 to 50.0°C / 32.0 to 122.0°F
Temperature resolution	0.1°C / 0.1°F
Temperature accuracy (at 20°C)	±0.5°C / ±1.0°F
pH calibration	automatic with 1 or 2 points
Temperature compensation	automatic 0 to 50°C (32 to 122°F)
Power supply	1x3V CR2032/about 800 hours of continuous use
Automatic shut off	after 8 or 60 minutes. It can be disabled
Operational conditions	0 to 50°C; U.R. max 100%

HI98107

PH / ORP / Temperature tester — PH-6

Io PH-6 is a waterproof pocket pH, ORP and temperature meter.
This instrument is protected from moisture and is designed to float.
The pH electrode is replaceable and easy to insert as it is equipped with a round stainless steel connector.

Parameter	pH/ORP/Temperature
PH scale	-2.00 a 16.00 pH
PH resolution	0.01 pH
PH accuracy	±0.05 pH
PH calibration	automatic
Compensation	automatic
ORP scale	±1000 mV
ORP precision	±2 mV
The temperature scale	da -5.0 a 60.0°C / da 23.0 a 140.0°F
Resolution temperature	0.1°C / 0.1°F
Precision temperature	±0.5°C /±1°F

PH-6

Edge pH Bluetooth Meter — HI2002

Modern, thin and light design - pH electrode monitoring technology
Temperature sensor integrated in all electrodes - Data storage -
Large, easy-to-read LCD - Capacitive Keypad - Two USB ports - GLP functions
Rechargeable battery.

pH range	da -2.00 a 16.00 pH
pH resolution	0.01 pH, 0.001 pH, 0.1 mV
pH accuracy (at 20°C)	±0.01 pH, ±0.002 pH; ±0.2 mV
ORP Range	±2000.0 mV
ORP Resolution	0.1 mV
Temperature Range	-20.0 to 120.0°C; -4.0 to 248.0°F
pH Calibration:	2-points, manual
Memorizzazione:	Up to 1000 records in total, between: - Sample storage (max 200 log) - Manual log on Stability (max 200 log) - Automatic storage at programmable intervals up to 100 batches (max 600 logs/lot)
PC connection	USB; micro-USB

HI2002

Storage solution for electrodes — HI70300M
Bottle, 230 ml.

HI70300M

Buffer solutions for pH meters calibration

Buffer solution pH 4,01; 500 ml.	**HI7004L**
Buffer solution pH 7,01; 500 ml.	**HI7007L**
Buffer solution pH 10,01; 500 ml.	**HI7010L**

Solutions for conductivity meter calibration

12880 µS/cm; 230 ml.	**HI7030M**
111800 µS/cm; 230 ml.	**HI7035M**

Solution for cleaning electrodes of pH meters — HI7061M
230 ml bottle to clean the junction of the electrodes.

HI7004L - HI7007L - HI7010L - HI7030M - HI7035M - HI7061M

The operation mode of refractometers is based on the principle that the refractive index of a solution is proportional to the concentration of a solute. Thanks to a few drops of the sample, it is easy to define the concentration of the substances. This simple and accurate method is usually used to measure the concentration of sugar solutions (Brix). The refractometers are also used in food field for products such as maramalades, fruit juices, syrups, wine, honey and so on.

Hand refractometer, 0-32% ATC — HR-130N
Built in illuminator LED type. Measuring range: 0-32% Brix. Resolution: 0.2% Brix. With automatic temperature compensation (ATC).

Hand refractometer, 0-80% — HR-150N
Built in illuminator LED type. Measuring range: 0-80% Brix. Resolution: 1% Brix. Without ATC.

HR130N - HR150N

Abbe bench refractometer — 2WAJ

Main prism	horizontal
Secondary prism	hinge mounted
Refraction index range	n_D 1,300 - 1,700
Precision	n_D ±0,0003
Division	n_D 0,0005
Sugar range	0-95% from n_D 1,300 - 1,530.
Precision	0-50% = 0,2%; 51-95% = 0,1%
Division	0,25%
Weight	4
Dimensions	140x100x235 mm

2WAJ

Bench polarimeter with monochromatic LED light source — POL-X

Used for measuring the concentration of optically active substances (for example sugars) in a solution.
Measuring range of optical rotation: ± 180°
Resolution: 1°
Accuracy: 0.05°
Magnification factor of the magnifying glass: 4x
Light source: Monochromatic LED, 1.2 W, ld = 590 nm
(equivalent to sodium lamp)
Length of test tubes: 100mm and 200mm.
Power Supply: Input 100/240V ac, 50/60 Hz; Output 5V dc 500 mA
Weight: 1,7kg

POL-X

Simple spectroscope — 4126

The item can test the emission and the absorption of spectral radiations.
Model for direct vision.

4126

Kirchoff-Bunsen's spectroscope — 4028

The item is mounted on a circular metal platform, it is composed of: 1 collector with adjustable slit, 1 collector with graduated scale and 1 collimator with 2 interchangeable eyepieces. The slit of the collector is supplied with a small prism. While the collector, equipped with achromatic objective, is fixed to the platform, the collimator can rotate on an alidade, keeping the directional axis in the centre of the apparatus. The collector with graduated scale requires a small white light source to project the image of the scale in the eyepiece of the collimator by means of the reflection on a face of the prism. The equilateral prism made of highly dispersive material. With this device you can study the spectrum of a source of monochromatic or polychromatic light.

4028

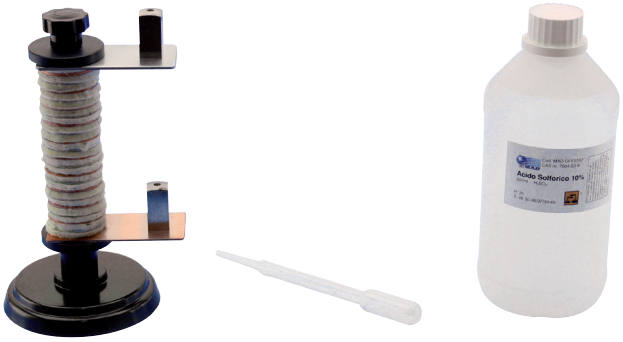
Spectrometer — 4209

This instrument has very good optic and mechanical features which allow the exact measurement of the optical ray deviation angles; therefore it can determine the refractive index of solids and liquids and the wavelength of monochromatic sources. Base: made of firevarnished cast-iron. Goniometer: Ø 17.5 cm and divided in 360° with a precision of 1°. It is equipped with a vernier, which allows to measure with an accuracy of 1/10°. Telescope: it has achromatic objectives with an 178 mm focal length and an eyepiece 15x. Focusing allows fine regulation. Collimator: endowed with achromatic objective with 178mm focal length and with a steady adjustable slit up to 6 mm. Plane of the prism: it can be adjusted both vertically and horizontally and it is supplied with boss-heads for the fixing of the diffraction grating. Diameter: 80 mm. Equipment: 1 Crown glass equilateral prism 32x32 mm; 1 diffraction grating 500 lines/mm; 1 magnifying lens. Dimensions: 48x33x33h cm. Weight: 12 Kg. The purchase of the diffraction gratings 80 lines/mm and 1000 lines/mm is suggested to verify the variation of the spectral resolution.

4209

Volta's battery, column type 5124

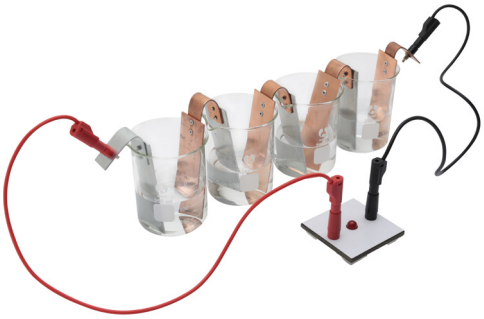
It is made of copper and zinc parts, separated by felt disks soaked in an acid solution. It is supplied with a bottle of acid solution.

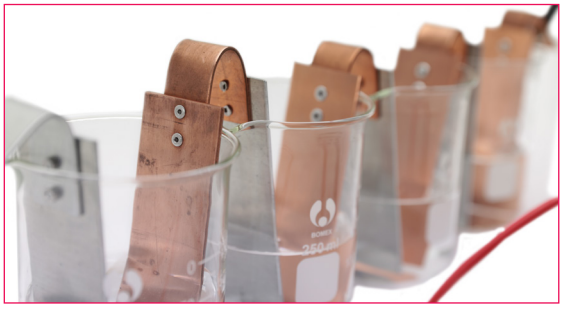


5124

Volta's battery, cups type 5167

It is composed of 4 voltmeters in series. It is supplied with copper and zinc electrodes, acid solution, cables and an LED assembled on a panel.





5167

Apparatus for the electrical conductivity of liquids 5113

Comprised of 4 bulbs in parallel. The electrolytic liquids must be poured into the four glasses, in which the electrodes are immersed. With this simple device, the electrolyte solutions can be recognised and the variation of conductivity as a function of the concentration can be studied.

5113

Human battery 5287

Placing your hand on two of the four metal plates (zinc, lead, aluminium and copper), you create a potential difference between the plates because of the electrical conduction properties of the human body. This potential difference can be measured through the use of a millimetric voltmeter (not included)
Trying all possible combinations between metals, it is possible to guess the existence of the electrochemical series.
Plates dimensions: 15x23 cm.
Board dimensions: 23x65 cm.

5287

Electrolytic cell 5415

Topics

- Electrical conductivity in liquids
- Volta's battery
- Electricity accumulator
- Electroplating

Equipment supplied

1 Base for electrolytic cell	1 Brass electrode
2 Supports for electrolytes	1 Sulphuric acid bottle, 10% solution
2 Coal electrodes	1 Bottle of copper sulphate's solution
2 Copper electrodes	1 Glass beaker
2 Zinc electrodes	3 Electrical leads
2 Lead electrodes	

Equipment required not supplied

1 Battery holder	1 Digital multimeter
4 1,5V Battery	

Replacements for electrolytic cell

All electrodes kit for cod. 5415	**5415.1**
Brass electrodes (couple)	**5043.1**
Lead electrodes (couple)	**5043.2**
Copper and zinc electrodes (couple)	**5043.3**

5415.1 - 5043.1 - 5043.2 - 5043.3

5415

Hofmann's voltameters

With graduated tubes and their metal stands. Height: 70 cm. Power supply unit (suggested code 4991) and connecting wires requested.

With carbon electrodes 5102

Equipment required not supplied

10% sulphuric acid solution	Code 6247
Power supply unit	Code 4991
Connection cables	Code 5012 or 5013
Ammeter	Cod. 5732

With platinum electrodes 5103

Equipment required not supplied

10% sulphuric acid solution	Code 6247
Power supply unit	Code 4991
Connection cables	Code 5012 or 5013
Ammeter	Cod. 5732

Replacements for Hofmann's voltmeter

Glass part only **5102.1**

Carbon electrodes (couple) **5165**

Platinum electrodes (couple) **5166**

5102 - 5103 - 5102.1 - 5165 - 5166