



TORONTECH



CARBON, HYDROGEN AND NITROGEN ELEMENTS ANALYZER

Carbon, Hydrogen and Nitrogen Elements Analyzer TT-5373

TT-5373 Carbon, Hydrogen, and Nitrogen Elements Analyzer conforms to the ASTM D5291 and ASTM D5373 standards. It provides precise instrumental determination of carbon, hydrogen, and nitrogen content in petroleum products, lubricants, coal, and coke.

Test Method A of the analyzer determines carbon content ranging from 54.9% to 84.7%, hydrogen from 3.26% to 5.08%, and nitrogen from 0.57% to 1.76% in analysis samples of coal, as well as carbon in coke samples ranging from 86.6% to 97.9%. Test Method B measures carbon in coal samples ranging from 57.7% to 84.0% and in coke samples ranging from 86.3% to 95.4%.

The TT-5373 is suitable for various applications, including determining the carbon, hydrogen, and nitrogen content in coal, coke, fuels, and lubricants. It is widely used in power plants, coal mines, commodity inspection, environmental protection, geological prospecting, metallurgy, papermaking, the chemical industry, scientific research, and education.

APPLICATIONS

The Torontech TT-5373 is a high-precision analyzer for the elemental determination of Carbon, Hydrogen, and Nitrogen (CHN) in a wide range of organic materials, in compliance with ASTM D5291 and D5373. This analysis provides a fundamental characterization of the material's composition, which is essential for calculating calorific value, ensuring product quality, and meeting regulatory specifications.

This fundamental elemental analysis is a critical process control and quality tool in:

- **Energy & Power Generation:** For the quality control of coal, coke, and other solid fuels, where precise CHN data is essential for calculating heating value, optimizing combustion efficiency, and predicting emissions.

- **Petroleum & Petrochemicals:** To characterize crude oils, lubricants, and refined fuels, providing critical data on the hydrocarbon ratio that influences product performance, purity, and processing requirements.
- **Environmental Compliance & Inspection:** For verifying fuel specifications and providing the data needed for environmental emissions reporting, particularly nitrogen content which is a direct precursor to NO_x formation.
- **Metallurgy & Steel Production:** As a critical quality control tool for metallurgical coke, where the fixed carbon content is a primary factor in the efficiency and success of blast furnace operations.

FEATURES

The TT-5373 Carbon, Hydrogen, and Nitrogen Elements Analyzer is equipped with advanced features designed for efficiency and precision:

- **Sample Capacity and Operation:** The analyzer can handle up to 39 samples simultaneously, with an optional capacity of 78 samples. It operates automatically after sampling, allowing for sample addition, reduction, or replacement during the test without manual intervention.
- **Horizontal Structure:** The unit features a horizontal design, making it easy to place the tester on a test bed for convenient operation.
- **Temperature Control:** The analyzer uses PID temperature control, ensuring that the furnace chamber maintains an accuracy of $\pm 1^{\circ}\text{C}$. The constant temperature chamber and gas cylinder have an accuracy of $\pm 0.1^{\circ}\text{C}$.
- **Pressure Monitoring:** It includes an absolute pressure sensor to monitor the entire gas path, detecting any leaks in the gas path, furnace, infrared pool, thermal conductivity pool, and gas storage tank.
- **Detection Methods:** The analyzer employs infrared spectroscopy to measure carbon and hydrogen content and uses the thermal conductivity method for determining nitrogen content.
- **Speed and Automation:** It offers fast testing with high automation. The test for carbon, hydrogen, and nitrogen takes approximately 4 minutes.
- **Automatic Cooling:** After the test, the unit features automatic cooling with no further operation required. It will power off and cool down automatically.
- **Test Report Editing:** Test reports can be edited to meet specific requirements.

- LMIS Connectivity: The analyzer is capable of connecting to the Laboratory Management Information System (LMIS).

TECHNICAL SPECIFICATIONS

The TT-5373 Carbon, Hydrogen, and Nitrogen Elements Analyzer has the following technical specifications:

1. Measuring Range:

- Carbon (C): 0.005% to 100%
- Hydrogen (H): 0.01% to 60%
- Nitrogen (N): 0.008% to 60%

2. Repeatability:

- Carbon (Cad): $\leq 0.5\%$
- Hydrogen (Had): $\leq 0.15\%$
- Nitrogen (Nad): $\leq 0.08\%$

3. Temperature Control Range: RT +10°C to 1050°C

4. Temperature Accuracy: $\pm 1^\circ\text{C}$

5. Sample Weight: Recommended 80 to 100 mg

6. Sample Presentation: Automatic

7. Sample Quantity: 39 samples per batch, with the capability to add or replace samples during the test. An optional sample plate is available that can hold up to 78 samples.

8. Single Analysis Time: Approximately 4 minutes

9. Carrier Gas: Helium, Purity $\geq 99.995\%$, Pressure: 0.25 ± 0.1 MPa

10. Oxidant Gas:

- For Carbon and Hydrogen testing: Oxygen, Purity $\geq 99.5\%$
- For Nitrogen testing: Oxygen, Purity $\geq 99.995\%$
- Pressure: 0.25 ± 0.1 MPa

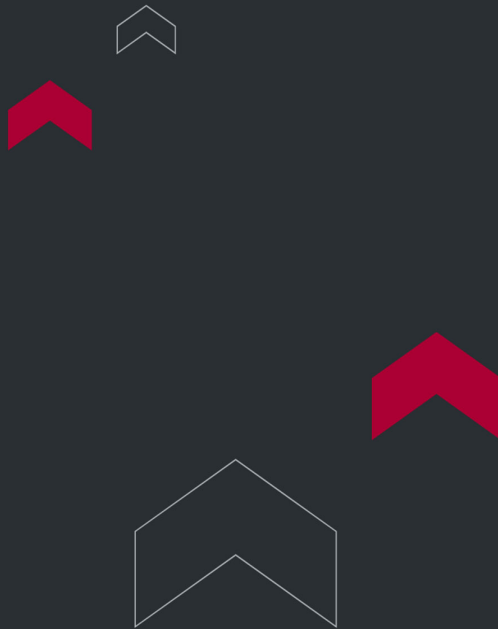
11. Power Gas: Inert gas, no oil or water, Pressure: 0.29 ± 0.1 MPa

12. Power Consumption: ≤ 4.5 kW

13. Placement Mode: Horizontal type

14. Dimensions: $690 \times 740 \times 720$ mm

15. Total Weight: 105 kg



Torontech Inc.

251 Consumers Road, Suite 1200
Toronto, Ontario, M2J 4R3, Canada 

Phone: +1 416 368 2721 | Fax: +1 416 981 7652
Email: info@torontech.com

Torontech, LLC

601 Brickell Key Drive, Suite 700
Miami, FL 33131, USA 

Toll-Free: 1-866-383-7919
Email: sales@torontech.com

Torontech ME FZE

Meydan Grandstand, 6th Floor,
Meydan Road, Nad Al Sheba,
Dubai-261440, UAE 

Phone: +971 488 19252
Email: me@torontech.com

