acquray series

Enter a new world of TOC analysis

Ease of use

Great flexibility

High sensitivity

High data quality

elementar

EXCELLENCE IN ELEMENTS

acquray series

Performance meets ease of use

KEY FEATURES

- High sensitivity due to large injection volumes
- Automatic acidification for NPOC determination
- High-energy UV lamp for the digestion of TOC/TN/TP in liquids
- Option to determine TN and TP in liquids
- Option to determine TOC, ROC and TIC in solids
- Optional autosampler with up to 111 positions
- Best price-to-performance ratio
- Low investment costs

With the new acquray® series Elementar opens an entirely new way for easy Total Organic Carbon (TOC) analysis and more. The technology is based on a chemical oxidation process supported by highly energetic UV radiation. This combination ensures complete digestion of organic carbon compounds. The modular concept allows the attachment of optional extra modules for the determination of TOC, TIC and ROC in solids as well as Total Nitrogen (TN) and Total Phosphorus (TP) in liquids. Predefined methods for several applications, automatic calibration features and auto-alert functions for maintenance make the acquray series the ideal solution for routine labs that require instruments with high laboratory efficiency and minimal down-time.

TOC module
Analysis of Total Organic Carbon in water

TP module
Analysis of Total Phosphorus in water

TN module
Analysis of Total Nitrogen in water

solid module
Analysis of TOC, TIC and ROC in solids

Ease of use

The **acquray** series is optimized to significantly simplify the daily routine operation. Clearly arranged, easily accessible system components minimize maintenance efforts. Thus, customers can enjoy smooth and fast analyses with reliable results.

A workhorse for any laboratory

The **acquray** series is designed for maximum robustness and minimal maintenance effort, thus providing industry-leading system uptime. For unattended overnight operation, optional autosampler configurations with up to 111 positions are available.

TOC BY WET CHEMICAL OXIDATION

The oxidizing process is supported by irradiation with UV light at a wavelength of 185 nm and 254 nm and heat. Additionally, a strong oxidation agent, such as sodium persulfate, can be added to the sample. The peroxydisulfate forms hydroxyl radicals that oxidize all carbon in the liquid sample to carbon dioxide. Carrier gas (e.g., N_2 or air) then transports the generated CO_2 through an infrared detector (IR). In the end, the TOC concentration is calculated from the IR signal using a pre-determined calibration curve.

Outstanding versatility

The **acquray** series, with its modular concept, offers an industry-leading versatility. Starting from the TOC base module, additional extra modules can be attached anytime. For high sample throughput, an autosampler is available, offering several carousels for different sample vial sizes. An optional combustion unit for solids can be used either for the classical TOC analysis of acidified samples with catalytic high-temperature combustion or for the more advanced temperature ramping method without pre-acidification. Completing the package, another two unique modules are available that enable the determination of Total Nitrogen and Total Phosphorus in liquids. Thus, **acquray** is the world's first UV-digestion TOC analyzer with a Total Nitrogen and/or a Total Phosphorus option (patent pending).

Made in Germany

All TOC and elemental analyzers are developed and manufactured in-house at the Elementar headquarters near Frankfurt ensuring high quality German engineering. High performance components and strict quality control yield industry-leading quality and reliability. Designed for easy laboratory integration, features such as automatic weight transfer from balance or LIMS integration are readily available. Our team's singular devotion and investment to elemental analysis guarantees a superior experience that any user will appreciate.

TOC, ROC AND TIC IN SOLIDS

With the optional solid sample combustion unit, it is possible to determine different carbon fractions in solids using the so-called temperature ramping method – fast and safe without acidification. By using this method, it is possible to distinguish between Total Organic Carbon (TOC_{400}) at 400 °C, Residual Oxidizable Carbon (ROC) at 600 °C and Total Inorganic Carbon (TIC_{900}) at 900 °C. This gives useful information for the classification of soil or solid waste. For example, the amount of elemental carbon is an important parameter, since this form of carbon is not bioavailable. With its fast heating rates and precise temperature settings, the **acquray** series is fully compliant to the German DIN 19536 standard.

Water analysis has never been easier!

SAMPLE	RECOVERY [%]	REL. SD
SUCROSE	99.3	0.26
BENZOQUINONE	99.6	0.65
BARBITURIC ACID	102.6	1.58
DODECYL-SULPHATE	95.6	0.65
ALBUMIN	97.2	0.98
HUMIC ACID	97.2	1.67

Sample: 10 ppm

THE ALTERNATIVE FOR COD

The analysis of the chemical oxygen demand (COD) is a commonly used method for the indirect measurement of organic compounds in water. Hazardous chemicals, long analysis time and the lack of automation explain the trend towards the TOC method in recent years. As with any method change, the reason for continuing to perform the older methods is the amount of historical data that is available to compare results against. With time it is expected that COD will be consigned to the history books. With this in mind, the **acquray** series was developed to provide an attractive alternative to COD with its outstanding ease of use and fully automated, fast analysis.

IN ACCORDANCE WITH STANDARDS

The **acquray** series operates in full compliance with all relevant national and international norms or standards such as ISO 8245, EN 1484, DIN 19539, ISO 29441, and ISO 15681.

IDEAL SOLUTION FOR

- Environmental laboratories
- Waste water treatment plants
- Academic research groups
- Quality control laboratories

SAMPLE TYPES ANALYZED

- Ultra-pure water
- Drinking water
- Groundwater
- Soil

Ease of use

Easy, labor-saving instrument operation and sample preparation. Simplified maintenance.

Great flexibility

Range of optional extra modules available for special applications. Upgradeable at any time.

High sensitivity

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

High data quality

Outstanding precision and accuracy through high performance components.

Elementar – your partner for excellent elemental analysis

Elementar is the world leader in high performance analysis of organic and inorganic 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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