

CHNS Analyser

CHNS+O COMBO ANALYSER



EPC / PRODUCTS / APPLICATION / SOFTWARE / ACCESSORIES / CONSUMABLES / SERVICES

Analytical Technologies Limited

An ISO 9001 Certified Company

www.analyticalgroup.net

▶▶ Instrument Principal :

CHNS+O Analyzer is a new product, and it is used for oxygen, nitrogen, hydrogen, Carbon, Sulfur determination in ferrous and non-ferrous metals, rare earth materials, alloy, semiconductors, electronic materials, ores, ceramics, coal, graphite, and some organic / inorganic materials.

- Pulse heating inert gas fusion.
- O (Oxygen): NDIR(Non Dispersive Infrared absorption);
- N/H (Nitrogen/Hydrogen): TCD(Thermal Conductivity Detection).
- Carrier gas (Oxygen) pass through sample extraction unit. Sample combustion at a high temperature, the carbon and sulfur in the sample were converted to CO₂ and SO₂.and then the mixed gas was measured by infrared detector.
- The infrared detector using Non-Dispersive-Infrared absorption technology, and it can quickly and accurately measuring carbon & sulfur contents, and it is easy to operate, easy to maintain, easy to repair.

▶▶ Instrument Specification :

1. Structure :

Modular Structure, including electronic balance, computer, printer, high-frequency infrared carbon & sulfur analyzer, tubular resistance furnace, vacuum cleaners, water circulate chillers.

2. Detection System :

- (i) Solid state Infrared detector is used for Oxygen. Thermo-conductivity detector is used for Nitrogen & Hydrogen.
- (ii) IR Cell: Standard configuration of measure scope is composed of low carbon, high carbon and low sulfur. For specially required scope for sulfur, high sulfur can be added.
- (iii) Detector: Solid-state pyroelectric detector.
- (iv) Motor: Synchronous motor made in Swiss, continuously working.
- (v) IR Emitter: Anti-oxide, stable IR emitter.
- (vi) Temperature control: Keep constant temperature in the whole infrared unit to make sure the temperature of detected gas to be stable and the results to be accurate.
- (vii) Protective gas: Controlled gas flow to purify and protect IR emitters and detectors, avoiding the influence of ambient to improve the stability and accuracy.
- (viii) Thermo-conductivity (TCD) detecting unit: Anti-oxide NTC thermistor
- (ix) Signal processing: Small current control technique is developed to make sure the thermistors can be used without carrier gas
- (x) Reference gas circuit: Low flow control technique is used

3. Gas flow control:

High sensitive and accurate electric flow control technique based on the low pressure difference is applied, and Anti-Overshoot System is applied.

4. Catalyst unit :

a) Catalyst heater: Convert CO to CO₂ and SO₂ to SO₃.

b) Filter: SO₃ is removed by a filter, to ensure the tail gas reach the requirement of atmospheric environment protection.

5. Dust filter :

Made of powdered metal technique, can be reused by washing in ultrasonic cleaner periodically. Cleaning filter and combustion chamber twice during one analysis by special design of the furnace, which reduce the difficulty of daily maintenance.

6. Weighing:

Sample mass can be transfer from balance into computer automatically, If necessary, the mass can also be manual input.

7. Analysis time :

A typical analysis using induction furnace requires 30-40 seconds.

8. Crucible

Ceramic crucible using in induction furnace is 25mm in diameter.

9. Furnace:

High frequency induction furnace, 18MHz, Max 2.7KVA, (Temperature: Max.3000°C)

10. Calibration:

1) Fast calibration 2) Normal calibration

11. Power:

220VAC 10%, 50/60Hz, current max. 50A.

►► Main Technical Parameters :

1. Range :

Oxygen	: Low Oxygen	: 0.0001% - 0.5%;	High Oxygen	: 0.5% - 20%
Nitrogen	: Low Nitrogen	: 0.0001% - 0.5%;	High Nitrogen	: 0.5% - 50%
Hydrogen	: Low Hydrogen	: 0.1ppm~50ppm;	High Hydrogen	: 20ppm~1000ppm
Carbon	: Low Carbon	: 0.0001% - 0.2%	High Carbon	: 0.2%- 6%
Sulfur	: Low Sulfur	: 0.0001% - 0.3%	High Sulfur	: 0.3% - 30%

2. Sensitivity :

Oxygen ,Nitrogen, Hydrogen, Carbon and Sulfur :0.01ppm

3. Repeatability :

Oxygen, Nitrogen and Carbon : 1ppm or 1%;

Hydrogen : 0.2ppm or 2%

Sulfur : 1.5%

4. Sample mass :

1g (Sample mass can be changed according to the content)

5. Analysis time:

about 3 min

6. Carrier gas :

High purity helium for O/N, high purity nitrogen for H

Oxygen: purity $\geq 99.5\%$, pressure 0.30 MPa, pressure of furnace end 0.05MPa, 3L/min

7. Pneumatic gas:

Nitrogen or compressed air

Pressure imported 0.30 MPa

8. Structure:

Modular Structure, including analyzer, computer, electronic balance*, printer*, water circulate chillers.

9. Chemical reagent:

Magnesium perchlorate, Ascarite

10. Electronic balance:

Weighing range: 0g-120g.

Precision of read: 0.0001g.

▶▶ Diagnostic Function :

- 1) Cooling water temperature feedback and display
- 2) Voltage and current of the furnace feedback and display
- 3) Catalyst heaters temperature feedback and display
- 4) Valves action feedback and display
- 5) IR baseline and TCD baseline adjustment and display
- 6) Furnace adjustment

▶▶ Software :

Software is developed under Window XP.

- Data display and storage:
- Analyzing results can be display.
- Data can be stored into the disk automatically after analyzing.
- Releasing plot is drawn dynamically.
- Sample mass can be transfer from balance into computer automatically.
- Analyzing results are calculated by the calibration curve either in high content channel or in low content channel according to sample content, the selection will be done by software automatically
- Channels selection:
- Analyzing results are calculated by the calibration curve either in high content channel or in low content channel according to sample content, the selection will be done by software automatically.

Data processing:

- ACCESS is used as database to manage and store the data.
- Inquiring, statistic, printing can be done.
- Data can be sorted by date or name.
- Releasing plots can be analyzed.
- Parameters configuration:
- Parameters of analyzing, flux etc can be setup according to the sample characteristic.
- Analyzing method with parameters and calibration curve can be established separately according to different samples and can be stored into the database.

►► **Software Interface :**

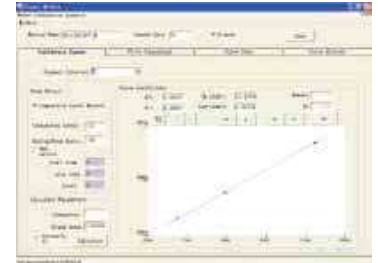
Working Curve :



Working curve for oxygen



Working curve for nitrogen



Working curve for hydrogen



Working curve for Carbon



Working curve for Sulfur

Main Analysis Window :



▶▶ **HPLC Servicing, Validation, Trainings and Preventive Maintenance :**

- HPLC Servicing : We have team of service engineers who can attend to any make of HPLC promptly @the most affordable cost.
- Trainings :We also take up preventive maintenance to reduce downtime of HPLC’s Trainings.
- AMC’s/CMC : We offer user training both in-House and at customer sites on PLC principles, operations, troubleshooting.
- Validations : We have protocols for carrying out periodic Validations as per GLP/ GMP/U SFDA norms.
- Instruments : We offer instruments/Renting Services Modules like pumps, detector etc. on Rent.



▶▶ **About Analytical Technologies**

Analytical Technologies is synonymous for offering technologies for doing analysis and is the Fastest Growing Global Brand having presence in at least 96 countries across the globe. Analytical Technologies Limited is an ISO :9001 Certified Company engaged in Designing, Manufacturing, Marketing & providing Services for the Analytical, Chromatography, Spectroscopy, Bio Technology, Bio Medical, Clinical Diagnostics, Material Science & General Laboratory Instrumentation. Analytical Technologies, India has across the Country operations with at least 4 Regional Offices, 6 Branch Offices & Service Centers. Distributors & Channel partners worldwide.

▶▶ **Our Products & Technologies**

						
UV/VIS Spectro 2060+ Double Beam	FTIR	Gas Chromatograph 3000	Gas Chromatograph 2979 Plus	Flash Chromatograph	Atomic Absorption Spectrophotometer	Liquid Partical Counter
						
Optical Emission Spectrophotometer	DSC/TGA	NOVA 2020 plus Automated Bio Chemistry Analyzer	HEMA 2020 Hematology Analyzer	Micro Plate Reader/Washer	URINOVA 2800 Urine Analyzer	Total Organic Carbon
						
Fully Automated CLIA	NOVA Basic Semi-Auto Chemistry Analyzer	PCR/Gradient PCR/ RTPCR	Blood Gas Analyzer	Random access Analyzer for immunoassay Proteins & clinical chemistry	Semen Analyzer	Water purification system

▶▶ Regulatory compliances



▶▶ Corporate Social Responsibility

Analytical Foundation is a Nonprofit Organization (NGO) found for the purpose of:



Analytical Foundation

1. Research & Innovation Scientist's awards / QC Professional Award: Quality life is possible by innovation only and the innovation is possible by research only, hence ANALYTICAL FOUNDATION is committed to identify such personalities for their contributions across various field of Science and Technology and awarding them yearly. To participate for award, send us your details of research / testing / publication at info@analyticalfoundation.org

2. Improving quality of life by offering YOGA Training courses, Work shops / Seminars etc.

3. ANALYTICAL FOUNDATION aims to DETOXYFY human minds, souls and body by means of Yoga, Meditation, Ayurveda, Health Care, Awards, Media, Events, Camps etc.

▶▶ Reach us @



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