

Development and validation results
of a new European Standard prEN 15309 for the determination
of the elemental composition of waste and soil by XRF

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Abstract

The European Standard “Determination of elemental composition by X-ray fluorescence” was developed by Technical Committee CEN/TC 292 “Characterisation of waste” (WG3), and in coordination with ISO/TC 190 “Soil quality”. The growing interest of both the government and the industry to implement the X-ray fluorescence technique as analytical tool for the characterisation of waste and soil led to the development and validation of a new standard.

It's a common knowledge that X-ray fluorescence spectrometry is a fast and reliable method for the quantitative analysis of the total content of certain elements within different matrices. Nevertheless, the quality of the results obtained depends very closely on the type of instrument used, e.g. bench top or high performance, energy dispersive or wavelength dispersive instruments. When selecting a specific instrument several factors have to be considered, such as the matrices to be analysed, elements to be determined, detection limits required and the measuring time. The quality of the results depends on the element to be determined and on the surrounding matrix. It is often difficult to set up a calibration with matrix-matched reference materials because of the wide range of matrix compositions and the lack of suitable reference materials in the case of inhomogeneous matrices like waste.

Due to the complexity of XRF analyses and taking in mind all the factors mentioned above, several decisions had to be made to create an usable standard and these will be illustrated. The presentation will highlight the general content of the method as well as the growing process of the standard.

Finally, the results of the validation study i.e. an interlaboratory comparison organised by CEN/TC 292 WG 3 in May 2006 / August 2006 with participants from 7 member countries, will be presented. For the interlaboratory comparison two soil and three waste samples were selected and distributed to the participants.