

# rapid CS cube

*High precision carbon and sulfur analysis*



High sensitivity



High data quality



High sample throughput



Extreme durability

rapid CS  cube

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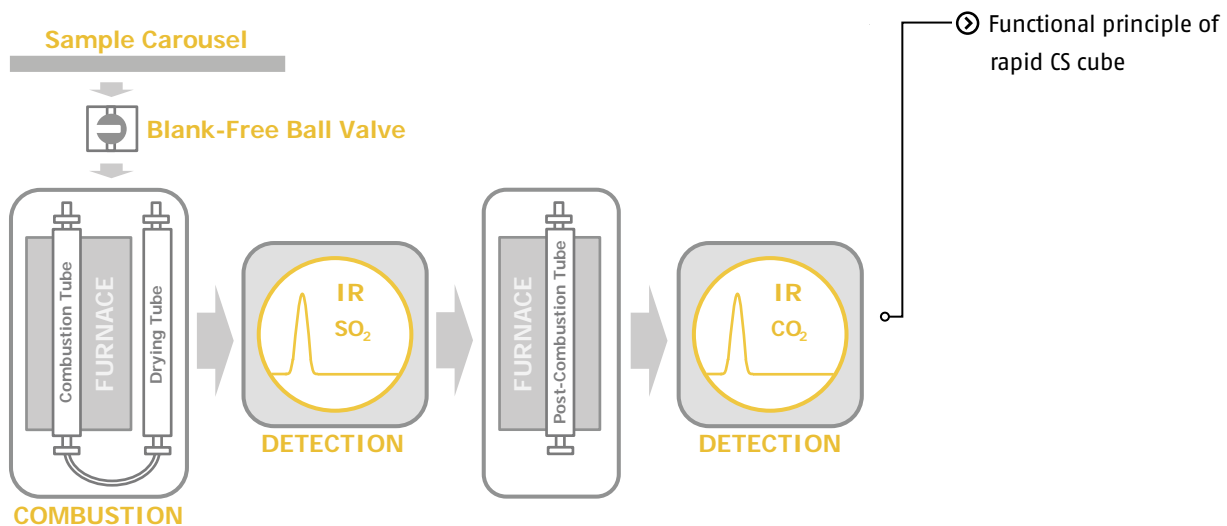
*Versatility meets  
high throughput*

## KEY FEATURES

- Industry-leading throughput
- Integrated 60-120 position autosampler as standard
- Unique chlorine determination as an option
- Low maintenance
- Patented ball valve for blank-free sample transfer
- 10-year guarantee on the high-temperature combustion furnace

The rapid CS cube is designed for fast, automated analysis of carbon and sulfur in coal, coke or biomass. Its outstanding sensitivity (LOD 2 ppm S in coal) makes it an universal instrument for all samples in this application area. Using tin foil to

wrap the samples avoids dust formation and contamination in the analyzer. Thus, customers can enjoy outstanding low maintenance efforts and highest possible instrument uptime.



## Fully automated operation

The rapid CS cube offers an integrated autosampler as standard for high sample throughput and safe unattended overnight measurements. The proprietary blank-free ball-valve technology assures reliable sample feeding without the need for sophisticated and therefore susceptible mechanics. During operation all sample positions are accessible and reloadable at any position and time. Depending on sample throughput and sample size, the system can be equipped with 60–120 position carousels.

## Norms and standards

The rapid CS cube is in accordance with all important international coal and coke standards, such as ASTM D4239–12 (S in coal and coke), DIN 51724–3 (S in solid fuels) as well as ISO 15178:2000 (S in soil), EN 15936 (TOC in solids), etc.

## Great application flexibility

The rapid CS cube is able to analyze e.g. 400 mg of coal, less than 1 mg of fine chemicals or 100 mg of plant material. The results are always accurate. No complicated sample preparation is required. In addition, the instrument allows the direct determination of TOC after external acidification of the solid sample. Moreover, the soliTIC module gives rise to reliable and robust TIC determination via the difference method. The instrument can also be easily retrofitted to measure liquid samples. Solid samples of 1 g may be measured with outstanding precision and accuracy.

## Future-proof investment

Thanks to the outstanding robustness and longevity of our rapid CS cube, we grant a 10-year guarantee on the high-temperature combustion furnace. With our well-known long term oriented dedication to technical support Elementar provides spare parts for a minimum of 10 years after the end of production. This results in outstanding low total cost of ownership and gives customers confidence in return of investment.

### HIGH-TEMPERATURE COMBUSTION



All elemental analyzers from Elementar are designed for minimal sample preparation and secure, unattended 24 / 7 operation. They use the safe, simple and environmental friendly high-temperature combustion principle. The proven Elementar furnace technology guarantees quantitative conversion of the sample to measuring gas – a prerequisite for highly precise elemental analysis.

### UNIQUE CHLORINE DETERMINATION



The rapid CS cube can be equipped with a chlorine module for fast and easy determination of chlorine, thus avoiding the necessity for a dedicated Cl analyzer. The chlorine detection is performed by means of solid-state electrochemical cells which are – unlike microcoulometric detectors – almost maintenance free. Analysis time for chlorine in coke is just about 15 minutes. Elementar offers a variety of detectors, enabling chlorine measurements over a wide range.

# Elemental analysis has never been easier!

SAMPLE	SULFUR [%]	CARBON [%]	CHLORINE [%]
LIGNITE	1.43 ± 0.003	-	-
MINERAL COAL	0.271 ± 0.007	61.5 ± 0.22	-
TOP SOIL	0.017 ± 0.004	3.39 ± 0.015	-
DRIED DISTILLERS GRAIN	1.064 ± 0.028	-	-
SOLID WASTE	-	0.77 ± 0.001*	-
WOOD COAL	-	-	0.0045 ± 0.0004
BIOMASS	-	-	0.133 ± 0.006
ORGANIC WASTE	-	-	0.142 ± 0.006

\*measured as total organic carbon (TOC)  
Sample weight 100 mg

## EASE OF USE

The rapid CS cube is optimized to significantly simplify the daily routine operation. Clearly arranged, easily accessible system components as well as a furnace that slides out 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.

## 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.

## IDEAL SOLUTION FOR

- Coal industry
- Agricultural laboratories
- Contract laboratories
- Academic research groups

## SAMPLE TYPES ANALYZED

- Coal
- Biomass
- Rubber
- 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.



### High sample throughput

Designed for 24 / 7 unattended operation. Industry-leading system uptime for highest laboratory efficiency.



### Extreme durability

Outstanding robustness and longevity thanks to state-of-the-art technology. 10-year guarantee on the high-temperature combustion furnace.

## 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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