

# acquray<sup>®</sup> series

*Enter a new world of TOC analysis and more*



Ease of use



Great flexibility



High sensitivity



High data quality



# acquray series

*Performance meets  
ease of use*

## KEY FEATURES

- Easy to use
- LOD of 2 ppb for TOC in water
- Option for TOC, ROC and TIC in solids
- Options for TN and TP in water
- Optional autosampler with up to 109 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 all organic compounds. The modular concept allows the attachment of optional extra modules for the determination

of TOC in solids, Total Nitrogen (TN) in water and Total Phosphorus (TP) in water. The instrument comes with predefined methods, completely calibrates itself automatically and auto-alerts the user any time maintenance is needed. This makes the **acquray** series the ideal solution for routine labs that require instruments with high laboratory efficiency and minimal down-time.



## *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 analyses and confidence in their 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 109 positions are available.

## *Outstanding versatility*

The **acquray** series, with its modular concept, offers an industry-leading versatility. Starting from the TOC analyzer base module, additional extra modules can be attached at any time. For increased sample throughput, an autosampler unit is available, offering several carousels for different sample vial sizes. An optional combustion furnace for solid samples can be used either for the classical TOC analysis of solids via acidification prior to combustion, or for the more advanced method via temperature ramping without acidification. Completing the package, another two unique modules are available that enable the determination of Total Nitrogen in water and Total Phosphorus in water. 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 Elementar 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 BY WET CHEMICAL OXIDATION



A strong oxidation agent, such as sodium peroxydisulfate, is added to the sample and heated up to 100 °C. The oxidizing process can be further supported by irradiation with UV light at a wavelength of 185 nm and 254 nm. The peroxydisulfate forms hydroxyl radicals that oxidize all carbon in dissolved organic matter to carbon dioxide. Carrier gas then transports the generated CO<sub>2</sub> through an infrared detector. The peak area is converted into a TOC concentration using a simple predetermined calibration curve.

### TOC, ROC AND TIC IN SOLIDS



With the optional solid sample combustion unit it is possible to determine different carbon species in solids using the so-called temperature ramp method – fast and safe without acidification. With this it is possible to distinguish between Total Organic Carbon (TOC) at 400 °C, Residual Organic Carbon (ROC) at 600 °C and Total Inorganic Carbon (TIC) at 900 °C. This gives useful information for the validation of soil, construction waste 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 rate and precise temperature setting the **acquray** series is fully compliant to the German DIN 19536 standard.

# Water analysis has never been easier!

SAMPLE	RECOVERY [%]	REL. SD
SACCHAROSE	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. Moreover, production and sales of potassium dichromate, a prerequisite for the COD method, will be banned within the European Union by 2017 making it likely that a total displacement of COD will proceed in the upcoming years. 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. Furthermore, the **acquray** series software is capable of COD/TOC correlation factors for flexible reporting.

## IN ACCORDANCE WITH STANDARDS

The **acquray** series operates in full compliance with all relevant national and international norms or standards such as DIN 19539, DIN 15936 and DIN 13137.

## IDEAL SOLUTION FOR

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

## SAMPLE TYPES ANALYZED

- Ultra-pure water
- Drinking water
- Surface water
- Groundwater
- Waste water effluent
- 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 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.



## Elementar Analysensysteme GmbH

Elementar-Straße 1 • 63505 Langenselbold (Germany)  
Phone: +49 (0) 6184 9393-0 | info@elementar.de | www.elementar.de

