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DUMALYZER N/PROTEIN

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DUMALYZER™ N/Protein

Automated Nitrogen & Protein Analyzer — Dumas Combustion Method

Overview & Purpose of Dumalyser™ N / Protein

The **Dumalyser™ N /Protein** is a fully automated nitrogen and protein analyzer using the Dumas combustion method, designed for fast and accurate analysis without the use of aggressive reagents. It is used in food, feed, agricultural, environmental and research laboratories that require reliable, high-throughput determination of nitrogen and calculated protein content.

Principle of Operation

Dumalyzer™ N /Protein

A precisely weighted sample is combusted in oxygen atmosphere at the high-temperature. The resulting gases pass through a reduction furnace and dedicated traps to remove CO_2, H_2O and unwanted by-products. The residual nitrogen gas is quantified by a Thermal Conductivity Detector (TCD), after which the software automatically calculates nitrogen and protein according to the selected protein factor.

The application of this method, combined with innovative technical solutions and a unique software platform developed by the experienced engineering team at Costech Microanalytical, has resulted in the high precision, full automation, and exceptional reliability of the **Dumalyser™ N / Protein analyzer.**

ES France - Département Bio-tests & Industries
127 rue de Buzenval BP 26 - 92380 Garches
Tél. 01 47 95 99 90
e-mail : bio@es-france.com
Site Web : www.es-france.com

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Key Advantages:

- **Short analysis time**
(3–4 minutes) Optimized combustion and data processing enable rapid results and efficient high-throughput workflows.

- **High analytical accuracy and outstanding reproducibility**
Stable temperature control, optimized flow rates and precise TCD detection ensure consistent analytical performance.

- **Full automation of all analytical steps**
A microprocessor-controlled gas-flow system provides real-time control of combustion, reduction and detection stages, minimizing human involvement and eliminating manual adjustments.
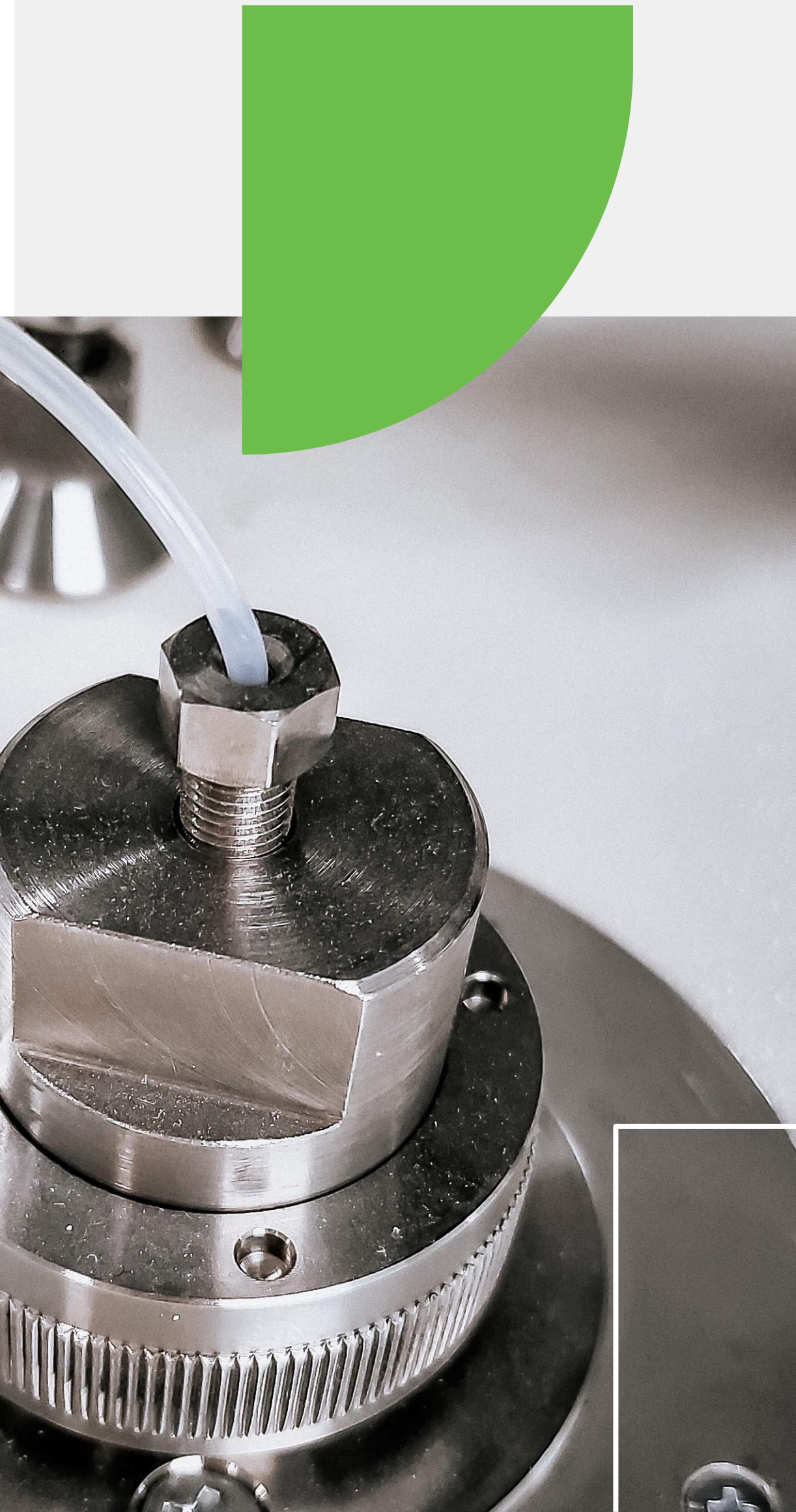
- **Low operational cost**
The gas-saving architecture dynamically adjusts consumption based on the selected mode, significantly reducing helium and oxygen usage.

- **Wide range of applications**
Supports recognized Dumas-based methods for protein and nitrogen determination across food, feed, agriculture and environmental testing.
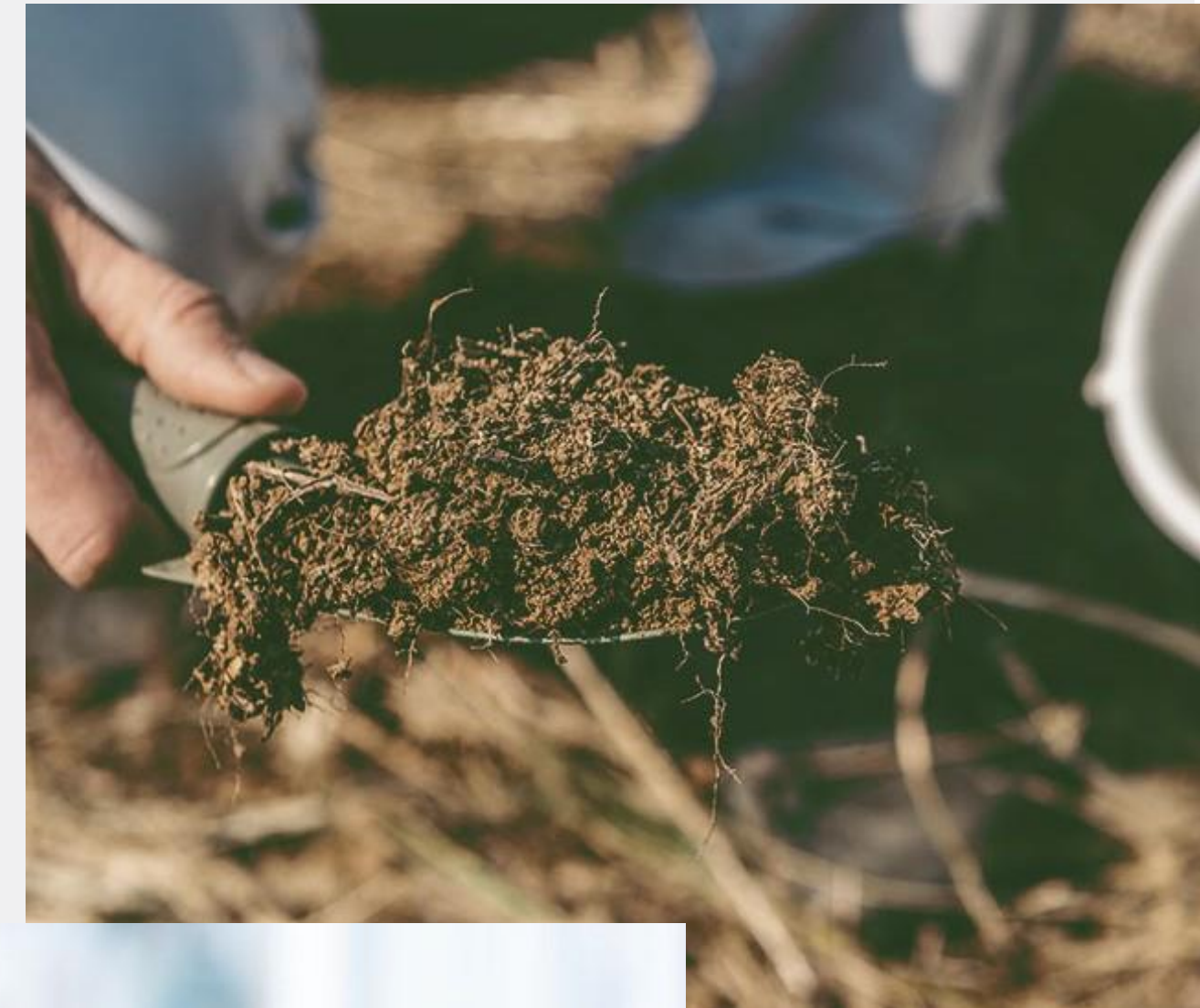
- **Proprietary software platform**
Dumalyser™ Manager provides automated workflow control, data traceability, reporting tools and user-friendly operation.

Applications & Standard Methods

Dumalyser™ N / Protein supports nitrogen/protein determination for:

Meat and meat products — AOAC 992.15, ISO 937

Milk and dairy products — AOAC 991.20, ISO 8968-1

Animal feed & feed ingredients — AOAC 990.03, ISO 16634-1

Cereals, grains, flour — AACC 46-30, ISO 20483

Oilseed meals, soy products — AOAC 996.11

Agricultural materials & fertilizers — AOAC 993.13

Soil & environmental samples — nitrogen-containing organic matter

Other organic and inorganic samples requiring N evaluation

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Instrument Specifications

Analytical Data	Dumalyzer N / Protein	
Sample Type	Liquid or solid substances, weighted in tin or silver capsules	
Sample Weight	0,5 mg - 1 g depending on the content of organic matter	
Detection Limits	N 0,01 mg - 50 mg Protein 0,05 - 100 %	
Measurement Accuracy	< 0,5 % with 150 mg reference substance (EDTA)	
Analysis Time	Nitrogen: 3 ÷ 4 min, depending on the weight and type of the sample	
Measurement Modes	N	

Technical Data	Dumalyzer N / Protein
Gases Used (and Input Pressures))	He purity 99.999 % (5.0) - 3 bar Ar purity 99.999 % (5.0) - 3 bar O$_2$ purity 99.999 % (5.0) - 3 bar Compressed air / technical nitrogen purity 99.9 % (3.0) - 4 bar – free from dust, oil traces, and moisture
Temperature control limits for the furnaces: Combustion furnace Reduction furnace Degassing furnace	400 ÷ 1100°C 400 ÷ 1100°C 50 ÷ 350°C -
Operating Temperature:	15 ÷ 35°C
Operating Voltage:	230 V AC ± 10%
Frequency:	50/60 Hz
Power Consumption:	max 6A
Dimensions (W x D x H):	805 x 410 x 525 mm (H+180 mm with auto-sampler)
Weight:	65 kg

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Information about Costech Microanalytical:

- 23+ years on the market
- 800+ analyzers installed
- Collaboration with leading laboratories
- Patented technologies
- Engineering & technical support

Customer Support includes:

- **On-site equipment installation** (performed by the company's regional representative).
- **Training of laboratory personnel** (conducted by the regional representative).
- **Reference and introductory materials** (available at www.costech.ee).
- **Online technical consultations** (Zoom / Skype).
- **Service maintenance** according to the customer's request.
- **Ordering and sales** of consumables and accessories.
- **Analytical support** for nitrogen/protein applications.

Contact Us:

📞 (+372) 607 78 70

✉ sales@costech.ee

🏠 Rahumäe tee 6A, 13415 Tallinn, Estonia

🌐 www.costech.ee

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