Results of Proficiency Test
Ethanol (Bio / Fuel grade)
November 2019

Organised by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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1 INTRODUCTION

Since 1995 the Institute for Interlaboratory Studies (iis) organizes a proficiency scheme for Ethanol (Bio / Fuel grade) every year. During the annual proficiency testing (PT) program 2019/2020 it was decided to continue the PT for the analyses of Ethanol (Bio / Fuel grade) in accordance with the latest applicable version of the specifications EN15376 and ASTM D4806. In this interlaboratory study 57 laboratories from 29 different countries registered for participation for the PT on Ethanol (Bio / Fuel grade). See appendix 2 for the number of participants per country. In this report, the results of the 2019 proficiency test on Ethanol (Bio / Fuel grade) 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 analyses for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC17025 accredited laboratory. In this proficiency test the participants received two different samples of Ethanol (Bio / Fuel grade), one bottle of 1L labelled #19250 for regular analyzes and one bottle of 50mL labelled #19251 for Inorganic Chloride, Sulfate and total Sulfur determination only. 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

A batch of approximately 80 liters of Ethanol (Bio / Fuel grade) obtained from a European supplier was used for the preparation of the subsamples for the regular analyzes. After homogenization 77 amber glass bottles of 1L were filled and labelled #19250. The homogeneity of the subsamples #19250 was checked by determination of Density in accordance with ISO12185 and Water in accordance with E203 on 8 stratified randomly selected samples.

	Density at 15°C in kg/L	Water in %M/M
Sample #19250-1	0.79445	0.259
Sample #19250-2	0.79445	0.262
Sample #19250-3	0.79445	0.261
Sample #19250-4	0.79445	0.260
Sample #19250-5	0.79445	0.258
Sample #19250-6	0.79445	0.258
Sample #19250-7	0.79445	0.257
Sample #19250-8	0.79445	0.254

Table 1: homogeneity test results of subsamples #19250

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

	Density at 15°C in kg/L	Water in %M/M
r (observed)	0.00000	0.007
reference test method	ISO12185:96	E203:16
0.3 * R (ref. test method)	0.00015	0.023

Table 2: evaluation of the repeatabilities of subsamples #19250

The calculated repeatabilities were in agreement with 0.3 times the corresponding reproducibilities of the reference test methods. Therefore, homogeneity of the subsamples was assumed. Please note that the Density for homogeneity purposes was determined at 15°C. The Density determination as requested from the participants was at 20°C.

The remaining part of the batch of Ethanol (Bio / Fuel grade) was spiked with Sodium Chloride (NaCl) and Sodium Sulfate (Na_2SO_4), dissolved in water, especially for Inorganic Chloride, Sulfate and total Sulfur determination. After homogenization 80 PE bottles of 50mL were filled and labelled #19251. The homogeneity of the subsamples #19251 was checked by determination of Sulfate as SO_4 in accordance with EN15492 on 7 stratified randomly selected samples.

	Sulfate as SO4 in mg/kg
Sample #19251-1	4.61
Sample #19251-2	4.10
Sample #19251-3	4.09
Sample #19251-4	3.63
Sample #19251-5	4.02
Sample #19251-6	4.12
Sample #19251-7	3.44

Table 3: homogeneity test results of subsamples #19251

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.

	Sulfate as SO4 in mg/kg
r (observed)	1.06
reference test method	D7319:17
0.3 * R (ref. test method)	1.05

Table 4: evaluation of the repeatability of subsamples #19251

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

To each of the participating laboratories, one bottle of 1L labelled #19250 and one bottle of 50mL labelled #19251 was sent on November 6, 2019. 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 was checked. The material was found sufficiently stable for the period of the proficiency test.

2.6 ANALYSES

The participants were asked to determine on sample #19250: Acidity Total as Acetic Acid, Appearance, Copper as Cu, Density at 20°C, Electrical Conductivity at 25°C, Nonvolatile matter, Nitrogen, pHe (KCl & LiCl), Phosphorus as P, Water (Coulometric and Volumetric), Ethanol incl. higher alcohols (acc. EN15721), Higher alcohols (acc. EN15721), Impurities (acc. EN15721), Methanol and Ethanol by mass and by volume (acc. ASTM D5501).
The participants were asked to determine on sample #19251: Inorganic Chloride as Cl, Sulfate as SO_4 and Sulfur.

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 appropriate reference test methods 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 test 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.

According to ISO5725 the original test results per determination were submitted to Dixon's and/or Grubbs' and/or Rosner's outlier tests. 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 these 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. The Kernel Density Graph 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 was projected over the Kernel Density Graph for reference.

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, e.g. ASTM or ISO reproducibilities, 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 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, no major problems were encountered with the dispatch of the samples. Three participants reported the test results after the final reporting date and six participants did not report any test results at all. Not all laboratories were able to report all analyses requested.
In total 51 laboratories reported 457 numerical test results. Observed were 16 outlying test results, which is 3.5% of the numerical test results. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

Not all original 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. 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 reproducibility estimated from the Horwitz equation.

In the iis PT reports, ASTM methods are referred to with a number (e.g. D5501) and an added designation for the year that the method was adopted or revised (e.g. D5501:12). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D5501:12 (2016)). In the results tables of appendix 1 only the method number and year of adoption or revision (e.g. D5501:12) will be used.

Sample #19250

Acidity, Total: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of EN15491:07 and ASTM D1613:17, but not in agreement with the requirements of ASTM D7795-B:15.

Appearance: This determination was not problematic. All reporting participants agreed about the appearance as Pass (Clear and Bright).

Copper as Cu: The majority of the participants reported a test result near or below the application range of the method EN15488:07. Therefore no z-scores were calculated.

Density at 20°C: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO12185:96.

Electrical Conductivity at 25°C: This determination was problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of EN15938:10.

Nonvolatile matter: All participants reported a test result near or below the application range of the method EN15691:09. Therefore no z-scores were calculated.

Nitrogen: This determination was problematic at the low level of 0.5 mg/kg. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of ASTM D4629:17. The low number of reported test results may (partly) explain the large variation.

pHe: It is known that the pHe determined with a LiCl electrode will be lower than the pHe determined with a KCl electrode. Two test methods are available for the determination of the pHe of Ethanol: ASTM D6423, that describes the use of a KCl electrode and EN15490, that describes the use of a LiCl electrode. Both test methods are used in this PT and therefore the reported pHe test results for were split up into pHe (KCl) and pHe (LiCl) and evaluated separately.

pHe (KCl): This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of D6423:19.

pHe (LiCl): This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN15490:07.

Phosphorus as P: All participants reported a test result near or below the application range of the method EN15487:07. Therefore no z-scores were calculated.

Water, Coulometric: This determination may be problematic depending on the test method used. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of EN15489:07 but is in agreement with the requirements of ASTM E1064:16 and ASTM D6304:16e1.

Water, Volumetric: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM E203:16 and EN15692:09.

GC general: 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 (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.
This determination was not problematic. One statistical outlier was observed. The calculated reproducibility is 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%, isopropanol%, 2-methyl-1-butanol% and 3-methyl-1-butanol%.
This determination was not problematic. No statistical outliers were observed. The calculated reproducibility 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%.
This determination was not problematic. No statistical outlier was observed. The calculated reproducibility is in agreement with the estimated reproducibility using the Horwitz equation based on nine components.

Methanol: This determination may be problematic depending on the test method used. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the estimated reproducibility using the Horwitz equation, but in agreement with the requirements of ASTM D5501:12 (2016). A negative value for the reproducibility is found at this concentration level for test method EN15721:13.

Ethanol (D5501): This determination was not problematic for Ethanol by mass and Ethanol by volume. No statistical outliers were observed but in total three test results were excluded. For both Ethanol by mass and Ethanol by volume the calculated reproducibility after rejection of the suspect data is in agreement with the requirements of ASTM D5501:12 (2016).

Sample #19251

Inorganic Chloride: This determination was problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the estimated reproducibility using the Horwitz equation nor with EN15492:12 or ASTM D7319:17. Because of the strict reproducibility of EN15492:12 and ASTM D7319:17 it was decided to evaluate the test results with the estimated reproducibility using the Horwitz equation.

Sulfate as SO_4: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of ASTM D7319:17 nor with EN15492:12 or ASTM D7328:17.

Sulfur: This determination is not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN15485:07, and also in agreement with the requirements of EN15486:07 and ASTM D5453:19a.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the relevant reference test method or as declared by the estimated target reproducibility using the Horwitz equation and the reproducibility as found for the group of participating laboratories. The number of significant test results, the average results, the calculated reproducibility (2.8 * standard deviation) and the target reproducibility derived from literature reference test methods (in casu ASTM, EN standards) or based on previous proficiency tests or the estimated target reproducibility are presented in the next tables.

Determination	unit	n	average	2.8 * sd	R(lit)
Acidity, Total as Acetic Acid	mg/kg	39	13.9	11.8	13.7
Appearance		41	Pass	n.a.	n.a.
Copper as Cu	mg/kg	21	<0.07	n.e.	n.e.
Density at 20°C	kg/L	47	0.7902	0.0002	0.0005
Electrical Conductivity at 25°C	µS/cm	25	0.36	0.18	0.11
Nonvolatile matter	mg/100mL	13	<10	n.e.	n.e.
Nitrogen	mg/kg	8	0.53	1.11	0.58
pHe (KCl)		21	6.98	1.26	1.09
pHe (LiCl)		7	6.40	0.30	0.62
Phosphorus as P	mg/L	20	<0.15	n.e.	n.e.
Water, Coulometric	%M/M	42	0.261	0.039	0.024

Determination	unit	n	average	2.8 * sd	R(lit)
Water, Volumetric	%M/M	26	0.263	0.062	0.078
Ethanol incl. higher alcohols (EN15721)	%M/M	24	99.966	0.011	0.032
Higher alcohols (EN15721)	%M/M	24	0.135	0.025	0.037
Impurities (EN15721)	%M/M	21	0.031	0.009	0.017
Methanol	%M/M	27	0.004	0.002	0.001
Ethanol (D5501)	%M/M	17	99.625	0.298	0.993
Ethanol (D5501)	%V/V	17	99.744	0.339	0.993

Table 5: reproducibilities of tests on sample #19250

Parameter	unit	n	average	2.8 * sd	R (lit)
Inorganic Chloride as Cl	mg/kg	20	3.7	1.6	1.4
Sulfate as SO_4	mg/kg	21	2.8	4.2	2.7
Sulfur	mg/kg	25	1.9	0.9	3.4

Table 6: reproducibilities of tests on sample #19251

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

4.3 COMPARISON OF THE PROFICIENCY TEST OF NOVEMBER 2019 WITH PREVIOUS PTS

	November 2019	December 2018	December 2017	December 2016	December 2015
Number of reporting laboratories	51	53	59	57	68
Number of test results	457	473	537	476	899
Number of statistical outliers	16	14	22	31	39
Percentage outliers	3.5%	3.0%	4.1%	6.5%	4.3%

Table 7: 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 against the requirements of the respective reference test methods. The conclusions are given the following table.

Determination	November 2019	December 2018	December 2017	December 2016	December 2015
Acidity, Total as Acetic Acid	+	+	-	+	+/-
Density at 20°C	++	++	++	++	++
Electrical Conductivity at 25°C	-	--	--	--	-
Nonvolatile matter	n.e.	(--)	(--)	(--)	(--)
Nitrogen	-	-	-	--	--
pHe	+/-	-	-	+/-	n.e.

Determination	November 2019	December 2018	December 2017	December 2016	December 2015
Water, Coulometric	-	+/-	+/-	+	+/-
Water, Volumetric	+	+	++	++	++
Ethanol incl. higher alcohols (EN15721)	++	--	-	-	--
Higher alcohols (EN15721)	+	+/-	+/-	-	-
Impurities (EN15721)	++	-	-	--	--
Methanol	--	--	-	-	--
Ethanol (D5501)	++	+	+	++	++
Inorganic Chloride as Cl	-	-	+	(++)	-
Sulfate as SO_4	-	-	--	--	(--)
Sulfur	++	+	+	+	++

Table 8: comparison determinations against the reference test methods
Results between brackets should be used with care, because the average was near or below the application range.

The following performance categories were used:

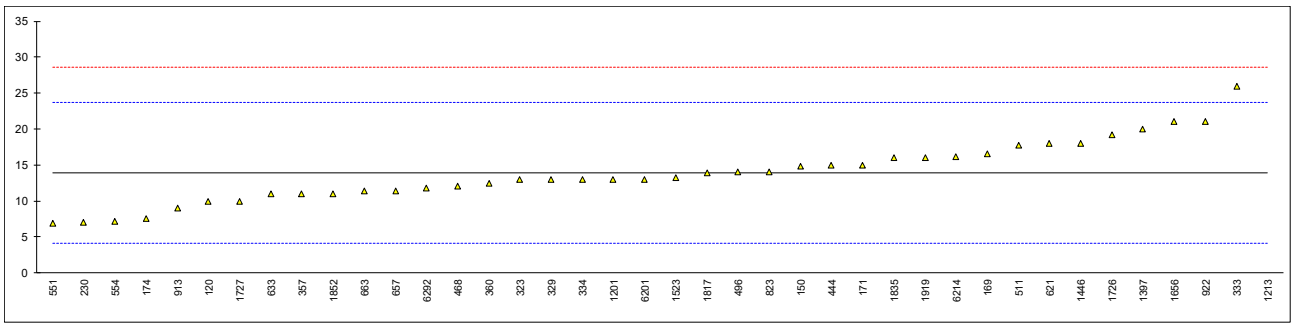
++: group performed much better than the reference test method
+ : group performed better than the reference test method
+/-: group performance equals the reference test method
- : group performed worse than the reference test method
-- : group performed much worse than the reference test method
n.e: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

APPENDIX 1

Determination of Acidity, Total as Acetic Acid on sample #19250; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52	EN15491	<30		-----	
120	D1613	9.97		-0.79	
150	D7795	14.8		0.19	
169	D7795	16.61		0.56	
171	D1613	15		0.23	
174	D1613	7.6		-1.28	
175		-----		-----	
194		-----		-----	
230	D1613	6.988		-1.40	
311	D1613	<30		-----	
323	EN15491	13		-0.18	
329	EN15491	13		-0.18	
333	EN15491	26		2.48	
334	EN15491	13		-0.18	
337	EN15491	<30		-----	
343	EN15491	<30		-----	
357	EN15491	11		-0.58	
360	EN15491	12.4		-0.30	
396		-----		-----	
444	EN15491	15	C	0.23	first reported 0.0034 %M/M
468	EN15491	12		-0.38	
496	EN15491	14		0.03	
511	D1613	17.8		0.81	
541		-----		-----	
551	D1613	6.875		-1.43	
554	D1613	7.2		-1.36	
558		-----		-----	
621	D1613	18		0.85	
631		-----		-----	
633	D1613	11		-0.58	
657	D1613	11.4139		-0.50	
663	D1613	11.4		-0.50	
823	D1613	14		0.03	
913	D1613	9		-0.99	
922	D1613	21.1		1.48	
1201	EN15491	13		-0.18	
1213	D1613	52.5	R(0.01)	7.90	
1359		-----		-----	
1397	EN15491	20		1.26	
1446	EN15491	18		0.85	
1523	ISO1388/2	13.3		-0.11	
1656	EN15491	21	C	1.46	first reported 0.004 %M/M
1667		-----		-----	
1726	EN15491	19.2		1.09	
1727	EN15491	10		-0.79	
1817	ISO1388/2	13.94		0.02	
1835	EN15491	16		0.44	
1852	EN15491	11		-0.58	
1919	EN15491	16		0.44	
6201	EN15491	13		-0.18	
6214	EN15491	16.17		0.47	
6224		-----		-----	
6262		-----		-----	
6292	NBR9866	11.73		-0.44	
6297		-----		-----	
6303		-----		-----	
6305		-----		-----	

normality	OK		
n	39		
outliers	1		
mean (n)	13.859		
st.dev. (n)	4.2187		
R(calc.)	11.812		
st.dev.(EN15491:07)	4.8929		
R(EN15491:07)	13.70		application range: 30 - 150 mg/kg
compare			
R(D1613:17)	14		application range: <500 mg/kg
R(D7795-B:15)	10.281		application range: <200 mg/kg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30
25
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15
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5
0
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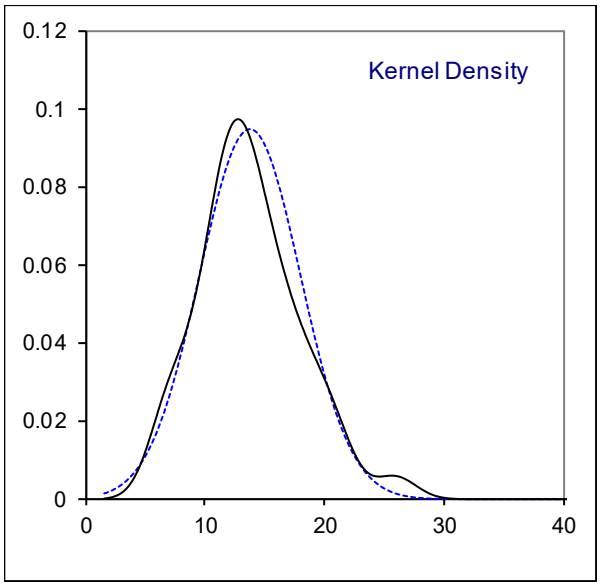

Kernel Density
0.12
0.1
0.08
0.06
0.04
0.02
0
0
10
20
30
40

Determination of Appearance on sample #19250;

lab	method	value	mark	z(targ)	remarks
52	D4176	Pass		-----	
120		-----		-----	
150	E2680	Pass		-----	
169		-----		-----	
171	Visual	Pass		-----	
174	Visual	Clear & Free		-----	
175	D4176	Pass		-----	
194	Visual	Clear		-----	
230	Visual	Clear & Bright		-----	
311	EN15769	clear & colourless		-----	
323	D4176	clear & bright liquid		-----	
329	Visual	clear		-----	
333		-----		-----	
334	Visual	clear and bright		-----	
337	Visual	Incolore		-----	
343	Visual	PASS		-----	
357	E2680	Pass		-----	
360	EN15769	Clear and Colourless		-----	
396	Visual	Clear and Bright		-----	
444	EN15769	Pass		-----	
468	EN15769	C&C		-----	
496	EN15769	clear & colourless		-----	
511	EN15769	Clear and colourless		-----	
541		-----		-----	
551	E2680	PASS		-----	
554	Visual	Pass		-----	
558		-----		-----	
621	Visual	Clear & colourless		-----	
631		-----		-----	
633	Visual	Clear & Bright		-----	
657	E2680	Pass		-----	
663	Visual	Clear and Bright		-----	
823	E2680	Pass		-----	
913	E2680	Pass		-----	
922	Visual	Clear and bright		-----	
1201	Visual	Bright and Clear		-----	
1213		-----		-----	
1359	Visual	Clear and bright		-----	
1397	EN15769	colourless, bright		-----	
1446		-----		-----	
1523		-----		-----	
1656	EN15769	pass		-----	
1667		-----		-----	
1726	EN15769	Clear and colourless		-----	
1727	Visual	Clear&Colorless		-----	
1817	Visual	pass		-----	
1835	EN15769	C&C		-----	
1852	Visual	clear & bright		-----	
1919		-----		-----	
6201	EN15769	Clear and Colourless		-----	
6214	EN15769	clear and colourless		-----	
6224		-----		-----	
6262		-----		-----	
6292	Visual	Clear		-----	
6297		-----		-----	
6303		-----		-----	
6305		-----		-----	
	n	41			
	mean	Pass (Clear & Bright)			

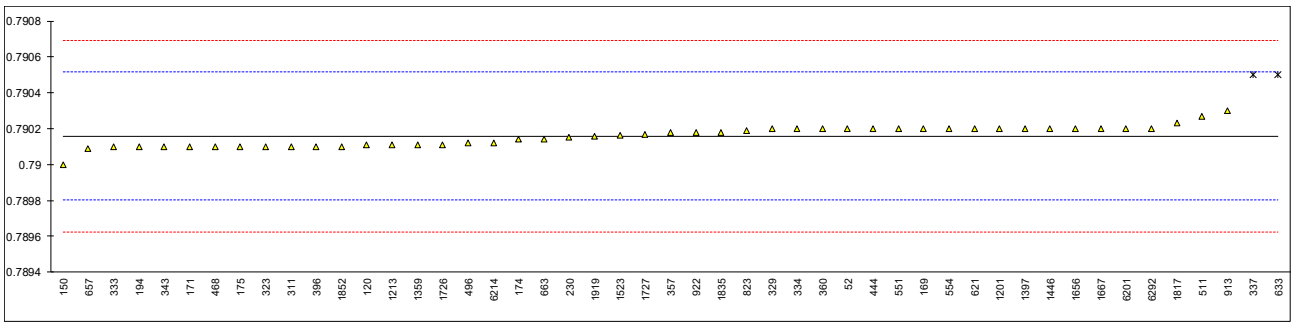
Determination of Copper as Cu on sample #19250; results in mg/kg

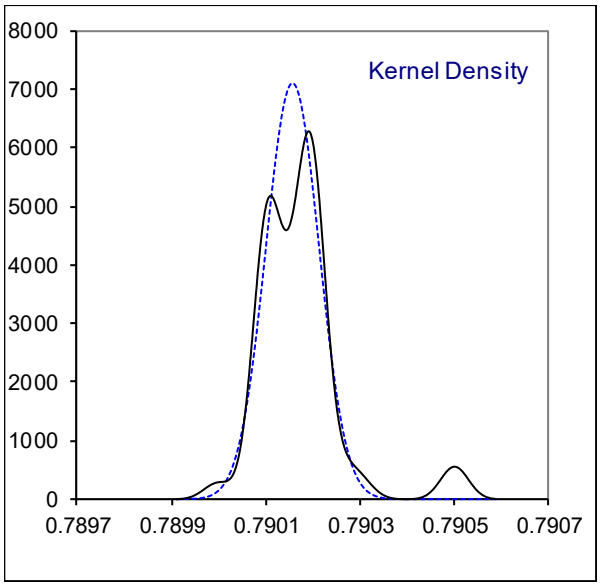
lab	method	value	mark	z(targ)	remarks
52	EN15837	<0.050		-----	
120		-----		-----	
150		-----		-----	
169		-----		-----	
171		-----		-----	
174		-----		-----	
175	D1688	<0.05		-----	
194		-----		-----	
230	EN15488	0		-----	
311	EN15837	<0.050		-----	
323	EN15488	<0.07		-----	
329	EN15488	<0,07		-----	
333	EN15488	<0.07		-----	
334		-----		-----	
337		-----		-----	
343	EN15837	<0.05		-----	
357		-----		-----	
360	EN15837	< 0.050		-----	
396		-----		-----	
444	EN15837	<0.05		-----	
468	EN15488	<0,07		-----	
496	EN15837	0.000		-----	
511	D1688	0.006		-----	
541		-----		-----	
551	INH-2047	<0.04		-----	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
657		-----		-----	
663	INH-12414	0.002		-----	
823	UOP389	<0.01		-----	
913		-----		-----	
922	D1688	<0.05		-----	
1201	EN15488	<0.07		-----	
1213		<0.1		-----	
1359	EN15488	<1		-----	
1397		-----		-----	
1446		-----		-----	
1523		-----		-----	
1656	D1688-A	<0.1		-----	
1667		-----		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835	EN15837	0.03		-----	
1852		-----		-----	
1919		-----		-----	
6201	EN15488	0.003		-----	
6214	EN15488	0.00245		-----	
6224		-----		-----	
6262		-----		-----	
6292		-----		-----	
6297		-----		-----	
6303		-----		-----	
6305		-----		-----	
	n	21			
	mean (n)	<0.07			
	application range of test method EN15488:07: 0.07 – 0.20 mg/kg				

Determination of Density at 20°C on sample #19250; results in kg/L

lab	method	value	mark	z(targ)	remarks
52	ISO12185	0.7902		0.24	
120	D4052	0.79011	C	-0.27	first reported 790.11 kg/L
150	D4052	0.7900		-0.88	
169	D4052	0.7902		0.24	
171	D4052	0.7901		-0.32	
174	D4052	0.79014		-0.10	
175	D4052	0.7901		-0.32	
194	D4052	0.7901	C	-0.32	first reported 0.7944
230	D4052	0.79015		-0.04	
311	D4052	0.7901		-0.32	
323	D4052	0.7901		-0.32	
329	D4052	0.7902		0.24	
333	D4052	0.7901		-0.32	
334	ISO12185	0.7902		0.24	
337	ISO12185	0.7905	R(0.01)	1.92	
343	ISO12185	0.7901		-0.32	
357	D4052	0.79018		0.12	
360	D4052	0.7902		0.24	
396	ISO12185	0.7901		-0.32	
444	D4052	0.7902		0.24	
468	ISO12185	0.7901		-0.32	
496	ISO12185	0.79012	C	-0.21	first reported 790.12 kg/L
511	D4052	0.79027	C	0.63	first reported 0.79172
541		-----		-----	
551	D4052	0.7902		0.24	
554	D4052	0.7902		0.24	
558		-----		-----	
621	D4052	0.7902		0.24	
631		-----		-----	
633	D4052	0.79050	R(0.01)	1.92	
657	D4052	0.79009		-0.38	
663	D4052	0.79014		-0.10	
823	D4052	0.79019		0.18	
913	D4052	0.7903		0.80	
922	D4052	0.79018		0.12	
1201	D4052	0.7902		0.24	
1213	D4052	0.79011		-0.27	
1359	ISO12185	0.79011		-0.27	
1397	ISO12185	0.7902		0.24	
1446	ISO12185	0.79020		0.24	
1523	D4052	0.7901623		0.03	
1656	D4052	0.7902		0.24	
1667	ISO12185	0.7902		0.24	
1726	D4052	0.79011		-0.27	
1727	D4052	0.79017		0.07	
1817	Table OIML	0.79023		0.40	
1835	ISO12185	0.79018		0.12	
1852	ISO12185	0.7901	C	-0.32	first reported 790.1 kg/L
1919	ISO12185	0.79016		0.01	
6201	ISO12185	0.79020		0.24	
6214	ISO12185	0.79012		-0.21	
6224		-----		-----	
6262		-----		-----	
6292	D4052	0.7902		0.24	
6297		-----		-----	
6303		-----		-----	
6305		-----		-----	

normality	OK
n	47
outliers	2
mean (n)	0.79016
st.dev. (n)	0.000056
R(calc.)	0.00016
st.dev.(ISO12185:96)	0.000179
R(ISO12185:96)	0.0005

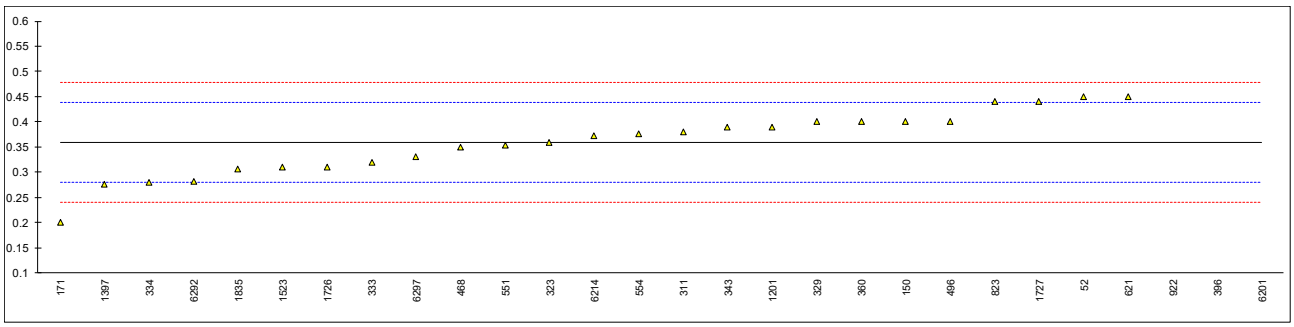

0.7908
0.7906
0.7904
0.7902
0.79
0.7898
0.7896
0.7894
150 657 333 194 343 171 468 175 323 311 396 1852 120 1213 1359 1726 496 6214 174 663 230 1919 1523 1727 357 922 1835 823 329 334 360 52 444 551 169 554 621 1201 1397 1446 1656 1667 6201 6292 1817 511 913 337 633

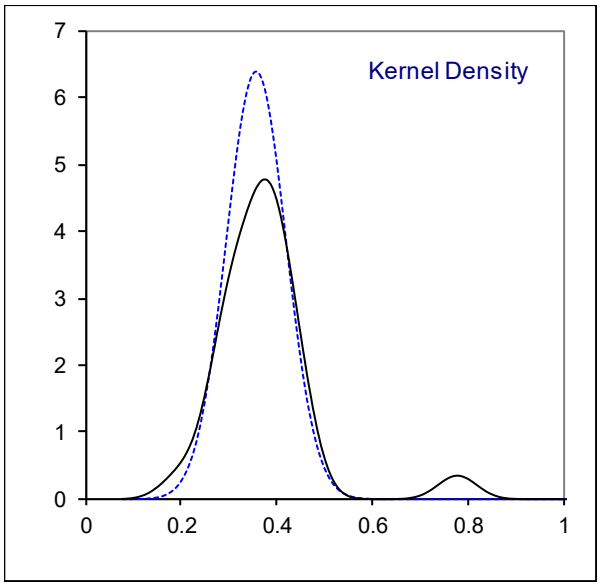

Kernel Density
8000
7000
6000
5000
4000
3000
2000
1000
0
0.7897 0.7899 0.7901 0.7903 0.7905 0.7907

Determination of Electrical Conductivity at 25°C on sample #19250; results in µS/cm

lab	method	value	mark	z(targ)	remarks
52	EN15938	0.45		2.30	
120		-----		-----	
150	EN15938	0.4	C	1.04	first reported 40
169		-----		-----	
171	EN15938	0.20	C	-3.99	first reported 20
174	D1125-A	<10		-----	
175		-----		-----	
194		-----		-----	
230		-----		-----	
311	EN15938	0.38		0.54	
323	EN15938	0.36		0.03	
329	EN15938	0.40		1.04	
333	EN15938	0.32		-0.97	
334	EN15938	0.28		-1.98	
337		-----		-----	
343	EN15938	0.39		0.79	
357		-----		-----	
360	EN15938	0.40		1.04	
396	EN15938	1.65	R(0.01)	32.51	
444		-----		-----	
468	EN15938	0.35		-0.22	
496	EN15938	0.4		1.04	
511		-----		-----	
541		-----		-----	
551	NBR10547	0.353		-0.14	
554	NBR10547	0.376		0.44	
558		-----		-----	
621	EN15938	0.45		2.30	
631		-----		-----	
633		-----		-----	
657		-----		-----	
663		-----		-----	
823	D1125	0.44		2.05	
913		-----		-----	
922	D5391	0.78	R(0.01)	10.61	
1201	EN15938	0.39		0.79	
1213		-----		-----	
1359		-----		-----	
1397		0.276		-2.08	
1446		-----		-----	
1523	D2624	0.31		-1.23	
1656	EN15938	<1		-----	
1667		-----		-----	
1726	EN15938	0.31		-1.23	
1727	EN15938	0.44		2.05	
1817		-----		-----	
1835	EN15938	0.307		-1.30	
1852		-----		-----	
1919		-----		-----	
6201	EN15938	2.10	R(0.01)	43.84	
6214	EN15938	0.373		0.36	
6224		-----		-----	
6262		-----		-----	
6292	NBR10547	0.282		-1.93	
6297	NBR10547	0.33		-0.72	
6303		-----		-----	
6305		-----		-----	

normality	OK
n	25
outliers	3
mean (n)	0.359
st.dev. (n)	0.0624
R(calc.)	0.175
st.dev.(EN15938:10)	0.0397
R(EN15938:10)	0.111


0.6
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
171
1397
334
6292
1835
1523
1726
333
6297
468
551
323
6214
554
311
343
1201
329
360
150
496
823
1727
52
621
922
396
6201


Kernel Density
7
6
5
4
3
2
1
0
0
0.2
0.4
0.6
0.8
1

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Determination of Nonvolatile matter on sample #19250; results in mg/100mL

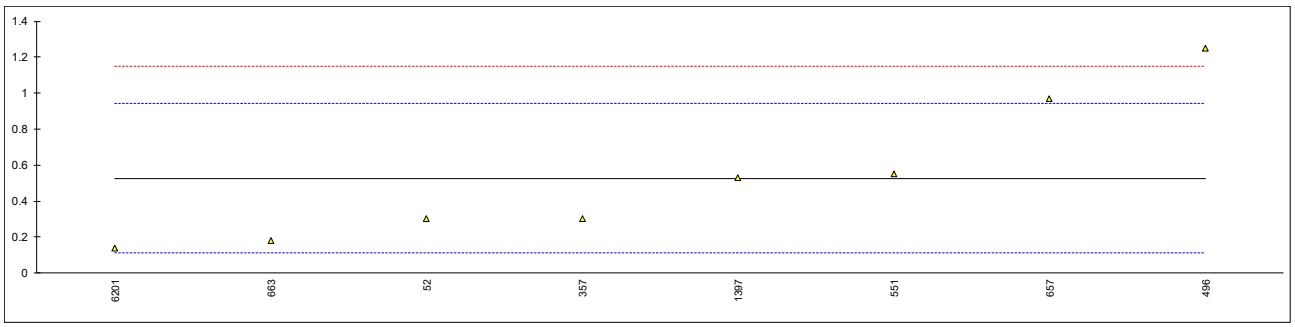
lab	method	value	mark	z(targ)	remarks
52	EN15691	<10		-----	
120		-----		-----	
150	D1353	1.2		-----	
169	D1353	0.00		-----	
171	D1353	<1		-----	
174	D1353	0.2		-----	
175		-----		-----	
194		-----		-----	
230	D1353	5.0	G(0.01)	-----	
311	EN15691	<10		-----	
323	EN15691	<1		-----	
329	EN15691	0.5		-----	
333	EN15691	<10		-----	
334	EN15691	<10		-----	
337		-----		-----	
343		-----		-----	
357	EN15691	< 1		-----	
360	EN15691	0.8		-----	
396		-----		-----	
444	EN15691	0.9		-----	
468		-----		-----	
496	EN15691	0		-----	
511		-----		-----	
541		-----		-----	
551	D1353	0.4		-----	
554	D1353	0.3		-----	
558		-----		-----	
621	D1353	0.1		-----	
631		-----		-----	
633		-----		-----	
657	D1353	0.4		-----	
663		-----		-----	
823		-----		-----	
913	D1353	<1		-----	
922	D1353	0.7		-----	
1201	EN15691	<10		-----	
1213		-----		-----	
1359		-----		-----	
1397	EN15691	4	G(0.01)	-----	
1446		-----		-----	
1523		-----		-----	
1656	EN15691	<1		-----	
1667		-----		-----	
1726	EN15691	<10		-----	
1727	EN15691	<10		-----	
1817	In house	0.4		-----	
1835	EN15691	<10		-----	
1852		-----		-----	
1919		-----		-----	
6201	EN15691	0.5		-----	
6214	EN15691	0.3		-----	
6224		-----		-----	
6262		-----		-----	
6292		-----		-----	
6297		-----		-----	
6303		-----		-----	
6305		-----		-----	
	n	13			
	mean (n)	<10			

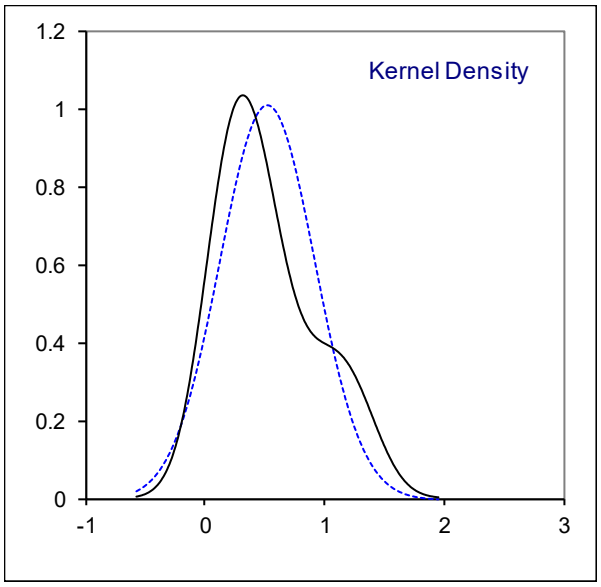
application range of test method EN15691:09: 10 – 25 mg/100mL

Determination of Nitrogen on sample #19250; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52	D4629	0.3		-1.09	
120		-----		-----	
150		-----		-----	
169		-----		-----	
171	D4629	<0.3		-----	
174		-----		-----	
175		-----		-----	
194		-----		-----	
230		-----		-----	
311		-----		-----	
323		-----		-----	
329		-----		-----	
333	D4629	<0.3		-----	
334	D4629	<0.3		-----	
337		-----		-----	
343		-----		-----	
357	D4629	0.3		-1.09	
360		-----		-----	
396		-----		-----	
444	D4629	<0.3		-----	
468	D4629	<0,5		-----	
496	D4629	1.25		3.48	
511		-----		-----	
541		-----		-----	
551	D4629	0.55		0.11	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
657	D4629	0.9679		2.12	
663	D4629	0.18		-1.67	
823		-----		-----	
913		-----		-----	
922	D4629	<0.3		-----	
1201	D4629	<1		-----	
1213		-----		-----	
1359		-----		-----	
1397		0.53		0.02	
1446		-----		-----	
1523		-----		-----	
1656		-----		-----	
1667		-----		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835		-----		-----	
1852		-----		-----	
1919		-----		-----	
6201	D4629	0.137		-1.88	
6214		-----		-----	
6224		-----		-----	
6262		-----		-----	
6292		-----		-----	
6297		-----		-----	
6303		-----		-----	
6305		-----		-----	

normality	unknown	
n	8	
outliers	0	
mean (n)	0.527	
st.dev. (n)	0.3952	
R(calc.)	1.107	
st.dev.(D4629:17)	0.2078	
R(D4629:17)	0.582	application range: 0.3 – 100 mg/kg

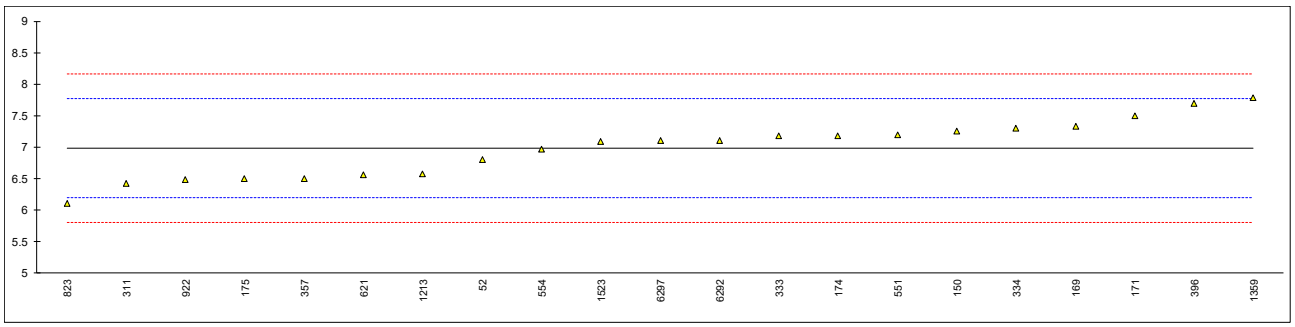

1.4
1.2
1
0.8
0.6
0.4
0.2
0
6201
663
52
357
1397
551
657
496

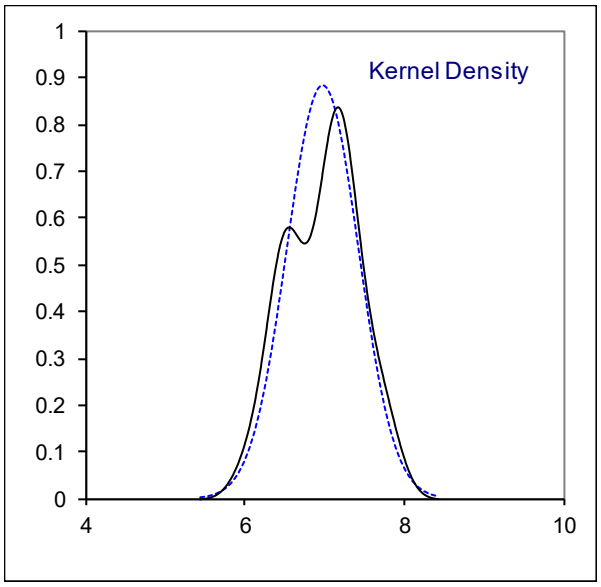

Kernel Density
1.2
1
0.8
0.6
0.4
0.2
0
-1
0
1
2
3

Determination of pHe (KCl) on sample #19250;

lab	method	value	mark	z(targ)	remarks
52	EN15490	6.8		-0.46	
120		-----		-----	
150	D6423	7.25		0.69	
169	D6423	7.33		0.89	
171	D6423	7.5	C	1.33	first reported 9; no details on which type of electrode was used
174	D6423	7.18		0.51	
175	D6423	6.5		-1.23	
194		-----		-----	
230		-----		-----	
311	EN15490	6.42		-1.44	
323		-----		-----	
329		-----		-----	
333	EN15490	7.18		0.51	
334	EN15490	7.30		0.82	
337		-----		-----	
343		-----		-----	
357	D6423	6.5		-1.23	
360		-----		-----	
396	EN15490	7.7		1.84	
444		-----		-----	
468		-----		-----	
496		-----		-----	
511		-----		-----	
541		-----		-----	
551	D6423	7.2		0.56	
554		6.96		-0.06	
558		-----		-----	
621	D6423	6.56		-1.08	
631		-----		-----	
633		-----		-----	
657		-----		-----	
663		-----		-----	
823	D6423	6.1		-2.26	
913		-----		-----	
922	D6423	6.48		-1.28	
1201		-----		-----	
1213	D6423	6.58		-1.03	
1359		7.78		2.04	
1397		-----		-----	
1446		-----		-----	
1523	EN15490	7.0825		0.26	
1656		-----		-----	
1667		-----		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835		-----		-----	
1852		-----		-----	
1919		-----		-----	
6201		-----		-----	
6214		-----		-----	
6224		-----		-----	
6262		-----		-----	
6292	D6423	7.11		0.33	
6297	D6423	7.1		0.30	
6303		-----		-----	
6305		-----		-----	

normality	OK
n	21
outliers	0
mean (n)	6.982
st.dev. (n)	0.4508
R(calc.)	1.262
st.dev.(D6423:19)	0.3907
R(D6423:19)	1.094

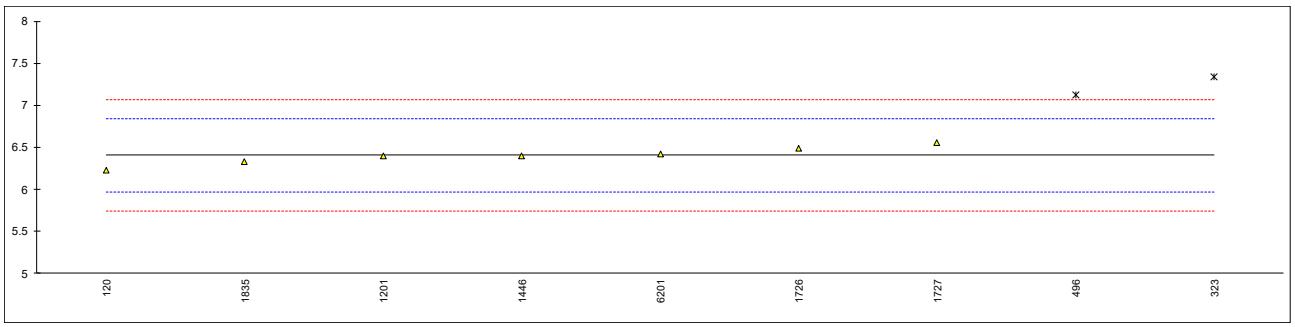

9
8.5
8
7.5
7
6.5
6
5.5
5
823
311
922
175
357
621
1213
52
554
1523
6297
6292
333
174
551
150
334
169
171
396
1359

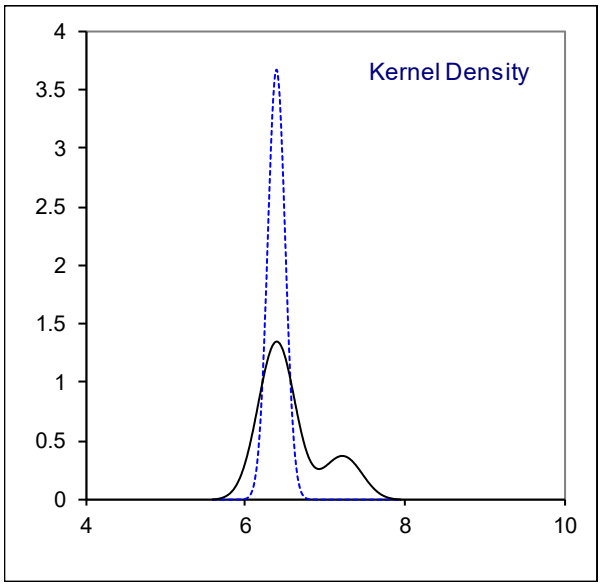

Kernel Density
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
4
6
8
10

Determination of pHe (LiCl) on sample #19250;

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
120	D6423	6.221		-0.83	no details on which type of electrode was used
150		-----		-----	
169		-----		-----	
171		-----		-----	
174		-----		-----	
175		-----		-----	
194		-----		-----	
230		-----		-----	
311		-----		-----	
323	EN15490	7.34	DG(0.01)	4.27	possibly used a KCl electrode?
329		-----		-----	
333		-----		-----	
334		-----		-----	
337		-----		-----	
343		-----		-----	
357		-----		-----	
360		-----		-----	
396		-----		-----	
444		-----		-----	
468		-----		-----	
496	EN15490	7.12	DG(0.01)	3.27	possibly used a KCl electrode?
511		-----		-----	
541		-----		-----	
551		-----		-----	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
657		-----		-----	
663		-----		-----	
823		-----		-----	
913		-----		-----	
922		-----		-----	
1201	EN15490	6.4	C	-0.01	first reported 0.4; no details on which type of electrode was used
1213		-----		-----	
1359		-----		-----	
1397		-----		-----	
1446	EN15490	6.4		-0.01	
1523		-----		-----	
1656		-----		-----	
1667		-----		-----	
1726	EN15490	6.49		0.40	
1727	EN15490	6.56		0.72	
1817		-----		-----	
1835	EN15490	6.33		-0.33	
1852		-----		-----	
1919		-----		-----	
6201	EN15490	6.42		0.08	
6214		-----		-----	
6224		-----		-----	
6262		-----		-----	
6292		-----		-----	
6297		-----		-----	
6303		-----		-----	
6305		-----		-----	

normality	OK
n	7
outliers	2
mean (n)	6.403
st.dev. (n)	0.1088
R(calc.)	0.305
st.dev.(EN15490:07)	0.2195
R(EN15490:07)	0.615


8
7.5
7
6.5
6
5.5
5
120
1835
1201
1446
6201
1726
1727
496
323


Kernel Density
4
3.5
3
2.5
2
1.5
1
0.5
0
4
6
8
10

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Determination of Phosphorus as P on sample #19250; results in mg/L

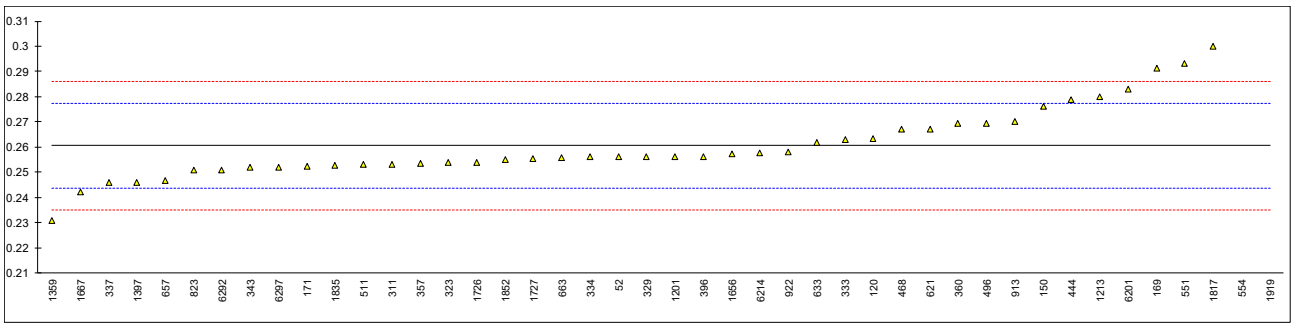
lab	method	value	mark	z(targ)	remarks
52	EN15487	<0.10		-----	
120		-----		-----	
150		-----		-----	
169		-----		-----	
171		-----		-----	
174		-----		-----	
175		-----		-----	
194		-----		-----	
230		-----		-----	
311	EN15837	<0.13		-----	
323	EN15487	<0.15		-----	
329	EN15487	0.004		-----	
333	EN15487	<0.15		-----	
334		-----		-----	
337		-----		-----	
343	EN15487	<0.13		-----	
357		-----		-----	
360	EN15837	< 0.10		-----	
396		-----		-----	
444	EN15837	0.01		-----	
468	EN15487	<0,15		-----	
496	EN15487	<0.01		-----	
511		-----		-----	
541		-----		-----	
551	INH-2047	<0.13		-----	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
657		-----		-----	
663		-----		-----	
823	UOP389	<0.11		-----	
913		-----		-----	
922		-----		-----	
1201	EN15487	<0.15		-----	
1213		-----		-----	
1359	EN15487	<0.01		-----	
1397	EN15487	<0,1		-----	
1446		-----		-----	
1523		-----		-----	
1656	EN15487	<0.01		-----	
1667		-----		-----	
1726	EN15487	0.005		-----	
1727	EN15487	<0,01		-----	
1817		-----		-----	
1835	EN15837	0.02		-----	
1852		-----		-----	
1919		-----		-----	
6201		-----		-----	
6214	EN15487	0.1115		-----	
6224		-----		-----	
6262		-----		-----	
6292		-----		-----	
6297		-----		-----	
6303		-----		-----	
6305		-----		-----	
	n	20			
	mean (n)	<0.15			

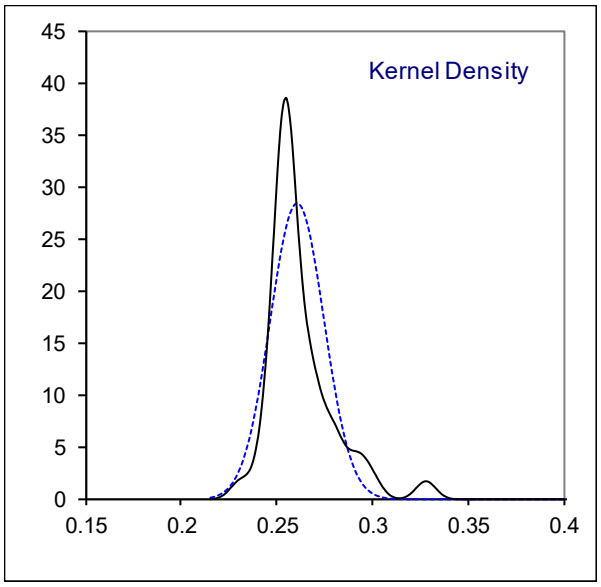
application range test method EN15487:07: 0.15 – 1.50 mg/L

Determination of Water, Coulometric on sample #19250; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	EN15489	0.256		-0.54	
120	E1064	0.2635		0.35	
150	E1064	0.276		1.83	
169	E1064	0.2913	C	3.63	first reported 0.3423
171	EN15489	0.2523		-0.97	
174		-----		-----	
175		-----		-----	
194		-----		-----	
230		-----		-----	
311	EN15489	0.253		-0.89	
323	EN15489	0.2540		-0.77	
329	D6304	0.2560		-0.54	
333	EN15489	0.263		0.29	
334	EN15489	0.256		-0.54	
337	EN15489	0.246		-1.72	
343	EN15489	0.252		-1.01	
357	E1064	0.2537		-0.81	
360	EN15489	0.2693		1.03	
396	EN15489	0.2561		-0.53	
444	EN15489	0.2788		2.16	
468	EN15489	0.267		0.76	
496	EN15489	0.2695		1.06	
511	E1064	0.253		-0.89	
541		-----		-----	
551	E1064	0.293		3.83	
554	E1064	0.328	R(0.01)	7.97	
558		-----		-----	
621	D6304	0.267		0.76	
631		-----		-----	
633	D6304	0.262	C	0.17	reported 0.262 mg/kg
657	E1064	0.2466		-1.65	
663	E1064	0.2556		-0.58	
823	E1064	0.251		-1.13	
913	E1064	0.2703		1.15	
922	D6304	0.258	C	-0.30	first reported 0.298
1201	EN15489	0.256		-0.54	
1213	D6304	0.2799		2.29	
1359	EN15489	0.23085		-3.51	
1397	EN15489	0.246		-1.72	
1446		-----		-----	
1523		-----		-----	
1656	EN15489	0.2574		-0.37	
1667	EN15489	0.242		-2.19	
1726	EN15489	0.254		-0.77	
1727	EN15489	0.2553		-0.62	
1817	In house	0.30		4.66	
1835	EN15489	0.2527		-0.93	
1852	EN15489	0.2550		-0.66	
1919	EN15489	0.5262	R(0.01)	31.39	
6201	EN15489	0.28314	C	2.67	first reported 2831.4 without unit
6214	EN15489	0.25786		-0.32	
6224		-----		-----	
6262		-----		-----	
6292	E1064	0.251		-1.13	
6297	E1064	0.252		-1.01	
6303		-----		-----	
6305		-----		-----	

			EN15489:07 only
	normality	suspect	suspect
	n	42	24
	outliers	2	1
	mean (n)	0.26055	0.25680
	st.dev. (n)	0.014074	0.011157
	R(calc.)	0.03941	0.03124
	st.dev.(EN15489:07)	0.008464	0.008439
	R(EN15489:07)	0.02370	0.02363
	compare		
	R(E1064:16)	0.04455	---
	R(D6304:16e1)	0.18933	---

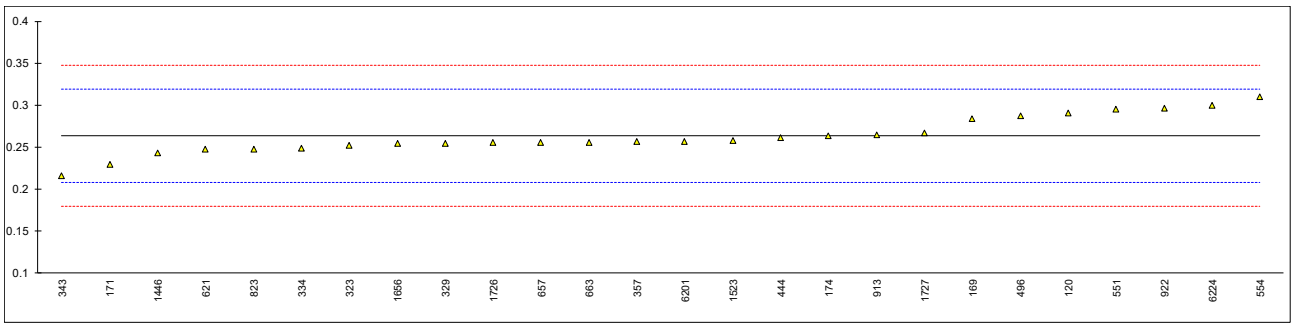

0.31
0.3
0.29
0.28
0.27
0.26
0.25
0.24
0.23
0.22
0.21
1359 1667 337 1397 657 823 6292 343 6297 171 1835 511 311 357 323 1726 1852 1727 663 334 52 329 1201 396 1666 6214 922 633 333 120 468 621 360 496 913 150 444 1213 6201 169 551 1817 554 1919

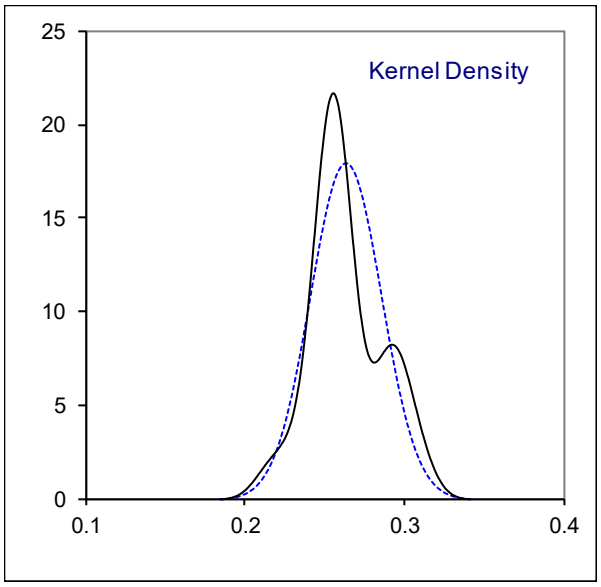

Kernel Density
45
40
35
30
25
20
15
10
5
0
0.15
0.2
0.25
0.3
0.35
0.4

Determination of Water, Volumetric on sample #19250; results in %M/M

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
120	E203	0.2902		0.96	
150		-----		-----	
169	E203	0.2838		0.73	
171	E203	0.2298		-1.21	
174	E203	0.2630		-0.02	
175		-----		-----	
194		-----		-----	
230		-----		-----	
311		-----		-----	
323	E203	0.2520		-0.41	
329	E203	0.2547		-0.31	
333		-----		-----	
334	E203	0.249		-0.52	
337		-----		-----	
343	E203	0.216		-1.70	
357	E203	0.2562		-0.26	
360		-----		-----	
396		-----		-----	
444	E203	0.2617		-0.06	
468		-----		-----	
496	E203	0.2875		0.86	
511		-----		-----	
541		-----		-----	
551	E203	0.295		1.13	
554	E203	0.310		1.67	
558		-----		-----	
621	E203	0.248		-0.56	
631		-----		-----	
633		-----		-----	
657	E203	0.2560		-0.27	
663	E203	0.2560		-0.27	
823	E203	0.248		-0.56	
913	E203	0.264		0.02	
922	E203	0.296		1.17	
1201		-----		-----	
1213		-----		-----	
1359		-----		-----	
1397		-----		-----	
1446	ISO760	0.2430		-0.73	
1523	E203	0.2575		-0.21	
1656	E203	0.2541		-0.34	
1667		-----		-----	
1726	EN15692	0.2551		-0.30	
1727	EN15692	0.2663		0.10	
1817		-----		-----	
1835		-----		-----	
1852		-----		-----	
1919		-----		-----	
6201	E203	0.25715	C	-0.23	first reported 2571.5 without unit
6214		-----		-----	
6224	In house	0.3		1.31	
6262		-----		-----	
6292		-----		-----	
6297		-----		-----	
6303		-----		-----	
6305		-----		-----	

normality	OK
n	26
outliers	0
mean (n)	0.26346
st.dev. (n)	0.022243
R(calc.)	0.06228
st.dev.(E203:16)	0.027857
R(E203:16)	0.078
compare	
R(EN15692:09)	0.09827

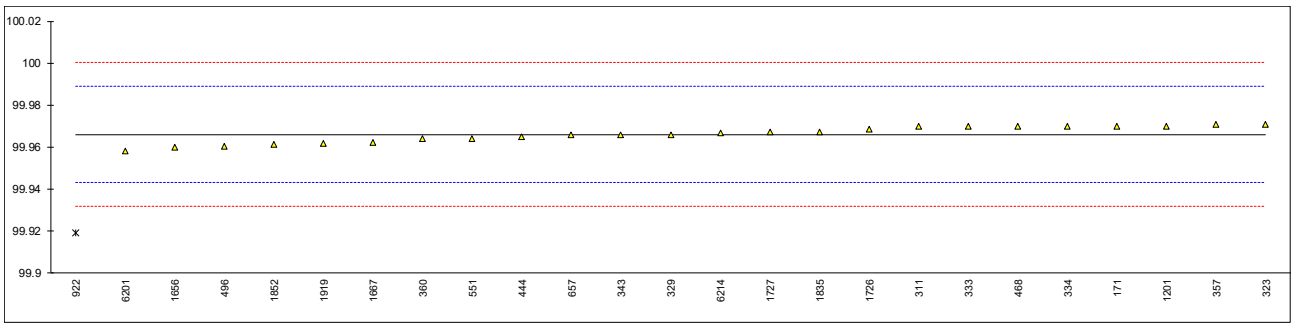

0.4
0.35
0.3
0.25
0.2
0.15
0.1
343
171
1446
621
823
334
323
1656
329
1726
657
663
357
6201
1523
444
174
913
1727
169
496
120
551
922
6224
554

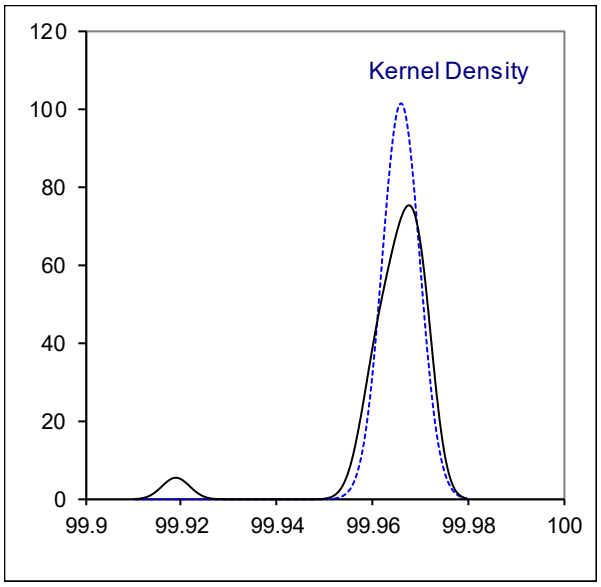

Kernel Density
25
20
15
10
5
0
0.1
0.2
0.3
0.4

Determination of Ethanol incl. higher alcohols acc. to EN15721 on sample #19250 in %M/M

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
120		-----		-----	
150		-----		-----	
169		-----		-----	
171	EN15721	99.97		0.35	
174		-----		-----	
175		-----		-----	
194		-----		-----	
230		-----		-----	
311	EN15721	99.97		0.35	
323	EN15721	99.971		0.43	
329	EN15721	99.966		0.00	
333	EN15721	99.970		0.35	
334	EN15721	99.970		0.35	
337		-----		-----	
343	EN15721	99.966	C	0.00	first reported 99.754
357	EN15721	99.971		0.43	
360	EN15721	99.9638		-0.19	
396		-----		-----	
444	EN15721	99.965		-0.09	
468	EN15721	99.97		0.35	
496	EN15721	99.9602		-0.51	
511		-----		-----	
541		-----		-----	
551	INH-1313	99.964		-0.18	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
657	INH-02	99.9658		-0.02	
663		-----		-----	
823		-----		-----	
913		-----		-----	
922	INH-02	99.919	C,R(0.01)	-4.11	first reported 99.607
1201	EN15721	99.97		0.35	
1213		-----		-----	
1359		-----		-----	
1397		-----		-----	
1446		-----		-----	
1523		-----		-----	
1656	EN15721	99.96	C	-0.53	first reported 99.74 (test result excl. higher alcohols)
1667	EN15721	99.962		-0.35	
1726	EN15721	99.9684		0.21	
1727	EN15721	99.967		0.09	
1817		-----		-----	
1835	EN15721	99.967		0.09	
1852	EN15721	99.9613		-0.41	
1919	EN15721	99.9616		-0.39	
6201	EN15721	99.958		-0.70	
6214	EN15721	99.9666		0.05	
6224		-----		-----	
6262		-----		-----	
6292		-----		-----	
6297		-----		-----	
6303		-----		-----	
6305		-----		-----	

normality	OK
n	24
outliers	1
mean (n)	99.96603
st.dev. (n)	0.003930
R(calc.)	0.01100
st.dev.(EN15721:13)	0.011455
R(EN15721:13)	0.03207

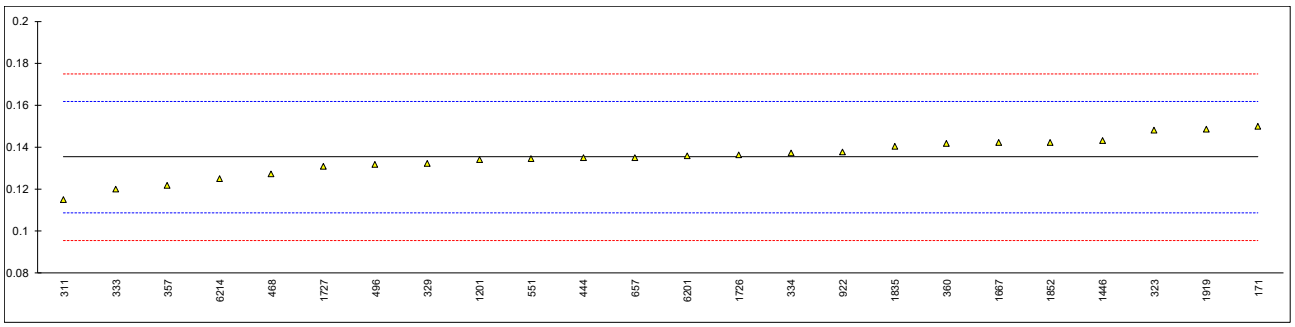

100.02
100
99.98
99.96
99.94
99.92
99.9
922
6201
1656
496
1852
1919
1667
360
551
444
657
343
329
6214
1727
1835
1726
311
333
468
334
171
1201
357
323

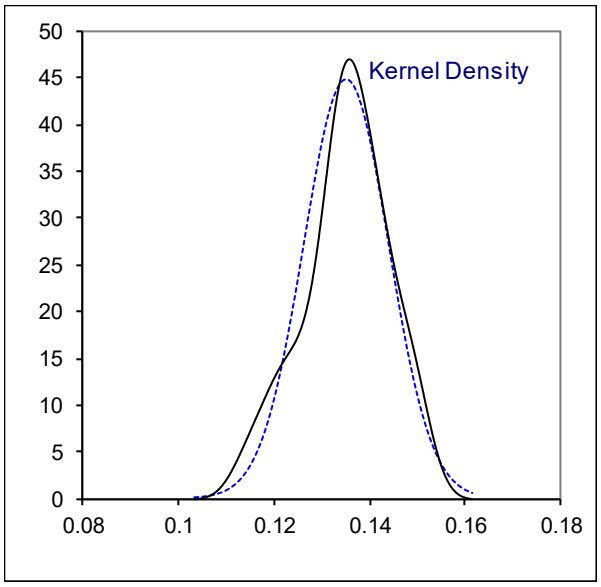

Kernel Density
120
100
80
60
40
20
0
99.9
99.92
99.94
99.96
99.98
100

Determination of Higher alcohols acc. to EN15721 on sample #19250; results in %M/M

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
120		-----		-----	
150		-----		-----	
169		-----		-----	
171	EN15721	0.150		1.13	
174		-----		-----	
175		-----		-----	
194		-----		-----	
230		-----		-----	
311	EN15721	0.115		-1.53	
323	EN15721	0.148		0.97	
329	EN15721	0.1322		-0.23	
333	EN15721	0.120		-1.15	
334	EN15721	0.1371		0.15	
337		-----		-----	
343		-----		-----	
357	EN15721	0.122		-1.00	
360	EN15721	0.1416		0.49	
396		-----		-----	
444	EN15721	0.135		-0.01	
468	EN15721	0.1272		-0.61	
496	EN15721	0.1316		-0.27	
511		-----		-----	
541		-----		-----	
551	INH-1313	0.1344		-0.06	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
657	INH-02	0.1351		-0.01	
663		-----		-----	
823		-----		-----	
913		-----		-----	
922	INH-02	0.1375		0.18	
1201	EN15721	0.134		-0.09	
1213		-----		-----	
1359		-----		-----	
1397		-----		-----	
1446	EN15721	0.1429		0.59	
1523		-----		-----	
1656		-----	W	-----	first reported 0.21
1667	EN15721	0.142		0.52	
1726	EN15721	0.1363		0.08	
1727	EN15721	0.1308		-0.33	
1817		-----		-----	
1835	EN15721	0.1403		0.39	
1852	EN15721	0.1423		0.54	
1919	EN15721	0.1484		1.00	
6201	EN15721	0.136		0.06	
6214	EN15721	0.1248		-0.79	
6224		-----		-----	
6262		-----		-----	
6292		-----		-----	
6297		-----		-----	
6303		-----		-----	
6305		-----		-----	

normality	OK
n	24
outliers	0
mean (n)	0.13519
st.dev. (n)	0.008895
R(calc.)	0.02491
st.dev.(EN15721:13)	0.013165
R(EN15721:13)	0.03686

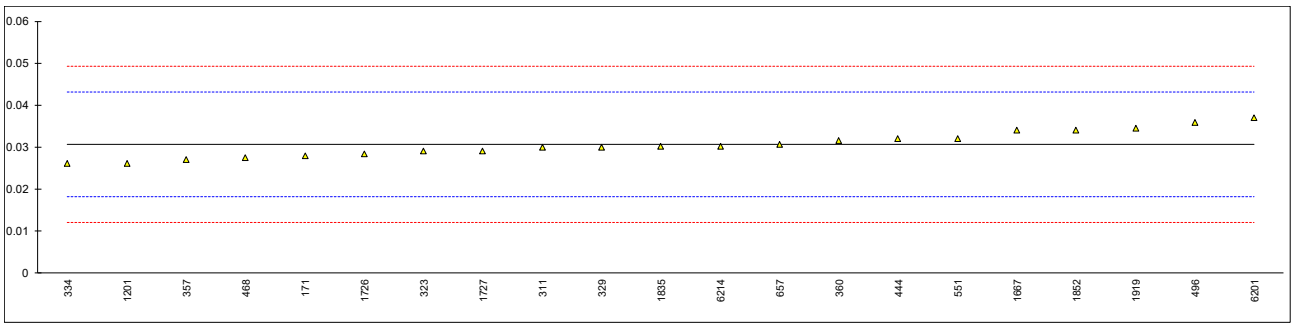

0.2
0.18
0.16
0.14
0.12
0.1
0.08
311
333
357
6214
468
1727
496
329
1201
551
444
657
6201
1726
334
922
1835
360
1667
1852
1446
323
1919
171

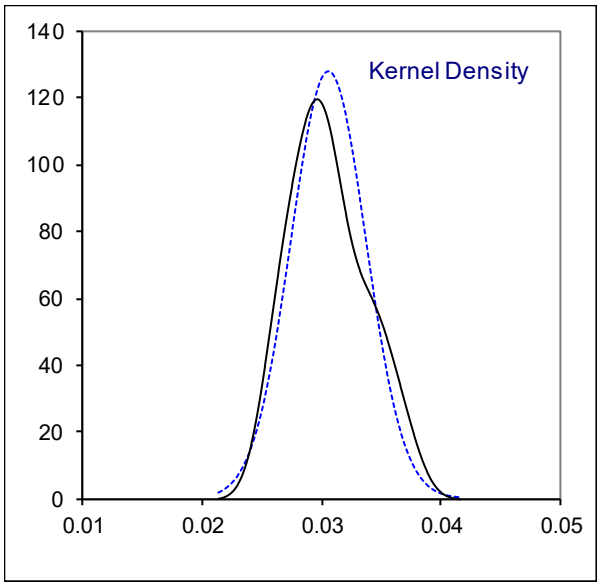

Kernel Density
50
45
40
35
30
25
20
15
10
5
0
0.08
0.1
0.12
0.14
0.16
0.18

Determination of Impurities acc. to EN15721 on sample #19250; results in %M/M

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
120		-----		-----	
150		-----		-----	
169		-----		-----	
171	EN15721	0.028		-0.42	
174		-----		-----	
175		-----		-----	
194		-----		-----	
230		-----		-----	
311	EN15721	0.030		-0.10	
323	EN15721	0.029	C	-0.26	first reported 0.178
329	EN15721	0.030		-0.10	
333	EN15721	<0.100		-----	
334	EN15721	0.026		-0.74	
337		-----		-----	
343		-----		-----	
357	EN15721	0.027		-0.58	
360	EN15721	0.0315		0.15	
396		-----		-----	
444	EN15721	0.032		0.23	
468	EN15721	0.0275		-0.50	
496	EN15721	0.0358		0.84	
511		-----		-----	
541		-----		-----	
551	INH-1313	0.032		0.23	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
657	INH-02	0.0306		0.00	
663		-----		-----	
823		-----		-----	
913		-----		-----	
922		-----		-----	
1201	EN15721	0.026		-0.74	
1213		-----		-----	
1359		-----		-----	
1397		-----		-----	
1446		-----		-----	
1523		-----		-----	
1656		-----		-----	
1667	EN15721	0.034		0.55	
1726	EN15721	0.0283		-0.37	
1727	EN15721	0.029		-0.26	
1817		-----		-----	
1835	EN15721	0.0301		-0.08	
1852	EN15721	0.0341		0.57	
1919	EN15721	0.0344		0.61	
6201	EN15721	0.037		1.03	
6214	EN15721	0.03011		-0.08	
6224		-----		-----	
6262		-----		-----	
6292		-----		-----	
6297		-----		-----	
6303		-----		-----	
6305		-----		-----	

normality	OK
n	21
outliers	0
mean (n)	0.03059
st.dev. (n)	0.003116
R(calc.)	0.00873
st.dev.(Horwitz (n=9))	0.006205
R(Horwitz (n=9))	0.01737

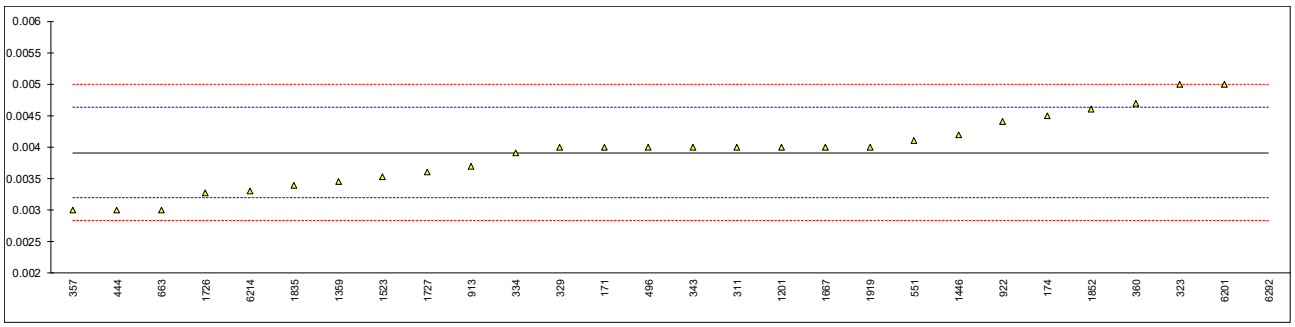

0.06
0.05
0.04
0.03
0.02
0.01
0
334
1201
357
468
171
1726
323
1727
311
329
1835
6214
657
360
444
551
1667
1852
1919
496
6201

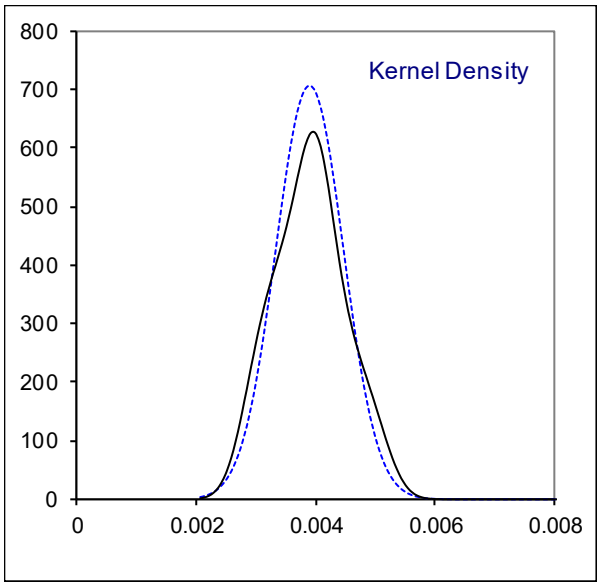

Kernel Density
140
120
100
80
60
40
20
0
0.01
0.02
0.03
0.04
0.05

Determination of Methanol on sample #19250; results in %M/M

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
120	D5501	<0.01	C	-----	first reported 0.01
150		-----		-----	
169		-----		-----	
171	EN15721	0.004		0.24	
174	D5501	0.0045		1.63	
175		-----		-----	
194		-----		-----	
230		-----		-----	
311	EN15721	0.004		0.24	
323	EN15721	0.005		3.02	
329	EN15721	0.0040		0.24	
333	EN15721	<0.100		-----	
334	EN15721	0.0039		-0.03	
337		-----		-----	
343	EN15721	0.004		0.24	
357	EN15721	0.003		-2.53	
360	EN15721	0.0047		2.18	
396		-----		-----	
444	EN15721	0.003		-2.53	
468	EN15721	<0,01		-----	
496	EN15721	0.0040		0.24	
511		-----		-----	
541		-----		-----	
551	INH-1313	0.0041		0.52	
554		-----		-----	
558		-----		-----	
621	D5501	<0.01		-----	
631		-----		-----	
633		-----		-----	
657	D5501	< 0.01		-----	
663	INH-0002	0.003		-2.53	
823	D5501	<0.01		-----	
913	D5501	0.0037		-0.59	
922	INH-02	0.0044		1.35	
1201	EN15721	0.004		0.24	
1213		-----		-----	
1359	EN15721	0.003447		-1.29	
1397		-----		-----	
1446	EN15721	0.0042		0.80	
1523	D5501	0.003524		-1.08	
1656	EN15721	<0.01	C	-----	first reported 0.01
1667	EN15721	0.004		0.24	
1726	EN15721	0.003265		-1.80	
1727	EN15721	0.0036		-0.87	
1817		-----		-----	
1835	EN15721	0.0034		-1.42	
1852	EN15721	0.0046		1.91	
1919	EN15721	0.004		0.24	
6201	EN15721	0.005		3.02	
6214	EN15721	0.0033		-1.70	
6224		-----		-----	
6262		-----		-----	
6292	D5501	0.02	R(0.01)	44.63	
6297		-----		-----	
6303		-----		-----	
6305		-----		-----	

normality	OK		
n	27		
outliers	1		
mean (n)	0.00391		
st.dev. (n)	0.000565		
R(calc.)	0.00158		
st.dev.(Horwitz)	0.000360		
R(Horwitz)	0.00101		
compare			
R(D5501:12)	0.01301		application range: 0.01 – 0.6 %M/M
R(EN15721:13)	-0.00499		application range: 0.1 – 3 %M/M

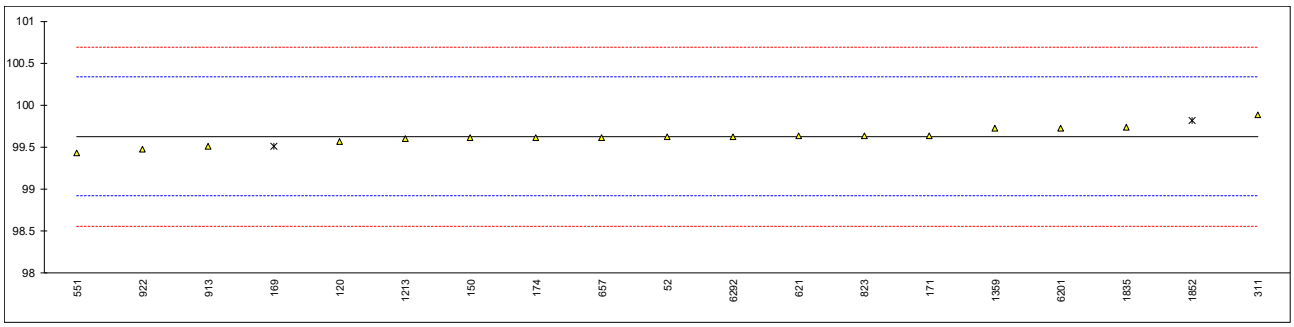

0.006
0.0055
0.005
0.0045
0.004
0.0035
0.003
0.0025
0.002
357
444
663
1726
6214
1835
1359
1523
1727
913
334
329
171
496
343
311
1201
1667
1919
551
1446
922
174
1852
360
323
6201
6292

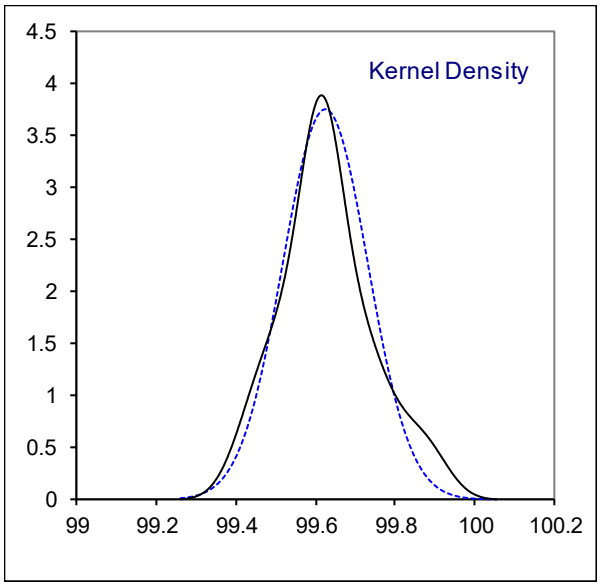

Kernel Density
800
700
600
500
400
300
200
100
0
0
0.002
0.004
0.006
0.008

Determination of Ethanol acc. to ASTM D5501 on sample #19250; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D5501	99.62		-0.02	
120	D5501	99.57		-0.16	
150	D5501	99.61		-0.04	
169	D5501	99.512	ex	-0.32	result excluded as Ethanol %M/M is > Ethanol %V/V which is not possible
171	D5501	99.634		0.02	
174	D5501	99.6103		-0.04	
175		-----		-----	
194		-----		-----	
230		-----		-----	
311	D5501	99.886		0.73	
323		-----		-----	
329		-----		-----	
333		-----		-----	
334		-----		-----	
337		-----		-----	
343		-----		-----	
357		-----		-----	
360		-----		-----	
396		-----		-----	
444		-----		-----	
468		-----		-----	
496		-----		-----	
511		-----		-----	
541		-----		-----	
551	D5501	99.43		-0.55	
554		-----		-----	
558		-----		-----	
621	D5501	99.63		0.01	
631		-----		-----	
633		-----		-----	
657	D5501	99.6154		-0.03	
663		-----		-----	
823	D5501	99.63		0.01	
913	D5501	99.51		-0.33	
922	D5501	99.47		-0.44	
1201		-----		-----	
1213	D5501	99.605		-0.06	
1359	D5501	99.72		0.27	
1397		-----		-----	
1446		-----		-----	
1523		-----		-----	
1656		-----		-----	
1667		-----		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835	D5501	99.74		0.32	
1852		99.8190	ex	0.55	excl. as result reported in comments as pure Ethanol %M/M
1919		-----		-----	
6201	D5501	99.73		0.30	
6214		-----		-----	
6224		-----		-----	
6262		-----		-----	
6292	D5501	99.62		-0.02	
6297		-----		-----	
6303		-----		-----	
6305		-----		-----	

normality	suspect
n	17
outliers	0 (+2 ex)
mean (n)	99.62533
st.dev. (n)	0.106304
R(calc.)	0.29765
st.dev.(D5501:12)	0.354765
R(D5501:12)	0.99334

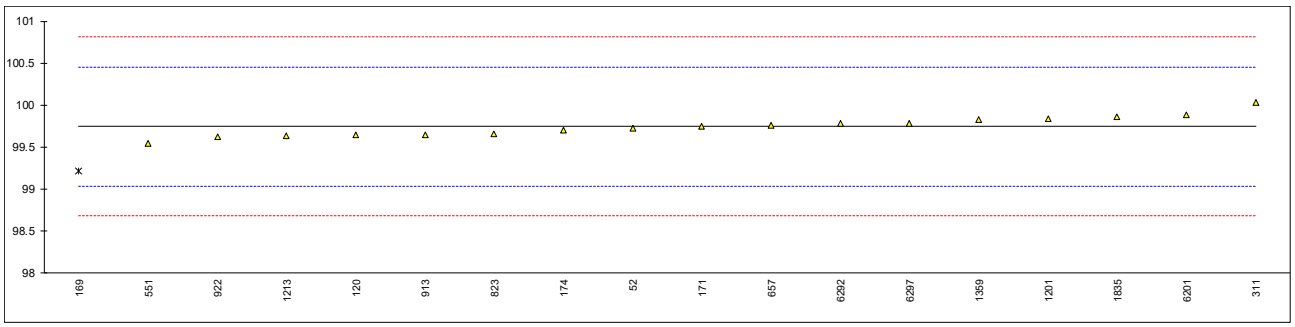

101
100.5
100
99.5
99
98.5
98
551
922
913
169
120
1213
150
174
657
52
6292
621
823
171
1359
6201
1885
1852
311

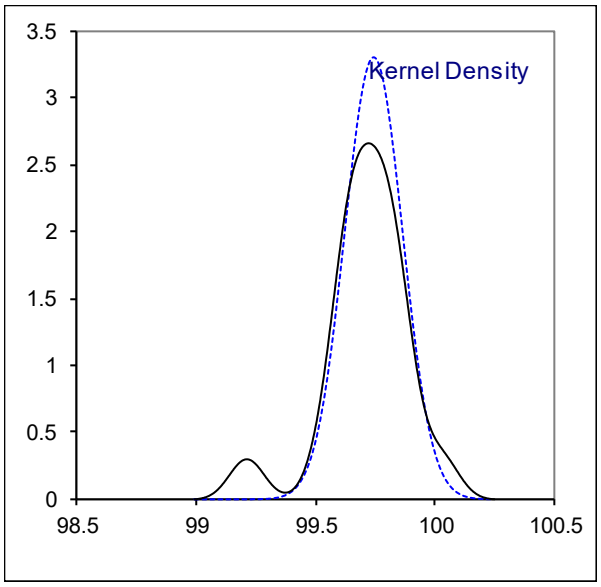

Kernel Density
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
99
99.2
99.4
99.6
99.8
100
100.2

Determination of Ethanol acc. to ASTM D5501 on sample #19250; results in %V/V

lab	method	value	mark	z(targ)	remarks
52	D5501	99.72		-0.07	
120	D5501	99.64		-0.29	
150		-----		-----	
169	D5501	99.212	ex	-1.50	result excluded as Ethanol %M/M is > Ethanol %V/V which is not possible
171	D5501	99.747		0.01	
174	D5501	99.6982		-0.13	
175		-----		-----	
194		-----		-----	
230		-----		-----	
311	D5501	100.03		0.81	
323		-----		-----	
329		-----		-----	
333		-----		-----	
334		-----		-----	
337		-----		-----	
343		-----		-----	
357		-----		-----	
360		-----		-----	
396		-----		-----	
444		-----		-----	
468		-----		-----	
496		-----		-----	
511		-----		-----	
541		-----		-----	
551	D5501	99.54		-0.58	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
657	D5501	99.7542		0.03	
663		-----		-----	
823	D5501	99.66		-0.24	
913	D5501	99.64		-0.29	
922	D5501	99.62		-0.35	
1201	D5501	99.84		0.27	
1213	D5501	99.630		-0.32	
1359	D5501	99.83		0.24	
1397		-----		-----	
1446		-----		-----	
1523		-----		-----	
1656		-----		-----	
1667		-----		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835	D5501	99.86		0.33	
1852		-----		-----	
1919		-----		-----	
6201	D5501	99.88		0.38	
6214		-----		-----	
6224		-----		-----	
6262		-----		-----	
6292	D5501	99.78		0.10	
6297	D5501	99.78		0.10	
6303		-----		-----	
6305		-----		-----	

normality	OK
n	17
outliers	0 (+1 ex)
mean (n)	99.74408
st.dev. (n)	0.121040
R(calc.)	0.33891
st.dev.(D5501:12)	0.354512
R(D5501:12)	0.99263

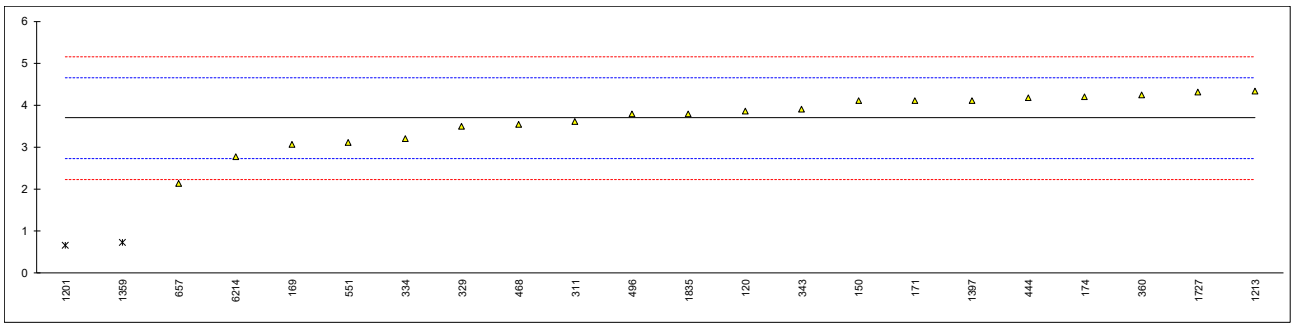

101
100.5
100
99.5
99
98.5
98
169
551
922
1213
120
913
823
174
52
171
657
6292
6297
1359
1201
1835
6201
311

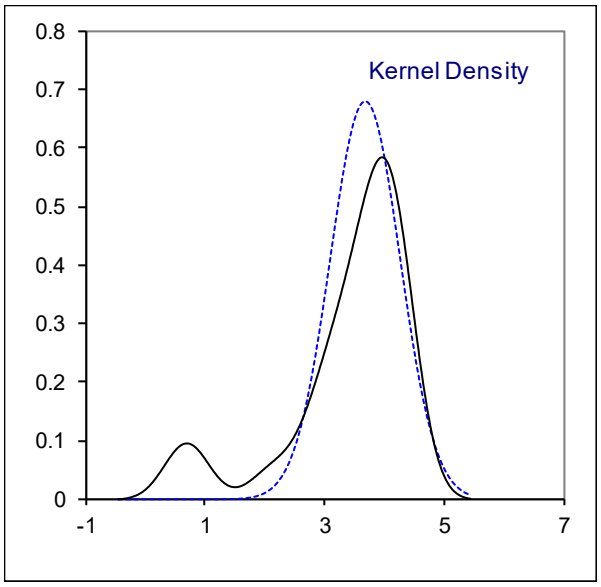

Kernel Density
3.5
3
2.5
2
1.5
1
0.5
0
98.5
99
99.5
100
100.5

Determination of Inorganic Chloride as Cl on sample #19251; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
120	D7319	3.85		0.33	
150	D7328	4.1		0.84	
169	D7319	3.061		-1.30	
171	D7319	4.1		0.84	
174	D7319	4.2		1.05	
175		-----		-----	
194		-----		-----	
230		-----		-----	reported: >2 but <3
311	EN15492	3.6		-0.19	
323		-----		-----	
329	EN15492	3.5		-0.39	
333		-----		-----	
334	EN15492	3.2		-1.01	
337		-----		-----	
343	EN15492	3.9		0.43	
357		-----		-----	
360	EN15492	4.24		1.13	
396		-----		-----	
444	EN15492	4.18		1.01	
468	EN15492	3.55		-0.29	
496	EN15492	3.78		0.18	
511		-----		-----	
541		-----		-----	
551	D7319	3.1		-1.22	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
657	D7328	2.1343		-3.21	
663		-----		-----	
823		-----		-----	
913		-----		-----	
922		-----		-----	
1201	EN15492	0.67	R(0.01)	-6.23	
1213	D7328	4.332		1.32	
1359	EN15492	0.72	R(0.01)	-6.12	
1397	EN15492	4.11		0.86	
1446		-----		-----	
1523		-----		-----	
1656		-----		-----	
1667		-----		-----	
1726		-----		-----	
1727	EN15492	4.32		1.30	
1817		-----		-----	
1835	EN15492	3.80		0.22	
1852		-----		-----	
1919		-----		-----	
6201		-----		-----	
6214	EN15492	2.7722		-1.89	
6224		-----		-----	
6262		-----		-----	
6292		-----		-----	
6297		-----		-----	
6303		-----		-----	
6305		-----		-----	

	normality	suspect	
	n	20	
	outliers	2	
	mean (n)	3.691	
	st.dev. (n)	0.5860	
	R(calc.)	1.641	
	st.dev.(Horwitz)	0.4852	
	R(Horwitz)	1.359	
	compare		
	R(EN15492:12)	0.777	application range: 1 – 30 mg/kg
	R(D7319:17)	1.041	application range: 0.75 – 50 mg/kg

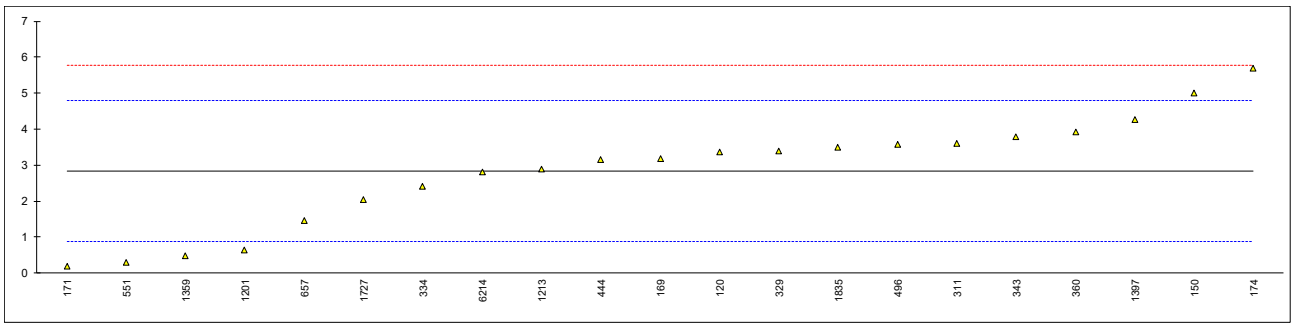

6
5
4
3
2
1
0
1201
1359
657
6214
169
551
334
329
468
311
496
1835
120
343
150
171
1397
444
174
360
1727
1213

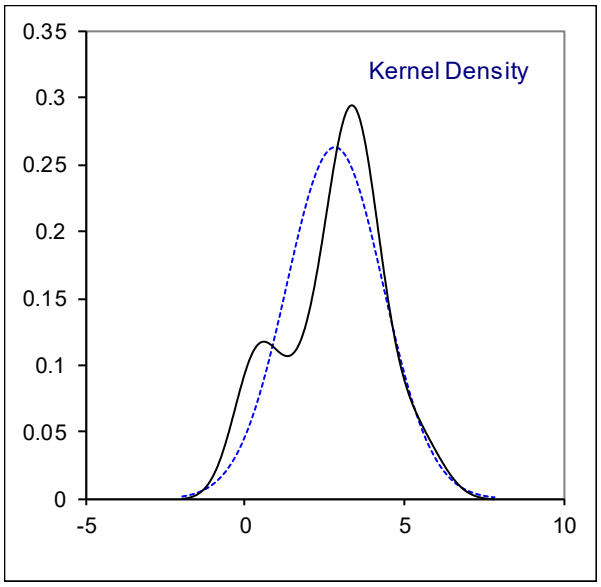

Kernel Density
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-1
1
3
5
7

Determination of Sulfate as SO_4 on sample #19251; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
120	D7319	3.37		0.54	
150	D7328	5.0		2.21	
169	D7319	3.190		0.36	
171	D7319	0.2		-2.71	
174	D7319	5.7		2.93	
175		-----		-----	
194		-----		-----	
230		-----		-----	
311	EN15492	3.6		0.78	
323		-----		-----	
329	EN15492	3.4		0.57	
333		-----		-----	
334	EN15492	2.4		-0.45	
337		-----		-----	
343	EN15492	3.8		0.98	
357		-----		-----	
360	EN15492	3.92		1.10	
396		-----		-----	
444	EN15492	3.15		0.32	
468		-----		-----	
496	EN15492	3.57		0.75	
511		-----		-----	
541		-----		-----	
551	D7319	0.3		-2.60	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
657	D7328	1.4627		-1.41	
663		-----		-----	
823		-----		-----	
913		-----		-----	
922		-----		-----	
1201	EN15492	0.65		-2.24	
1213	D7328	2.900		0.06	
1359	EN15492	0.47		-2.43	
1397	EN15492	4.27		1.46	
1446		-----		-----	
1523		-----		-----	
1656		-----		-----	
1667		-----		-----	
1726		-----		-----	
1727	EN15492	2.03		-0.83	
1817		-----		-----	
1835	EN15492	3.50		0.67	
1852		-----		-----	
1919		-----		-----	
6201		-----		-----	
6214	EN15492	2.7990		-0.04	
6224		-----		-----	
6262		-----		-----	
6292		-----		-----	
6297		-----		-----	
6303		-----		-----	
6305		-----		-----	

	normality	OK	
	n	21	
	outliers	0	
	mean (n)	2.842	
	st.dev. (n)	1.5153	
	R(calc.)	4.243	
	st.dev.(D7319:17)	0.9766	
	R(D7319:17)	2.734	application range: 1 – 20 mg/kg
	compare		
	R(EN15492:12)	0.741	application range: 1 - 20 mg/kg
	R(D7328:17)	1.595	application range: 0.55 – 20 mg/kg

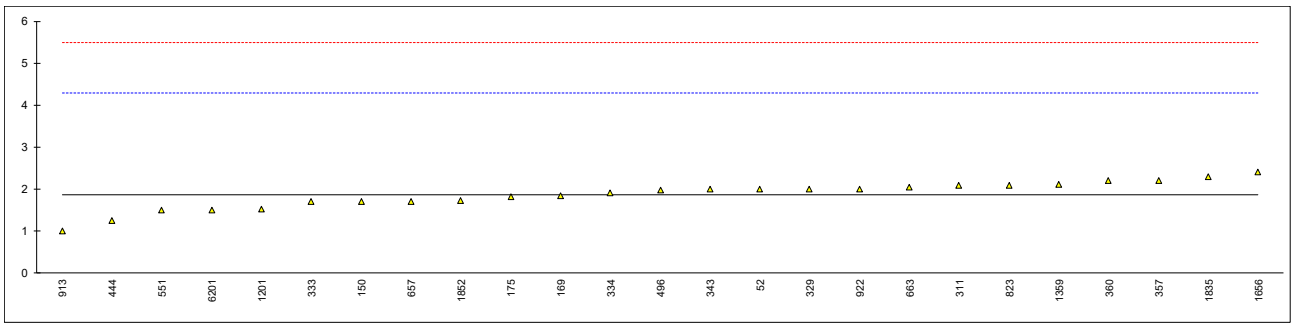

7
6
5
4
3
2
1
0
171
551
1359
1201
657
1727
334
6214
1213
444
169
120
329
1835
496
311
343
360
1397
150
174


Kernel Density
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
-5
0
5
10

Determination of Sulfur on sample #19251; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52	EN15486	2.0		0.11	
120		-----		-----	
150	D5453	1.7		-0.14	
169	D5453	1.85		-0.01	
171	D5453	<1		-----	
174		-----		-----	
175	D5453	1.81		-0.05	
194		-----		-----	
230	In house	-----		-----	
311	D5453	2.1		0.19	
323		-----		-----	
329	D5453	2.0		0.11	
333	EN15486	1.7		-0.14	
334	ISO20846	1.9		0.03	
337	EN15486	<5		-----	
343	D5453	2.0		0.11	
357	D5453	2.2		0.28	
360	EN15486	2.2		0.28	
396		-----		-----	
444	EN15485	1.26		-0.50	
468	EN15486	<2,0		-----	
496	ISO20846	1.97		0.09	
511		-----		-----	
541		-----		-----	
551	D5453	1.5		-0.30	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
657	D5453	1.71		-0.13	
663	D5453	2.04		0.14	
823	D5453	2.1		0.19	
913	D5453	1.0		-0.71	
922	D5453	2.0		0.11	
1201	D5453	1.52		-0.28	
1213		-----		-----	
1359	In house	2.12		0.21	
1397	D2662	<3,0		-----	
1446		-----		-----	
1523		-----		-----	
1656	EN15486	2.4		0.44	
1667		-----		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835	EN15486	2.3		0.36	
1852	ISO20846	1.734		-0.11	
1919		-----		-----	
6201	EN15486	1.503		-0.30	
6214		-----		-----	
6224		-----		-----	
6262		-----		-----	
6292		-----		-----	
6297		-----		-----	
6303		-----		-----	
6305		-----		-----	

	normality	OK	
	n	25	
	outliers	0	
	mean (n)	1.865	
	st.dev. (n)	0.3284	
	R(calc.)	0.919	
	st.dev.(EN15485:07)	1.2109	
	R(EN15485:07)	3.391	application range: 7 – 20 mg/kg
	compare		
	R(EN15468:07)	1.968	application range: 5 – 20 mg/kg
	R(D5453:19a)	0.925	at a concentration < 400 mg/kg; application range: 1 – 8000 mg/kg


6
5
4
3
2
1
0
913
444
551
6201
1201
333
150
657
1852
175
169
334
496
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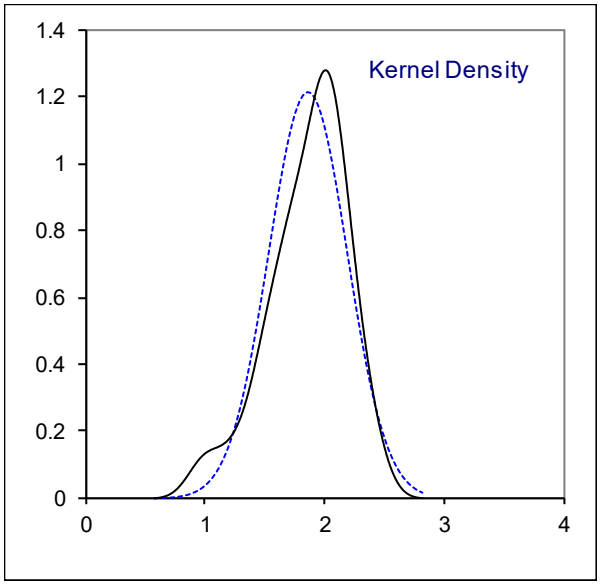
52
329
922
663
311
823
1359
360
357
1885
1656


Kernel Density
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
1
2
3
4

APPENDIX 2

Number of participating laboratories per country:

1 lab in	ARGENTINA
4 labs in	BELGIUM
3 labs in	BRAZIL
2 labs in	BULGARIA
1 lab in	CANADA
3 labs in	COLOMBIA
1 lab in	CROATIA
1 lab in	CZECH REPUBLIC
1 lab in	FINLAND
3 labs in	FRANCE
2 labs in	GERMANY
1 lab in	HUNGARY
1 lab in	INDIA
1 lab in	INDONESIA
1 lab in	ITALY
1 lab in	MAURITIUS
5 labs in	NETHERLANDS
1 lab in	PAKISTAN
1 lab in	PERU
2 labs in	PHILIPPINES
1 lab in	SINGAPORE
1 lab in	SOUTH KOREA
4 labs in	SPAIN
2 labs in	SWEDEN
2 labs in	THAILAND
1 lab in	TURKEY
2 labs in	UNITED KINGDOM
7 labs in	UNITED STATES OF AMERICA
1 lab in	VIETNAM

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	= possibly an error in calculations
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
SDS	= Safety Data Sheet

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