

vario TOC cube

Unmatched application flexibility in TOC analysis



High sensitivity




High data quality



Great flexibility



Extreme durability

vario TOC  cube

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*TOC / TN_b analysis
without limitations*

KEY FEATURES

- Industry-leading performance and versatility
- LOD of 3 ppb for TOC
- Choice between three detection methods (IR, CL, EC) for nitrogen
- Automatic sample feeding for solids
- Unique matrix separation
- Outstanding robustness
- Integrated 50 position autosampler for liquids as standard

For over 30 years, Elementar has been the German pioneer in high temperature TOC analysis. Elementar's high temperature combustion method to measure organic contaminations provides a multitude of advantages compared to other methods.

It is optimized to deal with compounds hard to oxidize, such as humic acid or other rather persistent compounds. This always guarantees full recovery of every organic component and an outstanding precision and accuracy.

④ Clearly arranged and easily accessible components for fast and easy maintenance.

④ Optional autosampler for solid samples.

④ Choice between three detection methods (IR, CL, EC) for nitrogen.



No limitations in sample nature

The vario TOC cube has an optimized tubing and connection system that gives rise to a reliably, trouble-free handling of liquid samples containing particles. With the unique matrix separation concept, concentrated salt solutions can be analyzed even in larger injection volumes. In addition, the vario TOC cube is one of the very few analyzers on the market that allows measurement of solid and liquid samples with a single instrument – retrofitting is done within minutes.



TOTAL ORGANIC CARBON

The measuring principle is based on the high temperature digestion of the sample in an air / O₂ stream at 850 °C. Totally bound carbon is converted into CO₂ which is quantitatively determined by means of a NDIR detector. The advantage of this method as opposed to the wet chemical UV / persulfate digestion is the absolute assurance that even stable compounds, particles or salt containing solutions will be completely detected. Additionally, the high temperature method enables the determination of bound nitrogen (TN_b).

Unmatched analytical performance

All parameters such as TOC, NPOC, TC, TIC, DOC, POC and TN_b can be measured with the same basic unit. Detection of low ppb for ultrapure water, undiluted 60,000 ppm industrial waste water or up to 20 mg C absolute in solids represents a measuring range which cannot be met by any other instrument. Sample volume can range from 3 µl to 2 ml. No modifications of the instrument hardware or detection range is necessary.

Customized instrument versions

Based on one very compact basic unit, the vario TOC cube can be adjusted to customers' demands. This could be manual or automatic sample changing, analysis of liquids or solids as well as determination of TOC or TN_b in addition to the choice of NDIR, CLD or EC detection. For TIC analysis in solids a separate unit can be attached. This allows the most cost effective solution for your analytical task.

A workhorse for any laboratory

The vario TOC cube is designed for maximum robustness and minimal maintenance effort, thus providing industry-leading system uptime. An advanced matrix separation technology enables customers to run hundreds of samples without the necessity of maintenance work. For unattended overnight operation optional autosampler configurations with 60, 80 and 120 positions are available.



HIGH TEMPERATURE DIGESTION

A high combustion temperature is crucial for a quantitative oxidation of bound carbon to CO₂ and a precondition for the digestion of stable compounds and particles. The vario TOC cube can be operated at a permanent furnace temperature of up to 1200 °C. In solids mode the combustion enthalpy of the tin capsules results in a temporary temperature increase of up to 1800 °C. This allows the analysis of even refractory samples.

TOC / TN_b analysis has never been easier!

SAMPLE	TC [mg/l]	TOC [mg/l]	TIC [mg/l]	TN _b [mg/l]
ULTRAPURE WATER TYPE 2	-	0.069 ± 0.006	-	-
DRINKING WATER	-	0.634 ± 0.009	-	-
WELL WATER	21.53 ± 0.12	-	20.04 ± 0.25	-
MUNICIPAL WASTE WATER	-	27.96 ± 1.32	-	-
INDUSTRIAL WASTE WATER	-	41.84 ± 0.81	-	-
SEA WATER	-	0.54 ± 0.03	-	0.45 ± 0.02
SOIL EXTRACT	-	178.5 ± 0.30	-	30.7 ± 0.65
RIVER SEDIMENT*	8.496 W-% ± 0.136	-	-	-
SOIL STD. (3.5% C)*	3.515 W-% ± 0.039	-	-	-

*Solids measurements

IN ACCORDANCE WITH THE OFFICIAL STANDARDS

The vario TOC cube operates in full compliance with all relevant national and international norms or standards like ISO 8245, 10694, EPA 415.1, European standard acc. to EN 1484, ENV 12260.

QUALITY YOU CAN TRUST

Our consumables and spare parts are designed to meet the highest quality standards and reliability. They are certified and validated in accordance with international norms and standards. We do not compromise on quality of our parts and chemicals – this is the prerequisite of a guaranteed long lifetime of our instruments.

EASE OF USE

The vario TOC cube is optimized to significantly simplify the daily routine operation. Clearly arranged, easily accessible system components minimize maintenance efforts. The tool-free clamp connection system ensures a reliably leak-tight instrument at any time. Thus, customers can enjoy smooth analyses and confidence in their results.

IDEAL SOLUTION FOR

- Environmental laboratories
- Academic research groups
- Quality control laboratories
- Pharmaceutical industry

SAMPLE TYPES ANALYZED

- Ultra-pure water
- Tap water
- Drinking water
- Sea water
- Waste water (influent, effluent)
- Waste
- Soil



High sensitivity

Outstanding sensitivity thanks to high performance, state-of-the-art technology.



High data quality

Outstanding precision and accuracy through high performance combustion. Matrix-independent results. Longterm stability of calibration.



Great flexibility

Wide range of optional conversion kits available for special applications. Upgradeable at any time.



Extreme durability

Outstanding robustness and longevity thanks to state-of-the-art technology. 10 year warranty on the furnace.

Elementar – your partner for elemental analysis

Elementar is the world leader in high performance analysis of organic elements. Continuous innovation, creative solutions and comprehensive support form the foundation of the Elementar brand, ensuring our products continue to advance science across agriculture, chemical, environmental, energy, materials and forensics markets in more than 80 countries.

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