Institute for
Interlaboratory Studies

Results of Proficiency Test
Ethanol (Bio / Fuel grade)
December 2023

Organized by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

Author: Mrs. E.R. Montenij-Bos
Correctors: Mrs. G.A. Oosterlaken-Buijs, BSc & Mr. R.J. Starink, BSc
Approved by: Mr. R.J. Starink, BSc

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CONTENTS

1 INTRODUCTION

Since 1995 the Institute for Interlaboratory Studies (iis) organizes a proficiency scheme for the analysis of Ethanol (Bio / Fuel grade) based on the latest version of EN15376 and ASTM D4806 every year. During the annual proficiency testing program of 2023 it was decided to continue the round robin for the analysis of Ethanol (Bio / Fuel grade).

In this interlaboratory study 65 laboratories in 31 countries registered for participation, see appendix 2 for the number of participants per country. In this report the results of the Ethanol (Bio / Fuel grade) proficiency test are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organizer of this proficiency test (PT). Sample analyzes for fit-for-use and homogeneity testing were subcontracted to a laboratory that has performed the tests in accordance with for ISO/IEC17043 relevant requirements of ISO/IEC17025.
In this proficiency test the participants received three different samples of Ethanol (Bio / Fuel grade), see table below.

Sample ID	Quantity	Purpose
#23260	1x 1 L	Regular analyzes
#23261	1x 100 mL	Inorganic Chloride, Sulfate and Sulfur
#23262	1x 250 mL	Nonvolatile matter

Table 1: Ethanol (Bio / Fuel grade) samples used in PT iis23C11

Participants were requested to report rounded and unrounded test results. The unrounded test results were preferably used for statistical evaluation.

2.1 ACCREDITATION

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, is accredited in agreement with ISO/IEC17043:2010 (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This PT falls under the accredited scope. This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentiality of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5). This protocol is electronically available through the iis website www.iisnl.com, from the FAQ page.

2.3 CONFIDENTIALITY STATEMENT

All data presented in this report must be regarded as confidential and for use by the participating companies only. Disclosure of the information in this report is only allowed by means of the entire report. Use of the contents of this report for third parties is only allowed by written permission of the Institute for Interlaboratory Studies. Disclosure of the identity of one or more of the participating companies will be done only after receipt of a written agreement of the companies involved.

2.4 SAMPLES

For the preparation of the sample for the regular analyzes in Ethanol (Bio / Fuel grade) a batch of approximately 120 liters of Ethanol (Bio / Fuel grade) was obtained from a local supplier. After homogenization 90 amber glass bottles of 1 L were filled and labelled #23260. The homogeneity of the subsamples was checked by determination of Density at 20 °C in accordance with ASTM D4052 and Water in accordance with ASTM E203 on 8 stratified randomly selected subsamples.

	Density at 20 °C in kg/L	Water in %M/M
sample #23260-1	0.78991	0.181
sample #23260-2	0.78992	0.180
sample #23260-3	0.78991	0.177
sample #23260-4	0.78991	0.176
sample #23260-5	0.78994	0.175
sample #23260-6	0.78992	0.180
sample #23260-7	0.78991	0.175
sample #23260-8	0.78991	0.176

Table 2: homogeneity test results of subsamples #23260

From the above test results the repeatabilities were calculated and compared with 0.3 times the corresponding reproducibility of the reference test methods in agreement with the procedure of ISO13528, Annex B2 in the next table.

	Density at 20 °C in kg/L	Water in %M/M
r (observed)	0.00003	0.007
reference test method	ISO12185:96	ASTM E203:23
0.3 x R (reference test method)	0.00015	0.023

Table 3: evaluation of the repeatabilities of subsamples #23260

The calculated repeatabilities are in agreement with 0.3 times the corresponding reproducibility of the reference test methods. Therefore, homogeneity of the subsamples was assumed.

For the preparation of the sample for the determination of Inorganic Chloride, Sulfate and Sulfur in Ethanol (Bio / Fuel grade) a batch of approximately 10 L Ethanol (Bio / Fuel grade) was spiked with Sodium Chloride (NaCl) dissolved in water. After homogenization 90 PE bottles of 100 mL were filled and labelled #23261.
The homogeneity of the subsamples was checked by determination of Inorganic Chloride as Cl in accordance with EN15492 on 8 stratified randomly selected subsamples.

	Inorganic Chloride as Cl in mg/kg	
sample #23261-1	4.5	
sample #23261-2	4.6	
sample #23261-3	4.6	
sample #23261-4	2.3	D(0.01)
sample #23261-5	4.6	
sample #23261-6	4.6	
sample #23261-7	4.6	
sample #23261-8	4.6	

Table 4: homogeneity test results of subsamples #23261

Subsample 4 is a Dixon outlier and therefore excluded from statistical evaluation of the homogeneity.

From the above test results the repeatability was calculated and compared with 0.3 times the reproducibility of the reference test method in agreement with the procedure of ISO13528, Annex B2 in the next table.

	Inorganic Chloride as Cl in mg/kg
r (observed)	0.1
reference test method	ASTM D7319:22
0.3 x R (reference test method)	0.4

Table 5: evaluation of the repeatability of subsamples #23261

The calculated repeatability is in agreement with 0.3 times the reproducibility of the reference test method. Therefore, homogeneity of the subsamples was assumed.

For the preparation of the sample for the determination of Nonvolatile matter in Ethanol (Bio / Fuel grade) a batch of approximately 25 L Ethanol (Bio / Fuel grade) was spiked with Sodium Chloride (NaCl) dissolved in water. After homogenization 90 amber glass bottles of 250 mL were filled and labelled #23262.
The homogeneity of the subsamples was checked by determination of Nonvolatile matter in accordance with EN15691 on 8 stratified randomly selected subsamples.

	Nonvolatile matter in mg/100 mL
sample #23262-1	17.2
sample #23262-2	15.4
sample #23262-3	16.1
sample #23262-4	14.8
sample #23262-5	18.0
sample #23262-6	16.3
sample #23262-7	16.6
sample #23262-8	14.5

Table 6: homogeneity test results of subsamples #23262

From the above test results the repeatability was calculated and compared with 0.3 times the reproducibility of the reference test method in agreement with the procedure of ISO13528, Annex B2 in the next table.

	Nonvolatile matter in mg/100 mL
r (observed)	3.3
reference test method	EN15691:23
0.3 x R (reference test method)	4.7

Table 7: evaluation of the repeatability of subsamples #23262

The calculated repeatability is in agreement with 0.3 times the reproducibility of the reference test method. Therefore, homogeneity of the subsamples was assumed.

To each of the participating laboratories one 1 L bottle of Ethanol (Bio/Fuel grade) labelled #23260, one 100 mL bottle labelled #23261 and one 250 mL bottle labelled #23262 was sent on November 15, 2023. An SDS was added to the sample package.

2.5 STABILITY OF THE SAMPLES

The stability of Ethanol (Bio / Fuel grade) packed in amber glass bottles and PE bottles was checked. The material was found sufficiently stable for the period of the proficiency test.

2.6 ANALYZES

The participants were requested to determine on sample #23260: Total Acidity as Acetic Acid, Appearance, Copper as Cu, Density at 20 °C, Electrical Conductivity at 25 °C, Nitrogen, pHe (LiCl and KCl electrode), Phosphorus as P, Water (Coulometric and Volumetric), Ethanol incl. higher alcohols (acc. EN15721), Higher alcohols (acc. EN15721), Impurities (acc. EN15721), Methanol, Ethanol by mass and by volume (acc. ASTM D5501) and Gum (solvent washed).
On sample #23261 it was requested to determine Inorganic Chloride as Cl, Sulfate as SO_4 and Sulfur.
On sample #23262 it was requested to determine Nonvolatile matter.

It was explicitly requested to treat the samples as if they were routine samples and to report the test results using the indicated units on the report form and not to round the test results, but report as much significant figures as possible. It was also requested not to report ‘less than’ test results, which are above the detection limit, because such test results cannot be used for meaningful statistical evaluations.

To get comparable test results a detailed report form and a letter of instructions are prepared. On the report form the reporting units are given as well as the reference test methods (when applicable) that will be used during the evaluation. The detailed report form and the letter of instructions are both made available on the data entry portal www.kpmd.co.uk/sgs-iis/. The participating laboratories are also requested to confirm the sample receipt on this data entry portal. The letter of instructions can also be downloaded from the iis website www.iisnl.com.

3 RESULTS

During five weeks after sample dispatch, the test results of the individual laboratories were gathered via the data entry portal www.kpmd.co.uk/sgs-iis/. The reported test results are tabulated per determination in appendix 1 of this report. The laboratories are presented by their code numbers.

Directly after the deadline, a reminder was sent to those laboratories that had not reported test results at that moment. Shortly after the deadline, the available test results were screened for suspect data. A test result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the reported test results (no reanalyzes). Additional or corrected test results are used for data analysis and the original test results are placed under 'Remarks' in the result tables in appendix 1. Test results that came in after the deadline were not taken into account in this screening for suspect data and thus these participants were not requested for checks.

3.1 STATISTICS

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report ‘iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation’ of June 2018 (iis-protocol, version 3.5).
For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as ‘<…’ or ‘>…’ were not used in the statistical evaluation.

First, the normality of the distribution of the various data sets per determination was checked by means of the Lilliefors-test, a variant of the Kolmogorov-Smirnov test and by the calculation of skewness and kurtosis. Evaluation of the three normality indicators in combination with the visual evaluation of the graphic Kernel density plot, lead to judgement of the normality being either ‘unknown’, ‘OK’, ‘suspect’ or ‘not OK’. After removal of outliers, this check was repeated. If a data set does not have a normal distribution, the (results of the) statistical evaluation should be used with due care.

The assigned value is determined by consensus based on the test results of the group of participants after rejection of the statistical outliers and/or suspect data.

According to ISO13528 all (original received or corrected) results per determination were submitted to outlier tests. In the iis procedure for proficiency tests, outliers are detected prior to calculation of the mean, standard deviation and reproducibility. For small data sets, Dixon (up to 20 test results) or Grubbs (up to 40 test results) outlier tests can be used. For larger data sets (above 20 test results) Rosner's outlier test can be used. Outliers are marked by D(0.01) for the Dixon's test, by G(0.01) or DG(0.01) for the Grubbs' test and by R(0.01) for the Rosner's test. Stragglers are marked by D(0.05) for the Dixon's test, by G(0.05) or DG(0.05) for the Grubbs' test and by R(0.05) for the Rosner's test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

For each assigned value the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirement based on the target reproducibility in accordance with ISO13528. In this PT, the criterion of ISO13528, paragraph 9.2.1. was met for all evaluated tests, therefore, the uncertainty of all assigned values may be negligible and need not be included in the PT report.

Finally, the reproducibilities were calculated from the standard deviations by multiplying them with a factor of 2.8.

3.2 GRAPHICS

In order to visualize the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported test results are plotted. The corresponding laboratory numbers are on the X-axis. The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected reference test method. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle.

Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms. Also, a normal Gauss curve (dotted line) was projected over the Kernel Density Graph (smooth line) for reference. The Gauss curve is calculated from the consensus value and the corresponding standard deviation.

3.3 Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements (derived from e.g. ISO or ASTM test methods), the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the variation in this interlaboratory study.

The target standard deviation was calculated from the literature reproducibility by division with 2.8. In case no literature reproducibility was available, other target values were used, like Horwitz or an estimated reproducibility based on former iis proficiency tests.

When a laboratory did use a test method with a reproducibility that is significantly different from the reproducibility of the reference test method used in this report, it is strongly advised to recalculate the z-score, while using the reproducibility of the actual test method used, this in order to evaluate whether the reported test result is fit-for-use.

The z-scores were calculated according to:

$z_{(target)}$ = (test result - average of PT) / target standard deviation

The $z_{(target)}$ scores are listed in the test result tables in appendix 1.

Absolute values for z<2 are very common and absolute values for z>3 are very rare. Therefore, the usual interpretation of z-scores is as follows:

	|z|	< 1	good
1 <	|z|	< 2	satisfactory
2 <	|z|	< 3	questionable
3 <	|z|		unsatisfactory

4 EVALUATION

In this proficiency test some problems were encountered with the dispatch of the samples. Six participants reported test results after the final reporting date and five other participants did not report any test results. Not all participants were able to report all tests requested. In total 60 participants reported 551 numerical test results. Observed were 27 outlying test results, which is 4.9%. In proficiency studies outlier percentages of 3% - 7.5% are quite normal.

Not all data sets proved to have a normal Gaussian distribution. These are referred to as “not OK” or “suspect”. The statistical evaluation of these data sets should be used with due care, see also paragraph 3.1.

4.1 EVALUATION PER SAMPLE AND PER TEST

In this section the reported test results are discussed per sample and per test. The test methods which were used by the various laboratories were taken into account for explaining the observed differences when possible and applicable. These test methods are also in the tables together with the original data in appendix 1. The abbreviations, used in these tables, are explained in appendix 3.

Unfortunately, a suitable reference test method providing the precision data is not available for all determinations. For these tests the calculated reproducibility was compared against the estimated reproducibility calculated with the Horwitz equation.

In the iis PT reports ASTM test methods are referred to with a number (e.g. D1353) and an added designation for the year that the test method was adopted or revised (e.g. D1353:13). When a method has been reapproved an “R” will be added and the year of approval (e.g. D1353:13R21).

sample #23260

Total Acidity as Acetic Acid: The group of participants met the target requirements. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of EN15491:21 and ASTM D1613:17R23.

Appearance: All reporting participants agreed about the appearance as Clear and Bright (Pass).

Copper as Cu: Almost all reporting participants agreed on a value near or below the application range. Therefore, no z-scores are calculated.

Density at 20 °C: The group of participants met the target requirements. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO12185:96.

Electrical Conductivity at 25 °C: The group of participants had difficulty to meet the target requirements. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of EN15938:10.

Nitrogen: The group of participants had difficulty to meet the target requirements. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of ASTM D4629:17.

It is known that the pHe determined with a LiCl electrode will be lower than the pHe determined with a KCl electrode. Therefore, the test results are requested separately. Test method EN15490 describes the use of a LiCl electrode and test method ASTM D6423 describes the use of a KCl electrode.

pHe (LiCl): The group of participants had difficulty to meet the target requirements. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of EN15490:07.

pHe (KCl): The group of participants had difficulty to meet the target requirements. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of D6423:20a.

Phosphorus as P: Almost all participants agreed on a value near or below the application range. Therefore, no z-scores are calculated.

Water, Coulometric: The group of participants met the target requirements. Five statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN15489:07 and ASTM E1064:16.

Water, Volumetric: The group of participants met the target requirements. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM E203:23 but not in agreement with the requirements of EN15692:21.

The test results reported for the Ethanol content is depending on the test method used by the laboratory. Test method EN15721 uses a different definition for Ethanol than ASTM D5501. Therefore, the participants in this proficiency test were requested to report the Ethanol content for each of the two definitions.

Ethanol incl. higher alcohols (EN15721): In EN15721 the purity (the Ethanol content) is defined as: Ethanol (incl. higher alcohols) = 100% - impurity% - methanol%, where the higher alcohols consequently are not included in “impurity%” but in Ethanol content.
The group of participants had difficulty to meet the target requirements. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of EN15721:13.

Higher alcohols (EN15721): In EN15721 the higher alcohol content is defined as: the sum of n-propanol%, n-butanol%, sec-butanol%, isobutanol%, 2-methyl-1-butanol% and 3-methyl-1-butanol%.
The group of participants met the target requirements. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN15721:13.

Impurities (EN15721): In EN15721 the impurity content is defined as: content of all components except for Ethanol%, Methanol% and the higher alcohols%.
The group of participants may have had difficulty to meet the target requirements. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the estimated reproducibility calculated with the Horwitz equation based on nine components.

Methanol: The group of participants may have had difficulty to meet the target requirements depending on the test method used. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not at all in agreement with the estimated reproducibility calculated with the Horwitz equation but is in agreement with the requirements of ASTM D5501:20. A negative value for the reproducibility is found at this concentration level for test method EN15721:13 which is theoretically not correct.

Ethanol (D5501): The group of participants met the target requirements by mass and by volume. In total two statistical outliers were observed and four other test results were excluded. Both calculated reproducibilities after rejection of the suspect data are in agreement with the requirements of ASTM D5501:20.

Gum (solvent washed): Almost all reporting participants agreed on a test result <0.5 mg/100mL. Therefore, no z-scores are calculated.

sample #23261

Inorganic Chloride: The group of participants had difficulty to meet the target requirements Five statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D7319:22 or EN15492:12.

Sulfate as SO_4: All reporting participants agreed on a value near or below the detection limit. Therefore, no z-scores are calculated.

Sulfur: Almost all reporting participants agreed on a value near or below the detection limit. Therefore, no z-scores are calculated.

sample #23262

Nonvolatile matter: The group of participants met the target requirements. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of EN15691:23 and ASTM D1353:13R21.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the reference test method and the reproducibility as found for the group of participating laboratories. The number of significant test results, the average, the calculated reproducibility (2.8 * standard deviation) and the target reproducibility derived from reference methods are presented in the next tables.

Parameter	unit	n	average	2.8 * sd	R(lit)
Total Acidity as Acetic Acid	mg/kg	43	14.3	12.3	13.7
Appearance		48	C&B (Pass)	n.a.	n.a.
Copper as Cu	mg/kg	24	<0.07	n.e.	n.e.
Density at 20 °C	kg/L	51	0.7899	0.0001	0.0005
Electrical Conductivity at 25 °C	µS/cm	38	0.68	0.42	0.15
Nitrogen	mg/kg	19	0.81	0.92	0.73
pHe (LiCl)		11	6.51	1.57	0.63
pHe (KCl)		23	7.06	1.22	1.09
Phosphorus as P	mg/L	23	<0.15	n.e.	n.e.
Water, Coulometric	%M/M	46	0.179	0.016	0.022
Water, Volumetric	%M/M	23	0.180	0.035	0.078

Parameter	unit	n	average	2.8 * sd	R(lit)
Ethanol incl. high. alc. (EN15721)	%M/M	31	99.908	0.099	0.050
Higher alcohols (EN15721)	%M/M	29	0.149	0.032	0.041
Impurities (EN15721)	%M/M	28	0.092	0.104	0.044
Methanol	%M/M	30	0.0079	0.0037	0.0018
Ethanol (D5501)	%M/M	17	99.645	0.326	0.993
Ethanol (D5501)	%V/V	18	99.773	0.282	0.992
Gum (solvent washed)	mg/100 mL	15	<0.5	n.e.	n.e.

Table 8: reproducibilities of tests on sample #23260

Parameter	unit	n	average	2.8 * sd	R(lit)
Inorganic Chloride as Cl	mg/kg	25	4.3	1.5	1.2
Sulfate as SO_4	mg/kg	26	<1	n.e.	n.e.
Sulfur	mg/kg	28	<1	n.e.	n.e.
Nonvolatile matter	mg/100 mL	35	15.7	4.7	5.7

Table 9: reproducibilities of tests on sample #23261 and sample #23262

Without further statistical calculations it can be concluded that for many tests there is a good compliance of the group of participants with the reference test methods. The problematic tests have been discussed in paragraph 4.1.

4.3 COMPARISON OF THE PROFICIENCY TEST OF DECEMBER 2023 WITH PREVIOUS PTS

	December 2023	December 2022	December 2021	December 2020	November 2019
Number of reporting laboratories	60	57	64	49	51
Number of test results	551	500	579	507	457
Number of statistical outliers	27	32	32	18	16
Percentage of statistical outliers	4.9%	6.4%	5.5%	3.6%	3.5%

Table 10: comparison with previous proficiency tests

In proficiency tests outlier percentages of 3% - 7.5% are quite normal.

The performance of the determinations of the proficiency tests was compared to the requirements of the reference test methods. The conclusions are given in the following table.

Parameter	December 2023	December 2022	December 2021	December 2020	November 2019
Total Acidity as Acetic Acid	+	+	+/-	++	+
Density at 20 °C	++	++	++	++	++
Electrical Conductivity at 25 °C	--	--	--	--	-
Nitrogen	-	+	+	-	-
pHe	--	--	+/-	+/-	+/-
Water, Coulometric	+	+	+	+/-	-
Water, Volumetric	++	++	++	+	+

Parameter	December 2023	December 2022	December 2021	December 2020	November 2019
Ethanol incl. high. alc. (EN15721)	-	+	+	+/-	++
Higher alcohols (EN15721)	+	+	-	+/-	+
Impurities (EN15721)	--	+	+/-	-	++
Methanol	--	--	-	-	--
Ethanol (D5501)	++	++	++	++	++
Inorganic Chloride as Cl	-	+/-	+/-	-	-
Sulfate as SO_4	n.e.	-	+/-	+	-
Sulfur	n.e.	++	++	++	++
Nonvolatile matter	+	+/-	-	n.e./ +	n.e.

Table 11: comparison of determinations to the reference test methods

The following performance categories were used:

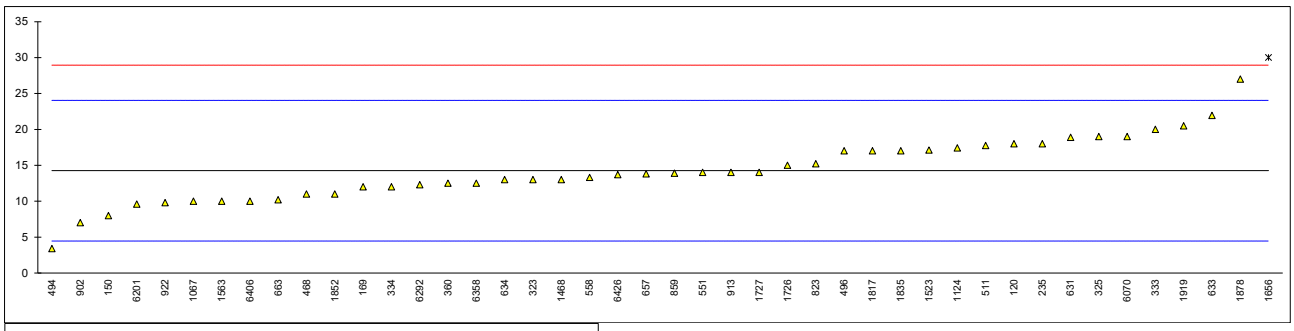
- ++ : group performed much better than the reference test method
- + : group performed better than the reference test method
- +/- : group performance equals the reference test method
- - : group performed worse than the reference test method
- -- : group performed much worse than the reference test method
- n.e. : not evaluated

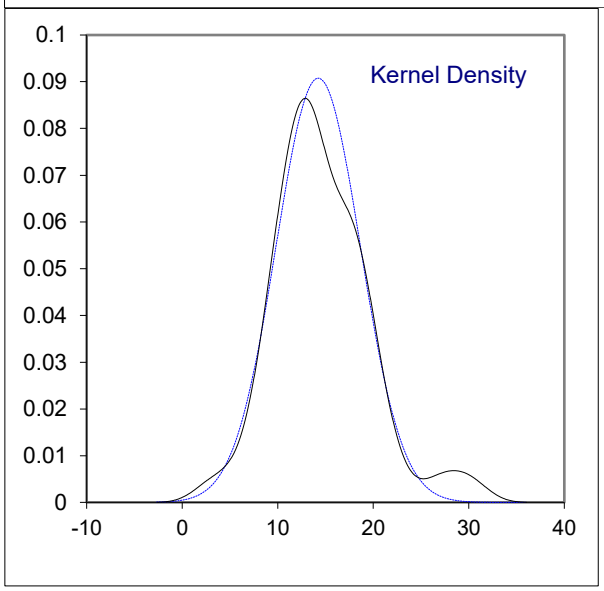
APPENDIX 1

Determination of Total Acidity as Acetic Acid on sample #23260; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52	EN15491	<30		-----	
120	D1613	18.0		0.77	
150	D1613	8		-1.28	
169	D7795	12		-0.46	
171	EN15491	<30		-----	
174		-----		-----	
235	D1613	18		0.77	
315	EN15491	<30		-----	
323	EN15491	13		-0.26	
325	EN15491	19		0.97	
333	EN15491	20		1.18	
334	EN15491	12		-0.46	
337		-----		-----	
343	EN15491	<30		-----	
360	D1613	12.5		-0.36	
468	EN15491	11		-0.66	
492		-----		-----	
494	EN15491	3.4		-2.22	
495		-----		-----	
496	EN15491	17		0.56	
511	D1613	17.75		0.72	
541		-----		-----	
551	D1613	14		-0.05	
554		-----		-----	
558	NBR9866	13.3		-0.19	
621		-----		-----	
631	D1613	18.9		0.95	
633	D1613	21.93		1.57	
634	D1613	13		-0.26	
657	D1613	13.816		-0.09	
663	D1613	10.2		-0.83	
823	D1613	15.2		0.19	
859	D1613	13.9		-0.07	
874		-----		-----	
902	D1613	7		-1.48	
913	D1613	14		-0.05	
922	D1613	9.8		-0.91	
1067	EN15491	10		-0.87	
1124	EN15491	17.4		0.64	
1468	EN15491	13		-0.26	
1523	ISO1388	17.1155		0.59	
1530		-----		-----	
1563	EN15491	10		-0.87	
1656	EN15491	30	R(0.05)	3.22	
1726	EN15491	15		0.15	
1727	EN15491	14		-0.05	
1817	ISO1388	17		0.56	
1835	EN15491	17		0.56	
1852	EN15491	11		-0.66	
1878	EN15491	27		2.61	
1919	EN15491	20.5		1.28	
2797		-----		-----	
6070	D1613	19	C	0.97	first reported 40
6072		-----		-----	
6201	EN15491	9.6		-0.95	
6214		-----		-----	
6292		12.28		-0.40	
6297		-----		-----	
6358	EN15491	12.5		-0.36	
6406	EN15491	10	C	-0.87	reported 0.001 mg/kg
6424		-----		-----	
6426	INEN341	13.6940		-0.11	
6444		-----		-----	
6546		-----		-----	
6557		-----		-----	

	normality	OK
	n	43
	outliers	1
	mean (n)	14.251
	st.dev. (n)	4.3972
	R(calc.)	12.312
	st.dev.(EN15491:21)	4.8929
	R(EN15491:21)	13.7
Compare	R(D1613:17R23)	14


35
30
25
20
15
10
5
0
494 902 150 6201 922 1067 1563 6406 663 468 1852 169 334 6292 360 6358 634 323 1468 558 6426 657 859 551 913 1727 1726 823 496 1817 1835 1523 1124 511 120 235 631 325 6070 333 1919 633 1878 1656


Kernel Density
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-10 0 10 20 30 40

Determination of Appearance on sample #23260;

lab	method	value	mark	z(targ)	remarks
52	EN15769	Clear & Colourless		-----	
120	Visual	Clear & Bright		-----	
150	Visual	clear &bright		-----	
169	Visual	Pass		-----	
171	Visual	Clear and Free		-----	
174	Visual	Clear & Free		-----	
235	Visual	C & B		-----	
315	E2680	CL. COL.		-----	
323	Visual	CFFMIS		-----	
325	Visual	clear		-----	
333	Visual	Clear and bright		-----	
334	Visual	clear and bright		-----	
337	Visual	Clear and Bright		-----	
343	Visual	C&B		-----	
360	EN15769	Clear and Colourless		-----	
468	EN15769	C&C		-----	
492		-----		-----	
494	Visual	clear & bright		-----	
495	EN15769	clear & colourless		-----	
496	Visual	c+b		-----	
511	Visual	clear and bright		-----	
541		-----		-----	
551	Visual	Pass		-----	
554		-----		-----	
558	Visual	clean and free from impurities		-----	
621	E2680	pass		-----	
631	Visual	clear & bright [pass]		-----	
633	Visual	Clear & Bright		-----	
634		Clear & Bright		-----	
657	E2680	Pass		-----	
663	Visual	Bright & Clear		-----	
823	E2680	Pass		-----	
859	Visual	Pass		-----	
874	E2680	pass		-----	
902	EN15769	Pass		-----	
913	E2680	Clear and Bright		-----	
922	Visual	Clear & Bright		-----	
1067	Visual	clear and colourless		-----	
1124	EN15769	Clear and bright		-----	
1468	EN15769	clear and bright		-----	
1523		-----		-----	
1530		-----		-----	
1563	EN15769	Clear and colourless		-----	
1656	Visual	Pass		-----	
1726	EN15769	Clear&Colorless		-----	
1727	EN15769	Clear&colorless		-----	
1817	Visual	pass		-----	
1835	EN15769	C&C		-----	
1852		-----		-----	
1878	EN15769	C&B		-----	
1919		-----		-----	
2797		-----		-----	
6070	Visual	Clear & Bright		-----	
6072		-----		-----	
6201	EN15769	Bright and Clear		-----	
6214		-----		-----	
6292		-----		-----	
6297		-----		-----	
6358	EN15769	clear and bright		-----	
6406	E2680	Clear and Bright		-----	
6424		-----		-----	
6426		-----		-----	
6444		-----		-----	
6546		-----		-----	
6557		-----		-----	
	n	48			
	Mean (n)	Clear and Bright (Pass)			

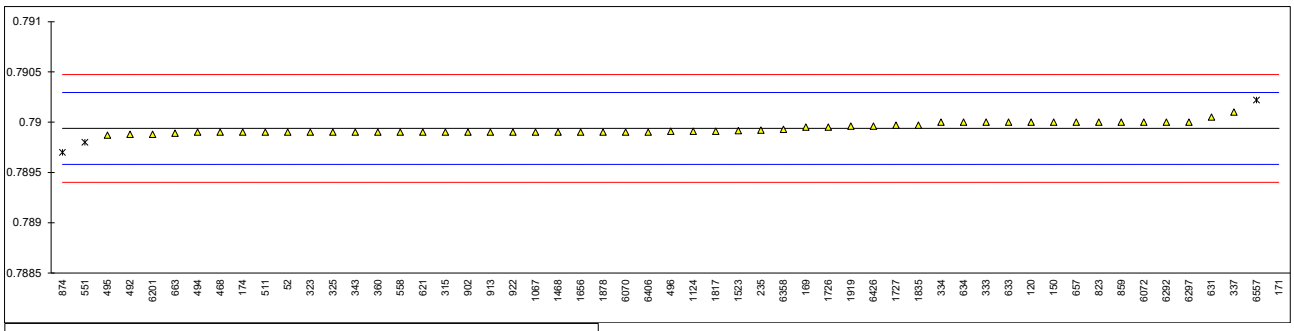
Determination of Copper as Cu on sample #23260; results in mg/kg

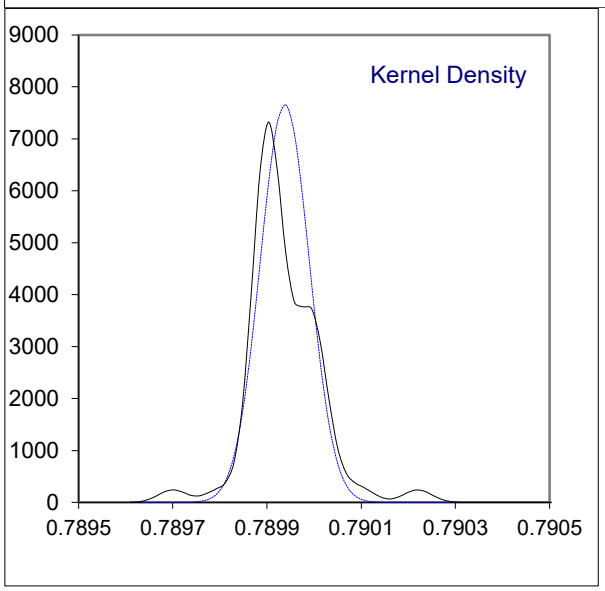
lab	method	value	mark	z(targ)	remarks
52	EN15837	<0.050		-----	
120		-----		-----	
150	D1688	<0.05		-----	
169		-----		-----	
171	EN15488	<0.070		-----	
174		-----		-----	
235	EN15837	0.00		-----	
315	EN15837	<0.050		-----	
323	EN15488	<0.070		-----	
325	EN15488	0.003		-----	
333	EN15488	<0.07		-----	
334	EN15837	0.002		-----	
337		-----		-----	
343	EN15837	<0.05		-----	
360	EN15837	<0.050		-----	
468		-----		-----	
492		-----		-----	
494	EN15837	<0,1		-----	
495		-----		-----	
496		-----		-----	
511		-----		-----	
541		-----		-----	
551	ING-2047	<0.04		-----	
554		-----		-----	
558		-----		-----	
621	D1688	<0.07		-----	
631	D1688	<0.05		-----	
633		-----		-----	
634		-----		-----	
657		-----		-----	
663	INH-12441	<0.05		-----	
823	UOP389	<0.01		-----	
859		-----		-----	
874		-----		-----	
902		-----		-----	
913		-----		-----	
922	D1688	< 0.05		-----	
1067	EN15488	< 0.001		-----	
1124	EN15488	< 0,07		-----	
1468	EN15837	<0,1		-----	
1523		-----		-----	
1530		-----		-----	
1563		-----		-----	
1656	EN15837	<0.05		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835	EN15837	<0.050		-----	
1852		-----		-----	
1878	EN15837	<0.050		-----	
1919		-----		-----	
2797		-----		-----	
6070		-----		-----	
6072		-----		-----	
6201	EN15488	0.021		-----	
6214		-----		-----	
6292		-----		-----	
6297		-----		-----	
6358	EN15488	<0,070		-----	
6406		-----		-----	
6424		-----		-----	
6426		-----		-----	
6444		-----		-----	
6546		-----		-----	
6557		-----		-----	
	n	24			
	mean (n)	<0.07			Application range EN 15488:07: 0.07 – 0.20 mg/kg

Determination of Density at 20 °C on sample #23260; results in kg/L

lab	method	value	mark	z(targ)	remarks
52	ISO12185	0.7899		-0.21	
120	D4052	0.7900		0.35	
150	D4052	0.7900		0.35	
169	D4052	0.78995		0.07	
171	ISO12185	0.7942	R(0.01)	23.87	
174	D4052	0.7899		-0.21	
235	ISO12185	0.78992		-0.10	
315	D4052	0.7899		-0.21	
323	D4052	0.7899		-0.21	
325	D4052	0.7899		-0.21	
333	ISO12185	0.7900		0.35	
334	ISO12185	0.790		0.35	
337	ISO12185	0.7901	C	0.91	first reported 790.1 kg/L
343	ISO12185	0.7899		-0.21	
360	D4052	0.7899		-0.21	
468	ISO12185	0.7899		-0.21	
492	D4052	0.78988		-0.32	
494	ISO12185	0.7899		-0.21	
495	ISO12185	0.78987		-0.38	
496	ISO12185	0.78991		-0.16	
511	D4052	0.7899		-0.21	
541		-----		-----	
551	D4052	0.7898	R(0.01)	-0.77	
554		-----		-----	
558	D4052	0.7899	C	-0.21	first reported 789.9 kg/L
621	D4052	0.7899		-0.21	
631	D4052	0.79005		0.63	
633	D4052	0.7900		0.35	
634	D4052	0.7900		0.35	
657	D4052	0.7900		0.35	
663	D4052	0.78989		-0.27	
823	ISO12185	0.7900		0.35	
859	ISO12185	0.7900		0.35	
874	ISO12185	0.7897	R(0.01)	-1.33	
902	ISO12185	0.7899		-0.21	
913	D4052	0.7899		-0.21	
922	D4052	0.7899		-0.21	
1067	D4052	0.7899		-0.21	
1124	ISO12185	0.78991		-0.16	
1468	ISO12185	0.7899		-0.21	
1523	D4052	0.789915		-0.13	
1530		-----		-----	
1563		-----		-----	
1656	ISO12185	0.7899		-0.21	
1726	D4052	0.78995		0.07	
1727	D4052	0.78997		0.18	
1817	Table OIML	0.78991		-0.16	
1835	ISO12185	0.78997		0.18	
1852		-----		-----	
1878	ISO12185	0.7899		-0.21	
1919	ISO12185	0.789960		0.12	
2797		-----		-----	
6070	D4052	0.7899	C	-0.21	first reported 0.7871
6072	D4052	0.790	C	0.35	first reported 790 kg/L
6201	ISO12185	0.78988		-0.32	
6214		-----		-----	
6292	D4052	0.7900	C	0.35	first reported 790.0 kg/L
6297	D4052	0.7900	C	0.35	first reported 790.0 kg/L
6358	ISO12185	0.789928		-0.06	
6406	ISO12185	0.7899		-0.21	
6424		-----		-----	
6426	D4052	0.78996		0.12	
6444		-----		-----	
6546		-----		-----	
6557	D4052	0.79022	R(0.01)	1.58	

normality	OK
n	51
outliers	4
mean (n)	0.789938
st.dev. (n)	0.0000521
R(calc.)	0.000146
st.dev.(ISO12185:96)	0.0001786
R(ISO12185:96)	0.0005

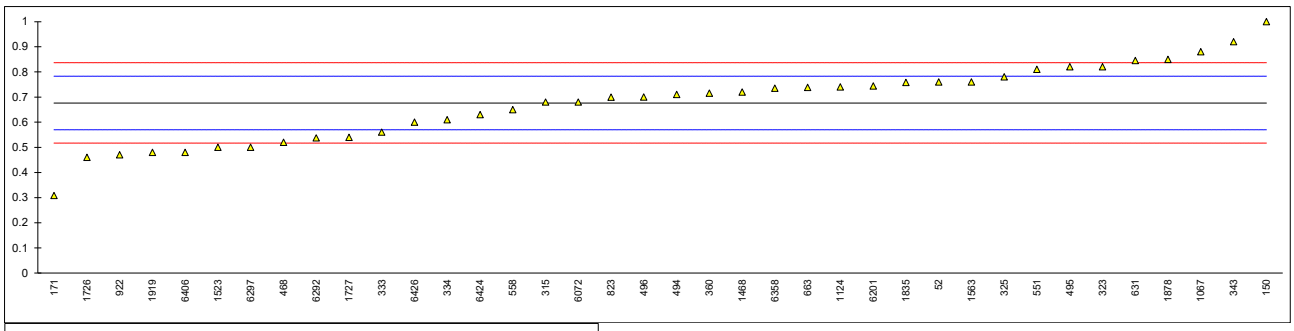

0.791
0.7905
0.79
0.7895
0.789
0.7885
874 551 495 492 6201 663 494 468 174 511 52 323 325 343 360 558 621 315 902 913 922 1067 1468 1656 1878 6070 6406 496 1124 1817 1523 235 6358 169 1726 1919 6426 1727 1835 334 634 333 633 120 150 657 823 859 6072 6292 6297 631 337 6557 171

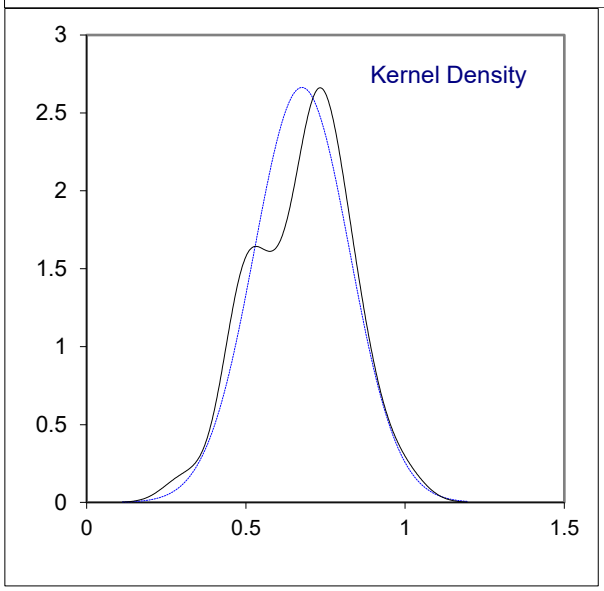

Kernel Density
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
0.7895 0.7897 0.7899 0.7901 0.7903 0.7905

Determination of Electrical Conductivity at 25 °C on sample #23260; results in µS/cm

lab	method	value	mark	z(targ)	remarks
52	EN15938	0.76		1.57	
120		-----		-----	
150	EN15938	1.00		6.08	
169		-----		-----	
171	EN15938	0.308	C	-6.92	reported 308.00 µS/cm
174		-----		-----	
235		-----		-----	
315	EN15938	0.68		0.06	
323	EN15938	0.82		2.69	
325	EN15938	0.78		1.94	
333	EN15938	0.56		-2.19	
334	EN15938	0.61		-1.25	
337		-----		-----	
343	EN15938	0.92		4.57	
360	EN15938	0.715		0.72	
468	EN15938	0.52		-2.94	
492		-----		-----	
494	EN15938	0.71		0.63	
495	EN15938	0.820		2.69	
496	EN15938	0.7		0.44	
511		-----		-----	
541		-----		-----	
551	NBR10547	0.81		2.51	
554		-----		-----	
558	NBR10547	0.65	C	-0.50	first reported 65.0
621	EN15938	<10		-----	
631	D1125	0.845		3.16	
633		-----		-----	
634		-----		-----	
657		-----		-----	
663	D1125	0.738		1.15	
823	D1125	0.699		0.42	
859		-----		-----	
874		-----		-----	
902		-----		-----	
913		-----		-----	
922	EN15938	0.47		-3.88	
1067	EN15938	0.88		3.82	
1124	EN15938	0.74		1.19	
1468	EN15938	0.72		0.82	
1523	D2624	0.5		-3.32	
1530		-----		-----	
1563	EN15938	0.76		1.57	
1656		-----		-----	
1726	EN15938	0.46		-4.07	
1727	EN15938	0.54		-2.56	
1817		-----		-----	
1835	EN15938	0.758		1.53	
1852		-----		-----	
1878	EN15938	0.85		3.26	
1919	EN15938	0.48		-3.69	
2797		-----		-----	
6070		-----		-----	
6072	NBR10547	0.680		0.06	
6201	EN15938	0.744		1.27	
6214		-----		-----	
6292		0.537		-2.62	
6297	NBR10547	0.50		-3.32	
6358	EN15938	0.735		1.10	
6406	EN15938	0.48		-3.69	
6424	NBR10547	0.63		-0.87	
6426	In house	0.60		-1.44	
6444		-----		-----	
6546		-----		-----	
6557		-----		-----	

normality	OK
n	38
outliers	0
mean (n)	0.6766
st.dev. (n)	0.14974
R(calc.)	0.4193
st.dev.(EN15938:10)	0.05324
R(EN15938:10)	0.1491

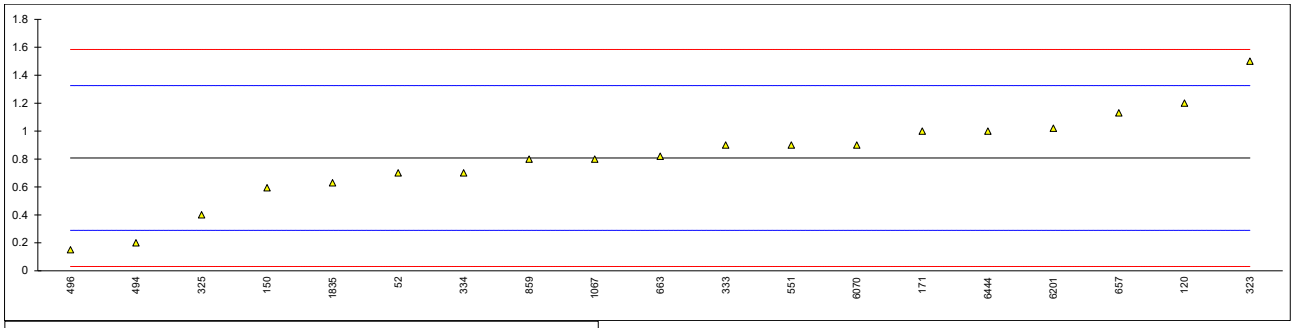

1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
171 1726 922 1919 6406 1523 6297 468 6292 1727 333 6426 334 6424 558 315 6072 823 496 494 360 1468 6358 663 1124 6201 1835 52 1563 325 551 495 323 631 1878 1067 343 150

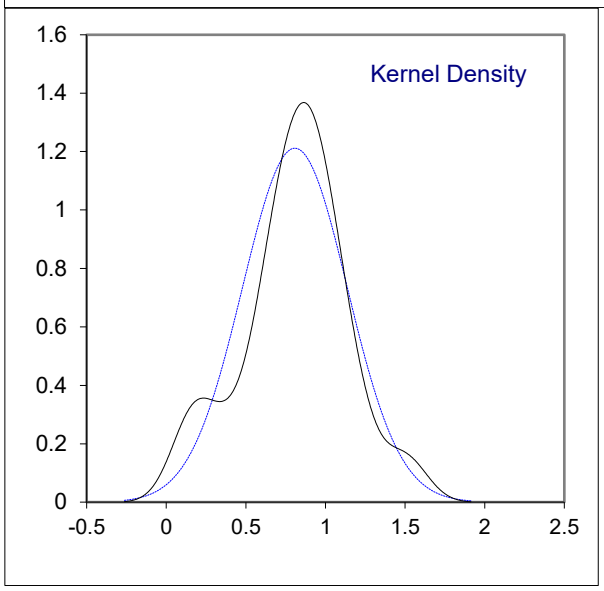

Kernel Density
3
2.5
2
1.5
1
0.5
0
0
0.5
1
1.5

Determination of Nitrogen on sample #23260; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52	D4629	0.7		-0.42	
120	D4629	1.2		1.52	
150	D4629	0.594	C	-0.82	first reported 470
169		-----		-----	
171	D4629	1.0		0.74	
174		-----		-----	
235		-----		-----	
315		-----		-----	
323	D4629	1.5		2.67	
325	D5762	0.4		-1.57	
333	D4629	0.9		0.36	
334	D4629	0.7		-0.42	
337		-----		-----	
343		-----		-----	
360		-----		-----	
468	D4629	<1		-----	
492		-----		-----	
494	D4629	0.20		-2.35	
495		-----		-----	
496	D4629	0.15		-2.54	
511		-----		-----	
541		-----		-----	
551	D4629	0.9		0.36	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657	D4629	1.13		1.25	
663	D4629	0.82		0.05	
823		-----		-----	
859	D4629	0.8		-0.03	
874		-----		-----	
902		-----		-----	
913		-----		-----	
922	D4629	< 0.3		-----	
1067	D4629	0.8		-0.03	
1124		-----		-----	
1468	D4629	<1.0		-----	
1523		-----		-----	
1530		-----		-----	
1563		-----		-----	
1656		-----		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835	D4629	0.63		-0.69	
1852		-----		-----	
1878		-----		-----	
1919		-----		-----	
2797		-----		-----	
6070	D4629	0.9	C	0.36	first reported 1.541
6072		-----		-----	
6201	D4629	1.02		0.82	
6214		-----		-----	
6292		-----		-----	
6297		-----		-----	
6358		-----		-----	
6406		-----		-----	
6424		-----		-----	
6426		-----		-----	
6444	D4629	1.0		0.74	
6546		-----		-----	
6557		-----		-----	

normality	OK
n	19
outliers	0
mean (n)	0.808
st.dev. (n)	0.3292
R(calc.)	0.922
st.dev.(D4629:17)	0.2589
R(D4629:17)	0.725

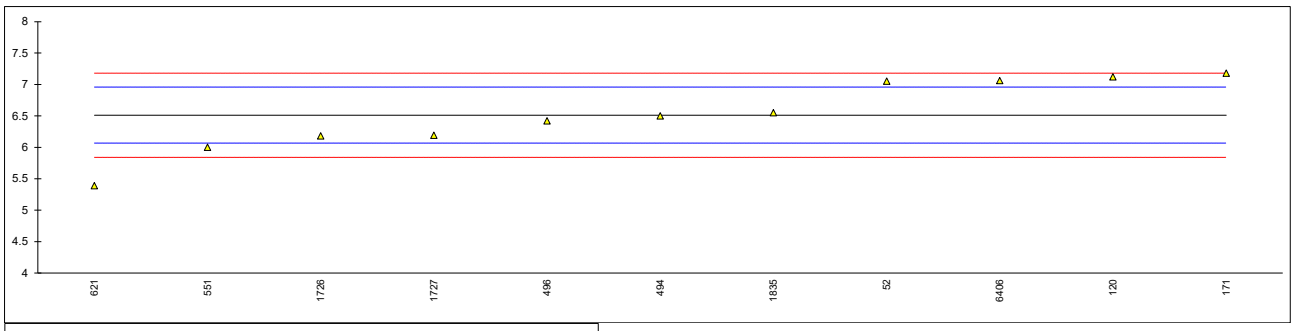

1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
496
494
325
150
1835
52
334
859
1067
663
333
551
6070
171
6444
6201
657
120
323

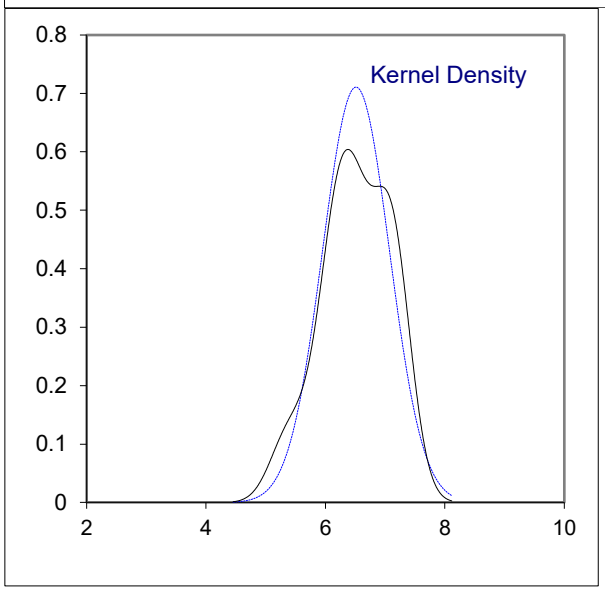

Kernel Density
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.5
0
0.5
1
1.5
2
2.5

Determination of pHe with LiCl electrode on sample #23260;

lab	method	value	mark	z(targ)	remarks
52	EN15490	7.05		2.41	
120	EN15490	7.12		2.72	
150		-----		-----	
169		-----		-----	
171	EN15490	7.18		2.99	
174		-----		-----	
235		-----		-----	
315		-----		-----	
323		-----		-----	
325		-----		-----	
333		-----		-----	
334		-----		-----	
337		-----		-----	
343		-----		-----	
360		-----		-----	
468		-----		-----	
492		-----		-----	
494	EN15490	6.5		-0.06	
495		-----		-----	
496	EN15490	6.42		-0.42	
511		-----		-----	
541		-----		-----	
551	NBR10891	6.0		-2.30	
554		-----		-----	
558		-----		-----	
621	EN15490	5.39		-5.03	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657		-----		-----	
663		-----		-----	
823		-----		-----	
859		-----		-----	
874		-----		-----	
902		-----		-----	
913		-----		-----	
922		-----		-----	
1067		-----		-----	
1124		-----		-----	
1468		-----		-----	
1523		-----		-----	
1530		-----		-----	
1563		-----		-----	
1656		-----		-----	
1726	EN15490	6.18		-1.49	
1727	EN15490	6.19		-1.45	
1817		-----		-----	
1835	EN15490	6.55		0.17	
1852		-----		-----	
1878		-----		-----	
1919		-----		-----	
2797		-----		-----	
6070		-----		-----	
6072		-----		-----	
6201		-----		-----	
6214		-----		-----	
6292		-----		-----	
6297		-----		-----	
6358		-----		-----	
6406	EN15490	7.06		2.45	
6424		-----		-----	
6426		-----		-----	
6444		-----		-----	
6546		-----		-----	
6557		-----		-----	

normality	OK
n	11
outliers	0
mean (n)	6.513
st.dev. (n)	0.5613
R(calc.)	1.572
st.dev.(EN15490:07)	0.2233
R(EN15490:07)	0.625

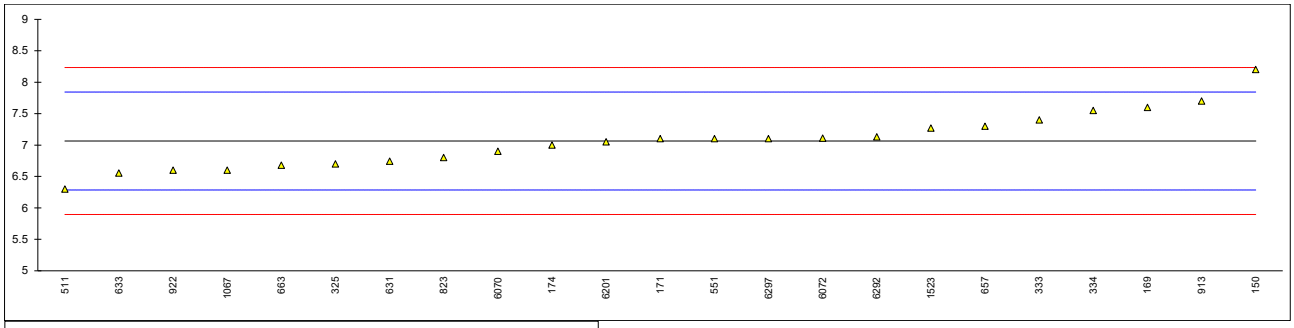

8
7.5
7
6.5
6
5.5
5
4.5
4
621
551
1726
1727
496
494
1835
52
6406
120
171

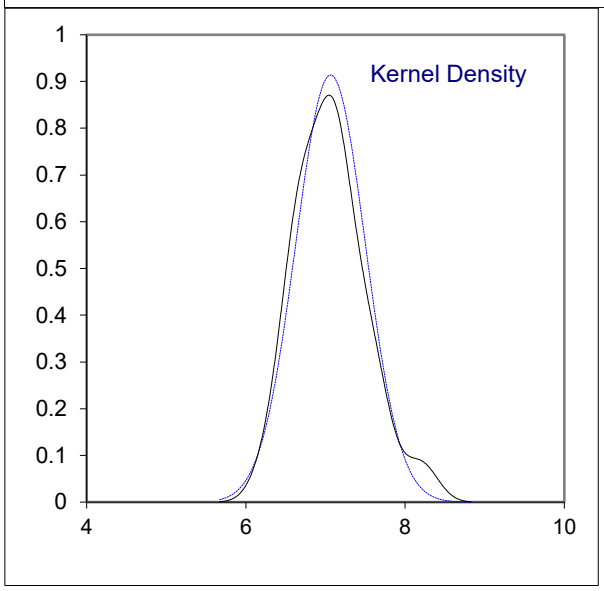

Kernel Density
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
2
4
6
8
10

Determination of pHe with KCl electrode on sample #23260;

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
120		-----		-----	
150	D6423	8.2		2.92	
169	D6423	7.6		1.38	
171	D6423	7.1		0.09	
174	D6423	7.0		-0.17	
235		-----		-----	
315		-----		-----	
323		-----		-----	
325	D6423	6.7		-0.94	
333	D6423	7.4		0.86	
334	D6423	7.55	C	1.25	first reported 9.1
337		-----		-----	
343		-----		-----	
360		-----		-----	
468		-----		-----	
492		-----		-----	
494		-----		-----	
495		-----		-----	
496		-----		-----	
511	D6423	6.3		-1.97	
541		-----		-----	
551	D6423	7.1		0.09	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631	D6423	6.744		-0.82	
633	D6423	6.555		-1.31	
634		-----		-----	
657	D6423	7.3		0.60	
663	D6423	6.68		-0.99	
823	D6423	6.80		-0.68	
859		-----		-----	
874		-----		-----	
902		-----		-----	
913	D6423	7.7		1.63	
922	D6423	6.60		-1.19	
1067	D6423	6.6		-1.19	
1124		-----		-----	
1468		-----		-----	
1523	EN15490	7.27		0.53	
1530		-----		-----	
1563		-----		-----	
1656		-----		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835		-----		-----	
1852		-----		-----	
1878		-----		-----	
1919		-----		-----	
2797		-----		-----	
6070	D6423	6.90		-0.42	
6072	D6423	7.11		0.12	
6201	D6423	7.05		-0.04	
6214		-----		-----	
6292	D6423	7.13		0.17	
6297	D6423	7.10		0.09	
6358		-----		-----	
6406		-----		-----	
6424		-----		-----	
6426		-----		-----	
6444		-----		-----	
6546		-----		-----	
6557		-----		-----	

normality	OK
n	23
outliers	0
mean (n)	7.065
st.dev. (n)	0.4367
R(calc.)	1.223
st.dev.(D6423:20a)	0.3891
R(D6423:20a)	1.090


9
8.5
8
7.5
7
6.5
6
5.5
5
511
633
922
1067
663
325
631
823
6070
174
6201
171
551
6297
6072
6292
1523
657
333
334
169
913
150


Kernel Density
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
4
6
8
10

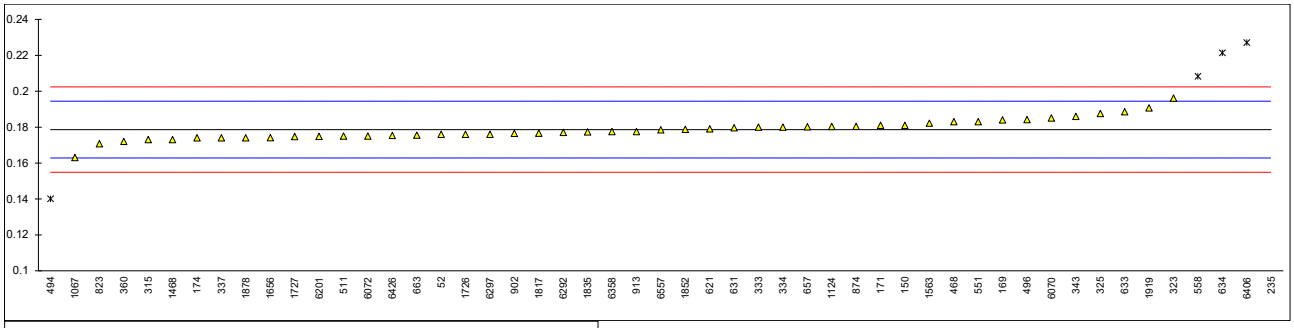
Determination of Phosphorus as P on sample #23260; results in mg/L

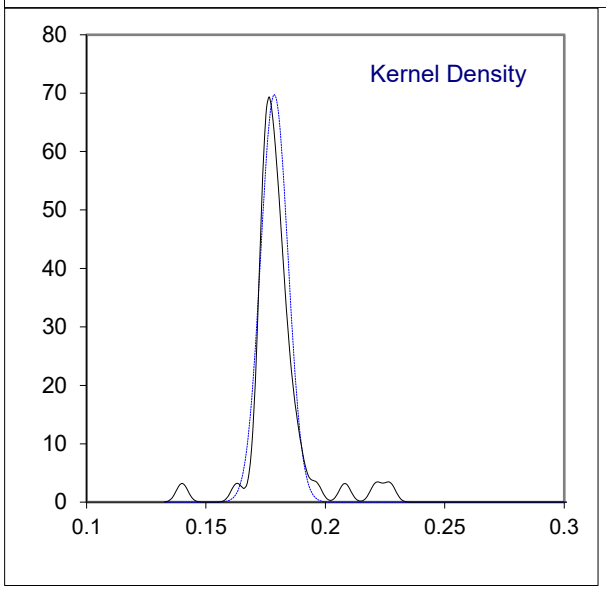
lab	method	value	mark	z(targ)	remarks
52	EN15837	<0.10		-----	
120		-----		-----	
150	D3231	<0.20		-----	
169		-----		-----	
171	EN15487	<1		-----	
174		-----		-----	
235		-----		-----	
315	EN15837	<0.10		-----	
323	EN15487	<0.01		-----	
325	EN15487	0.001		-----	
333	EN15487	<0.15		-----	
334	EN15487	0.08		-----	
337		-----		-----	
343	EN15837	<0.13		-----	
360	EN15837	<0.10		-----	
468	EN15487	<0,15		-----	
492		-----		-----	
494	EN15837	<0,1		-----	
495		-----		-----	
496	EN15487	0		-----	
511		-----		-----	
541		-----		-----	
551	INH-2047	<0.04		-----	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657		-----		-----	
663		-----		-----	
823	UOP389	<0.11		-----	
859		-----		-----	
874		-----		-----	
902		-----		-----	
913		-----		-----	
922		-----		-----	
1067	EN15487	< 0.15		-----	
1124	EN15487	< 0,15		-----	
1468	EN15487	<0.1		-----	
1523		-----		-----	
1530		-----		-----	
1563	EN15487	0.037		-----	
1656	EN15487	<0.05		-----	
1726	EN15487	0.011		-----	
1727	EN15487	<0,01		-----	
1817		-----		-----	
1835	EN15837	<0.13		-----	
1852		-----		-----	
1878	EN15837	<0.13		-----	
1919		-----		-----	
2797		-----		-----	
6070		-----		-----	
6072		-----		-----	
6201		-----		-----	
6214		-----		-----	
6292		-----		-----	
6297		-----		-----	
6358	EN15487	<0,15		-----	
6406		-----		-----	
6424		-----		-----	
6426		-----		-----	
6444		-----		-----	
6546		-----		-----	
6557		-----		-----	
	n	23			
	mean (n)	<0.15			Application range EN 15487:07: 0.15 – 1.50 mg/L

Determination of Water, Coulometric on sample #23260; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	EN15489	0.176		-0.33	
120		-----		-----	
150	E1064	0.181		0.30	
169	E1064	0.184		0.68	
171	EN15489	0.181		0.30	
174	E1064	0.174		-0.59	
235	D6304	0.391	R(0.01)	26.84	
315	EN15489	0.173		-0.71	
323	EN15489	0.1961		2.21	
325	D6304	0.1876		1.13	
333	EN15489	0.180		0.17	
334	EN15489	0.18	C	0.17	first reported 0.230
337	EN15489	0.174		-0.59	
343	EN15489	0.186		0.93	
360	E1064	0.1720		-0.84	
468	EN15489	0.183	C	0.55	first reported 0.155
492		-----		-----	
494	EN15489	0.14	R(0.01)	-4.88	
495		-----		-----	
496	EN15489	0.18415		0.70	
511	E1064	0.175		-0.46	
541		-----		-----	
551	D6304	0.183		0.55	
554		-----		-----	
558	NBR15888	0.2082	R(0.01)	3.74	
621	D6304	0.179		0.05	
631	D6304	0.17959		0.12	
633	D6304	0.1885		1.25	
634	D6304	0.2213	R(0.01)	5.39	
657	E1064	0.1801		0.19	
663	E1064	0.1755		-0.40	
823	E1064	0.1707		-1.00	
859		-----		-----	
874	E1064	0.1804		0.22	
902	EN15489	0.1765		-0.27	
913	E1064	0.1775		-0.14	
922		-----		-----	
1067	EN15489	0.163		-1.98	
1124	EN15489	0.1803		0.21	
1468	EN15489	0.1730		-0.71	
1523		-----		-----	
1530		-----		-----	
1563	EN15489	0.1822		0.45	
1656	EN15489	0.1741	C	-0.57	reported 1741 %M/M
1726	EN15489	0.176		-0.33	
1727	EN15489	0.1747		-0.50	
1817	In house	0.1766		-0.26	
1835	EN15489	0.1773		-0.17	
1852	EN15489	0.1787		0.01	
1878	EN15489	0.174		-0.59	
1919	EN15489	0.19069		1.52	
2797		-----		-----	
6070	E1064	0.185	C	0.80	first reported 1.079961
6072	E1064	0.175		-0.46	
6201	EN15489	0.1748		-0.48	
6214		-----		-----	
6292	E1064	0.177		-0.21	
6297	E1064	0.176		-0.33	
6358	EN15489	0.17748		-0.15	
6406	EN15489	0.227	C,R(0.01)	6.11	first reported 0.271
6424		-----		-----	
6426	E1064	0.1753		-0.42	
6444		-----		-----	
6546		-----		-----	
6557	D6304	0.1784		-0.03	

	normality	suspect
	n	46
	outliers	5
	mean (n)	0.17864
	st.dev. (n)	0.005717
	R(calc.)	0.01601
	st.dev.(EN15489:07)	0.007914
	R(EN15489:07)	0.02216
Compare	R(E1064:16)	0.02840

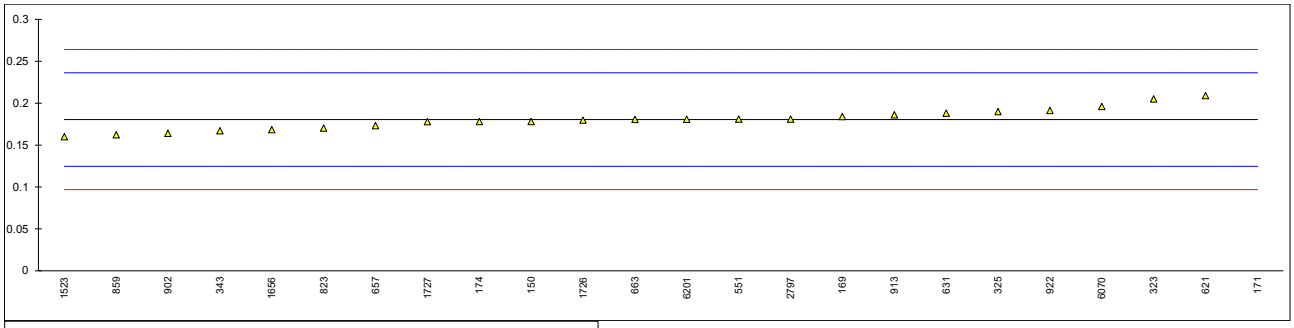

0.24
0.22
0.2
0.18
0.16
0.14
0.12
0.1
494 1067 823 360 315 1488 174 337 1878 1656 1727 6201 511 6072 6426 663 52 1726 6297 902 1817 6292 1835 6358 913 6557 1852 621 631 333 334 657 1124 874 171 150 1563 468 551 169 496 6070 343 325 633 1919 323 558 634 6406 235

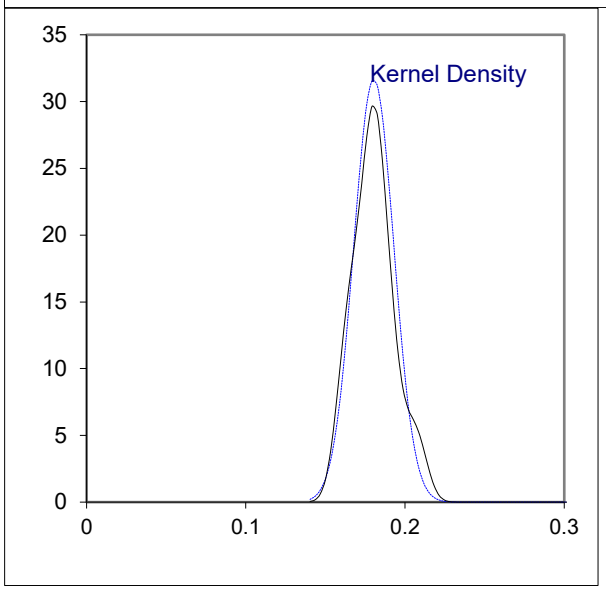

Kernel Density
80
70
60
50
40
30
20
10
0
0.1
0.15
0.2
0.25
0.3

Determination of Water, Volumetric on sample #23260; results in %M/M

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
120		-----		-----	
150	E203	0.178		-0.09	
169	E203	0.184		0.13	
171	E203	0.949	R(0.01)	27.59	
174	E203	0.178		-0.09	
235		-----		-----	
315		-----		-----	
323	E203	0.205		0.88	
325	E203	0.1898		0.34	
333		-----		-----	
334		-----		-----	
337		-----		-----	
343	E203	0.167		-0.48	
360		-----		-----	
468		-----		-----	
492		-----		-----	
494		-----		-----	
495		-----		-----	
496		-----		-----	
511		-----		-----	
541		-----		-----	
551	E203	0.181		0.02	
554		-----		-----	
558		-----		-----	
621	E203	0.209		1.02	
631	E203	0.188		0.27	
633		-----		-----	
634		-----		-----	
657	E203	0.1731		-0.26	
663	E203	0.1806		0.00	
823	E203	0.1703		-0.36	
859	E203	0.1623		-0.65	
874		-----		-----	
902	E203	0.1639		-0.59	
913	E203	0.1860		0.20	
922	E203	0.1913		0.39	
1067		-----		-----	
1124		-----		-----	
1468		-----		-----	
1523	E203	0.16		-0.73	
1530		-----		-----	
1563		-----		-----	
1656	E203	0.1682		-0.44	
1726	EN15692	0.1796		-0.03	
1727	EN15692	0.1778		-0.10	
1817		-----		-----	
1835		-----		-----	
1852		-----		-----	
1878		-----		-----	
1919		-----		-----	
2797		0.181		0.02	
6070	E203	0.196	C	0.56	first reported 1.16515
6072		-----		-----	
6201	E203	0.1808		0.01	
6214		-----		-----	
6292		-----		-----	
6297		-----		-----	
6358		-----		-----	
6406		-----		-----	
6424		-----		-----	
6426		-----		-----	
6444		-----		-----	
6546		-----		-----	
6557		-----		-----	

	normality	OK
	n	23
	outliers	1
	mean (n)	0.18047
	st.dev. (n)	0.012604
	R(calc.)	0.03529
	st.dev.(E203:23)	0.027857
	R(E203:23)	0.078
Compare	R(EN15692:21)	0.0236

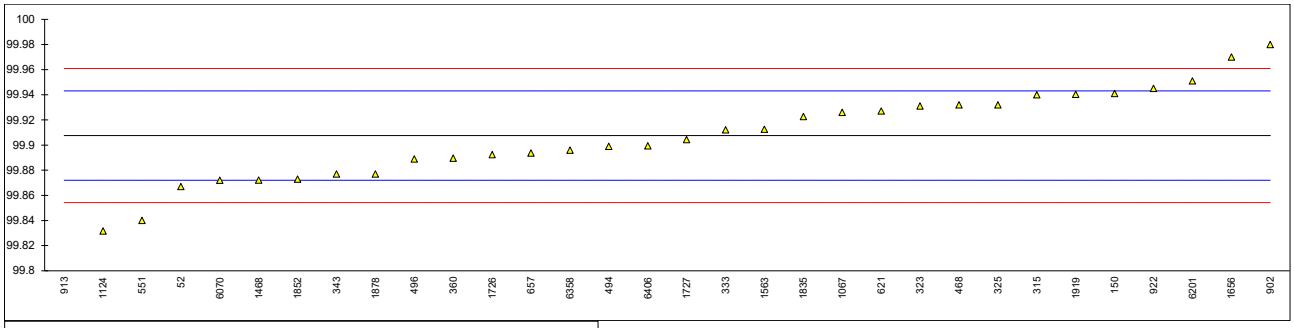

0.3
0.25
0.2
0.15
0.1
0.05
0
1523
859
902
343
1656
823
657
1727
174
150
1726
663
6201
551
2797
169
913
631
325
922
6070
323
621
171

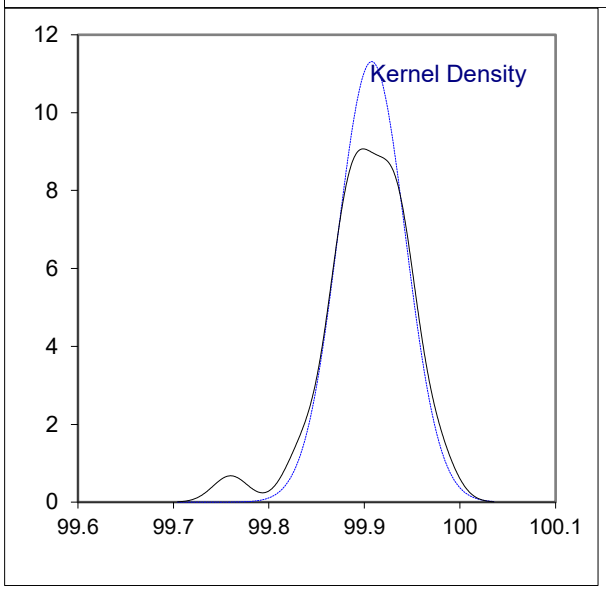

Kernel Density
35
30
25
20
15
10
5
0
0
0.1
0.2
0.3

Determination of Ethanol incl. higher alcohols acc. to EN15721 on sample #23260 in %M/M

lab	method	value	mark	z(targ)	remarks
52	EN15721	99.867		-2.28	
120		-----		-----	
150	EN15721	99.941		1.88	
169		-----		-----	
171		-----		-----	
174		-----		-----	
235		-----		-----	
315	EN15721	99.94		1.82	
323	EN15721	99.931		1.32	
325	EN15721	99.932		1.37	
333	EN15721	99.912		0.25	
334		-----		-----	
337		-----		-----	
343	EN15721	99.877		-1.72	
360	EN15721	99.8896		-1.01	
468	EN15721	99.932		1.37	
492		-----		-----	
494	EN15721	99.899		-0.48	
495		-----		-----	
496	EN15721	99.8890		-1.05	
511		-----		-----	
541		-----		-----	
551	EN15721	99.84		-3.80	
554		-----		-----	
558		-----		-----	
621	EN15721	99.927		1.09	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657	INH-0169/0170	99.8937		-0.78	
663		-----		-----	
823		-----		-----	
859		-----		-----	
874		-----		-----	
902	INH-02	99.98		4.08	
913	INH-02	99.76	R(0.01)	-8.31	
922	INH-02	99.945		2.11	
1067	EN15721	99.926		1.04	
1124	EN15721	99.8317		-4.27	
1468	EN15721	99.8721		-2.00	
1523		-----		-----	
1530		-----		-----	
1563	EN15721	99.9125		0.28	
1656	EN15721	99.97		3.51	
1726	EN15721	99.8923		-0.86	
1727	EN15721	99.9043		-0.18	
1817		-----		-----	
1835	EN15721	99.9227		0.85	
1852	EN15721	99.8729		-1.95	
1878	EN15721	99.877		-1.72	
1919	EN15721	99.9404		1.85	
2797		-----		-----	
6070	EN15721	99.872	C	-2.00	first reported 85.8402
6072		-----		-----	
6201	EN15721	99.951		2.44	
6214		-----		-----	
6292		-----		-----	
6297		-----		-----	
6358	EN15721	99.896		-0.65	
6406	EN15721	99.8993		-0.47	
6424		-----		-----	
6426		-----		-----	
6444		-----		-----	
6546		-----		-----	
6557		-----		-----	

normality	OK
n	31
outliers	1
mean (n)	99.90758
st.dev. (n)	0.035286
R(calc.)	0.09880
st.dev.(EN15721:13)	0.017767
R(EN15721:13)	0.04975

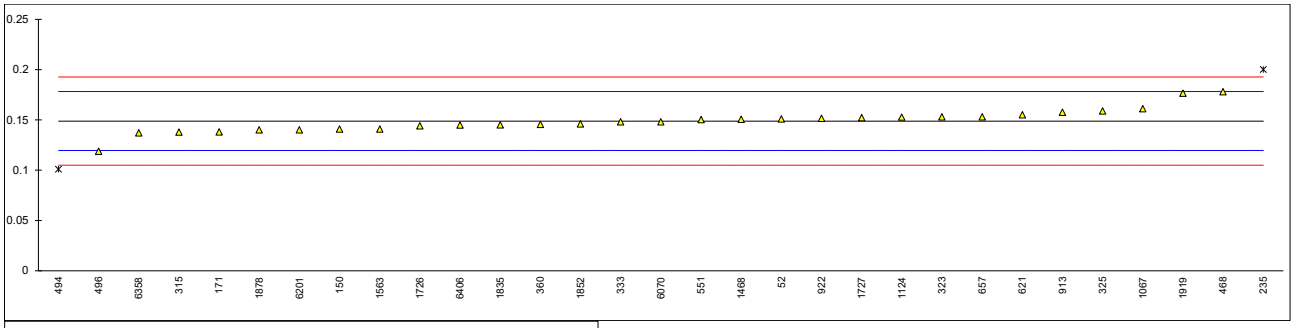

100
99.98
99.96
99.94
99.92
99.9
99.88
99.86
99.84
99.82
99.8
913
1124
551
52
6070
1468
1852
343
1878
496
360
1726
657
6358
494
6406
1727
333
1563
1835
1067
621
323
468
325
315
1919
150
922
6201
1656
902

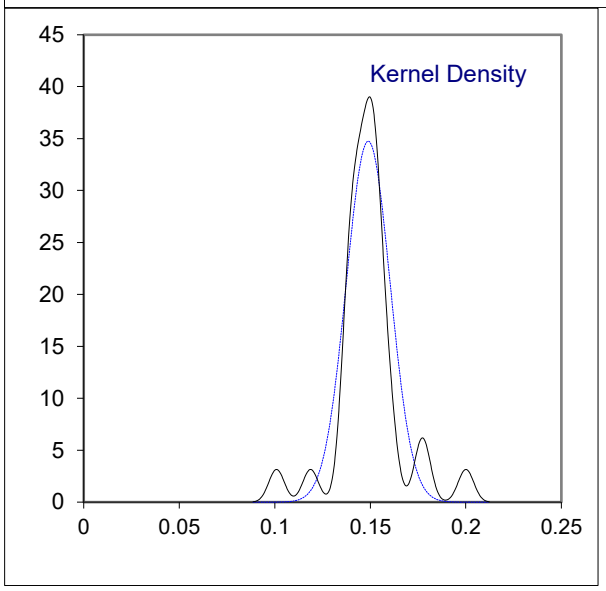

Kernel Density
12
10
8
6
4
2
0
99.6
99.7
99.8
99.9
100
100.1

Determination of Higher alcohols acc. to EN15721 on sample #23260; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	EN15721	0.151		0.15	
120		-----		-----	
150	EN15721	0.141		-0.54	
169		-----		-----	
171	EN15721	0.1381		-0.74	
174		-----		-----	
235	INH-0001	0.20	R(0.01)	3.50	
315	EN15721	0.138		-0.74	
323	EN15721	0.153		0.28	
325	EN15721	0.1590		0.69	
333	EN15721	0.148		-0.06	
334		-----		-----	
337		-----		-----	
343		-----		-----	
360	EN15721	0.1455		-0.23	
468	EN15721	0.178		1.99	
492		-----		-----	
494	EN15721	0.1009	R(0.01)	-3.28	
495		-----		-----	
496	EN15721	0.1187		-2.06	
511		-----		-----	
541		-----		-----	
551	EN15721	0.1504		0.11	
554		-----		-----	
558		-----		-----	
621	EN15721	0.155		0.42	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657	INH-0169/0170	0.1531		0.29	
663		-----		-----	
823		-----		-----	
859		-----		-----	
874		-----		-----	
902		-----		-----	
913	INH-02	0.1576		0.60	
922	INH-02	0.1516		0.19	
1067	EN15721	0.161		0.83	
1124	EN15721	0.1527		0.26	
1468	EN15721	0.1507		0.13	
1523		-----		-----	
1530		-----		-----	
1563	EN15721	0.141	C	-0.54	first reported 0.101
1656		-----		-----	
1726	EN15721	0.144106		-0.33	
1727	EN15721	0.1521		0.22	
1817		-----		-----	
1835	EN15721	0.1451		-0.26	
1852	EN15721	0.1459		-0.20	
1878	EN15721	0.140		-0.61	
1919	EN15721	0.1765		1.89	
2797		-----		-----	
6070	EN15721	0.148	C	-0.06	first reported 0.5230
6072		-----		-----	
6201	EN15721	0.140		-0.61	
6214		-----		-----	
6292		-----		-----	
6297		-----		-----	
6358	EN15721	0.137		-0.81	
6406	EN15721	0.1449		-0.27	
6424		-----		-----	
6426		-----		-----	
6444		-----		-----	
6546		-----		-----	
6557		-----		-----	

normality	not OK
n	29
outliers	2
mean (n)	0.14886
st.dev. (n)	0.011486
R(calc.)	0.03216
st.dev.(EN15721:13)	0.014608
R(EN15721:13)	0.04090

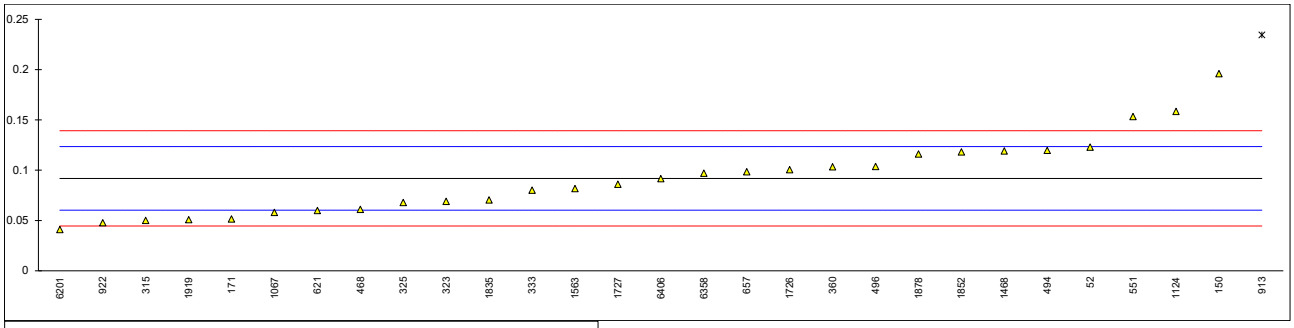

0.25
0.2
0.15
0.1
0.05
0
494
496
6358
315
171
1878
6201
150
1563
1726
6406
1835
360
1852
333
6070
551
1468
52
922
1727
1124
323
657
621
913
325
1067
1919
468
235

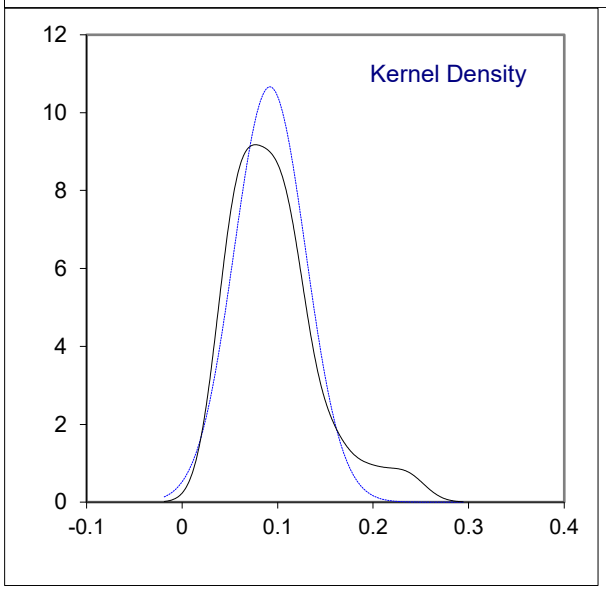

Kernel Density
45
40
35
30
25
20
15
10
5
0
0
0.05
0.1
0.15
0.2
0.25

Determination of Impurities acc. to EN15721 on sample #23260; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	EN15721	0.123		1.97	
120		-----		-----	
150	EN15721	0.196		6.59	
169		-----		-----	
171	EN15721	0.0515		-2.56	
174		-----		-----	
235		-----		-----	
315	EN15721	0.050		-2.65	
323	EN15721	0.069		-1.45	
325	EN15721	0.0678		-1.53	
333	EN15721	0.080		-0.75	
334		-----		-----	
337		-----		-----	
343		-----		-----	
360	EN15721	0.1034		0.73	
468	EN15721	0.061		-1.96	
492		-----		-----	
494	EN15721	0.1196		1.75	
495		-----		-----	
496	EN15721	0.1036		0.74	
511		-----		-----	
541		-----		-----	
551	EN15721	0.1534		3.89	
554		-----		-----	
558		-----		-----	
621	EN15721	0.06		-2.02	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657	INH-0169/0170	0.09841		0.41	
663		-----		-----	
823		-----		-----	
859		-----		-----	
874		-----		-----	
902		-----		-----	
913	INH-02	0.2345	R(0.05)	9.03	
922	INH-02	0.0478		-2.79	
1067	EN15721	0.058		-2.15	
1124	EN15721	0.1584		4.21	
1468	EN15721	0.1191		1.72	
1523		-----		-----	
1530		-----		-----	
1563	EN15721	0.0817		-0.65	
1656		-----		-----	
1726	EN15721	0.100495		0.54	
1727	EN15721	0.0859		-0.38	
1817		-----		-----	
1835	EN15721	0.0704		-1.36	
1852	EN15721	0.1181		1.66	
1878	EN15721	0.116		1.53	
1919	EN15721	0.0507		-2.61	
2797		-----		-----	
6070		-----	W	-----	test result withdrawn, reported 14.1572
6072		-----		-----	
6201	EN15721	0.041		-3.22	
6214		-----		-----	
6292		-----		-----	
6297		-----		-----	
6358	EN15721	0.097		0.32	
6406	EN15721	0.0916		-0.02	
6424		-----		-----	
6426		-----		-----	
6444		-----		-----	
6546		-----		-----	
6557		-----		-----	

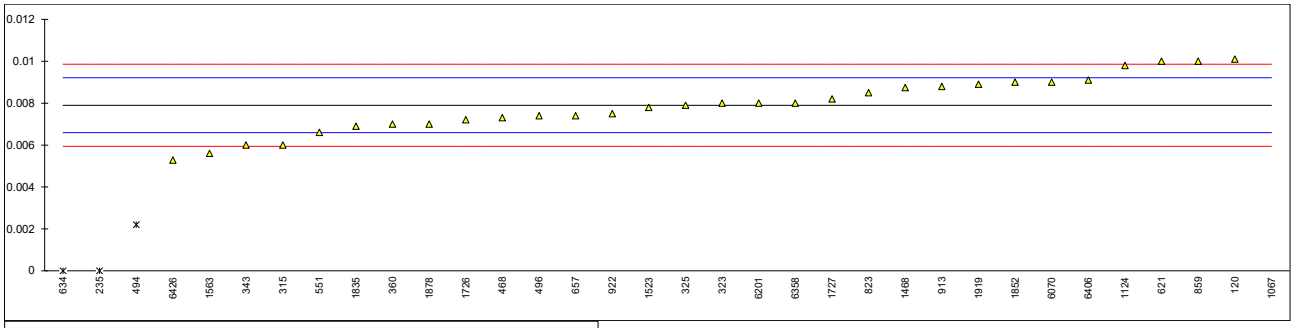
normality	OK
n	28
outliers	1
mean (n)	0.09189
st.dev. (n)	0.037410
R(calc.)	0.10475
st.dev.(Horwitz (n=9))	0.015794
R(Horwitz (n=9))	0.04422

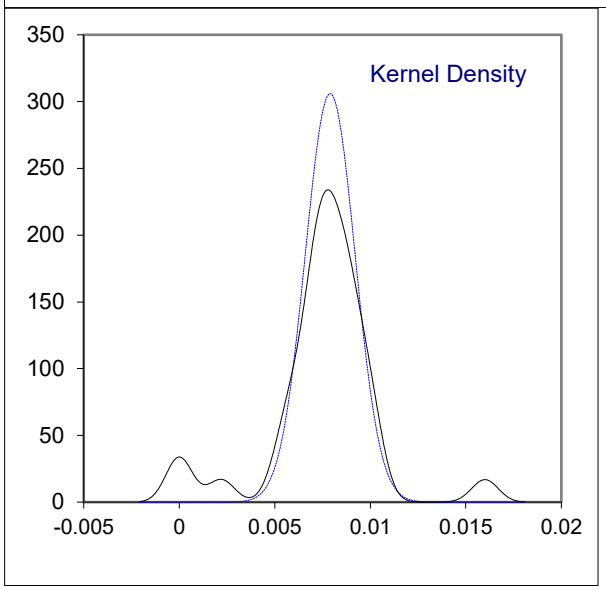

0.25
0.2
0.15
0.1
0.05
0
6201
922
315
1919
171
1067
621
468
325
323
1835
333
1563
1727
6406
6358
657
1726
360
496
1878
1852
1468
494
52
551
1124
150
913


Kernel Density
12
10
8
6
4
2
0
-0.1
0
0.1
0.2
0.3
0.4

Determination of Methanol on sample #23260; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	EN15721	<0.100		-----	
120	D5501	0.0101		3.36	
150	EN15721	<0.100		-----	
169	D5501	<0.10	C	-----	first reported 0.02
171		-----		-----	
174		-----		-----	
235	INH-0001	0.00	R(0.01)	-12.06	
315	EN15721	0.006		-2.90	
323	EN15721	0.008		0.15	
325	EN15721	0.0079		0.00	
333	EN15721	<0.100		-----	
334		-----		-----	
337		-----		-----	
343	EN15721	0.006		-2.90	
360	EN15721	0.0070		-1.38	
468	EN15721	0.0073		-0.92	
492		-----		-----	
494	EN15721	0.0022	R(0.01)	-8.71	
495		-----		-----	
496	EN15721	0.0074		-0.76	
511		-----		-----	
541		-----		-----	
551	EN15721	0.0066		-1.99	
554		-----		-----	
558		-----		-----	
621	EN15721	0.01		3.21	
631		-----		-----	
633		-----		-----	
634	D5501	0.00	R(0.01)	-12.06	
657	D5501	0.0074		-0.76	
663		-----		-----	
823	D5501	0.0085		0.91	
859	D5501	0.01		3.21	
874		-----		-----	
902		-----		-----	
913	INH-02	0.0088		1.37	
922	INH-02	0.0075		-0.61	
1067	EN15721	0.016	R(0.01)	12.37	
1124	EN15721	0.0098		2.90	
1468	EN15721	0.00874		1.28	
1523	D5501	0.0077967		-0.16	
1530		-----		-----	
1563	EN15721	0.0056		-3.51	
1656		-----		-----	
1726	EN15721	0.007211		-1.05	
1727	EN15721	0.0082		0.46	
1817		-----		-----	
1835	EN15721	0.0069		-1.53	
1852	EN15721	0.0090		1.68	
1878	EN15721	0.007		-1.38	
1919	EN15721	0.0089		1.53	
2797		-----		-----	
6070	EN15721	0.009	C	1.68	first reported 0.0027
6072		-----		-----	
6201	EN15721	0.008		0.15	
6214		-----		-----	
6292		-----		-----	
6297		-----		-----	
6358	EN15721	0.008		0.15	
6406	EN15721	0.0091		1.83	
6424		-----		-----	
6426	INEN2014	0.00528		-4.00	
6444		-----		-----	
6546		-----		-----	
6557		-----		-----	
	normality	OK			
	n	30			
	outliers	4			
	mean (n)	0.00790			
	st.dev. (n)	0.001304			
	R(calc.)	0.00365			
	st.dev.(Horwitz)	0.000655			
	R(Horwitz)	0.00183			
Compare	R(D5501:20)	0.01349			
	R(EN15721:13)	-0.00366			

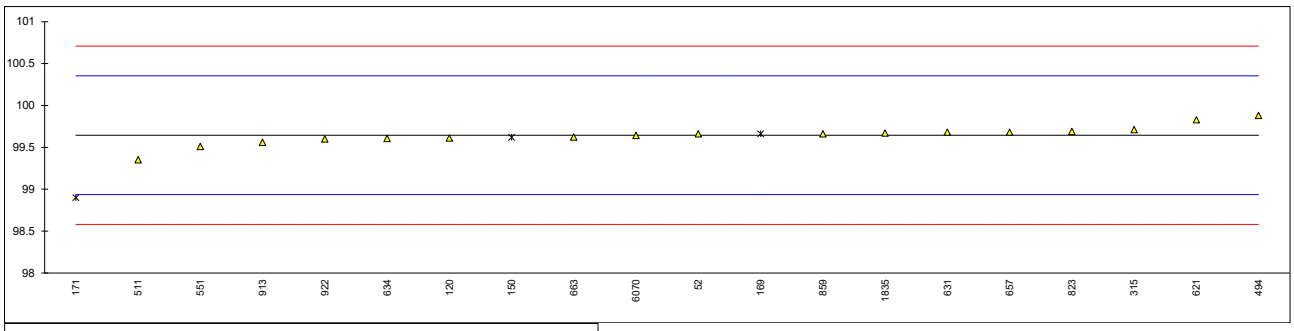

0.012
0.01
0.008
0.006
0.004
0.002
0
634
235
494
6426
1563
343
315
551
1835
360
1878
1726
468
496
657
922
1523
325
323
6201
6358
1727
823
1468
913
1919
1852
6070
6406
1124
621
859
120
1067

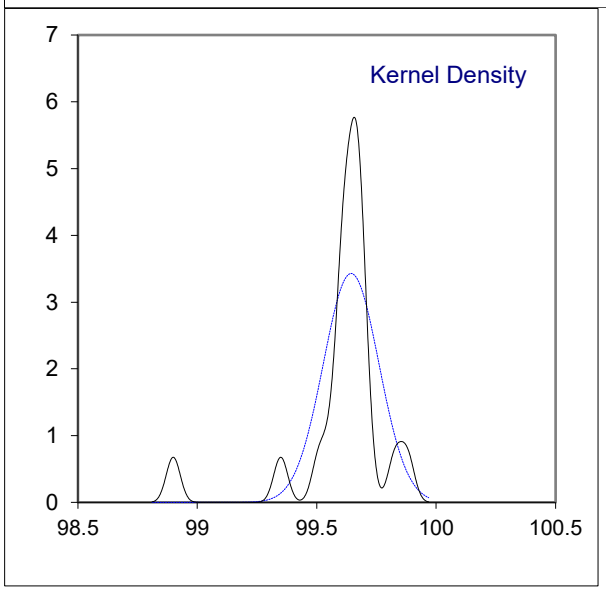

Kernel Density
350
300
250
200
150
100
50
0
-0.005
0
0.005
0.01
0.015
0.02

Determination of Ethanol acc. to ASTM D5501 on sample #23260; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D5501	99.66		0.04	
120	D5501	99.61		-0.10	
150	D5501	99.62	ex	-0.07	test result excluded as Ethanol %M/M > Ethanol %V/V
169	D5501	99.66	ex	0.04	test result excluded as Ethanol %M/M > Ethanol %V/V
171	D5501	98.90	G(0.01)	-2.10	
174		-----		-----	
235		-----		-----	
315	D5501	99.71		0.18	
323		-----		-----	
325		-----		-----	
333		-----		-----	
334		-----		-----	
337		-----		-----	
343		-----		-----	
360		-----		-----	
468		-----		-----	
492		-----		-----	
494	D5501	99.8804		0.66	
495		-----		-----	
496		-----		-----	
511	D5501	99.35		-0.83	
541		-----		-----	
551	D5501	99.51		-0.38	
554		-----		-----	
558		-----		-----	
621	D5501	99.828		0.52	
631	D5501	99.681		0.10	
633		-----		-----	
634	D5501	99.605		-0.11	
657	D5501	99.6814		0.10	
663	D5501	99.623		-0.06	
823	D5501	99.6896		0.13	
859	D5501	99.66		0.04	
874		-----		-----	
902		-----		-----	
913	D5501	99.56		-0.24	
922	D5501	99.60		-0.13	
1067		-----		-----	
1124		-----		-----	
1468		-----		-----	
1523		-----		-----	
1530		-----		-----	
1563		-----		-----	
1656		-----		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835	D5501	99.67		0.07	
1852		-----		-----	
1878		-----		-----	
1919		-----		-----	
2797		-----		-----	
6070	D5501	99.64	C	-0.01	first reported 91.40
6072		-----		-----	
6201		-----		-----	
6214		-----		-----	
6292		-----		-----	
6297		-----		-----	
6358		-----		-----	
6406		-----		-----	
6424		-----		-----	
6426		-----		-----	
6444		-----		-----	
6546		-----		-----	
6557		-----		-----	

normality	not OK
n	17
outliers	1+2ex
mean (n)	99.6446
st.dev. (n)	0.11636
R(calc.)	0.3258
st.dev.(D5501:20)	0.35472
R(D5501:20)	0.9932

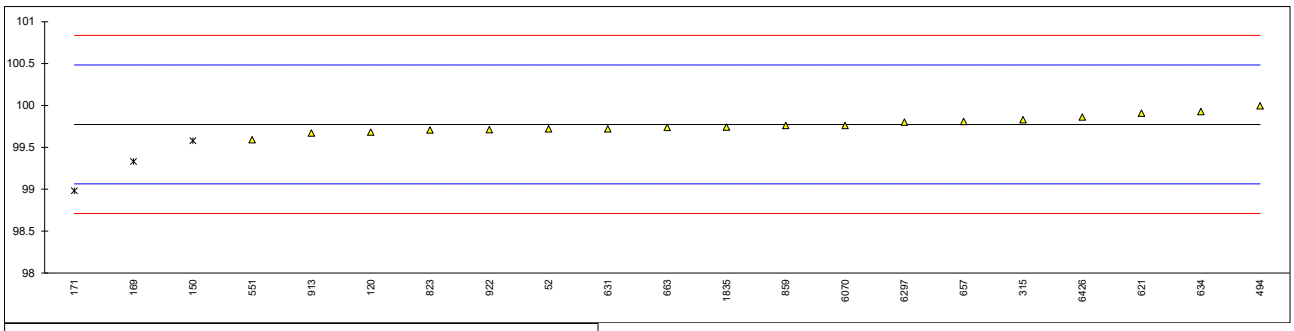

101
100.5
100
99.5
99
98.5
98
171
511
551
913
922
634
120
150
663
6070
52
169
859
1835
631
657
823
315
621
494

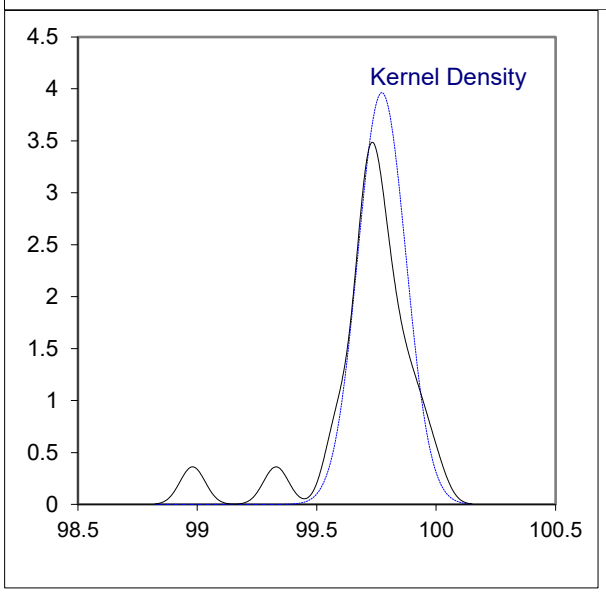

Kernel Density
7
6
5
4
3
2
1
0
98.5
99
99.5
100
100.5

Determination of Ethanol acc. to ASTM D5501 on sample #23260; results in %V/V

lab	method	value	mark	z(targ)	remarks
52	D5501	99.72		-0.15	
120	D5501	99.68		-0.26	
150	D5501	99.58	ex	-0.55	test result excluded as Ethanol %M/M > Ethanol %V/V
169	D5501	99.33	ex	-1.25	test result excluded as Ethanol %M/M > Ethanol %V/V
171	D5501	98.98	G(0.01)	-2.24	
174		-----		-----	
235		-----		-----	
315	D5501	99.83		0.16	
323		-----		-----	
325		-----		-----	
333		-----		-----	
334		-----		-----	
337		-----		-----	
343		-----		-----	
360		-----		-----	
468		-----		-----	
492		-----		-----	
494	D5501	99.9939		0.62	
495		-----		-----	
496		-----		-----	
511		-----		-----	
541		-----		-----	
551	D5501	99.59		-0.52	
554		-----		-----	
558		-----		-----	
621	D5501	99.908		0.38	
631	D5501	99.720		-0.15	
633		-----		-----	
634	D5501	99.925		0.43	
657	D5501	99.8078		0.10	
663	D5501	99.737		-0.10	
823	D5501	99.7069		-0.19	
859	D5501	99.76		-0.04	
874		-----		-----	
902		-----		-----	
913	D5501	99.67		-0.29	
922	D5501	99.71		-0.18	
1067		-----		-----	
1124		-----		-----	
1468		-----		-----	
1523		-----		-----	
1530		-----		-----	
1563		-----		-----	
1656		-----		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835	D5501	99.74		-0.09	
1852		-----		-----	
1878		-----		-----	
1919		-----		-----	
2797		-----		-----	
6070	D5501	99.76	C	-0.04	first reported 91.17
6072		-----		-----	
6201		-----		-----	
6214		-----		-----	
6292		-----		-----	
6297	D5501	99.8		0.08	
6358		-----		-----	
6406		-----		-----	
6424		-----		-----	
6426		99.86		0.24	
6444		-----		-----	
6546		-----		-----	
6557		-----		-----	

normality	OK
n	18
outliers	1+2ex
mean (n)	99.7732
st.dev. (n)	0.10068
R(calc.)	0.2819
st.dev.(D5501:20)	0.35445
R(D5501:20)	0.9925


101
100.5
100
99.5
99
98.5
98
171
169
150
551
913
120
823
922
52
631
663
1835
859
6070
6297
657
315
6426
621
634
494


Kernel Density
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
98.5
99
99.5
100
100.5

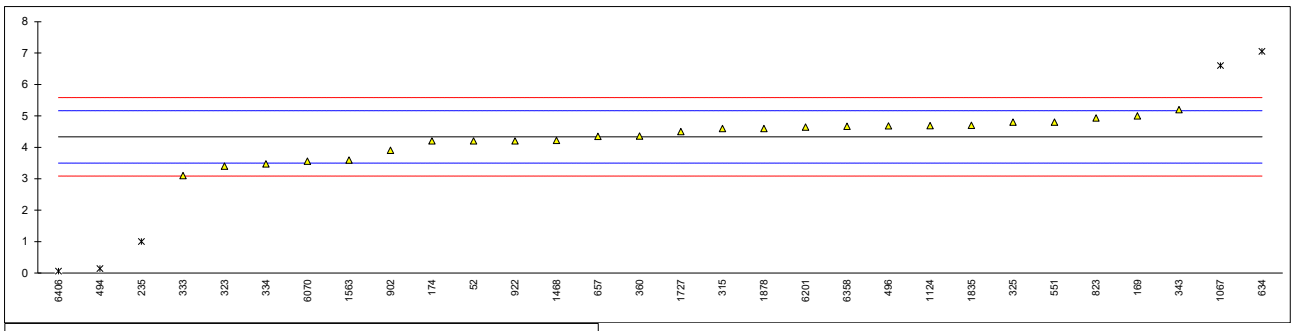
Determination of Gum (solvent washed) on sample #23260; results in mg/100mL

lab	method	value	mark	z(targ)	remarks
52	D381	<0.5		-----	
120	D381	0.6		-----	
150		-----		-----	
169	D381	<0.5		-----	
171	D381	9.5		-----	possibly a false positive test result?
174		-----		-----	
235	D381	0.40		-----	
315		-----		-----	
323		-----		-----	
325		-----		-----	
333		-----		-----	
334	D381	<0.5		-----	
337		-----		-----	
343		-----		-----	
360	ISO6246	0.5		-----	
468		-----		-----	
492		-----		-----	
494		-----		-----	
495		-----		-----	
496		-----		-----	
511		-----		-----	
541		-----		-----	
551	D381	<0.5		-----	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633	D381	0.5		-----	
634		-----		-----	
657	D381	<0.5		-----	
663	D381	0.5		-----	
823	D381	<0.5		-----	
859		-----		-----	
874		-----		-----	
902		-----		-----	
913		-----		-----	
922	D381	< 0.5		-----	
1067		-----		-----	
1124	ISO6246	< 0,5		-----	
1468	ISO6246	<0.5		-----	
1523		-----		-----	
1530		-----		-----	
1563		-----		-----	
1656		-----		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835		-----		-----	
1852		-----		-----	
1878		-----		-----	
1919		-----		-----	
2797		-----		-----	
6070		-----		-----	
6072		-----		-----	
6201	D381	0.15		-----	
6214		-----		-----	
6292		-----		-----	
6297		-----		-----	
6358		-----		-----	
6406		0.2		-----	
6424		-----		-----	
6426		-----		-----	
6444		-----		-----	
6546		-----		-----	
6557		-----		-----	
	n	15			
	mean (n)	<0.5			

Determination of Inorganic Chloride as Cl on sample #23261; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52	EN15492	4.2		-0.32	
120		-----		-----	
150		-----		-----	
169	D7319	5.0		1.60	
171		-----		-----	
174	D7319	4.2		-0.32	
235	INH-22	1	R(0.05)	-8.02	
315	EN15492	4.6		0.64	
323	EN15492	3.4		-2.25	
325	EN15492	4.8		1.12	
333	EN15492	3.1		-2.97	
334	EN15492	3.47		-2.08	
337		-----		-----	
343	EN15492	5.2		2.08	
360	EN15492	4.355		0.05	
468		-----		-----	
492		-----		-----	
494	EN15492	0.139	R(0.05)	-10.09	
495		-----		-----	
496	EN15492	4.68		0.83	
511		-----		-----	
541		-----		-----	
551	EN15492	4.8		1.12	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
634	D512B	7.0481	R(0.05)	6.53	
657	D7328	4.345		0.03	
663		-----		-----	
823	D7319	4.93		1.43	
859		-----		-----	
874		-----		-----	
902	EN15492	3.9		-1.04	
913		-----		-----	
922	D7328	4.2		-0.32	
1067	EN15492	6.6	R(0.05)	5.45	
1124	EN15492	4.69		0.86	
1468	EN15492	4.22		-0.27	
1523		-----		-----	
1530		-----		-----	
1563	EN15492	3.590		-1.79	
1656		-----		-----	
1726		-----		-----	
1727	EN15492	4.5		0.40	
1817		-----		-----	
1835	EN15492	4.7		0.88	
1852		-----		-----	
1878	EN15492	4.6		0.64	
1919		-----		-----	
2797		-----		-----	
6070	D7319	3.5608		-1.86	
6072		-----		-----	
6201	D7319	4.6414		0.74	
6214		-----		-----	
6292		-----		-----	
6297		-----		-----	
6358	EN15492	4.667		0.80	
6406	EN15492	0.055	C,R(0.05)	-10.29	first reported 1.700
6424		-----		-----	
6426		-----		-----	
6444		-----		-----	
6546		-----		-----	
6557		-----		-----	

	normality	OK
	n	25
	outliers	5
	mean (n)	4.3340
	st.dev. (n)	0.55101
	R(calc.)	1.5428
	st.dev.(D7319:22)	0.41591
	R(D7319:22)	1.1646
Compare	R(EN15492:12)	0.8250


8
7
6
5
4
3
2
1
0
6406
494
235
333
323
334
6070
1563
902
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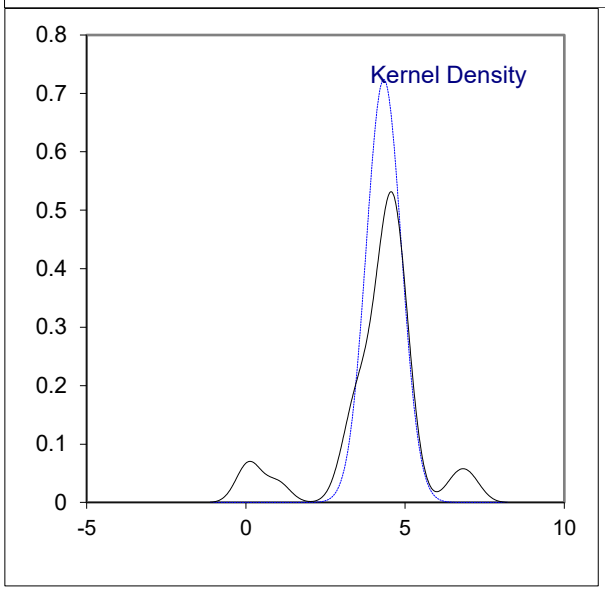
52
922
1468
657
360
1727
315
1878
6201
6358
496
1124
1835
325
551
823
169
343
1067
634


Kernel Density
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-5
0
5
10

Determination of Sulfate as SO_4 on sample #23261; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52	EN15492	<1.0		-----	
120		-----		-----	
150		-----		-----	
169	D7319	0.2		-----	
171		-----		-----	
174	D7319	<1		-----	
235		-----		-----	
315	EN15492	<1.0		-----	
323	EN15492	0.2		-----	
325	EN15492	0.1		-----	
333		-----		-----	
334	EN15492	<1.0		-----	
337		-----		-----	
343	EN15492	<1.0		-----	
360	EN15492	0.375		-----	
468		-----		-----	
492		-----		-----	
494	EN15492	0.012		-----	
495		-----		-----	
496	EN15492	0.39		-----	
511		-----		-----	
541		-----		-----	
551	EN15492	0.7		-----	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657	D7328	0.871		-----	
663		-----		-----	
823	D7319	0.65		-----	
859		-----		-----	
874		-----		-----	
902		-----		-----	
913		-----		-----	
922	D7328	< 0.55		-----	
1067	EN15492	0.3		-----	
1124	EN15492	0.42		-----	
1468	EN15492	<1		-----	
1523		-----		-----	
1530		-----		-----	
1563	EN15492	0.31		-----	
1656		-----		-----	
1726		-----		-----	
1727	EN15492	<1		-----	
1817		-----		-----	
1835	EN15492	<1.0		-----	
1852		-----		-----	
1878	EN15492	0.4		-----	
1919		-----		-----	
2797		-----		-----	
6070	D7319	0.2579		-----	
6072		-----		-----	
6201	D7319	0.3273		-----	
6214		-----		-----	
6292		-----		-----	
6297		-----		-----	
6358	EN15492	0.397		-----	
6406	EN15492	0.220		-----	
6424		-----		-----	
6426		-----		-----	
6444		-----		-----	
6546		-----		-----	
6557		-----		-----	
	n	26			
	mean (n)	<1			Application range D7319:22 1 – 20 mg/kg

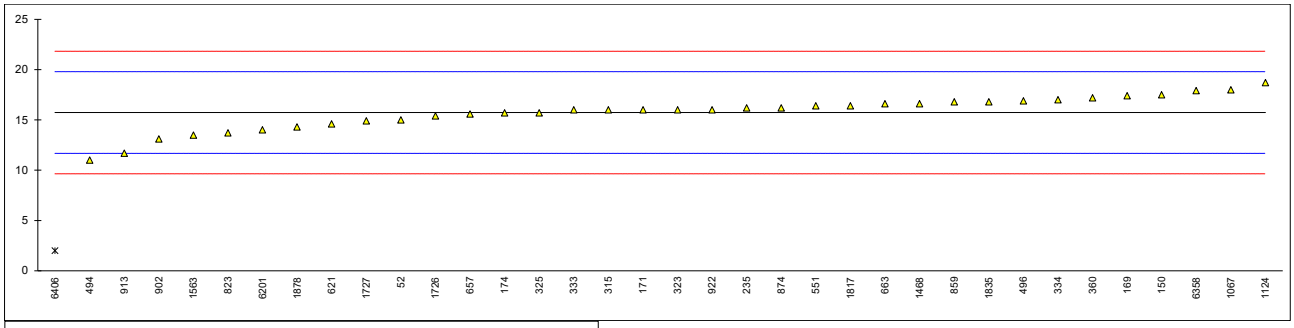
Determination of Sulfur on sample #23261; results in mg/kg

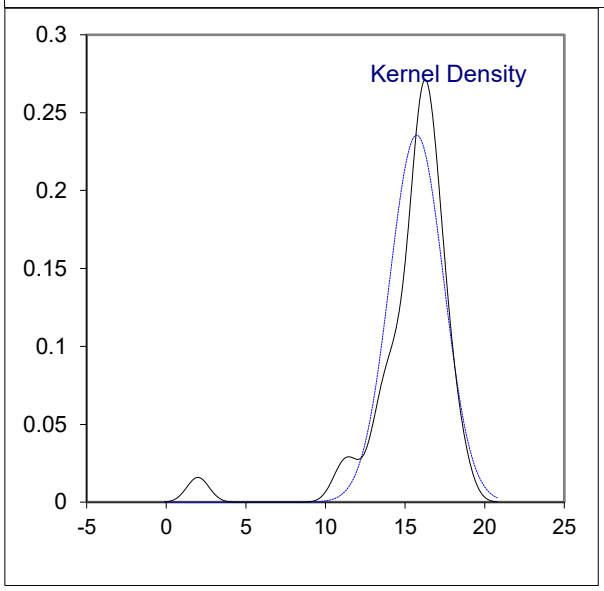
lab	method	value	mark	z(targ)	remarks
52	EN15486	0.6		-----	
120		-----		-----	
150	D5453	1.2		-----	
169	D5453	0.28		-----	
171	EN15485	<7.00		-----	
174		-----		-----	
235	D5453	0.298		-----	
315	EN15486	<5		-----	
323	EN15485	0.2		-----	
325	D5453	0.20		-----	
333	ISO20846	0.6		-----	
334	ISO20846	<3		-----	
337	ISO20846	<3		-----	
343	D5453	<1.0		-----	
360	EN15486	0.8		-----	
468	EN15486	<2		-----	
492		-----		-----	
494	ISO20846	0.4		-----	
495		-----		-----	
496	EN15486	0.3		-----	
511		-----		-----	
541		-----		-----	
551	D5453	0.4		-----	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657	D5453	0.3		-----	
663		-----		-----	
823	D5453	<1.0		-----	
859	D5453	<0.5		-----	
874	D5453	<1.0		-----	
902	D5453	<0,5		-----	
913	D5453	0.68		-----	
922	D5453	< 1.0		-----	
1067	D5453	0.1		-----	
1124	EN15486	< 1		-----	
1468	EN15486	<1		-----	
1523		-----		-----	
1530		-----		-----	
1563	EN15486	<5		-----	
1656	EN15485	<1		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835	EN15486	<5.0		-----	
1852	ISO20846	0.36		-----	
1878	EN15486	<1.0		-----	
1919		-----		-----	
2797		-----		-----	
6070	D5453	0.489		-----	
6072		-----		-----	
6201	EN15485	0.48		-----	
6214		-----		-----	
6292		-----		-----	
6297		-----		-----	
6358	EN15486	0.51		-----	
6406		-----		-----	
6424		-----		-----	
6426		-----		-----	
6444	D5453	0.3		-----	
6546		-----		-----	
6557		-----		-----	
	n	28			
	mean (n)	<1			Application range EN15485:07 7-20 mg/kg

Determination of Nonvolatile matter on sample #23262; results in mg/100mL

lab	method	value	mark	z(targ)	remarks
52	EN15691	15		-0.36	
120		-----		-----	
150	D1353	17.5	C	0.87	first reported 0.0
169	D1353	17.4		0.82	
171	D1353	16		0.13	
174	D1353	15.7		-0.02	
235	D1353	16.2		0.23	
315	EN15691	16		0.13	
323	EN15691	16		0.13	
325	EN15691	15.7		-0.02	
333	EN15691	16		0.13	
334	EN15691	17		0.62	
337		-----		-----	
343		-----		-----	
360	EN15691	17.2		0.72	
468		-----		-----	
492		-----		-----	
494	EN15691	11		-2.33	
495		-----		-----	
496	D1353	16.9		0.57	
511		-----		-----	
541		-----		-----	
551	D1353	16.4		0.33	
554		-----		-----	
558		-----		-----	
621	D1353	14.6		-0.56	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657	D1353	15.6		-0.07	
663	D1353	16.6		0.42	
823	D1353	13.7		-1.00	
859	D1353	16.8		0.52	
874	EN15691	16.2		0.23	
902	D1353	13.1		-1.30	
913	D1353	11.7		-1.99	
922	D1353	16.0		0.13	
1067	EN15691	18		1.11	
1124	EN15691	18.70		1.46	
1468	EN15691	16.6		0.42	
1523		-----		-----	
1530		-----		-----	
1563	EN15691	13.5		-1.10	
1656		-----		-----	
1726	EN15691	15.4		-0.17	
1727	EN15691	14.9		-0.41	
1817	In house	16.4		0.33	
1835	EN15691	16.8		0.52	
1852		-----		-----	
1878	EN15691	14.3		-0.71	
1919		-----		-----	
2797		-----		-----	
6070		-----		-----	
6072		-----		-----	
6201	EN15691	14.0		-0.85	
6214		-----		-----	
6292		-----		-----	
6297		-----		-----	
6358	EN15691	17.9		1.06	
6406	EN15691	2	C,R(0.01)	-6.76	first reported 10.2
6424		-----		-----	
6426		-----		-----	
6444		-----		-----	
6546		-----		-----	
6557		-----		-----	

	normality	suspect
	n	35
	outliers	1
	mean (n)	15.737
	st.dev. (n)	1.6938
	R(calc.)	4.743
	st.dev.(EN15691:23)	2.0322
	R(EN15691:23)	5.690
Compare	R(D1353:13R21)	6.790


25
20
15
10
5
0
6406 494 913 902 1563 823 6201 1878 621 1727 52 1726 657 174 325 333 315 171 323 922 235 874 551 1817 663 1468 859 1835 496 334 360 169 150 6358 1067 1124


Kernel Density
0.3
0.25
0.2
0.15
0.1
0.05
0
-5 0 5 10 15 20 25

APPENDIX 2

Number of participants per country

1 lab in ARGENTINA
1 lab in AUSTRIA
3 labs in BELGIUM
3 labs in BRAZIL
1 lab in BULGARIA
1 lab in CANADA
2 labs in CHINA, People's Republic
4 labs in COLOMBIA
1 lab in CROATIA
1 lab in ECUADOR
4 labs in FRANCE
6 labs in GERMANY
1 lab in HUNGARY
1 lab in INDIA
1 lab in INDONESIA
1 lab in KOREA, Republic of
1 lab in LATVIA
1 lab in MAURITIUS
5 labs in NETHERLANDS
2 labs in PAKISTAN
1 lab in PERU
3 labs in PHILIPPINES
1 lab in POLAND
1 lab in RUSSIAN FEDERATION
1 lab in SINGAPORE
4 labs in SPAIN
2 labs in SWEDEN
2 labs in THAILAND
1 lab in TURKIYE
2 labs in UNITED KINGDOM
6 labs in UNITED STATES OF AMERICA

APPENDIX 3

Abbreviations

C	= final test result after checking of first reported suspect test result
D(0.01)	= outlier in Dixon's outlier test
D(0.05)	= straggler in Dixon's outlier test
G(0.01)	= outlier in Grubbs' outlier test
G(0.05)	= straggler in Grubbs' outlier test
DG(0.01)	= outlier in Double Grubbs' outlier test
DG(0.05)	= straggler in Double Grubbs' outlier test
R(0.01)	= outlier in Rosner's outlier test
R(0.05)	= straggler in Rosner's outlier test
E	= calculation difference between reported test result and result calculated by iis
W	= test result withdrawn on request of participant
ex	= test result excluded from statistical evaluation
n.a.	= not applicable
n.e.	= not evaluated
n.d.	= not detected
fr.	= first reported
f+?	= possibly a false positive test result?
f-?	= possibly a false negative test result?
SDS	= Safety Data Sheet

Literature

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7 P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
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Address: Malledijk 18, P.O. Box 200, 3200 AE Spijkenisse, The Netherlands
Telephone number: +31 (0)88 214 45 41
Email address: nl.iis@sgs.com
Website: www.iisnl.com