**Institute for
Interlaboratory Studies**

Results of Proficiency Test
Mono Ethylene glycol
(MEG polyester grade)
October 2023

CONTENTS

Appendices:

1   INTRODUCTION

Since 1994 the Institute for Interlaboratory Studies (iis) organizes a proficiency scheme for the analysis of Mono Ethylene glycol (MEG polyester grade) based on the latest version of ASTM E202 every year. During the annual proficiency testing program of 2023 it was decided to continue the round robin for the analysis of Mono Ethylene glycol.

In this interlaboratory study 62 laboratories in 22 countries registered for participation, see appendix 2 for the number of participants per country. In this report the results of the Mono Ethylene glycol proficiency test are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

2   SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organizer of this proficiency test (PT). Sample analyzes for fit-for-use and homogeneity testing were subcontracted to a laboratory that has performed the tests in accordance with for ISO/IEC17043 relevant requirements of ISO/IEC17025.
It was decided to send two different samples of Mono Ethylene glycol (MEG polyester grade): 1x 1 L bottle for various analyzes labelled #23190 and 1x 100 mL bottle for determination of UV only labelled #23191.
The participants were requested to report rounded and unrounded test results. The unrounded test results were preferably used for statistical evaluation.

2.1   ACCREDITATION

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, is accredited in agreement with ISO/IEC17043:2010 (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This PT falls under the accredited scope. This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentiality of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2   PROTOCOL

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5). This protocol is electronically available through the iis website www.iisnl.com, from the FAQ page.

2.3   CONFIDENTIALITY STATEMENT

All data presented in this report must be regarded as confidential and for use by the participating companies only. Disclosure of the information in this report is only allowed by means of the entire report. Use of the contents of this report for third parties is only allowed by written permission of the Institute for Interlaboratory Studies.

Disclosure of the identity of one or more of the participating companies will be done only after receipt of a written agreement of the companies involved.

2.4   SAMPLES

For the preparation of the sample for the regular analyzes in MEG a batch of approximately 90 liters of MEG polyester grade was obtained from a local supplier. After homogenization 85 amber glass bottles of 1 L were filled and labelled #23190.
The homogeneity of the subsamples was checked by determination of Density at 20 °C in accordance with ASTM D4052 on 8 stratified randomly selected subsamples.

	Density at 20 °C in kg/L
sample #23190-1	1.11327
sample #23190-2	1.11328
sample #23190-3	1.11327
sample #23190-4	1.11327
sample #23190-5	1.11328
sample #23190-6	1.11326
sample #23190-7	1.11327
sample #23190-8	1.11327

Table 1: homogeneity test results of subsamples #23190

From the above test results the repeatability was calculated and compared with 0.3 times the reproducibility of the reference test method in agreement with the procedure of ISO13528, Annex B2 in the next table.

	Density at 20 °C in kg/L
r (observed)	0.00002
reference test method	ISO12185:96
0.3 x R (reference test method)	0.0015

Table 2: evaluation of the repeatability of subsamples #23190

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

For the preparation of the sample for the analyzes of UV transmittance in MEG a batch of approximately 9 liters of MEG polyester grade was obtained from a local supplier. After homogenization 85 amber glass bottles of 100 mL were filled and labelled #23191.
The homogeneity of the subsamples was checked by the determination of UV transmittance at 350 nm, 275 nm, 250 nm and 220 nm in accordance with ASTM E2193 option B (not sparged with Nitrogen) using a 10 mm cuvette on 8 stratified randomly selected subsamples.

	UV at 350 nm in %T	UV at 275 nm in %T	UV at 250 nm in %T	UV at 220 nm in %T
sample #23191-1	99.9	98.6	94.6	75.0
sample #23191-2	99.9	98.6	94.7	75.0
sample #23191-3	99.8	98.6	94.8	75.3
sample #23191-4	99.9	98.7	94.5	74.6
sample #23191-5	99.9	98.7	94.4	74.9
sample #23191-6	99.9	98.7	94.5	74.7
sample #23191-7	99.9	98.6	94.5	75.3
sample #23191-8	99.9	98.7	94.6	74.8

Table 3: homogeneity test results of subsamples #23191

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

	UV at 350 nm in %T	UV at 275 nm in %T	UV at 250 nm in %T	UV at 220 nm in %T
r (observed)	0.10	0.15	0.36	0.72
reference test method	E2193-B:23	E2193-B:23	E2193-B:23	E2193-B:23
0.3 x R (reference test method)	0.35	0.63	0.33	1.21

Table 4: evaluation of the repeatabilities of subsamples #23191

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

To each of the participating laboratories one 1 L bottle of MEG polyester grade labelled #23190 and one 100 mL bottle of MEG polyester grade labelled #23191 were sent on September 20, 2023. An SDS was added to the sample package.

2.5   STABILITY OF THE SAMPLES

The stability of 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   ANALYZES

The participants were requested to determine on sample #23190: Acidity as Acetic Acid (ASTM E2679 and ASTM D1613), Aldehydes as Acetaldehyde, Appearance, Ash content, Inorganic Chloride as Cl, Color Pt/Co (manual and automated), Density at 20 °C, Diethylene Glycol, Distillation (Initial Boiling Point, 50% recovered and Dry Point), Iron as Fe, Water miscibility (Hydrocarbons), Purity by GC as received, Specific Gravity 20/20 °C and Water. On sample #23191 it 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' test results, which are above the detection limit, because such test results cannot be used for meaningful statistical evaluations.

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

3   RESULTS

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

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

3.1   STATISTICS

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5).
For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as '<…' or '>…' were not used in the statistical evaluation.

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

The assigned value is determined by consensus based on the test results of the group of participants after rejection of the statistical outliers and/or suspect data.

According to ISO13528 all (original received or corrected) results per determination were submitted to outlier tests. In the iis procedure for proficiency tests, outliers are detected prior to calculation of the mean, standard deviation and reproducibility. For small data sets, Dixon (up to 20 test results) or Grubbs (up to 40 test results) outlier tests can be used. For larger data sets (above 20 test results) Rosner's outlier test can be used. Outliers are marked by D(0.01) for the Dixon's test, by G(0.01) or DG(0.01) for the Grubbs' test and by R(0.01) for the Rosner's test. Stragglers are marked by D(0.05) for the Dixon's test, by G(0.05) or DG(0.05) for the Grubbs' test and by R(0.05) for the Rosner's test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

For each assigned value the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirement based on the target reproducibility in accordance with ISO13528. In this PT the criterion of ISO13528, paragraph 9.2.1, was met for all evaluated tests. Therefore, the uncertainty of all assigned values may be negligible and need not be included in the PT report.

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

3.2   GRAPHICS

In order to visualize the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported test results are plotted. The corresponding laboratory numbers are on the X-axis. The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected reference test method. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle.

Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms. Also, a normal Gauss curve (dotted line) was projected over the Kernel Density Graph (smooth line) for reference. The Gauss curve is calculated from the consensus value and the corresponding standard deviation.

3.3   Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements (derived from e.g. ISO or ASTM test methods), the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the variation in this interlaboratory study.

The target standard deviation was calculated from the literature reproducibility by division with 2.8. In case no literature reproducibility was available, other target values were used, like Horwitz or an estimated reproducibility based on former iis proficiency tests.

When a laboratory did use a test method with a reproducibility that is significantly different from the reproducibility of the reference test method used in this report, it is strongly advised to recalculate the z-score, while using the reproducibility of the actual test method used, this in order to evaluate whether the reported test result is fit-for-use.

The z-scores were calculated according to:

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

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

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

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

4   EVALUATION

In this proficiency test some problems were encountered with the dispatch of the samples. When considering the test results of the two samples together eight participants reported test results after the final reporting date and two other participants did not report any test results. Not all participants were able to report all tests requested.
In total 60 participants reported 845 numerical test results. Observed were 34 outlying test results, which is 4.0%. In proficiency tests outlier percentages of 3% - 7.5% are quite normal.

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

4.1   EVALUATION PER SAMPLE AND PER TEST

In this section the reported test results are discussed per sample and per test. The test methods which were used by the various laboratories were taken into account for explaining the observed differences when possible and applicable. These test methods are also in the tables together with the original data in appendix 1. The abbreviations, used in these tables, are explained in appendix 3.

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). When a method has been reapproved an "R" will be added and the year of approval (e.g. D1209:05R19).

sample #23190

Acidity as Acetic Acid (ASTM E2679): The group of participants met the target requirements.
Two statistical outliers were observed. The calculated reproducibility after
rejection of the statistical outliers is in agreement with the requirements of
ASTM E2679:22.

Acidity as Acetic Acid (ASTM D1613): The group of participants met the target requirements.
No statistical outliers were observed. The calculated reproducibility is in
agreement with the requirements of ASTM D1613:17R23.

Aldehydes as Acetaldehyde: The group of participants met the target requirements. One
statistical outlier was observed. The calculated reproducibility after rejection
of the statistical outlier is in agreement with the requirements of ASTM
E2313:22.

Appearance: All reporting participants agreed on a test result of Pass (Clear & Bright).

Ash content: All reporting participants agreed on a value near or below the application
range. Therefore, no z-scores are calculated.

Inorganic Chloride as Cl: The group of participants had difficulty to meet the target
requirements. One statistical outlier was observed. The calculated
reproducibility after rejection of the statistical outlier is not in agreement
with the requirements of ASTM E2469:16.

Color Pt/Co (manual): The group of participants met the target requirements. One statistical
outlier was observed. The calculated reproducibility after rejection of the
statistical outlier is in agreement with the requirements of ASTM
D1209:05R19.

Color Pt/Co (automated): The group of participants met the target requirements. No statistical
outliers were observed. The calculated reproducibility is in agreement with
the requirements of ASTM D5386:16.

Density at 20 °C: The group of participants met the target requirements. Three statistical
outliers were observed. The calculated reproducibility after rejection of the
statistical outliers is in agreement with the requirements of ISO12185:96.

Diethylene Glycol: The group of participants had difficulty to meet the target requirements.
Six statistical outliers were observed. The calculated reproducibility after
rejection of the statistical outliers is not in agreement with the requirements
of ASTM E2409:20a.

Distillation: The group of participants met the target requirements. In total three statistical outliers were observed and one other test result was excluded over three distillation parameters. All three calculated reproducibilities after rejection of the suspect data are in agreement with the requirements of ASTM D1078:11R19 automated and manual modes.

Iron as Fe: The group of participants had difficulty to meet the target requirements. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM E1615:22.

Water miscibility (Hydrocarbons): All reporting participants agreed on a test result of 'Passes test' or 'Pass'.

Purity by GC as received: Regretfully, no reproducibility data for Purity is mentioned in ASTM E2409:20a. Therefore, no z-scores are calculated.

Specific Gravity 20/20 °C: The group of participants met the target requirements. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM E202:18.

Water: The group of participants had difficulty to meet the target requirements. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM E1064:23.

sample #23191
UV transmittance: The reported test results were evaluated separately for option A (with Nitrogen sparging) and option B (without Nitrogen sparging).

Option A: The group of participants had difficulty to meet the target requirements. Three statistical outliers were observed in the four parameters. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM E2193:23 for the transmittance at 275 nm, 250 nm and 220 nm, but is in agreement for the transmittance at 350 nm.

Option B: The group of participants may have had difficulty to meet the target requirements. Eight statistical outliers were observed in the four parameters. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM E2193:23 for the transmittance at 250 nm, but is in agreement for the transmittance at 350 nm, 275 nm and 220 nm.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the reference test method and the reproducibility as found for the group of participating laboratories. The number of significant test results, the average, the calculated reproducibility (2.8 * standard deviation) and the target reproducibility derived from reference methods are presented in the next table.

Parameter	unit	n	average	2.8 * sd	R(lit)
Acidity as Acetic Acid (E2679)	mg/kg	7	1.15	0.33	0.58
Acidity as Acetic Acid (D1613)	mg/kg	48	6.05	6.3	14
Aldehydes as Acetaldehyde	mg/kg	40	18.3	6.4	15.7
Appearance		57	Pass (Clear&Bright)	n.a.	n.a.
Ash content	%M/M	42	<0.01	n.e.	n.e.
Inorganic Chloride as Cl	mg/kg	22	0.027	0.044	0.022
Color Pt/Co (manual)		28	1.5	1.6	7
Color Pt/Co (automated)		45	1.3	1.6	4.8
Density at 20 °C	kg/L	51	1.1133	0.0002	0.0005
Diethylene Glycol	mg/kg	35	18.4	6.5	4.7
Initial Boiling Point	°C	44	196.9	0.9	3.1
50% recovered	°C	44	197.5	0.6	1.3
Dry Point	°C	41	197.8	0.8	2.1
Iron as Fe	mg/kg	35	0.008	0.012	0.009
Water miscibility (Hydrocarbons)		30	Pass	n.a.	n.a.
Purity by GC as received	%M/M	47	99.975	0.030	n.a.
Specific Gravity 20/20 °C		48	1.1153	0.0002	0.0005
Water	mg/kg	54	150	54	24
UV transmittance at 350 nm (A)	%T	9	99.79	0.70	0.94
UV transmittance at 275 nm (A)	%T	9	99.35	1.56	1.10
UV transmittance at 250 nm (A)	%T	11	97.14	5.17	2.06
UV transmittance at 220 nm (A)	%T	11	87.82	17.21	9.68
UV transmittance at 350 nm (B)	%T	39	99.99	0.88	1.15
UV transmittance at 275 nm (B)	%T	43	99.50	1.78	2.11
UV transmittance at 250 nm (B)	%T	41	96.65	2.08	1.10
UV transmittance at 220 nm (B)	%T	43	79.57	3.93	4.05

Table 5: reproducibilities of tests on samples #23190 and #23191

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

4.3   COMPARISON OF THE PROFICIENCY TEST OF OCTOBER 2023 WITH PREVIOUS PTS

	October 2023	October 2022	October 2021	October 2020	October 2019
Number of reporting laboratories	60	52	61	60	54
Number of test results	845	669	856	852	759
Number of statistical outliers	34	33	44	45	30
Percentage of statistical outliers	4.0%	4.9%	5.1%	5.3%	4.0%

Table 6: comparison with previous proficiency tests

In proficiency tests outlier percentages of 3% - 7.5% are quite normal.

The performance of the determinations of the proficiency tests was compared to the requirements of the reference test methods. The conclusions are given in the following table.

	October 2023	October 2022	October 2021	October 2020	October 2019
Acidity as Acetic Acid (E2679)	+	-	-	--	--
Acidity as Acetic Acid (D1613)	++	+	++	++	+
Aldehydes as Acetaldehyde	++	++	++	+	+
Ash content	n.e.	n.e.	n.e.	n.e.	(++)
Inorganic Chloride as Cl	--	-	-	--	--
Color Pt/Co (manual)	++	++	++	++	+
Color Pt/Co (automated)	++	++	++	++	+/-
Density at 20 °C	++	++	++	+	++
Diethylene Glycol	-	-	--	-	-
Distillation	++	++	++	++	++
Iron as Fe	-	-	-	-	--
Specific Gravity 20/20 °C	++	++	+	+	++
Water	--	-	-	-	+/-
UV transmittance at 350 nm (A)	+	-	+	++	+/-
UV transmittance at 275 nm (A)	-	-	-	+/-	-
UV transmittance at 250 nm (A)	--	--	+	--	+/-
UV transmittance at 220 nm (A)	-	+	+	++	++
UV transmittance at 350 nm (B)	+	-	+	++	-
UV transmittance at 275 nm (B)	+	-	+	++	+
UV transmittance at 250 nm (B)	-	--	-	-	--
UV transmittance at 220 nm (B)	+/-	-	+	+	+

Table 7: comparison of determinations to the reference test methods

For results between brackets no z-scores are calculated

The following performance categories were used:

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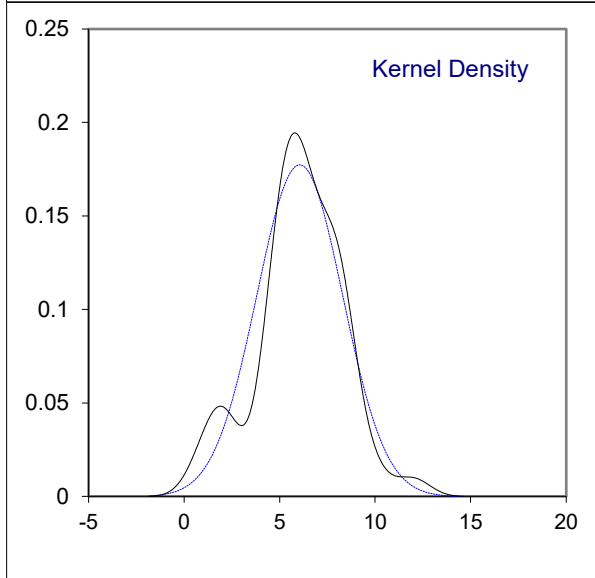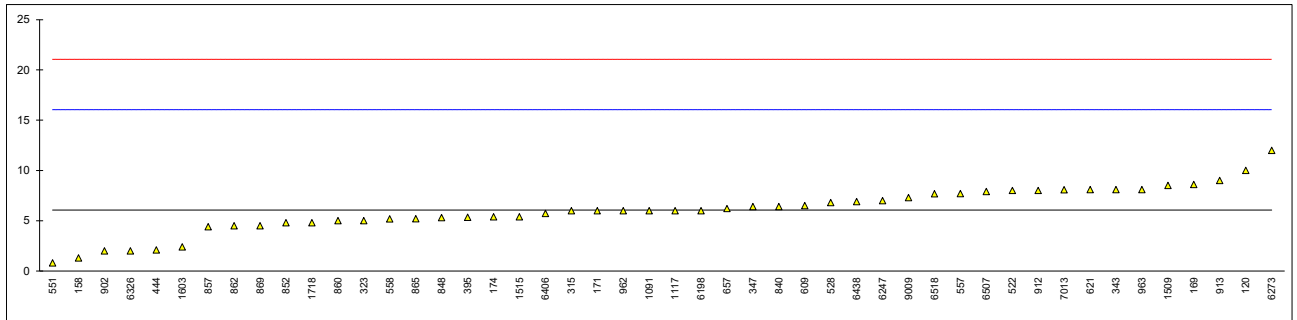　　n.e.　 : not evaluated

APPENDIX 1

Determination of Acidity as Acetic Acid (ASTM E2679) on sample #23190; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
158		-----		-----	
169		-----		-----	
171		-----		-----	
172		-----		-----	
174		-----		-----	
315		-----		-----	
323	E2679	1.3	C	0.74	first reported 1.7
343		-----		-----	
347		-----		-----	
370		-----		-----	
395		-----		-----	
396		-----		-----	
444		-----		-----	
522		-----		-----	
528		-----		-----	
551		-----		-----	
557		-----		-----	
558		-----		-----	
600		-----		-----	
609		-----		-----	
621	E2679	1		-0.71	
657	E2679	1.2012		0.26	
840		-----		-----	
848		-----		-----	
852		-----		-----	
857		-----		-----	
860		-----		-----	
862		-----		-----	
865		-----		-----	
869		-----		-----	
886		-----		-----	
902		-----		-----	
912		-----		-----	
913		-----		-----	
962		-----		-----	
963		-----		-----	
1091	E2679	1.1		-0.23	
1117		-----		-----	
1509		-----		-----	
1515		-----		-----	
1603		-----		-----	
1656		-----		-----	
1718		-----		-----	
1880	E2679	1.2		0.25	
1954		-----		-----	
6198		-----		-----	
6247		-----		-----	
6262		-----		-----	
6273		-----		-----	
6326		-----		-----	
6406		-----		-----	
6438		-----		-----	
6507	E2679	6.7	C,G(0.01)	26.78	first reported 0.000067
6518		-----		-----	
6555	E2679	0.5	C,G(0.05)	-3.12	first reported 0.00005
7013		-----		-----	
9006	E2679	1.23		0.40	
9008	E2679	1.0		-0.71	
9009		-----		-----	
9014		-----		-----	

|		
normality	OK	
n	7	
outliers	2	
mean (n)	1.147	
st.dev. (n)	0.1165	
R(calc.)	0.326	
st.dev.(E2679:22)	0.2073	
R(E2679:22)	0.581	
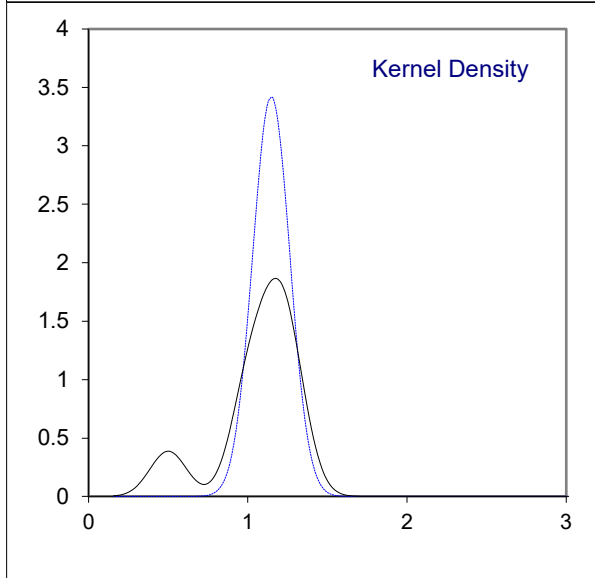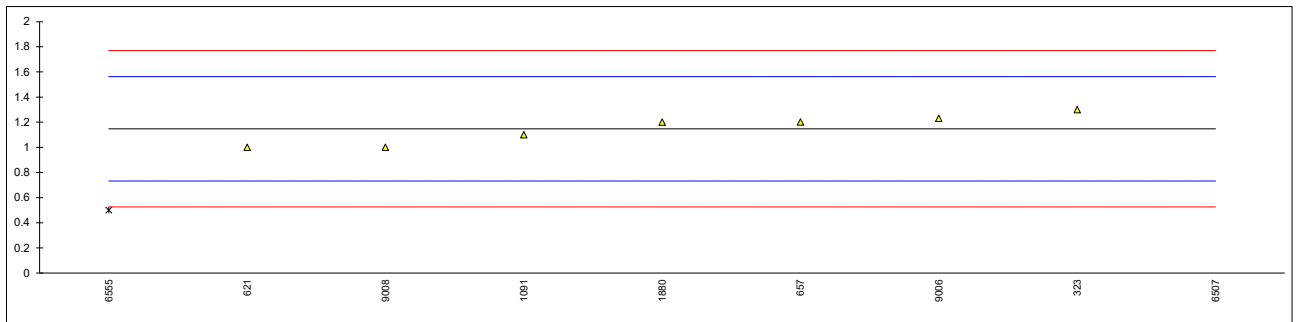
Determination of Acidity as Acetic Acid (ASTM D1613) on sample #23190; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120	D1613	10		0.79	
150	D1613	<1		-----	
158	D1613	1.3		-0.95	
169	D1613	8.6		0.51	
171	D1613	6		-0.01	
172		-----		-----	
174	D1613	5.4		-0.13	
315	D1613	6		-0.01	
323	D1613	5		-0.21	
343	D1613	8.1		0.41	
347	D1613	6.4		0.07	
370		-----		-----	
395	D1613	5.347		-0.14	
396		-----		-----	
444	D1613	2.1		-0.79	
522	D1613	8.0		0.39	
528	D1613	6.795		0.15	
551	D1613	0.8		-1.05	
557	D1613	7.688731		0.33	
558	D1613	5.184		-0.17	
600		-----		-----	
609	D1613	6.5		0.09	
621	D1613	8.1		0.41	
657	D1613	6.2099		0.03	
840	D1613	6.4		0.07	
848	D1613	5.3		-0.15	
852	D1613	4.8		-0.25	
857	D1613	4.4		-0.33	
860	D1613	5		-0.21	
862	D1613	4.5		-0.31	
865	D1613	5.2		-0.17	
869	D1613	4.5		-0.31	
886		-----		-----	
902	D1613	2		-0.81	
912	D1613	8.0		0.39	
913	D1613	9		0.59	
962	D1613	6		-0.01	
963	D1613	8.1		0.41	
1091	D1613	6.0		-0.01	
1117	D1613	6	C	-0.01	first reported 0.0006
1509	D1613	8.5		0.49	
1515	D1613	5.4	C	-0.13	first reported 75.4
1603	In house	2.4		-0.73	
1656		-----		-----	
1718	D1613	4.8		-0.25	
1880		-----		-----	
1954		-----		-----	
6198	D1613	6		-0.01	
6247	D1613	7.0		0.19	
6262		-----		-----	
6273	D1613	12		1.19	
6326	D1613	2		-0.81	
6406	D1613	5.73		-0.06	
6438	D1613	6.907		0.17	
6507	D1613	7.9	C	0.37	first reported 0.00079
6518	D1613	7.68		0.33	
6555		-----		-----	
7013	D1613	8.08		0.41	
9006		-----		-----	
9008		-----		-----	
9009	D1613	7.3		0.25	
9014		-----		-----	

	normality	OK	
	n	48	
	outliers	0	
	mean (n)	6.050	
	st.dev. (n)	2.2491	
	R(calc.)	6.297	
	st.dev.(D1613:17R23)	5.0000	
	R(D1613:17R23)	14	

Determination of Aldehydes as Acetaldehyde on sample #23190; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150	E2313	20.9		0.46	
158	E2313	17.6		-0.13	
169	E2313	15.4		-0.52	
171		-----		-----	
172	E2313	13.8		-0.80	
174	E2313	19.2		0.16	
315	E2313	14.6		-0.66	
323	E2313	19.0		0.12	
343		-----		-----	
347		-----		-----	
370		-----		-----	
395		-----		-----	
396		-----		-----	
444	E2313	16.1		-0.39	
522		-----		-----	
528	E2313	18.51		0.04	
551		-----		-----	
557	E2313	23.1181363622		0.86	
558		-----		-----	
600		-----		-----	
609		-----		-----	
621		-----		-----	
657	E2313	19.44		0.20	
840	E2313	19.82		0.27	
848	E2313	18.1		-0.04	
852	E2313	18.4		0.02	
857	E2313	18.4		0.02	
860	E2313	18.3		0.00	
862	E2313	18.5		0.03	
865	E2313	18.2		-0.02	
869	E2313	17.4		-0.16	
886		-----		-----	
902	E2313	17.3		-0.18	
912		-----		-----	
913	E2313	20.8		0.44	
962	E2313	18.4		0.02	
963	E2313	8.9	R(0.01)	-1.67	
1091	E2313	17.5		-0.14	
1117		-----	W	-----	test result withdrawn, reported <0.1
1509	E2313	11.86		-1.15	
1515	E2313	17.77		-0.10	
1603	In house	19.9		0.28	
1656		-----		-----	
1718	E2313	19.51		0.21	
1880	E2313	19.22		0.16	
1954		-----		-----	
6198	E2313	16.552		-0.31	
6247	E2313	19.8		0.27	
6262	E2313	15.8		-0.45	
6273		-----		-----	
6326	E2313	22.8254		0.80	
6406		-----		-----	
6438	E2313	21.59		0.58	
6507	E2313	15.597		-0.48	
6518	E2313	18.986		0.12	
6555	E2313	16.7		-0.29	
7013	E2313	19.2		0.16	
9006	E2313	18.23		-0.01	
9008	E2313	18.175		-0.02	
9009	E2313	21.8		0.62	
9014		-----		-----	

	normality	OK	
	n	40	
	outliers	1	
	mean (n)	18.308	
	st.dev. (n)	2.2889	
	R(calc.)	6.409	
	st.dev.(E2313:22)	5.6243	
	R(E2313:22)	15.748	
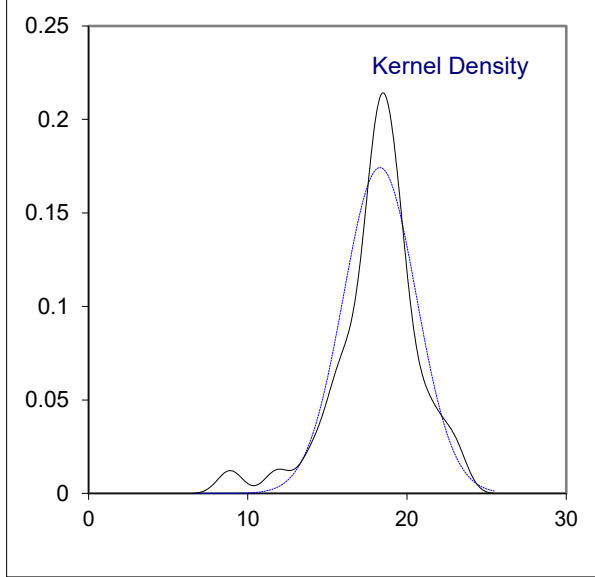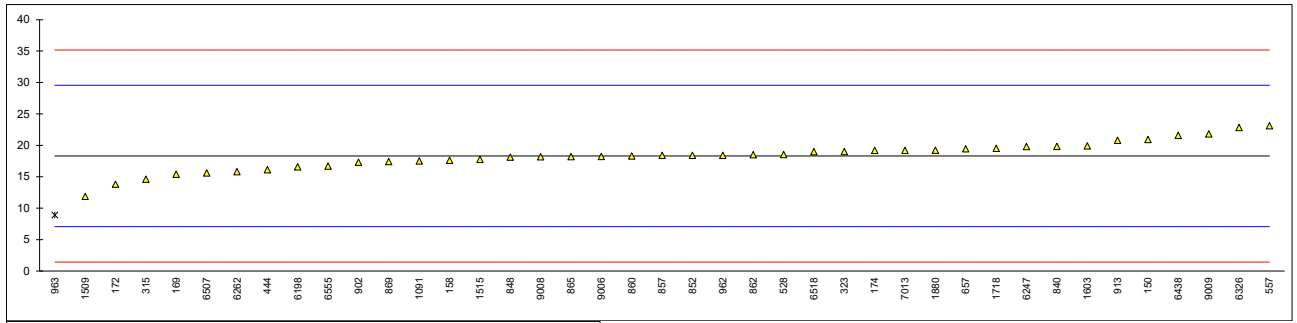
Determination of Appearance on sample #23190;

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150	E2680	Pass		-----	
158	E2680	Pass		-----	
169	Visual	PASS		-----	
171	E2680	pass		-----	
172	E2680	PASS		-----	
174	Visual	Clear & Free		-----	
315	E2680	pass		-----	
323	E2680	C&B		-----	
343	E2680	Pass		-----	
347	E2680	Pass		-----	
370	E2680	pass		-----	
395	E2680	PASS		-----	
396		-----		-----	
444	E2680	Pass		-----	
522	Visual	PASS		-----	
528	E2680	Pass		-----	
551	E2680	Pass		-----	
557	E2680	PASS		-----	
558	Visual	PASS		-----	
600	Visual	Clear & Colourless		-----	
609	E2680	Pass		-----	
621	E2680	PASS		-----	
657	E2680	Pass		-----	
840	E2680	Pass		-----	
848	E2680	Bright&Clear		-----	
852	Visual	Clear&Bright		-----	
857	E2680	Pass		-----	
860	E2680	Pass		-----	
862	E2680	pass		-----	
865	E2680	Clear&Bright		-----	
869	E2680	Pass		-----	
886		-----		-----	
902	E2680	Pass		-----	
912	E2680	PASS		-----	
913	E2680	Clear and Bright		-----	
962	Visual	Pass		-----	
963	E2680	Pass		-----	
1091	E2680	clear		-----	
1117	D4176	pass		-----	
1509	E2680	CFFSM		-----	
1515	E2680	PASS		-----	
1603	Visual	CFP		-----	
1656	Visual	pass		-----	
1718	E2680	CFFSM		-----	
1880	E2680	Pass		-----	
1954		-----		-----	
6198		-----		-----	
6247	D4176	Clear colourless liquid		-----	
6262	Visual	clear		-----	
6273	E2680	B&C		-----	
6326	E2680	Colourless		-----	
6406	Visual	Clear & Bright		-----	
6438	E2680	Pass		-----	
6507	E2680	pass		-----	
6518	E2680	Pass		-----	
6555	E2680	clear and bright		-----	
7013	Visual	Clear		-----	
9006	E2680	PASS		-----	
9008	E2680	Pass		-----	
9009	E2680	Pass		-----	
9014	E2680	PASS		-----	
	n	57			
	mean (n)	Pass (Clear & Bright)			

CFFSM = Clear and free from suspended matter
CFP = Clear and free from particles

Determination of Ash content on sample #23190; results in %M/M

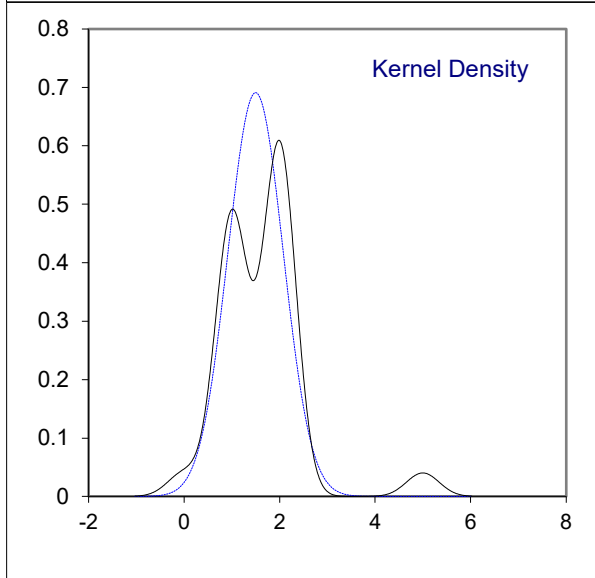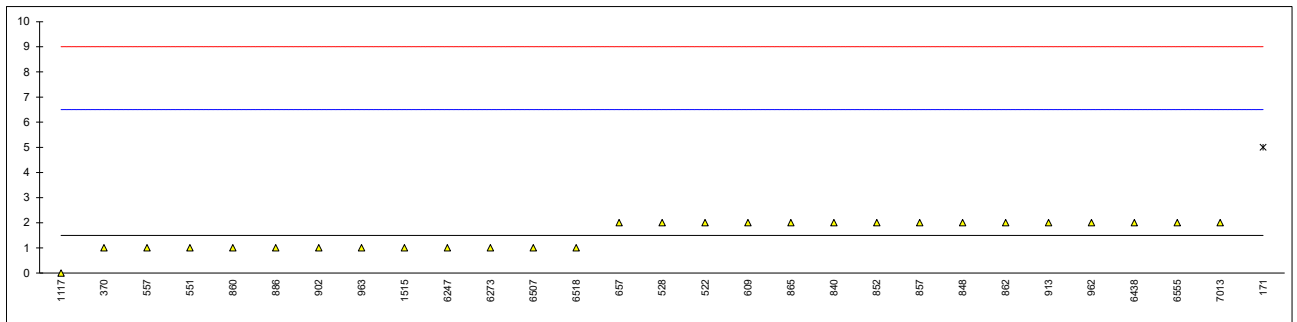| lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150	D482	<0.010		-----	
158	D482	<0.001		-----	
169	D482	0		-----	
171	D482	<0.010		-----	
172	D482	<0.010		-----	
174	D482	<0.001		-----	
315	D482	<0.001		-----	
323	D482	<0.001		-----	
343		-----		-----	
347		-----		-----	
370	D482	<0.001		-----	
395		-----		-----	
396		-----		-----	
444	D482	<0.01		-----	
522		-----		-----	
528	D482	0.00032		-----	
551	D482	<0.001		-----	
557	D482	0.0004490745		-----	
558		-----		-----	
600		-----		-----	
609		-----		-----	
621	D482	<0.01		-----	
657	D482	0.0007		-----	
840	ISO6245	<0.001		-----	
848	D482	0.0002		-----	
852	D482	<0.001		-----	
857	D482	<0.001		-----	
860	D482	<0.001		-----	
862	D482	0.0002		-----	
865	D482	0.0003		-----	
869	D482	0.0003		-----	
886		-----		-----	
902	D482	<0,001		-----	
912	D482	<0.001		-----	
913	D482	<0.01		-----	
962	D482	<0.010		-----	
963	D482	<0.01		-----	
1091		-----		-----	
1117	D482	<0.001		-----	
1509	D482	0.0007		-----	
1515		-----		-----	
1603	In house	N.N. < 0,0010		-----	N.N. below quantification limit (given).
1656		-----		-----	
1718	D482	0.0000		-----	
1880		-----		-----	
1954		-----		-----	
6198		-----		-----	
6247		-----		-----	
6262	D482	0.0000		-----	
6273	D482	<0.01	C	-----	first reported 0.01
6326	D482	<0.001		-----	
6406	D482	< 0.001		-----	
6438	D482	<0.01		-----	
6507	D482	0.0000		-----	
6518	D482	0.0007		-----	
6555	D482	0		-----	
7013	D482	0.0004		-----	
9006		-----		-----	
9008		-----		-----	
9009	D482	<0.01		-----	
9014		-----		-----	
	n	42			
	mean (n)	<0.01			

Determination of Inorganic Chloride as Cl on sample #23190; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120	E2469	0.01		-2.13	
150		-----		-----	
158	E2469	<0.01		-----	
169		-----		-----	
171	E2469	<0.01		-----	
172	E2469	<0.05		-----	
174	E2469	<0.01		-----	
315	E2469	<0.01		-----	
323	E2469	<0.03		-----	
343	E2469	0.02		-0.85	
347		-----		-----	
370		-----		-----	
395		-----		-----	
396		-----		-----	
444	E2469	0.044		2.24	
522		-----		-----	
528		-----		-----	
551		-----		-----	
557		-----		-----	
558		-----		-----	
600		-----		-----	
609	E2469	0.020		-0.85	
621		-----		-----	
657	E2469	0.695	R(0.01)	85.96	
840	IMPCA002	<0.2		-----	
848	E2469	0.03		0.44	
852		-----		-----	
857	E2469	0.022		-0.59	
860		-----		-----	
862		-----		-----	
865	INH-001	<0.3		-----	
869		-----		-----	
886		-----		-----	
902	E2469	<0,05		-----	
912		-----		-----	
913		<1		-----	
962	E2469	0.01		-2.13	
963	SMS2901	<0.01		-----	
1091	E2469	0.026		-0.08	
1117	E2469	0.036		1.21	
1509	E2469	0.0159		-1.38	
1515		-----		-----	
1603	In house	N.N. < 0,018		-----	N.N. below quantification limit (given).
1656		-----		-----	
1718	E2469	0.0132		-1.72	
1880	E2469	0.056		3.78	
1954		-----		-----	
6198		0.028		0.18	
6247	E2469	0.01		-2.13	
6262	E2469	0.0106		-2.06	
6273		-----		-----	
6326	E2469	0.027		0.05	
6406	E2469	<0.1		-----	
6438		-----		-----	
6507	E2469	0.06		4.30	
6518	E2469	<0.01		-----	
6555	E2469	0.033		0.82	
7013	E2469	0.015		-1.49	
9006	E2469	0.017		-1.23	
9008	E2469	0.0595		4.23	
9009	E2469	0.0220		-0.59	
9014		-----		-----	

|			
	normality	suspect	
	n	22	
	outliers	1	
	mean (n)	0.0266	
	st.dev. (n)	0.01580	
	R(calc.)	0.0442	
	st.dev.(E2469:16)	0.00778	
	R(E2469:16)	0.0218	
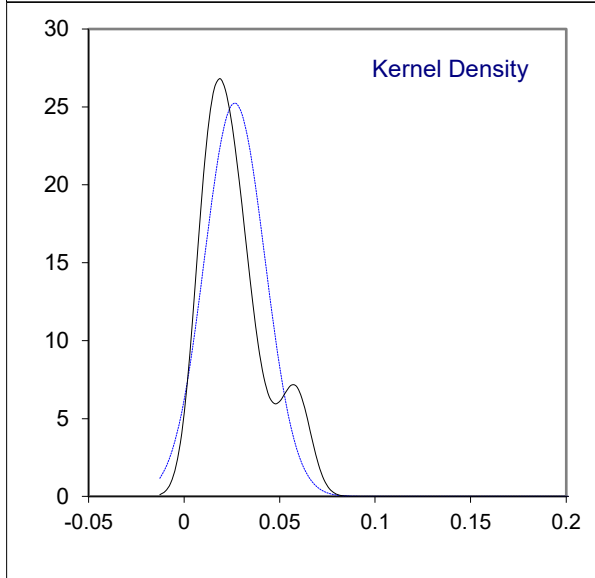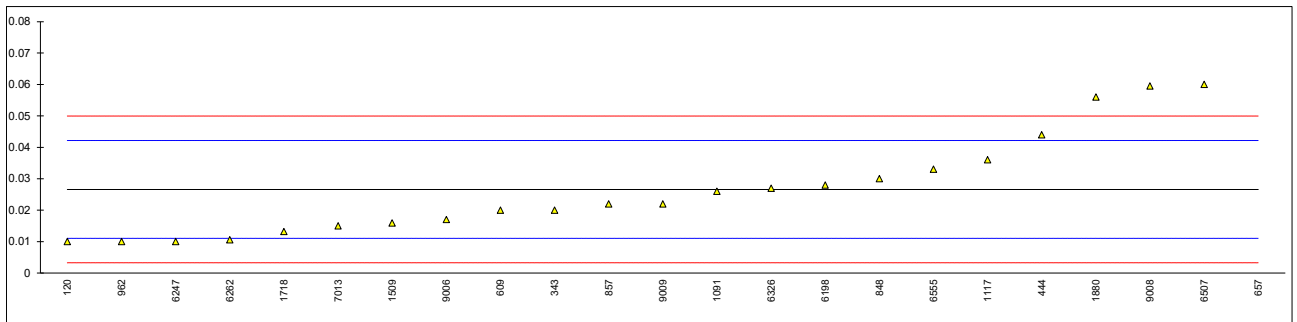
Determination of Color Pt/Co (manual) on sample #23190

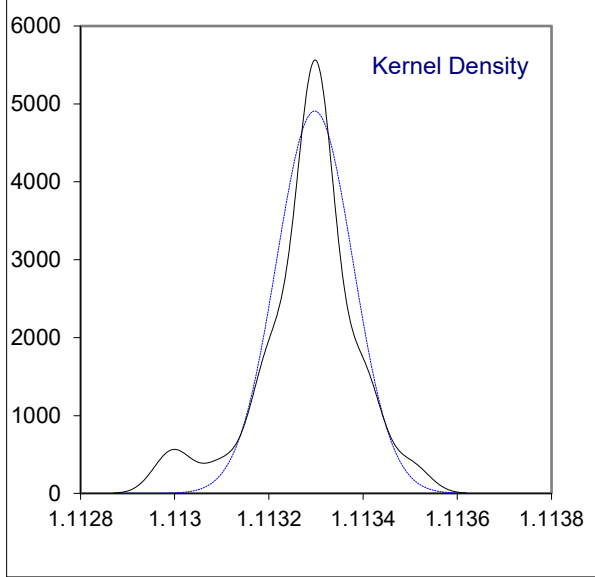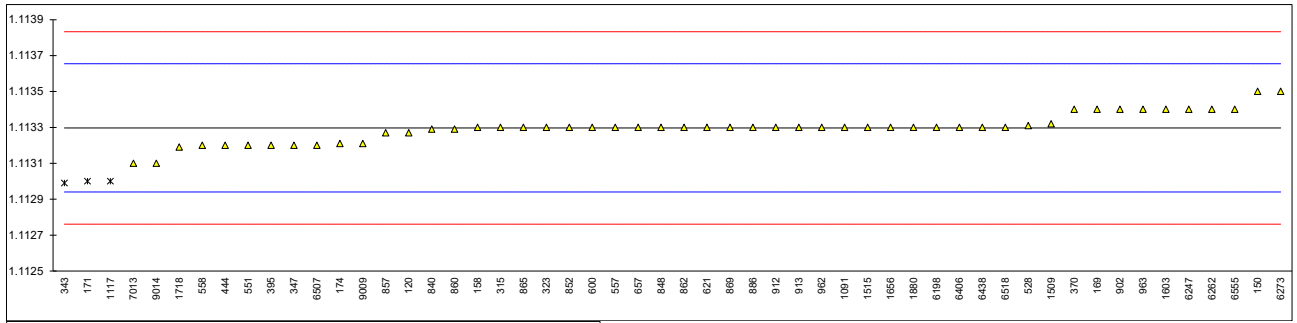| lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150	D1209	<5		-----	
158	D1209	<5		-----	
169	D1209	<5		-----	
171	D1209	5	R(0.01)	1.40	
172	D1209	<5		-----	
174		-----		-----	
315	D1209	<5		-----	
323	D1209	<5		-----	
343		-----		-----	
347		-----		-----	
370	D1209	1		-0.20	
395		-----		-----	
396		-----		-----	
444		-----		-----	
522	D1209	2		0.20	
528	D1209	2		0.20	
551	D1209	1		-0.20	
557	D1209	1		-0.20	
558	D1209	<3		-----	
600		-----		-----	
609	D1209	2.0		0.20	
621	D1209	<5		-----	
657	D1209	2		0.20	
840	D1209	2		0.20	
848	D1209	2		0.20	
852	D1209	2		0.20	
857	D1209	2		0.20	
860	D1209	1		-0.20	
862	D1209	2		0.20	
865	D1209	2		0.20	
869		-----		-----	
886	D1209	1		-0.20	
902	D1209	1		-0.20	
912		-----		-----	
913	D1209	2		0.20	
962	D1209	2		0.20	
963	D1209	1		-0.20	
1091	D1209	<5		-----	
1117	D1209	0		-0.60	
1509	D1209	<5		-----	
1515	D1209	1		-0.20	
1603		-----		-----	
1656		-----		-----	
1718	D1209	<5		-----	
1880		-----		-----	
1954		-----		-----	
6198		-----		-----	
6247	D1209	1		-0.20	
6262	D1209	<5		-----	
6273	D1209	1		-0.20	
6326		-----		-----	
6406	D1209	<5		-----	
6438	D1209	2		0.20	
6507	D1209	1		-0.20	
6518	D1209	1		-0.20	
6555	D1209	2		0.20	
7013	D1209	2		0.20	
9006		-----		-----	
9008		-----		-----	
9009		-----		-----	
9014		-----		-----	
	normality	OK			
	n	28			
	outliers	1			
	mean (n)	1.50			
	st.dev. (n)	0.577			
	R(calc.)	1.62			
	st.dev.(D1209:05R19)	2.500			
	R(D1209:05R19)	7			

Determination of Color Pt/Co (automated) on sample #23190

| lab	method	value	mark	z(targ)	remarks
120	D5386	0		-0.73	
150	D5386	2		0.44	
158	D5386	2		0.44	
169	D5386	1.32		0.04	
171	D5386	0		-0.73	
172		-----		-----	
174	D5386	1.29		0.03	
315	D5386	2		0.44	
323	D5386	1		-0.14	
343	D5386	1		-0.14	
347	D5386	1		-0.14	
370		-----		-----	
395	D5386	2		0.44	
396		-----		-----	
444	D5386	0.2		-0.61	
522		-----		-----	
528	D5386	1.5		0.15	
551	D5386	1		-0.14	
557	D5386	1		-0.14	
558		-----		-----	
600		-----		-----	
609		-----		-----	
621		-----		-----	
657	D5386	1.29		0.03	
840	D5386	1.1		-0.08	
848	D5386	1		-0.14	
852	D5386	1		-0.14	
857	D5386	2		0.44	
860	D5386	1		-0.14	
862	D5386	1		-0.14	
865	D5386	2		0.44	
869	D5386	1		-0.14	
886		-----		-----	
902	D5386	1		-0.14	
912		-----		-----	
913	D5386	1.5		0.15	
962	D5386	2		0.44	
963	D5386	1		-0.14	
1091		-----		-----	
1117	D5386	2		0.44	
1509	D5386	1	C	-0.14	first reported 4
1515		-----		-----	
1603	In house	1		-0.14	
1656	D5386	1		-0.14	
1718	D5386	1		-0.14	
1880	D5386	1.5		0.15	
1954		-----		-----	
6198	D5386	1.1		-0.08	
6247	D5386	1		-0.14	
6262	D5386	0.0		-0.73	
6273		-----		-----	
6326	D5386	1.68		0.25	
6406	D5386	2.5		0.73	
6438	D5386	1.6		0.21	
6507		-----		-----	
6518	D8005	1		-0.14	
6555		-----		-----	
7013		-----		-----	
9006	D5386	1.1		-0.08	
9008	D5386	1.35		0.06	
9009	D5386	2.11		0.51	
9014	D5386	0.9		-0.20	
	normality	OK			
	n	45			
	outliers	0			
	mean (n)	1.25			
	st.dev. (n)	0.572			
	R(calc.)	1.60			
	st.dev.(D5386:16)	1.712			
	R(D5386:16)	4.79			

Kernel Density
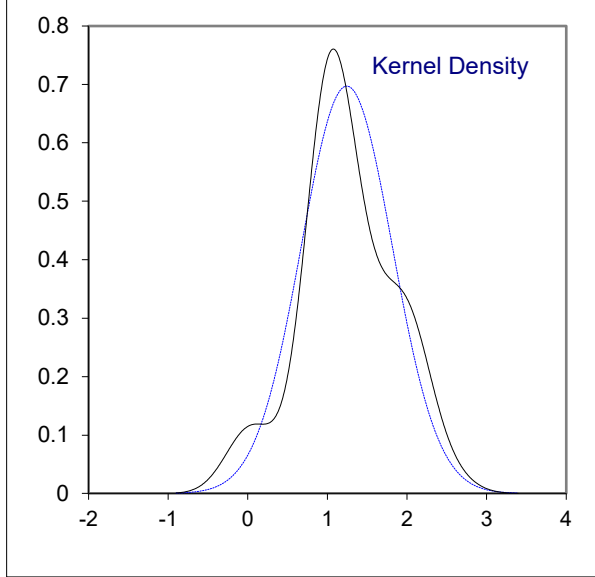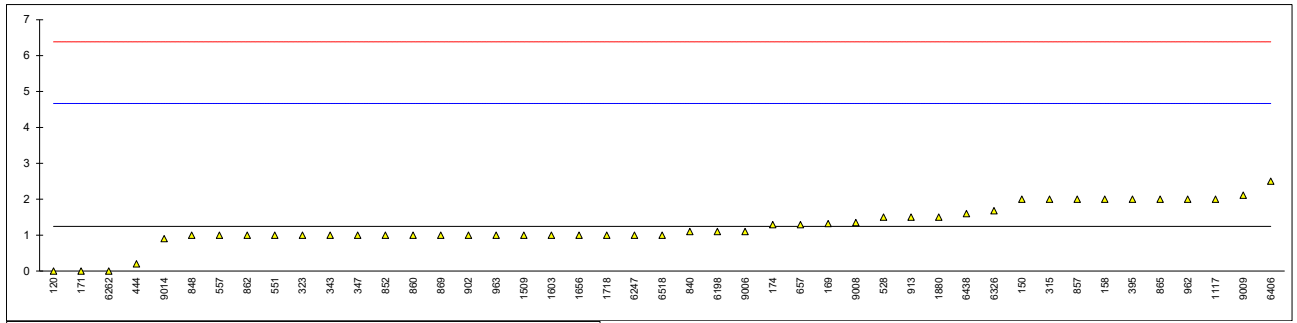
Determination of Density at 20 °C on sample #23190; results in kg/L

lab	method	value	mark	z(targ)	remarks
120	D4052	1.11327		-0.15	
150	D4052	1.1135	C	1.14	first reported 1.1137
158	D4052	1.1133		0.02	
169	D4052	1.1134		0.58	
171	D4052	1.113	R(0.05)	-1.66	
172		-----		-----	
174	D4052	1.11321		-0.49	
315	D4052	1.1133		0.02	
323	D4052	1.1133		0.02	
343	D4052	1.11299	R(0.05)	-1.72	
347	D4052	1.1132		-0.54	
370	D4052	1.1134		0.58	
395	D4052	1.1132		-0.54	
396		-----		-----	
444	D4052	1.1132		-0.54	
522		-----		-----	
528	D4052	1.11331		0.07	
551	D4052	1.1132	C	-0.54	first reported 1.1136
557	D4052	1.1133		0.02	
558	D4052	1.1132		-0.54	
600	INH-002	1.1133		0.02	
609		-----		-----	
621	D4052	1.1133		0.02	
657	D4052	1.1133		0.02	
840	D4052	1.11329		-0.04	
848	D4052	1.1133		0.02	
852	D4052	1.1133		0.02	
857	D4052	1.11327		-0.15	
860	D4052	1.11329		-0.04	
862	D4052	1.1133		0.02	
865	D4052	1.1133		0.02	
869	D4052	1.1133		0.02	
886	D4052	1.1133		0.02	
902	D4052	1.1134		0.58	
912	D4052	1.1133		0.02	
913	D4052	1.1133		0.02	
962	D4052	1.1133		0.02	
963	D4052	1.1134		0.58	
1091	D4052	1.1133		0.02	
1117	D4052	1.113	R(0.05)	-1.66	
1509	D4052	1.11332		0.13	
1515	D4052	1.1133		0.02	
1603	In house	1.11340		0.58	
1656	ISO12185	1.1133		0.02	
1718	D4052	1.11319		-0.60	
1880	D4052	1.1133		0.02	
1954		-----		-----	
6198	D4052	1.1133		0.02	
6247	D4052	1.1134		0.58	
6262	D4052	1.1134		0.58	
6273	D4052	1.1135		1.14	
6326		-----		-----	
6406	D4052	1.1133		0.02	
6438	D4052	1.1133		0.02	
6507	D4052	1.1132		-0.54	
6518	D4052	1.1133		0.02	
6555	D4052	1.1134		0.58	
7013	D4052	1.1131		-1.10	
9006		-----		-----	
9008		-----		-----	
9009	D4052	1.11321		-0.49	
9014	D4052	1.11310		-1.10	

	normality	OK	
	n	51	
	outliers	3	
	mean (n)	1.1133	
	st.dev. (n)	0.000081	
	R(calc.)	0.00023	
	st.dev.(ISO12185:96)	0.000179	
	R(ISO12185:96)	0.0005	

Kernel Density
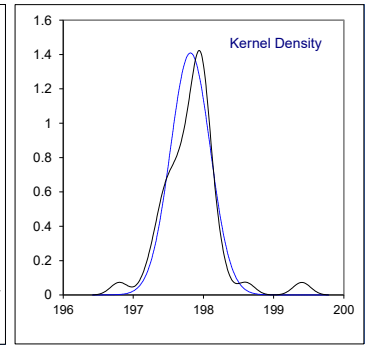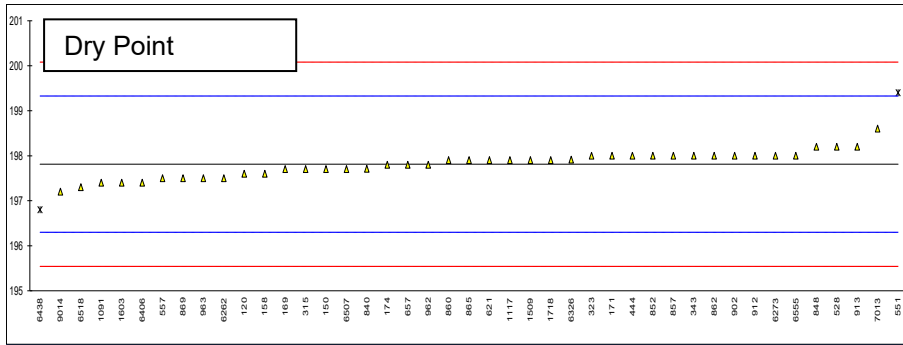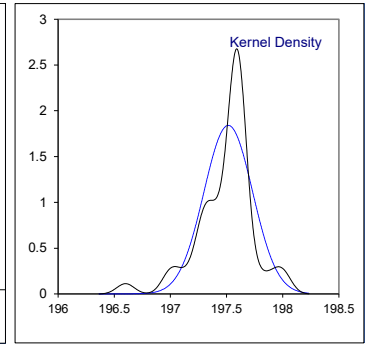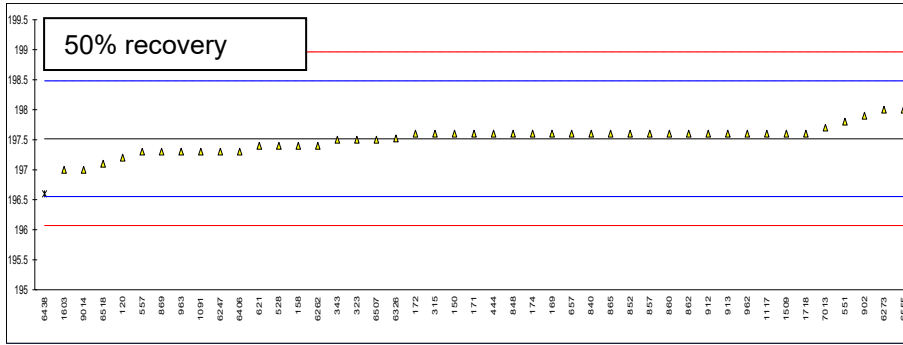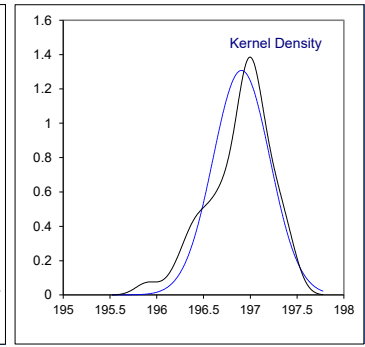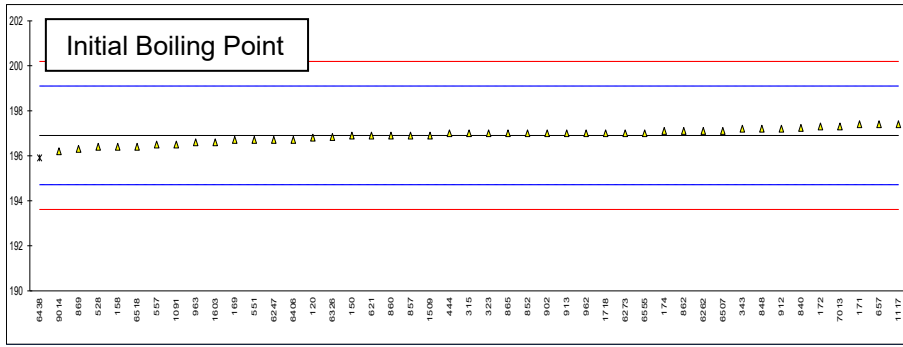
Determination of Diethylene Glycol on sample #23190; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
158		-----		-----	
169	E2409	16.8		-0.94	
171		-----		-----	
172	E2409	29.4	C,R(0.01)	6.60	first reported 0.0029
174		-----		-----	
315	E2409	10	R(0.01)	-5.02	
323	E2409	24		3.37	
343	E2409	20		0.97	
347	E2409	<50		-----	
370		-----		-----	
395		-----		-----	
396		-----		-----	
444	E2409	16		-1.42	
522	E2409	18.85		0.28	
528		-----		-----	
551	E2409	18		-0.23	
557	E2409	19.40		0.61	
558	E2409	19.7		0.79	
600		-----		-----	
609	E2409	20		0.97	
621	E2409	<22		-----	
657	E2409	34.922	C,R(0.01)	9.91	first reported 44.2188
840	E2409	N.D <22		-----	
848	E2409	22		2.17	
852	E2409	19		0.37	
857	E2409	20.4		1.21	
860	E2409	20		0.97	
862	E2409	19		0.37	
865	E2409	19		0.37	
869	E2409	20		0.97	
886		-----		-----	
902		-----		-----	
912	E2409	20		0.97	
913	E2409	16		-1.42	
962	E2409	16		-1.42	
963	E2409	17		-0.82	
1091	E2409	28	R(0.01)	5.76	
1117	E2409	33	C,R(0.01)	8.76	first reported 0.0033
1509	E2409	13.5		-2.92	
1515	E2409	17.9		-0.29	
1603	In house	N.N. < 0,0050		-----	N.N. below quantification limit (given).
1656		-----		-----	
1718	E2409	21.6		1.93	
1880	E2409	16		-1.42	
1954		-----		-----	
6198	E2409	15	C	-2.02	first reported 0.0015
6247	E2409	20		0.97	
6262	E2409	20		0.97	
6273	E2409	15		-2.02	
6326	E2409	16		-1.42	
6406		-----		-----	
6438	E2409	18	C	-0.23	first reported 106
6507	E2409	15	C	-2.02	first reported 0.0015
6518	E2409	20.1		1.03	
6555	E2409	29	C,R(0.01)	6.36	first reported 0.0029
7013	E2409	<27		-----	
9006	E2409	19.6		0.73	
9008		-----		-----	
9009	E2409	17		-0.82	
9014	E2409	17.34	C	-0.62	first reported 84.58

|				
	normality	OK		
	n	35		
	outliers	6		
	mean (n)	18.38		
	st.dev. (n)	2.304		
	R(calc.)	6.45		
	st.dev.(E2409:20a)	1.670		
	R(E2409:20a)	4.68		
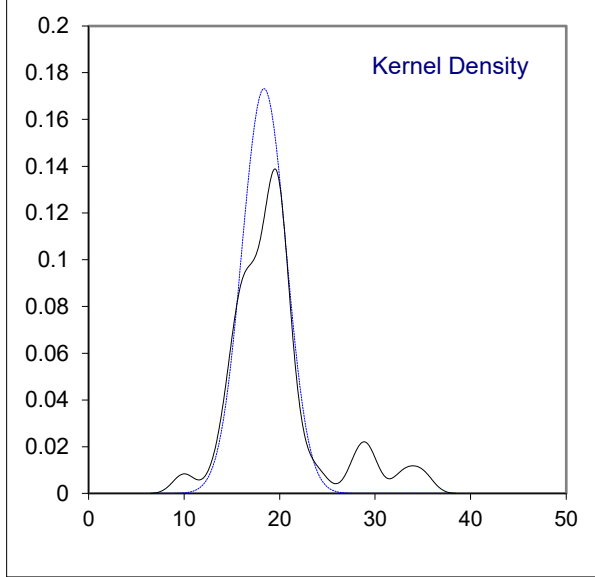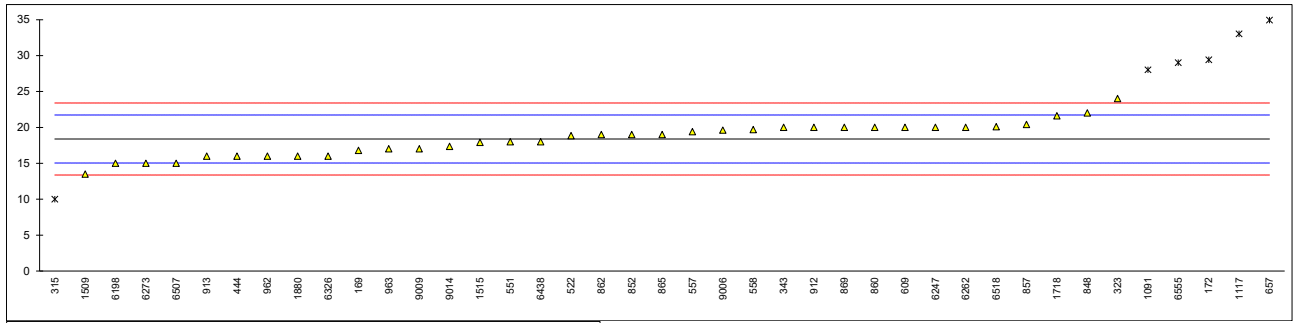
Determination of Distillation: IBP, 50% recovered, Dry Point on sample #23190; results in °C

lab	method	IBP	mark	z(targ)	50% rec	mark	z(targ)	DP	mark	z(targ)
120	D1078	196.8		-0.10	197.2		-0.66	197.6		-0.28
150	D1078-automated	196.9		-0.01	197.6		0.17	197.7		-0.15
158	D1078-automated	196.4		-0.46	197.4		-0.24	197.6		-0.28
169	D1078-automated	196.7		-0.19	197.6		0.17	197.7		-0.15
171	D1078-automated	197.4		0.45	197.6		0.17	198.0		0.25
172	D1078-automated	197.3		0.36	197.6		0.17	-----		-----
174	D1078-automated	197.1		0.18	197.6		0.17	197.8		-0.02
315	D1078-automated	197.0		0.09	197.6		0.17	197.7		-0.15
323	D1078-automated	197.0		0.09	197.5		-0.03	198.0		0.25
343	D1078	197.2		0.27	197.5		-0.03	198.0		0.25
347		-----		-----	-----		-----	-----		-----
370		-----		-----	-----		-----	-----		-----
395		-----		-----	-----		-----	-----		-----
396		-----		-----	-----		-----	-----		-----
444	D1078-automated	197.0		0.09	197.6		0.17	198.0		0.25
522		-----		-----	-----		-----	-----		-----
528	D1078-manual	196.4		-0.46	197.4		-0.24	198.2		0.51
551	D1078-automated	196.7		-0.19	197.8		0.59	199.4	R(0.01)	2.10
557	D1078-automated	196.5		-0.37	197.3		-0.45	197.5		-0.41
558		-----		-----	-----		-----	-----		-----
600		-----		-----	-----		-----	-----		-----
609		-----		-----	-----		-----	-----		-----
621	D1078-manual	196.9		-0.01	197.4		-0.24	197.9		0.12
657	D1078-automated	197.4		0.45	197.6		0.17	197.8		-0.02
840	D1078-automated	197.24		0.30	197.60		0.17	197.71		-0.14
848	D1078-manual	197.2		0.27	197.6		0.17	198.2		0.51
852	D1078-manual	197.0		0.09	197.6		0.17	198.0		0.25
857	D1078-manual	196.9		-0.01	197.6		0.17	198.0		0.25
860	D1078-manual	196.9		-0.01	197.6		0.17	197.9		0.12
862	D1078-manual	197.1		0.18	197.6		0.17	198.0		0.25
865	D1078-automated	197.0		0.09	197.6		0.17	197.9		0.12
869	D1078-automated	196.3		-0.55	197.3		-0.45	197.5		-0.41
886		-----		-----	-----		-----	-----		-----
902	D1078-automated	197.0		0.09	197.9		0.80	198.0		0.25
912	D1078-manual	197.2		0.27	197.6		0.17	198.0		0.25
913	D1078-manual	197.0		0.09	197.6		0.17	198.2		0.51
962	D1078-automated	197.0		0.09	197.6		0.17	197.8		-0.02
963	D1078-automated	196.6		-0.28	197.3		-0.45	197.5		-0.41
1091	D1078-automated	196.5		-0.37	197.3		-0.45	197.4		-0.55
1117	D1078-automated	197.4		0.45	197.6		0.17	197.9		0.12
1509	D1078-automated	196.9		-0.01	197.6		0.17	197.9		0.12
1515		-----		-----	-----		-----	-----		-----
1603	D1078-automated	196.6		-0.28	197.0		-1.07	197.4		-0.55
1656		-----		-----	-----		-----	-----		-----
1718	D1078-automated	197.0		0.09	197.6		0.17	197.9		0.12
1880		-----		-----	-----		-----	-----		-----
1954		-----		-----	-----		-----	-----		-----
6198		-----		-----	-----		-----	-----		-----
6247	D1078-automated	196.7		-0.19	197.3		-0.45	-----		-----
6262	D1078-automated	197.1		0.18	197.4		-0.24	197.5		-0.41
6273	D1078-manual	197		0.09	198		1.00	198		0.25
6326	D1078	196.83		-0.07	197.52		0.01	197.91		0.13
6406	D1078-automated	196.7		-0.19	197.3		-0.45	197.4		-0.55
6438	D1078-automated	195.9	ex	-0.92	196.6	R(0.01)	-1.90	196.8	R(0.05)	-1.34
6507	D1078-automated	197.1		0.18	197.5		-0.03	197.7		-0.15
6518	D1078-automated	196.4		-0.46	197.1		-0.86	197.3		-0.68
6555	D1078-automated	197		0.09	198		1.00	198		0.25
7013	D1078-automated	197.3		0.36	197.7		0.38	198.6		1.04
9006		-----		-----	-----		-----	-----		-----
9008		-----		-----	-----		-----	-----		-----
9009		-----		-----	-----		-----	-----		-----
9014	D1078-automated	196.2		-0.64	197		-1.07	197.2		-0.81
	normality	OK			OK			OK		
	n	44			44			41		
	outliers	0+1ex			1			2		
	mean (n)	196.91			197.52			197.81		
	st.dev. (n)	0.305			0.217			0.283		
	R(calc.)	0.85			0.61			0.79		
	st.dev.(D1078-A:11R19)	1.097			0.482			0.756		
	R(D1078-A:11R19)	3.07			1.35			2.12		
Compare										
	R(D1078-M:11R19)	2.11			1.28			2.57		

Initial Boiling Point

Kernel Density

50% recovery

Kernel Density

Dry Point

Kernel Density

Determination of Iron as Fe on sample #23190; results in mg/kg

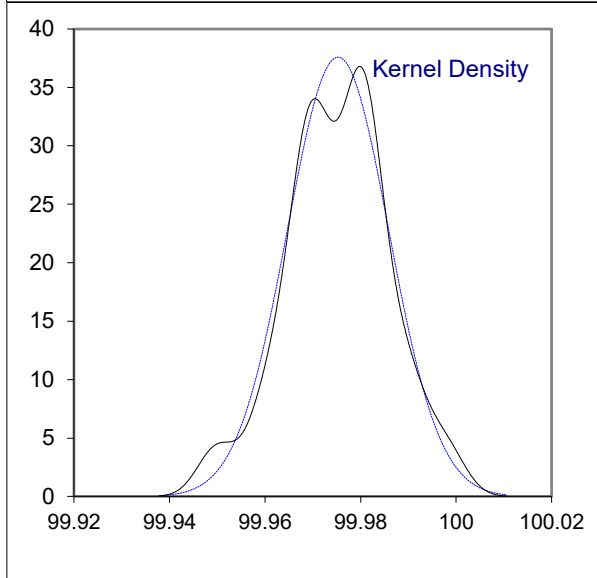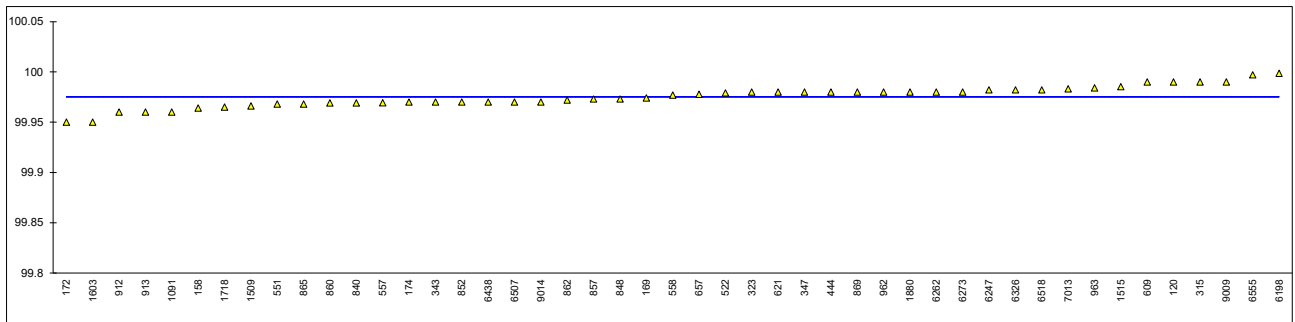| lab	method	value	mark	z(targ)	remarks
120	INH-0290	0		-2.58	
150		-----		-----	
158		-----		-----	
169	E1615	0.018	C	3.22	first reported 0.028
171	E1615	<0.010		-----	
172	E1615	<0.05		-----	
174	E1615	<0.01		-----	
315	E1615	<0.010		-----	
323	E1615	0.010		0.64	
343	E1615	0.052	C,R(0.01)	14.18	first reported 0.057
347		-----		-----	
370		-----		-----	
395		-----		-----	
396		-----		-----	
444	E1615	0.012		1.29	
522		-----		-----	
528	E1615	0.0075		-0.17	
551	E394	<0.01		-----	
557		0.00674931		-0.41	
558	NBR7448	0.012		1.29	
600		-----		-----	
609	E1615	0.006		-0.65	
621	E394	<0.01		-----	
657	E1615	0.0097		0.54	
840	E394	0.006		-0.65	
848	E394	0.008		0.00	
852	E394	0.015		2.25	
857	E1615	<0.010		-----	
860	E394	0.01		0.64	
862	E1615	0.018		3.22	
865	E394	<0.01		-----	
869	E394	0.011		0.96	
886		-----		-----	
902	E394	0.005		-0.97	
912		-----		-----	
913	E394	0.03	R(0.01)	7.09	
962	E394	0.01		0.64	
963	E394	<0.01		-----	
1091	E1615	0.008		0.00	
1117	E394	<0.1		-----	
1509	E394	0.009		0.32	
1515	E394	0.01	C	0.64	first reported 0.03
1603	In house	N.N. < 0,01		-----	N.N. below quantification limit (given).
1656		-----		-----	
1718	E394	0.000		-2.58	
1880	E1615	0.009		0.32	
1954		-----		-----	
6198	E394	0.01		0.64	
6247	E394	0.01		0.64	
6262		-----	W	-----	test result withdrawn, reported 0.033
6273	E394	0.01		0.64	
6326	E394	0.0009		-2.29	
6406	E1615	0.01		0.64	
6438	E1615	0.0080		0.00	
6507	E1615	0.0041		-1.26	
6518	E1615	0.005		-0.97	
6555	EPA6010D	0.00		-2.58	
7013	E1615	0.0046		-1.10	
9006	E1615	0.005		-0.97	
9008	E1615	0.005		-0.97	
9009	E1615	0.0069		-0.36	
9014		-----		-----	
	normality	OK			
	n	35			
	outliers	2			
	mean (n)	0.0080			
	st.dev. (n)	0.00435			
	R(calc.)	0.0122			
	st.dev.(E1615:22)	0.00310			
	R(E1615:22)	0.0087			
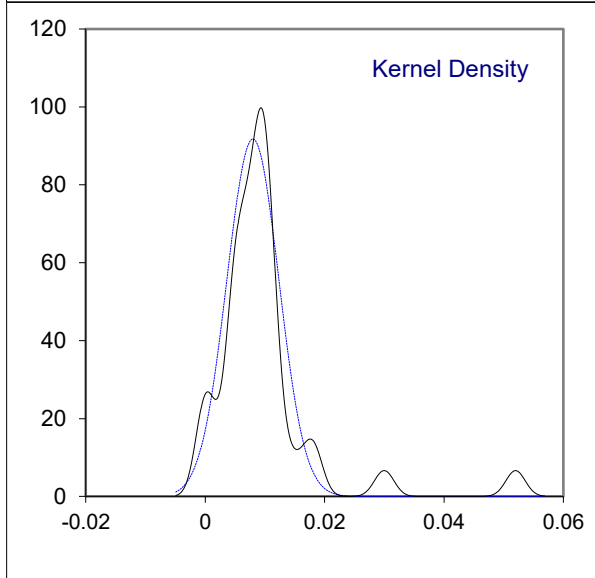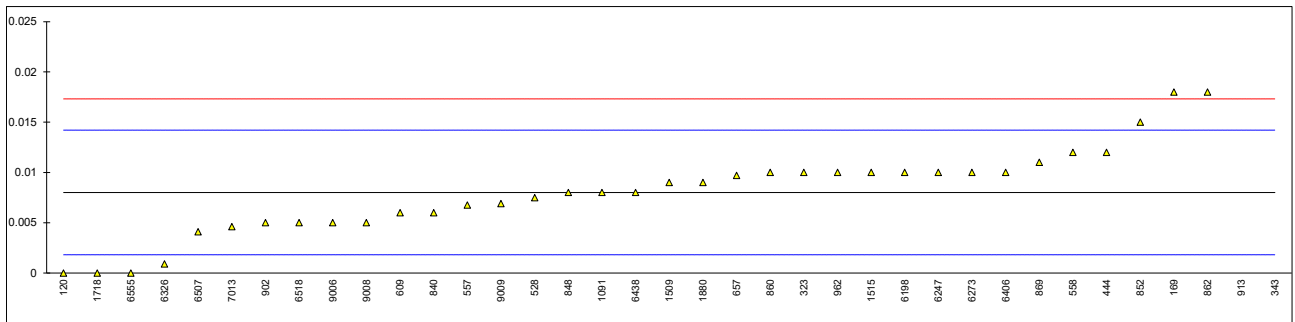
Determination of Water miscibility (Hydrocarbons) on sample #23190;

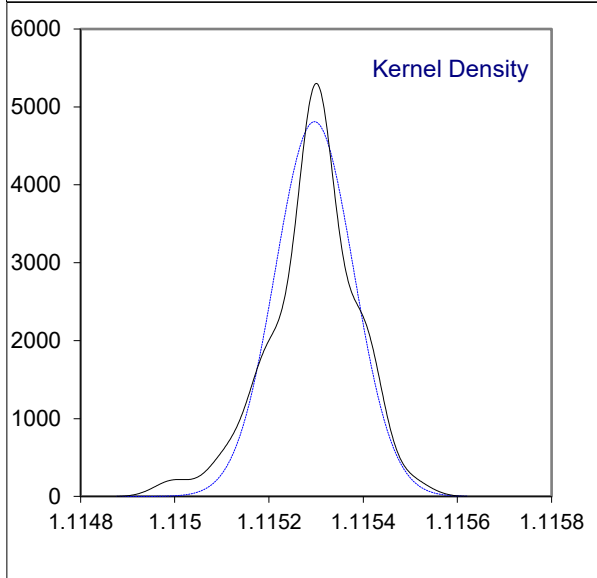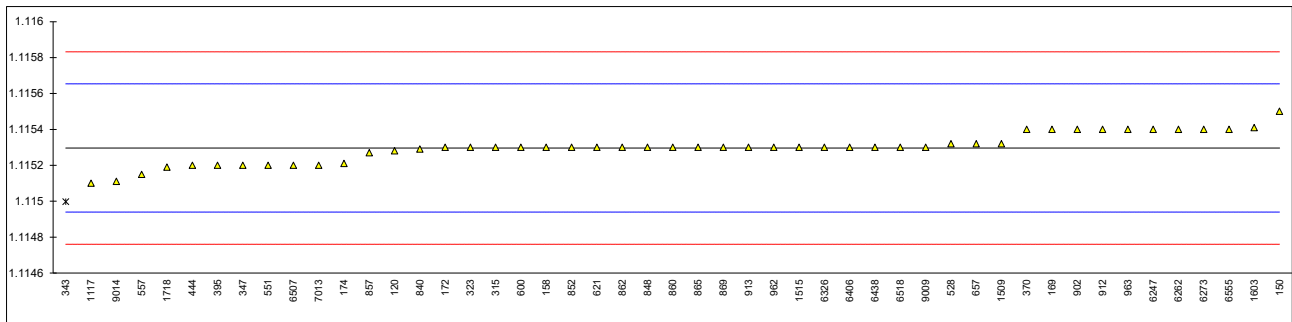| lab	method	value	mark	z(targ)	remarks
120	D1722	Pass		-----	
150	D1722	Pass		-----	
158		-----		-----	
169		-----		-----	
171	D1722	pass		-----	
172		-----		-----	
174	D1722	Pass		-----	
315		-----		-----	
323	D1722	PASSES		-----	
343	D1722	Pass		-----	
347		-----		-----	
370		-----		-----	
395	D1722	PASS		-----	
396		-----		-----	
444		-----		-----	
522		-----		-----	
528		-----		-----	
551	D1722	Pass test		-----	
557	D1722	PASS		-----	
558		-----		-----	
600		-----		-----	
609		-----		-----	
621	D1722	PASS		-----	
657		-----		-----	
840	D1722	Passes Test		-----	
848	D1722	pass		-----	
852	D1722	Pass		-----	
857	D1722	Passed test		-----	
860	D1722	Pass test		-----	
862	D1722	pass		-----	
865	D1722	Passes Test		-----	
869		-----		-----	
886		-----		-----	
902	D1722	Pass		-----	
912	D1722	PASS		-----	
913	D1722	Pass		-----	
962	D1722	Pass		-----	
963		-----		-----	
1091	D1722	pass		-----	
1117	D1722	pass		-----	
1509	D1722	Pass		-----	
1515		-----		-----	
1603		-----		-----	
1656		-----		-----	
1718	D1722	Pass		-----	
1880		-----		-----	
1954		-----		-----	
6198		-----		-----	
6247		-----		-----	
6262	D1722	PASS		-----	
6273	D1722	pass		-----	
6326		-----		-----	
6406		-----		-----	
6438	D1722	Pass		-----	
6507		-----		-----	
6518	D1722	Passes test		-----	
6555		-----		-----	
7013		-----		-----	
9006		-----		-----	
9008		-----		-----	
9009		-----		-----	
9014	D1722	PASS		-----	
	n	30			
	mean (n)	Pass			

Determination of Purity by GC as received on sample #23190; results in %M/M

| lab	method	value	mark	z(targ)	remarks
120	INH-0542	99.99		-----	
150		-----		-----	
158	E2409	99.9639		-----	
169	E2409	99.9741		-----	
171		-----		-----	
172	E2409	99.95		-----	
174	E2409	99.97		-----	
315	E2409	99.99		-----	
323	E2409	99.98		-----	
343	E2409	99.97		-----	
347	E2409	99.98		-----	
370		-----		-----	
395		-----		-----	
396		-----		-----	
444	E2409	99.98		-----	
522	E2409	99.979		-----	
528		-----		-----	
551	E2409	99.968		-----	
557	E2409	99.9692863861		-----	
558	E2409	99.977		-----	
600		-----		-----	
609	E2409	99.99		-----	
621	E2409	99.98		-----	
657	E2409	99.9777		-----	
840	E2409	99.969		-----	
848	E2409	99.973		-----	
852	E2409	99.97		-----	
857	E2409	99.973		-----	
860	E2409	99.969		-----	
862	E202	99.972		-----	
865	E2409	99.968		-----	
869	E2409	99.98		-----	
886		-----		-----	
902		-----		-----	
912	E2409	99.96		-----	
913	E2409	99.96		-----	
962	E2409	99.98		-----	
963	E2409	99.984		-----	
1091	E2409	99.96		-----	
1117	E2409	>99.9		-----	
1509	E2409	99.966		-----	
1515	E2409	99.9852		-----	
1603	In house	99.95		-----	
1656		-----		-----	
1718	E2409	99.965		-----	
1880	E2409	99.98		-----	
1954		-----		-----	
6198	E2409	99.9985		-----	
6247	E2409	99.982		-----	
6262	E2409	99.98		-----	
6273	E2409	99.98		-----	
6326	E2409	99.9820		-----	
6406		-----		-----	
6438	E2409	99.97		-----	
6507	E2409	99.970		-----	
6518	E2409	99.982		-----	
6555	E2409	99.9970		-----	
7013	E2409	99.9832		-----	
9006		-----		-----	
9008		-----		-----	
9009	E2409	99.99		-----	
9014	E2409	99.97	C	-----	first reported 99.96
	normality	OK			
	n	47			
	outliers	0			
	mean (n)	99.9753			
	st.dev. (n)	0.01062			
	R(calc.)	0.0297			
	st.dev.(lit.)	unknown			
	R(lit.)	unknown			

Mono Ethylene glycol (MEG polyester grade): iis23C10

Determination of Specific Gravity 20/20 °C on sample #23190;

lab	method	value	mark	z(targ)	remarks
120	D4052	1.11528		-0.09	
150	D4052	1.1155	C	1.14	first reported 1.1157
158	D4052	1.1153		0.02	
169	D4052	1.1154		0.58	
171		-----		-----	
172	D4052	1.1153		0.02	
174	D4052	1.11521		-0.48	
315	D4052	1.1153		0.02	
323	E202	1.1153		0.02	
343	D4052	1.114997	R(0.05)	-1.68	
347	D4052	1.1152		-0.54	
370	D4052	1.1154		0.58	
395	D4052	1.1152		-0.54	
396		-----		-----	
444	D4052	1.1152		-0.54	
522		-----		-----	
528	D4052	1.11532		0.13	
551	D4052	1.1152	C	-0.54	first reported 1.1156
557	D4052	1.115149463		-0.82	
558		-----		-----	
600	INH-002	1.1153		0.02	
609		-----		-----	
621	D4052	1.1153		0.02	
657	D4052	1.11532		0.13	
840	D4052	1.11529		-0.04	
848	D4052	1.1153		0.02	
852	D4052	1.1153		0.02	
857	D4052	1.11527		-0.15	
860	D4052	1.11530		0.02	
862	D4052	1.1153		0.02	
865	D4052	1.1153		0.02	
869	D4052	1.1153		0.02	
886		-----		-----	
902	D4052	1.1154		0.58	
912	D4052	1.1154		0.58	
913	D4052	1.1153		0.02	
962	D4052	1.1153		0.02	
963	D4052	1.1154		0.58	
1091		-----		-----	
1117	D4052	1.1151		-1.10	
1509	D4052	1.11532		0.13	
1515	D4052	1.1153		0.02	
1603	In house	1.11541		0.64	
1656		-----		-----	
1718	D4052	1.11519		-0.60	
1880		-----		-----	
1954		-----		-----	
6198		-----		-----	
6247	D4052	1.1154		0.58	
6262	D4052	1.1154		0.58	
6273	D4052	1.1154	C	0.58	first reported 1.1146
6326	D4052	1.1153		0.02	
6406	D4052	1.1153		0.02	
6438	D4052	1.1153		0.02	
6507	D4052	1.1152		-0.54	
6518	D4052	1.1153		0.02	
6555	D4052	1.1154		0.58	
7013	D4052	1.1152		-0.54	
9006		-----		-----	
9008		-----		-----	
9009	D4052	1.1153		0.02	
9014	D4052	1.11511		-1.04	

	normality	OK	
	n	48	
	outliers	1	
	mean (n)	1.11530	
	st.dev. (n)	0.000083	
	R(calc.)	0.00023	
	st.dev.(E202:18)	0.000179	
	R(E202:18)	0.0005	

Kernel Density

Determination of Water on sample #23190; results in mg/kg

| lab	method	value	mark	z(targ)	remarks
120	E1064	133.4		-1.91	
150	E1064	160		1.22	
158	E1064	140		-1.13	
169		-----		-----	
171	E1064	140		-1.13	
172	E203	154		0.51	
174	E1064	132		-2.08	
315	E1064	140		-1.13	
323	E1064	140		-1.13	
343	E1064	147		-0.31	
347	E1064	145		-0.55	
370	E1064	150		0.04	
395	E1064	182.75		3.90	
396		-----		-----	
444	E1064	153	C	0.40	first reported 0.0153
522	E203	180.0		3.57	
528	E1064	174		2.87	
551	E1064	134		-1.84	
557	E1064	126.336139	C	-2.74	first reported 226.336139
558	E1064	125.07		-2.89	
600	D6304-A	272	R(0.01)	14.40	
609	E1064	150		0.04	
621	E1064	190		4.75	
657	E1064	168		2.16	
840	E1064	171		2.51	
848	E1064	140		-1.13	
852	E1064	128		-2.55	
857	E1064	135		-1.72	
860	E1064	140		-1.13	
862	E1064	133		-1.96	
865	E1064	134		-1.84	
869	E1064	140		-1.13	
886	E1064	148		-0.19	
902		-----		-----	
912	E1064	234	R(0.01)	9.93	
913	E1064	166		1.93	
962	E1064	180		3.57	
963	E1064	140		-1.13	
1091	ISO12937	136.5		-1.55	
1117	E1064	147		-0.31	
1509	E1064	148.7		-0.11	
1515	E1064	128.3		-2.51	
1603	In house	250	R(0.01)	11.81	
1656		-----		-----	
1718	E1064	151.0		0.16	
1880	E1064	125		-2.90	
1954		-----		-----	
6198	E1064	138		-1.37	
6247	E1064	160		1.22	
6262	E1064	164		1.69	
6273	E1064	149.5		-0.02	
6326	E1064	164		1.69	
6406	E1064	130		-2.31	
6438	E1064	206	C	6.63	first reported 232
6507	E1064	190	C	4.75	first reported 0.019
6518	E1064	157.0		0.87	
6555	E203	140	C	-1.13	first reported 0.014
7013	E1064	144.79		-0.57	
9006	E1064	164		1.69	
9008	E1064	110.1		-4.65	
9009	E1064	147		-0.31	
9014	E203	160		1.22	
	normality	OK			
	n	54			
	outliers	3			
	mean (n)	149.64			
	st.dev. (n)	19.158			
	R(calc.)	53.64			
	st.dev.(E1064:23)	8.497			
	R(E1064:23)	23.79			
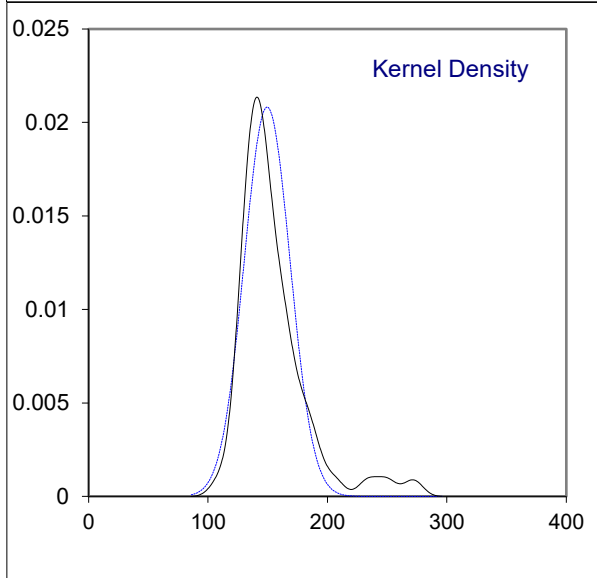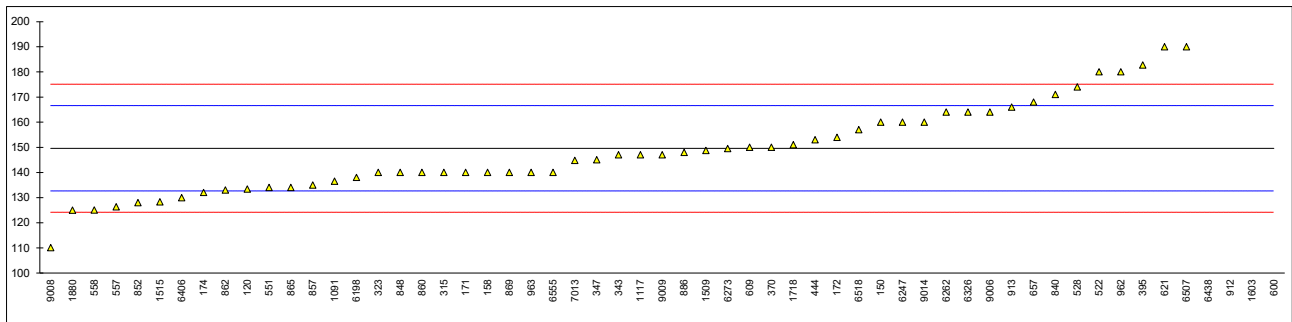
Determination of UV transmittance at 350 nm on sample #23191; results in %Transmittance

lab	method	cuvette size	Option A ASTM E2193	mark	z(targ)	method	cuvette size	Option B ASTM E2193	mark	z(targ)
120			-----		-----	E2193 - B	50mm	100		0.03
150			-----		-----			-----		-----
158			-----		-----	E2193 - B	10 mm	99.5		-1.18
169			-----		-----			-----		-----
171	E2193 - A	10 mm	100		0.62			-----		-----
172			-----		-----	E2193 - B	10 mm	99.2		-1.91
174			-----		-----	E2193 - B	10 mm	100.0		0.03
315			-----		-----	E2193 - B	10 mm	100.0		0.03
323			-----		-----	E2193 - B	10 mm	80.5	C,R1	-47.28
343			-----		-----	E2193 - B	10 mm	100		0.03
347			-----		-----	E2193 - B	50 mm	100		0.03
370			-----		-----	E2193 - B	10 mm	100		0.03
395			-----		-----			-----		-----
396			-----		-----			-----		-----
444			-----		-----	E2193 - B	10 mm	99.8		-0.45
522			-----		-----			-----		-----
528			-----		-----			-----		-----
551			-----		-----	E2193 - B	10 mm	>100		-----
557			-----		-----	E2193 - B	10 mm	100.0000		0.03
558			-----		-----			-----		-----
600			-----		-----			-----		-----
609			-----		-----	E2193 - B	10 mm	100.0		0.03
621	E2193 - A	10 mm	99.59		-0.61			-----		-----
657			-----		-----	E2193 - B	10 mm	99.99		0.01
840	E2193 - A	10 mm	99.860		0.20	E2193 - B	10 mm	99.882		-0.25
848	E2193 - A	50 mm	99.9		0.32	E2193 - B	50 mm	99.9		-0.21
852			-----		-----	E2193 - B	10 mm	100.0		0.03
857			-----		-----	E2193 - B	10 mm	100.0		0.03
860	E2193 - A	10 mm	100.0		0.62	E2193 - B	10 mm	100.0		0.03
862	E2193 - A	50 mm	99.93		0.41	E2193 - B	50 mm	99.97		-0.04
865	E2193 - A	10 mm	100		0.62	E2193 - B	10 mm	100		0.03
869			-----		-----	E2193 - B	10 mm	99.9	C	-0.21
886			-----		-----			-----		-----
902			-----		-----	E2193 - B	10 mm	99.3	C	-1.67
912			-----		-----			-----		-----
913			-----		-----	E2193 - B	10 mm	100.85		2.09
962	E2193 - A	10 mm	99.3	C	-1.48	E2193 - B	10 mm	99.8		-0.45
963			-----		-----	E2193 - B	10 mm	99.9		-0.21
1091			-----		-----	E2193 - B	10 mm	100.6		1.49
1117			-----		-----	E2193 - B	50 mm	100.06		0.18
1509			-----		-----	E2193 - B	50 mm	99.92		-0.16
1515			-----		-----			-----		-----
1603			-----		-----	In house	10 mm	100		0.03
1656			-----		-----			-----		-----
1718			-----		-----	E2193 - B	50 mm	100.00		0.03
1880			-----		-----	E2193 - B	10 mm	100.0		0.03
1954			-----		-----			-----		-----
6198			-----		-----	E2193 - B	10 mm	>99.9		-----
6247			-----		-----	E2193 - B	10 mm	100		0.03
6262			-----		-----			-----		-----
6273			-----		-----			-----	W	-----
6326			-----		-----	E2193 - B	10 mm	100.355		0.89
6406	E2193 - A	10 mm	>99.9		-----	E2193 - B	10 mm	>99.9		-----
6438	E2193 - A	10 mm	99.559	C	-0.70	E2193 - B	10 mm	99.428		-1.36
6507			-----		-----	E2193 - B	10 mm	101.96	R1	4.79
6518			-----		-----	E2193 - B	10 mm	100.6		1.49
6555	E2193 - A	10 mm	100.6	D5	2.41	E2193 - B	10 mm	100.4		1.00
7013			-----		-----	E2193 - B	10 mm	99.8		-0.45
9006			-----		-----	E2193 - B	10 mm	-----		-----
9008			-----		-----	E2193 - B	10 mm	100		0.03
9009			-----		-----	E2193 - B	10 mm	100.000		0.03
9014			-----		-----	E2193 - B	10 mm	100.34		0.86

	normality		OK					not OK		
	n		9					39		
	outliers		1					2		
	mean (n)		99.793					99.987		
	st.dev. (n)		0.2506					0.3129		
	R(calc.)		0.702					0.876		
	st.dev.(E2193:23)		0.3343					0.4121		
	R(E2193:23)		0.936					1.154		

Lab 323 first reported 78.5   Lab 962 first reported 98.1
Lab 869 first reported 79.5   Lab 6273 test result withdrawn, reported 99.3
Lab 902 first reported 79.3   Lab 6438 first reported 98.925

Mono Ethylene glycol (MEG polyester grade): iis23C10
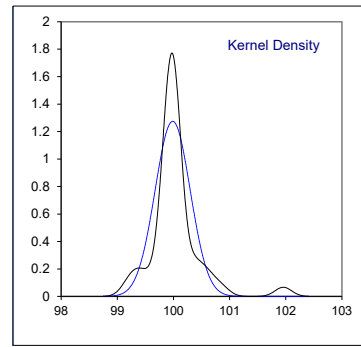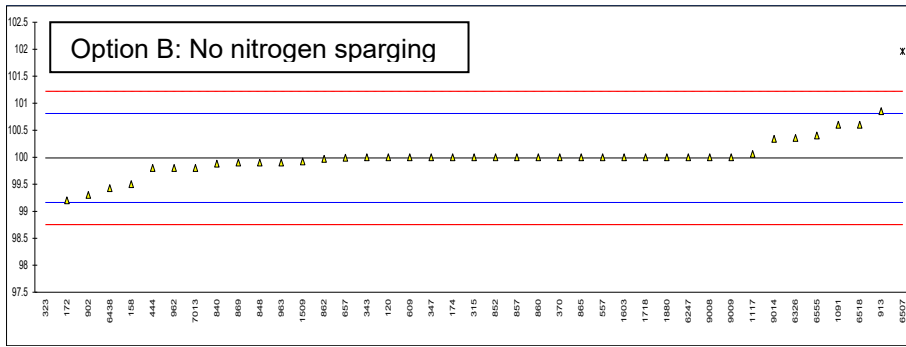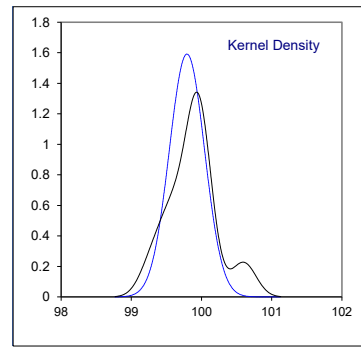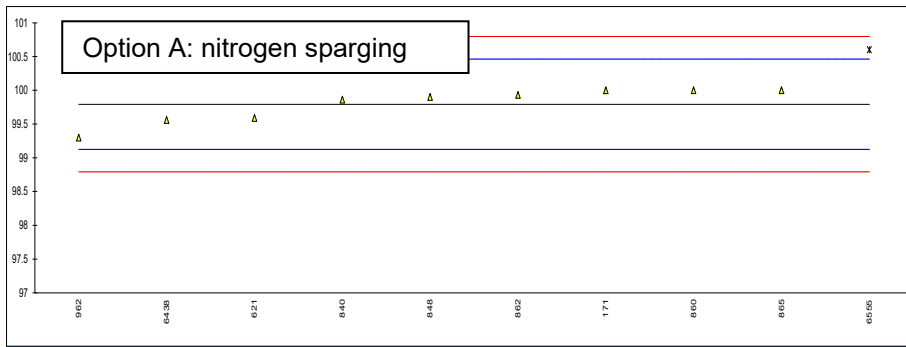
Determination of UV transmittance at 275 nm on sample #23191; results in %Transmittance

lab	method	cuvette size	Option A ASTM E2193	mark	z(targ)	method	cuvette size	Option B ASTM E2193	mark	z(targ)
120			-----		-----	E2193 - B	50mm	97.2	DG5	-3.06
150			-----		-----			-----		-----
158			-----		-----	E2193 - B	10 mm	98.3		-1.60
169			-----		-----			-----		-----
171	E2193 - A	10 mm	100		1.66			-----		-----
172			-----		-----	E2193 - B	10 mm	97.8		-2.27
174			-----		-----	E2193 - B	10 mm	99.5		0.00
315			-----		-----	E2193 - B	10 mm	99.5		0.00
323			-----		-----	E2193 - B	10 mm	97.3	C,DG5	-2.93
343			-----		-----	E2193 - B	10 mm	100		0.66
347			-----		-----	E2193 - B	50 mm	99.2		-0.40
370			-----		-----	E2193 - B	10 mm	100		0.66
395			-----		-----			-----		-----
396			-----		-----			-----		-----
444			-----		-----	E2193 - B	10 mm	98.8		-0.94
522			-----		-----			-----		-----
528			-----		-----			-----		-----
551			-----		-----	E2193 - B	10 mm	99.865		0.48
557			-----		-----	E2193 - B	10 mm	99.6865		0.24
558			-----		-----			-----		-----
600			-----		-----			-----		-----
609			-----		-----	E2193 - B	10 mm	99.9		0.53
621	E2193 - A	10 mm	96.65	DG5	-6.89			-----		-----
657			-----		-----	E2193 - B	10 mm	99.66		0.21
840	E2193 - A	10 mm	99.017		-0.85	E2193 - B	10 mm	99.129		-0.50
848	E2193 - A	50 mm	99.2		-0.38	E2193 - B	50 mm	99.2		-0.40
852			-----		-----	E2193 - B	10 mm	99.6		0.13
857			-----		-----	E2193 - B	10 mm	99.4		-0.14
860	E2193 - A	10 mm	99.5		0.38	E2193 - B	10 mm	99.9		0.53
862	E2193 - A	50 mm	98.44		-2.32	E2193 - B	50 mm	99.10		-0.54
865	E2193 - A	10 mm	99.4		0.13	E2193 - B	10 mm	99.6		0.13
869			-----		-----	E2193 - B	10 mm	99.5	C	0.00
886			-----		-----			-----		-----
902			-----		-----	E2193 - B	10 mm	98.7	C	-1.07
912			-----		-----			-----		-----
913			-----		-----	E2193 - B	10 mm	100.83		1.77
962	E2193 - A	10 mm	98.8	C	-1.40	E2193 - B	10 mm	99.1		-0.54
963			-----		-----	E2193 - B	10 mm	98.9		-0.80
1091			-----		-----	E2193 - B	10 mm	99.9		0.53
1117			-----		-----	E2193 - B	50 mm	99.04		-0.62
1509			-----		-----	E2193 - B	50 mm	98.88		-0.83
1515			-----		-----			-----		-----
1603			-----		-----	In house	10 mm	100		0.66
1656			-----		-----			-----		-----
1718			-----		-----	E2193 - B	50 mm	99.66		0.21
1880			-----		-----	E2193 - B	10 mm	99.8		0.40
1954			-----		-----			-----		-----
6198			-----		-----	E2193 - B	10 mm	99.8		0.40
6247			-----		-----	E2193 - B	10 mm	99.7		0.26
6262			-----		-----			-----		-----
6273			-----		-----			-----	W	-----
6326			-----		-----	E2193 - B	10 mm	99.191		-0.42
6406	E2193 - A	10 mm	99.6		0.64	E2193 - B	10 mm	99.6		0.13
6438	E2193 - A	10 mm	97.143	DG5	-5.63	E2193 - B	10 mm	98.079		-1.89
6507			-----		-----	E2193 - B	10 mm	101.16		2.20
6518			-----		-----	E2193 - B	10 mm	100.4		1.19
6555	E2193 - A	10 mm	100.2		2.17	E2193 - B	10 mm	100.1		0.79
7013			-----		-----	E2193 - B	10 mm	99.3		-0.27
9006			-----		-----	E2193 - B	10 mm	99.45		-0.07
9008			-----		-----	E2193 - B	10 mm	100		0.66
9009			-----		-----	E2193 - B	10 mm	99.90		0.53
9014			-----		-----	E2193 - B	10 mm	99.50		0.00
	normality		OK					suspect		
	n		9					43		
	outliers		2					2		
	mean (n)		99.351					99.503		
	st.dev. (n)		0.5586					0.6367		
	R(calc.)		1.564					1.783		
	st.dev.(E2193:16)		0.3921					0.7518		
	R(E2193:16)		1.098					2.105		

Lab 323 first reported 96.0   Lab 962 first reported 94.9
Lab 869 first reported 96.6   Lab 6273 test result withdrawn, reported 97.5
Lab 902 first reported 96.0

Option A: nitrogen sparging

Kernel Density

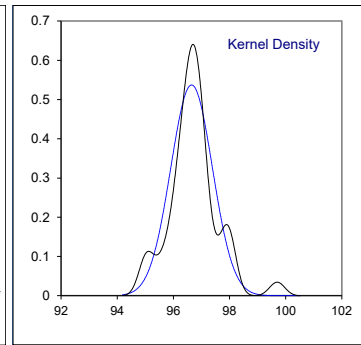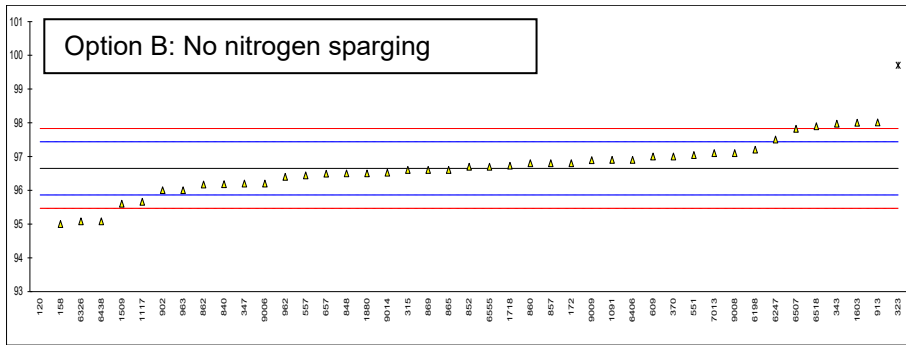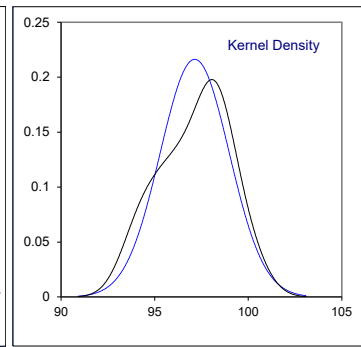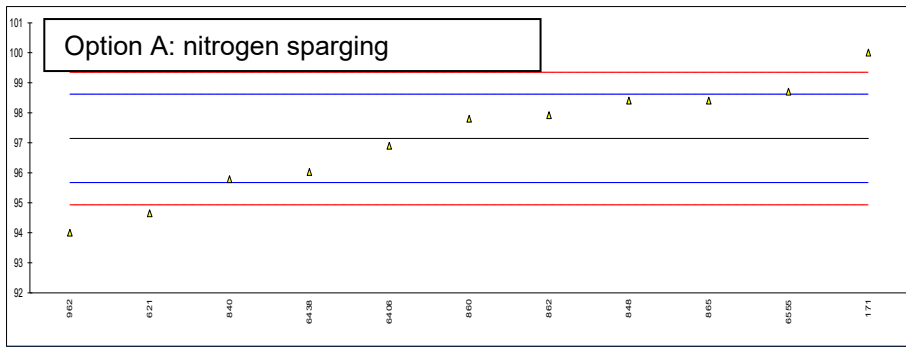Option B: No nitrogen sparging

Kernel Density
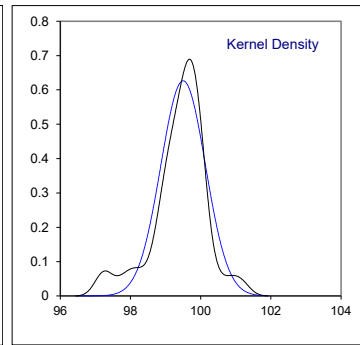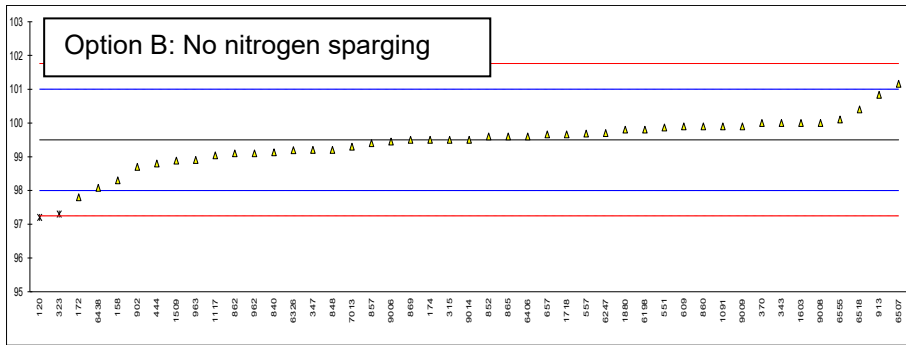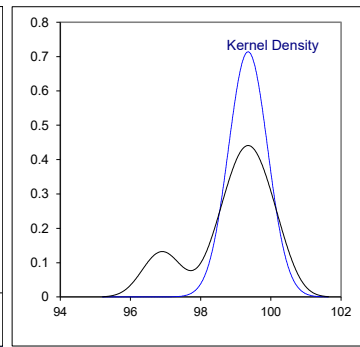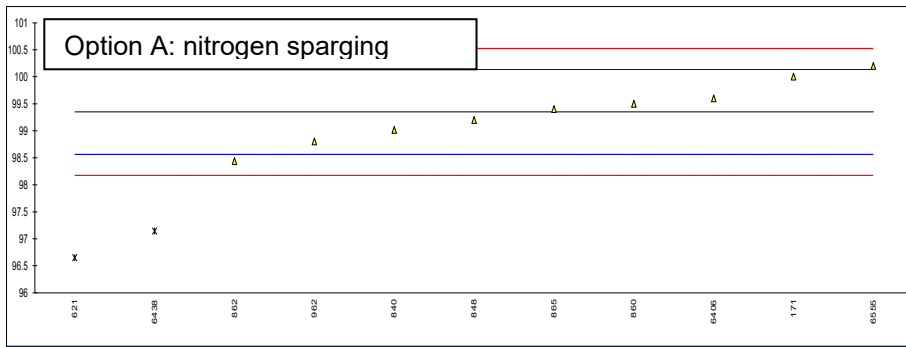
Determination of UV transmittance at 250 nm on sample #23191; results in %Transmittance

lab	method	cuvette size	Option A ASTM E2193	mark	z(targ)	method	cuvette size	Option B ASTM E2193	mark	z(targ)
120			-----		-----	E2193 - B	50mm	84.3	R(0.01)	-31.38
150			-----		-----			-----		-----
158			-----		-----	E2193 - B	10 mm	95.0		-4.19
169			-----		-----			-----		-----
171	E2193 - A	10 mm	100		3.88			-----		-----
172			-----		-----	E2193 - B	10 mm	96.8	C	0.38
174			-----		-----		10 mm	-----		-----
315			-----		-----	E2193 - B	10 mm	96.6		-0.13
323			-----		-----	E2193 - B	10 mm	99.7	C,R1	7.75
343			-----		-----	E2193 - B	10 mm	97.97		3.35
347			-----		-----	E2193 - B	50 mm	96.2		-1.15
370			-----		-----	E2193 - B	10 mm	97		0.89
395			-----		-----			-----		-----
396			-----		-----			-----		-----
444			-----		-----		10 mm	-----		-----
522			-----		-----			-----		-----
528			-----		-----			-----		-----
551			-----		-----	E2193 - B	10 mm	97.042		0.99
557			-----		-----	E2193 - B	10 mm	96.4445		-0.52
558			-----		-----			-----		-----
600			-----		-----			-----		-----
609			-----		-----	E2193 - B	10 mm	97.0		0.89
621	E2193 - A	10 mm	94.65		-3.38			-----		-----
657			-----		-----	E2193 - B	10 mm	96.49		-0.41
840	E2193 - A	10 mm	95.787		-1.84	E2193 - B	10 mm	96.183		-1.19
848	E2193 - A	50 mm	98.4		1.71	E2193 - B	50 mm	96.5		-0.38
852			-----		-----	E2193 - B	10 mm	96.7		0.12
857			-----		-----	E2193 - B	10 mm	96.8		0.38
860	E2193 - A	10 mm	97.8		0.89	E2193 - B	10 mm	96.8		0.38
862	E2193 - A	50 mm	97.92		1.05	E2193 - B	50 mm	96.17		-1.22
865	E2193 - A	10 mm	98.4		1.71	E2193 - B	10 mm	96.6		-0.13
869			-----		-----	E2193 - B	10 mm	96.6	C	-0.13
886			-----		-----			-----		-----
902			-----		-----	E2193 - B	10 mm	96.0	C	-1.65
912			-----		-----			-----		-----
913			-----		-----	E2193 - B	10 mm	98.01		3.45
962	E2193 - A	10 mm	94.0		-4.27	E2193 - B	10 mm	96.4		-0.64
963			-----		-----	E2193 - B	10 mm	96.0		-1.65
1091			-----		-----	E2193 - B	10 mm	96.9		0.63
1117			-----		-----	E2193 - B	50 mm	95.66		-2.52
1509			-----		-----	E2193 - B	50 mm	95.60		-2.67
1515			-----		-----			-----		-----
1603			-----		-----	In house	10 mm	98		3.43
1656			-----		-----			-----		-----
1718			-----		-----	E2193 - B	50 mm	96.73		0.20
1880			-----		-----	E2193 - B	10 mm	96.5		-0.38
1954			-----		-----			-----		-----
6198			-----		-----	E2193 - B	10 mm	97.2		1.39
6247			-----		-----	E2193 - B	10 mm	97.5		2.16
6262			-----		-----			-----		-----
6273			-----		-----			-----	W	-----
6326			-----		-----	E2193 - B	10 mm	95.081		-3.99
6406	E2193 - A	10 mm	96.9		-0.33	E2193 - B	10 mm	96.9		0.63
6438	E2193 - A	10 mm	96.023		-1.52	E2193 - B	10 mm	95.081		-3.99
6507			-----		-----	E2193 - B	10 mm	97.82		2.97
6518			-----		-----	E2193 - B	10 mm	97.9		3.17
6555	E2193 - A	10 mm	98.7		2.11	E2193 - B	10 mm	96.7		0.12
7013			-----		-----	E2193 - B	10 mm	97.1		1.14
9006			-----		-----	E2193 - B	10 mm	96.2		-1.15
9008			-----		-----	E2193 - B	10 mm	97.1		1.14
9009			-----		-----	E2193 - B	10 mm	96.89		0.61
9014			-----		-----	E2193 - B	10 mm	96.52		-0.33
	normality		OK					OK		
	n		11					41		
	outliers		0					2		
	mean (n)		97.144					96.651		
	st.dev. (n)		1.8447					0.7427		
	R(calc.)		5.165					2.080		
	st.dev.(E2193:16)		0.7368					0.3936		
	R(E2193:16)		2.063					1.102		

Lab 172 first reported 94.7   Lab 902 first reported 98.7
Lab 323 first reported 99.2   Lab 6273 test result withdrawn, reported 92
Lab 869 first reported 99.5

Option A: nitrogen sparging

Kernel Density

Option B: No nitrogen sparging

Kernel Density

Determination of UV transmittance at 220 nm on sample #23191; results in %Transmittance

lab	method	cuvette size	Option A ASTM E2193	mark	z(targ)	method	cuvette size	Option B ASTM E2193	mark	z(targ)
120			-----		-----	E2193 - B	50 mm	32.5	R1	-32.57
150			-----		-----			-----		-----
158			-----		-----	E2193 - B	10 mm	77.6		-1.36
169			-----		-----			-----		-----
171	E2193 - A	10 mm	94.2		1.85			-----		-----
172			-----		-----	E2193 - B	10 mm	77.6		-1.36
174			-----		-----	E2193 - B	10 mm	80.2		0.44
315			-----		-----	E2193 - B	10 mm	79.2		-0.26
323			-----		-----	E2193 - B	10 mm	100.0	R1	14.14
343			-----		-----	E2193 - B	10 mm	80.57		0.69
347			-----		-----	E2193 - B	50 mm	79.1		-0.32
370			-----		-----	E2193 - B	10 mm	80		0.30
395			-----		-----			-----		-----
396			-----		-----			-----		-----
444			-----		-----	E2193 - B	10 mm	79.6		0.02
522			-----		-----			-----		-----
528			-----		-----			-----		-----
551			-----		-----	E2193 - B	10 mm	80.222		0.45
557			-----		-----	E2193 - B	10 mm	79.1510		-0.29
558			-----		-----			-----		-----
600			-----		-----			-----		-----
609			-----		-----	E2193 - B	10 mm	80.3		0.51
621	E2193 - A	10 mm	78.54		-2.68			-----		-----
657			-----		-----	E2193 - B	10 mm	79.34		-0.16
840	E2193 - A	10 mm	77.346		-3.03	E2193 - B	10 mm	79.404		-0.11
848	E2193 - A	50 mm	92.4		1.33	E2193 - B	50 mm	79.1		-0.32
852			-----		-----	E2193 - B	10 mm	79.2		-0.26
857			-----		-----	E2193 - B	10 mm	79.6		0.02
860	E2193 - A	10 mm	92.2		1.27	E2193 - B	10 mm	79.4		-0.12
862	E2193 - A	50 mm	90.64		0.82	E2193 - B	50 mm	79.51		-0.04
865	E2193 - A	10 mm	92.4		1.33	E2193 - B	10 mm	79.0		-0.39
869			-----		-----	E2193 - B	10 mm	79.5	C	-0.05
886			-----		-----			-----		-----
902			-----		-----	E2193 - B	10 mm	79.3	C	-0.19
912			-----		-----			-----		-----
913			-----		-----	E2193 - B		80.15		0.40
962	E2193 - A	10 mm	85.0		-0.81	E2193 - B	10 mm	81.3		1.20
963			-----		-----	E2193 - B	10 mm	78.1		-1.02
1091			-----		-----	E2193 - B	10 mm	79.7		0.09
1117			-----		-----	E2193 - B	50 mm	77.52		-1.42
1509			-----		-----	E2193 - B	50 mm	77.62		-1.35
1515			-----		-----			-----		-----
1603			-----		-----	In house	10 mm	81		0.99
1656			-----		-----			-----		-----
1718			-----		-----	E2193 - B	50 mm	79.60		0.02
1880			-----		-----	E2193 - B	10 mm	77.6		-1.36
1954			-----		-----			-----		-----
6198			-----		-----	E2193 - B	10 mm	80.3		0.51
6247			-----		-----	E2193 - B	10 mm	81.8		1.54
6262			-----		-----			-----		-----
6273			-----		-----			-----	W	-----
6326			-----		-----	E2193 - B	10 mm	76.337		-2.24
6406	E2193 - A	10 mm	81.9		-1.71	E2193 - B	10 mm	81.9		1.61
6438	E2193 - A	10 mm	88.142		0.09	E2193 - B	10 mm	77.517		-1.42
6507			-----		-----	E2193 - B	10 mm	82.70		2.17
6518			-----		-----	E2193 - B	10 mm	82.0		1.68
6555	E2193 - A	10 mm	93.2		1.56	E2193 - B	10 mm	81.2		1.13
7013			-----		-----	E2193 - B	10 mm	81.7		1.47
9006			-----		-----	E2193 - B	10 mm	78.5		-0.74
9008			-----		-----	E2193 - B	10 mm	78.3		-0.88
9009			-----		-----	E2193 - B	10 mm	80.24		0.46
9014			-----		-----	E2193 - B	10 mm	79.49		-0.05
	normality		OK					OK		
	n		11					43		
	outliers		0					2		
	mean (n)		87.815					79.569		
	st.dev. (n)		6.1454					1.4046		
	R(calc.)		17.207					3.933		
	st.dev.(E2193:16)		3.4579					1.4454		
	R(E2193:16)		9.682					4.047		

Lab 869 first reported 99.9
Lab 902 first reported 99.3
Lab 6273 test result withdrawn, reported 70.6

Option A: nitrogen sparging

Kernel Density

Option B: No nitrogen sparging

Kernel Density
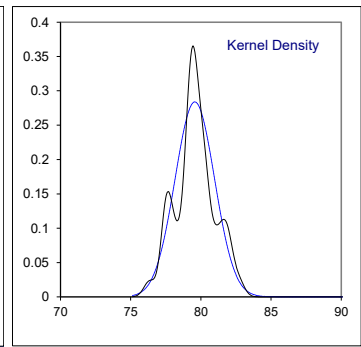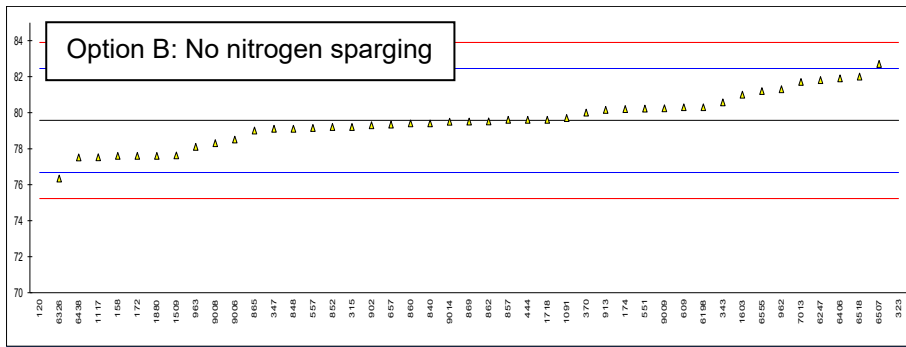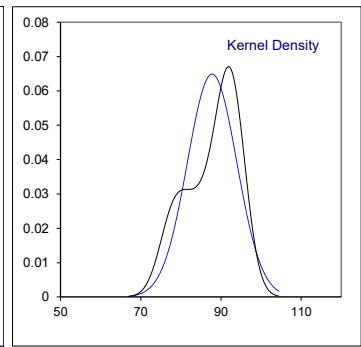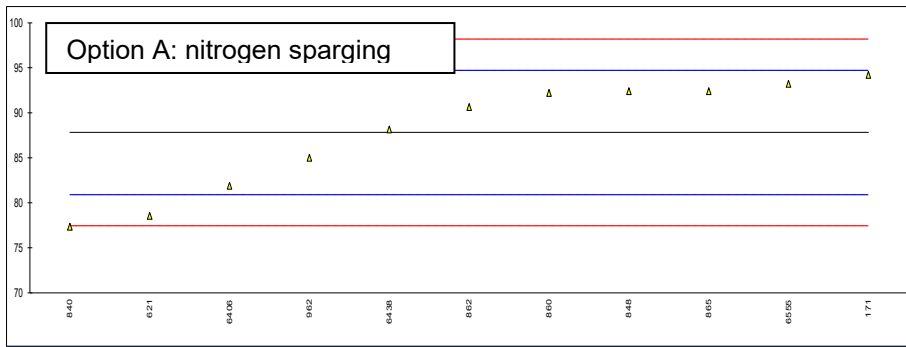
APPENDIX 2

Number of participants per country

    3 labs in BELGIUM

    3 labs in BRAZIL

    2 labs in CANADA

    8 labs in CHINA, People's Republic

    2 labs in GERMANY

    5 labs in INDIA

    1 lab in INDONESIA

    1 lab in IRAN, Islamic Republic of

    2 labs in ITALY

    2 labs in KUWAIT

    1 lab in LITHUANIA

    5 labs in MALAYSIA

    2 labs in MEXICO

    3 labs in NETHERLANDS

    3 labs in SAUDI ARABIA

    3 labs in SINGAPORE

    2 labs in SPAIN

    1 lab in TAIWAN

    2 labs in TURKEY

    2 labs in UNITED KINGDOM

    8 labs in UNITED STATES OF AMERICA

    1 lab in VIETNAM

APPENDIX 3

Abbreviations

C	= final test result after checking of first reported suspect test result
D(0.01)	= outlier in Dixon's outlier test
D(0.05)	= straggler in Dixon's outlier test
G(0.01)/G1	= outlier in Grubbs' outlier test
G(0.05)/G5	= straggler in Grubbs' outlier test
DG(0.01)/DG1	= outlier in Double Grubbs' outlier test
DG(0.05)/DG5	= straggler in Double Grubbs' outlier test
R(0.01)/R1	= outlier in Rosner's outlier test
R(0.05)/R5	= straggler in Rosner's outlier test
E	= calculation difference between reported test result and result calculated by iis
W	= test result withdrawn on request of participant
ex	= test result excluded from statistical evaluation
n.a.	= not applicable
n.e.	= not evaluated
n.d.	= not detected
fr.	= first reported
f+?	= possibly a false positive test result?
f-?	= possibly a false negative test result?
SDS	= Safety Data Sheet

Literature

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4   ISO13528:05
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7   P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
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9   Analytical Methods Committee, Technical Brief, No 4, January 2001
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