

DIN EN ISO 12677:2013-02 (E)

Chemical analysis of refractory products by X-ray fluorescence (XRF) - Fused cast-bead method (ISO 12677:2011)

Contents		Page
Foreword		4
1	Scope	5
2	Normative references	5
3	Types of material	5
4	Principle	6
5	Apparatus	6
6	Sample grinding	7
7	Loss on ignition (and/or drying)	8
8	Flux	8
8.1	Choice of flux and ratio of flux to sample	8
8.2	Compensations for moisture in flux	9
9	Fusion casting procedures	9
9.1	Fusion of samples and casting of beads	9
9.2	Automatic bead preparation	11
9.3	Storage	11
9.4	Special problems	12
10	Calibration	12
10.1	Calibration standards	12
10.2	Reagents and series reference materials (SeRMs)	12
10.3	Calibration using reagents	14
10.4	Calibration using SeRMs	19
11	Corrections	21
11.1	Line-overlap correction	21
11.2	Background correction	21
11.3	Drift correction	22
11.4	Calculation of results	22
11.5	Software requirements	23
12	Reproducibility and repeatability	24
12.1	Fusion tests	24
12.2	Frequency of instrument tests	24
12.3	Maximum allowance differences of sample holders	24
12.4	Sample measuring positions	25
12.5	Instrument repeatability	25
12.6	Sequential systems	25
12.7	Dead time	26
12.8	Other tests	26
12.9	Flow gas	26
13	Accuracy determined by certified reference materials	26

13.1	Validation of synthetic calibrations	26
13.2	Validation of SeRM calibrations	26
13.3	Fresh beads of the CRMs or synthetic standards used to check SeRM calibrations	26
14	Definitions of limits of detection	27
15	Test report	27
Annex A (normative) Calibration range and required detection limits		28
Annex B (normative) Corrections for tungsten carbide grinding media		32
Annex C (informative) Examples of fluxes/flux ratios		34
Annex D (normative) Examples of CRM to be used to check synthetic calibrations		36
Annex E (normative) Examples of SeRM		42
Annex F (normative) Equation for theoretical calculations		47
Annex G (normative) Certified reference materials (CRMs)		48
Annex H (normative) Method of inter-element correction used to compensate for the effects of co-existing components when using SeRM for calibration		51
Annex I (normative) Standard deviations achieved with certified reference materials		71
Bibliography		79