Aurora 1030D
Total Organic Carbon Analyzer

The Aurora 1030D is a dual oxidation mode total organic carbon (TOC) analyzer that performs high temperature combustion and heated persulfate wet oxidation on the same instrument.

Versatility for Maximum Capability

Heated Persulfate Wet Oxidation

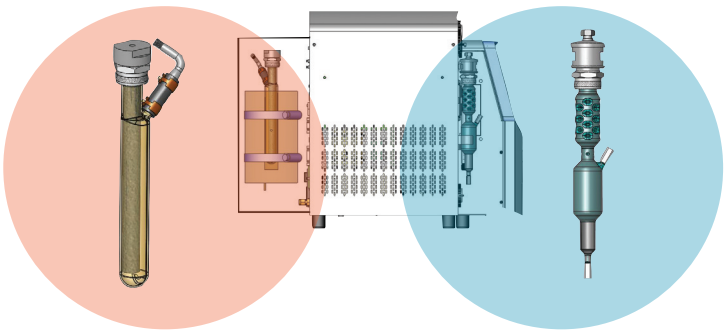
Virtually all organic compounds dissolved in water can be oxidized by heated sodium persulfate ($Na_2S_2O_8$). In wet oxidation mode the 1030D reaction chamber is thoroughly rinsed between analyses eliminating residue from the previous sample and ensuring a low system background is maintained for high sensitivity TOC measurements.

High Temperature Combustion

High temperature (680 °C) catalytic combustion is most effective for samples containing high molecular weight, difficult-to-oxidize organics (e.g.; humic acid) at levels > 500 ppb C. The patented* two chamber combustion tube of the 1030D contains a bed of quartz in the first chamber to protect platinum catalyst in the second chamber from deposition of non-combustible constituents. This design extends catalyst life, ensures consistent oxidation conditions, and reduces instrument maintenance costs.

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

High Temperature Combustion Tube ***Wet Oxidation Reaction Chamber***



$$\text{Organic C} + 0_2 \xrightarrow[\Delta\ \text{Pt}]{680\ ^\circ\text{C}} CO_2$$

$$S_2O_8^{-2} + 2H_2O \xrightarrow{98\ ^\circ\text{C}} 2SO_4^{-2} + 2H^+ + 2OH^-$$

$$\text{Organic C} + 2SO_4^{-2} + OH^- \longrightarrow CO_2 + H_2O$$

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1030D Specifications

Wet Oxidation Mode

Operating Principle	Heated sodium persulfate oxidation
Measurement Range	10 ppb C - 30,000 ppm C (multiple calibration ranges or dilution required)
Instrument Detection LImit (IDL)	2 ppb C
Sample Injection Volume	10µL – 10mL
Method TC	Acid and persulfate reaction
Method TIC	Acidification with Phosphoric acid and sparging
Method TOC	NPOC by heated persulfate oxidation or TC - TIC
Reagents Required	Sodium persulfate, 5% phosphoric acid, rinsewater
Gas Supply	N_2 (99.998%), zero-grade air, or O_2 (99.998%)

High Temperature Combustion Mode

Operating Principle	High Temperature (680˚C) catalytic combustion
Measurement Range	100 ppb C - 30,000 ppm C (multiple calibration ranges or dilution required)
Instrument Detection LImit (IDL)	50 ppb C
Sample Injection Volume	10µL – 0.8mL
Method TC	680 ˚C Pt catalyst, 900 ˚C non-catalyst packing
Method TIC	Acidification and sparging
Method TOC	NPOC, combustion of TIC-free sample, TOC–TIC
Reagents Required	Hydrochloric acid, rinsewater
Gas Supply	Zero-grade air, or O_2 (99.998%)

General Instrument Specifications

Measurement Technique	Non-dispersive infrared (NDIR) detector
Operator Interface	Color LCD touchscreen display with Windows® CE-based software
Basic Software	Single instrument operation with data transfer to PC
Optional A_{TOC} Software	Network LAN/LIMS operation, data management, custom reports, 21 CFR 11 compliance
Autosampler	88 position rotary autosampler designed to fit directly underneath Aurora 1030D analyzer
Certification	CE, EMC: EN61326 / Safety: IEC 61010-11 2001
Power Supply	Variable voltage, 100-240VAC, 50/60Hz, 950W
Dimensions – Aurora 1030D + 1088 Autosampler	26.75 in. H x 19.5 in. W x 23 in. D.
Weight – Aurora 1030D + 1088 Autosampler	34.5 kg (76 lbs.)

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