

Elemental Analyser for automatic determination of C-H-N-S

Fully Automated PC controlled Elemental Analyser for Solids, liquid and semi solid samples.

Operating modes for measurement of CHNS, CHN, CNS, and S

Sample weight Range : up to 1000 mg

Detection range : 0 to 100% for all elements (C, H, N, S)

LOD : 50 ppm or better(lower)

Standard deviation : $\leq 0.1\%$ of absolute.

Fully digital electronics that should be fully integrated in unit, no external control panels required

Should have mass flow controller/electronic flow controller for constant flow of carrier gas.

Quick swap clamp connections for fast maintenance.

Accessory for Liquid and solid sample preparation should be a part of the quotation. Spares for regular maintenance should be quoted. All the required tools and accessories should be quoted.

Furnace System

- Should have two zone furnace system, separate for combustion and reduction with independent temperature control for each furnace. It should be possible to set difference temperature for combustion and reduction in CHNS mode.
- Controlled furnace maximum Temperature should be 1200° C or more
- Furnace working on low voltage for safety and long life with 10 years warranty.
- Should have possibility to use ceramic/quartz ash finger to handle high halogen or fluorine contents sample.

Separation System

- Advanced Chromatographic separation of gases.
- Complete instrument control over elution process with provision of auto zero of baseline after each element elution.
- Full separation of all analytes and there should be no peak tailing or peak overlap
- Sulphur being a crucial element, should be analysed with higher column temperature (separation column) than Nitrogen, Carbon, and Hydrogen. All necessary accessories/ options in this regard should be quoted as mandatory items.

Detector System

- Oxygen intrusion free thermistor technology based Temperature stabilized TCD detector for measurement of C-H-N-S
- There should be a provision to attach IR detector in the future for lower range of Sulphur and Oxygen.
- There should be a provision to attach detector for Chlorine in the future
- 10 year or more warranty on TCD.

Autosampler System

- Electromechanical auto sampler system with 100 positions or more. The Autosampler should hold at least 300 mg of Soil Sample. Pneumatic autosampler is not acceptable.
- The autosampler should be zero blank and ensure complete removal of atmospheric gases before sample injection into the high temperature reactor/ furnace. It is a crucial scientific requirement and must be met.

Carrier gas: Possibility of using Argon gas and Helium gas both as a carrier gas in CHNS mode.

Software

- should be Windows 11 professional based and should have display of set and actual pressures, flow rates, temperatures, number of samples analysed with provision for setting maintenance interval with warning when maintenance needed
- Should have **segmented** leak check through software to enable identification of exact position of leak.

Consumables: To be supplied with consumables sufficient for 1000 sample analysis in CHNS/CNS mode,

Gas Cylinders: Helium and Oxygen gas cylinder with double stage regulator should be quoted.

1. Please include the list of minimum 10 users in India.