



CERAMICS ANALYSES BY WD-XRF

XRF analysis plays a pivotal role in ceramic material development by enabling **precise, non-destructive elemental analysis** at every stage of the production cycle—from raw materials to finished products. Here's how it makes a difference:

1. Raw Material Verification

XRF ensures that incoming materials like kaolin, alumina, or zircon meet required purity and composition specs. This helps prevent downstream defects and ensures batch-to-batch consistency.



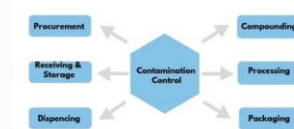
2. Process Optimization

By monitoring elemental composition in real time, manufacturers can fine-tune firing temperatures, additives, and blending ratios. This leads to improved sintering behavior, mechanical strength, and thermal stability.



3. Quality Control & Contamination Detection

XRF can detect trace elements and contaminants that might compromise product performance. This is especially critical in high-performance ceramics used in electronics, aerospace, or biomedical applications.



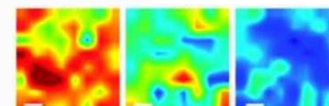
4. Research & Development

In R&D, XRF supports the formulation of new ceramic compositions by providing fast feedback on experimental batches. It helps researchers understand how changes in chemistry affect properties like hardness, porosity, and dielectric behavior.

Compound	Kaolin (%)
SiO ₂	69.14
Al ₂ O ₃	17.22
CaO	1.23
Fe ₂ O ₃	0.46
MgO	0.28
SO ₃	1.03
Na ₂ O	0.04
K ₂ O	0.65

5. Surface & Coating Analysis

Elemental mapping of surfaces is useful for analyzing glazes, coatings, or diffusion layers in advanced ceramics.



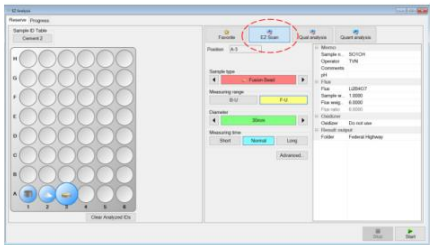
CALIBRATION CURVES: TURN-KEY OR CUSTOM

A flexible suite of XRF method options is available, tailored for ceramic analysis, making it easy for both routine users and advanced analysts to obtain accurate results.

 Pre-Loaded Method Options

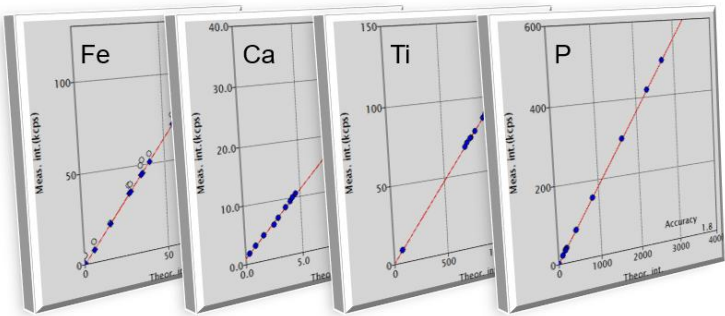
FB-Oxide PAK: A pre-calibrated method package optimized for oxide materials, commonly used in ceramics. It allows for quick, reliable quantification of major and minor oxides without the need for custom calibration.

SQX Semi-quant EZ Analysis: A powerful standardless method based on Fundamental Parameters (FP). It estimates elemental concentrations even in unknown or complex matrices, ideal for screening or when reference standards are unavailable.



 Custom Method Development

Standard Addition Methods: For more specialized applications, users can create custom calibrations using known standards and spiking techniques. This is especially useful when analyzing trace elements or when matrix effects are significant.



INSTRUMENTATION



PRIMUS IV



PRIMUS IVi



SUPERMINI200

ELEMENTAL ANALYSIS TESTING SERVICES

VPrep Corp offers fast elemental analysis on a variety of materials by non-destructive direct wavelength-dispersive X-ray fluorescence (WD-XRF) for a wide elemental range. The Rigaku Supermini200 system is our choice for XRF analysis, offering precise elemental identification and quantification for materials such as cement, metal alloys, geological, plastics, pharmaceuticals, oils, and many more. We offer methods for full scans, semi-quantitative, and quantitative to cover all material types.



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