

Dear Partners

Xenemetrix's distributor's network is expanding

As part of our global expansion we have introduced several new representatives into the Xenemetrix business network, namely: **S-prep GmbH** in Germany and **OMETTO EQUIPAMENTOS DE RADIOPROTEÇÃO E INSPEÇÃO LTDA.** in Brazil.

We welcome them all! Their joining our network yields a meaningful increase in the availability of our spectrometers across the globe and an extensive contribution to our global presence and success.

For any queries, feel free to contact us at info@xenemetrix.com or check the 'Contact us' tab at our website to find authorized representatives near you.

For more information please contact us at: info@xenemetrix.com or visit our website: www.xenemetrix.com

Yours,
Xenemetrix Team



Tip of the Month

The benefit of Cement Sample preparation.

Sample preparation is a procedure performed on the sample prior to the XRF analysis, in order to improve the XRF accuracy and precision level results. Various methods of sample preparation can be performed for XRF application, and we will focus on two major ones: Press Pellet and Fusion.

For example, cement application can be analysed in a powder form. However, using a fast and convenient Press Pellet system to convert the powder cement to a solid pellet will produce sharper picks in the XRF analysis that improve pick separation.

Another method of ensuring improvement in the elemental detection is Fusion. In this method the cement powder is heated to a very high temperature, melting and mixing the cement and the agent (flux). Later, the melted mixture cools down to a glass bead form with homogeneous properties, and the flux is used as matrix in the XRF analysis. Since the matrix affects the elements of interest, different matrices in the samples cannot make use of the same standard. Therefore, it is easier to fuse the cement and use the flux as matrix for all different standards and samples. In addition, the flux is transparent to XRF and thus the picks of the elements of interest are increased and can easily be detected.

These systems and sample preparation accessories are now available from Xenemetrix.

More tips & support please contact us at: info@xenemetrix.com

Application Highlight

Quantitative elemental analysis of Na₂O, MgO, Al₂O₃, SiO₂, P₂O₅, SO₃, K₂O, CaO, TiO₂, Mn₂O₃ and Fe₂O₃ oxides in Cement powder using Xenemetrix EDXRF analyzer X-Calibur SDD

Abstract:

Quantitative analysis of the different oxides in cement; Na₂O, MgO, Al₂O₃, SiO₂, P₂O₅, SO₃, K₂O, CaO, TiO₂, Mn₂O₃ and Fe₂O₃ was performed on Xenemetrix EDXRF analyzer X-Calibur equipped with a highly efficient Silicon Drift Detector. All measurements were carried out in vacuum atmosphere, to promote the signals from the light oxides (Na-Si).

EDXRF is an ideal method for a fast and simple elemental analysis test for industrial control purposes. This analytical technique is quick, noninvasive, requiring minimal sample preparation, and can easily be operated by non-skilled personnel in the production line.

Experimental:

Six certified Portland cement standards from NIST were used to calibrate X-Calibur SDD with standard Be detector window. Low voltage and vacuum were used during the three minutes acquisition of the samples. The correlation graphs, precision and accuracy data are presented in this report.

Quantitative results:

A calibration curve was built for each oxide based on the spectral data of the six calibration standards. Correlation graphs per oxide are shown in Table 1. Repeatability of the instrument was performed by measuring one of the cement powder samples ten times consecutively without moving the sample in between runs. Precision data, i.e. measured average value ± standard deviation from this experiment, is presented in Table 2 along with data on the level of accuracy obtained.

Table 1: Correlation graphs of the different oxides in cement.

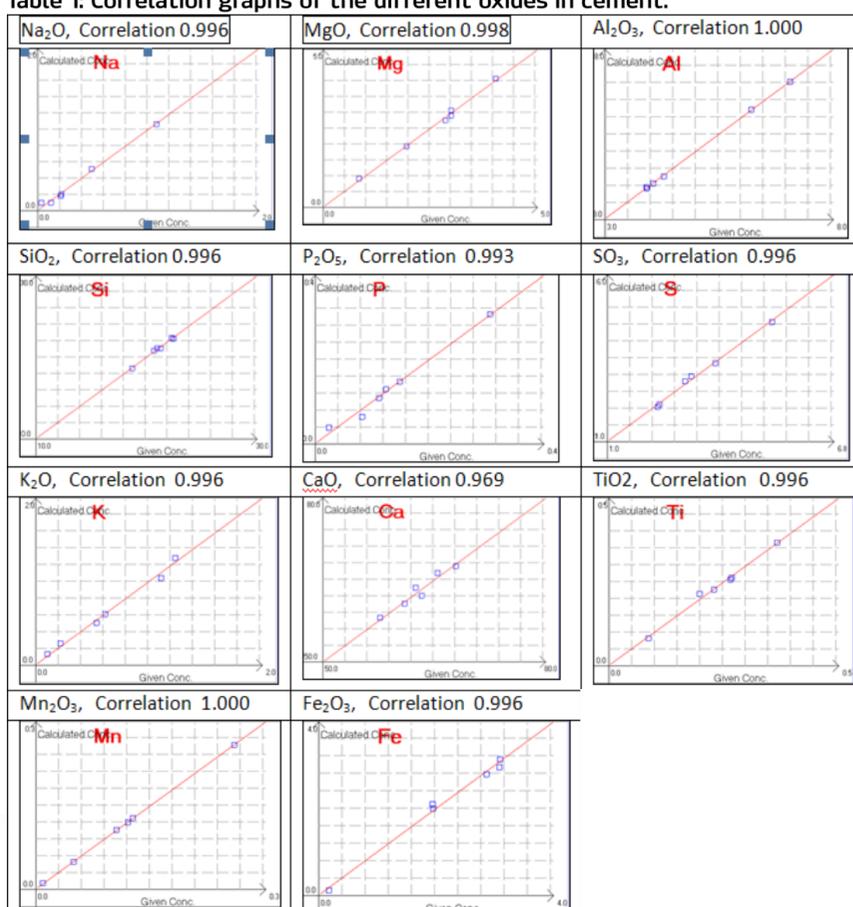


Table 2: Precision data on sample 1887a (10 consecutive runs)

Run#	Na ₂ O	MgO	Al ₂ O ₃	SiO ₂	P ₂ O ₅	SO ₃	K ₂ O	CaO	TiO ₂	Mn ₂ O ₃	Fe ₂ O ₃
Average	0.343	2.620	6.194	18.38	0.273	4.466	1.026	60.34	0.258	0.107	2.698
±std	0.222±	0.058±	0.132±	0.100±	0.012±	0.021±	0.005±	0.60±	0.008±	0.007±	0.013±
Abs. error	0.135	0.215	0.008	0.25	0.033	0.156	0.074	0.56	0.008	0.012	0.163

CONCLUSION:

The Xenemetrix EDXRF analyzer shows an excellent performance when applied to one of the major cement applications, i.e. measuring the elemental oxide composition in powder samples. The performance and accuracy levels obtained on cement powder samples coupled with the short measuring time (three minutes per sample) and coupled with no sample preparation and ease of use, make the X-Calibur SDD the method of choice for the cement industry. Important cement applications, i.e. measuring the elemental oxide composition in powder samples. The performance and the accuracy obtained on cement powder samples matched with the short measuring time (3 minutes per sample) and coupled with no sample preparation and ease of use makes the X-Calibur SDD the method of choice for the cement industry.

For the full report and more details please contact us at: info@xenemetrix.com

Coming Next: New Applications, Tips & Innovations