

Coal Cup Plastometer Crucible For Bituminous Coal Plastic Layer Testing

Item Number: KT-MB1



Introduction

Engineered for standardized coal plastometric evaluation this precision coal cup delivers exceptional thermal stability exact dimensional tolerances and uniform heat transfer during bituminous coal plastic layer index determination ensuring reliable coking property analysis in modern metallurgical and quality control laboratories

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Application	Description	Key Benefit
Coking Coal Blend Optimization	Evaluates the plastic layer thickness (Y-value) and shrinkage (X-value) of blended coal feedstocks in commercial coke oven plants.	Enables accurate blending ratios, directly optimizing coke strength, reducing production costs, and preventing excessive oven wall expansion pressure.
Blast Furnace Feedstock Inspection	Analyzes raw metallurgical coals and PCI coals upon arrival at steelmaking facilities to verify classification against purchase specifications.	Prevents off-spec coal batches from entering the coking battery, eliminating unplanned downtime and irregular carbonization yields.
Coal Mining and Geological Classification	Conducts standardized rank categorization and caking property assessment on freshly drilled core samples and processed coal seams.	Provides definitive geological classification data for coal resource valuation, seam mapping, and commercial viability studies.
Coal-Chemical Research and Development	Measures kinetic softening behavior, volatile matter evolution, and thermoplastic transformation dynamics under controlled lab environments.	Delivers high-repeatability kinetic datasets essential for developing advanced coal conversion technologies and carbon additives.
Third-Party Inspection and Quality Verification	Delivers standard-compliant laboratory analysis for international commercial coal shipments, dispute arbitration, and regulatory verification.	Guarantees compliance with standard plastometric test methods, eliminating cross-laboratory measurement deviations and testing disputes.

Synthetic Coke and Carbon Material Synthesis	Evaluates the binder performance and caking indices of heavy pitch, coal tar, and synthetic carbon precursors under pyrolytic heating.	Ensures consistent matrix consolidation and pore structure control in specialized graphite and carbon electrode manufacturing.
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Specification Parameter	Standard Configuration (KT-MB1)	Heavy-Duty Variant (KT-MB1-HD)
Product Item Number	KT-MB1	KT-MB1-HD
Material Grade	High-Grade Heat-Resistant Cr-Ni Stainless Steel	Advanced Superalloy / Reinforced Nickel-Chromium Alloy
Maximum Operating Temperature	850°C continuous (up to 950°C peak)	1050°C continuous (up to 1150°C peak)
Nominal Inner Diameter	59.0 mm (±0.1 mm tolerance)	59.0 mm (±0.05 mm precision tolerance)
Cup Internal Height	110.0 mm (±0.2 mm tolerance)	110.0 mm (±0.1 mm tolerance)
Outer Diameter	70.0 mm (±0.3 mm tolerance)	72.0 mm (±0.2 mm tolerance)
Wall Thickness	5.5 mm uniform profile	6.5 mm reinforced thermal-barrier profile
Standard Compliance	GB/T 479, ISO Coal Plastometer Standards	GB/T 479, ISO, ASTM Coking Property Methods
Thermocouple Guide Hole Diameter	2.0 mm to 2.5 mm precision bored	2.0 mm to 2.5 mm precision bored

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Bottom Closure Type	Precision-ground detachable alloy base plate	Precision-lapped high-temperature interlocking base plate
Applied Compressive Load Rating	Standard 9.8 N/cm² (0.10 MPa) static test load	Extended rating up to 25.0 N/cm² for heavy dynamic testing
Thermal Expansion Coefficient	≤ 16.5 × 10 ⁻⁶ / °C (20°C to 800°C)	≤ 14.2 × 10 ⁻⁶ / °C (20°C to 1000°C)
Surface Hardness	≥ 220 HBW	≥ 280 HBW (solution-treated & surface-conditioned)
Surface Finish (Inner Wall)	Ra ≤ 0.8 μm micro-finish	Ra ≤ 0.4 μm mirror-lapped finish
Tare Weight	Approximately 2.1 kg (full assembly)	Approximately 2.45 kg (reinforced assembly)