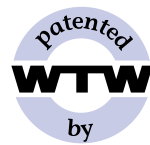




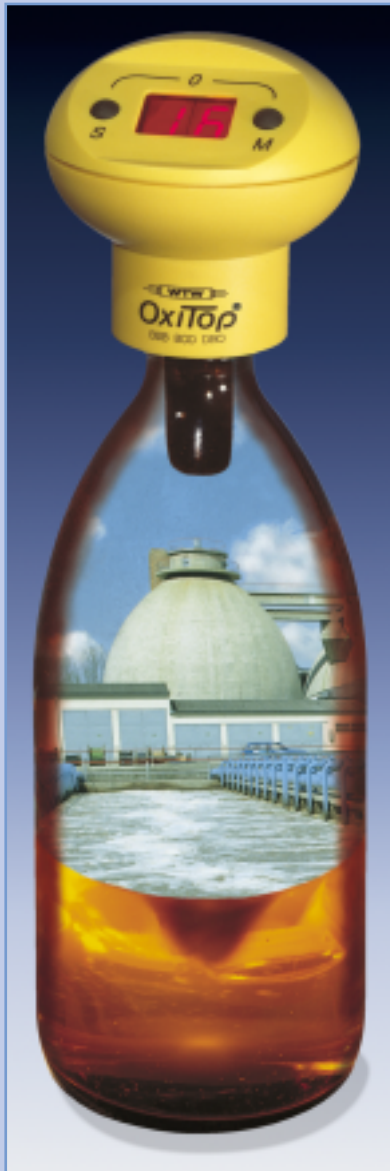
"BOD self-check measurements"

practical method according to the self-check regulations
 Proposal for a German standard method –
 DEV 46th installment 2000 – H55

OxiTop® IS 6, OxiTop® IS 12



U.S. patent
 granted (US
 5,770,153)



Features

- Simple handling
- Mercury-free measurement
- 5-day memory
- Push-button measurements possible
- Extendable
- Mobile
- Precise

Mercury-free BOD measurement

Despite all discussions about quicker alternative methods, the determination of the biological oxygen demand BOD has not become any less important. On the contrary, it is still one of the most important measurements for the management of water resources and allows statements to be made about the loading of waters and wastewater with biodegradable substances. The importance of the respirometric BOD measurement is also shown by the inclusion of the "Determination of the biochemical oxygen demand after n-days (BOD_n) in a respirometer – extension of the method according to DIN EN 1899-2 (H55)" as a proposal for a German standard method in the 46th installment 2000 of the DEV.

Criticisms of the conventional manometric measuring systems have mainly concerned the use of mercury for measuring the pressure. Mercury is toxic and if not handled properly it produces vapors which are injurious to health.

With the development of the OxiTop® systems, WTW has fulfilled a worldwide customer wish – mercury-free BOD determinations.

With OxiTop® WTW now offers a unique and modular mercury-free BOD instrument system which has been developed for daily practical use.

OxiTop® alters the previous handling process in a revolutionary manner.

“BOD self-check measurements”

OxiTop® IS 6, IS 12

Complete package for 6 or 12 measuring places

The OxiTop® IS 6, IS 12-6 and IS 12 complete packages have been assembled so that they contain everything necessary to carry out the measurements.

OxiTop® IS 6

ready for use with 6 measuring places

OxiTop® IS 12-6

ready for use with 6 measuring places, extendable to 12 places

OxiTop® IS 12

ready for use with 12 measuring places

Each measuring place contains the following items:

- 1 OxiTop® (green or yellow)
- 1 PF 600 Amber sample bottle
- 1 GK 600L Rubber sleeve
- 1 RST 600 Stirrer bar

Each package contains:

- 1 Stirrer platform IS 6/IS 12 with plug-in mains power supply (see page 124)
- 1 REF 600 Stirrer bar remover
- 1 NHP 600 NaOH pellets
- 1 NTH 600 Nitrification inhibitor
- 1 MK 164/600 Overflow flask 164 ml
- 1 MK 432/600 Overflow flask 432 ml
- 1 Dia/600 Chart paper block

Test agents see page 125



... or conversion

Conversion to OxiTop®

Any conventional manometric BOD measuring instrument (no matter whether from WTW or anybody else) can be converted to the OxiTop® system. Various conversion sets are available. (see page 123)



OxiTop® closely observed

BOD measurement with "brains"



US patent granted (US 5,770,153)

Registered industrial property rights:

- Protected design patent
- Utility model patent

The patented measuring head contains the following items:

- 1 Piezoelectric pressure sensor
- 2 Operating keys: M for showing the momentary value; S for showing the stored value
- 2-place LED, displaying 00 to 50 "scale divisions". 1 scale division corresponds to 3.55 hPa. A correct measurement should only show scale divisions up to 40; with larger values the sensible measuring range has already been exceeded so that the display only serves for orientation purposes.
- Data memory for 5 measurements at daily intervals. It is not necessary to read off the measurements every day as they are made automatically. This means that measurements can be carried out over a weekend with unattended operation. The measurement can also be read off after 7 days (BOD₇).
- AutoTemp function: delayed start of measurement for samples which are too cold. OxiTop® delays the start until a constant temperature has been achieved; the minimum delay period is 1 hour.
- 2 batteries with a typical working life of 1 year (if properly used for BOD measurements).



Very modern microelectronics

Pressure sensor, microcontroller, timer, memory



Technical data

	OxiTop®-measuring head
Measuring principle	manometric with pressure sensor
Quantity measured	BOD _n
Measuring range	0 ... 40 digits (display units) equals 0 ... 40 / 80 / 200 / 400 / 800 / 2000 / 4000 mg/L BOD
Display range	0 ... 50 digits
Display accuracy	±1 digit (Δ ±3.55 hPa)
Display	2-character 7-segment LED, 10 mm
Operating range	500 ... 1100 hPa
Memory	for BOD, daily
Power supply	lithium battery (280 mAh) 2 x CR 2430
Power consumption	max. 25 mA (during display of measurements)
Safety class	3 to IEC 1010
Protection type	IP 54 to DIN 40 050
EMC	EN 61326 Class B, FCC Class A
Climate class	2, VDI/VDE 3540
Ambient temperature	storage: -25 ... +65 °C operation: +5 ... +50 °C
Dimensions	69 x 70 mm (H x dia.)
Test certificates	CE, TÜV/GS, UL, CUL
Warranty	1 year on the instrument

“BOD self-check measurements”

Laboratory & Field

General Features

pH

ORP

ISE

Oxygen (D.O.)

Conductivity

Multi-Parameter

BOD

Respiration

Sample Preparation

Colony Counter

Photometry

Turbidity

Software, Printers

Customer Service

Ordering information

BOD determination with OxiTop® “mercury-free” measuring system		Order no.
OxiTop® IS 6	Complete package, ready for use, for 6 measuring places, with IS 6 Inductive Stirring System, for mains operation 230 V / 50/60 Hz and 6 OxiTop® measuring systems, including 6 sample bottles, 6 rubber sleeves, 6 stirrer bars and other accessories	208 210
OxiTop® IS 12-6	Complete package, ready for use, for 6 measuring places (extendable to 12 measuring places), with IS 12 Inductive Stirring System, for mains operation 230 V / 50/60 Hz and 6 OxiTop® measuring systems, including 6 sample bottles, 6 rubber sleeves, 6 stirrer bars and other accessories	208 212
OxiTop® IS 12	Complete package, ready for use, for 12 measuring places, with IS 12 Inductive Stirring System, for mains operation 230 V / 50/60 Hz and 12 OxiTop® measuring systems, including 12 sample bottles, 12 rubber sleeves, 12 stirrer bars and other accessories	208 211

Note: versions for 120 VAC / 60 Hz on request



OxiTop® IS 12



OxiTop® IS 6

Accessories



For system	Accessories	from page
OxiTop® IS 6 and OxiTop® IS 12	System extensions	123
	Conversions (OxiTop® measuring heads, stirring systems IS 6, IS 12)	123
	Storage rack for OxiTop®	125
	Marking rings	125
	Thermostatic instruments (boxes, cabinets)	126



"BOD Self-Check Measurement"

practical method according to the self-check regulations
 Proposal for a German standard method –
 DEV 46th installment 2000 – H55

OxiTop® Control 6, OxiTop® Control 12



Features

- Comfortable handling
- Mercury-free pressure measurement
- Large data memory in measuring head
- Infrared data transmission to controller
- Automatic sample management
- Automatic measuring protocol
- Mobile
- Precise

Comfortable BOD determination with the OxiTop® Control system

The OxiTop® Control system is the logical further development of the successful OxiTop® system.

- Instead of the display and keys the OxiTop®-C measuring head has an infrared interface with which it communicates with Controller OC 100 or OC 110.
- The Controller OC 100/OC 110 can manage up to 100 OxiTop®-C measuring heads.
- Documentation is carried out via the Achat OC program in combination with a PC (or the TD 100 Thermal printer)

The measuring head stores 180 to 360 data sets (depending on set running time) which can be called up at any time in the Controller and where they are shown graphically.

Call-up is by collect call or selectively by "pointing" to the required measuring head. Each measuring head has its own identification; this means that manual identification is no longer necessary.

“BOD self-check measurements”

Operation

Operation of the system is clear and simple

- Select language
- Set operating mode either BOD routine for single samples or BOD standard for samples with parallel batches and statistical evaluation
- Set running time
- Prepare sample and start measurement by briefly clicking the measuring head with the Controller
- Incubate sample
- Wait until set running time has elapsed
- If necessary, monitor sample by calling up the data (can also be carried out through glass or Plexiglas, so that the sample is not disturbed by opening the door of the thermostat cabinet!)
- Data can be called up as often as required during the measurement
- When measurement is finished result can be read off from the Controller display
- Documentation of results

OxiTop® Control

Complete package for 6 or 12 measuring places

The OxiTop® Control 6 and Control 12 complete packages have been assembled so that they contain everything necessary to carry out the measurements.

OxiTop® Control 6

ready for use with 6 measuring places

OxiTop® Control 12

ready for use with 12 measuring places

Each measuring place contains the following items:

- 1 OxiTop®-C
- 1 PF 600 Amber sample bottle
- 1 GK 600L Rubber sleeve
- 1 RST 600 Stirrer bar

Each package contains:

- 1 Controller OC 100
- 1 Stirrer platform IS 6/IS 12 with plug-in mains power supply (see page 124)
- 1 REF 600 Stirrer bar remover
- 1 NHP 600 NaOH-pellets
- 1 NTH 600 Nitrification inhibitor
- 1 MK 164/600 Overflow flask 164 ml
- 1 MK 432/600 Overflow flask 432 ml
- 1 Dia/600 Chart paper block





OxiTop®-C closely observed

BOD measurement with "infrared brains"



The measuring head with its protected design and utility model patents contains the following items:

- 1 Piezoelectric **pressure sensor**, pressure range 500 to 1350 hPa
- **Infrared interface** for data transmission to Controller with pilot lamp
- **Data memory** for max. 360 data sets. Data is stored automatically at preset time intervals from 0.5 hours to max. 99 days.
- **AutoTemp function**: delayed start of measurement for samples which are too cold. OxiTop®-C delays the start until a constant temperature has been achieved; the minimum delay period is 1 hour. In the BOD standard operating mode this function can be switched off.
- **2 batteries** with a typical working life of 1 year.



Technical data

	OxiTop®-C measuring head
Measuring principle	manometric with pressure sensor
Measurement of	BOD _n
Pressure range	500 ... 1350 hPa
Accuracy	± 1% of value ± 1 hPa
Resolution	1 hPa (corresponds to 0.7% of BOD _n measuring range)
Display	LED pilot lamp
Power supply	2 x CR 2430 lithium batteries (280 mAh)
Safety class	3, IEC 1010
Protection type	IP 54 to DIN 40 050
EMC	EN 61326 Class B, FCC Class A
Climate class	2, VDI/VDE 3540
Ambient temperature	storage: -25 ... +65 °C operation: +5 ... +50 °C
Dimensions	70 x 70 mm (H x dia.)
Test certificates	CE, TÜV/GS, UL, CUL
Warranty	1 year on the instrument



- ① Short click from controller to measuring head to start the sample
- ② Infrared call-up of data at incubator. Data transfer even through closed incubator doors and OxiTop® boxes



“BOD self-check measurements”

OxiTop® Control closely observed

The handy Controller manages the data for up to 100 OxiTop®-C measuring heads.

This comprises:

- Identifying the samples with automatic number allocation, i.e. manual marking or labeling the samples is not necessary
- Data call-up function for all samples or selected samples.
- Sample progress display
- Calculation, evaluation and graphical presentation of BOD value
- Protocol of data on battery-operated TD 100 Printer or with a PC via the Achat OC communication program



Operating comfort guaranteed by:

- Large graphics display
- Operator guidance in
 - German, English, French, Spanish, Italian (OC 100)
 - German and English (OC 110)
- Data transmission even through glass doors
- Simple adaptation to specific measuring tasks

Confidence in the measurements is guaranteed by:

- AutoTest with function monitoring and system messages
- High data security, independent of power supply from batteries

Technical data

	Controller OxiTop® OC 100 + OC 110
Measuring ranges	OC 100/OC 110: 0 ... 40 / 80 / 200 / 400 / 800 / 2000 / 4000 mg/L BOD (corresponds to 0 ... 142 hPa) OC 110 only: <ul style="list-style-type: none"> • measuring range variable with upper limit 400 000 mg/L (in BOD special mode) • 500 ... 1350 hPa (pressure mode)
Data sets per measurement	180 ... 360 (depends on running time)
Measurement period	adjustable from: 0.5 ... 6 h in 0.5 h steps 6 ... 24 h in 1 h steps 1 .. 99 days in 1 day steps
Display	LCD graphics display 64 x 128 point
Energy supply	3 x 1.5 V alkaline batteries (AA/mignon)
Safety class	3, IEC 1010
Protection type	IP 42 to DIN 40 050
EMC	EN 61326 Class B, FCC Class A
Climate class	2, VDI/VDE 3540
Ambient temperature	storage: -25 ... +65 °C operation: +5 ... +40 °C
Dimensions	45 x 100 x 200 mm (H x B x D)
Weight	approx. 390 g
Test certificates	CE, TÜV/GS, UL, CUL
Warranty	1 year on the instrument



Achat OC PC communication program, TD 100 thermal printer

Laboratory & Field
General Features
pH
ORP
ISE
Oxygen (D.O.)
Conductivity
Multi-Parameter
BOD
Respiration
Sample Preparation
Colony Counter
Photometry
Turbidity
Software, Printers
Customer Service



Ordering information

BOD determination with Controller OxiTop® OC 100 and OxiTop®-C measuring heads "mercury-free"

		Order no.
OxiTop® Control 6	Complete package, ready for use, for 6 measuring places, with Controller OC 100 and IS 6 Inductive Stirring System, for mains operation 230 V / 50/60 Hz and 6 OxiTop®-C measuring systems, including 6 sample bottles, 6 rubber sleeves, 6 stirrer bars and other accessories	208 201
OxiTop® Control 12	Complete package, ready for use, for 12 measuring places, with Controller OC 100 and IS 12 Inductive Stirring System, for mains operation 230 V / 50/60 Hz and 12 OxiTop®-C measuring systems, including 12 sample bottles, 12 rubber sleeves, 12 stirrer bars and other accessories	208 204

Note: versions for 120 VAC / 60 Hz on request

Accessories

		Order no.
TD 100	Thermal printer (battery-operated) with IR interface for data transmission from Controllers OxiTop® OC 100 and OC 110 including 1 roll of special paper and 1 set of batteries	208 900
RP 100	1 roll of special paper for TD 100 thermal printer (minimum order 5 rolls)	208 910

Software (see also page 180)

		Order no.
ACHAT OC	PC communication program "ACHAT OC" for Controller OxiTop® OC 100 or OC 110 for further data processing and documentation of measuring data. Software requirements: Windows 3.1 or higher, update possibilities on request. Required accessory: interface cable AK 540/B	208 990
AK 540/B	Interface cable for connecting Controller to a PC via the RS 232 interface, including 9/25-pole adapter	902 842

Test agents see page 125



Accessories



for system	Accessories	from page
OxiTop® Control 6 and OxiTop® Control 12	System extensions OxiTop®-C IS 6, IS 12	123
	Storage rack for OxiTop®	125
	Thermostatic instruments (boxes, cabinets)	126