

**Results of Proficiency Test
Fuel/Bio-ethanol
December 2015**

Organised by: Institute for Interlaboratory Studies (iis)
Spijkenisse, the Netherlands

Authors: ing. R.J. Starink
Correctors: dr. R.G. Visser & ing. L. Sweere
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1 INTRODUCTION

Since 1995, a proficiency test for Fuel/Bio-Ethanol was organised every year by the Institute for Interlaboratory Studies. During the annual proficiency testing program 2015/2016, it was decided to continue the round robin for the analysis of Fuel/Bio-ethanol in agreement with EN15376:14 and ASTM D4806:15. In this interlaboratory study for Fuel/Bio-ethanol, 71 laboratories in 32 different countries have participated. See appendix 2 for the number of participants per country. In this report, the results of the Fuel/Bio-Ethanol 2015 proficiency test are presented and discussed. This report is also electronically available through the iis internet site www.iisnl.com.

2 SET-UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organiser of this proficiency test. Sample analyses for fit-for-use and homogeneity testing were subcontracted to an accredited laboratory. It was decided to send 2 samples of Ethanol 1 * 1 L bottle of Fuel/Bio-ethanol labelled #15230 and 1* 0.25 L bottle of Fuel/Bio-ethanol labelled #15231, especially for Gas Chromatography. Participants were requested to report the analytical results using the indicated units and to report rounded and unrounded results. The unrounded 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/IEC 17043:2010 (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 organisation was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of April 2014 (iis-protocol, version 3.3). This protocol is electronically available through the iis internet site 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

The necessary bulk material for samples #15230 and #15231 was obtained from a local trader. The bulk material was split in two for preparation of the samples.

The first batch, approximately 90 litres, was spiked with 862.2 mg Sodium Chloride in a precleaned drum. After homogenisation, 88 amber glass bottles of 1L were filled and labelled #15230. The homogeneity of the subsamples #15230 was checked by determination of Density in accordance with ASTM D4052, Chloride in accordance with In house test method and Water in accordance with ASTM E203 on 8 stratified randomly selected samples.

	<i>Density at 20°C in kg/L</i>	<i>Chloride in mg/kg</i>	<i>Water in %M/M</i>
Sample #15230-1	0.78993	5.5	0.164
Sample #15230-2	0.78993	5.6	0.165
Sample #15230-3	0.78993	5.5	0.164
Sample #15230-4	0.78993	5.5	0.165
Sample #15230-5	0.78992	5.6	0.164
Sample #15230-6	0.78993	5.5	0.164
Sample #15230-7	0.78994	5.5	0.165
Sample #15230-8	0.78994	5.5	0.164

Table 1: Homogeneity tests results of subsamples #15230

From the test results of table 1, the repeatabilities were calculated and compared with 0.3 times the corresponding target reproducibility in agreement with the procedure of ISO 13528, Annex B2 in the next table:

	<i>Density at 20°C in kg/L</i>	<i>Chloride in mg/kg</i>	<i>Water in %M/M</i>
r (Observed)	0.00002	0.13	0.001
reference method	ISO12185:96	EN15492:12	EN15489:07
0.3 * R (ref. Method)	0.00015	0.27	0.007

Table 2: Repeatability of subsamples #15230

The second batch, approximately 20 litres, was homogenised in a precleaned drum. After homogenisation, 80 amber glass bottles of 0.25L were filled and labelled #15231. The homogeneity of the subsamples #15231 was checked by determination of Methanol in accordance with EN15721, proc. A on 8 stratified randomly selected samples.

	<i>Methanol in %M/M</i>
Sample #15231-1	0.0051
Sample #15231-2	0.0051
Sample #15231-3	0.0048
Sample #15231-4	0.0050
Sample #15231-5	0.0050
Sample #15231-6	0.0050
Sample #15231-7	0.0051
Sample #15231-8	0.0050

Table 3: Homogeneity tests results of subsamples #15231

From the test results of table 3, the repeatability was calculated and compared with 0.3 times the corresponding target reproducibility in agreement with the procedure of ISO 13528, Annex B2 in the next table:

	<i>Methanol in %M/M</i>
r (Observed)	0.0003
reference method	Horwitz
0.3 * R (ref. method)	0.0004

Table 4: Repeatability of subsamples #15231

The calculated repeatabilities of both samples are in agreement with the 0.3 times the reproducibility limits of the respective test methods. Therefore the homogeneity of each of the subsamples #15230 and #15231 was assumed.

To each of the participating laboratories: 1 * 1 L bottle (labelled #15230) and 1 * 0.25 L bottle (labelled #15231) were sent on November 11, 2015.

2.5 STABILITY OF THE SAMPLES

The stability of Ethanol, packed in the 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 #15230: Acidity, Appearance, Copper, Density at 20°C, Electrical conductivity at 25°C, Inorganic Chloride as Cl, Involatile material content, Nitrogen, pHe, Phosphorus, Sulphate, Sulphur and Water (coulometric and titrimetric).

On sample #15231 was asked to determine: Ethanol, Acetaldehyde, Acetal, Acetone, n-Amyl alcohol, sec-Amyl alcohol, tert-Amyl alcohol, Benzene, n-Butanol, sec-Butanol, tert-Butanol, n-Butyraldehyde, Crotonaldehyde, Cyclohexane, Cyclohexanol, Diacetyl, DEG, Dioxane, Ethylacetate, Ethylbenzene, ETBE, Furfural, n-Heptane, n-Hexanol, Isobutanol, Isopropanol, Methanol, 2-methyl-1-Butanol, 3-methyl-1-Butanol, sum of 2-methyl-1-Butanol and 3-methyl-1-Butanol, MEK, MTBE, MEG, MiBK, n-Propanol, Toluene, m-Xylene, o-Xylene and p-Xylene.

To get comparable results a detailed report form, on which the units were prescribed as well as the required standards and a letter of instructions were prepared and made available on the data entry portal www.kpmd.co.uk/sgs-iis/.

A SDS and a form to confirm receipt of the samples were added to the sample package.

3 RESULTS

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

Directly after deadline, a reminder was sent to those laboratories that had not yet reported. Shortly after the deadline, the available results were screened for suspect data. A 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 (raw data of the) reported results.

Additional or corrected results have been used for data analysis and original results are placed under 'Remarks' in the result tables in appendix 1.

3.1 STATISTICS

Statistical calculations were performed as described in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' (iis-protocol, April 2014 version 3.3). For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded results. 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. Not all data sets proved to have a normal distribution, in which cases the statistical evaluation of the results should be used with due care.

Accordance to ISO 5725 (1986 and 1994) the original results per determination were submitted subsequently to Dixon, Grubbs and Rosner outlier tests. Outliers are marked by D(0.01) for the Dixon test, by G(0.01) or DG(0.01) for the Grubbs test and by R(0.01) for the Rosner General ESD test (see appendix 3, no.16). Stragglers are marked by D(0.05) for the Dixon 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 the averages and the 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. When the uncertainty passed the evaluation, no remarks are made in the report. However, when the uncertainty failed the evaluation it is mentioned in the report and it will have consequences for the evaluation of the test results.

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

3.2 GRAPHICS

In order to visualise the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for each determination (see appendix 1). On the Y-axis the reported analysis results are plotted. The corresponding laboratory numbers are under 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 standard. 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 (see appendix 3; nos.14 and 15). 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 reproducibilities, the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the spread of this interlaboratory study. The target standard deviation was calculated from the literature reproducibility by division with 2.8.

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 in accordance with:

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

The $z_{(\text{target})}$ 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 maybe as follows:

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

4 EVALUATION

In this interlaboratory study, some problems with sample despatch were encountered due to several reasons. Five participants reported after the deadline and three participants did not report any result at all. Not all participants were able to report all requested parameters. Not all laboratories were able to perform all analyses requested. The 68 reporting laboratories did report 899 results. Observed were 39 outlying results, which is 4.3%. In proficiency studies, outlier percentages of 3% - 7.5% are normal.

4.1 EVALUATION PER TEST

In this section, the results are discussed per sample and per test. The specified test methods and requirements were taken into account for explaining the observed differences when possible and applicable. These methods are also in the tables together with the reported data. The abbreviations, used in these tables, are listed in appendix 3.

In the iis PT reports, ASTM methods are referred to with a number (e.g. D1613) and an added designation for the year that the method was adopted or revised (e.g. D1613-02). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D1613-02 (2012)). In the results tables of Appendix 1 only the method number and year of adoption or revision will be used.

For the components measured by Gas Chromatography the observed spreads were compared against EN15271 and/or the (strict) reproducibility limit estimated from the Horwitz equation.

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.

Acidity: This determination was problematic for a number of laboratories. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of EN15491:07 and ASTM D1613:02(2012).

Appearance: This determination was not problematic. All participants agreed about the appearance of sample #15230 as clear and free of suspended matter.

Chloride, Inorganic: The determination of this component may be problematic, depending on the test method used by the laboratory. A known concentration of Chloride was added to the samples (see §2.4) and therefore the minimum chloride concentration able to be determined was known ($4.48 \text{ mg/kg} = 5.45 \text{ mg/kg} - 0.97 \text{ mg/kg}_{(R \text{ EN15492})}$). However, 17 of the 33 laboratories reported a concentration lower than 4.48 mg/kg and these test results were rejected prior to statistical analysis. Also one statistical outlier was observed. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of EN15492:12, but it is in agreement with the requirements of ASTM D7319. The average recovery of Inorganic Chloride

(theoretical increment of 5.45 mg Cl/kg) may be good: "less than 95%" (the actual blank chloride content is unknown).

Copper: Almost all laboratories reported a 'less than' test result. Therefore no statistical conclusions were drawn.

Density at 20°C: This determination was problematic for a number of laboratories. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of ISO12185:96.

Electrical Conductivity: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of EN15938:10.

Involatile matter: All test results were below the application range of the method EN15691:09 (10 – 25 mg/100ml). Therefore no significant conclusions were drawn.

Nitrogen: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not at all in agreement with the requirements of D4629:12. Four laboratories reported a false negative test result.

pHe: It is known (see ref. 17) that in general in a pHe determination with a LiCl electrode, the observed values are lower than in the case other types of electrodes are used. In last year PT on REN/Food Ethanol (iis14C11) a bimodal distribution was observed. Therefore, in this PT, besides the pHe also the type of electrode used in the determination was requested to be reported by the participants. A bimodal distribution was also visible for the pHe values on sample #15230. Therefore, it was decided to evaluate the reported test results per type of electrolyte used.

pHe (KCl): This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of D4629:14.

pHe (LiCl): This determination was problematic for a number of laboratories. Three statistical outliers according the Huber (robust) outlier test were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN15490:07.

Phosphorous: All test results were near or below the application range of method EN15487:07 (0.15 – 1.50 mg/kg). Therefore no statistical conclusions were drawn.

Sulphate: The consensus value of the group was below application range of the methods EN15492:12 (1 – 20 mg/L) and ASTM D7319:09 (1– 50 mg/L). Therefore no statistical conclusions were drawn. Two laboratories reported a false positive test result.

Total Sulphur: Although the sulphur concentration was below the application ranges of the test methods EN15485:07 (7– 20 mg/kg) and EN15486:07 (5 – 20 mg/kg), this determination may not be problematic. No statistical outliers were observed and the calculated reproducibility is in good agreement with the estimated requirements of EN15485:07 and EN15486:07, but not in agreement with the requirements of ASTM D5453:09.

Water: The coulometric or the titrimetric Karl Fisher method can be used for this determination. In total four statistical outliers were observed. The calculated reproducibility for the coulometric method after rejection of the statistical outliers is in full agreement with the requirements of EN15489:07 and ASTM E1064:12. For the titrimetric Karl Fisher method the calculated reproducibility is in good agreement with the requirements of ASTM E203:08.

GC general: In previous round robins it became clear that the test result reported for the Ethanol content is depending on the test method used by the laboratory. The test method EN15721 used a different definition for Ethanol, than ASTM D5501 does. Therefore, it was decided in this proficiency test to request the ethanol content for both definitions.

Ethanol (EN15721): After exploring the effect of the purity calculation as reported by the participants, it was decided to determine a consensus value for Ethanol, based on the test results of the participants that reported to have used EN15721 only. 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%”. This determination was very problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not at all in agreement with the requirements of EN15721:13.

Higher Alcohols (EN15721): After exploring the effect of the purity calculation as reported by the participants, it was decided to use a consensus value for Higher Alcohols, based on the test results of the participants that reported to have used EN15721 only. 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): This determination was very problematic. The group appears to be bimodally divided. After investigation it turned out that one group of laboratories did include the higher alcohols in the impurity result. This is not in accordance with EN15721 (chapters 10 and 8.3). In EN15721 the impurity content is defined as: content of all components except for Methanol% and the “higher alcohols”%.

When the two groups of test results are evaluated separately, no statistical outliers were observed and both calculated reproducibilities are not in agreement with the estimated reproducibility limits using the Horwitz equation.

- Methanol: This determination was problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the estimated requirements calculated using the Horwitz equation. When using standard EN15721:13 a negative value for the reproducibility is found at this concentration level.
- Ethanol (D5501): 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 D5501:12e1.
- Acetaldehyde: This determination may be problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not at all in agreement with the estimated reproducibility using the Horwitz equation.
- Acetal: This determination may be problematic. 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.
- n-Butanol: The consensus value found was near or below the detection limit of the test methods used, therefore no significant conclusions were drawn. Two statistical outliers were observed.
- Ethylacetate: This determination may be 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.
- Isobutanol: This determination may be problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the estimated reproducibility using the Horwitz equation.
- 2-Me-1-Butanol: This determination may be problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the estimated reproducibility using the Horwitz equation.
- 3-Me-1-Butanol: This determination may be very problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not at all in agreement with the estimated reproducibility using the Horwitz equation.
- Sum of 2-Me-1-Butanol and 3-Me-1-Butanol: This determination may be not problematic. Two statistical outliers were observed. Eight laboratories reported the sum but did not report the test results for the individual components. The calculated reproducibility after rejection of the statistical outliers is in full agreement with the estimated reproducibility using the Horwitz equation.

- n-Propanol: This determination may be problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the estimated reproducibility using the Horwitz equation.
- Toluene: This determination may be problematic. 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.
- o-Xylene: This determination may be problematic. Two statistical outliers were as observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the estimated reproducibility using the Horwitz equation.

Other GC components: The concentrations of the components Acetone, n-Amyl alcohol, sec-Amyl alcohol, tert-Amyl alcohol, Benzene, sec-Butanol, tert-Butanol, n-Butyraldehyde, Crotonaldehyde, Cyclohexane, Cyclohexanol, Diacetyl, DEG, Dioxane, Ethylbenzene, ETBE, Furfural, n-Heptane, n-Hexanol, Isopropanol, MEK, MTBE, MEG, MiBK, m-Xylene and p-Xylene, were all near or below the detection limit. Therefore no significant conclusions were drawn for these components.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the relevant standard and the reproducibility as found for the group of participating laboratories. The average results per sample, calculated reproducibilities and reproducibilities derived from literature standards (in casu ASTM or EN standards) or the Horwitz equation are compared in the next table.

Parameter	unit	n	average	2.8 *sd _R	R (lit)
Acidity as Acetic acid	mg/kg	52	21.2	13.4	13.7
Appearance		52	Clear	n.a.	n.a.
Chloride as Cl, Inorganic	mg/kg	17	5.2	1.2	0.9
Copper	mg/kg	28	<0.07	n.a.	n.a.
Density at 20°C	kg/L	63	0.7900	0.0002	0.0005
Electrical conductivity	µS/cm	24	5.3	1.0	0.7
Involatile material content	mg/100 mL	26	1.3	2.3	(0.2)
Nitrogen	mg/kg	16	1.2	1.5	0.9
pHe (KCl)		19	6.6	1.2	1.1
pHe (LiCl)		6	5.6	0.3	0.5
Phosphorus	mg/L	23	<0.2	n.a.	n.a.
Sulphate	mg/kg	22	0.5	0.6	(0.3)
Total Sulphur	mg/kg	29	0.5	0.7	3.3
Water coulometric	mg/kg	51	1709	223	220
Water titrimetric	%M/M	32	0.171	0.023	0.078

Table 5: Reproducibilities of sample #15230

Results between brackets should used with care, because the average was near or below the application range.

Parameter	Unit	n	average	2.8 *sd _R	R (lit)
Ethanol (EN15721)	%M/M	19	99.899	0.111	0.052
Higher Alcohols (EN15721)	%M/M	23	0.1336	0.0399	0.0363
Impurities - group 1	%M/M	16	0.093	0.101	0.022
Impurities - group 2	%M/M	11	0.235	0.079	0.049
Methanol	%M/M	41	0.0055	0.0029	0.0013
Ethanol (D5501)	%M/M	31	99.734	0.201	0.993
Acetaldehyde	%M/M	27	0.006	0.005	0.002
Acetal	%M/M	29	0.039	0.021	0.007
n-Butanol	%M/M	17	0.0006	0.0005	(0.0002)
Ethylacetate	%M/M	29	0.012	0.004	0.003
Isobutanol	%M/M	35	0.038	0.012	0.007
2-Me-1-Butanol	%M/M	20	0.008	0.004	0.002
3-Me-1-Butanol	%M/M	21	0.028	0.007	0.005
Sum 2-Me-1-BuOH+3-Me-1-BuOH	%M/M	22	0.036	0.008	0.009
n-Propanol	%M/M	33	0.061	0.015	0.010
Toluene	%M/M	12	0.0014	0.0009	0.0004
o-Xylene	%M/M	7	0.0036	0.0014	0.0009

Table 6: Reproducibilities of sample #15231

Results between brackets should be used with care, because the average was near or below the application range.

Without further statistical calculations, it can be concluded that for most of the tests there is not a good compliance of the group of participating laboratories with the relative standards. The tests, that are problematic, have been discussed in paragraph 4.1.

4.3 COMPARISON OF THE PROFICIENCY TEST OF DECEMBER 2015 WITH PREVIOUS PTS

	<i>December 2015</i>	<i>November 2014</i>	<i>November 2013</i>	<i>November 2012</i>
Number of reporting labs	68	68	71	67
Number of results reported	899	817	880	845
Statistical outliers	39	42	41	52
Percentage outliers	4.3%	5.1%	4.7%	6.2%

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 standards. The conclusions are given in the following table:

Determination	December 2015	November 2014	November 2013	November 2012
Acidity as Acetic Acid	+/-	+/-	+	+/-
Chloride as Cl, Inorganic	-	+	-	(+)
Density at 20°C	++	++	+	++
Electric conductivity	-	--	--	--
Involatile Matter	(--)	(--)	(--)	(--)
Nitrogen	--	--	-	--
Phosphorus as P	n.e.	(+/-)	(--)	(-)
Sulphate	(--)	(--)	(--)	++
Total Sulphur	++	++	++	++
Water coulometric	+/-	+/-	+	++
Water titrimetric	++	++	++	++
Ethanol (EN15721)	--	n.e.	n.e.	n.e.
Higher Alcohols (EN15721)	-	n.e.	n.e.	n.e.
Impurities (EN15721)	--	n.e.	n.e.	n.e.
Methanol	--	++	++	++
Ethanol (D5501)	++	--	++	n.e.
Acetaldehyde	--	--	n.e.	n.e.
Acetal	--	--	--	--
Acetone	n.e.	n.e.	n.e.	n.e.
n-Amyl alcohol	n.e.	n.e.	n.e.	n.e.
sec-Amyl alcohol	n.e.	n.e.	n.e.	n.e.
tert-Amyl alcohol	n.e.	n.e.	n.e.	n.e.
Benzene	n.e.	n.e.	+/-	n.e.
n-Butanol	(--)	--	-	--
sec-Butanol	n.e.	n.e.	n.e.	n.e.
tert-Butanol	n.e.	n.e.	n.e.	n.e.
n-Butyraldehyde	n.e.	n.e.	n.e.	n.e.
Crotonaldehyde	n.e.	n.e.	n.e.	n.e.
Cyclohexane	n.e.	n.e.	n.e.	n.e.
Cyclohexanol	n.e.	n.e.	n.e.	n.e.
Diacetyl	n.e.	n.e.	n.e.	n.e.
Diethylene glycol (DEG)	n.e.	n.e.	n.e.	n.e.
Dioxane	n.e.	n.e.	n.e.	n.e.
Ethylacetate	-	+	-	-
Ethylbenzene	n.e.	n.e.	n.e.	n.e.
ETBE	n.e.	n.e.	n.e.	n.e.
Furfural	n.e.	n.e.	n.e.	n.e.
n-Heptane	n.e.	n.e.	n.e.	n.e.
n-Hexanol	n.e.	n.e.	n.e.	n.e.
Isobutanol	--	-	-	-
Isopropanol	n.e.	n.e.	n.e.	n.e.
2-Methyl-1-butanol	-	--	--	--
3-Methyl-1-butanol	-	-	--	--
Sum 3-Me- + 2-Me-1-BuOH	+	+	-	n.e.
Methyl-ethyl Ketone (MEK)	n.e.	n.e.	n.e.	n.e.
MTBE	n.e.	n.e.	n.e.	n.e.
Monoethylene glycol (MEG)	n.e.	n.e.	n.e.	n.e.
MiBK	n.e.	n.e.	n.e.	n.e.

n-Propanol	--	+/-	+/-	+
Toluene	--	n.e.	n.e.	n.e.
m-Xylene	n.e.	n.e.	n.e.	n.e.
o-Xylene	--	n.e.	n.e.	n.e.
p-Xylene	n.e.	n.e.	n.e.	n.e.

Table 8: comparison determinations against the standard

Results between brackets are compared with the spread of the previous round robin

The performance of the determinations against the requirements of the respective standards is listed in the above table. The following performance categories were used:

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

APPENDIX 1

Determination of Acidity as Acetic Acid on sample #15230; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621	EN15491	20.44		-0.16
62	D7795	31		2.00	631	D1613	19.2		-0.41
120	D7795	24	C	0.57	657	D1613	18.99		-0.45
131	D1613	18.9		-0.47	663	D1613	21.9		0.14
132	D7795	14.02		-1.47	786	EN15491	22		0.16
150	D1613	17.1		-0.84	823	D1613	17		-0.86
159	D7795	21		-0.04	840	D1613	22.1		0.18
169	D1613	19.6		-0.33	902	D1613	25		0.78
171	D1613	20		-0.25	913	D1613	20		-0.25
174	D1613	19.6		-0.33	922	D1613	23.0		0.37
175	D7795	15.9		-1.08	963	D1613	22.2		0.20
194	D1613	28		1.39	1040	EN15491	185	C,R(0.01)	33.48
230	D1613	22.7		0.31	1067		----		----
311	EN15491	<30		----	1079	EN15491	22.8		0.33
323	EN15491	<30		----	1126		----		----
329	D1613	16		-1.06	1161	EN15491	21		-0.04
332	EN15491	32		2.21	1201	EN15491	21		-0.04
333	EN15491	<30	C	----	1203	EN15491	23.8		0.53
334	EN15491	17	C	-0.86	1276	EN15491	16	C	-1.06
337		----		----	1359	EN15491	27.34		1.25
338	D1613	22		0.16	1397		----		----
340	EN15491	<30		----	1402	EN15491	16		-1.06
343	EN15491	<30		----	1446	EN15491	28		1.39
357	EN15491	14		-1.47	1523	ISO1388/2	25.45		0.87
360	EN15491	21.27		0.01	1563	EN15491	20	C	-0.25
391		----		----	1605		----		----
402	EN15491	22.6		0.29	1656	EN15491	10	C	-2.29
441		----		----	1710	EN15491	23		0.37
444	EN15491	40	C,R(0.05)	3.84	1726	EN15491	25.9		0.96
468	EN15491	17		-0.86	1727	EN15491	17	C	-0.86
496	EN15491	23	C	0.37	1788		----		----
511	EN15491	19.4	C	-0.37	1817		34.3		2.68
541	EN15491	<30		----	1835	EN15491	23	C	0.37
551	D1613	16.92		-0.88	1919	D1613	28.10		1.41
554		----		----	1996	EN15491	15	C	-1.27
556		----		----					

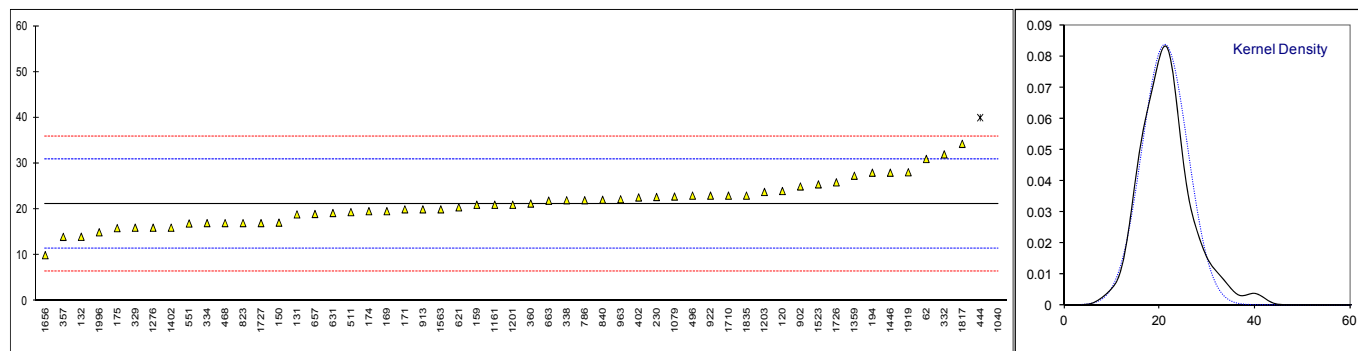
normality OK
n 52
outliers 2
mean (n) 21.20
st.dev. (n) 4.778
R(calc.) 13.38
R(EN15491:07) 13.70
Compare
R(D1613:02) 14.00

Application range: 30 – 0.0150 mg/kg

Lab 120: reported 0.0024 mg/kg
Lab 333: reported <0.003 mg/kg
Lab 334: reported 0.0017 mg/kg
Lab 444: reported 0.004 mg/kg
Lab 496: reported 0.0023 mg/kg
Lab 511: reported 0.00194 mg/kg

Lab 1040: reported 0.0185 mg/kg
Lab 1563: reported 0.002 mg/kg
Lab 1656: reported 0.001 mg/kg
Lab 1727: reported 0.0017 mg/kg
Lab 1835: reported 0.0023 mg/kg

Lab 1276: first reported 0.0016
Lab 1996: first reported 0.0015



Determination of Appearance on sample #15230;

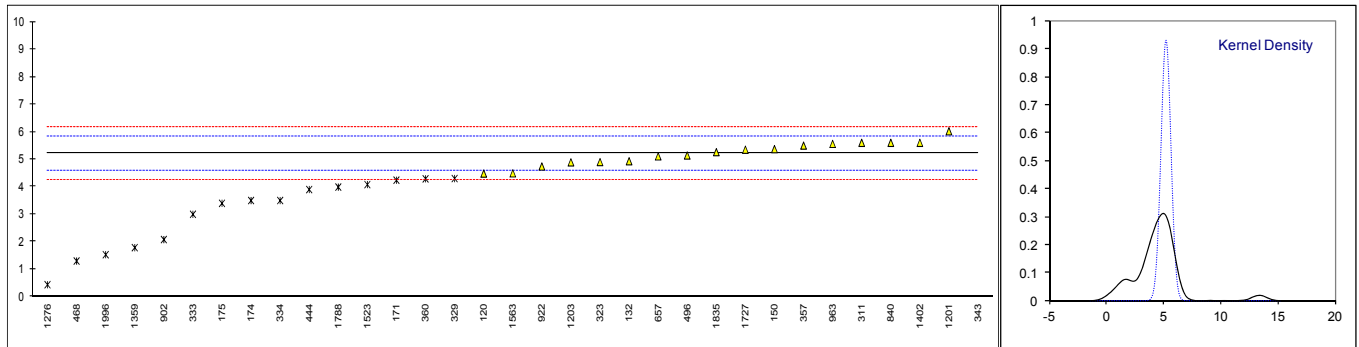
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4176	Pass		----	621	D4176	Pass		----
62		----		----	631	Visual	Clear & Bright		----
120	Visual	C&B		----	657	E2680	PASS		----
131	D4176	Clear and Bright		----	663	Visual	Clear and Bright		----
132	D4176	Clear & Bright		----	786	E2680	Pass		----
150	E2680	Pass		----	823	E2680	Pass		----
159	D4176	Clear and Bright		----	840	E2680	Pass		----
169		----		----	902	EN15769	PASS		----
171	EN15769	Pass		----	913	D2680	Pass		----
174	E2680	PASS		----	922	Visual	CLEAR LIQUID		----
175	Visual	Clear and bright		----	963	E2680	Pass		----
194	D4176	Clear and Bright		----	1040		----		----
230	Visual	Clear and bright		----	1067		----		----
311	EN15769	clear&colourless		----	1079	Visual	Clear & colorless		----
323	E2680	clear & bright		----	1126		----		----
329	Visual	clear		----	1161	Visual	clear and bright		----
332	EN15769	Clear and colourless		----	1201	Visual	Br&Cl		----
333		----		----	1203	Visual	clear and colourless		----
334		----		----	1276	D4176	Bright and clear		----
337	EN15769	Clear and Colourless		----	1359	Visual	Clear		----
338	Visual	Clear and Bright		----	1397		----		----
340	Visual	clear		----	1402		----		----
343	Visual	Clear & Bright		----	1446		----		----
357	E2680	pass		----	1523		----		----
360	EN15769	Clear and Colourless		----	1563	EN15769	Clear and colourless		----
391	EN15769	Clear and colourless		----	1605		----		----
402		----		----	1656	EN15769	Pass		----
441		----		----	1710	EN15769	Clear and Bright		----
444	EN15769	Pass		----	1726	EN15769	Clear & coloured		----
468	EN15769	C&C		----	1727	Visual	Clean&colourless		----
496	EN15769	clear . colourless		----	1788		----		----
511	EN15769	C&B		----	1817		----		----
541	Visual	C&B		----	1835	EN15769	CCL		----
551	EN15769	C&B		----	1919		----		----
554		----		----	1996	D4176	C&B		----
556		----		----					
	normality	n.a.							
	n	52							
	outliers	n.a.							
	mean (n)	Clear and Colourless							

Determination of Chlorides, Inorganic as Cl on sample #15230; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621		----		----
62		----		----	631		----		----
120	D7319	4.48		-2.29	657	D7328	5.106		-0.32
131		----		----	663	INH-0055	<0.5	ex, see §4.1	<-14.80
132	D7319	4.93		-0.87	786		----		----
150	D7328	5.37		0.51	823		----		----
159		----		----	840		5.60		1.23
169		----		----	902	EN15492	2.08	ex, see §4.1	-9.83
171	EN15492	4.24	ex, see §4.1	-3.04	913		----		----
174	D7319	3.5	ex, see §4.1	-5.37	922	EN15492	4.74	C	-1.47
175	D7319	3.4	ex, see §4.1	-5.68	963	EN15492	5.56		1.11
194		----		----	1040		----		----
230	D512	<8		----	1067		----		----
311	EN15492	5.6		1.23	1079	EN15492	<0.1	ex, see §4.1	<-16.05
323	EN15492	4.9		-0.97	1126		----		----
329	EN15492	4.3	ex, see §4.1	-2.85	1161		----		----
332		----		----	1201	EN15492	6.02		2.55
333	EN15492	3.0	ex, see §4.1	-6.94	1203	EN15492	4.89		-1.00
334	EN15492	3.5	ex, see §4.1	-5.37	1276	EN15492	0.439	C, ex, see §4.1	-14.99
337		----		----	1359	EN15492	1.7859	ex, see §4.1	-10.76
338		----		----	1397		----		----
340	EN15484	<5.0		----	1402	EN15492	5.6		1.23
343	EN15492	13.4	R(0.01)	25.76	1446		----		----
357	EN15492	5.5		0.92	1523	D7319	4.08	ex, see §4.1	-3.55
360	EN15492	4.29	C, ex, see §4.1	-2.89	1563	EN15492	4.49		-2.26
391		----		----	1605		----		----
402		----		----	1656		----		----
441		----		----	1710		----		----
444	EN15492	3.9	ex, see §4.1	-4.11	1726		----		----
468	EN15492	1.3	C, ex, see §4.1	-12.29	1727	EN15492	5.35		0.45
496	EN15492	5.14		-0.21	1788	D512	3.9886	ex, see §4.1	-3.83
511		----		----	1817		----		----
541		----		----	1835	EN15492	5.26		0.16
551		----		----	1919		----		----
554		----		----	1996	EN15492	1.53	C, ex, see §4.1	-11.56
556		----		----					

normality OK
n 17
outliers 1 (+17 excl) Spike:
mean (n) 5.208 5.45 Recovery = <95%
st.dev. (n) 0.4280
R(calc.) 1.199
R(EN15492:12) 0.891
Compare
R(D7319:13) 1.324

- Lab 360: first reported 8.56
- Lab 468: first reported 1.13
- Lab 922: first reported <3.0
- Lab 1276: first reported 4.12
- Lab 1996: first reported 8.53
- Lab 663: reported a false negative test result
- Lab 1079: reported a false negative test result



Determination of Copper on sample #15230; results in mg/kg

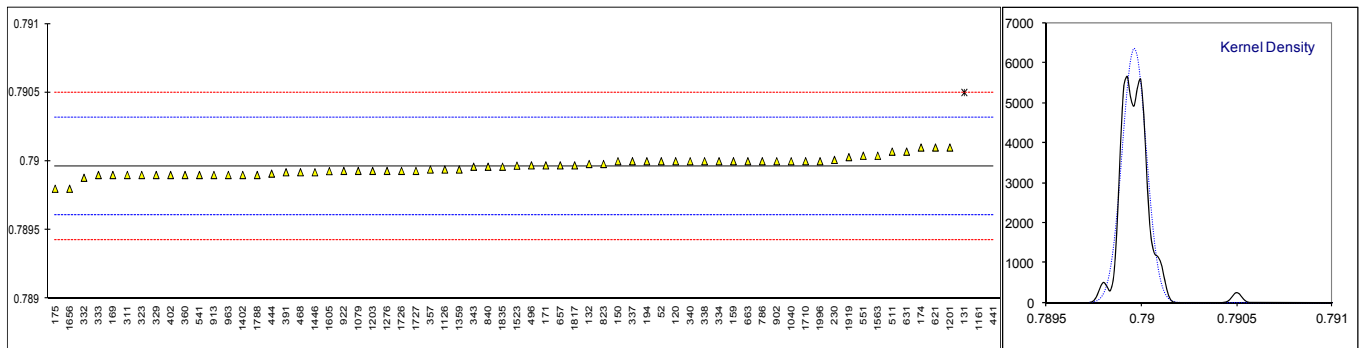
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D1688	0		----	621		----		----
62		----		----	631	D1688	<0.05		----
120	D1688	<0.05		----	657		----		----
131		----		----	663		----		----
132	D1688	<0.05		----	786		----		----
150	D1688	<0.05		----	823	UOP389	<0.01		----
159		----		----	840		----		----
169	D1688	0.00		----	902		----		----
171	EN15488	<0.07		----	913		----		----
174	D1688	<0.07		----	922	D1688	<0.05		----
175	D1688	<0.05		----	963	EN15488	<0.07		----
194		----		----	1040		----		----
230		----		----	1067		----		----
311		----		----	1079	EN15488	0.007		----
323	EN15488	<0.07		----	1126		----		----
329	EN15488	<0.07		----	1161		----		----
332		----		----	1201	EN15488	0.020		----
333	EN15488	<0.07		----	1203	EN15837	<0.05		----
334		----		----	1276	EN15488	0.000		----
337		----		----	1359	EN15488	0.00008015		----
338		----		----	1397		----		----
340		----		----	1402	EN15488	0.005		----
343	EN15488	<0.07		----	1446		----		----
357		----		----	1523		----		----
360	EN15837	<0.050		----	1563	EN15488	0.000		----
391		----		----	1605		----		----
402		----		----	1656	EN15488	<0.05		----
441		----		----	1710		----		----
444		----		----	1726		----		----
468	EN15488	<0.07		----	1727		----		----
496		----		----	1788		----		----
511	D1688	<0.05		----	1817		----		----
541		----		----	1835		----		----
551	EN15488	<0.07		----	1919		----		----
554		----		----	1996		----		----
556		----		----					
	normality	n.a.							
	n	28							
	outliers	n.a.							
	mean (n)	<0.07							
	st.dev. (n)	n.a.							
	R(calc.)	n.a.							
	R(EN15488:07)	n.a.							

Determination of Density at 20°C on sample #15230; results in kg/L

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4052	0.7900		0.22	621	ISO12185	0.7901		0.78
62	----	----		----	631	D4052	0.79007		0.61
120	D4052	0.7900		0.22	657	D4052	0.78997		0.05
131	D4052	0.7905	R(0.01)	3.02	663	D4052	0.7900		0.22
132	D4052	0.78998		0.11	786	D4052	0.7900		0.22
150	D4052	0.7900		0.22	823	D4052	0.78998		0.11
159	D4052	0.7900		0.22	840	D4052	0.78996		-0.01
169	D4052	0.7899		-0.34	902	D4052	0.7900		0.22
171	D4052	0.78997		0.05	913	D4052	0.7899		-0.34
174	D4052	0.7901		0.78	922	D4052	0.78993		-0.17
175	D4052	0.7898		-0.90	963	ISO12185	0.7899		-0.34
194	D4052	0.7900		0.22	1040	ISO12185	0.7900	C	0.22
230	D4052	0.79001	C	0.27	1067	----	----		----
311	D4052	0.7899		-0.34	1079	ISO12185	0.78993		-0.17
323	D4052	0.7899		-0.34	1126	ISO12185	0.78994		-0.12
329	D4052	0.7899		-0.34	1161	ISO12185	0.79405	C,R(0.01)	22.90
332	ISO12185	0.78988		-0.45	1201	ISO12185	0.7901		0.78
333	ISO12185	0.7899		-0.34	1203	ISO12185	0.78993		-0.17
334	ISO12185	0.7900		0.22	1276	ISO12185	0.78993		-0.17
337	ISO12185	0.7900		0.22	1359	ISO12185	0.78994		-0.12
338	ISO12185	0.7900		0.22	1397	----	----		----
340	ISO12185	0.790		0.22	1402	D4052	0.7899		-0.34
343	ISO12185	0.78996		-0.01	1446	ISO12185	0.78992		-0.23
357	D4052	0.78994		-0.12	1523	D4052	0.789968		0.04
360	ISO12185	0.7899		-0.34	1563	INH-035	0.79004		0.44
391	ISO12185	0.78992		-0.23	1605	D4052	0.789928		-0.18
402	ISO12185	0.7899		-0.34	1656	D4052	0.7898		-0.90
441	D4052	0.7942	R(0.01)	23.74	1710	ISO12185	0.7900		0.22
444	ISO12185	0.78991		-0.29	1726	D4052	0.78993		-0.17
468	D4052	0.78992		-0.23	1727	D4052	0.78993		-0.17
496	ISO12185	0.78997		0.05	1788	D4052	0.7899		-0.34
511	D4052	0.79007	C	0.61	1817	----	0.78997		0.05
541	ISO12185	0.7899		-0.34	1835	D4052	0.78996		-0.01
551	D4052	0.79004		0.44	1919	D4052	0.79003		0.39
554	----	----		----	1996	ISO12185	0.7900	C	0.22
556	----	----		----					

normality OK
n 63
outliers 3
mean (n) 0.78996
st.dev. (n) 0.000063
R(calc.) 0.00018
R(ISO12185:96) 0.00050

Lab 230: first reported 0.78891
Lab 511: reported 790.07 kg/L
Lab 1040: reported 790.0 kg/L
Lab 1161: reported 794.05 kg/L
Lab 1996: first reported 0.7895

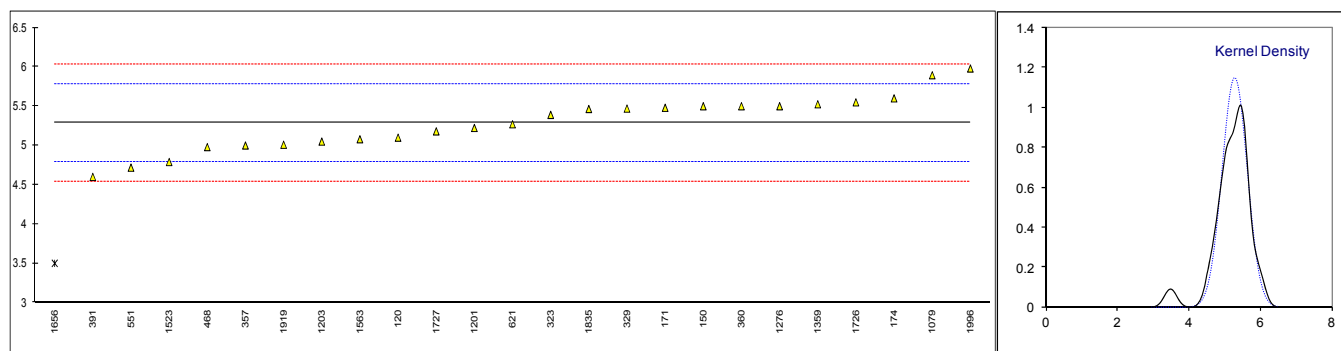


Determination of Electrical conductivity at 25°C on sample #15230; results in µS/cm

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621	EN15938	5.27		-0.06
62		----		----	631		----		----
120	EN15938	5.1		-0.74	657		----		----
131		----		----	663		----		----
132		----		----	786		----		----
150	D1125	5.5		0.86	823		----		----
159		----		----	840		----		----
169		----		----	902		----		----
171	EN15938	5.48		0.78	913		----		----
174	EN15938	5.6		1.26	922		----		----
175		----		----	963		----		----
194		----		----	1040		----		----
230		----		----	1067		----		----
311	EN15938	>5		----	1079	EN15938	5.8948		2.44
323	EN15938	5.39		0.42	1126		----		----
329	EN15938	5.47		0.74	1161		----		----
332		----		----	1201	EN15938	5.223		-0.25
333		----		----	1203	EN15938	5.05		-0.95
334		----		----	1276	EN15938	5.5		0.86
337		----		----	1359	EN15938	5.525		0.96
338		----		----	1397		----		----
340		----		----	1402		----		----
343		----		----	1446		----		----
357	EN15938	5.00		-1.15	1523	D2624	4.79		-1.99
360	EN15938	5.50		0.86	1563	EN15938	5.08		-0.82
391	EN15938	4.6		-2.75	1605		----		----
402		----		----	1656	EN15938	3.5	C,R(0.01)	-7.16
441		----		----	1710		----		----
444		----		----	1726	EN15938	5.55		1.06
468	EN15938	4.98		-1.23	1727	EN15938	5.18		-0.42
496		----		----	1788		----		----
511		----		----	1817		----		----
541		----		----	1835	EN15938	5.465		0.72
551	NBR10547	4.718		-2.28	1919	EN15938	5.01		-1.11
554		----		----	1996	EN15938	5.98		2.79
556		----		----					

normality OK
n 24
outliers 1
mean (n) 5.286
st.dev. (n) 0.3469
R(calc.) 0.971
R(EN15938:10) 0.698

Lab 1656: first reported 3



Determination of Involatile material content on sample #15230; results in mg/100mL

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621	EN15691	<10		----
62		----		----	631		----		----
120	EN15691	1.5		----	657	D1353	1.3		----
131		----		----	663	D381	2.5		----
132		----		----	786	D1353	0.80		----
150	D1353	1.5		----	823	D1353	0.3		----
159		----		----	840		----		----
169		----		----	902	EN15691	1.1		----
171	EN15691	2		----	913		----		----
174	D1353	1.2		----	922	D1353	2.10		----
175		----		----	963		----		----
194		----		----	1040		----		----
230		----		----	1067		----		----
311	EN15691	<10		----	1079	EN15691	0.2		----
323	EN15691	<1		----	1126		----		----
329	EN15691	1.2		----	1161		----		----
332		----		----	1201		----		----
333	EN15691	<10		----	1203	EN15691	<10		----
334		----		----	1276	EN15691	0.6		----
337		----		----	1359	EN15691	1.65		----
338	D1353	0.0		----	1397	EN15691	0.4		----
340	EN15691	<10		----	1402	EN15691	1.65		----
343	EN15691	<10		----	1446		----		----
357	EN15691	1		----	1523		----		----
360	EN15691	<10		----	1563	EN15691	0		----
391		----		----	1605		----		----
402	EN15691	3.0		----	1656	D1353	<1		----
441		----		----	1710	EN15691	<10		----
444	EN15691	3		----	1726	EN15691	1		----
468	EN15691	1.4		----	1727	EN15691	1.9		----
496	EN15691	0.95		----	1788		----		----
511		----		----	1817		----		----
541	EN15691	<10		----	1835	EN15691	<10		----
551	D1353	0.6		----	1919		----		----
554		----		----	1996	D1353	6.2	R(0.01)	----
556		----		----					
	normality	OK							
	n	26							
	outliers	1							
	mean (n)	1.263							
	st.dev. (n)	0.8247							
	R(calc.)	2.309							
	R(EN15691:09)	(0.234)							

Application range : 10 – 25 mg/100ml

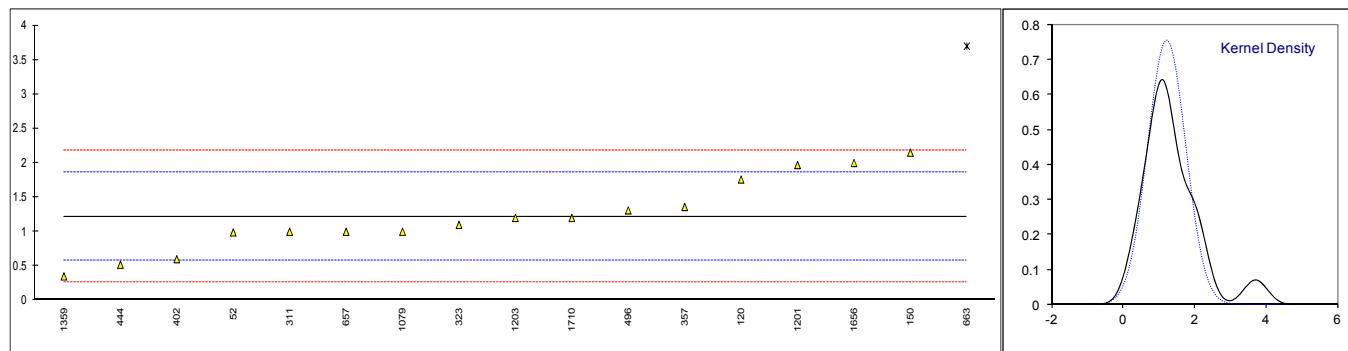
Determination of Nitrogen on sample #15230; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4629	0.99		-0.72	621		----		----
62		----		----	631		----		----
120	D4629	1.76		1.69	657	D4629	1.0		-0.69
131		----		----	663	D4629	3.70	G(0.01)	7.75
132		----		----	786		----		----
150	D4629	2.15		2.91	823		----		----
159		----		----	840		----		----
169		----		----	902		----		----
171	D4629	<0.3		<-2.87	913		----		----
174		----		----	922	D4629	<1.0		<-0.69
175		----		----	963		----		----
194		----		----	1040		----		----
230		----		----	1067		----		----
311	D4629	1.0		-0.69	1079	D4629	1.0		-0.69
323	D4629	1.1		-0.37	1126		----		----
329		----		----	1161		----		----
332		----		----	1201	D4629	1.97		2.34
333	D4629	<0.3		<-2.87	1203	D4629	1.2		-0.06
334		----		----	1276		----		----
337		----		----	1359	in house	0.35		-2.72
338		----		----	1397		----		----
340		----		----	1402	D4629	<0.3		<-2.87
343		----		----	1446		----		----
357	D4629	1.36		0.44	1523		----		----
360		----		----	1563		----		----
391		----		----	1605		----		----
402	D4629	0.6		-1.93	1656	D4629	2		2.44
441		----		----	1710	D4629	1.2		-0.06
444	D4629	0.52		-2.18	1726		----		----
468		----		----	1727		----		----
496	D4629	1.31		0.28	1788		----		----
511		----		----	1817		----		----
541		----		----	1835		----		----
551		----		----	1919		----		----
554		----		----	1996	D4629	<0.1		<-3.50
556		----		----					

normality OK
n 16
outliers 1
mean (n) 1.219
st.dev. (n) 0.5291
R(calc.) 1.482
R(D4629:12) 0.896

Application range: 0.3 – 100 mg/kg

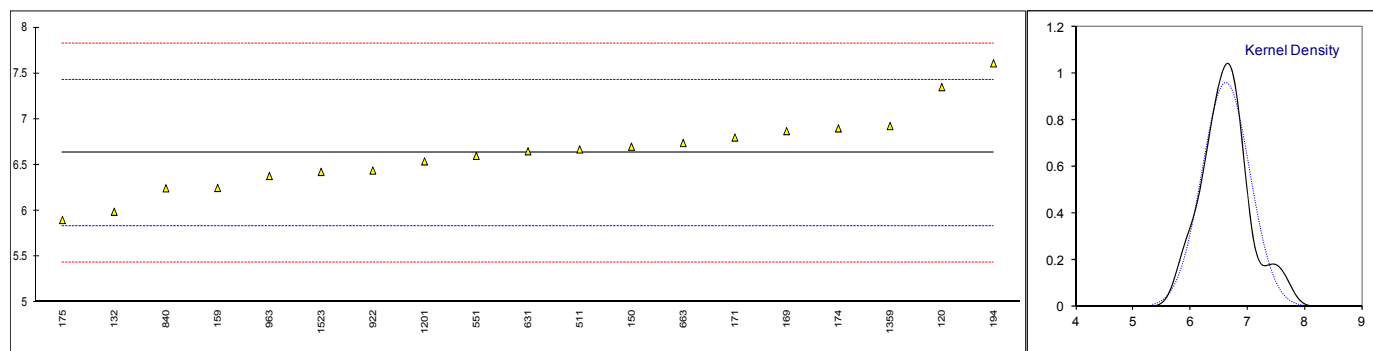
Lab 171, 333, 1402 and 1996 reported a false negative test result?



Determination of pHe (KCl) on sample #15230;

lab	method	Elect.	value	mark	z(targ)	lab	method	Elect.	value	mark	z(targ)
52			----		----	621			----		----
62			----		----	631	D6423	KCl	6.65		0.05
120	D6423	KCl	7.35		1.81	657			----		----
131			----		----	663	D6423	KCl	6.74		0.27
132	D6423	ORION	5.990		-1.61	786			----		----
150	D6423	KCl	6.70		0.17	823			----		----
159	D6423	KCl	6.25		-0.96	840	D6423	KCl	6.246		-0.97
169	D6423	KCl	6.87		0.60	902			----		----
171	D6423	KCl	6.80		0.43	913			----		----
174	D6423	KCl	6.9		0.68	922	D6423	KCl	6.44		-0.48
175	D6423	KCl	5.9		-1.84	963	D6423	KCl	6.38		-0.63
194	D6423	KCl	7.61		2.47	1040			----		----
230			----		----	1067			----		----
311			----		----	1079			----		----
323			----		----	1126			----		----
329			----		----	1161			----		----
332			----		----	1201	EN15490	KCl	6.54		-0.23
333			----		----	1203			----		----
334			----		----	1276			----		----
337			----		----	1359	In house	KCl	6.925		0.74
338			----		----	1397			----		----
340			----		----	1402			----		----
343			----		----	1446			----		----
357			----		----	1523	D6423	KCl	6.425		-0.52
360			----		----	1563			----		----
391			----		----	1605			----		----
402			----		----	1656			----		----
441			----		----	1710			----		----
444			----		----	1726			----		----
468			----		----	1727			----		----
496			----		----	1788			----		----
511	D6423	KCl	6.67		0.10	1817			----		----
541			----		----	1835			----		----
551	D6423	KCl	6.6		-0.08	1919			----		----
554			----		----	1996			----		----
556			----		----						

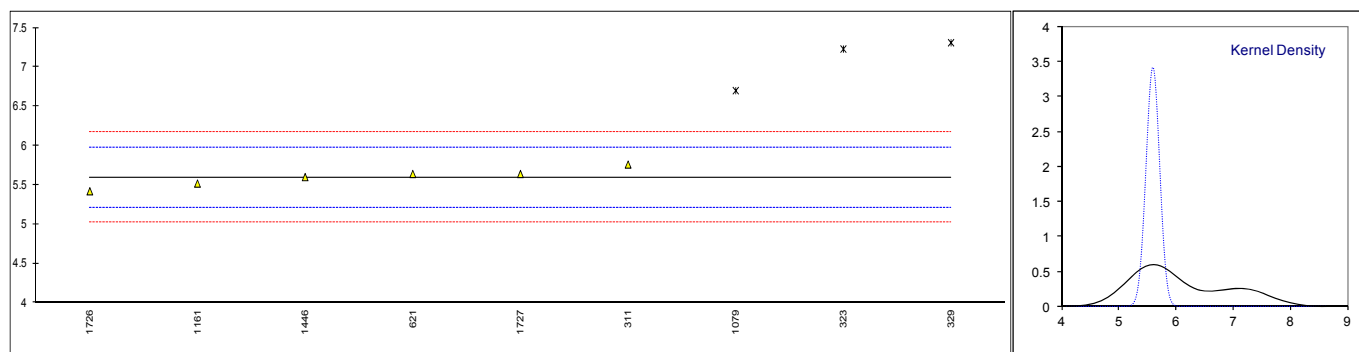
normality OK
n 19
outliers 0
mean (n) 6.631
st.dev. (n) 0.4169
R(calc.) 1.167
R(D6423:14) 1.112



Determination of pHe (LiCl) on sample #15230;

lab	method	Elect.	value	mark	z(targ)	lab	method	Elect.	value	mark	z(targ)
52			----		----	621	EN15490	LiCl	5.64		0.23
62			----		----	631			----		----
120			----		----	657			----		----
131			----		----	663			----		----
132			----		----	786			----		----
150			----		----	823			----		----
159			----		----	840			----		----
169			----		----	902			----		----
171			----		----	913			----		----
174			----		----	922			----		----
175			----		----	963			----		----
194			----		----	1040			----		----
230			----		----	1067			----		----
311	EN15490	EtOH- Trode	5.76		0.85	1079	EN15490	LiCl	6.7	H	5.75
323	EN15490	LiCl	7.23	H	8.51	1126			----		----
329	EN15490	LiCl	7.31	H	8.93	1161	EN15490	LiCl	5.518		-0.41
332			----		----	1201			----		----
333			----		----	1203			----		----
334			----		----	1276			----		----
337			----		----	1359			----		----
338			----		----	1397			----		----
340			----		----	1402			----		----
343			----		----	1446	EN15490	LiCl	5.6		0.02
357			----		----	1523			----		----
360			----		----	1563			----		----
391			----		----	1605			----		----
402			----		----	1656			----		----
441			----		----	1710			----		----
444			----		----	1726	EN15490	LiCl	5.42		-0.92
468			----		----	1727	EN15490		5.64		0.23
496			----		----	1788			----		----
511			----		----	1817			----		----
541			----		----	1835			----		----
551			----		----	1919			----		----
554			----		----	1996			----		----
556			----		----				----		----

normality OK
n 6
outliers 3
mean (n) 5.596
st.dev. (n) 0.1165
R(calc.) 0.326
R(EN15490:07) 0.537



Determination of Phosphorus on sample #15230; results in mg/L

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621	D3231	< 0.2		----
62		----		----	631		----		----
120		----		----	657		----		----
131		----		----	663		----		----
132		----		----	786		----		----
150	D3231	<0.2		----	823	UOP389	<0.11		----
159		----		----	840		----		----
169		----		----	902		----		----
171		----		----	913		----		----
174	EN15487	<0.01		----	922		----		----
175		----		----	963		----		----
194		----		----	1040		----		----
230		----		----	1067		----		----
311		----		----	1079		----		----
323	EN15487	<0.15		----	1126		----		----
329	EN15487	<0.15		----	1161		----		----
332		----		----	1201	EN15487	0.010		----
333	EN15487	<0.15		----	1203	EN15487	<0.15		----
334		----		----	1276	EN15487	0.0024	C	----
337		----		----	1359	EN15487	0.002		----
338		----		----	1397	EN15487	<0.1		----
340		----		----	1402	EN15487	0.001		----
343		----		----	1446		----		----
357		----		----	1523		----		----
360	EN15837	< 0.10		----	1563	EN15487	0.009		----
391		----		----	1605		----		----
402	EN15487	<0.01		----	1656	EN15487	0.04		----
441		----		----	1710		----		----
444	EN15487	0.114		----	1726	EN15487	<0.15		----
468	EN15487	<0.15		----	1727	EN15487	0.01		----
496		----		----	1788		----		----
511		----		----	1817		----		----
541		----		----	1835	EN15487	<0.15		----
551	EN15487	<0.15		----	1919		----		----
554		----		----	1996		----		----
556		----		----					

normality unknown
n 23
outliers n.a.
mean (n) <0.2
st.dev. (n) n.a.
R(calc.) n.a.
R(EN15487:07) n.a.

Application range: 0.15 – 1.50 mg/L

Lab 1276: first reported 0.0055

Determination of Sulphate on sample #15230; results in mg/kg

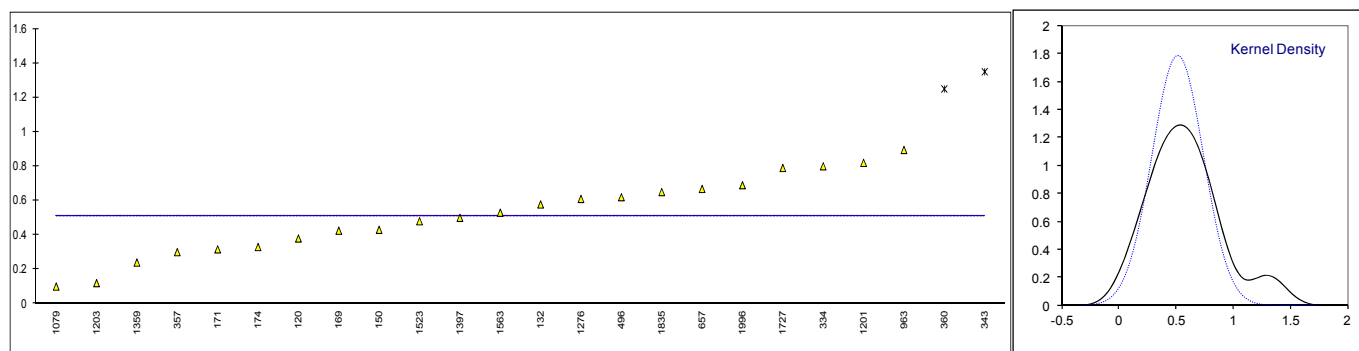
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621		----		----
62		----		----	631		----		----
120	D7319	0.38		----	657	D7328	0.668		----
131		----		----	663		----		----
132	D7319	0.578		----	786		----		----
150	D7328	0.43		----	823		----		----
159		----		----	840		----		----
169	D7319	0.425		----	902		----		----
171	D7328	0.3165		----	913		----		----
174	D7319	0.33		----	922	EN15492	<3.0		----
175	D7319	<1.0		----	963	EN15492	0.895		----
194		----		----	1040		----		----
230		----		----	1067		----		----
311	EN15492	<1.0		----	1079	EN15492	0.1		----
323	EN15492	<1		----	1126		----		----
329	EN15492	<1.0		----	1161		----		----
332		----		----	1201	EN15492	0.82		----
333	EN15492	< 1.0		----	1203	EN15492	0.12		----
334	EN15492	0.8		----	1276	EN15492	0.61		----
337		----		----	1359	EN15492	0.2397		----
338		----		----	1397	EN15492	0.5		----
340		----		----	1402		----		----
343	EN15492	1.35	DG(0.05)	----	1446		----		----
357	EN15492	0.3		----	1523	D7319	0.480		----
360	EN15492	1.25	DG(0.05)	----	1563	EN15492	0.53		----
391		----		----	1605		----		----
402		----		----	1656		----		----
441		----		----	1710		----		----
444		----		----	1726		----		----
468	EN15492	<1.0		----	1727	EN15492	0.79		----
496	EN15492	0.62		----	1788		----		----
511		----		----	1817		----		----
541		----		----	1835	EN15492	0.65		----
551	EN15492	<1		----	1919		----		----
554		----		----	1996	EN15492	0.69		----
556		----		----					

normality OK
n 22
outliers 2
mean (n) 0.512
st.dev. (n) 0.2236
R(calc.) 0.626
R(EN15492:12) (0.259)
Compare
R(D7319:13) (1.027)

Application range: 1 – 20 mg/kg

Application range: 1 – 50 mg/kg

Lab 343 and 360 reported a false positive test result?



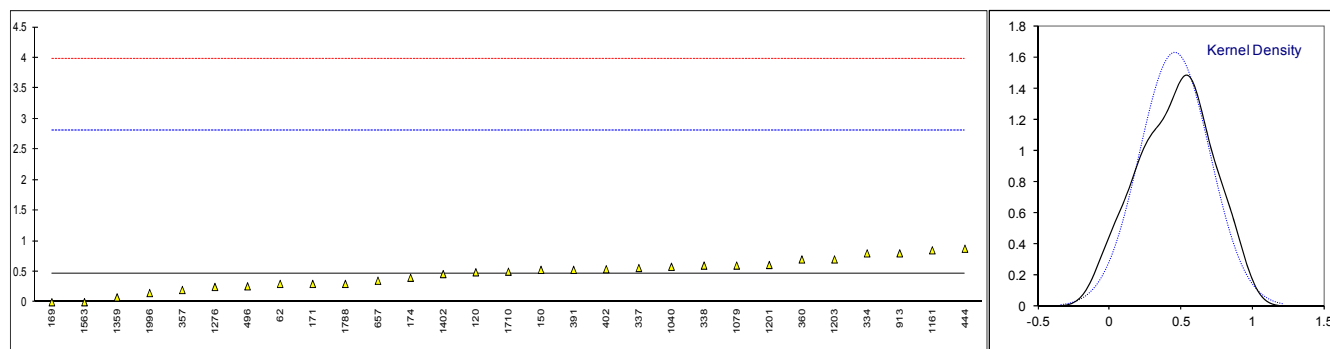
Determination of total Sulphur on sample #15230; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D5453	<1.0		----	621		----		----
62	D5453	0.3		-0.14	631		----		----
120	D5453	0.49		0.03	657	D5453	0.352		-0.09
131		----		----	663		----		----
132	D5453	<1		----	786	D5453	<1		----
150	D5453	0.53		0.06	823	D5453	<1.0		----
159		----		----	840		----		----
169	D5453	0.0		-0.39	902		----		----
171	D5453	0.30		-0.14	913	D5453	0.8		0.29
174	D5453	0.4		-0.05	922	D5453	<1.0		----
175	D5453	<1.0		----	963		----		----
194		----		----	1040	ISO20846	0.58		0.10
230		----		----	1067		----		----
311	D5453	<1.0		----	1079	D5453	0.6		0.12
323	D5453	<1		----	1126		----		----
329		----		----	1161	ISO20846	0.850		0.33
332		----		----	1201	EN15485	0.61		0.13
333	D5453	<1		----	1203	EN15485	0.7		0.20
334	ISO20846	0.8		0.29	1276	ISO20846	0.25		-0.18
337	ISO20846	0.56		0.09	1359	in house	0.08		-0.32
338	D5453	0.6		0.12	1397	ISO20846	>3	C	>2.16
340	ISO20846	<3		----	1402	D5453	0.46		0.00
343	D5453	<1		----	1446		----		----
357	D5453	0.2		-0.22	1523		----		----
360	EN15486	0.7		0.20	1563	EN15485	0		-0.39
391	EN15486	0.53		0.06	1605		----		----
402	ISO20846	0.54		0.07	1656	D5453	<1		----
441		----		----	1710	EN15485	0.5		0.03
444	D5453	0.876		0.35	1726		----		----
468		----		----	1727		----		----
496	EN15485	0.26		-0.17	1788	D5453	0.3		-0.14
511	D5453	<1.0		----	1817		----		----
541		----		----	1835	EN15485	<1.0		----
551	D5453	<1		----	1919		----		----
554		----		----	1996	EN15485	0.15		-0.26
556		----		----					

normality OK
n 29
outliers 0
mean (n) 0.459
st.dev. (n) 0.2452
R(calc.) 0.687
R(EN15485:07) 3.292
Compare
R(EN15486:07) 1.743
R(D5453:09) 0.323

Application range: 7 – 20 mg/kg
Application range: 5 – 20 mg/kg
Application range: 1 – 8000 mg/kg

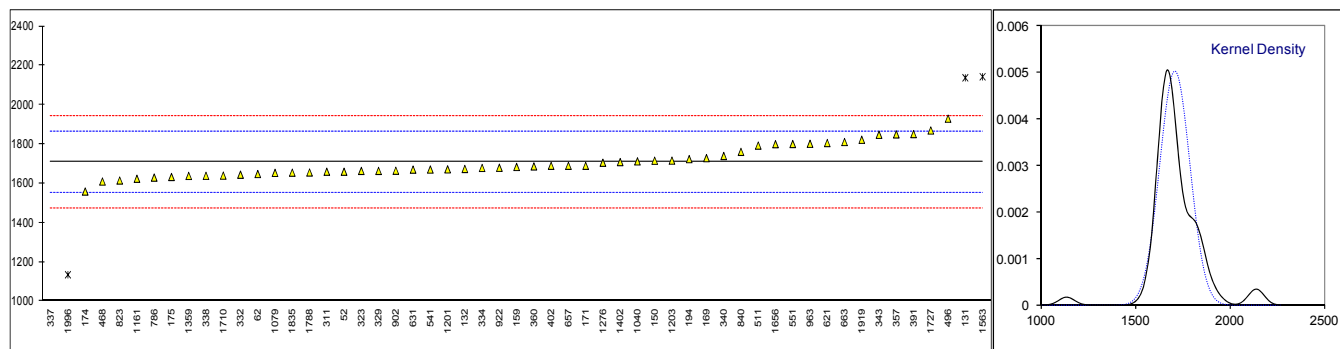
Lab 1397: first reported 16.21. Revised test result is still false positive



Determination of Water (coulometric) on sample #15230; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	E1064	1660	C	-0.62	621	D6304	1806		1.24
62	E1064	1648		-0.77	631	D6304	1670.7		-0.48
120		----		----	657	E1064	1690		-0.24
131	E1064	2138	R(0.01)	5.46	663	E1064	1811		1.30
132	E1064	1674.03		-0.44	786	E1064	1630		-1.00
150	E1064	1716		0.09	823	E1064	1615		-1.19
159	E1064	1684		-0.31	840	E1064	1761		0.66
169	E1064	1729		0.26	902	E1064	1665		-0.56
171	E1064	1690.1		-0.24	913		----		----
174	E1064	1559		-1.90	922	D6304	1680		-0.37
175	D6304	1633		-0.96	963	E1064	1802	C	1.19
194	E1064	1724		0.19	1040	EN15489	1712.5		0.05
230		----		----	1067		----		----
311	EN15489	1660		-0.62	1079	E1064	1654		-0.70
323	EN15489	1664		-0.57	1126		----		----
329	E1064	1664		-0.57	1161	EN15489	1624		-1.08
332	EN15489	1644.7		-0.81	1201	EN15489	1672		-0.47
333		----		----	1203	EN15489	1716.5		0.10
334	EN15489	1679		-0.38	1276	EN15489	1705.67		-0.04
337	EN15489	41	R(0.01)	-21.21	1359	EN15489	1638.45		-0.89
338	E1064	1639.00		-0.89	1397		----		----
340	EN15489	1740		0.40	1402	EN15489	1709		0.00
343	EN15489	1848		1.77	1446		----		----
357	EN15489	1850	C	1.80	1523		----		----
360	EN15489	1687.0		-0.28	1563	EN15489	2143.2	C,R(0.01)	5.53
391	EN15489	1851.5		1.82	1605		----		----
402	ISO12937	1690		-0.24	1656	E1064	1800		1.16
441		----		----	1710	EN15489	1640		-0.87
444		----		----	1726		----		----
468	EN15489	1610	C	-1.26	1727	EN15489	1870		2.05
496	EN15489	1930		2.81	1788	D6304	1656		-0.67
511	E1064	1793		1.07	1817		----		----
541	E1064	1671		-0.48	1835	EN15489	1655	C	-0.68
551	EN15489	1801		1.17	1919	EN15489	1822.6		1.45
554		----		----	1996	ISO12937	1135	R(0.01)	-7.30
556		----		----					
	normality	OK							
	n	51							
	outliers	4							
	mean (n)	1708.7							
	st.dev. (n)	79.46							
	R(calc.)	222.5							
	R(EN15489:07)	220.1							
	Compare								
	R(E1064:12)	290.5							

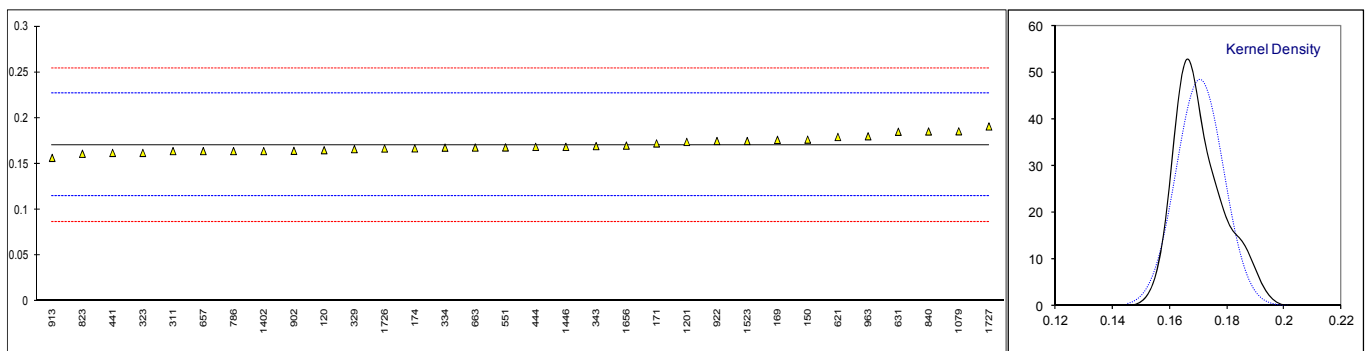
Lab 52: first reported 0.2%M/M (D6304)
 Lab 357: reported 0.185 mg/kg
 Lab 468: first reported 1132
 Lab 963: first reported 1902
 Lab 1563: reported 0.21432 mg/kg
 Lab 1835: reported 0.1655 mg/kg



Determination of Water (titrimetric) on sample #15230; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621	E203	0.1794		0.31
62		----		----	631	E203	0.1851		0.52
120	E203	0.165		-0.21	657	E203	0.1640		-0.24
131		----		----	663	E203	0.1679		-0.10
132		----		----	786	E203	0.164		-0.24
150	E203	0.1765		0.21	823	E203	0.1611		-0.35
159		----		----	840	E203	0.1854		0.53
169	E203	0.1763		0.20	902	E203	0.1643		-0.23
171	E203	0.17237		0.06	913	E203	0.1566		-0.51
174	E203	0.167		-0.13	922	E203	0.175		0.15
175		----		----	963	E203	0.1802		0.34
194		----		----	1040		----		----
230		----		----	1067		----		----
311	E203	0.164		-0.24	1079	EN15692	0.1856		0.53
323	E203	0.1620		-0.31	1126		----		----
329	E203	0.1661		-0.17	1161		----		----
332		----		----	1201	E203	0.1740		0.12
333		----		----	1203		----		----
334	E203	0.1678		-0.10	1276		----		----
337		----		----	1359		----		----
338		----		----	1397		----		----
340		----		----	1402	E203	0.164		-0.24
343	E203	0.1695		-0.04	1446	ISO760	0.1686		-0.08
357		----		----	1523	E203	0.175		0.15
360		----		----	1563		----		----
391		----		----	1605		----		----
402		----		----	1656	E203	0.17		-0.03
441	D4928	0.162		-0.31	1710		----		----
444	E203	0.1686		-0.08	1726	EN15692	0.1668		-0.14
468		----		----	1727	EN15692	0.1909		0.72
496		----		----	1788		----		----
511		----		----	1817		----		----
541		----		----	1835		----		----
551	E203	0.1680		-0.10	1919		----		----
554		----		----	1996		----		----
556		----		----					

normality OK
 n 32
 outliers 0
 mean (n) 0.17072
 st.dev. (n) 0.008259
 R(calc.) 0.02313
 R(E203:08) 0.07800



Determination of Ethanol, including higher alcohols (EN15721) on sample #15231 in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621		----		----
62		----		----	631		----		----
120		----		----	657		----		----
131		----		----	663	INH-0001	99.935	C	1.92
132		----		----	786		----		----
150		----		----	823		----		----
159		----		----	840		----		----
169		----		----	902		----		----
171	EN15721	99.9048		0.30	913		----		----
174	INH-0001	99.906		0.36	922		----		----
175		----		----	963		----		----
194		----		----	1040	EN15721	99.7309	C,R(0.05)	-9.01
230		----		----	1067		----		----
311	EN15721	99.87		-1.56	1079	EN15721	99.9093		0.54
323	INH-0001	99.90		0.04	1126		----		----
329	INH-0001	99.902		0.15	1161	ISO22854	99.87		-1.56
332		----		----	1201	EN15721	99.908		0.47
333		----		----	1203	EN15721	99.895		-0.23
334	INH-5001	99.870		-1.56	1276	EN15721	99.918		1.01
337		----		----	1359	EN15721	99.7565	R(0.05)	-7.64
338	INH-2870	99.91		0.58	1397		----		----
340	EN15721	99.976		4.11	1402	EN15721	99.853		-2.47
343	EN15721	99.82	C	-4.24	1446		----		----
357	INH-0001	99.92		1.11	1523		----		----
360	EN15721	99.8889		-0.55	1563	EN15721	99.896		-0.17
391		----		----	1605		----		----
402		----		----	1656	EN15721	99.92		1.11
441		----		----	1710		----		----
444	EN15721	99.859		-2.15	1726	EN15721	99.872		-1.46
468	EN15721	99.98		4.33	1727	EN15721	99.87		-1.56
496	EN15721	99.9189		1.05	1788		----		----
511	EN15721	99.941		2.24	1817		----		----
541		----		----	1835	EN15721	99.8851		-0.76
551		----		----	1919		----		----
554		----		----	1996		----		----
556		----		----					

Selected group

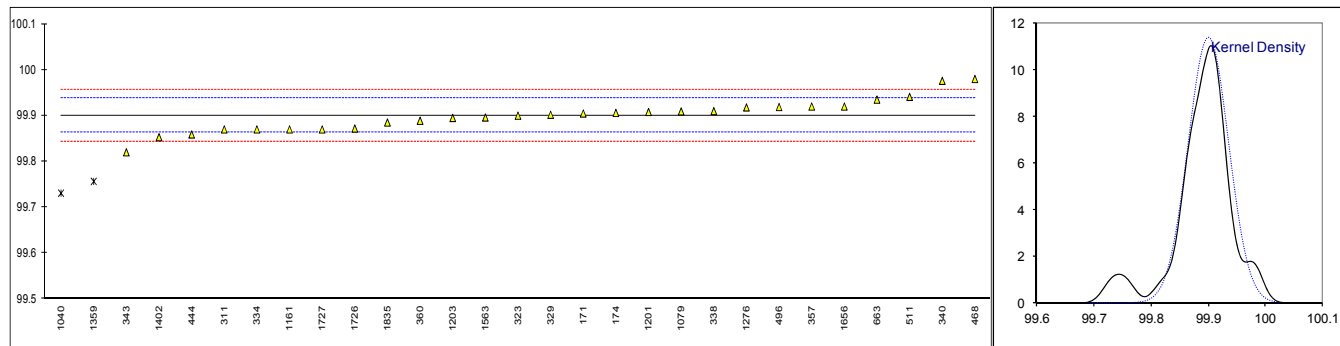
Only EN15721

normality	OK
n	19
outliers	2
mean (n)	99.8992
st.dev. (n)	0.03969
R(calc.)	0.1111
R(EN15721:13)	0.0522

All data:

OK
27
2
99.8999
0.03505
0.0981
0.0521

Lab 343: first reported 99.644
 Lab 663: first reported 99.689
 Lab 1040: first reported 99.7301



Determination of Higher Alcohols (EN15721) on sample #15231; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621		----		----
62		----		----	631		----		----
120		----		----	657		----		----
131		----		----	663	INH-0001	0.119		-1.12
132		----		----	786		----		----
150		----		----	823		----		----
159		----		----	840	EN15721	0.1342		0.05
169		----		----	902		----		----
171	EN15721	0.1196		-1.07	913		----		----
174	INH-0001	0.116		-1.35	922	INH-0001	0.1263		-0.56
175		----		----	963		----		----
194		----		----	1040	EN15721	0.1318		-0.13
230		----		----	1067		----		----
311	EN15721	0.121		-0.97	1079	EN15721	0.1343		0.06
323	INH-0001	0.1424		0.68	1126		----		----
329	INH-0001	0.1440		0.80	1161		----		----
332		----		----	1201	EN15721	0.1310		-0.20
333		----		----	1203	EN15721	0.1342		0.05
334	INH-5001	0.1047		-2.22	1276	EN15721	0.146		0.96
337		----		----	1359	EN15721	0.134385		0.06
338	INH-2870	0.1055		-2.16	1397		----		----
340	EN15721	0.108		-1.97	1402	EN15721	0.132		-0.12
343	EN15721	0.130		-0.27	1446		----		----
357	INH-0001	0.120		-1.04	1523		----		----
360	EN15721	0.1360		0.19	1563	EN15721	0.096		-2.89
391		----		----	1605		----		----
402	EN15721	0.1620		2.19	1656	EN15721	0.14	C	0.50
441		----		----	1710		----		----
444	EN15721	0.143		0.73	1726	EN15721	0.1402		0.51
468	EN15721	0.16		2.04	1727	EN15721	0.1420		0.65
496	EN15721	0.1331		-0.03	1788		----		----
511	EN15721	0.1241		-0.73	1817		----		----
541		----		----	1835	EN15721	0.1387		0.40
551		----		----	1919		----		----
554		----		----	1996		----		----
556		----		----					

Selected group

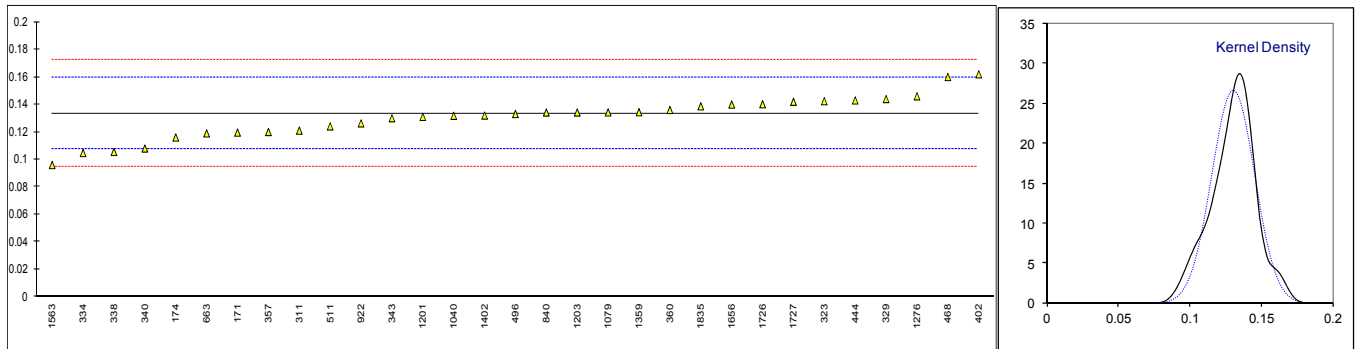
Only EN15721

normality	suspect
n	23
outliers	0
mean (n)	0.13355
st.dev. (n)	0.014261
R(calc.)	0.03993
R(EN15721:13)	0.03638

All data

OK
31
0
0.13063
0.015025
0.04207
0.03551

Lab 1656: first reported 0.26

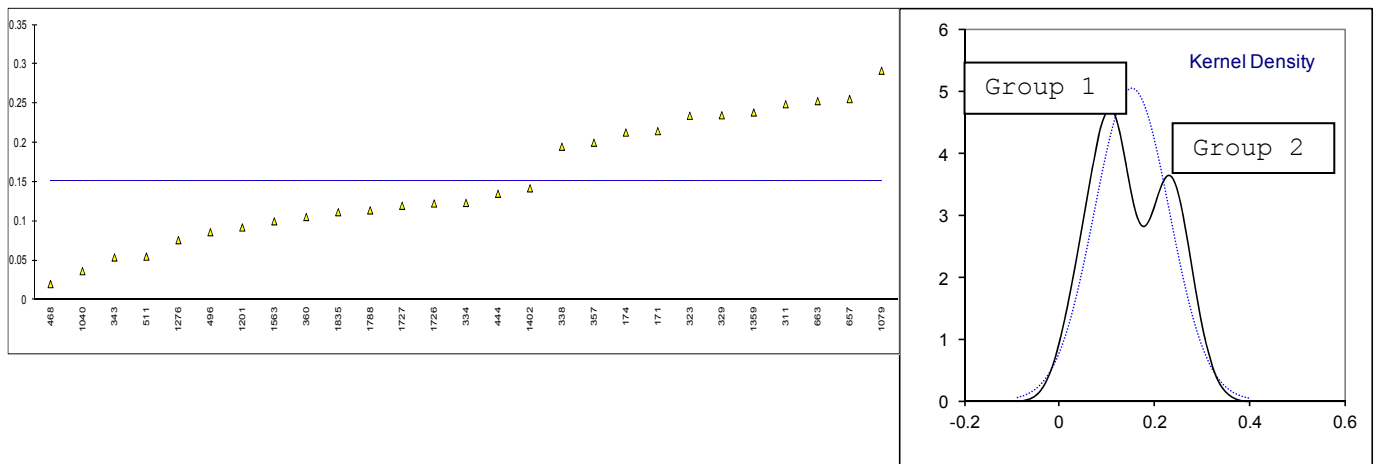


Determination of Impurities (EN15721) on sample #15231; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621		----		----
62		----		----	631		----		----
120		----		----	657	INH-0001	0.2556		----
131		----		----	663	INH-0001	0.253	C	----
132		----		----	786		----		----
150		----		----	823		----		----
159		----		----	840		----		----
169		----		----	902		----		----
171	EN15721	0.2148		----	913		----		----
174	INH-0001	0.213		----	922		----		----
175		----		----	963		----		----
194		----		----	1040	EN15721	0.0365		----
230		----		----	1067		----		----
311	EN15721	0.249		----	1079	EN15721	0.2917		----
323	INH-0001	0.2344		----	1126		----		----
329	INH-0001	0.2350		----	1161		----		----
332		----		----	1201	EN15721	0.0922		----
333		----		----	1203		----		----
334	INH-5001	0.1234		----	1276	EN15721	0.076		----
337		----		----	1359	EN15721	0.238525		----
338	INH-2870	0.1949		----	1397		----		----
340		----		----	1402	EN15721	0.142		----
343	EN15721	0.054		----	1446		----		----
357	INH-0001	0.20		----	1523		----		----
360	EN15721	0.1055		----	1563	EN15721	0.100		----
391		----		----	1605		----		----
402		----		----	1656		----		----
441		----		----	1710		----		----
444	EN15721	0.135		----	1726	EN15721	0.1227		----
468	EN15721	0.02		----	1727	EN15721	0.1198		----
496	EN15721	0.0861		----	1788	D5501	0.1139		----
511	EN15721	0.0551		----	1817		----		----
541		----		----	1835	EN15721	0.1116		----
551		----		----	1919		----		----
554		----		----	1996		----		----
556		----		----					

	<u>Group 1</u>	<u>Group 2</u>
normality	OK	OK
n	16	11
outliers	0	0
mean (n)	0.09336	0.23454
st.dev. (n)	0.036047	0.028098
R(calc.)	0.10093	0.07867
R(Horwitz – 9 comp)	0.02241	0.04901

Lab 663: first reported 0.430

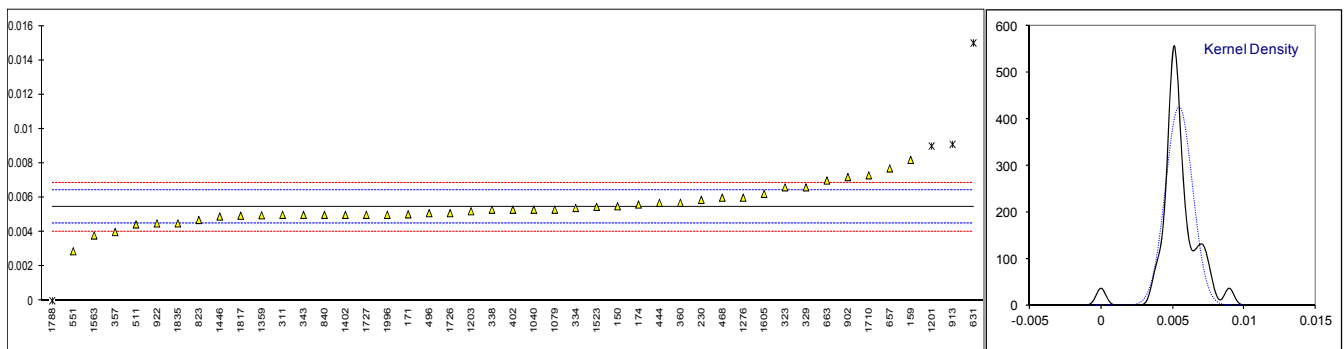


Determination of Methanol on sample #15231; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621		----		----
62		----		----	631	D5501	0.015	R(0.01)	20.00
120		----		----	657	INH-0001	0.0077		4.72
131		----		----	663	INH-0001	0.0070		3.25
132	D5501	<0.01		----	786		----		----
150	INH-0001	0.0055		0.11	823	INH-0001	0.0047		-1.57
159	D5501	0.0082		5.76	840	EN15721	0.0050		-0.94
169		----		----	902	INH-0001	0.0072		3.67
171	EN15721	0.00503		-0.87	913	INH-0001	0.0091	R(0.05)	7.65
174	INH-0001	0.0056		0.32	922	INH-0001	0.0045		-1.98
175		----		----	963		----		----
194		----		----	1040	EN15721	0.0053		-0.31
230	INH-0001	0.005873		0.89	1067		----		----
311	EN15721	0.005		-0.94	1079	EN15721	0.0053		-0.31
323	INH-0001	0.0066		2.41	1126		----		----
329	INH-0001	0.0066		2.41	1161	ISO22854	<0.01		----
332		----		----	1201	EN15721	0.0090	C,R(0.05)	7.44
333		----		----	1203	EN15721	0.00521		-0.50
334	INH-5001	0.0054		-0.10	1276	EN15721	0.006		1.16
337		----		----	1359	EN15721	0.004975		-0.99
338	INH-2870	0.0053		-0.31	1397		----		----
340	EN15721	<0.100		----	1402	EN15721	0.005		-0.94
343	EN15721	0.005		-0.94	1446		0.0049		-1.15
357	INH-0001	0.004		-3.03	1523	D5501	0.005466		0.04
360	EN15721	0.0057		0.53	1563	EN15721	0.0038		-3.45
391		----		----	1605	In house	0.00622		1.62
402	EN15721	0.0053		-0.31	1656	EN15721	<0.01	C	----
441		----		----	1710	EN15721	0.0073		3.88
444	EN15721	0.0057		0.53	1726	EN15721	0.0051		-0.73
468	EN15721	0.006		1.16	1727	EN15721	0.0050		-0.94
496	EN15721	0.0051		-0.73	1788	D5501	0	R(0.01)	-11.41
511	EN15721	0.00444		-2.11	1817		0.00495		-1.04
541		----		----	1835	EN15721	0.0045		-1.98
551	INH-1313	0.00288		-5.38	1919		----		----
554		----		----	1996	D5501	0.005		-0.94
556		----		----					

normality suspect
n 41
outliers 4
mean (n) 0.00545
st.dev. (n) 0.001038
R(calc.) 0.00291
R(Horwitz) 0.00134
Compare
R(EN15721:13) -0.00447

Lab 1201: first reported 0.0137
Lab 1656: first reported 0.01

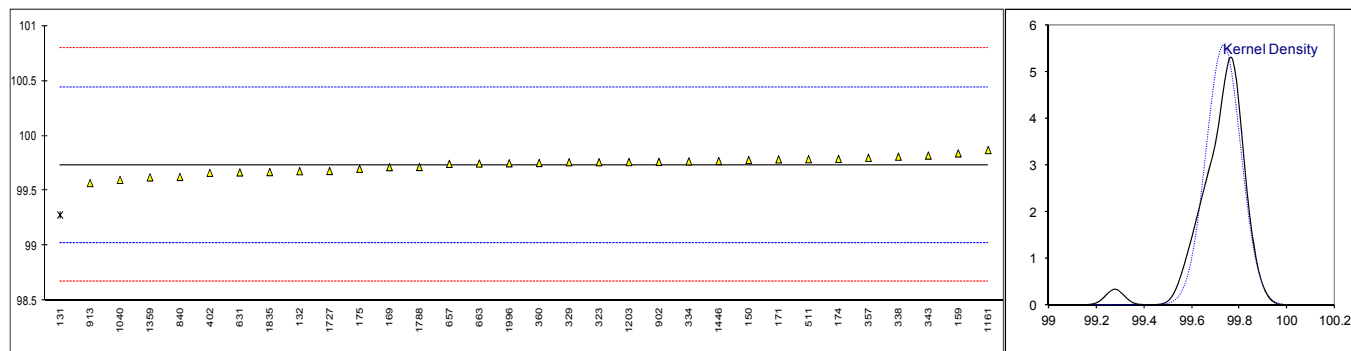


Determination of Ethanol (ASTM D5501) on sample #15231; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621		----		----
62		----		----	631	D5501	99.667		-0.19
120		----		----	657	INH-0001	99.7444		0.03
131	D5501	99.28	R(0.01)	-1.28	663	INH-0001	99.748	C	0.04
132	D5501	99.678		-0.16	786		----		----
150	INH-0001	99.78		0.13	823		----		----
159	D5501	99.8398		0.30	840	D5501	99.626		-0.31
169	D5501	99.715		-0.05	902	INH-0001	99.763		0.08
171	EN15721	99.7852		0.14	913	D5501	99.57		-0.46
174	D5501	99.790		0.16	922		----		----
175	D5501	99.70		-0.10	963		----		----
194		----		----	1040	in house	99.5992		-0.38
230		----		----	1067		----		----
311		----		----	1079		----		----
323	INH-0001	99.76		0.07	1126		----		----
329	INH-0001	99.76		0.07	1161	ISO22854	99.87		0.38
332		----		----	1201		----		----
333		----		----	1203	EN15721	99.761		0.08
334	INH-5001	99.767		0.09	1276		----		----
337		----		----	1359		99.622115		-0.32
338	INH-2870	99.81		0.21	1397		----		----
340		----		----	1402		----		----
343	INH-0001	99.82		0.24	1446	D5501	99.77		0.10
357	INH-0001	99.80		0.19	1523		----		----
360	EN15721	99.7529		0.05	1563		----		----
391		----		----	1605		----		----
402	D5501	99.663		-0.20	1656		----		----
441		----		----	1710		----		----
444		----		----	1726		----		----
468		----		----	1727	D5501	99.68		-0.15
496		----		----	1788	D5501	99.7161		-0.05
511	D5501	99.787		0.15	1817		----		----
541		----		----	1835	D5501	99.670		-0.18
551		----		----	1919		----		----
554		----		----	1996	D5501	99.750		0.04
556		----		----					

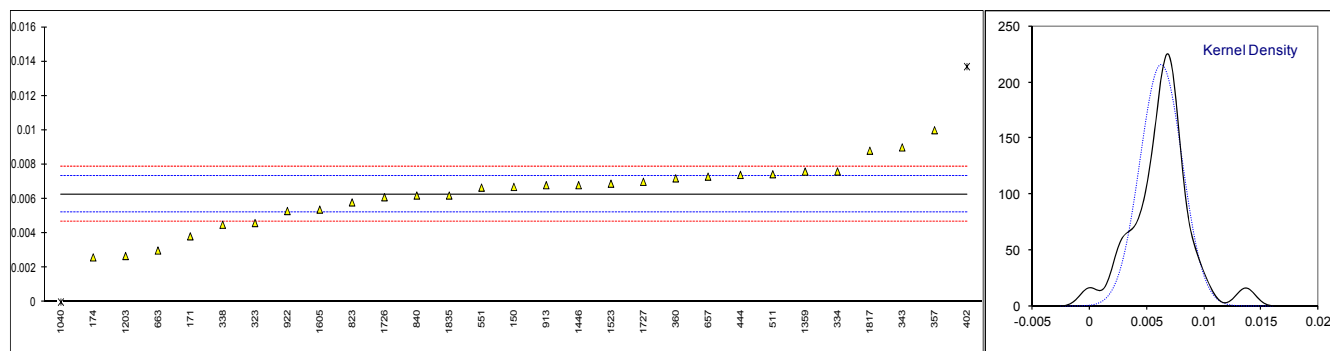
normality OK
n 31
outliers 1
mean (n) 99.73437
st.dev. (n) 0.071853
R(calc.) 0.20119
R(D5501:12e1) 0.99269

Lab 663: first reported 99.570



Determination of Acetaldehyde on sample #15231; results in %M/M

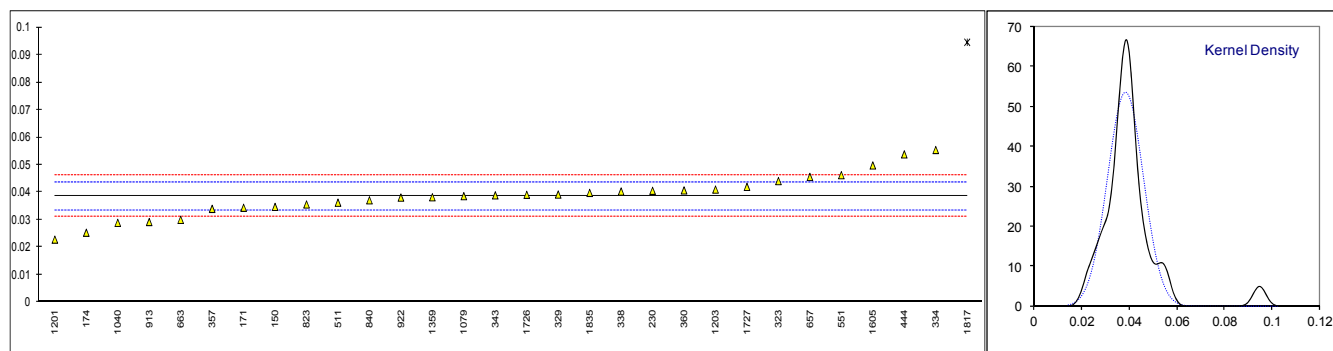
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621		----		----
62		----		----	631		----		----
120		----		----	657	INH-0001	0.0073		1.91
131		----		----	663	INH-0001	0.0030		-6.08
132		----		----	786		----		----
150	INH-0001	0.0067		0.79	823	INH-0001	0.0058		-0.88
159		----		----	840	INH-0001	0.0062		-0.14
169		----		----	902		----		----
171	EN15721	0.003825		-4.55	913	INH-0001	0.0068		0.98
174	INH-0001	0.0026		-6.82	922	INH-0001	0.0053		-1.81
175		----		----	963		----		----
194		----		----	1040	in house	0.0000	D(0.05)	-11.65
230	INH-0001	<0.010		----	1067		----		----
311		----		----	1079		----		----
323	INH-0001	0.0046		-3.11	1126		----		----
329		----		----	1161		----		----
332		----		----	1201	EN15721	<0.001	false negative?	<-9.80
333		----		----	1203	EN15721	0.00268		-6.67
334	INH-5001	0.0076		2.46	1276		----		----
337		----		----	1359		0.007595		2.45
338	INH-2870	0.0045		-3.29	1397		----		----
340		----		----	1402		----		----
343	INH-0001	0.009		5.06	1446		0.0068		0.98
357	INH-0001	0.010		6.92	1523	D5501	0.006891		1.15
360	EN15721	0.0072		1.72	1563		----		----
391		----		----	1605	in house	0.00538		-1.66
402	D5501	0.0137	D(0.05)	13.79	1656		----		----
441		----		----	1710		----		----
444	EN15721	0.0074		2.09	1726	in house	0.0061		-0.32
468		----		----	1727	EN15721	0.007		1.35
496		----		----	1788		----		----
511	EN15721	0.00744		2.17	1817		0.00881		4.71
541		----		----	1835	in house	0.0062		-0.14
551	INH-1313	0.00666		0.72	1919		----		----
554		----		----	1996	D5501	<0.001	false negative?	<-9.80
556		----		----					
normality		OK							
n		27							
outliers		2							
mean (n)		0.00627							
st.dev. (n)		0.001847							
R(calc.)		0.00517							
R(Horwitz)		0.00151							



Determination of Acetal (1,1-diethoxyethane) on sample #15231; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621		----		----
62		----		----	631		----		----
120		----		----	657	INH-0001	0.0456		2.77
131		----		----	663	INH-0001	0.0300		-3.42
132		----		----	786		----		----
150	INH-0001	0.0347		-1.55	823	INH-0001	0.0356		-1.19
159		----		----	840	INH-0001	0.0371		-0.60
169		----		----	902		----		----
171	EN15721	0.03439		-1.67	913	INH-0001	0.0292		-3.73
174	INH-0001	0.0253		-5.28	922	INH-0001	0.0381		-0.20
175		----		----	963		----		----
194		----		----	1040	in house	0.0289		-3.85
230	INH-0001	0.040564		0.78	1067		----		----
311		----		----	1079	EN15721	0.0386		0.00
323	INH-0001	0.0441		2.18	1126		----		----
329	INH-0001	0.0392		0.23	1161		----		----
332		----		----	1201	EN15721	0.0228		-6.27
333		----		----	1203	EN15721	0.04101		0.95
334	INH-5001	0.0554		6.66	1276		----		----
337		----		----	1359		0.038205		-0.16
338	INH-2870	0.0403		0.67	1397		----		----
340		----		----	1402		----		----
343	INH-0001	0.0389		0.12	1446		----		----
357	INH-0001	0.034		-1.83	1523		----		----
360	EN15721	0.0407		0.83	1563		----		----
391		----		----	1605	in house	0.04978		4.43
402		----		----	1656		----		----
441		----		----	1710		----		----
444	EN15721	0.0538		6.03	1726	in house	0.0391		0.20
468		----		----	1727	EN15721	0.042		1.35
496		----		----	1788		----		----
511	EN15721	0.03624		-0.94	1817		0.09457	R(0.01)	22.20
541		----		----	1835	in house	0.0398		0.47
551	INH-1313	0.04624		3.03	1919		----		----
554		----		----	1996		----		----
556		----		----					

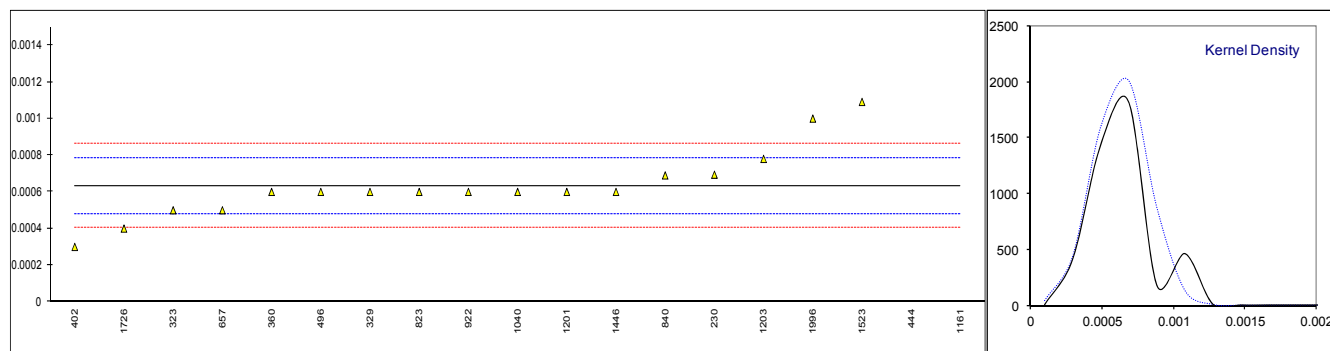
normality OK
n 29
outliers 1
mean (n) 0.03861
st.dev. (n) 0.007466
R(calc.) 0.02091
R(Horwitz) 0.00706



Determination of n-Butanol on sample #15231; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621		----		----
62		----		----	631		----		----
120		----		----	657	INH-0001	0.0005		----
131		----		----	663	INH-0001	<0.0005		----
132		----		----	786		----		----
150	INH-0001	<0.0005		----	823	INH-0001	0.0006		----
159		----		----	840	INH-0001	0.00069		----
169		----		----	902	INH-0001	<0.0005		----
171	EN15721	<0.001		----	913	INH-0001	<0.0005		----
174	INH-0001	<0.001		----	922	INH-0001	0.0006		----
175		----		----	963		----		----
194		----		----	1040	in house	0.0006		----
230	INH-0001	0.000694		----	1067		----		----
311		----		----	1079		----		----
323	INH-0001	0.0005		----	1126		----		----
329	INH-0001	0.0006		----	1161	ISO22854	0.05	G(0.01), false +?	----
332		----		----	1201	EN15721	0.0006		----
333		----		----	1203	EN15721	0.00078		----
334		----		----	1276		----		----
337		----		----	1359		----		----
338		----		----	1397		----		----
340		----		----	1402		----		----
343	INH-0001	<0.01		----	1446		0.0006		----
357	INH-0001	<0.001		----	1523	D5501	0.001091		----
360	EN15721	0.0006		----	1563		----		----
391		----		----	1605		----		----
402	D5501	0.0003		----	1656		----		----
441		----		----	1710		----		----
444	EN15721	0.0060	G(0.01)	----	1726	in house	0.0004		----
468		----		----	1727	EN15721	<0.001		----
496	EN15721	0.0006		----	1788		----		----
511		----		----	1817		----		----
541		----		----	1835		----		----
551	INH-1313	<0.0006		----	1919		----		----
554		----		----	1996	D5501	0.001		----
556		----		----					

normality suspect
n 17
outliers 2
mean (n) 0.00063
st.dev. (n) 0.000191
R(calc.) 0.00053
R(Horwitz) (0.00022)

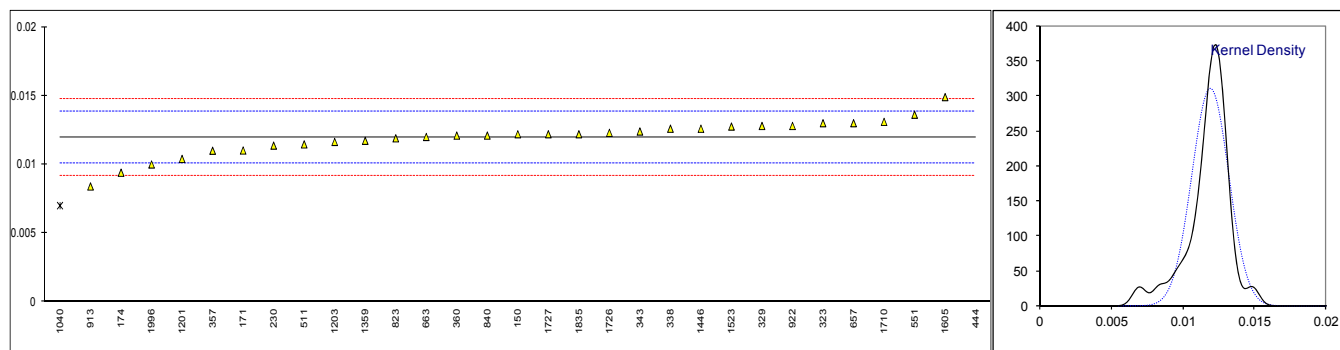


Determination of Ethylacetate on sample #15231; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621		----		----
62		----		----	631		----		----
120		----		----	657	INH-0001	0.0130		1.11
131		----		----	663	INH-0001	0.0120		0.04
132		----		----	786		----		----
150	INH-0001	0.0122		0.25	823	INH-0001	0.0119		-0.07
159		----		----	840	INH-0001	0.0121		0.14
169		----		----	902		----		----
171	EN15721	0.011017		-1.02	913	INH-0001	0.0084		-3.83
174	INH-0001	0.0094		-2.75	922	INH-0001	0.0128	C	0.90
175		----		----	963		----		----
194		----		----	1040	in house	0.0070	R(0.05)	-5.33
230	INH-0001	0.011373		-0.64	1067		----		----
311		----		----	1079		----		----
323	INH-0001	0.0130		1.11	1126		----		----
329	INH-0001	0.0128		0.90	1161		----		----
332		----		----	1201	EN15721	0.0104		-1.68
333		----		----	1203	EN15721	0.01164		-0.35
334		----		----	1276		----		----
337		----		----	1359		0.011720		-0.26
338	INH-2870	0.0126		0.68	1397		----		----
340		----		----	1402		----		----
343	INH-0001	0.0124		0.47	1446		0.0126		0.68
357	INH-0001	0.011		-1.04	1523	D5501	0.012756		0.85
360	EN15721	0.0121		0.14	1563		----		----
391		----		----	1605	in house	0.01490		3.15
402		----		----	1656		----		----
441		----		----	1710	EN15721	0.0131		1.22
444	EN15721	0.0538	R(0.01)	44.90	1726	in house	0.0123		0.36
468		----		----	1727	EN15721	0.0122		0.25
496		----		----	1788		----		----
511	EN15721	0.01146		-0.54	1817		----		----
541		----		----	1835	in house	0.0122		0.25
551	INH-1313	0.01362		1.78	1919		----		----
554		----		----	1996	D5501	0.010		-2.11
556		----		----					

normality suspect
n 29
outliers 2
mean (n) 0.01197
st.dev. (n) 0.001286
R(calc.) 0.00360
R(Horwitz) 0.00261

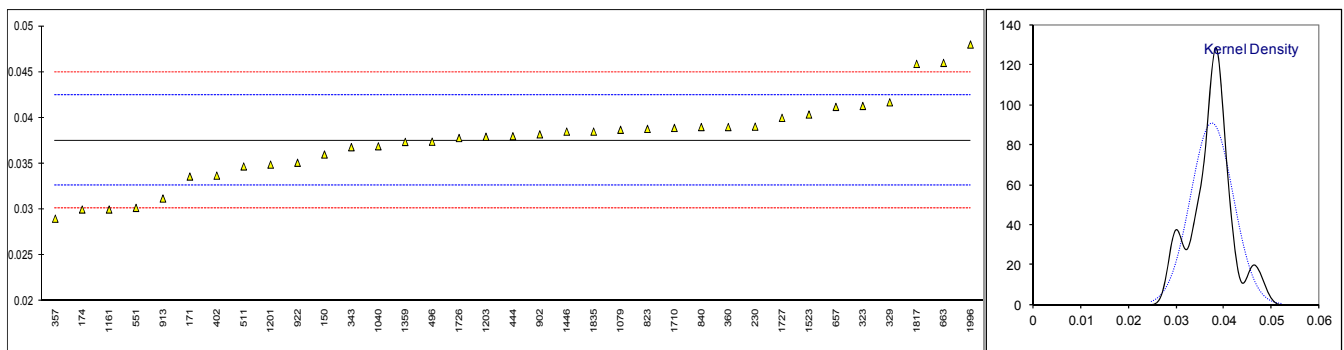
Lab 922: first reported 0.0077



Determination of Isobutanol on sample #15231; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621		----		----
62		----		----	631		----		----
120		----		----	657	INH-0001	0.0412		1.49
131		----		----	663	INH-0001	0.046	C	3.44
132		----		----	786		----		----
150	INH-0001	0.0360		-0.62	823	INH-0001	0.0388		0.51
159		----		----	840	INH-0001	0.0390		0.60
169		----		----	902	INH-0001	0.0382		0.27
171	EN15721	0.0336		-1.60	913	INH-0001	0.0312		-2.57
174	INH-0001	0.030		-3.06	922	INH-0001	0.0351		-0.99
175		----		----	963		----		----
194		----		----	1040	in house	0.0369		-0.26
230	INH-0001	0.039045		0.61	1067		----		----
311		----		----	1079	EN15721	0.0387		0.47
323	INH-0001	0.0413		1.53	1126		----		----
329	INH-0001	0.0417		1.69	1161	ISO22854	0.03		-3.06
332		----		----	1201	EN15721	0.0349		-1.07
333		----		----	1203	EN15721	0.03794		0.16
334		----		----	1276		----		----
337		----		----	1359		0.037375		-0.06
338		----		----	1397		----		----
340		----		----	1402		----		----
343	INH-0001	0.0368		-0.30	1446		0.0385		0.39
357	INH-0001	0.029		-3.47	1523	D5501	0.040365		1.15
360	EN15721	0.0390		0.60	1563		----		----
391		----		----	1605		----		----
402	D5501	0.0337		-1.56	1656		----		----
441		----		----	1710	EN15721	0.0389		0.56
444	EN15721	0.0380		0.19	1726	in house	0.0378		0.11
468		----		----	1727	EN15721	0.0400		1.00
496	EN15721	0.0374		-0.05	1788		----		----
511	EN15721	0.03470		-1.15	1817		0.045887		3.39
541		----		----	1835	in house	0.0385		0.39
551	INH-1313	0.03018		-2.99	1919		----		----
554		----		----	1996	D5501	0.048		4.25
556		----		----					
	normality	OK							
	n	35							
	outliers	0							
	mean (n)	0.03753							
	st.dev. (n)	0.004403							
	R(calc.)	0.01233							
	R(Horwitz)	0.00689							

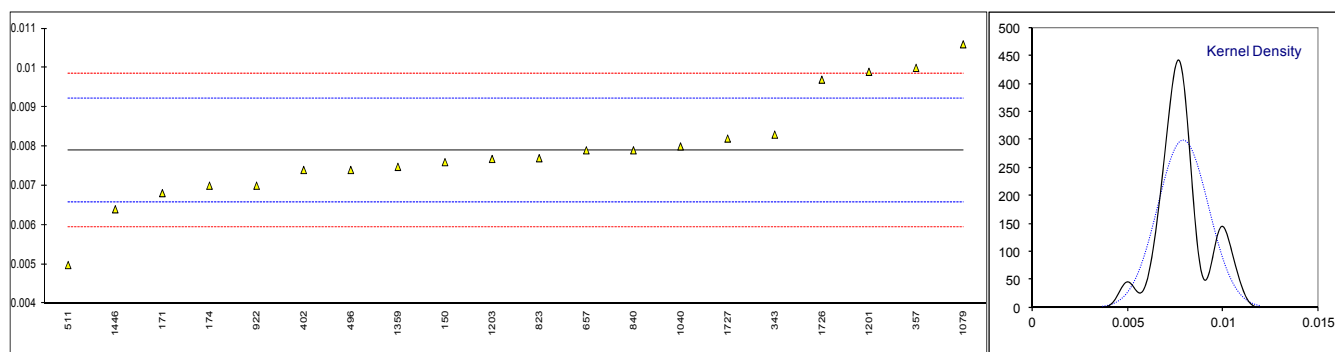
Lab 663: first reported 0.041



Determination of 2-Methyl-1-Butanol on sample #15231; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621		----		----
62		----		----	631		----		----
120		----		----	657	INH-0001	0.0079		0.00
131		----		----	663		----		----
132		----		----	786		----		----
150	INH-0001	0.0076		-0.45	823	INH-0001	0.0077		-0.30
159		----		----	840	INH-0001	0.0079		0.00
169		----		----	902		----		----
171	EN15721	0.00681		-1.66	913		----		----
174	INH-0001	0.007		-1.37	922	INH-0001	0.0070		-1.37
175		----		----	963		----		----
194		----		----	1040	in house	0.0080		0.16
230		----		----	1067		----		----
311		----		----	1079	EN15721	0.0106		4.13
323		----		----	1126		----		----
329		----		----	1161		----		----
332		----		----	1201	EN15721	0.0099		3.06
333		----		----	1203	EN15721	0.00768		-0.33
334		----		----	1276		----		----
337		----		----	1359		0.007480		-0.64
338		----		----	1397		----		----
340		----		----	1402		----		----
343	INH-0001	0.0083		0.61	1446		0.0064		-2.29
357	INH-0001	0.010		3.21	1523		----		----
360		----		----	1563		----		----
391		----		----	1605		----		----
402	D5501	0.0074		-0.76	1656		----		----
441		----		----	1710		----		----
444		----		----	1726	in house	0.0097		2.75
468		----		----	1727	EN15721	0.0082		0.46
496	EN15721	0.0074		-0.76	1788		----		----
511	EN15721	0.00498	C	-4.46	1817		----		----
541		----		----	1835	in house	<0.0100		----
551		----		----	1919		----		----
554		----		----	1996		----		----
556		----		----					
	normality	OK							
	n	20							
	outliers	0							
	mean (n)	0.00790							
	st.dev. (n)	0.001331							
	R(calc.)	0.00373							
	R(Horwitz)	0.00183							

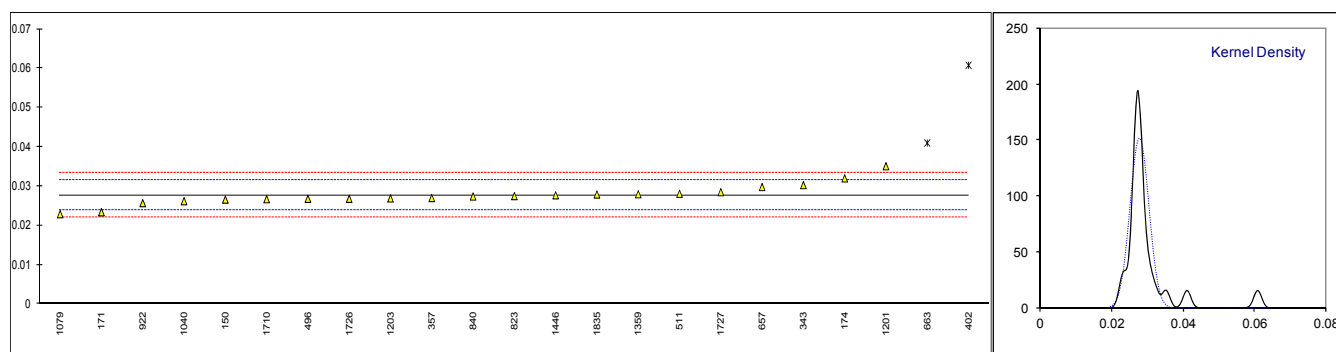
Lab 551: result mixed up with 3-methyl-1-butanol



Determination of 3-Methyl-1-Butanol on sample #15231; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621		----		----
62		----		----	631		----		----
120		----		----	657	INH-0001	0.0298		1.12
131		----		----	663	INH-0001	0.041	R(0.01)	7.01
132		----		----	786		----		----
150	INH-0001	0.0266		-0.57	823	INH-0001	0.0275		-0.09
159		----		----	840	INH-0001	0.0274		-0.15
169		----		----	902		----		----
171	EN15721	0.02339		-2.26	913		----		----
174	INH-0001	0.032		2.27	922	INH-0001	0.0257		-1.04
175		----		----	963		----		----
194		----		----	1040	in house	0.0262		-0.78
230		----		----	1067		----		----
311		----		----	1079	EN15721	0.0229		-2.52
323		----		----	1126		----		----
329		----		----	1161		----		----
332		----		----	1201	EN15721	0.0351		3.91
333		----		----	1203	EN15721	0.02690		-0.41
334		----		----	1276		----		----
337		----		----	1359		0.027965		0.15
338		----		----	1397		----		----
340		----		----	1402		----		----
343	INH-0001	0.0303		1.38	1446		0.0277		0.01
357	INH-0001	0.027		-0.36	1523		----		----
360		----		----	1563		----		----
391		----		----	1605		----		----
402	D5501	0.0608	R(0.01)	17.44	1656		----		----
441		----		----	1710	EN15721	0.0267		-0.51
444		----		----	1726	in house	0.0268		-0.46
468		----		----	1727	EN15721	0.0285		0.43
496	EN15721	0.0268		-0.46	1788		----		----
511	EN15721	0.02809	C	0.22	1817		----		----
541		----		----	1835	in house	0.0279		0.12
551		----		----	1919		----		----
554		----		----	1996		----		----
556		----		----					
	normality	not OK							
	n	21							
	outliers	2							
	mean (n)	0.02768							
	st.dev. (n)	0.002629							
	R(calc.)	0.00736							
	R(Horwitz)	0.00532							

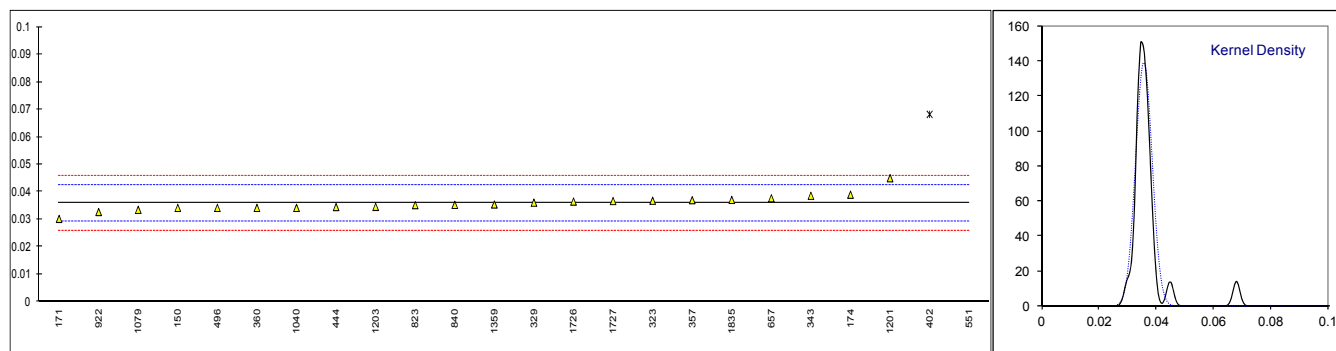
Lab 511: result mixed up with 2-Methyl-1-butanol



Determination of sum of 2-Methyl-1-Butanol and 3-Methyl-1-Butanol on sample #15231; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621		----		----
62		----		----	631		----		----
120		----		----	657	INH-0001	0.0377		0.55
131		----		----	663		----		----
132		----		----	786		----		----
150	INH-0001	0.0342		-0.49	823	INH-0001	0.0352		-0.19
159		----		----	840	INH-0001	0.0353		-0.16
169		----		----	902		----		----
171	EN15721	0.03019		-1.69	913		----		----
174	INH-0001	0.039		0.94	922	INH-0001	0.0327		-0.94
175		----		----	963		----		----
194		----		----	1040	in house	0.0342		-0.49
230		----		----	1067		----		----
311		----		----	1079	EN15721	0.0335		-0.70
323	INH-0001	0.0368		0.28	1126		----		----
329	INH-0001	0.0361		0.07	1161		----		----
332		----		----	1201	EN15721	0.0450		2.73
333		----		----	1203	EN15721	0.03458		-0.38
334		----		----	1276		----		----
337		----		----	1359		0.035445		-0.12
338		----		----	1397		----		----
340		----		----	1402		----		----
343	INH-0001	0.0386		0.82	1446		----		----
357	INH-0001	0.037		0.34	1523		----		----
360	EN15721	0.0342		-0.49	1563		----		----
391		----		----	1605		----		----
402	D5501	0.0682	R(0.01)	9.67	1656		----		----
441		----		----	1710		----		----
444	EN15721	0.0345		-0.40	1726	in house	0.0365		0.19
468		----		----	1727	EN15721	0.0367		0.25
496	EN15721	0.0342		-0.49	1788		----		----
511		----		----	1817		----		----
541		----		----	1835	in house	0.0371		0.37
551		0.23122	R(0.01)	58.37	1919		----		----
554		----		----	1996		----		----
556		----		----					

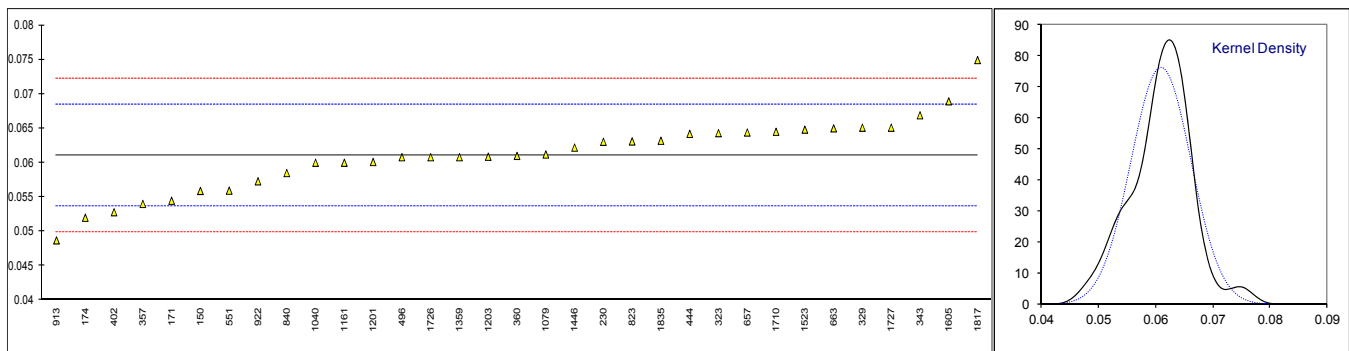
normality not OK
n 22
outliers 2
mean (n) 0.03585
st.dev. (n) 0.002865
R(calc.) 0.00802
R(Horwitz) (n=2) 0.00937



Determination of n-Propanol on sample #15231; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621		----		----
62		----		----	631		----		----
120		----		----	657	INH-0001	0.0644		0.90
131		----		----	663	INH-0001	0.0650		1.06
132		----		----	786		----		----
150	INH-0001	0.0559		-1.39	823	INH-0001	0.0631		0.55
159		----		----	840	INH-0001	0.0585		-0.69
169		----		----	902		----		----
171	EN15721	0.05447		-1.77	913	INH-0001	0.0487		-3.32
174	INH-0001	0.052		-2.43	922	INH-0001	0.0573		-1.01
175		----		----	963		----		----
194		----		----	1040	in house	0.0600		-0.28
230	INH-0001	0.063045		0.53	1067		----		----
311		----		----	1079	EN15721	0.0612		0.04
323	INH-0001	0.0643		0.87	1126		----		----
329	INH-0001	0.0651		1.09	1161	ISO22854	0.06		-0.28
332		----		----	1201	EN15721	0.0601		-0.26
333		----		----	1203	EN15721	0.06087		-0.05
334		----		----	1276		----		----
337		----		----	1359		0.060805		-0.07
338		----		----	1397		----		----
340		----		----	1402		----		----
343	INH-0001	0.0669		1.57	1446		0.0622		0.31
357	INH-0001	0.054		-1.90	1523	D5501	0.064813		1.01
360	EN15721	0.0610		-0.02	1563		----		----
391		----		----	1605	in house	0.06894		2.12
402	D5501	0.0528		-2.22	1656		----		----
441		----		----	1710	EN15721	0.0645		0.93
444	EN15721	0.0642		0.84	1726	in house	0.0608		-0.07
468		----		----	1727	EN15721	0.0651		1.09
496	EN15721	0.0608		-0.07	1788		----		----
511		----		----	1817		0.074933		3.73
541		----		----	1835	in house	0.0632		0.58
551	INH-1313	0.05594		-1.38	1919		----		----
554		----		----	1996		----		----
556		----		----					

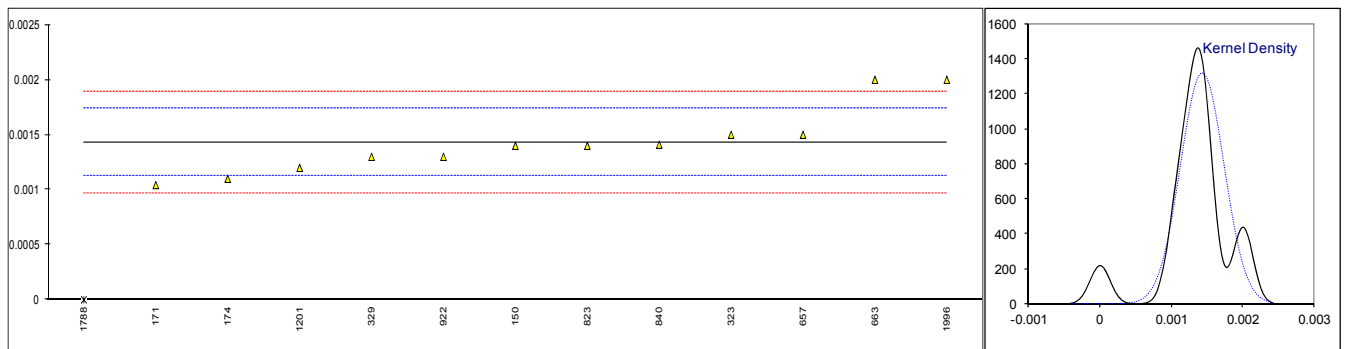
normality OK
 n 33
 outliers 0
 mean (n) 0.06106
 st.dev. (n) 0.005249
 R(calc.) 0.01470
 R(Horwitz) 0.01042



Determination of Toluene on sample #15231; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621		----		----
62		----		----	631		----		----
120		----		----	657	INH-0001	0.0015		0.46
131		----		----	663	INH-0001	0.0020		3.72
132		----		----	786		----		----
150	INH-0001	0.0014		-0.19	823	INH-0001	0.0014		-0.19
159		----		----	840	INH-0001	0.00141		-0.13
169		----		----	902		----		----
171	EN15721	0.001043		-2.52	913		----		----
174	INH-0001	0.0011		-2.15	922	INH-0001	0.0013		-0.84
175		----		----	963		----		----
194		----		----	1040		----		----
230		----		----	1067		----		----
311		----		----	1079		----		----
323	INH-0001	0.0015		0.46	1126		----		----
329	INH-0001	0.0013		-0.84	1161	ISO22854	<0.01		----
332		----		----	1201	EN15721	0.0012		-1.50
333		----		----	1203		----		----
334		----		----	1276		----		----
337		----		----	1359		----		----
338		----		----	1397		----		----
340		----		----	1402		----		----
343	INH-0001	<0.01		----	1446		----		----
357		----		----	1523		----		----
360		----		----	1563		----		----
391		----		----	1605		----		----
402		----		----	1656		----		----
441		----		----	1710		----		----
444		----		----	1726		----		----
468		----		----	1727		----		----
496		----		----	1788	D6563	0	G(0.05)	-9.33
511		----		----	1817		----		----
541		----		----	1835		----		----
551		----		----	1919		----		----
554		----		----	1996		0.002		3.72
556		----		----					

normality suspect
n 12
outliers 1
mean (n) 0.00143
st.dev. (n) 0.000303
R(calc.) 0.00085
R(Horwitz) 0.00043

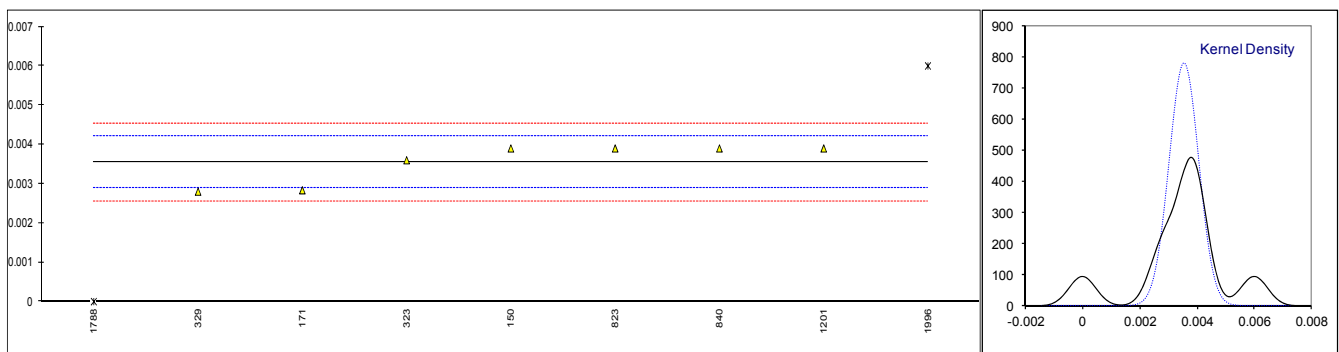


Determination of o-Xylene on sample #15231; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	621		----		----
62		----		----	631		----		----
120		----		----	657		----		----
131		----		----	663		----		----
132		----		----	786		----		----
150	INH-0001	0.0039		1.06	823	INH-0001	0.0039	C	1.06
159		----		----	840	INH-0001	0.0039		1.06
169		----		----	902		----		----
171	EN15721	0.002835		-2.15	913		----		----
174		----		----	922		----		----
175		----		----	963		----		----
194		----		----	1040		----		----
230		----		----	1067		----		----
311		----		----	1079		----		----
323	INH-0001	0.0036		0.16	1126		----		----
329	INH-0001	0.0028		-2.25	1161		----		----
332		----		----	1201	EN15721	0.0039		1.06
333		----		----	1203		----		----
334		----		----	1276		----		----
337		----		----	1359		----		----
338		----		----	1397		----		----
340		----		----	1402		----		----
343	INH-0001	<0.01		----	1446		----		----
357		----		----	1523		----		----
360		----		----	1563		----		----
391		----		----	1605		----		----
402		----		----	1656		----		----
441		----		----	1710		----		----
444		----		----	1726		----		----
468		----		----	1727		----		----
496		----		----	1788	D6563	0	D(0.01)	-10.69
511		----		----	1817		----		----
541		----		----	1835		----		----
551		----		----	1919		----		----
554		----		----	1996		0.006	D(0.05)	7.39
556		----		----					

normality OK
n 7
outliers 2
mean (n) 0.00355
st.dev. (n) 0.000511
R(calc.) 0.00143
R(Horwitz) 0.00093

Lab 663: first reported 0.0241



Determination of other reported impurities on sample #15231; results in %M/M

lab	Impurity
52	
62	
120	
131	
132	
150	Isopropanol: 0.0005
159	
169	
171	
174	n-Amylalc.: 0.0010
175	
194	
230	sec-Amylalc.: 0.005461, Crotonaldehyde: 0.001209
311	
323	sec-Butanol: 0.0005, m-Xylene 0.0032, p-Xylene: 0.0010
329	sec-Butanol: 0.0005, m-Xylene 0.0032, p-Xylene: 0.0010
332	
333	
334	
337	
338	
340	
343	
357	
360	sec-Butanol: 0.0010
391	
402	sec-Butanol: 0.007
441	
444	
468	
496	
511	
541	
551	
554	
556	
621	
631	
657	
663	n-Amylalc.:0.0320
786	
823	
840	sec-Butanol: 0.00039, Isopropanol: 0.00049, m-Xylene: 0.0035, p-Xylene:0.00102
902	
913	
922	Acetone: 0.0006, sec-Butanol: 0.0008; Diacetyl: 0.0006, Isopropanol: 0.0006
963	
1040	Isopropanol: 0.0005
1067	
1079	
1126	
1161	
1201	Isopropanol: 0.0004, m-Xylene: 0.0018, p-Xylene: 0.0020
1203	
1276	
1359	sec-Butanol: 0.000425, Isopropanol: 0.000305
1397	
1402	
1446	n-Amylalc.: 0.0299, sec-Butanol: 0.0032
1523	
1563	
1605	
1656	
1710	
1726	
1727	Isopropanol: 0.0004
1788	
1817	
1835	
1919	
1996	Isopropanol: 0.085

APPENDIX 2**Number of participating laboratories per country:**

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

APPENDIX 3**Abbreviations:**

C	= final result after checking of first reported suspect result
H	= outlier in Huber (Robust) outlier test
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 outlier test
R(0.05)	= straggler in Rosner outlier test
E	= error in calculations
ex	= excluded from calculations
n.a.	= not applicable
U	= unit error
SDS	= Safety Data Sheet

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