

Coal Gangue Slaking Inversion Tumbling Test Apparatus

Item Number: KT-XS



Introduction

Engineered for precise compliance with standard slaking test protocols, this automated gangue slaking tumbling tester delivers consistent forty rpm rotation, integrated PT100 temperature monitoring, and robust digital controls to accurately quantify mineral breakdown in demanding coal, metallurgical, and geological laboratories.

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Application	Description	Key Benefit
Coal Preparation & Washing Optimization	Evaluating the disintegration rate of surrounding host rock and carbonaceous gangue during dense-medium and gravity separation.	Prevents unexpected increases in circulating slime volume, protects process water clarity, and optimizes flocculant dosing requirements.
Tailings Dewatering & Filtration Studies	Quantifying the generation of ultrafine particles below 10 µm from argillaceous shale and mudstone during hydraulic transport.	Delivers reliable sizing metrics to properly dimension thickeners, optimize belt filter presses, and prevent filter cloth blinding.
Underground Mine Backfill Assessment	Testing the slaking resistance, soft-rock weathering, and durability of crushed gangue aggregates destined for cemented paste backfill.	Prevents aggregate breakdown and loss of structural compressive strength in underground backfill matrices exposed to moisture.
Environmental Tailings Dam Stability	Simulating hydraulic weathering and continuous slurry agitation to forecast long-term sedimentation and mudding profiles of stored mineral waste.	Enhances environmental hazard models by predicting runoff viscosity, settling rates, and structural compaction behaviors under wet conditions.
Metallurgical Coking Coal Refining	Assessing the clay release and slaking properties of raw metallurgical coal feedstocks prior to thermal beneficiation and froth flotation.	Minimizes clay coating on fine coal particles, thereby improving recovery yield and maintaining optimal concentrate ash values.
Geotechnical & Mineral Research	Conducting standard-compliant empirical degradation analyses across university, government, and commercial mining research laboratories.	Produces fully reproducible, peer-verifiable data conforming strictly to recognized industrial mineral testing standards.

Parameter Category	Specification	Operational Detail / Standard Value
Product Item Number	KT-XS	Standard Laboratory Model Identifier
Main Shaft Rotation Speed	40 r/min	Regulated constant rotational frequency
Standard Compliance	MT/T 109-1996	Methods for determining the slaking properties of coal and gangue
Primary Sample Grain Size	2.8 mm to 5.6 mm	Prepared by standard precision sieving procedures
Suspension Sieve Cut Size	500 µm	For separating coarse residual rock from secondary slimes
Fine Mud Measurement Target	< 10 µm	Determined by gravity sedimentation analysis
Temperature Measurement Range	0 to 90.9 °C	Broad analytical monitoring coverage
Temperature Measuring Accuracy	±0.1 °C	High-sensitivity industrial PT100 sensor
Temperature Control Accuracy	±0.2 °C	Closed-loop precision thermal stabilization
Maximum Control Power	1 kW	Dedicated output for auxiliary heating regulation
Main Motor Rated Power	10 W	Low-vibration, high-torque kinetic drive
Total Instrument Power Consumption	< 10 W (Excl. Aux. Heating)	Highly energy-efficient core drive mechanism
Display & Counter Type	LED Digital Display	Intuitive readout with manual and auto-reset capability

Parameter Category	Specification	Operational Detail / Standard Value
Operating Power Supply	AC 220 V ± 10%, 50 Hz ± 1 Hz	Standard single-phase laboratory electrical source
Equipment Dimensions (L × W × H)	400 mm × 400 mm × 860 mm	Compact, space-saving vertical column footprint
Equipment Net Weight	Approximately 20 kg	Stable benchtop or floor-standing mass
Operating Ambient Temperature	0 to 40 °C (Nominal: 5 to 35 °C)	Laboratory room temperature operational range
Operating Relative Humidity	≤ 80% RH (Max limit: ≤ 85% RH)	Non-condensing testing atmosphere
Environmental Compatibility	Non-corrosive atmosphere	Free from corrosive vapors, high EMI, and strong magnetic fields