Bituminous Coal Crucible Swelling Number Tester For Free Swelling Index And Caking Property Analysis

Item Number: KT-TE52

Introduction

Evaluate coal coking properties with precision using this bituminous coal crucible swelling number tester engineered with Fe-Cr-Al heating, aluminum silicate thermal insulation, and strict heating rate compliance to deliver accurate crucible swelling index results across demanding metallurgical laboratories.

Learn More

Application	Description	Key Benefit
Coking Coal Classification	Quantitative classification of metallurgical bituminous coals according to thermoplastic swelling properties and international coal grade standards.	Ensures precise categorization of incoming coal shipments and verifies commercial specification compliance before processing.
Blast Furnace Coke Optimization	Determination of coal caking properties to evaluate raw coal suitability for blending blends used in slot-oven carbonization.	Prevents excessive carbonization wall pressures while maximizing the structural integrity and cold/hot strength of the resulting coke.
Thermal Power Plant Fuel Assessment	Evaluation of coal swelling tendencies and agglomeration behavior prior to combustion in pulverized coal or fluidized-bed boilers.	Minimizes boiler wall slagging, avoids burner clogging, and optimizes burner firing settings by identifying highly swelling coal stocks.
Commercial Coal Inspection & Trade	Verification of Free Swelling Index (FSI) and Crucible Swelling Number (CSN) for import/export commercial transaction settlement.	Provides transparent, standard-compliant validation of fuel specifications, eliminating disputes between coal traders and industrial buyers.
Metallurgical Research & Development	Academic and institutional investigation into coal pyrolysis, devolatilization kinetics, and the thermoplastic phase of synthetic carbon matrices.	Delivers repeatable thermal conditions required to isolate chemical mechanisms governing fluidity and swelling characteristics in carbonaceous materials.
Carbon Electrode Manufacturing	Testing of pitch, anthracite blends, and binder-caking behavior for formulating anodes and specialty graphite electrodes.	Prevents structural cracking during industrial baking by matching swelling index compatibility between filler cokes and binder matrices.

Parameter	Specification Details
Product Item Number	KT-TE52
Core Measurement Standard	Compliant with GB/T 5448 (Coal Crucible Swelling Number Determination)
Swelling Index Scale	Crucible Swelling Number (CSN) / Free Swelling Index (FSI) Range 0 to 9, >9
Furnace Architecture	Vertical single-hole cylindrical electric furnace, bottom-heating configuration
Heating Element Material	High-grade Iron-Chromium-Aluminum (Fe-Cr-Al) resistance alloy wire
Furnace Lining & Body	Sintered refractory clay cylinder surrounded by multi-layer aluminum silicate insulation
Maximum Operating Temperature	1000°C
Heating Rate Control	Standardized time-temperature curve controlled via SCR voltage regulator
Temperature Control System	Millivoltmeter silicon-controlled rectifier (SCR) step-less voltage adjustment system
Observation System	Dedicated optical coke profile observation viewer with standardized CSN silhouettes
Operating Voltage	220V ± 22V AC, 50 Hz
Rated Power Consumption	800 W – 1000 W

Parameter	Specification Details
System Components	Crucible electric furnace, electronic temperature/voltage controller, coke profile viewer
Crucible Compatibility	Standard fused-silica (quartz) crucible with specialized lid per test standard