

# Coal Clinkering Property Tester And Slagging Characteristic Analyzer For Gasification And Combustion Quality Assessment

Item Number: KT-TE63



## Introduction

Designed to evaluate coal ash behavior during high heat combustion and air blast reactions, this reliable analyzer delivers accurate solid fuel quality data helping industrial power plants and testing labs prevent boiler slag and optimize daily furnace output.

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| Application                                          | Description                                                                                                                                                 | Key Benefit                                                                                                                                                           |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pulverized Coal Power Generation                     | Evaluates the clinkering tendencies of incoming thermal coal shipments and blended fuel stocks prior to boiler injection.                                   | Prevents unplanned outages caused by superheater slagging, reduces sootblower steam consumption, and protects water-wall tube banks from severe thermal stress.       |
| Fixed-Bed and Entrained-Flow Gasification            | Simulates solid fuel ash melting dynamics under controlled air-blown gasification conditions for coal-to-chemical synthesis gas production.                 | Minimizes clinker bridging above gasifier ash grates, maintains uniform bed permeability, and stabilizes oxygen-to-coal consumption ratios.                           |
| Metallurgical Coke Manufacturing                     | Characterizes clinker formation and ash reactivity in metallurgical coke samples used in ironmaking blast furnaces and foundry cupolas.                     | Preserves cohesive zone permeability, avoids coke lump agglomeration in the lower furnace stack, and extends refractory campaign life.                                |
| Commercial Fuel Inspection and Quality Certification | Performs independent conformity assessments and standardized quality grading for commercial coal trading terminals and assay laboratories.                  | Delivers certified, legally defensible test results adhering strictly to national standards to resolve contractual quality disputes and verify vendor specifications. |
| Industrial Boiler Fuel Blending Optimization         | Guides multi-source coal blending at cement kilns, paper mills, and industrial steam plants to establish safe blending ratios for low-cost, high-ash coals. | Enables procurement teams to capitalize on discounted fuel sources while guaranteeing that combined fuel slagging ratings remain within safe boiler operating limits. |
| Coal-to-Chemicals Synthesis Gas Production           | Assesses feedstock compatibility for catalytic coal gasifiers where molten ash deposition deactivates downstream synthesis catalysts.                       | Protects gas cooling trains and gas cleanup units from molten ash carryover, ensuring steady syngas ratios and lower maintenance downtime.                            |

| Parameter                                    | Specification                                 | Notes / Auxiliary Compatibility Requirements                           |
|----------------------------------------------|-----------------------------------------------|------------------------------------------------------------------------|
| Base System Identifier                       | KT-TE63                                       | Complete benchtop coal clinkering determination system                 |
| Applicable Test Standard                     | GB1572-2001                                   | Standard method for determination of clinkering property of coal       |
| Target Solid Fuels                           | Lignite, Bituminous Coal, Anthracite, Coke    | Full-spectrum solid carbonaceous fossil fuels and coking products      |
| Test Sample Grain Size Fraction              | 3.0 mm to 6.0 mm                              | Standard granular sizing prepared via precision screening              |
| Ignition Medium Specification                | Prepared wood charcoal (3.0 mm to 6.0 mm)     | Uniform sizing identical to test fuel to ensure stable planar ignition |
| Required Air Blower Volumetric Flow          | ≥ 12 m³/h                                     | Sustained air supply under load during active gasification phase       |
| Required Air Blower Static Blast Pressure    | ≥ 49 hPa (500 mmH2O)                          | Constant static pressure head to maintain bed aeration                 |
| Auxiliary Muffle Furnace Internal Dimensions | ≥ 140 mm (H) × 200 mm (W) × 320 mm (D)        | Minimum heating chamber volume required for pre-heating and ash ashing |
| Muffle Furnace Flue Gas Ventilation          | Rear wall or top wall ventilation port        | Essential for unimpeded removal of combustion off-gases                |
| Muffle Furnace Thermal Controller            | Integrated PID digital temperature controller | Ensures stable setpoint maintenance during analytical thermal cycles   |

| Parameter                                | Specification                                      | Notes / Auxiliary Compatibility Requirements                               |
|------------------------------------------|----------------------------------------------------|----------------------------------------------------------------------------|
| Auxiliary Industrial Balance Capacity    | 1.0 kg (1000 g)                                    | Standard laboratory benchtop configuration                                 |
| Auxiliary Industrial Balance Sensitivity | 0.01 g readability                                 | High-resolution mass quantification for accurate clinker yield calculation |
| Analytical Separation Sieve Aperture     | 6.0 mm standard round-hole or wire mesh            | Standard threshold defining clinkered ash from unconsolidated fine residue |
| Primary Quantitative Result              | Clinkering Rate (% Clinker > 6.0 mm)               | Expressed as mass percentage of clinker relative to total residual ash     |
| Reaction Crucible Metallurgy             | High-temperature oxidation-resistant thermal alloy | Corrosion-resistant against aggressive silicate and iron ash melts         |