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British Standard Methods of testing

Refractory materials

Part 9. Chemical analysis by instrumental methods

Section 9.1 Analysis of alumino-silicate refractories by X-ray fluorescence

Méthodes d'essai des matériaux réfractaires

Partie 9. Analyse chimique par méthodes instrumentales

Section 9.1 Analyse des réfractaires aluminio-silicate par fluorescence aux rayons X

Verfahren zur Prüfung von feuerfesten Werkstoffen

Teil 9. Apparative chemische Analyse

Abschnitt 9.1 Röntgenfluoreszenzanalyse von feuerfesten Werkstoffen aus Aluminosilikat

Foreword

This Section of BS 1902 : Part 9 has been prepared under the direction of the Refractory Products Standards Committee. It is one of a series of Sections covering chemical analysis by instrumental methods, and describes the X-ray fluorescence (XRF) technique.

The method is based on the fused, cast bead technique which is the current accurate industrial method for the preparation of oxide materials for XRF in the United Kingdom and much of Europe. It has been necessary to use inter-element corrections in the calibrations. The flux used is of low melting point, which greatly assists mixing and dissolution of the samples. The flux has successfully been applied to the analysis of silica/alumina materials from sand through clays, feldspars, etc. to pure alumina materials, and is also suitable for a whole range of other materials including zircon, steatite, glazes, frits, fluxes, glasses, fluorspar and gypsum.

The calibration is by binary standard beads for calibration and line interference or background corrections, and by binary or tertiary standard beads for inter-element (alpha) corrections. This ensures that each parameter in the calibration, calibration curve, line interference and alpha correction is determined separately. No assumptions are made beforehand that calibrations will be linear. Because an ignited sample and an ignited-basis flux is used, the dilution of the samples in melts is constant, hence simplifying calibration and analysis.

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