



INSTRUMENT USAGE SHEET

PERKIN ELMER 2400 SERIES II CHN/S ELEMENTAL ANALYZER

General Information

Instrument: Perkin Elmer 2400 Series II CHN/S Elemental Analyzer

Manufacturer: Perkin Elmer

Location:

- CRIETT – Cubo Building
- Via Valleggio 11, Como, Italy
- Floor: 0 – Laboratory PT-10 (CO. CUBO PT.018.0)

Instrument Manager

- Dr. Sonia MOSCONI
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Authorized Users

Dr. Sonia Mosconi

Training Requirements

No. The instrument is operated exclusively by the technical staff or the instrument manager. User access is not permitted.

Internal tickets can be viewed on the intranet page (access with university credentials): <https://intranet.uninsubria.it/areadocumenti/ticket-strumenti-criett-utenti-interni>

The fee schedule for external users can be viewed on the website:
www.uninsubria.it/criett



Acknowledgment of CRIETT Services in Scientific Publications (See CRIETT Regulations, Article 11): Any scientific publication resulting from the use of CRIETT equipment must acknowledge the instrument according to the following statement:

“The scientific support from CRIETT centre of University of Insubria (instrument code: XXX) is greatly acknowledged”.

Instrument Code: MAC04

Access Procedures

1. Access with Scientific Technician (Full-Service)

Who: Research groups that use the instrument occasionally and external users.

Procedure: Access is provided through the assistance of dedicated technical staff, who are responsible for booking and operating the instrument.

Description and Functions

The CHN elemental analyzer is an analytical instrument used for the quantitative determination of carbon, hydrogen, and nitrogen. It operates by high-temperature combustion of the sample followed by detection of the resulting gases, providing high accuracy and reproducibility for the chemical characterization of both organic and inorganic materials.

Technical Specifications

- High-temperature combustion tube with furnace (up to approximately 1100°C) for complete sample combustion.
- Reduction tube for the conversion of nitrogen oxides and removal of residual oxygen.
- Frontal chromatography separation system for isolating combustion gases before detection.
- High-sensitivity Thermal Conductivity Detector (TCD) for quantification of CO₂, H₂O, and N₂.

- Operating mode: CHN (Carbon-Hydrogen-Nitrogen).
- Autosampler (60 positions), used only when a large number of samples need to be analyzed.
- Operating gases:
 - Helium as carrier gas
 - Oxygen for combustion
- Analysis results are printed directly on the dot-matrix printer connected to the instrument.
- Typical performance: CHN analysis completed in approximately 6 minutes.
- Sample amount: typically 2–3 mg per sample.

Safety Warnings

- Avoid contact with hot surfaces (furnace temperatures up to approximately 1100°C) during operation.
- Use dedicated gloves and tweezers when handling samples and reagents.
- Handle compressed gases (helium and oxygen) according to established safety regulations.
- Ensure adequate ventilation for combustion gases.
- Do not introduce explosive, flammable, or highly toxic substances into the instrument.
- Switch off the instrument and close the gas cylinders when the instrument is not in use.

Operating Notes

- Samples to be analyzed should be placed in the designated collection box located next to the instrument.

- The instrument is started and analyses are performed when approximately 10 samples have been collected.
- Analytical results are returned together with the unused portion of the original sample in a separate collection box located next to the instrument.

Materials and Accessories Provided by CRIETT

- Tin capsules for sample preparation.
- Certified reference materials for calibration and quality control.
- Combustion and reduction reagents.
- High-purity operating gases:
 - Helium as carrier gas
 - Oxygen for combustion
- Tweezers, spatulas, and weighing tools for sample preparation.
- Gibertini analytical balance (Crystal model) for accurate sample weighing.
- Paper and ribbons for the dot-matrix printer connected to the instrument.
- Consumables for routine maintenance (gaskets, tubing, septa, quartz wool).

Materials and Accessories to Be Provided by the User

- Samples to be analyzed (prepared in suitable vials or containers).