Results of Proficiency Test
Mono Ethylene Glycol (MEG)
October 2013

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

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CONTENTS

Appendices:

1 INTRODUCTION

Since 1994, the Institute for Interlaboratory Studies organised a proficiency test for the analysis of Mono Ethylene Glycol every year. As part of the annual proficiency test program of 2013/2014, the Institute decided to continue this proficiency test on Mono Ethylene Glycol. In this interlaboratory study 62 laboratories in 23 different countries have participated. See appendix 2 for the number of participants per country. In this report the results of the 2013 proficiency test are presented and discussed.

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 get maximum information from this study it was decided to send 2 different samples:

	Bottle type	Tests requested
Sample #13194	1.0 L amber glass bottle	for all regular determinations on MEG
Sample #13195	0.1 L amber glass bottle	for UV transmittance and Water only

table 1: type of samples

The participants were requested 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 accordance with ISO/IEC 17043:2010, since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentially 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 of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of January 2010 (iis-protocol, version 3.2).

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, approximately 100 litre of MEG polyester grade was obtained from a local production plant. The bulk material was transferred to a precleaned 200 litre drum. From this batch, after homogenization, 83 amber glass bottles of 100mL were filled. The bottles were closed with special screw caps with Teflon inner layer, and labelled #13195.
The remainder of the batch, approx. 90 litre was spiked with 0.095 mg/kg Chloride and 0.050 mg/kg Iron. After homogenisation, 80 amber glass bottles of 1.0 litre were filled and labelled #13194. The homogeneity of the subsamples #13194 was checked by determination of Density in accordance with ASTM D4052:11, on 8 stratified randomly selected samples. The homogeneity of the samples #13195 was checked by determination of UV-Transmittance without nitrogen sparging at 220 nm in accordance with ASTM E2193:08 on 7 stratified randomly selected samples.

	Density @ 20ºC in kg/l
Sample #13194-1	1.11676
Sample #13194-2	1.11676
Sample #13194-3	1.11675
Sample #13194-4	1.11676
Sample #13194-5	1.11675
Sample #13194-6	1.11676
Sample #13194-7	1.11676
Sample #13194-8	1.11676

Table 2: homogeneity test results of subsamples #13194

	UV(220nm) in T%
Sample #13195-1	76.1
Sample #13195-2	76.0
Sample #13195-3	76.4
Sample #13195-4	77.1
Sample #13195-5	76.7
Sample #13195-6	76.7
Sample #13195-7	76.3

table 3: homogeneity test results of subsamples #13195

From the above test results the repeatabilities were calculated and compared with 0.3 times the corresponding reproducibilities of the reference test methods in agreement with the procedure of ISO 13528, Annex B2 in the next table:

	Density @ 20ºC in kg/l	UV(220nm) in T%
r (observed)	0.00001	1.1
$0.3xR_{(ISO12185:96)}$	0.00015	--
$0.3xR_{(ASTM\ E2193:08-B)}$	--	1.2

table 4: homogeneity evaluation of subsamples #13194 and #13195

Each calculated repeatability was equal or less than 0.3 times the corresponding reproducibility of the reference method. Therefore, homogeneity of the samples was assumed.

To each of the participating laboratories 2 bottles (1*1 L bottle, labelled #13194 and 1*100 mL bottle, labelled #13195), were sent on October 10, 2013.

2.5 STABILITY OF THE SAMPLES

The stability of the Mono Ethylene Glycol, packed in amber glass bottles, was checked. The material was found sufficiently stable for the period of the proficiency test.

2.6 ANALYSES

The participants were requested to determine Acidity as Acetic Acid, Aldehydes as Acetaldehyde, Appearance, Ash, Chloride as Cl, Colour (D5386), Colour Pt/Co (D1209) Density @ 20°C, Diethylene Glycol, Distillation (Initial Boiling Point, 50%recovered and Dry Point), Iron, Purity and Specific Gravity @ 20/20°C on sample #13194.
On sample #13195 was requested to determine UV Transmittance (at 350, 275, 250 and 220 nm) and Water.
To get comparable results a detailed report form, on which the units were prescribed as well as some of the required standards and a letter of instructions were prepared and made available for download on the iis website (www.iisnl.com).
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 received. The original reported results are tabulated per determination in appendix 1 of this report. The laboratories are presented by their code numbers.
Directly after deadline, a reminder fax 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' of January 2010 (iis-protocol, version 3.2).

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. After removal of outliers, this check was repeated. Not all data sets proved to have a normal distribution, in which cases the conclusions of statistical evaluation should be used with due care.
In accordance with ISO 5725 (1986 and 1994) the original results per determination were submitted subsequently to Dixon and Grubbs 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. Stragglers are marked by D(0.05) for the Dixon test, by G(0.05) or DG(0.05) for the Grubbs test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

For each assigned value the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirement based on the target reproducibility in accordance with ISO13528. 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.13 and 14).

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. The z-scores were calculated according to:

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

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

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 the fit-for-useness of the reported test result.

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

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

4 EVALUATION

In this interlaboratory study several problems were encountered with customs clearance or with the courier during dispatch of the samples to participants in Brazil, Iran and Saudi Arabia.
Eight participants did not report any test results and another eleven participants reported the test results after the final reporting date. Finally, 54 laboratories did report 785 numerical results. Observed were 40 outlying results, which is 5.1%. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

4.1 EVALUATION PER TEST

In this section, the results are discussed per sample and per test.

Not all data sets proved to have a normal distribution. Not normal distributions were found for the following determinations: Acidity (E2679), Acidity (D1613), Aldehydes, Colour Pt/Co, Colour, Density @20ºC, Diethylene Glycol, Distillation (IBP, Mid-point, Dry Point), Iron, Specific Gravity and UV350nm (method A and method B). For these determinations the statistical evaluation should be used with due care.
Since 2010 a new version of ASTM E202 (and renewed in 2012) was published. Regretfully, the new version is not always clear about the precision data in certain test methods, in those cases the precision data of ASTM E202:2005 or specific test method was used.
Some of the used reference test methods provide precision data related to a specific concentration. For these tests, the target reproducibility is estimated.

Acidity: The determination according ASTM E2679 was very problematic. No statistical outliers were observed. However, the calculated reproducibility is not at all in agreement with the strict precision data of ASTM E2679:09. The determination according ASTM D1613 was not problematic. No statistical outliers were observed and the calculated reproducibility is in good agreement with the requirements of ASTM D1613:12.

Aldehydes: This determination is not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of ASTM E2313:08.

Appearance: No analytical problems were observed. All participants agreed about the appearance of sample #13194, which was bright, clear and free of suspended matter (= pass).

Ash: No statistical outliers were observed. Regretfully, the consensus value is below the application range (0.001 – 0.180 %M/M) of ASTM D482:13. Therefore no significant conclusions were drawn.

Colour Pt/Co: The determination was not problematic. No statistical outliers were observed and the calculated reproducibility is in agreement with the requirements of ASTM D1209:11.

Colour D5386: The determination was not problematic. No statistical outliers were observed and the calculated reproducibility is in agreement with the requirements of ASTM D5386:10.

Chloride: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility, after rejection of the statistical outliers, is in agreement with the requirements of ASTM E2469:08a. The average recovery of Chloride (theoretical increment of 0.096 mg Cl/kg) may be good: “less then 122%” (the actual blank Chloride content is unknown).

Density: This determination was problematic for a number of laboratories. Four statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D4052:02e1.

DEG: This determination was very problematic at a low level of 10 mg/kg. Six statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is at all not in agreement the estimated requirements of ASTM E2409:13. One false negative test result was observed.

Distillation: This determination was not problematic. In total three statistical outliers were observed. All three calculated reproducibilities after rejection of the statistical outliers are in good agreement with the requirements of ASTM D1078:11.

Iron: This determination is not problematic. Only one statistical outlier and one false negative test result were observed. However, the calculated reproducibility after rejection of the statistical outlier is in full agreement with the estimated requirements of ASTM E1615:08. The average recovery of Iron (theoretical increment of 0.050 mg Fe/kg) may be unsatisfactory: “less then 74%” (the actual blank Iron content is unknown).

Purity: Regretfully, no reproducibility data for purity are mentioned in ASTM E2409. Therefore no significant conclusions were drawn.

Specific Gravity: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of ASTM D4052:02e1.

UV: The reported test results were split up into method A (sparged with nitrogen) and method B (not sparged with nitrogen). Both sets of test results were evaluated separately.
For method A.
This determination was problematic. In total eleven statistical outliers were observed. The calculated reproducibilities of UV at 350nm and 275nm, after rejection of the statistical outliers, are in agreement with the requirements of ASTM E2193:08. However the calculated reproducibilities of UV at 250nm and 220nm after rejection of the statistical outliers are not in agreement with the requirements of ASTM E2193:08.
For method B.
This determination was not problematic. In total only one statistical outlier was observed. The calculated reproducibilities of UV at 350nm, 275nm and 220nm, after rejection of the statistical outlier, are in agreement with the requirements of ASTM E2193:08. The calculated reproducibility of UV at 250nm is almost in agreement with the requirements of ASTM E2193:08.

Water: This determination was problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM E1064:12.

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 standards) are compared in the next table:

Parameter	unit	n	average	2.8 *sd_R	R (lit.)
Acidity as Acetic Acid (E2679)	mg/kg	17	3.47	6.91	1.75
Acidity as Acetic Acid (D1613)	mg/kg	46	7.11	5.48	14.00
Aldehydes as Acetaldehyde	mg/kg	33	21.95	9.03	18.88
Appearance		49	Pass	n.a.	n.a.
Ash	%M/M	21	0.0003	0.0005	(0.0050)
Colour Pt/Co	---	32	2.1	3.9	7.0
Colour ASTM D5386	---	31	1.9	2.4	4.9
Chloride as Cl	mg/kg	30	0.12	0.11	0.10
Density at 20°C	kg/L	47	1.1133	0.0002	0.0005
Diethylene Glycol	mg/kg	32	10.4	13.4	2.7
Initial Boiling Point	°C	38	196.8	0.8	3.1
50% recovered	°C	38	197.6	0.7	1.4
Dry Point	°C	36	198.0	1.1	2.1
Iron as Fe	mg/kg	41	0.037	0.040	0.040
Purity	%M/M	44	99.951	0.055	n.a.
Specific Gravity 20/20°C	---	45	1.1153	0.0002	0.0005
UV Transmittance at 350 nm (N_2)	%T	23	99.98	0.55	1.15
UV Transmittance at 275 nm (N_2)	%T	21	98.04	1.00	2.11
UV Transmittance at 250 nm (N_2)	%T	22	95.74	1.69	1.10
UV Transmittance at 220 nm (N_2)	%T	19	88.71	5.20	4.05
UV Transmittance at 350 nm	%T	19	99.98	0.26	1.15
UV Transmittance at 275 nm	%T	20	98.12	1.36	2.11
UV Transmittance at 250 nm	%T	19	93.85	1.36	1.10
UV Transmittance at 220 nm	%T	20	75.91	4.01	4.05
Water	mg/kg	47	447.4	122.4	76.5

table 5: reproducibilities of samples #13194 and #13195

Results between brackets were below the application range of the method, therefore results should be evaluated with care

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

4.3 COMPARISON OF THE PROFICIENCY TEST OF OCTOBER 2013 WITH PREVIOUS PTS

	October 2013	*October 2012*	*October 2011*	*October 2010*
Number of reporting labs	54	54	63	62
Number of results reported	785	838	927	907
Statistical outliers	40	48	42	36
Percentage outliers	5.1%	5.7%	4.5%	4.0%

table 6: comparison of statistical summary parameters 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 the following table:

	October 2013		*October 2012*		*October 2011*	*October 2010*
Acidity as Acetic Acid	--	++	-	+	--	++
Aldehydes as Acetaldehyde	++		(++)		++	++
Ash	(+/-)		(++)		(++)	(++)
Colour Pt/Co	++		++		-	++
Colour ASTM D5368	++		+		--	++
Chloride as Cl	+/-		--		+/-	--
Density at 20°C	++		+		++	++
Diethylene Glycol	--		--		+/-	--
Initial Boiling Point	++		--		++	++
50% recovered	++		++		++	++
Dry Point	++		++		++	++
Iron as Fe	+/-		++		++	++
Purity	--		--		++	++
Specific Gravity 20/20°C	++		+		++	++
UV Transmittance at 350 nm	++	++	--		--	++
UV Transmittance at 275 nm	++	++	--		++	++
UV Transmittance at 250 nm	-	-	--		--	--
UV Transmittance at 220 nm	-	+/-	-		++	+
Water	--		+/-		++	++

table 7: comparison determinations against the standard

Results between brackets were below the application range of the method, therefore results should be evaluated with care

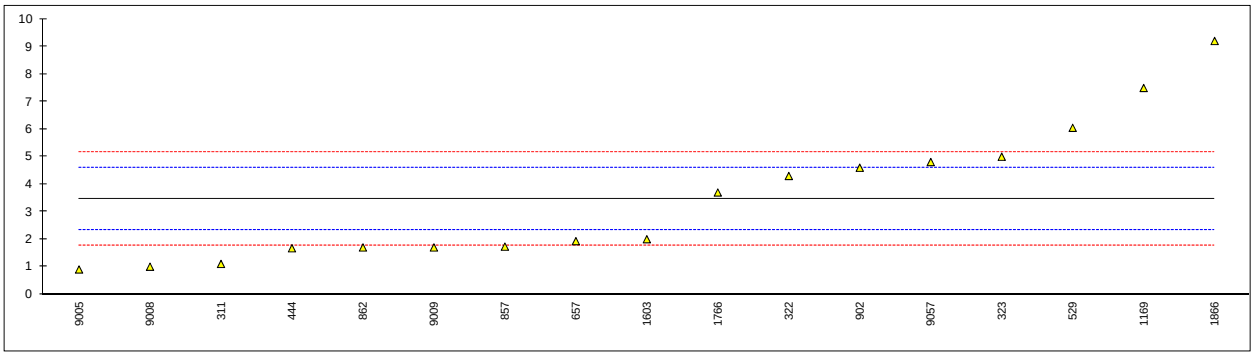
The performance of the determinations against the requirements of the respective standards is listed in the above table. The following performance categories were used:

++: 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

APPENDIX 1

Determination of Acidity as Acetic Acid (E2679) on sample #13194; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
169		-----		-----	
171		-----		-----	
174		-----		-----	
311	E2679	1.1		-3.78	
322	E2679	4.3	C	1.33	First reported 8.3
323	E2679	5		2.45	
343		-----		-----	
347		-----		-----	
370		-----		-----	
395		-----		-----	
396		-----		-----	
398		-----		-----	
444	E2679	1.67		-2.87	
528		-----		-----	
529	E2679	6.05		4.13	
551		-----		-----	
557		-----		-----	
558		-----		-----	
609		-----		-----	
657	E2679	1.93		-2.45	
663		-----		-----	
825		-----		-----	
857	E2679	1.73		-2.77	
860		-----		-----	
861		-----		-----	
862	E2679	1.7		-2.82	
865		-----		-----	
867		-----		-----	
869		-----		-----	
902	E2679	4.6		1.81	
912		-----		-----	
913		-----		-----	
962		-----		-----	
963		-----		-----	
1107		-----		-----	
1117		-----		-----	
1151		-----		-----	
1169	E2679	7.5	C	6.45	First reported 9
1217		-----		-----	
1261		-----		-----	
1467		-----		-----	
1509		-----		-----	
1515		-----		-----	
1557		-----		-----	
1592		-----		-----	
1603	in house	2.0		-2.34	
1608		-----		-----	
1623		-----		-----	
1688		-----		-----	
1718		-----		-----	
1766	E2679	3.70		0.38	
1767		-----		-----	
1823		-----		-----	
1866	E2679	9.21		9.18	
1868		-----		-----	
7006		-----		-----	
9005	E2679	0.9		-4.10	
9008	E2679	1		-3.94	
9009	E2679	1.7		-2.82	
9057	INH-652	4.807		2.14	
	normality	not OK			
	n	17			
	outliers	0			
	mean (n)	3.465			
	st.dev. (n)	2.4670			
	R(calc.)	6.908			
	R(E2679:09)	1.753			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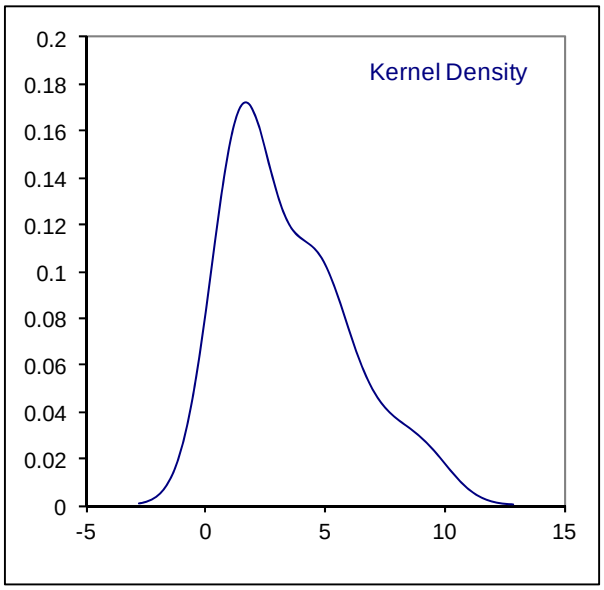
Kernel Density
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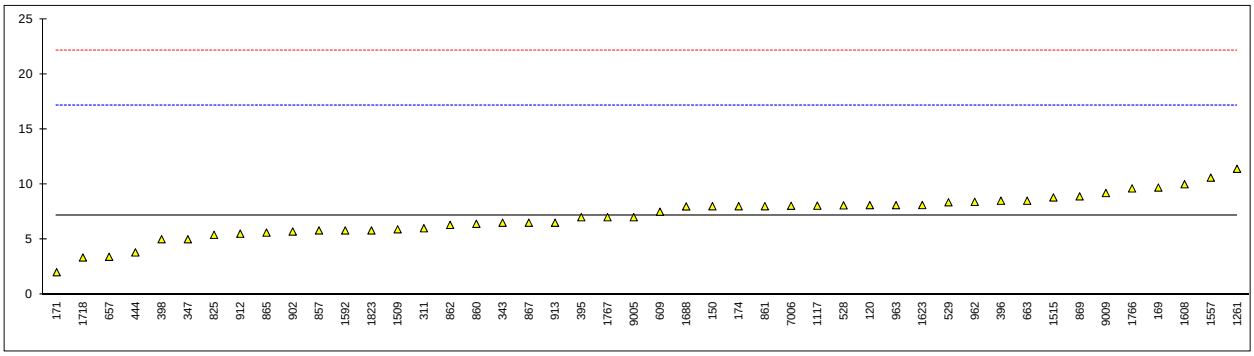
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
-5
0
5
10
15

Determination of Acidity as Acetic Acid (D1613) on sample #13194; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120	D1613	8.1		0.20	
150	D1613	8		0.18	
169	D1613	9.7	C	0.52	First reported 0.00097
171	D1613	2	C	-1.02	First reported 0.0002
174	D1613	8.0		0.18	
311	D1613	6		-0.22	
322		-----		-----	
323		-----		-----	
343	D1613	6.5		-0.12	
347	D1613	5		-0.42	
370		-----		-----	
395	D1613	7.0		-0.02	
396	D1613	8.5		0.28	
398	D1613	5		-0.42	
444	D1613	3.8		-0.66	
528	D1613	8.08		0.19	
529	D1613	8.36		0.25	
551		-----		-----	
557		-----		-----	
558		-----		-----	
609	D1613	7.5		0.08	
657	D1613	3.4		-0.74	
663	D1613	8.5		0.28	
825	D1613	5.4		-0.34	
857	D1613	5.8		-0.26	
860	D1613	6.4		-0.14	
861	D1613	8.0		0.18	
862	D1613	6.3		-0.16	
865	D1613	5.6		-0.30	
867	D1613	6.5		-0.12	
869	D1613	8.9		0.36	
902	D1613	5.7		-0.28	
912	D1613	5.5		-0.32	
913	D1613	6.5		-0.12	
962	D1613	8.4		0.26	
963	D1613	8.1		0.20	
1107		-----		-----	
1117	D1613	8.05		0.19	
1151		-----		-----	
1169		-----		-----	
1217		-----		-----	
1261	D1613	11.4		0.86	
1467		-----		-----	
1509	D1613	5.9		-0.24	
1515	D1613	8.8		0.34	
1557	D1613	10.6		0.70	
1592	D1613	5.8		-0.26	
1603		-----		-----	
1608	D1613	10		0.58	
1623	D1613	8.11		0.20	
1688	D1613	7.98		0.17	
1718	D1613	3.34		-0.75	
1766	D1613	9.62		0.50	
1767	D1613	7		-0.02	
1823	D1613	5.8		-0.26	
1866		-----		-----	
1868		-----		-----	
7006	D1613	8.04		0.19	
9005	D1613	7.0		-0.02	
9008		-----		-----	
9009	D1613	9.2		0.42	
9057		-----		-----	

normality	not OK
n	46
outliers	0
mean (n)	7.11
st.dev. (n)	1.957
R(calc.)	5.48
R(D1613:12)	14.00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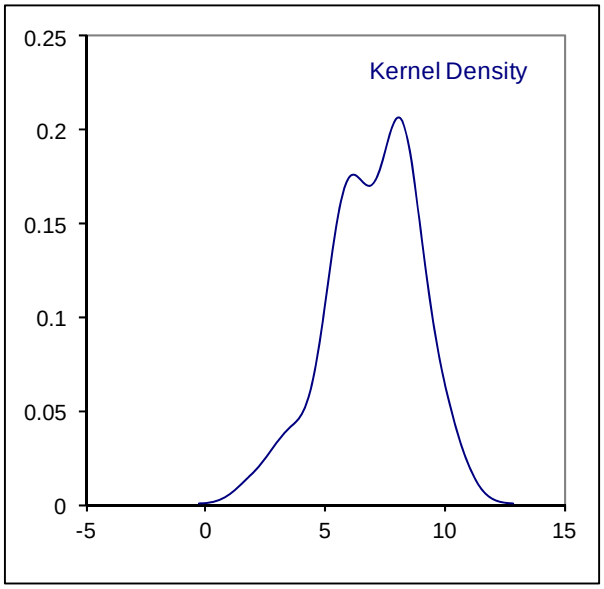
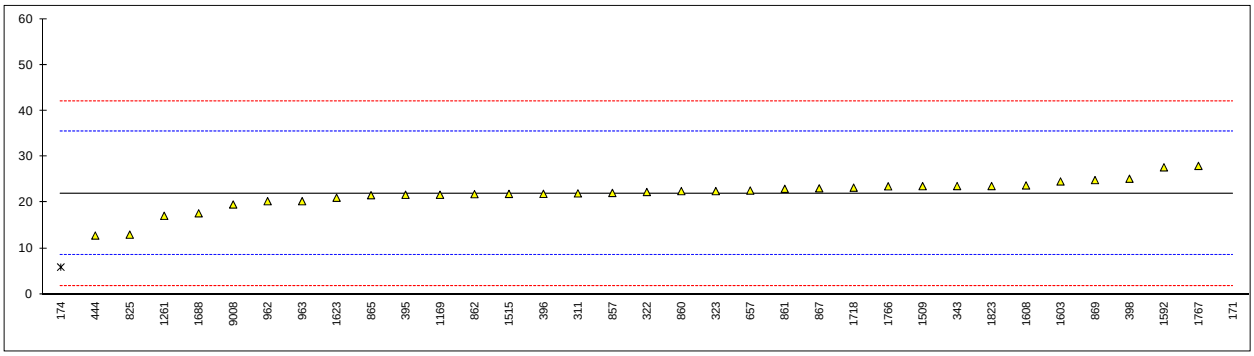
1509
311
862
860
343
867
913
395
1767
9005
609
1688
150
174
861
7006
1117
528
120
963
1623
529
962
396
663
1515
869
9009
1766
169
1608
1557
1261

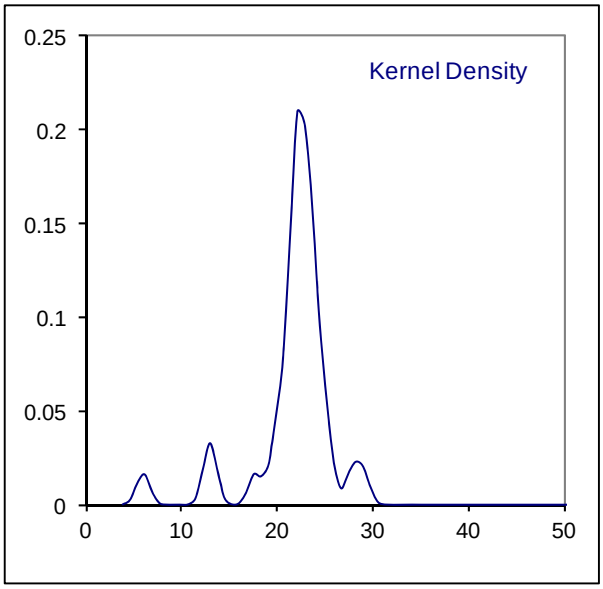

Kernel Density
0.25
0.2
0.15
0.1
0.05
0
-5
0
5
10
15

Determination of Aldehydes as Acetaldehyde on sample #13194; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
169		-----		-----	
171	E2313	195.60	G(0.01)	25.76	
174	E2313	5.9	C,G(0.01)	-2.38	First reported 8.7
311	E2313	22.0	C	0.01	First reported 15.0
322	E2313	22.3	C	0.05	First reported 28.3
323	E2313	22.5		0.08	
343	E2313	23.6		0.25	
347		-----		-----	
370		-----		-----	
395	E2313	21.7		-0.04	
396	E2313	21.9		-0.01	
398	INH-1996	25.2		0.48	
444	E2313	12.8		-1.36	
528		-----		-----	
529		-----		-----	
551		-----		-----	
557		-----		-----	
558		-----		-----	
609		-----		-----	
657	E2313	22.62		0.10	
663		-----		-----	
825	E2313	13	C	-1.33	First reported 5.4
857	E2313	22.1		0.02	
860	E2313	22.5		0.08	
861	E2313	23.0		0.16	
862	E2313	21.84		-0.02	
865	E2313	21.6		-0.05	
867	E2313	23.1		0.17	
869	E2313	24.9		0.44	
902		-----		-----	
912		-----		-----	
913		-----		-----	
962	E2313	20.3		-0.24	
963	E2313	20.3		-0.24	
1107		-----		-----	
1117		-----		-----	
1151		-----		-----	
1169	E2313	21.7	C	-0.04	First reported 5.57
1217		-----		-----	
1261	E2313	17.11		-0.72	
1467		-----		-----	
1509	E2313	23.58		0.24	
1515	E2313	21.89		-0.01	
1557		-----		-----	
1592	E2313	27.69		0.85	
1603	in house	24.61		0.40	
1608	E2313	23.74		0.27	
1623	INH -012	21.05		-0.13	
1688	Calc.	17.65	C	-0.64	First reported 16.04
1718	E2313	23.25		0.19	
1766	E2313	23.54		0.24	
1767	E2313	28.0	C	0.90	First reported 28.9
1823	E2313	23.600		0.25	
1866		-----		-----	
1868		-----		-----	
7006		-----		-----	
9005		-----		-----	
9008	E2313	19.57		-0.35	
9009		-----		-----	
9057		-----		-----	

normality	not OK
n	33
outliers	2
mean (n)	21.947
st.dev. (n)	3.2257
R(calc.)	9.032
R(E2313:08)	18.878


60
50
40
30
20
10
0
174
444
825
1261
1688
9008
962
963
1623
865
395
1169
862
1515
396
311
857
322
860
323
657
861
867
1718
1766
1509
343
1823
1608
1603
869
398
1592
1767
171


Kernel Density
0.25
0.2
0.15
0.1
0.05
0
0
10
20
30
40
50

Determination of Appearance on sample #13194;

lab	method	Value	mark	z(targ)	remarks
120	E2680	Pass		-----	
150	E2680	Pass		-----	
169	E2680	BC&FSM		-----	
171	E2680	Pass		-----	
174	E2680	Pass		-----	
311	E2680	Pass		-----	
322	E2680	Pass		-----	
323	E2680	Pass		-----	
343	E2680	Pass		-----	
347	E2680	Pass		-----	
370	E2680	Pass		-----	
395	E2680	Pass		-----	
396	E2680	Pass		-----	
398	E2680	Pass		-----	
444	E2680	Pass		-----	
528	E2680	Pass		-----	
529	E2680	Pass		-----	
551		-----		-----	
557		-----		-----	
558		-----		-----	
609	E2680	Pass		-----	
657	E2680	Pass		-----	
663	E2680	Pass		-----	
825	E2680	Pass		-----	
857	E2680	Pass		-----	
860	E2680	Pass		-----	
861	E2680	Pass		-----	
862	E2680	Pass		-----	
865	E2680	Pass		-----	
867	E2680	Pass		-----	
869	E2680	Pass		-----	
902	E2680	Pass		-----	
912	E2680	Pass		-----	
913	E2680	Pass		-----	
962	E2680	Pass		-----	
963	E2680	Pass		-----	
1107		-----		-----	
1117	D4176	on spec		-----	
1151		-----		-----	
1169	D4176	Pass		-----	
1217		-----		-----	
1261	E2680	clear		-----	
1467		-----		-----	
1509	E2680	Pass		-----	
1515	E2680	Pass		-----	
1557	INH-1200	BC&FFMC		-----	
1592		-----		-----	
1603	in house	Clear		-----	
1608	D4176	Pass		-----	
1623	D2090	Clear		-----	
1688	D4176	Pass		-----	
1718	D4176	CFFSM		-----	
1766	E2680	Clear		-----	
1767	E2680	Pass		-----	
1823	E2680	Pass		-----	
1866		-----		-----	
1868		-----		-----	
7006		-----		-----	
9005	E2680	Pass		-----	
9008	E2680	Pass		-----	
9009		-----		-----	
9057		-----		-----	
	normality	n.a.			
	n	0			
	outliers	n.a.			
	mean (n)	Pass			

B&C = Bright and clear (C)FFSM = Clear and free from suspended matter
C&F = Clear and Free

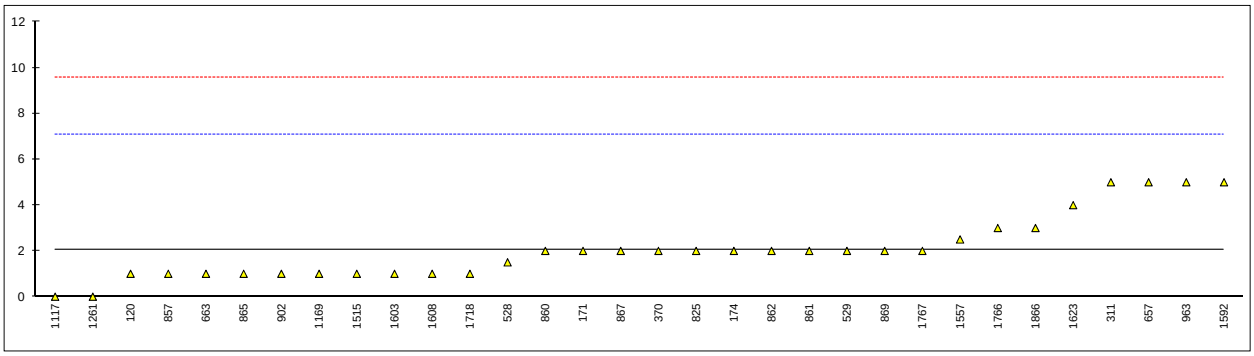
Determination of Ash on sample #13194; results in %M/M

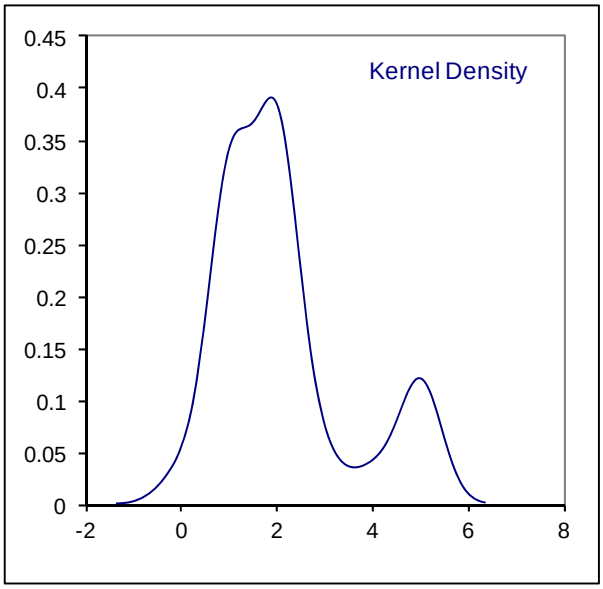
lab	method	value	mark	z(targ)	remarks
120	D482	0.0002		-----	
150	D482	<0.001		-----	
169	D482	<0.0001		-----	
171	D482	0.0004		-----	
174	D482	0.0005		-----	
311	D482	<0.001		-----	
322		-----		-----	
323	D482	<0.001		-----	
343	D482	<0.001		-----	
347	D482	<0.001		-----	
370	D482	<0.001		-----	
395		-----		-----	
396		-----		-----	
398		-----		-----	
444	D482	0.00023		-----	
528	D482	0.00053		-----	
529	D482	0.000485		-----	
551		-----		-----	
557		-----		-----	
558		-----		-----	
609		-----		-----	
657	D482	0.0009		-----	
663	D482	<0.001		-----	
825		-----		-----	
857	D482	0.0002		-----	
860	D482	0.0002		-----	
861	D482	0.00011		-----	
862	D482	0.0003		-----	
865	D482	0.0002		-----	
867	D482	0.0001		-----	
869	D482	0.0001		-----	
902		-----		-----	
912	D482	<0.001		-----	
913	D482	<0.0010		-----	
962		-----		-----	
963	D482	0.0004		-----	
1107		-----		-----	
1117	D482	<0.001		-----	
1151		-----		-----	
1169		-----		-----	
1217		-----		-----	
1261		-----		-----	
1467		-----		-----	
1509	D482	0.0003		-----	
1515		-----		-----	
1557	INH-055	0.00042	C	-----	First reported 0.0042
1592		-----		-----	
1603	in house	0.00049		-----	
1608	D482	<0.0001		-----	
1623	D482	0.00039		-----	
1688	D482	<0.001		-----	
1718	D482	<0.001		-----	
1766	D482	0.0003		-----	
1767		-----		-----	
1823	D482	0.0003		-----	
1866		-----		-----	
1868		-----		-----	
7006		-----		-----	
9005		-----		-----	
9008		-----		-----	
9009		-----		-----	
9057		-----		-----	
	normality	OK			
	n	21			
	outliers	0			
	mean (n)	0.00034			
	st.dev. (n)	0.000187			
	R(calc.)	0.00052			
	R(D482:13)	(0.00500)			Application range:0.001 – 0.180 %M/M

Determination of Colour Pt/Co on sample #13194;

lab	method	value	mark	z(targ)	remarks
120	D1209	1		-0.43	
150		-----		-----	
169		-----		-----	
171	D1209	2		-0.03	
174	D1209	2		-0.03	
311	D1209	5		1.18	
322		-----		-----	
323	D1209	<5		-----	
343		-----		-----	
347		-----		-----	
370	D1209	2		-0.03	
395	D1209	<5		-----	
396	D1209	<5		-----	
398	D1209	<5		-----	
444		-----		-----	
528	D1209	1.5		-0.23	
529	D1209	2		-0.03	
551		-----		-----	
557		-----		-----	
558		-----		-----	
609		-----		-----	
657	D1209	5		1.18	
663	D1209	1		-0.43	
825	D1209	2		-0.03	
857	D1209	1		-0.43	
860	D1209	2		-0.03	
861	D1209	2		-0.03	
862	D1209	2		-0.03	
865	D1209	1		-0.43	
867	D1209	2		-0.03	
869	D1209	2		-0.03	
902	D1209	1		-0.43	
912		-----		-----	
913		-----		-----	
962	D1209	<5		-----	
963	D1209	5		1.18	
1107		-----		-----	
1117	D1209	0		-0.83	
1151		-----		-----	
1169	D1209	1		-0.43	
1217		-----		-----	
1261	D1209	0		-0.83	
1467		-----		-----	
1509	D1209	<5		-----	
1515	D1209	1		-0.43	
1557	D1209	2.5		0.18	
1592	D1209	5		1.18	
1603	in house	1		-0.43	
1608	D1209	1		-0.43	
1623	D1209	4.0		0.78	
1688	D1209	<5		-----	
1718	D1209	1		-0.43	
1766	D1209	3		0.38	
1767	D1209	2		-0.03	
1823		-----		-----	
1866	D1209	3		0.38	
1868		-----		-----	
7006		-----		-----	
9005		-----		-----	
9008		-----		-----	
9009		-----		-----	
9057		-----		-----	

normality	not OK
n	32
outliers	0
mean (n)	2.06
st.dev. (n)	1.396
R(calc.)	3.91
R(D1209:11)	7.00

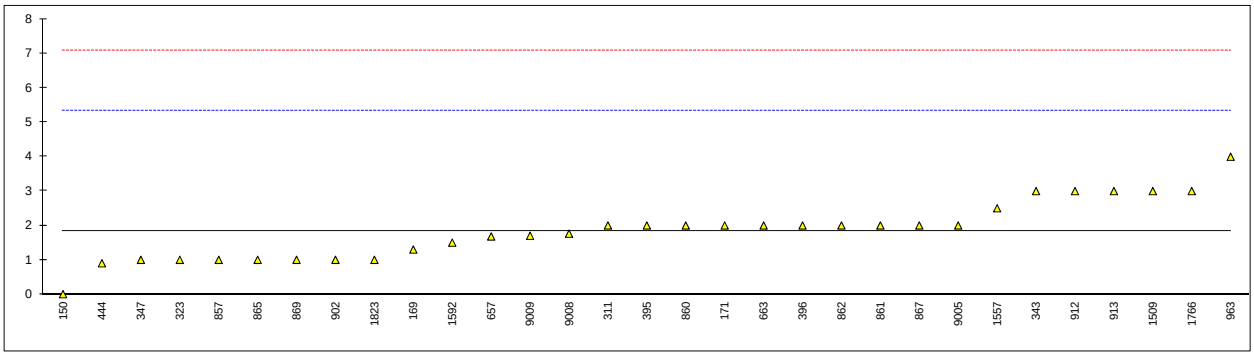

12
10
8
6
4
2
0
1117
1261
120
857
663
865
902
1169
1515
1603
1608
1718
528
860
171
867
370
825
174
862
861
529
869
1767
1557
1766
1866
1623
311
657
963
1592

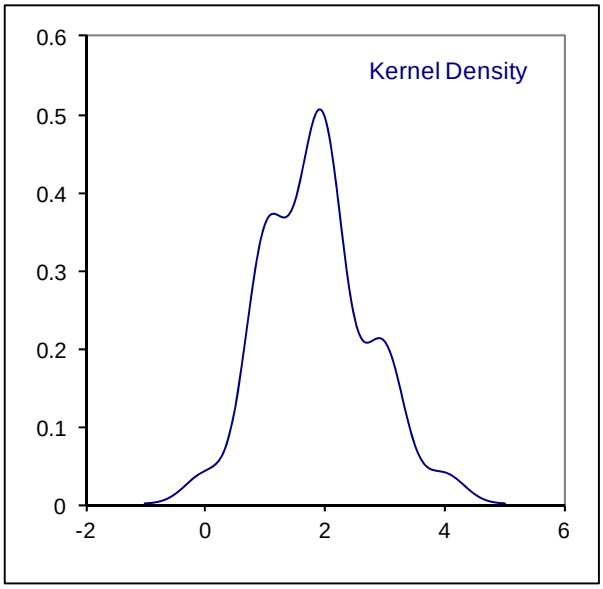

Kernel Density
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
-2
0
2
4
6
8

Determination of Colour (D5386) on sample #13194;

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150	D5386	0		-1.06	
169	D5386	1.3		-0.32	
171	D5386	2		0.09	
174		-----		-----	
311	D5386	2	C	0.09	First reported 6
322		-----		-----	
323	D5386	1		-0.49	
343	D5386	3		0.66	
347	D5386	1		-0.49	
370		-----		-----	
395	D5386	2		0.09	
396	D5386	2		0.09	
398		-----		-----	
444	D5386	0.9		-0.54	
528		-----		-----	
529		-----		-----	
551		-----		-----	
557		-----		-----	
558		-----		-----	
609		-----		-----	
657	D5386	1.68		-0.10	
663	D5386	2		0.09	
825		-----		-----	
857	D5386	1		-0.49	
860	D5386	2		0.09	
861	D5386	2		0.09	
862	D5386	2		0.09	
865	D5386	1		-0.49	
867	D5386	2		0.09	
869	D5386	1		-0.49	
902	D5386	1		-0.49	
912	D5386	3		0.66	
913	D5386	3		0.66	
962		-----		-----	
963	D5386	4		1.23	
1107		-----		-----	
1117		-----		-----	
1151		-----		-----	
1169		-----		-----	
1217		-----		-----	
1261		-----		-----	
1467		-----		-----	
1509	D5386	3		0.66	
1515		-----		-----	
1557	D5386	2.5		0.37	
1592	D5386	1.5		-0.20	
1603		-----		-----	
1608		-----		-----	
1623		-----		-----	
1688		-----		-----	
1718		-----		-----	
1766	D5386	3		0.66	
1767		-----		-----	
1823	D5386	1.0		-0.49	
1866		-----		-----	
1868		-----		-----	
7006		-----		-----	
9005	D5386	2		0.09	
9008	D5386	1.76		-0.05	
9009	D5386	1.7		-0.09	
9057		-----		-----	

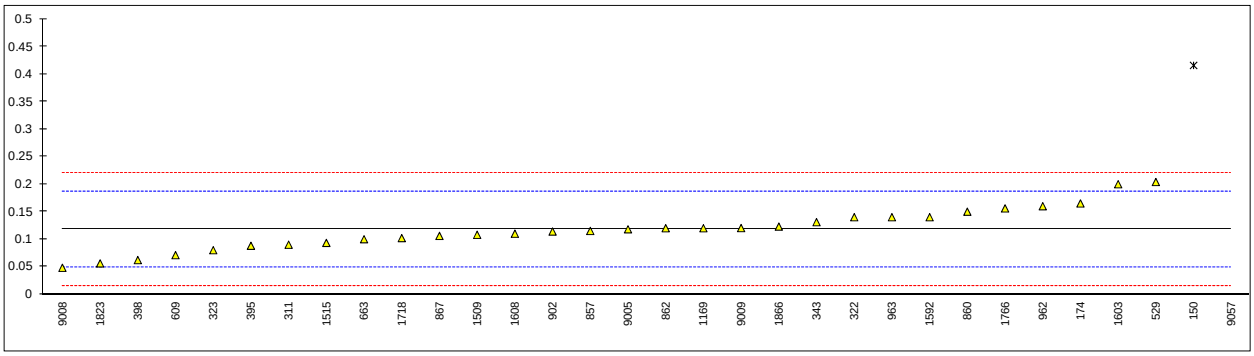
normality	not OK
n	31
outliers	0
mean (n)	1.85
st.dev. (n)	0.852
R(calc.)	2.38
R(D5386:10)	4.89

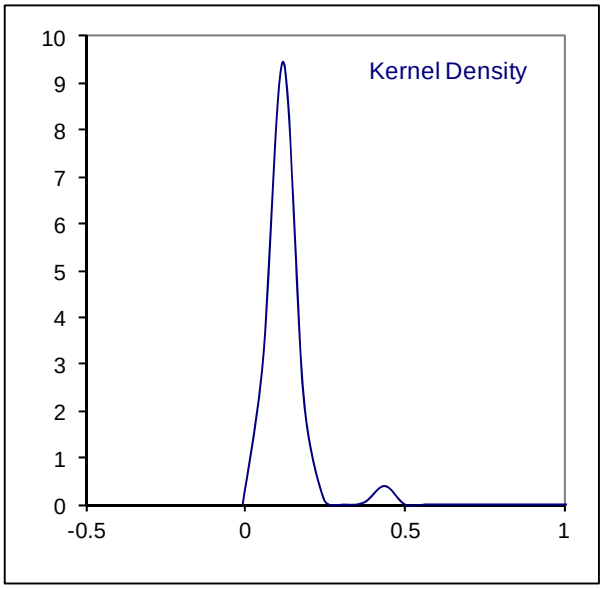

8
7
6
5
4
3
2
1
0
150
444
347
323
857
865
869
902
1823
169
1592
657
9009
9008
311
395
860
171
663
396
862
861
867
9005
1557
343
912
913
1509
1766
963


Kernel Density
0.6
0.5
0.4
0.3
0.2
0.1
0
-2
0
2
4
6

Determination of Chloride as Cl on sample #13194; results in mg/kg

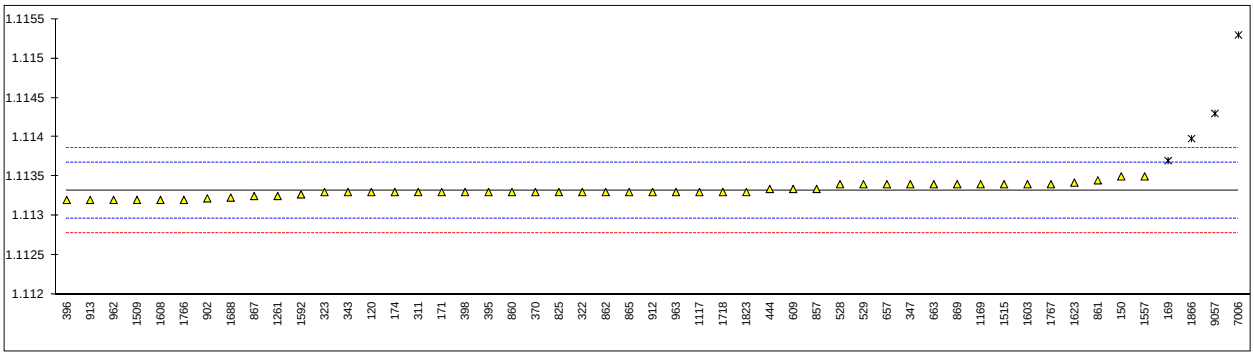
lab	method	value	mark	z(targ)	remarks
120	INH-0221	<0.5		-----	
150	INH-2637	0.416	G(0.01)	8.67	
169		-----		-----	
171		-----		-----	
174	E2469	0.165		1.38	
311	E2469	0.09		-0.80	
322	E2469	0.14		0.65	
323	E2469	0.08		-1.10	
343	E2469	0.131		0.39	
347		-----		-----	
370		-----		-----	
395	E2469	0.088		-0.86	
396		-----		-----	
398	INH-2901	0.062		-1.62	
444		-----		-----	
528		-----		-----	
529	E2469	0.204		2.51	
551		-----		-----	
557		-----		-----	
558		-----		-----	
609	E2469	0.071		-1.36	
657		-----		-----	
663	INH-1867	0.10		-0.51	
825		-----		-----	
857	E2469	0.115		-0.08	
860	IMPCA002	0.15		0.94	
861		-----		-----	
862	E2469	0.12		0.07	
865	INH-001	<0.5		-----	
867	E2469	0.106		-0.34	
869		-----		-----	
902	E2469	0.114		-0.11	
912		-----		-----	
913		-----		-----	
962	E2469	0.16		1.23	
963	E2469	0.14		0.65	
1107		-----		-----	
1117		-----		-----	
1151		-----		-----	
1169	E2469	0.12	C	0.07	First reported 0.389
1217		-----		-----	
1261		-----		-----	
1467		-----		-----	
1509	E2469	0.108		-0.28	
1515	E2469	0.0933		-0.71	
1557	INH-141	<0.5		-----	
1592	INH-002	0.14		0.65	
1603	in house	0.20		2.39	
1608	E2469	0.11		-0.22	
1623		-----		-----	
1688	INH-2901	<0.05		-----	
1718	E2469	0.102		-0.46	
1766	E2469	0.156		1.11	
1767		-----		-----	
1823	INH-2901	0.056		-1.79	
1866	E2469	0.123		0.15	
1868		-----		-----	
7006		-----		-----	
9005	E2469	0.118		0.01	
9008	E2469	0.048		-2.03	
9009	E2469	0.1202		0.07	
9057	INH-722	16.15	G(0.01)	466.04	
	normality	OK			
	n	30			
	outliers	2	Spike:		
	mean (n)	0.1177	0.096		Recovery <122%
	st.dev. (n)	0.03758			
	R(calc.)	0.1052			
	R(E2469:08a)	0.0963			

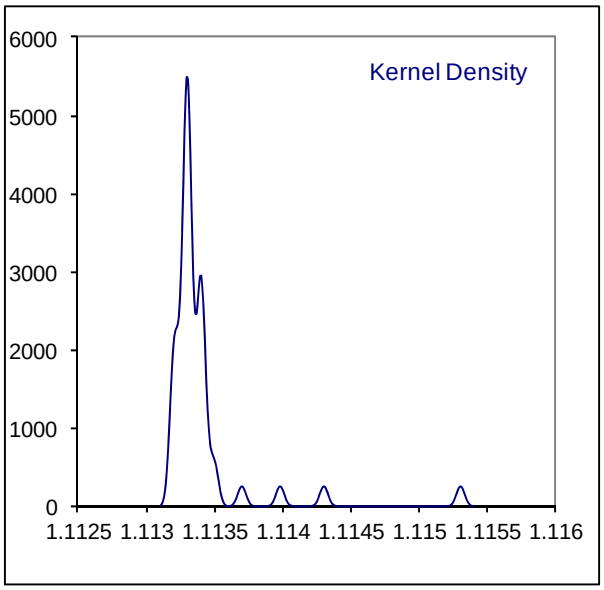

0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
9008
1823
398
609
323
395
311
1515
663
1718
867
1509
1608
902
857
9005
862
1169
9009
1866
343
322
963
1592
860
1766
962
174
1603
529
150
9057


Kernel Density
10
9
8
7
6
5
4
3
2
1
0
-0.5
0
0.5
1

Determination of Density at 20 °C on sample #13194; results in kg/L

lab	method	value	mark	z(targ)	remarks
120	D4052	1.1133		-0.11	
150	D4052	1.1135		1.01	
169	D4052	1.1137	G(0.01)	2.13	
171	D4052	1.1133		-0.11	
174	D4052	1.1133		-0.11	
311	D4052	1.1133		-0.11	
322	D4052	1.1133		-0.11	
323	D4052	1.1133		-0.11	
343	D4052	1.1133		-0.11	
347	D4052	1.1134		0.45	
370	D4052	1.1133		-0.11	
395	D4052	1.1133		-0.11	
396	D4052	1.1132		-0.67	
398	D4052	1.1133		-0.11	
444	D4052	1.11334		0.12	
528	D4052	1.1134		0.45	
529	D4052	1.1134		0.45	
551		-----		-----	
557		-----		-----	
558		-----		-----	
609	D4052	1.11334		0.12	
657	D4052	1.1134		0.45	
663	D4052	1.1134		0.45	
825	D4052	1.1133		-0.11	
857	D4052	1.11334		0.12	
860	D4052	1.1133		-0.11	
861	D4052	1.11345		0.73	
862	D4052	1.1133		-0.11	
865	D4052	1.1133		-0.11	
867	D4052	1.11325		-0.39	
869	D4052	1.11340		0.45	
902	D4052	1.11322		-0.56	
912	D4052	1.1133		-0.11	
913	D4052	1.1132		-0.67	
962	D4052	1.1132		-0.67	
963	D4052	1.1133		-0.11	
1107		-----		-----	
1117	D4052	1.1133		-0.11	
1151		-----		-----	
1169	D4052	1.1134		0.45	
1217		-----		-----	
1261	D4052	1.11325		-0.39	
1467		-----		-----	
1509	D4052	1.1132		-0.67	
1515	D4052	1.1134		0.45	
1557	D1122	1.1135	C	1.01	First reported 1.1155
1592	D4052	1.11327		-0.28	
1603	in house	1.11340		0.45	
1608	D4052	1.1132	C	-0.67	First reported 1113.2
1623	D4052	1.11342		0.56	
1688	D4052	1.11323		-0.50	
1718	D4052	1.1133		-0.11	
1766	D4052	1.11320		-0.67	
1767	D4052	1.1134		0.45	
1823	D4052	1.1133		-0.11	
1866	D4052	1.11398	G(0.01)	3.70	
1868		-----		-----	
7006	D4052	1.1153	G(0.01)	11.09	Probably mixed up Density @20ºC, with Specific Gravity 20/20ºC
9005		-----		-----	
9008		-----		-----	
9009		-----		-----	
9057	INH-101	1.1143	G(0.01)	5.49	
	normality	not OK			
	n	47			
	outliers	4			
	mean (n)	1.11332			
	st.dev. (n)	0.000078			
	R(calc.)	0.00022			
	R(ISO12185:96)	0.00050			

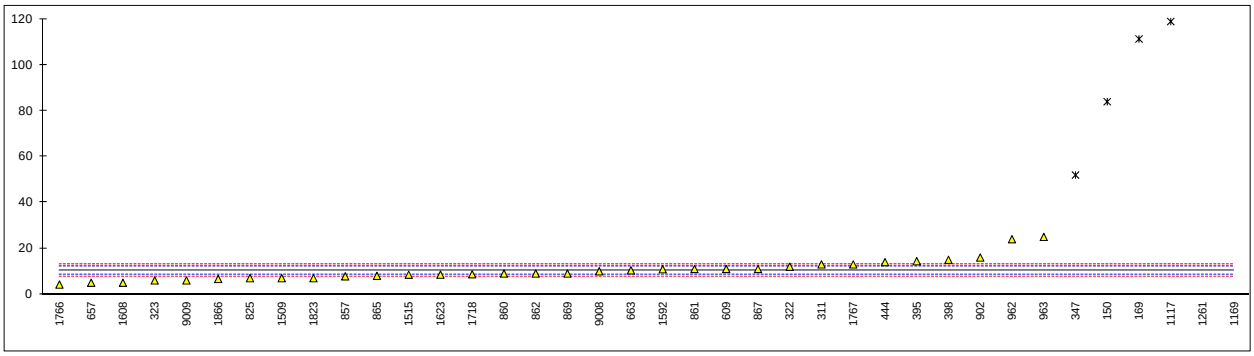

1.1155
1.115
1.1145
1.114
1.1135
1.113
1.1125
1.112
396 913 962 1509 1608 1766 902 1688 867 1261 1592 323 343 120 174 311 171 398 395 860 370 825 322 862 865 912 963 1117 1718 1823 444 609 857 528 529 657 347 663 869 1169 1515 1603 1767 1623 861 150 1557 169 1866 9057 7006

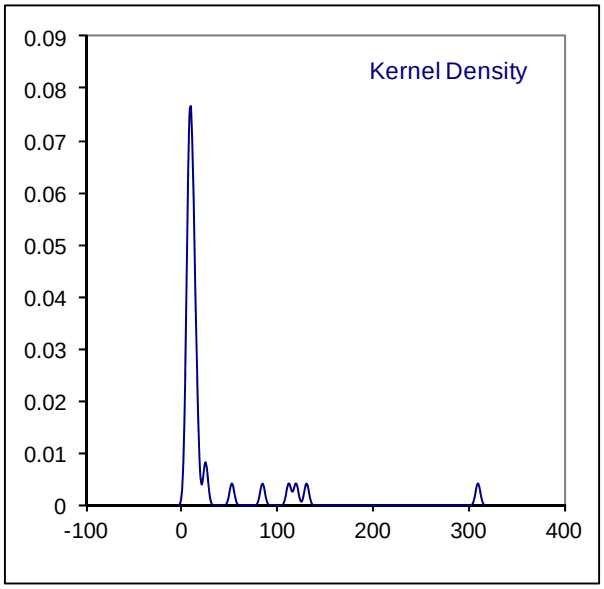

Kernel Density
6000
5000
4000
3000
2000
1000
0
1.1125 1.113 1.1135 1.114 1.1145 1.115 1.1155 1.116

Determination of Diethylene Glycol on sample #13194; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150	E2409	84	G(0.01)	77.82	
169	E2409	111.4	G(0.01)	106.79	
171		-----		-----	
174	E2409	<10	C	-----	First reported 133
311	E2409	13		2.74	
322	E2409	12		1.68	
323	E2409	6		-4.66	
343	E2409	<40	C	-----	First reported 46
347	E2409	52	G(0.01)	43.98	
370		-----		-----	
395	E2409	14.4		4.22	
396		-----		-----	
398	INH-2886	15.0		4.86	
444	E2409	14		3.80	
528		-----		-----	
529		-----		-----	
551		-----		-----	
557		-----		-----	
558		-----		-----	
609	E2409	11	C	0.63	First reported 114
657	E2409	5		-5.72	
663	E2409	10.4		-0.01	
825	E2409	7	C	-3.60	First reported 25
857	E2409	7.8		-2.76	
860	E2409	9		-1.49	
861	E2409	11		0.63	
862	E2409	9		-1.49	
865	E2409	8		-2.55	
867	E2409	11		0.63	
869	E2409	9		-1.49	
902	E2409	16	C	5.91	First reported 30
912		-----		-----	
913		-----		-----	
962	E2409	24	C	14.37	First reported 42
963	E2409	25	C	15.43	First reported 52
1107		-----		-----	
1117	E2409	119	C,G(0.01)	114.83	First reported 132
1151		-----		-----	
1169	E2409	309	C,G(0.01)	315.73	First reported 170.1
1217		-----		-----	
1261	E2409	130	G(0.01)	126.46	
1467		-----		-----	
1509	E2409	7		-3.60	
1515	E2409	8.5		-2.02	
1557		-----		-----	
1592	E611	10.9		0.52	
1603	E2409	<50		-----	
1608	E2409	5		-5.72	
1623	E2409	8.52		-2.00	
1688	INH-2386	<10	C	-----	First reported 27
1718	E2409	8.7		-1.81	
1766	E2409	4.2		-6.56	
1767	E2409	13		2.74	
1823	E2409	7		-3.60	
1866	E2409	6.646		-3.98	
1868		-----		-----	
7006	E2409	<10		-----	
9005	E2409	<5		<-5.72	False negative?
9008	E2409	10		-0.43	
9009	E2409	6		-4.66	
9057		-----		-----	

	normality	not OK	
	n	32	
	outliers	6	
	mean (n)	10.41	
	st.dev. (n)	4.785	
	R(calc.)	13.40	
	R(E2409:13)	2.65	Application range: 5-3000 mg/kg

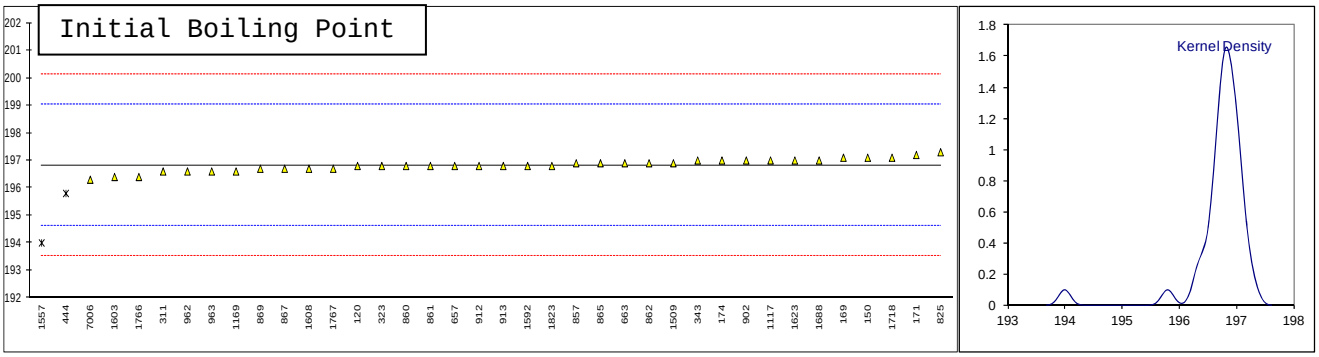

120
100
80
60
40
20
0
1766
657
1608
323
9009
1866
825
1509
1823
857
865
1515
1623
1718
860
862
869
9008
663
1592
861
609
867
322
311
1767
444
395
398
902
962
963
347
150
169
1117
1261
1169

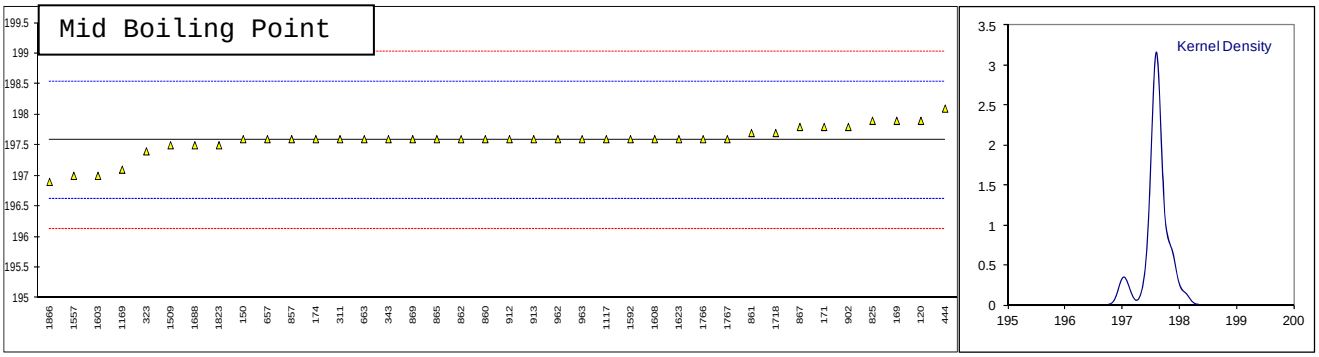

Kernel Density
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-100
0
100
200
300
400

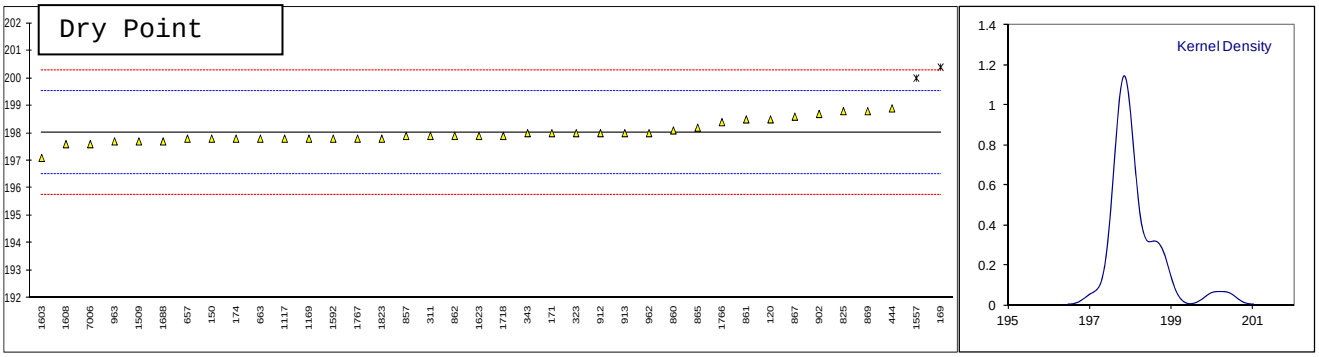
Determination of Distillation: IBP, 50% recovered, Dry Point on sample #13194; results in °C

lab	method	IBP	mark	z(targ)	50% rec	mark	z(targ)	DP	mark	z(targ)	remarks
120	D1078	196.8		0.02	197.9		0.66	198.5		0.64	
150	D1078	197.1		0.29	197.6		0.04	197.8		-0.29	
169	D1078	197.1		0.29	197.9		0.66	200.4	G(0.01)	3.15	
171	D1078	197.2		0.38	197.8		0.45	198.0		-0.02	
174	D1078	197.0		0.20	197.6		0.04	197.8		-0.29	
311	D1078	196.6		-0.17	197.6		0.04	197.9		-0.15	
322		-----		-----	-----		-----	-----		-----	
323	D1078	196.8		0.02	197.4		-0.38	198.0		-0.02	
343	D1078	197.0		0.20	197.6		0.04	198.0		-0.02	
347		-----		-----	-----		-----	-----		-----	
370		-----		-----	-----		-----	-----		-----	
395		-----		-----	-----		-----	-----		-----	
396		-----		-----	-----		-----	-----		-----	
398		-----		-----	-----		-----	-----		-----	
444	D1078	195.8		-0.90	198.1		1.08	198.9		1.17	
528		-----		-----	-----		-----	-----		-----	
529		-----		-----	-----		-----	-----		-----	
551		-----		-----	-----		-----	-----		-----	
557		-----		-----	-----		-----	-----		-----	
558		-----		-----	-----		-----	-----		-----	
609		-----		-----	-----		-----	-----		-----	
657	D1078	196.8		0.02	197.6		0.04	197.8		-0.29	
663	D1078	196.9		0.11	197.6		0.04	197.8		-0.29	
825	D1078	197.3		0.47	197.9		0.66	198.8		1.04	
857	D1078	196.9		0.11	197.6		0.04	197.9		-0.15	
860	D1078	196.8		0.02	197.6		0.04	198.1		0.11	
861	D1078	196.8		0.02	197.7		0.25	198.5		0.64	
862	D1078	196.9		0.11	197.6		0.04	197.9		-0.15	
865	D1078	196.9		0.11	197.6		0.04	198.2		0.24	
867	D1078	196.7		-0.07	197.8		0.45	198.6		0.77	
869	D1078	196.7		-0.07	197.6		0.04	198.8		1.04	
902	D1078	197.0		0.20	197.8		0.45	198.7		0.90	
912	D1078	196.8		0.02	197.6		0.04	198.0		-0.02	
913	D1078	196.8		0.02	197.6		0.04	198.0		-0.02	
962	D1078	196.6		-0.17	197.6		0.04	198.0		-0.02	
963	D1078	196.6		-0.17	197.6		0.04	197.7		-0.42	
1107		-----		-----	-----		-----	-----		-----	
1117	D1078	197.0		0.20	197.6		0.04	197.8		-0.29	
1151		-----		-----	-----		-----	-----		-----	
1169	D1078	196.6		-0.17	197.1	C	-1.00	197.8	C	-0.29	
1217		-----		-----	-----		-----	-----		-----	
1261		-----		-----	-----		-----	-----		-----	
1467		-----		-----	-----		-----	-----		-----	
1509	D1078	196.9		0.11	197.5		-0.17	197.7		-0.42	
1515		-----		-----	-----		-----	-----		-----	
1557	D1078	194.0	C,G(0.01)	-2.54	197.0	C	-1.21	200.0	C,G(0.01)	2.62	
1592	D1078	196.8		0.02	197.6		0.04	197.8		-0.29	
1603	in house	196.4		-0.35	197.0		-1.21	197.1		-1.21	
1608	D1078	196.7		-0.07	197.6		0.04	197.6		-0.55	
1623	D1078	197.0		0.20	197.6		0.04	197.9		-0.15	
1688	D1078	197.0		0.20	197.5		-0.17	197.7		-0.42	
1718	D1078	197.1		0.29	197.7		0.25	197.9		-0.15	
1766	D1078	196.4		-0.35	197.6		0.04	198.4		0.51	
1767	D1078	196.7		-0.07	197.6		0.04	197.8		-0.29	
1823	D1078	196.8		0.02	197.5		-0.17	197.8		-0.29	
1866	D1078	196.1		-0.62	196.9		-1.41	-----		-----	
1868		-----		-----	-----		-----	-----		-----	
7006	D1078	196.3		-0.44	-----		-----	197.6		-0.55	
9005		-----		-----	-----		-----	-----		-----	
9008		-----		-----	-----		-----	-----		-----	
9009		-----		-----	-----		-----	-----		-----	
9057		-----		-----	-----		-----	-----		-----	
	normality	not OK			not OK			not OK			
	n	38			38			36			
	outliers	1			0			2			
	mean (n)	196.78			197.58			198.02			
	st.dev. (n)	0.295			0.243			0.395			
	R(calc.)	0.83			0.68			1.10			
	R(D1078:11)	3.07			1.35			2.12			

Lab 1169: first reported 197.0, 197.2
Lab 1557: first reported 192.9, 194.4, 195.0

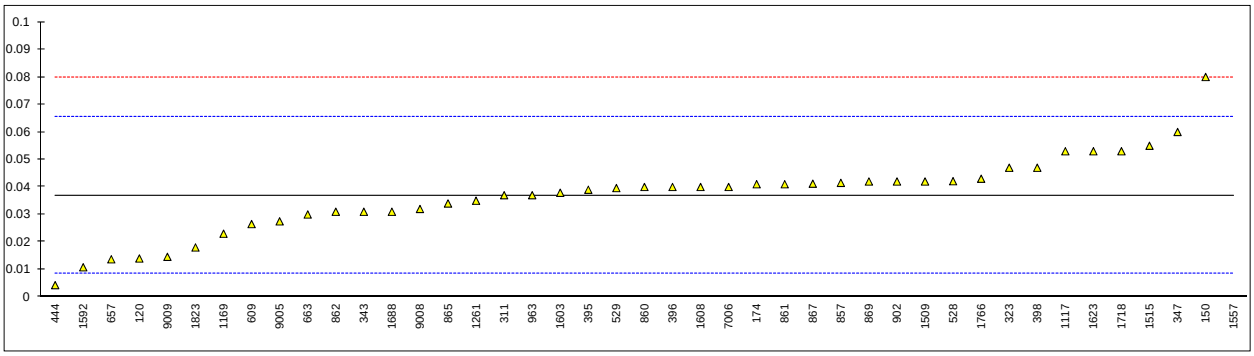

Initial Boiling Point
Kernel Density

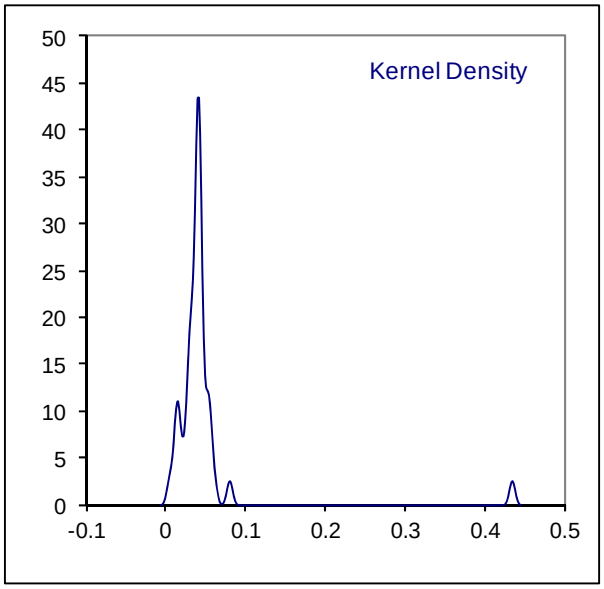

Mid Boiling Point
Kernel Density


Dry Point
Kernel Density

Determination of Iron as Fe on sample #13194; results in mg/kg

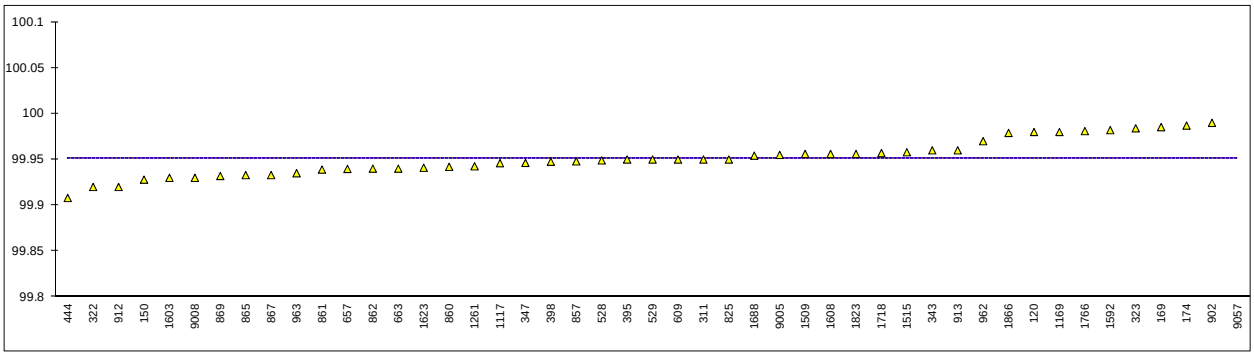
lab	method	value	mark	z(targ)	remarks
120	INH-0290	0.014		-1.60	
150	E394	0.08		3.01	
169		-----		-----	
171		-----		-----	
174	E1615	0.041		0.29	
311	E1615	0.037		0.01	
322	E1615	<0.01		<-1.88	False negative?
323	E1615	0.047		0.71	
343	E1615	0.031		-0.41	
347	E394	0.06		1.61	
370		-----		-----	
395	E1615	0.039		0.15	
396	E202	0.04		0.22	
398	E394	0.047		0.71	
444	E1615	0.0043		-2.28	
528	E1615	0.0421		0.36	
529	E1615	0.0396		0.19	
551		-----		-----	
557		-----		-----	
558		-----		-----	
609	E1615	0.0265		-0.73	
657	E1615	0.0137		-1.62	
663	E394	0.03		-0.48	
825		-----		-----	
857	E1615	0.0415		0.32	
860	E394	0.040		0.22	
861	E1615	0.041		0.29	
862	E1615	0.031		-0.41	
865	E394	0.034		-0.20	
867	E1615	0.0412		0.30	
869	E1615	0.042		0.36	
902	E1615	0.042		0.36	
912		-----		-----	
913		-----		-----	
962		-----		-----	
963	E394	0.037		0.01	
1107		-----		-----	
1117	E394	0.053		1.12	
1151		-----		-----	
1169	E394	0.023		-0.97	
1217		-----		-----	
1261	E394	0.035		-0.13	
1467		-----		-----	
1509	E394	0.042		0.36	
1515	E1615	0.055		1.26	
1557	INH-1200	0.436	CG(0.01)	27.92	First reported 0.337
1592	E1615	0.0108		-1.83	
1603	in house	0.0379		0.07	
1608	E394	0.04		0.22	
1623	E202	0.053		1.12	
1688	E394	0.031		-0.41	
1718	E394	0.053		1.12	
1766	E1615	0.043	C	0.43	First reported 0.0857
1767		-----		-----	
1823	E394	0.018		-1.32	
1866	E1615	<0.05		-----	
1868		-----		-----	
7006	D394	0.04		0.22	
9005	E1615	0.0275		-0.66	
9008	E1615	0.032		-0.34	
9009	E1615	0.0146		-1.56	
9057		-----		-----	
	normality	not OK			
	n	42			
	outliers	1	Spike		
	mean (n)	0.0369	0.050		Recovery <74%
	st.dev. (n)	0.01415			
	R(calc.)	0.0396			
	R(E1615:08)	0.0400			

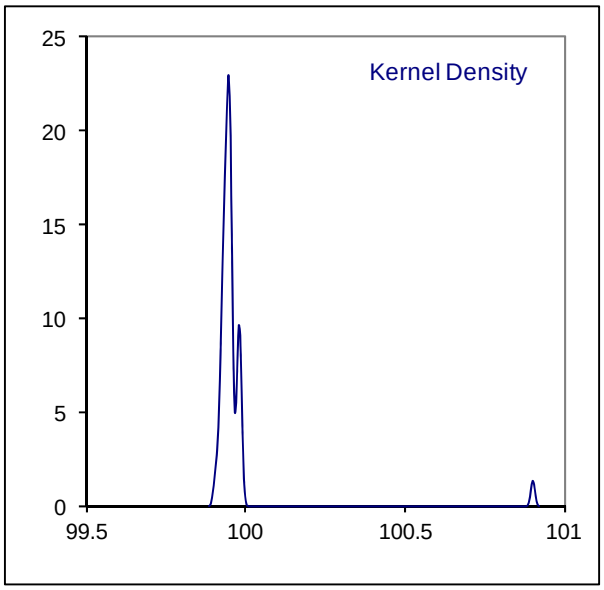

0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
444 1592 657 120 9009 1823 1169 609 9005 663 862 343 1688 9008 865 1261 311 963 1603 395 529 860 396 1608 7006 174 861 867 857 869 902 1509 528 1766 323 398 1117 1623 1718 1515 347 150 1557


Kernel Density
50
45
40
35
30
25
20
15
10
5
0
-0.1 0 0.1 0.2 0.3 0.4 0.5

Determination of Purity on sample #13194; results in %M/M

lab	method	value	mark	z(targ)	remarks
120	E202	99.98		-----	
150	E2409	99.928		-----	
169	E202	99.9853		-----	
171		-----		-----	
174	E2409	99.987		-----	
311	E202	99.95		-----	
322	E202	99.92		-----	
323	E202	99.984		-----	
343	E202	99.96		-----	
347	E2409	99.9463		-----	
370		-----		-----	
395	E2409	99.95		-----	
396		-----		-----	
398	INH-2886	99.9475		-----	
444	E2409	99.908		-----	
528	E202	99.949		-----	
529	E202	99.950		-----	
551		-----		-----	
557		-----		-----	
558		-----		-----	
609	E2409	99.95	C	-----	First reported 99.77
657	E2409	99.9397		-----	
663	E2409	99.94		-----	
825	E202	99.95		-----	
857	E2409	99.948		-----	
860	E2409	99.942		-----	
861	E202	99.939		-----	
862	E202	99.940		-----	
865	E2409	99.933		-----	
867	E202	99.933		-----	
869	E202	99.932		-----	
902	E2409	99.99		-----	
912	E202	99.92		-----	
913	E202	99.96		-----	
962	E202	99.97		-----	
963	E2409	99.935		-----	
1107		-----		-----	
1117	E202	99.946		-----	
1151		-----		-----	
1169	E202	99.98		-----	
1217		-----		-----	
1261	E202	99.9426		-----	
1467		-----		-----	
1509	E2409	99.956		-----	
1515	E202	99.9579		-----	
1557		-----		-----	
1592	E611	99.982		-----	
1603	in house	99.93		-----	
1608	E202	99.956		-----	
1623	E2409	99.941		-----	
1688	Calc.	99.9542	C	-----	First reported 99.9525
1718	E2409	99.957		-----	
1766	E202	99.981		-----	
1767		-----		-----	
1823	E2409	99.956		-----	
1866	E202	99.979		-----	
1868		-----		-----	
7006		-----		-----	
9005	E2409	99.955		-----	
9008	E202	99.93		-----	
9009		-----		-----	
9057	INH-762	100.9	G(0.01)	-----	
	normality	OK			
	n	46			
	outliers	1			
	mean (n)	99.9515			
	st.dev. (n)	0.01966			
	R(calc.)	0.0551			
	R(lit)	unknown			

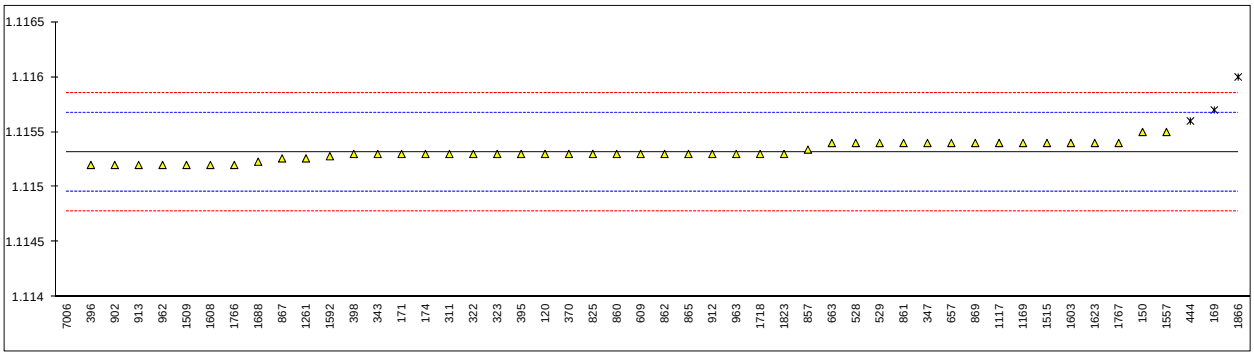

100.1
100.05
100
99.95
99.9
99.85
99.8
444 322 912 150 1603 9008 869 865 867 963 861 657 862 663 1623 860 1261 1117 347 398 857 528 395 529 609 311 825 1688 9005 1509 1608 1823 1718 1515 343 913 962 1866 120 1169 1766 1592 323 169 174 902 9057

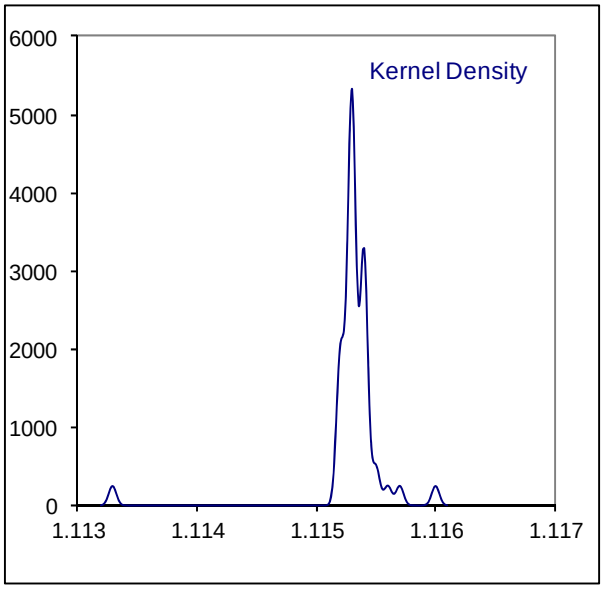

Kernel Density
25
20
15
10
5
0
99.5
100
100.5
101

Determination of Specific Gravity 20/20°C on sample #13194;

lab	method	value	mark	z(targ)	remarks
120	D4052	1.1153		-0.10	
150	D4052	1.1155		1.02	
169	D4052	1.1157	G(0.01)	2.14	
171	D4052	1.1153		-0.10	
174	D4052	1.1153		-0.10	
311	E202	1.1153		-0.10	
322	D4052	1.1153		-0.10	
323	E202	1.1153		-0.10	
343	E202	1.1153		-0.10	
347	D4052	1.1154		0.46	
370	E202	1.1153		-0.10	
395	D4052	1.1153		-0.10	
396	E202	1.1152		-0.66	
398	E202	1.1153		-0.10	
444	D4052	1.1156	G(0.05)	1.58	
528	D4052	1.1154		0.46	
529	D4052	1.1154		0.46	
551		-----		-----	
557		-----		-----	
558		-----		-----	
609	D4052	1.1153		-0.10	
657	D4052	1.1154		0.46	
663	E202	1.1154		0.46	
825	E202	1.1153		-0.10	
857	D4052	1.11534		0.12	
860	D4052	1.1153		-0.10	
861	E202	1.1154		0.46	
862	D4052	1.1153		-0.10	
865	D4052	1.1153		-0.10	
867	E202	1.11526		-0.33	
869	E202	1.11540		0.46	
902	D4052	1.1152		-0.66	
912	D4052	1.1153		-0.10	
913	D4052	1.1152		-0.66	
962	E202	1.1152		-0.66	
963	D4052	1.1153		-0.10	
1107		-----		-----	
1117	D4052	1.1154		0.46	
1151		-----		-----	
1169	D4052	1.1154		0.46	
1217		-----		-----	
1261	D4052	1.11526		-0.33	
1467		-----		-----	
1509	D4052	1.1152		-0.66	
1515	E202	1.1154		0.46	
1557	E202	1.1155	C	1.02	First reported 1.1175
1592	D4052	1.11528		-0.21	
1603	in house	1.11540		0.46	
1608	D4052	1.1152		-0.66	
1623	D891	1.1154		0.46	
1688	D4052	1.11523		-0.49	
1718	D4052	1.1153		-0.10	
1766	E202	1.11520		-0.66	
1767	E202	1.1154		0.46	
1823	D4052	1.1153		-0.10	
1866	D4052	1.1160	G(0.01)	3.82	
1868		-----		-----	
7006	E202	1.113292	G(0.01)	-11.35	Probably mixed up Density @20ºC, with Specific Gravity 20/20ºC
9005		-----		-----	
9008		-----		-----	
9009		-----		-----	
9057		-----		-----	

normality	not OK
n	46
outliers	4
mean (n)	1.11532
st.dev. (n)	0.000078
R(calc.)	0.00022
R(D4052:02e1)	0.00050

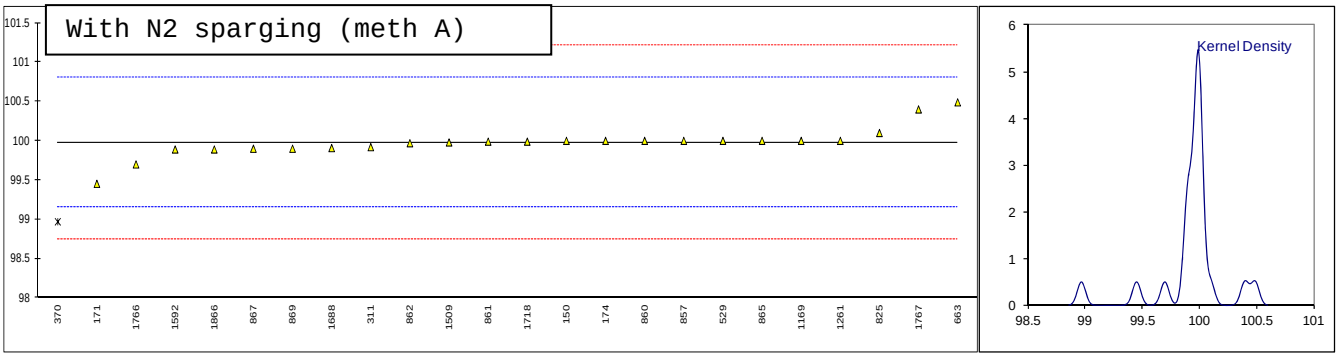

1.1165
1.116
1.1155
1.115
1.1145
1.114
7006 396 902 913 962 1509 1608 1766 1688 867 1261 1592 398 343 171 174 311 322 323 395 120 370 825 860 609 862 865 912 963 1718 1823 857 663 528 529 861 347 657 869 1117 1169 1515 1603 1623 1767 150 1557 444 169 1866

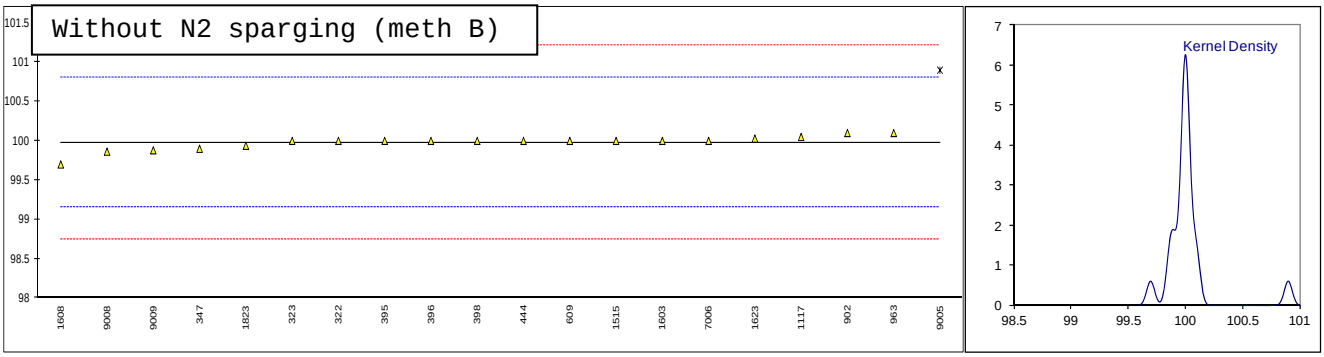

Kernel Density
6000
5000
4000
3000
2000
1000
0
1.113
1.114
1.115
1.116
1.117

Determination of UV Transmittance at 350 nm on sample #13195; results in %Transmittance

lab	method	Meth A	mark	z(targ)	Meth B	mark	z(targ)	remarks
120		-----		-----	-----		-----	
150	E2193-A	100		0.05	-----		-----	
169		-----		-----	-----		-----	
171	E2193-A	99.453		-1.27	-----		-----	
174	E2193-A	100.00		0.05	-----		-----	
311	E2193-A	99.92		-0.14	-----		-----	
322	E2193	-----		-----	100.0		0.06	
323	E2193	-----		-----	100.0		0.06	
343		-----		-----	-----		-----	
347	E2193-B	-----		-----	99.9		-0.19	
370	E2193-A	98.97	G(0.01)	-2.44	-----		-----	
395	E2193-B	-----		-----	100		0.06	
396	E2193-B	-----		-----	100.0		0.06	
398	INH-2902	-----		-----	100		0.06	
444	E2193-B	-----		-----	100.0		0.06	
528		-----		-----	-----		-----	
529	E2193-A	100		0.05	-----		-----	
551		-----		-----	-----		-----	
557		-----		-----	-----		-----	
558		-----		-----	-----		-----	
609	E2193-B	-----		-----	100.0		0.06	
657		-----		-----	-----		-----	
663	E2193-A	100.49		1.24	-----		-----	
825	E2193-A	100.1		0.30	-----		-----	
857	E2193-A	100.0		0.05	-----		-----	
860	E2193-A	100.0		0.05	-----		-----	
861	E2193-A	99.99		0.03	-----		-----	
862	E2193-A	99.97		-0.02	-----		-----	
865	E2193-A	100.0		0.05	-----		-----	
867	E2193-A	99.9		-0.19	-----		-----	
869	E2193-A	99.9		-0.19	-----		-----	
902	E2193-B	-----		-----	100.10		0.30	
912		-----		-----	-----		-----	
913		-----		-----	-----		-----	
962		-----		-----	-----		-----	
963	E2193-B	-----		-----	100.1		0.30	
1107		-----		-----	-----		-----	
1117	E2193-B	-----		-----	100.05		0.18	
1151		-----		-----	-----		-----	
1169	E2193-A	100.0		0.05	-----		-----	
1217		-----		-----	-----		-----	
1261	INH-577-A	100		0.05	-----		-----	
1467		-----		-----	-----		-----	
1509	E2193-A	99.98		0.01	-----		-----	
1515	E2193-B	-----		-----	100		0.06	
1557		-----		-----	-----		-----	
1592	E2193-A	99.89		-0.21	-----		-----	
1603	In house	-----		-----	100		0.06	
1608	E2193-B	-----		-----	99.7		-0.67	
1623	E2193-B	-----		-----	100.03		0.13	
1688	INH-1997	99.908		-0.17	-----		-----	
1718	E2193-A	99.99		0.03	-----		-----	
1766	E2193-A	99.70		-0.67	-----		-----	
1767	E2193-A	100.4		1.03	-----		-----	
1823	E2193-B	-----		-----	99.937		-0.10	
1866	E2193-A	99.89		-0.21	-----		-----	
1868		-----		-----	-----		-----	
7006	E2193-B	-----		-----	100.0		0.06	
9005	E2193-B	-----		-----	100.9	G(0.01)	2.24	
9008	E2193-B	-----		-----	99.863		-0.28	
9009	E2193-B	-----		-----	99.880		-0.23	
9057		-----		-----	-----		-----	
	normality	not OK			not OK			
	n	23			19			
	outliers	1			1			
	mean (n)	99.977			99.977			
	st.dev. (n)	0.1963			0.0914			
	R(calc.)	0.550			0.256			
	R(E2193:08)	1.154			1.154			

Method A: Nitrogen sparging of the sample
Method B: None Nitrogen sparging of the sample

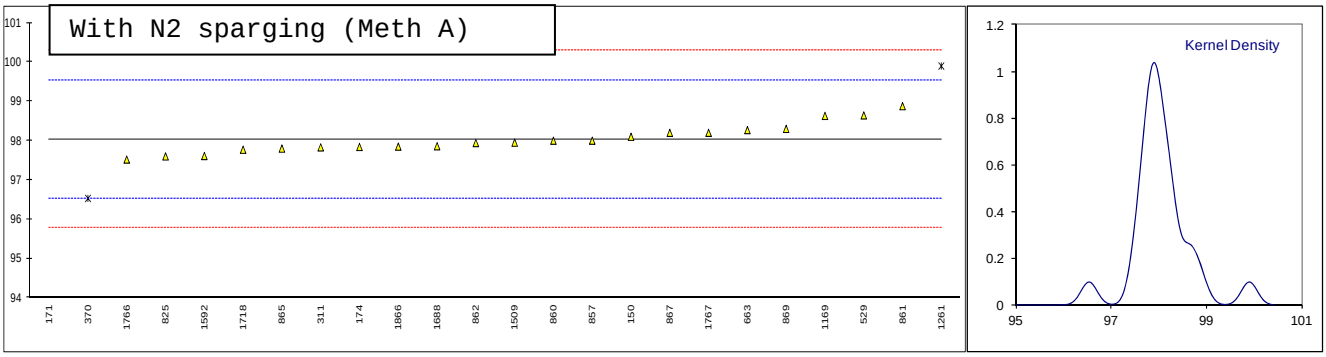

With N2 sparging (meth A)
101.5
101
100.5
100
99.5
99
98.5
98
370 171 1766 1592 1866 867 869 1688 311 862 1509 861 1718 150 174 860 857 529 865 1169 1261 825 1767 663
Kernel Density
6
5
4
3
2
1
0
98.5 99 99.5 100 100.5 101

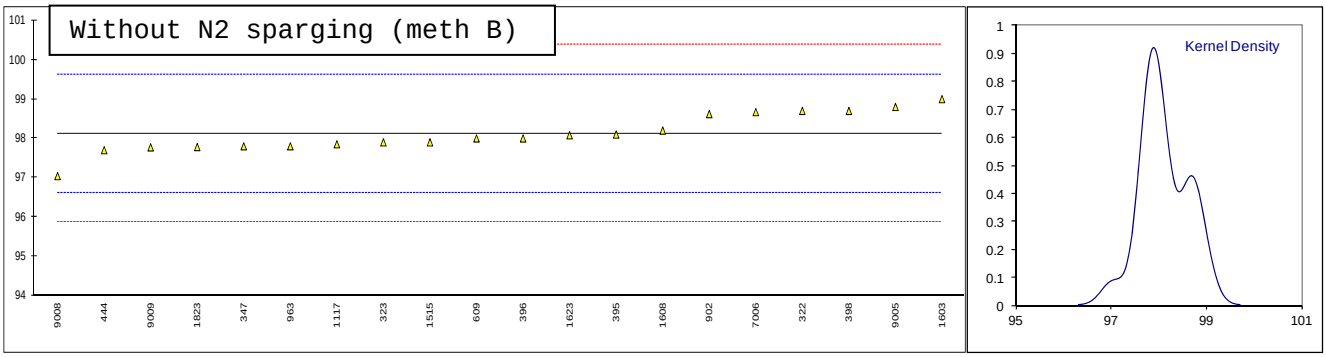

Without N2 sparging (meth B)
101.5
101
100.5
100
99.5
99
98.5
98
1608 9008 9009 347 1823 323 322 395 396 398 444 609 1515 1603 7006 1623 1117 902 963 9005
Kernel Density
7
6
5
4
3
2
1
0
98.5 99 99.5 100 100.5 101

Determination of UV Transmittance at 275 nm on sample #13195; results in %Transmittance

lab	method	Meth A	mark	z(targ)	Meth B	mark	z(targ)	Remarks
120		-----		-----	-----		-----	
150	E2193-A	98.1		0.08	-----		-----	
169		-----		-----	-----		-----	
171	E2193-A	89.523	G(0.01)	-11.33	-----		-----	
174	E2193-A	97.84		-0.26	-----		-----	
311	E2193-A	97.83		-0.28	-----		-----	
322	E2193	-----		-----	98.7		0.77	
323	E2193	-----		-----	97.9		-0.29	
343		-----		-----	-----		-----	
347	E2193-B	-----		-----	97.8		-0.43	
370	E2193-A	96.53	C,G(0.05)	-2.01	-----		-----	First reported 95.83
395	E2193-B	-----		-----	98.1		-0.03	
396	E2193-B	-----		-----	98.0		-0.16	
398	INH-2902	-----		-----	98.7		0.77	
444	E2193-B	-----		-----	97.7		-0.56	
528		-----		-----	-----		-----	
529	E2193-A	98.644		0.81	-----		-----	
551		-----		-----	-----		-----	
557		-----		-----	-----		-----	
558		-----		-----	-----		-----	
609	E2193-B	-----		-----	98.0		-0.16	
657		-----		-----	-----		-----	
663	E2193-A	98.27		0.31	-----		-----	
825	E2193-A	97.6		-0.58	-----		-----	
857	E2193-A	98.0		-0.05	-----		-----	
860	E2193-A	98.0		-0.05	-----		-----	
861	E2193-A	98.88		1.12	-----		-----	
862	E2193-A	97.94		-0.13	-----		-----	
865	E2193-A	97.8		-0.32	-----		-----	
867	E2193-A	98.2		0.22	-----		-----	
869	E2193-A	98.3		0.35	-----		-----	
902	E2193-B	-----		-----	98.62		0.66	
912		-----		-----	-----		-----	
913		-----		-----	-----		-----	
962		-----		-----	-----		-----	
963	E2193-B	-----		-----	97.8		-0.43	
1107		-----		-----	-----		-----	
1117	E2193-B	-----		-----	97.85		-0.36	
1151		-----		-----	-----		-----	
1169	E2193-A	98.63		0.79	-----		-----	
1217		-----		-----	-----		-----	
1261	INH-577-A	99.9	G(0.01)	2.48	-----		-----	
1467		-----		-----	-----		-----	
1509	E2193-A	97.95		-0.12	-----		-----	
1515	E2193-B	-----		-----	97.9		-0.29	
1557		-----		-----	-----		-----	
1592	E2193-A	97.61		-0.57	-----		-----	
1603	In house	-----		-----	99		1.17	
1608	E2193-B	-----		-----	98.2		0.11	
1623	E2193-B	-----		-----	98.08		-0.05	
1688	INH-1997	97.859		-0.24	-----		-----	
1718	E2193-A	97.77		-0.36	-----		-----	
1766	E2193-A	97.52		-0.69	-----		-----	
1767	E2193-A	98.2		0.22	-----		-----	
1823	E2193-B	-----		-----	97.780		-0.45	
1866	E2193-A	97.85		-0.25	-----		-----	
1868		-----		-----	-----		-----	
7006	E2193-B	-----		-----	98.67		0.73	
9005	E2193-B	-----		-----	98.8		0.90	
9008	E2193-B	-----		-----	97.041		-1.44	
9009	E2193-B	-----		-----	97.772		-0.46	
9057		-----		-----	-----		-----	
	normality	OK			OK			
	N	21			20			
	Outliers	3			0			
	mean (n)	98.038			98.121			
	st.dev. (n)	0.3569			0.4840			
	R(calc.)	0.999			1.355			
	R(E2193:08)	2.105			2.105			

Method A: Nitrogen sparging of the sample
Method B: None Nitrogen sparging of the sample

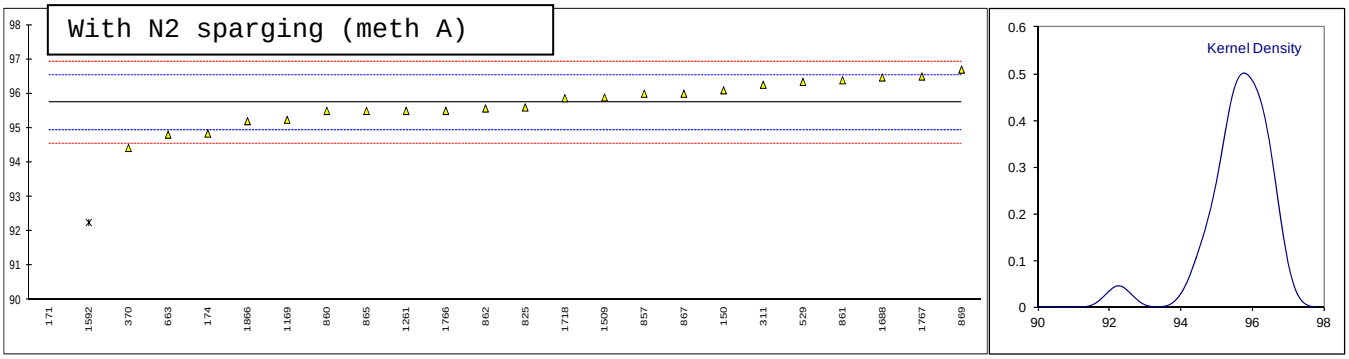

With N2 sparging (Meth A)
101
100
99
98
97
96
95
94
171 370 1766 825 1592 1718 865 311 174 1866 1688 862 1509 860 857 150 867 1767 663 869 1169 529 861 1261
Kernel Density
1.2
1
0.8
0.6
0.4
0.2
0
95 97 99 101

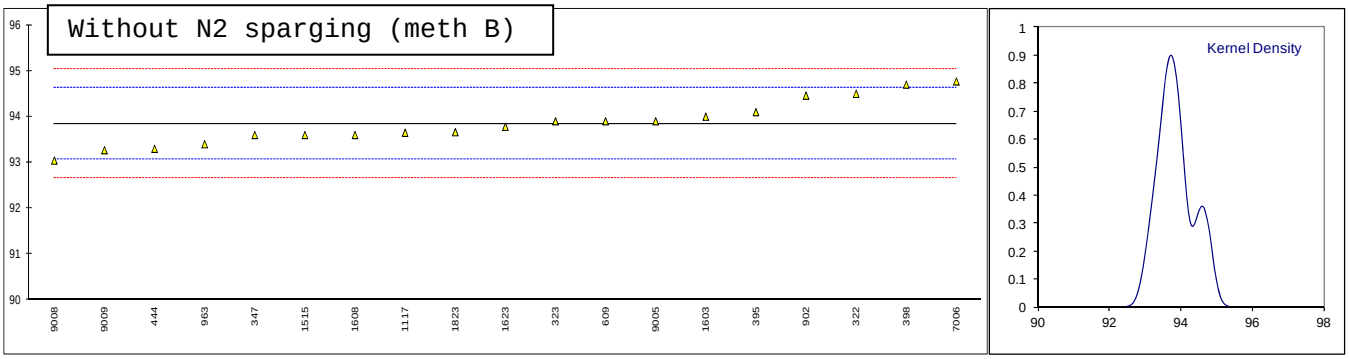

Without N2 sparging (meth B)
101
100
99
98
97
96
95
94
9008 444 9009 1823 347 963 1117 323 1515 609 396 1623 395 1608 902 7006 322 398 9005 1603
Kernel Density
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
95 97 99 101

Determination of UV Transmittance at 250 nm on sample #13195; results in %Transmittance

lab	method	Meth A	mark	z(targ)	Meth B	mark	z(targ)	remarks
120		-----		-----	-----		-----	
150	E2193-A	96.1		0.92	-----		-----	
169		-----		-----	-----		-----	
171	E2193-A	80.657	G(0.01)	-38.31	-----		-----	
174	E2193-A	94.84		-2.28	-----		-----	
311	E2193-A	96.26		1.33	-----		-----	
322	E2193	-----		-----	94.5		1.65	
323	E2193	-----		-----	93.9		0.13	
343		-----		-----	-----		-----	
347	E2193-B	-----		-----	93.6		-0.63	
370	E2193-A	94.42		-3.35	-----		-----	
395	E2193-B	-----		-----	94.1		0.64	
396	E2193-B	-----		-----	-----		-----	
398	INH-2902	-----		-----	94.7		2.16	
444	E2193-B	-----		-----	93.3		-1.40	
528		-----		-----	-----		-----	
529	E2193-A	96.344		1.54	-----		-----	
551		-----		-----	-----		-----	
557		-----		-----	-----		-----	
558		-----		-----	-----		-----	
609	E2193-B	-----		-----	93.9		0.13	
657		-----		-----	-----		-----	
663	E2193-A	94.81		-2.35	-----		-----	
825	E2193-A	95.6		-0.35	-----		-----	
857	E2193-A	96.0		0.67	-----		-----	
860	E2193-A	95.5		-0.60	-----		-----	
861	E2193-A	96.39		1.66	-----		-----	
862	E2193-A	95.57		-0.42	-----		-----	
865	E2193-A	95.5		-0.60	-----		-----	
867	E2193-A	96.0		0.67	-----		-----	
869	E2193-A	96.7		2.45	-----		-----	
902	E2193-B	-----		-----	94.46		1.55	
912		-----		-----	-----		-----	
913		-----		-----	-----		-----	
962		-----		-----	-----		-----	
963	E2193-B	-----		-----	93.4		-1.14	
1107		-----		-----	-----		-----	
1117	E2193-B	-----		-----	93.65		-0.51	
1151		-----		-----	-----		-----	
1169	E2193-A	95.24		-1.26	-----		-----	
1217		-----		-----	-----		-----	
1261	INH-577-A	95.5		-0.60	-----		-----	
1467		-----		-----	-----		-----	
1509	E2193-A	95.89		0.39	-----		-----	
1515	E2193-B	-----		-----	93.6		-0.63	
1557		-----		-----	-----		-----	
1592	E2193-A	92.25	G(0.01)	-8.86	-----		-----	
1603	In house	-----		-----	94		0.38	
1608	E2193-B	-----		-----	93.6		-0.63	
1623	E2193-B	-----		-----	93.78		-0.18	
1688	INH-1997	96.472		1.87	-----		-----	
1718	E2193-A	95.87		0.34	-----		-----	
1766	E2193-A	95.50		-0.60	-----		-----	
1767	E2193-A	96.5		1.94	-----		-----	
1823	E2193-B	-----		-----	93.662		-0.48	
1866	E2193-A	95.2		-1.36	-----		-----	
1868		-----		-----	-----		-----	
7006	E2193-B	-----		-----	94.77		2.34	
9005	E2193-B	-----		-----	93.9		0.13	
9008	E2193-B	-----		-----	93.043		-2.05	
9009	E2193-B	-----		-----	93.268		-1.48	
9057		-----		-----	-----		-----	
	normality	OK			OK			
	n	22			19			
	outliers	2			0			
	mean (n)	95.737			93.849			
	st.dev. (n)	0.6029			0.4841			
	R(calc.)	1.688			1.356			
	R(E2193:08)	1.102			1.102			

Method A: Nitrogen sparging of the sample
Method B: None Nitrogen sparging of the sample

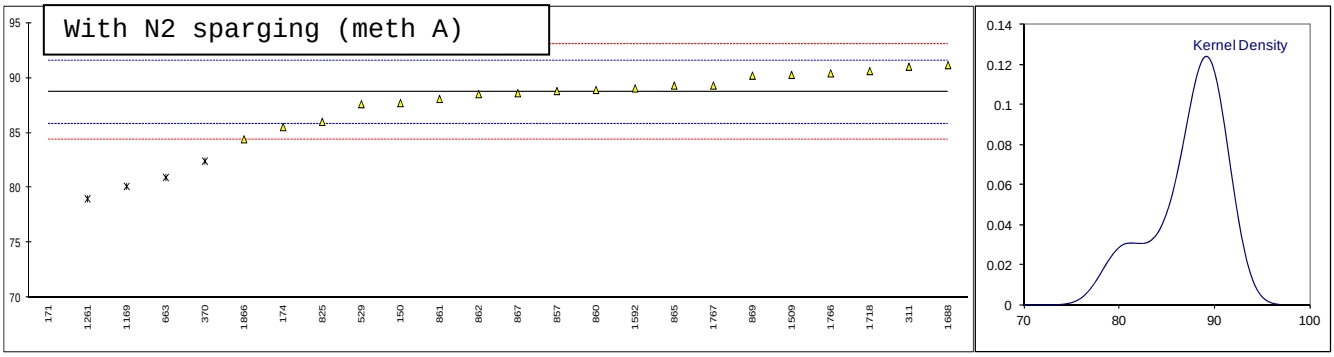

With N2 sparging (meth A)
Kernel Density

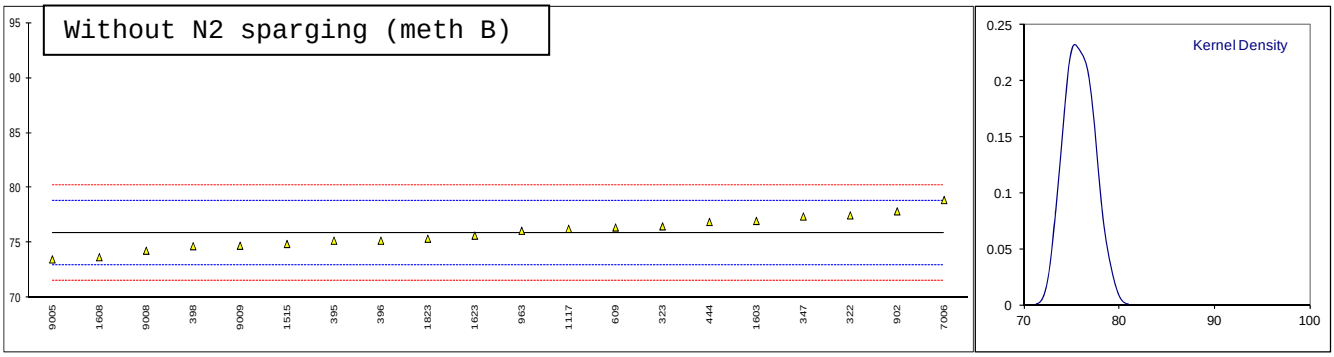

Without N2 sparging (meth B)
Kernel Density

Determination of UV Transmittance at 220 nm on sample #13195; results in %Transmittance

lab	method	Meth A	mark	z(targ)	Meth B	mark	z(targ)	remarks
120		-----		-----	-----		-----	
150	E2193-A	87.7		-0.70	-----		-----	
169		-----		-----	-----		-----	
171	E2193-A	60.540	G(0.01)	-19.49	-----		-----	
174	E2193-A	85.52		-2.21	-----		-----	
311	E2193-A	91.01		1.59	-----		-----	
322	E2193-B	-----		-----	77.5		1.10	
323	E2193-B	-----		-----	76.5		0.41	
343		-----		-----	-----		-----	
347	E2193-B	-----		-----	77.4		1.03	
370	E2193-A	82.43	G(0.05)	-4.34	-----		-----	
395	E2193-B	-----		-----	75.2		-0.49	
396	E2193-B	-----		-----	75.2		-0.49	
398	INH-2902	-----		-----	74.7		-0.83	
444	E2193-B	-----		-----	76.9		0.69	
528		-----		-----	-----		-----	
529	E2193-A	87.606		-0.76	-----		-----	
551		-----		-----	-----		-----	
557		-----		-----	-----		-----	
558		-----		-----	-----		-----	
609	E2193-B	-----		-----	76.4		0.34	
657		-----		-----	-----		-----	
663	E2193-A	80.94	DG(0.05)	-5.37	-----		-----	
825	E2193-A	86.0		-1.87	-----		-----	
857	E2193-A	88.8		0.06	-----		-----	
860	E2193-A	88.9		0.13	-----		-----	
861	E2193-A	88.08		-0.43	-----		-----	
862	E2193-A	88.52		-0.13	-----		-----	
865	E2193-A	89.3		0.41	-----		-----	
867	E2193-A	88.6		-0.07	-----		-----	
869	E2193-A	90.2		1.03	-----		-----	
902	E2193-B	-----		-----	77.87		1.36	
912		-----		-----	-----		-----	
913		-----		-----	-----		-----	
962		-----		-----	-----		-----	
963	E2193-B	-----		-----	76.1		0.13	
1107		-----		-----	-----		-----	
1117	E2193-B	-----		-----	76.28		0.26	
1151		-----		-----	-----		-----	
1169	E2193-A	80.13	DG(0.05)	-5.93	-----		-----	
1217		-----		-----	-----		-----	
1261	INH-577-A	79	G(0.01)	-6.72	-----		-----	
1467		-----		-----	-----		-----	
1509	E2193-A	90.27		1.08	-----		-----	
1515	E2193-B	-----		-----	74.9		-0.70	
1557		-----		-----	-----		-----	
1592	E2193-A	89.04		0.23	-----		-----	
1603	In house	-----		-----	77		0.76	
1608	E2193-B	-----		-----	73.7		-1.53	
1623	E2193-B	-----		-----	75.66		-0.17	
1688	INH-1997	91.159		1.70	-----		-----	
1718	E2193-A	90.62		1.32	-----		-----	
1766	E2193-A	90.41		1.18	-----		-----	
1767	E2193-A	89.3		0.41	-----		-----	
1823	E2193-B	-----		-----	75.380		-0.36	
1866	E2193	84.41		-2.97	-----		-----	
1868		-----		-----	-----		-----	
7006	E2193-B	-----		-----	78.90		2.07	
9005	E2193-B	-----		-----	73.5		-1.66	
9008	E2193-B	-----		-----	74.291		-1.12	
9009	E2193-B	-----		-----	74.744		-0.80	
9057		-----		-----	-----		-----	
	normality	OK			OK			
	n	19			20			
	outliers	5			0			
	mean (n)	88.708			75.906			
	st.dev. (n)	1.8563			1.4321			
	R(calc.)	5.198			4.010			
	R(E2193:08)	4.047			4.047			

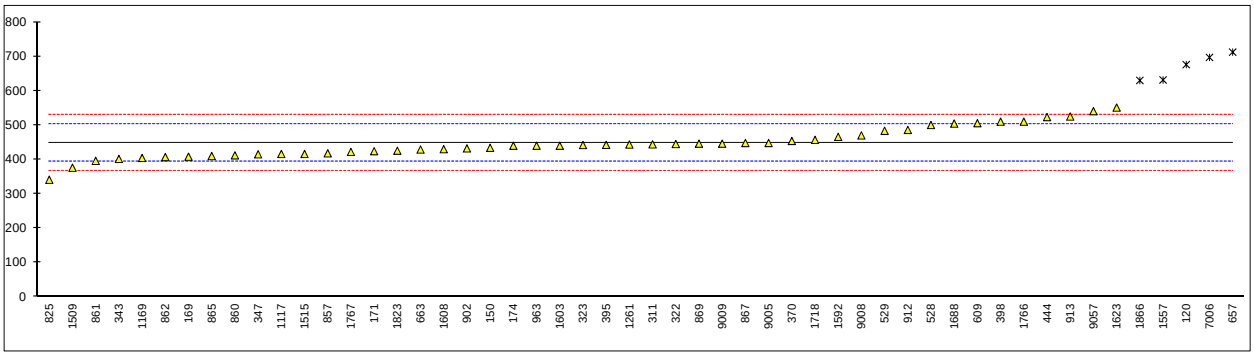
Method A: Nitrogen sparging of the sample
Method B: None Nitrogen sparging of the sample

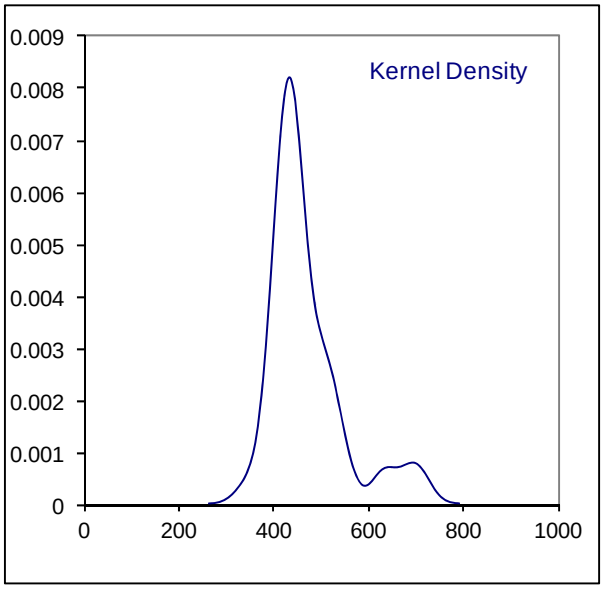

With N2 sparging (meth A)
95
90
85
80
75
70
171
1261
1169
663
370
1866
174
825
529
150
861
862
867
857
860
1592
865
1767
869
1509
1766
1718
311
1688
Kernel Density
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
70
80
90
100


Without N2 sparging (meth B)
95
90
85
80
75
70
9005
1608
9008
398
9009
1515
395
396
1823
1623
963
1117
609
323
444
1603
347
322
902
7006
Kernel Density
0.25
0.2
0.15
0.1
0.05
0
70
80
90
100

Determination of Water on sample #13195; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120	E1064	676	G(0.01)	8.36	
150	E1064	434		-0.49	
169	E1064	408	C	-1.44	First reported 0.0408
171	E1064	424.1		-0.85	
174	E1064	440		-0.27	
311	E1064	444		-0.13	
322	E1064	445		-0.09	
323	E1064	442		-0.20	
343	E1064	401.6		-1.68	
347	E1064	415		-1.19	
370	E1064	454		0.24	
395	E1064	442.5		-0.18	
396		-----		-----	
398	E1064	510	C	2.29	First reported 0.0510
444	E203	523.4		2.78	
528	E1064	500.2		1.93	
529	E1064	483.42		1.32	
551		-----		-----	
557		-----		-----	
558		-----		-----	
609	E1064	505.65		2.13	
657	E1064	712.35	G(0.05)	9.70	
663	E1064	429.0		-0.67	
825	E1064	341		-3.89	
857	E1064	418		-1.08	
860	E1064	412		-1.30	
861	E1064	396		-1.88	
862	E1064	407		-1.48	
865	E1064	410		-1.37	
867	E1064	448		0.02	
869	E1064	446		-0.05	
902	E1064	432.3		-0.55	
912	E1064	486		1.41	
913	E1064	525		2.84	
962		-----		-----	
963	E1064	440		-0.27	
1107		-----		-----	
1117	D4672	416		-1.15	
1151		-----		-----	
1169	E1064	404.3		-1.58	
1217		-----		-----	
1261	E1064	443.5		-0.14	
1467		-----		-----	
1509	E1064	376		-2.61	
1515	E1064	416		-1.15	
1557	INH-051	631.4	C,G(0.01)	6.73	First reported 1089.7
1592	E1064	465.8		0.67	
1603	in house	440	C	-0.27	First reported 0.0440
1608	E1064	430		-0.64	
1623	E203	551.0		3.79	
1688	E1064	504.45		2.09	
1718	E1064	457.0		0.35	
1766	E1064	510	C	2.29	First reported 0.0510
1767	E1064	422		-0.93	
1823	E1064	425.5		-0.80	
1866	E1064	630	G(0.01)	6.68	
1868		-----		-----	
7006	E203	697.0	G(0.05)	9.13	
9005	E1064	448		0.02	
9008	E1064	470		0.83	
9009	E1064	446		-0.05	
9057	INH-272	540.55		3.41	
	normality	not OK			
	n	47			
	outliers	5			
	mean (n)	447.43			
	st.dev. (n)	43.729			
	R(calc.)	122.44			
	R(E1064:12)	76.51			


800
700
600
500
400
300
200
100
0
825 1509 861 343 1169 862 169 865 860 347 1117 1515 857 1767 171 1823 663 1608 902 150 174 963 1603 323 395 1261 311 322 869 9009 867 9005 370 1718 1592 9008 529 912 528 1688 609 398 1766 444 913 9057 1623 1866 1557 120 7006 657


Kernel Density
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
0
200
400
600
800
1000

APPENDIX 2

Number of participants per country

2 laboratories in	BELGIUM
3 laboratories in	BRAZIL
1 laboratory in	CANADA
1 laboratory in	GERMANY
2 laboratories in	INDIA
1 laboratory in	IRAN
3 laboratories in	ITALY
1 laboratory in	KOREA
2 laboratories in	KUWAIT
1 laboratory in	LITHUANIA
2 laboratories in	MALAYSIA
2 laboratories in	MEXICO
11 laboratories in	P.R. of CHINA
9 laboratories in	SAUDI ARABIA
1 laboratory in	SERBIA
3 laboratories in	SINGAPORE
2 laboratories in	SPAIN
1 laboratory in	THAILAND
4 laboratories in	THE NETHERLANDS
1 laboratory in	TURKEY
7 laboratories in	U.S.A.
1 laboratory in	UNITED KINGDOM
1 laboratory in	VENEZUELA

APPENDIX 3

Abbreviations:

C	= final result after checking of first reported suspect result
D(0.01)	= outlier in Dixon's outlier test
D(0.05)	= straggler in Dixon's outlier test
G(0.01)	= outlier in Grubbs' outlier test
G(0.05)	= straggler in Grubbs' outlier test
DG(0.01)	= outlier in Double Grubbs' outlier test
DG(0.05)	= straggler in Double Grubbs' outlier test
on db	= on dry basis
ex	= excluded from calculations
E	= probably error in calculations
U	= probably reported in different unit
n.a.	= not applicable
fr.	= first reported
W	= withdrawn on request of the participant

Literature:

1 iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, January 2010
2 ASTM E178-02
3 ASTM E1301-03
4 ISO 13528-05
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6 ISO 5725, parts 1-6, 1994
7 M. Thompson and R. Wood, J. AOAC Int, 76, 926, (1993)
8 W.J. Youden and E.H. Steiner, Statistical Manual of the AOAC, (1975)
9 IP 367/96
10 DIN 38402 T41/42
11 P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
12 J.N. Miller, Analyst, 118, 455, (1993)
13 W. Horwitz and R. Albert, J. AOAC Int., Vol. 79, 3, p. 589, (1996)
14 Analytical Methods Committee Technical brief, No4 January 2001.
15 The Royal Society of Chemistry 2002, Analyst 2002, 127 page 1359-1364, P.J. Lowthian and M. Thompson (see http://www.rsc.org/suppdata/an/b2/b205600n/).