

# DBO

## Automatic meter for the BOD<sub>5</sub> (Mod. B306)

The causes of water pollution can have a wide variety of origins; industrial spills, nutrient supply caused by eutrophication, organic spills, etc. A large part of this contamination is due to the organic material that comes from urban sewage or from livestock and industrial waste, whose processes involve the use of organic compounds. Organic material in the water medium is broken down by micro-organisms which use up oxygen during the process. When there is an excess of organic material, the oxygen runs out and a process of anaerobic breakdown begins, leading to undesirable situations.

The BOD (Biochemical Oxygen Demand) is a measurement that aims to give the amount of organic material that can be broken down by micro-organisms. It is a widely-used parameter, which can be applied to all water types, especially sewage and purification processes.

The BOD equipment, unlike the BOD<sub>5</sub> reading in the laboratory, enables an equivalent result to be obtained every 90 minutes, in an unaided and uninterrupted way, 24 hours a day, 365 days a year.

### Applications:

- It improves efficiency in treatment processes.
- Optimizes operational costs at treatment plants.
- Treatment plant outlet monitoring.
- Monitoring of critical points in systems for regulation, use and re-use of water (purifiers, reservoirs, collectors, rain-water tanks, etc.).
- Quality tracking of waters in areas of ecological and/or tourist interest (rivers, wetlands, etc.).
- Optimization of strategies for environmental hazard prevention in waters.
- Detection of contamination incidents that are organic in origin.

## STRUCTURE

### Analysis area:

- Thermostated chamber with reagent and measuring cell.
- Thermostated chamber for reagent storage.

### Control area:

- Data monitoring, acquisition, storage and transmission system.

## OPERATION

### Measurement cycle

The cycle starts with the injection into the measuring cell of an aliquot of sensor micro-organisms from the reagent developed specifically for this application. At this point the base line for dissolved oxygen is determined. After a stabilization period, a standard with a known concentration is injected into the cell, where it is consumed by the sensor micro-organisms. The oxygen consumption value is stored as data for calculating the BOD. Once the base line is recovered, the sample injection is carried out and oxygen consumption is measured in the same way as for the standard. Finally, the process of emptying and cleaning the measuring cell is started and it is kept on standby for the next analysis. At the beginning of the process, the removed aliquot is replaced by fresh nutrient medium in the reagent.

### Reagent management

The reagent contains a population of micro-organisms that have been specifically selected, with a great capacity for breaking down organic material. Reagent management allows there to be a constant concentration of micro-organisms at the time of analysis, providing the system with a high level of reproducibility. Its integrity and stability are ensured because the sample and the reagent never come into contact, only a reagent aliquot, which is later disposed of.



INNOVATIVE SOLUTIONS  
FOR WATER & ENVIRONMENT



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### NOTEWORTHY CHARACTERISTICS

- The reagent never comes into contact with the sample, which means it remains unaltered and uncontaminated.
- Principle of respirometric measurement by monitoring oxygen consumption.
- System validated by PROMOTE-ETV (European Environmental Technology Verification System).
- Obtains the value equivalent to BOD<sub>5</sub> in just 90 min.
- Double thermostating irrespective of the exterior temperature.
- Self-calibration.
- Simple and immediate range configuration.
- Self-cleaning cycles that allow an increase in system autonomy.
- High precision of results provided by the constancy of the concentration and the metabolic activity of the micro-organisms.
- Renewal of micro-organisms at the end of each analysis.
- Corrosion resistant interior in 316 stainless steel.
- Automatic quality control of the results obtained.

### GENERAL CHARACTERISTICS

<b>Power supply:</b>	110-230 VAC/50-60 Hz
<b>Power:</b>	690 W
<b>Communications:</b>	RS-232 ,RS-485, GSM/GPRS MODEM and Ethernet
<b>Measurement principle:</b>	Respirometry
<b>Number of analyses per day:</b>	8 (4 ou 16 en option)
<b>Minimum analysis time:</b>	90 min.
<b>Range 1:</b>	0 – 100 mg/l O <sub>2</sub>
<b>Detection limit 1:</b>	4 mg/l O <sub>2</sub>
<b>Limit of quantification 1:</b>	10 mg/l O <sub>2</sub>
<b>Range 2:</b>	0 -1 000 mg/l O <sub>2</sub>
<b>Detection limit 2:</b>	40 mg/l O <sub>2</sub>
<b>Limit of quantification 2:</b>	100 mg/l O <sub>2</sub>
<b>Accuracy:</b>	< 15%
<b>Consumption of nutrient medium:</b>	30 ml/analysis
<b>Cleaning solution consumption:</b>	40 ml/ analysis
<b>Standard consumption:</b>	1 ml/analysis
<b>Sample consumption:</b>	3.5 ml low range 0.5 ml high range

Adasa reserves the right to modify the technical features.



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ISO 9001 Quality Management  
UNE 166002:2006 R&D and innovation Management  
ISO 14001 Environmental Management  
OHSAS 18001 Health and Safety