



**TOC
COD, BOD**

*THE OXIDATION PROCESS
THAT TOTALLY
SELF-CLEANS*

PRODUCT FEATURES AND BENEFITS

- Low Maintenance - No Calibration required between 6 month service intervals
- High Reliability - Typically 99.7% Uptime
- Self Cleaning Technology - Prevents clogging & sample contamination
- Clean & Dirty water analysis (including fats, oils & greases)
- Can handle chlorides up to 30% and calcium sludge up to 12% by volume
- No filtering requirements
- Complete Oxidation of Representative Sample using Patented Two-Stage Advanced Oxidation (TSAO) Technology
- Multi Range with automatic selection
- Single or Multi-Stream Option
- Measured Components: TOC, COD, BOD, TC, TIC, VOC
- Very Low Cost of Ownership
- Guaranteed to handle the most demanding applications

APPLICATIONS

- Control of Influent to Industrial Waste Treatment Plants
- Monitoring of Final Effluent
- Measuring Organic Carbon and Inorganic Carbon in Process
- Minimizing Waste from Process Plants
- Monitoring Cooling Water
- Monitoring Boiler Condensate & Feed Water
- Monitoring Municipal Waste Treatment Plant - Influent & Effluent
- Monitoring River Water
- Monitoring Surface Water
- Monitoring Landfill sites
- Monitoring De-icing runoff in Airports
- Monitoring Process Breakthrough and Spills
- Special Applications

BioTector liquid analyzers are specifically developed for continuous analysis in the harsh on-line environment. Biotector's patented self-cleaning oxidation technology (TSAO) has overcome the traditional problems associated with on-line measurement and can reliably measure samples containing salts, particulates, fats, oils and greases.

BioTector products are regarded by major international users as the most reliable on-line liquid analyzers on the market. Over the past 15 years BioTector products have proven their ability on the simplest to the most demanding applications throughout the world.

THE MEASUREMENT PROCESS CAN BE DESCRIBED IN FIVE STAGES

- 1 **SAMPLING:** A representative unfiltered sample from the stream to be measured is pumped into the analyzer. The sample injection valve automatically selects the appropriate sample volume for the optimum measuring range.
- 2 **TIC DETECTION:** Acid is added to lower the pH so that inorganic carbon is sparged off as CO₂. This is measured to ensure TIC is not carried over into the TOC.
- 3 **OXIDATION:** The BioTector's patented oxidation method (TSAO) is used to achieve total and complete oxidation of sample, including organic carbon to CO₂. TSAO utilizes hydroxyl radicals generated within the analyzer by combining oxygen, which passes through the ozone generator, with sodium hydroxide.
- 4 **TOC MEASUREMENT:** To remove the CO₂ from the oxidized sample, the pH of the sample is lowered again. The CO₂ is sparged and measured by the specially developed NDIR-detector. The result is displayed as Total Organic Carbon (TOC).
- 5 **CLEANING:** The entire system is automatically self-cleaned by the reaction process during every cycle. No additional cleaning solution is required.

MAINTENANCE

Normal service frequency is 6 months. Ready made service kits are available for the 6-month and 12-month service.

GENERAL INFORMATION

Designed to withstand corrosive environments, the BioTector TOC Analyzer is housed in a FRP enclosure with dual compartments to keep all electronic components separate from the "wet" or analysis section. The BioTector TOC Analyzer has an in-built microcontroller and is operated through a membrane keypad. An SD Flash Card allows easy software & configuration updates and may be used to download the 5,000 event archive.

BIOTECTOR PLUS

BioTector is also available in a Plus model with a Hastelloy Reactor. With this Plus model, BioTector Analytical Systems offers a 6 month satisfaction guarantee regardless of application or stream content.

ALSO AVAILABLE FROM BIOTECTOR ANALYTICAL SYSTEMS LIMITED

*BioTector Ultra Low TOC On-Line Analyzer **

*BioTector TOC & TN On-Line Analyzer **

*BioTector TOC, TN & TP On-Line Analyzer **

BioTector Vacuum Sampler

* Also utilizing BioTector's Patented Two-Stage Advanced Oxidation (TSAO). See separate brochures or website for further details.





GENERAL TECHNICAL DATA

Enclosure:	Fibreglass Reinforced Polyester
Dimensions (HxWxD):	1250 x 750 x 320mm
Weight:	90 kg
Power Consumption:	300 W
Mains Connection:	230V or 115V AC

FEATURES IN DETAIL

Display:	High Contrast 40 Character x 16 Line Backlit LCD with CFL Backlight
Data Storage:	Previous 5000 Reaction Data Previous 50 Fault Events
SD Flash Card:	Allowing Easy Software & Configuration Updates
Operation:	Microcontroller with Membrane Keyboard
Language Options:	Multiple Languages Available

INPUT & OUTPUT SIGNALS

Standard Output:	4 - 20mA for TOC
Digital Output:	2 Potential Free Contacts, Programmable 1 Potential Free Fault Contact, Programmable
Serial Port:	RS232 Output for Printer or Data Logger

OPTIONAL FEATURES

Output:	TIC, TC, VOC, BOD, COD (As individual signals or full multiplex)
Remote Pause Signal:	Input for Remote Pause
Industrial Interface:	Modbus, Profibus, Ethernet
Valves:	Automatic Calibration and Manual Sample
Multi-Stream:	Up to 6 Streams
Manual Sample:	Up to 6 Manual Sample Input Points
EExp:	Certified Option Available
Outdoor Model:	Integrated Outdoor Version to IP54

CONSUMABLES

Acid & Base:	Replacement Frequency – Application Dependent (Typically 4 – 8 weeks)
Oxygen:	Integrated or Stand Alone Oxygen Concentrator Available
Service:	6 Monthly Intervals



ANALYSIS PARAMETERS

Oxidation Method: Patented Two-Stage Advanced Oxidation Process using Hydroxyl Radicals

TOC Measurement: Infrared Measurement of CO₂ after Oxidation

Measured Components: TOC
TIC
TC
VOC / POC
TOC as TC-TIC

COD (COR)
BOD (COR)

Cycle Time: TOC - Typically < 6.5 minutes

Sample Volume: Up to 8.0 ml

Particle Size: Up to 2mm Ø, soft particulates

Filtration Requirements: Not required

Signal Drift: < 5% per year

Ambient Temperature: 5 - 40 °C
Air Conditioning option available

Humidity: 5 - 85%, non-condensing

Chloride Tolerance: Up to 30% all ranges

RANGES

Automatic Range Selection – 3 Ranges Configurable within each range band detailed below

TOC Range Band

Low 0-5mgC/l up to 0-1,250mgC/l (3 ranges Configurable)

Standard 0-10mgC/l up to 0-10,000mgC/l (3 ranges Configurable)

High 0-15mgC/l up to 0-15,000mgC/l (3 ranges Configurable)

Ultra High 0-20mgC/l up to 0-100,000mgC/l (3 ranges Configurable)

Repeatability: +/- 3% of reading or 0.3mg whichever is greater, with automatic range selection (Multi Range) feature

Exceedence Tracking: Full Exceedence Tracking to Maximum Range

Range Selection: Automatic or Manual

MEASUREMENT TERMS

TOC: Total Organic Carbon including Non Purgeable Organic Carbon (NPOC) and Purgeable Organic Carbon (POC)

BioTector's TOC mode measures NPOC
BioTector's TOC/VOC mode measures NPOC and POC

BioTector On-Line Analyzers come with up to 12 months warranty against manufacturing errors.

BioTector Analytical Systems Limited have a continuous research and development programme. Specifications may therefore be changed without notice. For specification updates, please contact BioTector Analytical Systems Limited.

BioTector
ANALYTICAL SYSTEMS LIMITED



For more information on any of our products please visit our website or contact us at:

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