rapid N cube

The compact power in protein analysis

ELEMENTAR is the pioneer in N/protein analysis by the Dumas combustion method, with the first analyzer introduced in 1964.
N/Protein determination by Dumas combustion is preferred over the classical wet chemical Kjeldahl analysis because of:

- analysis time of 4 minutes compared to 1.5 hours
- Safe handling and operations without hot sulfuric acid or other aggressive chemicals and hazardous waste
- 100% N recovery independent from sample matrix
- fully automatic operation with high sample throughput

The **rapid N** cube is a totally new analyzer with high performance characteristics but based on the very popular **rapid N III**, known for its robustness and absolute reliability. The combination of the latest micro-electronics and micro-mechanical innovations with well proven basics makes the **rapid N** cube the most compact and powerful Dumas analyzer ever.

The basic concept is straightforward
Feeding and combustion of the sample, catalytic post combustion followed by the reduction of combustion gases. The formed N_2 flows through a thermoconductivity detector (TCD) and produces an electrical signal which correlates to N_2 or protein concentration in the sample.

elementar

rapid N cube is special

Automatic sampler for high sample throughput

The sampler can accommodate up to 60 samples with 1 g or 1 ml size or alternatively 120 samples with up to 300 mg on just one carousel. No stacking is required. In connection with the proven ball valve injection an absolute stable ”around-the-clock” operation is assured.

3-zone furnace for sample combustion and gas reduction

Combustion occurs at 900°C in a robust stainless steel tube. Oxygen jet injection serves for 100% oxygen concentration directly at the sample where it is required (95% less oxygen consumption compared to other technologies). The 2nd furnace zone is for catalytic post combustion and the 3rd zone accommodates the patented tungsten reduction tube with approx. 3 times more sample capacity compared to traditional copper.

Most modern electronics and software

The **rapid N** cube is based on advanced micro-electronics. All instrument functions including gas flows and pressures are under digital control allowing computer assisted leak checking, adjustments or even direct troubleshooting via the internet. The Windows software has an integrated database for data as well as graphics and all the other great features you have come to expect.

Long time stability and low maintenance

The **rapid N** cube is designed for long lasting trouble-free operation. The gas control and detection system is so stable that the original calibration can be used for up to several months or even years, regardless of the sample matrix. The complete system works under low voltage and is mains failure safe.
The furnace has a 10 year warranty.

N/Protein analysis has never been easier and more accurate.

Optimal combustion gas handling

All combustion gases are analyzed in continuous flow without collection and splitting. This provides for high oxygen savings, real time monitoring, automatic optimizing of combustion and high accuracy of analysis even for the most difficult sample matrices. Efficient multi-step gas drying allows the analysis of up to 1 ml of liquid samples (in capsules). There is no need for CO_2 removal due to the efficient use of CO_2 as carrier gas.

High detection sensitivity and stability

A digital mass flow controller just in front of the detector ensures absolutely stable flow conditions, regardless of pressure fluctuations from sample combustion. The special wide range thermistor TCD is oxygen excess proven and stable over years, serving for accurate results from < 0.01 to 100%.

Low installation and operation costs

Due to the exceptional micro-mechanics and electronics, the instrument has a size of only 48 x 55 x 55 cm, thus being the most compact Dumas analyzer. Only a small table, a power socket and 2 gases (CO_2, O_2) are required. The **rapid N** cube can operate on all standard voltages (100 – 240 VAC) but does not require compressed air or even a fume hood. Long life of consumables and parts result in a very low cost per analysis.

In accordance with the official standards

The Dumas combustion method for protein analysis used in the **rapid N** cube is a worldwide standard for all kinds of agricultural products accepted by organizations like AOAC, ASBC, AACC, FGIS, CGL, DIN, EN, ISO, LUFA or MEBAK.

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