

# vario ISOTOPE select

*Enter the world of EA-IRMS analysis*



High data quality



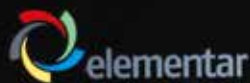
Low cost of ownership



Extreme durability



Ease of use



vario ISOTOPE  select





# vario ISOTOPE select

*The workhorse  
in isotope ratio analysis*

## KEY FEATURES

- Outstanding robustness – low maintenance
- 10 year warranty on furnace and thermoconductivity detector cell
- Low total cost of ownership and highest data quality
- Reliable results even for submilligram samples
- Fractionation-free, patented TPD gas separation for high precision and accuracy
- Integrated 120 position autosampler as standard
- Patented ball valve for blank-free sample transfer

## Reliable results

The vario ISOTOPE select guarantees outstanding precision and accuracy through quantitative combustion via controlled oxygen jet-injection directly into the active zone. This leads to matrix-independent results even for samples which are difficult to combust. In combination with the state-of-the-art thermoconductivity detector, the instrument provides an elemental detection limit of < 100 ppm.

## Operating comfort

The vario ISOTOPE select is optimized to significantly simplify 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.

## 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 combined with efficient oxygen dosing guarantees quantitative conversion of the sample to measuring gas – a prerequisite for highly precise and matrix-independent elemental and isotope ratio analysis.

The vario ISOTOPE select is the entry-level EA dedicated to stable isotope analysis, combining reliable results with outstanding robustness. It utilizes Elementar's proprietary Advanced Purge and Trap technology with a single Temperature Programmed Desorption

(TPD) column. Thus, full baseline resolution during simultaneous CNS isotope ratio analysis is always guaranteed. In combination with a state-of-the-art IRMS from Isoprime, you will always get the best out of your analyses.

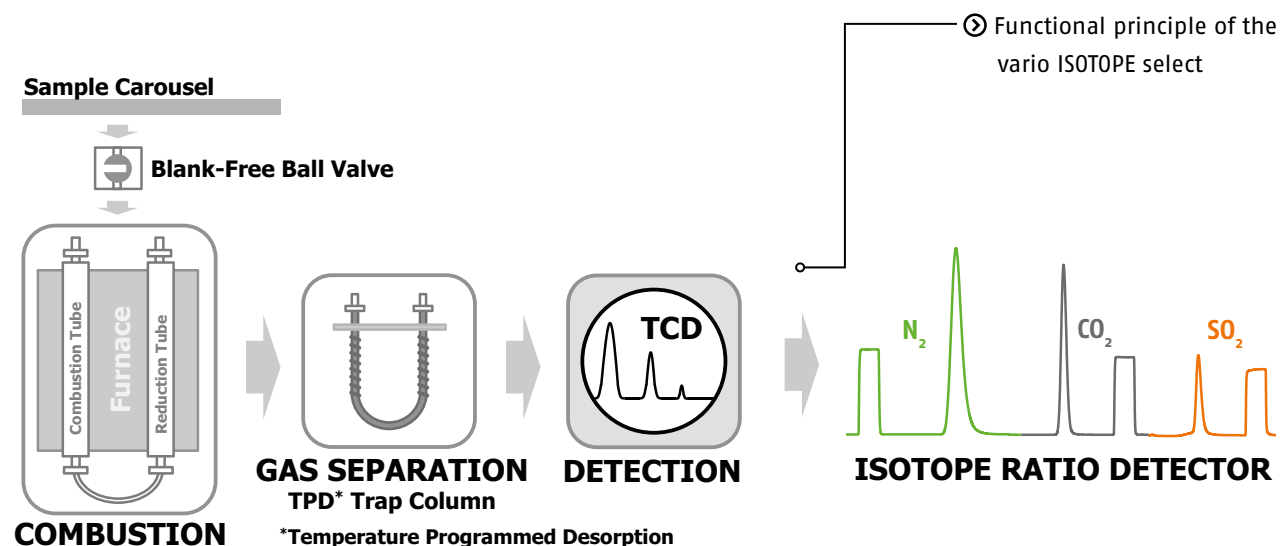
## Future-proof investment

Thanks to the outstanding robustness and longevity, all elemental analyzers include a 10 year warranty on furnace and thermoconductivity detector (TCD) cell. With the confidence that you will receive the highest level of technical support from our experienced team, 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.



## TEMPERATURE PROGRAMMED DESORPTION (TPD)

Elementar's proprietary TPD technology is a unique high performance chromatographic technique for the determination of non-metal elements. The fractionation-free TPD technology is capable of resolving e.g. C/N ratios of up to 5000:1 and C/S ratios of up to 4000:1. The distinct peak separation assures absolutely reliable and trouble-free data acquisition. The data analysis can therefore be easily automated for larger sample amounts while maintaining highest possible data quality. Elementar's unique TPD columns are optimized to provide unmatched robustness and longevity compared to GC columns. Furthermore, the vario ISOTOPE select can be loaded up to 4-fold higher, resulting in outstanding sample flexibility. The analysis of samples with an absolute carbon content of up to 7 mg is therefore possible in CNS mode. Thus, customers enjoy industry-leading accuracy, sensitivity and versatility.



## Made in Germany

All elemental analyzers are developed and manufactured in-house at the Elementar headquarters – high quality German engineering. High performance components and strict quality control ensure industry-leading quality and reliability. Designed for easy laboratory integration, features such as automatic weight transfer from balance or LIMS integration are readily available.

# EA-IRMS analysis has never been easier!

SAMPLE*	$\delta^{13}\text{C}$ (‰ VPDB)	$\delta^{15}\text{N}$ (‰ AIR N <sub>2</sub> )	$\delta^{34}\text{S}$ (‰ VCDT)
SULFANILIC ACID	-28.19 ± 0.05	-1.75 ± 0.02	16.84 ± 0.25
CAFFEINE	-35.05 ± 0.05	-2.92 ± 0.01	-
ATROPINE	-28.46 ± 0.05	-19.67 ± 0.22	-
UREA	-36.42 ± 0.05	9.73 ± 0.10	-
CASEINE	-22.14 ± 0.06	4.63 ± 0.04	10.37 ± 0.11
CORN FLOUR	-11.78 ± 0.03	3.10 ± 0.06	1.38 ± 0.22
HONEY	-23.29 ± 0.04	-	-
ITALIAN WINE**	-24.64 ± 0.01	-	-
HUMAN SERUM	-22.53 ± 0.22	-22.53 ± 0.22	-
BEECH WOOD	-26.32 ± 0.05	0.15 ± 0.14	-
ANTHROSOL A HORIZON	-26.96 ± 0.02	14.01 ± 0.10	7.08 ± 0.13

\*Sample weight between 5 – 100 mg, \*\*Liquid injection with VLS

## HIGH SAMPLE THROUGHPUT

The vario ISOTOPE select offers the fastest CNS isotope ratio determination with analyses spanning less than 9 minutes. During operation all sample positions are accessible and reloadable at any position and time. The instrument is designed for safe unattended overnight measurements. Equipped with a 120 position autosampler for high sample throughput and the most user-friendly operating software on the market, the vario ISOTOPE select is setting new benchmarks.

## 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

- Environmental laboratories
- Academic research groups
- Quality control laboratories
- Contract laboratories

## SAMPLE TYPES ANALYZED

- Chemicals
- Soil & sediment
- Plants
- Food & beverage
- Fuels



### High data quality

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



### Low cost of ownership

Low consumables consumption and maintenance effort thanks to state-of-the-art technology and straightforward design.



### Extreme durability

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



### Ease of use

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

## Elementargroup – your partner for elemental analysis

Elementargroup is the world leader in high performance analysis of organic elements. Continuous innovation, creative solutions and comprehensive support form the foundation of the Elementar and Isoprime brands 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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