

X Ray Fluorescence Sulfur Calcium Iron Analyzer Cement Raw Meal Elemental Analysis Equipment

Item Number: KT-TE48



Introduction

Discover advanced XRF sulfur calcium iron analyzer systems engineered for cement, shale, and mineral operations. Rapidly quantify SO₃, CaO, and Fe₂O₃ in thirty seconds to optimize raw material blending, forecast cement strength, and streamline quality control across demanding production environments.

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Application	Description	Key Benefit
Cement Raw Meal Proportioning	Used on continuous plant sampling loops to analyze calcium oxide and ferric oxide concentrations in raw meal prior to preheater and rotary kiln firing. Rapid testing allows plant operators to adjust raw limestone, clay, and iron sand feed rates instantly whenever raw feed variance is detected.	Stabilizes burnability in the rotary kiln, prevents ring formation, reduces fuel consumption per ton of clinker, and ensures optimal saturation factor consistency.
Finished Cement Clinker & Admixture Control	Measures calcium oxide percentages in finished cement directly at the milling circuit outlet. Because CaO concentration correlates strongly with cementitious mineral formation, the system enables operators to project 28-day compressive strength and accurately calculate the precise inclusion ratio of supplementary cementitious materials.	Maximizes mineral admixture incorporation (such as blast furnace slag or fly ash) while eliminating clinker over-consumption, ensuring target cement grades are achieved at the lowest production cost.
Gypsum Addition in Finish Grinding	Tracks sulfur trioxide percentage in real time during final ball mill grinding to govern the exact proportion of natural or desulfurization gypsum interground with cement clinker.	Ensures finished cement stays strictly within regulatory SO ₃ limits, preventing destructive delayed ettringite formation while optimizing initial setting times and early strength development.
Sintered Shale and Coal Gangue Brick Production	Analyzes calcium and iron content in raw shale, crushed coal gangue, and clay mixtures prior to extrusion, drying, and kiln sintering. It detects local lime nodules and iron sulfide pockets before raw materials enter the pug mill.	Prevents post-firing lime popping, structural cracking, and surface discoloration, drastically lowering scrap rates and enhancing the load-bearing rating of finished masonry bricks.
Steel Plant Pyrite & Flux Feedstock Verification	Analyzes incoming sulfur-bearing pyrite, limestone fluxes, and iron ore feedstocks at bulk receiving docks and mixing yards to determine accurate sulfur, calcium, and iron contents before furnace charging.	Protects blast furnace and converter slag basicity balances, prevents unexpected sulfur contamination in molten iron, and optimizes metallurgical flux consumption.
Flue Gas Desulfurization (FGD) Gypsum Testing	Analyzes synthetic gypsum produced by wet limestone flue gas desulfurization systems in coal-fired power plants, verifying sulfur trioxide and residual calcium carbonate levels.	Confirms byproduct purity for commercial sale to gypsum wallboard manufacturers, validates limestone reagent utilization efficiency, and prevents unreacted carbonate waste.
Quicklime & Hydrated Lime Manufacturing	Monitors limestone calcination efficiency in shaft and rotary kilns by evaluating residual calcium oxide and carbonate ratios across finished quicklime and hydrated lime batches.	Assures high active lime availability for downstream industrial users, minimizes fuel consumption during over-burning, and prevents under-calcined stone discharge.

Specification Category	Parameter	Technical Detail
Model Identification	Product Item Number	KT-TE48
Analytical Principle	Measurement Technology	Energy-Dispersive X-Ray Fluorescence (ED-XRF) Physical Spectrometry
Target Analytes	Quantified Oxides / Elements	Sulfur Trioxide (SO ₃), Calcium Oxide (CaO), Ferric Oxide (Fe ₂ O ₃)
Analytical Range	Total Quantitative Span	0.01% to 99.9% (Configurable via calibrated working curves)

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Measurement Width	Specific Oxide Dynamic Span	CaO: min to max $\leq 15\%$ (e.g., standard cement span 40% to 55% CaO)
Analytical Precision	Standard Deviation (SO ₃)	SSO ₃ $\leq 0.04\%$
	Standard Deviation (CaO)	SCaO $\leq 0.05\%$
	Standard Deviation (Fe ₂ O ₃)	SFe ₂ O ₃ $\leq 0.04\%$
Analysis Cycle Time	Programmable Measurement Duration	n × 30 seconds (User-configurable multiplier n = 1, 2, 3, 4, 5)
Standard Compliance	Industry Benchmark	GB/T 19140 (General Rules for X-ray Fluorescence Analysis of Cement)
Sample Handling	Sample Physical Integrity	Non-destructive; samples remain intact and reusable without chemical alteration
Environmental Safety	Chemical & Radiation Safety	100% reagent-free; zero waste gas, liquid, or solid discharge; non-radioactive source design
Data Architecture	Memory Storage Capacity	High-capacity onboard non-volatile memory for assay history and self-diagnostic logs
User Interface	Screen & Controls	Large-screen LCD with integrated menu-prompted operation
Electrical Parameters	Operating Voltage	AC 200V to 240V, 50/60 Hz
	Power Consumption	< 30 W
Environmental Limits	Operating Temperature Range	0 °C to 40 °C
	Relative Humidity	< 85% RH (non-condensing)
Physical Dimensions	External Dimensions (W × D × H)	468 mm × 368 mm × 136 mm
	Instrument Net Weight	13.8 kg