FLX-134-01-COA

DIN EN ISO 17034:2017

Certified Reference Material
FLX-134 - Clay

Certified Values

Parameter	Mass fraction in %[1)]	Uncertainty in %[2)]	Traceable to
Al_2O_3	38,24	0,48	BAS 348
BaO	0,052	0,014	IV CGBA1 Lot: U2-BA730520
CaO	0,140	0,027	BAS 348
Fe_2O_3	1,189	0,070	BAS 348
K_2O	1,944	0,086	IV CGK10 Lot: P2-K688009
MgO	0,315	0,039	BAS 348
Na_2O	0,205	0,059	IV CGNA10 Lot: P2-NA685078
P_2O_5	0,079	0,019	BAS 348
SiO_2	56,57	0,570	BAS 348
TiO_2	1,023	0,064	BAS 348
V_2O_5	0,028	0,009	IV CGV1 Lot: U2-V730228

Table1) Certified Values

1) Certified value traceable to SI unit kg/kg based on ignited material (1050°C until constant mass).
2) Total expanded uncertainty U_{CRM} calculated for a confidence interval of 95% (k=2).

The sum of all oxides is **99,79 %**. This excludes LOI.

This certificate is valid, within the uncertainty specified, **until 02.02.2035,** provided the CRM is handled in accordance with the instructions given in this certificate. The certification is nullified if the CRM is damaged, contaminated, or otherwise modified.

Bedburg-Hau, **10.04.2025**

Responsible Reference Materials

Dr. Rainer Schramm

Quality Management

Ch. Winkels-Herding

Description of the CRM

This reference material is an industrial product and was taken directly from the production stream. The complete batch was sealed into 30 g bottles. This material is normally used as dolomite.

Intended use

Calibration and control sample for x-ray fluorescence (XRF) analysis.

Informational Values

Parameter	Mass Fraction in %[3)]	Uncertainty
LOI	*13,69* [4)]	

Table2) Informational Values

3) Only Informational Value.
4) LOI = loss on ignition at least 18 hours at 1050°C.

Instructions for the correct use of the CRM

This material is moisture sensitive. The material has to be ignited at 1050°C for at least 18 hours prior use. The ignition process must result in a constant weight. The ignited material must be stored in a desiccator not longer than 24h, then reignition might be necessary. For XRF use, ignited samples should be prepared as a fused bead, e.g. in accordance with ISO 29581-2:2010.

The minimum sample quantity for analysis should be 0,5 g.

Storage Information

The material has to be stored in a dry and clean environment.

Hazardous situation

For this material an actual MSDS is available.

Level of homogeneity

In accordance with ISO 33405:2024 a homogeneity study was performed. A one-way ANOVA was used to calculate the batch inhomogeneity.

Stability

In accordance with ISO 33405:2024 a stability study was performed. As a result, the stability of the material was considered as fit for purpose. The uncertainty of long-term stability was calculated

Total expanded uncertainty

The total expanded uncertainty U_{CRM} for a confidence interval of 95% (k=2) was calculated by taking into account the uncertainty of characterization u_{char}, of inhomogeneity u_{bb} and long-term stability u_{lts}.

$$U_{CRM} = \mathrm{k} \times \sqrt{u_{char}^2 + u_{bb}^2 + u_{lts}^2}$$

Traceability

All of the certified values derived as part of this testing program have traceability to the reference materials stated in table 1.

Methods used

The analytical work performed to assess this material was carried out by the FLUXANA laboratory, which works according to ISO/IEC 17025:2018.
In accordance with ISO 17034:2017 and ISO 33405:2024, we use the approach stated in ISO 17034:2017 Chapter 7.12.3. d) value transfer from an RM to a closely matched candidate RM performed using a single measurement procedure performed by one laboratory.
An example for this approach is found in ISO 13528:2022 E.5. Using this approach, samples of the test material that is to be the new reference material are tested along with matching and/or synthetic RMs using a suitable method. The assigned values X_{CRM} and their uncertainties U_{CRM} are then derived from a calibration against the certified reference values of the compared RMs. Synthetic RMs are made from pure chemicals by weighing.
Measurement method used: XRF with fusion as sample preparation technique.

This certificate is in conformance with ISO 33401:2024.

feedback@fluxana.de