

Global Cement and Raw Materials Fusion/XRF Analytical Solution: Part 2

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Last year we presented a paper which described a robust universal sample preparation for all materials related to the cement industry, which is also a simple fusion solution for the 21st century reality of this industry. This method using a Claisse M4 fluxer was developed to prepare all cements, all process materials, and a very large range of raw materials. Combined with a Bruker S4 Explorer XRF Spectrometer, and using two sets of cement reference material (NIST and JCA) , this method was found to comply with the requirements for qualification of ASTM C 114 and validation of ISO/DIS 29581-2. These chemical analysis standard methods for cement are recognized in the cement industry worldwide.

This year, we present the results of a single calibration application for the raw materials. Using the universal sample preparation fusion method developed last year, we added a wide range of additional reference material types including limestone, dolomite, gypsum, clay, bauxite, geological, iron ore, aluminate cement, fire brick, fly ash, silica fume, industrial wastes, and by-product additives to the cement reference material series for calibration, This selection of materials allows coverage for most of the elements in the cement industry process. The complete solution using only one sample preparation method for all materials decreases the chance of manipulation errors.

Additionally, an alternative fusion method was developed for situations where a quick answer is needed. This solution produces precise and accurate results in the least amount of time for cements and clinkers only, and also complies with the Standard Methods. The methodology used, along with the parameters, and results will be discussed for all.