

# Aurora 1030

Total Organic Carbon Analyzers

Versatility and Productivity in TOC Analysis



**1030W Wet Oxidation TOC Analyzer**

**1030W<sup>2</sup> Wet Oxidation TOC Analyzer**

**1030C Combustion TOC Analyzer**

**1030D Dual Mode TOC Analyzer**



OI Analytical has been an innovator in instrumentation for Total Organic Carbon (TOC) analysis since 1972. Our Aurora 1030 TOC analyzers incorporate several noteworthy innovations to improve laboratory productivity and analytical performance.

- Parallel Wet Oxidation Chambers
- Patented ACT II two-stage combustion reactor
- Dual Wet Oxidation and High-temperature Combustion capabilities on a single instrument
- Full-color LCD touchscreen display with Windows® CE-based software
- Multi-level Operation – standalone, PC-controlled, or LAN/LIMS network connectivity
- 21 CFR Part 11 compliant data handling, security, auditing, and reporting capability
- Optional accessories for continuous at-line sampling and analysis with SCADA interface capability
- Optional module for Total Bound Nitrogen (TN<sub>b</sub>) measurement

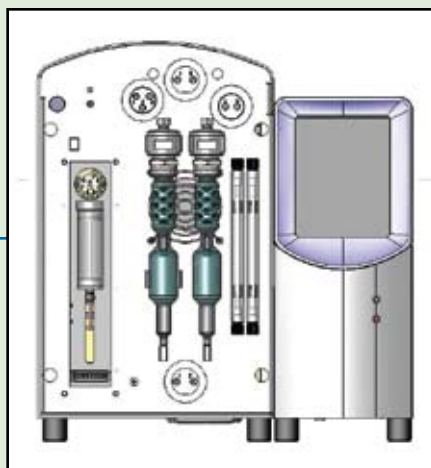
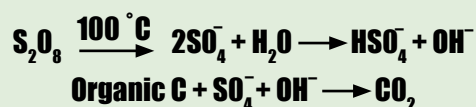
# Versatility by Design

The versatile design of our Aurora 1030 TOC analyzers ensures that a proper technical solution is available to address the widest possible range of applications and usage conditions. Four basic models are available.

## 1030W

### Wet Oxidation TOC Analyzer

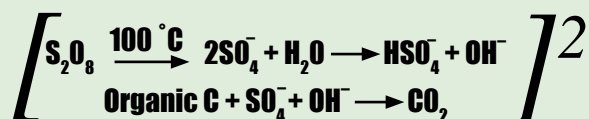
The 1030W employs heated sodium persulfate wet oxidation to oxidize and convert organic compounds present in aqueous samples to CO<sub>2</sub> for measurement by a non-dispersive infrared (NDIR) detector.



## 1030W<sup>2</sup>

### High-throughput Wet Oxidation TOC Analyzer

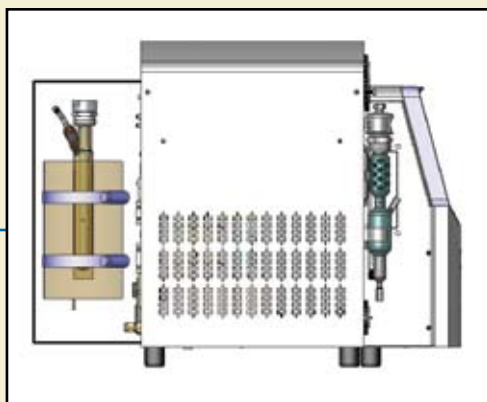
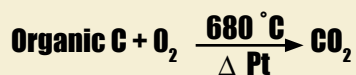
The 1030W<sup>2</sup> is equipped with two parallel wet oxidation chambers allowing concurrent sample processing to increase sample throughput.



## 1030C

### Combustion TOC Analyzer

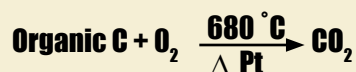
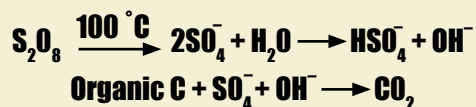
The 1030C performs high temperature (680 °C) combustion over a platinum catalyst to oxidize and convert organic compounds to CO<sub>2</sub> for measurement by a NDIR detector.



## 1030D

### Dual Oxidation Mode TOC Analyzer

The 1030D is equipped to perform both heated persulfate wet oxidation and high temperature combustion techniques on the same instrument. This analyzer configuration gives laboratories maximum flexibility without the need to invest in two separate instruments and computers, or allocate more bench space.





# Aurora 1030 TOC Analyzers



TOC analysis is in widespread use to detect and measure the concentration of organic matter and compounds in water samples. The presence of organic contaminants directly affects water treatment processes used to protect human health and the environment, or to maintain control of industrial operations and product quality.

A number of factors must be considered when selecting an Aurora 1030 TOC analyzer for a particular application. The choice of oxidation technique is influenced by such factors as; the chemical and physical composition of samples, the method detection limit (MDL) and measurement range required, regulatory compliance testing requirements, and anticipated usage conditions.

Hundreds of laboratories and industrial facilities rely on OI Analytical TOC analyzers for their water quality monitoring applications. Our experienced TOC specialists can also help you find the proper technical solution for your application.

## Methods and Applications Supported by Aurora 1030 TOC Analyzers

Method	Sample/Application	Aurora 1030
Standard Method 5310C	Drinking Water	1030W
USEPA 415.1	Drinking Water	1030C / 1030W
USEPA 415.3	Drinking Water	1030W
Standard Method 5310B	Wastewater, Ground & Surface Waters	1030C
USEPA 9060A	Wastewater, Ground & Surface Waters	1030C
USP < 643 > / EU 2.2.44	Purified Water	1030W
ASTM D4779	Ultrapure Water	1030W
ASTM D4839	Wastewater, Seawater	1030W
USEPA-DBPR	Disinfection Byproduct Rule	1030C / 1030W
USEPA - SPCC	Spill Prevention & Control Countermeasures	1030W
ISO 8245	Drinking Water, Wastewater	1030C / 1030W
EN 1484	Surface & Ground Waters, Potable Water	1030C / 1030W
EN-12260	Surface & Waste Waters, Sewage Effluent	1030C + TN <sub>b</sub>
DIN-ISO 11905-2	Surface & Waste Waters, Sewage Effluent	1030C + TN <sub>b</sub>

# Expanding the Possibilities of TOC Analysis

## 1030W Wet Oxidation TOC Analyzer

The 1030W oxidizes samples using 100 °C sodium persulfate which maintains the low system background necessary for high sensitivity TOC measurements. Virtually all organic compounds dissolved in water can be oxidized with high efficiency.

Heated persulfate wet oxidation is considered the best technique for TOC analysis of samples containing corrosive acids or high concentrations of halides, such as metal plating and brine solutions. The reaction chamber of the 1030W can be thoroughly rinsed between analyses to eliminate residue from a previous sample. In some combustion TOC analyzers residual salts will accumulate on catalyst surfaces degrading oxidation efficiency, and causing higher blanks and background contamination.



- Drinking Water
- Ultrapure Water
- Pharmaceutical Cleaning Validation
- Metal Plating Solutions
- Seawater & Brine Solutions
- Boiler Feedwater & Condensate
- Cooling Water
- Purified Water
- Municipal Wastewater

## 1030C Combustion TOC Analyzer

The 1030C oxidizes samples by high temperature (680 °C) catalytic combustion. This technique is most effective for analysis of samples containing high molecular weight, difficult-to-oxidize organics (e.g.; humic acid) at levels > 500 ppbC.

The 1030C is equipped with a special two-stage (ACT II) combustion reactor\* that overcomes problems associated with TOC analyzers that use a single-stage catalytic combustion reactor. The first chamber of the ACT II reactor contains a bed of quartz to protect the platinum catalyst in the second chamber from deposition of noncombustible constituents, and ensures consistent oxidation conditions for stable blanks. This reactor design extends catalyst life and reduces maintenance costs.



- Wastewater
- Industrial Process Water
- Drinking Water
- Surface Waters and Groundwater
- Petrochemical Wastewater
- Pulp & Paper Wastewater
- Sewage Effluent

\* - Patent: US 7,306,770 B2

## Accessories for Enhanced Productivity

OI Analytical offers a selection of optional accessory modules for Aurora 1030 TOC Analyzers. These add-on modules enable users to configure an Aurora 1030 to meet their specific installation and application requirements. Autosamplers, on-line analysis accessories, and A<sub>TOC</sub> automated data management software provide automation capabilities to improve laboratory productivity.

### A<sub>TOC</sub> Software



A<sub>TOC</sub> is an optional Windows®-based software package that provides fully automated data management capability. The software is specifically designed to automate data collection, analysis, reporting and storage in a LAN/LIMS environment. A<sub>TOC</sub> software has modules for 21 CFR Part 11 compliant security and auditing, and for reviewing results, generating custom reports and data export to a LIMS.

A<sub>TOC</sub> software also provides the capability to network multiple Aurora 1030 TOC analyzers. Secure network links allow remote control of, and data transfer from multiple analyzers to a relational database where operational and customer data is stored for export and reporting.

### Aurora 1030W TOC Validation Package



The Aurora 1030W Validation Package provides complete documentation for validating a 1030W TOC analyzer for use in pharmaceutical and biotechnology GLP/GMP applications, including cleaning validation (CV) and Purified Water (PW) analysis. The validation package consists of validation protocols for installation qualifications (IQ), operation qualifications (OQ), and performance qualifications (PQ) along with matching certification documents to record successful completion of each step with a signature and date.

### TN<sub>b</sub> Analysis Module

The TN<sub>b</sub> analysis module is an optional accessory for the Aurora 1030C TOC analyzer that allows measurement of total bound (inorganic and organic) nitrogen (excluding N<sub>2</sub>) concentrations in aqueous samples. Total nitrogen can be measured simultaneously during NPOC and TC analysis, or as a separate function in the TN<sub>b</sub> analysis mode.



## Autosamplers

### Model 1088 Rotary Autosampler

The 1088 Rotary Autosampler automates introduction of 88 samples to an Aurora 1030 TOC Analyzer. The 1088 is designed to fit directly underneath an Aurora 1030 instrument and conserve laboratory benchspace. Capabilities include; magnetic stirring, random and priority sampling, and septum-piercing.

### Model 1096+ XYZ Autosampler

The 1096+ XYZ Autosampler automates introduction of 96 samples to an Aurora 1030 TOC Analyzer. The 1096+ has additional positions for 12 calibration standards, supports random and priority sampling, and has septum-piercing capability.

## On-line TOC Analysis Options

These optional accessories support continuous on-line monitoring of one to four process streams for organic contaminants. Interfacing an Aurora 1030 TOC analyzer to a Supervisory Control and Data Acquisition (SCADA) system allows facilities to adjust chemical usage and optimize water treatment processes.

### I/O Expansion Module

The I/O Expansion Module supports data acquisition using 4-20mA analog signals. Four output signals and four relays for independent programmable alarms are built into the I/O Expansion Module.

### Autocalibration/Stream Sequencer Module

The Autocalibration/Stream Sequencer Module is programmable to perform automatic calibrations and on-line random sampling from multiple streams for continuous monitoring of up to four process streams.

### NEMA 4X Enclosure

The NEMA 4X Enclosure houses an Aurora 1030W wet oxidation analyzer for installation and on-line operation in non-laboratory environments. A positive pressure gas purge system prevents corrosive gases from contacting and damaging the instrument and associated electronic components. An optional vortex cooler is available for locations with temperatures above 30 °C (85 °F).





# Water Quality Analysis Solutions



**Drinking Water (NPDWR, DBPR)**  
**Wastewater (NPDES)**  
**Storm Water Run-off (SPCC)**  
**Industrial Process Water**  
**Ultrapure Water**  
**Groundwater & Well Water**  
**Natural Waters & Seawater**

Publication 21910608



## FS IV<sup>®</sup> Automated Ion Analyzer

Automates complex, multi-step ion analysis procedures.



## DA 3500 Discrete Analyzer

Performs multiple chemistries concurrently, to test samples for multiple ions in a single run.



## Eclipse 4660 Purge-and-Trap Sample Concentrator

Processes water samples for GC/GC-MS analysis of volatile organic compounds (VOCs).



Windows is a registered trademark of Microsoft Corp.



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