

Carbon Hydrogen Elemental Analyzer For Coal And Organic Materials Determination

Item Number: KT-TE33



Introduction

Engineered for accurate carbon and hydrogen elemental analysis in coal and organic materials, this dual tube combustion system features three independent heating zones operating up to 1100°C, delivering reliable gravimetric precision, exceptional thermal uniformity, and compliant testing for industrial laboratories.

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Application	Description	Key Benefit
Coal & Solid Fuel Characterization	Quantitative determination of carbon and hydrogen in raw coal, washed coal, anthracite, lignite, and metallurgical coke to determine calorific value and fuel grade.	Delivers standard-compliant elemental verification adhering directly to GB/T 476 testing protocols for commercial fuel contracts.
Petrochemical & Heavy Residue Analysis	Combustion analysis of petroleum coke, pitch, asphalt binders, and heavy fuel residues with high organic carbon fractions.	Ensures complete conversion of complex aromatic structures through sustained 850°C and 800°C dual catalytic oxidation stages.
Synthetic Polymer & Rubber Quality Control	Determination of stoichiometric carbon-to-hydrogen ratios in raw synthetic elastomers, thermoplastic polymers, and organic additives.	Parallel dual-tube architecture provides rapid batch validation and immediate verification of chemical formulations.
Environmental Biomass & Refuse-Derived Fuel	Evaluating renewable biomass pellets, agricultural waste fuels, and refuse-derived fuel (RDF) for combustion emission modeling and carbon credit verification.	Highly sensitive gravimetric absorption train reliably quantifies trace and elevated hydrogen contents across heterogeneous feedstocks.
Academic & Organic Chemical Synthesis Research	Verifying empirical molecular formulas and chemical purity of newly synthesized organic reagents, pharmaceuticals, and carbon precursors.	Wide dynamic measurement range (1-99% C, 0.5-50% H) accommodates standard chemical research without calibration drift.
Metallurgical Sintering & Carbon Additive Testing	Assessing graphite powders, carburizers, and carbonaceous fluxes utilized in electric arc furnace steelmaking and cast-iron foundries.	Robust stainless steel combustion tubes and reliable thermal control withstand continuous, high-throughput industrial assay cycles.

Parameter	Value / Specification
Product Identification	KT-TE33
Carbon Measurement Range	1.00% to 99.00%
Hydrogen Measurement Range	0.50% to 50.00%
Reaction Tube Dimensions	Outer Diameter: Ø25 mm, Wall Thickness: 2.5 mm, Length: 1100 mm
Reaction Tube Material	Industrial-Grade High-Temperature Stainless Steel
Combustion Tube Capacity	Dual Parallel Hearths (Simultaneous 2-Sample Determination)
Furnace Heating Elements	Premium Nickel-Chromium (Ni-Cr) Resistance Wire
Temperature Measurement Sensor	Nickel-Chromium - Nickel-Silicon (NiCr-NiSi / Type K) Thermocouples
Temperature Control Range	Ambient to 1100°C

Parameter	Value / Specification
Temperature Display & Control Precision	Grade 0.5 Digital Controller Accuracy
Operating Voltage	AC 220V ± 10%, 50/60 Hz
Standard Compliance	GB/T 476-2001 (Elemental Analysis of Coal)

Furnace Zone	Section Length	Operating Temperature	Constant Temperature Zone Length
Section 1 (Combustion / Vaporization Zone)	240 mm	850 ± 10°C	60 mm
Section 2 (Oxidation / Catalytic Zone)	320 mm	800 ± 10°C	80 mm
Section 3 (Post-Catalytic / Sulfur Scrubbing Zone)	150 mm	600 ± 10°C	Continuous Uniform Gradient

Subsystem	Component	Engineering Specification
Gas Purification System	Gas Drying Tower	500 mL Capacity Desiccant Reservoir
Gas Purification System	Gas Flow Meter	Integrated Precision Rotameter (0 to 150 mL/min Range)
Combustion Mechanical Frame	Furnace Mounting & Mobility	Split-hinge radial opening up to 45°; guided horizontal track sliding mechanism
Absorption Gravimetric Train	Moisture Absorption Assembly	Calibrated U-tube filled with high-capacity desiccant agent
Absorption Gravimetric Train	Nitrogen Oxide Scrubbing	Dedicated chemical removal U-tube for nitrogen interference elimination
Absorption Gravimetric Train	Carbon Dioxide Absorption	Dual-stage sequential absorption U-tubes for complete CO2 capture
Absorption Gravimetric Train	Gas Indicating Bubble Counter	~10 mL Capacity Borosilicate Unit loaded with concentrated sulfuric acid