

Fluxana, Deutschland - Chrommagnetit FLX-CRM 111

Veranstalter: FluXana GmbH & Co. KG, Borschelstr. 3, 47551 Bedburg-Hau

Ringversuchsmaterial: FLX-CRM 111 - Chrommagnetit, Germany

RV geschlossen: 2012 – 5

Literatur: Proficiency Test Report Fluxana FLX-CRM 111, 112 (CRB Laborcode = 23)

Hauptelemente [MA%]

| | CRB | RV | 1sRV | Z-Score |
|--------------------------------|-------|-------|-------|---------|
| Al ₂ O ₃ | 4,70 | 4,664 | 0,157 | 0,23 |
| CaO | 2,04 | 2,052 | 0,081 | 0,48 |
| Fe ₂ O ₃ | 9,36 | 9,54 | 0,158 | 1,17 |
| K ₂ O | 0,006 | 0,01 | 0,006 | 0,74 |
| MgO | 70,08 | 70,24 | 1,347 | 0,10 |
| Na ₂ O | <0,03 | 0,069 | 0,019 | --- |
| SiO ₂ | 1,28 | 1,399 | 0,112 | 1,11 |
| P ₂ O ₅ | 0,087 | 0,088 | 0,008 | 0,23 |
| SO ₃ | 0,13 | 0,134 | 0,05 | 0,08 |
| TiO ₂ | 0,17 | 0,16 | 0,006 | 1,72 |
| LOI | 0,55 | 0,576 | 0,08 | 0,32 |

Spurenelemente [µg/g]

| | CRB | RV | 1sRV | Z-Score |
|--------------------------------|-------|--------|-------|---------|
| Cr ₂ O ₃ | 11,46 | 11,485 | 0,563 | 0,04 |
| Mn ₃ O ₄ | 0,275 | 0,37 | 0,049 | 1,94 |
| WO ₃ | 0,007 | 0,006 | 0,002 | 0,43 |
| Co ₃ O ₄ | 0,007 | 0,012 | 0,001 | 3,46 |
| ZrO ₂ | 0,071 | 0,057 | 0,012 | 1,22 |
| NiO | 0,031 | 0,033 | 0,004 | 0,05 |
| HfO ₂ | 0,001 | 0,001 | 0,001 | 0,15 |

Legende

CRB: Ergebnisse CRB – **RV:** Ergebnisse Ringversuch -- **1s-RV:** Standardabweichung Ringversuch

Z-Score: Differenz des Messwertes vom Mittelwert des Ringversuchs -- * Wert nicht zertifiziert

ZERTIFIKAT

FLX CRM-111-112 Ringversuch 2012

CRB Analyse Service GmbH
Bahnhofstraße 14
37181 Hardegsen

Das Testlabor nahm mit der Labornummer 23 an dem FLUXANA Ringversuch FLX CRM-111-112 mit Erfolg teil.

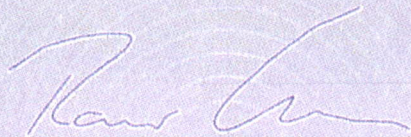
Probe: FLX CRM-111-112

Von 34 Parametern wurden 91% erfolgreich (d.h. nicht als Ausreißer detektiert) bestimmt:
Haupt- und Spurenelemente: Al₂O₃, CaO, Fe₂O₃, HfO₂, K₂O, MgO, NiO, SiO₂, SO₃,
TiO₂, ZrO₂, Co₃O₄, WO₃, Cr₂O₃, Mn₃O₄, P₂O₅, LOI

Die Durchführung dieses Ringversuchs und damit die Produktion dieses Referenzmaterials wurde in Übereinstimmung mit ISO Guide 34-2009, ISO Guide 31-2000 und ISO Guide 35-2006 ausgeführt.

Die Ergebnisse wurden in einem Bericht und Zertifikat zusammengefasst.

Bedburg-Hau, den 26.10.2012



Dr. Rainer Schramm

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Borschelstr. 3
47551 Bedburg-Hau

FLUXANA

New Certified Reference Materials

FLX-CRM 111, FLX-CRM 112



Proficiency Test Report

FLX-CRM 111, FLX-CRM 112

Introduction

X-ray fluorescence analysis is a widely used technique for the analysis of oxidic materials. Different ISO methods like e.g. 12677:2011 or 29581-2:2010 describe the use in detail.

However for the calibration of xrf instruments dedicated standard material is needed. As a world wide supplier for xrf laboratories FLUXANA has developed a number of services to support xrf users. One of these services is the production of new reference materials in combination with a proficiency test.

From 2011 FLUXANA has introduced its own quality management in agreement with ISO 17025.

The production of reference materials and the corresponding proficiency tests including all evaluations are performed in agreement with ISO 17043, ISO Guide 34-2009, ISO Guide 31-2000 and ISO Guide 35-2006.

Proficiency test

All laboratories which applied until 29.02.2012 for the participation of the proficiency test got their samples starting week 10 and sent in their results until 31.05.2012.

Further information

In the following evaluation report all laboratory data are listed. Also the used methods like XRF according ISO 12677, XRF preparation as fused bead, XRF preparation as pressed pellet, XRF as reconstitution method, ICP-OES, combustion with HF-IR (high frequency infrared) or others are specified. Laboratories which are working under ISO 17025 accreditation are highlighted. Under Remark additional information is given.

Certificate of Analysis

Based on this report a certificate of analysis is issued separately.

Outlier evaluation

There will be two outlier tests based on **Grubbs** and **z-score**.

However every outlier detected by the test was verified individually. Sometimes a value detected as outlier is included to guarantee a balance between different analytical methods. These values are marked as **'included'**. Real outliers which were excluded from the calculation of mean, standard deviation and uncertainty are marked as **'confirmed outliers'**.

Statistical Evaluation for a new RM (reference material)

All mentioned calculations are based on:

Reference materials – General and statistical principles for certification ISO Guide 35:2006.

Conformity assessment - General requirements for proficiency testing ISO 17043:2010.

Calculation of laboratory average

Each participant of the proficiency test must perform a number of single measurements and report with significant digits.

For each participant a laboratory average \bar{x} is calculated:

$$(1) \quad \bar{x} = \sum_{k=1}^p \frac{x}{p}$$

1 x Single measurement

p Number of single measurements

Calculation of total average

From all laboratory averages a total average $\bar{\bar{x}}$ is calculated:

$$(2) \quad \bar{\bar{x}} = \sum_{k=1}^n \frac{\bar{x}}{n}$$

n Number of participants

Calculation of standard deviation

From all laboratory averages the standard deviation s is calculated:

$$(3) \quad s = \sqrt{\sum_{k=1}^n (\bar{x} - \bar{\bar{x}})^2 / (n - 1)}$$

Test for outliers

From all laboratory averages the **z-score** z is calculated:

$$(4) \quad z = \left| (\bar{\bar{x}} - \bar{x}) / s \right|$$

An outlier test based on z-score is performed:

| | |
|-----------------|---|
| $z \leq 2,0$ | indicates ‚satisfactory‘ performance = generates no signal |
| $2,0 < z < 3,0$ | indicates ‚questionable‘ performance = generates a warning signal |
| $z \geq 3,0$ | indicates ‚unsatisfactory‘ performance = generates an action signal |

Parallel an outlier test based on Grubbs is performed:

$$(5) \quad PG = \left| (\bar{\bar{x}} - \bar{x}) / s \right|$$

PG test value

Based on table 1 a comparison value for the half width confidence interval is calculated for n:

| | |
|--------------|---|
| $PG \leq VG$ | indicates ‚satisfactory‘ performance = generates no signal |
| $PG > VG$ | indicates ‚unsatisfactory‘ performance = generates an action signal |

In case an outlier is detected the data will be taken out and all calculations according formulars 2,3,4,5 have to be repeated. A new test for outliers must be performed.

Calculation of the uncertainty

The uncertainty values are coming from the half width confidence interval C(95%). It is equal to:

$$(6) \quad C(95\%) = t * s / \sqrt{n}$$

t Student's value

where t is the appropriate Student's value, n the number of acceptable mean values and s the standard deviation.

Participating Laboratories

| | | |
|---|-------------------|-------------|
| Bachema AG | Schlieren | Switzerland |
| BASF Coatings GmbH | Münster | Germany |
| CRB Analyse Service GmbH | Hardegsen | Germany |
| Deutsches Institut für Feuerfest und Keramik GmbH | Bonn | Germany |
| Dorfner Anzaplan | Hirschau | Germany |
| FLUXANA GmbH & Co.KG | Bedburg-Hau | Germany |
| Fundacion ITMA | Llanera-Asturias | Spain |
| Grothe Rohstoffe GmbH & Co. KG | Bückeberg | Germany |
| Holcim (Deutschland) AG | Sehnde | Germany |
| Hoppecke Batterien GmbH & Co. KG | Brilon-Hoppecke | Germany |
| HuK Umweltlabor GmbH | Wenden-Hünsborn | Germany |
| Imerys Minerals Ltd. | Cornwall | England |
| Instituto Nacional del Carbón (INCAR-CSIC) | Oviedo (Asturias) | Spain |
| Rockwool BV | JG Roermond | Netherlands |
| ThyssenKrupp Steel Europe AG | Duisburg | Germany |
| Vargön Alloys AB | Vargön | Sweden |

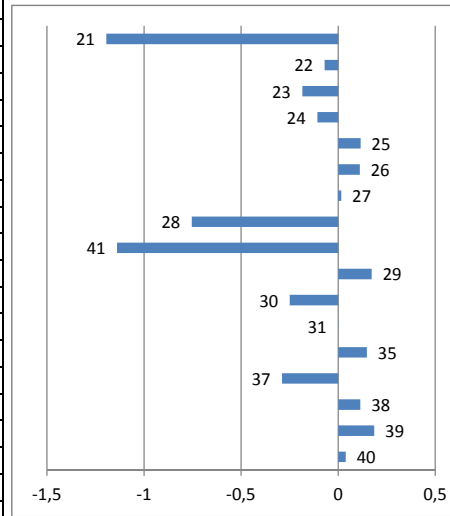
| Al2O3 | | FLX-CRM 111 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:28:20 | | z-score | Grubbs | Outlier |
|--------------|------------|--------------------|----------------|----------------|--------------|--------|--------|------------------------------------|---------------|-----------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | z>3 | n=13 VG=2,331 | confirmed | |
| 21 | ISO 12677 | | | 3,942 | 4,232 | x4,087 | | | 3,68 | Outlier | x | |
| 22 | ISO 12677 | | reconstitution | 4,726 | 4,443 | 4,585 | | | 0,50 | | | |
| 23 | ISO 12677 | YES | | 4,770 | 4,630 | 4,700 | | | 0,23 | | | |
| 24 | ISO 12677 | | | 4,640 | 4,668 | 4,654 | | | 0,06 | | | |
| 25 | XRF bead | | | 4,700 | 4,440 | 4,570 | | | 0,60 | | | |
| 26 | XRF pellet | | | 3,832 | 3,706 | x3,769 | | | 5,71 | Outlier | x | |
| 27 | ISO 12677 | YES | | 4,680 | 4,520 | 4,600 | | | 0,41 | | | |
| 28 | ISO 12677 | YES | | 4,670 | 4,730 | 4,700 | | | 0,23 | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 4,500 | | 4,500 | | | 1,04 | | | |
| 29 | ISO 12677 | YES | | 4,650 | 4,722 | 4,686 | | | 0,14 | | | |
| 30 | XRF bead | | | 4,130 | 4,180 | x4,155 | | | 3,24 | Outlier | x | |
| 31 | ISO 12677 | YES | | 0,837 | 1,061 | x0,949 | | | 23,70 | Outlier | x | |
| 35 | ISO 12677 | | | 4,784 | 4,714 | 4,749 | | | 0,55 | | | |
| 37 | ICP-OES | | Borax fusion | 4,310 | | 4,310 | | | 2,26 | Included | | |
| 38 | ISO 12677 | YES | | 4,814 | 4,870 | 4,842 | | | 1,14 | | | |
| 39 | XRF bead | | | 4,780 | 4,930 | 4,855 | | | 1,22 | | | |
| 40 | ISO 12677 | | | 4,936 | 4,815 | 4,876 | | | 1,35 | | | |
| | | | | n | 13 | | | | | | | |
| | | | | Mean | 4,664 | | | | | | | |
| | | | | Max | 4,876 | | | | | | | |
| | | | | Min | 4,310 | | | | | | | |
| | | | | Stdev s | 0,157 | | | | | | | |
| | | | | C(95%) | 0,095 | | | | | | | |

C(95%)=t*s/SQR(n) t(13)=2,179

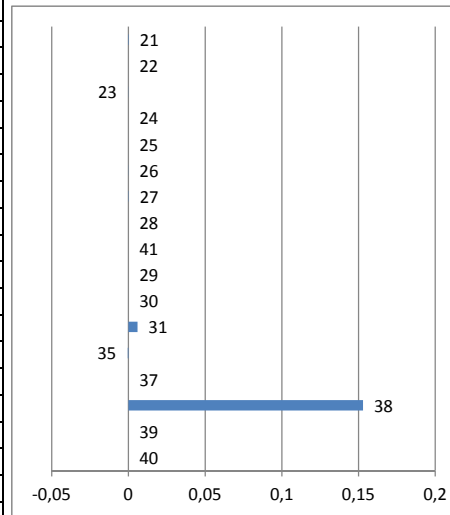
| CaO | | FLX-CRM 111 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:27:51 | | z-score | Grubbs | Outlier |
|------------|------------|--------------------|----------------|----------------|--------------|--------|--------|------------------------------------|---------------|----------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | z>3 | n=15 VG=2,409 | confirmed | |
| 21 | ISO 12677 | | | 1,975 | 1,888 | 1,932 | | | 2,12 | | | |
| 22 | ISO 12677 | | reconstitution | 1,871 | 1,830 | x1,851 | | | 3,41 | Outlier | x | |
| 23 | ISO 12677 | YES | | 2,040 | 2,030 | 2,035 | | | 0,48 | | | |
| 24 | ISO 12677 | | | 2,089 | 2,108 | 2,099 | | | 0,53 | | | |
| 25 | XRF bead | | | 2,050 | 2,060 | 2,055 | | | 0,16 | | | |
| 26 | XRF pellet | | | 2,851 | 2,828 | x2,840 | | | 12,32 | Outlier | x | |
| 27 | ISO 12677 | YES | | 2,070 | 2,090 | 2,080 | | | 0,23 | | | |
| 28 | ISO 12677 | YES | | 2,120 | 2,140 | 2,130 | | | 1,03 | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 2,000 | | 2,000 | | | 1,04 | | | |
| 29 | ISO 12677 | YES | | 2,015 | 2,050 | 2,033 | | | 0,52 | | | |
| 30 | XRF bead | | | 2,140 | 2,110 | 2,125 | | | 0,95 | | | |
| 31 | ISO 12677 | YES | | 2,141 | 2,122 | 2,132 | | | 1,05 | | | |
| 35 | ISO 12677 | | | 2,138 | 2,123 | 2,131 | | | 1,04 | | | |
| 37 | ICP-OES | | aqua regia | 1,960 | | 1,960 | | | 1,68 | | | |
| 38 | ISO 12677 | YES | | 2,094 | 2,071 | 2,083 | | | 0,27 | | | |
| 39 | XRF bead | | | 2,080 | 2,140 | 2,110 | | | 0,71 | | | |
| 40 | ISO 12677 | | | 2,069 | 2,087 | 2,078 | | | 0,20 | | | |
| | | | | n | 15 | | | | | | | |
| | | | | Mean | 2,065 | | | | | | | |
| | | | | Max | 2,132 | | | | | | | |
| | | | | Min | 1,932 | | | | | | | |
| | | | | Stdev s | 0,063 | | | | | | | |
| | | | | C(95%) | 0,035 | | | | | | | |

C(95%)=t*s/SQR(n) t(15)=2,145

| Fe2O3 | | FLX-CRM 111 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:28:29 | | z-score | Grubbs | Outlier |
|--------------|------------|--------------------|----------------|---------|---------|----------------|--------------|------------------------------------|---------------|----------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | z>3 | n=14 VG=2,371 | confirmed | |
| 21 | ISO 12677 | | | 8,367 | 8,323 | x8,345 | | | 7,58 | Outlier | x | |
| 22 | ISO 12677 | | reconstitution | 9,482 | 9,457 | 9,470 | | | 0,44 | | | |
| 23 | ISO 12677 | YES | | 9,310 | 9,400 | 9,355 | | | 1,17 | | | |
| 24 | ISO 12677 | | | 9,407 | 9,457 | 9,432 | | | 0,68 | | | |
| 25 | XRF bead | | | 9,620 | 9,690 | 9,655 | | | 0,73 | | | |
| 26 | XRF pellet | | | 9,483 | 9,818 | 9,651 | | | 0,71 | | | |
| 27 | ISO 12677 | YES | | 9,500 | 9,610 | 9,555 | | | 0,10 | | | |
| 28 | ISO 12677 | YES | | 8,770 | 8,800 | x8,785 | | | 4,79 | Outlier | x | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 8,400 | | x8,400 | | | 7,23 | Outlier | x | |
| 29 | ISO 12677 | YES | | 9,768 | 9,656 | 9,712 | | | 1,10 | | | |
| 30 | XRF bead | | | 9,280 | 9,300 | 9,290 | | | 1,58 | | | |
| 31 | ISO 12677 | YES | | 9,555 | 9,522 | 9,539 | | | 0,01 | | | |
| 35 | ISO 12677 | | | 9,715 | 9,659 | 9,687 | | | 0,94 | | | |
| 37 | ICP-OES | | Borax fusion | 9,250 | | 9,250 | | | 1,84 | | | |
| 38 | ISO 12677 | YES | | 9,699 | 9,607 | 9,653 | | | 0,72 | | | |
| 39 | XRF bead | | | 9,810 | 9,640 | 9,725 | | | 1,18 | | | |
| 40 | ISO 12677 | | | 9,522 | 9,634 | 9,578 | | | 0,25 | | | |
| | | | | | | n | 14 | | | | | |
| | | | | | | Mean | 9,539 | | | | | |
| | | | | | | Max | 9,725 | | | | | |
| | | | | | | Min | 9,250 | | | | | |
| | | | | | | Stdev s | 0,158 | | | | | |
| | | | | | | C(95%) | 0,091 | C(95%)=t*s/SQR(n) | | t(14)=2,160 | | |



| HfO2 | | FLX-CRM 111 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:10:27 | | z-score | Grubbs | Outlier |
|-------------|------------|--------------------|---------------|---------|---------|----------------|--------------|------------------------------------|---------------|----------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | z>3 | n=5 VG=1,672 | confirmed | |
| 21 | XRF pellet | | | 0,001 | 0,001 | 0,001 | | | 0,96 | | | |
| 22 | | | | | | | | | | | | |
| 23 | ISO 12677 | YES | | 0,001 | 0,001 | 0,001 | | | 0,15 | | | |
| 24 | ISO 12677 | | | <0,02 | <0,02 | | | | | | | |
| 25 | | | | | | | | | | | | |
| 26 | XRF pellet | | | 0,001 | 0,001 | 0,001 | | | 0,29 | | | |
| 27 | ICP-OES | YES | | 0,001 | 0,002 | 0,001 | | | 0,54 | | | |
| 28 | ISO 12677 | YES | | <0,01 | <0,01 | | | | | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | <0,005 | | | | | | | | |
| 29 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 31 | ISO 12677 | YES | | 0,007 | 0,007 | x0,007 | | | 22,10 | Outlier | x | |
| 35 | ISO 12677 | | | 0,001 | 0,001 | 0,001 | | | 1,64 | | | |
| 37 | | | | | | | | | | | | |
| 38 | ISO 12677 | YES | | 0,154 | 0,154 | x0,154 | | | 567,29 | Outlier | x | |
| 39 | | | | | | | | | | | | |
| 40 | ISO 12677 | | | | | | | | | | | |
| | | | | | | n | 5 | | | | | |
| | | | | | | Mean | 0,001 | | | | | |
| | | | | | | Max | 0,001 | | | | | |
| | | | | | | Min | 0,001 | | | | | |
| | | | | | | Stdev s | 0,000 | | | | | |
| | | | | | | C(95%) | 0,000 | C(95%)=t*s/SQR(n) | | t(5)=2,776 | | |



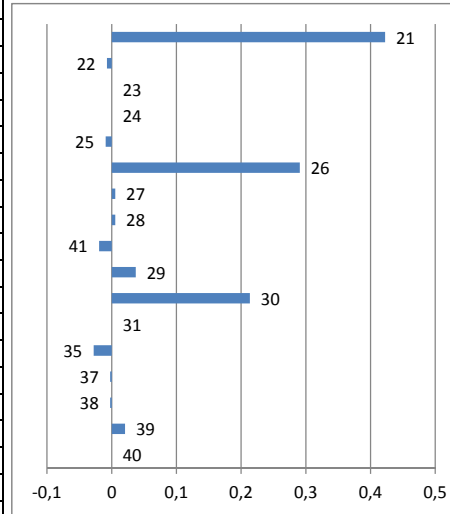
| K2O | | FLX-CRM 111 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:28:38 | | z-score | Grubbs | Outlier |
|------------|------------|-------------|---------------|---------|---------|----------------|--------------|------------------------------------|---------------|----------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | z>3 | n=9 VG=2,110 | confirmed | |
| 21 | ISO 12677 | | | 0,026 | 0,044 | x0,035 | | | 4,53 | Outlier | x | |
| 22 | | | | | | | | | | | | |
| 23 | ISO 12677 | YES | | 0,005 | 0,007 | 0,006 | | | | | | |
| 24 | ISO 12677 | | | <0,03 | <0,03 | | | | | | | |
| 25 | XRF bead | | | <0,1 | <0,1 | | | | | | | |
| 26 | XRF pellet | | | 0,013 | 0,007 | 0,010 | | | | | | |
| 27 | ICP-OES | YES | | 0,020 | 0,010 | 0,015 | | | | | | |
| 28 | ISO 12677 | YES | | 0,020 | 0,020 | 0,020 | | | | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,006 | | 0,006 | | | | | | |
| 29 | ISO 12677 | YES | | 0,001 | 0,001 | 0,001 | | | | | | |
| 30 | XRF bead | | | 0,066 | 0,071 | x0,069 | | | | | | |
| 31 | ISO 12677 | YES | | <0,0012 | <0,0012 | | | | | | | |
| 35 | ISO 12677 | | | <0,0100 | <0,0100 | | | | | | | |
| 37 | ICP-OES | | aqua regia | 0,012 | | 0,012 | | | | | | |
| 38 | ISO 12677 | YES | | <0,01 | <0,01 | | | | | | | |
| 39 | XRF bead | | | 0,010 | 0,010 | 0,010 | | | | | | |
| 40 | ISO 12677 | | | 0,011 | 0,010 | 0,011 | | | | | | |
| | | | | | | n | 9 | | | | | |
| | | | | | | Mean | 0,010 | | | | | |
| | | | | | | Max | 0,020 | | | | | |
| | | | | | | Min | 0,001 | | | | | |
| | | | | | | Stdev s | 0,006 | | | | | |
| | | | | | | C(95%) | 0,004 | | | | | |

C(95%)=t*s/SQR(n) t(9)=2,306

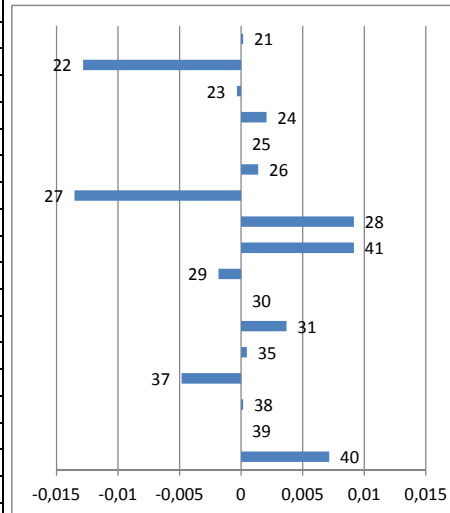
| MgO | | FLX-CRM 111 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:28:49 | | z-score | Grubbs | Outlier |
|------------|------------|-------------|----------------|---------|---------|----------------|---------------|------------------------------------|---------------|---------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | z>3 | n=16 VG=2,443 | confirmed | |
| 21 | ISO 12677 | | | 70,605 | 69,964 | 70,285 | | | | | | |
| 22 | ISO 12677 | | reconstitution | 69,913 | 69,945 | 69,929 | | | | | | |
| 23 | ISO 12677 | YES | | 70,080 | 70,070 | 70,075 | | | | | | |
| 24 | ISO 12677 | | | 70,970 | 71,284 | 71,127 | | | | | | |
| 25 | XRF bead | | | 70,590 | 69,930 | 70,260 | | | | | | |
| 26 | XRF pellet | | | 66,790 | 66,370 | x66,580 | | | | | | |
| 27 | ISO 12677 | YES | | 69,900 | 69,800 | 69,850 | | | | | | |
| 28 | ISO 12677 | YES | | 71,300 | 70,900 | 71,100 | | | | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 72,900 | | 72,900 | | | | | | |
| 29 | ISO 12677 | YES | | 69,669 | 70,284 | 69,977 | | | | | | |
| 30 | XRF bead | | | 70,940 | 70,426 | 70,683 | | | | | | |
| 31 | ISO 12677 | YES | | 72,780 | 72,650 | 72,715 | | | | | | |
| 35 | ISO 12677 | | | 68,605 | 68,200 | 68,403 | | | | | | |
| 37 | ICP-OES | | aqua regia | 67,840 | | 67,840 | | | | | | |
| 38 | ISO 12677 | YES | | 69,455 | 69,333 | 69,394 | | | | | | |
| 39 | XRF bead | | | 69,010 | 68,650 | 68,830 | | | | | | |
| 40 | ISO 12677 | | | 69,883 | 69,917 | 69,900 | | | | | | |
| | | | | | | n | 16 | | | | | |
| | | | | | | Mean | 70,204 | | | | | |
| | | | | | | Max | 72,900 | | | | | |
| | | | | | | Min | 67,840 | | | | | |
| | | | | | | Stdev s | 1,347 | | | | | |
| | | | | | | C(95%) | 0,717 | | | | | |

C(95%)=t*s/SQR(n) t(16)=2,131

| Na2O | | FLX-CRM 111 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:28:58 | | z-score | Grubbs | Outlier |
|-------------|------------|--------------------|----------------|----------------|--------------|--------|--------|------------------------------------|---------------|----------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | z>3 | n=10 VG=2,176 | confirmed | |
| 21 | ISO 12677 | | | 0,500 | 0,483 | x0,492 | | | 22,51 | Outlier | x | |
| 22 | ISO 12677 | | reconstitution | 0,049 | 0,075 | 0,062 | | | 0,39 | | | |
| 23 | ISO 12677 | YES | | <0,03 | <0,03 | | | | | | | |
| 24 | | | | | | | | | | | | |
| 25 | ICP-OES | | | 0,060 | 0,060 | 0,060 | | | 0,50 | | | |
| 26 | XRF pellet | | | 0,351 | 0,368 | x0,360 | | | 15,48 | Outlier | x | |
| 27 | ICP-OES | YES | | 0,070 | 0,080 | 0,075 | | | 0,30 | | | |
| 28 | ISO 12677 | YES | | 0,080 | 0,070 | 0,075 | | | 0,30 | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,050 | | 0,050 | | | 1,03 | | | |
| 29 | ISO 12677 | YES | | 0,104 | 0,109 | 0,107 | | | 1,98 | | | |
| 30 | XRF bead | | | 0,277 | 0,289 | x0,283 | | | 11,38 | Outlier | x | |
| 31 | ISO 12677 | YES | | <0,014 | <0,014 | | | | | | | |
| 35 | ISO 12677 | | | 0,038 | 0,045 | 0,042 | | | 1,49 | | | |
| 37 | ICP-OES | | aqua regia | 0,067 | | 0,067 | | | 0,13 | | | |
| 38 | ISO 12677 | YES | | 0,072 | 0,062 | 0,067 | | | 0,13 | | | |
| 39 | XRF bead | | | 0,080 | 0,100 | 0,090 | | | 1,10 | | | |
| 40 | ISO 12677 | | | <0,1 | <0,1 | | | | | | | |
| | | | | n | 10 | | | | | | | |
| | | | | Mean | 0,069 | | | | | | | |
| | | | | Max | 0,107 | | | | | | | |
| | | | | Min | 0,042 | | | | | | | |
| | | | | Stdev s | 0,019 | | | | | | | |
| | | | | C(95%) | 0,013 | | | C(95%)=t*s/SQR(n) t(10)=2,262 | | | | |



| NiO | | FLX-CRM 111 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:11:18 | | z-score | Grubbs | Outlier |
|------------|------------|--------------------|----------------|----------------|--------------|--------|--------|------------------------------------|---------------|---------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | z>3 | n=14 VG=2,371 | confirmed | |
| 21 | XRF pellet | | | 0,031 | 0,031 | 0,031 | | | 0,02 | | | |
| 22 | ISO 12677 | | reconstitution | 0,018 | 0,018 | 0,018 | | | 1,87 | | | |
| 23 | ISO 12677 | YES | | 0,030 | 0,031 | 0,031 | | | 0,05 | | | |
| 24 | ISO 12677 | | | 0,033 | 0,033 | 0,033 | | | 0,30 | | | |
| 25 | | | | | | | | | | | | |
| 26 | XRF pellet | | | 0,033 | 0,031 | 0,032 | | | 0,20 | | | |
| 27 | ICP-OES | YES | | 0,017 | 0,017 | 0,017 | | | 1,97 | | | |
| 28 | ISO 12677 | YES | | 0,040 | 0,040 | 0,040 | | | 1,33 | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,040 | | 0,040 | | | 1,33 | | | |
| 29 | ISO 12677 | YES | | 0,029 | 0,029 | 0,029 | | | 0,27 | | | |
| 30 | | | | | | | | | | | | |
| 31 | ISO 12677 | YES | | 0,035 | 0,034 | 0,035 | | | 0,54 | | | |
| 35 | ISO 12677 | | | 0,031 | 0,032 | 0,031 | | | 0,07 | | | |
| 37 | ICP-OES | | aqua regia | 0,026 | | 0,026 | | | 0,70 | | | |
| 38 | ISO 12677 | YES | | 0,031 | 0,031 | 0,031 | | | 0,02 | | | |
| 39 | | | | | | | | | | | | |
| 40 | ISO 12677 | | | 0,038 | 0,038 | 0,038 | | | 1,04 | | | |
| | | | | n | 14 | | | | | | | |
| | | | | Mean | 0,031 | | | | | | | |
| | | | | Max | 0,040 | | | | | | | |
| | | | | Min | 0,017 | | | | | | | |
| | | | | Stdev s | 0,007 | | | | | | | |
| | | | | C(95%) | 0,004 | | | C(95%)=t*s/SQR(n) t(14)=2,160 | | | | |



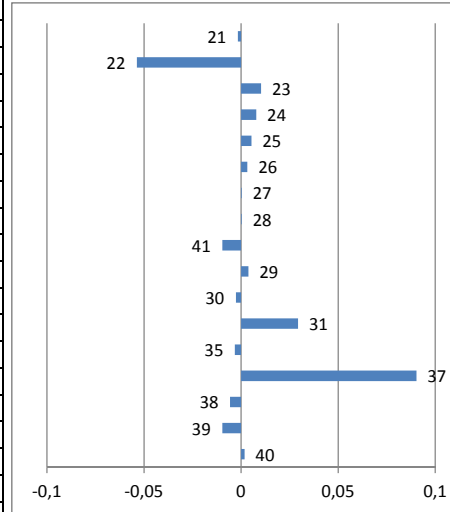
| SiO2 | | FLX-CRM 111 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:29:06 | | z-score | Grubbs | Outlier |
|---------|------------|-------------|----------------|---------|---------|----------------|--------------|------------------------------------|---------------|----------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | z-score | n=14 VG=2,371 | confirmed | |
| 21 | ISO 12677 | | | 1,694 | 2,177 | x1,936 | | | z>3 | | | |
| 22 | ISO 12677 | | reconstitution | 1,311 | 1,299 | 1,305 | | | 4,78 | Outlier | x | |
| 23 | ISO 12677 | YES | | 1,290 | 1,260 | 1,275 | | | 0,84 | | | |
| 24 | ISO 12677 | | | 1,302 | 1,301 | 1,302 | | | 1,11 | | | |
| 25 | XRF bead | | | 1,310 | 1,390 | 1,350 | | | 0,87 | | | |
| 26 | XRF pellet | | | 2,654 | 2,552 | x2,603 | | | 0,44 | | | |
| 27 | ISO 12677 | YES | | 1,350 | 1,400 | 1,375 | | | 10,72 | Outlier | x | |
| 28 | ISO 12677 | YES | | 1,610 | 1,630 | 1,620 | | | 0,22 | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 1,500 | | 1,500 | | | 1,97 | | | |
| 29 | ISO 12677 | YES | | 1,436 | 1,405 | 1,421 | | | 0,90 | | | |
| 30 | XRF bead | | | 1,490 | 1,500 | 1,495 | | | 0,19 | | | |
| 31 | ISO 12677 | YES | | 1,312 | 1,291 | 1,302 | | | 0,85 | | | |
| 35 | ISO 12677 | | | 1,814 | 1,758 | x1,786 | | | 0,87 | | | |
| 37 | ICP-OES | | Borax fusion | 1,260 | | 1,260 | | | 3,44 | Outlier | x | |
| 38 | ISO 12677 | YES | | 1,406 | 1,405 | 1,406 | | | 1,24 | | | |
| 39 | XRF bead | | | 1,510 | 1,630 | 1,570 | | | 0,05 | | | |
| 40 | ISO 12677 | | | 1,412 | 1,415 | 1,414 | | | 1,52 | | | |
| | | | | | | n | 14 | | | 0,13 | | |
| | | | | | | Mean | 1,399 | | | | | |
| | | | | | | Max | 1,620 | | | | | |
| | | | | | | Min | 1,260 | | | | | |
| | | | | | | Stdev s | 0,112 | | | | | |
| | | | | | | C(95%) | 0,065 | | | | | |

C(95%)=t*s/SQR(n) t(14)=2,160

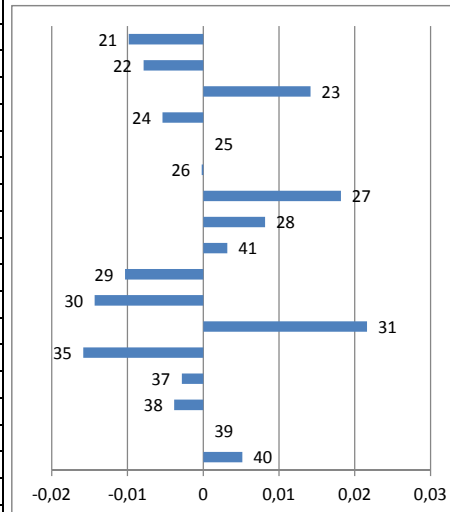
| Total S expressed as SO3 | | FLX-CRM 111 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:29:12 | | z-score | Grubbs | Outlier |
|--------------------------|------------|-------------|----------------|---------|---------|----------------|--------------|------------------------------------|---------------|----------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | z-score | n=14 VG=2,371 | confirmed | |
| 21 | HF-IR | | | 0,153 | 0,153 | 0,153 | | | z>3 | | | |
| 22 | ISO 12677 | | reconstitution | 0,173 | 0,180 | 0,177 | | | 0,38 | | | |
| 23 | ISO 12677 | YES | | 0,120 | 0,140 | 0,130 | | | 0,85 | | | |
| 24 | HF-IR | | | 0,145 | 0,140 | 0,143 | | | 0,08 | | | |
| 25 | HF-IR | | | 0,150 | 0,150 | 0,150 | | | 0,17 | | | |
| 26 | XRF pellet | | | 0,474 | 0,826 | x0,650 | | | 0,32 | | | |
| 27 | HF-IR | YES | | 0,040 | 0,033 | 0,037 | | | 10,29 | Outlier | x | |
| 28 | ISO 12677 | YES | | 0,120 | 0,130 | 0,125 | | | 1,95 | | | |
| 41 | | | | | | | | | 0,18 | | | |
| 29 | ISO 12677 | YES | | 0,064 | 0,092 | 0,078 | | | | | | |
| 30 | XRF bead | | | 0,189 | 0,203 | 0,196 | | | 1,12 | | | |
| 31 | ISO 12677 | YES | | 0,161 | 0,167 | 0,164 | | | 1,23 | | | |
| 35 | ISO 12677 | | | 0,101 | 0,098 | 0,099 | | | 0,60 | | | |
| 37 | ICP-OES | | aqua regia | 0,175 | | 0,175 | | | 0,69 | | | |
| 38 | HF-IR | | DIN 51095-1 | 0,195 | 0,196 | 0,196 | | | 0,82 | | | |
| 39 | | | | | | | | | 1,22 | | | |
| 40 | ISO 12677 | | | 0,073 | 0,040 | 0,057 | | | | | | |
| | | | | | | n | 14 | | | 1,55 | | |
| | | | | | | Mean | 0,134 | | | | | |
| | | | | | | Max | 0,196 | | | | | |
| | | | | | | Min | 0,037 | | | | | |
| | | | | | | Stdev s | 0,050 | | | | | |
| | | | | | | C(95%) | 0,029 | | | | | |

C(95%)=t*s/SQR(n) t(14)=2,160

| TiO2 | | FLX-CRM 111 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:29:21 | | z-score | Grubbs | Outlier |
|-------------|------------|--------------------|----------------|---------|---------|--------|--------|------------------------------------|-------------------|---------------|---------------|-----------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | | z>3 | n=14 VG=2,371 | confirmed |
| 21 | ISO 12677 | | | 0,158 | 0,158 | 0,158 | | | | 0,29 | | |
| 22 | ISO 12677 | | reconstitution | 0,103 | 0,109 | x0,106 | | | | 8,99 | Outlier | x |
| 23 | ISO 12677 | YES | | 0,167 | 0,173 | 0,170 | | | | 1,72 | | |
| 24 | ISO 12677 | | | 0,170 | 0,165 | 0,168 | | | | 1,30 | | |
| 25 | XRF bead | | | 0,170 | 0,160 | 0,165 | | | | 0,89 | | |
| 26 | XRF pellet | | | 0,161 | 0,165 | 0,163 | | | | 0,53 | | |
| 27 | ISO 12677 | YES | | 0,160 | 0,160 | 0,160 | | | | 0,05 | | |
| 28 | ISO 12677 | YES | | 0,160 | 0,160 | 0,160 | | | | 0,05 | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,150 | | 0,150 | | | | 1,62 | | |
| 29 | ISO 12677 | YES | | 0,165 | 0,162 | 0,164 | | | | 0,63 | | |
| 30 | XRF bead | | | 0,158 | 0,156 | 0,157 | | | | 0,45 | | |
| 31 | ISO 12677 | YES | | 0,188 | 0,190 | x0,189 | | | | 4,90 | Outlier | x |
| 35 | ISO 12677 | | | 0,149 | 0,164 | 0,157 | | | | 0,54 | | |
| 37 | ICP-OES | | Borax fusion | 0,250 | | x0,250 | | | | 15,11 | Outlier | x |
| 38 | ISO 12677 | YES | | 0,154 | 0,154 | 0,154 | | | | 0,96 | | |
| 39 | XRF bead | | | 0,150 | 0,150 | 0,150 | | | | 1,62 | | |
| 40 | ISO 12677 | | | 0,164 | 0,159 | 0,162 | | | | 0,30 | | |
| | | | | n | 14 | | | | | | | |
| | | | | Mean | 0,160 | | | | | | | |
| | | | | Max | 0,170 | | | | | | | |
| | | | | Min | 0,150 | | | | | | | |
| | | | | Stdev s | 0,006 | | | | | | | |
| | | | | C(95%) | 0,003 | | | | C(95%)=t*s/SQR(n) | t(14)=2,160 | | |



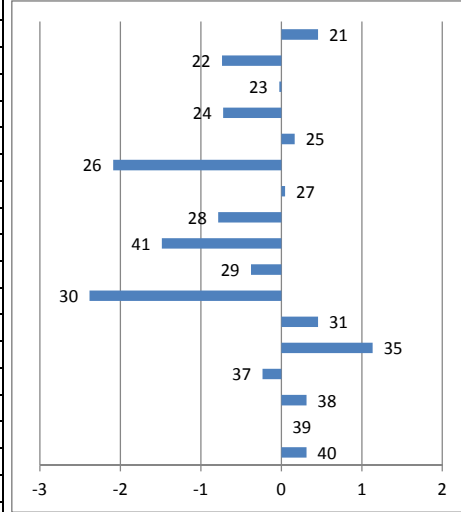
| ZrO2 | | FLX-CRM 111 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:29:26 | | z-score | Grubbs | Outlier |
|-------------|------------|--------------------|----------------|---------|---------|--------|--------|------------------------------------|-------------------|---------------|---------------|-----------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | | z>3 | n=15 VG=2,409 | confirmed |
| 21 | XRF pellet | | | 0,047 | 0,047 | 0,047 | | | | 0,85 | | |
| 22 | ISO 12677 | | reconstitution | 0,054 | 0,044 | 0,049 | | | | 0,68 | | |
| 23 | ISO 12677 | YES | | 0,073 | 0,069 | 0,071 | | | | 1,22 | | |
| 24 | ISO 12677 | | | 0,051 | 0,052 | 0,051 | | | | 0,47 | | |
| 25 | | | | | | | | | | | | |
| 26 | XRF pellet | | | 0,058 | 0,055 | 0,057 | | | | 0,02 | | |
| 27 | ISO 12677 | YES | | 0,070 | 0,080 | 0,075 | | | | 1,57 | | |
| 28 | ISO 12677 | YES | | 0,060 | 0,070 | 0,065 | | | | 0,71 | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,060 | | 0,060 | | | | 0,27 | | |
| 29 | ISO 12677 | YES | | 0,043 | 0,050 | 0,047 | | | | 0,89 | | |
| 30 | XRF bead | | | 0,041 | 0,044 | 0,043 | | | | 1,24 | | |
| 31 | ISO 12677 | YES | | 0,078 | 0,079 | 0,078 | | | | 1,87 | | |
| 35 | ISO 12677 | | | 0,042 | 0,040 | 0,041 | | | | 1,37 | | |
| 37 | ICP-OES | | Borax fusion | 0,054 | | 0,054 | | | | 0,24 | | |
| 38 | ISO 12677 | YES | | 0,051 | 0,055 | 0,053 | | | | 0,33 | | |
| 39 | | | | | | | | | | | | |
| 40 | ISO 12677 | | | 0,067 | 0,057 | 0,062 | | | | 0,45 | | |
| | | | | n | 15 | | | | | | | |
| | | | | Mean | 0,057 | | | | | | | |
| | | | | Max | 0,078 | | | | | | | |
| | | | | Min | 0,041 | | | | | | | |
| | | | | Stdev s | 0,012 | | | | | | | |
| | | | | C(95%) | 0,006 | | | | C(95%)=t*s/SQR(n) | t(15)=2,145 | | |



| Co3O4 | | FLX-CRM 111 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:12:23 | | z-score | Grubbs | Outlier |
|---------|------------|-------------|---------------|---------|---------|--------|------------------------------|------------------------------------|---------------|--------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | z>3 | n=9 VG=2,110 | confirmed | |
| 21 | XRF pellet | | | 0,011 | 0,011 | 0,011 | | | 0,43 | | | |
| 22 | ISO 12677 | | | 0,013 | 0,013 | 0,013 | | | 1,08 | | | |
| 23 | ISO 12677 | YES | | 0,006 | 0,007 | x0,007 | | | 3,46 | Outlier | x | |
| 24 | ISO 12677 | | | <0,02 | <0,02 | | | | | | | |
| 25 | | | | | | | | | | | | |
| 26 | XRF pellet | | | 0,011 | 0,011 | 0,011 | | | 0,27 | | | |
| 27 | ICP | YES | | 0,011 | 0,013 | 0,012 | | | 0,25 | | | |
| 28 | ISO 12677 | YES | | 0,010 | 0,010 | 0,010 | | | 1,19 | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,014 | | 0,014 | | | 1,84 | | | |
| 29 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 31 | ISO 12677 | YES | | | | | | | | | | |
| 35 | ISO 12677 | | | 0,013 | 0,011 | 0,012 | | | 0,33 | | | |
| 37 | ICP-OES | | aqua regia | 0,010 | | 0,010 | | | 1,19 | | | |
| 38 | ISO 12677 | YES | | <0,01 | <0,01 | | | | | | | |
| 39 | | | | | | | | | | | | |
| 40 | ISO 12677 | | | 0,010 | 0,012 | 0,011 | | | 0,43 | | | |
| | | | | n | 9 | | | | | | | |
| | | | | Mean | 0,012 | | | | | | | |
| | | | | Max | 0,014 | | | | | | | |
| | | | | Min | 0,010 | | | | | | | |
| | | | | Stdev s | 0,001 | | | | | | | |
| | | | | C(95%) | 0,001 | | C(95%)=t*s/SQR(n) t(9)=2,306 | | | | | |

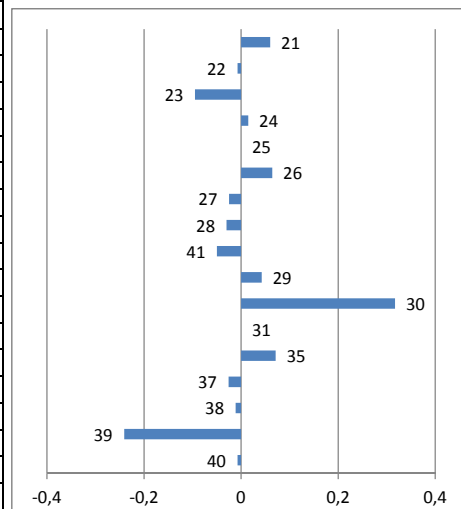
| WO3 | | FLX-CRM 111 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:29:47 | | z-score | Grubbs | Outlier |
|---------|------------|-------------|----------------|---------|---------|--------|------------------------------|------------------------------------|---------------|--------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | z>3 | n=7 VG=1,938 | confirmed | |
| 21 | XRF pellet | | | 0,005 | 0,005 | 0,005 | | | 0,64 | | | |
| 22 | ISO 12677 | | reconstitution | 0,007 | 0,007 | 0,007 | | | 0,33 | | | |
| 23 | ISO 12677 | YES | | 0,007 | 0,007 | 0,007 | | | 0,43 | | | |
| 24 | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | |
| 26 | XRF pellet | | | 0,005 | 0,002 | 0,004 | | | 1,17 | | | |
| 27 | ICP | YES | | 0,005 | 0,006 | 0,006 | | | 0,30 | | | |
| 28 | ISO 12677 | YES | | 0,010 | 0,010 | 0,010 | | | 1,88 | | | |
| 41 | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 31 | ISO 12677 | YES | | 0,054 | 0,055 | x0,054 | | | 23,20 | Outlier | x | |
| 35 | ISO 12677 | | | <0,004 | <0,004 | | | | | | | |
| 37 | ICP-OES | | aqua regia | 0,005 | | 0,005 | | | 0,54 | | | |
| 38 | ISO 12677 | YES | | <0,01 | <0,01 | | | | | | | |
| 39 | | | | | | | | | | | | |
| 40 | ISO 12677 | | | <0,02 | <0,02 | | | | | | | |
| | | | | n | 7 | | | | | | | |
| | | | | Mean | 0,006 | | | | | | | |
| | | | | Max | 0,010 | | | | | | | |
| | | | | Min | 0,004 | | | | | | | |
| | | | | Stdev s | 0,002 | | | | | | | |
| | | | | C(95%) | 0,002 | | C(95%)=t*s/SQR(n) t(7)=2,447 | | | | | |

| Cr203 | | FLX-CRM 111 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:29:57 | | z-score | Grubbs | Outlier |
|--------------|------------|--------------------|----------------|---------|---------|---------|-------------------------------|------------------------------------|---------------|---------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | z>3 | n=13 VG=2,331 | confirmed | |
| 21 | XRF pellet | | | 11,940 | 11,940 | 11,940 | | | | | | |
| 22 | ISO 12677 | | reconstitution | 10,658 | 10,838 | 10,748 | | | | | | |
| 23 | ISO 12677 | YES | | 11,420 | 11,500 | 11,460 | | | | | | |
| 24 | ISO 6331 | | | 10,777 | 10,747 | 10,762 | | | | | | |
| 25 | XRF bead | | | 11,690 | 11,610 | 11,650 | | | | | | |
| 26 | XRF pellet | | | 9,305 | 9,482 | x9,394 | | | | | | |
| 27 | ISO 12677 | YES | | 11,560 | 11,500 | 11,530 | | | | | | |
| 28 | ISO 12677 | YES | | 10,600 | 10,800 | 10,700 | | | | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 10,000 | | x10,000 | | | | | | |
| 29 | ISO 12677 | YES | | 11,382 | 10,832 | 11,107 | | | | | | |
| 30 | XRF bead | | | 8,975 | 9,224 | x9,100 | | | | | | |
| 31 | ISO 12677 | YES | | 11,950 | 11,930 | 11,940 | | | | | | |
| 35 | ISO 12677 | | | 12,570 | 12,666 | 12,618 | | | | | | |
| 37 | ICP-OES | | Borax fusion | 11,250 | | 11,250 | | | | | | |
| 38 | ISO 12677 | YES | | 11,701 | 11,894 | 11,798 | | | | | | |
| 39 | | | | | | | | | | | | |
| 40 | ISO 12677 | | | 11,800 | 11,794 | 11,797 | | | | | | |
| | | | | n | 13 | | | | | | | |
| | | | | Mean | 11,485 | | | | | | | |
| | | | | Max | 12,618 | | | | | | | |
| | | | | Min | 10,700 | | | | | | | |
| | | | | Stdev s | 0,563 | | | | | | | |
| | | | | C(95%) | 0,340 | | C(95%)=t*s/SQR(n) t(13)=2,179 | | | | | |



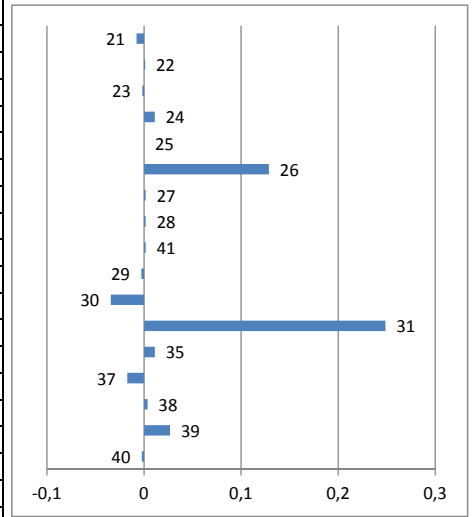
| | | |
|---------|---------|---------|
| z-score | z>3 | Outlier |
| 0,81 | | |
| 1,31 | | |
| 0,04 | | |
| 1,28 | | |
| 0,29 | | |
| 3,71 | Outlier | x |
| 0,08 | | |
| 1,39 | | |
| 2,64 | Outlier | x |
| 0,67 | | |
| 4,24 | Outlier | x |
| 0,81 | | |
| 2,01 | | |
| 0,42 | | |
| 0,56 | | |
| 0,55 | | |

| Mn304 | | FLX-CRM 111 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:30:02 | | z-score | Grubbs | Outlier |
|--------------|------------|--------------------|----------------|---------|---------|--------|-------------------------------|------------------------------------|---------------|---------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | z>3 | n=13 VG=2,331 | confirmed | |
| 21 | XRF pellet | | | 0,430 | 0,430 | 0,430 | | | | | | |
| 22 | ISO 12677 | | reconstitution | 0,361 | 0,364 | 0,363 | | | | | | |
| 23 | ISO 12677 | YES | | 0,280 | 0,270 | 0,275 | | | | | | |
| 24 | ISO 12677 | | | 0,384 | 0,386 | 0,385 | | | | | | |
| 25 | | | | | | | | | | | | |
| 26 | XRF pellet | | | 0,429 | 0,439 | 0,434 | | | | | | |
| 27 | ISO 12677 | YES | | 0,340 | 0,350 | 0,345 | | | | | | |
| 28 | ISO 12677 | YES | | 0,340 | 0,340 | 0,340 | | | | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,320 | | 0,320 | | | | | | |
| 29 | ISO 12677 | YES | | 0,408 | 0,417 | 0,413 | | | | | | |
| 30 | XRF bead | | | 0,686 | 0,688 | x0,687 | | | | | | |
| 31 | ISO 12677 | YES | | | | | | | | | | |
| 35 | ISO 12677 | | | 0,444 | 0,438 | 0,441 | | | | | | |
| 37 | ICP-OES | | Borax fusion | 0,344 | | 0,344 | | | | | | |
| 38 | ISO 12677 | YES | | 0,359 | 0,358 | 0,359 | | | | | | |
| 39 | XRF bead | | | 0,129 | 0,129 | x0,129 | | | | | | |
| 40 | ISO 12677 | | | 0,363 | 0,362 | 0,363 | | | | | | |
| | | | | n | 13 | | | | | | | |
| | | | | Mean | 0,370 | | | | | | | |
| | | | | Max | 0,441 | | | | | | | |
| | | | | Min | 0,275 | | | | | | | |
| | | | | Stdev s | 0,049 | | | | | | | |
| | | | | C(95%) | 0,030 | | C(95%)=t*s/SQR(n) t(13)=2,179 | | | | | |



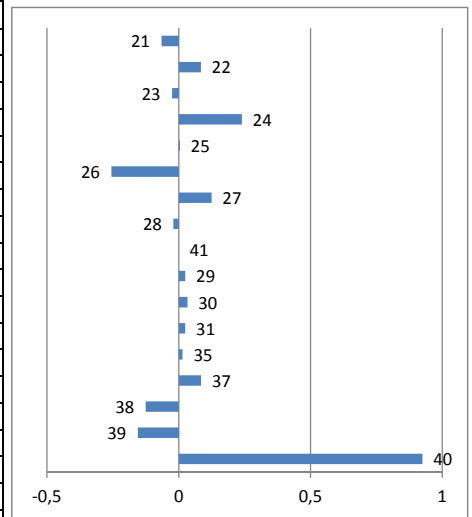
| | | |
|---------|---------|---------|
| z-score | z>3 | Outlier |
| 1,23 | | |
| 0,15 | | |
| 1,94 | | |
| 0,30 | | |
| | | |
| 1,31 | | |
| 0,51 | | |
| 0,61 | | |
| 1,02 | | |
| 0,87 | | |
| 6,48 | Outlier | x |
| | | |
| 1,45 | | |
| 0,53 | | |
| 0,23 | | |
| 4,92 | Outlier | x |
| 0,15 | | |

| P205 | | FLX-CRM 111 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:30:11 | | z-score | Grubbs | Outlier |
|---------|------------|-------------|----------------|---------|---------|--------|-------------------------------|------------------------------------|---------|---------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | z-score | n=12 VG=2,285 | confirmed | |
| 21 | ISO 12677 | | | 0,082 | 0,079 | 0,081 | | | 1,02 | | | |
| 22 | ISO 12677 | | reconstitution | 0,092 | 0,087 | 0,090 | | | 0,16 | | | |
| 23 | ISO 12677 | YES | | 0,087 | 0,086 | 0,087 | | | 0,24 | | | |
| 24 | ISO 12677 | | | 0,099 | 0,100 | 0,099 | | | 1,45 | | | |
| 25 | XRF bead | | | <0,1 | <0,1 | | | | | | | |
| 26 | XRF pellet | | | 0,222 | 0,211 | x0,217 | | | 16,81 | Outlier | x | |
| 27 | ISO 12677 | YES | | 0,090 | 0,090 | 0,090 | | | 0,22 | | | |
| 28 | ISO 12677 | YES | | 0,080 | 0,100 | 0,090 | | | 0,22 | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,090 | | 0,090 | | | 0,22 | | | |
| 29 | ISO 12677 | YES | | 0,085 | 0,086 | 0,086 | | | 0,37 | | | |
| 30 | XRF bead | | | 0,052 | 0,056 | x0,054 | | | 4,48 | Outlier | x | |
| 31 | ISO 12677 | YES | | 0,346 | 0,327 | x0,337 | | | 32,49 | Outlier | x | |
| 35 | ISO 12677 | | | 0,100 | 0,099 | 0,099 | | | 1,44 | | | |
| 37 | ICP-OES | | aqua regia | 0,071 | | 0,071 | | | 2,26 | Included | | |
| 38 | ISO 12677 | YES | | 0,092 | 0,092 | 0,092 | | | 0,48 | | | |
| 39 | XRF bead | | | 0,110 | 0,120 | x0,115 | | | 3,49 | Outlier | x | |
| 40 | ISO 12677 | | | 0,087 | 0,085 | 0,086 | | | 0,30 | | | |
| | | | | n | 12 | | | | | | | |
| | | | | Mean | 0,088 | | | | | | | |
| | | | | Max | 0,099 | | | | | | | |
| | | | | Min | 0,071 | | | | | | | |
| | | | | Stdev s | 0,008 | | | | | | | |
| | | | | C(95%) | 0,005 | | C(95%)=t*s/SQR(n) t(12)=2,201 | | | | | |



| z-score | Grubbs | Outlier |
|---------|---------------|-----------|
| z>3 | n=12 VG=2,285 | confirmed |
| 1,02 | | |
| 0,16 | | |
| 0,24 | | |
| 1,45 | | |
| | | |
| 16,81 | Outlier | x |
| 0,22 | | |
| 0,22 | | |
| 0,22 | | |
| 0,37 | | |
| 4,48 | Outlier | x |
| 32,49 | Outlier | x |
| 1,44 | | |
| 2,26 | Included | |
| 0,48 | | |
| 3,49 | Outlier | x |
| 0,30 | | |

| LOI (@ 1025°C) | | FLX-CRM 111 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:30:16 | | z-score | Grubbs | Outlier |
|----------------|-------------|-------------|---------------|---------|---------|--------|-------------------------------|------------------------------------|---------|---------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | z-score | n=13 VG=2,331 | confirmed | |
| 21 | gravimetric | | | 0,510 | 0,510 | 0,510 | | | 0,82 | | | |
| 22 | ISO 12677 | | | 0,635 | 0,684 | 0,660 | | | 1,04 | | | |
| 23 | ISO 12677 | YES | | 0,560 | 0,540 | 0,550 | | | 0,32 | | | |
| 24 | ISO 12677 | | | 0,820 | 0,810 | x0,815 | | | 2,98 | Outlier | x | |
| 25 | gravimetric | | | 0,580 | 0,580 | 0,580 | | | 0,05 | | | |
| 26 | | | | 0,330 | 0,310 | x0,320 | | | 3,18 | Outlier | x | |
| 27 | ISO 12677 | YES | | 0,700 | 0,700 | 0,700 | | | 1,55 | | | |
| 28 | ISO 12677 | YES | | 0,550 | 0,560 | 0,555 | | | 0,26 | | | |
| 41 | | | | | | | | | | | | |
| 29 | DIN 51081 | YES | 1 h at 1025°C | 0,590 | 0,610 | 0,600 | | | 0,30 | | | |
| 30 | gravimetric | | | 0,592 | 0,625 | 0,609 | | | 0,41 | | | |
| 31 | ISO 12677 | | | 0,600 | 0,600 | 0,600 | | | 0,30 | | | |
| 35 | ISO 12677 | | | 0,590 | 0,590 | 0,590 | | | 0,18 | | | |
| 37 | gravimetric | | | 0,660 | | 0,660 | | | 1,05 | | | |
| 38 | ISO 12677 | YES | | 0,440 | 0,460 | 0,450 | | | 1,56 | | | |
| 39 | gravimetric | | | 0,450 | 0,390 | 0,420 | | | 1,94 | | | |
| 40 | ISO 12677 | | | 1,500 | 1,500 | x1,500 | | | 11,50 | Outlier | x | |
| | | | | n | 13 | | | | | | | |
| | | | | Mean | 0,576 | | | | | | | |
| | | | | Max | 0,700 | | | | | | | |
| | | | | Min | 0,420 | | | | | | | |
| | | | | Stdev s | 0,080 | | | | | | | |
| | | | | C(95%) | 0,049 | | C(95%)=t*s/SQR(n) t(13)=2,179 | | | | | |



| z-score | Grubbs | Outlier |
|---------|---------------|-----------|
| z>3 | n=13 VG=2,331 | confirmed |
| 0,82 | | |
| 1,04 | | |
| 0,32 | | |
| 2,98 | Outlier | x |
| 0,05 | | |
| 3,18 | Outlier | x |
| 1,55 | | |
| 0,26 | | |
| | | |
| 0,30 | | |
| 0,41 | | |
| 0,30 | | |
| 0,18 | | |
| 1,05 | | |
| 1,56 | | |
| 1,94 | | |
| 11,50 | Outlier | x |

| Al2O3 | | FLX-CRM 112 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:47:41 | | | | |
|---------|------------|-------------|----------------|---------|---------|---------|--|------------------------------------|--|---------|---------------|-----------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | Bar chart showing individual measurements (21-40) and their deviation from the mean. | | | z-score | Grubbs | Outlier |
| 21 | ISO 12677 | | | 82,462 | 82,025 | x82,244 | | | | >3 | n=11 VG=2,234 | confirmed |
| 22 | ISO 12677 | | reconstitution | 77,563 | 77,673 | x77,618 | | | | 4,54 | Outlier | x |
| 23 | ISO 12677 | YES | | 80,020 | 80,050 | 80,035 | | | | 4,10 | Outlier | x |
| 24 | ISO 12677 | | | 79,495 | 79,594 | 79,545 | | | | 0,41 | | |
| 25 | XRF bead | YES | | 80,340 | 80,060 | 80,200 | | | | 0,50 | | |
| 26 | XRF pellet | | | 55,350 | 54,190 | x54,770 | | | | 0,72 | | |
| 27 | ISO 12677 | YES | | 80,500 | 80,900 | 80,700 | | | | 46,75 | Outlier | x |
| 28 | ISO 12677 | YES | | 79,600 | 79,700 | 79,650 | | | | 1,66 | | |
| 41 | | | | | | | | | | 0,30 | | |
| 29 | ISO 12677 | YES | | 79,652 | 79,681 | 79,667 | | | | 0,27 | | |
| 30 | XRF bead | | | 79,610 | 80,860 | 80,235 | | | | 0,79 | | |
| 31 | ISO 12677 | YES | | 78,620 | 78,620 | 78,620 | | | | 2,23 | Included | |
| 35 | ISO 12677 | | | 79,832 | 80,193 | 80,013 | | | | 0,37 | | |
| 37 | ICP-OES | | Borax fusion | 70,990 | | x70,990 | | | | 16,47 | Outlier | x |
| 38 | ISO 12677 | YES | | 79,790 | 79,842 | 79,816 | | | | 0,01 | | |
| 39 | XRF bead | | | 75,230 | 75,510 | x75,370 | | | | 8,29 | Outlier | x |
| 40 | ISO 12677 | | | 79,574 | 79,351 | 79,463 | | | | 0,65 | | |
| | | | | n | 11 | | | | | | | |
| | | | | Mean | 79,813 | | | | | | | |
| | | | | Max | 80,700 | | | | | | | |
| | | | | Min | 78,620 | | | | | | | |
| | | | | Stdev s | 0,536 | | | | | | | |
| | | | | C(95%) | 0,360 | | | | | | | |

C(95%)=t*/SQR(n) t(11)=2,228

| CaO | | FLX-CRM 112 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:47:47 | | | | |
|---------|------------|-------------|----------------|---------|---------|--------|--|------------------------------------|--|---------|---------------|-----------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | Bar chart showing individual measurements (21-40) and their deviation from the mean. | | | z-score | Grubbs | Outlier |
| 21 | ISO 12677 | | | 0,205 | 0,246 | x0,226 | | | | >3 | n=14 VG=2,371 | confirmed |
| 22 | ISO 12677 | | reconstitution | 0,141 | 0,154 | 0,148 | | | | 2,93 | Outlier | x |
| 23 | ISO 12677 | YES | | 0,167 | 0,153 | 0,160 | | | | 0,03 | | |
| 24 | ISO 12677 | | | 0,165 | 0,161 | 0,163 | | | | 0,49 | | |
| 25 | XRF bead | YES | | <0,1 | <0,1 | | | | | 0,60 | | |
| 26 | XRF pellet | | | 0,182 | 0,181 | 0,182 | | | | 1,29 | | |
| 27 | ISO 12677 | YES | | 0,110 | 0,120 | 0,115 | | | | 1,17 | | |
| 28 | ISO 12677 | YES | | 0,100 | 0,100 | 0,100 | | | | 1,72 | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,140 | | 0,140 | | | | 0,24 | | |
| 29 | ISO 12677 | YES | | 0,124 | 0,131 | 0,128 | | | | 0,71 | | |
| 30 | XRF bead | | | 0,270 | 0,260 | x0,265 | | | | 4,36 | Outlier | x |
| 31 | ISO 12677 | YES | | 0,158 | 0,157 | 0,157 | | | | 0,39 | | |
| 35 | ISO 12677 | | | 0,150 | 0,151 | 0,150 | | | | 0,14 | | |
| 37 | ICP-OES | | aqua regia | 0,098 | | 0,098 | | | | 1,79 | | |
| 38 | ISO 12677 | YES | | 0,178 | 0,168 | 0,173 | | | | 0,97 | | |
| 39 | XRF bead | | | 0,200 | 0,150 | 0,175 | | | | 1,05 | | |
| 40 | ISO 12677 | | | 0,169 | 0,160 | 0,165 | | | | 0,66 | | |
| | | | | n | 14 | | | | | | | |
| | | | | Mean | 0,147 | | | | | | | |
| | | | | Max | 0,182 | | | | | | | |
| | | | | Min | 0,098 | | | | | | | |
| | | | | Stdev s | 0,027 | | | | | | | |
| | | | | C(95%) | 0,016 | | | | | | | |

C(95%)=t*/SQR(n) t(14)=2,160

| Fe2O3 | | FLX-CRM 112 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:47:53 | | z-score | Grubbs | Outlier |
|--------------|------------|--------------------|----------------|---------|---------|----------------|--------------|------------------------------------|---------------|----------------------|------------------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | z>3 | n=16 VG=2,443 | confirmed | |
| 21 | ISO 12677 | | | 0,338 | 0,307 | 0,323 | | | | | | |
| 22 | ISO 12677 | | reconstitution | 0,360 | 0,360 | 0,360 | | | | | | |
| 23 | ISO 12677 | YES | | 0,400 | 0,380 | 0,390 | | | | | | |
| 24 | ISO 12677 | | | 0,379 | 0,390 | 0,385 | | | | | | |
| 25 | XRF bead | YES | | 0,400 | 0,410 | 0,405 | | | | | | |
| 26 | XRF pellet | | | 1,027 | 1,138 | x1,083 | | | | | | |
| 27 | ISO 12677 | YES | | 0,390 | 0,390 | 0,390 | | | | | | |
| 28 | ISO 12677 | YES | | 0,210 | 0,200 | 0,205 | | | | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,340 | | 0,340 | | | | | | |
| 29 | ISO 12677 | YES | | 0,399 | 0,342 | 0,371 | | | | | | |
| 30 | XRF bead | | | 0,240 | 0,240 | 0,240 | | | | | | |
| 31 | ISO 12677 | YES | | 0,281 | 0,269 | 0,275 | | | | | | |
| 35 | ISO 12677 | | | 0,346 | 0,350 | 0,348 | | | | | | |
| 37 | ICP-OES | | Borax fusion | 0,415 | | 0,415 | | | | | | |
| 38 | ISO 12677 | YES | | 0,356 | 0,327 | 0,342 | | | | | | |
| 39 | XRF bead | | | 0,180 | 0,190 | 0,185 | | | | | | |
| 40 | ISO 12677 | | | 0,253 | 0,226 | 0,240 | | | | | | |
| | | | | | | n | 16 | | | | | |
| | | | | | | Mean | 0,326 | | | | | |
| | | | | | | Max | 0,415 | | | | | |
| | | | | | | Min | 0,185 | | | | | |
| | | | | | | Stdev s | 0,074 | | | | | |
| | | | | | | C(95%) | 0,039 | | | | | |

C(95%)=t*s/SQR(n) t(16)=2,131

| HfO2 | | FLX-CRM 112 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:17:35 | | z-score | Grubbs | Outlier |
|-------------|------------|--------------------|---------------|---------|---------|----------------|--------------|------------------------------------|---------------|----------------------|------------------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | z>3 | n=12 VG=2,285 | confirmed | |
| 21 | XRF pellet | | | 0,362 | 0,362 | x0,362 | | | | | | |
| 22 | ISO 12677 | | | 0,243 | 0,241 | x0,242 | | | | | | |
| 23 | ISO 12677 | YES | | 0,121 | 0,122 | 0,122 | | | | | | |
| 24 | ISO 12677 | | | 0,138 | 0,139 | 0,139 | | | | | | |
| 25 | XRF bead | | | 0,130 | 0,120 | 0,125 | | | | | | |
| 26 | XRF pellet | | | 0,082 | 0,087 | 0,085 | | | | | | |
| 27 | ICP-OES | YES | | 0,117 | 0,120 | 0,119 | | | | | | |
| 28 | ISO 12677 | YES | | 0,070 | 0,070 | 0,070 | | | | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,044 | | 0,044 | | | | | | |
| 29 | ISO 12677 | YES | | 0,100 | 0,097 | 0,099 | | | | | | |
| 30 | | | | | | | | | | | | |
| 31 | ISO 12677 | YES | | 0,107 | 0,107 | 0,107 | | | | | | |
| 35 | ISO 12677 | | | 0,082 | 0,081 | 0,082 | | | | | | |
| 37 | | | | | | | | | | | | |
| 38 | ISO 12677 | YES | | 0,070 | 0,079 | 0,075 | | | | | | |
| 39 | | | | | | | | | | | | |
| 40 | ISO 12677 | | | 0,124 | 0,124 | 0,124 | | | | | | |
| | | | | | | n | 12 | | | | | |
| | | | | | | Mean | 0,099 | | | | | |
| | | | | | | Max | 0,139 | | | | | |
| | | | | | | Min | 0,044 | | | | | |
| | | | | | | Stdev s | 0,028 | | | | | |
| | | | | | | C(95%) | 0,018 | | | | | |

C(95%)=t*s/SQR(n) t(12)=2,201

| K2O | | FLX-CRM 112 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:48:04 | | z-score | Grubbs | Outlier |
|------------|------------|--------------------|----------------|---------|---------|----------------|--------------|------------------------------------|--------------|---------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | >3 | n=10 VG=2,176 | confirmed | |
| 21 | ISO 12677 | | | 0,092 | 0,092 | 0,092 | | | | | | |
| 22 | ISO 12677 | | reconstitution | 0,075 | 0,106 | 0,091 | | | | | | |
| 23 | ISO 12677 | YES | | 0,087 | 0,081 | 0,084 | | | | | | |
| 24 | ISO 12677 | | | 0,099 | 0,094 | 0,097 | | | | | | |
| 25 | XRF bead | YES | | <0,1 | <0,1 | | | | | | | |
| 26 | XRF pellet | | | 0,176 | 0,172 | x0,174 | | | | | | |
| 27 | ICP-OES | YES | | 0,095 | 0,095 | 0,095 | | | | | | |
| 28 | ISO 12677 | YES | | 0,080 | 0,090 | 0,085 | | | | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,040 | | x0,040 | | | | | | |
| 29 | ISO 12677 | YES | | 0,100 | 0,098 | 0,099 | | | | | | |
| 30 | XRF bead | | | 0,177 | 0,190 | x0,184 | | | | | | |
| 31 | ISO 12677 | YES | | 0,051 | 0,052 | x0,051 | | | | | | |
| 35 | ISO 12677 | | | 0,071 | 0,074 | x0,073 | | | | | | |
| 37 | ICP-OES | | aqua regia | 0,048 | | x0,048 | | | | | | |
| 38 | ISO 12677 | YES | | 0,089 | 0,085 | 0,087 | | | | | | |
| 39 | XRF bead | | | 0,090 | 0,080 | 0,085 | | | | | | |
| 40 | ISO 12677 | | | 0,089 | 0,086 | 0,088 | | | | | | |
| | | | | | | n | 10 | | | | | |
| | | | | | | Mean | 0,090 | | | | | |
| | | | | | | Max | 0,099 | | | | | |
| | | | | | | Min | 0,084 | | | | | |
| | | | | | | Stdev s | 0,005 | | | | | |
| | | | | | | C(95%) | 0,004 | | | | | |

C(95%)=t*s/SQR(n) t(10)=2,262

| | | |
|--------------|----------------|----------|
| 0,35 | | |
| 0,07 | | |
| 1,16 | | |
| 1,20 | | |
| | | |
| 15,80 | Outlier | x |
| 0,91 | | |
| 0,97 | | |
| 9,45 | Outlier | x |
| 1,67 | | |
| 17,68 | Outlier | x |
| 7,38 | Outlier | x |
| 3,23 | Outlier | x |
| 7,94 | Outlier | x |
| 0,59 | | |
| 0,97 | | |
| 0,50 | | |

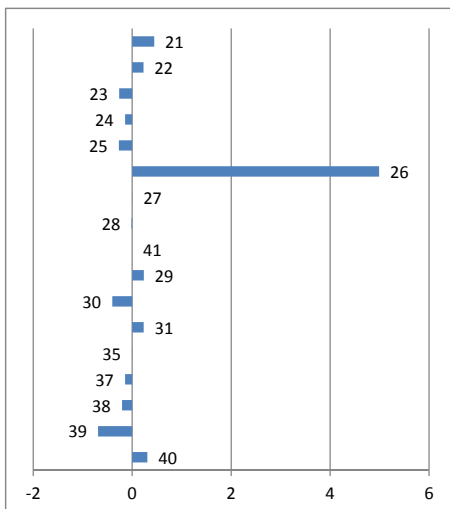
| MgO | | FLX-CRM 112 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:48:08 | | z-score | Grubbs | Outlier |
|------------|------------|--------------------|----------------|---------|---------|----------------|--------------|------------------------------------|--------------|---------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | >3 | n=16 VG=2,443 | confirmed | |
| 21 | ISO 12677 | | | 0,789 | 0,808 | 0,799 | | | | | | |
| 22 | ISO 12677 | | reconstitution | 0,901 | 0,883 | 0,892 | | | | | | |
| 23 | ISO 12677 | YES | | 0,720 | 0,720 | 0,720 | | | | | | |
| 24 | ISO 12677 | | | 0,651 | 0,630 | 0,641 | | | | | | |
| 25 | XRF bead | YES | | 0,690 | 0,680 | 0,685 | | | | | | |
| 26 | XRF pellet | | | 0,864 | 0,838 | 0,851 | | | | | | |
| 27 | ISO 12677 | YES | | 0,570 | 0,540 | x0,555 | | | | | | |
| 28 | ISO 12677 | YES | | 0,660 | 0,630 | 0,645 | | | | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,690 | | 0,690 | | | | | | |
| 29 | ISO 12677 | YES | | 0,781 | 0,815 | 0,798 | | | | | | |
| 30 | XRF bead | | | 0,824 | 0,844 | 0,834 | | | | | | |
| 31 | ISO 12677 | YES | | 0,819 | 0,833 | 0,826 | | | | | | |
| 35 | ISO 12677 | | | 0,779 | 0,715 | 0,747 | | | | | | |
| 37 | ICP-OES | | aqua regia | 0,630 | | 0,630 | | | | | | |
| 38 | ISO 12677 | YES | | 0,781 | 0,782 | 0,782 | | | | | | |
| 39 | XRF bead | | | 0,760 | 0,770 | 0,765 | | | | | | |
| 40 | ISO 12677 | | | 0,772 | 0,771 | 0,772 | | | | | | |
| | | | | | | n | 16 | | | | | |
| | | | | | | Mean | 0,755 | | | | | |
| | | | | | | Max | 0,892 | | | | | |
| | | | | | | Min | 0,630 | | | | | |
| | | | | | | Stdev s | 0,080 | | | | | |
| | | | | | | C(95%) | 0,042 | | | | | |

C(95%)=t*s/SQR(n) t(16)=2,131

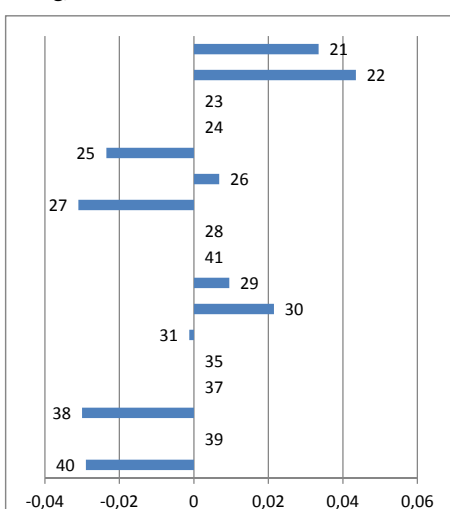
| | | |
|-------------|----------------|----------|
| 0,55 | | |
| 1,72 | | |
| 0,44 | | |
| 1,43 | | |
| 0,87 | | |
| 1,21 | | |
| 2,50 | Outlier | x |
| 1,38 | | |
| 0,81 | | |
| 0,54 | | |
| 0,99 | | |
| 0,89 | | |
| 0,10 | | |
| 1,56 | | |
| 0,34 | | |
| 0,13 | | |
| 0,21 | | |

| Na2O | | FLX-CRM 112 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:48:13 | | z-score | Grubbs | Outlier |
|---------|------------|-------------|----------------|---------|---------|-------------------|--|------------------------------------|-------|---------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | Bar chart showing individual measurements (Lab.No. 21-40) on the x-axis (ranging from -0,5 to 1) and their corresponding values on the y-axis. | | >3 | n=14 VG=2,371 | confirmed | |
| 21 | ISO 12677 | | | 0,348 | 0,368 | 0,358 | 21 | | 1,38 | | | |
| 22 | ISO 12677 | | reconstitution | 0,184 | 0,191 | 0,188 | 22 | | 1,20 | | | |
| 23 | ISO 12677 | YES | | 0,330 | 0,330 | 0,330 | 23 | | 0,96 | | | |
| 24 | | | | | | | 24 | | | | | |
| 25 | ICP-OES | YES | | 0,260 | 0,240 | 0,250 | 25 | | 0,25 | | | |
| 26 | XRF pellet | | | 1,233 | 1,158 | x1,196 | 26 | | 14,04 | Outlier | x | |
| 27 | ICP-OES | YES | | 0,310 | 0,310 | 0,310 | 27 | | 0,66 | | | |
| 28 | ISO 12677 | YES | | 0,180 | 0,170 | 0,175 | 28 | | 1,38 | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,230 | | 0,230 | 41 | | 0,55 | | | |
| 29 | ISO 12677 | YES | | 0,312 | 0,301 | 0,307 | 29 | | 0,60 | | | |
| 30 | XRF bead | | | 0,277 | 0,266 | 0,272 | 30 | | 0,07 | | | |
| 31 | ISO 12677 | YES | | 0,628 | 0,586 | x0,607 | 31 | | 5,14 | Outlier | x | |
| 35 | ISO 12677 | | | 0,259 | 0,272 | 0,266 | 35 | | 0,02 | | | |
| 37 | ICP-OES | | aqua regia | 0,135 | | 0,135 | 37 | | 1,99 | | | |
| 38 | ISO 12677 | YES | | 0,316 | 0,317 | 0,317 | 38 | | 0,75 | | | |
| 39 | XRF bead | | | 0,260 | 0,260 | 0,260 | 39 | | 0,10 | | | |
| 40 | ISO 12677 | | | 0,332 | 0,342 | 0,337 | 40 | | 1,06 | | | |
| | | | | n | 14 | | | | | | | |
| | | | | Mean | 0,267 | | | | | | | |
| | | | | Max | 0,358 | | | | | | | |
| | | | | Min | 0,135 | | | | | | | |
| | | | | Stdev s | 0,066 | | | | | | | |
| | | | | C(95%) | 0,038 | | | | | | | |
| | | | | | | C(95%)=t*s/SQR(n) | | t(14)=2,160 | | | | |

| NiO | | FLX-CRM 112 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:31:40 | | z-score | Grubbs | Outlier |
|---------|------------|-------------|----------------|---------|---------|-------------------|---|------------------------------------|------|---------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | Bar chart showing individual measurements (Lab.No. 21-40) on the x-axis (ranging from -0,01 to 0,015) and their corresponding values on the y-axis. | | >3 | n=10 VG=2,176 | confirmed | |
| 21 | XRF pellet | | | 0,019 | 0,019 | 0,019 | 21 | | 1,34 | | | |
| 22 | ISO 12677 | | reconstitution | 0,014 | 0,015 | 0,015 | 22 | | 0,71 | | | |
| 23 | ISO 12677 | YES | | 0,001 | 0,001 | 0,001 | 23 | | 1,16 | | | |
| 24 | ISO 12677 | | | <0,005 | <0,005 | | 24 | | | | | |
| 25 | | | | | | | 25 | | | | | |
| 26 | XRF pellet | | | 0,002 | 0,003 | 0,002 | 26 | | 0,96 | | | |
| 27 | ICP-OES | YES | | 0,002 | 0,002 | 0,002 | 27 | | 1,04 | | | |
| 28 | ISO 12677 | YES | | 0,010 | 0,010 | 0,010 | 28 | | 0,09 | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | <0,005 | | <0,005 | 41 | | | | | |
| 29 | ISO 12677 | YES | | 0,013 | 0,015 | 0,014 | 29 | | 0,64 | | | |
| 30 | | | | | | | 30 | | | | | |
| 31 | ISO 12677 | YES | | 0,007 | 0,007 | 0,007 | 31 | | 0,28 | | | |
| 35 | ISO 12677 | | | <0,004 | <0,004 | | 35 | | | | | |
| 37 | | | | | | | 37 | | | | | |
| 38 | ISO 12677 | YES | | 0,020 | 0,020 | 0,020 | 38 | | 1,48 | | | |
| 39 | | | | | | | 39 | | | | | |
| 40 | ISO 12677 | | | 0,004 | 0,003 | 0,004 | 40 | | 0,81 | | | |
| | | | | n | 10 | | | | | | | |
| | | | | Mean | 0,009 | | | | | | | |
| | | | | Max | 0,020 | | | | | | | |
| | | | | Min | 0,001 | | | | | | | |
| | | | | Stdev s | 0,007 | | | | | | | |
| | | | | C(95%) | 0,005 | | | | | | | |
| | | | | | | C(95%)=t*s/SQR(n) | | t(10)=2,262 | | | | |

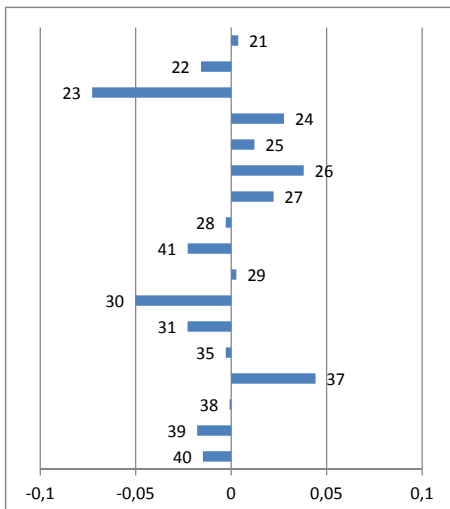
| SiO2 | | FLX-CRM 112 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:48:20 | | z-score | Grubbs | Outlier |
|-------------|------------|--------------------|----------------|---------|---------|---------|---|------------------------------------|--------------|---------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean |  | | >3 | n=14 VG=2,371 | confirmed | |
| 21 | ISO 12677 | | | 12,410 | 12,810 | 12,610 | 21 | | 1,75 | | | |
| 22 | ISO 12677 | | reconstitution | 12,357 | 12,427 | 12,392 | 22 | | 0,90 | | | |
| 23 | ISO 12677 | YES | | 11,920 | 11,880 | 11,900 | 23 | | 1,04 | | | |
| 24 | ISO 12677 | | | 11,990 | 12,050 | 12,020 | 24 | | 0,57 | | | |
| 25 | XRF bead | YES | | 11,880 | 11,910 | 11,895 | 25 | | 1,06 | | | |
| 26 | XRF pellet | | | 17,280 | 17,030 | x17,155 | 26 | | 19,61 | Outlier | x | |
| 27 | ISO 12677 | YES | | 12,270 | 12,060 | 12,165 | 27 | | 0,00 | | | |
| 28 | ISO 12677 | YES | | 12,200 | 12,100 | 12,150 | 28 | | 0,06 | | | |
| 41 | | | | | | | 41 | | | | | |
| 29 | ISO 12677 | YES | | 12,403 | 12,392 | 12,398 | 29 | | 0,92 | | | |
| 30 | XRF bead | | | 11,810 | 11,710 | 11,760 | 30 | | 1,59 | | | |
| 31 | ISO 12677 | YES | | 12,420 | 12,370 | 12,395 | 31 | | 0,91 | | | |
| 35 | ISO 12677 | | | 12,223 | 12,104 | 12,164 | 35 | | 0,00 | | | |
| 37 | ICP-OES | | Borax fusion | 12,020 | | 12,020 | 37 | | 0,57 | | | |
| 38 | ISO 12677 | YES | | 12,043 | 11,875 | 11,959 | 38 | | 0,81 | | | |
| 39 | XRF bead | | | 11,530 | 11,420 | x11,475 | 39 | | 2,71 | Outlier | x | |
| 40 | ISO 12677 | | | 12,511 | 12,430 | 12,471 | 40 | | 1,20 | | | |
| | | | | n | 14 | | | | | | | |
| | | | | Mean | 12,164 | | | | | | | |
| | | | | Max | 12,610 | | | | | | | |
| | | | | Min | 11,760 | | | | | | | |
| | | | | Stdev s | 0,254 | | | | | | | |
| | | | | C(95%) | 0,147 | | | | | | | |

C(95%)=t*s/SQR(n) t(14)=2,160

| Total S expressed as SO3 | | FLX-CRM 112 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:48:27 | | z-score | Grubbs | Outlier |
|---------------------------------|------------|--------------------|----------------|---------|---------|--------|--|------------------------------------|--------------|---------------|-----------|---------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean |  | | >3 | n=10 VG=2,176 | confirmed | |
| 21 | HF-IR | | | 0,077 | 0,077 | 0,077 | 21 | | 1,21 | | | |
| 22 | ISO 12677 | | reconstitution | 0,086 | 0,088 | 0,087 | 22 | | 1,57 | | | |
| 23 | ISO 12677 | YES | | <0,03 | <0,03 | | 23 | | | | | |
| 24 | | | | | | | 24 | | | | | |
| 25 | HF-IR | | | 0,010 | 0,030 | 0,020 | 25 | | 0,85 | | | |
| 26 | XRF pellet | | | 0,041 | 0,059 | 0,050 | 26 | | 0,25 | | | |
| 27 | HF-IR | YES | | 0,010 | 0,015 | 0,013 | 27 | | 1,12 | | | |
| 28 | ISO 12677 | YES | | <0,01 | <0,01 | | 28 | | | | | |
| 41 | | | | | | | 41 | | | | | |
| 29 | ISO 12677 | YES | | 0,042 | 0,064 | 0,053 | 29 | | 0,34 | | | |
| 30 | XRF bead | | | 0,065 | 0,065 | 0,065 | 30 | | 0,78 | | | |
| 31 | ISO 12677 | YES | | 0,040 | 0,045 | 0,042 | 31 | | 0,05 | | | |
| 35 | ISO 12677 | | | <0,010 | <0,010 | | 35 | | | | | |
| 37 | | | | | | | 37 | | | | | |
| 38 | HF-IR | | DIN 51095-1 | 0,016 | 0,011 | 0,014 | 38 | | 1,09 | | | |
| 39 | | | | | | | 39 | | | | | |
| 40 | ISO 12677 | | | 0,012 | 0,017 | 0,015 | 40 | | 1,05 | | | |
| | | | | n | 10 | | | | | | | |
| | | | | Mean | 0,044 | | | | | | | |
| | | | | Max | 0,087 | | | | | | | |
| | | | | Min | 0,013 | | | | | | | |
| | | | | Stdev s | 0,028 | | | | | | | |
| | | | | C(95%) | 0,020 | | | | | | | |

C(95%)=t*s/SQR(n) t(10)=2,262

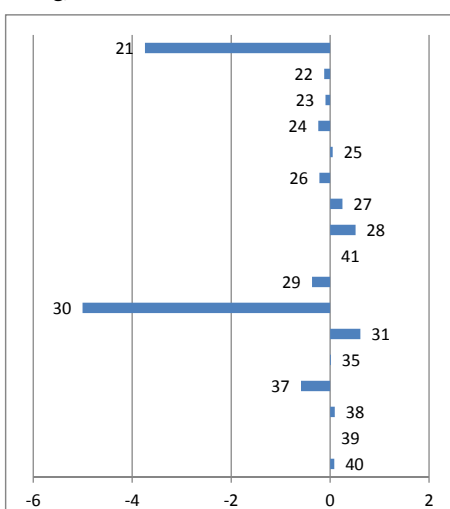
| TiO2 | | FLX-CRM 112 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:48:32 | | z-score | Grubbs | Outlier | |
|-------------|------------|--------------------|----------------|---------|---------|--------|--------|------------------------------------|--|--------------|---------------|-----------|--|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | | | | | |
| 21 | ISO 12677 | | | 0,277 | 0,276 | 0,277 | | | | >3 | n=16 VG=2,443 | confirmed | |
| 22 | ISO 12677 | | reconstitution | 0,257 | 0,257 | 0,257 | | | | 0,15 | | | |
| 23 | ISO 12677 | YES | | 0,200 | 0,200 | x0,200 | | | | 0,64 | | | |
| 24 | ISO 12677 | | | 0,297 | 0,304 | 0,301 | | | | 2,94 | Outlier | x | |
| 25 | XRF bead | YES | | 0,280 | 0,290 | 0,285 | | | | 1,12 | | | |
| 26 | XRF pellet | | | 0,315 | 0,307 | 0,311 | | | | 0,49 | | | |
| 27 | ISO 12677 | YES | | 0,290 | 0,300 | 0,295 | | | | 1,53 | | | |
| 28 | ISO 12677 | YES | | 0,270 | 0,270 | 0,270 | | | | 0,90 | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,250 | | 0,250 | | | | 0,11 | | | |
| 29 | ISO 12677 | YES | | 0,280 | 0,271 | 0,276 | | | | 0,92 | | | |
| 30 | XRF bead | | | 0,223 | 0,222 | 0,223 | | | | 0,11 | | | |
| 31 | ISO 12677 | YES | | 0,248 | 0,252 | 0,250 | | | | 2,03 | | | |
| 35 | ISO 12677 | | | 0,273 | 0,267 | 0,270 | | | | 0,92 | | | |
| 37 | ICP-OES | | Borax fusion | 0,317 | | 0,317 | | | | 0,11 | | | |
| 38 | ISO 12677 | YES | | 0,277 | 0,267 | 0,272 | | | | 1,78 | | | |
| 39 | XRF bead | | | 0,260 | 0,250 | 0,255 | | | | 0,03 | | | |
| 40 | ISO 12677 | | | 0,261 | 0,255 | 0,258 | | | | 0,72 | | | |
| | | | | n | 16 | | | | | | | | |
| | | | | Mean | 0,273 | | | | | | | | |
| | | | | Max | 0,317 | | | | | | | | |
| | | | | Min | 0,223 | | | | | | | | |
| | | | | Stdev s | 0,025 | | | | | | | | |
| | | | | C(95%) | 0,013 | | | | | | | | |



| Sample | z-score |
|--------|---------|
| 21 | 0,15 |
| 22 | 0,64 |
| 23 | 2,94 |
| 24 | 1,12 |
| 25 | 0,49 |
| 26 | 1,53 |
| 27 | 0,90 |
| 28 | 0,11 |
| 29 | 0,92 |
| 30 | 0,11 |
| 31 | 2,03 |
| 35 | 0,92 |
| 37 | 0,11 |
| 38 | 1,78 |
| 39 | 0,03 |
| 40 | 0,72 |

C(95%)=t*s/SQR(n) t(16)=2,131

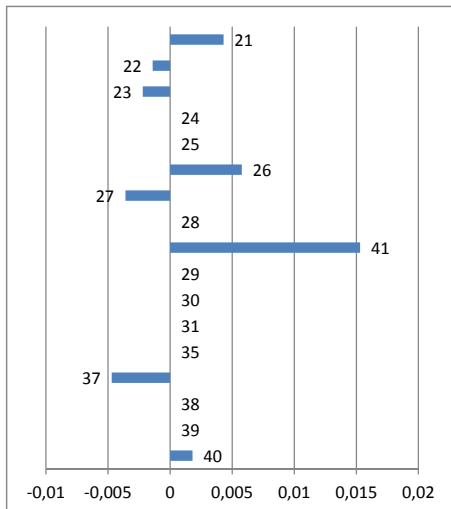
| ZrO2 | | FLX-CRM 112 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:48:42 | | z-score | Grubbs | Outlier | |
|-------------|------------|--------------------|----------------|---------|---------|--------|--------|------------------------------------|--|--------------|---------------|-----------|--|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | | | | | |
| 21 | XRF pellet | | | 2,208 | 2,208 | x2,208 | | | | >3 | n=13 VG=2,331 | confirmed | |
| 22 | ISO 12677 | | reconstitution | 5,706 | 5,951 | 5,829 | | | | 11,23 | Outlier | x | |
| 23 | ISO 12677 | YES | | 5,830 | 5,880 | 5,855 | | | | 0,36 | | | |
| 24 | ISO 12677 | | | 5,704 | 5,715 | 5,710 | | | | 0,28 | | | |
| 25 | XRF bead | | | 6,010 | 5,990 | 6,000 | | | | 0,72 | | | |
| 26 | XRF pellet | | | 5,745 | 5,720 | 5,733 | | | | 0,15 | | | |
| 27 | ISO 12677 | YES | | 6,300 | 6,100 | 6,200 | | | | 0,65 | | | |
| 28 | ISO 12677 | YES | | 6,470 | 6,460 | 6,465 | | | | 0,75 | | | |
| 41 | | | | | | | | | | 1,55 | | | |
| 29 | ISO 12677 | YES | | 5,573 | 5,593 | 5,583 | | | | 1,10 | | | |
| 30 | XRF bead | | | 0,950 | 0,942 | x0,946 | | | | 15,02 | Outlier | x | |
| 31 | ISO 12677 | YES | | 6,518 | 6,605 | 6,562 | | | | 1,84 | | | |
| 35 | ISO 12677 | | | 6,005 | 5,927 | 5,966 | | | | 0,05 | | | |
| 37 | ICP-OES | | Borax fusion | 5,360 | | 5,360 | | | | 1,77 | | | |
| 38 | ISO 12677 | YES | | 5,962 | 6,126 | 6,044 | | | | 0,28 | | | |
| 39 | | | | | | | | | | | | | |
| 40 | ISO 12677 | | | 6,045 | 6,022 | 6,034 | | | | 0,25 | | | |
| | | | | n | 13 | | | | | | | | |
| | | | | Mean | 5,949 | | | | | | | | |
| | | | | Max | 6,562 | | | | | | | | |
| | | | | Min | 5,360 | | | | | | | | |
| | | | | Stdev s | 0,333 | | | | | | | | |
| | | | | C(95%) | 0,201 | | | | | | | | |



| Sample | z-score |
|--------|---------|
| 21 | 11,23 |
| 22 | 0,36 |
| 23 | 0,28 |
| 24 | 0,72 |
| 25 | 0,15 |
| 26 | 0,65 |
| 27 | 0,75 |
| 28 | 1,55 |
| 29 | 1,10 |
| 30 | 15,02 |
| 31 | 1,84 |
| 35 | 0,05 |
| 37 | 1,77 |
| 38 | 0,28 |
| 39 | |
| 40 | 0,25 |

C(95%)=t*s/SQR(n) t(13)=2,179

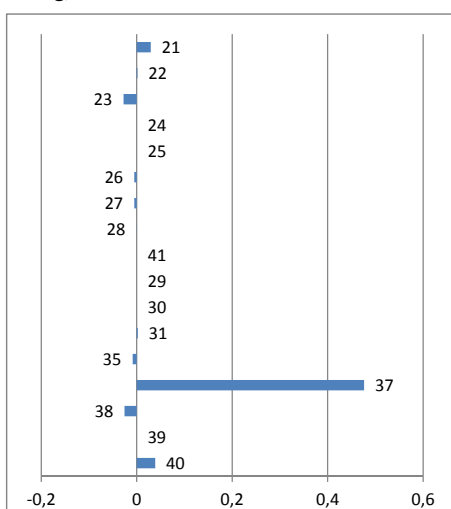
| Co304 | | FLX-CRM 112 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:46:51 | | | | |
|--------------|------------|--------------------|---------------|---------|---------|--------|--------|------------------------------------|--|--------------|----------------|-----------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | | z-score | Grubbs | Outlier |
| 21 | XRF pellet | | | 0,013 | 0,013 | 0,013 | | | | >3 | n=7 VG=1,938 | confirmed |
| 22 | ISO 12677 | | | 0,007 | 0,007 | 0,007 | | | | 1,07 | | |
| 23 | ISO 12677 | YES | | 0,006 | 0,007 | 0,007 | | | | 0,35 | | |
| 24 | ISO 12677 | | | <0,02 | <0,02 | | | | | 0,55 | | |
| 25 | | | | | | | | | | | | |
| 26 | XRF pellet | | | 0,014 | 0,015 | 0,014 | | | | 1,44 | | |
| 27 | ICP-OES | YES | | 0,005 | 0,005 | 0,005 | | | | 0,89 | | |
| 28 | ISO 12677 | YES | | <0,01 | <0,01 | | | | | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,024 | | x0,024 | | | | 3,81 | Outlier | x |
| 29 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 31 | ISO 12677 | YES | | | | | | | | | | |
| 35 | ISO 12677 | | | <0,005 | <0,005 | | | | | | | |
| 37 | ICP-OES | | aqua regia | 0,004 | | 0,004 | | | | 1,17 | | |
| 38 | ISO 12677 | YES | | <0,01 | <0,01 | | | | | | | |
| 39 | | | | | | | | | | | | |
| 40 | ISO 12677 | | | 0,011 | 0,010 | 0,011 | | | | 0,45 | | |
| | | | | n | 7 | | | | | | | |
| | | | | Mean | 0,009 | | | | | | | |
| | | | | Max | 0,014 | | | | | | | |
| | | | | Min | 0,004 | | | | | | | |
| | | | | Stdev s | 0,004 | | | | | | | |
| | | | | C(95%) | 0,004 | | | | | | | |



| Lab.No | Mean |
|--------|--------|
| 21 | 0,013 |
| 22 | 0,007 |
| 23 | 0,006 |
| 24 | <0,02 |
| 25 | |
| 26 | 0,014 |
| 27 | 0,005 |
| 28 | <0,01 |
| 41 | 0,024 |
| 29 | |
| 30 | |
| 31 | |
| 35 | <0,005 |
| 37 | 0,004 |
| 38 | <0,01 |
| 39 | |
| 40 | 0,011 |

C(95%)=t*s/SQR(n) t(7)=2,447

| WO3 | | FLX-CRM 112 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:47:17 | | | | |
|------------|------------|--------------------|----------------|---------|---------|--------|--------|------------------------------------|--|--------------|----------------|-----------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | | z-score | Grubbs | Outlier |
| 21 | XRF pellet | | | 0,070 | 0,070 | 0,070 | | | | >3 | n=10 VG=2,176 | confirmed |
| 22 | ISO 12677 | | reconstitution | 0,043 | 0,041 | 0,042 | | | | 1,41 | | |
| 23 | ISO 12677 | YES | | 0,013 | 0,013 | 0,013 | | | | 0,07 | | |
| 24 | | | | | | | | | | 1,32 | | |
| 25 | | | | | | | | | | | | |
| 26 | XRF pellet | | | 0,035 | 0,036 | 0,035 | | | | 0,24 | | |
| 27 | ICP-OES | YES | | 0,034 | 0,037 | 0,036 | | | | 0,24 | | |
| 28 | ISO 12677 | YES | | 0,040 | 0,040 | 0,040 | | | | 0,03 | | |
| 41 | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 31 | ISO 12677 | YES | | 0,043 | 0,043 | 0,043 | | | | 0,11 | | |
| 35 | ISO 12677 | | | 0,033 | 0,031 | 0,032 | | | | 0,41 | | |
| 37 | ICP-OES | | aqua regia | 0,517 | | x0,517 | | | | 22,80 | Outlier | x |
| 38 | ISO 12677 | YES | | 0,010 | 0,020 | 0,015 | | | | 1,22 | | |
| 39 | | | | | | | | | | | | |
| 40 | ISO 12677 | | | 0,076 | 0,083 | 0,080 | | | | 1,86 | | |
| | | | | n | 10 | | | | | | | |
| | | | | Mean | 0,041 | | | | | | | |
| | | | | Max | 0,080 | | | | | | | |
| | | | | Min | 0,013 | | | | | | | |
| | | | | Stdev s | 0,021 | | | | | | | |
| | | | | C(95%) | 0,015 | | | | | | | |



| Lab.No | Mean |
|--------|-------|
| 21 | 0,070 |
| 22 | 0,042 |
| 23 | 0,013 |
| 24 | |
| 25 | |
| 26 | 0,035 |
| 27 | 0,036 |
| 28 | 0,040 |
| 41 | |
| 29 | |
| 30 | |
| 31 | 0,043 |
| 35 | 0,032 |
| 37 | 0,517 |
| 38 | 0,015 |
| 39 | |
| 40 | 0,080 |

C(95%)=t*s/SQR(n) t(10)=2,262

| Cr2O3 | | FLX-CRM 112 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:48:51 | | z-score | Grubbs | Outlier |
|--------------|------------|--------------------|----------------|---------|---------|--------|--------|------------------------------------|--|---------------|----------------|-----------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | | z>3 | n=10 VG=2,176 | confirmed |
| 21 | XRF pellet | | | 0,130 | 0,130 | x0,130 | | | | 23,68 | Outlier | x |
| 22 | ISO 12677 | | reconstitution | 0,011 | 0,011 | 0,011 | | | | 1,36 | | |
| 23 | ISO 12677 | YES | | 0,020 | 0,021 | 0,021 | | | | 0,64 | | |
| 24 | ISO 12677 | | | 0,021 | 0,022 | 0,022 | | | | 0,85 | | |
| 25 | | | | | | | | | | | | |
| 26 | XRF pellet | | | 0,242 | 0,295 | x0,269 | | | | 52,93 | Outlier | x |
| 27 | ISO 12677 | YES | | 0,030 | 0,020 | 0,025 | | | | 1,59 | | |
| 28 | ISO 12677 | YES | | <0,01 | <0,01 | | | | | | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,014 | | 0,014 | | | | 0,73 | | |
| 29 | ISO 12677 | YES | | 0,022 | 0,024 | 0,023 | | | | 1,17 | | |
| 30 | XRF bead | | | 0,013 | 0,012 | 0,013 | | | | 1,04 | | |
| 31 | ISO 12677 | YES | | 0,016 | 0,018 | 0,017 | | | | 0,10 | | |
| 35 | ISO 12677 | | | 0,013 | 0,017 | 0,015 | | | | 0,50 | | |
| 37 | ICP-OES | | Borax fusion | 0,015 | | 0,015 | | | | 0,52 | | |
| 38 | ISO 12677 | YES | | 0,059 | 0,057 | x0,058 | | | | 8,53 | Outlier | x |
| 39 | | | | | | | | | | | | |
| 40 | ISO 12677 | | | | | | | | | | | |
| | | | | n | 10 | | | | | | | |
| | | | | Mean | 0,017 | | | | | | | |
| | | | | Max | 0,025 | | | | | | | |
| | | | | Min | 0,011 | | | | | | | |
| | | | | Stdev s | 0,005 | | | | | | | |
| | | | | C(95%) | 0,003 | | | | | | | |

C(95%)=t*s/SQR(n) t(10)=2,262

| Mn3O4 | | FLX-CRM 112 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:48:57 | | z-score | Grubbs | Outlier |
|--------------|------------|--------------------|----------------|---------|---------|--------|--------|------------------------------------|--|---------------|---------------|-----------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | | z>3 | n=12 VG=2,285 | confirmed |
| 21 | XRF pellet | | | 0,034 | 0,034 | 0,034 | | | | 0,98 | | |
| 22 | ISO 12677 | | reconstitution | 0,026 | 0,024 | 0,025 | | | | 0,08 | | |
| 23 | ISO 12677 | YES | | 0,028 | 0,025 | 0,027 | | | | 0,23 | | |
| 24 | ISO 12677 | | | <0,03 | <0,03 | | | | | | | |
| 25 | | | | | | | | | | | | |
| 26 | XRF pellet | | | 0,026 | 0,028 | 0,027 | | | | 0,27 | | |
| 27 | ISO 12677 | YES | | 0,030 | 0,030 | 0,030 | | | | 0,58 | | |
| 28 | ISO 12677 | YES | | 0,020 | 0,020 | 0,020 | | | | 0,42 | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,014 | | 0,014 | | | | 1,02 | | |
| 29 | ISO 12677 | YES | | 0,029 | 0,033 | 0,031 | | | | 0,68 | | |
| 30 | XRF bead | | | 0,043 | 0,045 | 0,044 | | | | 1,99 | | |
| 31 | ISO 12677 | YES | | | | | | | | | | |
| 35 | ISO 12677 | | | <0,010 | <0,010 | | | | | | | |
| 37 | ICP-OES | | Borax fusion | 0,014 | | 0,014 | | | | 1,02 | | |
| 38 | ISO 12677 | YES | | 0,020 | 0,010 | 0,015 | | | | 0,92 | | |
| 39 | XRF bead | | | 0,010 | 0,000 | 0,010 | | | | 1,42 | | |
| 40 | ISO 12677 | | | | | | | | | | | |
| | | | | n | 12 | | | | | | | |
| | | | | Mean | 0,024 | | | | | | | |
| | | | | Max | 0,044 | | | | | | | |
| | | | | Min | 0,010 | | | | | | | |
| | | | | Stdev s | 0,010 | | | | | | | |
| | | | | C(95%) | 0,006 | | | | | | | |

C(95%)=t*s/SQR(n) t(12)=2,201

| P205 | | FLX-CRM 112 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:49:02 | | z-score | Grubbs | Outlier |
|-------------|------------|--------------------|----------------|----------|----------|---------|--------|------------------------------------|--|--------------|---------------|-----------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | | | | |
| 21 | ISO 12677 | | | 0,069 | 0,068 | 0,069 | | | | >3 | n=10 VG=2,176 | confirmed |
| 22 | ISO 12677 | | reconstitution | 0,126 | 0,123 | x0,125 | | | | 0,43 | | |
| 23 | ISO 12677 | YES | | 0,082 | 0,082 | 0,082 | | | | 4,34 | Outlier | x |
| 24 | ISO 12677 | | | 0,081 | 0,081 | 0,081 | | | | 0,71 | | |
| 25 | XRF bead | YES | | <0,1 | <0,1 | | | | | 0,62 | | |
| 26 | XRF pellet | | | 0,230 | 0,222 | x0,226 | | | | 12,87 | Outlier | x |
| 27 | ISO 12677 | YES | | 0,080 | 0,080 | 0,080 | | | | 0,54 | | |
| 28 | ISO 12677 | YES | | 0,070 | 0,070 | 0,070 | | | | 0,30 | | |
| 41 | ICP-OES | YES | ISO 11885-E22 | 0,061 | | 0,061 | | | | 1,06 | | |
| 29 | ISO 12677 | YES | | 0,130 | 0,136 | x0,133 | | | | 5,01 | Outlier | x |
| 30 | XRF bead | | | 0,037 | 0,039 | x0,038 | | | | 3,01 | Outlier | x |
| 31 | ISO 12677 | YES | | <0.00069 | <0.00069 | | | | | | | |
| 35 | ISO 12677 | | | 0,088 | 0,088 | 0,088 | | | | 1,22 | | |
| 37 | ICP-OES | | aqua regia | 0,053 | | 0,053 | | | | 1,74 | | |
| 38 | ISO 12677 | YES | | 0,089 | 0,086 | 0,088 | | | | 1,17 | | |
| 39 | XRF bead | | | 0,070 | 0,060 | 0,065 | | | | 0,73 | | |
| 40 | ISO 12677 | | | | | | | | | | | |
| | | | | | | n | 10 | | | | | |
| | | | | | | Mean | 0,074 | | | | | |
| | | | | | | Max | 0,088 | | | | | |
| | | | | | | Min | 0,053 | | | | | |
| | | | | | | Stdev s | 0,012 | | | | | |
| | | | | | | C(95%) | 0,008 | | | | | |

C(95%)=t*s/SQR(n) t(10)=2,262

| LOI (@ 1025°C) | | FLX-CRM 112 | | | Mass % | Mass % | Mass % | Freitag, 12. Oktober 2012 11:49:06 | | z-score | Grubbs | Outlier |
|-----------------------|-------------|--------------------|--------|---------|---------|---------|--------|------------------------------------|--|--------------|---------------|-----------|
| Lab.No: | Method | ISO 17025 | Remark | Meas #1 | Meas #2 | Mean | | | | | | |
| 21 | gravimetric | | | 5,350 | 5,200 | 5,275 | | | | >3 | n=13 VG=2,331 | confirmed |
| 22 | ISO 12677 | | | 5,559 | 5,559 | 5,559 | | | | 1,18 | | |
| 23 | ISO 12677 | YES | | 5,020 | 4,990 | x5,005 | | | | 1,07 | | |
| 24 | ISO 12677 | | | 5,200 | 5,270 | 5,235 | | | | 3,32 | Outlier | x |
| 25 | gravimetric | | | 4,220 | 4,240 | x4,230 | | | | 1,50 | | |
| 26 | ISO 12677 | | | 5,260 | 5,280 | 5,270 | | | | 9,46 | Outlier | x |
| 27 | ISO 12677 | YES | | 5,660 | 5,660 | 5,660 | | | | 1,22 | | |
| 28 | ISO 12677 | YES | | 5,400 | 5,430 | 5,415 | | | | 1,87 | | |
| 41 | | | | | | | | | | 0,07 | | |
| 29 | DIN 51081 | YES | | 5,370 | 5,360 | 5,365 | | | | 0,47 | | |
| 30 | gravimetric | | | 5,441 | 5,533 | 5,487 | | | | 0,50 | | |
| 31 | ISO 12677 | | | 5,400 | 5,400 | 5,400 | | | | 0,19 | | |
| 35 | ISO 12677 | | | 5,380 | 5,380 | 5,380 | | | | 0,35 | | |
| 37 | gravimetric | | | 5,480 | | 5,480 | | | | 0,45 | | |
| 38 | | | | | | | | | | | | |
| 39 | 950°C | | | 5,390 | 5,430 | 5,410 | | | | 0,11 | | |
| 40 | ISO 12677 | | | 5,657 | 5,488 | 5,573 | | | | 1,18 | | |
| | | | | | | n | 13 | | | | | |
| | | | | | | Mean | 5,424 | | | | | |
| | | | | | | Max | 5,660 | | | | | |
| | | | | | | Min | 5,235 | | | | | |
| | | | | | | Stdev s | 0,126 | | | | | |
| | | | | | | C(95%) | 0,076 | | | | | |

C(95%)=t*s/SQR(n) t(13)=2,179