Results of Proficiency Test
Ethanol (Bio / Fuel grade)
December 2021

Organized 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 the analysis of Ethanol (Bio / Fuel grade) in accordance with the latest version of the EN15376 and ASTM D4806 every year. During the annual proficiency testing program 2021/2022 it was decided to continue the round robin for the analysis of Ethanol (Bio / Fuel grade).

In this interlaboratory study 68 laboratories in 29 different 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 an ISO/IEC17025 accredited laboratory.
It was decided to send three different samples of Ethanol (Bio / Fuel grade), one bottle of 1L labelled #21260 for regular analyzes, one bottle of 100mL labelled #21261 for Inorganic Chloride, Sulfate and total Sulfur determination and one bottle of 250mL labelled #21262 for determination of Nonvolatile matter only.
The 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 a batch of approximately 100 liters of Ethanol (Bio / Fuel grade) was obtained from a European supplier. After homogenization 86 amber glass bottles of 1L were filled and labelled #21260.
The homogeneity of the subsamples was checked by determination of Density at 20°C in accordance with ASTM D4052 and Water in accordance with E203 on 8 stratified randomly selected subsamples.

	Density at 20°C in kg/L	Water in %M/M
sample #21260-1	0.78970	0.106
sample #21260-2	0.78969	0.105
sample #21260-3	0.78969	0.105
sample #21260-4	0.78970	0.105
sample #21260-5	0.78969	0.105
sample #21260-6	0.78969	0.104
sample #21260-7	0.78969	0.105
sample #21260-8	0.78968	0.104

Table 1: homogeneity test results of subsamples #21260

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)	0.00002	0.002
reference test method	ISO12185:96	E203:16
0.3 x R (reference test method)	0.00015	0.023

Table 2: evaluation of the repeatabilities of subsamples #21260

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 total Sulfur in Ethanol (Bio / Fuel grade) a batch of approximately 10L Ethanol (Bio / Fuel grade) was spiked with Sodium Chloride (NaCl) and Sodium Sulfate (Na2SO4) dissolved in water. After homogenization 86 PE bottles of 100mL were filled and labelled #21261.
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 #21261-1	4.1
sample #21261-2	4.1
sample #21261-3	4.0
sample #21261-4	3.9
sample #21261-5	4.1
sample #21261-6	3.9
sample #21261-7	4.1
sample #21261-8	4.1

Table 3: homogeneity test results of subsamples #21261

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.

	In organic Chloride as Cl in mg/kg
r (observed)	0.26
reference test method	D7319:17
0.3 x R (reference test method)	0.33

Table 4: evaluation of the repeatability of subsamples #21261

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 25L Ethanol (Bio / Fuel grade) was spiked with Sodium Chloride (NaCl) dissolved in water. After homogenization 86 amber glass bottles of 250mL were filled and labelled #21262.
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/100mL
sample #21262-1	11.5
sample #21262-2	11.4
sample #21262-3	11.3
sample #21262-4	10.9
sample #21262-5	11.2
sample #21262-6	10.8
sample #21262-7	10.7
sample #21262-8	10.9

Table 5: homogeneity test results of subsamples #21262

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/100mL
r (observed)	0.8
reference test method	ASTM D1353:13
0.3 x R (reference test method)	1.4

Table 6: evaluation of the repeatability of subsamples #21262

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 sample Ethanol (Bio/Fuel grade) labelled #21260, one sample labelled #21261 and one sample labelled #21262 was sent on November 10, 2021. 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 #21260: 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 #21261 it was requested to determine Inorganic Chloride as Cl, Sulfate as SO_4 and Sulfur.
On sample #21262 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

Some problems were encountered with the dispatch of the samples due to the COVID-19 pandemic. Therefore, the reporting time on the data entry portal was extended with another two weeks. When considering the test results of the three samples together three participants reported test results after the final reporting date and four other participants did not report any test results. Not all participants were able to report all tests requested.
In total 64 participants reported 579 numerical test results. Observed were 32 outlying test results, which is 5.5%. 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 and if appropriate an indication of sub test method (e.g. D1353) and an added designation for the year that the test method was adopted or revised (e.g. D1353:13). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D1353:13(2021)). In the test results tables of appendix 1 only the method number (sub) and year of adoption or revision (e.g. D1353:13) will be used.

sample #21260

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

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

Copper as Cu: Almost all 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. Three 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: This determination was very problematic. No statistical outliers were observed. The calculated reproducibility is not at all in agreement with the requirements of EN15938:10.

Nitrogen: 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 ASTM D4629:17.

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: EN15490, that describes the use of a LiCl electrode and ASTM D6423, that describes the use of a KCl electrode.

pHe (LiCl): This determination was very problematic. No statistical outliers were observed. It was decided not to calculate z-scores due to the large variation in the test results.

pHe (KCl): 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 D6423:20a.

Phosphorus as P: This determination was not problematic. Almost all of the 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 was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of EN15489:07 and ASTM E1064:16.

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 EN15692:21.

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. Five statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers 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 problematic. No statistical outliers were observed. The calculated reproducibility is not 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. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in full agreement with the estimated reproducibility calculated with the Horwitz equation based on nine components.

Methanol: This determination may be problematic depending on the test method used. Six statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not 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): This determination was not problematic by mass and by volume. In total one statistical outlier was observed. Both calculated reproducibilities after rejection of the statistical outlier are in agreement with the requirements of ASTM D5501:20.

Gum (solvent washed): This determination was not problematic. Almost all of the participants agreed on a test result <1 mg/100mL. Therefore, no z-scores were calculated.

sample #21261

Inorganic Chloride: 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 in full agreement with the requirements of ASTM D7319:17, but not with the requirements of EN15492:12.

Sulfate as SO_4: 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 in full agreement with the requirements of ASTM D7319:17, but is not in agreement with the requirements of EN15492:12 or ASTM D7328:17.

Sulfur: This determination may be problematic depending on the test method used. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN15485:07, EN15486:07 and ISO20846:19, but not with the requirements of ASTM D5453:19a.

sample #21262

Nonvolatile matter: This determination may be problematic depending on the test method used. Five statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of EN15691:09, but in agreement with the requirements of ASTM D1353:13(2021).

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 test methods (in casu ASTM, EN and ISO test methods) or estimated using the Horwitz equation are presented in the next tables.

Parameter	unit	n	average	2.8 * sd	R(lit)
Total Acidity as Acetic Acid	%M/M	45	0.0022	0.0014	0.0014
Appearance		54	Pass	n.a.	n.a.
Copper as Cu	mg/kg	23	<0.07	n.e.	n.e.
Density at 20°C	kg/L	56	0.7897	0.0002	0.0005
Electrical Conductivity at 25°C	µS/cm	33	0.38	0.30	0.11
Nitrogen	mg/kg	13	0.40	0.44	0.51
pHe (LiCl)		12	6.21	1.79	(0.60)
pHe (KCl)		15	6.74	1.01	1.11
Phosphorus as P	mg/L	24	<0.15	n.e.	n.e.
Water, Coulometric	%M/M	54	0.111	0.018	0.021
Water, Volumetric	%M/M	27	0.107	0.017	0.078
Ethanol + higher alc. (EN15721)	%M/M	32	99.948	0.022	0.037
Higher alcohols (EN15721)	%M/M	34	0.186	0.063	0.052
Impurities (EN15721)	%M/M	31	0.045	0.025	0.024
Methanol	%M/M	29	0.0059	0.0021	0.0014
Ethanol (D5501)	%M/M	19	99.726	0.247	0.993
Ethanol (D5501)	%V/V	18	99.785	0.283	0.992
Gum (solvent washed)	mg/100mL	22	<1	n.e.	n.e.

Table 7: reproducibilities of tests on sample #21260

Results between brackets no z-scores are calculated

Parameter	unit	n	average	2.8 * sd	R(lit)
Inorganic Chloride as Cl	mg/kg	27	4.0	1.1	1.1
Sulfate as SO_4	mg/kg	22	2.0	2.3	2.1
Sulfur	mg/kg	26	1.3	0.8	3.4
Nonvolatile matter	mg/100mL	28	10.4	2.7	1.9

Table 8: reproducibilities of tests on sample #21261 and sample #21262

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 2021 WITH PREVIOUS PTS

	December 2021	December 2020	November 2019	December 2018	December 2017
Number of reporting laboratories	64	49	51	53	59
Number of test results	579	507	457	473	537
Number of statistical outliers	32	18	16	14	22
Percentage of statistical outliers	5.5%	3.6%	3.5%	3.0%	4.1%

Table 9: 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 2021	December 2020	November 2019	December 2018	December 2017
Acidity, Total as Acetic Acid	+/-	++	+	+	-
Density at 20°C	++	++	++	++	++
Electrical Conductivity at 25°C	--	--	-	--	--
Nitrogen	+	-	-	-	-
pHe	+/-	+/-	+/-	-	-
Water, Coulometric	+	+/-	-	+/-	+/-
Water, Volumetric	++	+	+	+	++
Ethanol + higher alc. (EN15721)	+	+/-	++	--	-
Higher alcohols (EN15721)	-	+/-	+	+/-	+/-
Impurities (EN15721)	+/-	-	++	-	-
Methanol	-	-	--	--	-
Ethanol (D5501)	++	++	++	+	+
Inorganic Chloride as Cl	+/-	-	-	-	+
Sulfate as SO_4	+/-	+	-	-	--
Sulfur	++	++	++	+	+
Nonvolatile matter	-	n.e./ +	n.e.	(--)	(--)

Table 10: comparison determinations against the reference test methods

Results between brackets should be used with care.

The following performance categories were used:

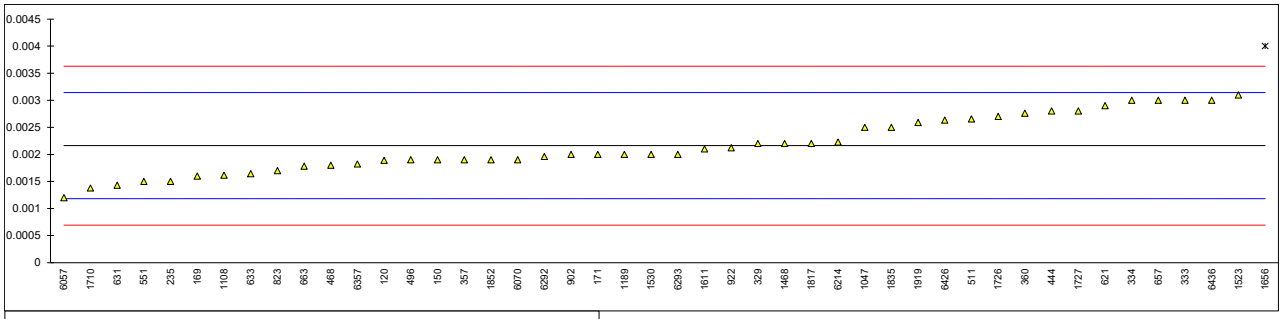
- ++ : group performed much better than the reference test method
- + : group performed better than the reference test method
- +/- : group performance equals the reference test method
- - : group performed worse than the reference test method
- -- : group performed much worse than the reference test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

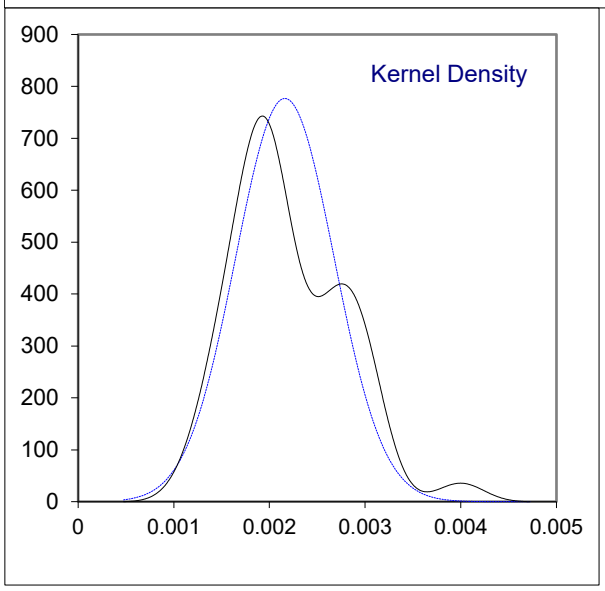
APPENDIX 1

Determination of Total Acidity as Acetic Acid on sample #21260; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	EN15491	<0.003		-----	
120	D1613	0.00189		-0.56	
150	D1613	0.0019		-0.54	
169	D7795	0.00160		-1.15	
171	EN15491	0.0020		-0.33	
174		-----		-----	
175		-----		-----	
235	D1613	0.0015	C	-1.35	First reported 0.01538
315	EN15491	<0.0030		-----	
323	EN15491	<0.0030		-----	
329	EN15491	0.0022		0.08	
333	EN15491	0.003		1.71	
334	EN15491	0.003		1.71	
337		-----		-----	
343	EN15491	<0,003		-----	
357	EN15491	0.0019		-0.54	
360	EN15491	0.00276		1.22	
444	EN15491	0.0028		1.30	
468	EN15491	0.0018		-0.74	
492		-----		-----	
495		-----		-----	
496	EN15491	0.0019		-0.54	
511	D1613	0.002655		1.01	
541		-----		-----	
551	D1613	0.0015		-1.35	
554		-----		-----	
558		-----		-----	
621	D1613	0.0029		1.51	
631	D1613	0.00143		-1.50	
633	D1613	0.001642		-1.06	
634		-----		-----	
657	D1613	0.0030		1.71	
663	D1613	0.00178		-0.78	
823	D1613	0.0017		-0.94	
902	EN15491	0.0020		-0.33	
913		-----		-----	
922	D1613	0.00212		-0.09	
1047	EN15491	0.0025		0.69	
1108	EN15491	0.0016155		-1.12	
1189	EN15491	0.002		-0.33	
1457		-----		-----	
1468	EN15491	0.0022		0.08	
1523	D1388	0.003098		1.91	
1530	EN15491	0.002		-0.33	
1611	EN15491	0.0021		-0.13	
1618		-----		-----	
1656	EN15491	0.004	R(0.05)	3.76	
1697		-----		-----	
1710	EN15491	0.00138		-1.60	
1713		-----		-----	
1726	EN15491	0.0027		1.10	
1727	EN15491	0.0028		1.30	
1817	D1388	0.0022		0.08	
1835	EN15491	0.0025		0.69	
1852	EN15491	0.0019		-0.54	
1919	EN15491	0.00259		0.87	
6047		-----		-----	
6057	EN15491	0.0012		-1.97	
6070	D1613	0.0019		-0.54	
6214	EN15491	0.002227		0.13	
6291		-----		-----	
6292	NBR9866	0.001962		-0.41	
6293	EN15491	0.002		-0.33	
6297		-----		-----	
6357	NBR9866	0.00182325		-0.69	
6424		-----		-----	
6426	INH-341	0.0026313		0.96	
6436	EN15491	0.003		1.71	

	normality	OK
	n	45
	outliers	1
	mean (n)	0.002162
	st.dev. (n)	0.0005136
	R(calc.)	0.001438
	st.dev.(EN15491:07)	0.0004893
	R(EN15491:07)	0.001370
Compare		
	R(D1613:17)	0.0014





Determination of Appearance on sample #21260;

lab	method	value	mark	z(targ)	remarks
52	EN15769	Clear and Colourless		-----	
120	D4176	C & B		-----	
150	E2680	Pass		-----	
169	E2680	CB&FSM		-----	
171	Visual	Pass		-----	
174	Visual	Clear & Free		-----	
175	D4176	Pass		-----	
235	Visual	C&B		-----	
315	EN15769	cl & col		-----	
323	E2679	C&B		-----	
329	Visual	clear		-----	
333	Visual	Clear and bright		-----	
334	Visual	Clear and bright		-----	
337	Visual	colourless		-----	
343	Visual	C&B		-----	
357	E2680	Pass		-----	
360	EN15769	Clear and colourless		-----	
444		-----		-----	
468	EN15769	Clear & Colourlesss		-----	
492	EN15769	CB&FSM		-----	
495	EN15769	clear and colourless		-----	
496	Visual	clear & bright		-----	
511	EN15769	Clear and colourless		-----	
541		-----		-----	
551	E2680	Pass		-----	
554		-----		-----	
558		-----		-----	
621	D4176	PASS		-----	
631	Visual	clear & bright		-----	
633	Visual	Clear		-----	
634		-----		-----	
657	E2680	Clear and free from suspended solid		-----	
663	Visual	Bright & Clear		-----	
823	E2680	Pass		-----	
902	EN15769	PASS		-----	
913		-----		-----	
922	Visual	Clear and Bright		-----	
1047		-----		-----	
1108	Visual	Clear and Bright		-----	
1189	Visual	C/B		-----	
1457	Visual	Br.& Cl.		-----	
1468	EN15769	clear&bright		-----	
1523		-----		-----	
1530	Visual	c&b		-----	
1611	EN15769	Clear & free from suspended matter		-----	
1618	EN15769	colorless, clear		-----	
1656	Visual	Pass		-----	
1697	EN15769	colorlees, clear		-----	
1710	EN15769	clear and colourless		-----	
1713	EN15769	transparent, colorless		-----	
1726	EN15769	Clear&Colorless		-----	
1727	EN15769	Clear&Colorless		-----	
1817	Visual	Pass		-----	
1835	EN15769	C&C		-----	
1852	Visual	clear, bright		-----	
1919		-----		-----	
6047	EN15769	colorless		-----	
6057	Visual	Clear & Briight		-----	
6070	Visual	Clear and Bright		-----	
6214	EN15769	clear & colourless		-----	
6291	Visual	Clear & free from suspended matter		-----	
6292		-----		-----	
6293	Visual	clear&colorless		-----	
6297		-----		-----	
6357		-----		-----	
6424		-----		-----	
6426		-----		-----	
6436	Visual	clear, bright, free from suspended matter		-----	
	n	54			
	mean (n)	CBFSM (Pass)			

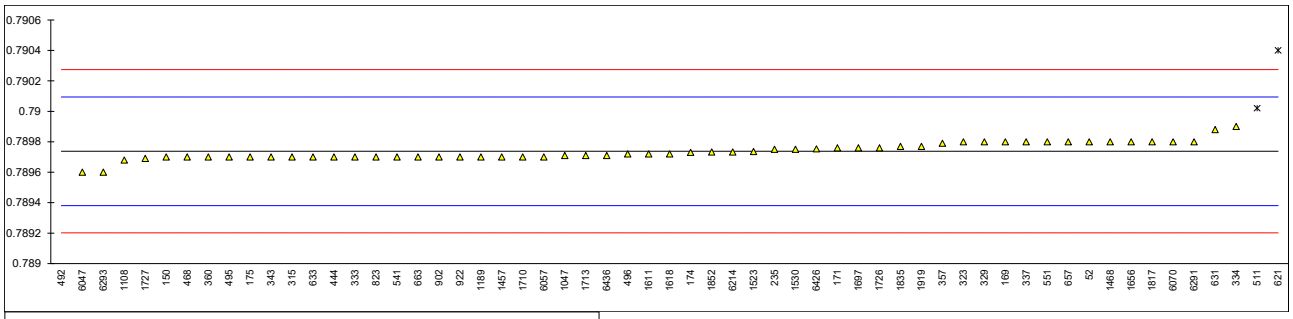
Determination of Copper as Cu on sample #21260; results in mg/kg

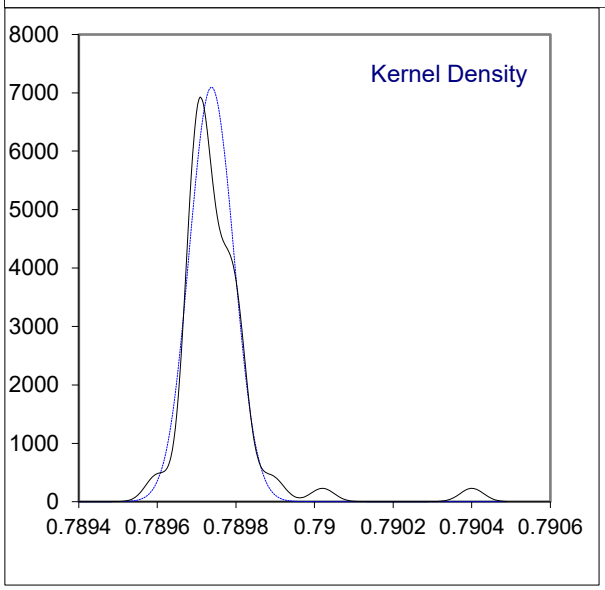
lab	method	value	mark	z(targ)	remarks
52	EN15837	0.050		-----	
120		-----		-----	
150	D1688	<0.05		-----	
169	D1688	0		-----	
171		-----		-----	
174		-----		-----	
175	D1688	<0.05		-----	
235		-----		-----	
315	EN15837	<0.0050		-----	
323		-----		-----	
329	EN15488	<0.07		-----	
333	EN15488	<0.07		-----	
334		-----		-----	
337		-----		-----	
343	EN15837	<0,05		-----	
357		-----		-----	
360	EN15837	< 0,050		-----	
444		-----		-----	
468	EN15488	<0,07		-----	
492		-----		-----	
495		-----		-----	
496		-----		-----	
511	D1688	<0.05		-----	
541		-----		-----	
551	D1688	<0.04		-----	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631	D1688	<0.05		-----	
633		-----		-----	
634		-----		-----	
657		-----		-----	
663	INH-12414	<0.05		-----	
823	UOP389	<0.01		-----	
902		-----		-----	
913		-----		-----	
922	D1688	<0.05		-----	
1047	EN15837	<0,02		-----	
1108		-----		-----	
1189		-----		-----	
1457		-----		-----	
1468	EN15837	<0.01		-----	
1523		-----		-----	
1530		-----		-----	
1611	EN15488	0.004		-----	
1618		-----		-----	
1656	D1688	<0.1		-----	
1697		-----		-----	
1710		-----		-----	
1713		-----		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835	EN15837	<0.050		-----	
1852		-----		-----	
1919		-----		-----	
6047		-----		-----	
6057	EN15837	0.189		-----	Possibly a false positive test result?
6070	D1688	0.000		-----	
6214	EN15488	0.00256		-----	
6291		-----		-----	
6292		-----		-----	
6293	EN15837	0.00		-----	
6297		-----		-----	
6357		-----		-----	
6424		-----		-----	
6426		-----		-----	
6436	EN15837	< 0,1		-----	
	n	23			
	mean (n)	<0.07			Application range EN15488:07: 0.07 – 0.20 mg/kg

Determination of Density at 20°C on sample #21260; results in kg/L

lab	method	value	mark	z(targ)	remarks
52	ISO12185	0.7898		0.35	
120		-----		-----	
150	D4052	0.7897		-0.21	
169	D4052	0.7898		0.35	
171	D4052	0.78976		0.12	
174	D4052	0.78973		-0.04	
175	D4052	0.7897		-0.21	
235	D4052	0.78975		0.07	
315	D4052	0.7897		-0.21	
323	D4052	0.7898		0.35	
329	D4052	0.7898		0.35	
333	ISO12185	0.7897		-0.21	
334	ISO12185	0.7899		0.91	
337	ISO12185	0.7898		0.35	
343	ISO12185	0.7897		-0.21	
357	D4052	0.78979		0.29	
360	D4052	0.7897		-0.21	
444	D4052	0.7897		-0.21	
468	ISO12185	0.7897		-0.21	
492	EN15721	0.7887	R(0.01)	-5.81	
495	ISO12185	0.7897		-0.21	
496	ISO12185	0.78972		-0.10	
511	D4052	0.79002	R(0.01)	1.58	
541	D4052	0.7897		-0.21	
551	D4052	0.7898		0.35	
554		-----		-----	
558		-----		-----	
621	D4052	0.7904	R(0.01)	3.71	
631	D4052	0.78988		0.80	
633	D4052	0.78970		-0.21	
634		-----		-----	
657	D4052	0.7898		0.35	
663	D4052	0.78970		-0.21	
823	ISO12185	0.7897		-0.21	
902	ISO12185	0.7897		-0.21	
913		-----		-----	
922	D4052	0.7897		-0.21	
1047	ISO12185	0.78971		-0.16	
1108	D4052	0.78968		-0.32	
1189	ISO12185	0.7897		-0.21	
1457	ISO12185	0.7897		-0.21	
1468	ISO12185	0.7898		0.35	
1523	D4052	0.7897355		-0.01	
1530	ISO12185	0.78975		0.07	
1611	ISO12185	0.78972		-0.10	
1618	ISO12185	0.78972		-0.10	
1656	D4052	0.7898		0.35	
1697	ISO12185	0.78976		0.12	
1710	ISO12185	0.7897		-0.21	
1713	ISO12185	0.78971		-0.16	
1726	D4052	0.78976		0.12	
1727	D4052	0.78969		-0.27	
1817	OIML table	0.78980		0.35	
1835	ISO12185	0.78977		0.18	
1852	ISO12185	0.789733		-0.03	
1919	ISO12185	0.78977	C	0.18	First reported 0.79014
6047	ISO12185	0.7896		-0.77	
6057	ISO12185	0.7897		-0.21	
6070	D4052	0.7898		0.35	
6214	ISO12185	0.789733		-0.03	
6291	ISO12185	0.7898		0.35	
6292		-----		-----	
6293	ISO12185	0.7896		-0.77	
6297		-----		-----	
6357		-----		-----	
6424		-----		-----	
6426	D4052	0.789753		0.09	
6436	ISO12185	0.79		-0.16	

normality	suspect
n	56
outliers	3
mean (n)	0.789738
st.dev. (n)	0.0000562
R(calc.)	0.000157
st.dev.(ISO12185:96)	0.0001786
R(ISO12185:96)	0.0005

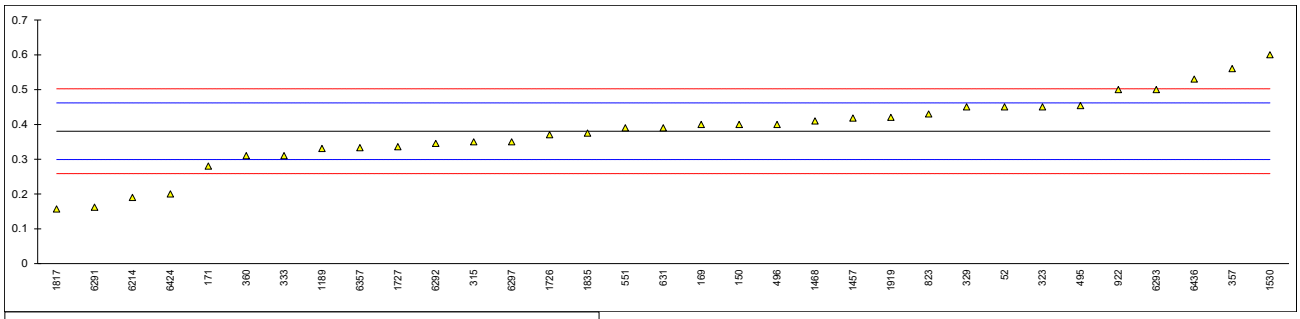


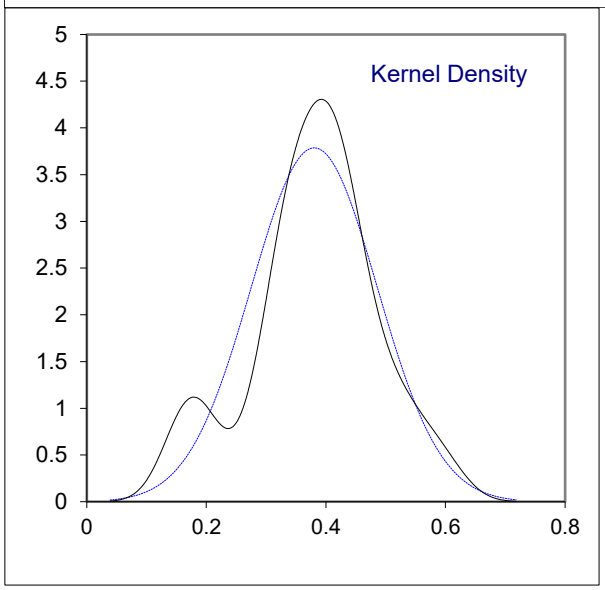


Determination of Electrical Conductivity at 25°C on sample #21260; results in µS/cm

lab	method	value	mark	z(targ)	remarks
52	EN15938	0.45		1.71	
120		-----		-----	
150	EN15938	0.40		0.48	
169	NBR10547	0.40	C	0.48	First reported 4
171	EN15938	0.28	C	-2.47	First reported 28
174	D1125	<10		-----	
175		-----		-----	
235		-----		-----	
315	EN15938	0.35		-0.75	
323	EN15938	0.45		1.71	
329	EN15938	0.45		1.71	
333	EN15938	0.31		-1.73	
334	EN15938	<0.3		-----	
337		-----		-----	
343	EN15938	<0.3	C	-----	First reported 1.06
357	EN15938	0.56		4.42	
360	EN15938	0.31		-1.73	
444		-----		-----	
468		-----		-----	
492		-----		-----	
495	EN15938	0.454		1.81	
496	EN15938	0.40		0.48	
511		-----		-----	
541		-----		-----	
551	NBR10547	0.39		0.24	
554		-----		-----	
558		-----		-----	
621	EN15938	<10		-----	
631	D1125	0.39		0.24	
633		-----		-----	
634		-----		-----	
657		-----		-----	
663		-----		-----	
823	D1125	0.43		1.22	
902		-----		-----	
913		-----		-----	
922	D5391	0.50		2.94	
1047		-----		-----	
1108		-----		-----	
1189	EN15938	0.331		-1.21	
1457	EN15938	0.418		0.93	
1468	EN15938	0.41		0.73	
1523		-----		-----	
1530	EN15938	0.6		5.40	
1611		-----		-----	
1618		-----		-----	
1656	EN15938	<1		-----	
1697		-----		-----	
1710		-----		-----	
1713		-----		-----	
1726	EN15938	0.37		-0.25	
1727	EN15938	0.336		-1.09	
1817	In house	0.157		-5.50	
1835	EN15938	0.375		-0.13	
1852		-----		-----	
1919	EN15938	0.42		0.98	
6047		-----		-----	
6057		-----		-----	
6070		-----		-----	
6214	EN15938	0.19		-4.68	
6291	EN15938	0.162		-5.37	
6292	NBR10547	0.345		-0.87	
6293	EN15938	0.5		2.94	
6297	NBR10547	0.35		-0.75	
6357	NBR10547	0.333		-1.16	
6424	INH-3001	0.20		-4.44	
6426		-----		-----	
6436	EN15938	0.530		3.68	

normality	OK
n	33
outliers	0
mean (n)	0.3803
st.dev. (n)	0.10538
R(calc.)	0.2951
st.dev.(EN15938:10)	0.04064
R(EN15938:10)	0.1138

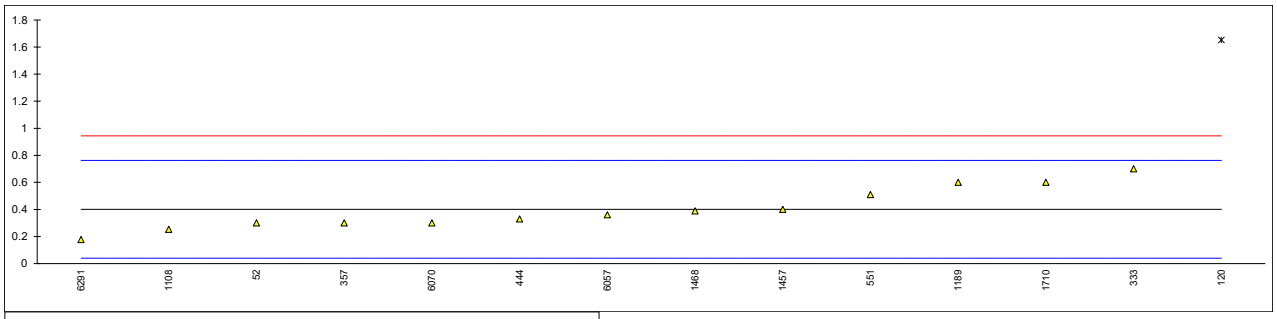


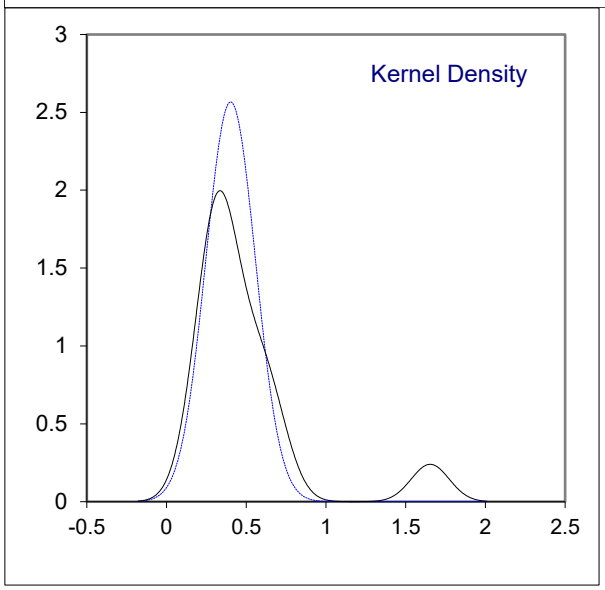


Determination of Nitrogen on sample #21260; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52	D4629	0.3		-0.56	
120		1.653	G(0.01)	6.93	
150	D4629	<0.3		-----	
169		-----		-----	
171	D4629	<0.3		-----	
174		-----		-----	
175		-----		-----	
235		-----		-----	
315		-----		-----	
323		-----		-----	
329		-----		-----	
333	D4629	0.7		1.65	
334	D4629	<0.3		-----	
337		-----		-----	
343		-----		-----	
357	D4629	0.3		-0.56	
360		-----		-----	
444	D4629	0.33		-0.40	
468		-----		-----	
492		-----		-----	
495	D4629	<0,3		-----	
496	D4629	<0.3		-----	
511		-----		-----	
541		-----		-----	
551	D4629	0.51		0.60	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657	D4629	<0.3		-----	
663	D4629	<0.3		-----	
823	D4629	<0.3		-----	
902		-----		-----	
913		-----		-----	
922	D4629	<0.3		-----	
1047	D4629	<0,5		-----	
1108	D5762	0.2533		-0.82	
1189	D4629	0.6		1.10	
1457	D4629	0.4		-0.01	
1468	D4629	0.389		-0.07	
1523		-----		-----	
1530	D4629	<1		-----	
1611		-----		-----	
1618		-----		-----	
1656		-----		-----	
1697		-----		-----	
1710	D4629	0.6		1.10	
1713		-----		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835		-----		-----	
1852		-----		-----	
1919		-----		-----	
6047		-----		-----	
6057	D4629	0.36		-0.23	
6070	D4629	0.3		-0.56	
6214		-----		-----	
6291	D4629	0.177		-1.24	
6292		-----		-----	
6293		-----		-----	
6297		-----		-----	
6357		-----		-----	
6424		-----		-----	
6426		-----		-----	
6436	D4629	< 0,1		-----	

normality	OK
n	13
outliers	1
mean (n)	0.401
st.dev. (n)	0.1554
R(calc.)	0.435
st.dev.(D4629:17)	0.1807
R(D4629:17)	0.506

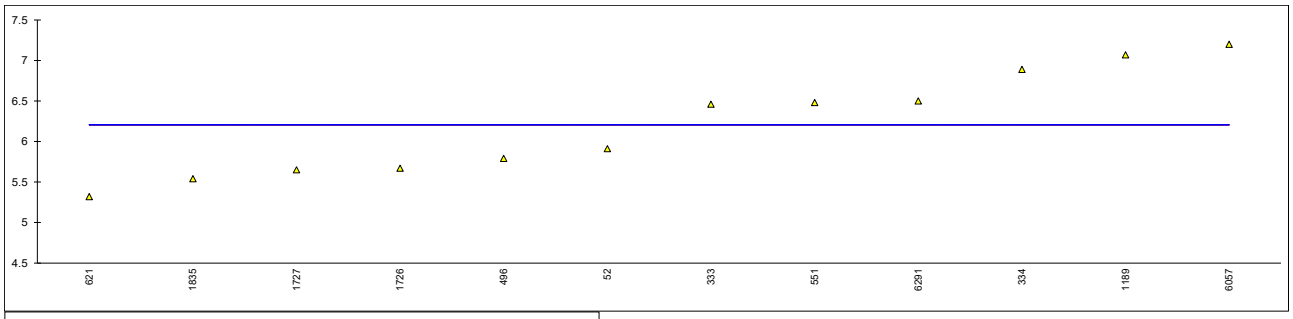


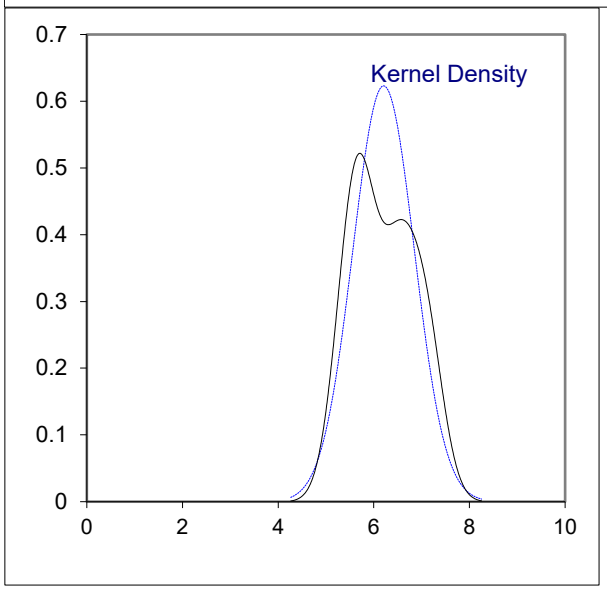


Determination of pHe with LiCl electrode on sample #21260;

lab	method	value	mark	z(targ)	remarks
52	EN15490	5.91		-----	
120		-----		-----	
150		-----		-----	
169		-----		-----	
171		-----		-----	
174		-----		-----	
175		-----		-----	
235		-----		-----	
315		-----		-----	
323		-----		-----	
329		-----		-----	
333	EN15490	6.46		-----	
334	EN15490	6.89		-----	
337		-----		-----	
343		-----		-----	
357		-----		-----	
360		-----		-----	
444		-----		-----	
468		-----		-----	
492		-----		-----	
495		-----		-----	
496	EN15490	5.79		-----	
511		-----		-----	
541		-----		-----	
551	NBR10891	6.48		-----	
554		-----		-----	
558		-----		-----	
621	EN15490	5.32		-----	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657		-----		-----	
663		-----		-----	
823		-----		-----	
902		-----		-----	
913		-----		-----	
922		-----		-----	
1047		-----		-----	
1108		-----		-----	
1189	EN15490	7.07		-----	
1457		-----		-----	
1468		-----		-----	
1523		-----		-----	
1530		-----		-----	
1611		-----		-----	
1618		-----		-----	
1656		-----		-----	
1697		-----		-----	
1710		-----		-----	
1713		-----		-----	
1726	EN15490	5.67		-----	
1727	EN15490	5.65		-----	
1817		-----		-----	
1835	EN15490	5.54		-----	
1852		-----		-----	
1919		-----		-----	
6047		-----		-----	
6057	EN15490	7.2		-----	
6070		-----		-----	
6214		-----		-----	
6291	EN15490	6.5		-----	
6292		-----		-----	
6293		-----		-----	
6297		-----		-----	
6357		-----		-----	
6424		-----		-----	
6426		-----		-----	
6436		-----		-----	

normality	OK
n	12
outliers	0
mean (n)	6.207
st.dev. (n)	0.6406
R(calc.)	1.794
st.dev.(EN15490:07)	(0.2128)
R(EN15490:07)	(0.596)

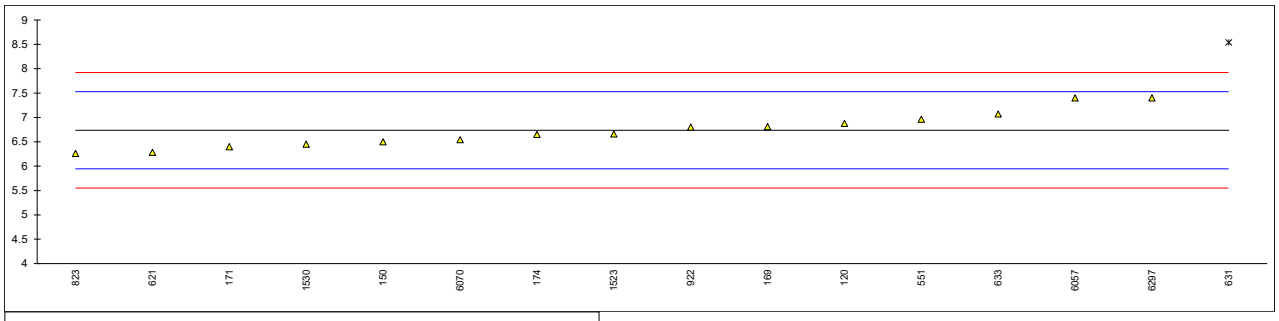


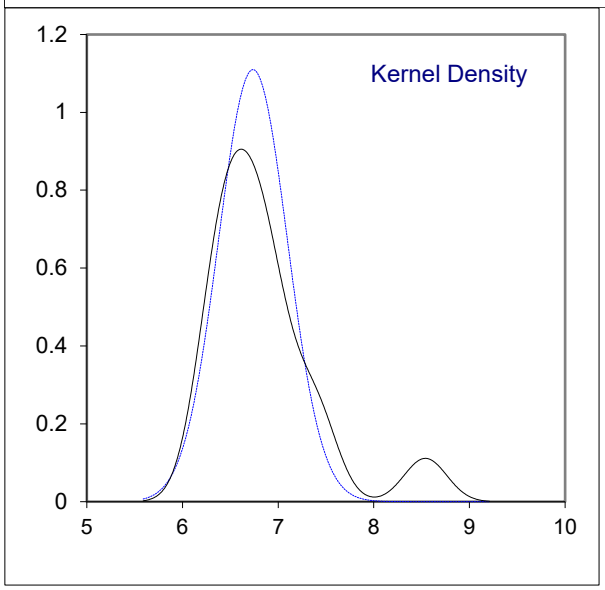


Determination of pHe with KCl electrode on sample #21260;

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
120	D6423	6.878		0.36	
150	D6423	6.5		-0.60	
169	D6423	6.81	C	0.18	First reported 8.09
171	D6423	6.4		-0.85	
174	D6423	6.65		-0.22	
175		-----		-----	
235		-----		-----	
315		-----		-----	
323		-----		-----	
329		-----		-----	
333		-----		-----	
334		-----		-----	
337		-----		-----	
343		-----		-----	
357		-----		-----	
360		-----		-----	
444		-----		-----	
468		-----		-----	
492		-----		-----	
495		-----		-----	
496		-----		-----	
511		-----		-----	
541		-----		-----	
551	D6423	6.96		0.56	
554		-----		-----	
558		-----		-----	
621	D6423	6.28		-1.16	
631	D6423	8.54	G(0.01)	4.56	
633	D6423	7.070		0.84	
634		-----		-----	
657		-----		-----	
663		-----		-----	
823	D6423	6.26		-1.21	
902		-----		-----	
913		-----		-----	
922	D6423	6.8		0.16	
1047		-----		-----	
1108		-----		-----	
1189		-----		-----	
1457		-----		-----	
1468		-----		-----	
1523	D6423	6.66		-0.20	
1530	D6423	6.45		-0.73	
1611		-----		-----	
1618		-----		-----	
1656		-----		-----	
1697		-----		-----	
1710		-----		-----	
1713		-----		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835		-----		-----	
1852		-----		-----	
1919		-----		-----	
6047		-----		-----	
6057	D6423	7.4		1.68	
6070	D6423	6.54		-0.50	
6214		-----		-----	
6291		-----		-----	
6292		-----		-----	
6293		-----		-----	
6297	D6423	7.4		1.68	
6357		-----		-----	
6424		-----		-----	
6426		-----		-----	
6436		-----		-----	

normality	OK
n	15
outliers	1
mean (n)	6.737
st.dev. (n)	0.3595
R(calc.)	1.007
st.dev.(D6423:20a)	0.3953
R(D6423:20a)	1.107





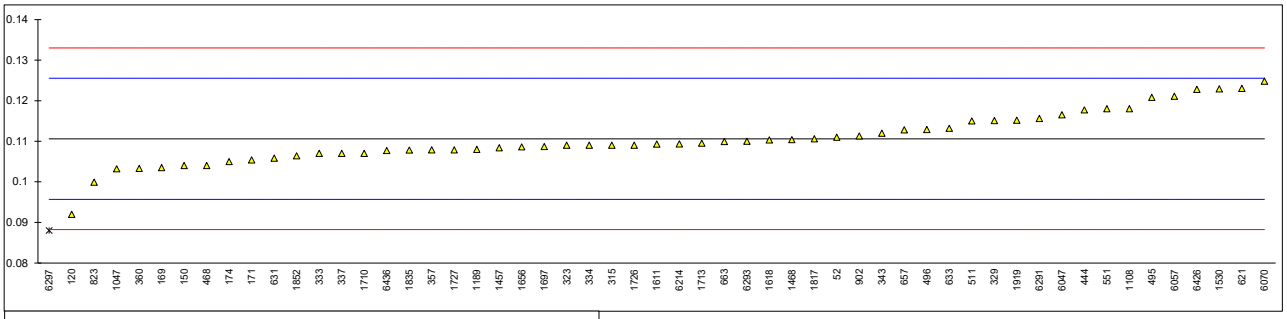
Determination of Phosphorus as P on sample #21260; results in mg/L

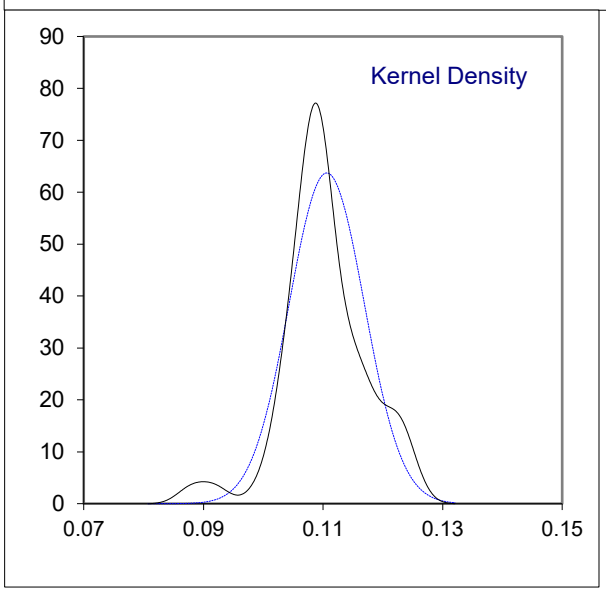
lab	method	value	mark	z(targ)	remarks
52	EN15837	0.10		-----	
120		-----		-----	
150	D3231	<0.20		-----	
169		-----		-----	
171	EN15487	<0.0010		-----	
174		-----		-----	
175		-----		-----	
235		-----		-----	
315	EN15837	<0.13		-----	
323	EN15487	< 0.15		-----	
329	EN15487	<0.15		-----	
333	EN15487	<0.15		-----	
334		-----		-----	
337		-----		-----	
343	EN15837	<0,13		-----	
357		-----		-----	
360	EN15837	< 0,10		-----	
444		-----		-----	
468	EN15487	<0,08		-----	
492		-----		-----	
495		-----		-----	
496	EN15487	<0.15		-----	
511	EN15487	<0.15		-----	
541		-----		-----	
551	INH-2047	<0.13		-----	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657		-----		-----	
663		-----		-----	
823	UOP389	<0.11		-----	
902		-----		-----	
913		-----		-----	
922		-----		-----	
1047	EN15837	<0,1		-----	
1108	EN15487	0.00		-----	
1189		-----		-----	
1457		-----		-----	
1468	EN15837	<0.01		-----	
1523		-----		-----	
1530		-----		-----	
1611	EN15487	0.04		-----	
1618		-----		-----	
1656		-----		-----	
1697		-----		-----	
1710		-----		-----	
1713	EN15487	<0,15		-----	
1726	EN15487	0.023		-----	
1727	EN15487	<0,15		-----	
1817		-----		-----	
1835	EN15837	<0.13		-----	
1852		-----		-----	
1919		-----		-----	
6047		-----		-----	
6057	D3231	0.20		-----	
6070		-----		-----	
6214	EN15487	0.01		-----	
6291		-----		-----	
6292		-----		-----	
6293		0.00		-----	
6297		-----		-----	
6357		-----		-----	
6424		-----		-----	
6426		-----		-----	
6436	EN15837	< 0,1		-----	
	n	24			
	mean (n)	<0.15			Application range EN15487:07: 0.15 – 1.50 mg/L

Determination of Water, Coulometric on sample #21260; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	EN15489	0.111		0.05	
120	EN15489	0.092		-2.50	
150	E1064	0.104		-0.89	
169	E1064	0.1035		-0.95	
171	EN15489	0.1054		-0.70	
174	E1064	0.105		-0.75	
175		-----		-----	
235		-----		-----	
315	EN15489	0.1090		-0.22	
323	EN15489	0.1090		-0.22	
329	D6304	0.1151		0.60	
333	EN15489	0.107		-0.49	
334	EN15489	0.109		-0.22	
337	EN15489	0.107		-0.49	
343	EN15489	0.112		0.19	
357	E1064	0.1079		-0.36	
360	ISO12937	0.1033		-0.98	
444	EN15489	0.1177		0.95	
468	EN15489	0.104		-0.89	
492		-----		-----	
495	EN15489	0.1208		1.37	
496	EN15489	0.1129		0.31	
511	E1064	0.115		0.59	
541		-----		-----	
551	D6304	0.118		0.99	
554		-----		-----	
558		-----		-----	
621	D6304	0.123		1.66	
631	D6304	0.1058		-0.65	
633	D6304	0.113178		0.34	
634		-----		-----	
657	E1064	0.1128		0.29	
663	E1064	0.1099		-0.10	
823	E1064	0.0999		-1.44	
902	EN15489	0.1113		0.09	
913		-----		-----	
922		-----		-----	
1047	EN15489	0.1032		-1.00	
1108	EN15489	0.118		0.99	
1189	EN15489	0.108		-0.35	
1457	EN15489	0.1084		-0.30	
1468	EN15489	0.1104		-0.03	
1523		-----		-----	
1530	EN15489	0.1229	C	1.65	First reported 0.0214
1611	EN15489	0.1093		-0.18	
1618	EN15489	0.1103		-0.04	
1656	EN15489	0.1086		-0.27	
1697	EN15489	0.1087		-0.26	
1710	EN15489	0.107		-0.49	
1713	EN15489	0.1095		-0.15	
1726	EN15489	0.109		-0.22	
1727	EN15489	0.1079		-0.36	
1817	In house	0.1106		0.00	
1835	EN15489	0.1078		-0.38	
1852	EN15489	0.1064		-0.57	
1919	EN15489	0.11516		0.61	
6047	ISO12937	0.1165		0.79	
6057	EN15489	0.1211		1.41	
6070	E1064	0.1248		1.90	
6214	EN15489	0.10934		-0.17	
6291	EN15489	0.1156		0.67	
6292		-----		-----	
6293	ISO12937	0.11		-0.08	
6297	E1064	0.088	R(0.05)	-3.03	
6357		-----		-----	
6424		-----		-----	
6426	INH-C10S	0.1228		1.63	
6436	EN15489	0.1077		-0.39	

normality	OK
n	54
outliers	1
mean (n)	0.11062
st.dev. (n)	0.006263
R(calc.)	0.01754
st.dev.(EN15489:07)	0.007457
R(EN15489:07)	0.02088
Compare	
R(E1064:16)	0.01759

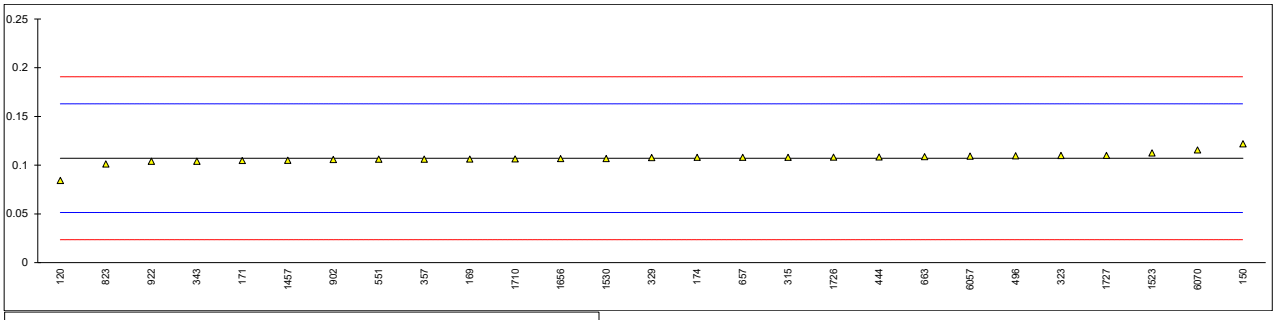


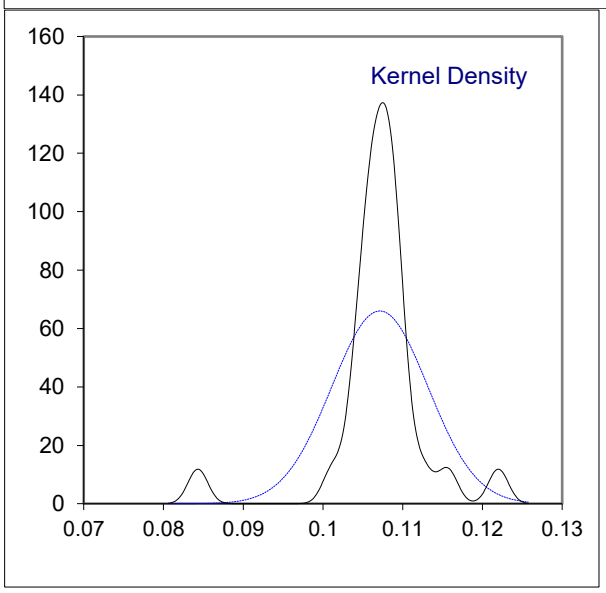


Determination of Water, Volumetric on sample #21260; results in %M/M

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
120	E203	0.0843		-0.82	
150	E203	0.122		0.53	
169	E203	0.1062		-0.03	
171	E203	0.1047		-0.09	
174	E203	0.108		0.03	
175		-----		-----	
235		-----		-----	
315	E203	0.1080		0.03	
323	E203	0.1098		0.10	
329	E203	0.1077		0.02	
333		-----		-----	
334		-----		-----	
337		-----		-----	
343	E203	0.104		-0.11	
357	E203	0.1061		-0.04	
360		-----		-----	
444	E203	0.1083		0.04	
468		-----		-----	
492		-----		-----	
495		-----		-----	
496	E203	0.1095		0.09	
511		-----		-----	
541		-----		-----	
551	E203	0.106		-0.04	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657	E203	0.108		0.03	
663	E203	0.1086		0.05	
823	E203	0.1012		-0.21	
902	E203	0.1057		-0.05	
913		-----		-----	
922	E203	0.1039		-0.12	
1047		-----		-----	
1108		-----		-----	
1189		-----		-----	
1457	E203	0.105		-0.08	
1468		-----		-----	
1523	E203	0.1125		0.19	
1530	E203	0.1068		-0.01	
1611		-----		-----	
1618		-----		-----	
1656	E203	0.1067		-0.02	
1697		-----		-----	
1710	EN15692	0.1064		-0.03	
1713		-----		-----	
1726	EN15692	0.1082		0.04	
1727	EN15692	0.110		0.10	
1817		-----		-----	
1835		-----		-----	
1852		-----		-----	
1919		-----		-----	
6047		-----		-----	
6057	E203	0.1093		0.08	
6070	E203	0.11563		0.31	
6214		-----		-----	
6291		-----		-----	
6292		-----		-----	
6293		-----		-----	
6297		-----		-----	
6357		-----		-----	
6424		-----		-----	
6426		-----		-----	
6436		-----		-----	

normality	not OK
n	27
outliers	0
mean (n)	0.10713
st.dev. (n)	0.006039
R(calc.)	0.01691
st.dev.(E203:16)	0.027857
R(E203:16)	0.078
Compare	
R(EN15692:21)	0.0236

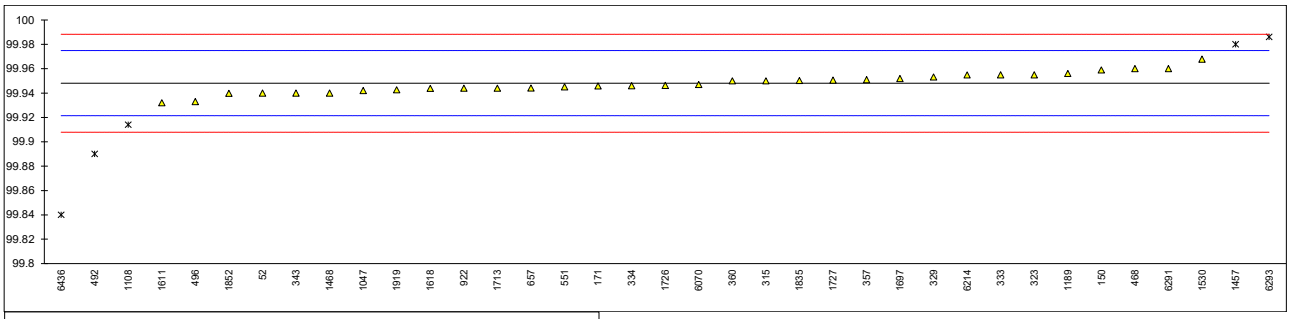


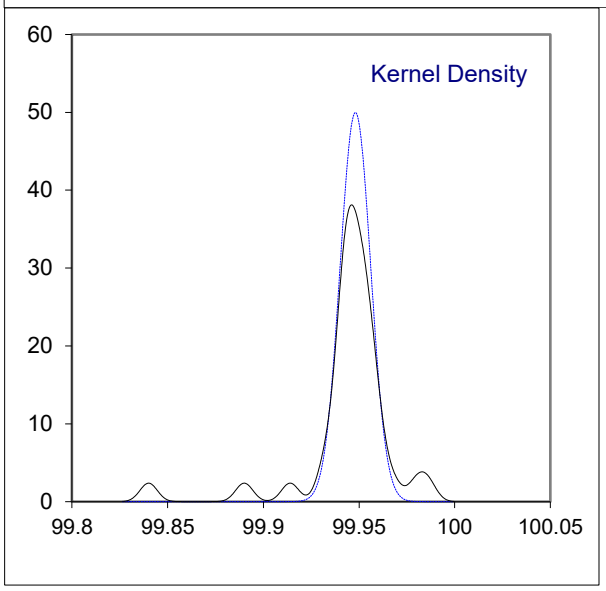


Determination of Ethanol incl. higher alcohols acc. to EN15721 on sample #21260 in %M/M

lab	method	value	mark	z(targ)	remarks
52	EN15721	99.940		-0.61	
120		-----		-----	
150	EN15721	99.959		0.81	
169		-----		-----	
171	EN15721	99.9458		-0.17	
174		-----		-----	
175		-----		-----	
235		-----		-----	
315	EN15721	99.95		0.14	
323	EN15721	99.955		0.51	
329	EN15721	99.9532		0.38	
333	EN15721	99.955		0.51	
334	EN15721	99.946		-0.16	
337		-----		-----	
343	EN15721	99.940		-0.61	
357	EN15721	99.951		0.22	
360	EN15721	99.9500		0.14	
444		-----		-----	
468	EN15721	99.96		0.89	
492	EN15721	99.89	R(0.01)	-4.34	
495		-----		-----	
496	EN15721	99.933		-1.13	
511		-----		-----	
541		-----		-----	
551	EN15721mod	99.945		-0.23	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657	EN15721mod	99.9441		-0.30	
663		-----		-----	
823		-----		-----	
902		-----		-----	
913		-----		-----	
922	INH-02	99.944		-0.31	
1047	EN15721	99.942		-0.46	
1108	EN15721	99.914	R(0.01)	-2.55	
1189	EN15721	99.956		0.59	
1457	EN15721	99.980	R(0.01)	2.38	
1468	EN15721	99.940		-0.61	
1523		-----		-----	
1530	EN15721	99.9678		1.47	
1611	EN15721	99.932		-1.20	
1618	EN15721	99.9438		-0.32	
1656		-----		-----	
1697	EN15721	99.9520		0.29	
1710		-----		-----	
1713	EN15721	99.9440		-0.31	
1726	EN15721	99.9463		-0.14	
1727	EN15721	99.9506		0.19	
1817		-----		-----	
1835	EN15721	99.9503		0.16	
1852	EN15721	99.9397		-0.63	
1919	EN15721	99.9426		-0.41	
6047		-----		-----	
6057		-----		-----	
6070	EN15721	99.947		-0.08	
6214	EN15721	99.95489		0.51	
6291	EN15721	99.96		0.89	
6292		-----		-----	
6293	EN15721	99.986	R(0.01)	2.83	
6297		-----		-----	
6357		-----		-----	
6424		-----		-----	
6426		-----		-----	
6436	EN15721	99.84	R(0.01)	-8.08	

normality	OK
n	32
outliers	5
mean (n)	99.94812
st.dev. (n)	0.007983
R(calc.)	0.02235
st.dev.(EN15721:13)	0.013389
R(EN15721:13)	0.03749

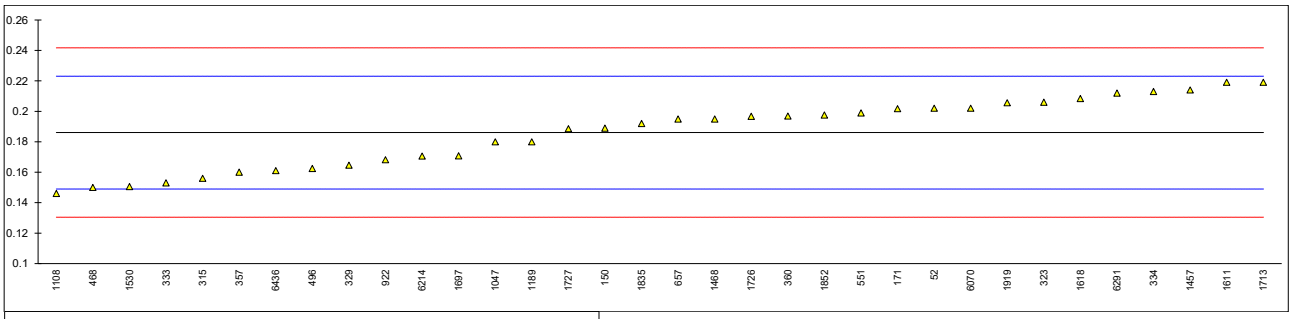


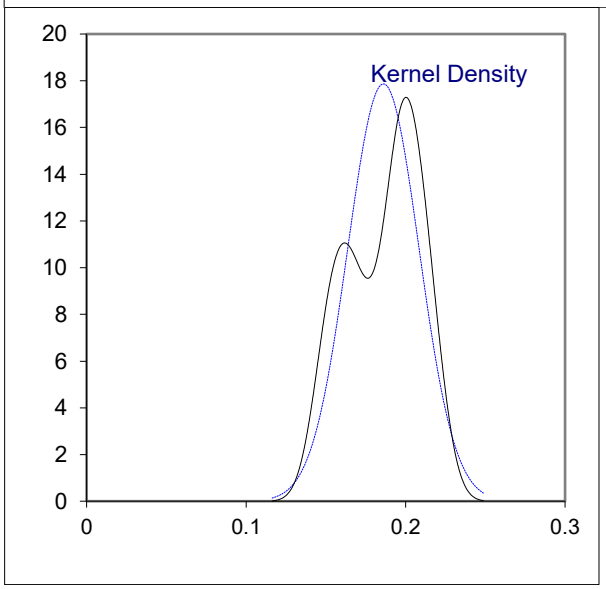


Determination of Higher alcohols acc. to EN15721 on sample #21260; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	EN15721	0.202		0.86	
120		-----		-----	
150	EN15721	0.189		0.16	
169		-----		-----	
171	EN15721	0.20175		0.85	
174		-----		-----	
175		-----		-----	
235		-----		-----	
315	EN15721	0.156		-1.62	
323	EN15721	0.206		1.08	
329	EN15721	0.1646		-1.16	
333	EN15721	0.153		-1.78	
334	EN15721	0.213		1.45	
337		-----		-----	
343		-----		-----	
357	EN15721	0.160		-1.41	
360	EN15721	0.1969		0.59	
444		-----		-----	
468	EN15721	0.15		-1.95	
492		-----		-----	
495		-----		-----	
496	EN15721	0.1625		-1.27	
511		-----		-----	
541		-----		-----	
551	EN15721mod	0.1989		0.69	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657	EN15721mod	0.1950		0.48	
663		-----		-----	
823		-----		-----	
902		-----		-----	
913		-----		-----	
922	INH-02	0.1682		-0.96	
1047	EN15721	0.180		-0.33	
1108	EN15721	0.146		-2.16	
1189	EN15721	0.180	C	-0.33	First reported 0.108
1457	EN15721	0.214		1.51	
1468	EN15721	0.195		0.48	
1523		-----		-----	
1530	EN15721	0.1506		-1.91	
1611	EN15721	0.219		1.78	
1618	EN15721	0.2084		1.21	
1656		-----		-----	
1697	EN15721	0.1708		-0.82	
1710		-----		-----	
1713	EN15721	0.2190		1.78	
1726	EN15721	0.1967		0.57	
1727	EN15721	0.1886		0.14	
1817		-----		-----	
1835	EN15721	0.1920		0.32	
1852	EN15721	0.1976		0.62	
1919	EN15721	0.2056		1.05	
6047		-----		-----	
6057		-----		-----	
6070	EN15721	0.202		0.86	
6214	EN15721	0.1706		-0.83	
6291	EN15721	0.212		1.40	
6292		-----		-----	
6293		-----	W	-----	Test result withdrawn, reported 0.03
6297		-----		-----	
6357		-----		-----	
6424		-----		-----	
6426		-----		-----	
6436	EN15721	0.161		-1.35	

normality	OK
n	34
outliers	0
mean (n)	0.18605
st.dev. (n)	0.022339
R(calc.)	0.06255
st.dev.(EN15721:13)	0.018535
R(EN15721:13)	0.05190

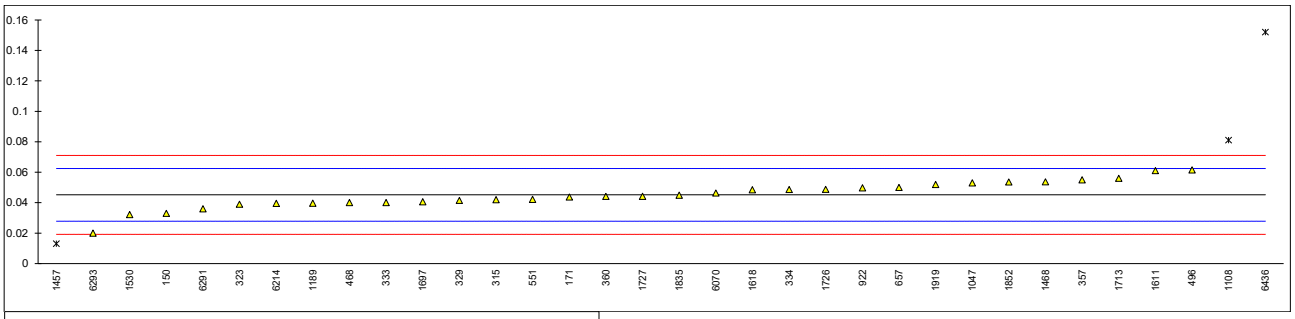


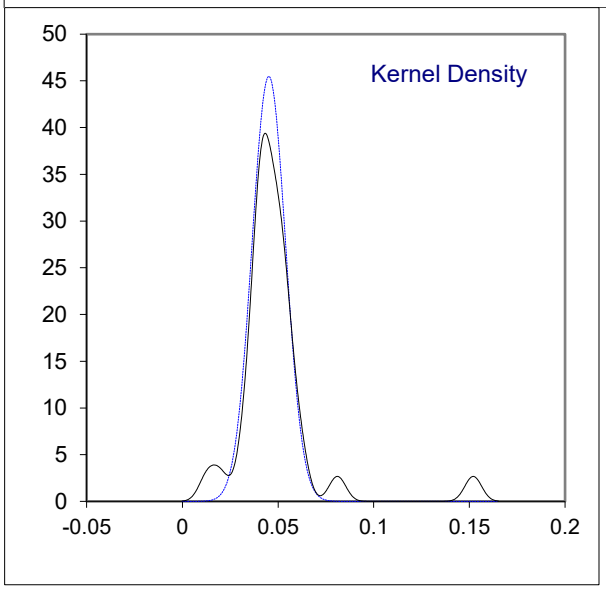


Determination of Impurities acc. to EN15721 on sample #21260; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	EN15721	<0.100		-----	
120		-----		-----	
150	EN15721	0.033	C	-1.41	First reported 0.231
169		-----		-----	
171	EN15721	0.0437	C	-0.17	First reported 0.0043
174		-----		-----	
175		-----		-----	
235		-----		-----	
315	EN15721	0.042		-0.37	
323	EN15721	0.039		-0.71	
329	EN15721	0.0415		-0.42	
333	EN15721	0.040		-0.60	
334	EN15721	0.049	C	0.40	First reported 0.267
337		-----		-----	
343		-----		-----	
357	EN15721	0.055		1.14	
360	EN15721	0.0441		-0.12	
444		-----		-----	
468	EN15721	0.04		-0.60	
492		-----		-----	
495		-----		-----	
496	EN15721	0.0615		1.89	
511		-----		-----	
541		-----		-----	
551	EN15721mod	0.04216		-0.35	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657	EN15721mod	0.05	C	0.56	First reported 0.2509
663		-----		-----	
823		-----		-----	
902		-----		-----	
913		-----		-----	
922	INH-02	0.0497		0.53	
1047	EN15721	0.053		0.91	
1108	EN15721	0.081	R(0.05)	4.15	
1189	EN15721	0.0396		-0.64	
1457	EN15721	0.013	R(0.05)	-3.72	
1468	EN15721	0.0537		0.99	
1523		-----		-----	
1530	EN15721	0.0322	C	-1.50	First reported 0.1828
1611	EN15721	0.061		1.83	
1618	EN15721	0.0484		0.38	
1656		-----		-----	
1697	EN15721	0.0406		-0.53	
1710		-----		-----	
1713	EN15721	0.0560		1.26	
1726	EN15721	0.04871		0.41	
1727	EN15721	0.0442		-0.11	
1817		-----		-----	
1835	EN15721	0.0449		-0.03	
1852	EN15721	0.0536		0.98	
1919	EN15721	0.0519		0.78	
6047		-----		-----	
6057		-----		-----	
6070	EN15721	0.0463		0.13	
6214	EN15721	0.03951		-0.65	
6291	EN15721	0.036		-1.06	
6292		-----		-----	
6293	EN15721	0.02		-2.91	
6297		-----		-----	
6357		-----		-----	
6424		-----		-----	
6426		-----		-----	
6436	EN15721	0.152	R(0.01)	12.37	

normality	suspect
n	31
outliers	3
mean (n)	0.04516
st.dev. (n)	0.008771
R(calc.)	0.02456
st.dev.(Horwitz (n=9))	0.008638
R(Horwitz (n=9))	0.02419

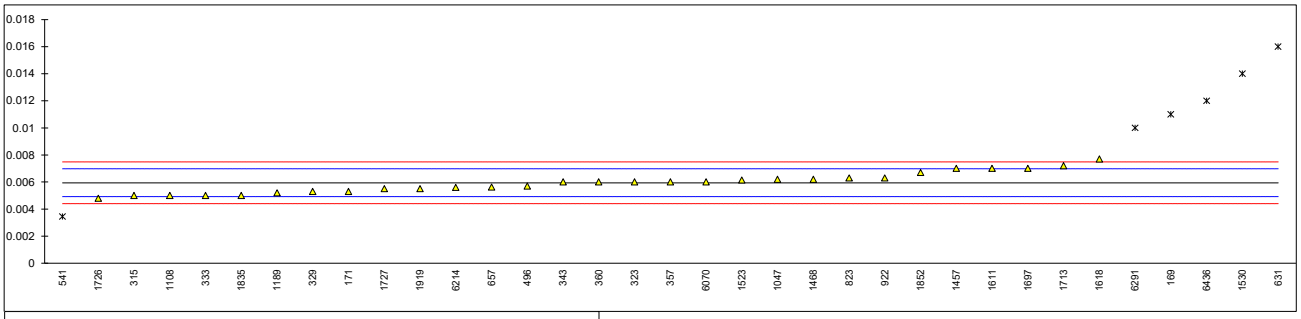


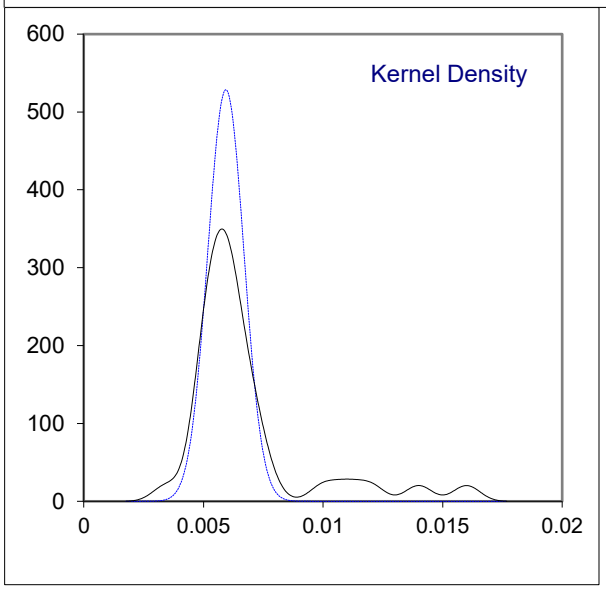


Determination of Methanol on sample #21260; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	EN15721	<0.100		-----	
120		-----		-----	
150	EN15721	<0.100		-----	
169	D5501	0.011	C,R(0.01)	9.84	First reported 0.018
171	EN15721	0.0053		-1.25	
174		-----		-----	
175		-----		-----	
235		-----		-----	
315	EN15721	0.005		-1.83	
323	EN15721	0.006		0.12	
329	EN15721	0.0053		-1.25	
333	EN15721	0.005		-1.83	
334	EN15721	<0.100		-----	
337		-----		-----	
343	EN15721	0.006		0.12	
357	EN15721	0.006		0.12	
360	EN15721	0.0060		0.12	
444		-----		-----	
468	EN15721	<0,01		-----	
492		-----		-----	
495		-----		-----	
496	EN15721	0.0057		-0.47	
511		-----		-----	
541	INH-0002	0.00345	R(0.01)	-4.85	
551	D5501	<0.01		-----	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631	D5501	0.016	R(0.01)	19.57	
633		-----		-----	
634		-----		-----	
657	EN15721mod	0.005624		-0.62	
663		-----		-----	
823	D5501	0.0063		0.70	
902		-----		-----	
913		-----		-----	
922	INH-02	0.0063		0.70	
1047	EN15721	0.0062		0.50	
1108	EN15721	0.005		-1.83	
1189	D5501	0.0052		-1.44	
1457	EN15721	0.007		2.06	
1468	EN15721	0.0062		0.50	
1523	D5501	0.006151		0.41	
1530	EN15721	0.0140	C,R(0.01)	15.68	First reported 0.0120
1611	EN15721	0.007		2.06	
1618	EN15721	0.0077		3.42	
1656		-----		-----	
1697	EN15721	0.0070		2.06	
1710		-----		-----	
1713	EN15721	0.0072		2.45	
1726	EN15721	0.0048		-2.22	
1727	EN15721	0.0055		-0.86	
1817		-----		-----	
1835	EN15721	0.0050		-1.83	
1852	EN15721	0.0067		1.48	
1919	EN15721	0.0055		-0.86	
6047		-----		-----	
6057		-----		-----	
6070	EN15721	0.006		0.12	
6214	EN15721	0.0056		-0.66	
6291	EN15721	0.01	R(0.01)	7.90	
6292		-----		-----	
6293		-----	W	-----	Test result withdrawn, reported 0
6297		-----		-----	
6357		-----		-----	
6424		-----		-----	
6426		-----		-----	
6436	EN15721	0.012	R(0.01)	11.79	

normality	OK
n	29
outliers	6
mean (n)	0.00594
st.dev. (n)	0.000755
R(calc.)	0.00211
st.dev.(Horwitz)	0.000514
R(Horwitz)	0.00144
Compare	
R(EN15721:13)	-0.00431
R(D5501:20)	0.01325

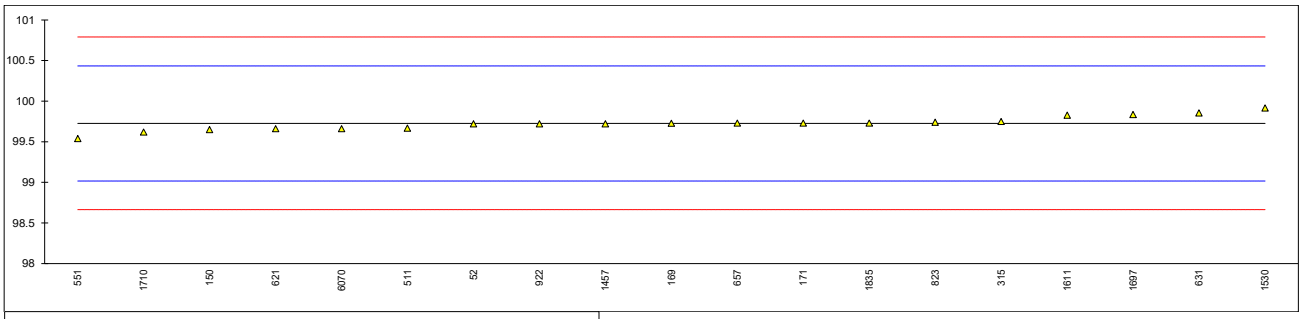


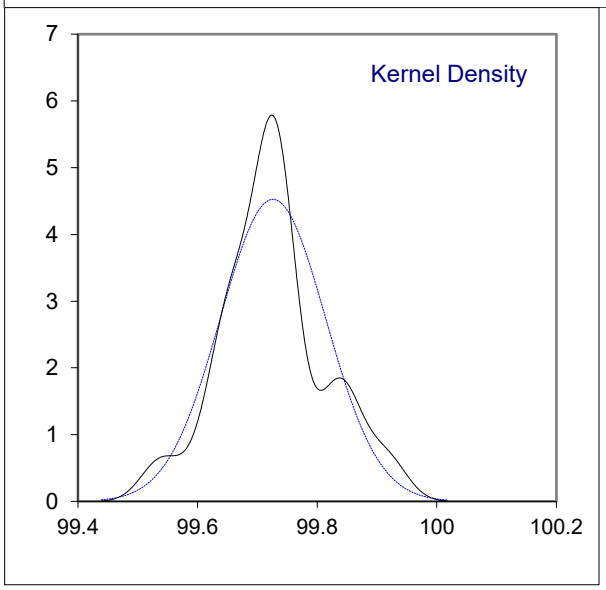


Determination of Ethanol acc. to ASTM D5501 on sample #21260; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D5501	99.72		-0.02	
120		-----		-----	
150	D5501	99.65		-0.22	
169	D5501	99.728		0.00	
171	D5501	99.73		0.01	
174		-----		-----	
175		-----		-----	
235		-----		-----	
315	D5501	99.75		0.07	
323		-----		-----	
329		-----		-----	
333		-----		-----	
334		-----		-----	
337		-----		-----	
343		-----		-----	
357		-----		-----	
360		-----		-----	
444		-----		-----	
468		-----		-----	
492		-----		-----	
495		-----		-----	
496		-----		-----	
511	D5501	99.66876		-0.16	
541		-----		-----	
551	D5501	99.54		-0.53	
554		-----		-----	
558		-----		-----	
621	D5501	99.66		-0.19	
631	D5501	99.855		0.36	
633		-----		-----	
634		-----		-----	
657	D5501	99.73		0.01	
663		-----		-----	
823	D5501	99.74		0.04	
902		-----		-----	
913		-----		-----	
922	D5501	99.72		-0.02	
1047		-----		-----	
1108		-----		-----	
1189		-----		-----	
1457	D5501	99.72		-0.02	
1468		-----		-----	
1523		-----		-----	
1530	D5501	99.9172		0.54	
1611	INH-79528-3	99.827		0.28	
1618		-----		-----	
1656		-----		-----	
1697	INH-79528-3	99.835		0.31	
1710	D5501	99.62		-0.30	
1713		-----		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835	D5501	99.73		0.01	
1852		-----		-----	
1919		-----		-----	
6047		-----		-----	
6057		-----		-----	
6070	D5501	99.66		-0.19	
6214		-----		-----	
6291		-----		-----	
6292		-----		-----	
6293		-----		-----	
6297		-----		-----	
6357		-----		-----	
6424		-----		-----	
6426		-----		-----	
6436		-----		-----	

normality	OK
n	19
outliers	0
mean (n)	99.7264
st.dev. (n)	0.08813
R(calc.)	0.2468
st.dev.(D5501:20)	0.35455
R(D5501:20)	0.9927

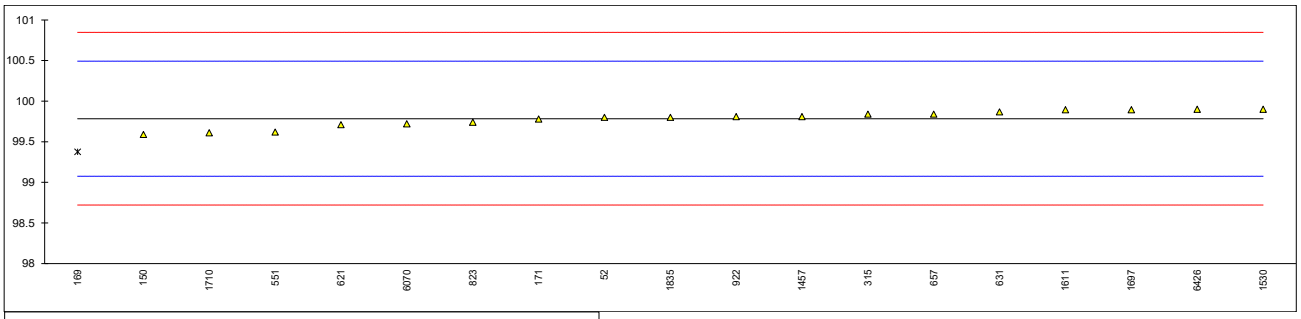


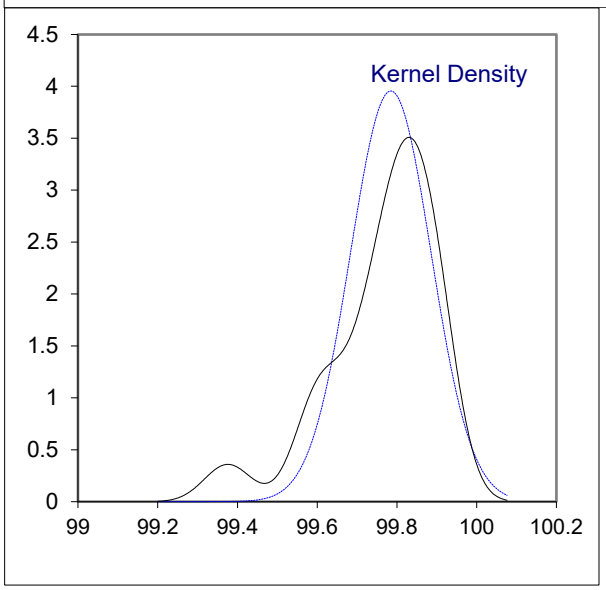


Determination of Ethanol acc. to ASTM D5501 on sample #21260; results in %V/V

lab	method	value	mark	z(targ)	remarks
52	D5501	99.80		0.04	
120		-----		-----	
150	D5501	99.59		-0.55	
169	D5501	99.376	G(0.05)	-1.15	
171	D5501	99.78		-0.01	
174		-----		-----	
175		-----		-----	
235		-----		-----	
315	D5501	99.84		0.16	
323		-----		-----	
329		-----		-----	
333		-----		-----	
334		-----		-----	
337		-----		-----	
343		-----		-----	
357		-----		-----	
360		-----		-----	
444		-----		-----	
468		-----		-----	
492		-----		-----	
495		-----		-----	
496		-----		-----	
511		-----		-----	
541		-----		-----	
551	D5501	99.62		-0.47	
554		-----		-----	
558		-----		-----	
621	D5501	99.71		-0.21	
631	D5501	99.867		0.23	
633		-----		-----	
634		-----		-----	
657	D5501	99.84		0.16	
663		-----		-----	
823	D5501	99.74		-0.13	
902		-----		-----	
913		-----		-----	
922	D5501	99.81		0.07	
1047		-----		-----	
1108		-----		-----	
1189		-----		-----	
1457	D5501	99.81		0.07	
1468		-----		-----	
1523		-----		-----	
1530	D5501	99.901		0.33	
1611	INH-79528-3	99.895		0.31	
1618		-----		-----	
1656		-----		-----	
1697	INH-79528-3	99.895		0.31	
1710	D5501	99.61		-0.49	
1713		-----		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835	D5501	99.80		0.04	
1852		-----		-----	
1919		-----		-----	
6047		-----		-----	
6057		-----		-----	
6070	D5501	99.72		-0.18	
6214		-----		-----	
6291		-----		-----	
6292		-----		-----	
6293		-----		-----	
6297		-----		-----	
6357		-----		-----	
6424		-----		-----	
6426	OIML-ITS-90	99.90		0.32	
6436		-----		-----	

normality	OK
n	18
outliers	1
mean (n)	99.7849
st.dev. (n)	0.10092
R(calc.)	0.2826
st.dev.(D5501:20)	0.35442
R(D5501:20)	0.9924





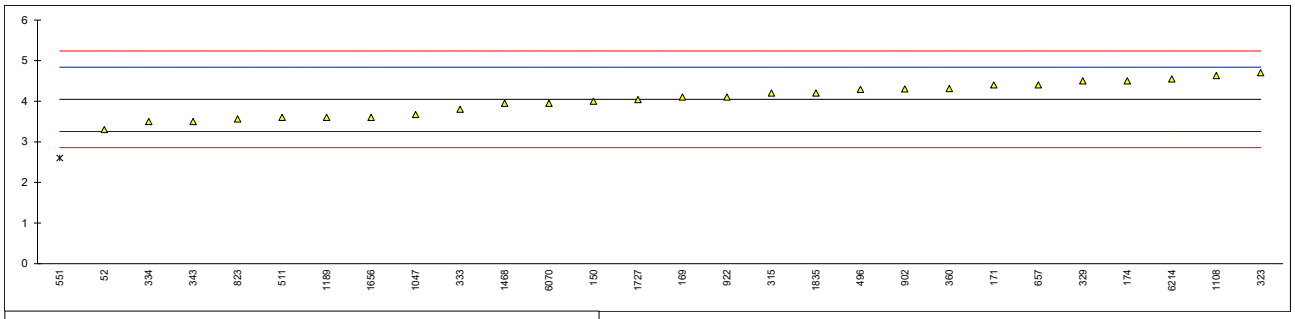
Determination of Gum (solvent washed) on sample #21260; results in mg/100mL

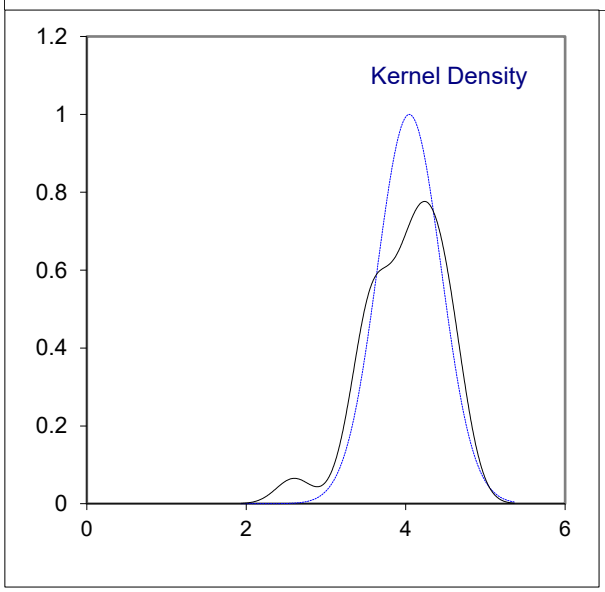
lab	method	value	mark	z(targ)	remarks
52	D381	<0.5		-----	
120		-----		-----	
150	D381	<0.5		-----	
169	D381	0.0		-----	
171	D381	<0.5		-----	
174		-----		-----	
175	D381	<0.5		-----	
235		-----		-----	
315		-----		-----	
323	D381	< 0.5		-----	
329		-----		-----	
333		-----		-----	
334		-----		-----	
337		-----		-----	
343		-----		-----	
357	D381	1		-----	
360	D381	0.8		-----	
444		-----		-----	
468		-----		-----	
492		-----		-----	
495		-----		-----	
496	D381	0.4		-----	
511		-----		-----	
541		-----		-----	
551		-----		-----	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633	D381	<1		-----	
634		-----		-----	
657	D381	0.5		-----	
663	D381	<0.5		-----	
823	D381	<0.5		-----	
902		-----		-----	
913		-----		-----	
922	D381	<1		-----	
1047		-----		-----	
1108		-----		-----	
1189	D381	0		-----	
1457	D381	0		-----	
1468	ISO6246	0.5		-----	
1523		-----		-----	
1530	D381	<0.3	C	-----	First reported 10.8
1611		-----		-----	
1618		-----		-----	
1656		-----		-----	
1697		-----		-----	
1710	D381	<0.5		-----	
1713		-----		-----	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835		-----		-----	
1852	D381	0.00		-----	
1919		-----		-----	
6047		-----		-----	
6057	D381	7		-----	Possibly a false positive test result?
6070	D381	0.3		-----	
6214		-----		-----	
6291	D381	0		-----	
6292		-----		-----	
6293		-----		-----	
6297		-----		-----	
6357		-----		-----	
6424		-----		-----	
6426		-----		-----	
6436		-----		-----	
	n	22			
	mean (n)	<1			

Determination of Inorganic Chloride as Cl on sample #21261; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52	EN15492	3.3		-1.88	
120		-----		-----	
150	D7319	4.0		-0.12	
169	D7319	4.1	C	0.14	First reported 1.9
171	D7319	4.4		0.89	
174	D7319	4.5		1.14	
175		-----		-----	
235		-----		-----	
315	EN15492	4.2		0.39	
323	EN15492	4.7		1.65	
329	EN15492	4.5		1.14	
333	EN15492	3.8		-0.62	
334	EN15492	3.5	C	-1.38	First reported 2.6
337		-----		-----	
343	EN15492	3.5		-1.38	
357		-----		-----	
360	EN15492	4.31		0.67	
444		-----		-----	
468		-----		-----	
492		-----		-----	
495		-----		-----	
496	EN15492	4.29		0.61	
511	EN15492	3.600	C	-1.13	First reported 2.812
541		-----		-----	
551	D7319	2.6	R(0.05)	-3.65	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657	D7328	4.4	C	0.89	First reported 0.282
663		-----		-----	
823	D7319	3.56		-1.23	
902	EN15492	4.30		0.64	
913		-----		-----	
922	D7328	4.1		0.14	
1047	EN15492	3.67		-0.95	
1108	EN15492	4.63		1.47	
1189	EN15492	3.6		-1.13	
1457		-----		-----	
1468	EN15492	3.95		-0.24	
1523		-----		-----	
1530		-----		-----	
1611		-----		-----	
1618		-----		-----	
1656	EN15492	3.6	C	-1.13	First reported 2.2
1697		-----		-----	
1710		-----		-----	
1713		-----		-----	
1726		-----		-----	
1727	EN15492	4.04		-0.02	
1817		-----		-----	
1835	EN15492	4.2		0.39	
1852		-----		-----	
1919		-----		-----	
6047		-----		-----	
6057		-----		-----	
6070	D7319	3.95		-0.24	
6214	EN15492	4.548		1.27	
6291		-----		-----	
6292		-----		-----	
6293		-----		-----	
6297		-----		-----	
6357		-----		-----	
6424		-----		-----	
6426		-----		-----	
6436		-----		-----	

normality	OK	
n	27	
outliers	1	
mean (n)	4.046	
st.dev. (n)	0.3990	
R(calc.)	1.117	
st.dev.(D7319:17)	0.3964	
R(D7319:17)	1.110	application range: 0.75 – 50 mg/kg
Compare		
R(EN15492:12)	0.803	application range: 1 – 30 mg/kg

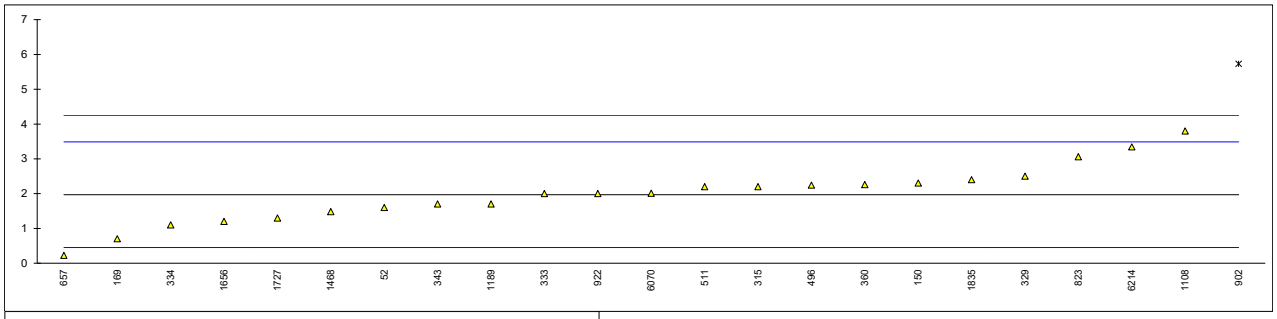


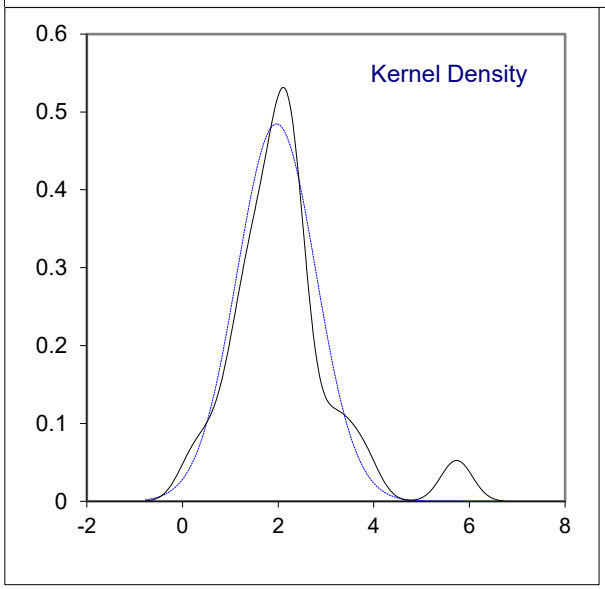


Determination of Sulfate as SO_4 on sample #21261; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52	EN15492	1.6		-0.49	
120		-----		-----	
150	D7319	2.3		0.44	
169	D7319	0.7		-1.67	
171		-----		-----	
174		-----		-----	
175		-----		-----	
235		-----		-----	
315	EN15492	2.2		0.30	
323		-----		-----	
329	EN15492	2.5		0.70	
333	EN15492	2.0		0.04	
334	EN15492	1.1		-1.15	
337		-----		-----	
343	EN15492	1.7		-0.35	
357		-----		-----	
360	EN15492	2.26		0.38	
444		-----		-----	
468		-----		-----	
492		-----		-----	
495		-----		-----	
496	EN15492	2.24		0.36	
511	EN15492	2.20	C	0.30	First reported 1.73
541		-----		-----	
551	D7318	<1		-----	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657	D7328	0.224		-2.30	
663		-----		-----	
823	D7319	3.06		1.44	
902	EN15492	5.73	R(0.01)	4.96	
913		-----		-----	
922	D7328	2.0		0.04	
1047	EN15492	<1,1		-----	
1108	EN15492	3.80		2.42	
1189	EN15492	1.7		-0.35	
1457		-----		-----	
1468	EN15492	1.48		-0.64	
1523		-----		-----	
1530		-----		-----	
1611		-----		-----	
1618		-----		-----	
1656	EN15492	1.2		-1.01	
1697		-----		-----	
1710		-----		-----	
1713		-----		-----	
1726		-----		-----	
1727	EN15492	1.3		-0.88	
1817		-----		-----	
1835	EN15492	2.4		0.57	
1852		-----		-----	
1919		-----		-----	
6047		-----		-----	
6057		-----		-----	
6070	D7319	2.01		0.05	
6214	EN15492	3.3407		1.81	
6291		-----		-----	
6292		-----		-----	
6293		-----		-----	
6297		-----		-----	
6357		-----		-----	
6424		-----		-----	
6426		-----		-----	
6436		-----		-----	

normality	OK	
n	22	
outliers	1	
mean (n)	1.969	
st.dev. (n)	0.8235	
R(calc.)	2.306	
st.dev.(D7319:17)	0.7580	
R(D7319:17)	2.123	Application range: 1 – 20 mg/kg
Compare		
R(EN15492:12)	0.561	Application range: 1 – 20 mg/kg
R(D7328:17)	1.377	Application range: 0.55 – 20 mg/kg

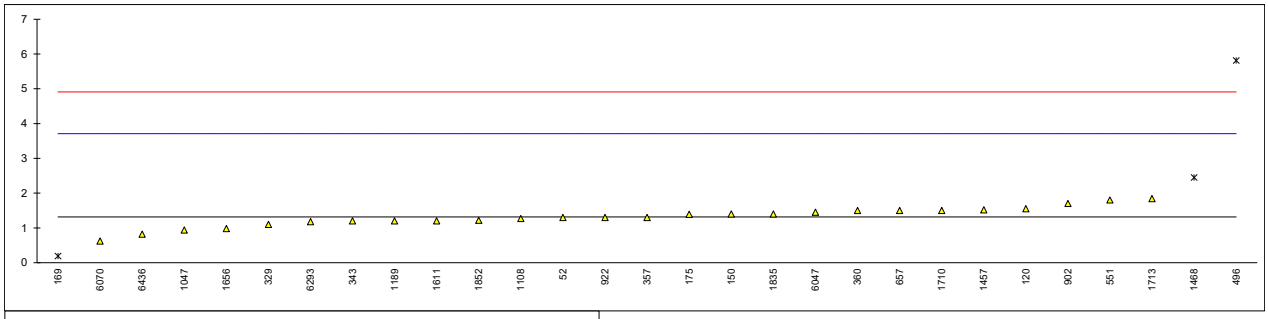


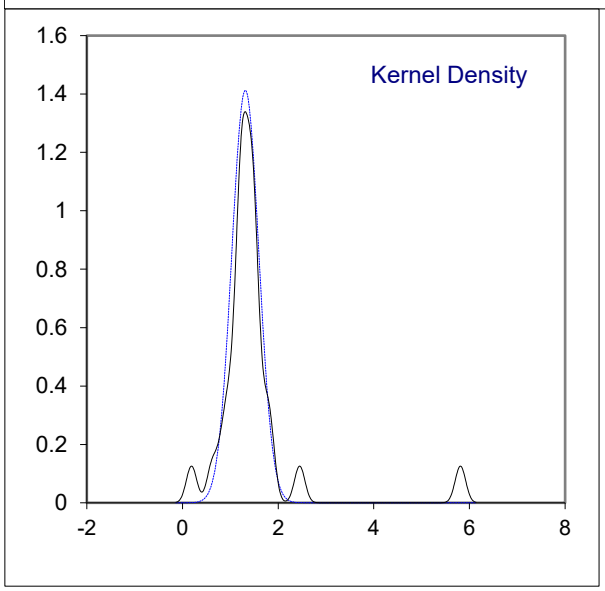


Determination of Sulfur on sample #21261; results in mg/kg

lab	Method	value	mark	z(targ)	remarks
52	EN15486	1.3		-0.01	
120	D5453	1.552		0.20	
150	D5453	1.4		0.07	
169	D5453	0.19	R(0.05)	-0.94	
171	D5453	<3.00		-----	
174		-----		-----	
175	D5453	1.39		0.06	
235		-----		-----	
315	EN15486	<5.0		-----	
323	EN15485	< 5		-----	
329	D5453	1.1		-0.18	
333	ISO20846	<3		-----	
334	ISO20846	<3		-----	
337	EN15486	< 5		-----	
343	D5453	1.2		-0.10	
357	D5453	1.3		-0.01	
360	EN15486	1.5		0.15	
444		-----		-----	
468		-----		-----	
492		-----		-----	
495	EN15486	<0,5		-----	
496	ISO20846	5.81	R(0.01)	3.75	
511		-----		-----	
541		-----		-----	
551	D5453	1.8		0.41	
554		-----		-----	
558		-----		-----	
621		-----		-----	
631		-----		-----	
633		-----		-----	
634		-----		-----	
657	D5453	1.5		0.15	
663		-----		-----	
823	D5453	<1.0		-----	
902	D5453	1.7		0.32	
913		-----		-----	
922	D5453	1.3		-0.01	
1047	EN15485	0.94		-0.31	
1108		1.27		-0.04	
1189	ISO20846	1.2		-0.10	
1457	EN15486	1.52		0.17	
1468	EN15486	2.45	R(0.05)	0.95	
1523		-----		-----	
1530		-----		-----	
1611	EN15486	1.2		-0.10	
1618		-----		-----	
1656	EN15486	0.98		-0.28	
1697		-----		-----	
1710	ISO20846	1.5		0.15	
1713	EN15486	1.84		0.44	
1726		-----		-----	
1727		-----		-----	
1817		-----		-----	
1835	EN15486	1.4		0.07	
1852	ISO20846	1.22		-0.08	
1919		-----		-----	
6047	ISO20846	1.45	C	0.11	First reported 4.28
6057		-----		-----	
6070	D5453	0.62		-0.58	
6214		-----		-----	
6291		-----		-----	
6292		-----		-----	
6293	ISO20846	1.18		-0.11	
6297		-----		-----	
6357		-----		-----	
6424		-----		-----	
6426		-----		-----	
6436	ISO20846	0.82		-0.41	

normality	OK	
n	26	
outliers	3	
mean (n)	1.315	
st.dev. (n)	0.2825	
R(calc.)	0.791	
st.dev.(EN15485:07)	1.1972	
R(EN15485:07)	3.352	Application range: 7 – 20 mg/kg
Compare		
R(D5453:19a)	0.712	Application range: 1 – 8000 mg/kg
R(ISO20846:19)	1.189	Application range: 3 – 60 mg/kg
R(EN15486:07)	1.880	Application range: 5 – 20 mg/kg

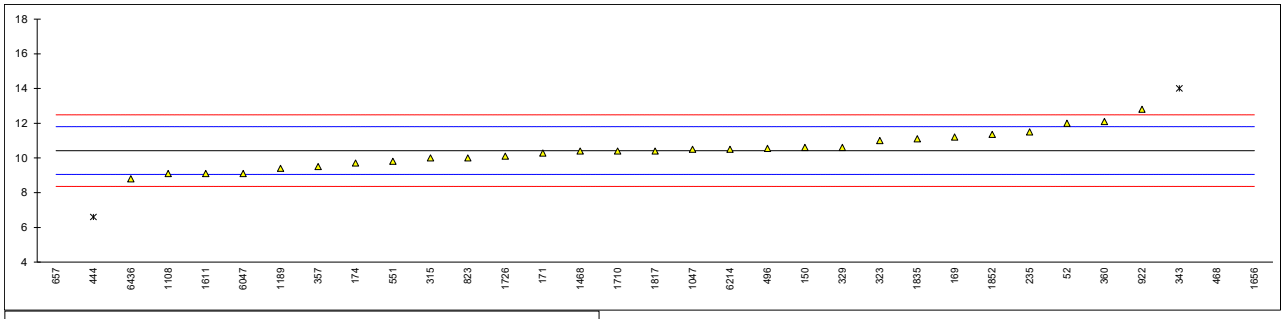


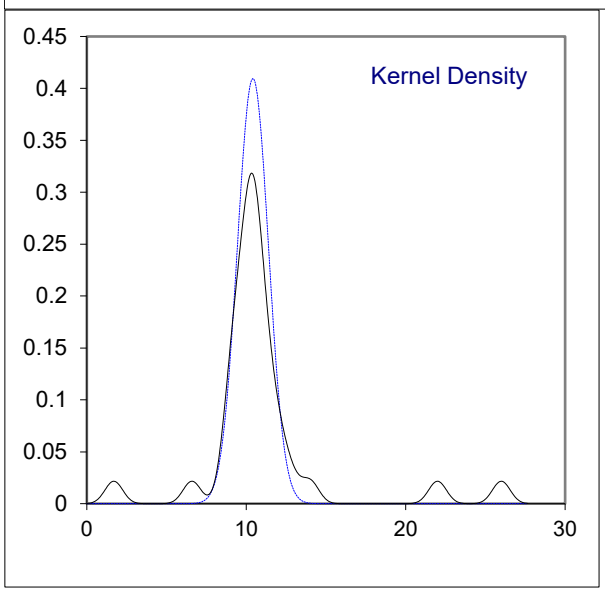


Determination of Nonvolatile matter on sample #21262; results in mg/100mL

lab	method	value	mark	z(targ)	remarks
52	EN15691	12		2.29	
120		-----		-----	
150	D1353	10.6		0.26	
169	D1353	11.2		1.13	
171	EN15691	10.275		-0.22	
174	D1353	9.7		-1.05	
175		-----		-----	
235	D1353	11.5		1.56	
315	EN15691	10		-0.62	
323	EN15691	11		0.84	
329	EN15691	10.6		0.26	
333	EN15691	<10		-----	
334	EN15691	<10		-----	
337		-----		-----	
343	EN15691	14	R(0.05)	5.20	
357	D1353	9.5		-1.34	
360	EN15691	12.1		2.43	
444	EN15691	6.6	R(0.05)	-5.56	
468	EN15691	22	R(0.01)	16.82	
492		-----		-----	
495		-----		-----	
496	EN15691	10.55		0.18	
511	EN15691	<10		-----	
541		-----		-----	
551	EN15691	9.8		-0.91	
554		-----		-----	
558		-----		-----	
621	D1353	<1		<-13.69	Possibly a false negative test result?
631		-----		-----	
633		-----		-----	
634		-----		-----	
657	D1353	1.7	C,R(0.01)	-12.68	First reported 0.2
663		-----		-----	
823	D1353	10		-0.62	
902	EN15691	<10		-----	
913		-----		-----	
922	D1353	12.8		3.45	
1047	EN15691	10.5		0.11	
1108	EN15691	9.1		-1.92	
1189	EN15691	9.4		-1.49	
1457		-----		-----	
1468	EN15691	10.4		-0.04	
1523		-----		-----	
1530		-----		-----	
1611	EN15691	9.1		-1.92	
1618		-----		-----	
1656	EN15691	26.0	C,R(0.01)	22.63	First reported 16.4
1697		-----		-----	
1710	EN15691	10.4		-0.04	
1713	EN15691	<10		-----	
1726	EN15691	10.1		-0.47	
1727	EN15691	<10		-----	
1817	In House	10.4	C	-0.04	First reported 104
1835	EN15691	11.1		0.98	
1852	D1353	11.35		1.35	
1919		-----		-----	
6047	EN15691	9.1		-1.92	
6057		-----		-----	
6070		-----		-----	
6214	EN15691	10.5		0.11	
6291		-----		-----	
6292		-----		-----	
6293		-----		-----	
6297		-----		-----	
6357		-----		-----	
6424		-----		-----	
6426		-----		-----	
6436	EN15691	8.8		-2.36	

	normality	OK
	n	28
	outliers	5
	mean (n)	10.424
	st.dev. (n)	0.9744
	R(calc.)	2.728
	st.dev.(EN15691:09)	0.6883
	R(EN15691:09)	1.927
Compare		
	R(D1353:13)	4.498





APPENDIX 2

Number of participants per country

1 lab in ARGENTINA
1 lab in AUSTRIA
3 labs in BELGIUM
3 labs in BRAZIL
2 labs in BULGARIA
1 lab in CANADA
4 labs in COLOMBIA
1 lab in ECUADOR
1 lab in FINLAND
3 labs in FRANCE
8 labs in GERMANY
1 lab in GREECE
2 labs in HUNGARY
1 lab in INDIA
1 lab in INDONESIA
1 lab in KOREA, Republic of
1 lab in MAURITIUS
4 labs in NETHERLANDS
1 lab in PAKISTAN
1 lab in PERU
3 labs in PHILIPPINES
5 labs in POLAND
1 lab in SINGAPORE
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

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
SDS	= Safety Data Sheet

Literature

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11 W. Horwitz and R. Albert, J. AOAC Int, 79.3, 589-621, (1996)
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