

Vertical Coal Based Granular Activated Carbon Mechanical Strength Tester Tumbler Index Testing Equipment

Item Number: KT-JTP



Introduction

Assess the mechanical durability of granular activated carbon with this vertical strength tester. Built for standardized tumbler index testing, the system provides a precision drum, lifter plates, and automated timing to deliver consistent laboratory data.

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Application	Description	Key Benefit
Potable Water Filtration QA	Testing granular carbon attrition before bed loading to ensure long-term physical stability under rapid gravity and pressurized water flows.	Prevents filter media loss, down-stream piping fouling, and excessive bed compaction in municipal and industrial filters.
Industrial Off-Gas Purification	Evaluating the impact and abrasion resistance of virgin and regenerated carbon granules used in volatile organic compound adsorption towers.	Minimizes channeling, high pressure drops, and dust carryover within high-velocity industrial exhaust streams.
Chemical Catalyst Support Verification	Assessing the crushing and tumbling resilience of activated carbon pellets used as substrate carriers for noble metal catalyst deposition.	Guarantees mechanical survivability under rapid turbulent fluidization and heavy liquid-gas contact loops.
Solvent Recovery Facilities	Measuring the durability of carbon matrices subjected to repetitive thermal desorptions, steam stripping, and cooling cycles.	Extends operational lifetime of carbon beds and mitigates solvent retention issues caused by pulverized fines.
Activated Carbon Manufacturing QC	Benchmarking production lots directly at the kiln or activation furnace exit to guide parameter adjustments.	Ensures shipped materials consistently meet contractual tumbler index guarantees and national testing standards.

Academic and Materials Research	Conducting comparative degradation studies on novel precursors, pitch formulations, and modified surface treatments.	Delivers highly repeatable baseline attrition metrics to isolate the impact of specific activation parameters.
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Parameter	Specification (KT-JTP)
Applicable Standard	GB/T 7702.3-2008
Drum Internal Diameter	80 ± 0.2 mm
Drum Length	126 ± 0.5 mm
Drum Rotational Speed	50 ± 2 r/min
Tumbling Ball Specification	Φ14.3 mm Hardened Steel Balls
Motor Power Rating	0.55 kW
Operating Voltage	380 V (Three-Phase, 50 Hz)
Preset Operating Cycle	5 min (Automated Digital Shutoff)
Tumbler Index Range	0 – 70
Frame Orientation	Vertical Laboratory Bench Configuration

Ancillary Apparatus	Recommended Specification	Purpose in Testing Workflow
Standard Sieve	Φ200 mm Frame, 1.0 mm (or 0.5 mm) Aperture	Pre-test sample separation and post-tumbling retained fraction measurement

Ancillary Apparatus	Recommended Specification	Purpose in Testing Workflow
Mechanical Sieve Shaker	280-320 r/min Rotation, 140-160 taps/min Tapping Rate	Automated, standardized screening to isolate intact particles from abraded fines
Analytical Balance	0.1 g Readability	High-accuracy gravimetric determination of initial and retained mass fractions
Constant Temperature Drying Oven	HW202-1 Forced Convection Model	Complete moisture removal from carbon test samples prior to physical tumbling