

Press Release

Rigaku NEX QC EDXRF: Major Oxides in Finished Cement

Austin, TX – February 7, 2012. Applied Rigaku Technologies, Inc. today announced a new empirical method for the analysis of finished cement. Application Note #1157 demonstrates the efficacy of the Rigaku NEX QC energy dispersive X-ray fluorescence spectrometer (EDXRF) for quality control during the cement production process.

Portland cement is the most common type of cement in general use worldwide and is a basic ingredient of concrete, mortar, stucco and most non-specialty grout. X-ray fluorescence (XRF) spectroscopy is an established technique used in cement plants around the world for quality control (QA/QC) throughout the manufacturing process. During the entire production and processing cycle, oxide composition of the cement material must be reliably monitored to ensure optimal process control, monitor physical characteristics of the cement and enable profitability.

Energy dispersive X-ray fluorescence (EDXRF) spectrometry is a routinely employed screening and quality control tool employed to ensure proper composition of incoming feedstocks, raw meal mixture balances, addition of gypsum and throughout the manufacturing process. EDXRF analyzers are also commonly deployed as backup instruments for WDXRF spectrometers used for final QC and certification.

For this method, each sample is prepared by grinding the material to a fine, dry, homogeneous powder and producing a 5 gram hydraulically pressed pellet using 20 tons pressure for 30 seconds. Empirical calibrations were built using a set of 8 NIST SRM certified standards. Using the empirical approach, "alpha corrections" are then employed to automatically compensate for variations in X-ray absorption and enhancement effects within the sample due to the independent variations in element concentration, thereby yielding an accurate model characterizing the cement type. The method shows how the Rigaku NEX QC analyzer's rapid quantitative elemental analysis capabilities give cement plants a reliable and rugged low-cost system for QC measurements.

A copy of this report may be requested at:

http://www.rigakuedxrf.com/edxrf/app-notes.html?id=1157_AppNote

About Rigaku

Since its inception in Japan in 1951, Rigaku has been at the forefront of analytical and industrial instrumentation technology. Rigaku and its subsidiaries form a global group focused on life sciences and general purpose analytical instrumentation. With hundreds of major innovations to its credit, Rigaku and its subsidiary companies are world leaders in the fields of small molecule and protein crystallography, Raman spectroscopy, X-ray spectrometry and diffraction, X-ray optics, as well as semiconductor metrology. Rigaku employs over 1,100 people globally and its products are in use in more than 70 countries – supporting research, development, production control and quality assurance activities. Throughout the world, Rigaku continuously promotes partnerships, dialog, and innovation within the global scientific and industrial community.

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