



Project no. 038644

Validation round robin

BioNorm II

Task II.2



Report
Deliverable D II.2 - 6

Austrian Research Institute for Chemistry and Technology
Vienna, October 2009

Table of contents	Page
1 INTRODUCTION / GENERAL REMARKS	5
2. ORGANIZATION OF VALIDATION EXERCISES	6
3. PARTICIPANTS	6
3 TERMINOLOGY	8
4 GENERAL INFORMATION ON THE EVALUATION	11
RESULTS FOR CEN/TS 14775 ASH CONTENT	12
Results for Ash content, sample olive residues	12
Results for Ash content, sample wood chips	13
RESULTS FOR CEN/TS 14918 CALORIFIC VALUE	14
Results for GCV, sample olive residues	14
Results for GCV, sample wood chips	15
Results for NCV, sample olive residues	16
Results for NCV, sample wood chips	17
RESULTS FOR CEN/TS 15104 CARBON, HYDROGEN AND NITROGEN	18
Results for carbon determination, sample olive residues	18
Results for carbon determination, sample wood chips	19
Results for Hydrogen determination, sample olive residues	20
Results for Hydrogen determination, sample wood chips	21
Results for Nitrogen determination, sample olive residues	22
Results for Nitrogen determination, sample wood chips	23
RESULTS FOR CEN/TS 15289 SULPHUR AND CHLORINE	24
Results for Chlorine determination, sample olive residues	24
Results for Chlorine determination, sample wood chips	25
Results for Sulphur determination, sample Olive residues	26
Results for Sulphur determination, sample wood chips	27
RESULTS FOR CEN/TS 15105 WATER SOLUBLE	28
Results for water soluble Chlorine, sample olive residues	28
Results for water soluble Chlorine, sample wood chips	29
Results for water soluble Sodium, sample olive residues	30
Results for water soluble Sodium, sample wood chips	31
Results for water soluble Potassium, sample olive residues	32
Results for water soluble Potassium, sample wood chips	33
RESULTS FOR CEN/TS 15290 MAJOR ELEMENTS	34
Results for the determination of Aluminum, sample olive residues	34
Results for the determination of Aluminum, sample wood chips	35

Results for the determination of Calcium, sample olive residues	36
Results for the determination of Calcium, sample wood chips	37
Results for the determination of Iron, sample olive residues	38
Results for the determination of Iron, sample wood chips	39
Results for the determination of Potassium, sample olive residues	40
Results for the determination of Potassium, sample wood chips	41
Results for the determination of Magnesium, sample olive residues	42
Results for the determination of Magnesium, sample wood chips	43
Results for the determination of Sodium, sample Olive residues	44
Results for the determination of Sodium, sample wood chips	45
Results for the determination of Phosphor, sample olive residues	46
Results for the determination of Phosphor, sample wood chips	46
Results for the determination of Phosphor, sample wood chips	47
Results for the determination of Silicium, sample olive residues	48
Results for the determination of Silicium, sample wood chips	49
Results for the determination of Titanium, sample olive residues	50
Results for the determination of Titanium, sample wood chips	51
RESULTS FOR CEN/TS 15297 MINOR ELEMENTS	52
Results for the determination of Arsenic, sample olive residues	52
Results for the determination of Arsenic, sample Wood chips	53
Results for the determination of cadmium, sample olive residues	54
Results for the determination of cadmium, sample Wood chips	55
Results for the determination of Cobalt, sample olive residues	56
Results for the determination of Cobalt, sample Wood chips	57
Results for the determination of Chromium, sample olive residues	58
Results for the determination of Chromium, sample Wood chips	59
Results for the determination of Copper, sample olive residues	60
Results for the determination of Copper, sample Wood chips	61
Results for the determination of Mercury, sample olive residues	62
Results for the determination of Mercury, sample Wood chips	63
Results for the determination of Manganese, sample olive residues	64
Results for the determination of Manganese, sample Wood chips	65
Results for the determination of Molybdenum, sample olive residues	66
Results for the determination of Molybdenum, sample Wood chips	67
Results for the determination of Nickel, sample olive residues	68
Results for the determination of Nickel, sample Wood chips	69
Results for the determination of Lead, sample olive residues	70
Results for the determination of Lead, sample Wood chips	71
Results for the determination of Antimony, sample olive residues	72

Results for the determination of Antimony, sample Wood chips	73
Results for the determination of Vanadium, sample olive residues	74
Results for the determination of Vanadium, sample Wood chips	75
Results for the determination of Zinc, sample olive residues	76
Results for the determination of Zinc, sample Wood chips	77

**For questions, comments or feedback concerning this
and future interlaboratory comparison tests, please, contact:**

Dipl.-Ing. Philipp Koskarti (ext. - 970): philipp.koskarti@ofi.at

Dr. Martin Englisch (ext. - 490): martin.englich@ofi.at

ofi – Austrian research institute for chemistry and technology,
A-1030 Vienna, Arsenal Objekt 213

<http://www.ofi.at>

www.pelletstesting.com

Phone: +43 / (0)1 / 798 16 01 - 0

Fax: +43 / (0)1 / 798 16 01 - 480

1 INTRODUCTION / GENERAL REMARKS

Analytical procedures developed in the BioNorm 1 project provide a complete set of methods for the determination of most frequently required chemical parameters in solid biofuel characterization (C, H, N, major and minor elements, Cl, S). Although they are optimised for solid biofuels, respecting the specific characteristics of these fuels, the applicability of the methods and a respective validation based on an international round robin was missing.

Before upgrading the Technical Specifications (CEN-TS's) based on the scientific results of BioNorm 1 and additional research results from BioNorm 2 to European Standards (EN's) a validation exercise is necessary to demonstrate the applicability of the methods for the wide variety of biofuels available on the European market and to obtain necessary data on the performance of the methods. The round robin should be performed as part of the BioNorm 2 project to furthermore verify doubts if the methods deliver reasonable accurate results for all biofuels. Especially the determination of chlorine and nitrogen require very precise results because small deviations in analytical results may lead to a false performance expectation in combustion and may cause unexpected corrosion (for chlorine) or emissions exceeding legislative emission limits (e.g. nitrogen or the respective nitrogen oxides).

This inter-laboratory comparison test aims to check the accuracy, reliability and applicability of the current test methods (EN-drafts). Due to many analytical possibilities given in the standards and due to an instrumental freedom in other standards, the results represent more a picture of the performance of the participating accredited or otherwise qualified European laboratories, the majority with some experience in solid biofuel analysis. A final valuation of the chemical test methods themselves should be done with care. The results of this round robin can not be used to guarantee that all options described in the standards deliver perfect results for all biofuels available. The methods are new and experiences are still growing, thus it does not provide a complete picture on the performance of the methods only but also shows the level of current chemical analysis quality.

The present report summarises the individual results of the interlaboratory comparison tests and includes a statistical evaluation of these tests, which was carried out in accordance with the provisions of ISO 5725.

2. ORGANIZATION OF VALIDATION EXERCISES

For the present interlaboratory comparison tests 2 different samples were selected to be tested. It was the aim to choose typical fuel samples used in Europe with fuel properties covering a wide range concerning the expected values. Therefore following samples were selected

:

- **sample A: wood chips**
- **sample B: olive residues**

The samples A and B were pre-dried, milled to 1 mm and homogenized according to CEN/TS 14780. All samples were in a condition as usually analyzed within fuel testing. Each participant received a homogeneous sample of 50g. A list of all included tests is given in table 1.

The **anonymity** of test results is ensured for all participants due to an appropriate encoding procedure.

The materials tested in this interlaboratory comparison tests are available at **ofi** as well characterized reference materials for internal lab performance tests.

3. PARTICIPANTS

A total of 37 laboratories from 11 countries participated in this validation round robin. The participation was open only for invited laboratories, preferred were laboratories accredited according to EN 17025. The number of individual tests by a particular participant was not limited. The number of participants in different countries is given table 1.

table 1: participating laboratories and methods provided

test method	CEN/TS 14775 ash content	CEN/TS 15104 CHN-Instrumental methods	CEN/TS 15105 water soluble Cl, Na, K	CEN/TS 15289 total sulphur and chlorine	CEN/TS 15290 major elements	CEN/TS 15297/minor elements	XRF major and minor	CEN/TS 14918 calorific value
participants	37	28	10	25	15	18	5	32
Austria								
ofi	+		+	+	+	+	+	+
ARCS Seibersdorf	+	+	+	+	+	+		+
TÜV AUSTRIA SERVICES GMBH	+	+		o				+
Montanuniversität Leoben	+	+		o				+
ARP Aufbereitung Recycling Prüftechnik GesmbH	+	+		+	+	+		+
Energie AG Oberösterreich Kraftwerke GmbH	+	+		+	+	+		+
TU-Wien	+	+	+	+				+
Austrian Bioenergy Centre GmbH	+			+	+	+		
HFA	+							+
BLT, HBLuFA FRANCISCO JOSEPHINUM	+							+
Netherlands								
ECN	+	+	+	+	+	+		+
NUON Buggenum	+	+		+		+		+
EON Maasvlakte	o					o	+	+
INCOLAB	+	+		+		+		
SGS Nederland	+	+		+			+	+
Sweden								
SP	+	+		+	+	+		+
Lantmännen Analycen AB	+	+		+	+	+		+
ALS Scandinavia AB Luleå	+				+	+		
Ireland								
Waterford Institute of Technology	+							+
Edenderry Power Operations Ltd	+	+		o				+
Teagasc	+	+						+
Italy								
ENEA Lab. BIOCAR TER-ENEBIOx	+	+		+	+	+		+
Belgium								
Laborelec - Electrotechnical Materials and Equipment	+	+		o				+
UK								
TES Bretby	+	+		+	+	+		+
FINLAND								
Ramboll Analytics Ltd.	+	+	+	+				+
VTT	+	+						+
Nab Labs Oy, Rauma	+	+						+
ENAS Oy	+	+						+
Denmark								
DONG Energy (ENV)	+	+	+	+	+	+	+	+
FORCE Technology	+	+	+	+	+	+	+	+
DONG Energy (AVV)	+							
Germany								
Eurofins-AUA-GmbH	+	+	+	+	+	+		+

3 TERMINOLOGY

The terms specified below, which are used in the statistical evaluation of the validation round robin are generally known or are defined, among other sources, in ISO 5725-1:1994 and previous issues of this standard, in ISO Guide 43-1:1997 and in CEN Guide 13:2008 as follows:

Arithmetic mean, average (\bar{x}):

Quotient of the sum of independently identified individual values x_i and their number n :

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$$

Note: In the evaluation of the comparison test m is used for x and it is calculated as an overall mean of x_i (x_i = test result of a particulate participant = mean value of an particulate number of individual measurements in one laboratory), after removal of outliers

Variance (s^2):

Quotient of the sum of squares of deviations of the individual values from the arithmetic mean and $(n - 1)$, i.e. number of degrees of freedom:

$$s^2 = \frac{1}{n-1} \sum_{i=1}^n (x_i - \bar{x})^2$$

Standard deviation (s):

Positive value of the root of the variance of a series of measured values:

$$s = \sqrt{\frac{1}{n-1} \sum_{i=1}^n (x_i - \bar{x})^2}$$

Coefficient of variation:

Dispersion of individual results expressed as quotient of the standard deviation and arithmetic mean in percent.

Repeatability conditions:

Conditions where independent test results are obtained with the same method on identical test items in the same laboratory by the same operator using the same equipment within short intervals of time.

Reproducibility conditions:

Conditions where test results are obtained with the same method on identical test items in different laboratories with different operators using different equipment.

Between-laboratory standard deviation (s_L):

Term including between-operator and between-equipment variabilities.

Repeatability standard deviation (s_r):

Standard deviation of test results obtained under repeatability conditions:

$$s_r = \sqrt{\frac{\sum_{i=1}^n (a_i - 1) s_i^2}{(\sum_{i=1}^n a_i) - n}}$$

- a_i = number of test results per participant
- s_i = standard deviation of a particulate test result
- n = number of participants

Reproducibility standard deviation ($s_R = (s_r^2 + s_L^2)^{0,5}$):

The standard deviation of test results obtained under reproducibility conditions.

Repeatability limit (r):

A value less than or equal to what the absolute difference between two test results obtained under repeatability conditions may be expected to be with a probability of 95%:

$$r = 2,8 * s_r$$

Reproducibility limit (R):

A value less than or equal to what the absolute difference between two test results obtained under reproducibility conditions may be expected to be with a probability of 95%:

$$R = 2,8 * s_R$$

Outlier according to Cochran:

With this test, the within-laboratory variances are tested for homogeneity ("outliers regarding standard deviations"):

$$Cochran\ criterion\ C = \frac{s_{max}^2}{\sum_{i=1}^n s_i^2}$$

- s_{max} = highest value of all s_i
- C-values for statistical (probability 99%) and possible (probability 95%) outliers are listed in relevant literature

Outlier according to Grubbs:

With this test, the extreme values of x_i ($x_{extr} = x_{max}$ or x_{min}) are tested to be an outlier ("outlier regarding the mean value")

$$Grubbs\ criterion\ G = \left| \bar{x}_p - \bar{x}_{extr} \right| / s_p$$

- \bar{x}_p = general mean incl. test result which is tested according to Grubbs (x_{extr})
- x_{extr} = extreme value of x_i

s_p = general standard deviation (tested result is taken into account as in x_p)
 G -values for statistical (probability 99%) and possible (probability 95%) outliers from literature

4 GENERAL INFORMATION ON THE EVALUATION

The test results provided by the individual participants were subjected to a statistical evaluation in accordance with the provisions of ISO 5725-2:1994 ("Accuracy [trueness and precision] of measurement methods and results" - Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method"). This was done independent of the fact of how many participants attended the individual tests. In all cases the raw data provided by the participants served as a basis for this evaluation (individual test results).

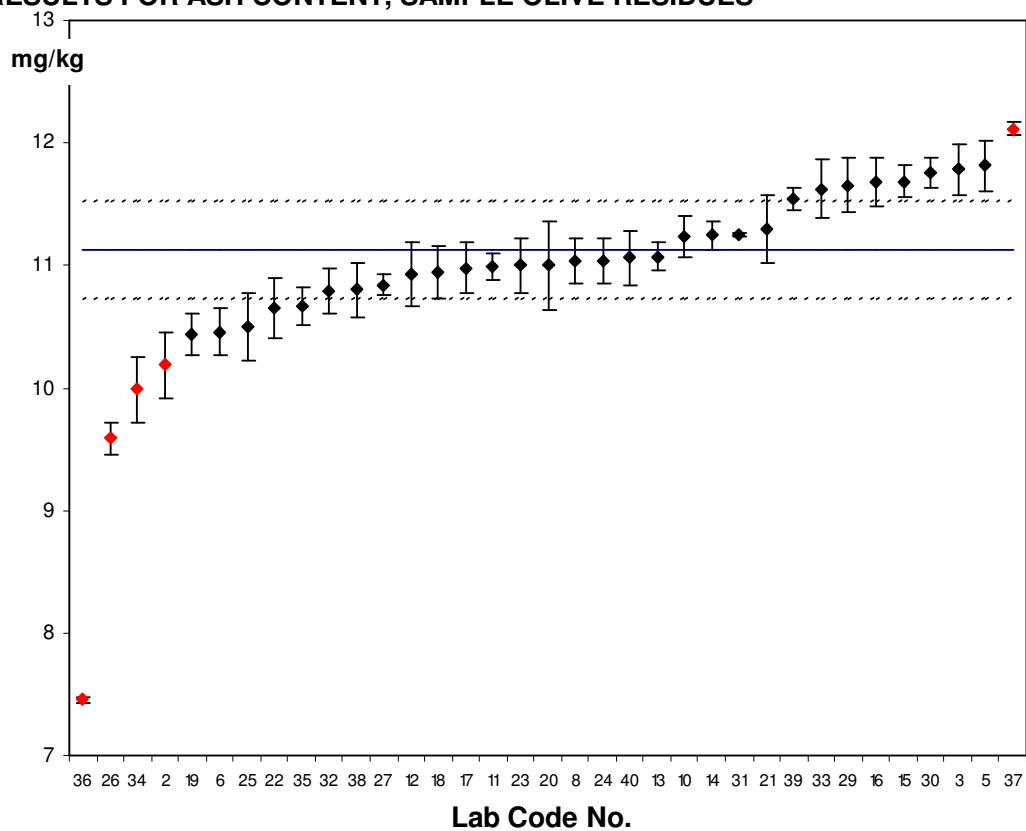
After the calculation of **means** and **standard deviations** for the individual testing labs, **outlier tests according to Cochran and Grubbs** were conducted in order to identify *possible outliers* in this way (95% probability; marked with "**") and/or *statistical outliers* (99% probability; marked with "**").

Statistical outliers according to *Cochran* and according to *Grubbs* were, **in general, not taken into account in the calculation of the validation results**. Statistical stragglers were only taken into account if necessary to assure enough results for evaluation. The elimination of outliers and stragglers is iterative. By eliminating outliers, new outliers and stragglers may pop up. Each iteration outliers are eliminated, the statistical analysis is repeated to study the distribution in order to trace new outliers or stragglers. This iterative procedure will continue until no new outliers are found or, if the process is brings the calculation to instability or senseless results, the number of iterations is limited manually. In a few cases, multiple outliers mask each other. In these cases, when results are not reliable, they were excluded on basis of research results carried out in BioNorm projects 1 and 2 (e.g. for nitrogen).

The **graphic representation of the results** of a particular test includes all participants with their relevant mean and the respective standard deviation. Those participants which were identified as outliers by the tests according to Cochran and Grubbs and that were not taken for calculation of the statistical parameters have been marked red in tables and figures. **Values marked in red in the diagrams are not used for the calculation of the statistical data!**

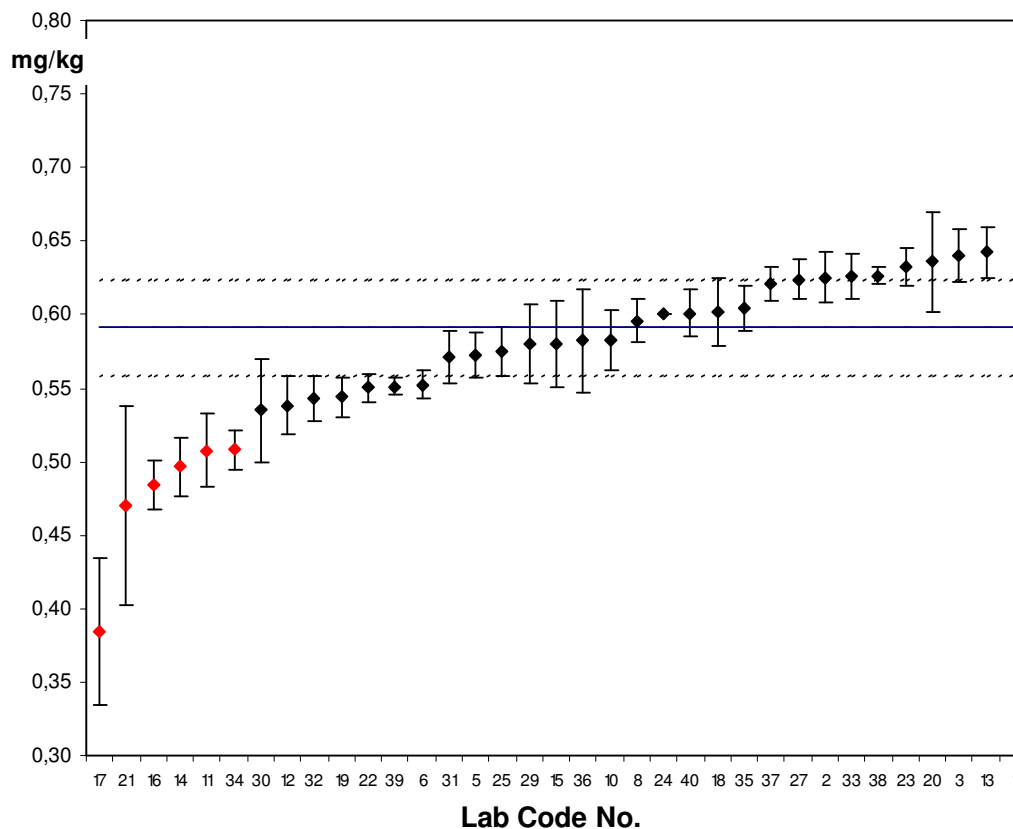
RESULTS FOR CEN/TS 14775 ASH CONTENT

RESULTS FOR ASH CONTENT, SAMPLE OLIVE RESIDUES



General mean = assigned value	m	11,1	mg/kg
Repeatability variance	s_r^2	0,040	
Repeatability standard deviation	s_r	0,200	mg/kg
Repeatability coefficient of variation		1,80	%
Between-laboratory variance	s_L^2	0,161	
Between-laboratory standard deviation	s_L	0,401	mg/kg
Between-laboratory coefficient of variation		3,61	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,201	
Reproducibility standard deviation	s_R	0,448	mg/kg
Reproducibility coefficient of variation		4,03	%
Repeatability limit	r	0,56 5,03	mg/kg %
Reproducibility limit	R	1,26 11,28	mg/kg %
Number of participants (outlier free)	n	30	
Number of individual analytical values (outlier free)	l	138	

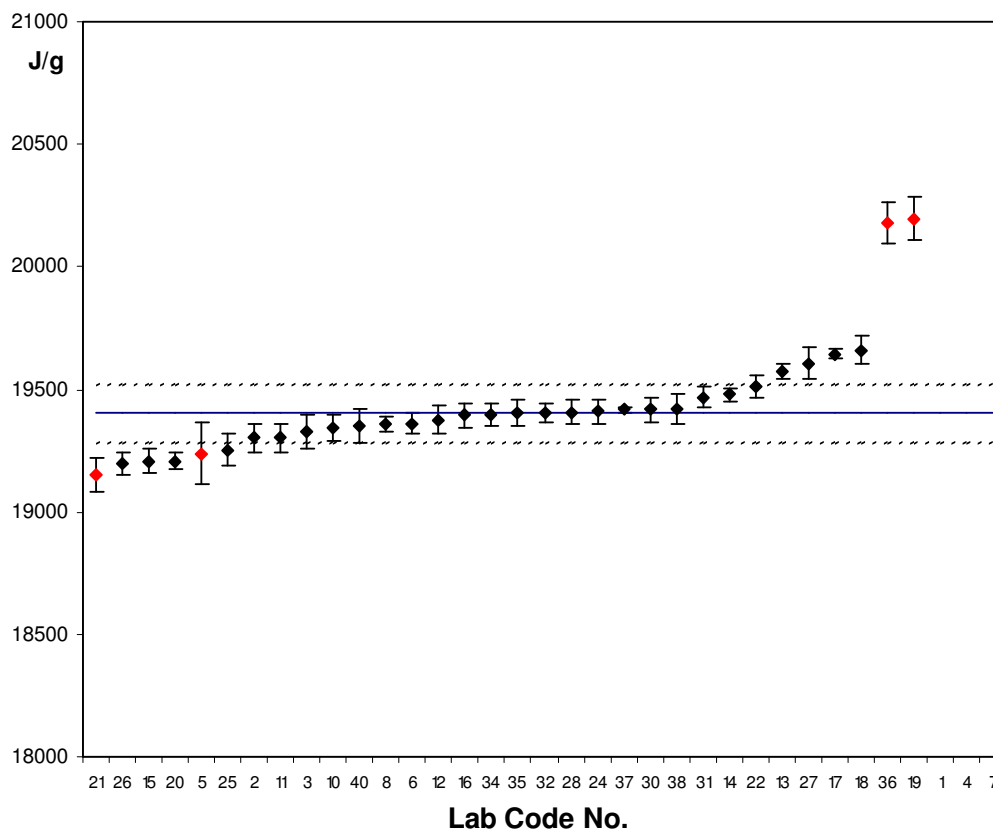
RESULTS FOR ASH CONTENT, SAMPLE WOOD CHIPS



General mean = assigned value	m	0,591	mg/kg
Repeatability variance	s_r^2	0,000	
Repeatability standard deviation	s_r	0,019	mg/kg
Repeatability coefficient of variation		3,27	%
Between-laboratory variance	s_L^2	0,001	
Between-laboratory standard deviation	s_L	0,032	mg/kg
Between-laboratory coefficient of variation		5,49	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,001	
Reproducibility standard deviation	s_R	0,038	mg/kg
Reproducibility coefficient of variation		6,39	%
Repeatability limit	r	0,054 9,15	mg/kg %
Reproducibility limit	R	0,106 17,88	mg/kg %
Number of participants (outlier free)	n	28	
Number of individual analytical values (outlier free)	l	124	

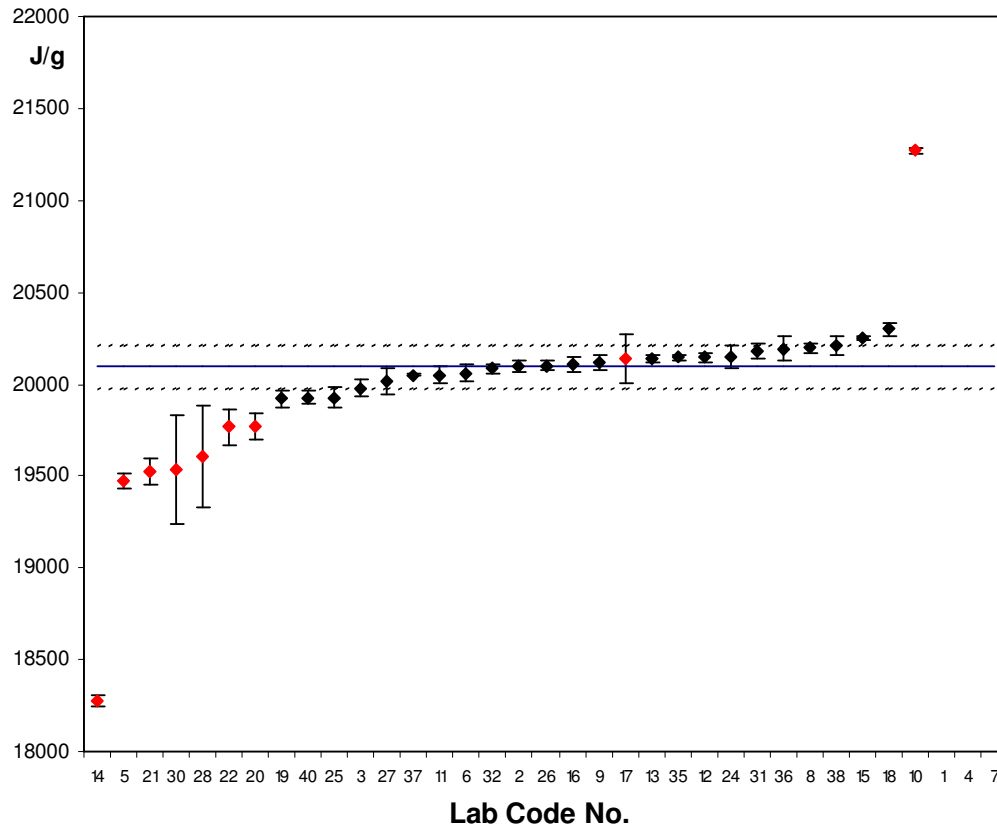
RESULTS FOR CEN/TS 14918 CALORIFIC VALUE

RESULTS FOR GCV, SAMPLE OLIVE RESIDUES



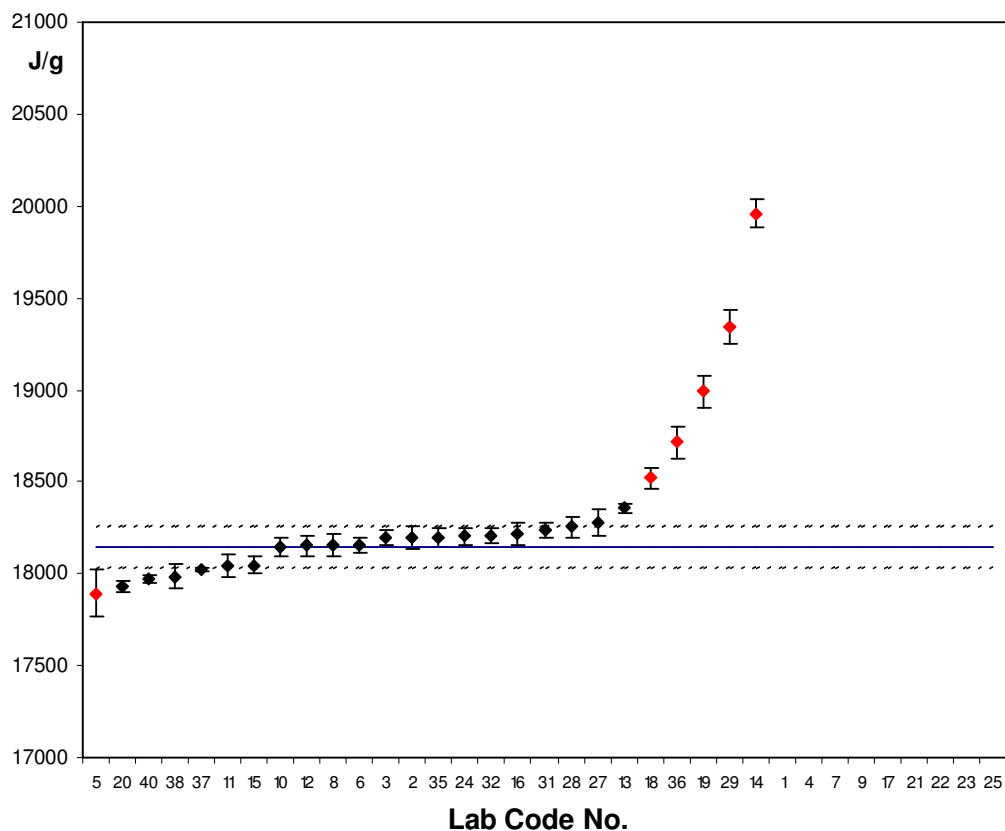
General mean = assigned value	m	19401	J/g
Repeatability variance	s_r^2	2436	
Repeatability standard deviation	s_r	49,4	J/g
Repeatability coefficient of variation		0,25	%
Between-laboratory variance	s_L^2	13748	
Between-laboratory standard deviation	s_L	117,3	J/g
Between-laboratory coefficient of variation		0,60	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	16183	
Reproducibility standard deviation	s_R	127,2	J/g
Reproducibility coefficient of variation		0,66	%
Repeatability limit	r	138 0,71	J/g %
Reproducibility limit	R	356 1,84	J/g %
Number of participants (outlier free)	n	28	
Number of individual analytical values (outlier free)	l	121	

RESULTS FOR GCV, SAMPLE WOOD CHIPS



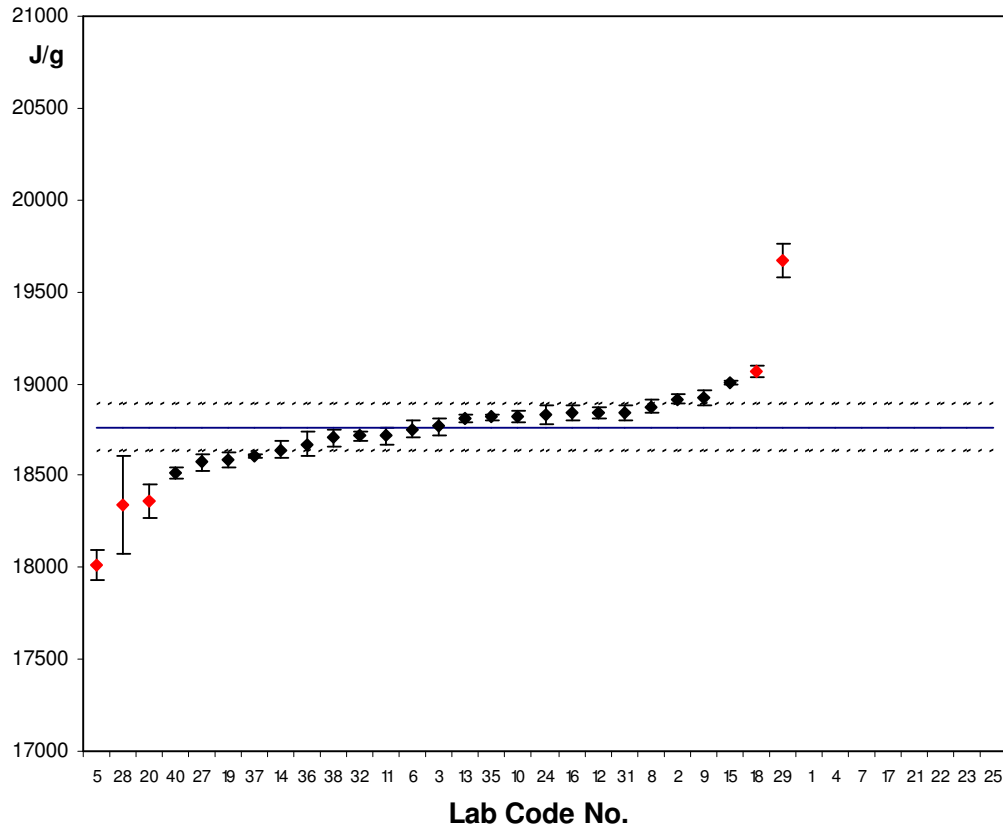
General mean = assigned value	m	20092	J/g
Repeatability variance	s_r^2	1753	
Repeatability standard deviation	s_r	41,9	J/g
Repeatability coefficient of variation		0,21	%
Between-laboratory variance	s_L^2	13528	
Between-laboratory standard deviation	s_L	116,3	J/g
Between-laboratory coefficient of variation		0,58	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	15282	
Reproducibility standard deviation	s_R	123,6	J/g
Reproducibility coefficient of variation		0,62	%
Repeatability limit	r	117 0,58	J/g %
Reproducibility limit	R	346 1,72	J/g %
Number of participants (outlier free)	n	24	
Number of individual analytical values (outlier free)	l	111	

RESULTS FOR NCV, SAMPLE OLIVE RESIDUES



General mean = assigned value	m	18146	J/g
Repeatability variance	s_r^2	2428	
Repeatability standard deviation	s_r	49,3	J/g
Repeatability coefficient of variation		0,27	%
Between-laboratory variance	s_L^2	11914	
Between-laboratory standard deviation	s_L	109,2	J/g
Between-laboratory coefficient of variation		0,60	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	14342	
Reproducibility standard deviation	s_R	119,8	J/g
Reproducibility coefficient of variation		0,66	%
Repeatability limit	r	138 0,76	J/g %
Reproducibility limit	R	335 1,85	J/g %
Number of participants (outlier free)	n	20	
Number of individual analytical values (outlier free)	l	90	

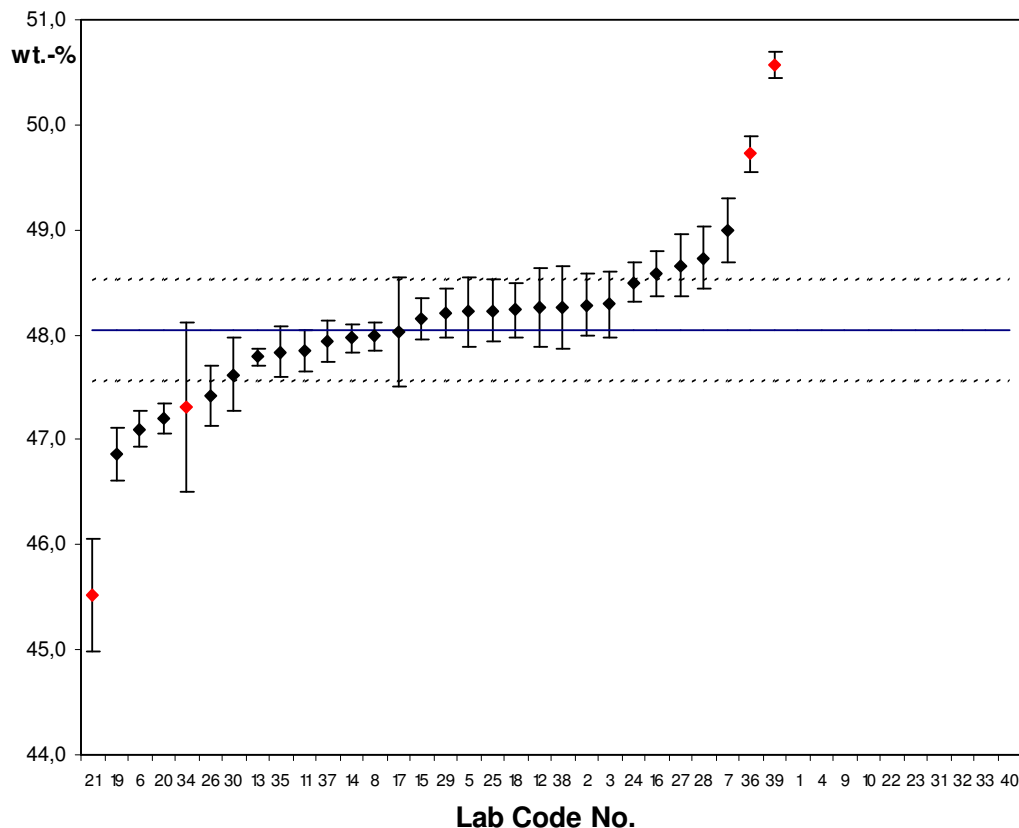
RESULTS FOR NCV, SAMPLE WOOD CHIPS



General mean = assigned value	m	18764	J/g
Repeatability variance	s_r^2	1413	
Repeatability standard deviation	s_r	37,6	J/g
Repeatability coefficient of variation		0,20	%
Between-laboratory variance	s_L^2	15975	
Between-laboratory standard deviation	s_L	126,4	J/g
Between-laboratory coefficient of variation		0,67	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	17388	
Reproducibility standard deviation	s_R	131,9	J/g
Reproducibility coefficient of variation		0,70	%
Repeatability limit	r	105 0,56	J/g %
Reproducibility limit	R	369 1,97	J/g %
Number of participants (outlier free)	n	22	
Number of individual analytical values (outlier free)	l	105	

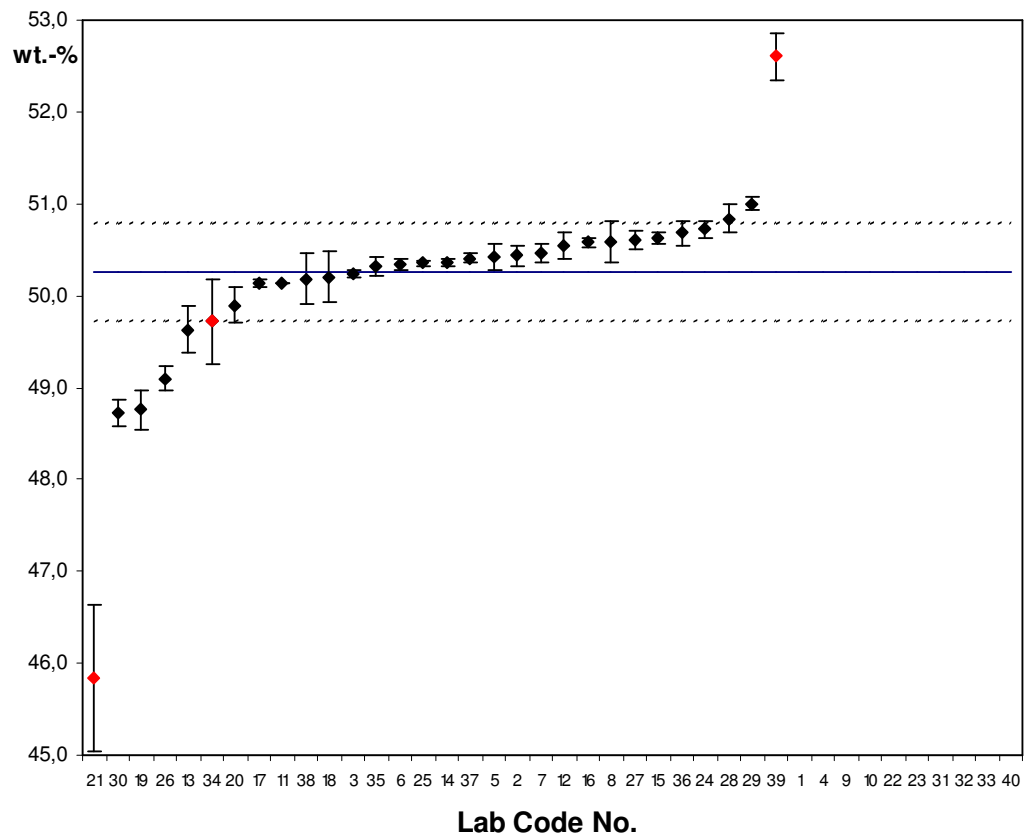
RESULTS FOR CEN/TS 15104 CARBON, HYDROGEN AND NITROGEN

RESULTS FOR CARBON DETERMINATION, SAMPLE OLIVE RESIDUES



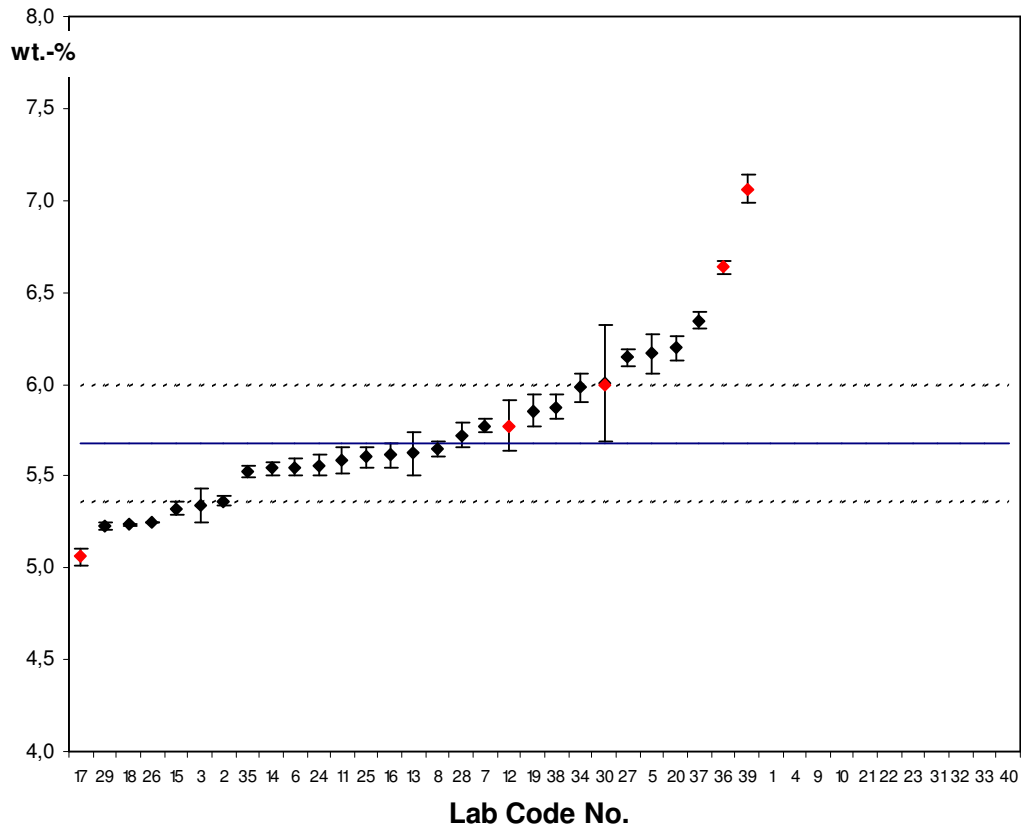
General mean = assigned value	m	48,05	wt.-%
Repeatability variance	s_r^2	0,074	
Repeatability standard deviation	s_r	0,27	wt.-%
Repeatability coefficient of variation		0,56	%
Between-laboratory variance	s_L^2	0,232	
Between-laboratory standard deviation	s_L	0,48	wt.-%
Between-laboratory coefficient of variation		1,00	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,306	
Reproducibility standard deviation	s_R	0,55	wt.-%
Reproducibility coefficient of variation		1,15	%
Repeatability limit	r	0,76 1,58	wt.-% %
Reproducibility limit	R	1,55 3,22	wt.-% %
Number of participants (outlier free)	n	26	
Number of individual analytical values (outlier free)	l	123	

RESULTS FOR CARBON DETERMINATION, SAMPLE WOOD CHIPS



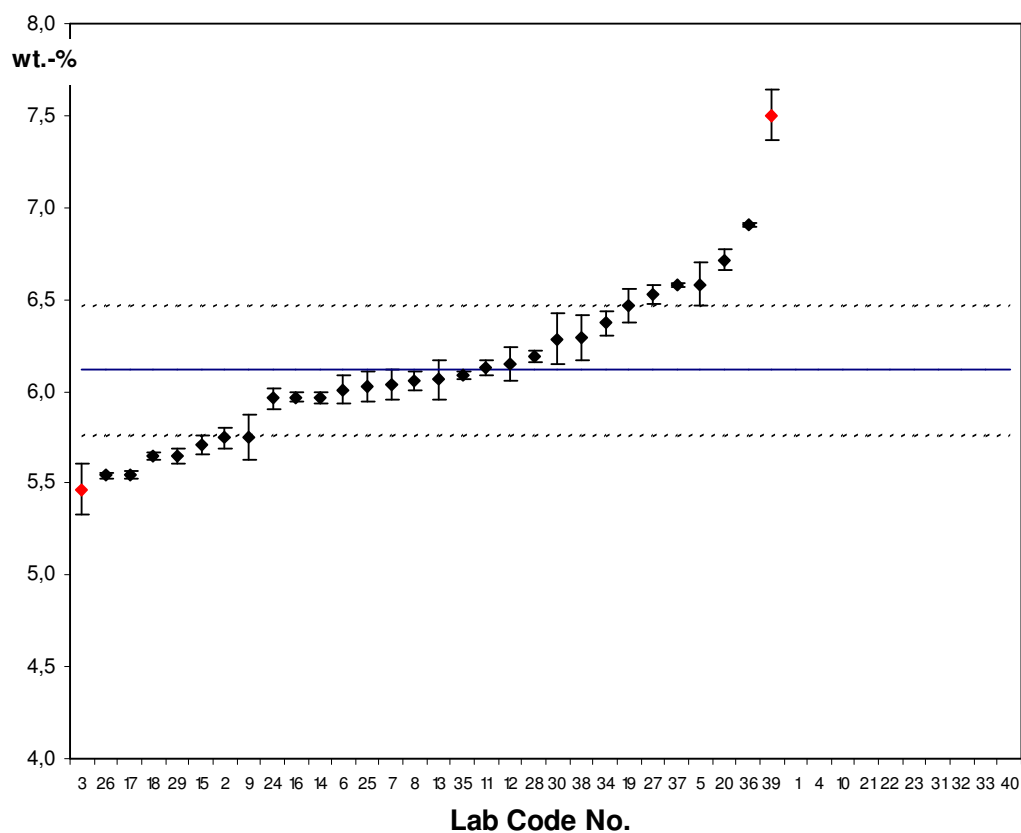
General mean = assigned value	m	50,26	wt.-%
Repeatability variance	s_r^2	0,021	
Repeatability standard deviation	s_r	0,14	wt.-%
Repeatability coefficient of variation		0,29	%
Between-laboratory variance	s_L^2	0,282	
Between-laboratory standard deviation	s_L	0,53	wt.-%
Between-laboratory coefficient of variation		1,06	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,303	
Reproducibility standard deviation	s_R	0,55	wt.-%
Reproducibility coefficient of variation		1,09	%
Repeatability limit	r	0,40 0,80	wt.-% %
Reproducibility limit	R	1,54 3,07	wt.-% %
Number of participants (outlier free)	n	27	
Number of individual analytical values (outlier free)	l	128	

RESULTS FOR HYDROGEN DETERMINATION, SAMPLE OLIVE RESIDUES



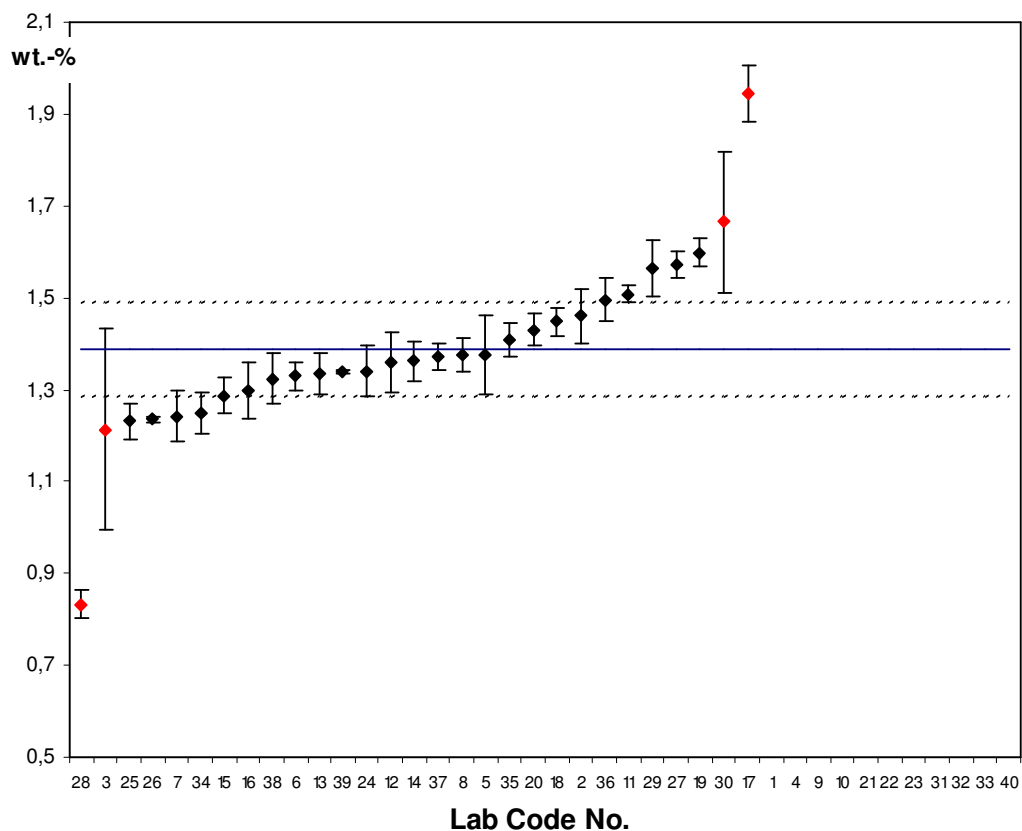
General mean = assigned value	m	5,68	wt.-%
Repeatability variance	s_r^2	0,004	
Repeatability standard deviation	s_r	0,06	wt.-%
Repeatability coefficient of variation		1,10	%
Between-laboratory variance	s_L^2	0,101	
Between-laboratory standard deviation	s_L	0,32	wt.-%
Between-laboratory coefficient of variation		5,61	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,105	
Reproducibility standard deviation	s_R	0,32	wt.-%
Reproducibility coefficient of variation		5,71	%
Repeatability limit	r	0,17 3,07	wt.-% %
Reproducibility limit	R	0,91 16,00	wt.-% %
Number of participants (outlier free)	n	24	
Number of individual analytical values (outlier free)	l	115	

RESULTS FOR HYDROGEN DETERMINATION, SAMPLE WOOD CHIPS



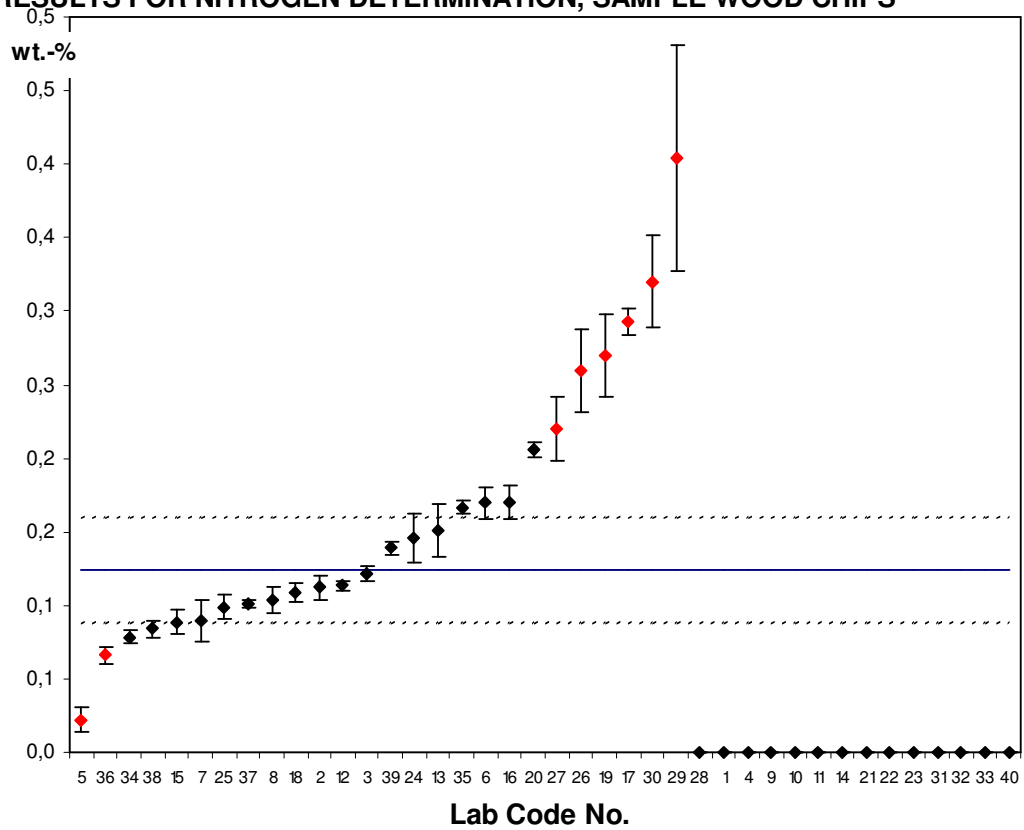
General mean = assigned value	m	6,12	wt.-%
Repeatability variance	s_r^2	0,005	
Repeatability standard deviation	s_r	0,07	wt.-%
Repeatability coefficient of variation		1,19	%
Between-laboratory variance	s_L^2	0,124	
Between-laboratory standard deviation	s_L	0,35	wt.-%
Between-laboratory coefficient of variation		5,76	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,130	
Reproducibility standard deviation	s_R	0,36	wt.-%
Reproducibility coefficient of variation		5,88	%
Repeatability limit	r	0,20 3,32	wt.-% %
Reproducibility limit	R	1,01 16,48	wt.-% %
Number of participants (outlier free)	n	28	
Number of individual analytical values (outlier free)	l	135	

RESULTS FOR NITROGEN DETERMINATION, SAMPLE OLIVE RESIDUES



General mean = assigned value	m	1,39	wt.-%
Repeatability variance	s_r^2	0,002	
Repeatability standard deviation	s_r	0,04	wt.-%
Repeatability coefficient of variation		3,20	%
Between-laboratory variance	s_L^2	0,011	
Between-laboratory standard deviation	s_L	0,10	wt.-%
Between-laboratory coefficient of variation		7,46	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,013	
Reproducibility standard deviation	s_R	0,11	wt.-%
Reproducibility coefficient of variation		8,12	%
Repeatability limit	r	0,12 8,95	wt.-% %
Reproducibility limit	R	0,32 22,73	wt.-% %
Number of participants (outlier free)	n	25	
Number of individual analytical values (outlier free)	l	113	

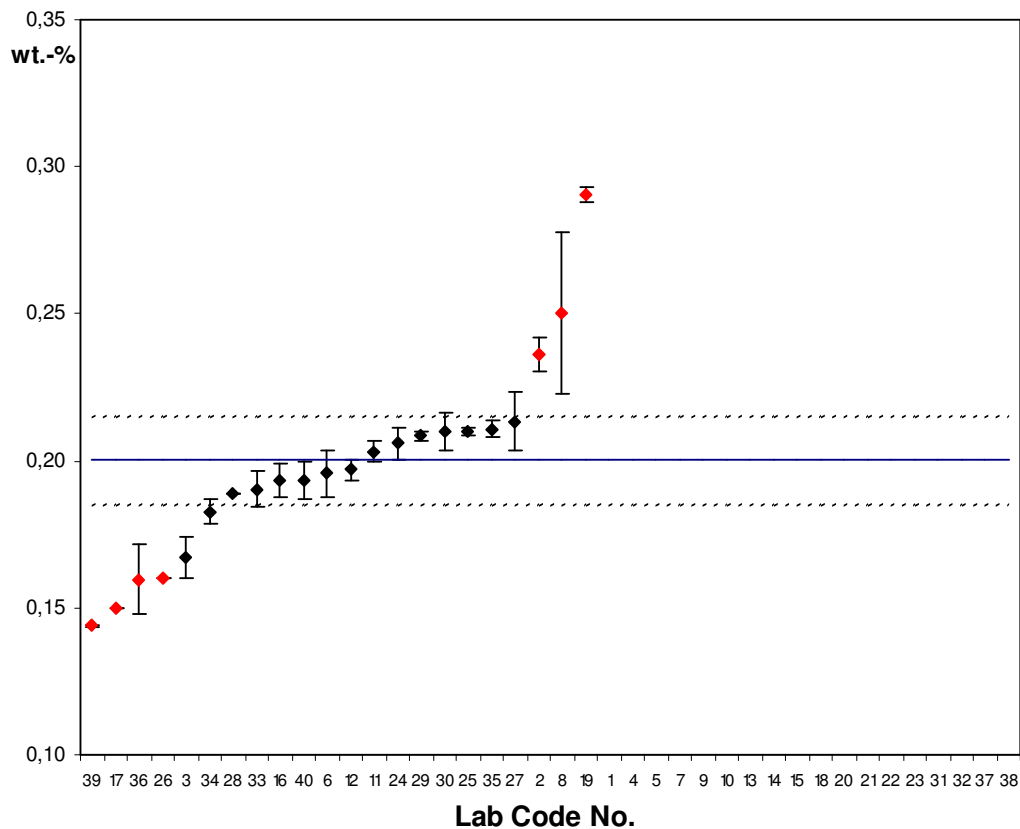
RESULTS FOR NITROGEN DETERMINATION, SAMPLE WOOD CHIPS



General mean = assigned value	m	0,12	wt.-%
Repeatability variance	s_r^2	0,000	
Repeatability standard deviation	s_r	0,01	wt.-%
Repeatability coefficient of variation		7,43	%
Between-laboratory variance	s_L^2	0,001	
Between-laboratory standard deviation	s_L	0,04	wt.-%
Between-laboratory coefficient of variation		28,79	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,001	
Reproducibility standard deviation	s_R	0,04	wt.-%
Reproducibility coefficient of variation		29,73	%
Repeatability limit	r	0,03 20,79	wt.-% %
Reproducibility limit	R	0,10 83,25	wt.-% %
Number of participants (outlier free)	n	18	
Number of individual analytical values (outlier free)	l	84	

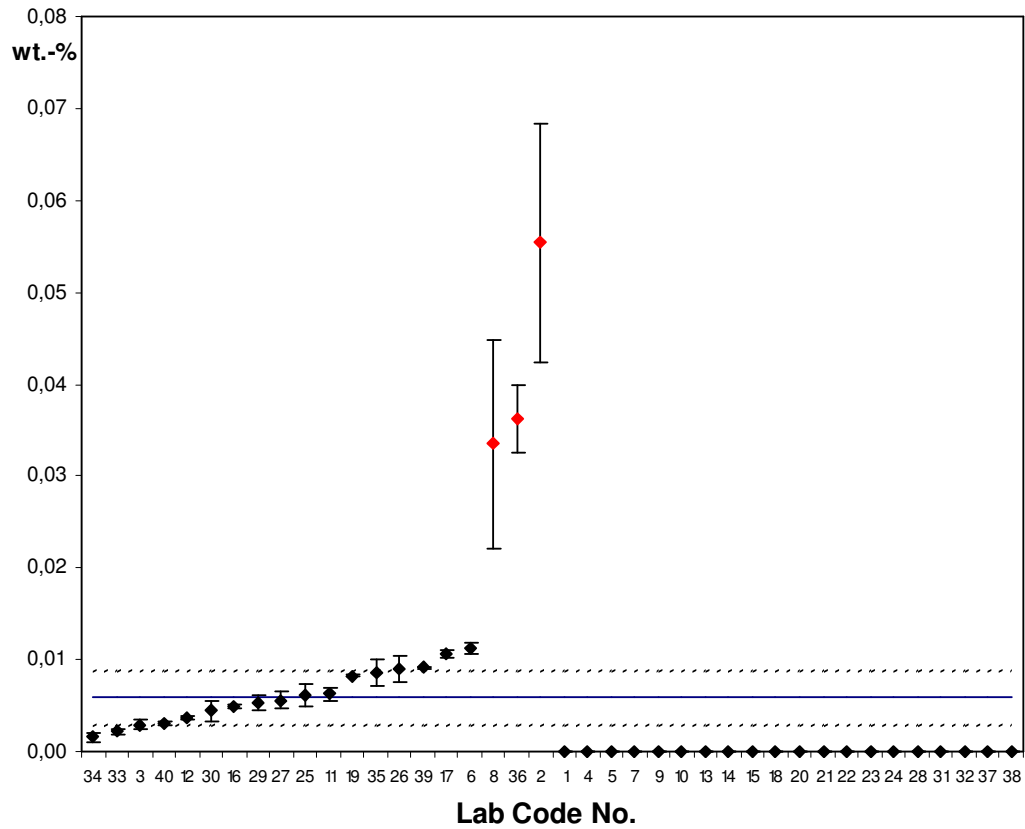
RESULTS FOR CEN/TS 15289 SULPHUR AND CHLORINE

RESULTS FOR CHLORINE DETERMINATION, SAMPLE OLIVE RESIDUES



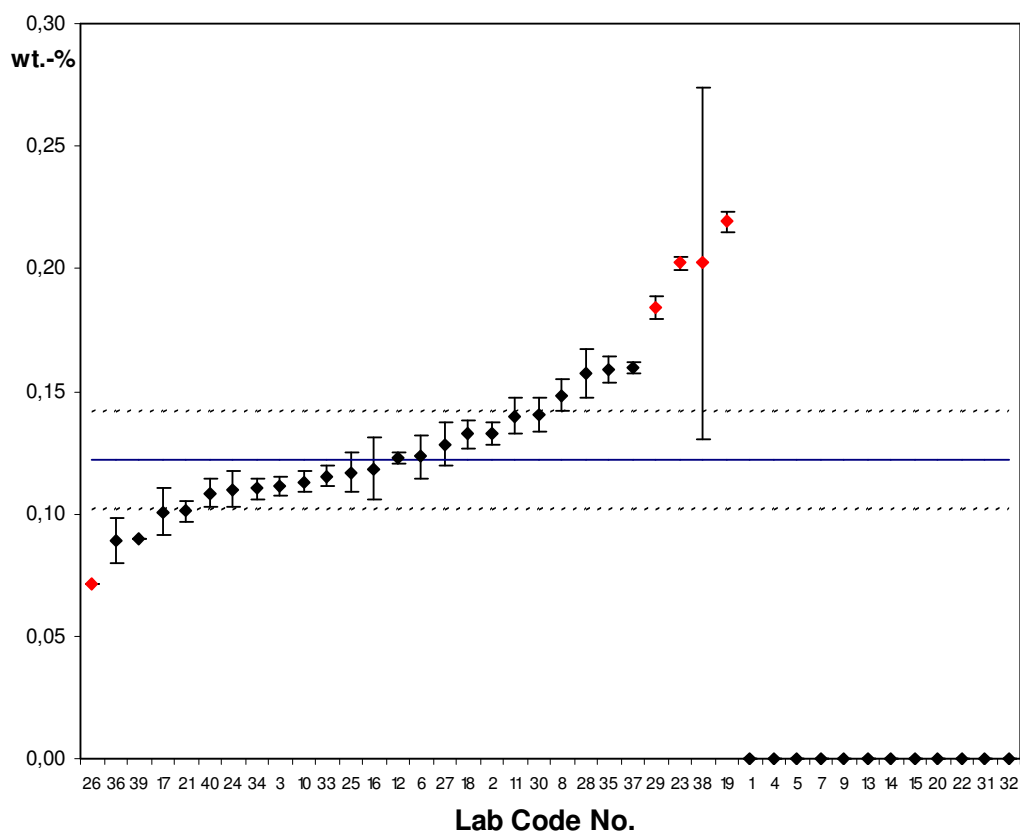
General mean = assigned value	m	0,20	wt.-%
Repeatability variance	s_r^2	0,000	
Repeatability standard deviation	s_r	0,01	wt.-%
Repeatability coefficient of variation		2,76	%
Between-laboratory variance	s_L^2	0,000	
Between-laboratory standard deviation	s_L	0,01	wt.-%
Between-laboratory coefficient of variation		7,49	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,000	
Reproducibility standard deviation	s_R	0,02	wt.-%
Reproducibility coefficient of variation		7,98	%
Repeatability limit	r	0,02 7,72	wt.-% %
Reproducibility limit	R	0,04 22,35	wt.-% %
Number of participants (outlier free)	n	16	
Number of individual analytical values (outlier free)	l	75	

RESULTS FOR CHLORINE DETERMINATION, SAMPLE WOOD CHIPS



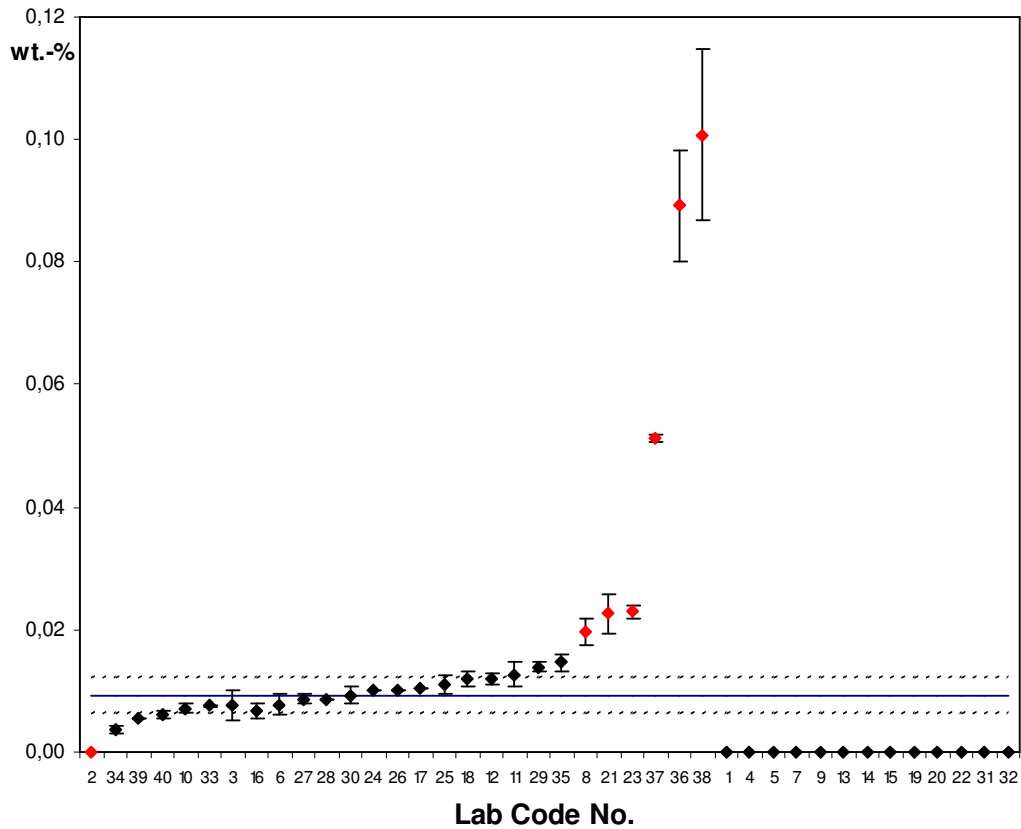
General mean = assigned value	m	0,006	wt.-%
Repeatability variance	s_r^2	0,000	
Repeatability standard deviation	s_r	0,001	wt.-%
Repeatability coefficient of variation		12,73	%
Between-laboratory variance	s_L^2	0,000	
Between-laboratory standard deviation	s_L	0,00	wt.-%
Between-laboratory coefficient of variation		50,02	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,000	
Reproducibility standard deviation	s_R	0,003	wt.-%
Reproducibility coefficient of variation		51,61	%
Repeatability limit	r	0,002	wt.-%
		35,63	%
Reproducibility limit	R	0,008	wt.-%
		144,52	%
Number of participants (outlier free)	n	17	
Number of individual analytical values (outlier free)	l	75	

RESULTS FOR SULPHUR DETERMINATION, SAMPLE OLIVE RESIDUES



General mean = assigned value	m	0,12	wt.-%
Repeatability variance	s_r^2	0,000	
Repeatability standard deviation	s_r	0,007	wt.-%
Repeatability coefficient of variation		5,42	%
Between-laboratory variance	s_L^2	0,000	
Between-laboratory standard deviation	s_L	0,020	wt.-%
Between-laboratory coefficient of variation		16,42	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,000	
Reproducibility standard deviation	s_R	0,021	wt.-%
Reproducibility coefficient of variation		17,29	%
Repeatability limit	r	0,02 15,17	wt.-% %
Reproducibility limit	R	0,06 48,42	wt.-% %
Number of participants (outlier free)	n	23	
Number of individual analytical values (outlier free)	l	111	

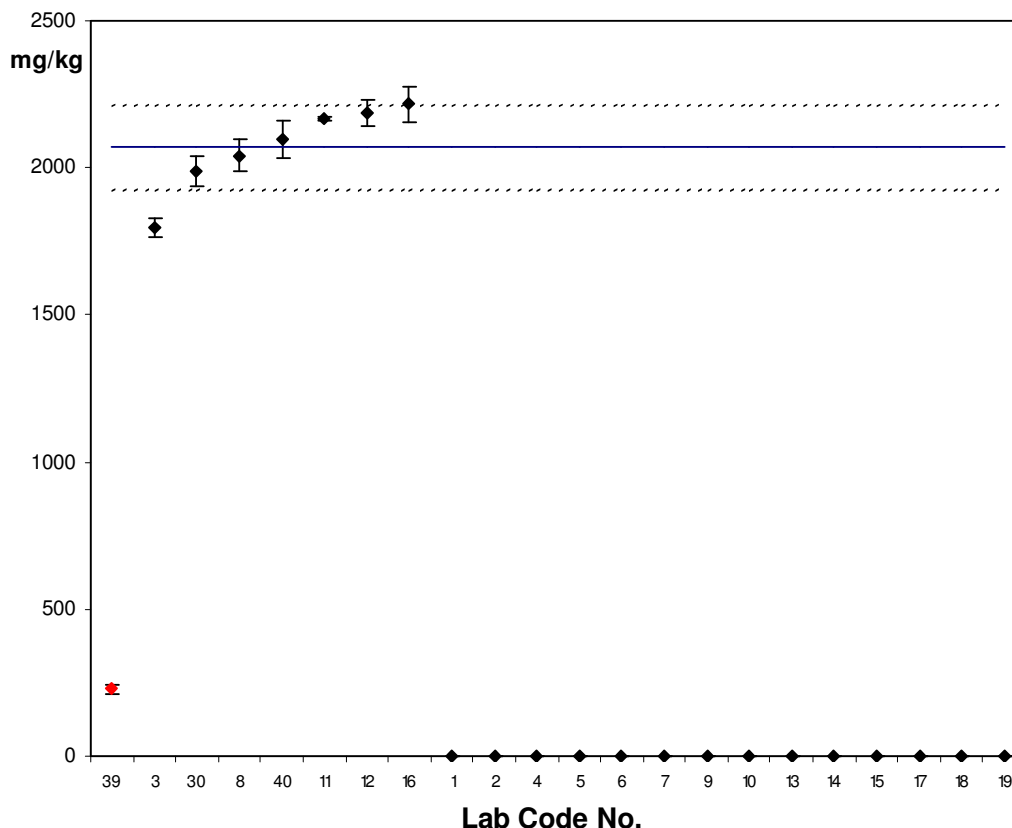
RESULTS FOR SULPHUR DETERMINATION, SAMPLE WOOD CHIPS



General mean = assigned value	m	0,009	wt.-%
Repeatability variance	s_r^2	0,000	
Repeatability standard deviation	s_r	0,001	wt.-%
Repeatability coefficient of variation		12,26	%
Between-laboratory variance	s_L^2	0,000	
Between-laboratory standard deviation	s_L	0,003	wt.-%
Between-laboratory coefficient of variation		31,56	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,000	
Reproducibility standard deviation	s_R	0,003	wt.-%
Reproducibility coefficient of variation		33,86	%
Repeatability limit	r	0,003 34,34	wt.-% %
Reproducibility limit	R	0,009 94,80	wt.-% %
Number of participants (outlier free)	n	20	
Number of individual analytical values (outlier free)	l	90	

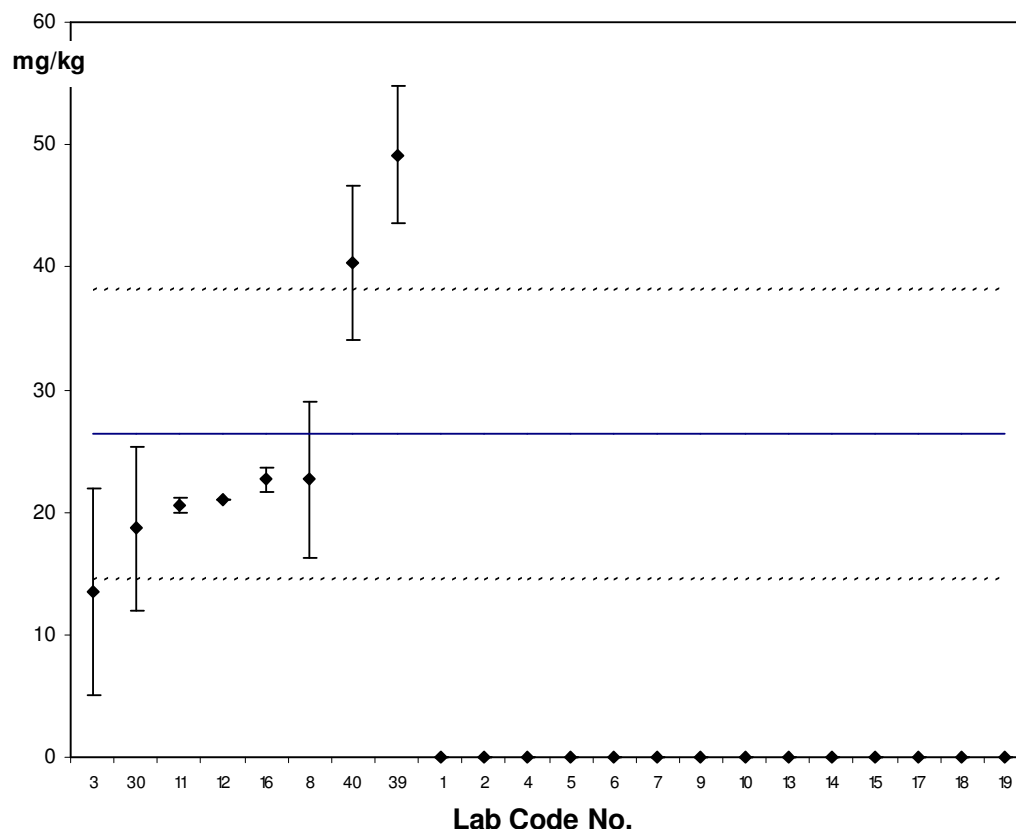
RESULTS FOR CEN/TS 15105 WATER SOLUBLE

RESULTS FOR WATER SOLUBLE CHLORINE, SAMPLE OLIVE RESIDUES



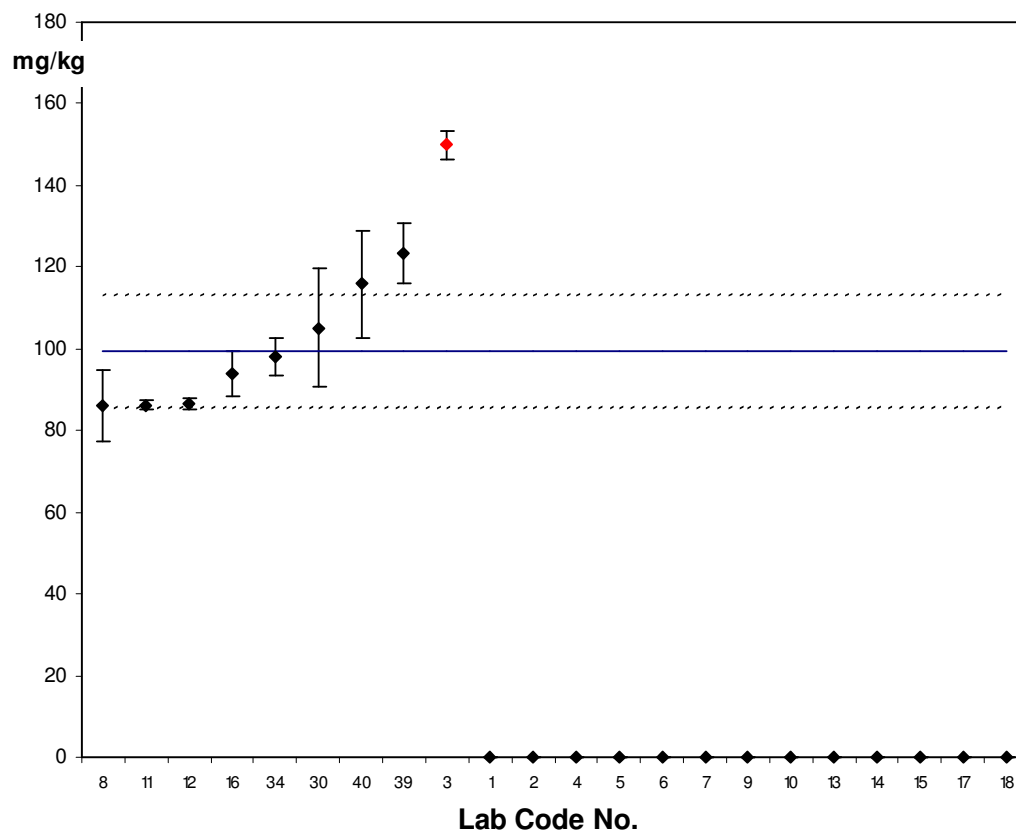
General mean = assigned value	m	2071	mg/kg
Repeatability variance	s_r^2	2400	
Repeatability standard deviation	s_r	49	mg/kg
Repeatability coefficient of variation		2,37	%
Between-laboratory variance	s_L^2	20771	
Between-laboratory standard deviation	s_L	144	mg/kg
Between-laboratory coefficient of variation		6,96	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	23171	
Reproducibility standard deviation	s_R	152	mg/kg
Reproducibility coefficient of variation		7,35	%
Repeatability limit	r	137	mg/kg
		6,62	%
Reproducibility limit	R	426	mg/kg
		20,58	%
Number of participants (outlier free)	n	7	
Number of individual analytical values (outlier free)	l	35	

RESULTS FOR WATER SOLUBLE CHLORINE, SAMPLE WOOD CHIPS



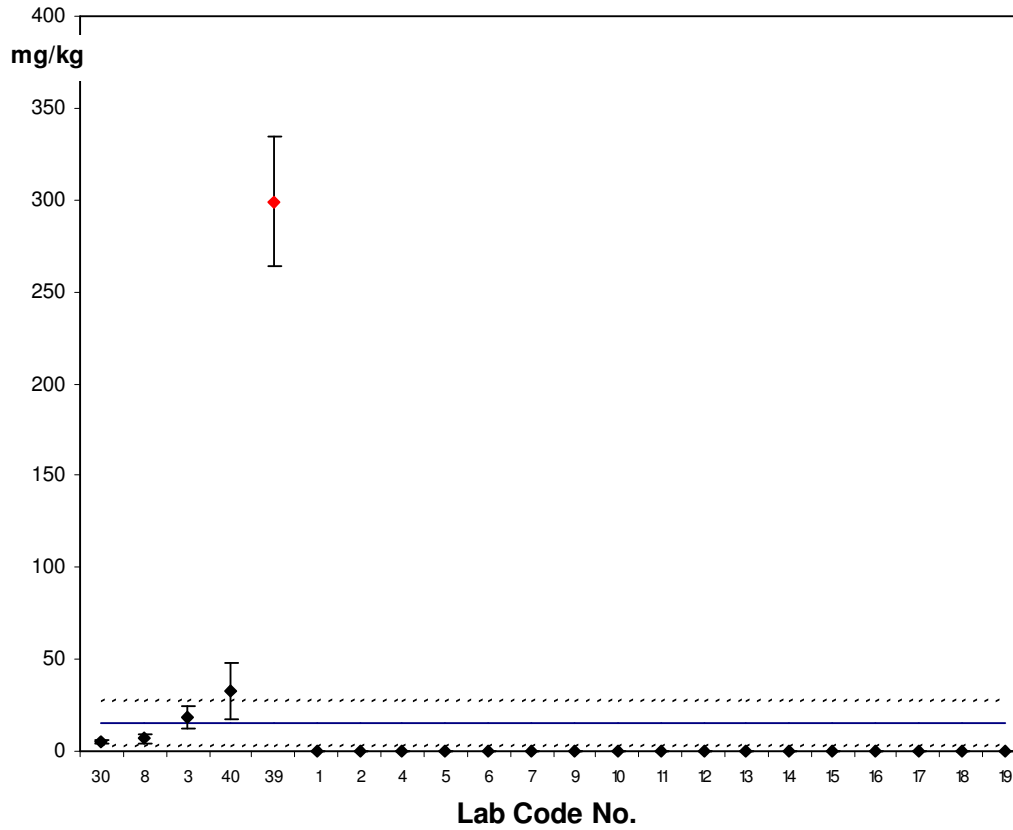
General mean = assigned value	m	26	mg/kg
Repeatability variance	s_r^2	24,7	
Repeatability standard deviation	s_r	5,0	mg/kg
Repeatability coefficient of variation		18,82	%
Between-laboratory variance	s_L^2	140,2	
Between-laboratory standard deviation	s_L	11,8	mg/kg
Between-laboratory coefficient of variation		44,88	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	164,8	
Reproducibility standard deviation	s_R	12,8	mg/kg
Reproducibility coefficient of variation		48,67	%
Repeatability limit	r	14 52,70	mg/kg %
Reproducibility limit	R	36 136,26	mg/kg %
Number of participants (outlier free)	n	8	
Number of individual analytical values (outlier free)	l	34	

RESULTS FOR WATER SOLUBLE SODIUM, SAMPLE OLIVE RESIDUES



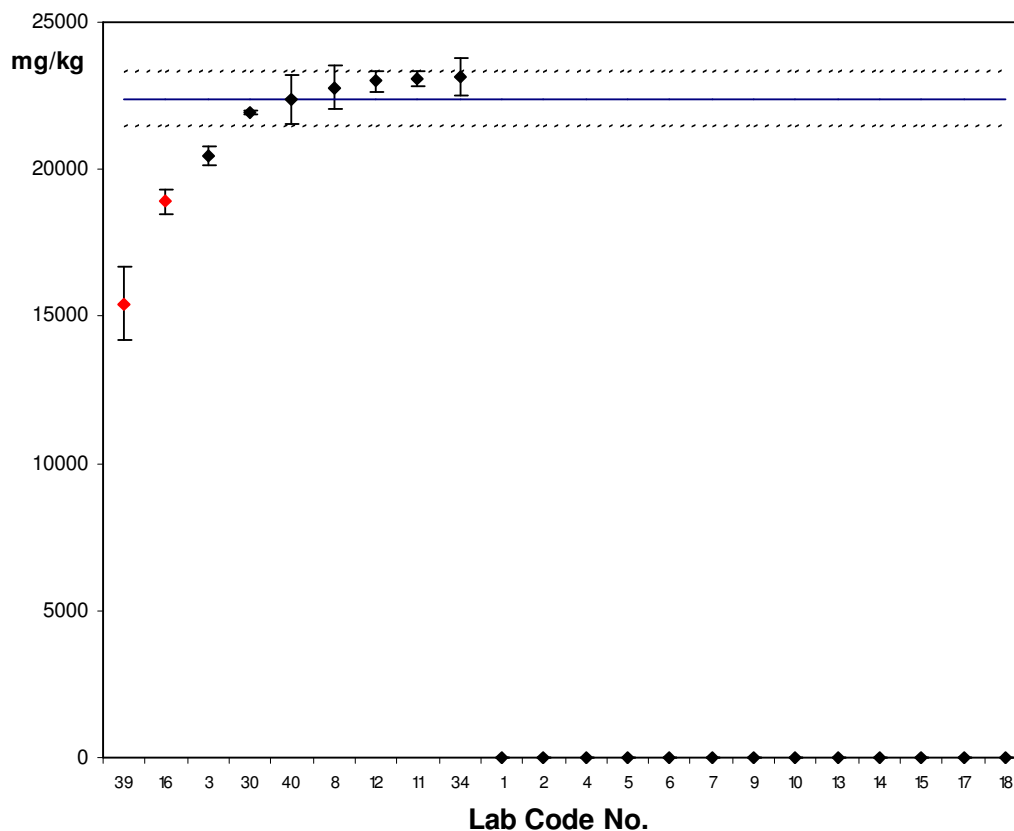
General mean = assigned value	m	99	mg/kg
Repeatability variance	s_r^2	70	
Repeatability standard deviation	s_r	8	mg/kg
Repeatability coefficient of variation		8,41	%
Between-laboratory variance	s_L^2	190	
Between-laboratory standard deviation	s_L	14	mg/kg
Between-laboratory coefficient of variation		13,87	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	260	
Reproducibility standard deviation	s_R	16	mg/kg
Reproducibility coefficient of variation		16,22	%
Repeatability limit	r	23 23,55	mg/kg %
Reproducibility limit	R	45 45,43	mg/kg %
Number of participants (outlier free)	n	8	
Number of individual analytical values (outlier free)	l	40	

RESULTS FOR WATER SOLUBLE SODIUM, SAMPLE WOOD CHIPS



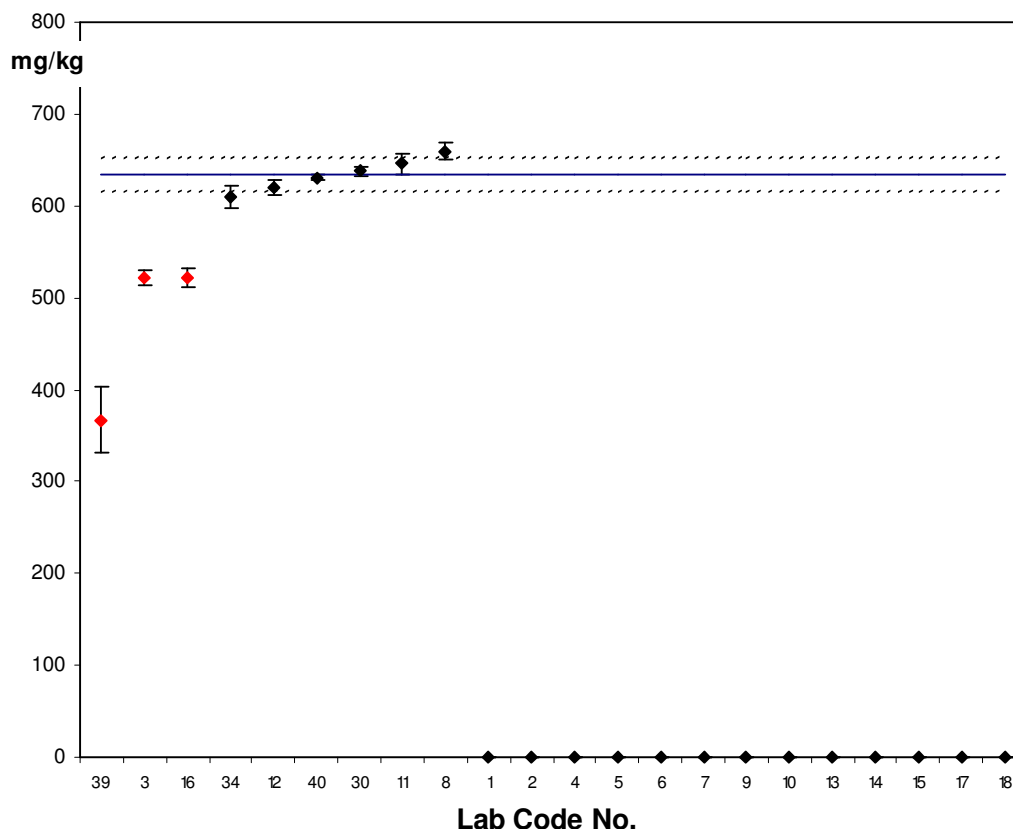
General mean = assigned value	m	16	mg/kg
Repeatability variance	s_r^2	70	
Repeatability standard deviation	s_r	8	mg/kg
Repeatability coefficient of variation		53,79	%
Between-laboratory variance	s_L^2	154	
Between-laboratory standard deviation	s_L	12	mg/kg
Between-laboratory coefficient of variation		79,53	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	224	
Reproducibility standard deviation	s_R	15	mg/kg
Reproducibility coefficient of variation		96,01	%
Repeatability limit	r	23 150,61	mg/kg %
Reproducibility limit	R	42 268,84	mg/kg %
Number of participants (outlier free)	n	4	
Number of individual analytical values (outlier free)	l	19	

RESULTS FOR WATER SOLUBLE POTASSIUM, SAMPLE OLIVE RESIDUES



General mean = assigned value	m	22392	mg/kg
Repeatability variance	s_r^2	274731	
Repeatability standard deviation	s_r	524	mg/kg
Repeatability coefficient of variation		2,34	%
Between-laboratory variance	s_L^2	854507	
Between-laboratory standard deviation	s_L	924	mg/kg
Between-laboratory coefficient of variation		4,13	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	1129238	
Reproducibility standard deviation	s_R	1063	mg/kg
Reproducibility coefficient of variation		4,75	%
Repeatability limit	r	1468 6,55	mg/kg %
Reproducibility limit	R	2975 13,29	mg/kg %
Number of participants (outlier free)	n	7	
Number of individual analytical values (outlier free)	l	35	

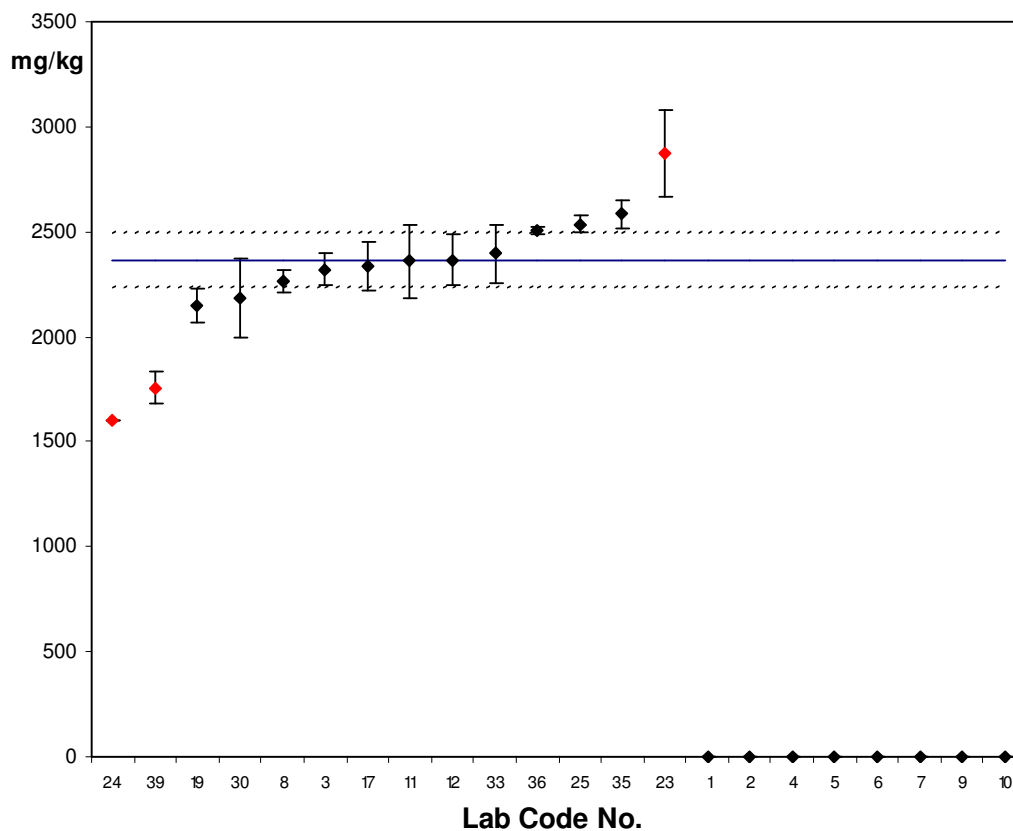
RESULTS FOR WATER SOLUBLE POTASSIUM, SAMPLE WOOD CHIPS



General mean = assigned value	m	634	mg/kg
Repeatability variance	s_r^2	80	
Repeatability standard deviation	s_r	9	mg/kg
Repeatability coefficient of variation		1,41	%
Between-laboratory variance	s_L^2	310	
Between-laboratory standard deviation	s_L	18	mg/kg
Between-laboratory coefficient of variation		2,78	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	390	
Reproducibility standard deviation	s_R	20	mg/kg
Reproducibility coefficient of variation		3,11	%
Repeatability limit	r	25 3,95	mg/kg %
Reproducibility limit	R	55 8,72	mg/kg %
Number of participants (outlier free)	n	6	
Number of individual analytical values (outlier free)	l	29	

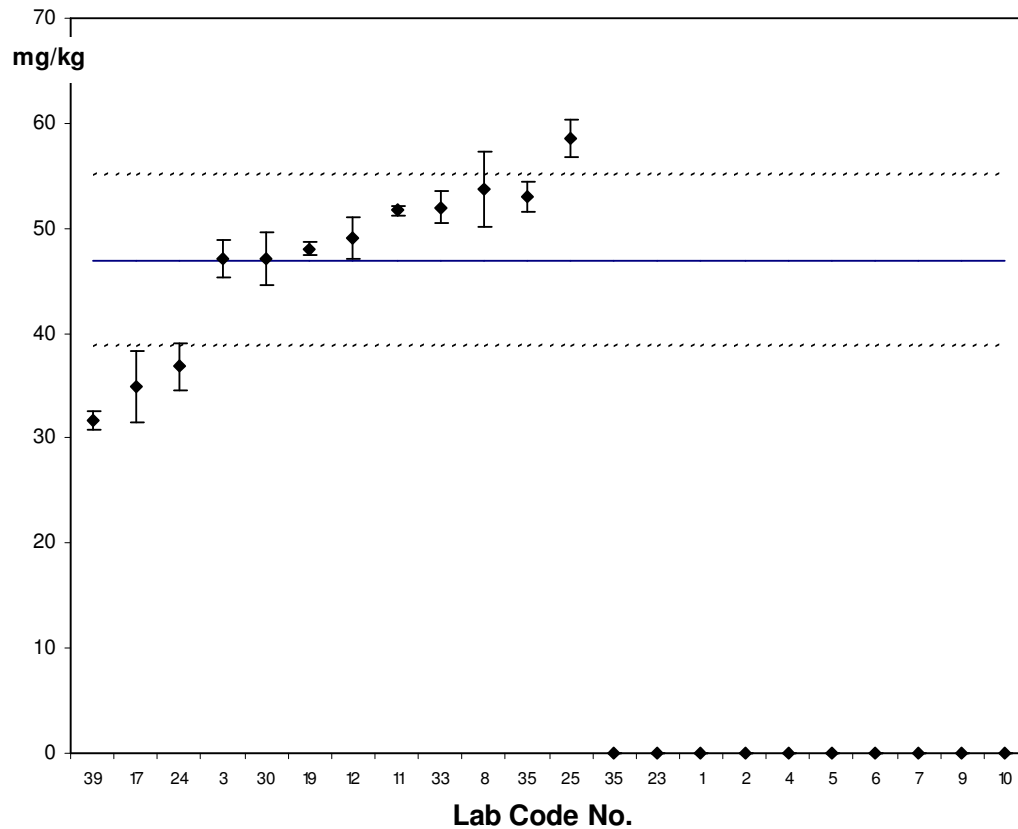
RESULTS FOR CEN/TS 15290 MAJOR ELEMENTS

RESULTS FOR THE DETERMINATION OF ALUMINUM, SAMPLE OLIVE RESIDUES



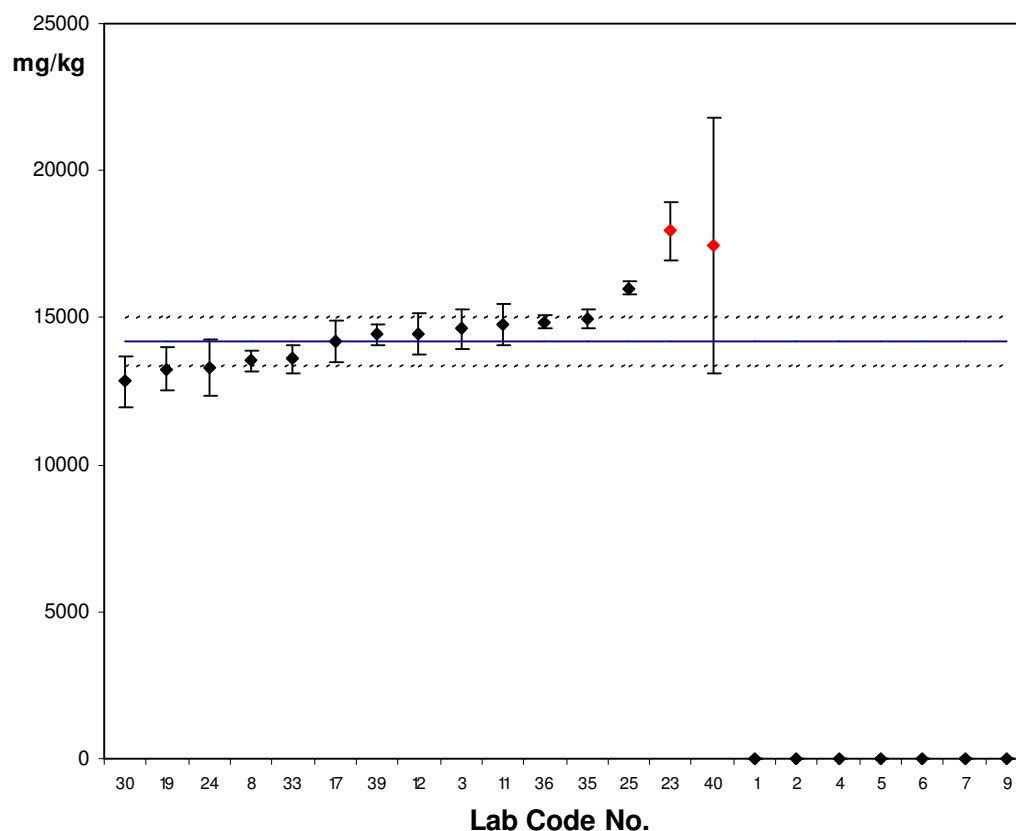
General mean = assigned value	m	2364	mg/kg
Repeatability variance	s_r^2	12110	
Repeatability standard deviation	s_r	110	mg/kg
Repeatability coefficient of variation		4,65	%
Between-laboratory variance	s_L^2	16700	
Between-laboratory standard deviation	s_L	129	mg/kg
Between-laboratory coefficient of variation		5,47	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	28810	
Reproducibility standard deviation	s_R	170	mg/kg
Reproducibility coefficient of variation		7,18	%
Repeatability limit	r	308 13,03	mg/kg %
Reproducibility limit	R	475 20,10	mg/kg %
Number of participants (outlier free)	n	11	
Number of individual analytical values (outlier free)	l	55	

RESULTS FOR THE DETERMINATION OF ALUMINUM, SAMPLE WOOD CHIPS



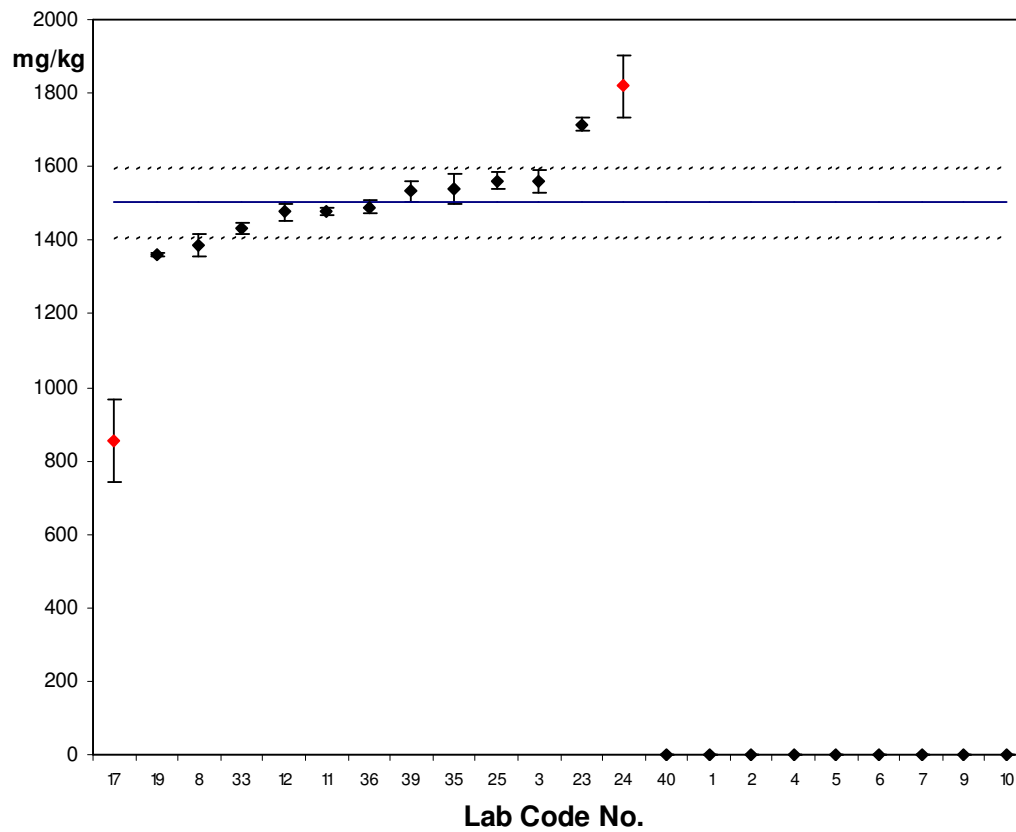
General mean = assigned value	m	47	mg/kg
Repeatability variance	s_r^2	4	
Repeatability standard deviation	s_r	2	mg/kg
Repeatability coefficient of variation		4,14	%
Between-laboratory variance	s_L^2	67	
Between-laboratory standard deviation	s_L	8	mg/kg
Between-laboratory coefficient of variation		17,38	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	70	
Reproducibility standard deviation	s_R	8	mg/kg
Reproducibility coefficient of variation		17,86	%
Repeatability limit	r	5 11,60	mg/kg %
Reproducibility limit	R	23 50,02	mg/kg %
Number of participants (outlier free)	n	12	
Number of individual analytical values (outlier free)	l	57	

RESULTS FOR THE DETERMINATION OF CALCIUM, SAMPLE OLIVE RESIDUES



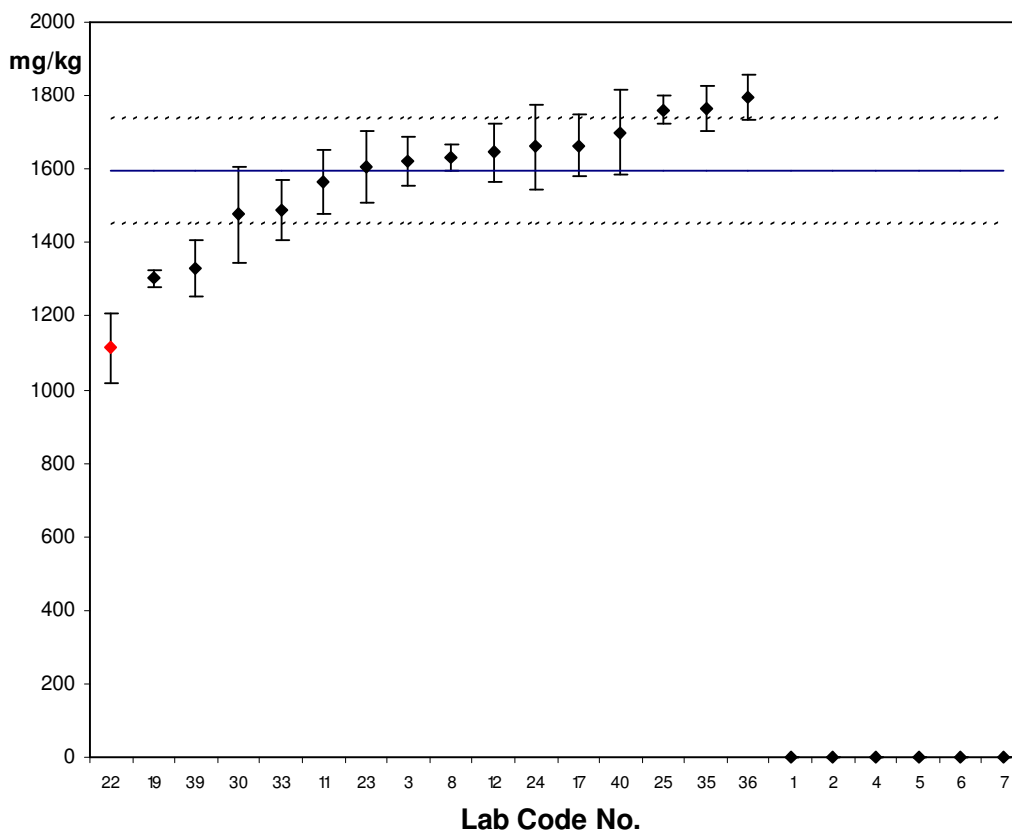
General mean = assigned value	m	14216	mg/kg
Repeatability variance	s_r^2	367848	
Repeatability standard deviation	s_r	607	mg/kg
Repeatability coefficient of variation		4,27	%
Between-laboratory variance	s_L^2	704353	
Between-laboratory standard deviation	s_L	839	mg/kg
Between-laboratory coefficient of variation		5,90	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	1072201	
Reproducibility standard deviation	s_R	1035	mg/kg
Reproducibility coefficient of variation		7,28	%
Repeatability limit	r	1698 11,95	mg/kg %
Reproducibility limit	R	2899 20,39	mg/kg %
Number of participants (outlier free)	n	13	
Number of individual analytical values (outlier free)	l	65	

RESULTS FOR THE DETERMINATION OF CALCIUM, SAMPLE WOOD CHIPS



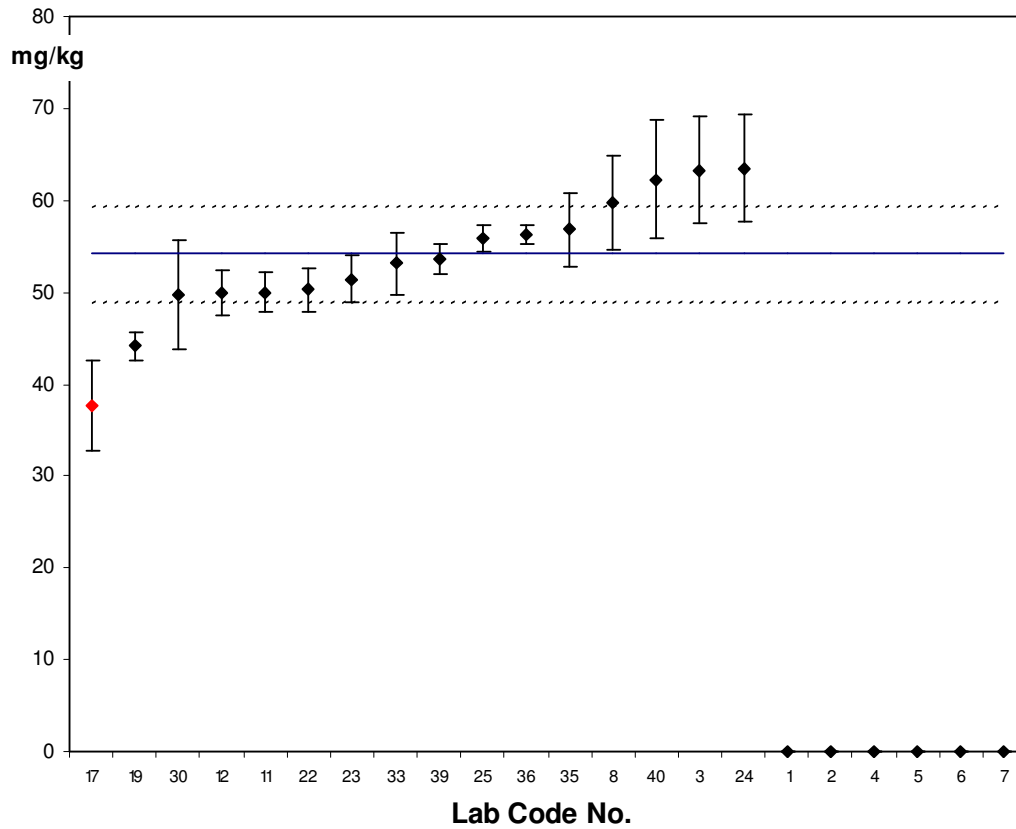
General mean = assigned value	m	1502	mg/kg
Repeatability variance	s_r^2	569	
Repeatability standard deviation	s_r	24	mg/kg
Repeatability coefficient of variation		1,59	%
Between-laboratory variance	s_L^2	9386	
Between-laboratory standard deviation	s_L	97	mg/kg
Between-laboratory coefficient of variation		6,45	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	9954	
Reproducibility standard deviation	s_R	100	mg/kg
Reproducibility coefficient of variation		6,64	%
Repeatability limit	r	67	mg/kg
		4,45	%
Reproducibility limit	R	279	mg/kg
		18,60	%
Number of participants (outlier free)	n	11	
Number of individual analytical values (outlier free)	l	54	

RESULTS FOR THE DETERMINATION OF IRON, SAMPLE OLIVE RESIDUES



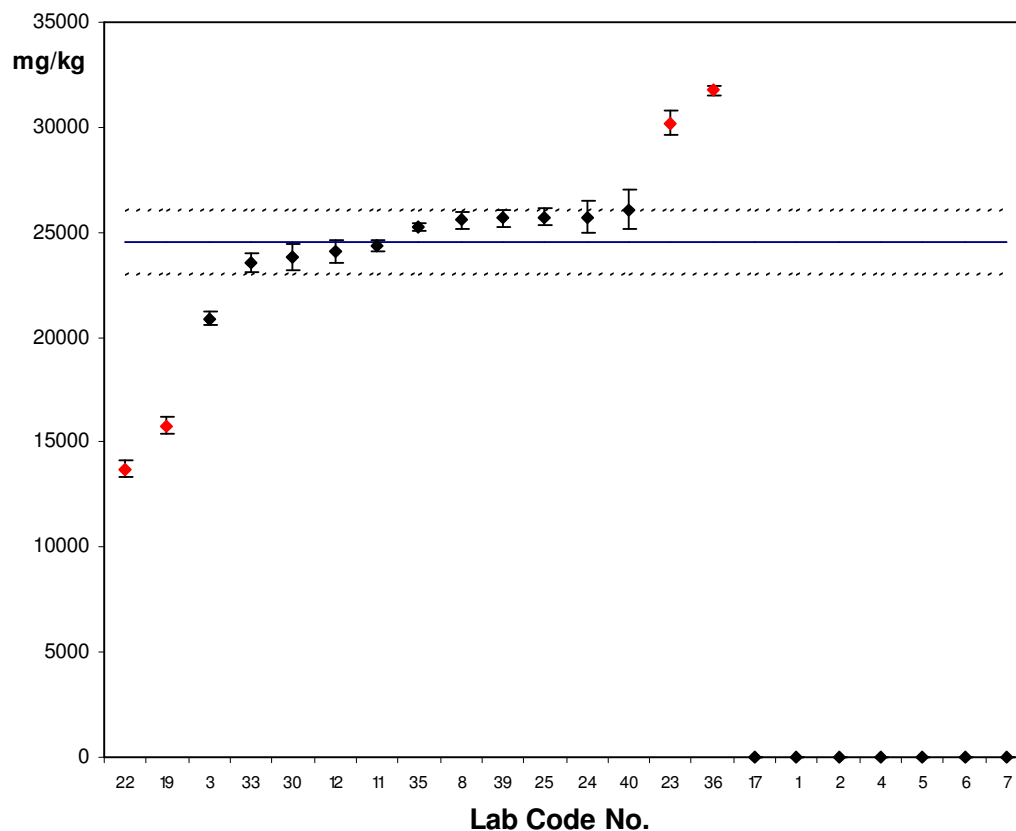
General mean = assigned value	m	1598	mg/kg
Repeatability variance	s_r^2	6541	
Repeatability standard deviation	s_r	81	mg/kg
Repeatability coefficient of variation		5,06	%
Between-laboratory variance	s_L^2	20520	
Between-laboratory standard deviation	s_L	143	mg/kg
Between-laboratory coefficient of variation		8,96	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	27061	
Reproducibility standard deviation	s_R	165	mg/kg
Reproducibility coefficient of variation		10,29	%
Repeatability limit	r	226 14,17	mg/kg %
Reproducibility limit	R	461 28,83	mg/kg %
Number of participants (outlier free)	n	15	
Number of individual analytical values (outlier free)	l	73	

RESULTS FOR THE DETERMINATION OF IRON, SAMPLE WOOD CHIPS



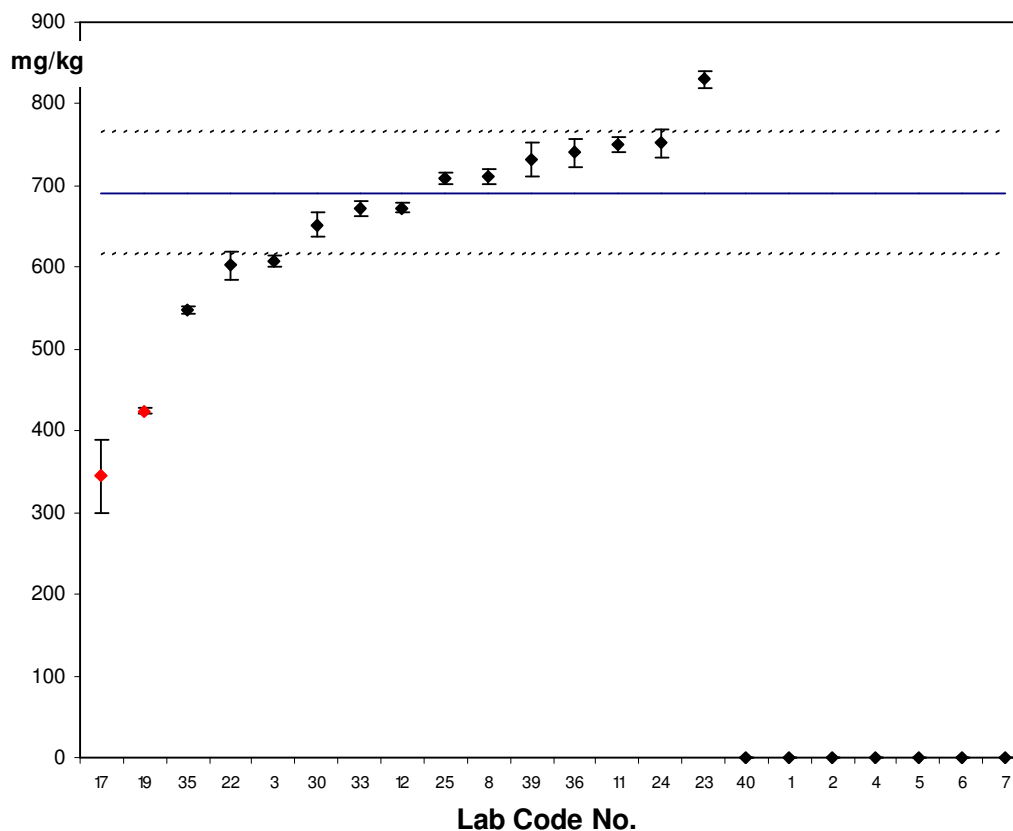
General mean = assigned value	m	54	mg/kg
Repeatability variance	s_r^2	13	
Repeatability standard deviation	s_r	4	mg/kg
Repeatability coefficient of variation		6,59	%
Between-laboratory variance	s_L^2	27	
Between-laboratory standard deviation	s_L	5	mg/kg
Between-laboratory coefficient of variation		9,65	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	40	
Reproducibility standard deviation	s_R	6	mg/kg
Reproducibility coefficient of variation		11,68	%
Repeatability limit	r	10 18,45	mg/kg %
Reproducibility limit	R	18 32,72	mg/kg %
Number of participants (outlier free)	n	15	
Number of individual analytical values (outlier free)	l	69	

RESULTS FOR THE DETERMINATION OF POTASSIUM, SAMPLE OLIVE RESIDUES



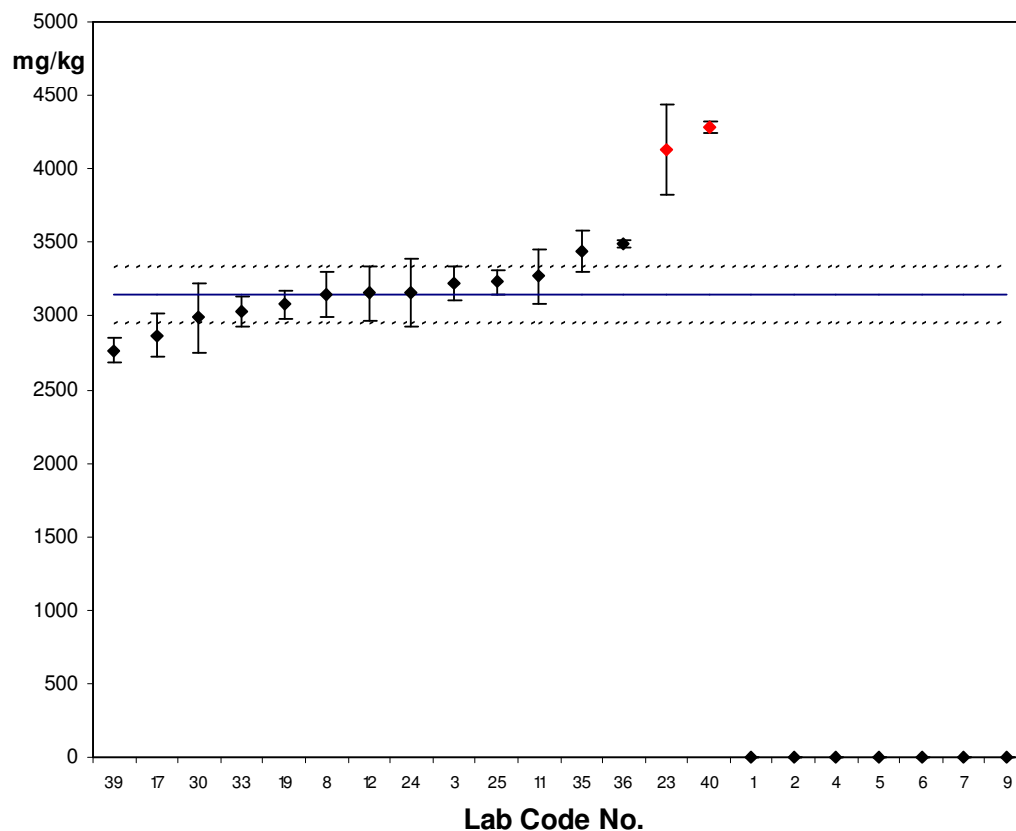
General mean = assigned value	m	24524	mg/kg
Repeatability variance	s_r^2	218854	
Repeatability standard deviation	s_r	468	mg/kg
Repeatability coefficient of variation		1,91	%
Between-laboratory variance	s_L^2	2229115	
Between-laboratory standard deviation	s_L	1493	mg/kg
Between-laboratory coefficient of variation		6,09	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	2447969	
Reproducibility standard deviation	s_R	1565	mg/kg
Reproducibility coefficient of variation		6,38	%
Repeatability limit	r	1310	mg/kg
		5,34	%
Reproducibility limit	R	4381	mg/kg
		17,86	%
Number of participants (outlier free)	n	11	
Number of individual analytical values (outlier free)	l	52	

RESULTS FOR THE DETERMINATION OF POTASSIUM, SAMPLE WOOD CHIPS



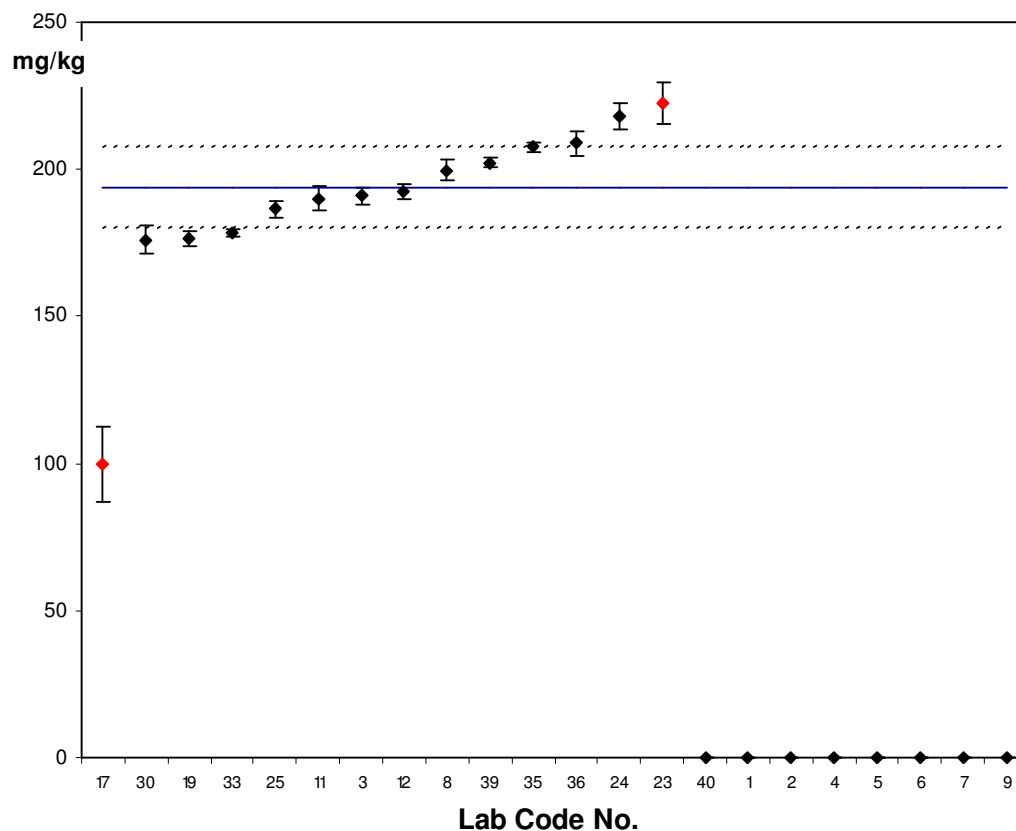
General mean = assigned value	m	691	mg/kg
Repeatability variance	s_r^2	152	
Repeatability standard deviation	s_r	12	mg/kg
Repeatability coefficient of variation		1,78	%
Between-laboratory variance	s_L^2	5734	
Between-laboratory standard deviation	s_L	76	mg/kg
Between-laboratory coefficient of variation		10,95	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	5885	
Reproducibility standard deviation	s_R	77	mg/kg
Reproducibility coefficient of variation		11,09	%
Repeatability limit	r	35 4,99	mg/kg %
Reproducibility limit	R	215 31,07	mg/kg %
Number of participants (outlier free)	n	13	
Number of individual analytical values (outlier free)	l	63	

RESULTS FOR THE DETERMINATION OF MAGNESIUM, SAMPLE OLIVE RESIDUES



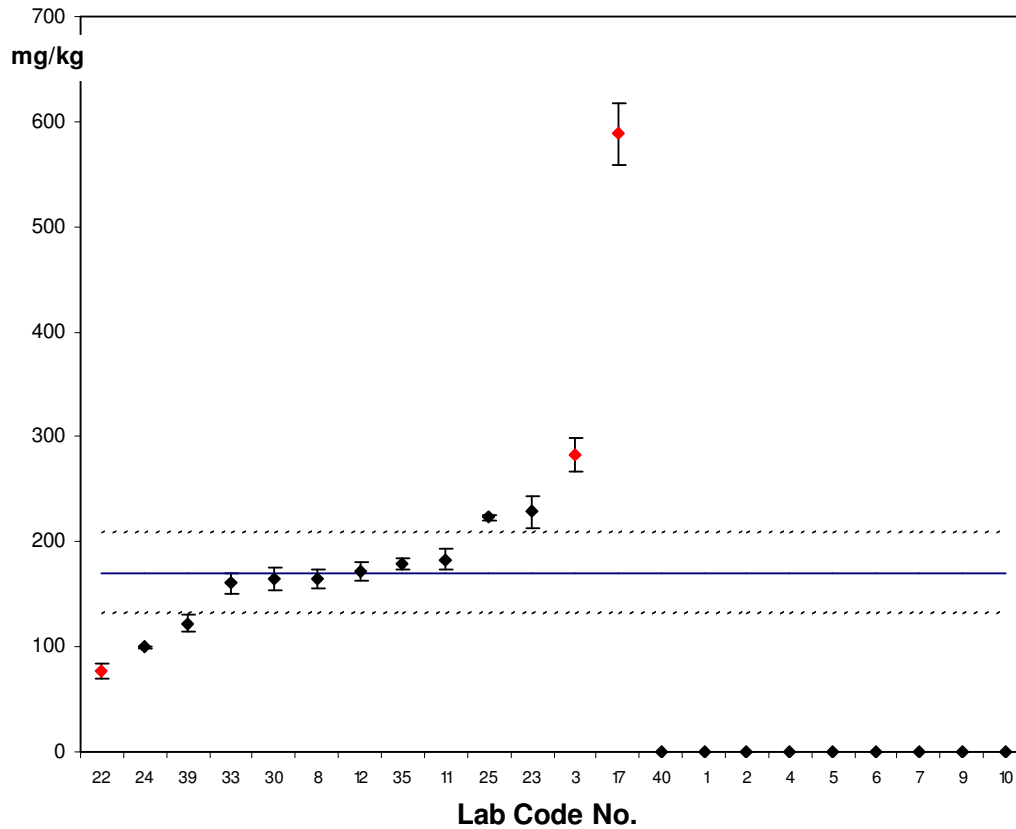
General mean = assigned value	m	3143	mg/kg
Repeatability variance	s_r^2	22226	
Repeatability standard deviation	s_r	149	mg/kg
Repeatability coefficient of variation		4,74	%
Between-laboratory variance	s_L^2	36960	
Between-laboratory standard deviation	s_L	192	mg/kg
Between-laboratory coefficient of variation		6,12	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	59186	
Reproducibility standard deviation	s_R	243	mg/kg
Reproducibility coefficient of variation		7,74	%
Repeatability limit	r	417 13,28	mg/kg %
Reproducibility limit	R	681 21,68	mg/kg %
Number of participants (outlier free)	n	13	
Number of individual analytical values (outlier free)	l	65	

RESULTS FOR THE DETERMINATION OF MAGNESIUM, SAMPLE WOOD CHIPS



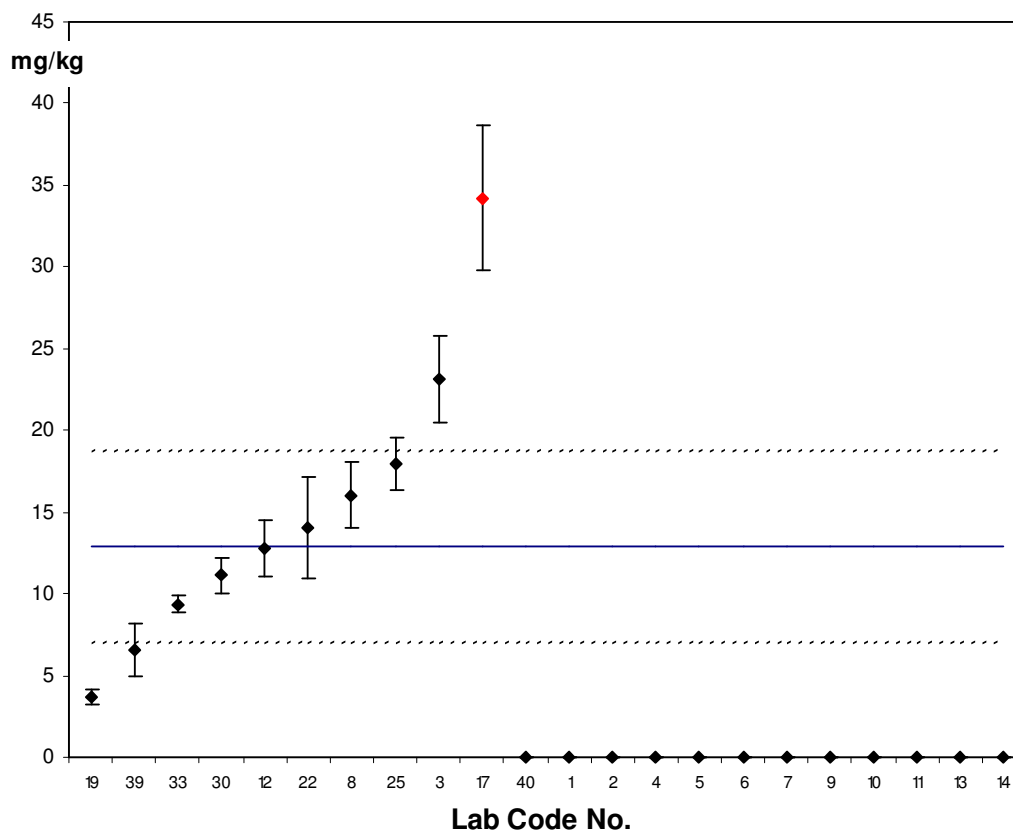
General mean = assigned value	m	194	mg/kg
Repeatability variance	s_r^2	11	
Repeatability standard deviation	s_r	3	mg/kg
Repeatability coefficient of variation		1,69	%
Between-laboratory variance	s_L^2	184	
Between-laboratory standard deviation	s_L	14	mg/kg
Between-laboratory coefficient of variation		7,00	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	195	
Reproducibility standard deviation	s_R	14	mg/kg
Reproducibility coefficient of variation		7,20	%
Repeatability limit	r	9 4,74	mg/kg %
Reproducibility limit	R	39 20,15	mg/kg %
Number of participants (outlier free)	n	12	
Number of individual analytical values (outlier free)	l	60	

RESULTS FOR THE DETERMINATION OF SODIUM, SAMPLE OLIVE RESIDUES



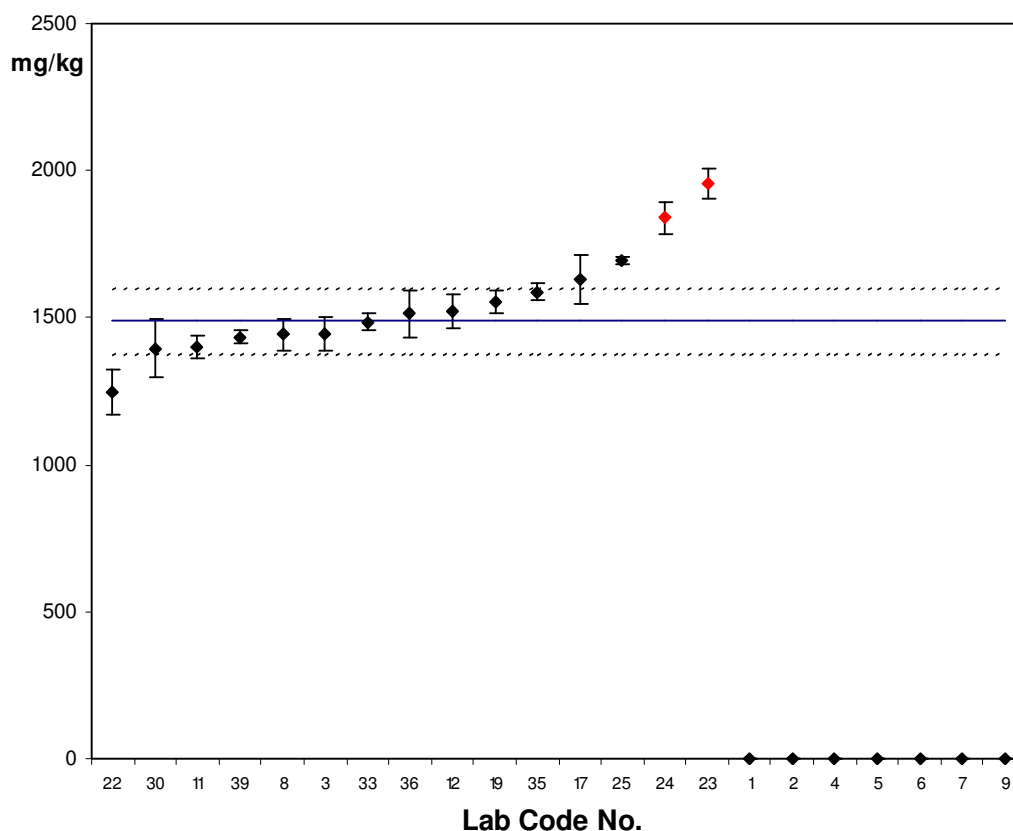
General mean = assigned value	m	171	mg/kg
Repeatability variance	s_r^2	84	
Repeatability standard deviation	s_r	9	mg/kg
Repeatability coefficient of variation		5,35	%
Between-laboratory variance	s_L^2	1505	
Between-laboratory standard deviation	s_L	39	mg/kg
Between-laboratory coefficient of variation		22,72	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	1589	
Reproducibility standard deviation	s_R	40	mg/kg
Reproducibility coefficient of variation		23,35	%
Repeatability limit	r	26 14,99	mg/kg %
Reproducibility limit	R	112 65,37	mg/kg %
Number of participants (outlier free)	n	10	
Number of individual analytical values (outlier free)	l	49	

RESULTS FOR THE DETERMINATION OF SODIUM, SAMPLE WOOD CHIPS



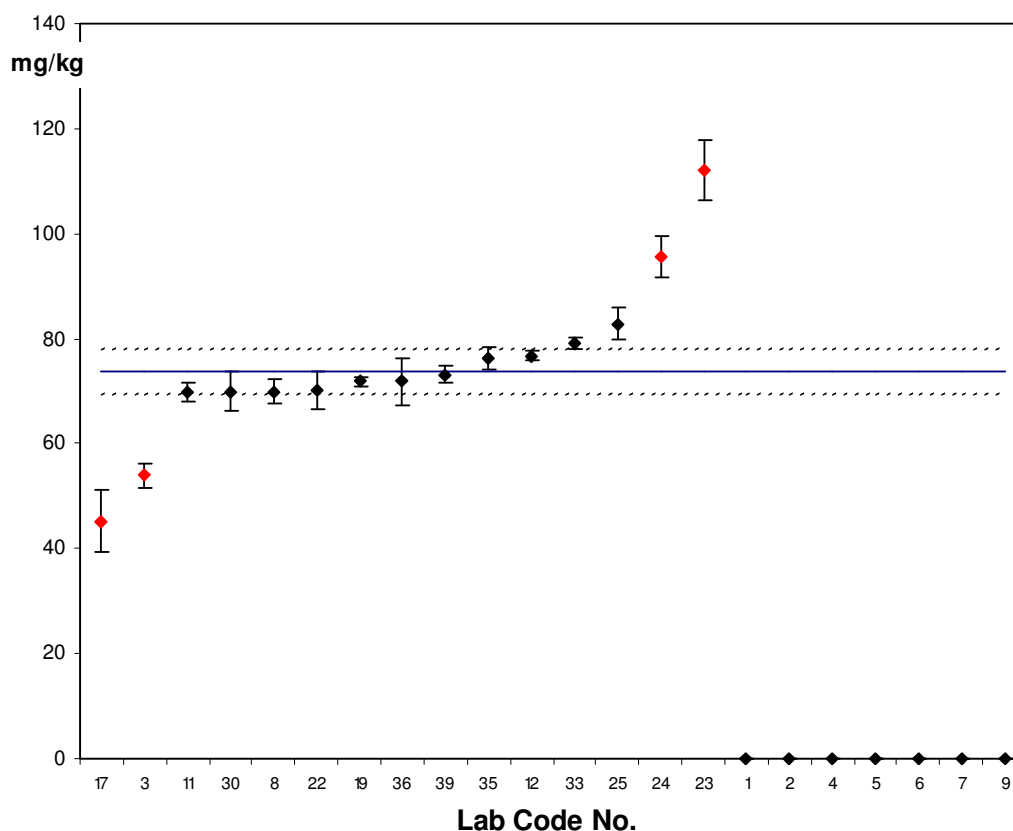
General mean = assigned value	m	13	mg/kg
Repeatability variance	s_r^2	3	
Repeatability standard deviation	s_r	2	mg/kg
Repeatability coefficient of variation		14,37	%
Between-laboratory variance	s_L^2	34	
Between-laboratory standard deviation	s_L	6	mg/kg
Between-laboratory coefficient of variation		45,53	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	38	
Reproducibility standard deviation	s_R	6	mg/kg
Reproducibility coefficient of variation		47,74	%
Repeatability limit	r	5	mg/kg
		40,23	%
Reproducibility limit	R	17	mg/kg
		133,68	%
Number of participants (outlier free)	n	9	
Number of individual analytical values (outlier free)	l	44	

RESULTS FOR THE DETERMINATION OF PHOSPHOR, SAMPLE OLIVE RESIDUES



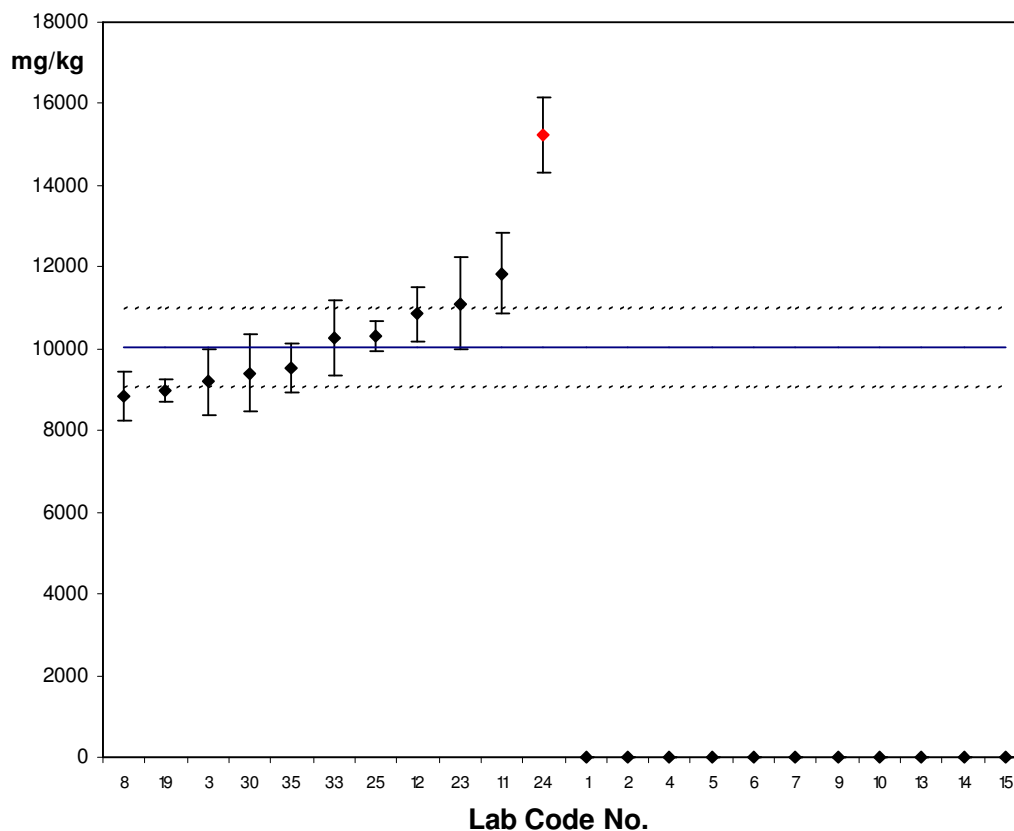
General mean = assigned value	m	1488	mg/kg
Repeatability variance	s_r^2	3370	
Repeatability standard deviation	s_r	58	mg/kg
Repeatability coefficient of variation		3,90	%
Between-laboratory variance	s_L^2	12677	
Between-laboratory standard deviation	s_L	113	mg/kg
Between-laboratory coefficient of variation		7,56	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	16047	
Reproducibility standard deviation	s_R	127	mg/kg
Reproducibility coefficient of variation		8,51	%
Repeatability limit	r	163 10,92	mg/kg %
Reproducibility limit	R	355 23,83	mg/kg %
Number of participants (outlier free)	n	13	
Number of individual analytical values (outlier free)	l	65	

RESULTS FOR THE DETERMINATION OF PHOSPHOR, SAMPLE WOOD CHIPS



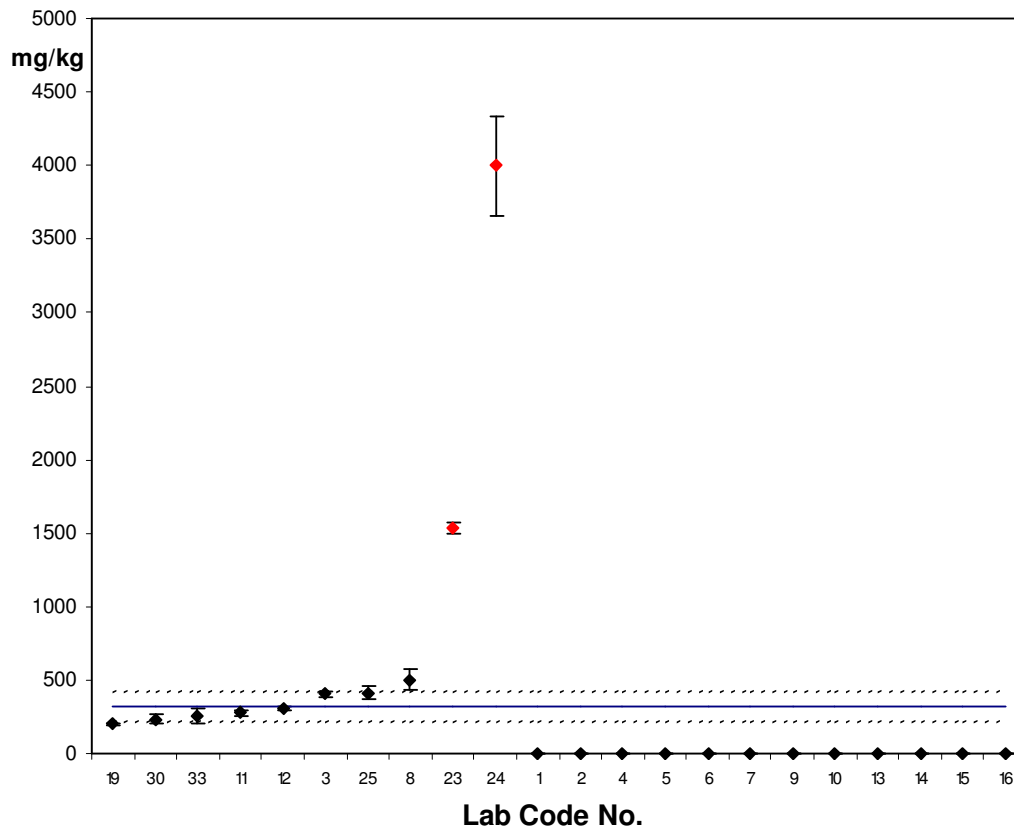
General mean = assigned value	m	74	mg/kg
Repeatability variance	s_r^2	6	
Repeatability standard deviation	s_r	2	mg/kg
Repeatability coefficient of variation		3,37	%
Between-laboratory variance	s_L^2	18	
Between-laboratory standard deviation	s_L	4	mg/kg
Between-laboratory coefficient of variation		5,77	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	24	
Reproducibility standard deviation	s_R	5	mg/kg
Reproducibility coefficient of variation		6,68	%
Repeatability limit	r	7 9,42	mg/kg %
Reproducibility limit	R	14 18,70	mg/kg %
Number of participants (outlier free)	n	11	
Number of individual analytical values (outlier free)	l	53	

RESULTS FOR THE DETERMINATION OF SILICIUM, SAMPLE OLIVE RESIDUES



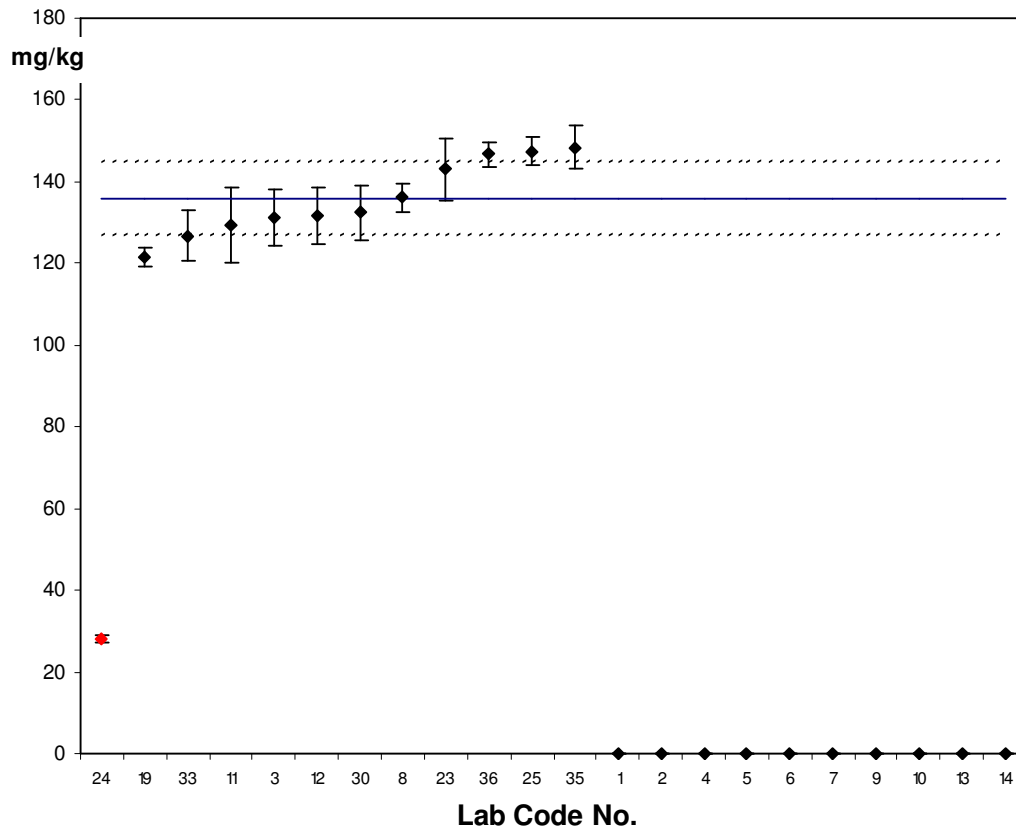
General mean = assigned value	m	10043	mg/kg
Repeatability variance	s_r^2	591745	
Repeatability standard deviation	s_r	769	mg/kg
Repeatability coefficient of variation		7,66	%
Between-laboratory variance	s_L^2	911768	
Between-laboratory standard deviation	s_L	955	mg/kg
Between-laboratory coefficient of variation		9,51	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	1503513	
Reproducibility standard deviation	s_R	1226	mg/kg
Reproducibility coefficient of variation		12,21	%
Repeatability limit	r	2154 21,45	mg/kg %
Reproducibility limit	R	3433 34,19	mg/kg %
Number of participants (outlier free)	n	10	
Number of individual analytical values (outlier free)	l	49	

RESULTS FOR THE DETERMINATION OF SILICIUM, SAMPLE WOOD CHIPS



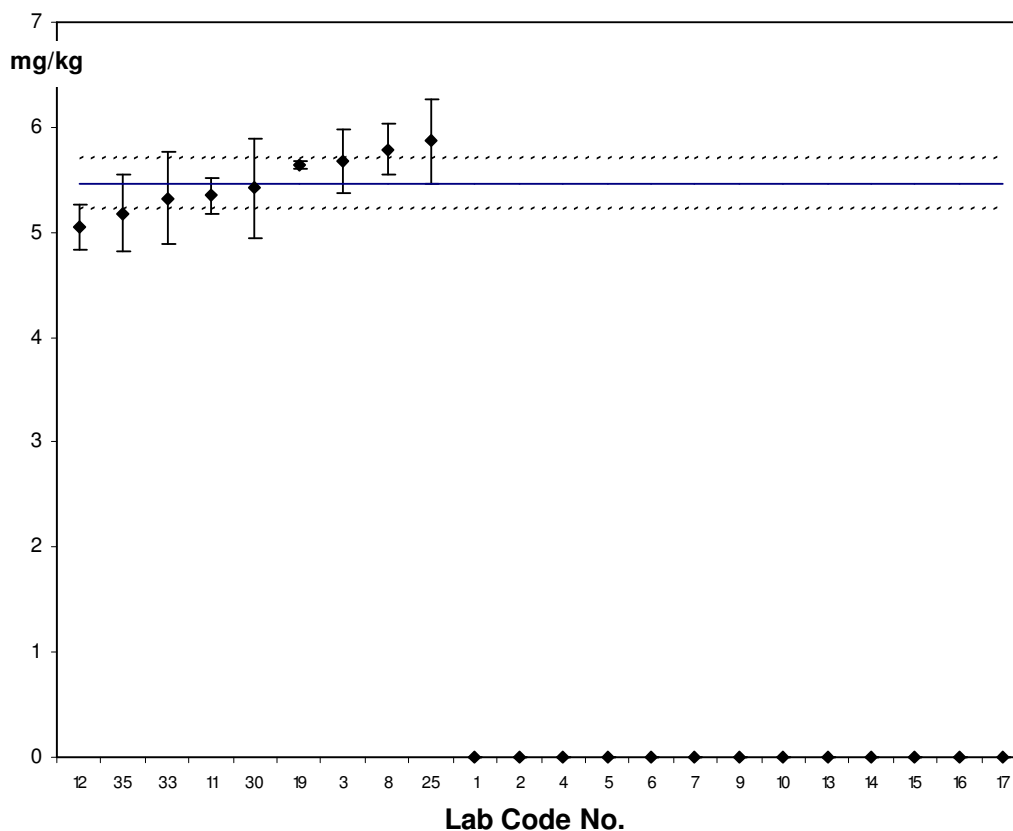
General mean = assigned value	m	320	mg/kg
Repeatability variance	s_r^2	1284	
Repeatability standard deviation	s_r	36	mg/kg
Repeatability coefficient of variation		11,21	%
Between-laboratory variance	s_L^2	9859	
Between-laboratory standard deviation	s_L	99	mg/kg
Between-laboratory coefficient of variation		31,05	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	11144	
Reproducibility standard deviation	s_R	106	mg/kg
Reproducibility coefficient of variation		33,01	%
Repeatability limit	r	100	mg/kg
		31,38	%
Reproducibility limit	R	296	mg/kg
		92,42	%
Number of participants (outlier free)	n	8	
Number of individual analytical values (outlier free)	l	39	

RESULTS FOR THE DETERMINATION OF TITANIUM, SAMPLE OLIVE RESIDUES



General mean = assigned value	m	136	mg/kg
Repeatability variance	s_r^2	35	
Repeatability standard deviation	s_r	6	mg/kg
Repeatability coefficient of variation		4,38	%
Between-laboratory variance	s_L^2	78	
Between-laboratory standard deviation	s_L	9	mg/kg
Between-laboratory coefficient of variation		6,51	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	114	
Reproducibility standard deviation	s_R	11	mg/kg
Reproducibility coefficient of variation		7,85	%
Repeatability limit	r	17 12,26	mg/kg %
Reproducibility limit	R	30 21,97	mg/kg %
Number of participants (outlier free)	n	11	
Number of individual analytical values (outlier free)	l	54	

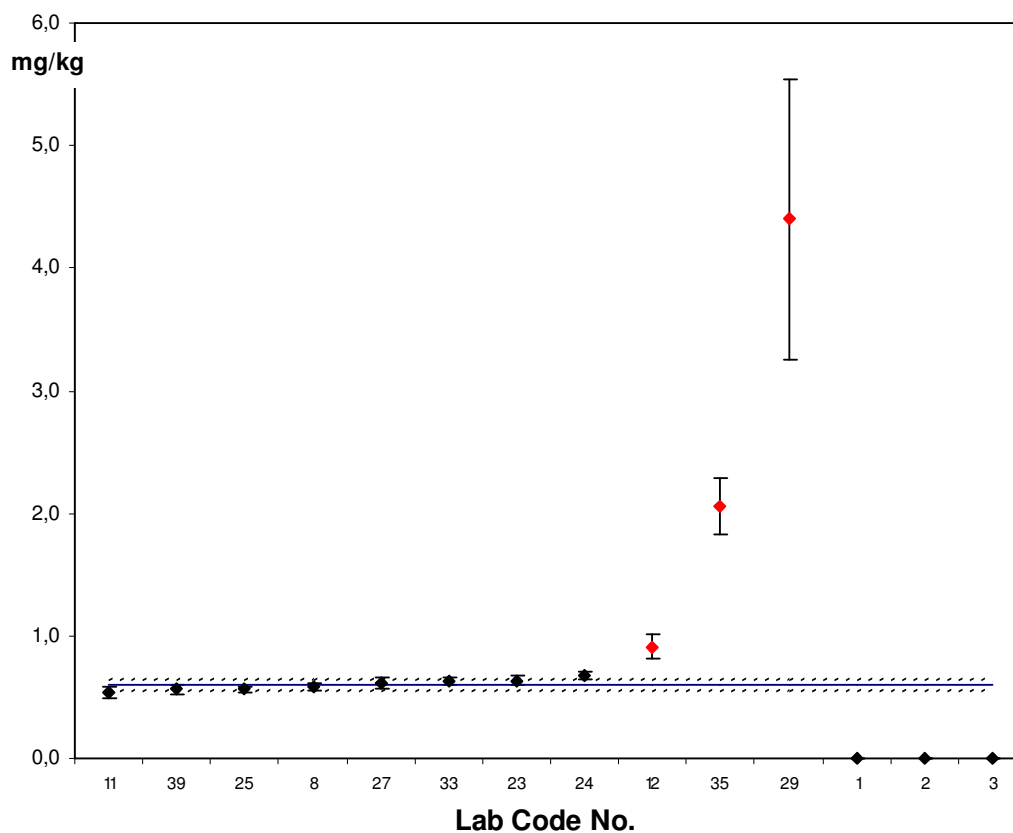
RESULTS FOR THE DETERMINATION OF TITANIUM, SAMPLE WOOD CHIPS



General mean = assigned value	m	5,5	mg/kg
Repeatability variance	s_r^2	0,10	
Repeatability standard deviation	s_r	0,32	mg/kg
Repeatability coefficient of variation		5,90	%
Between-laboratory variance	s_L^2	0,06	
Between-laboratory standard deviation	s_L	0,24	mg/kg
Between-laboratory coefficient of variation		4,43	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,16	
Reproducibility standard deviation	s_R	0,40	mg/kg
Reproducibility coefficient of variation		7,38	%
Repeatability limit	r	0,90 16,52	mg/kg %
Reproducibility limit	R	1,13 20,66	mg/kg %
Number of participants (outlier free)	n	9	
Number of individual analytical values (outlier free)	l	43	

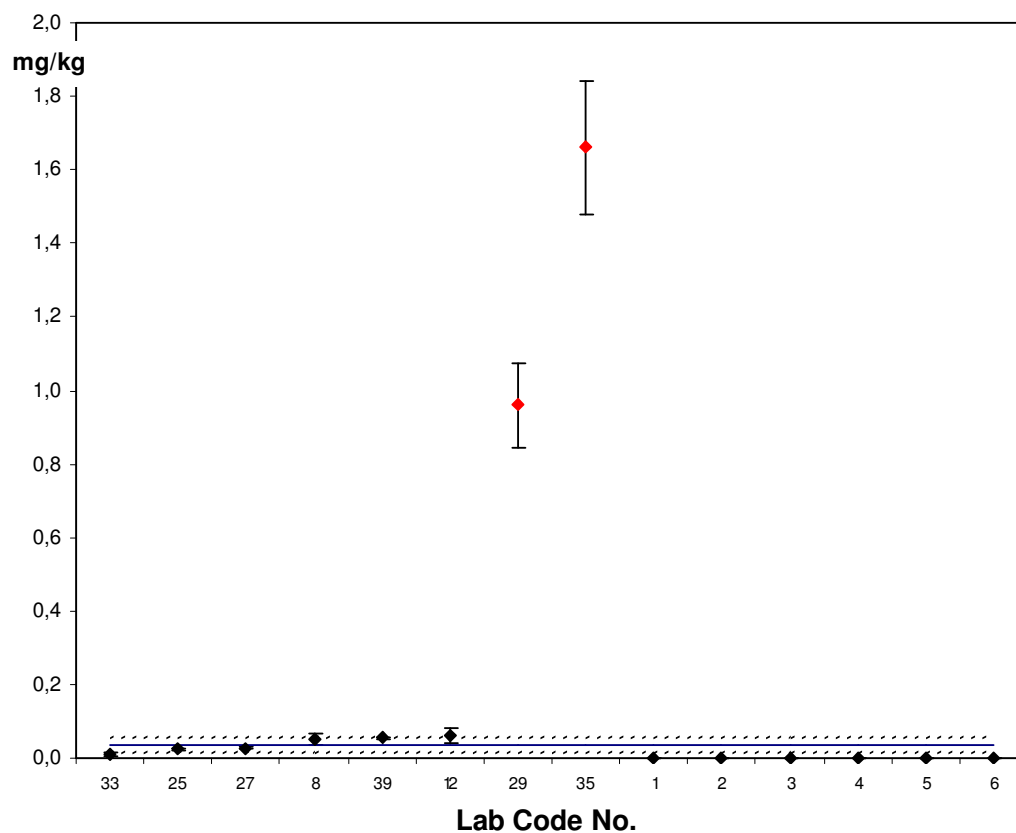
RESULTS FOR CEN/TS 15297 MINOR ELEMENTS

RESULTS FOR THE DETERMINATION OF ARSENIC, SAMPLE OLIVE RESIDUES



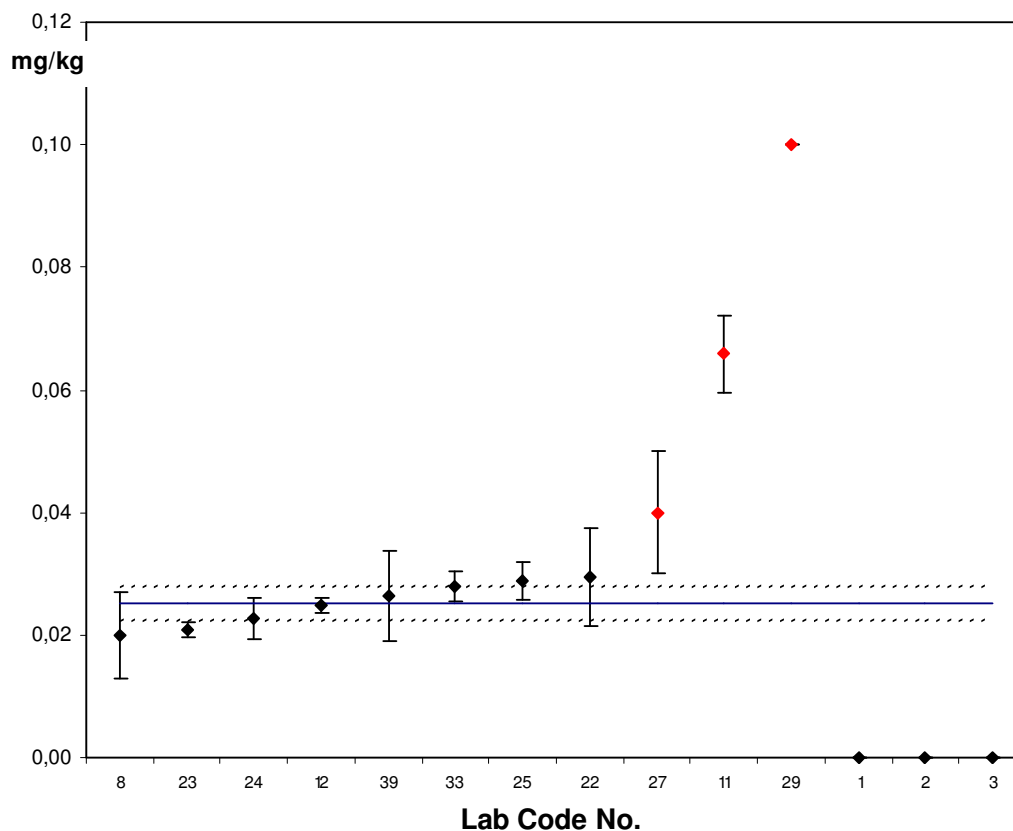
General mean = assigned value	m	0,60	mg/kg
Repeatability variance	s_r^2	0,001	
Repeatability standard deviation	s_r	0,036	mg/kg
Repeatability coefficient of variation		6,04	%
Between-laboratory variance	s_L^2	0,002	
Between-laboratory standard deviation	s_L	0,044	mg/kg
Between-laboratory coefficient of variation		7,36	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,003	
Reproducibility standard deviation	s_R	0,057	mg/kg
Reproducibility coefficient of variation		9,53	%
Repeatability limit	r	0,10 16,92	mg/kg %
Reproducibility limit	R	0,16 26,67	mg/kg %
Number of participants (outlier free)	n	8	
Number of individual analytical values (outlier free)	l	38	

RESULTS FOR THE DETERMINATION OF ARSENIC, SAMPLE WOOD CHIPS



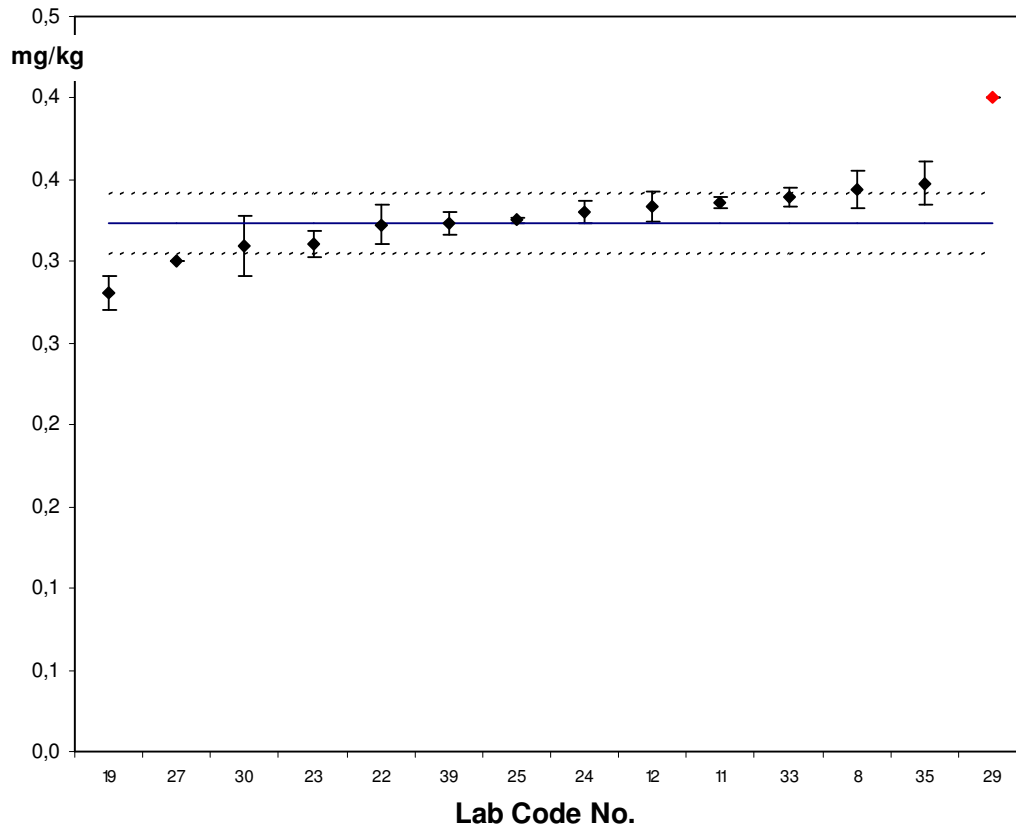
General mean = assigned value	m	0,036	mg/kg
Repeatability variance	s_r^2	0,000	
Repeatability standard deviation	s_r	0,012	mg/kg
Repeatability coefficient of variation		33,54	%
Between-laboratory variance	s_L^2	0,000	
Between-laboratory standard deviation	s_L	0,020	mg/kg
Between-laboratory coefficient of variation		54,98	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,001	
Reproducibility standard deviation	s_R	0,023	mg/kg
Reproducibility coefficient of variation		64,40	%
Repeatability limit	r	0,033 93,91	mg/kg %
Reproducibility limit	R	0,064 180,33	mg/kg %
Number of participants (outlier free)	n	6	
Number of individual analytical values (outlier free)	l	27	

RESULTS FOR THE DETERMINATION OF CADMIUM, SAMPLE OLIVE RESIDUES



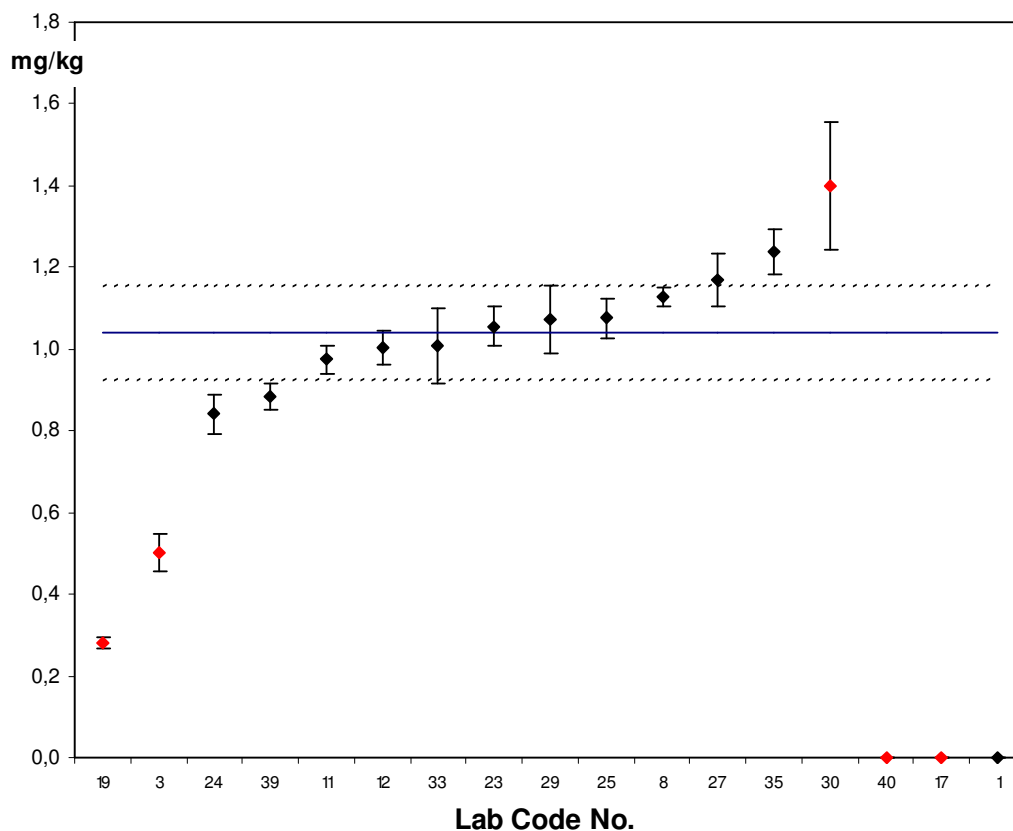
General mean = assigned value	m	0,025	mg/kg
Repeatability variance	s_r^2	0,0000	
Repeatability standard deviation	s_r	0,0050	mg/kg
Repeatability coefficient of variation		19,77	%
Between-laboratory variance	s_L^2	0,0000	
Between-laboratory standard deviation	s_L	0,0029	mg/kg
Between-laboratory coefficient of variation		11,39	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,0000	
Reproducibility standard deviation	s_R	0,0057	mg/kg
Reproducibility coefficient of variation		22,82	%
Repeatability limit	r	0,014 55,36	mg/kg %
Reproducibility limit	R	0,016 63,89	mg/kg %
Number of participants (outlier free)	n	8	
Number of individual analytical values (outlier free)	l	40	

RESULTS FOR THE DETERMINATION OF CADMIUM, SAMPLE WOOD CHIPS



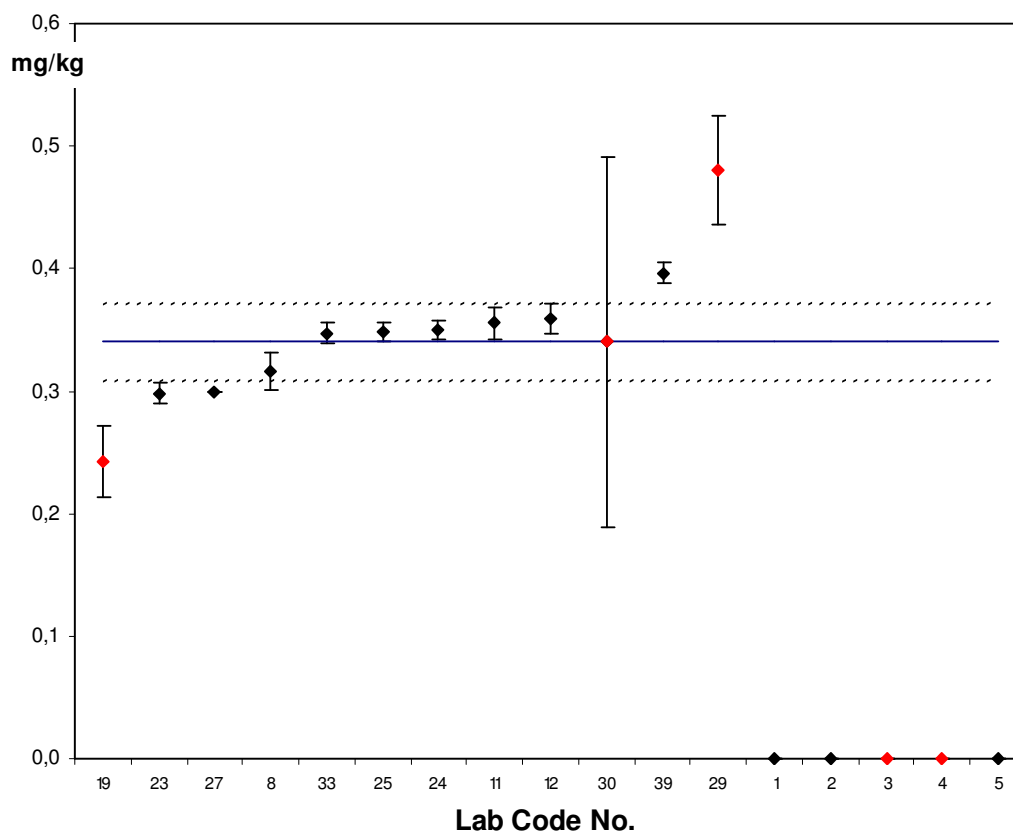
General mean = assigned value	m	0,32	mg/kg
Repeatability variance	s_r^2	0,000	
Repeatability standard deviation	s_r	0,009	mg/kg
Repeatability coefficient of variation		2,85	%
Between-laboratory variance	s_L^2	0,000	
Between-laboratory standard deviation	s_L	0,019	mg/kg
Between-laboratory coefficient of variation		5,76	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,000	
Reproducibility standard deviation	s_R	0,021	mg/kg
Reproducibility coefficient of variation		6,42	%
Repeatability limit	r	0,03 7,97	mg/kg %
Reproducibility limit	R	0,06 17,99	mg/kg %
Number of participants (outlier free)	n	13	
Number of individual analytical values (outlier free)	l	63	

RESULTS FOR THE DETERMINATION OF COBALT, SAMPLE OLIVE RESIDUES



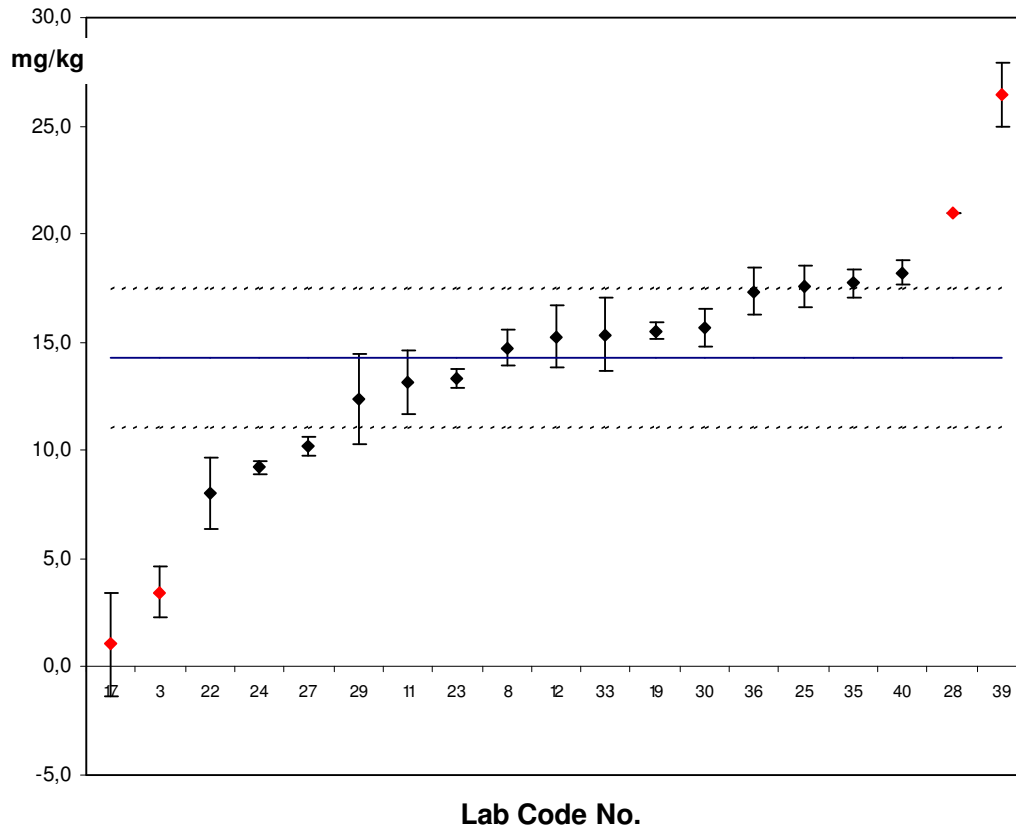
General mean = assigned value	m	1,04	mg/kg
Repeatability variance	s_r^2	0,003	
Repeatability standard deviation	s_r	0,056	mg/kg
Repeatability coefficient of variation		5,35	%
Between-laboratory variance	s_L^2	0,013	
Between-laboratory standard deviation	s_L	0,115	mg/kg
Between-laboratory coefficient of variation		11,04	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,016	
Reproducibility standard deviation	s_R	0,128	mg/kg
Reproducibility coefficient of variation		12,27	%
Repeatability limit	r	0,16 14,97	mg/kg %
Reproducibility limit	R	0,36 34,35	mg/kg %
Number of participants (outlier free)	n	11	
Number of individual analytical values (outlier free)	l	54	

RESULTS FOR THE DETERMINATION OF COBALT, SAMPLE WOOD CHIPS



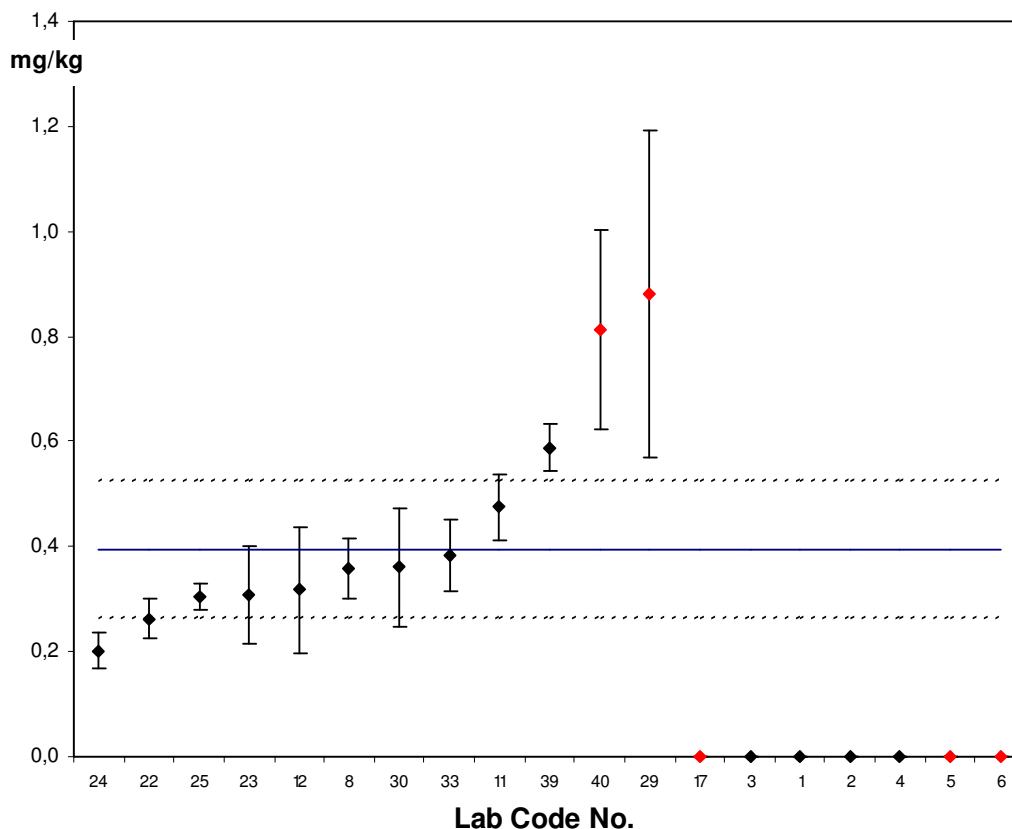
General mean = assigned value	m	0,34	mg/kg
Repeatability variance	s_r^2	0,000	
Repeatability standard deviation	s_r	0,010	mg/kg
Repeatability coefficient of variation		2,85	%
Between-laboratory variance	s_L^2	0,001	
Between-laboratory standard deviation	s_L	0,032	mg/kg
Between-laboratory coefficient of variation		9,28	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,001	
Reproducibility standard deviation	s_R	0,033	mg/kg
Reproducibility coefficient of variation		9,71	%
Repeatability limit	r	0,03 7,99	mg/kg %
Reproducibility limit	R	0,09 27,19	mg/kg %
Number of participants (outlier free)	n	9	
Number of individual analytical values (outlier free)	l	43	

RESULTS FOR THE DETERMINATION OF CHROMIUM, SAMPLE OLIVE RESIDUES



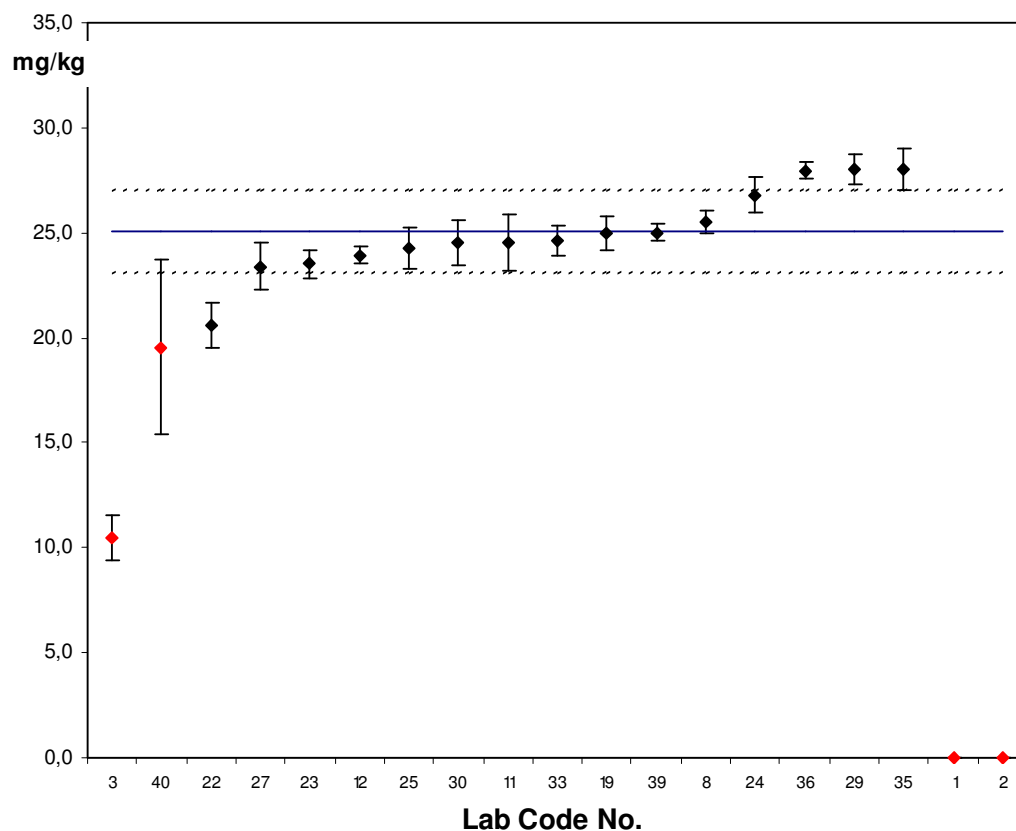
General mean = assigned value	m	14,28	mg/kg
Repeatability variance	s_r^2	1,170	
Repeatability standard deviation	s_r	1,081	mg/kg
Repeatability coefficient of variation		7,57	%
Between-laboratory variance	s_L^2	10,076	
Between-laboratory standard deviation	s_L	3,174	mg/kg
Between-laboratory coefficient of variation		22,23	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	11,246	
Reproducibility standard deviation	s_R	3,353	mg/kg
Reproducibility coefficient of variation		23,49	%
Repeatability limit	r	3,03 21,21	mg/kg %
Reproducibility limit	R	9,39 65,76	mg/kg %
Number of participants (outlier free)	n	15	
Number of individual analytical values (outlier free)	l	72	

RESULTS FOR THE DETERMINATION OF CHROMIUM, SAMPLE WOOD CHIPS



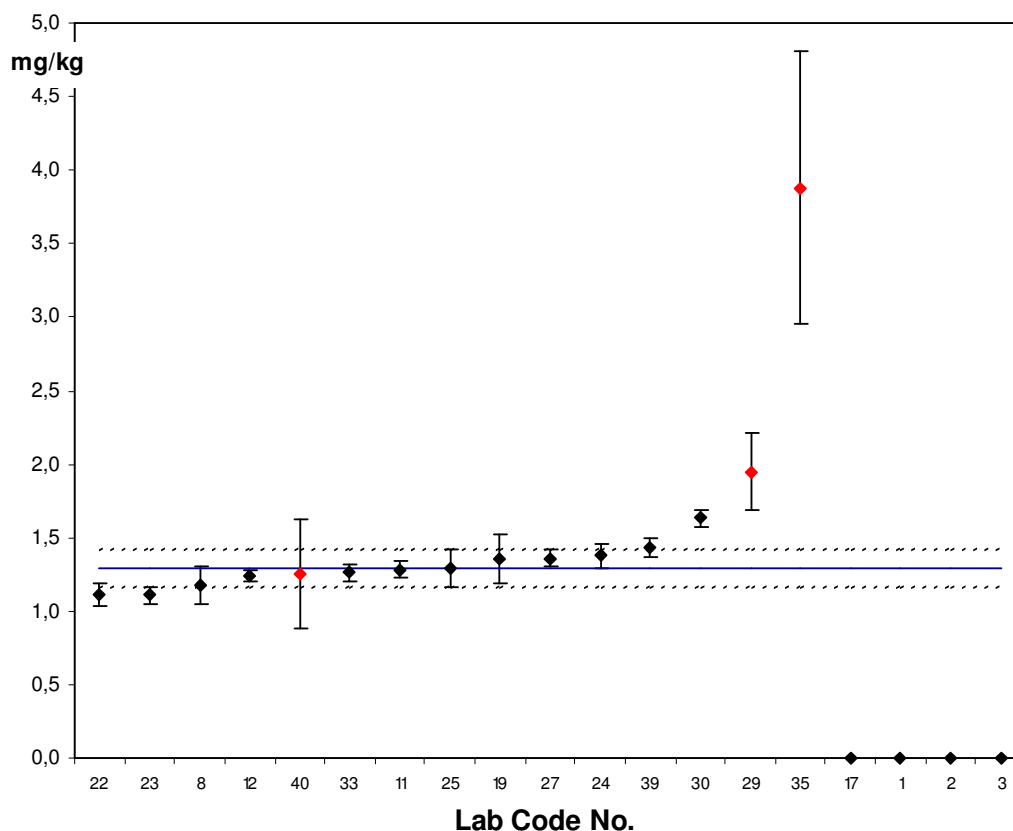
General mean = assigned value	m	0,37	mg/kg
Repeatability variance	s_r^2	0,006	
Repeatability standard deviation	s_r	0,077	mg/kg
Repeatability coefficient of variation		20,99	%
Between-laboratory variance	s_L^2	0,007	
Between-laboratory standard deviation	s_L	0,085	mg/kg
Between-laboratory coefficient of variation		22,97	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,013	
Reproducibility standard deviation	s_R	0,115	mg/kg
Reproducibility coefficient of variation		31,12	%
Repeatability limit	r	0,22 58,76	mg/kg %
Reproducibility limit	R	0,32 87,12	mg/kg %
Number of participants (outlier free)	n	9	
Number of individual analytical values (outlier free)	l	43	

RESULTS FOR THE DETERMINATION OF COPPER, SAMPLE OLIVE RESIDUES



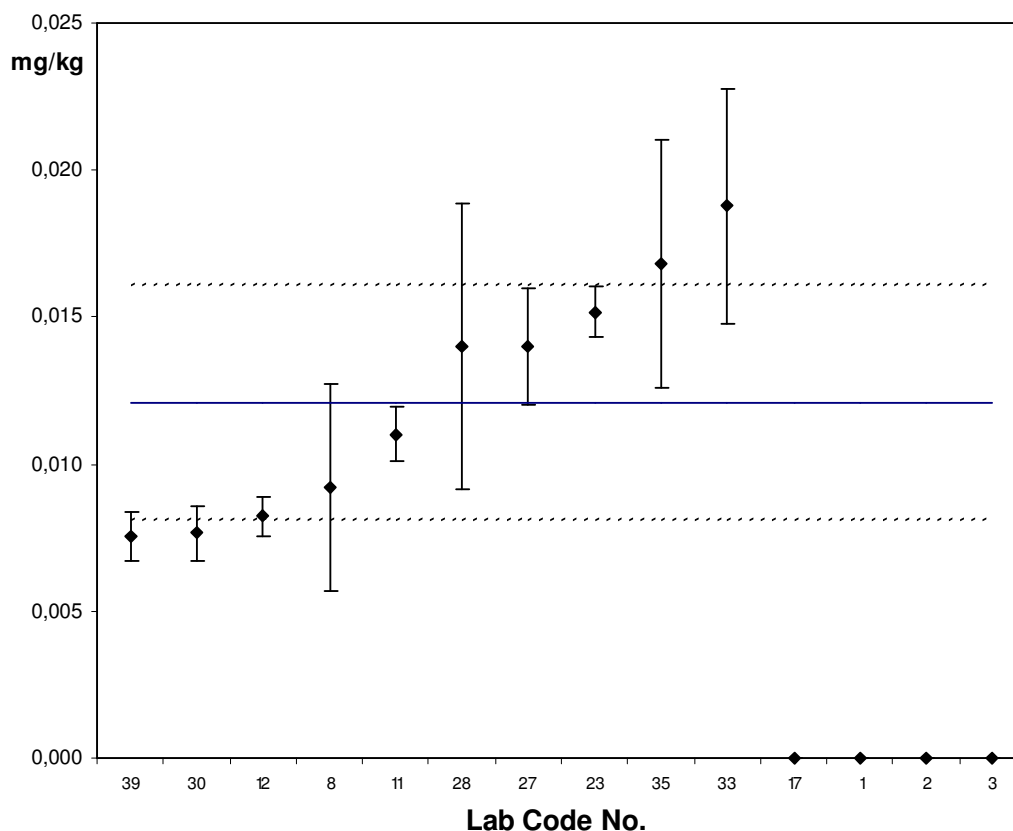
General mean = assigned value	m	25,04	mg/kg
Repeatability variance	s_r^2	0,728	
Repeatability standard deviation	s_r	0,853	mg/kg
Repeatability coefficient of variation		3,41	%
Between-laboratory variance	s_L^2	3,914	
Between-laboratory standard deviation	s_L	1,978	mg/kg
Between-laboratory coefficient of variation		7,90	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	4,642	
Reproducibility standard deviation	s_R	2,155	mg/kg
Reproducibility coefficient of variation		8,60	%
Repeatability limit	r	2,39 9,54	mg/kg %
Reproducibility limit	R	6,03 24,09	mg/kg %
Number of participants (outlier free)	n	15	
Number of individual analytical values (outlier free)	l	75	

RESULTS FOR THE DETERMINATION OF COPPER, SAMPLE WOOD CHIPS



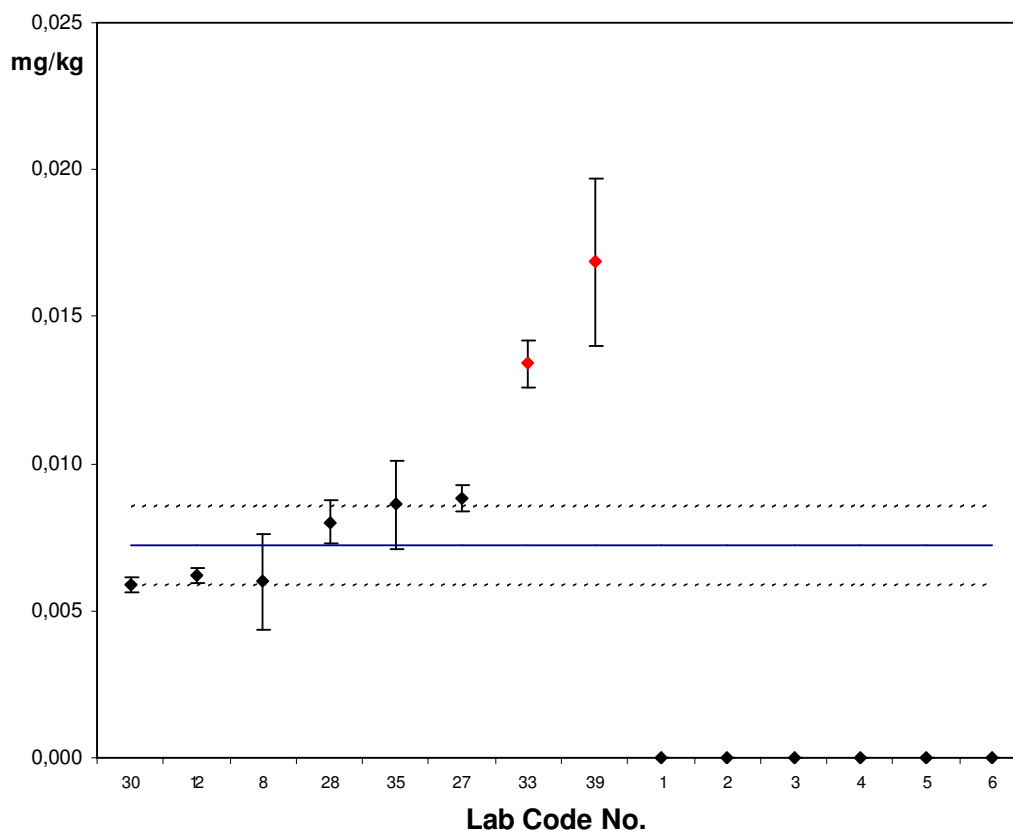
General mean = assigned value	m	1,29	mg/kg
Repeatability variance	s_r^2	0,008	
Repeatability standard deviation	s_r	0,091	mg/kg
Repeatability coefficient of variation		7,00	%
Between-laboratory variance	s_L^2	0,016	
Between-laboratory standard deviation	s_L	0,125	mg/kg
Between-laboratory coefficient of variation		9,69	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,024	
Reproducibility standard deviation	s_R	0,155	mg/kg
Reproducibility coefficient of variation		11,96	%
Repeatability limit	r	0,25 19,60	mg/kg %
Reproducibility limit	R	0,43 33,48	mg/kg %
Number of participants (outlier free)	n	12	
Number of individual analytical values (outlier free)	l	57	

RESULTS FOR THE DETERMINATION OF MERCURY, SAMPLE OLIVE RESIDUES



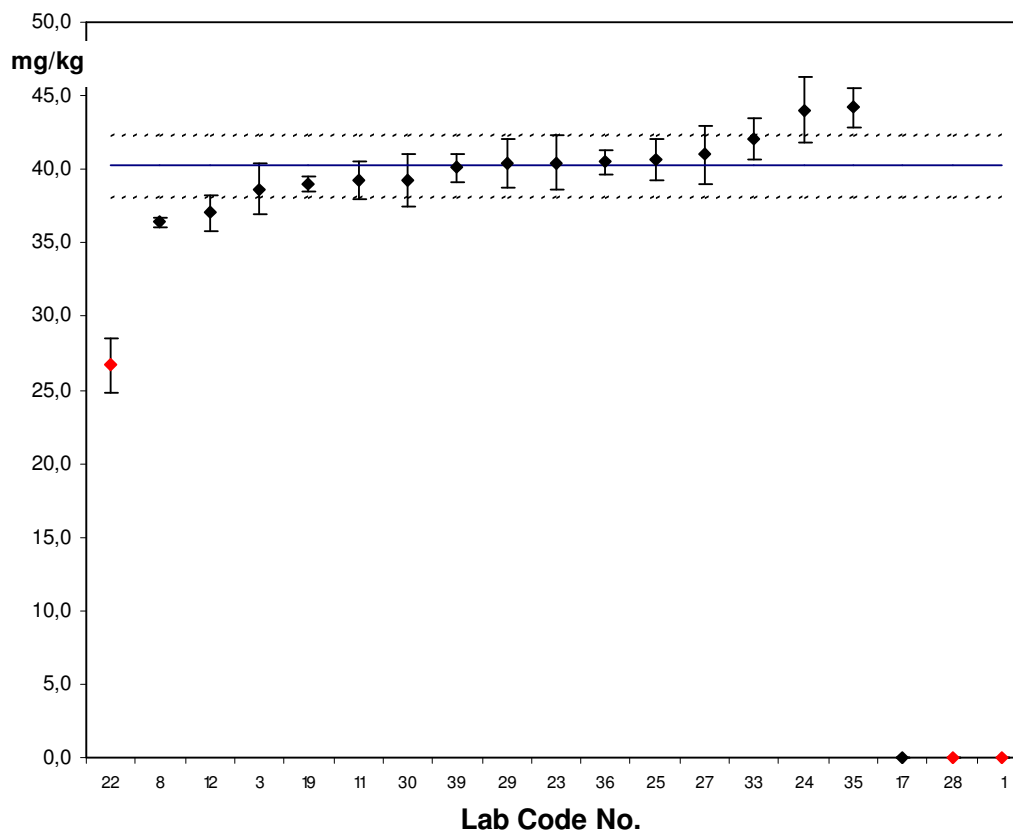
General mean = assigned value	m	0,012	mg/kg
Repeatability variance	s_r^2	0,0000	
Repeatability standard deviation	s_r	0,0026	mg/kg
Repeatability coefficient of variation		21,76	%
Between-laboratory variance	s_L^2	0,0000	
Between-laboratory standard deviation	s_L	0,0040	mg/kg
Between-laboratory coefficient of variation		33,05	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,0000	
Reproducibility standard deviation	s_R	0,0048	mg/kg
Reproducibility coefficient of variation		39,57	%
Repeatability limit	r	0,0074 60,92	mg/kg %
Reproducibility limit	R	0,0134 110,79	mg/kg %
Number of participants (outlier free)	n	10	
Number of individual analytical values (outlier free)	l	44	

RESULTS FOR THE DETERMINATION OF MERCURY, SAMPLE WOOD CHIPS



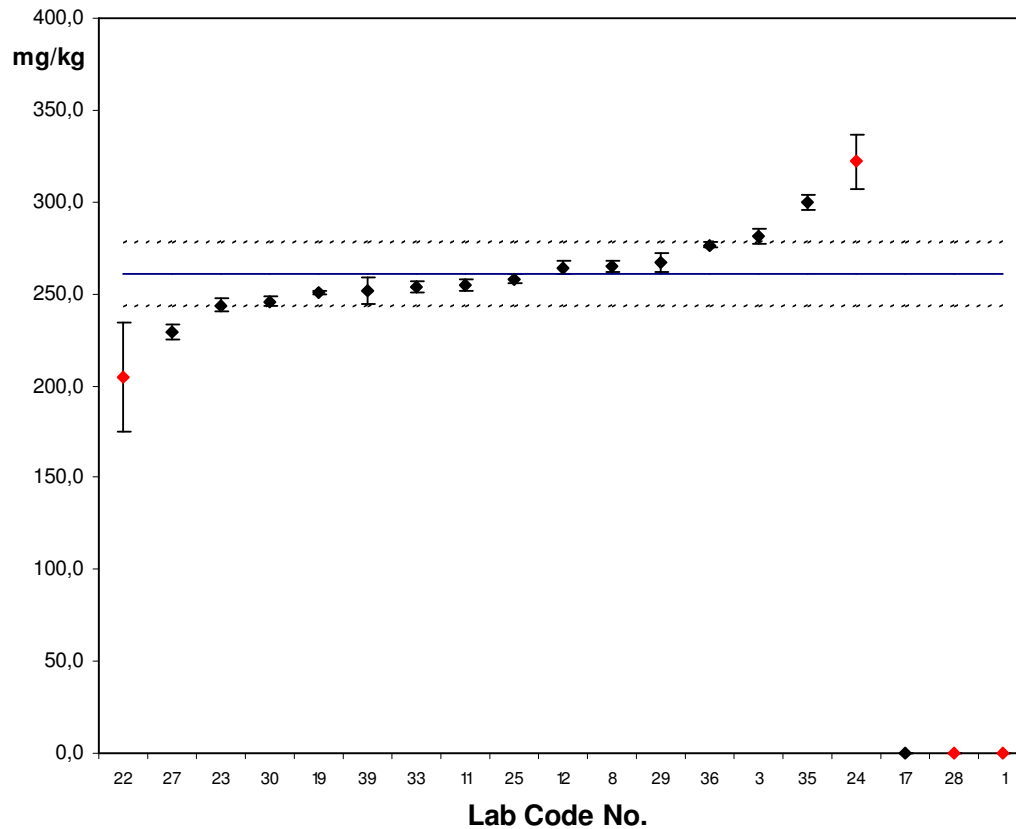
General mean = assigned value	m	0,0072	mg/kg
Repeatability variance	s_r^2	0,0000	
Repeatability standard deviation	s_r	0,0010	mg/kg
Repeatability coefficient of variation		13,37	%
Between-laboratory variance	s_L^2	0,0000	
Between-laboratory standard deviation	s_L	0,0013	mg/kg
Between-laboratory coefficient of variation		18,36	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,0000	
Reproducibility standard deviation	s_R	0,0016	mg/kg
Reproducibility coefficient of variation		22,71	%
Repeatability limit	r	0,0027 37,44	mg/kg %
Reproducibility limit	R	0,0046 63,59	mg/kg %
Number of participants (outlier free)	n	6	
Number of individual analytical values (outlier free)	l	27	

RESULTS FOR THE DETERMINATION OF MANGANESE, SAMPLE OLIVE RESIDUES



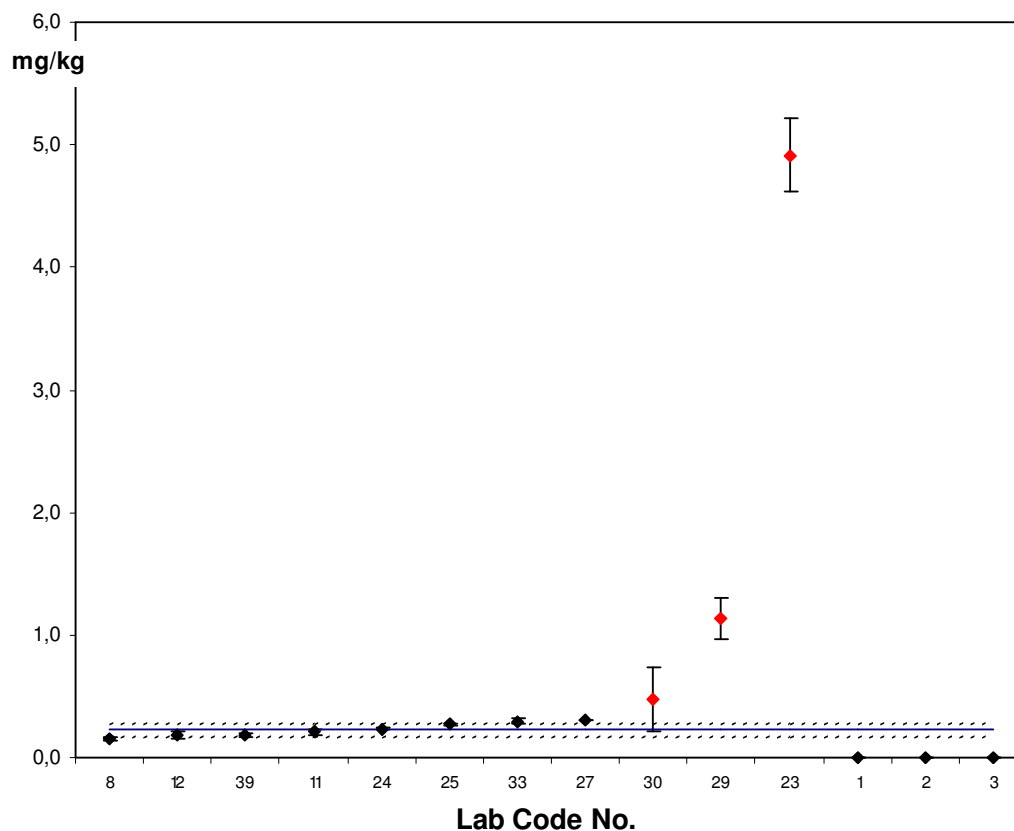
General mean = assigned value	m	40,23	mg/kg
Repeatability variance	s_r^2	2,139	
Repeatability standard deviation	s_r	1,463	mg/kg
Repeatability coefficient of variation		3,64	%
Between-laboratory variance	s_L^2	4,286	
Between-laboratory standard deviation	s_L	2,070	mg/kg
Between-laboratory coefficient of variation		5,15	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	6,426	
Reproducibility standard deviation	s_R	2,535	mg/kg
Reproducibility coefficient of variation		6,30	%
Repeatability limit	r	4,10 10,18	mg/kg %
Reproducibility limit	R	7,10 17,64	mg/kg %
Number of participants (outlier free)	n	15	
Number of individual analytical values (outlier free)	l	73	

RESULTS FOR THE DETERMINATION OF MANGANESE, SAMPLE WOOD CHIPS



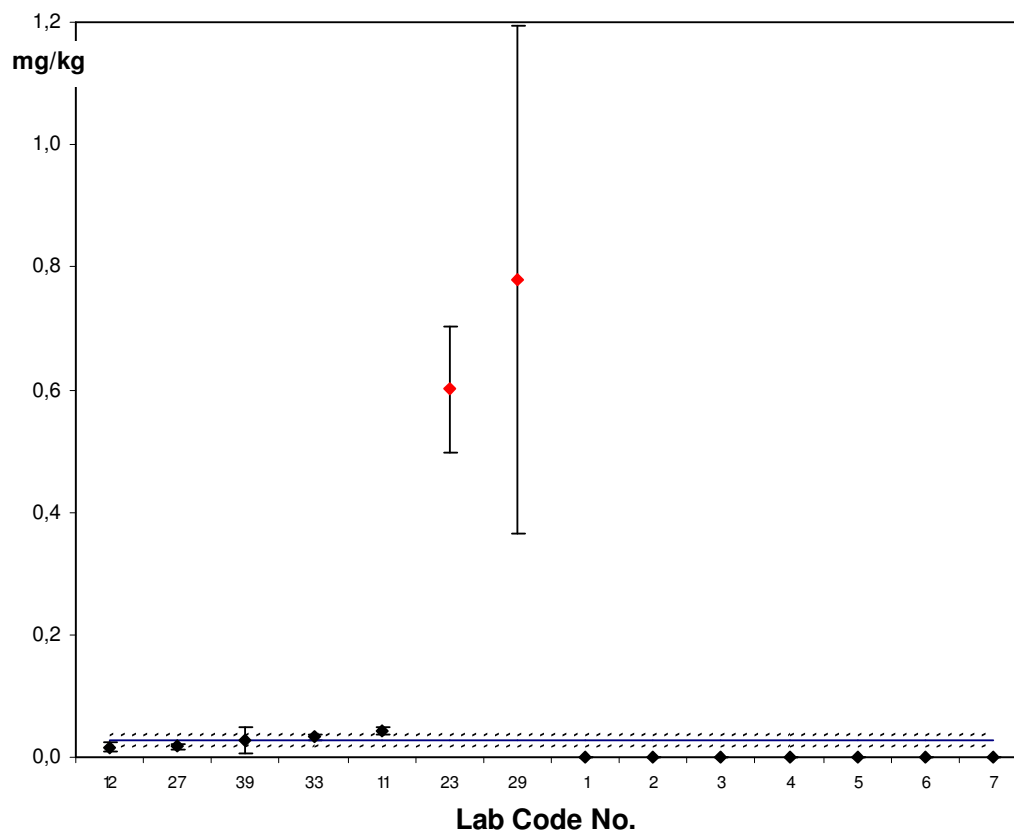
General mean = assigned value	m	261	mg/kg
Repeatability variance	s_r^2	14,28	
Repeatability standard deviation	s_r	3,78	mg/kg
Repeatability coefficient of variation		1,45	%
Between-laboratory variance	s_L^2	297,66	
Between-laboratory standard deviation	s_L	17,25	mg/kg
Between-laboratory coefficient of variation		6,62	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	311,93	
Reproducibility standard deviation	s_R	17,66	mg/kg
Reproducibility coefficient of variation		6,78	%
Repeatability limit	r	10,58 4,06	mg/kg %
Reproducibility limit	R	49,45 18,97	mg/kg %
Number of participants (outlier free)	n	14	
Number of individual analytical values (outlier free)	l	69	

RESULTS FOR THE DETERMINATION OF MOLYBDENUM, SAMPLE OLIVE RESIDUES



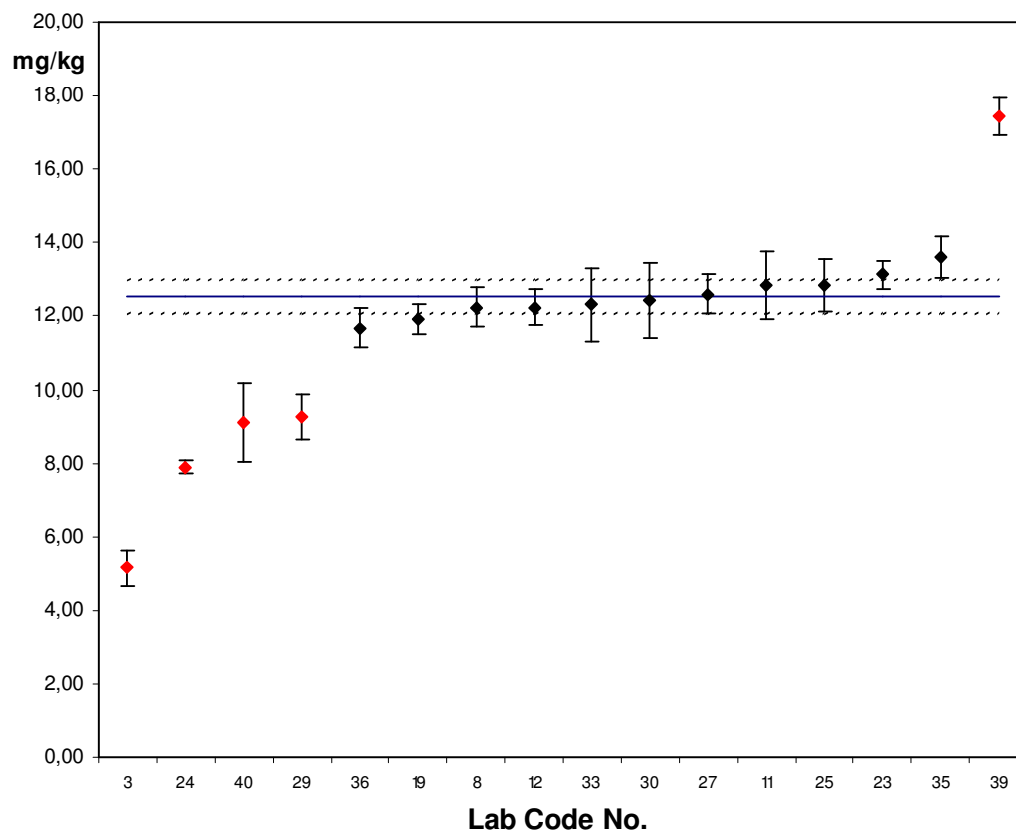
General mean = assigned value	m	0,22	mg/kg
Repeatability variance	s_r^2	0,000	
Repeatability standard deviation	s_r	0,018	mg/kg
Repeatability coefficient of variation		8,21	%
Between-laboratory variance	s_L^2	0,003	
Between-laboratory standard deviation	s_L	0,053	mg/kg
Between-laboratory coefficient of variation		23,71	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,003	
Reproducibility standard deviation	s_R	0,056	mg/kg
Reproducibility coefficient of variation		25,09	%
Repeatability limit	r	0,05 22,98	mg/kg %
Reproducibility limit	R	0,16 70,26	mg/kg %
Number of participants (outlier free)	n	8	
Number of individual analytical values (outlier free)	l	37	

RESULTS FOR THE DETERMINATION OF MOLYBDENUM, SAMPLE WOOD CHIPS



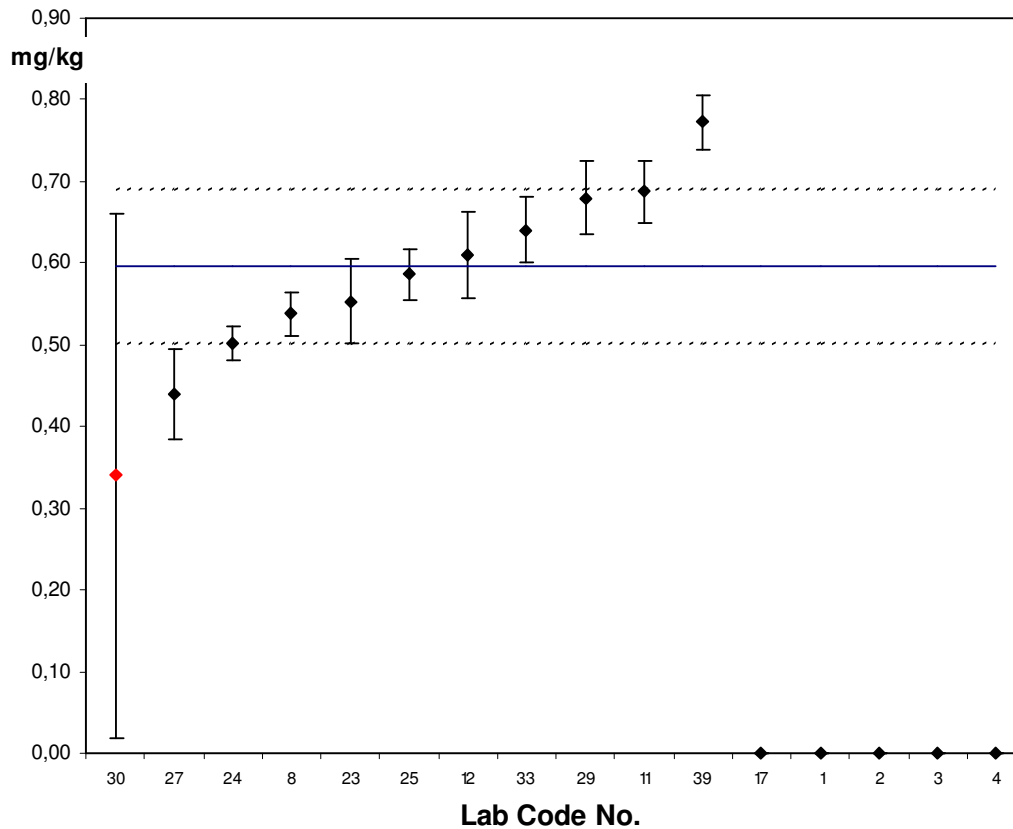
General mean = assigned value	m	0,028	mg/kg
Repeatability variance	s_r^2	0,000	
Repeatability standard deviation	s_r	0,012	mg/kg
Repeatability coefficient of variation		40,95	%
Between-laboratory variance	s_L^2	0,000	
Between-laboratory standard deviation	s_L	0,009	mg/kg
Between-laboratory coefficient of variation		32,68	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,000	
Reproducibility standard deviation	s_R	0,015	mg/kg
Reproducibility coefficient of variation		52,39	%
Repeatability limit	r	0,032 114,66	mg/kg %
Reproducibility limit	R	0,041 146,70	mg/kg %
Number of participants (outlier free)	n	5	
Number of individual analytical values (outlier free)	l	23	

RESULTS FOR THE DETERMINATION OF NICKEL, SAMPLE OLIVE RESIDUES



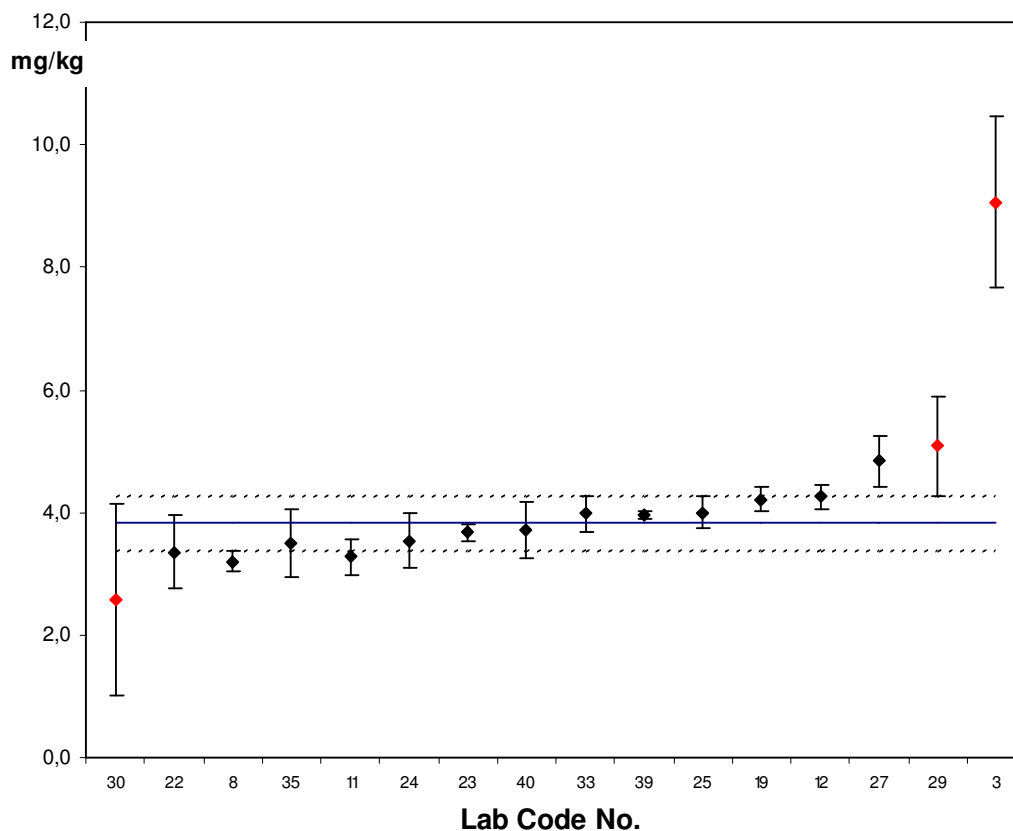
General mean = assigned value	m	12,53	mg/kg
Repeatability variance	s_r^2	0,457	
Repeatability standard deviation	s_r	0,676	mg/kg
Repeatability coefficient of variation		5,39	%
Between-laboratory variance	s_L^2	0,215	
Between-laboratory standard deviation	s_L	0,464	mg/kg
Between-laboratory coefficient of variation		3,70	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,672	
Reproducibility standard deviation	s_R	0,820	mg/kg
Reproducibility coefficient of variation		6,54	%
Repeatability limit	r	1,89 15,10	mg/kg %
Reproducibility limit	R	2,30 18,32	mg/kg %
Number of participants (outlier free)	n	11	
Number of individual analytical values (outlier free)	l	54	

RESULTS FOR THE DETERMINATION OF NICKEL, SAMPLE WOOD CHIPS



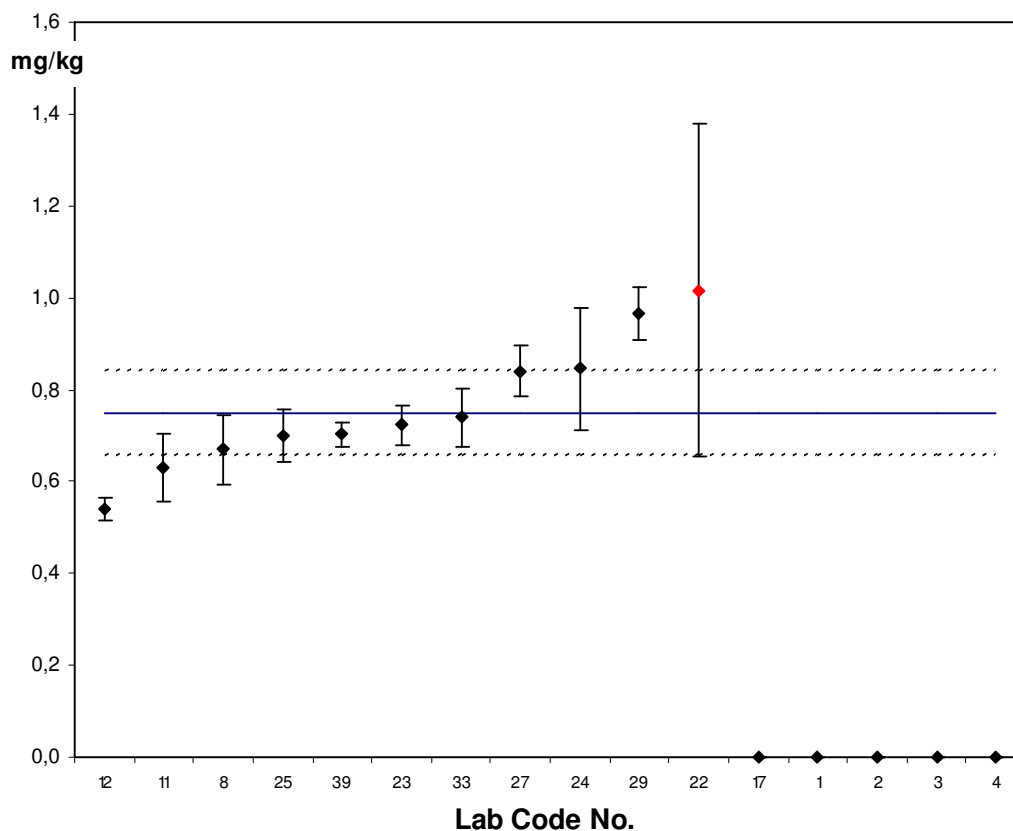
General mean = assigned value	m	0,60	mg/kg
Repeatability variance	s_r^2	0,002	
Repeatability standard deviation	s_r	0,042	mg/kg
Repeatability coefficient of variation		6,97	%
Between-laboratory variance	s_L^2	0,009	
Between-laboratory standard deviation	s_L	0,095	mg/kg
Between-laboratory coefficient of variation		15,87	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,011	
Reproducibility standard deviation	s_R	0,103	mg/kg
Reproducibility coefficient of variation		17,33	%
Repeatability limit	r	0,12 19,52	mg/kg %
Reproducibility limit	R	0,29 48,52	mg/kg %
Number of participants (outlier free)	n	10	
Number of individual analytical values (outlier free)	l	47	

RESULTS FOR THE DETERMINATION OF LEAD, SAMPLE OLIVE RESIDUES



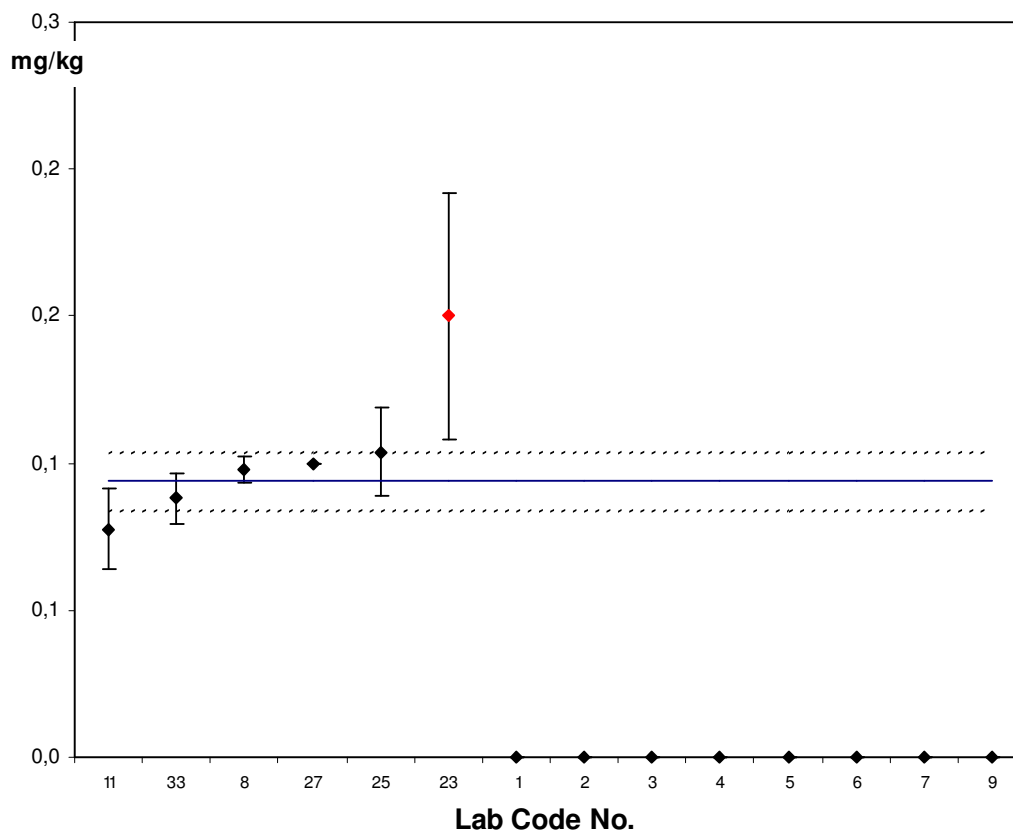
General mean = assigned value	m	3,83	mg/kg
Repeatability variance	s_r^2	0,127	
Repeatability standard deviation	s_r	0,357	mg/kg
Repeatability coefficient of variation		9,31	%
Between-laboratory variance	s_L^2	0,204	
Between-laboratory standard deviation	s_L	0,452	mg/kg
Between-laboratory coefficient of variation		11,80	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,331	
Reproducibility standard deviation	s_R	0,575	mg/kg
Reproducibility coefficient of variation		15,03	%
Repeatability limit	r	1,00	mg/kg
		26,08	%
Reproducibility limit	R	1,61	mg/kg
		42,09	%
Number of participants (outlier free)	n	13	
Number of individual analytical values (outlier free)	l	56	

RESULTS FOR THE DETERMINATION OF LEAD, SAMPLE WOOD CHIPS



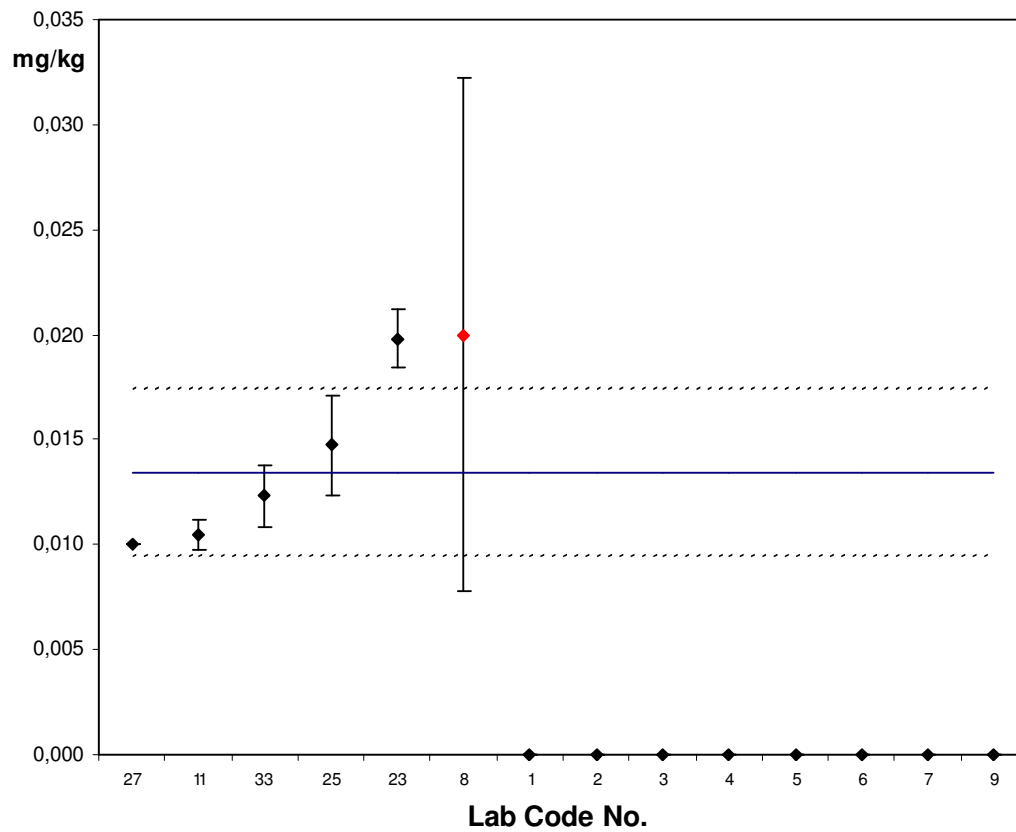
General mean = assigned value	m	0,75	mg/kg
Repeatability variance	s_r^2	0,005	
Repeatability standard deviation	s_r	0,072	mg/kg
Repeatability coefficient of variation		9,62	%
Between-laboratory variance	s_L^2	0,008	
Between-laboratory standard deviation	s_L	0,092	mg/kg
Between-laboratory coefficient of variation		12,28	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,014	
Reproducibility standard deviation	s_R	0,117	mg/kg
Reproducibility coefficient of variation		15,60	%
Repeatability limit	r	0,20	mg/kg
		26,95	%
Reproducibility limit	R	0,33	mg/kg
		43,68	%
Number of participants (outlier free)	n	9	
Number of individual analytical values (outlier free)	l	41	

RESULTS FOR THE DETERMINATION OF ANTIMONY, SAMPLE OLIVE RESIDUES



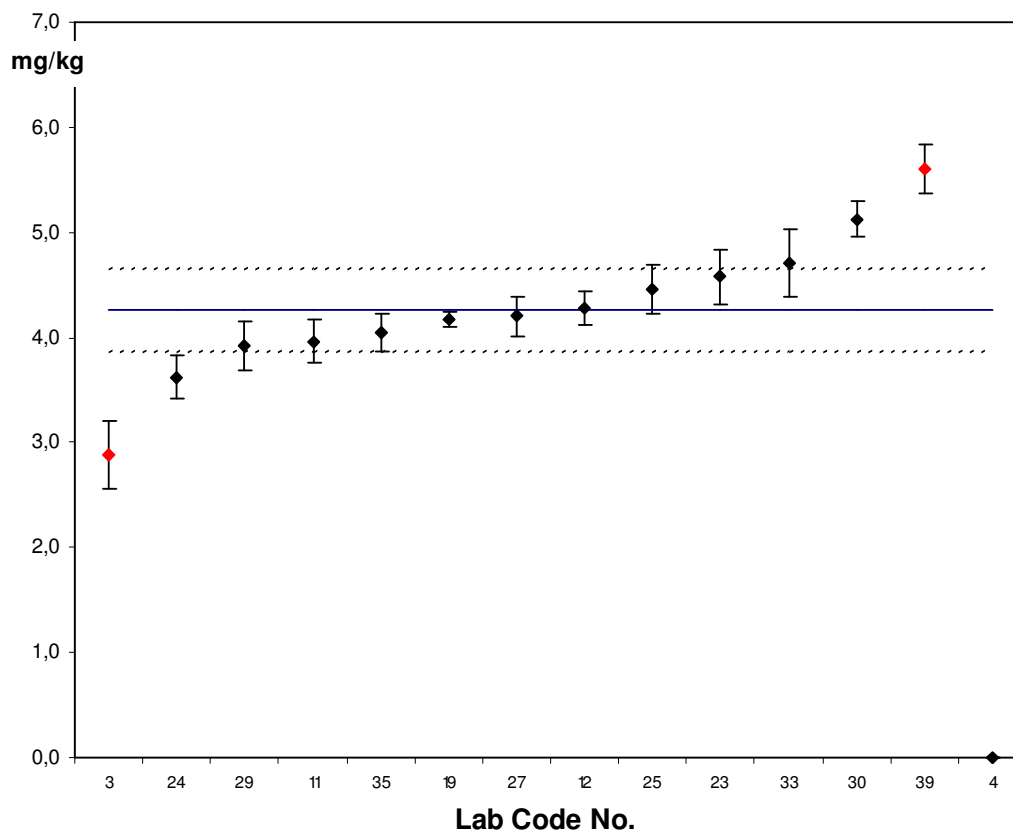
General mean = assigned value	m	0,094	mg/kg
Repeatability variance	s_r^2	0,000	
Repeatability standard deviation	s_r	0,010	mg/kg
Repeatability coefficient of variation		10,89	%
Between-laboratory variance	s_L^2	0,000	
Between-laboratory standard deviation	s_L	0,010	mg/kg
Between-laboratory coefficient of variation		10,39	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,000	
Reproducibility standard deviation	s_R	0,014	mg/kg
Reproducibility coefficient of variation		15,05	%
Repeatability limit	r	0,029 30,48	mg/kg %
Reproducibility limit	R	0,039 42,14	mg/kg %
Number of participants (outlier free)	n	5	
Number of individual analytical values (outlier free)	l	24	

RESULTS FOR THE DETERMINATION OF ANTIMONY, SAMPLE WOOD CHIPS



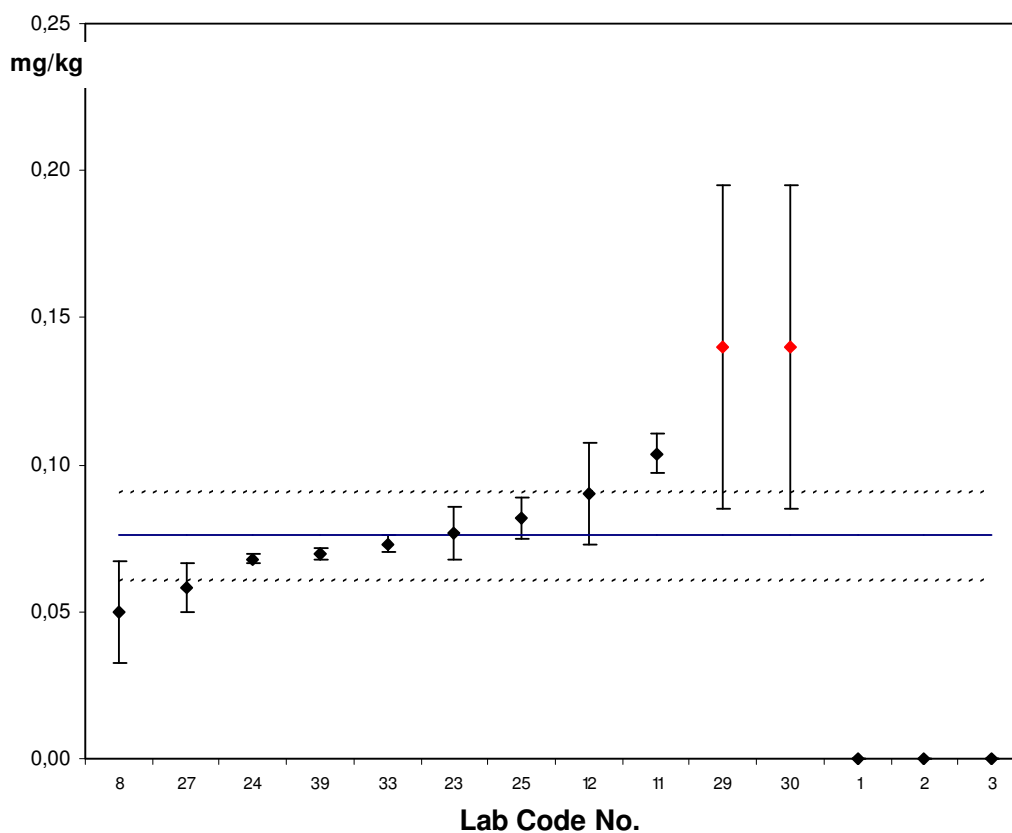
General mean = assigned value	m	0,013	mg/kg
Repeatability variance	s_r^2	0,000	
Repeatability standard deviation	s_r	0,001	mg/kg
Repeatability coefficient of variation		10,54	%
Between-laboratory variance	s_L^2	0,000	
Between-laboratory standard deviation	s_L	0,0040	mg/kg
Between-laboratory coefficient of variation		29,36	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,000	
Reproducibility standard deviation	s_R	0,0042	mg/kg
Reproducibility coefficient of variation		31,19	%
Repeatability limit	r	0,0040 29,51	mg/kg %
Reproducibility limit	R	0,012 87,34	mg/kg %
Number of participants (outlier free)	n	5	
Number of individual analytical values (outlier free)	l	25	

RESULTS FOR THE DETERMINATION OF VANADIUM, SAMPLE OLIVE RESIDUES



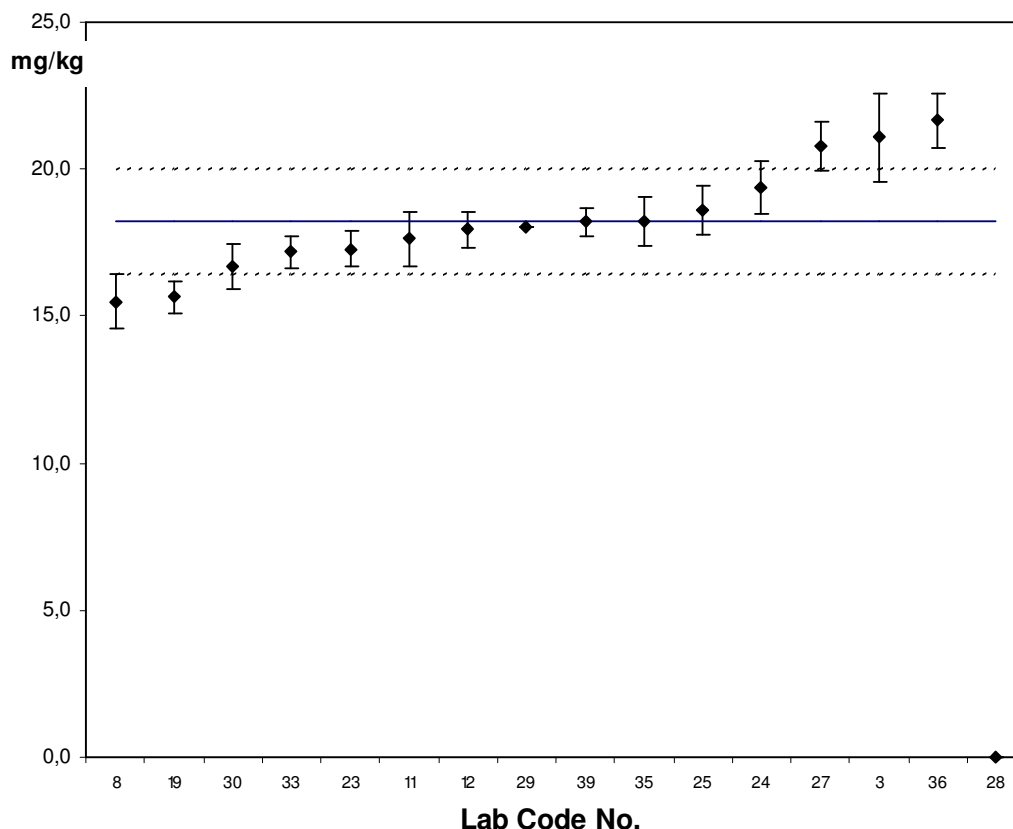
General mean = assigned value	m	4,26	mg/kg
Repeatability variance	s_r^2	0,044	
Repeatability standard deviation	s_r	0,210	mg/kg
Repeatability coefficient of variation		4,92	%
Between-laboratory variance	s_L^2	0,159	
Between-laboratory standard deviation	s_L	0,398	mg/kg
Between-laboratory coefficient of variation		9,35	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,203	
Reproducibility standard deviation	s_R	0,450	mg/kg
Reproducibility coefficient of variation		10,57	%
Repeatability limit	r	0,59 13,78	mg/kg %
Reproducibility limit	R	1,26 29,58	mg/kg %
Number of participants (outlier free)	n	11	
Number of individual analytical values (outlier free)	l	51	

RESULTS FOR THE DETERMINATION OF VANADIUM, SAMPLE WOOD CHIPS



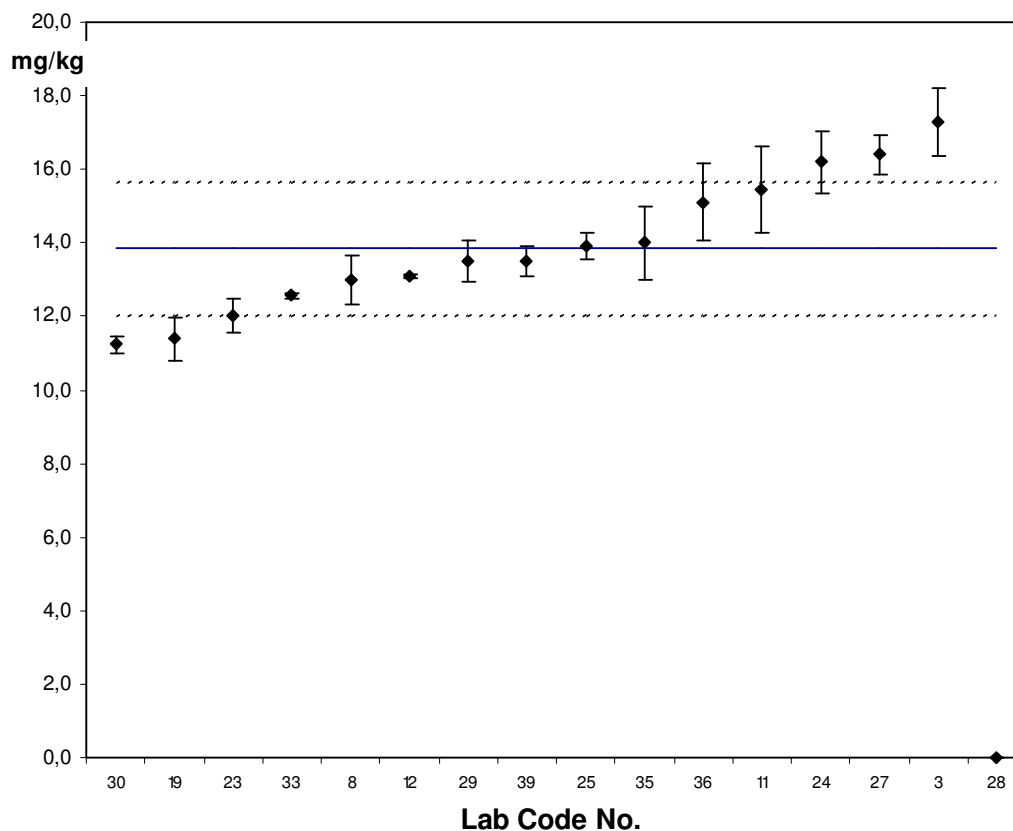
General mean = assigned value	m	0,076	mg/kg
Repeatability variance	s_r^2	0,000	
Repeatability standard deviation	s_r	0,009	mg/kg
Repeatability coefficient of variation		12,16	%
Between-laboratory variance	s_L^2	0,000	
Between-laboratory standard deviation	s_L	0,015	mg/kg
Between-laboratory coefficient of variation		19,89	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	0,000	
Reproducibility standard deviation	s_R	0,018	mg/kg
Reproducibility coefficient of variation		23,31	%
Repeatability limit	r	0,026 34,04	mg/kg %
Reproducibility limit	R	0,050 65,28	mg/kg %
Number of participants (outlier free)	n	9	
Number of individual analytical values (outlier free)	l	42	

RESULTS FOR THE DETERMINATION OF ZINC, SAMPLE OLIVE RESIDUES



General mean = assigned value	m	18,23	mg/kg
Repeatability variance	s_r^2	0,683	
Repeatability standard deviation	s_r	0,827	mg/kg
Repeatability coefficient of variation		4,53	%
Between-laboratory variance	s_L^2	3,178	
Between-laboratory standard deviation	s_L	1,783	mg/kg
Between-laboratory coefficient of variation		9,78	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	3,861	
Reproducibility standard deviation	s_R	1,965	mg/kg
Reproducibility coefficient of variation		10,78	%
Repeatability limit	r	2,31 12,69	mg/kg %
Reproducibility limit	R	5,50 30,18	mg/kg %
Number of participants (outlier free)	n	15	
Number of individual analytical values (outlier free)	l	71	

RESULTS FOR THE DETERMINATION OF ZINC, SAMPLE WOOD CHIPS



General mean = assigned value	m	13,84	mg/kg
Repeatability variance	s_r^2	0,450	
Repeatability standard deviation	s_r	0,670	mg/kg
Repeatability coefficient of variation		4,84	%
Between-laboratory variance	s_L^2	3,306	
Between-laboratory standard deviation	s_L	1,818	mg/kg
Between-laboratory coefficient of variation		13,14	%
Reproducibility variance s_R^2	$s_r^2 + s_L^2$	3,756	
Reproducibility standard deviation	s_R	1,938	mg/kg
Reproducibility coefficient of variation		14,00	%
Repeatability limit	r	1,88 13,56	mg/kg %
Reproducibility limit	R	5,43 39,20	mg/kg %
Number of participants (outlier free)	n	15	
Number of individual analytical values (outlier free)	l	70	