Results of Proficiency Test
Mono Ethylene Glycol (MEG)
October 2017

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

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1 INTRODUCTION

Since 1994, the Institute for Interlaboratory Studies organizes a proficiency scheme for Mono Ethylene Glycol (MEG) every year. During the annual proficiency test program of 2017/2018, it was decided to continue this proficiency test on Mono Ethylene Glycol analyses according to the latest applicable version of ASTM E202 (Standard test methods for analysis of Ethylene and Propylene Glycols).
In this interlaboratory study, 65 laboratories from 26 different countries did register for participation. See appendix 2 for the number of participants per country. In this report, the results of the 2017 proficiency test are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organiser of this proficiency test (PT). Sample analyses for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC 17025 accredited laboratory. To get maximum information from this study, it was decided to send a sample for the main round (1x1L MEG, labelled #17205) and a sample for UV transmittance only (1x0.1L MEG, labelled #17206). The participants were requested to report rounded and unrounded test results. The unrounded test results were preferably used for statistical evaluation.

2.1 ACCREDITATION

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, is accredited in agreement with ISO/IEC 17043:2010 (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This proficiency test 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 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 March 2017 (iis-protocol, version 3.4). This protocol is electronically available through the iis website www.iisnl.com, from the FAQ page.

2.3 CONFIDENTIALITY STATEMENT

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

2.4 SAMPLES

The necessary bulk material for the main round, 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. After homogenization, 90 amber glass bottles of 1 L (labelled #17205) were filled. The homogeneity of the subsamples #17205 was checked by determination of Density in accordance with ASTM D4052 and water in accordance with ASTM E1064, on 8 stratified randomly selected samples.

	Density at 20°C in kg/L	*Water in %M/M*
sample #17205-1	1.11333	0.025
sample #17205-2	1.11334	0.025
sample #17205-3	1.11333	0.026
sample #17205-4	1.11333	0.025
sample #17205-5	1.11333	0.026
sample #17205-6	1.11333	0.025
sample #17205-7	1.11333	0.026
sample #17205-8	1.11333	0.026

table 1: homogeneity test results of subsamples #17205

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

	Density at 20°C in kg/L	*Water in %M/M*
r (observed)	0.00001	0.001
reference test method	ISO12185:96	E1064:16
0.3 * R (ref. test method)	0.00015	0.001

table 2: evaluation of the repeatabilities of subsamples #17206

The calculated repeatabilities are in agreement with 0.3 times the corresponding reproducibility of the reference test method. Therefore, homogeneity of the subsamples #17205 was assumed.

For the UV sample, the necessary bulk material, approximately 10 litre of MEG polyester grade was obtained from a local production plant. After homogenization, 90 amber glass bottles of 100 mL (labelled #17206) were filled. The homogeneity of the subsamples #17206 was checked by determination of UV transmission at 220 and 250 nm in accordance with ASTM E2193 method B, on 7 stratified randomly selected samples.

	UV 250 nm in %T	*UV 275 nm in %T*
sample #17206-1	79.5	89.9
sample #17206-2	79.5	89.9
sample #17206-3	79.3	89.8
sample #17206-4	79.5	89.9
sample #17206-5	79.4	89.9
sample #17206-6	79.2	89.8
sample #17206-7	79.4	89.9

table 3: homogeneity test results of subsamples #17206

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

	UV 250 nm in %T	*UV 275 nm in %T*
r (observed)	0.32	0.14
reference test method	E2193:16 (B)	E2193:16 (B)
0.3 * R (ref. test method)	0.33	0.63

table 4: evaluation of the repeatabilities of subsamples #17206

The calculated repeatabilities are in agreement with 0.3 times the corresponding reproducibility of the reference test method. Therefore, homogeneity of the subsamples #17206 was assumed.

To each of the participating laboratories 2 bottles (1*1 L bottle, labelled #17205 and 1*100 mL bottle, labelled #17206), were sent on October 4, 2017. An SDS was added to the sample package.

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 (E2679 and D1613), Aldehydes as Acetaldehyde, Appearance, Ash, Chloride as Cl, Colour Pt/Co (D1209 and D5386), Density at 20°C, Diethylene Glycol, Distillation (Initial Boiling Point, 50% recovered and Dry Point), Iron as Fe, Miscibility, Purity and Specific Gravity at 20/20°C and Water on sample #17205.
On sample #17206 was requested to determine UV Transmittance (at 350, 275, 250 and 220 nm).

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

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

3 RESULTS

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

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

3.1 STATISTICS

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of March 2017 (iis-protocol, version 3.4).
For the statistical evaluation, the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as '<…' or '>…' were not used in the statistical evaluation.

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

According to ISO 5725 the original test results per determination were submitted to Dixon's, Grubbs' and/or Rosner's outlier tests. Outliers are marked by D(0.01) for the Dixon's test, by G(0.01) or DG(0.01) for the Grubbs' test and by R(0.01) for the Rosner's test. Stragglers are marked by D(0.05) for the Dixon's test, by G(0.05) or DG(0.05) for the Grubbs' test and by R(0.05) for the Rosner's test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

For each assigned value, the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirement based on the target reproducibility in accordance with ISO13528. 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 visualize the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported test results are plotted. The corresponding laboratory numbers are on the X-axis.

The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected reference test method. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle.

Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms. Also, a normal Gauss curve 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 variation 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 according to:

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

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

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

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

4 EVALUATION

In this proficiency test, no major problems were encountered with the dispatch of the samples. Three participants did not report any test results and seven other participants did report test results after the final reporting date. Not all participants were able to report all requested parameters. Finally, 62 participants did report 880 numerical test results. Observed were 37 outlying test results, which is 4.2%. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

4.1 EVALUATION PER SAMPLE AND PER TEST

In this section, the results are discussed per sample and per test.
In the iis PT reports, ASTM test methods are referred to with a number (e.g. D1209) and an added designation for the year that the test method was adopted or revised (e.g. D1209:05). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D1209:05(2011)). In the tables of Appendix 1 only the test method number and year of adoption or revision will be used.

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

Sample #17205

Acidity: The determination according ASTM E2679 was very problematic. No statistical outliers were observed. However, the calculated reproducibility after rejection is not at all in agreement with the strict precision data of ASTM E2679:09(2016)e1.

The determination according ASTM D1613 was 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 D1613:17.

Aldehydes: 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 E2313:15.

Appearance: The majority of the participants agreed that the appearance was a Pass. A standardized method is available for Appearance since 2009, being ASTM E2680:16. However, not all reporting participants did report according this method. Some participants, even some performing ASTM E2680, reported an appearance ‘bright and clear’, ‘clear and free’ or just ‘clear’.

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

Chloride: This determination was very problematic at the low concentration of 0.02 mg/kg. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM E2469:16.

Colour Pt/Co D1209: The determination was not problematic. Three statistical outliers were observed and one test result was excluded for reporting the automated method ASTM D5386. However, the calculated reproducibility after rejection of the suspect data is in good agreement with the requirements of ASTM D1209:05(2011).

Colour Pt/Co D5386: The determination was 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 D5386:16.

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

Diethylene Glycol: This determination was problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the estimated requirements of ASTM E2409:13.

Distillation: This determination was not problematic. No statistical outliers were observed. All three calculated reproducibilities are in agreement with the requirements of ASTM D1078:11.
From the reported test results of the 50% recovered, it appeared that sixteen participants obviously did not correct the results for barometric pressure and thermometer inaccuracy as described in ASTM D1078:11 (paragraph 11.1.3 and 11.1.4).

Iron: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the estimated requirements of ASTM E1615:16.

Miscibility with water: All reporting participants agreed about the miscibility of sample #17205 to be 'passes test'.

Purity: Regretfully, no reproducibility data for purity is mentioned in ASTM E2409:13. Therefore no significant conclusions were drawn.
The calculated reproducibility of the 2017 PT is similar to the reproducibility of the 2016 PT (0.090 vs 0.085).

Specific Gravity: This determination was 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 E202:12.

Water: This determination was very problematic. Five statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not at all in agreement with the requirements of ASTM E1064:16.

Sample #17206:

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, regretfully only five participants reported tests results. For the transmittance at 250 nm only three test results were reported, therefore no significant conclusions were drawn. For the other three transmittances, in total 2 statistical outliers were observed. The calculated reproducibilities of the transmittance at 275 nm and 220 nm are not in agreement with the requirements of E2193:16 procedure A, while the calculated reproducibility of the transmittance at 350 nm is in agreement with the requirements.
For method B, this determination was problematic for a number of laboratories. In total nine statistical outliers were observed. The calculated reproducibilities of the transmittance at 350 nm and 220 nm are in agreement with the requirements of E2193:16 procedure B, while the calculated reproducibilities of the transmittance at 275 nm and 250 nm are not in agreement with these requirements.

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 (lit.)
Acidity as Acetic Acid (E2679)	mg/kg	7	1.78	3.14	0.90
Acidity as Acetic Acid (D1613)	mg/kg	48	6.73	5.63	14
Aldehydes as Acetaldehyde	mg/kg	36	35.67	7.67	30.68
Appearance		54	Pass	n.a.	n.a.
Ash	%M/M	23	0.0005	0.0021	(0.005)
Chloride as Cl	mg/kg	14	0.019	0.041	0.016
Colour D1209 manual	---	30	2.1	2.0	7
Colour D5386 automated	---	32	2.0	1.4	4.9
Density at 20°C	kg/L	55	1.1134	0.0004	0.0005
Diethylene Glycol	mg/kg	49	329	104	84
Initial Boiling Point	°C	48	196.8	1.2	3.1
50% recovered	°C	46	197.5	0.9	1.4
Dry Point	°C	46	198.3	1.2	2.1
Iron as Fe	mg/kg	46	0.107	0.056	0.116
Miscibility with water	---	30	passes test	n.a.	n.a.
Purity	%M/M	45	99.903	0.090	n.a.
Specific Gravity 20/20°C	---	52	1.1154	0.0004	0.0005
Water	mg/kg	55	289	94	49
UV Transmittance at 350 nm (N_2)	%T	4	99.44	0.96	0.94
UV Transmittance at 275 nm (N_2)	%T	4	90.86	1.14	1.10
UV Transmittance at 250 nm (N_2)	%T	3	80.54	n.a.	(2.06)
UV Transmittance at 220 nm (N_2)	%T	5	81.28	14.05	9.68
UV Transmittance at 350 nm	%T	50	99.44	1.13	1.15
UV Transmittance at 275 nm	%T	48	90.60	2.44	2.11
UV Transmittance at 250 nm	%T	46	79.87	1.37	1.10
UV Transmittance at 220 nm	%T	50	71.17	3.69	4.05

table 5: reproducibilities of samples #17205 and #17206

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 2017 WITH PREVIOUS PTS

	October 2017	*October 2016*	*October 2015*	*October 2014*	*October 2013*
Number of reporting labs	62	59	53	52	54
Number of results reported	880	808	751	766	785
Statistical outliers	37	46	14	31	40
Percentage outliers	4.2%	5.7%	1.9%	4.0%	5.1%

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 2017	*October 2016*	*October 2015*	*October 2014*	*October 2013*
Acidity as Acetic Acid (E2679)	--	--	--	--	--
Acidity as Acetic Acid (D1613)	++	++	++	++	n.a.
Aldehydes as Acetaldehyde	++	++	++	+	++
Ash	(++)	(++)	(++)	(++)	(+/-)
Chloride as Cl	--	--	--	--	+/-
Colour D1209 manual	++	++	++	++	++
Colour D5368 automated	++	++	+	++	++
Density at 20°C	+	++	+	+	++
Diethylene Glycol	-	--	--	-	--
Initial Boiling Point	++	++	++	++	++
50% recovered	+	++	++	++	++
Dry Point	+	++	++	++	++
Iron as Fe	+	+	+	-	+/-
Purity	n.e.	n.e.	n.e.	n.a.	--
Specific Gravity 20/20°C	+	++	++	+	++
Water	--	+/-	--	--	--
UV Transmittance at 350 nm	+/-	++	+	+	++
UV Transmittance at 275 nm	-	+	-	-	++
UV Transmittance at 250 nm	-	-	-	-	+/-
UV Transmittance at 220 nm	+	+	--	++	+

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:

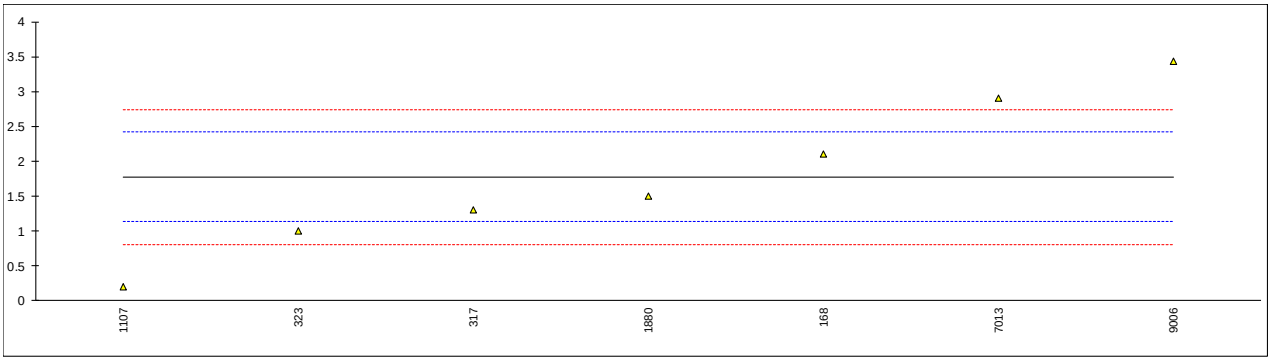
- ++: group performed much better than the standard
- + : group performed better than the standard
- +/-: group performance equals the standard
- - : group performed worse than the standard
- -- : group performed much worse than the standard

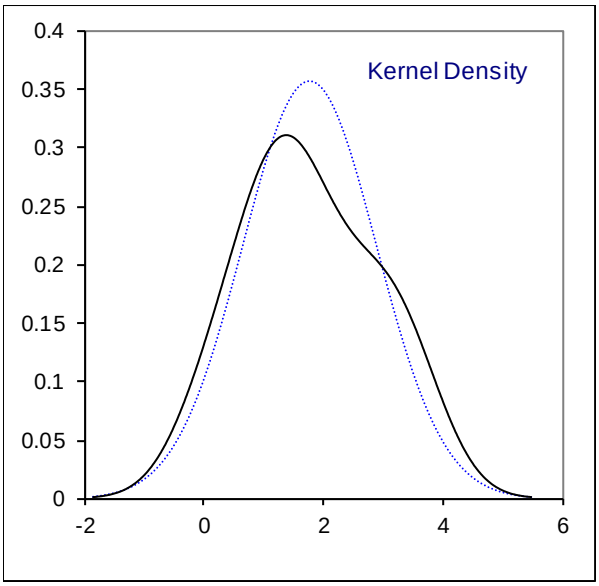
APPENDIX 1

Determination of Acidity as Acetic Acid (E2679) on sample #17205; results in mg/kg

lab	method	value	mark	z(targ)	remarks
150		-----		-----	
168	E2679	2.1		1.01	
169		-----		-----	
171		-----		-----	
174		-----		-----	
273		-----		-----	
311		-----		-----	
317	E2679	1.3		-1.49	
322		-----		-----	
323	E2679	1.0		-2.42	
343		-----		-----	
347		-----		-----	
360		-----		-----	
370		-----		-----	
395		-----		-----	
396		-----		-----	
444		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
557		-----		-----	
558		-----		-----	
609		-----		-----	
610		-----		-----	
657		-----		-----	
663		-----		-----	
786		-----		-----	
825		-----		-----	
848		-----		-----	
852		-----		-----	
857		-----		-----	
860		-----		-----	
861		-----		-----	
862		-----		-----	
865		-----		-----	
869		-----		-----	
886		-----		-----	
902		-----		-----	
912		-----		-----	
913		-----		-----	
962		-----		-----	
963		-----		-----	
1107	E2679	0.2		-4.91	
1117		-----		-----	
1151		-----		-----	
1217		-----		-----	
1261		-----		-----	
1467		-----		-----	
1509		-----		-----	
1515		-----		-----	
1603		-----		-----	
1608		-----		-----	
1623		-----		-----	
1718		-----		-----	
1823		-----		-----	
1866		-----		-----	
1868		-----		-----	
1880	E2679	1.5		-0.86	
1954		-----		-----	
7006		-----		-----	
7013	E2679	2.9		3.50	
9006	E2679	3.44		5.18	
9008		-----		-----	
9009		-----		-----	
9014		-----		-----	

normality	unknown
n	7
outliers	0
mean (n)	1.777
st.dev. (n)	1.1200
R(calc.)	3.136
st.dev.(E2679:09)	0.3212
R(E2679:09)	0.899

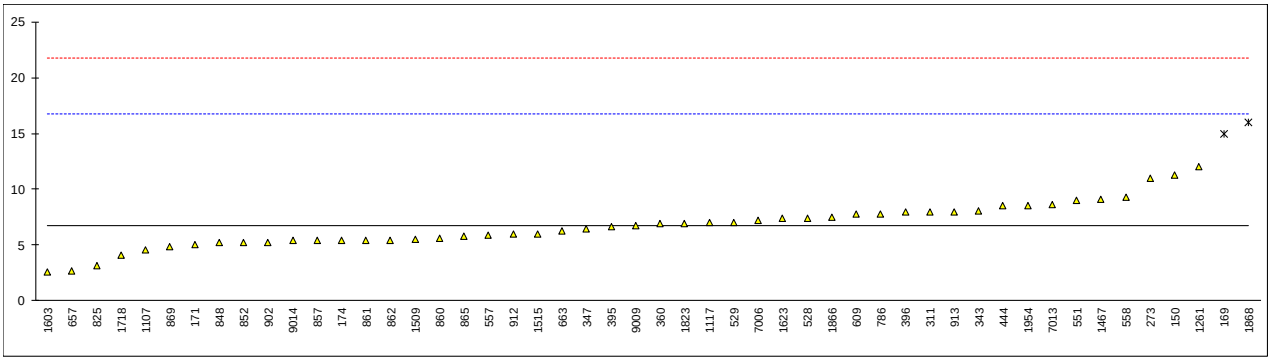


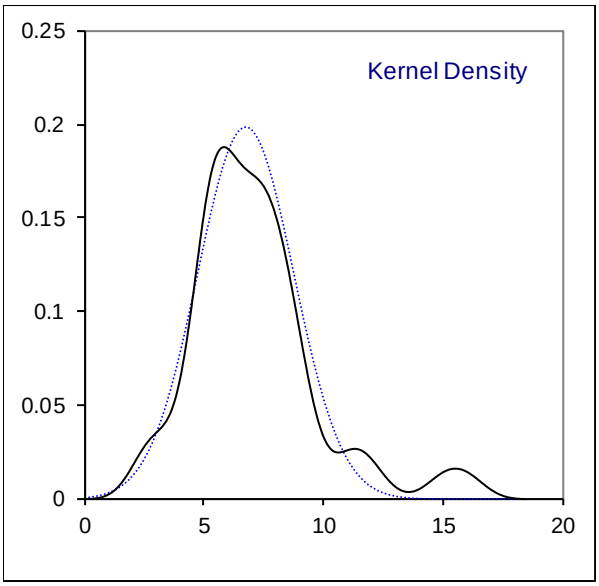


Determination of Acidity as Acetic Acid (D1613) on sample #17205; results in mg/kg

lab	method	value	mark	z(targ)	remarks
150	D1613	11.3	C	0.91	first reported: 0.011
168		-----		-----	
169	D1613	15.0	R(0.01)	1.65	
171	D1613	5		-0.35	
174	D1613	5.4		-0.27	
273	D1613	11		0.85	
311	D1613	8		0.25	
317		-----		-----	
322		-----		-----	
323		-----		-----	
343	D1613	8.1		0.27	
347	D1613	6.5		-0.05	
360	D1613	6.90		0.03	
370		-----		-----	
395	D1613	6.66		-0.01	
396	D1613	8		0.25	
444	D1613	8.5		0.35	
528	D1613	7.45		0.14	
529	D1613	7.0015		0.05	
551	D1613	9		0.45	
557	D1613	5.8887285		-0.17	
558	D1613	9.3		0.51	
609	D1613	7.8		0.21	
610		-----		-----	
657	D1613	2.7268		-0.80	
663	D1613	6.3		-0.09	
786	D1613	7.8		0.21	
825	D1613	3.2	C	-0.71	first reported: 30.2
848	D1613	5.2		-0.31	
852	D1613	5.2		-0.31	
857	D1613	5.4		-0.27	
860	D1613	5.6		-0.23	
861	D1613	5.4		-0.27	
862	D1613	5.4		-0.27	
865	D1613	5.8		-0.19	
869	D1613	4.9		-0.37	
886		-----		-----	
902	D1613	5.2		-0.31	
912	D1613	6		-0.15	
913	D1613	8		0.25	
962		-----		-----	
963		-----		-----	
1107	D1613	4.6		-0.43	
1117	D1613	7		0.05	
1151		-----		-----	
1217		-----		-----	
1261	D1613	12		1.05	
1467	D1613	9.06		0.47	
1509	D1613	5.5		-0.25	
1515	D1613	6.0		-0.15	
1603	In house	2.6		-0.83	
1608		-----		-----	
1623	D1613	7.43		0.14	
1718	D1613	4.1		-0.53	
1823	D1613	6.9		0.03	
1866	D1613	7.54		0.16	
1868	D1613	16	R(0.01)	1.85	
1880		-----		-----	
1954	D1613	8.556		0.36	
7006	D1613	7.2		0.09	
7013	D1613	8.62		0.38	
9006		-----		-----	
9008		-----		-----	
9009	D1613	6.70		-0.01	
9014		5.39		-0.27	

normality	OK
n	48
outliers	2
mean (n)	6.732
st.dev. (n)	2.0112
R(calc.)	5.631
st.dev.(D1613:17)	5.0000
R(D1613:17)	14

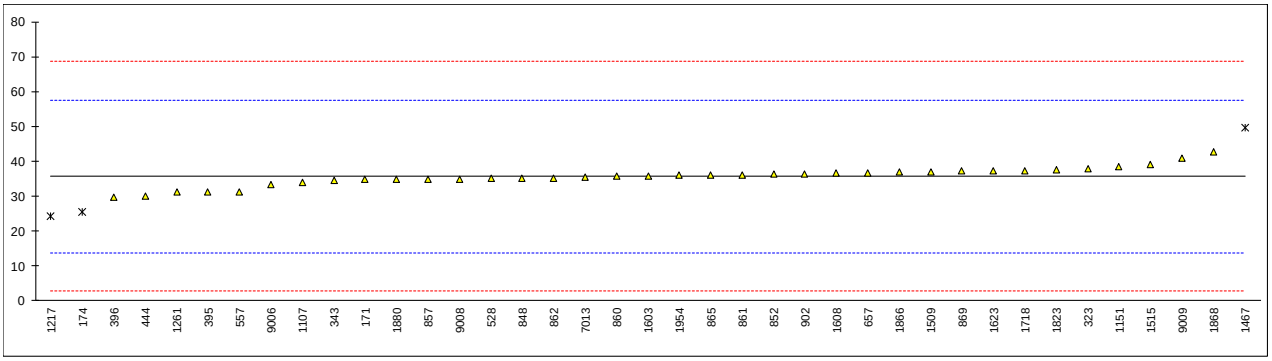


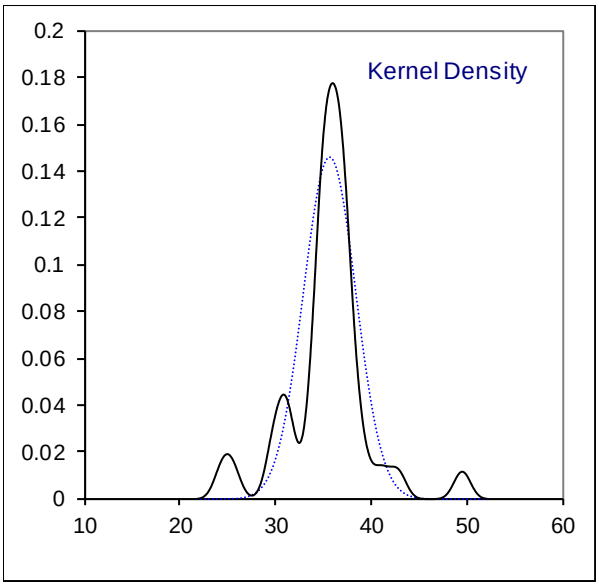


Determination of Aldehydes as Acetaldehyde on sample #17205; results in mg/kg

lab	method	value	mark	z(targ)	remarks
150		-----		-----	
168		-----		-----	
169		-----		-----	
171	E2313	34.8		-0.08	
174	E2313	25.5	R(0.05)	-0.93	
273		-----		-----	
311		-----		-----	
317		-----		-----	
322		-----		-----	
323	E2313	37.8		0.19	
343	E2313	34.5		-0.11	
347		-----		-----	
360		-----		-----	
370		-----		-----	
395	E2313	31.18		-0.41	
396	E2313	29.7		-0.54	
444	E2313	30.03		-0.51	
528	E2313	35.02		-0.06	
529		-----		-----	
551		-----		-----	
557	E2313	31.354692769		-0.39	
558		-----		-----	
609		-----		-----	
610		-----		-----	
657	E2313	36.6787		0.09	
663		-----		-----	
786		-----		-----	
825		-----		-----	
848	E2313	35.02		-0.06	
852	E2313	36.3		0.06	
857	E2313	34.9		-0.07	
860	E2313	35.8		0.01	
861	E2313	36.2		0.05	
862	E2313	35.21		-0.04	
865	E2313	36.1		0.04	
869	E2313	37.2		0.14	
886		-----		-----	
902	E2313	36.4		0.07	
912		-----		-----	
913		-----		-----	
962		-----		-----	
963		-----		-----	
1107	E2313	33.9		-0.16	
1117		-----		-----	
1151	E2313	38.465		0.26	
1217	E2313	24.4	R(0.05)	-1.03	
1261	E2313	31.1		-0.42	
1467	E2313	49.565	R(0.05)	1.27	
1509	E2313	37.01		0.12	
1515	E2313	39.14		0.32	
1603	In house	35.8		0.01	
1608	E2313	36.65		0.09	
1623	INH-63	37.35		0.15	
1718	E2313	37.41		0.16	
1823	E2313	37.54		0.17	
1866	E2313	36.97		0.12	
1868	E2313	42.8		0.65	
1880	E2313	34.84		-0.08	
1954	E2313	36.06		0.04	
7006		-----		-----	
7013	E2313	35.35		-0.03	
9006	E2313	33.5		-0.20	
9008	E2313	34.99		-0.06	
9009	E2313	41.0119		0.49	
9014		-----		-----	

normality	suspect
n	36
outliers	3
mean (n)	35.669
st.dev. (n)	2.7385
R(calc.)	7.668
st.dev.(E2313:15)	10.9579
R(E2313:15)	30.682





Determination of Appearance on sample #17205;

lab	method	value	mark	z(targ)	remarks
150	E2680	Pass		-----	
168	E2680	Clear & Bright		-----	
169	Visual	Pass		-----	
171	E2680	pass		-----	
174	Visual	clear & free		-----	
273	Visual	Bright & Clear		-----	
311	E2680	pass		-----	
317	E2680	pass		-----	
322		-----		-----	
323	E2680	C&B		-----	
343	E2680	PASS		-----	
347	E2680	Pass		-----	
360	ISO1998-2	Clear and Bright		-----	
370	E2680	pass		-----	
395	E2680	PASS		-----	
396	E2680	Pass		-----	
444	E2680	Pass		-----	
528	E2680	CFSM		-----	
529	E2680	pass		-----	
551	E2680	Pass		-----	
557	E2680	Pass		-----	
558	E2680	Pass		-----	
609	E2680	Pass		-----	
610		-----		-----	
657	E2680	Pass		-----	
663	E2680	Pass		-----	
786	D4176	Pass		-----	
825		-----		-----	
848	Visual	Bright &Clear		-----	
852	E2680	pass		-----	
857	E2680	Pass		-----	
860	E2680	Pass		-----	
861	Visual	Bright&Clear		-----	
862	E2680	PASS		-----	
865	E2680	pass		-----	
869	E2680	pass		-----	
886		-----		-----	
902	E2680	Pass		-----	
912	E2680	pass		-----	
913	E2680	CFSM		-----	
962		-----		-----	
963		-----		-----	
1107	E2680	particles		-----	
1117	D4176	pass		-----	
1151		-----		-----	
1217		pass		-----	
1261	Visual	Clear		-----	
1467	E2680	Pass		-----	
1509	E2680	Pass		-----	
1515	E2680	PASS		-----	
1603	Visual	PASS		-----	
1608	E2680	Pass		-----	
1623	INH-63	Clear		-----	
1718	D4176	Pass		-----	
1823	D4176	Pass		-----	
1866		-----		-----	
1868		-----		-----	
1880	E2680	Pass		-----	
1954	Visual	Clear Colorless liquid		-----	
7006		-----		-----	
7013	Visual	Clear		-----	
9006	E2680	pass		-----	
9008	Visual	PASS		-----	
9009	E2680	PASS		-----	
9014	E2680	Clear and Bright		-----	
	n	54			
	mean (n)	Pass			

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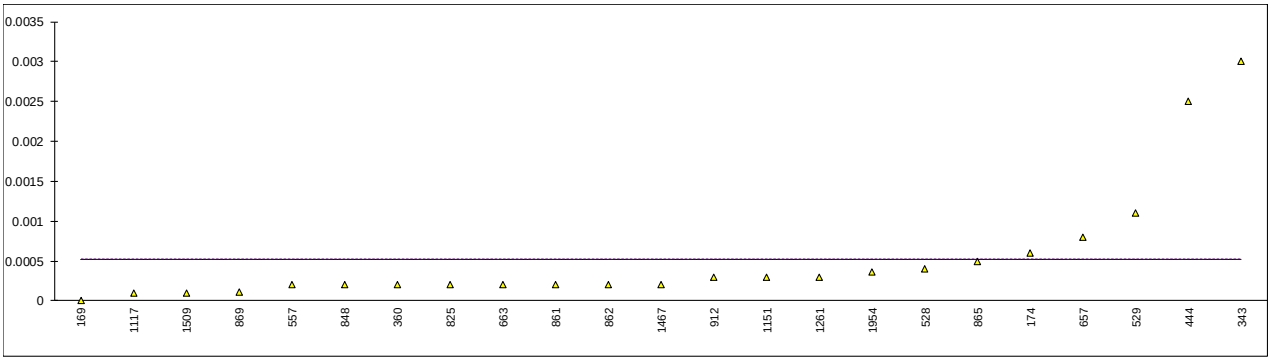
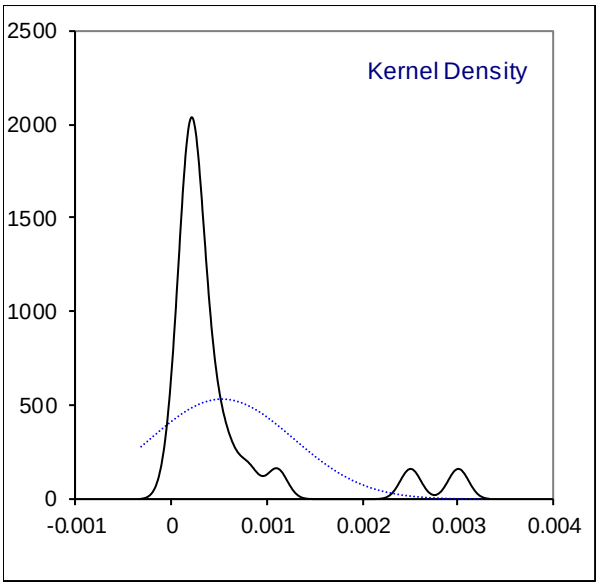
Determination of Ash on sample #17205; results in %M/M

lab	method	value	mark	z(targ)	remarks
150	D482	<0.001		-----	
168		-----		-----	
169	D482	0.000		-----	
171	D482	<0.001		-----	
174	D482	0.0006		-----	
273	D482	<0.01		-----	
311	D482	<0.001		-----	
317		-----		-----	
322		-----		-----	
323	D482	<0.0010		-----	
343	D482	0.003		-----	
347	D482	<0.001		-----	
360	ISO6245	0.0002		-----	
370	D482	<0.001		-----	
395		-----		-----	
396		-----		-----	
444	D482	0.0025		-----	
528	D482	0.0004		-----	
529	D482	0.0011		-----	
551	D482	<0,001		-----	
557	D482	0.0001993161		-----	
558		-----		-----	
609		-----		-----	
610		-----		-----	
657	D482	0.0008		-----	
663	D482	0.0002		-----	
786	D482	<0.001		-----	
825	D482	0.0002		-----	
848	D482	0.0002		-----	
852	D482	<0.001		-----	
857	D482	<0.001		-----	
860	D482	<0.001		-----	
861	D482	0.0002		-----	
862	D482	0.0002		-----	
865	D482	0.0005		-----	
869	D482	0.00011		-----	
886		-----		-----	
902	D482	<0,001		-----	
912	D482	0.0003		-----	
913	D482	<0.01		-----	
962		-----		-----	
963		-----		-----	
1107		-----		-----	
1117	D482	0.0001		-----	
1151	D482	0.0003		-----	
1217		-----		-----	
1261	D482	0.0003		-----	
1467	D482	0.0002		-----	
1509	D482	0.0001		-----	
1515		-----		-----	
1603	In house	< 0,0010		-----	
1608	D482	<0.001		-----	
1623	D482	<0.001		-----	
1718	D482	<0.001		-----	
1823		-----		-----	
1866		-----		-----	
1868		-----		-----	
1880		-----		-----	
1954	D482	0.000369		-----	
7006		-----		-----	
7013		-----		-----	
9006		-----		-----	
9008		-----		-----	
9009		-----		-----	
9014		-----		-----	

normality	not OK
n	23
outliers	0
mean (n)	0.00053
st.dev. (n)	0.000747
R(calc.)	0.00209
st.dev.(D482:13)	(0.001786)
R(D482:13)	(0.005)

Application range: 0.001 – 0.180%M/M

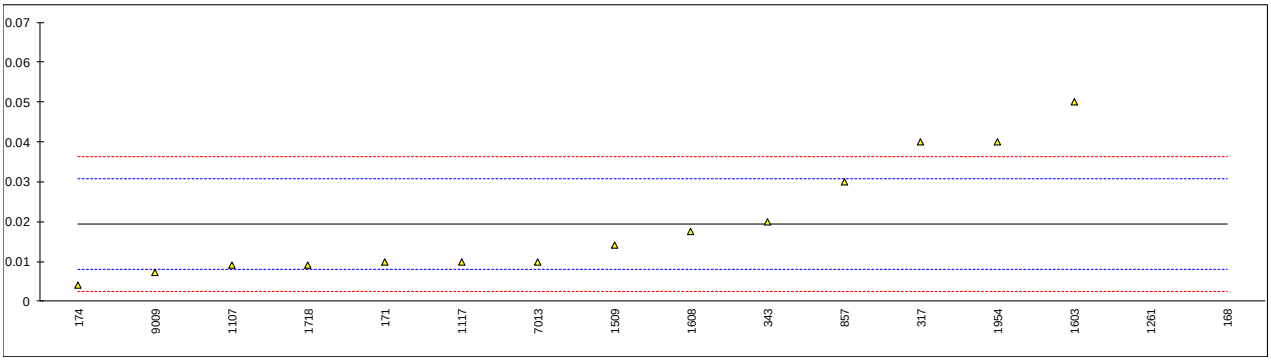


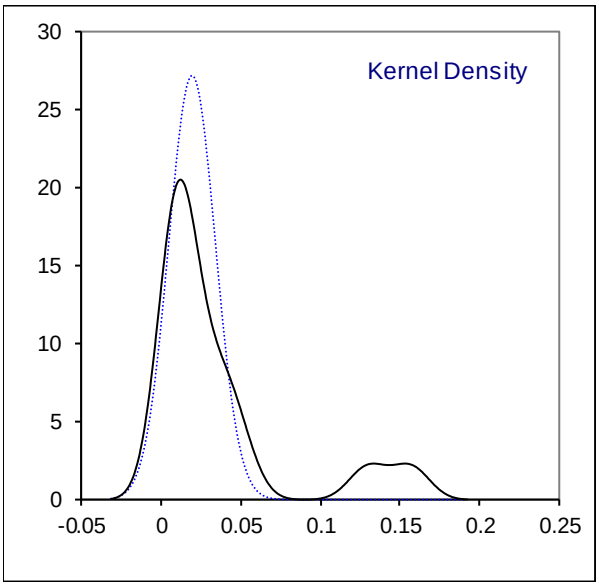


Determination of Chloride as Cl on sample #17205; results in mg/kg

lab	method	value	mark	z(targ)	remarks
150	E2469	<0.01		-----	
168	E2469	0.1568	C,G(0.05)	24.30	first reported: 0.44
169		-----		-----	
171	E2469	0.01		-1.65	
174	E2469	0.004		-2.71	
273		-----		-----	
311	E2469	<0.01		-----	
317	E2469	0.04		3.65	
322		-----		-----	
323	E2469	<0.03		-----	
343	E2469	0.02		0.12	
347		-----		-----	
360		-----		-----	
370		-----		-----	
395		-----		-----	
396		-----		-----	
444		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
557		-----		-----	
558		-----		-----	
609	E2469	<0.1		-----	
610		-----		-----	
657		-----		-----	
663		-----		-----	
786	IMPCA002	<0.25		-----	
825		-----		-----	
848		-----		-----	
852		-----		-----	
857	E2469	0.03		1.88	
860		-----		-----	
861		-----		-----	
862		-----		-----	
865	INH-001	<0.2		-----	
869		-----		-----	
886		-----		-----	
902	E2469	<0,05		-----	
912		-----		-----	
913		-----		-----	
962		-----		-----	
963		-----		-----	
1107	E2469	0.009		-1.83	
1117	E2469	0.01		-1.65	
1151		-----		-----	
1217		-----		-----	
1261	E2469	0.13	G(0.01)	19.56	
1467		-----		-----	
1509	E2469	0.0142		-0.91	
1515		-----		-----	
1603	In house	0.05		5.42	
1608	E2469	0.01745		-0.34	
1623		-----		-----	
1718	E2469	0.0090		-1.83	
1823		-----	W	-----	first reported: 0.092 (method INH-2901)
1866		-----		-----	
1868		-----		-----	
1880		-----		-----	
1954	INH-635	0.04		3.65	
7006		-----		-----	
7013	INH-635	0.01		-1.65	
9006	E2469	<0.010		-----	
9008		-----		-----	
9009	E2469	0.00723		-2.14	
9014		-----		-----	

		Only ASTM E2469:	
normality	suspect	not OK	
n	14	11	
outliers	2	2	
mean (n)	0.0193	0.0155	
st.dev. (n)	0.01466	0.01087	
R(calc.)	0.0411	0.0304	
st.dev.(E2469:16)	0.00566	0.00454	
R(E2469:16)	0.0158	0.0127	Application range: 0.01 – 1.0 mg/kg

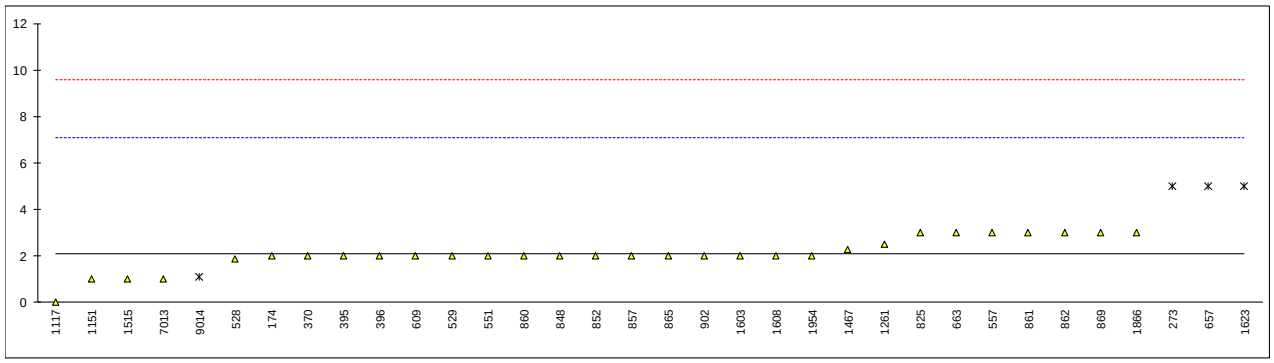


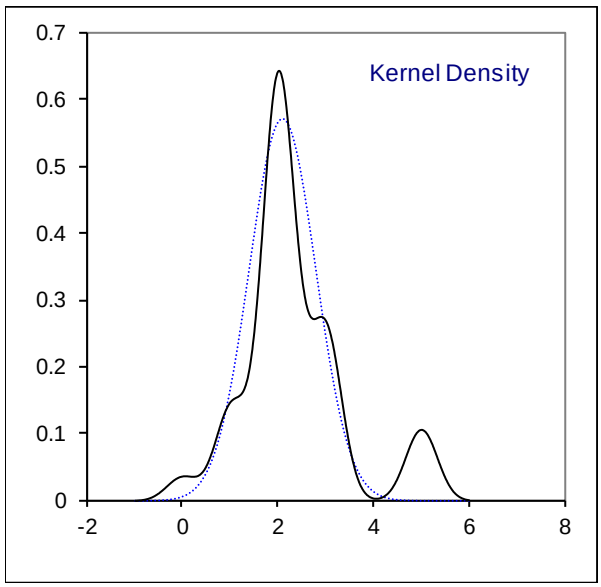


Determination of Colour Pt/Co manual (D1209) on sample #17205

lab	method	value	mark	z(targ)	remarks
150		-----		-----	
168		-----		-----	
169		-----		-----	
171		-----		-----	
174	D1209	2		-0.04	
273	D1209	5	R(0.01)	1.16	
311	D1209	<5		-----	
317	D1209	<5		-----	
322		-----		-----	
323	D1209	<5		-----	
343		-----		-----	
347		-----		-----	
360		-----		-----	
370	D1209	2		-0.04	
395	D1209	2		-0.04	
396	D1209	2		-0.04	
444		-----		-----	
528	D1209	1.9		-0.08	
529	D1209	2		-0.04	
551	D1209	2		-0.04	
557	D1209	3		0.36	
558	NBR5769	<5		-----	
609	D1209	2		-0.04	
610		-----		-----	
657	D1209	5	R(0.01)	1.16	
663	D1209	3		0.36	
786	D1209	<5		-----	
825	D1209	3		0.36	
848	D1209	2		-0.04	
852	D1209	2		-0.04	
857	D1209	2		-0.04	
860	D1209	2		-0.04	
861	D1209	3		0.36	
862	D1209	3		0.36	
865	D1209	2		-0.04	
869	D1209	3		0.36	
886	D1209	<5		-----	
902	D1209	2		-0.04	
912		-----		-----	
913		-----		-----	
962		-----		-----	
963		-----		-----	
1107		-----		-----	
1117	D1209	0		-0.84	
1151	D1209	1		-0.44	
1217		-----		-----	
1261	D1209	2.5		0.16	
1467	D1209	2.28		0.08	
1509	D1209	<5		-----	
1515	D1209	1		-0.44	
1603	In house	2		-0.04	
1608	D1209	2		-0.04	
1623	D1209	5	R(0.01)	1.16	
1718	D1209	<5		-----	
1823		-----		-----	
1866	D1209	3		0.36	
1868	D1209	<5		-----	
1880		-----		-----	
1954	D1209	2		-0.04	
7006		-----		-----	
7013	D1209	1		-0.44	
9006		-----		-----	
9008		-----		-----	
9009		-----		-----	
9014	D5386	1.1	ex	-0.40	excluded because same result was also entered in color Pt/Co D5386

normality	suspect
n	30
outliers	3 (+1ex)
mean (n)	2.09
st.dev. (n)	0.697
R(calc.)	1.95
st.dev.(D1209:05)	2.5
R(D1209:05)	7

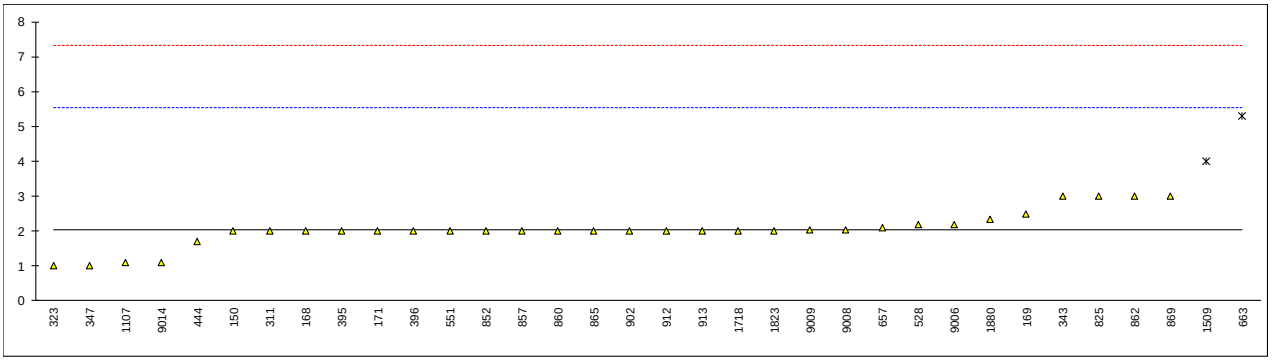


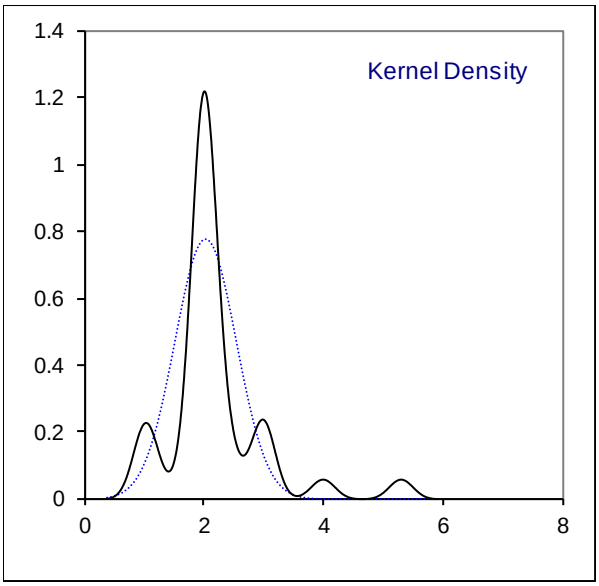


Determination of Colour Pt/Co automated (D5386) on sample #17205

lab	method	value	mark	z(targ)	remarks
150	D5386	2		-0.02	
168	D5386	2		-0.02	
169	D5386	2.5		0.26	
171	D5386	2		-0.02	
174		-----		-----	
273		-----		-----	
311	D5386	2		-0.02	
317		-----		-----	
322		-----		-----	
323	D5386	1		-0.59	
343	D5386	3		0.55	
347	D5386	1		-0.59	
360		-----		-----	
370		-----		-----	
395	D5386	2		-0.02	
396	D5386	2		-0.02	
444	D5386	1.7		-0.19	
528	D5386	2.2		0.09	
529		-----		-----	
551	D5386	2		-0.02	
557		-----		-----	
558		-----		-----	
609		-----		-----	
610		-----		-----	
657	D5386	2.11		0.04	
663	D5386	5.3	R(0.01)	1.86	
786		-----		-----	
825	D5386	3		0.55	
848		-----		-----	
852	D5386	2		-0.02	
857	D5386	2		-0.02	
860	D5386	2		-0.02	
861		-----		-----	
862	D5386	3		0.55	
865	D5386	2		-0.02	
869	D5386	3		0.55	
886		-----		-----	
902	D5386	2		-0.02	
912	D5386	2.0		-0.02	
913	D5386	2		-0.02	
962		-----		-----	
963		-----		-----	
1107	D5386	1.1		-0.54	
1117		-----		-----	
1151		-----		-----	
1217		-----		-----	
1261		-----		-----	
1467		-----		-----	
1509	D5386	4	R(0.05)	1.12	
1515		-----		-----	
1603		-----		-----	
1608		-----		-----	
1623		-----		-----	
1718	D5386	2		-0.02	
1823	D5386	2.0		-0.02	
1866		-----		-----	
1868		-----		-----	
1880	D5386	2.35		0.18	
1954		-----		-----	
7006		-----		-----	
7013		-----		-----	
9006	D5386	2.2		0.09	
9008	D5386	2.05		0.00	
9009	D5386	2.03		-0.01	
9014	D5386	1.1		-0.54	

normality	OK
n	32
outliers	2
mean (n)	2.04
st.dev. (n)	0.512
R(calc.)	1.43
st.dev.(D5386:16)	1.756
R(D5386:16)	4.92

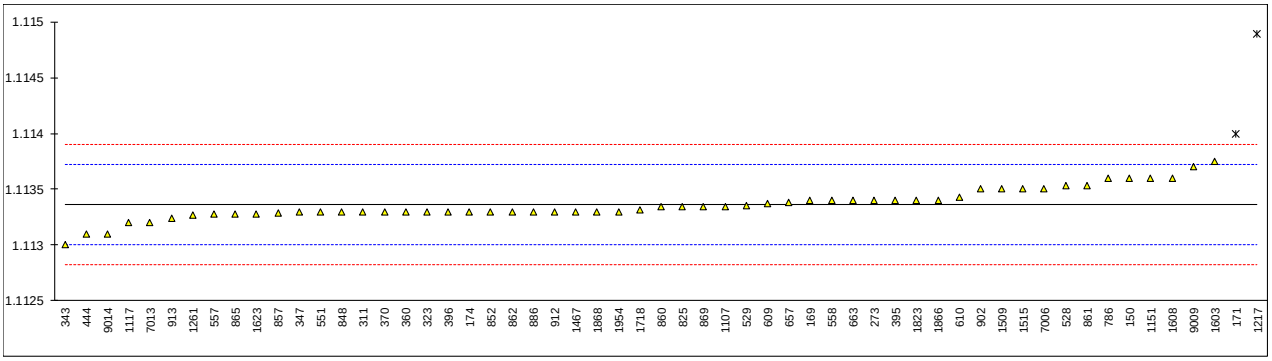


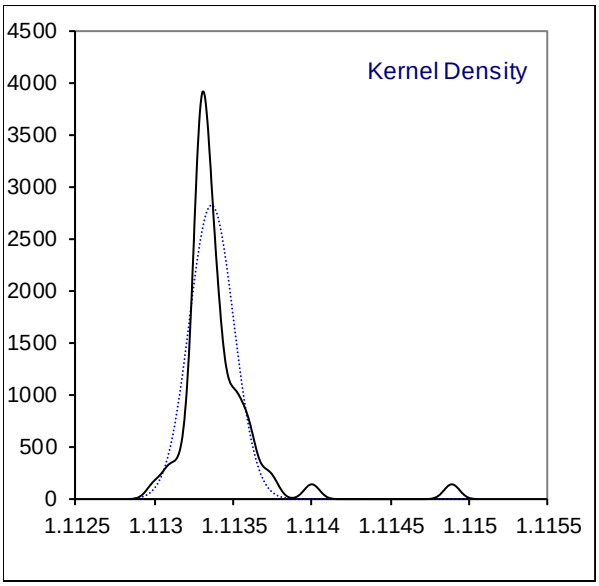


Determination of Density at 20 °C on sample #17205; results in kg/L

lab	method	value	mark	z(targ)	remarks
150	D4052	1.1136	C	1.33	first reported: 1.114
168		-----		-----	
169	D4052	1.1134		0.21	
171	D4052	1.114	R(0.01)	3.57	
174	D4052	1.1133		-0.35	
273	D4052	1.1134		0.21	
311	ISO12185	1.1133		-0.35	
317		-----		-----	
322		-----		-----	
323	D4052	1.1133		-0.35	
343	D4052	1.113		-2.03	
347	D4052	1.1133		-0.35	
360	D4052	1.1133		-0.35	
370	D4052	1.1133		-0.35	
395	D4052	1.1134		0.21	
396	D4052	1.1133		-0.35	
444	D4052	1.1131		-1.47	
528	D4052	1.11353		0.94	
529	D4052	1.11335		-0.07	
551	D4052	1.1133		-0.35	
557	D4052	1.11328		-0.46	
558	D4052	1.1134		0.21	
609	D4052	1.11337		0.04	
610	D4052	1.11343		0.38	
657	D4052	1.11338		0.10	
663	D4052	1.1134		0.21	
786	D4052	1.1136		1.33	
825	D4052	1.11334		-0.13	
848	D4052	1.1133		-0.35	
852	D4052	1.1133		-0.35	
857	D4052	1.11329		-0.41	
860	D4052	1.11334		-0.13	
861	D4052	1.11353		0.94	
862	D4052	1.1133		-0.35	
865	D4052	1.11328		-0.46	
869	D4052	1.11334		-0.13	
886	D4052	1.1133		-0.35	
902	D4052	1.1135		0.77	
912	D4052	1.1133		-0.35	
913	D4052	1.11324		-0.69	
962		-----		-----	
963		-----		-----	
1107	D4052	1.11334		-0.13	
1117	D4052	1.1132		-0.91	
1151	D4052	1.1136	C	1.33	first reported: 1.11390
1217	ISO12185	1.11489	R(0.01)	8.55	
1261	ISO12185	1.11327		-0.52	
1467	D4052	1.11330		-0.35	
1509	D4052	1.11350		0.77	
1515	D4052	1.1135		0.77	
1603	In house	1.11375		2.17	
1608	D4052	1.1136		1.33	
1623	D4052	1.11328		-0.46	
1718	D4052	1.11332		-0.24	
1823	D4052	1.1134		0.21	
1866	D4052	1.1134		0.21	
1868	D4052	1.1133		-0.35	
1880		-----		-----	
1954	D4052	1.1133		-0.35	
7006	D4052	1.1135		0.77	
7013	D4052	1.1132		-0.91	
9006		-----		-----	
9008		-----		-----	
9009	ISO12185	1.1137		1.89	
9014	D4052	1.1131		-1.47	

normality	suspect
n	55
outliers	2
mean (n)	1.11336
st.dev. (n)	0.000141
R(calc.)	0.00039
st.dev.(ISO12185:96)	0.000179
R(ISO12185:96)	0.0005

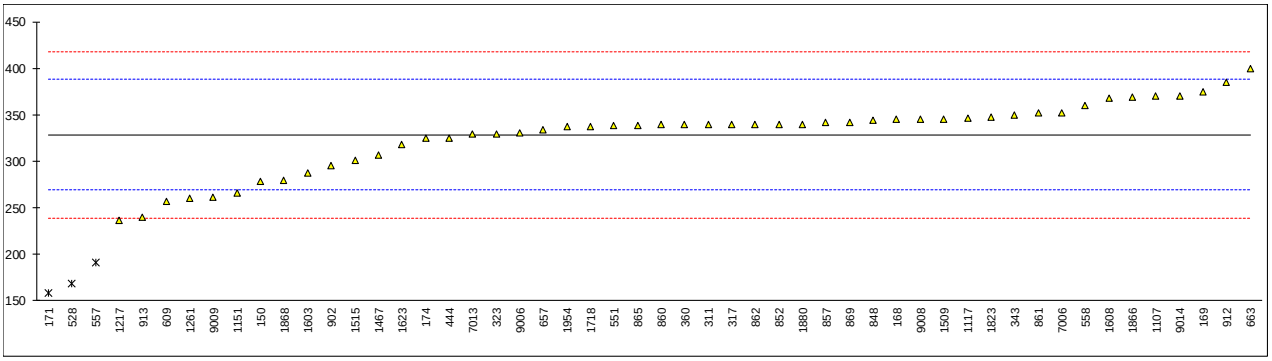


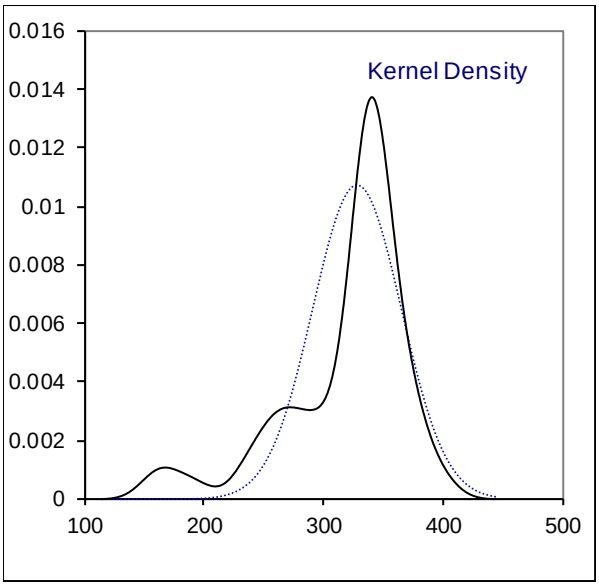


Determination of Diethylene Glycol content on sample #17205; results in mg/kg

lab	method	value	mark	z(targ)	remarks
150	E2409	279		-1.66	
168	E2409	345		0.55	
169	E2409	375		1.55	
171	E2409	159	R(0.05)	-5.68	
174	E2409	325		-0.12	
273		-----		-----	
311	INH-100	340		0.38	
317	E2409	340		0.38	
322		-----		-----	
323	E2409	330		0.05	
343	E2409	350		0.72	
347	E2409	<100	C	<-7.66	first reported: <0.01, possible false negative test result?
360	E2409	340		0.38	
370		-----		-----	
395		-----		-----	
396		-----		-----	
444	E2409	325		-0.12	
528	E2409	168.29	R(0.05)	-5.37	
529		-----		-----	
551	E2409	338		0.31	
557	E2409	191.8	C,R(0.05)	-4.58	first reported: 10
558	NBR9003	360.5		1.07	
609	E2409	257	C	-2.40	first reported: 221
610		-----		-----	
657	E2409	334		0.18	
663	E2409	399.4		2.37	
786		-----		-----	
825		-----		-----	
848	E2409	344.2		0.52	
852	E2409	340		0.38	
857	E2409	342		0.45	
860	E2409	340		0.38	
861	E2409	352		0.78	
862	E2409	340		0.38	
865	E2409	339		0.35	
869	E2409	342.2		0.45	
886		-----		-----	
902	E2409	295		-1.13	
912	E2409	385		1.89	
913	E2409	240	C	-2.97	first reported: 201
962		-----		-----	
963		-----		-----	
1107	E2409	370	C	1.39	first reported: 0.04
1117	E2409	346		0.58	
1151	E2409	266.5		-2.08	
1217	E2409	237		-3.07	
1261	E2409	260.4		-2.29	
1467	E2409	307		-0.72	
1509	E2409	345.8		0.57	
1515	E2409	300.8		-0.93	
1603	In house	287		-1.39	
1608	E2409	368		1.32	
1623	E2409	318.25		-0.35	
1718	E2409	337.1		0.28	
1823	E2409	348		0.65	
1866	E2409	369.1		1.36	
1868	E2409	280		-1.63	
1880	E2409	340		0.38	
1954	E2409	337		0.28	
7006	E2409	352		0.78	
7013	E2409	329	C	0.01	first reported: 430
9006	E2409	330.67		0.07	
9008	E2409	345		0.55	
9009	E2409	261		-2.26	
9014	E2409	370	C	1.39	first reported: 41.7

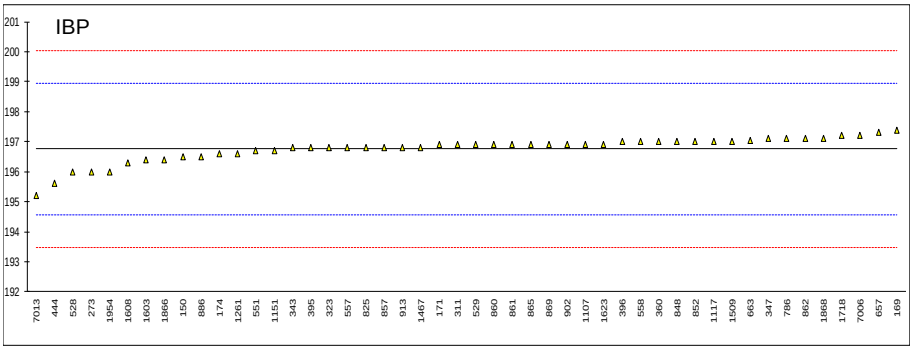
normality	OK
n	49
outliers	3
mean (n)	328.63
st.dev. (n)	37.205
R(calc.)	104.17
st.dev.(E2409:13)	29.860
R(E2409:13)	83.61

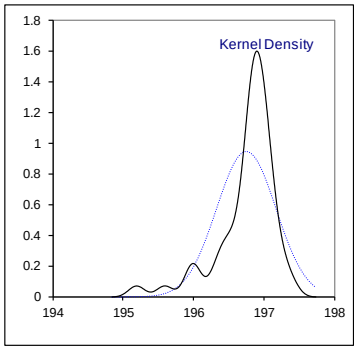


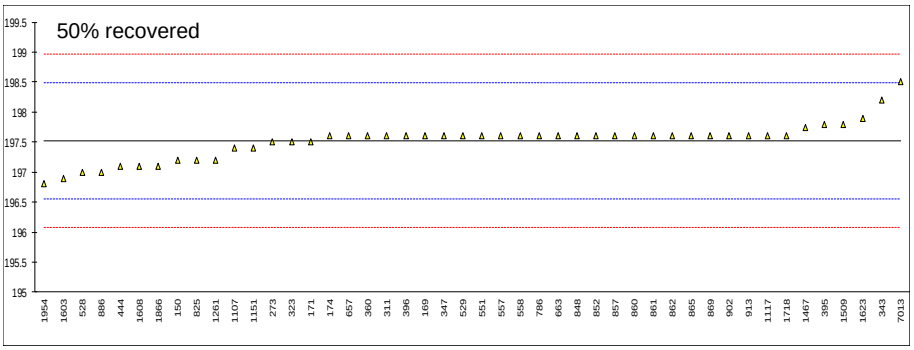


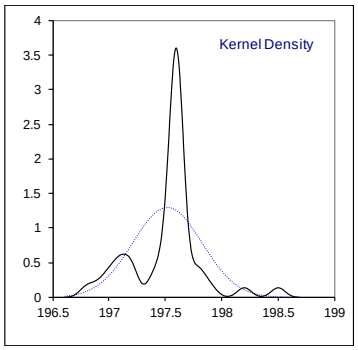
Determination of Distillation: IBP, 50% recovered, Dry Point on sample #17205; results in °C

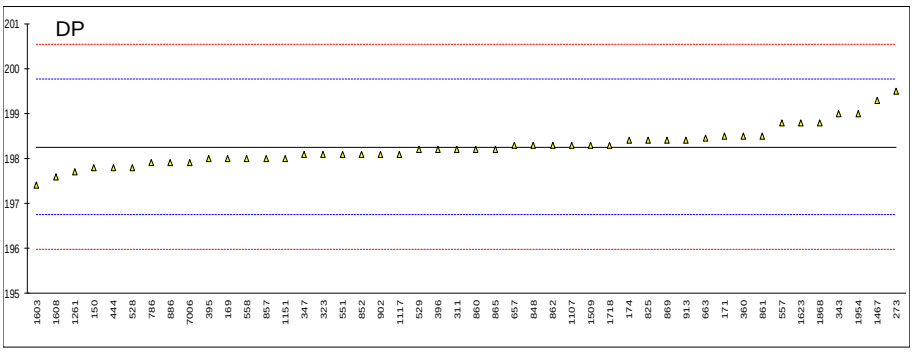
lab	method	IBP	mark	z(targ)	50% rec	mark	z(targ)	DP	mark	z(targ)
150	D1078-automated	196.5		-0.24	197.2		-0.66	197.8		-0.61
168		-----		-----	-----		-----	-----		-----
169	D1078-automated	197.4		0.58	197.6		0.17	198.0		-0.34
171	D1078-automated	196.9		0.13	197.5		-0.04	198.5		0.32
174	D1078-automated	196.6		-0.15	197.6		0.17	198.4		0.19
273	D1078-manual	196.0		-0.69	197.5		-0.04	199.5		1.64
311	D1078-automated	196.9		0.13	197.6		0.17	198.2		-0.08
317		-----		-----	-----		-----	-----		-----
322		-----		-----	-----		-----	-----		-----
323	D1078-manual	196.8		0.04	197.5		-0.04	198.1		-0.21
343	D1078-automated	196.8		0.04	198.2		1.41	199.0		0.98
347	D1078-automated	197.1		0.31	197.6		0.17	198.1		-0.21
360	D1078-manual	197.0		0.22	197.6		0.17	198.5		0.32
370		-----		-----	-----		-----	-----		-----
395		196.8		0.04	197.8		0.58	198.0		-0.34
396	D1078-manual	197.0		0.22	197.6		0.17	198.2		-0.08
444	D1078-automated	195.6		-1.06	197.1		-0.87	197.8		-0.61
528	D1078-manual	196.0		-0.69	197.0		-1.08	197.8		-0.61
529	D1078-automated	196.9		0.13	197.6		0.17	198.2		-0.08
551	D1078-automated	196.7		-0.05	197.6		0.17	198.1		-0.21
557	D1078-manual	196.8		0.04	197.6		0.17	198.8		0.71
558	NBR7125	197		0.22	197.6		0.17	198		-0.34
609		-----		-----	-----		-----	-----		-----
610		-----		-----	-----		-----	-----		-----
657	D1078-manual	197.3		0.49	197.6		0.17	198.3		0.05
663	D1078-automated	197.05		0.27	197.60		0.17	198.45		0.25
786	D1078-manual	197.1		0.31	197.6		0.17	197.9		-0.47
825		196.8		0.04	197.2		-0.66	198.4		0.19
848	D1078-manual	197.0		0.22	197.6		0.17	198.3		0.05
852	D1078-manual	197.0		0.22	197.6		0.17	198.1		-0.21
857	D1078-manual	196.8		0.04	197.6		0.17	198.0		-0.34
860	D1078-manual	196.9		0.13	197.6		0.17	198.2		-0.08
861	D1078-manual	196.9		0.13	197.6		0.17	198.5		0.32
862	D1078-manual	197.1		0.31	197.6		0.17	198.3		0.05
865	D1078-manual	196.9		0.13	197.6		0.17	198.2		-0.08
869	D1078-manual	196.9		0.13	197.6		0.17	198.4		0.19
886	D1078-automated	196.5		-0.24	197.0		-1.08	197.9		-0.47
902	D1078-automated	196.9		0.13	197.6		0.17	198.1		-0.21
912		-----		-----	-----		-----	-----		-----
913		196.8		0.04	197.6		0.17	198.4		0.19
962		-----		-----	-----		-----	-----		-----
963		-----		-----	-----		-----	-----		-----
1107	D1078-automated	196.9		0.13	197.4		-0.25	198.3		0.05
1117	D1078-automated	197.0		0.22	197.6		0.17	198.1		-0.21
1151	D1078-automated	196.7		-0.05	197.4		-0.25	198.0		-0.34
1217		-----		-----	-----		-----	-----		-----
1261	D1078	196.6		-0.15	197.2		-0.66	197.7		-0.74
1467	D1078	196.8		0.04	197.75		0.48	199.3		1.37
1509	D1078-automated	197.0		0.22	197.8		0.58	198.3		0.05
1515		-----		-----	-----		-----	-----		-----
1603	In house-automated	196.4		-0.33	196.9		-1.28	197.4		-1.13
1608	D1078-automated	196.3		-0.42	197.1		-0.87	197.6		-0.87
1623	D1078-automated	196.9		0.13	197.9		0.79	198.8		0.71
1718	D1078-automated	197.2		0.40	197.6		0.17	198.3		0.05
1823	D1078-automated	-----		-----	-----		-----	-----		-----
1866	D1078-automated	196.4		-0.33	197.1		-0.87	-----		-----
1868	D1078-automated	197.1		0.31	-----		-----	198.8		0.71
1880		-----		-----	-----		-----	-----		-----
1954	D1078-manual	196.0		-0.69	196.8		-1.49	199.0		0.98
7006	D1078-automated	197.2		0.40	-----		-----	197.9		-0.47
7013	D1078-automated	195.2		-1.42	198.5		2.04	-----		-----
9006		-----		-----	-----		-----	-----		-----
9008		-----		-----	-----		-----	-----		-----
9009		-----		-----	-----		-----	-----		-----
9014		-----		-----	-----		-----	-----		-----
	normality	not OK			not OK			suspect		
	n	48			46			46		
	outliers	0			0			0		
	mean (n)	196.76			197.52			198.26		
	st.dev. (n)	0.423			0.307			0.419		
	R(calc.)	1.19			0.86			1.17		
	st.dev.(D1078:11)	1.096			0.482			0.758		
	R(D1078:11)	3.07			1.35			2.12		

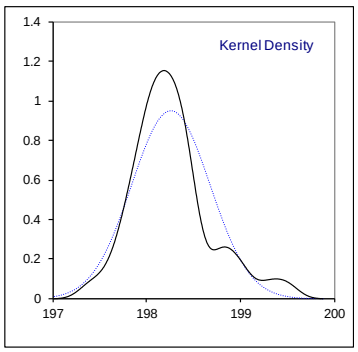












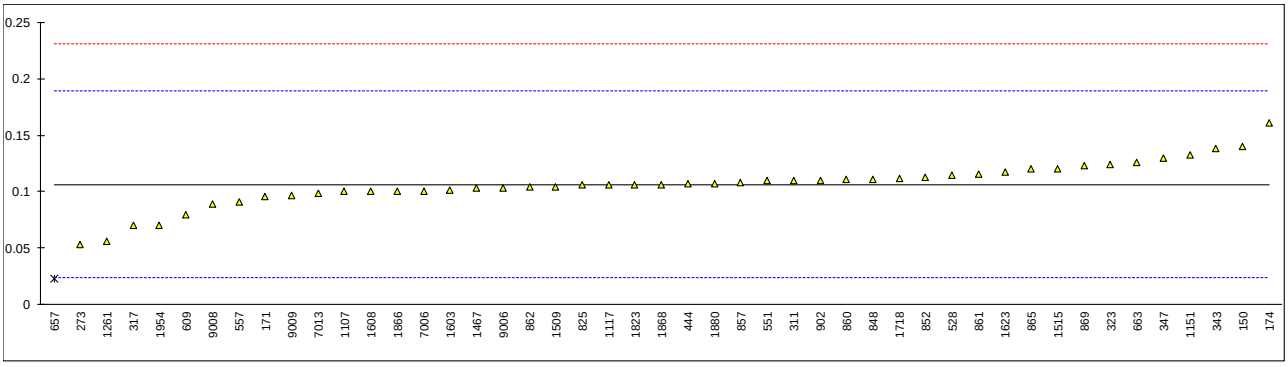
Several laboratories did not correct for theoretical mid boiling point (197.6°C). Results after correction by iis:

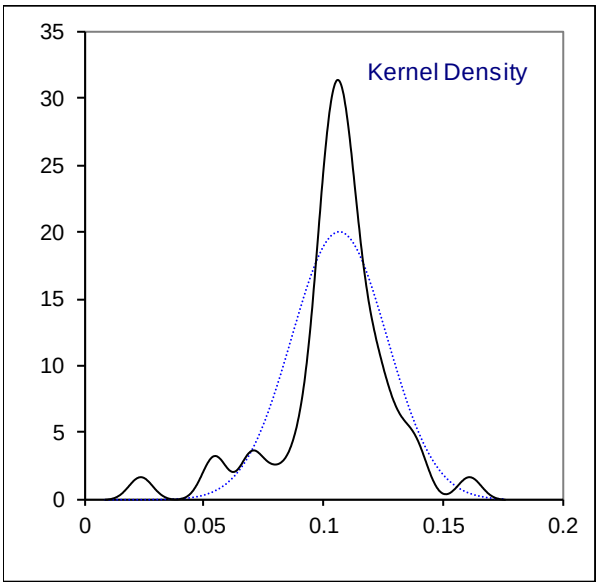
lab	method	IBP	mark	z(targ)	50% rec	mark	z(targ)	DP	mark	z(targ)
150	D1078-automated	196.9		0.07	197.6		0.01	198.2		-0.18
343	D1078-automated	196.2		-0.57	197.6		0.01	198.4		0.08
395		196.6		-0.21	197.6		0.01	197.8		-0.71
444	D1078-automated	196.1		-0.66	197.6		0.01	198.3		-0.05
528	D1078-manual	196.6		-0.21	197.6		0.01	198.4		0.08
886	D1078-automated	197.1		0.25	197.6		0.01	198.5		0.21
1107	D1078-automated	197.1		0.25	197.6		0.01	198.5		0.21
1151	D1078-automated	196.9		0.07	197.6		0.01	198.2		-0.18
1261	D1078	197		0.16	197.6		0.01	198.1		-0.31
1509	D1078-automated	196.8		-0.02	197.6		0.01	198.1		-0.31
1603	In house-automated	197.1		0.25	197.6		0.01	198.1		-0.31
1608	D1078-automated	196.8		-0.02	197.6		0.01	198.1		-0.31
1623	D1078-automated	196.6		-0.21	197.6		0.01	198.5		0.21
1866	D1078-automated	196.9		0.07	197.6		0.01	-----		-----
1954	D1078-manual	196.8		-0.02	197.6		0.01	199.8		1.93
7013	D1078-automated	194.3		-2.30	197.6		0.01	-----		-----
	normality	not OK			not OK			not OK		
	n	48			46			46		
	outliers	0			0			0		
	mean (n)	196.83			197.60			198.34		
	st.dev. (n)	0.459			0.034			0.387		
	R(calc.)	1.28			0.10			1.08		
	st.dev.(D1078:11)	1.097			0.482			0.758		
	R(D1078:11)	3.07			1.35			2.12		

Determination of Iron as Fe on sample #17205; results in mg/kg

lab	method	value	mark	z(targ)	remarks
150	E394	0.14		0.81	
168		-----		-----	
169		-----		-----	
171	E1615	0.096		-0.26	
174	E1615	0.161		1.32	
273	E202	0.053		-1.30	
311	E1615	0.11		0.08	
317	E1615	0.070		-0.89	
322		-----		-----	
323	E1615	0.124		0.42	
343	E1615	0.138	C	0.76	first reported: 0.276
347	E394	0.13		0.57	
360		-----		-----	
370		-----		-----	
395		-----		-----	
396		-----		-----	
444	E1615	0.107		0.01	
528	E1615	0.1150		0.20	
529		-----		-----	
551	E394	0.11		0.08	
557	INH-1042	0.0911027		-0.38	
558		-----		-----	
609	E1615	0.08		-0.64	
610		-----		-----	
657	E1615	0.0235	R(0.01)	-2.01	
663	E394	0.126		0.47	
786		-----		-----	
825	E394	0.106		-0.01	
848	E394	0.111		0.11	
852	E394	0.113		0.16	
857	E1615	0.108		0.03	
860	E394	0.111		0.11	
861	E394	0.116		0.23	
862	E1615	0.104		-0.06	
865	E394	0.12		0.33	
869	E394	0.123		0.40	
886		-----		-----	
902	E1615	0.11		0.08	
912		-----		-----	
913		-----		-----	
962		-----		-----	
963		-----		-----	
1107	E1615	0.100		-0.16	
1117	E394	0.106		-0.01	
1151	E394	0.133		0.64	
1217		-----		-----	
1261	E394	0.056		-1.23	
1467	E394	0.103		-0.09	
1509	E394	0.104		-0.06	
1515	E394	0.12		0.33	
1603	In house	0.101		-0.14	
1608	E394	0.10		-0.16	
1623	E202	0.117		0.25	
1718	E394	0.112		0.13	
1823	E394	0.106		-0.01	
1866	E1615	0.1		-0.16	
1868	E394	0.106		-0.01	
1880	E1615	0.107		0.01	
1954	E394	0.07		-0.89	
7006	E394	0.1		-0.16	
7013	E1615	0.099		-0.18	
9006	E1615	0.1034		-0.08	
9008	E1615	0.089		-0.43	
9009	E1615	0.09714		-0.23	
9014		-----		-----	

normality	suspect
n	46
outliers	1
mean (n)	0.1066
st.dev. (n)	0.01994
R(calc.)	0.0558
st.dev.(E1615:16)	0.04126
R(E1615:16)	0.1155





Determination of Miscibility with water on sample #17205;

lab	method	value	mark	z(targ)	remarks
150	D1722	Pass		-----	
168		-----		-----	
169	D1722	Pass		-----	
171	D1722	passes		-----	
174	D1722	pass		-----	
273		-----		-----	
311		-----		-----	
317		-----		-----	
322		-----		-----	
323	D1722	PASS		-----	
343		-----		-----	
347		-----		-----	
360		-----		-----	
370		-----		-----	
395	D1722	PASS		-----	
396	D1722	Passes Test		-----	
444	D1722	Pass		-----	
528		-----		-----	
529	D1722	pass test		-----	
551	D1722	Pass test		-----	
557	D1722	Passes Test		-----	
558		-----		-----	
609		-----		-----	
610		-----		-----	
657		-----		-----	
663	D1722	Passes Test		-----	
786	D1722	Pass		-----	
825	D1722	passes test		-----	
848	D1722	pass		-----	
852	D1722	pass		-----	
857	D1722	Passes test		-----	
860	D1722	Pass		-----	
861	D1722	Pass		-----	
862	D1722	PASS		-----	
865	D1722	passes test		-----	
869		-----		-----	
886		-----		-----	
902	D1722	Pass		-----	
912	D1722	pass		-----	
913	D1722	Passes		-----	
962		-----		-----	
963		-----		-----	
1107	D1722	passes		-----	
1117		-----		-----	
1151		-----		-----	
1217		-----		-----	
1261		-----		-----	
1467	D1722	Pass		-----	
1509	D1722	Pass		-----	
1515	D1722	PASS		-----	
1603		-----		-----	
1608		-----		-----	
1623		-----		-----	
1718	D1722	Pass		-----	
1823		-----		-----	
1866		-----		-----	
1868		-----		-----	
1880		-----		-----	
1954		-----		-----	
7006		-----		-----	
7013		-----		-----	
9006		-----		-----	
9008		-----		-----	
9009		-----		-----	
9014	D1722	Passed Test		-----	
	n	30			
	mean (n)	passes test			

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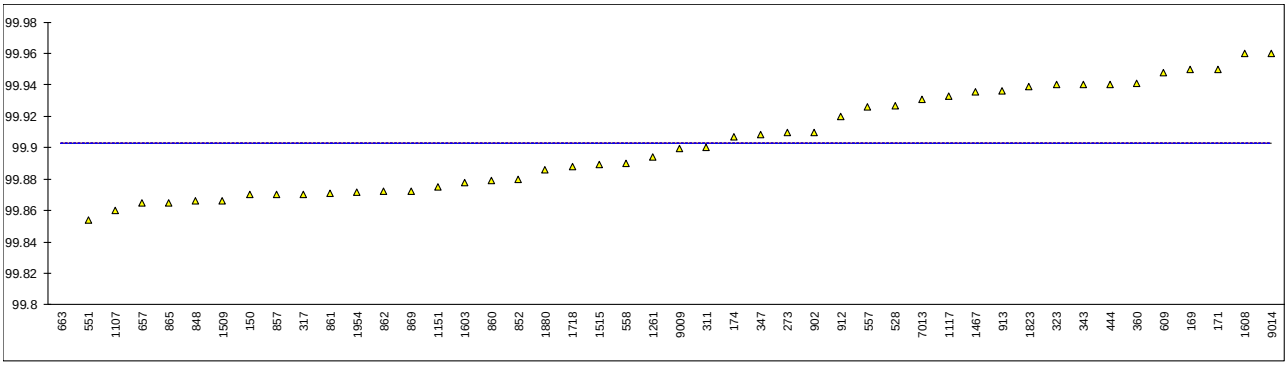
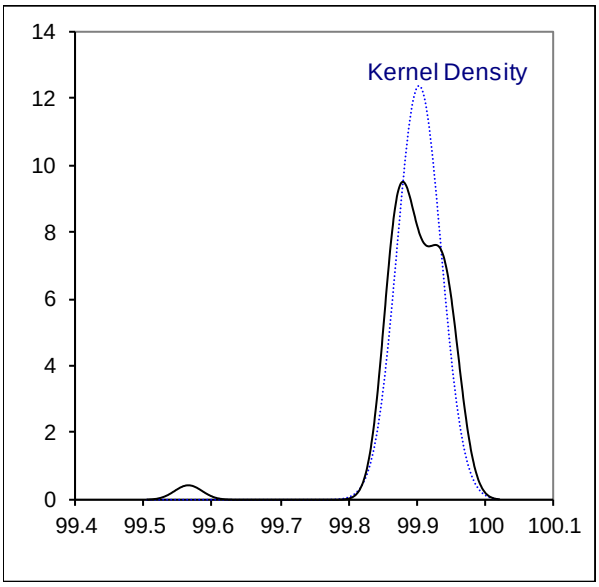
Determination of Purity by GC as received on sample #17205; results in %M/M

lab	method	value	mark	z(targ)	remarks
150	E2409	99.87		-----	
168		-----		-----	
169	E2409	99.9498		-----	
171	E2409	99.95		-----	
174	E2409	99.907		-----	
273	D3362	99.91		-----	
311	INH-100	99.90		-----	
317	E2409	99.87		-----	
322		-----		-----	
323	E2409	99.94		-----	
343	E2409	99.94		-----	
347	E2409	99.9084		-----	
360	E2409	99.941		-----	
370		-----		-----	
395		-----		-----	
396		-----		-----	
444	E2409	99.9401		-----	
528	E2409	99.927		-----	
529		-----		-----	
551	E2409	99.8543		-----	
557	E2409	99.9261402		-----	
558	E2409	99.89		-----	
609	E2409	99.948		-----	
610		-----		-----	
657	E2409	99.8648		-----	
663	E2409	99.566	R(0.01)	-----	
786		-----		-----	
825		-----		-----	
848	E2409	99.866		-----	
852	E2409	99.88		-----	
857	E2409	99.870		-----	
860	E2409	99.879		-----	
861	E2409	99.871		-----	
862	E202	99.872		-----	
865	E2409	99.865		-----	
869	E2409	99.872		-----	
886		-----		-----	
902	E2409	99.91		-----	
912	E2409	99.92		-----	
913	E2409	99.936		-----	
962		-----		-----	
963		-----		-----	
1107	E2409	99.86		-----	
1117	E2409	99.933		-----	
1151	E202	99.875		-----	
1217		-----		-----	
1261		99.8938		-----	
1467	E2409	99.9357		-----	
1509	E2409	99.866		-----	
1515	E2409	99.8893		-----	
1603	In house	99.8780		-----	
1608	E2409	99.96		-----	
1623		-----		-----	
1718	E2409	99.888		-----	
1823	E2409	99.939		-----	
1866		-----		-----	
1868		-----		-----	
1880	E2409	99.886		-----	
1954	E2409	99.8715		-----	
7006		-----		-----	
7013	E2409	99.9307		-----	
9006		-----		-----	
9008		-----		-----	
9009	E2409	99.8992		-----	
9014	E2409	99.96		-----	

normality	OK
n	45
outliers	1
mean (n)	99.9032
st.dev. (n)	0.03223
R(calc.)	0.0902
st.dev.(lit)	unknown
R(lit)	unknown

Compare: R(iis16C09) = 0.085

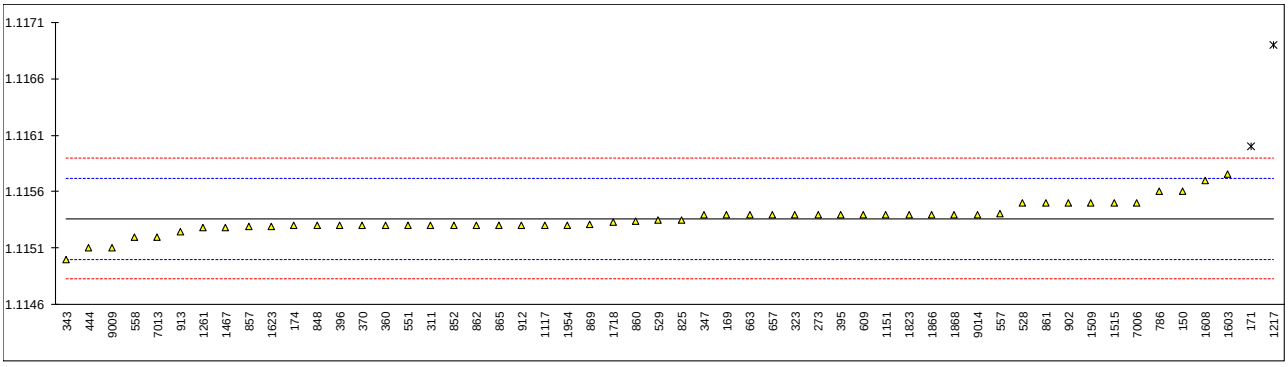


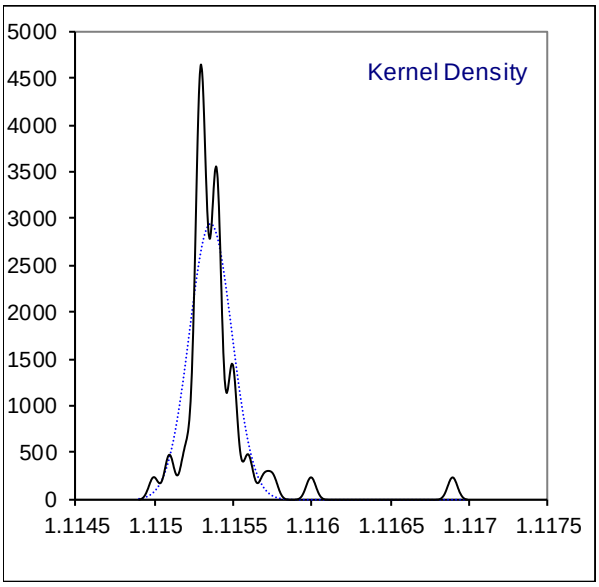


Determination of Specific Gravity 20/20°C on sample #17205;

lab	method	value	mark	z(targ)	remarks
150	D4052	1.1156	C	1.33	first reported: 1.116
168		-----		-----	
169	D4052	1.1154		0.21	
171	D4052	1.116	R(0.01)	3.57	
174	D4052	1.1153		-0.35	
273	D4052	1.1154		0.21	
311	E202	1.1153		-0.35	
317		-----		-----	
322		-----		-----	
323	D4052	1.1154		0.21	
343	D4052	1.1150		-2.03	
347	D4052	1.1154		0.21	
360	D4052	1.1153		-0.35	
370	E202	1.1153		-0.35	
395	D4052	1.1154		0.21	
396	D4052	1.1153		-0.35	
444	D4052	1.1151		-1.47	
528	D4052	1.1155		0.77	
529	D4052	1.11535		-0.07	
551	D4052	1.1153		-0.35	
557	D4052	1.115409		0.26	
558	D4052	1.1152		-0.91	
609	D4052	1.1154		0.21	
610		-----		-----	
657	D4052	1.11540		0.21	
663	D4052	1.1154		0.21	
786	D4052	1.1156		1.33	
825	D4052	1.11535		-0.07	
848	D4052	1.1153		-0.35	
852	D4052	1.1153		-0.35	
857	D4052	1.11529		-0.40	
860	D4052	1.11534		-0.12	
861	D4052	1.1155		0.77	
862	D4052	1.1153		-0.35	
865	D4052	1.1153		-0.35	
869	D4052	1.11531		-0.29	
886		-----		-----	
902	D4052	1.1155		0.77	
912	D4052	1.1153		-0.35	
913	D4052	1.11525		-0.63	
962		-----		-----	
963		-----		-----	
1107		-----		-----	
1117	D4052	1.1153		-0.35	
1151	D4052	1.1154	C	0.21	first reported: 1.1158
1217	E202	1.1169	R(0.01)	8.61	
1261	E202	1.11528		-0.46	
1467	D4052	1.115283		-0.44	
1509	D4052	1.11550		0.77	
1515	D4052	1.1155		0.77	
1603	In house	1.115758		2.22	
1608	D4052	1.1157		1.89	
1623	D891	1.11529		-0.40	
1718	D4052	1.11533		-0.18	
1823	D4052	1.1154		0.21	
1866	D4052	1.1154		0.21	
1868	D891	1.1154		0.21	
1880		-----		-----	
1954	D4052	1.1153		-0.35	
7006	D4052	1.1155		0.77	
7013	D4052	1.1152		-0.91	
9006		-----		-----	
9008		-----		-----	
9009	E202	1.1151		-1.47	
9014	D4052	1.1154		0.21	

normality	suspect
n	52
outliers	2
mean (n)	1.11536
st.dev. (n)	0.000135
R(calc.)	0.00038
st.dev.(E202:12)	0.000179
R(E202:12)	0.0005

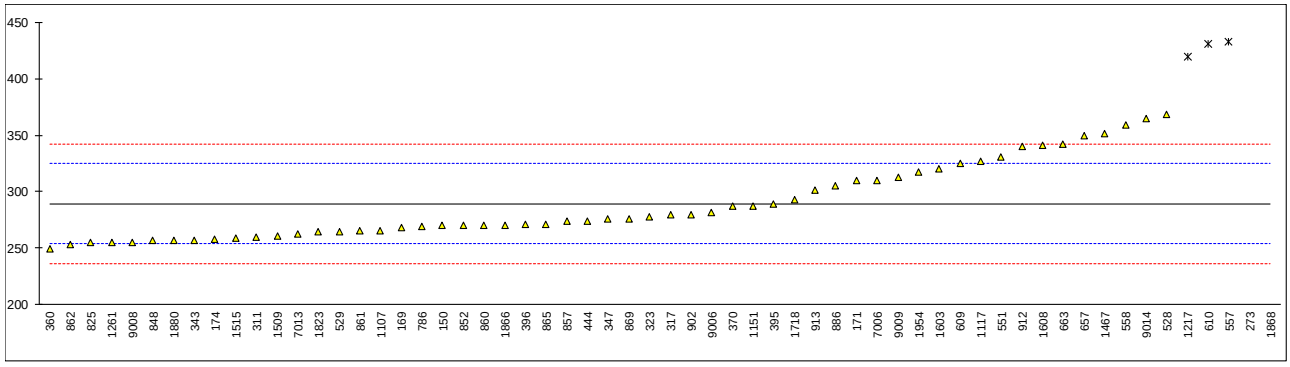


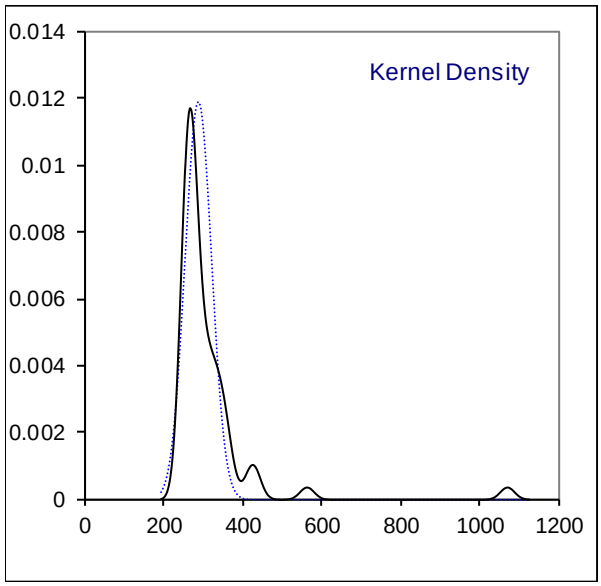


Determination of Water, Coulometric KF titration on sample #17205; results in mg/kg

lab	method	value	mark	z(targ)	remarks
150	E1064	270		-1.09	
168		-----		-----	
169	E1064	268		-1.20	
171	E1064	310		1.17	
174	E1064	258		-1.77	
273	E203	565	C,R(0.01)	15.61	first reported: 390
311	E1064	260		-1.66	
317	E1064	280		-0.53	
322		-----		-----	
323	E1064	278		-0.64	
343	E1064	257.1		-1.82	
347	E1064	276		-0.75	
360	E1064	249.7		-2.24	
370	E1064	287		-0.13	
395	E1064	288.9		-0.02	
396	E1064	271		-1.03	
444	E1064	274		-0.86	
528	E1064	367.93		4.45	
529	E1064	264.47		-1.40	
551	E1064	331		2.36	
557	INH-875	432.45865948	R(0.05)	8.10	
558	E1064	358.5		3.92	
609	E1064	325		2.02	
610	D6304	430.6	R(0.05)	8.00	
657	E1064	350		3.44	
663	E1064	342.2		3.00	
786	E1064	269		-1.15	
825	E1064	255		-1.94	
848	E1064	257		-1.83	
852	E1064	270		-1.09	
857	E1064	274		-0.86	
860	E1064	270		-1.09	
861	E1064	266		-1.32	
862	E1064	253		-2.05	
865	E1064	271		-1.03	
869	E1064	276		-0.75	
886	E1064	305		0.89	
902	E1064	280		-0.53	
912	E203	340		2.87	
913	E1064	301		0.66	
962		-----		-----	
963		-----		-----	
1107	E1064	266		-1.32	
1117	E1064	327		2.14	
1151	E1064	287.7		-0.09	
1217	E1064	419	R(0.05)	7.34	
1261	E1064	255		-1.94	
1467	E1064	351		3.49	
1509	E1064	260.5		-1.63	
1515	E1064	259		-1.71	
1603	In house	320		1.74	
1608		341.3		2.94	
1623		-----		-----	
1718	E1064	293		0.21	
1823	E1064	264.3		-1.41	
1866	E1064	270		-1.09	
1868		1073	R(0.01)	44.36	
1880	E1064	257		-1.83	
1954	E203	317		1.57	
7006	E203	310		1.17	
7013	E1064	263		-1.49	
9006	E1064	281.8		-0.42	
9008	E1064	255		-1.94	
9009	E1064	313		1.34	
9014	E203	365		4.29	

normality	OK
n	55
outliers	5
mean (n)	289.28
st.dev. (n)	33.495
R(calc.)	93.78
st.dev.(E1064:16)	17.667
R(E1064:16)	49.47

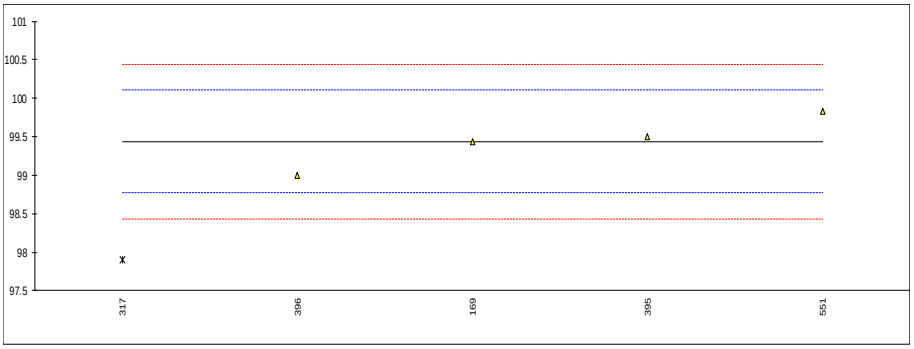


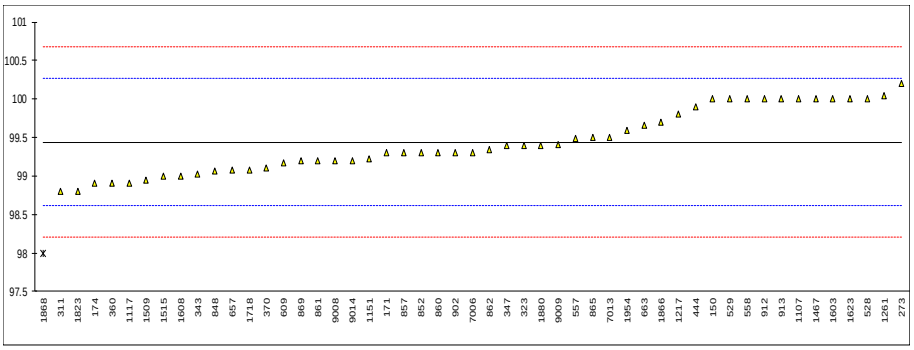


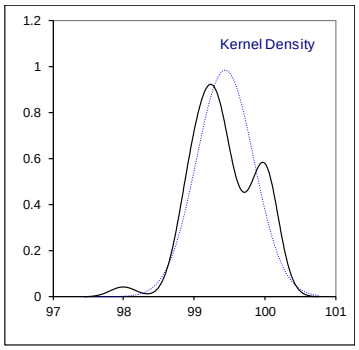
Determination of UV Transmittance at 350 nm on sample #17206; results in %Transmittance

lab	Method	cuvet	Method A	mark	z(targ)	Method B	mark	z(targ)	remarks
150	E2193- not sparged	10 mm	-----		-----	100.0		1.36	
168			-----		-----	-----		-----	
169	E2193- sparged	10 mm	99.43		-0.03	-----		-----	
171	E2193- not sparged	10 mm	-----		-----	99.3		-0.34	
174	E2193- not sparged	10 mm	-----		-----	98.9		-1.31	
273	E2193- not sparged	10 mm	-----		-----	100.2		1.85	
311	E2193- not sparged	50 mm	-----		-----	98.8	C	-1.55	fr. 99.2 (meth.A)
317	E2193- sparged	10 mm	97.9	D(0.05)	-4.61	-----		-----	
322			-----		-----	-----		-----	
323	E2193- not sparged	10 mm	-----		-----	99.4		-0.09	
343	E2193- not sparged	10 mm	-----		-----	99.03		-0.99	
347	E2193- not sparged	50 mm	-----		-----	99.4		-0.09	
360	E2193- not sparged	50 mm	-----		-----	98.91		-1.28	
370	E2193- not sparged	10 mm	-----		-----	99.1		-0.82	
395	E2193- sparged	10 mm	99.5		0.18	-----		-----	
396	E2193- sparged	10 mm	99.0		-1.32	-----		-----	
444	E2193- not sparged	10 mm	-----		-----	99.9		1.12	
528	E2193- not sparged	10 mm	-----		-----	100.004		1.37	
529	E2193- not sparged	10 mm	-----		-----	100		1.36	
551	E2193- sparged	10 mm	99.83	C	1.17	-----		-----	fr. 79.1
557	E2193- not sparged	10 mm	-----		-----	99.484		0.11	
558	NBR 7140	50 mm	-----		-----	100		1.36	
609	E2193- not sparged		-----		-----	99.170		-0.65	
610			-----		-----	-----		-----	
657	E2193- not sparged	10 mm	-----		-----	99.08		-0.87	
663	E2193- not sparged	10 mm	-----		-----	99.66		0.54	
786			-----		-----	-----		-----	
825			-----		-----	-----		-----	
848	E2193- not sparged	50 mm	-----		-----	99.06		-0.92	
852	E2193- not sparged	10 mm	-----		-----	99.3	C	-0.34	fr. 71.0
857	E2193- not sparged	10 mm	-----		-----	99.3		-0.34	
860	E2193- not sparged	10 mm	-----		-----	99.3		-0.34	
861	E2193- not sparged	50 mm	-----		-----	99.2		-0.58	
862	E2193- not sparged	50 mm	-----		-----	99.34		-0.24	
865	E2193- not sparged	10 mm	-----		-----	99.5		0.15	
869	E2193- not sparged	10 mm	-----		-----	99.2		-0.58	
886			-----		-----	-----		-----	
902	E2193- not sparged	10 mm	-----		-----	99.30		-0.34	
912	E2193- not sparged	50 mm	-----		-----	100		1.36	
913	E2193- not sparged	10 mm	-----		-----	100		1.36	
962			-----		-----	-----		-----	
963			-----		-----	-----		-----	
1107	E2193- not sparged	10 mm	-----		-----	100.0	C	1.36	rep. 72.2
1117	E2193- not sparged	50 mm	-----		-----	98.91		-1.28	
1151	E2193- not sparged	10 mm	-----		-----	99.23	C	-0.51	fr. 72.23
1217	E2193- not sparged	50 mm	-----		-----	99.8		0.88	
1261	EO 577A	10 mm	-----		-----	100.04		1.46	
1467	E2193- not sparged	10 mm	-----		-----	100		1.36	
1509	E2193- not sparged	50 mm	-----		-----	98.95		-1.19	
1515	E2193- not sparged	50 mm	-----		-----	99.0		-1.07	
1603	In house - not sparged	10 mm	-----		-----	100		1.36	
1608	E2193- not sparged	50 mm	-----		-----	99.0		-1.07	
1623	E2193- not sparged	10 mm	-----		-----	100.00		1.36	
1718	E2193- not sparged	50 mm	-----		-----	99.08		-0.87	
1823	E2193- not sparged	50 mm	-----		-----	98.8		-1.55	
1866	E2193- not sparged	10 mm	-----		-----	99.70		0.63	
1868	E2193- not sparged	10 mm	-----		-----	98	R(0.05)	-3.49	
1880	E2193- not sparged	10 mm	-----		-----	99.4		-0.09	
1954	E2193- not sparged	10 mm	-----		-----	99.6		0.39	
7006	E2193- not sparged	10 mm	-----		-----	99.3		-0.34	
7013	E2193- not sparged	10 mm	-----		-----	99.5		0.15	
9006		10 mm	-----		-----	-----		-----	
9008	E2193- not sparged	10 mm	-----		-----	99.2		-0.58	
9009	E2193- not sparged	10 mm	-----		-----	99.4043		-0.08	
9014	E2193- not sparged	10 mm	-----		-----	99.2		-0.58	

normality	unknown	OK
n	4	50
outliers	1	1
mean (n)	99.440	99.439
st.dev. (n)	0.3413	0.4050
R(calc.)	0.956	1.134
st.dev.(E2193:16)	0.3343	0.4121
R(E2193:16)	0.936	1.154



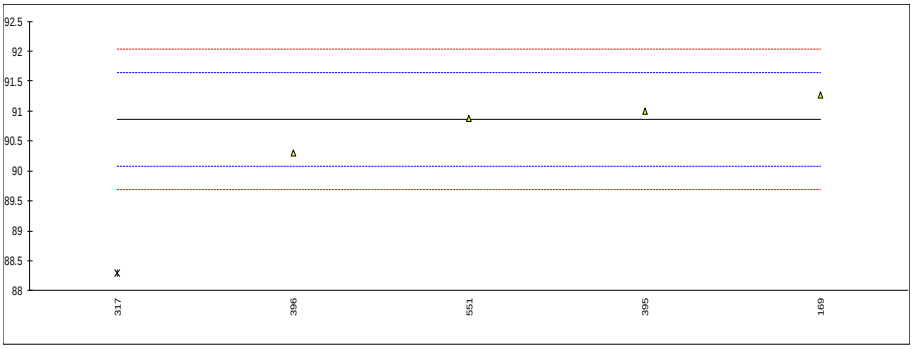


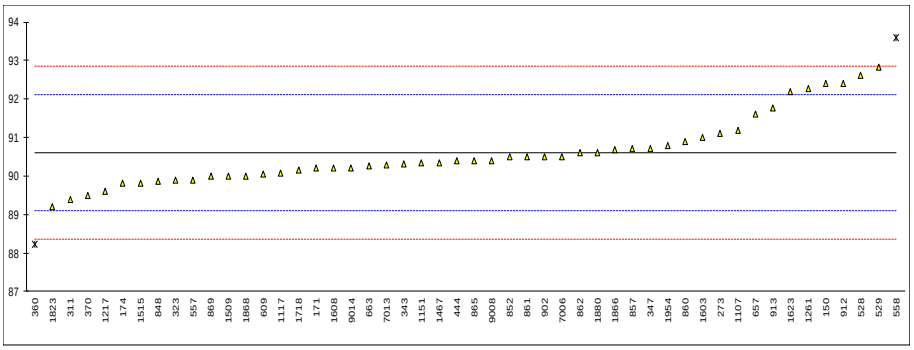


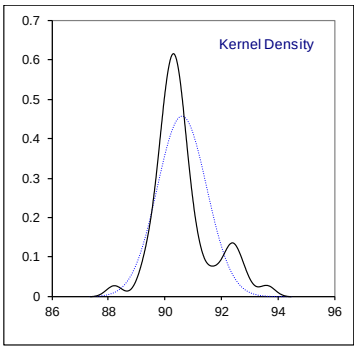
Determination of UV Transmittance at 275 nm on sample #17206; results in %Transmittance

lab	Method	cuvet	Method A	mark	z(targ)	Method B	mark	z(targ)	remarks
150	E2193- not sparged	10 mm	-----		-----	92.4		2.39	
168			-----		-----	-----		-----	
169	E2193- sparged	10 mm	91.27		1.05	-----		-----	
171	E2193- not sparged	10 mm	-----		-----	90.2		-0.54	
174	E2193- not sparged	10 mm	-----		-----	89.8		-1.07	
273	E2193- not sparged	10 mm	-----		-----	91.1		0.66	
311	E2193- not sparged	50 mm	-----		-----	89.4	C	-1.60	fr. 87.4 (meth.A)
317	E2193- sparged	10 mm	88.3	D(0.05)	-6.53	-----		-----	
322			-----		-----	-----		-----	
323	E2193- not sparged	10 mm	-----		-----	89.9		-0.94	
343	E2193- not sparged	10 mm	-----		-----	90.32		-0.38	
347	E2193- not sparged	50 mm	-----		-----	90.7		0.13	
360	E2193- not sparged	50 mm	-----		-----	88.22	R(0.05)	-3.17	
370	E2193- not sparged	10 mm	-----		-----	89.5		-1.47	
395	E2193- sparged	10 mm	91.0		0.36	-----		-----	
396	E2193- sparged	10 mm	90.3		-1.43	-----		-----	
444	E2193- not sparged	10 mm	-----		-----	90.4		-0.27	
528	E2193- not sparged	10 mm	-----		-----	92.617		2.68	
529	E2193- not sparged	10 mm	-----		-----	92.829		2.96	
551	E2193- sparged	10 mm	90.87	C	0.03	-----		-----	fr. 81.77
557	E2193- not sparged	10 mm	-----		-----	89.902		-0.93	
558	NBR 7140	50 mm	-----		-----	93.6	R(0.05)	3.99	
609	E2193- not sparged		-----		-----	90.049		-0.74	
610			-----		-----	-----		-----	
657	E2193- not sparged	10 mm	-----		-----	91.62		1.35	
663	E2193- not sparged	10 mm	-----		-----	90.26		-0.46	
786			-----		-----	-----		-----	
825			-----		-----	-----		-----	
848	E2193- not sparged	50 mm	-----		-----	89.86		-0.99	
852	E2193- not sparged	10 mm	-----		-----	90.5	C	-0.14	fr. 79.7
857	E2193- not sparged	10 mm	-----		-----	90.7		0.13	
860	E2193- not sparged	10 mm	-----		-----	90.9		0.39	
861	E2193- not sparged	50 mm	-----		-----	90.5		-0.14	
862	E2193- not sparged	50 mm	-----		-----	90.60		-0.01	
865	E2193- not sparged	10 mm	-----		-----	90.4		-0.27	
869	E2193- not sparged	10 mm	-----		-----	90.0		-0.80	
886			-----		-----	-----		-----	
902	E2193- not sparged	10 mm	-----		-----	90.50		-0.14	
912	E2193- not sparged	50 mm	-----		-----	92.4		2.39	
913	E2193- not sparged	10 mm	-----		-----	91.78		1.56	
962			-----		-----	-----		-----	
963			-----		-----	-----		-----	
1107	E2193- not sparged	10 mm	-----		-----	91.2	C	0.79	rep. 80.7
1117	E2193- not sparged	50 mm	-----		-----	90.07		-0.71	
1151	E2193- not sparged	10 mm	-----		-----	90.33	C	-0.36	fr. 80.1
1217	E2193- not sparged	50 mm	-----		-----	89.6		-1.34	
1261	EO 577A	10 mm	-----		-----	92.27		2.22	
1467	E2193- not sparged	10 mm	-----		-----	90.335		-0.36	
1509	E2193- not sparged	50 mm	-----		-----	90.00		-0.80	
1515	E2193- not sparged	50 mm	-----		-----	89.8		-1.07	
1603	In house - not sparged	10 mm	-----		-----	91		0.53	
1608	E2193- not sparged	50 mm	-----		-----	90.2		-0.54	
1623	E2193- not sparged	10 mm	-----		-----	92.20		2.12	
1718	E2193- not sparged	50 mm	-----		-----	90.16		-0.59	
1823	E2193- not sparged	50 mm	-----		-----	89.2		-1.87	
1866	E2193- not sparged	10 mm	-----		-----	90.690		0.11	
1868	E2193- not sparged	10 mm	-----		-----	90		-0.80	
1880	E2193- not sparged	10 mm	-----		-----	90.6		-0.01	
1954	E2193- not sparged	10 mm	-----		-----	90.8		0.26	
7006	E2193- not sparged	10 mm	-----		-----	90.5		-0.14	
7013	E2193- not sparged	10 mm	-----		-----	90.3		-0.40	
9006		10 mm	-----		-----	-----		-----	
9008	E2193- not sparged	10 mm	-----		-----	90.4		-0.27	
9009	E2193- not sparged	10 mm	-----		-----	90..9555		-----	
9014	E2193- not sparged	10 mm	-----		-----	90.2		-0.54	

normality	unknown	suspect
n	4	48
outliers	1	2
mean (n)	90.860	90.604
st.dev. (n)	0.40882	0.8700
R(calc.)	1.1447	2.436
st.dev.(E2193:16)	0.39214	0.7518
R(E2193:16)	1.098	2.105



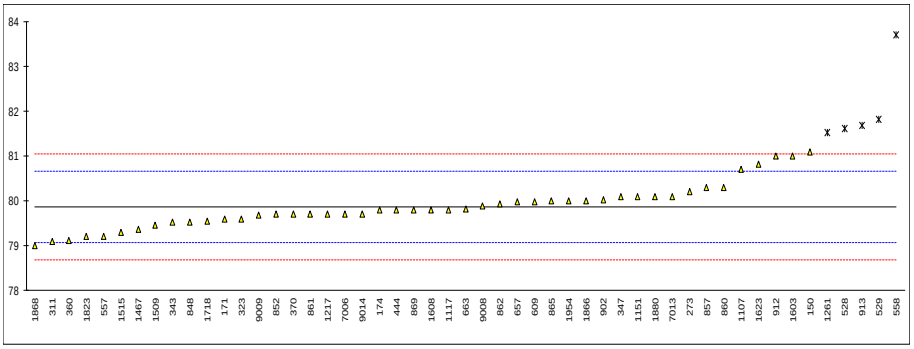


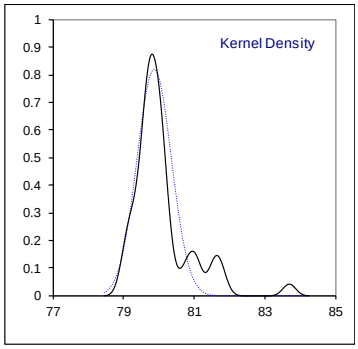


Determination of UV Transmittance at 250 nm on sample #17206; results in %Transmittance

lab	Method	cuvet	Method A	mark	z(targ)	Method B	mark	z(targ)	remarks
150	E2193- not sparged	10 mm	-----		-----	81.1	C	3.13	fr. 81.7
168			-----		-----	-----		-----	
169	E2193- sparged	10 mm	81.16		-----	-----		-----	
171	E2193- not sparged	10 mm	-----		-----	79.6		-0.68	
174	E2193- not sparged	10 mm	-----		-----	79.8		-0.17	
273	E2193- not sparged	10 mm	-----		-----	80.2		0.84	
311	E2193- not sparged	50 mm	-----		-----	79.1	C	-1.95	fr. 48.6 (meth.A)
317	E2193- sparged	10 mm	78.7		-----	-----		-----	
322			-----		-----	-----		-----	
323	E2193- not sparged	10 mm	-----		-----	79.6		-0.68	
343	E2193- not sparged	10 mm	-----		-----	79.52		-0.88	
347	E2193- not sparged	50 mm	-----		-----	80.1		0.59	
360	E2193- not sparged	50 mm	-----		-----	79.11		-1.93	
370	E2193- not sparged	10 mm	-----		-----	79.7		-0.43	
395	E2193- sparged	10 mm	-----		-----	-----		-----	
396	E2193- sparged	10 mm	-----		-----	-----		-----	
444	E2193- not sparged	10 mm	-----		-----	79.8		-0.17	
528	E2193- not sparged	10 mm	-----		-----	81.619	R(0.05)	4.45	
529	E2193- not sparged	10 mm	-----		-----	81.807	R(0.05)	4.93	
551	E2193- sparged	10 mm	81.77	C	-----	-----		-----	fr. 90.07
557	E2193- not sparged	10 mm	-----		-----	79.216		-1.66	
558	NBR 7140	50 mm	-----		-----	83.7	R(0.01)	9.74	
609	E2193- not sparged		-----		-----	79.981		0.29	
610			-----		-----	-----		-----	
657	E2193- not sparged	10 mm	-----		-----	79.98		0.29	
663	E2193- not sparged	10 mm	-----		-----	79.82		-0.12	
786			-----		-----	-----		-----	
825			-----		-----	-----		-----	
848	E2193- not sparged	50 mm	-----		-----	79.53		-0.86	
852	E2193- not sparged	10 mm	-----		-----	79.7	C	-0.43	fr. 90.5
857	E2193- not sparged	10 mm	-----		-----	80.3		1.10	
860	E2193- not sparged	10 mm	-----		-----	80.3		1.10	
861	E2193- not sparged	50 mm	-----		-----	79.7		-0.43	
862	E2193- not sparged	50 mm	-----		-----	79.94		0.18	
865	E2193- not sparged	10 mm	-----		-----	80.0		0.34	
869	E2193- not sparged	10 mm	-----		-----	79.8		-0.17	
886			-----		-----	-----		-----	
902	E2193- not sparged	10 mm	-----		-----	80.03		0.41	
912	E2193- not sparged	50 mm	-----		-----	81.0	C	2.88	fr. 81.8
913	E2193- not sparged	10 mm	-----		-----	81.67	R(0.05)	4.58	
962			-----		-----	-----		-----	
963			-----		-----	-----		-----	
1107	E2193- not sparged	10 mm	-----		-----	80.7	C	2.11	rep. 91.2
1117	E2193- not sparged	50 mm	-----		-----	79.81		-0.15	
1151	E2193- not sparged	10 mm	-----		-----	80.10	C	0.59	fr. 90.33
1217	E2193- not sparged	50 mm	-----		-----	79.7		-0.43	
1261	EO 577A	10 mm	-----		-----	81.51	R(0.05)	4.17	
1467	E2193- not sparged	10 mm	-----		-----	79.3775		-1.25	
1509	E2193- not sparged	50 mm	-----		-----	79.45		-1.06	
1515	E2193- not sparged	50 mm	-----		-----	79.3		-1.44	
1603	In house - not sparged	10 mm	-----		-----	81		2.88	
1608	E2193- not sparged	50 mm	-----		-----	79.8		-0.17	
1623	E2193- not sparged	10 mm	-----		-----	80.81	C	2.39	fr 82.21
1718	E2193- not sparged	50 mm	-----		-----	79.54		-0.83	
1823	E2193- not sparged	50 mm	-----		-----	79.2		-1.70	
1866	E2193- not sparged	10 mm	-----		-----	80.005		0.35	
1868	E2193- not sparged	10 mm	-----		-----	79		-2.20	
1880	E2193- not sparged	10 mm	-----		-----	80.1		0.59	
1954	E2193- not sparged	10 mm	-----		-----	80.0		0.34	
7006	E2193- not sparged	10 mm	-----		-----	79.7		-0.43	
7013	E2193- not sparged	10 mm	-----		-----	80.1		0.59	
9006		10 mm	-----		-----	-----		-----	
9008	E2193- not sparged	10 mm	-----		-----	79.9		0.08	
9009	E2193- not sparged	10 mm	-----		-----	79.6945		-0.44	
9014	E2193- not sparged	10 mm	-----		-----	79.7		-0.43	

normality	unknown	OK
n	3	46
outliers	0	5
mean (n)	80.543	79.867
st.dev. (n)	n.a.	0.4878
R(calc.)	n.a.	1.366
st.dev.(E2193:16)	(0.7368)	0.3936
R(E2193:16)	(2.063)	1.102

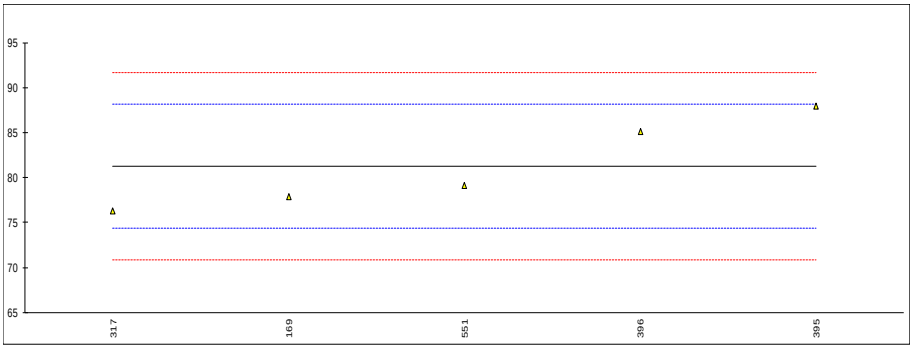


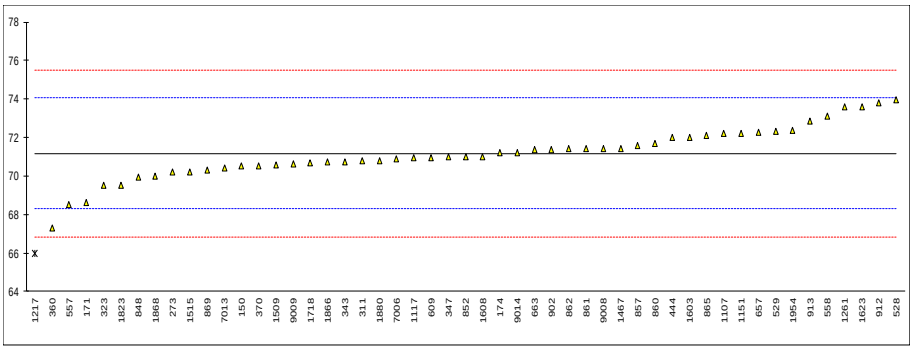


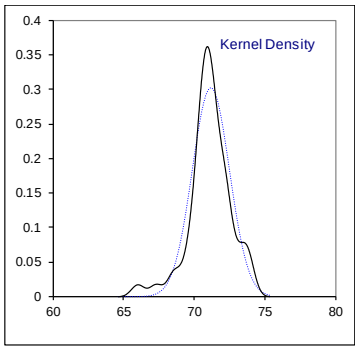
Determination of UV Transmittance at 220 nm on sample #17206; results in %Transmittance

lab	Method	cuvet	Method A	mark	z(targ)	Method B	mark	z(targ)	remarks
150	E2193- not sparged	10 mm	-----		-----	70.5		-0.47	
168			-----		-----	-----		-----	
169	E2193- sparged	10 mm	77.89		-0.98	-----		-----	
171	E2193- not sparged	10 mm	-----		-----	68.6		-1.78	
174	E2193- not sparged	10 mm	-----		-----	71.2		0.02	
273	E2193- not sparged	10 mm	-----		-----	70.2	C	-0.67	fr. 65.2
311	E2193- not sparged	50 mm	-----		-----	70.8	C	-0.26	fr. 66.4 (meth.A)
317	E2193- sparged	10 mm	76.3		-1.44	-----		-----	
322			-----		-----	-----		-----	
323	E2193- not sparged	10 mm	-----		-----	69.5		-1.16	
343	E2193- not sparged	10 mm	-----		-----	70.72		-0.31	
347	E2193- not sparged	50 mm	-----		-----	71.0		-0.12	
360	E2193- not sparged	50 mm	-----		-----	67.30		-2.68	
370	E2193- not sparged	10 mm	-----		-----	70.5		-0.47	
395	E2193- sparged	10 mm	88.0		1.94	-----		-----	
396	E2193- sparged	10 mm	85.1		1.10	-----		-----	
444	E2193- not sparged	10 mm	-----		-----	72.0		0.57	
528	E2193- not sparged	10 mm	-----		-----	73.965		1.93	
529	E2193- not sparged	10 mm	-----		-----	72.326		0.80	
551	E2193- sparged	10 mm	79.11	C	-0.63	-----		-----	fr. 99.83
557	E2193- not sparged	10 mm	-----		-----	68.5315		-1.83	
558	NBR 7140	50 mm	-----		-----	73.1	C	1.33	fr. 79.1
609	E2193- not sparged		-----		-----	70.972		-0.14	
610			-----		-----	-----		-----	
657	E2193- not sparged	10 mm	-----		-----	72.28		0.77	
663	E2193- not sparged	10 mm	-----		-----	71.36		0.13	
786			-----		-----	-----		-----	
825			-----		-----	-----		-----	
848	E2193- not sparged	50 mm	-----		-----	69.92		-0.87	
852	E2193- not sparged	10 mm	-----		-----	71.0	C	-0.12	fr. 99.3
857	E2193- not sparged	10 mm	-----		-----	71.6		0.29	
860	E2193- not sparged	10 mm	-----		-----	71.7		0.36	
861	E2193- not sparged	50 mm	-----		-----	71.4		0.16	
862	E2193- not sparged	50 mm	-----		-----	71.40		0.16	
865	E2193- not sparged	10 mm	-----		-----	72.1		0.64	
869	E2193- not sparged	10 mm	-----		-----	70.3		-0.60	
886			-----		-----	-----		-----	
902	E2193- not sparged	10 mm	-----		-----	71.36		0.13	
912	E2193- not sparged	50 mm	-----		-----	73.8		1.82	
913	E2193- not sparged	10 mm	-----		-----	72.85		1.16	
962			-----		-----	-----		-----	
963			-----		-----	-----		-----	
1107	E2193- not sparged	10 mm	-----		-----	72.2	C	0.71	rep. 100.0
1117	E2193- not sparged	50 mm	-----		-----	70.95		-0.15	
1151	E2193- not sparged	10 mm	-----		-----	72.23	C	0.73	fr. 99.23
1217	E2193- not sparged	50 mm	-----		-----	66.0	R(0.05)	-3.58	
1261	EO 577A	10 mm	-----		-----	73.57		1.66	
1467	E2193- not sparged	10 mm	-----		-----	71.44		0.18	
1509	E2193- not sparged	50 mm	-----		-----	70.60		-0.40	
1515	E2193- not sparged	50 mm	-----		-----	70.2		-0.67	
1603	In house - not sparged	10 mm	-----		-----	72		0.57	
1608	E2193- not sparged	50 mm	-----		-----	71.0		-0.12	
1623	E2193- not sparged	10 mm	-----		-----	73.59		1.67	
1718	E2193- not sparged	50 mm	-----		-----	70.66		-0.36	
1823	E2193- not sparged	50 mm	-----		-----	69.5		-1.16	
1866	E2193- not sparged	10 mm	-----		-----	70.715		-0.32	
1868	E2193- not sparged	10 mm	-----		-----	70		-0.81	
1880	E2193- not sparged	10 mm	-----		-----	70.8		-0.26	
1954	E2193- not sparged	10 mm	-----		-----	72.4		0.85	
7006	E2193- not sparged	10 mm	-----		-----	70.9		-0.19	
7013	E2193- not sparged	10 mm	-----		-----	70.4		-0.54	
9006		10 mm	-----		-----	-----		-----	
9008	E2193- not sparged	10 mm	-----		-----	71.4		0.16	
9009	E2193- not sparged	10 mm	-----		-----	70.6468		-0.36	
9014	E2193- not sparged	10 mm	-----		-----	71.2		0.02	

normality	unknown	OK
n	5	50
outliers	0	1
mean (n)	81.280	71.174
st.dev. (n)	5.0188	1.3182
R(calc.)	14.053	3.691
st.dev.(E2193:16)	3.4579	1.445
R(E2193:16)	9.682	4.047







APPENDIX 2

Number of participants per country

2 labs in	BELGIUM
3 labs in	BRAZIL
1 lab in	BULGARIA
2 labs in	CANADA
9 labs in	CHINA, People's Republic
1 lab in	GERMANY
3 labs in	INDIA
2 labs in	IRAN, Islamic Republic of
2 labs in	ITALY
2 labs in	KUWAIT
1 lab in	LITHUANIA
3 labs in	MALAYSIA
2 labs in	MEXICO
4 labs in	NETHERLANDS
1 lab in	RUSSIAN FEDERATION
8 labs in	SAUDI ARABIA
3 labs in	SINGAPORE
1 lab in	SOUTH AFRICA
1 lab in	SOUTH KOREA
2 labs in	SPAIN
1 lab in	TAIWAN
1 lab in	THAILAND
2 labs in	TURKEY
1 lab in	UNITED KINGDOM
6 labs in	UNITED STATES OF AMERICA
1 lab in	VENEZUELA

APPENDIX 3

Abbreviations:

C = final test result after checking of first reported suspect test result
D(0.01) = outlier in Dixon's outlier test
D(0.05) = straggler in Dixon's outlier test
G(0.01) = outlier in Grubbs' outlier test
G(0.05) = straggler in Grubbs' outlier test
DG(0.01) = outlier in Double Grubbs' outlier test
DG(0.05) = straggler in Double Grubbs' outlier test
R(0.01) = outlier in Rosner's outlier test
R(0.05) = straggler in Rosner's outlier test
E = probably an error in calculations
U = test result probably reported in a different unit
W = test result withdrawn on request of participant
ex = test result excluded from the statistical evaluation
n.a. = not applicable
n.e. = not evaluated
n.d. = not detected
fr. = first reported
SDS = Safety Data Sheet

Literature:

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