

1080

TOTAL ORGANIC CARBON ANALYZER



Description and Function

The **1080 Total Organic Carbon Analyzer** uses high-temperature (680 °C) catalytic combustion to oxidize and convert organic compounds present in aqueous samples to CO₂ for measurement by a solid-state, non-dispersive infrared detector (SS-NDIR). The system has a wide operational range of 50 ppb to 2,000 ppm and can analyze the total organic carbon (TOC), total inorganic carbon (TIC), and non-purgeable organic carbon (NPOC) content of a variety of aqueous samples. The 1080 TOC supports USEPA-approved methods, Standard Methods, ASTM, DIN/ISO/CEN, and EU Methods. Analyze up to 300 samples per day (>100,000 per year), depending upon the method employed.

Operating Principle

The 1080 TOC employs a multi-step analysis technique to distinguish and quantify different forms of carbon present in sample matrices and determine TOC content. The value reported as TOC is the non-purgeable organic carbon (NPOC) content. NPOC is derived by first determining, or sparging, the TIC content of a sample and then introducing the TIC-free sample into the combustion reactor to oxidize organic compound constituents.

TIC concentration is determined by acidifying a sample to a pH less than 2. Carbonates and bicarbonates in the sample dissociate, forming CO₂, which is measured by a solid-state, non-dispersive infrared detector (SS-NDIR) and reported in mass and concentration values. OI Analytical's SS-NDIR has the highest mass range of any TOC detector on the market.

TIC-free samples are Pulse-Timed injected into the reactor to perform high-temperature (680 °C) combustion over a platinum catalyst. Organic compounds are oxidized and converted into CO₂, which is then quantified by the SSNDIR detector. The result is reported as the TOC content in both mass and concentration of carbon.

The 1080 TOC also supports other analytical approaches – including TC, TOC by subtraction (TC-TIC), and simultaneous determination of total bound nitrogen (TNb) using the optional TNb analysis module.

Product Features

- Wide operational range (50 ppb –2,000 ppm C)
- Supports TC/TIC/TOC/NPOC analysis techniques and standard measurements
- Patented* Smart Slide injector extends o-ring life and reduces maintenance
- Patented* Tube Guard extends furnace tube life and reduces maintenance
- Intuitive, easy-to-use software

Principal Applications

- Wastewater
- Sea water
- Industrial wastewater
- Drinking water
- Groundwater
- Cooling water

Methods

- ASTM D2579, D7573-09
- Standard Method 5310B
- ISO 8245
- USEPA 415.1, 415.3, 9060, (D/DBPR)
- DIN/ISO/CEN EN 1484
- EU PH 2.2.44
- USP 23 <643>

1080 TOC SPECIFICATIONS

Specifications	
Method compliance	USEPA, CEN, USP, EUP, ASTM, ISO, DIN, STD methods
Measurement range (ppm)	50 ppb C - 2,000 ppm C
Method TC	680 °C with platinum catalyst
Method TIC	Acidification and sparging
Method TOC	NPOC, combustion of TIC-free sample, TOC by subtraction (TC-TIC)
Furnace temperature	Adjustable, 680 °C in 1°C increments; 720 °C for TNb
Measuring time	From three minutes
Oxidation technique	High temperature catalytic oxidation, liquid samples
Options available	TN _b , A _{TOC} software for data viewing and reporting, and advanced security and auditing
Reproducibility	3.0%
Accuracy	±2% FS or 2% relative
Sample pathway	Color-coded Teflon® and PEEK® with automatic cleaning in all injection modes
Sample injection and sample handling	Injection: sipper, rotary autosampler Handling: automatic syringe with sliding TC furnace injector
Sample injection volume	50 µL - 2.0 mL in 10 µL increments
IC pretreatment	Available with autosampler
Certifications	CE; EMC: Directive 2014/30/EU; Safety: LVD 2014/35/EU; RoHS: Directive 2011/65/EU
Operation mode	Controlled via PC software (Windows 7, 8, 10 PRO)
Operating interface	Windows PC
Software (included)	Multi-instrument control via PC-based software; LIMS operation, data management, custom reports
Operating System	Windows® 7 (with Service Pack 1 or higher), Windows® 8, 8.1 & 10
Reagent purge	Yes
Reagents required	Hydrochloric acid, rinse water
Communications	USB-to-RS422 communications cable (5m length)
Input and output relays	Two user-programmable inputs, two user-programmable outputs
Ambient temperature range:	10 °C - 37 °C
Operating humidity:	<90% noncondensing
Power Requirements	115/230V AC, 50/60 Hz, 750VA max
Benchspace with autosampler	14" W x 19" D (35.6cm W x 48.3 cm D)
Gas type and grade	Oxygen or Air, 99.995% (carbon dioxide and hydrocarbon free), 50-60 psig
Dimensions	29" H x 14" W x 19" D (74 cm H x 36 cm W x 48 cm D)
Weight	17.5 kg (38.5 lbs), 37.5 kg (82.5 lbs) with autosampler option
Warranty	12 months on parts and labor



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