

## B.O.D. determination systems (Biochemical Oxygen Demand)

### B.O.D. sensor

- Ecological system (without mercury), microprocessor controlled for BOD determinations by manometric technique.
- A pressure transducer microprocessor controller turn display reading into BOD value.
- BOD values (ppm) directly showed in the display.
- Display: 3 digits LED.
- After BOD5 it is possible to determine total B.O.D.
- 5 BOD values memorized at 24 hours intervals.
- Scales: 0-90, 0-250, 0-600 y 0-999 ppm B.O.D.
- Power supply: 2 lithium batteries, included.
- Weight: 80 gr.

### 51035 Sensor SET

- B.O.D. sensor included.
- With bottle and magnetic bar.

### B.O.D. microprocessor controlled

- Microprocessor controlled equipment for BOD determinations.
- Developed according to international safety rules for workers and environment protection (without mercury).
- Measure through an electronic pressure system.
- B.O.D. values (ppm) directly showed in the display on each position
- Scales 0-90, 0-250, 0-600 and 0-999 ppm B.O.D. higher values, after dilution.
- Complet systems with 6 or 10 places.
- Method and operating manual.
- For B.O.D. determination it is necessary the use of a refrigerating thermostat.



### 51036 B.O.D. SYSTEM 6

- Complet 6 places equipment, include:
  - 6 places stirring unit.
  - 6 electronic sensors.
  - 6 bottles and 6 magnets.
  - 6 CO2 absorption containers.
- Power: 2 W.
- Weight: 2,3 Kg.
- Dimensions: 350x150x300 mm.
- Voltage: 220-240V/50 Hz.

### 51037 B.O.D. SYSTEM 10

- Complet 10 places equipment, include:
  - 10 places stirring unit.
  - 10 electronic sensor.
  - 10 bottles and 10 magnets.
  - 10 CO2 absorption containers
- Power: 2 W.
- Weight: 3 Kg.
- Dimensions: 432x165x300 mm.
- Voltage: 220-240V/50 Hz.

### Accessories:

51137 Control tablets (box)

51135 Lithium electronic sensor

51136 Sensor Check

- To verify the correct operation of Sensor Set.



## B.O.D. determination systems

Equipment for Biochemical Oxygen Demand determinations by manometric technique up to 1000 ppm (mg/L).

- 4 Measuring scales: 0-90, 0-250, 0-600 y 0-1000 mg/L BOD.
- Sample volume may vary from 100 to 400 ml.
- For BOD determination it is necessary the use of a refrigerating thermostat.
- Method and operating manual.



● 51050

### 51046 6 places equipment

- Include: bottles, caps and capillary.
- 220-240V/50 Hz.
- Dimensions: 350x210x360 mm.

### 51050 10 places equipment

- Include: bottles, caps and capillary.
- 220-240V/50 Hz.
- Dimensions: 432x210x360 mm.

## Refrigerating thermostat for B.O.D.

### 51041 Refrigerating incubator FTC90

- CFC Free
- Volume 90 liters.
- Internal socket.
- Forced air recirculation.
- Accuracy at the constant value 20°C:  $\pm 5^\circ\text{C}$ .
- Purposely built for the incubation of a manometric BOD unit (either 6 or 10 places).
- Constant temperature: 20°C.
- Dimensions: 615x550x540 mm.
- Weight: 24,5 kg.
- Power: 150 W.
- Power supply: 230 V/50 Hz.



● 51041

### 51043 Refrigerating incubator FTC90E Temperature range from +3°C to 50 °C

- AUTO-TUNING temperature regulator.
- CFC Free.
- Volume 90 liters.
- Internal socket.
- Forced air recirculation.
- Accuracy at the constant value 20°C:  $\pm 5^\circ\text{C}$ .
- Purposely built for the incubation of a manometric B.O.D. unit (either 6 or 10 places).
- Internal temperature homogeneity:  $\pm 5^\circ\text{C}$ .
- Internal temperature stability:  $\pm 5^\circ\text{C}$ .
- Electronic thermoregulation by Auto-Tuning, temperature controlled by microprocessor regulable from +3°C to 50°C.
- Resolution: 0,1°C.
- Interface RS232.
- Dimensions: 615x550x540 mm.
- Weight: 24,5 kg.
- Power: 150 W.
- Power supply: 230V/50 Hz.



● 51043

### 51143 Refrigerating incubator with transparent internal door FTC90I

Same characteristic than model FTC90E



● 51143

#### Accessories:

Software compatible with the windows

See next page

## 51040 Refrigerating incubator FOC225E

- Temperature range from +3°C up to 50°C. AUTO-TUNING temperature regulator.
- CFC Free.
- Volume 220 liters.
- 2 Internal sockets.
- Forced air recirculation.
- Accuracy at the constant value 20°C: ±5°C.
- Purposely built for the incubation of a manometric.
- BOD unit (either 6 or 10 places).
- Internal temperature homogeneity: ±5°C.
- Internal temperature stability: ±5°C.
- Electronic thermoregulation by Auto-Tuning, temperature controlled by microprocessor regulable from +3°C to 50°C.
- Resolution: 0,1°C.
- Interface RS232.
- Dimensions: 540x540x1280 mm.
- Weight: 40 kg.
- Power: 300 W.
- Power supply: 230V/50 Hz.



## 51140 Refrigerating incubator FOC 225I

- With transparent internal door FOC225I.
- Temperature range from +3°C up to 50°C. AUTO-TUNING temperature regulator.
- CFC Free.
- Volume 220 liters.
- 2 Internal sockets.
- Forced air recirculation.
- Accuracy at the constant value 20°C: ±5°C.
- Purposely built for the incubation of a manometric.
- BOD unit (either 6 or 10 places).
- Internal temperature homogeneity: ±5°C.
- Internal temperature stability: ±5°C.
- Electronic thermoregulation by Auto-Tuning, temperature controlled by microprocessor regulable from +3°C to 50°C.
- Resolution: 0,1°C.
- Interface RS232.
- Dimensions: 540x540x1280 mm.
- Weight: 40 kg.
- Power: 300 W.
- Power supply: 230V/50 Hz.



### Accessories:

12010 Connecting cable interface

12020 Incubator software (compatible with the WINDOWS)

- Record on an Excel file and display in graphic from the internal temperature values.
- Signal and record any accidental overheating failure of the probe or deviation from the set temperature range.
- Use programmable temperature and times work cycles.

## Meter: pH-conductivity-temperature

### Meter 532

- High resolution graphical screen.
- 6 languages can be selected in the menu :English, Dutch, French, German, Spanish, Italian).
- Storage memory up to 200 measurements.
- According to GPL norms
- **pH** range from 0 to 14 pH
  - Resolution: 0,01 pH.
  - Accuracy: 0,2%.
  - Automatic pH calibration.
- **Conductivity** range from 0,1  $\mu\text{S}/\text{cm}$  to 100  $\text{mS}/\text{cm}$ .
  - Resolution: 0,1  $\mu\text{S}/\text{cm}$ .
  - Accuracy:  $\pm 1\%$ .
- **Temperature** range from 0 to 100  $^{\circ}\text{C}$ .
  - Resolution: 0,1 $^{\circ}\text{C}$ .
  - Accuracy: 0,5 $^{\circ}\text{C}$ .
  - Manual or automatic temperature compensation.
- Three years warranty
- Programmable automatic switch off for increased battery life.
- Inputs for pH electrode, conductivity and for temperature probe.
- IP65 protection.
- Power supply: batteries (4 x 1,5V- alkaline) or low voltage 9..15V DC.
- Dimensions: 100 x 200 x 40 mm.
- Weight: 400 gr.



### 805320 Meter with manual and 4 alkaline batteries (Without electrodes, buffers...)

#### 805323 pH / $^{\circ}\text{C}$ include:

- Meter, 4 alkaline batteries, 2 x 50 ml buffer (pH 4 and pH 7) 50 ml electrolyte (3 M KCL), pH electrode with ATC (Pt100).
- Carrying case.

#### 805324 pH / $\mu\text{S}/\text{cm}$ / $^{\circ}\text{C}$ include:

- Meter, 4 alkaline batteries, 2 x 50 ml buffer (pH 4 and pH 7) 50 ml KCL (conductivity standard), 50 ml electrolyte (3 M KCL), pH electrode, conductivity cell and temperature cell.
- Carrying case.



### Accessories:

- 804170 230 V mains adaptor rechargeable
- 804149 12 V NiMH rechargeable
- 805300 Electrodes stand (up to 4)
- 805310 pH electrode BP1
- 805311 pH electrode BP10T
- 805370 Conductivity cell
- 805380 Temperature cell ST10 -30...+130 $^{\circ}\text{C}$

## Chemical Oxygen demand determination equipments (C.O.D.)

### 51026 ECO.6

- Thermoreactor with microprocessor controlled temperature and heating time and digital display.
- Designed for COD analysis and also for wet digestion of samples in the evaluation of metallic and non metallic elements in organic and inorganic materials.
- According to EPA, APHA, AWWA, WEF.
- Allows simultaneous operation for 6 samples of 20 ml.
- Setting of temperature by an electronic programmer, from room temperature to 200°C.
- Setting of heating time up to 199 minutes.
- Continuous operation is possible.
- Thermal stability:  $\pm 0,5^{\circ}\text{C}$  at 150°C.
- Acoustic signal of end of cycle with automatic switch off.
- Included: 6 test tubes  $\varnothing 42 \times 200 \text{ mm}$  with cone SN 29/32.
- 6 air refrigerators with ground cone, 6 test tubes holder.
- Dimensions: 198x319x132 mm (without tubes).
- Power: 700 W.
- Weight: 5,6 kg.
- Power supply: 220-240 V/50-60 Hz.



#### Accessories:

- 11144 Anticorrosive reducer  $\varnothing 42 \text{ mm}$  with 3
- 11146 Anticorrosive reducer  $\varnothing 42 \text{ mm}$  with 1
- 11145 Antisplash
- 11140 Test tube  $\varnothing 42 \times 200 \text{ mm}$ , SN 29/32
- 11141 Air refrigerators with ground cone
- 11143 6 test tubes holder

### 51028 Thermoreactor ECO 8

- With safety cover in 30 minutes.
- Designed for COD, total phosphorus, total chromium and other analytical decompositions for water and sludge samples.
- Double safety system:
  - Safety cover.
  - Safety thermostat.
- Programmable reaction temperatures: 70°C, 100°C, 120°C, 150°C and 160°C.
- Precision:  $\pm 0,2\%$  end of scale.
- Thermal stability:  $\pm 0,5^{\circ}\text{C}$ .
- Homogeneity:  $\pm -0,3^{\circ}\text{C}$ .
- Temperature probe: Pt100.
- Probe calibration automatic by software.
- Programmable reaction times: 30,60 or 120 minutes and infinite.
- Acoustic signal at the end of cycle with automatic switch off.
- Acoustic signal when the set temperature is reached.
- Visual and acoustic signals for temperature errors and broken probe.

#### Capacity:

- 8 test tubes with 16 mm external diameter.
- 1 test tube with 22 mm external diameter.
- Power: 270 W.
- Dimensions: 214x133x110 mm.
- Weight: 2 kg.
- Power supply: 220-240 V/50-60 Hz.



## 51025 Thermoreactor type ECO 25 with

- Designed for C.O.D. analysis and also for wet digestion of samples in the evaluation of metallic and non metallic elements in organic and inorganic materials.
- Double safety system:
  - Safety cover.
  - Safety thermostat.
- Programmable reaction temperatures: 70°C, 100°C, 120°C, 150°C and 160°C
- Precision:  $\pm 0,2\%$  end of scale.
- Thermal stability:  $\pm 0,5^\circ\text{C}$ .
- Homogeneity:  $\pm 0,3^\circ\text{C}$ .
- Temperature probe: Pt100.
- Probe calibration automatic by software.
- Programmable reaction times: 30, 60 or 120 minutes and infinite.
- Acoustic signal at the end of cycle with automatic switch off.
- Acoustic signal when the set temperature is reached
- Visual and acoustic signals for temperature errors and broken probe

### Capacity:

- 25 test tubes with 16 mm external diameter.
- 1 test tube with 22 mm external diameter.
- Power: 400 W.
- Dimensions: 155x275x95 mm.
- Weight: 3,6 kg.
- Power supply: 220-240 V/50-60 Hz.
- Voltage changer 230 V or 115V.



## 51029 Thermoreactor ECO 16

- Designed for COD, total phosphorus, total chromium and other analytical decompositions for water and sludge samples.
- Acoustic signal at the end of cycle with automatic switch off.
- Programmable reaction temperatures from room temperature up to 160°C, accuracy 1°C.
- Safety thermostat against overheating.

### Capacity:

- 14 test tubes with 16 mm external diameter and 2 test tube with 22 mm external diameter.
- Dimensions: 168x269x110 mm.
- Power: 550 W.
- Weight: 3,8 kg
- Power supply: 220-240 V/50-60 Hz.



### Accessories:

- 11151 Safety shield for ECO
- 91680 Set of 24 glass test tubes
- 91666 Test tube for decomposition diameter 22 mm
- 91667 Condenser 200mm type KS
- 91668 Absorption attachment for condenser
- 91139 Test tube rack for 25 test tube diameter 16mm for ECO

## Leaching TEST/JAR test (Individual regulation for each stirring position)

### Application areas:

- Optimization of coagulants addition to flocculate suspended matter in water treatment plants (JAR TEST).
- Leaching test for heavy metals, by diluted acetic acid or carbon dioxide saturated water, on solid wastes to be sent to dump.

### Technical specifications:

- Epoxy painted steel frame highly resistant to chemical and mechanical attacks.
- Disconnectable lighted back panel.
- Stainless steel stirring rods adjustable in height by a self blocking chuck.
- Individual motor for each stirring position.
- Speed selector independent for each stirring position.
- Settable speed: 10 – 15 – 30 – 45 – 60 – 90 – 120 – 150 – 200 rpm/min. (up to rpm optional).

### 18011 Leaching Test/places

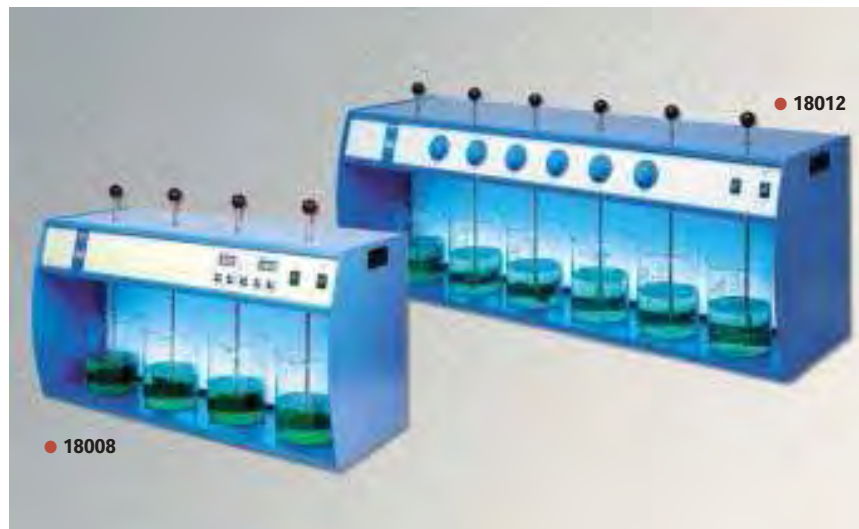
- Power: 50w.
- Weight: 12,5 Kg.
- Dimensions: 645x260x347 mm.
- 220-240V / 50-60 Hz.

### 18012 Leaching Test/places

- Power: 80 w.
- Weight: 18 Kg.
- Dimensions: 935x260x347 mm.
- 220-240V / 50-60 Hz.

### Accessories:

- 18114 Two plastic cones
- 18113 Plastic Imhoff cone



## Leaching Test/Jar test (microprocessor controlled)

### Application areas:

- Optimization of coagulants addition to flocculate suspended matter in water treatment plants (JAR TEST).
- Leaching test for heavy metals, by diluted acetic acid or carbon dioxide saturated water, on solid wastes to be sent to dump.

### Technical specifications:

- Epoxy painted steel frame highly resistant to chemical and mechanical attacks.
- Disconnectable lighted back panel.
- Stainless steel stirring rods adjustable in height by a self blocking chuck.

- Microprocessor control of stirring speed and stirring time with digital reading.
- Stirring time control in 2 levels:
  - 0 ... 999 minutes.
  - 0 .... 99 Hours.
- Stirring speed control from 0 to 300 rpm, resolution 1 rpm.

## 18008 Leaching Test/placetest

- Power 40w.
- Weight: 13 Kg.
- Dimensions: 645x260x350 mm.
- 220-240V / 50-60 Hz.

## 18009 Leaching Test/placetest

- Power 50 w.
- Weight 17 Kg.
- Dimensions: 935x260x350 mm.
- 220-240V / 50-60 Hz.

### Accessories:

- 18114 Two plastic cones
- 18113 Plastic Imhoff cone
- 18112 Plastic beaker 1000 ml



## Portable Jar Test



## 18017 Portable Jar

- Unit operated at 230 V AC or 12V DC from a car battery.
- Rear lighting disconnectable.
- Settable height of stainless steel stirring rods with self-locking device.
- Speed selector settable at: 20 – 40 –50 – 100 y 200 rpm.
- Timer from 0 to 30 minutes, disconnectable.
- Power 20 W.
- Weight: 4,8 Kg.
- Dimensions: 250X250X320 mm.
- 220-240V / 50-60Hz

### Accessory:

- 18018 Carring

## Overhead mixer

## 18118 Overhead mixer ROTAX

- Designed for the evaluation of solubility in water of sludges, sediments and solid wastes, according to DIN 38414.
- Used for all those applications where rotating, shaking and mixing is required.
- The DIN method requires the mixing of 100 gr of solid material (dry weight) with 1 Litre of distilled water in 2 liter bottles during 24 hours.
- The filtered eluate will be sent to chemical analysis.
- Capacity six 2 liters bottles or with an adapter, eight 1 liter bottles (for different uses).
- Speed controlled electronically from 0 to 30 r.p.m.
- Power 100 W.
- Weight 30 Kg.
- Dimensions: 665x470x520 mm.
- Voltage: 220V-240V/50-60Hz.



### Accessories:

- 11123 Adapter floliter
- 11121 Polyethylene 2 liters
- 11124 Glass 2 liters
- 11122 Polyethylene 1 liter

## Mineralization groups

- Finalized to heavy metals trace determinations.
- Units designed for hot digestions with acqua regia of sludges coming from water treatment plants, soils, compost, waste waters or vegetables according to DIN 38414.
- Hot mineralizations for determining mercury, cadmium, lead, chromium, copper, nickel, zinc, etc. Are performed without losses using waterjacketed condensers.
- Digesters (See DK6 and DK20 digesters on page 34).

### 51145 TDM 6 - 6 places group

- Dimensions: 225x810x126 mm.
- Weight: 6 Kg.

### 51146 TDM 20

- 20 places group.
- Dimensions: 360x810x126 mm.
- Weight: 20 Kg.

### 51005 DK6

### 51006 DK20



#### Accessories:

- 51636 Test tubes 12x60 joint
- 51637 Allihn condenser
- 51638 Absorption attachment for condenser

## 51490 Radiation detector

- With Geiger – Muller tube.
- Calibration is done by a pulse generator and is  $\pm 15\%$  of the full scale relative to Cesium 137.
- Portable radiation detector, measures: alpha and beta particles, gamma and x-rays.
- Radiation levels reading in:
  - miliRoetgens/hour mR/h
  - cpm
- The unit is protected by an anti-saturation circuit up to at least 100 times the maximum reading in the highest range
- Screen with graduated meter scale and audible beeper.
- Measure ranges:
  - 0,5 – 5,0 - 50 mR/h
  - 500 – 5000 – 50000 cpm
  - 5 – 50 – 500 m Sv.
- Sensitivity:
  - Alpha: detected down 2,5 MeV (typical detection efficiency 80% at 3,5 MeV).
  - Beta: detected at 150 keV (typical detection efficiency 75%).
  - Gamma and X-rays: detected downs 10 keV trough the end window and to 40 keV trough the case.
- 9-V alkaline battery, 2000 hours lifetime.
- Weight: 250 gr.
- Dimensions: 145 x 75 x 38 mm.



## 18116 Turbidimeter TB1

- Allows to measure turbidity of aqueous samples, the measure is given is Nephelometric Turbidity Units (N.T.U.)
- Light source used is infrared LED
- High quality and simplicity of use.
- Total waterproof resistance.
- The measure turbidity is according to the international analytica method ISO 7027, that allows a high reproducibility of the measured values.
- Simple and rapid calibration with the information about the steps showed on the display.
- LCD display
- IP 67 protection level
- Measure method: ISO 7027 nephelometric method.
- Measure range: 0 – 1000 NTU
- Resolution:  $\pm 0,01$ NTU or 1% of reading
- Accuracy:  $\pm 2\%$  for reading from 0 to 500 NTU  
 $\pm 3\%$  for reading from 501 to 1000 NTU
- Light source infrared emitting diode (850nm wavelength).

### Include:

- 4 calibration standars: 0,02 – 20,0 – 100 – 800 NTU.
- 3 empty vials, silicone oil, lint free cloth, batteries and carrying case.
- Dimensions: 68x155x46 mm.
- Weight: 200 gr.



### Accessories:

- 18126 Calibration
  - (4 calibration standars: 0,02 – 20,0 – 100 and 800 NTU)
- 18127 Sample vials - Pack of 3
- 18128 Silicone oil – 10 ml