Results of Proficiency Test
Gasoline (ASTM specification)
February 2013

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CONTENTS

Appendices:

1   INTRODUCTION

Since 1995, the Institute organizes a proficiency scheme for Gasoline. During the annual proficiency testing program 2012/2013, it was decided to continue the round robin for the analysis of Gasoline in accordance with the latest applicable version of ASTM D4814:12 specification. In this interlaboratory study 134 laboratories in 65 different countries have participated. See appendix 3 for the number of participants per country. In this report, the results of the gasoline proficiency test are presented and discussed. This report is also electronically available through the iis internet site www.iisnl.com.

2   SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organiser of this proficiency test. Sample analyses for fit-for-use and homogeneity testing were subcontracted. In this proficiency test, the participants received, depending on their registration, 2*1 litre euro 95 Gasoline (labelled #13006) and/or 1*1 litre (± 800 mL filled) euro 95 Gasoline (labelled #13007) for DVPE only.
Participants were requested to report rounded and unrounded results. The unrounded results were preferably used for statistical evaluation.

2.1   ACCREDITATION

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, is accredited in accordance with ISO/IEC17043:2010 and ILAC-G13:2007, (R007), since January 2000, by the Dutch Accreditation Council: RvA (Raad voor Accreditatie). This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentially of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2   PROTOCOL

The protocol followed in the organisation of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: 'Protocol for the Organisation, Statistics and Evaluation' of January 2010 (iis-protocol, version 3.2). This protocol can be downloaded from the iis website http://www.iisnl.com.

2.3   CONFIDENTIALITY STATEMENT

All data presented in this report must be regarded as confidential and are 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 sample material, 500 litre of Gasoline Euro 95 was obtained from a local petrol station in the Netherlands in August 2012. After transferring 400 liter into a 500 liter mixing vessel and homogenisation, 108 amber glass bottles of 1 litre with approx. 800 mL were filled and labelled #13007 "for DVPE only". The homogeneity of the subsamples #13007 was checked by determination of Dry Vapour Pressure Equivalent in accordance with ASTM D5191:12 on 8 stratified randomly selected samples.

	DVPE in kPa
Sample #13007-1	58.7
Sample #13007-2	59.1
Sample #13007-3	58.7
Sample #13007-4	58.8
Sample #13007-5	58.7
Sample #13007-6	58.9
Sample #13007-7	58.8
Sample #13007-8	58.7

Table 1: homogeneity test of subsamples #13007

The remaining 100 liter was also transferred to the mixing vessel. After homogenisation, 310 amber glass bottles of 1 litre were filled and labelled #13006. The homogeneity of the subsamples #13006 was checked by determination of Density @15°C in accordance with ASTM D4052:11 on 10 stratified randomly selected samples.

	Density @ 15°C in kg/m^3
Sample #13006-1	752.39
Sample #13006-2	752.38
Sample #13006-3	752.37
Sample #13006-4	752.40
Sample #13006-5	752.39
Sample #13006-6	752.37
Sample #13006-7	752.38
Sample #13006-8	752.42
Sample #13006-9	752.36
Sample #13006-10	752.39

Table 2: homogeneity test of subsamples #13006

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

	Density@ 15 °C in kg/m^3	DVPE in kPa
r (sample #13006)	0.13	----
r (sample #13007)	----	0.40
reference method	ASTM D4052:11	ASTM D5191:12
0.3 x R (ref. method)	0.55	0.67

Table 3: repeatabilities of subsamples #13006 and #13007

The calculated repeatabilities of the results of homogeneity test for Density and DVPE were less than 0.3 times the reproducibilities of the reference test methods. Therefore, homogeneity of subsamples #13006 and #13007 was assumed.

To the participants, depending on their registration, 2*1 litre bottle of sample #13006 and/or 1*1 litre bottle (± 800 mL filled) of sample #13007 were sent on February 6, 2013.

2.5 STABILITY OF THE SAMPLES

The stability of Gasoline, packed in the brown glass bottles, was checked. The material was found sufficiently stable for the period of the proficiency test.

2.6 ANALYSIS

The participants were requested to determine API Gravity, Aromatics by FIA, Benzene, Copper Strip Corrosion, Doctor Test, Density @ 15°C, Distillation (automated and manual), Existent gum, Lead, Phosphorus, Olefins by FIA, DIPE, Ethanol, ETBE, MTBE, Iso-Butanol, TAME, t-Butanol, Methanol, Oxygen, Oxidation Stability, Total Oxygenates, Sulphur, RON and MON on sample #13006.
On sample #13007, the participants were requested to determine Total Vapour Pressure and Dry Vapour Pressure (acc. ASTM D5191 and EPA).
To get comparable results a detailed report form, on which the units were prescribed as well as some of the required standards and a letter of instructions were prepared and made available for download on the iis website (www.iisnl.com).
A SDS and a form to confirm receipt of the samples were added to the sample package

3 RESULTS

During four weeks after sample despatch, the results of the individual laboratories were gathered. The original data are tabulated per determination in appendix 1 of this report. The laboratories are presented by their code numbers.

Directly after the deadline, a reminder fax was sent to the laboratories that had not reported results at that moment. Shortly after the deadline, the available results were screened for suspect data. A result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the results. Additional or corrected results are used for data analysis and original results are placed under 'Remarks' in the result tables in appendix 1.

3.1 STATISTICS

Statistical calculations were performed as described in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of January 2010 (iis-protocol, version 3.2). For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded results. Results reported as '<…' or '>…' were not used in the statistical evaluation.

First, the normality of the distribution of the various data sets per determination was checked by means of the Lilliefors-test. After removal of outliers, this check was repeated. Not all data sets proved to have a normal distribution, in which cases the statistical evaluation of the results should be used with due care.

In accordance to ISO 5725 (1986 and 1994) the original results per determination were submitted subsequently to Dixon and Grubbs outlier tests. Outliers are marked by D(0.01) for the Dixon test, by G(0.01) or DG(0.01) for the Grubbs test. Stragglers are marked by D(0.05) for the Dixon test, by G(0.05) or DG(0.05) for the Grubbs test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

For each assigned value, the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirement based on the target reproducibility in accordance with ISO13528. When the uncertainty passed the evaluation, no remarks are made in the report. However, when the uncertainty failed the evaluation it is mentioned in the report and it will have consequences for the evaluation of the test results.

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

3.2 GRAPHICS

In order to visualise the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported analysis results are plotted. The corresponding laboratory numbers are under the X-axis.

The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected standard. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle. Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms (see appendix 4; nos.13 and 14).

3.3 Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements, e.g. ASTM reproducibilities, the z-scores were calculated using a target standard deviation. This result was an evaluation independent of the spread of this interlaboratory study. The target standard deviation was calculated from the literature reproducibility by division with 2.8.

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

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

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

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

$\lvert z \rvert < 1$	good
$1 < \lvert z \rvert < 2$	satisfactory
$2 < \lvert z \rvert < 3$	questionable
$3 < \lvert z \rvert$	unsatisfactory

4   EVALUATION

In this proficiency test, problems were encountered during the transport of the samples to the laboratories in Australia, Bolivia, Brazil, Bulgaria, Costa Rica, Cyprus, India, Israel, Kenya, Morocco, Mozambique, Pakistan, Russia, Saudi Arabia, Tanzania, Thailand, Tunesia and U.A.E. The samples to these laboratories in these countries arrived near of after the final reporting date.
From the 134 participants, 30 participants did report the results after the deadline for reporting and 14 other participants did not report any results at all. Finally 120 laboratories did report 2048 numerical results. Observed were 65 outlying results, which is 3.2%. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

4.1   EVALUATION PER TEST

In this section, the results are discussed per test.
Not all data sets proved to have a normal distribution. Not normal distributions were found for the following determinations for sample #13006: API gravity, Benzene, Density, Distillation (for automated: 10 and 70% evaporated and for manual 10% and 50%), Existent Gum, Olefins by FIA, MTBE, Other oxygenates (DIPE, ETBE, i-prOH, MeOH, Tert-buOH), Total Oxygenates, Oxygen content and RON. In these cases, the statistical evaluation should be used with care.

API Gravity: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in good agreement with the requirements of ASTM D4052:11.

Benzene: This determination was problematic for a number of laboratories. Four statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of ASTM D3606:10.

Copper strip: No problems have been observed, all participants, except for one agreed on a result of 1.

Density @ 15°C: This determination was problematic for a number of laboraties. Four statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of ASTM D4052:11.

Distillation   The automated mode determination was not problematic. In total three statistical outliers were observed.The calculated reproducibilities after rejection of the statistical outliers are all in agreement with the requirements of ASTM D86:12, except for 50% evaporated.
The manual mode determination was partly problematic. In total five statistical outliers were observed. The calculated reproducibilities for 10%, 50% and 70% evaporated distillation results are in agreement with the requirements of ASTM D86:12, but the calculated reproducibilities for IBP, 90% evaporated and FBP are not in agreement to the requirements of ASTM D86:12.

Doctor Test: No analytical problems have been observed, all participants, except one, agreed on the absence of Mercaptans.

Existent Gum: 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 D381:12.

Olefins by FIA: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of ASTM D1319:10.

Aromatics by FIA: This determination was problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D1319:10. When the results for FIA were evaluated separately, the spread was somewhat smaller but still not in agreement with the requirements of ASTM D1319:10.

Lead: The consensus value of the group was below the application range (2.5 - 40 mg/L) of ASTM D3237:12. Therefore, no significant conclusions were drawn.

Phosphorus: The consensus value of the group was below the application range (0.20 - 40 mg/L) of ASTM D3231:11. Therefore, no significant conclusions were drawn.

Oxidation stability: The majority of the laboratories agreed that the Oxidation Stability is >300 (or even >900) minutes.

Ethanol: This determination was problematic for a number of laboratories. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D4815:09.

MTBE: This determination was problematic. Three statistical outliers and two false negative test results were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D4815:09. The large spread may be explained by the variety of test methods used.

Other Oxygenates: The concentrations of the other oxygenates were all near or below the detection limit of the method used and most of the participants reported a "less then" result. Therefore, no significant conclusions were drawn. In total six false positive test results were observed.

Total Oxygenates: This determination was problematic. Three statistical outliers and two false negative test results were observed and the calculated reproducibility after rejection of the statistical outliers is not in agreement with the estimated requirements of ASTM D4815:09. A number of laboratories probably mixed up the Oxygen content test result with the test result for Total oxygenates.

Oxygen content: This determination was problematic for a number of laboratories. Six statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ASTM D5599:10 and also with ASTM D4815:09.

Sulphur: This determination was problematic for a number of laboratories. Six statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ASTM D5453:12. The test methods using ED-XRF are not suitable for ultra low sulphur concentrations (less 10 mg/kg)

RON: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D2699:12.

MON: This determination was not problematic. Only one statistical outlier was observed and the calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D2700:12.

TVP: This determination was problematic for a number of laboratories. Five statistical outliers were observed. However, the calculated reproducibility, after rejection of the statistical outliers, is in full agreement with the requirements of ASTM D5191:12.

DVPE: The conversion of the measured Total Vapour Pressure to the corresponding
                  Dry Vapour Pressure Equivalent (DVPE) as described in ASTM D5191:12
                  and to the U.S. EPA guidelines (40 CFR Part 80, App. E, Method 3), showed
                  in total seven statistical outliers.
                  Both calculated reproducibilities after rejection of the statistical outliers are in
                  agreement with the respective requirements of ASTM D5191 and EPA
                  guidelines.

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 of sample #13006 and #13007, calculated reproducibilities and
reproducibilities, derived from literature standards (in casu ASTM standards) are compared in
the next table.

Parameter		Unit	n	mean	2.8 * sd	R (lit)
API Gravity		-----	64	56.48	0.26	0.46
Benzene		% V/V	66	0.85	0.10	0.16
Copper Strip 3 hrs @ 50°C		-----	85	1(1A)	n.a.	n.a.
Density @ 15 ^{o}C		kg/m^3	108	752.5	0.9	1.8
Dist. Auto.	IBP	ºC	87	37.1	4.8	5.3
	10%-evap.	ºC	87	52.0	2.1	3.2
	50%-evap.	ºC	86	95.0	2.3	1.9
	70%-evap.	ºC	87	124.6	2.1	5.3
	90%-evap.	ºC	88	149.9	2.5	4.0
	FBP	ºC	87	179.7	6.2	6.8
Dist. Man.	IBP	ºC	22	39.0	4.8	4.0
	10%-evap.	ºC	22	51.9	2.8	3.3
	50%-evap.	ºC	20	94.7	3.1	3.4
	70%-evap.	ºC	21	123.5	3.6	3.6
	90%-evap.	ºC	22	149.3	5.0	4.3
	FBP	ºC	20	179.2	6.3	4.4
Doctor Test		-----	63	Negative	n.a.	n.a.
Existent gum (washed)		mg/100mL	43	0.5	1.0	2.1
Olefins by FIA		%V/V	61	7.1	3.3	2.7
Aromatics by FIA		%V/V	59	35.5	5.3	3.7
Lead as Pb		mg/L	39	<2.5	n.a.	(2.60)
Phosphorus as P		mg/L	15	<0.2	n.a.	(0.13)
Oxidation Stability		min	50	>300	n.a.	n.a.
Ethanol		%V/V	57	4.8	0.6	0.6
MTBE		%V/V	54	3.2	0.4	0.3
Total Oxygenates		%M/M	44	8.0	1.0	0.6
Oxygen content		%M/M	50	2.3	0.3	0.3
Sulphur		mg/kg	90	6.3	2.4	2.3
RON		-----	59	95.6	0.6	0.7
MON		-----	43	85.1	1.0	0.9

table 4: performance evaluation sample #13006

* results between brackets should be used with care, because the average found was below the application range

Parameter	Unit	n	mean	2.8 * sd	R (lit)
TVP	psi	63	9.35	0.31	0.33
DVPE acc. to ASTM D5191	psi	77	8.49	0.31	0.32
DVPE acc. EPA	psi	57	8.60	0.34	0.32

table 5: performance evaluation sample #13007

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

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

	February 2013	*October 2012*	*February 2012*	*October 2011*
Number of rep. participants	120	95	119	111
Number of results reported	2048	1709	1962	2153
Statistical outliers	65	55	62	68
Percentage outliers	3.2%	3.2%	3.2%	3.2%

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 against the requirements of the respective standards. The conclusions are given in the following table:

Determination	*February 2013*	*October 2012*	*February 2012*	*October 2011*
API Gravity	++	+	++	+
Benzene	++	--	++	--
Density @ 15°C	++	--	++	+
Distillation Automated	+	-	++	-
Distillation Manual	+/-	+/-	++	+/-
Existent gum (washed)	++	(+)	++	(-)
Olefins by FIA	-	(-)	+	--
Aromatics by FIA	--	+	-	-
Lead as Pb	n.e.	(++)	--	(++)
Phosphorus as P	n.e.	n.e.	(+)	n.e.
Ethanol	+/-	-	--	--
MTBE	-	-	(--)	+
Oxygen content	+/-	+	+/-	-
Sulphur	+/-	-	--	+
RON	+	+/-	-	+
MON	+/-	+	+/-	+
TVP	+	+/-	++	+
DVPE	+/-	+/-	++	+

Table 7: comparison determinations against the standard

* results between brackets do not meet the application range of the test method.

The performance of the determinations against the requirements of the respective standards is listed in the above table.

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

APPENDIX 1

Determination of API Gravity on sample #13006;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4052	56.5		0.15	1006		-----		-----
62	D4052	56.5		0.15	1016		-----		-----
120	D4052	56.5		0.15	1017		-----		-----
132	D4052	56.50		0.15	1033		-----		-----
140	D4052	56.4		-0.46	1038		-----		-----
150	D4052	56.5		0.15	1047		-----		-----
158	D4052	56.5		0.15	1059	D4052	56.38		-0.58
159	D4052	56.48		0.03	1067		-----		-----
169	D4052	56.4		-0.46	1080		-----		-----
171	D4052	56.51		0.21	1081		-----		-----
193	D4052	56.51488		0.24	1108		-----		-----
194	D4052	56.49		0.09	1109	D287	56.35		-0.76
212		-----		-----	1126		-----		-----
217		-----		-----	1134	Calc.	61.61	G(0.01)	31.32
221		-----		-----	1161	D1298	56.5	C	0.15
224	D1298	56.23		-1.50	1171		-----		-----
225	Calc.	56.5		0.15	1186		-----		-----
228	Conversion	56.48		0.03	1194		-----		-----
230		-----		-----	1215	D4052	56.44		-0.22
237	D4052	56.45		-0.15	1231	D4052	56.4		-0.46
238	D1298	56.51		0.21	1237		-----		-----
252		-----		-----	1257		-----		-----
253	D4052	56.53		0.33	1297	D4052	56.32		-0.95
254		-----		-----	1299		-----		-----
256		-----		-----	1300	D4052	56.51	C	0.21
258	IP1250	56.2		-1.68	1347	D1298	56.6		0.76
273		-----		-----	1348		-----		-----
311		-----		-----	1385		-----		-----
312	D4052	56.53		0.33	1395		-----		-----
323	D1298	56.51		0.21	1397		-----		-----
333		-----		-----	1398		-----		-----
334		-----		-----	1428		-----		-----
336		-----		-----	1484		-----		-----
337		-----		-----	1498	D1298	56.92		2.71
338		-----		-----	1501	D4052	56.49		0.09
353		-----		-----	1531		-----		-----
360	D4052	56.45		-0.15	1538		-----		-----
399	D4052	56.60		0.76	1564		-----		-----
430		-----		-----	1575		-----		-----
431		-----		-----	1590	D4052	56.46		-0.09
433		-----		-----	1603		-----		-----
444		-----		-----	1613	D4052	56.44		-0.22
447	Calc.	56.49		0.09	1616		-----		-----
463	D4052	56.50		0.15	1631		-----		-----
468	D4052	56.48		0.03	1634	D4052	56.5399		0.39
485		-----		-----	1656	ISO2160	56.36		-0.70
494	D4052	56.48		0.03	1657	D4052	56.60		0.76
495	D4052	56.50		0.15	1668		-----		-----
511	D4052	56.42		-0.34	1669		-----		-----
541	D4052	56.5		0.15	1677	D4052	56.45		-0.15
557		-----		-----	1720		-----		-----
592		-----		-----	1724	D4052	56.48		0.03
631	D4052	56.45		-0.15	1730		-----		-----
657	D4052	56.5		0.15	1740		-----		-----
663	D4052	56.5		0.15	1807		-----		-----
671	D4052	56.4		-0.46	1810		-----		-----
862	D4052	56.47		-0.03	1811		-----		-----
868	D4052	56.46		-0.09	1842		-----		-----
875	D4052	56.48		0.03	1849		-----		-----
902	D4052	56.51		0.21	1851		-----		-----
912	D4052	56.46		-0.09	1854	D4052	56.5		0.15
922	D4052	56.51		0.21	1936		-----		-----
962		-----		-----	1937		-----		-----
974	D4052	56.53		0.33	1938		-----		-----
994	D4052	56.34		-0.83	1951		-----		-----
995	D4052	56.508		0.20	2129	Calc.	56.50		0.15
996	Calc.	56.44		-0.22	2130	Conversion	56.465		-0.06

normality	not OK
n	64
outliers	1
mean (n)	56.475
st.dev. (n)	0.0914
R(calc.)	0.256
R(D4052:11)	0.459

Lab 1161 first reported: 55.92

Lab 1300 first reported: 0.753
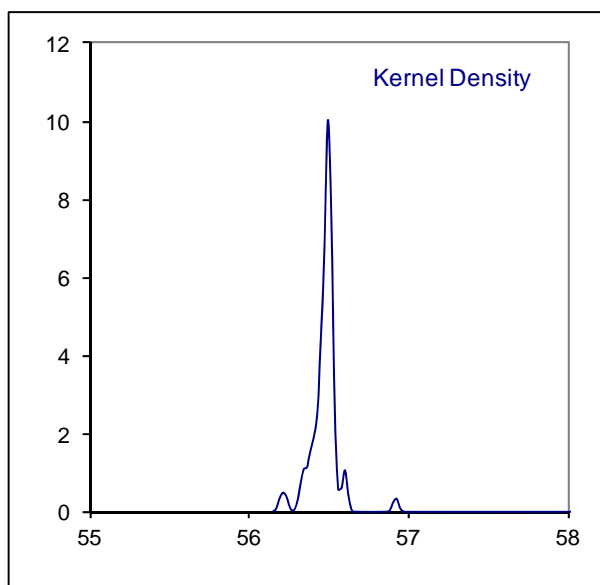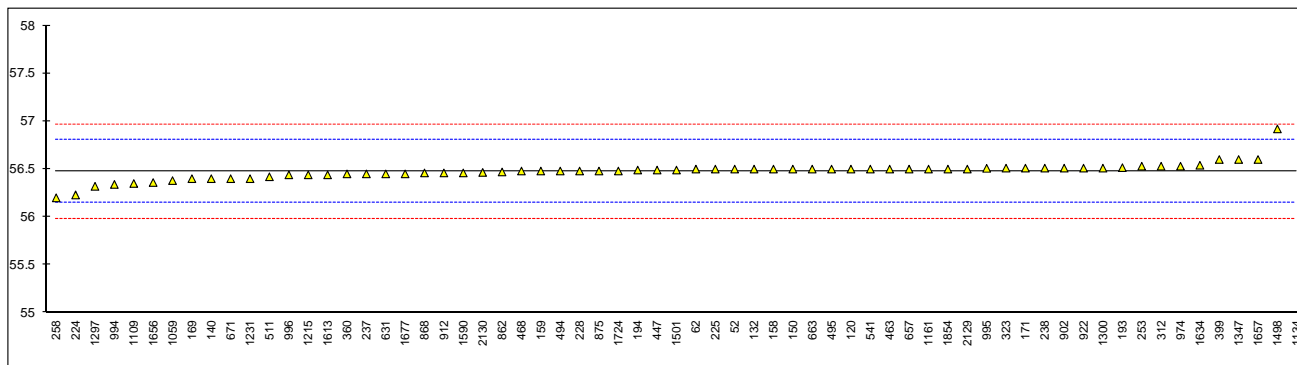
Determination of Benzene on sample #13006; results in %V/V

lab	method	value	mark	z(targ)	lab	Method	value	mark	z(targ)
52	INH-3	0.88		0.55	1006	D5580	0.85		0.02
62	D3606	0.875		0.46	1016		-----		-----
120	D3606	0.82		-0.50	1017	ISO22854	0.83		-0.33
132	D3606	0.878		0.51	1033		-----		-----
140	D3606	0.7896		-1.03	1038	D3606	0.85		0.02
150	D3606	0.82		-0.50	1047		-----		-----
158	D3606	0.87		0.37	1059	ISO22854	0.86		0.20
159	D3606	0.78		-1.20	1067		-----		-----
169	D3606	0.84		-0.15	1080	in house	0.86		0.20
171	D3606	0.88		0.55	1081	ISO22854	0.86		0.20
193	D3606	0.852785		0.07	1108	D6839	0.85		0.02
194		-----		-----	1109	D3606	0.865		0.28
212		-----		-----	1126	in house	0.87		0.37
217		-----		-----	1134	ISO22854	0.85		0.02
221		-----		-----	1161	EN12177	0.75		-1.72
224		-----		-----	1171	D6277	0.825		-0.41
225		-----		-----	1186		-----		-----
228		-----		-----	1194	D6277	0.833		-0.28
230		-----		-----	1215		-----		-----
237		-----		-----	1231	D6293	0.87		0.37
238		-----		-----	1237	EN238	0.8		-0.85
252		-----		-----	1257		-----		-----
253		-----		-----	1297	in house	1.09	G(0.01)	4.21
254		-----		-----	1299	ISO22854	0.85		0.02
256		-----		-----	1300	D3606	0.8172		-0.55
258		-----		-----	1347	D3606	0.921		1.26
273		-----		-----	1348	D3606	1.139	G(0.01)	5.07
311	EN22854	0.85		0.02	1385	D3606	1.120	G(0.01)	4.74
312	EN12177	0.85		0.02	1395		-----		-----
323		-----		-----	1397	EN238	0.86		0.20
333	EN238	0.79		-1.03	1398		-----		-----
334	EN238	0.8		-0.85	1428	EN12177	0.857		0.14
336	EN238	0.8		-0.85	1484		-----		-----
337		-----		-----	1498		-----		-----
338		-----		-----	1501	D6839	0.87		0.37
353		-----		-----	1531		-----		-----
360	EN12177	0.90		0.89	1538		-----		-----
399	ISO22854	0.85		0.02	1564	EN22854	0.85		0.02
430		-----		-----	1575		-----		-----
431		-----		-----	1590	D3606	0.95		1.77
433		-----		-----	1603	in house	0.825		-0.41
444		-----		-----	1613	D6839	0.86		0.20
447	D3606	0.80		-0.85	1616		-----		-----
463	EN238	0.828		-0.36	1631	ISO22854	0.86		0.20
468		-----		-----	1634		-----		-----
485		-----		-----	1656	EN14517	0.89		0.72
494	ISO22854	0.85		0.02	1657		-----		-----
495	D6839	0.87		0.37	1668		-----		-----
511		-----		-----	1669	ISO22854	0.87		0.37
541		-----		-----	1677	D3606	0.84		-0.15
557		-----		-----	1720		-----		-----
592		-----		-----	1724	ISO22854	0.86		0.20
631	D6839	0.87		0.37	1730		-----		-----
657	D5580	0.90		0.89	1740		-----		-----
663		-----		-----	1807	EN238	0.9		0.89
671		-----		-----	1810	EN22854	0.85		0.02
862	D5580	0.859		0.18	1811	D3606	0.85		0.02
868	D6839	0.87		0.37	1842		-----		-----
875	EN12177	0.786	C	-1.10	1849	D3606	0.85		0.02
902		-----		-----	1851		-----		-----
912		-----		-----	1854	D3606	0.85		0.02
922		-----		-----	1936		-----		-----
962		-----		-----	1937		-----		-----
974	D3606	1.031	G(0.01)	3.18	1938		-----		-----
994		-----		-----	1951	D3606	0.85		0.02
995	D6729	0.80		-0.85	2129	D6730	0.839		-0.17
996		-----		-----	2130	D6730	0.867	C	0.32

normality	not OK
n	66
outliers	4
mean (n)	0.849
st.dev. (n)	0.0342
R(calc.)	0.096
R(D3606:10)	0.160

Lab 875 first reported: 0.689

Lab 2130 first reported: 0.873
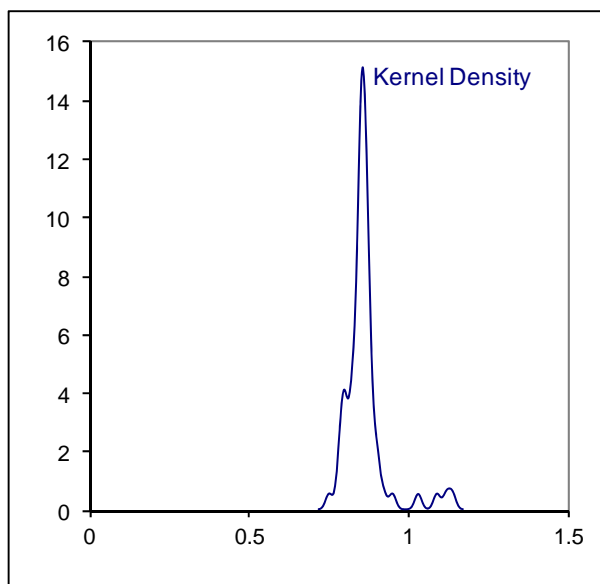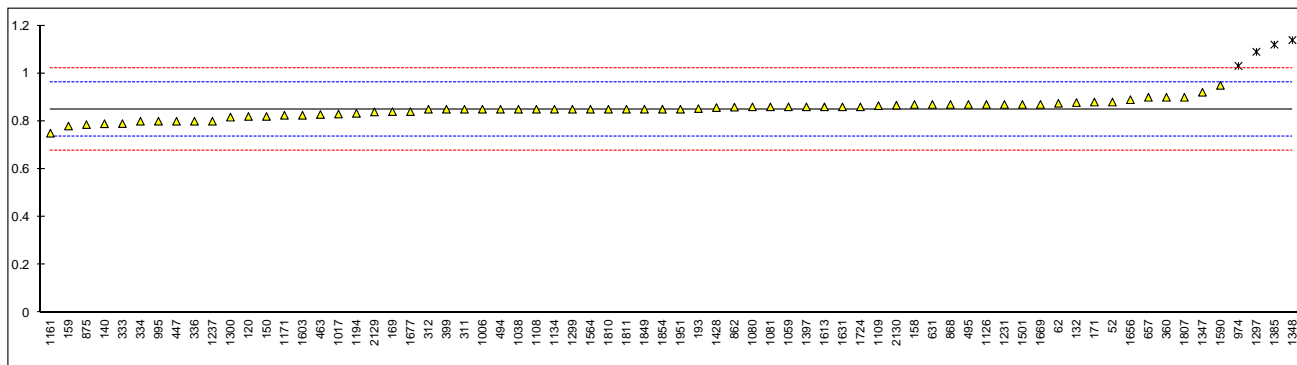
Determination of Copper strip 3hrs/50°C on sample #13006;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D130	1A		-----	1006	D130	1A		-----
62	D130	1B		-----	1016	D130	1A		-----
120	D130	1A		-----	1017	D130	1A		-----
132	D130	1A		-----	1033	IP154	1A		-----
140	D130	1A		-----	1038	D130	1A		-----
150	D130	1A		-----	1047		-----		-----
158		-----		-----	1059	D130	1A		-----
159	D130	1A		-----	1067		-----		-----
169	D130	1A		-----	1080	D130	1A		-----
171	D130	1A		-----	1081	D130	1A		-----
193		-----		-----	1108	D130	1A		-----
194	D130	1A		-----	1109	D130	1A		-----
212		-----		-----	1126		-----		-----
217		-----		-----	1134	D130	1A		-----
221		-----		-----	1161	ISO2160	1A		-----
224		-----		-----	1171	ISO2160	1A		-----
225	D130	1A		-----	1186		-----		-----
228	D130	1A		-----	1194		-----		-----
230	D130	1A		-----	1215		-----		-----
237	D130	1A		-----	1231	D130	1A		-----
238	D130	1A		-----	1237		-----		-----
252		-----		-----	1257	D130	1A		-----
253	D130	1A		-----	1297		-----		-----
254		-----		-----	1299	D130	1A		-----
256		-----		-----	1300	D130	1A		-----
258	D130	1A		-----	1347	D130	1A		-----
273	D130	1A		-----	1348	D130	1A		-----
311	D130	1A		-----	1385	D130	1A		-----
312		-----		-----	1395	D130	1A		-----
323	D130	1A		-----	1397	D130	1		-----
333		-----		-----	1398		-----		-----
334		-----		-----	1428	ISO2160	1		-----
336		-----		-----	1484		-----		-----
337		-----		-----	1498		-----		-----
338		-----		-----	1501	D130	1A		-----
353	D130	1A		-----	1531	D130	4B	false positive?	-----
360	D130	1A		-----	1538		-----		-----
399	D130	1A		-----	1564	D130	1A		-----
430		-----		-----	1575		-----		-----
431		-----		-----	1590	D130	1A		-----
433		-----		-----	1603	D130	1A		-----
444		-----		-----	1613	D130	1A		-----
447	D130	1A		-----	1616		-----		-----
463	D130	1A		-----	1631	ISO2160	1		-----
468	D130	1A		-----	1634	D130	1A		-----
485		-----		-----	1656	D130	1		-----
494	D130	1A		-----	1657	D130	1A		-----
495	D130	1A		-----	1668		-----		-----
511	D130	1A		-----	1669	ISO2160	1A		-----
541	D130	1		-----	1677	D130	1A		-----
557		-----		-----	1720		-----		-----
592		-----		-----	1724	D130	1A		-----
631	D130	1A		-----	1730		-----		-----
657	D130	1B		-----	1740	D130	1A		-----
663	D130	1A		-----	1807	D130	1A		-----
671	D130	1A		-----	1810		-----		-----
862	D130	1A		-----	1811		-----		-----
868	D130	1A		-----	1842	IP154	1A		-----
875	D130	1A		-----	1849	D130	1A		-----
902		-----		-----	1851		-----		-----
912		-----		-----	1854	D130	1B		-----
922	D130	1A		-----	1936		-----		-----
962		-----		-----	1937		-----		-----
974	D130	1A		-----	1938		-----		-----
994	D130	1A		-----	1951	D130	1		-----
995	D130	1A		-----	2129	D130	1A		-----
996	D130	1A		-----	2130	D130	1A		-----

normality   n.a.
n   85
outliers   1
mean (n)   1(1A)
st.dev. (n)   n.a.
R(calc.)   n.a.
R(D130:10)   n.a.

Determination of Density @ 15°C on sample #13006; results in kg/m^3

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4052	752.6		0.22	1006	D4052	752.7		0.37
62	D4052	752.41		-0.07	1016		-----		-----
120	D4052	752.4		-0.09	1017	D4052	752.3		-0.24
132	D4052	752.44	C	-0.03	1033	IP365	752.6		0.22
140	D4052	752.8		0.53	1038	D4052	751.3		-1.79
150	D4052	752.5		0.07	1047	D4052	752.3		-0.24
158	D4052	752.3	C	-0.24	1059	D4052	752.4		-0.09
159	D4052	752.5		0.07	1067		-----		-----
169		-----		-----	1080	D4052	752.4		-0.09
171	D4052	752.3		-0.24	1081	ISO12185	752.5		0.07
193	D4052	752.4	C	-0.09	1108	D4052	752.5		0.07
194	D4052	752.4		-0.09	1109	D4052	752.6		0.22
212		-----		-----	1126	ISO12185	752.63		0.27
217		-----		-----	1134	IP365	752.4		-0.09
221		-----		-----	1161	ISO12185	752.5	C	0.07
224	D1298	753.5		1.61	1171	D4052	751.49		-1.49
225	D4052	752.4		-0.09	1186	D1298	752.9		0.68
228	D4052	752.5		0.07	1194		-----		-----
230	D1298	752.7		0.37	1215	D4052	752.63		0.27
237	D4052	752.1		-0.55	1231	D4052	792.8	C, G(0.01)	62.23
238	D1298	755.5	G(0.01)	4.69	1237	ISO12185	752.3		-0.24
252		-----		-----	1257	D4052	752.75		0.45
253	D4052	752.3		-0.24	1297	D4052	752.7		0.37
254		-----		-----	1299	D4052	752.5		0.07
256		-----		-----	1300	D4052	752.36		-0.15
258	D1298	753.2		1.15	1347	D4052	752.63		0.27
273	D4052	752.3		-0.24	1348	D4052	753.6		1.76
311	D4052	752.4		-0.09	1385	D4052	752.9		0.68
312	D4052	752.3		-0.24	1395	D4052	752.6		0.22
323	D4052	752.3		-0.24	1397	D4052	752.0		-0.71
333	D4052	752.2		-0.40	1398		-----		-----
334	D4052	752.4		-0.09	1428	ISO12185	752.4		-0.09
336	D4052	752.5		0.07	1484		-----		-----
337	D4052	752.6		0.22	1498	D1298	750.8		-2.56
338	ISO12185	752.4		-0.09	1501	D4052	752.4		-0.09
353	IP365	752.5		0.07	1531	D1298	749	C, G(0.01)	-5.33
360	D4052	752.6		0.22	1538	D1298	752.3		-0.24
399	D4052	752.2		-0.40	1564	D4052	752.4		-0.09
430		-----		-----	1575	D4052	751.7		-1.17
431	ISO12185	752.33		-0.20	1590	D4052	752.6		0.22
433	ISO12185	752.4		-0.09	1603	in house	725.64	G(0.01)	-41.36
444		-----		-----	1613	D4052	752.2		-0.40
447		-----		-----	1616		-----		-----
463	D4052	752.40		-0.09	1631	ISO12185	752.4		-0.09
468	D4052	752.48		0.03	1634	D4052	752.517		0.09
485	D4052	752.3		-0.24	1656	D4052	752.6		0.22
494	D4052	752.5		0.07	1657	D4052	752.0		-0.71
495	D4052	752.4		-0.09	1668		-----		-----
511	D4052	752.75		0.45	1669	ISO12185	752.5	C	0.07
541	D4052	752.5		0.07	1677	D4052	752.3		-0.24
557		-----		-----	1720	D4052	752.6		0.22
592		-----		-----	1724	D4052	752.48		0.03
631	D4052	752.6		0.22	1730	D4052	752.4		-0.09
657	D4052	752.5		0.07	1740	ISO3675	752.6		0.22
663		-----		-----	1807	D4052	752.7	C	0.37
671	D4052	752.8		0.53	1810	D4052	752.4		-0.09
862	D4052	752.51		0.08	1811	D4052	752.8		0.53
868	D4052	752.49		0.05	1842	D4052	752.6		0.22
875	D4052	752.5		0.07	1849	D4052	752.42		-0.06
902	D4052	752.38	C	-0.12	1851		-----		-----
912	D4052	752.5		-0.01	1854	D4052	752.4		-0.09
922	D4052	752.4		-0.09	1936	D4052	752.4		-0.09
962		-----		-----	1937	ISO12185	752.5		0.07
974	D4052	752.3		-0.24	1938	D4052	752.6		0.22
994	D4052	753.0		0.84	1951	D4052	752.55		0.14
995	D4052	752.36		-0.15	2129	D4052	752.3		-0.24
996	D1298	752.7		0.37	2130	D4052	752.5		0.07

normality   not OK
n   108
outliers   4
mean (n)   752.46
st.dev. (n)   0.330
R(calc.)   0.92
R(D4052:11)   1.82

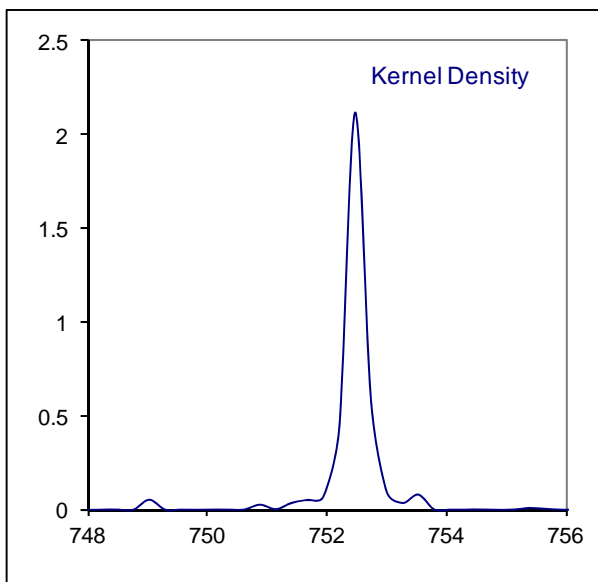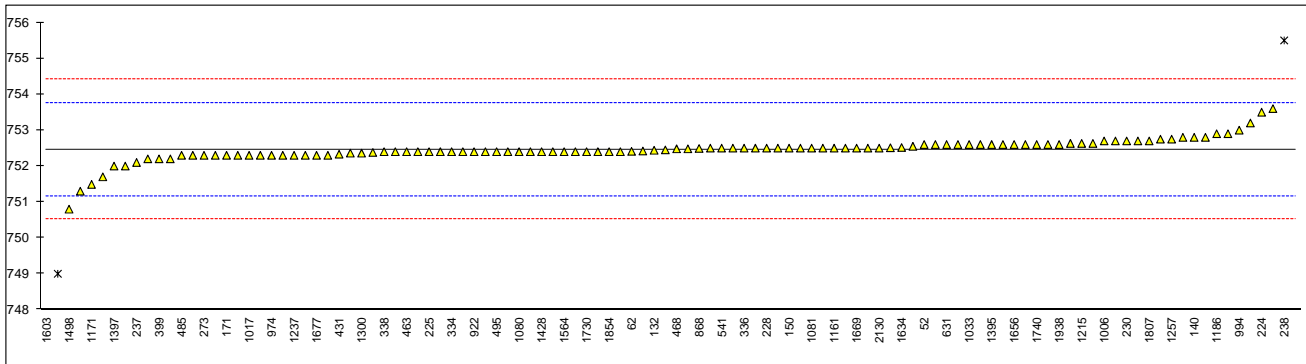Lab 132 first reported: 0.75244   Lab 1531 first reported: 761.0

Lab 902 first reported: 0.75238   Lab 1807 first reported 757.6

Lab 1161 first reported : 755.10   Lab 158, 193, 1231, 1669 reported probably in kg/l; iis converted the result to kg/m3

Determination of Distillation ASTM D86 (automated) on sample #13006; results in °C

lab	method	IBP	mark	10% eva	mark	50% eva	mark	70% eva	mark	90% eva	mark	FBP	mark
52	D86-A	37.2		51.4		94.1		124.6		149.8		178.3	
62	D86-A	35.4		51.4		95.3		124.9		150.2		181.0	
120	D86-A	35.5		51.3		94.5		124.4		149.2		179.2	
132	D86-A	35.9		51.2		95.0		124.9		150.8		178.6	
140	D86-A	37.5		52.5		95.3		124.8		150.1		182.0	
150	D86-A	37.1		52.4		95.1		124.2		149.4		177.2	
158	D86-A	35.4		51.7		94.3		124.2		149.3		180.4	
159	D86-A	38.7		52.3		96.2		125.0		150.2		181.4	
169	D86-A	36.7		52.0		95.0		124.7		150.0		179.8	
171	D86-A	36.5	C	51.4	C	93.3	C	123.7	C	149.0	C	175.3	C
193	D86-A	37.4		51.7		94.7		124.4		149.6		182.0	
194	D86-A	35.89		52.17		95.44		125.17		149.89		180.28	
212		-----		-----		-----		-----		-----		-----	
217		-----		-----		-----		-----		-----		-----	
221		-----		-----		-----		-----		-----		-----	
224		-----		-----		-----		-----		-----		-----	
225		-----		-----		-----		-----		-----		-----	
228		-----		-----		-----		-----		-----		-----	
230		-----		-----		-----		-----		-----		-----	
237		-----		-----		-----		-----		-----		-----	
238		-----		-----		-----		-----		-----		-----	
252		-----		-----		-----		-----		-----		-----	
253		-----		-----		-----		-----		-----		-----	
254		-----		-----		-----		-----		-----		-----	
256		-----		-----		-----		-----		-----		-----	
258	D86-A	38.5		52.7		94.8		124.4		149.9		181.6	
273	D86-A	38.8		53.8		93.6		123.6		147.1		176.6	
311	D86-A	34.6		51.3		93.5		123.5		149.5		180.0	
312	D86-	38.4		51.4		95.4		124.8		149.7		180.5	
323	D86-A	35.5		52.1		96.0		125.6		150.9		177.7	
333	D86-A	34.9		51.4		95.1		125.0		149.7		179.3	
334	D86-A	38.9		53.9		95.5		124.8		149.9		180.9	
336	D86-A	36.3		51.6		95.1		124.6		149.1		177.8	
337	D86-A	36.5		50.4		93.4	C	122.9		148.9		178.5	
338	ISO3405-A	36.9		52.5		94.7		125.2		149.6		185.0	
353	D86-A	37.0		50.7		94.2		124.5		150.2		180.0	
360	D86-A	34.1		51.6		94.1		124.0		149.8		179.7	
399	D86-A	39.3		52.8		94.0		122.3		147.4		176.4	
430		-----		-----		-----		-----		-----		-----	
431		-----		49.4		95.4		124.9		151.5		-----	
433		-----		-----		-----		-----		-----		-----	
444		-----		-----		-----		-----		-----		-----	
447	D86-	35.7		51.8		94.5		124.5		149.7		181.0	
463	D86-A	38.0		51.3		94.2		124.2		149.9		176.9	
468	D86-A	37.6		51.8		95.6		125.0		151.6		178.2	
485	D86-A	38.60		51.60		94.80		124.00		149.55		180.30	
494	D86-A	35.3		51.8		94.3		124.4		149.6		179.7	
495	D86-A	35.0		51.3		94.6		124.7		149.3		177.2	
511		-----		-----		-----		-----		-----		-----	
541		-----		-----		-----		-----		-----		-----	
557		-----		-----		-----		-----		-----		-----	
592		-----		-----		-----		-----		-----		-----	
631		-----		-----		-----		-----		-----		-----	
657	D86-A	35.1		51.6		94.6		124.0		149.1		178.4	
663	D86-	35.0		52.3		96.0		124.9		150.7		182.9	
671	D86-A	38.9		52.2		94.5		124.2		148.7		179.1	
862	D86-A	36.2		51.5		93.8		123.3		148.5		180.9	
868	D86-A	39.2		52.4		95.8		125.7		151.3		177.6	
875		-----		-----		-----		-----		-----		-----	
902		-----		-----		-----		-----		-----		-----	
912		-----		-----		-----		-----		-----		-----	
922		-----		-----		-----		-----		-----		-----	
962		-----		-----		-----		-----		-----		-----	
974		-----		-----		-----		-----		-----		-----	
994		-----		-----		-----		-----		-----		-----	
995		-----		-----		-----		-----		-----		-----	
996		-----		-----		-----		-----		-----		-----	
1006	D86-A	37.4		52.0		94.9		125.0		150.5		180.8	
1016		-----		-----		-----		-----		-----		-----	
1017	D86-A	38.1		53.1		95.1		124.8		150.1		180.5	
1033	IP123-A	41.6		52.3		95.6		125.0		150.4		181.9	
1038	D86-A	36.6		51.7		94.9		124.4		149.4		178.5	
1047		-----		-----		-----		-----		-----		-----	
1059	D86-A	37.2		50.9		94.3		123.8		149.0		178.9	
1067		-----		-----		-----		-----		-----		-----	
1080	D86-A	37.7		51.2		94.6		124.4		149.6		178.7	

1081	D86-A	40.6	50.9		95.4		124.3	149.7	179.3
1108	D86-A	39.5	52.6		96.3		125.6	150.2	184.0
1109	D86-A	38.8	51.5		95.6		124.4	149.4	179.5
1126	in house-A	35.9	44.7	G(0.01)	99.3	G(0.01)	123.5	149.3	177.4
1134	D86-A	34.9	52.2		95.2		125.0	149.6	180.6
1161	ISO3405-A	37.4	52.8		96.5		124.3	148.6	178.6
1171		-----	-----		-----		-----	-----	-----
1186		-----	-----		-----		-----	-----	-----
1194	in house-A	35.6	53.0		93.13		125.77	151.3	176.77
1215	D86-A	35.5	52.2		94.4		124.8	150.2	179.8
1231	D86-A	36.15	51.85		94.5		124.8	149.75	178.45
1237		-----	-----		-----		-----	-----	-----
1257	D86-A	36.4	52.4		96.5		125.8	150.7	178.4
1297	D86-A	35.4	52.9		95.7		125.4	150.4	178.7
1299	D86-A	36.3	51.8		94.7		124.7	149.5	184.8
1300	D86-A	39.1	51.8		93.2	C	123.7	150.4	178.7
1347		-----	-----		-----		-----	-----	-----
1348	D86-A	39.9	52	C	95.9		124.9	149.9	181.8
1385		-----	-----		-----		-----	-----	-----
1395	D86-A	37.8	52.8		95.8		125.7	150.8	186.4
1397	D86-A	42.1	51.8		96.0		125.4	150.3	181.2
1398		-----	-----		-----		-----	-----	-----
1428	ISO3405-A	38.8	51.9		95.6		124.8	149.6	181.5
1484		-----	-----		-----		-----	-----	-----
1498	D86-A	38.4	51.7		95.2		124.3	150.1	184.6
1501		-----	-----		-----		-----	-----	-----
1531	D86-A	39.3	52.0		95.9		125.6	151.5	182.6
1538	ISO3405-A	35.0	51.8		94.7		124.4	149.6	179.8
1564	D86-A	38.5	52.1		96.4		125.1	150.1	183.1
1575	D7345-A	39.3	52.7		90.7	G(0.01)	125.1	150.5	177.2
1590	D86-A	36.0	52.5		92.5		122.5	148.5	176.0
1603	in house-A	36.0	52.5		95.5		125.3	150.3	179.8
1613	D86-A	39.1	54.5		95	C	127.0	153.0	179.9
1616		-----	-----		-----		-----	-----	-----
1631	ISO3405-A	37.0	51.9		94.8		124.5	150.2	179.0
1634	D86-A	35.0	51.7		94.7		124.6	150.1	177.6
1656	ISO3405-A	38.1	52.1		96.1		125.3	150.5	175.9
1657	D86-A	36.5	52.4		95.4		124.5	149.6	180.8
1668		-----	-----		-----		-----	-----	-----
1669	ISO3405-A	40.8	52.0		95.5		124.3	149.8	179.1
1677	D86-A	34.9	51.4		95.8		-----	151.8	179.8
1720	D86-A	38.0	53.5		95.8		124.7	150.6	178.1
1724	D86-A	37.0	52.5		95.3		124.2	149.5	178.5
1730		-----	-----		-----		-----	-----	-----
1740	ISO3405-A	35.1	51.3		93.7		123.9	149.7	178.6
1807	D86-A	34.3	51.3		95.4		125.0	148.9	181.9
1810	D86-A	37.4	52.6		95.8		124.9	150.5	181.1
1811	D86-A	37.5	52.0		95.7		125.2	150.9	175.8
1842		-----	-----		-----		-----	-----	-----
1849	D86-A	37	51.9		94.9		123.5	149.7	179.8
1851		-----	-----		-----		-----	-----	-----
1854	D86-A	38.0	52.7		96.2		126.1	150.8	181.4
1936	D86-A	36.7	51.8		94.1		123.8	149.2	177.1
1937	ISO3405-A	36.5	52.1		94.7		124.4	149.8	180.1
1938	D86-A	37.3	51.4		94.5		124.1	148.7	176.1
1951	D86-A	37.4	52.2		95.0		123.5	149.6	179.6
2129	D86-A	34.6	51.7		94.9		124.6	149.7	179.6
2130	D86-A	37.3	51.9		95.0		124.2	149.2	181.7
	normality	OK	not OK		OK		not OK	OK	OK
	n	87	87		86		87	88	87
	outliers	0	1		2		0	0	0
	mean (n)	37.12	51.98		94.98		124.58	149.88	179.67
	st.dev. (n)	1.708	0.740		0.835		0.751	0.878	2.195
	R(calc.)	4.78	2.07		2.34		2.10	2.46	6.15
	R(D86:12)	5.25	3.20		1.88		5.34	3.98	6.78

Lab 171 first reported in Fahrenheit   Lab 1348 first reported 10% eva.: 57.0

Lab 337 first reported 50% eva.: 91.9   Lab 1613 first reported 50 eva.: 100.2

Lab 1300 first reported 50% eva.: 92.6

Initial Boiling Point

Kernel Density

10% evaporated

Kernel Density

50% evaporated

Kernel Density

70% evaporated

Kernel Density

90% evaporated

Kernel Density

Final Boiling Point

Kernel Density
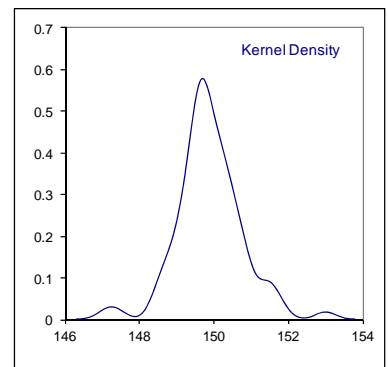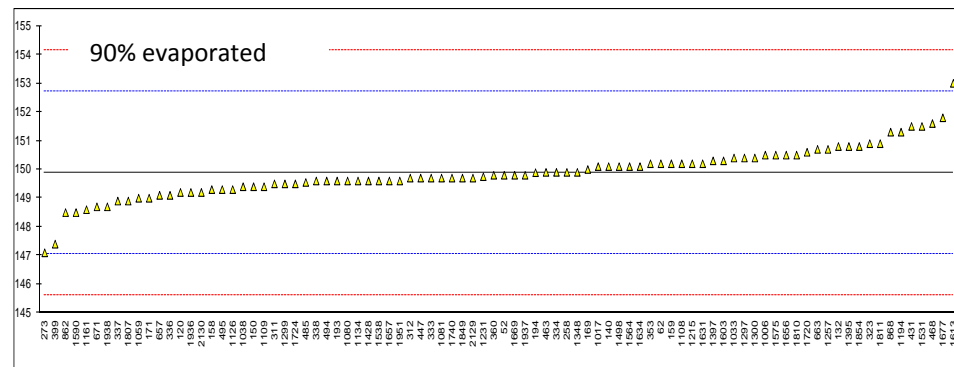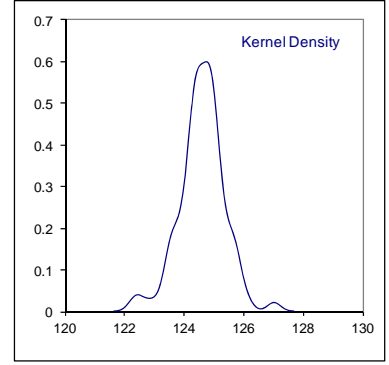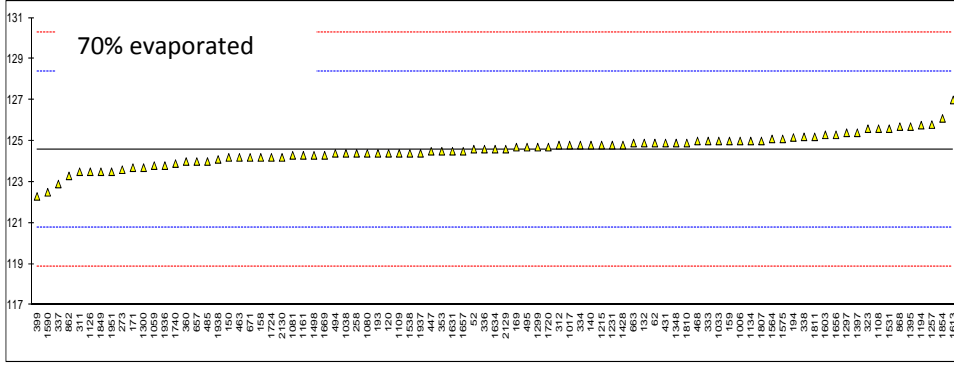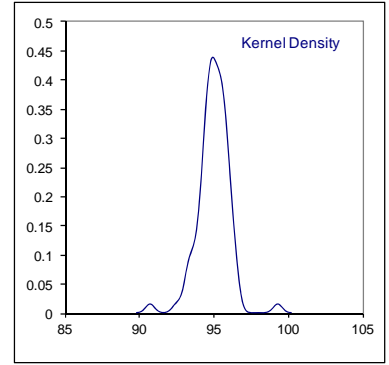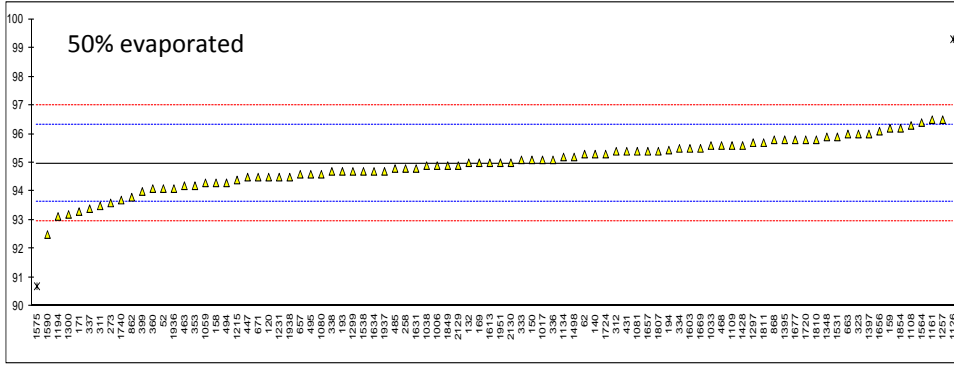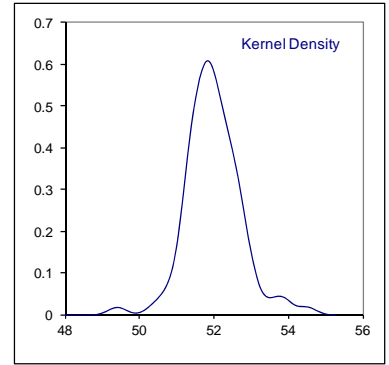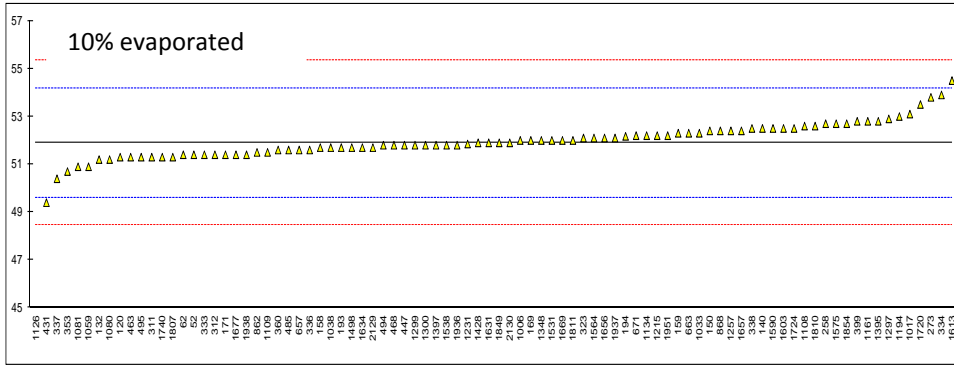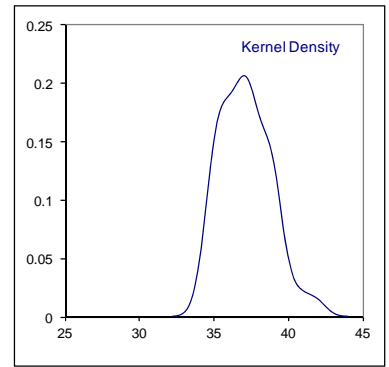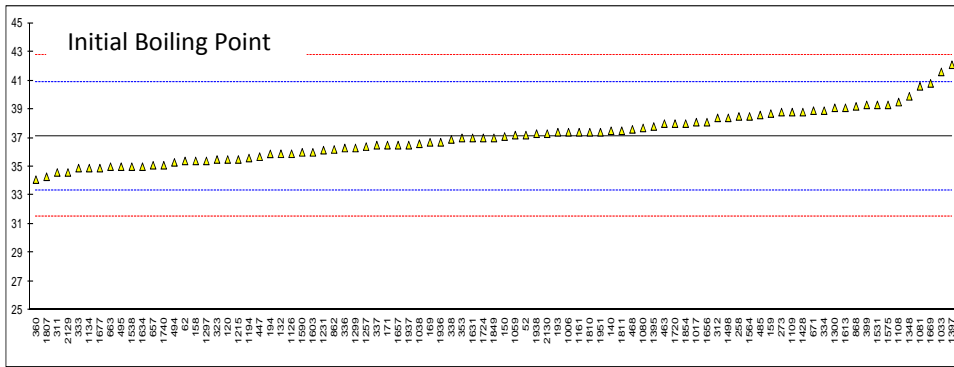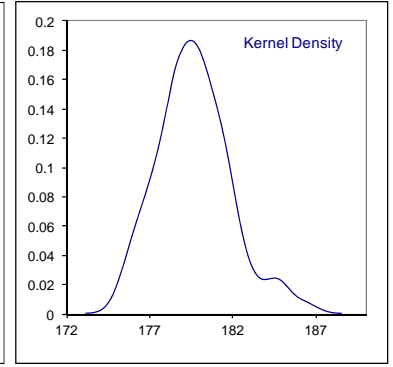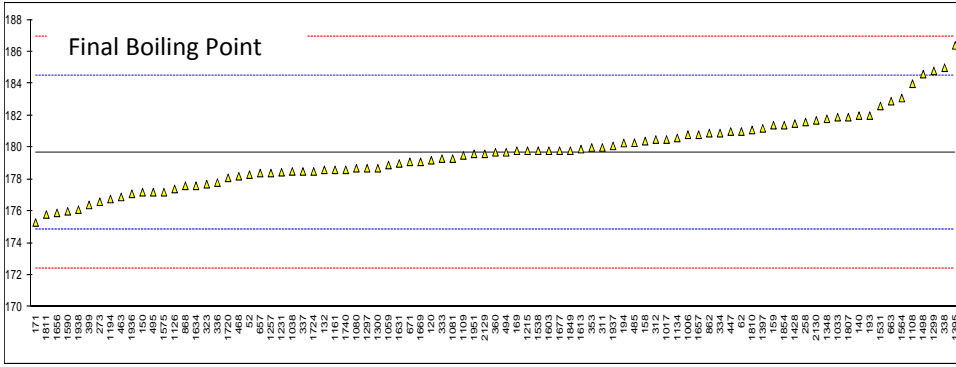
Determination of Distillation ASTM D86 (Manual) on sample #13006; results in °C

lab	method	IBP	mark	10% eva	mark	50% eva	mark	70% eva	mark	90% eva	mark	FBP	Mark
52		-----		-----		-----		-----		-----		-----	
62		-----		-----		-----		-----		-----		-----	
120		-----		-----		-----		-----		-----		-----	
132		-----		-----		-----		-----		-----		-----	
140		-----		-----		-----		-----		-----		-----	
150		-----		-----		-----		-----		-----		-----	
158		-----		-----		-----		-----		-----		-----	
159		-----		-----		-----		-----		-----		-----	
169		-----		-----		-----		-----		-----		-----	
171		-----		-----		-----		-----		-----		-----	
193		-----		-----		-----		-----		-----		-----	
194		-----		-----		-----		-----		-----		-----	
212		-----		-----		-----		-----		-----		-----	
217		-----		-----		-----		-----		-----		-----	
221		-----		-----		-----		-----		-----		-----	
224	D86-M	41.10		52.66		94.96		123.55		149.33		180.81	
225	D86-M	40.5		52.5		95.0		125.0		150.0		179.0	
228	D86-M	38.0		53.0		95.0		123.0		147.0		181.0	
230		-----		-----		-----		-----		-----		-----	
237	D86-M	38.0		50.94		93.60		121.96		147.0		178.5	
238		-----		-----		-----		-----		-----		-----	
252		-----		-----		-----		-----		-----		-----	
253	D86-M	38		52.25		93.5		122.5		150.5		172	DG(0.05)
254		-----		-----		-----		-----		-----		-----	
256		-----		-----		-----		-----		-----		-----	
258		-----		-----		-----		-----		-----		-----	
273		-----		-----		-----		-----		-----		-----	
311		-----		-----		-----		-----		-----		-----	
312		-----		-----		-----		-----		-----		-----	
323		-----		-----		-----		-----		-----		-----	
333		-----		-----		-----		-----		-----		-----	
334		-----		-----		-----		-----		-----		-----	
336		-----		-----		-----		-----		-----		-----	
337		-----		-----		-----		-----		-----		-----	
338		-----		-----		-----		-----		-----		-----	
353		-----		-----		-----		-----		-----		-----	
360		-----		-----		-----		-----		-----		-----	
399		-----		-----		-----		-----		-----		-----	
430		-----		-----		-----		-----		-----		-----	
431		-----		-----		-----		-----		-----		-----	
433		-----		-----		-----		-----		-----		-----	
444		-----		-----		-----		-----		-----		-----	
447		-----		-----		-----		-----		-----		-----	
463		-----		-----		-----		-----		-----		-----	
468		-----		-----		-----		-----		-----		-----	
485		-----		-----		-----		-----		-----		-----	
494		-----		-----		-----		-----		-----		-----	
495		-----		-----		-----		-----		-----		-----	
511	D86-M	39.5	C	52.0		97.0		125.5		151.5		179.5	
541		-----		-----		-----		-----		-----		-----	
557		-----		-----		-----		-----		-----		-----	
592		-----		-----		-----		-----		-----		-----	
631	D86-M	42.0		52.5		95.0		124.0		150.5		181.0	
657		-----		-----		-----		-----		-----		-----	
663		-----		-----		-----		-----		-----		-----	
671		-----		-----		-----		-----		-----		-----	
862		-----		-----		-----		-----		-----		-----	
868		-----		-----		-----		-----		-----		-----	
875	D86-M	38.0		52.0		95.0		124.0		149.5		179.5	
902	D86-M	37.5		51.5		93.0		123.0		148.0		180.5	C
912	D86-M	38.0		52.0		111.0	G(0.01)	125.0		150.0		182.0	
922	D86-M	40.03		52.04		93.04		125.04		150.05		177.05	
962		-----		-----		-----		-----		-----		-----	
974	D86-M	42.0		51.0		95.0		124.0		153.0		178.0	
994	D86-M	40.2		53.0		95.8		124.0		149.5		177.2	
995	D86-M	38.5		52.025		94.203		123.852		149.225		176.8	
996	D86-M	39.0		52.0		95.0		122.0		150.0		178.0	
1006		-----		-----		-----		-----		-----		-----	
1016		-----		-----		-----		-----		-----		-----	
1017		-----		-----		-----		-----		-----		-----	
1033		-----		-----		-----		-----		-----		-----	
1038		-----		-----		-----		-----		-----		-----	
1047		-----		-----		-----		-----		-----		-----	
1059		-----		-----		-----		-----		-----		-----	
1067		-----		-----		-----		-----		-----		-----	
1080		-----		-----		-----		-----		-----		-----	

1081		-----	-----	-----	-----	-----	-----
1108		-----	-----	-----	-----	-----	-----
1109		-----	-----	-----	-----	-----	-----
1126		-----	-----	-----	-----	-----	-----
1134		-----	-----	-----	-----	-----	-----
1161		-----	-----	-----	-----	-----	-----
1171	ISO3405-M	37.23	52.006	96.2	124.74	150.28	183.21
1186	D86-M	36.83	52.32	93.80	121.29	146.77	175.76
1194		-----	-----	-----	-----	-----	-----
1215		-----	-----	-----	-----	-----	-----
1231		-----	-----	-----	-----	-----	-----
1237	ISO3405-M	40.2	53.9	95.9	121.3	149.3	181.3
1257		-----	-----	-----	-----	-----	-----
1297		-----	-----	-----	-----	-----	-----
1299		-----	-----	-----	-----	-----	-----
1300	D86-M	37.0	49.5	93.1	123.4	150.9	178.0
1347	D86-M	42	51	95	122	148	172	DG(0.05)
1348		-----	-----	-----	-----	-----	-----
1385	D86-M	37	50	88 G(0.01)	117 G(0.01)	145	175
1395		-----	-----	-----	-----	-----	-----
1397		-----	-----	-----	-----	-----	-----
1398		-----	-----	-----	-----	-----	-----
1428		-----	-----	-----	-----	-----	-----
1484		-----	-----	-----	-----	-----	-----
1498		-----	-----	-----	-----	-----	-----
1501	D86-M	38.19	51.21	94.11	124.24	148.92	181.81
1531		-----	-----	-----	-----	-----	-----
1538		-----	-----	-----	-----	-----	-----
1564		-----	-----	-----	-----	-----	-----
1575		-----	-----	-----	-----	-----	-----
1590		-----	-----	-----	-----	-----	-----
1603		-----	-----	-----	-----	-----	-----
1613		-----	-----	-----	-----	-----	-----
1616		-----	-----	-----	-----	-----	-----
1631		-----	-----	-----	-----	-----	-----
1634		-----	-----	-----	-----	-----	-----
1656		-----	-----	-----	-----	-----	-----
1657		-----	-----	-----	-----	-----	-----
1668		-----	-----	-----	-----	-----	-----
1669		-----	-----	-----	-----	-----	-----
1677		-----	-----	-----	-----	-----	-----
1720		-----	-----	-----	-----	-----	-----
1724		-----	-----	-----	-----	-----	-----
1730		-----	-----	-----	-----	-----	-----
1740		-----	-----	-----	-----	-----	-----
1807		-----	-----	-----	-----	-----	-----
1810		-----	-----	-----	-----	-----	-----
1811		-----	-----	-----	-----	-----	-----
1842		-----	-----	-----	-----	-----	-----
1849		-----	-----	-----	-----	-----	-----
1851		-----	-----	-----	-----	-----	-----
1854		-----	-----	-----	-----	-----	-----
1936		-----	-----	-----	-----	-----	-----
1937		-----	-----	-----	-----	-----	-----
1938		-----	-----	-----	-----	-----	-----
1951		-----	-----	-----	-----	-----	-----
2129		-----	-----	-----	-----	-----	-----
2130		-----	-----	-----	-----	-----	-----
	normality	not OK	not OK	not OK	OK	OK	OK
	n	22	22	20	21	22	20
	outliers	0	0	2	1	0	2
	mean (n)	39.04	51.88	94.66	123.49	149.29	179.20
	st.dev. (n)	1.715	0.991	1.103	1.269	1.773	2.234
	R(calc.)	4.80	2.78	3.09	3.55	4.97	6.25
	R(D86:12)	3.99	3.28	3.39	3.62	4.27	4.36

Lab 511 first reported IBP: 45.0

Lab 902 first reported FBP: 193.0

Final Boiling Point
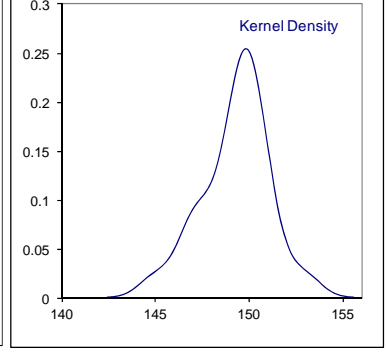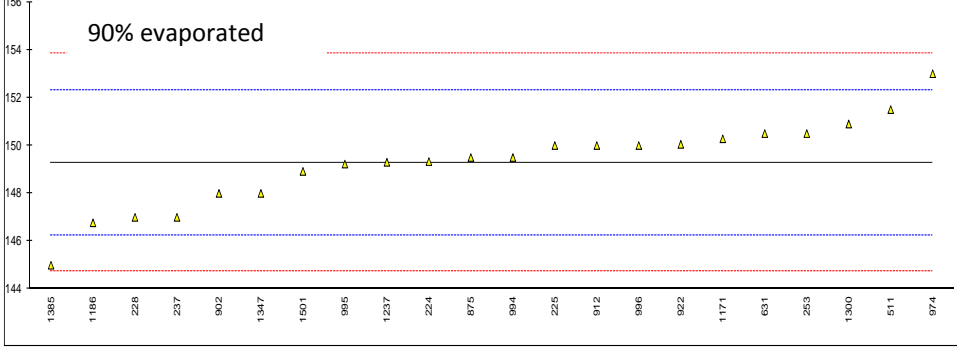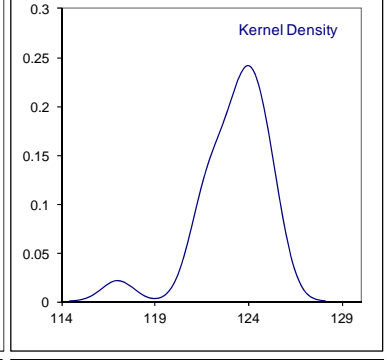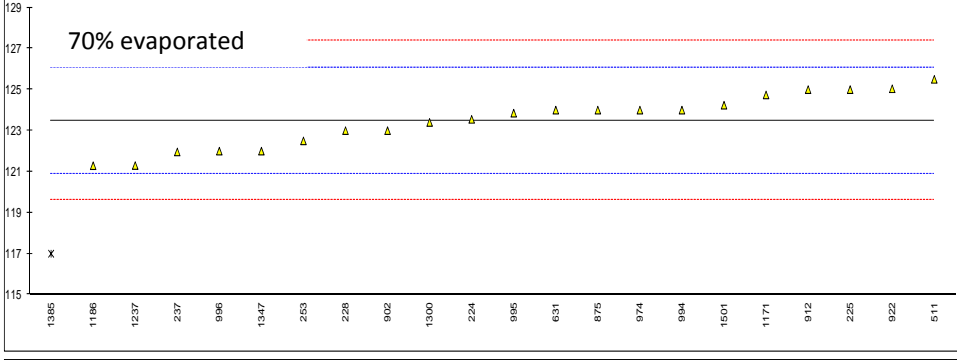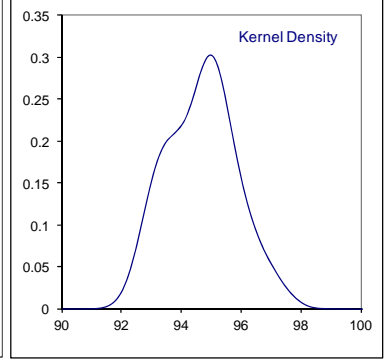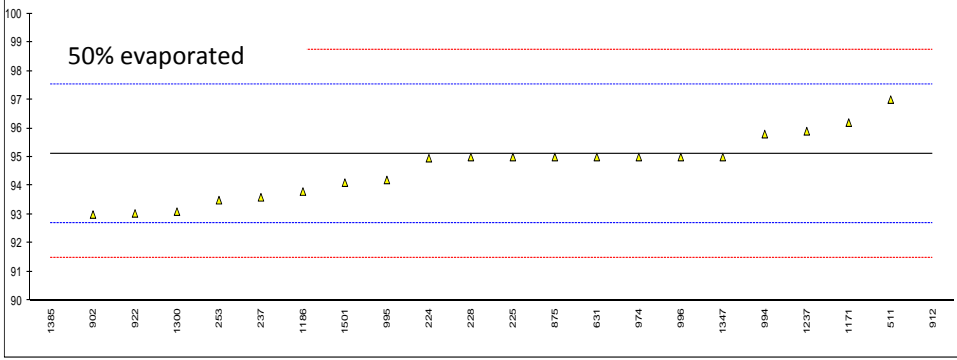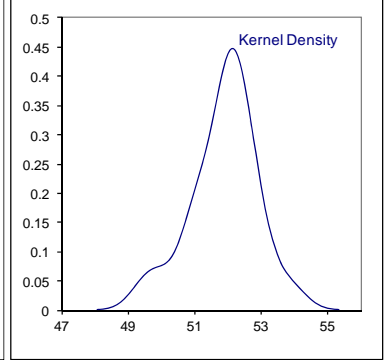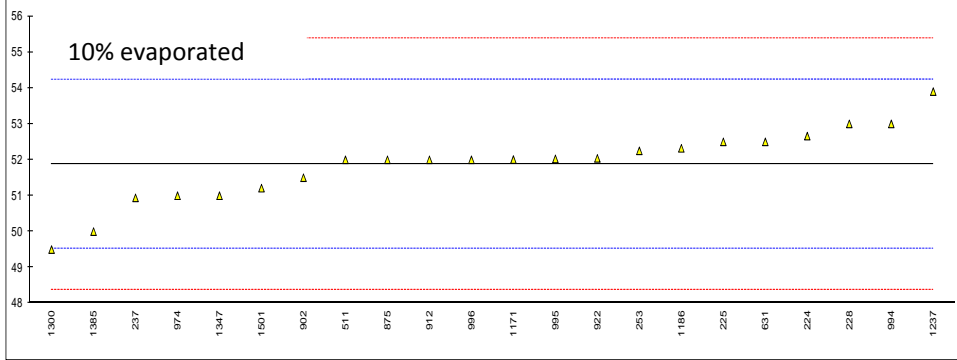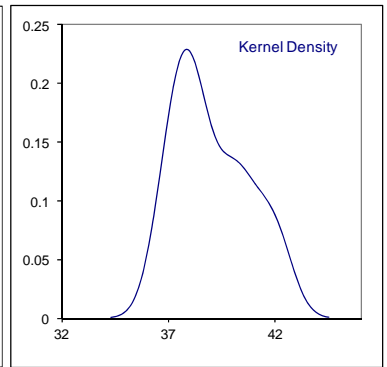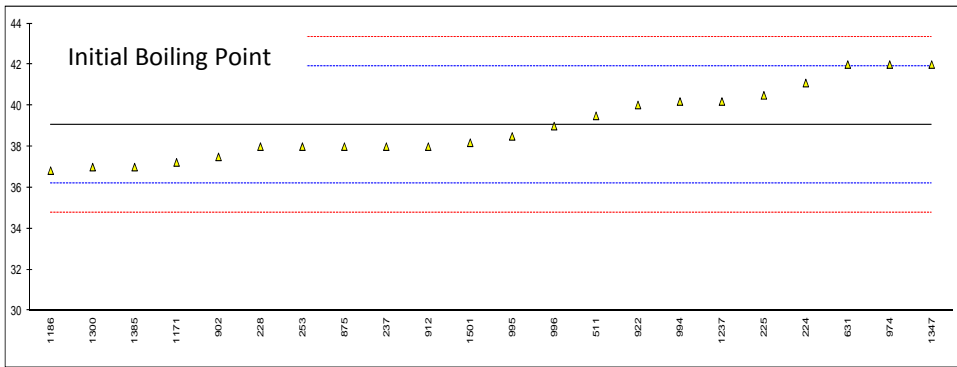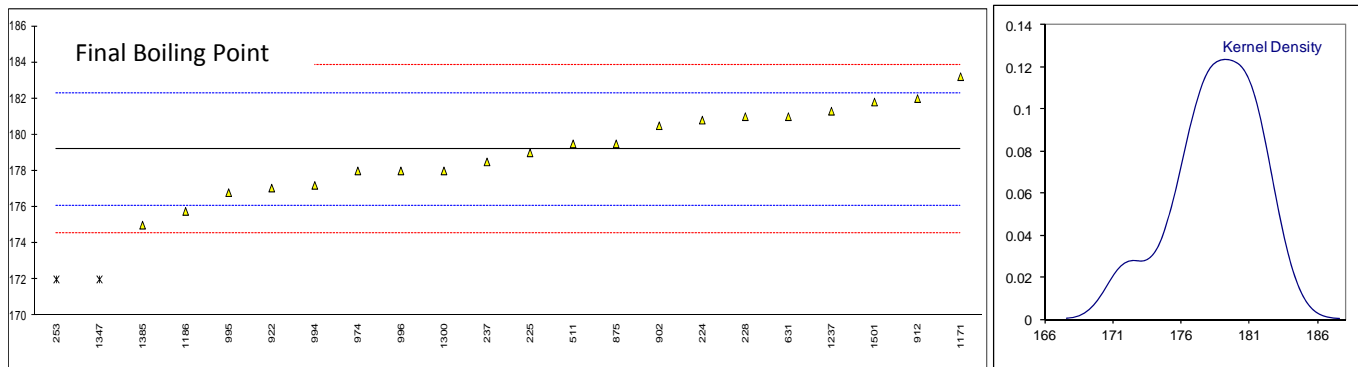
Determination of Doctor Test on sample #13006;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4952	NEG		-----	1006		-----		-----
62		-----		-----	1016	D4952	NEG		-----
120	D4952	NEG		-----	1017		-----		-----
132	D4952	NEG		-----	1033		-----		-----
140	D4952	POS	false positive?	-----	1038	IP30	NEG		-----
150	D4952	NEG		-----	1047		-----		-----
158		-----		-----	1059	D4952	NEG		-----
159	D4952	NEG		-----	1067		-----		-----
169		-----		-----	1080		-----		-----
171	D4952	NEG		-----	1081	D4952	NEG		-----
193		-----		-----	1108		-----		-----
194	D4952	NEG		-----	1109	IP30	NEG		-----
212		-----		-----	1126		-----		-----
217		-----		-----	1134	IP30	NEG		-----
221		-----		-----	1161		-----		-----
224		-----		-----	1171		-----		-----
225	D4952	NEG		-----	1186		-----		-----
228		-----		-----	1194		-----		-----
230	D4952	NEG		-----	1215		-----		-----
237	D4952	NEG		-----	1231		-----		-----
238	D4952	NEG		-----	1237		-----		-----
252		-----		-----	1257	D4952	NEG		-----
253		-----		-----	1297		-----		-----
254		-----		-----	1299		-----		-----
256		-----		-----	1300	D4952	NEG		-----
258	D4952	NEG		-----	1347		-----		-----
273	D4952	NEG		-----	1348		-----		-----
311	D4952	NEG		-----	1385		-----		-----
312	IP30	NEG		-----	1395		-----		-----
323	D4952	NEG		-----	1397	D4952	NEG		-----
333		-----		-----	1398		-----		-----
334		-----		-----	1428	D4952	NEG		-----
336		-----		-----	1484		-----		-----
337		-----		-----	1498		-----		-----
338		-----		-----	1501	D4952	NEG		-----
353		-----		-----	1531	D4952	NEG		-----
360	D4952	NEG		-----	1538		-----		-----
399	D4952	NEG		-----	1564		-----		-----
430		-----		-----	1575		-----		-----
431		-----		-----	1590	D4952	NEG		-----
433		-----		-----	1603	in house	NEG		-----
444		-----		-----	1613	D4952	NEG		-----
447	IP30	NEG		-----	1616		-----		-----
463	IP30	NEG		-----	1631		-----		-----
468		-----		-----	1634		-----		-----
485		-----		-----	1656	ISO3405	NEG		-----
494	D4952	NEG		-----	1657	D4952	NEG		-----
495	D4952	NEG		-----	1668		-----		-----
511		-----		-----	1669		-----		-----
541	IP30	NEG		-----	1677	IP30	NEG		-----
557		-----		-----	1720	D4952	NEG		-----
592		-----		-----	1724	IP30	NEG		-----
631		-----		-----	1730		-----		-----
657	D4952	NEG		-----	1740		-----		-----
663	D4952	NEG		-----	1807	D4952	NEG		-----
671	D4952	NEG		-----	1810		-----		-----
862	D4952	NEG		-----	1811	D4952	NEG		-----
868	D4952	NEG		-----	1842		-----		-----
875	D4952	NEG		-----	1849	D4952	NEG		-----
902		-----		-----	1851		-----		-----
912	D4952	NEG		-----	1854	D4952	NEG		-----
922	D4952	NEG		-----	1936		-----		-----
962		-----		-----	1937		-----		-----
974	D4952	NEG		-----	1938		-----		-----
994	D4952	NEG		-----	1951	D4952	NEG		-----
995	D4952	NEG		-----	2129	D4952	NEG		-----
996	D4952	NEG		-----	2130	IP30	NEG		-----

normality   n.a.
n   63   1 laboratory reported POS
outliers   0
mean (n)   Negative
st.dev. (n)   n.a.
R(calc.)   n.a.
R(D4952:12)   n.a.

Determination of Existent Gum (washed) on sample #13006; results in mg/100mL

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D381	<0.5		-----	1006	D381	0.2		-0.46
62		-----		-----	1016		-----		-----
120	D381	1.0		0.61	1017		-----		-----
132	D381	1.0		0.61	1033	IP131	8.5	G(0.01)	10.72
140		-----		-----	1038	D381	10	G(0.01)	12.74
150	D381	0.5		-0.06	1047		-----		-----
158		-----		-----	1059	D381	0.2		-0.46
159		-----		-----	1067		-----		-----
169	D381	0.5		-0.06	1080		-----		-----
171	D381	<0.5		-----	1081	D381	0.5		-0.06
193		-----		-----	1108	D381	0.8		0.34
194	D381	0.2		-0.46	1109	D381	0.0		-0.73
212		-----		-----	1126		-----		-----
217		-----		-----	1134	IP131	0.5		-0.06
221		-----		-----	1161	ISO6246	0.4		-0.19
224		-----		-----	1171		-----		-----
225	D381	<1		-----	1186		-----		-----
228		-----		-----	1194		-----		-----
230		-----		-----	1215		-----		-----
237	D381	0.5		-0.06	1231	D381	0.5		-0.06
238		-----		-----	1237		-----		-----
252		-----		-----	1257		-----		-----
253	D381	<0.5		-----	1297		-----		-----
254		-----		-----	1299	D381	1		0.61
256		-----		-----	1300	D381	0.4		-0.19
258	D381	1.1		0.75	1347	D381	0.20		-0.46
273		-----		-----	1348	D381	0.6		0.07
311	D381	<0.5		-----	1385	D381	0.8		0.34
312		-----		-----	1395	D381	0.2		-0.46
323	D381	<0.5		-----	1397	D381	0.5		-0.06
333		-----		-----	1398		-----		-----
334		-----		-----	1428	ISO6246	0.4		-0.19
336		-----		-----	1484		-----		-----
337		-----		-----	1498	D381	0.5		-0.06
338		-----		-----	1501	D381	0.54		-0.01
353	IP131	<1		-----	1531		-----		-----
360	D381	0.4		-0.19	1538	ISO6246	0.4		-0.19
399	D381	<0.5		-----	1564		-----		-----
430		-----		-----	1575		-----		-----
431		-----		-----	1590	D381	<0.5		-----
433		-----		-----	1603	in house	<0.2		-----
444		-----		-----	1613	D381	<0.5		-----
447	D381	0.4		-0.19	1616		-----		-----
463	D381	<0.5		-----	1631	ISO6246	0.5		-0.06
468	D381	<0.5		-----	1634		-----		-----
485		-----		-----	1656	ISO6246	<1		-----
494	D381	<1		-----	1657	D381	3.6	G(0.01)	4.12
495	D381	<1		-----	1668		-----		-----
511	D381	<0.5		-----	1669	ISO6246	0.6		0.07
541		-----		-----	1677	D381	0.4		-0.19
557		-----		-----	1720		-----		-----
592		-----		-----	1724	D381	0.4		-0.19
631	D381	<0.5		-----	1730		-----		-----
657	D381	2.0		1.96	1740		-----		-----
663	D381	0.5		-0.06	1807	ISO6246	<1		-----
671	D381	0.6		0.07	1810	D381	0.4		-0.19
862	D381	0.4		-0.19	1811	D381	0.5		-0.06
868	D381	<0.5		-----	1842		-----		-----
875	D381	0.50		-0.06	1849	D381	0.47		-0.10
902		-----		-----	1851		-----		-----
912	D381	<1		-----	1854	D381	0.3		-0.33
922		-----		-----	1936		-----		-----
962		-----		-----	1937		-----		-----
974	D381	0.2		-0.46	1938		-----		-----
994		-----		-----	1951		-----		-----
995		-----		-----	2129	D381	1.4		1.15
996		-----		-----	2130	D381	<0.5		-----

normality	not OK
n	43
outliers	3
mean (n)	0.54
st.dev. (n)	0.352
R(calc.)	0.99
R(D381:12)	2.08

Kernel Density
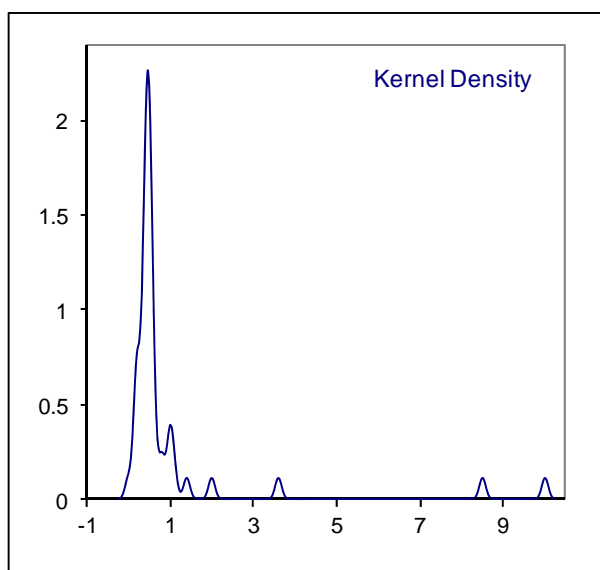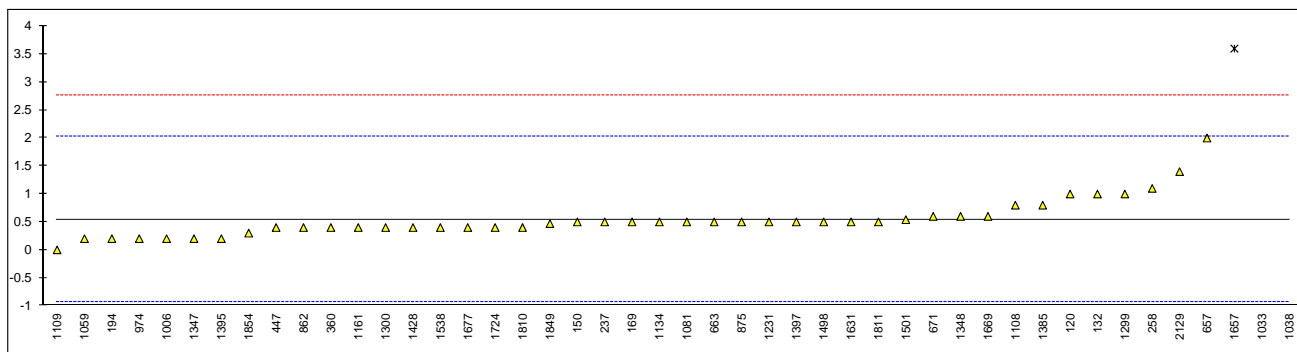
Determination of Olefins by FIA on sample #13006; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1006	D1319	7.8		0.72
62	D1319	7.4		0.30	1016		-----		-----
120	D1319	5.3		-1.91	1017	D1319	9.18		2.17
132	D1319	7.79		0.71	1033		-----		-----
140	D1319	7.8		0.72	1038	D6839	8.0		0.93
150	D1319	8.8		1.77	1047		-----		-----
158	D1319	7.1		-0.02	1059	D1319	6.4		-0.75
159	D1319	7.9		0.82	1067		-----		-----
169	D1319	4.7		-2.54	1080	REFOM3	7.90		0.82
171	D1319	7.9		0.82	1081	ISO22854	8.03		0.96
193	D1319	5.9		-1.28	1108	D6839	7.9		0.82
194	D1319	7.07		-0.05	1109	D1319	5.42		-1.79
212		-----		-----	1126	REFORM	7.61		0.52
217		-----		-----	1134	IP156	9.0		1.98
221		-----		-----	1161	ISO22854	7.28		0.17
224		-----		-----	1171	D1319	4.85		-2.38
225	D1319	9.5		2.51	1186		-----		-----
228		-----		-----	1194	in house	5.6		-1.60
230		-----		-----	1215		-----		-----
237	D1319	8.32		1.27	1231	D6293	4.75		-2.49
238		-----		-----	1237		-----		-----
252		-----		-----	1257		-----		-----
253	D1319	8.5		1.45	1297	DHA	15.03	G(0.01)	8.32
254		-----		-----	1299	D1319	7.9		0.82
256		-----		-----	1300	D1319	7.56		0.47
258		-----		-----	1347		-----		-----
273		-----		-----	1348		-----		-----
311	D1319	7.8		0.72	1385		-----		-----
312	D1319	6.7		-0.44	1395		-----		-----
323		-----		-----	1397	D1319	7.1		-0.02
333	D1319	5.6		-1.60	1398		-----		-----
334		-----		-----	1428	EN15553	6.4		-0.75
336		-----		-----	1484		-----		-----
337		-----		-----	1498		-----		-----
338		-----		-----	1501		-----		-----
353		-----		-----	1531		-----		-----
360	D1319	5.8		-1.39	1538		-----		-----
399	ISO22854	7.67		0.58	1564	D1319	7.8		0.72
430		-----		-----	1575		-----		-----
431		-----		-----	1590	D1319	8.03		0.96
433		-----		-----	1603		-----		-----
444		-----		-----	1613	D6839	7.15		0.03
447	D1319	4.4		-2.86	1616		-----		-----
463	D1319	5.0		-2.23	1631		-----		-----
468		-----		-----	1634		-----		-----
485		-----		-----	1656	EN14517	7.60		0.51
494	ISO22854	7.70		0.61	1657	D1319	7.7		0.61
495		-----		-----	1668		-----		-----
511		-----		-----	1669	ISO22854	7.70		0.61
541		-----		-----	1677	D1319	6.53		-0.62
557		-----		-----	1720		-----		-----
592		-----		-----	1724	D1319	6.93		-0.20
631	D1319	7.605		0.51	1730		-----		-----
657	D1319	7.6		0.51	1740		-----		-----
663		-----		-----	1807		-----		-----
671		-----		-----	1810	EN22854	7.85		0.77
862	D1319	5.61		-1.59	1811	D1319	7.69		0.60
868	D1319	6.18		-0.99	1842	IP156	6.0		-1.17
875		-----		-----	1849	D1319	6.99		-0.13
902		-----		-----	1851		-----		-----
912		-----		-----	1854	D1319	7.8		0.72
922		-----		-----	1936		-----		-----
962		-----		-----	1937		-----		-----
974	D1319	5.38		-1.83	1938		-----		-----
994		-----		-----	1951	D1319	7.66		0.57
995		-----		-----	2129	D1319	6.8		-0.33
996		-----		-----	2130	D1319	8.2		1.14

Only D1319/IP156 data:

normality	not OK	not OK
n	61	46
outliers	1	0
mean (n)	7.12	7.07
st.dev. (n)	1.186	1.256
R(calc.)	3.32	3.52
R(D1319:10)	2.66	2.65
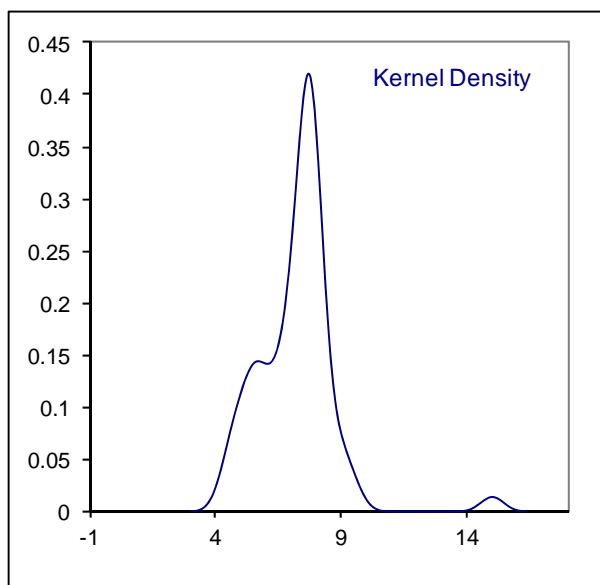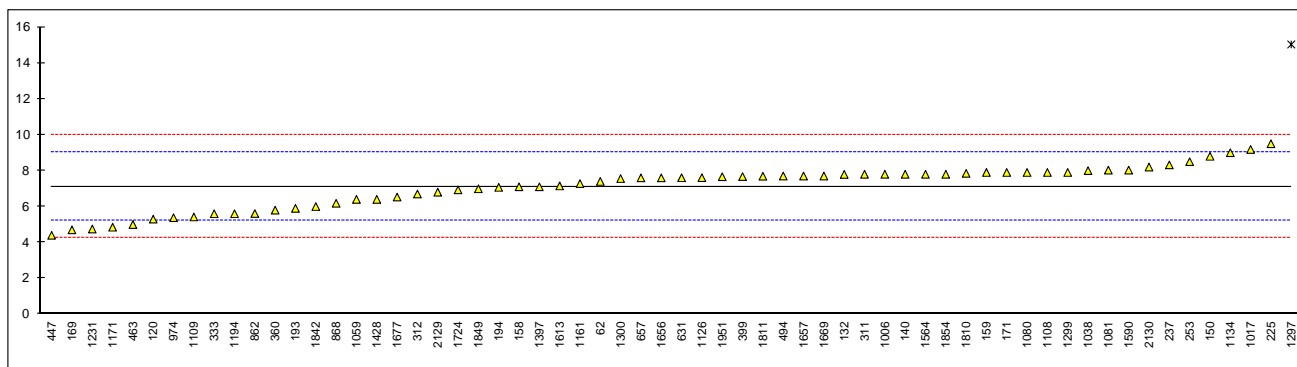
Determination of Aromatics by FIA on sample #13006; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1006	D1319	32.3		-2.40
62	D1319	37.8		1.77	1016		-----		-----
120	D1319	37.6		1.62	1017	D1319	37.99		1.91
132	D1319	35.71		0.19	1033		-----		-----
140	D1319	36.6		0.86	1038	D6839	33.4		-1.56
150	D1319	36.8		1.01	1047		-----		-----
158	D1319	39.7		3.20	1059	D1319	37.3		1.39
159	D1319	36.3		0.63	1067		-----		-----
169	D1319	26.6	G(0.05)	-6.71	1080	REFOM3	32.75		-2.05
171	D1319	34.0		-1.11	1081	ISO22854	33.54		-1.46
193	D1319	34.6		-0.65	1108	D6839	33.5		-1.49
194	D1319	35.47		0.00	1109	D1319	34.47		-0.75
212		-----		-----	1126	REFORM	33.43		-1.54
217		-----		-----	1134	IP156	36.0		0.40
221		-----		-----	1161	ISO22854	33.54		-1.46
224		-----		-----	1171	D1319	29.45	DG(0.05)	-4.55
225	D1319	38.7		2.45	1186		-----		-----
228		-----		-----	1194	in house	31.75		-2.81
230		-----		-----	1215		-----		-----
237	D1319	35.48		0.01	1231	D6293	34.0		-1.11
238		-----		-----	1237		-----		-----
252		-----		-----	1257		-----		-----
253	D1319	35.2		-0.20	1297	DHA	37.42		1.48
254		-----		-----	1299	D1319	36.2		0.56
256		-----		-----	1300	D1319	36.67		0.91
258		-----		-----	1347		-----		-----
273		-----		-----	1348		-----		-----
311	D1319	35.8		0.25	1385		-----		-----
312	D1319	36.2		0.56	1395		-----		-----
323		-----		-----	1397	D1319	35.7		0.18
333	D1319	33.7		-1.34	1398		-----		-----
334		-----		-----	1428	EN15553	36.1		0.48
336		-----		-----	1484		-----		-----
337		-----		-----	1498		-----		-----
338		-----		-----	1501		-----		-----
353		-----		-----	1531		-----		-----
360	D1319	36.5		0.78	1538		-----		-----
399	ISO22854	33.91		-1.18	1564	D1319	33.7		-1.34
430		-----		-----	1575		-----		-----
431		-----		-----	1590	D1319	36.45		0.75
433		-----		-----	1603		-----		-----
444		-----		-----	1613	D6839	34.38		-0.82
447	D1319	38.9		2.60	1616		-----		-----
463	D1319	38.5		2.30	1631		-----		-----
468		-----		-----	1634		-----		-----
485		-----		-----	1656	EN14517	34.09		-1.04
494	ISO22854	33.40		-1.56	1657	D1319	28.5	DG(0.05)	-5.27
495		-----		-----	1668		-----		-----
511		-----		-----	1669	ISO22854	33.50		-1.49
541		-----		-----	1677	D1319	36.46		0.75
557		-----		-----	1720		-----		-----
592		-----		-----	1724	D1319	36.14		0.51
631	D1319	38.97		2.65	1730		-----		-----
657	D1319	36.4		0.71	1740		-----		-----
663		-----		-----	1807		-----		-----
671		-----		-----	1810	EN22854	32.97		-1.89
862	D1319	34.96		-0.38	1811	D1319	33.55		-1.45
868	D1319	33.42		-1.55	1842	IP156	36.0		0.40
875		-----		-----	1849	D1319	37.14		1.27
902		-----		-----	1851		-----		-----
912		-----		-----	1854	D1319	35.5		0.03
922		-----		-----	1936		-----		-----
962		-----		-----	1937		-----		-----
974	D1319	34.48		-0.75	1938		-----		-----
994		-----		-----	1951	D1319	32.89		-1.95
995		-----		-----	2129	D1319	36.9		1.09
996		-----		-----	2130	D5134	37.6		1.62

Only D1319 results

normality	OK	OK
n	59	42
outliers	3	3
mean (n)	35.47	36.03
st.dev. (n)	1.881	1.714
R(calc.)	5.27	4.80
R(D1319:10)	3.70	3.70
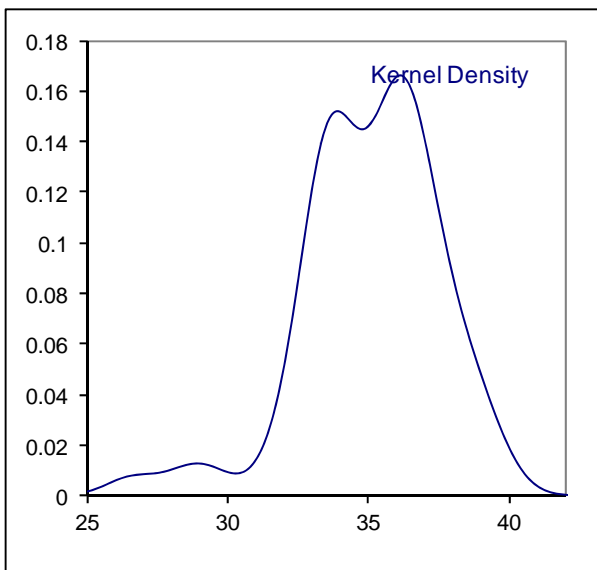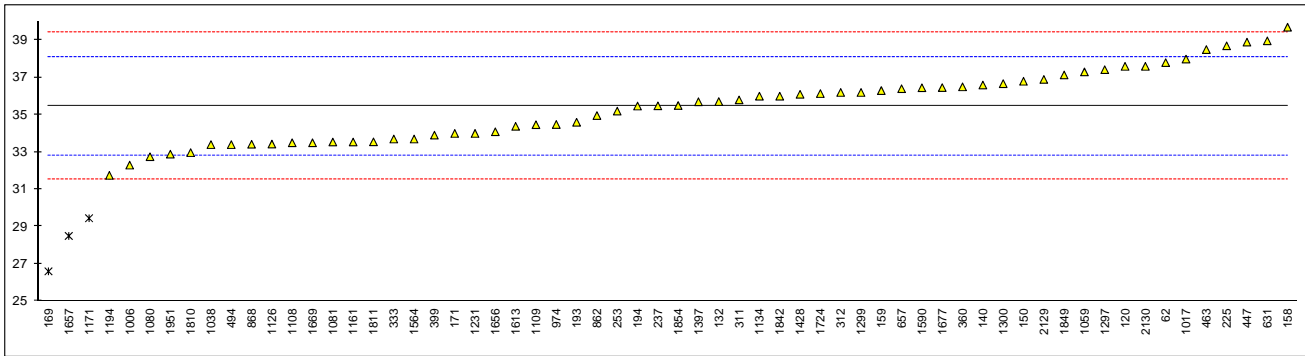
Determination of Lead as Pb on sample #13006; results in mg/L

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3237	<2.5		-----	1006	D3237	<2.5		-----
62	D3237	<0.2		-----	1016		-----		-----
120		-----		-----	1017		-----		-----
132	D3237	<2.5		-----	1033		-----		-----
140		-----		-----	1038		-----		-----
150	D3237	<2.5		-----	1047		-----		-----
158		-----		-----	1059	EN13723	<1.0		-----
159		-----		-----	1067		-----		-----
169		-----		-----	1080		-----		-----
171	D3237	<2.5		-----	1081	D5059	<2.5		-----
193		-----		-----	1108		-----		-----
194		-----		-----	1109		-----		-----
212		-----		-----	1126		-----		-----
217		-----		-----	1134		-----		-----
221		-----		-----	1161	EN237	<5		-----
224		-----		-----	1171	D5059	<2.6		-----
225		-----		-----	1186	D3237	3.17	false positive?	-----
228		-----		-----	1194		-----		-----
230		-----		-----	1215		-----		-----
237	IP352	<2.5		-----	1231		-----		-----
238		-----		-----	1237		-----		-----
252		-----		-----	1257		-----		-----
253		-----		-----	1297		-----		-----
254		-----		-----	1299	EN237	<0.0025	U	-----
256		-----		-----	1300	D3237	0.7458		-----
258		-----		-----	1347	D5059	n.d.		-----
273	D3237	5	false positive?	-----	1348	D3237	<0.001	U	-----
311		-----		-----	1385	D3237	<0.001	U	-----
312	EN237	<2.5		-----	1395		-----		-----
323	D3237	<2.5		-----	1397		-----		-----
333		-----		-----	1398		-----		-----
334		-----		-----	1428	EN237	<2.5		-----
336		-----		-----	1484		-----		-----
337		-----		-----	1498		-----		-----
338		-----		-----	1501	D3237	0.04		-----
353		-----		-----	1531		-----		-----
360	in house	<2.5		-----	1538		-----		-----
399		-----		-----	1564	D3237	<0.002	U	-----
430		-----		-----	1575		-----		-----
431		-----		-----	1590	D3237	1.3		-----
433		-----		-----	1603		-----		-----
444		-----		-----	1613	D3237	<2.5		-----
447		-----		-----	1616		-----		-----
463	D3237	0.18		-----	1631		-----		-----
468		-----		-----	1634		-----		-----
485		-----		-----	1656	EN237	<2.5		-----
494		-----		-----	1657		-----		-----
495		-----		-----	1668		-----		-----
511		-----		-----	1669		-----		-----
541	D3237	<2.5		-----	1677	D3237	<0.0025	U	-----
557		-----		-----	1720		-----		-----
592		-----		-----	1724	D3237	<3.0		-----
631	D3237	<2.5		-----	1730		-----		-----
657	D3237	<2.5		-----	1740		-----		-----
663		-----		-----	1807		-----		-----
671		-----		-----	1810		-----		-----
862	D3237	<2.5		-----	1811		-----		-----
868	D3237	<2.5		-----	1842	in house	<0.001	U	-----
875		-----		-----	1849	D3237	<2.5		-----
902		-----		-----	1851		-----		-----
912		-----		-----	1854		-----		-----
922		-----		-----	1936		-----		-----
962		-----		-----	1937		-----		-----
974		-----		-----	1938		-----		-----
994		-----		-----	1951		-----		-----
995	D3237	1.756		-----	2129	D3237	1.15		-----
996		-----		-----	2130	IP352	<2		-----

normality	OK
n	39
outliers	0
mean (n)	<2.5
st.dev. (n)	n.a.
R(calc.)	n.a.
R(D3237:12)	(2.60)　　　　application range: 2.5 – 25 mg/L

Determination of Phosphorus as P on sample #13006; results in mg/L

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3231	<0.2		-----	1006		-----		-----
62	D3231	<0.1		-----	1016		-----		-----
120		-----		-----	1017		-----		-----
132	D3231	<0.2		-----	1033		-----		-----
140		-----		-----	1038	D3231	<0.20		-----
150	D3231	<0.2		-----	1047		-----		-----
158		-----		-----	1059		-----		-----
159		-----		-----	1067		-----		-----
169		-----		-----	1080		-----		-----
171	D3231	<0.20		-----	1081		-----		-----
193		-----		-----	1108		-----		-----
194		-----		-----	1109	D3231	0.004		-----
212		-----		-----	1126		-----		-----
217		-----		-----	1134		-----		-----
221		-----		-----	1161		-----		-----
224		-----		-----	1171		-----		-----
225		-----		-----	1186		-----		-----
228		-----		-----	1194		-----		-----
230		-----		-----	1215		-----		-----
237		-----		-----	1231		-----		-----
238		-----		-----	1237		-----		-----
252		-----		-----	1257		-----		-----
253		-----		-----	1297		-----		-----
254		-----		-----	1299		-----		-----
256		-----		-----	1300	D3231	0.2066		-----
258		-----		-----	1347		-----		-----
273		-----		-----	1348		-----		-----
311		-----		-----	1385		-----		-----
312	D3231	<0.2		-----	1395		-----		-----
323		-----		-----	1397		-----		-----
333		-----		-----	1398		-----		-----
334		-----		-----	1428		-----		-----
336		-----		-----	1484		-----		-----
337		-----		-----	1498		-----		-----
338		-----		-----	1501	D3231	0.10		-----
353		-----		-----	1531		-----		-----
360		-----		-----	1538		-----		-----
399		-----		-----	1564		-----		-----
430		-----		-----	1575		-----		-----
431		-----		-----	1590		-----		-----
433		-----		-----	1603		-----		-----
444		-----		-----	1613		-----		-----
447		-----		-----	1616		-----		-----
463		-----		-----	1631		-----		-----
468		-----		-----	1634		-----		-----
485		-----		-----	1656		-----		-----
494	D3231	<0.2		-----	1657		-----		-----
495		-----		-----	1668		-----		-----
511		-----		-----	1669		-----		-----
541		-----		-----	1677		-----		-----
557		-----		-----	1720		-----		-----
592		-----		-----	1724		-----		-----
631		-----		-----	1730		-----		-----
657	D3231	<0.2		-----	1740		-----		-----
663		-----		-----	1807		-----		-----
671		-----		-----	1810		-----		-----
862	D3231	0.03		-----	1811		-----		-----
868	D3231	<0.2		-----	1842	in house	<1		-----
875		-----		-----	1849		-----		-----
902		-----		-----	1851		-----		-----
912		-----		-----	1854		-----		-----
922		-----		-----	1936		-----		-----
962		-----		-----	1937		-----		-----
974		-----		-----	1938		-----		-----
994		-----		-----	1951		-----		-----
995		-----		-----	2129	D3231	0.01		-----
996		-----		-----	2130		-----		-----

normality	n.a.
n	15
outliers	0
mean (n)	<0.2
st.dev. (n)	n.a.
R(calc.)	n.a.
R(D3231:11)	(0.13)

application range: 0.2-40 mg/L

Determination of Oxidation Stability on sample #13006; results in minutes

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1006	D525	1070		-----
62		-----		-----	1016		-----		-----
120		-----		-----	1017		-----		-----
132	D525	>900		-----	1033	IP40	>960		-----
140		-----		-----	1038	D525	>360		-----
150	D525	>900		-----	1047		-----		-----
158		-----		-----	1059	ISO7536	>900		-----
159		-----		-----	1067		-----		-----
169		-----		-----	1080		-----		-----
171	D525	1305		-----	1081		-----		-----
193		-----		-----	1108	D525	>900		-----
194	D525	>900		-----	1109	D525	>1800		-----
212		-----		-----	1126		-----		-----
217		-----		-----	1134	D525	>900		-----
221		-----		-----	1161	ISO7536	>900		-----
224		-----		-----	1171		-----		-----
225		-----		-----	1186		-----		-----
228	D525	>900		-----	1194		-----		-----
230		-----		-----	1215		-----		-----
237	D525	>900		-----	1231	D525	540		-----
238		-----		-----	1237		-----		-----
252		-----		-----	1257		-----		-----
253		-----		-----	1297		-----		-----
254		-----		-----	1299	D525	>960		-----
256		-----		-----	1300	D525	>900		-----
258		-----		-----	1347	D525	>360		-----
273		-----		-----	1348	D525	>900		-----
311	D525	>1440		-----	1385	D525	>900		-----
312		-----		-----	1395	D525	2989		-----
323	D525	>900		-----	1397		-----		-----
333		-----		-----	1398		-----		-----
334		-----		-----	1428	ISO7536	>900		-----
336	D525	>900		-----	1484		-----		-----
337		-----		-----	1498		-----		-----
338		-----		-----	1501	D525	>900		-----
353		-----		-----	1531		-----		-----
360	D525	>900		-----	1538		-----		-----
399		-----		-----	1564	D525	>500		-----
430		-----		-----	1575		-----		-----
431		-----		-----	1590	D525	>900		-----
433		-----		-----	1603	in house	>900		-----
444		-----		-----	1613	D525	>900		-----
447	D525	>360		-----	1616		-----		-----
463	D525	>360		-----	1631	ISO7536	>360		-----
468		-----		-----	1634		-----		-----
485		-----		-----	1656	D525	>900		-----
494	D525	>900		-----	1657		-----		-----
495		-----		-----	1668		-----		-----
511	D525	>900		-----	1669	ISO7536	>900		-----
541	D525	>900		-----	1677	D525	>900		-----
557		-----		-----	1720		-----		-----
592		-----		-----	1724	D525	>900		-----
631		-----		-----	1730		-----		-----
657	D525	>900		-----	1740		-----		-----
663		-----		-----	1807	D525	>720		-----
671		-----		-----	1810		-----		-----
862	D525	>900		-----	1811		-----		-----
868	D525	>900		-----	1842		-----		-----
875		-----		-----	1849	D525	435		-----
902		-----		-----	1851		-----		-----
912		-----		-----	1854		-----		-----
922	D525	>900		-----	1936		-----		-----
962		-----		-----	1937		-----		-----
974	D525	>900		-----	1938		-----		-----
994		-----		-----	1951	D525	>900		-----
995		-----		-----	2129	D525	>900		-----
996		-----		-----	2130		-----		-----

normality	n.a.
n	50
outliers	n.a.
mean (n)	>360
st.dev. (n)	n.a.
R(calc.)	n.a.
R(D525:12a)	n.a.

Determination of Ethanol on sample #13006; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	INH-3	5.0		1.26	1006	D4815	4.64		-0.54
62		-----		-----	1016		-----		-----
120	D5599	4.57		-0.89	1017	ISO22854	4.82		0.36
132	D5599	4.82		0.36	1033		-----		-----
140		-----		-----	1038		-----		-----
150	D5599	4.63		-0.59	1047		-----		-----
158	D5599	4.62		-0.64	1059	ISO22854	4.78		0.16
159	D5599	4.68		-0.34	1067		-----		-----
169	D4815	4.61		-0.69	1080	in house	4.75		0.01
171	D4815	4.72		-0.14	1081	ISO22854	4.69		-0.29
193	D5599	4.436		-1.56	1108	D6839	4.80		0.26
194		-----		-----	1109	D6839	4.72		-0.14
212		-----		-----	1126	in house	4.63		-0.59
217		-----		-----	1134	ISO22854	4.78		0.16
221		-----		-----	1161	EN13132	4.92		0.86
224		-----		-----	1171	D5845	3.84	G(0.01)	-4.54
225		-----		-----	1186		-----		-----
228		-----		-----	1194	D5845	4.88		0.66
230		-----		-----	1215		-----		-----
237		-----		-----	1231	D4815	5.335		2.94
238		-----		-----	1237		-----		-----
252		-----		-----	1257		-----		-----
253		-----		-----	1297		-----		-----
254		-----		-----	1299	ISO22854	4.95		1.01
256		-----		-----	1300	D4815	4.7616		0.07
258		-----		-----	1347	D4815	4.083		-3.32
273		-----		-----	1348	D4815	3.283	G(0.01)	-7.32
311		-----		-----	1385	D4815	4.226		-2.61
312	EN13132	4.8		0.26	1395		-----		-----
323	EN22854	4.78		0.16	1397	EN13132	5.1		1.76
333	EN13132	4.6		-0.74	1398		-----		-----
334	D4815	4.99		1.21	1428	EN13132	4.840		0.46
336	EN1601	5.1		1.76	1484		-----		-----
337		-----		-----	1498		-----		-----
338		-----		-----	1501		-----		-----
353		-----		-----	1531		-----		-----
360	EN13132	4.89		0.71	1538	EN13132	4.8		0.26
399	ISO22854	4.41		-1.69	1564	EN22854	4.68		-0.34
430		-----		-----	1575		-----		-----
431		-----		-----	1590	D4815	4.50		-1.24
433		-----		-----	1603		-----		-----
444		-----		-----	1613	D6839	5.22	C	2.36
447		-----		-----	1616		-----		-----
463	EN13132	4.77		0.11	1631		-----		-----
468		-----		-----	1634		-----		-----
485		-----		-----	1656	EN14517	5.0		1.26
494	ISO22854	4.72		-0.14	1657		-----		-----
495	D6839	4.85		0.51	1668		-----		-----
511		-----		-----	1669	ISO22854	4.95		1.01
541		-----		-----	1677	EN13132	4.69		-0.29
557		-----		-----	1720		-----		-----
592		-----		-----	1724	ISO22854	4.76		0.06
631	D6839	4.965		1.09	1730		-----		-----
657	D4815	4.59		-0.79	1740		-----		-----
663		-----		-----	1807	ISO13132	4.7	C	-0.24
671		-----		-----	1810	EN22854	4.84		0.46
862	D4815	4.671		-0.38	1811	D4815	4.67		-0.39
868	D4815	4.74		-0.04	1842		-----		-----
875		-----		-----	1849	D4815	4.67		-0.39
902		-----		-----	1851		-----		-----
912		-----		-----	1854	EN13132	4.80		0.26
922		-----		-----	1936		-----		-----
962		-----		-----	1937		-----		-----
974		-----		-----	1938		-----		-----
994		-----		-----	1951	D4815	4.62		-0.64
995		-----		-----	2129	D6730	4.715		-0.16
996		-----		-----	2130	D6730	4.326	C	-2.11

normality	OK
n	57
outliers	2
mean (n)	4.748
st.dev. (n)	0.2165
R(calc.)	0.606
R(D4815:09)	0.560

Lab 1613 first reported: 0.0

Lab 1807 first reported: 4.2

Lab 2130 first reported: 4.356
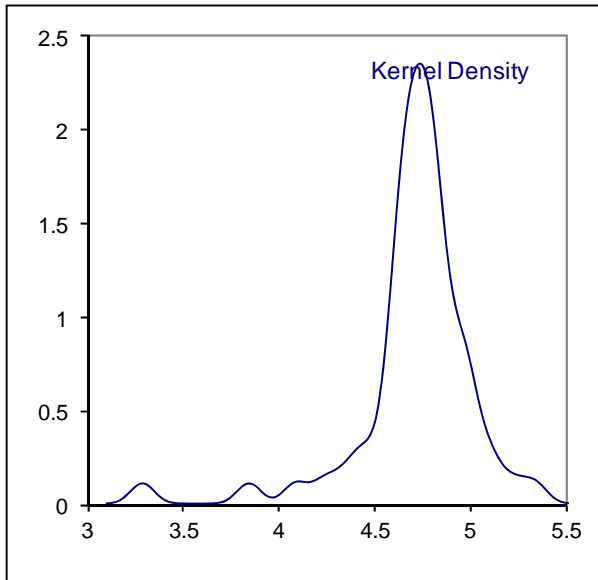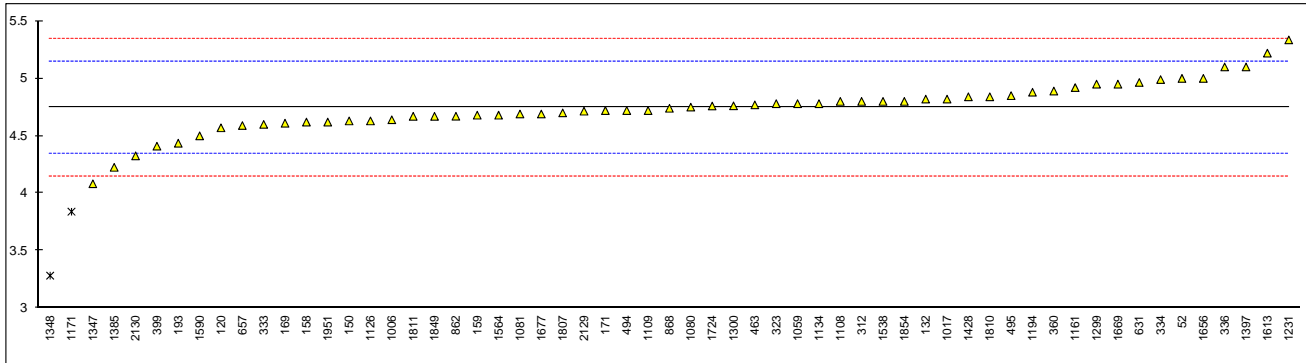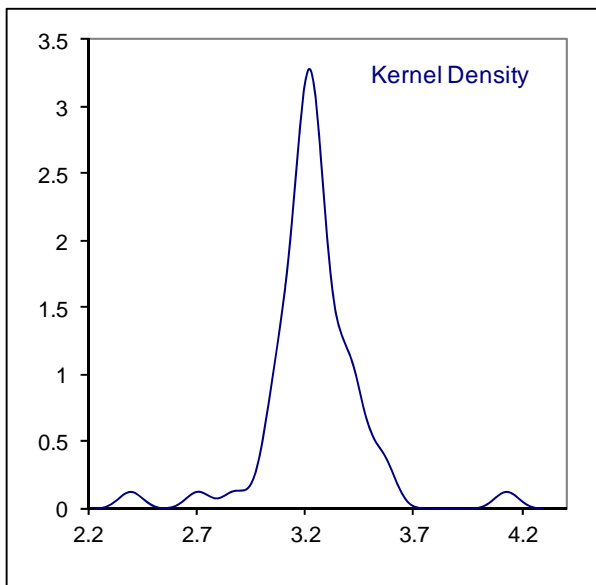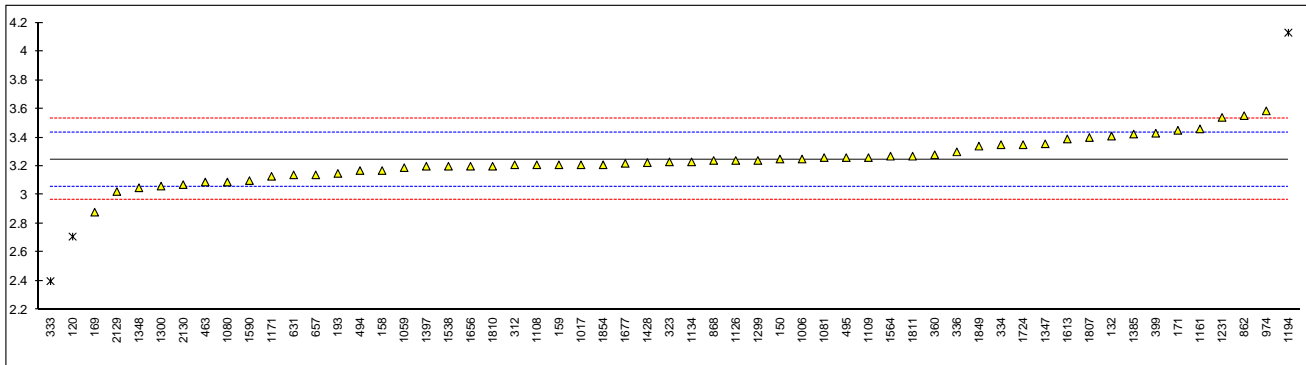
Determination of MTBE on sample #13006; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1006	D4815	3.25		0.03
62		-----		-----	1016		-----		-----
120	D5599	2.71	G(0.05)	-5.69	1017	ISO22854	3.21		-0.40
132	D5599	3.41		1.72	1033		-----		-----
140		-----		-----	1038		-----		-----
150	D5599	3.25		0.03	1047		-----		-----
158	D5599	3.17		-0.82	1059	ISO22854	3.19		-0.61
159	D5599	3.21		-0.40	1067		-----		-----
169	D4815	2.88		-3.89	1080	in house	3.09		-1.67
171	D4815	3.45		2.14	1081	ISO22854	3.26		0.13
193	D5599	3.150		-1.03	1108	D6839	3.21		-0.40
194		-----		-----	1109	D6839	3.26		0.13
212		-----		-----	1126	in house	3.24		-0.08
217		-----		-----	1134	ISO22854	3.23		-0.19
221		-----		-----	1161	EN13132	3.46		2.25
224		-----		-----	1171	D5845	3.13		-1.24
225		-----		-----	1186		-----		-----
228		-----		-----	1194	D5845	4.13	G(0.01)	9.34
230		-----		-----	1215		-----		-----
237		-----		-----	1231	D4815	3.54		3.09
238		-----		-----	1237		-----		-----
252		-----		-----	1257		-----		-----
253		-----		-----	1297		-----		-----
254		-----		-----	1299	ISO22854	3.24		-0.08
256		-----		-----	1300	D4815	3.0617	C	-1.97
258		-----		-----	1347	D4815	3.356		1.15
273		-----		-----	1348	D4815	3.050		-2.09
311		-----		-----	1385	D4815	3.424		1.87
312	EN13132	3.21		-0.40	1395		-----		-----
323	EN22854	3.23		-0.19	1397	EN13132	3.2		-0.50
333	EN13132	2.4	G(0.01)	-8.97	1398		-----		-----
334	D4815	3.35		1.08	1428	EN13132	3.225		-0.24
336	EN1601	3.3		0.55	1484		-----		-----
337		-----		-----	1498		-----		-----
338		-----		-----	1501		-----		-----
353		-----		-----	1531		-----		-----
360	EN13132	3.28		0.34	1538	EN13132	3.2		-0.50
399	ISO22854	3.43		1.93	1564	EN22854	3.27		0.24
430		-----		-----	1575		-----		-----
431		-----		-----	1590	D4815	3.10		-1.56
433		-----		-----	1603		-----		-----
444		-----		-----	1613	D6839	3.39		1.51
447		-----		-----	1616		-----		-----
463	EN13132	3.09		-1.67	1631		-----		-----
468		-----		-----	1634		-----		-----
485		-----		-----	1656	EN14517	3.2		-0.50
494	ISO22854	3.17		-0.82	1657		-----		-----
495	D6839	3.26		0.13	1668		-----		-----
511		-----		-----	1669	ISO22854	<0.05	false negative?	<-34.34
541		-----		-----	1677	EN13132	3.22		-0.29
557		-----		-----	1720		-----		-----
592		-----		-----	1724	ISO22854	3.35		1.08
631	D6839	3.14		-1.14	1730		-----		-----
657	D4815	3.14		-1.14	1740		-----		-----
663		-----		-----	1807	ISO13132	3.4		1.61
671		-----		-----	1810	EN22854	3.20		-0.50
862	D4815	3.552		3.22	1811	D4815	3.27		0.24
868	D4815	3.24		-0.08	1842		-----		-----
875		-----		-----	1849	D4815	3.34		0.98
902		-----		-----	1851		-----		-----
912		-----		-----	1854	EN13132	3.21		-0.40
922		-----		-----	1936		-----		-----
962		-----		-----	1937		-----		-----
974	D4815	3.5854		3.58	1938		-----		-----
994		-----		-----	1951	D4815	<0.01	C, false negative?	< -34.32
995		-----		-----	2129	D6730	3.024		-2.37
996		-----		-----	2130	D6730	3.072	C	-1.86

		Only D4815	Only EN13132	Only ISO22854
normality	not OK	OK	not OK	OK
n	54	16	10	11
outliers	3	0	1	0
mean (n)	3.248	3.287	3.249	3.253
st.dev. (n)	0.1374	0.2022	0.1069	0.0760
R(calc.)	0.385	0.566	0.299	0.213
R(D4815:09)	0.265	0.266	0.400	0.433

Lab 1300 first reported: 2.871

Lab 1951 first reported: 3.70

Lab 2130 first reported: 1.368

Kernel Density

Determination of other oxygenates on sample #13006; results in %V/V

lab	method	DIPE	ETBE	i-BuOH	IPA	MeOH	TAME	t-BuOH
52		-----	-----	-----	-----	<0.1	-----	-----
62		-----	-----	-----	-----	-----	-----	-----
120	D5599	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
132	D5599	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
140		-----	-----	-----	-----	-----	-----	-----
150	D5599	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
158	D5599	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
159	D5599	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
169	D4815	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
171	D4815	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
193	D5599	0.063	<0.05	<0.05	<0.05	0.055	<0.05	<0.05
194		-----	-----	-----	-----	-----	-----	-----
212		-----	-----	-----	-----	-----	-----	-----
217		-----	-----	-----	-----	-----	-----	-----
221		-----	-----	-----	-----	-----	-----	-----
224		-----	-----	-----	-----	-----	-----	-----
225		-----	-----	-----	-----	-----	-----	-----
228		-----	-----	-----	-----	-----	-----	-----
230		-----	-----	-----	-----	-----	-----	-----
237		-----	-----	-----	-----	-----	-----	-----
238		-----	-----	-----	-----	-----	-----	-----
252		-----	-----	-----	-----	-----	-----	-----
253		-----	-----	-----	-----	-----	-----	-----
254		-----	-----	-----	-----	-----	-----	-----
256		-----	-----	-----	-----	-----	-----	-----
258		-----	-----	-----	-----	-----	-----	-----
273		-----	-----	-----	-----	-----	-----	-----
311		-----	-----	-----	-----	-----	-----	-----
312		-----	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
323	EN22854	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
333	EN13132	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
334		-----	0.27	-----	-----	-----	-----	-----
336		-----	<0.17	-----	-----	-----	-----	-----
337		-----	-----	-----	-----	-----	-----	-----
338		-----	-----	-----	-----	-----	-----	-----
353		-----	-----	-----	-----	-----	-----	-----
360	EN13132	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
399	ISO22854	<0.01	<0.01	<0.01	<0.01	<0.01	0.08	<0.01
430		-----	-----	-----	-----	-----	-----	-----
431		-----	-----	-----	-----	-----	-----	-----
433		-----	-----	-----	-----	-----	-----	-----
444		-----	-----	-----	-----	-----	-----	-----
447		-----	-----	-----	-----	-----	-----	-----
463	EN13132	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
468		-----	-----	-----	-----	-----	-----	-----
485		-----	-----	-----	-----	-----	-----	-----
494	ISO22854	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
495		-----	0.03	-----	-----	-----	<0.01	-----
511		-----	-----	-----	-----	-----	-----	-----
541		-----	-----	-----	-----	-----	-----	-----
557		-----	-----	-----	-----	-----	-----	-----
592		-----	-----	-----	-----	-----	-----	-----
631		-----	-----	-----	-----	-----	-----	-----
657	D4815	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
663		-----	-----	-----	-----	-----	-----	-----
671		-----	-----	-----	-----	-----	-----	-----
862	D4815	0.05	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
868	D4815	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
875		-----	-----	-----	-----	-----	-----	-----
902		-----	-----	-----	-----	-----	-----	-----
912		-----	-----	-----	-----	-----	-----	-----
922		-----	-----	-----	-----	-----	-----	-----
962		-----	-----	-----	-----	-----	-----	-----
974		-----	-----	0.01745	*3.613*	-----	0.0193	-----
994		-----	-----	-----	-----	-----	-----	-----
995		-----	-----	-----	-----	-----	-----	-----
996		-----	-----	-----	-----	-----	-----	-----
1006	D4815	<0.1	<0.1	<0.1	-----	<0.1	<0.1	<0.1
1016		-----	-----	-----	-----	-----	-----	-----
1017	ISO22854	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1033		-----	-----	-----	-----	-----	-----	-----
1038		-----	-----	-----	-----	-----	-----	-----
1047		-----	-----	-----	-----	-----	-----	-----
1059	ISO22854	<0.20	<0.20	<0.20	0.03	<0.20	<0.20	<0.20
1067		-----	-----	-----	-----	-----	-----	-----
1080	in house	0.06	-----	0.01	-----	-----	0.01	0.01

1081		-----	0.00	-----	-----	0.00	-----	-----
1108	D6839	0.05	-----	-----	-----	-----	-----	-----
1109	D6839	0	0	0	0	0	0	0
1126		-----	-----	-----	-----	-----	-----	-----
1134	ISO22854	<0.01	<0.01	0.06	<0.01	<0.01	<0.01	0.03
1161	EN13132	0	0	0	0	0	0	0
1171	D5845	0.0	0.0	-----	-----	0.0	0.4	0.0
1186		-----	-----	-----	-----	-----	-----	-----
1194	D5845	*0.93*	0	-----	-----	0	0.98	0
1215		-----	-----	-----	-----	-----	-----	-----
1231		-----	-----	-----	0.00	0.00	-----	0.00
1237		-----	-----	-----	-----	-----	-----	-----
1257		-----	-----	-----	-----	-----	-----	-----
1297		-----	-----	-----	-----	-----	-----	-----
1299		-----	0.05	-----	-----	<0.01	<0.01	<0.01
1300	D4815	*0.1918*	0.1032	0.0121	0.0047	0.0119	*0.1924*	*0.2542*
1347	D4815	0.048	0.100	0.067	0.040	n.d.	0.089	0.019
1348	D4815	<0.1	0.366	0.191	<0.1	<0.1	0.251	<0.1
1385	D4815	0.060	0.286	0.164	0	0	0.164	0.017
1395		-----	-----	-----	-----	-----	-----	-----
1397		-----	0.3	-----	-----	-----	<0.2	-----
1398		-----	-----	-----	-----	-----	-----	-----
1428		-----	<0.17	<0.17	<0.17	<0.17	-----	<0.17
1484		-----	-----	-----	-----	-----	-----	-----
1498		-----	-----	-----	-----	-----	-----	-----
1501		-----	-----	-----	-----	-----	-----	-----
1531		-----	-----	-----	-----	-----	-----	-----
1538		-----	-----	-----	-----	-----	-----	-----
1564	EN22854	0.05	0.04	-----	-----	-----	-----	-----
1575		-----	-----	-----	-----	-----	-----	-----
1590		-----	-----	-----	-----	-----	-----	-----
1603		-----	-----	-----	-----	-----	-----	-----
1613	D6839	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1616		-----	-----	-----	-----	-----	-----	-----
1631		-----	-----	-----	-----	-----	-----	-----
1634		-----	-----	-----	-----	-----	-----	-----
1656	EN14517	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1657		-----	-----	-----	-----	-----	-----	-----
1668		-----	-----	-----	-----	-----	-----	-----
1669	ISO22854	*3.21*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1677	EN13132	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.01
1720		-----	-----	-----	-----	-----	-----	-----
1724		-----	-----	-----	-----	-----	-----	-----
1730		-----	-----	-----	-----	-----	-----	-----
1740		-----	-----	-----	-----	-----	-----	-----
1807		-----	<0.2	<0.2	<0.2	<0.2	-----	<0.2
1810	EN22854	0.05	0	0.05	0.02	0	0.01	-----
1811		-----	-----	-----	-----	-----	-----	-----
1842		-----	-----	-----	-----	-----	-----	-----
1849		-----	-----	-----	-----	-----	-----	-----
1851		-----	-----	-----	-----	-----	-----	-----
1854	EN13132	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01
1936		-----	-----	-----	-----	-----	-----	-----
1937		-----	-----	-----	-----	-----	-----	-----
1938		-----	-----	-----	-----	-----	-----	-----
1951	D4815	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2129	D6730	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2130	D6730	n.d.	-----	-----	-----	-----	-----	-----
	normality	not OK	not OK	OK	not OK	not OK	OK	not OK
	n	13	17	11	10	12	12	11
	outliers	3	0	0	1	0	1	1
	mean (n)	0.038	0.094	0.052	0.012	0.006	0.101	0.008
	st.dev. (n)	0.0267	0.1268	0.0669	0.0149	0.0159	0.1274	0.0104
	R(calc.)	0.075	0.354	0.187	0.042	0.044	0.357	0.029
	R(D4815:09)	n.a.	n.a,	n.a.	n.a.	n.a.	n.a.	n.a.

Bold, italic and underlined results are marked as false positives?

Lab1613 first reported: 4.81

Determination of Total Oxygenates on sample #13006; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1006	D4815	2.20	ex	-26.18
62		-----		-----	1016		-----		-----
120	D5599	7.28		-3.17	1017	ISO22854	8.03		0.23
132	D5599	8.23		1.13	1033		-----		-----
140		-----		-----	1038		-----		-----
150	D5599	<0.1	False negative?	-----	1047		-----		-----
158	D5599	8.01		0.13	1059	ISO22854	8.00		0.09
159	D5599	7.89		-0.41	1067		-----		-----
169	D4815	7.49		-2.22	1080	in house	8.00		0.09
171	D4815	8.17		0.86	1081		-----		-----
193	D5599	7.70		-1.27	1108	D6839	8.07		0.41
194		-----		-----	1109	D6839	8.00		0.09
212		-----		-----	1126	in house	7.95		-0.14
217		-----		-----	1134	ISO22854	8.15		0.77
221		-----		-----	1161	EN13132	8.35	C	1.67
224		-----		-----	1171		-----		-----
225		-----		-----	1186		-----		-----
228		-----		-----	1194		-----		-----
230		-----		-----	1215		-----		-----
237		-----		-----	1231	D4815	8.88		4.08
238		-----		-----	1237		-----		-----
252		-----		-----	1257		-----		-----
253		-----		-----	1297		-----		-----
254		-----		-----	1299	ISO22854	8.24		1.18
256		-----		-----	1300	D4815	8.4029		1.91
258		-----		-----	1347	D4815	7.829		-0.69
273		-----		-----	1348	D4815	3.47	ex	-20.43
311		-----		-----	1385	D4815	2.30	ex	-25.73
312	EN13132	8.0		0.09	1395		-----		-----
323	EN22854	8.09		0.50	1397		-----		-----
333	EN13132	7.0		-4.44	1398		-----		-----
334	D4815	8.60		2.81	1428		-----	C	-----
336		-----		-----	1484		-----		-----
337		-----		-----	1498		-----		-----
338		-----		-----	1501		-----		-----
353		-----		-----	1531		-----		-----
360	EN13132	8.17		0.86	1538		-----		-----
399	ISO22854	8.17		0.86	1564	EN22854	8.04		0.27
430		-----		-----	1575		-----		-----
431		-----		-----	1590	D4815	7.60		-1.72
433		-----		-----	1603		-----		-----
444		-----		-----	1613	D6839	8.20	E	1.00
447		-----		-----	1616		-----		-----
463	EN13132	7.86		-0.54	1631		-----		-----
468		-----		-----	1634		-----		-----
485		-----		-----	1656	EN14517	8.3		1.45
494	ISO22854	8.02		0.18	1657		-----		-----
495	D6839	8.14		0.72	1668		-----		-----
511		-----		-----	1669	ISO22854	8.17	E	0.86
541		-----		-----	1677	EN13132	7.94		-0.18
557		-----		-----	1720		-----		-----
592		-----		-----	1724		-----		-----
631	D6839	8.10		0.54	1730		-----		-----
657	D4815	7.74		-1.09	1740		-----		-----
663		-----		-----	1807		-----		-----
671		-----		-----	1810	EN22854	8.18		0.90
862	D4815	8.223		1.10	1811	D4815	7.94		-0.18
868	D4815	7.98		0.00	1842		-----		-----
875		-----		-----	1849		-----		-----
902		-----		-----	1851		-----		-----
912		-----		-----	1854	EN13132	8.07		0.41
922		-----		-----	1936		-----		-----
962		-----		-----	1937		-----		-----
974	D4815	7.1984		-3.54	1938		-----		-----
994		-----		-----	1951	D4815	<0.1	False negative?	-----
995		-----		-----	2129	D6730	7.739		-1.09
996		-----		-----	2130	D6730	7.4	C	-2.63

normality	not OK
n	42
outliers	0
mean (n)	7.980
st.dev. (n)	0.3521
R(calc.)	0.986
R(D4815:09)	0.618

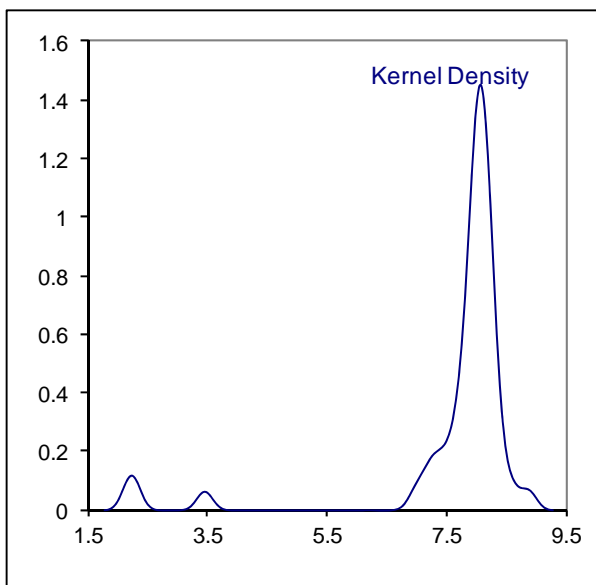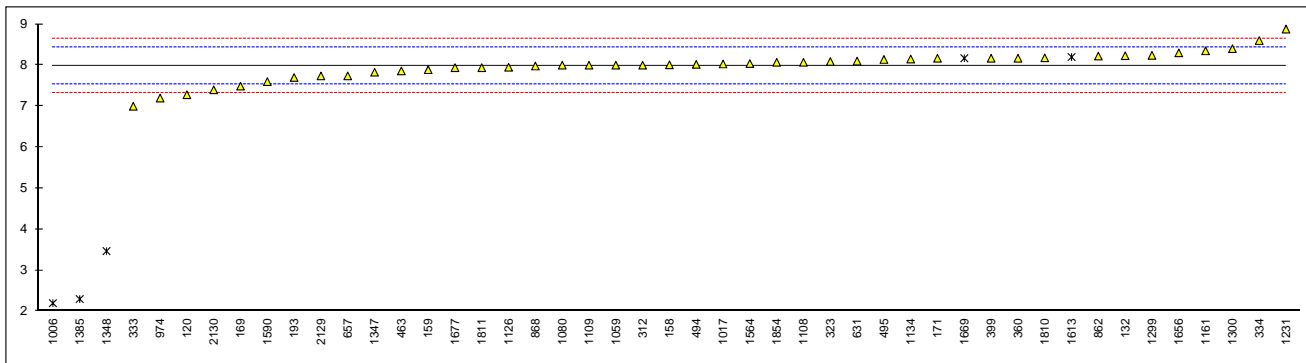Lab 1006 first reported: 2.28   Lab 1428 first reported as Total Oxygenates; corrected as Oxygen Content

Lab 1161 first reported: 2.41   Lab 2130 first reported: 5.724

Lab 1006, 1348, 1385 results are excluded as reported test result is probably mixed up with Oxygen content.

Lab 1613, 1669 made probably a calculation error in total calculation of oxygenated compounds

Determination of Oxygen Content on sample #13006; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	INH-3	1.9	G(0.05)	-4.48	1006		-----		-----
62		-----		-----	1016		-----		-----
120	D5599	2.16		-1.69	1017	ISO22854	2.34		0.24
132	D5599	2.4		0.88	1033		-----		-----
140	D5599	1.99	G(0.05)	-3.51	1038		-----		-----
150	D5599	2.27		-0.51	1047		-----		-----
158	D5599	2.26		-0.62	1059	ISO22854	2.33		0.13
159	D5599	2.3		-0.19	1067		-----		-----
169		-----		-----	1080	in house	2.33		0.13
171	D5599	2.2		-1.26	1081		-----		-----
193	D5599	2.23		-0.94	1108	D6839	2.35		0.35
194		-----		-----	1109	D6839	2.33		0.13
212		-----		-----	1126	in house	2.30		-0.19
217		-----		-----	1134	ISO22854	2.35		0.35
221		-----		-----	1161	EN13132	2.41	C	0.99
224		-----		-----	1171	D5845	2.059		-2.77
225		-----		-----	1186		-----		-----
228		-----		-----	1194	D5845	2.855	G(0.05)	5.76
230		-----		-----	1215		-----		-----
237		-----		-----	1231		-----		-----
238		-----		-----	1237		-----		-----
252		-----		-----	1257		-----		-----
253		-----		-----	1297		-----		-----
254		-----		-----	1299	ISO22854	2.41		0.99
256		-----		-----	1300	D5599	2.3144		-0.04
258		-----		-----	1347	D4815	2.175		-1.53
273		-----		-----	1348	D5599	1.95	G(0.05)	-3.94
311		-----		-----	1385	D4815	2.3		-0.19
312	EN13132	2.34		0.24	1395		-----		-----
323	Calc.	2.36		0.45	1397	EN13132	2.49		1.85
333	EN13132	2.18		-1.48	1398		-----		-----
334	D4815	2.47	C	1.63	1428	EN13132	2.46	C	1.52
336	EN1601	2.47		1.63	1484		-----		-----
337		-----		-----	1498		-----		-----
338		-----		-----	1501		-----		-----
353		-----		-----	1531		-----		-----
360	EN13132	2.382		0.69	1538	EN13132	2.30		-0.19
399	ISO22854	2.25		-0.73	1564	EN22854	2.32		0.02
430		-----		-----	1575		-----		-----
431		-----		-----	1590		-----		-----
433		-----		-----	1603		-----		-----
444		-----		-----	1613	D6839	8.59	C,G(0.01)	67.24
447		-----		-----	1616		-----		-----
463	EN13132	2.30		-0.19	1631		-----		-----
468		-----		-----	1634		-----		-----
485		-----		-----	1656	EN14517	2.36		0.45
494	ISO22854	2.33		0.13	1657		-----		-----
495	D6839	2.37		0.56	1668		-----		-----
511		-----		-----	1669	ISO22854	2.31		-0.08
541		-----		-----	1677	EN13132	2.318		0.00
557		-----		-----	1720		-----		-----
592		-----		-----	1724	ISO22854	2.40		0.88
631	D6839	2.40		0.88	1730		-----		-----
657	D4815	2.25		-0.73	1740		-----		-----
663		-----		-----	1807	ISO13132	2.10		-2.33
671		-----		-----	1810	EN22854	2.39		0.77
862	D4815	2.35		0.35	1811	D5599	2.33		0.13
868	D4815	2.33		0.13	1842		-----		-----
875		-----		-----	1849	D4815	2.32		0.02
902		-----		-----	1851		-----		-----
912		-----		-----	1854	D5599	2.4		0.88
922		-----		-----	1936		-----		-----
962		-----		-----	1937		-----		-----
974	D4815	1.66	G(0.01)	-7.05	1938		-----		-----
994		-----		-----	1951	D4815	2.37		0.56
995		-----		-----	2129	D6730	2.272		-0.49
996		-----		-----	2130	D6730	2.15	C	-1.80

normality	not OK
n	50
outliers	6
mean (n)	2.318
st.dev. (n)	0.0915
R(calc.)	0.256
R(D5599:10)	0.261

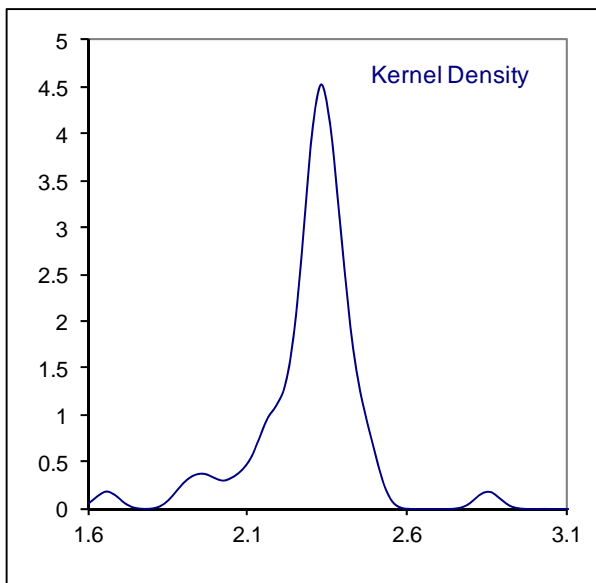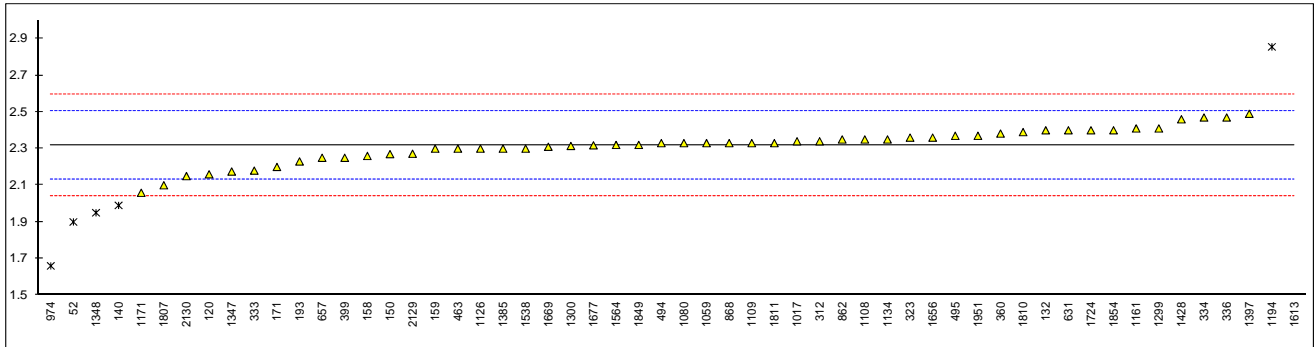Compare R(D4815:09) = 0.262

Lab 334 first reported: 3.59   Lab 2130 first reported: 1.853

Lab 1161 first reported: 0   Lab 1428 corrected result; first reported as Total Oxygenates

Lab 1613 first reported: 1.95

Determination of Sulphur on sample #13006; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D5453	5.4		-1.09	1006	D5453	6.5		0.24
62	D5453	5.8		-0.61	1016		-----		-----
120	D7039	5.8		-0.61	1017	ISO20846	6.7		0.49
132	D2622	6.84		0.66	1033		-----		-----
140	D5453	4.75		-1.88	1038	D2622	4.2		-2.55
150	D5453	6.9		0.73	1047		-----		-----
158	D5453	5.5		-0.97	1059	ISO20846	6.2		-0.12
159	D5453	7.2		1.09	1067		-----		-----
169	D5453	7.54		1.51	1080	D5453	6.0		-0.36
171	D2622	6.6		0.37	1081	ISO20846	5.9		-0.49
193	D7039	6.1		-0.24	1108	D5453	6.2		-0.12
194	D5453	6.07		-0.28	1109	D7039	6.8		0.61
212		-----		-----	1126	ISO20846	4.58		-2.09
217		-----		-----	1134	D5453	6.6		0.37
221		-----		-----	1161	ISO20846	7.30		1.22
224		-----		-----	1171	ISO20846	6.27		-0.04
225		-----		-----	1186	D5453	6.88		0.71
228		-----		-----	1194	D4294	8.1		2.19
230		-----		-----	1215	D5453	7.13		1.01
237	D4294	5.0		-1.58	1231	D5453	6.595		0.36
238	D4294	23	G(0.01)	20.29	1237	ISO20846	7.9		1.94
252		-----		-----	1257	D4294	10	G(0.01)	4.50
253		-----		-----	1297	D5453	5.96		-0.41
254		-----		-----	1299	ISO20884	7.0		0.85
256		-----		-----	1300	D5453	5.577		-0.88
258	D5453	6.99		0.84	1347	D4294	83	G(0.01)	93.17
273	D5453	4.96		-1.63	1348	D4294	161	G(0.01)	187.92
311	D5453	6.6		0.37	1385	D4294	142	G(0.01)	164.84
312	D5453	6.7		0.49	1395	D5453	7.0		0.85
323	D5453	6.8		0.61	1397	D5453	6.07		-0.28
333	D5453	5.9		-0.49	1398		-----		-----
334	D5453	6.4		0.12	1428	EN20846	7.0		0.85
336	ISO20846	6.4		0.12	1484		-----		-----
337	D5453	5.6		-0.85	1498	D5453	5.689		-0.74
338	ISO20846	4.1		-2.67	1501	D5453	4.87		-1.74
353	IP531	5.74		-0.68	1531	ISO20846	5.28		-1.24
360	D5453	6.80		0.61	1538	ISO20884	6.4		0.12
399		-----		-----	1564	EN20846	5	C	-1.58
430		-----		-----	1575		-----		-----
431		-----		-----	1590	D5453	4.7		-1.94
433		-----		-----	1603	in house	7.36		1.29
444		-----		-----	1613		-----		-----
447		-----		-----	1616		-----		-----
463	D5453	6.19		-0.13	1631	ISO22846	6.02		-0.34
468	D5453	6.16		-0.17	1634		-----		-----
485		-----		-----	1656	D5453	7.2		1.09
494	D5453	6.82		0.63	1657	D5453	13.3	G(0.01)	8.50
495	D5453	6.2		-0.12	1668		-----		-----
511	D5453	5.82		-0.58	1669	ISO20846	6.2		-0.12
541	D5453	5.3		-1.21	1677	ISO20846	6.1		-0.24
557		-----		-----	1720	D5453	7.05		0.91
592		-----		-----	1724	D5453	6.34		0.05
631		-----		-----	1730	ISO20884	6.48		0.22
657	D5453	7.1		0.97	1740	ISO20846	6.25		-0.06
663	D5453	6.40		0.12	1807	D5453	6.9		0.73
671		-----		-----	1810	D5453	5.9		-0.49
862	D5453	6.52		0.27	1811	D5453	6.1		-0.24
868	D3120	7.2		1.09	1842	D2622	-----	C	-----
875	D5453	8.62		2.82	1849	D5453	6.32		0.02
902		-----		-----	1851		-----		-----
912	D5453	7.68		1.68	1854	ISO20846	6.4		0.12
922	D5453	5.42		-1.07	1936	ISO20846	6.5		0.24
962		-----		-----	1937	ISO20846	6.7		0.49
974		-----		-----	1938	D5453	6.6		0.37
994	D5453	6.23		-0.08	1951	D5453	5.2		-1.34
995	D5453	5.95		-0.42	2129	D5453	6.92		0.75
996	D5453	5.68		-0.75	2130	D5453	8.23		2.35

normality	OK
n	90
outliers	6
mean (n)	6.299
st.dev. (n)	0.8513
R(calc.)	2.384
R(D5453:12)	2.305

Lab 1564 first reported: 4

Lab 1842 reported: 50000
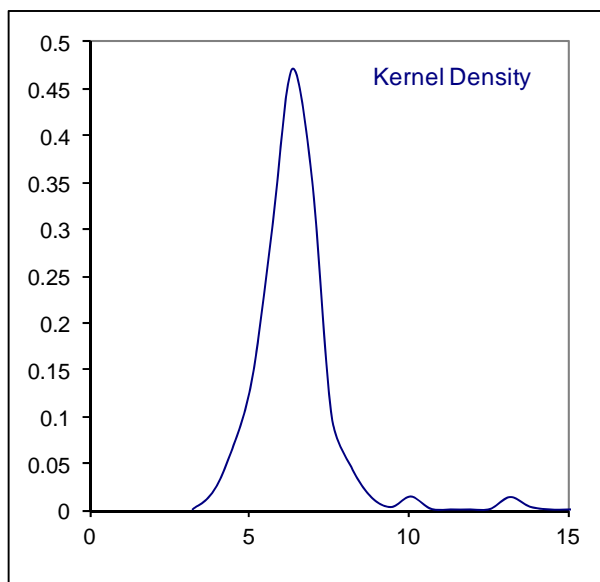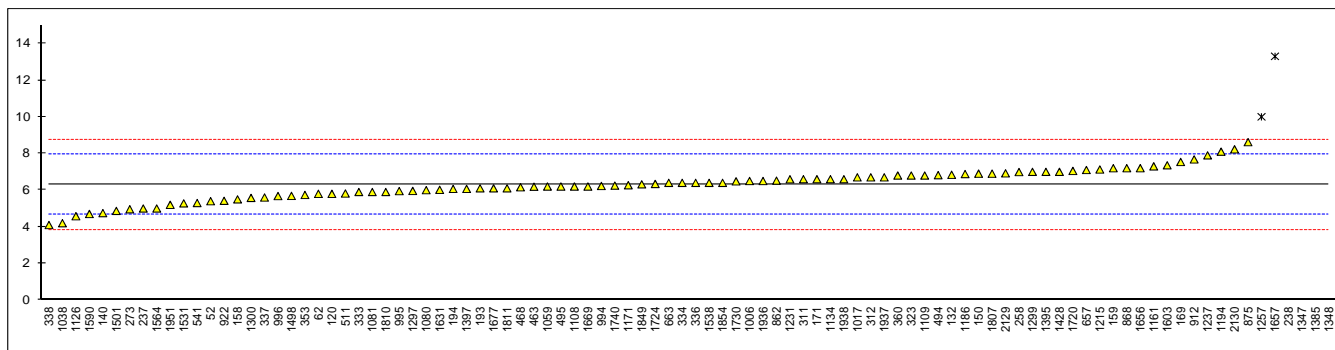
Determination of RON on sample #13006;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D2699	95.6		0.01	1006	D2699	95.7		0.41
62	D2699	95.5		-0.39	1016		-----		-----
120	D2699	95.7		0.41	1017		-----		-----
132	D2699	95.6		0.01	1033		-----		-----
140	D2699	96.6	G(0.05)	4.01	1038	D2699	95.6		0.01
150	D2699	95.8		0.81	1047		-----		-----
158		-----		-----	1059	ISO5164	95.6		0.01
159	D2699	95.5		-0.39	1067		-----		-----
169	D2699	95.80		0.81	1080		-----		-----
171	D2699	95.8		0.81	1081	D2699	95.5		-0.39
193		-----		-----	1108		-----		-----
194		-----		-----	1109	D2699	96.0		1.61
212		-----		-----	1126		-----		-----
217		-----		-----	1134		-----		-----
221		-----		-----	1161	ISO5164	95.6		0.01
224		-----		-----	1171	D2699	95.35		-0.99
225		-----		-----	1186	D2699	95.52		-0.31
228		-----		-----	1194	D2699	95.95		1.41
230		-----		-----	1215	D2699	95.7		0.41
237	D2699	95.2		-1.59	1231	D2699	95.8		0.81
238		-----		-----	1237		-----		-----
252		-----		-----	1257		-----		-----
253		-----		-----	1297	DHA	95.7		0.41
254		-----		-----	1299	D2699	95.6		0.01
256		-----		-----	1300	D2699	95.59	C	-0.03
258		-----		-----	1347	D2699	95.67		0.29
273		-----		-----	1348	D2699	95.94		1.37
311		-----		-----	1385	D2699	95.62		0.09
312	D2699	95.54		-0.23	1395		-----		-----
323		-----		-----	1397		-----		-----
333		-----		-----	1398		-----		-----
334	D2699	95.3		-1.19	1428	D2699	95.5		-0.39
336		-----		-----	1484	ISO5164	95.3		-1.19
337		-----		-----	1498	D2699	96.3	DG(0.05)	2.81
338		-----		-----	1501	D2699	95.53		-0.27
353		-----		-----	1531		-----		-----
360	D2699	95.66		0.25	1538		-----		-----
399		-----		-----	1564	D2699	95.3		-1.19
430	D2699	95.6		0.01	1575	in house	95.7		0.41
431		-----		-----	1590	D2699	95.7		0.41
433		-----		-----	1603		-----		-----
444	D2699	95.69		0.37	1613	D2699	95.65		0.21
447	D2699	95.7		0.41	1616		-----		-----
463	D2699	95.32		-1.11	1631		-----		-----
468		-----		-----	1634		-----		-----
485		-----		-----	1656	ISO5164	95.3		-1.19
494	D2699	95.56		-0.15	1657	D2699	95.4		-0.79
495	D2699	95.2		-1.59	1668		-----		-----
511	D2699	95.7		0.41	1669	EN25164	96.4	DG(0.05)	3.21
541	D2699	95.9		1.21	1677	D2699	95.6		0.01
557		-----		-----	1720	D2699	96.0		1.61
592		-----		-----	1724		-----		-----
631	D2699	95.69		0.37	1730		-----		-----
657	D2699	95.6		0.01	1740		-----		-----
663		-----		-----	1807		-----		-----
671		-----		-----	1810		-----		-----
862	D2699	95.5		-0.39	1811		-----		-----
868	D2699	95.6		0.01	1842		-----		-----
875		-----		-----	1849	D2699	95.7		0.41
902		-----		-----	1851	D2699	95.4		-0.79
912		-----		-----	1854		-----		-----
922		-----		-----	1936		-----		-----
962		-----		-----	1937		-----		-----
974	D2699	95.8		0.81	1938		-----		-----
994		-----		-----	1951	D2699	96.1		2.01
995	D2699	95.1		-1.99	2129	D2699	95.23		-1.47
996		-----		-----	2130	IP237	95.4		-0.79

normality	not OK
n	59
outliers	3
mean (n)	95.60
st.dev. (n)	0.212
R(calc.)	0.59
R(D2699:12)	0.70

Lab 1300 first reported: 96.19
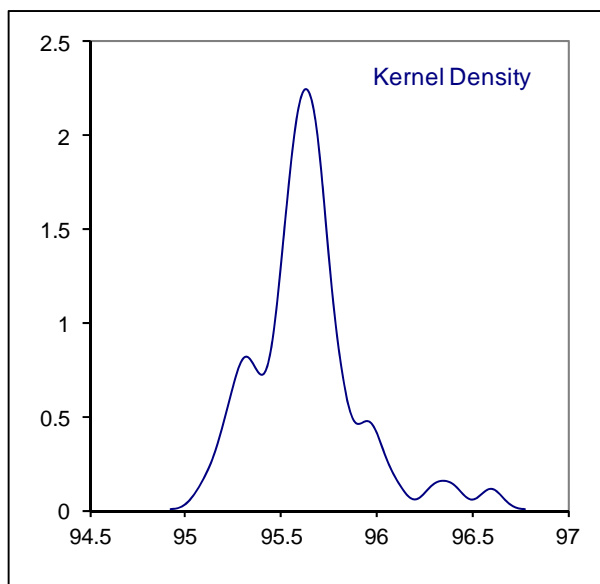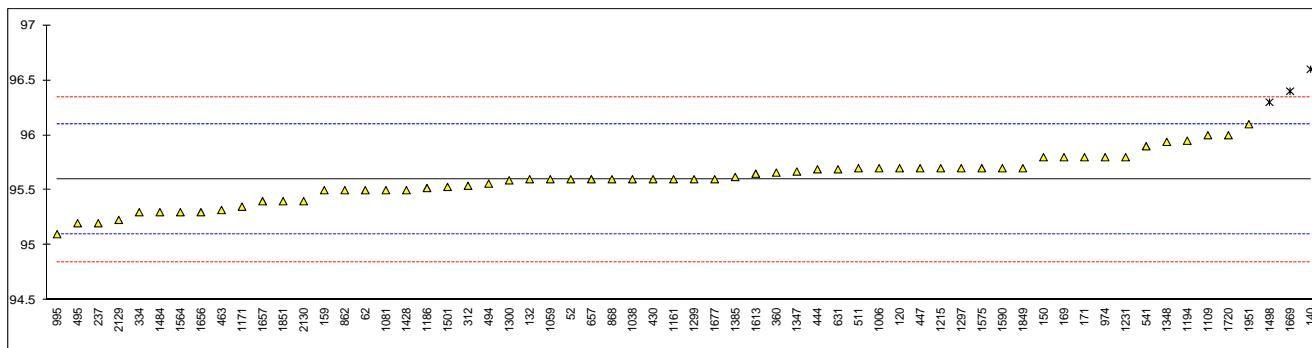
Determination of MON on sample #13006;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D2700	84.6		-1.62	1006		-----		-----
62	D2700	84.7	C	-1.31	1016		-----		-----
120	D2700	85.0		-0.37	1017		-----		-----
132	D2700	84.9		-0.69	1033		-----		-----
140	D2700	85.1		-0.06	1038	D2700	85.4		0.87
150	D2700	85.6		1.49	1047		-----		-----
158		-----		-----	1059	ISO5163	85.2		0.25
159	D2700	85.2		0.25	1067		-----		-----
169	D2700	84.25		-2.71	1080		-----		-----
171	D2700	84.8		-1.00	1081	D2700	85.3		0.56
193		-----		-----	1108		-----		-----
194		-----		-----	1109	D2700	85.2		0.25
212		-----		-----	1126		-----		-----
217		-----		-----	1134		-----		-----
221		-----		-----	1161	ISO5163	85.2		0.25
224		-----		-----	1171	D2699	85.01		-0.34
225		-----		-----	1186		-----		-----
228		-----		-----	1194	D2700	85.75		1.96
230		-----		-----	1215		-----		-----
237		-----		-----	1231	D2700	85.0		-0.37
238		-----		-----	1237		-----		-----
252		-----		-----	1257		-----		-----
253		-----		-----	1297	DHA	82.8	G(0.01)	-7.22
254		-----		-----	1299	D2700	84.5		-1.93
256		-----		-----	1300	D2700	85.23		0.34
258		-----		-----	1347		-----		-----
273		-----		-----	1348		-----		-----
311		-----		-----	1385		-----		-----
312	D2700	85.27		0.47	1395		-----		-----
323		-----		-----	1397		-----		-----
333		-----		-----	1398		-----		-----
334	D2700	85.1		-0.06	1428	D2700	84.9		-0.69
336		-----		-----	1484		-----		-----
337		-----		-----	1498		-----		-----
338		-----		-----	1501	D2700	85.17		0.15
353		-----		-----	1531		-----		-----
360	D2700	85.24		0.37	1538		-----		-----
399		-----		-----	1564	D2700	85.0		-0.37
430	D2700	85.1		-0.06	1575	in house	85.5		1.18
431		-----		-----	1590	D2700	85.2		0.25
433		-----		-----	1603		-----		-----
444	D2700	84.44		-2.12	1613		-----		-----
447	D2700	85.2		0.25	1616		-----		-----
463	D2700	85.25		0.40	1631		-----		-----
468		-----		-----	1634		-----		-----
485		-----		-----	1656	ISO5163	85.4		0.87
494	D2700	85.03		-0.28	1657		-----		-----
495	D2700	85.1		-0.06	1668		-----		-----
511		-----		-----	1669	EN25163	85.2		0.25
541		-----		-----	1677	D2700	84.7		-1.31
557		-----		-----	1720		-----		-----
592		-----		-----	1724		-----		-----
631	D2700	85.40		0.87	1730		-----		-----
657	D2700	85.4		0.87	1740		-----		-----
663		-----		-----	1807		-----		-----
671		-----		-----	1810		-----		-----
862	D2700	84.8		-1.00	1811		-----		-----
868		-----		-----	1842		-----		-----
875		-----		-----	1849	D2700	85.9	C	2.43
902		-----		-----	1851		-----		-----
912		-----		-----	1854		-----		-----
922		-----		-----	1936		-----		-----
962		-----		-----	1937		-----		-----
974		-----		-----	1938		-----		-----
994		-----		-----	1951	D2700	85.2		0.25
995		-----		-----	2129	D2700	84.84		-0.87
996		-----		-----	2130	IP236	85.9		2.43

normality	OK
n	43
outliers	1
mean (n)	85.12
st.dev. (n)	0.349
R(calc.)	0.98
R(D2700:12)	0.90

Lab 62 first reported: 84.1

Lab 1849 first reported: 86.9

Kernel Density
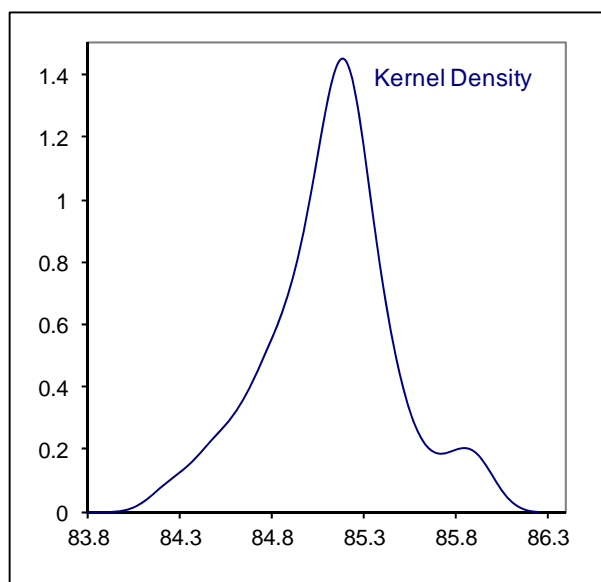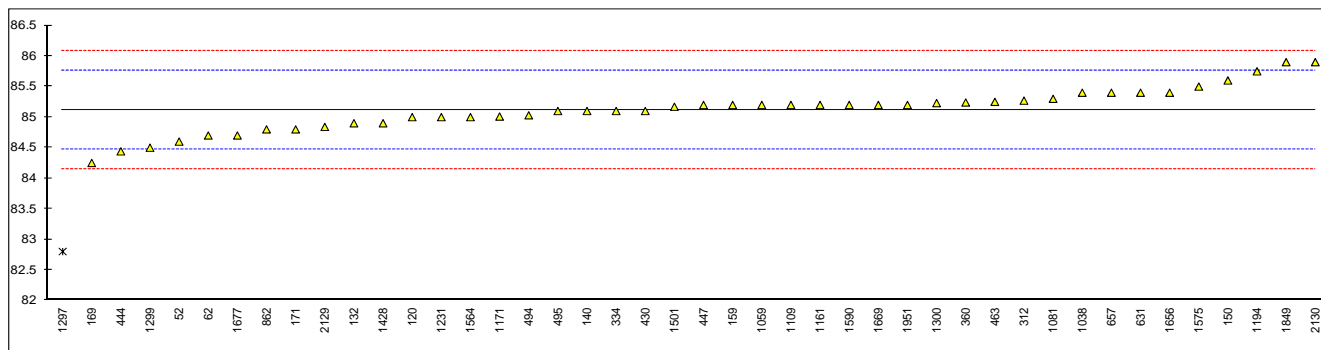
Determination of TVP on sample #13007; results in psi

lab	method	value	mark	z(targ)	remarks
52	D5191	9.40		0.43	
53	D5191	9.46		0.94	
62	D5191	9.31		-0.33	
120	D5191	9.24		-0.92	
132	D5191	9.37		0.18	
140	D5191	9.34		-0.08	
150	D5191	9.31		-0.33	
158	D5191	9.34		-0.08	
159	D5191	9.38		0.26	
169	D5191	9.37		0.18	
171	D5191	9.37		0.18	
193		-----		-----	
194	D5191	9.34		-0.08	
212		-----		-----	
225	D5191	9.24		-0.92	
228	D5191	9.946	G(0.05)	5.07	
230	D5191	9.210		-1.18	
237	D5191	9.22		-1.09	
238		-----		-----	
258	D5191	8.81798	G(0.01)	-4.50	
311	D5191	9.38		0.26	
312	D5191	9.39		0.35	
323	D5191	9.53		1.54	
333	D5191	9.2		-1.26	
334	D5191	9.37		0.18	
336	D5191	9.48		1.11	
337	D5191	9.28		-0.58	
353	D5191	9.3235		-0.22	
360	D5191	9.265		-0.71	
399	D5191	9.02		-2.79	
431		-----		-----	
433		-----		-----	
447	D5191	9.079		-2.29	
463	D5191	9.369		0.17	
468	D5191	9.461		0.95	
485		-----		-----	
494	D5191	9.38		0.26	
495	D5191	9.44		0.77	
557		-----		-----	
631	D5191	9.353		0.04	
657	D5191	9.48		1.11	
862	D5191	9.19		-1.35	
868	D5191	9.46		0.94	
875	D5191	9.369		0.17	
974	D5191	9.250		-0.84	
1006		-----		-----	
1017	D5191	9.454		0.89	
1033	IP394	9.2969		-0.44	
1038		-----		-----	
1059	D5191	9.372		0.20	
1067	D5191	9.369		0.17	
1080	D5191	9.31		-0.33	
1081		-----		-----	
1108	D5191	9.28		-0.58	
1109	D5191	9.35		0.01	
1134	D5191	9.34		-0.08	
1161	EN13016	8.5	G(0.01)	-7.20	
1171		-----		-----	
1231	D5191	8.635	G(0.01)	-6.06	
1257		-----		-----	
1299	D5191	9.12		-1.94	
1395	D5191	9.2679		-0.69	
1398		-----		-----	
1428		-----		-----	
1501	D6378	9.24		-0.92	
1564		-----		-----	
1581	D5191	9.37		0.18	
1590	D5191	9.30		-0.41	
1613	D5191	9.37		0.18	
1616		-----		-----	
1631		-----		-----	
1634	EN13016	9.391		0.36	
1656		-----		-----	
1657	D5191	9.45		0.86	
1668		-----		-----	
1669	ISO13016	9.46		0.94	

1677	D5191	9.645		2.51
1724	D5191	9.52		1.45
1730		-----		-----
1807	D5191	9.40		0.43
1810	D5191	9.23		-1.01
1811	D5191	9.31		-0.33
1849	D5191	9.456		0.91
1851		-----		-----
1854	D5191	9.50		1.28
1936	ISO13016	9.456		0.91
1937	EN13016	9.44		0.77
1938		-----		-----
1951	D5191	8.40	G(0.01)	-8.05
2130	D5191	9.31		-0.33

normality	OK
n	63
outliers	5
mean (n)	9.349
st.dev. (n)	0.1097
R(calc.)	0.307
R(D5191:12)	0.330
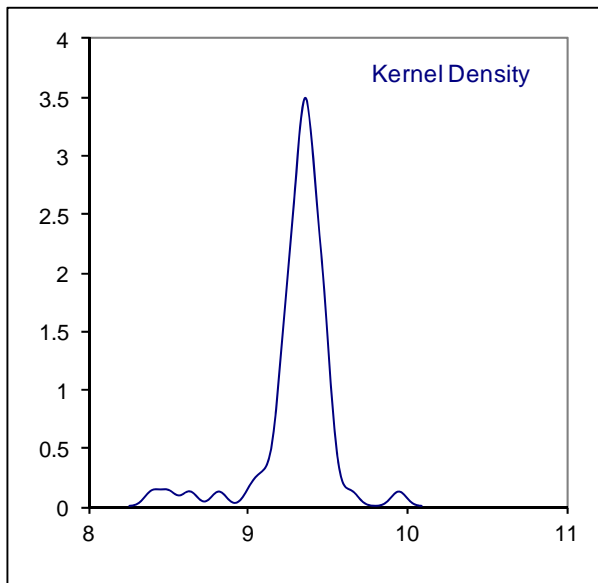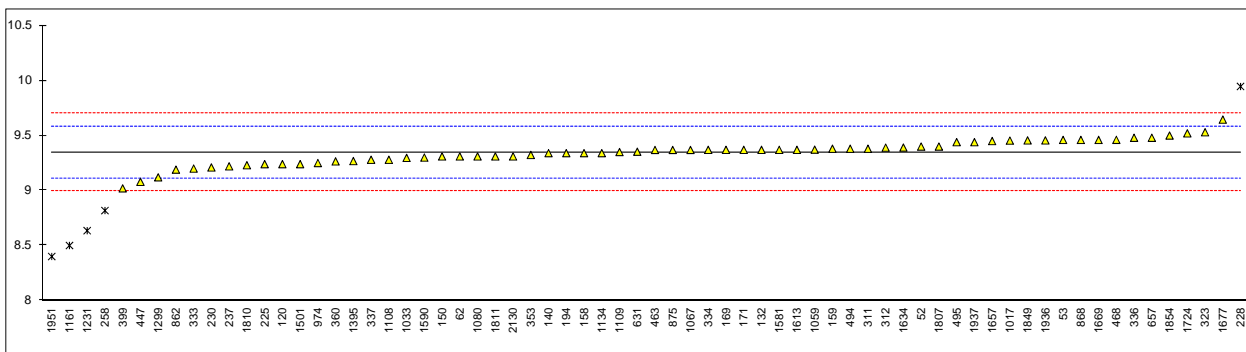
Determination of DVPE (acc. to ASTM D5191) on sample #13007; results in psi

lab	method	value	mark	z(targ)	remarks
52	D5191	8.52		0.30	
53	D5191	8.57		0.73	
62	D5191	8.44		-0.40	
120	D5191	8.37		-1.01	
132	D5191	8.49		0.04	
140	D5191	8.46		-0.22	
150	D5191	8.44		-0.40	
158	D5191	8.46		-0.22	
159	D5191	8.50		0.12	
169	D5191	8.49		0.04	
171	D5191	8.49		0.04	
193	D5191	8.62		1.17	
194	D5191	8.46		-0.22	
212		-----		-----	
225	D5191	8.49		0.04	
228	D5191	9.050	G(0.01)	4.92	
230	D5191	8.340		-1.27	
237	D5191	8.35		-1.18	
238		-----		-----	
258	D5191	7.96135	G(0.05)	-4.57	
311	D5191	8.51		0.21	
312	D5191	8.51		0.21	
323	D5191	8.65		1.43	
333	D5191	8.3		-1.62	
334	D5191	8.49		0.04	
336	D5191	8.60		1.00	
337	D5191	8.4072		-0.68	
353	D5191	8.449		-0.32	
360	D5191	8.395		-0.79	
399	D5191	8.16		-2.84	
431	EN13016	8.5282		0.37	
433	EN13016	8.53		0.39	
447	D5191	8.213		-2.38	
463	D5191	8.493		0.06	
468	D5191	8.601		1.00	
485	D5191	8.499		0.12	
494	D5191	8.50		0.12	
495	D5191	8.55		0.56	
557		-----		-----	
631	D5191	8.477		-0.08	
657	D5191	8.61		1.08	
862	D5191	8.32		-1.44	
868	D5191	8.58		0.82	
875	D5191	8.493		0.06	
974	D5191	8.383		-0.90	
1006	D5191	8.39		-0.83	
1017	D5191	8.569		0.73	
1033	IP394	8.4235		-0.54	
1038		-----		-----	
1059	D5191	8.496		0.09	
1067	D5191	8.493		0.06	
1080	D5191	8.44		-0.40	
1081	D5191	8.48	C	-0.05	reported 58.50 kPa; iis converted kPa to psi
1108	D5191	8.41		-0.66	
1109	D5191	8.475		-0.09	
1134	D5191	8.93	G(0.05)	3.87	
1161	EN13016	7.6	G(0.01)	-7.72	
1171	EN13016	8.554	C	0.59	first reported: 58.98 kPa
1231	D5191	9.51	G(0.01)	8.93	
1257	D5191	8.51		0.21	
1299	D5191	8.25		-2.05	
1395	D5191	8.3955		-0.79	
1398		-----		-----	
1428	D5191	8.38		-0.92	
1501	D6378	8.37		-1.01	
1564	EN13016	8.59	C	0.91	first reported as Total Vapour Pressure
1581	D5191	8.48		-0.05	
1590	D5191	8.43		-0.49	
1613	D5191	8.49		0.04	
1616		-----		-----	
1631	D5191	8.5		0.12	
1634	EN13016	8.514		0.25	
1656	EN13016	8.85		3.17	
1657	D5191	8.57		0.73	
1668		-----		-----	
1669	ISO13016	8.57		0.73	

1677	D5191	8.759		2.38	
1724	D5191	8.64		1.34	
1730	EN13016	8.441		-0.39	
1807	D5191	8.52		0.30	
1810	D5191	8.35		-1.18	
1811	D5191	8.43		-0.49	
1849	D5191	8.572		0.75	
1851	D5191	8.63	C	1.26	reported 59.5 kPa; converted by iis
1854	D5191	8.62		1.17	
1936	ISO13016	8.577		0.79	
1937	EN13016	8.56		0.65	
1938	D5191	8.499		0.12	
1951		-----		-----	
2130	D5191	8.44		-0.40	

normality	OK
n	77
outliers	5
mean (n)	8.486
st.dev. (n)	0.1095
R(calc.)	0.307
R(D5191:12)	0.321
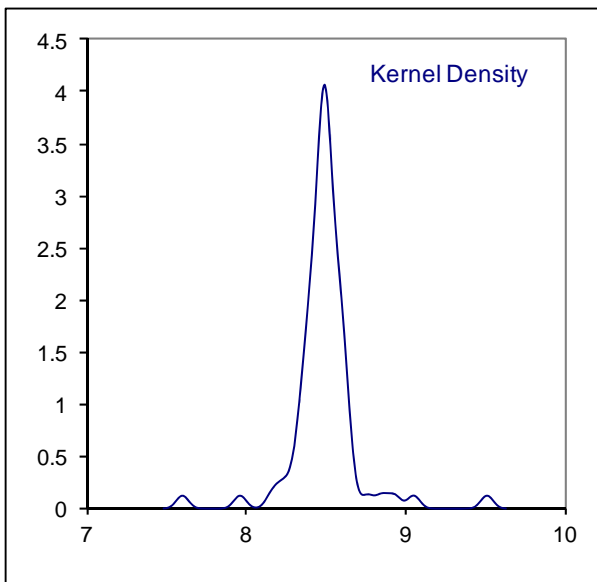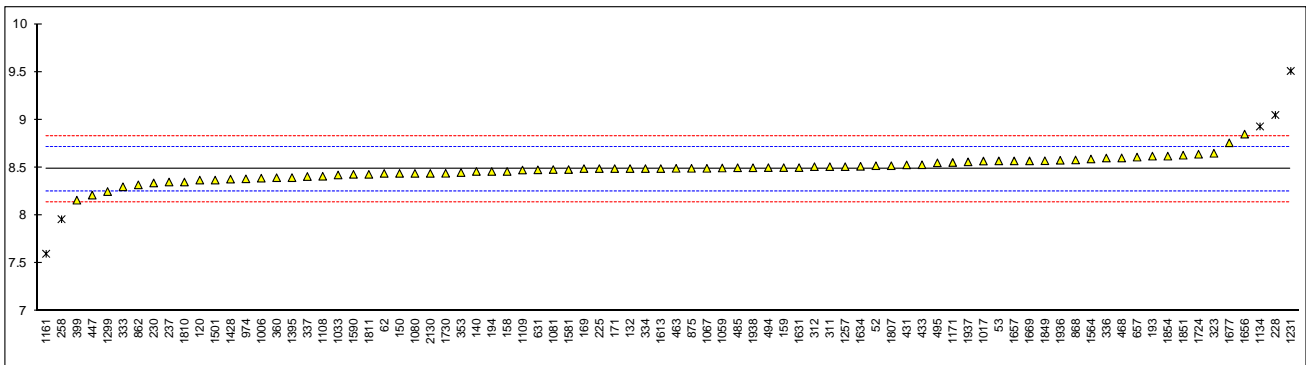
Determination of DVPE (acc. to EPA) on sample #13007; results in psi

lab	method	value	mark	z(targ)	remarks
52	D5191	8.64		0.37	
53		-----		-----	
62	D5191	8.55		-0.41	
120	D5191	8.48		-1.02	
132	D5191	8.61		0.11	
140	D5191	8.58		-0.15	
150	D5191	8.55		-0.41	
158		-----		-----	
159	D5191	8.63		0.29	
169	D5191	8.61		0.11	
171	D5191	8.62		0.20	
193		-----		-----	
194	D5191	8.58		-0.15	
212		-----		-----	
225	D5191	8.49		-0.93	
228	D5191	9.161	G(0.05)	4.90	
230	D5191	8.456		-1.22	
237	D5191	8.47		-1.10	
238		-----		-----	
258		-----		-----	
311	D5191	8.62		0.20	
312	D5191	8.63		0.29	
323	D5191	8.89		2.55	
333	D5191	8.4		-1.71	
334	D5191	8.61		0.11	
336	D5191	8.72		1.07	
337	D5191	8.5247		-0.63	
353	D5191	8.566		-0.27	
360	D5191	8.510		-0.75	
399	D5191	8.27		-2.84	
431		-----		-----	
433		-----		-----	
447	D5191	8.333		-2.29	
463	D5191	8.609		0.10	
468	D5191	8.697		0.87	
485		-----		-----	
494	D5191	8.62		0.20	
495	D5191	8.67		0.63	
557		-----		-----	
631	D5191	8.594		-0.03	
657	D5191	8.73		1.16	
862	D5191	8.44		-1.36	
868	D5191	8.70		0.90	
875	D5191	8.6098		0.11	
974	D5191	8.501		-0.83	
1006		-----		-----	
1017	D5191	8.691		0.82	
1033	IP394	8.5408		-0.49	
1038		-----		-----	
1059	D5191	8.613		0.14	
1067	D5191	8.610		0.11	
1080	D5191	8.55		-0.41	
1081		-----		-----	
1108	D5191	8.52		-0.67	
1109	D5191	8.592		-0.04	
1134	D5191	8.88	C	2.46	
1161	EN13016	7.8	G(0.01)	-6.92	
1171		-----		-----	
1231		-----		-----	
1257		-----		-----	
1299	D5191	8.37		-1.97	
1395	D5191	8.5131		-0.73	
1398		-----		-----	
1428		-----		-----	
1501	D6378	8.49		-0.93	
1564		-----		-----	
1581	D5191	8.62		0.20	
1590	D5191	8.56		-0.32	
1613	D5191	8.61		0.11	
1616		-----		-----	
1631		-----		-----	
1634	EN13016	8.630		0.29	
1656		-----		-----	
1657		-----		-----	
1668		-----		-----	
1669		-----		-----	

1677	D5191	8.874	2.41
1724	D5191	8.76	1.42
1730		-----	-----
1807	D5191	8.64	0.37
1810		-----	-----
1811		-----	-----
1849	D5191	8.789	1.67
1851		-----	-----
1854	D5191	8.74	1.24
1936	ISO13016	8.692	0.83
1937	EN13016	8.68	0.72
1938		-----	-----
1951		-----	-----
2130	D5191	8.55	-0.41

normality	OK	
n	57	
outliers	2	
mean (n)	8.597	
st.dev. (n)	0.1221	
R(calc.)	0.342	
R(D5191:12)	0.322	
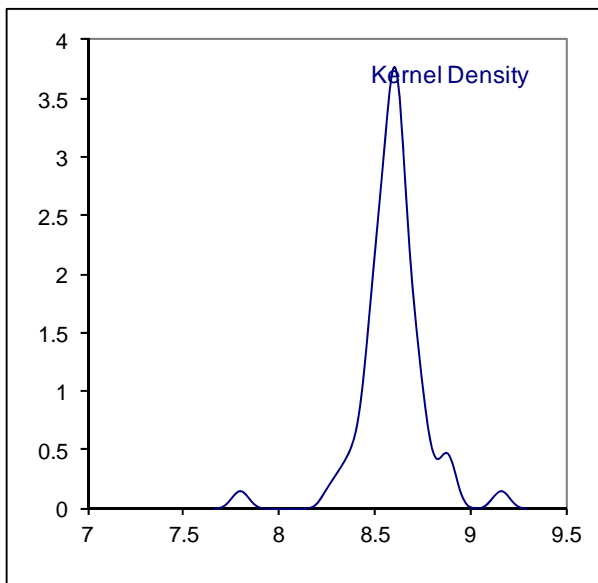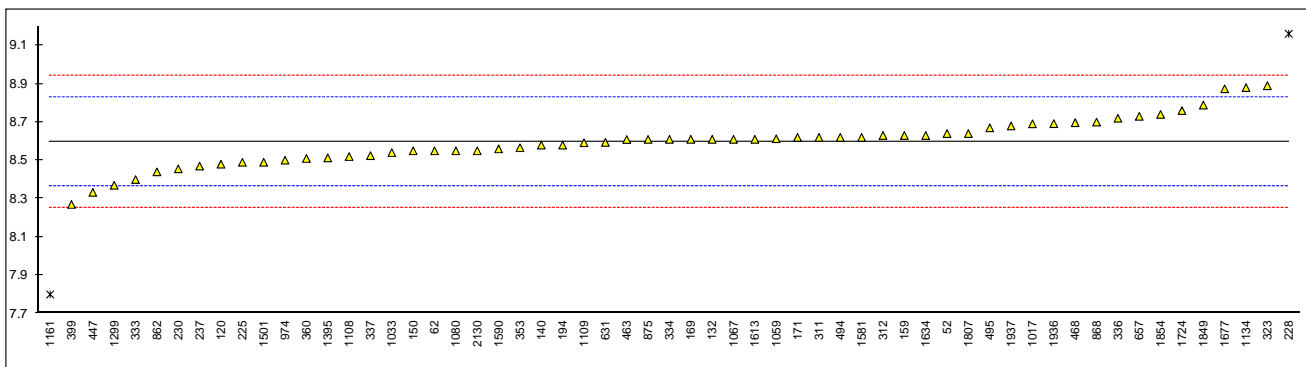
APPENDIX 2

z-scores distillation ASTM D86 (automated and manual mode)

	Automated mode						Manual mode					
lab	IBP	10%eva	50%eva	70%eva	90%eva	FBP	IBP	10%eva	50%eva	70%eva	90%eva	FBP
52	0.04	-0.51	-1.31	0.01	-0.06	-0.57	-----	-----	-----	-----	-----	-----
62	-0.92	-0.51	0.48	0.17	0.22	0.55	-----	-----	-----	-----	-----	-----
120	-0.87	-0.60	-0.71	-0.10	-0.48	-0.20	-----	-----	-----	-----	-----	-----
132	-0.65	-0.69	0.03	0.17	0.64	-0.44	-----	-----	-----	-----	-----	-----
140	0.20	0.45	0.48	0.11	0.15	0.96	-----	-----	-----	-----	-----	-----
150	-0.02	0.36	0.18	-0.20	-0.34	-1.02	-----	-----	-----	-----	-----	-----
158	-0.92	-0.25	-1.01	-0.20	-0.41	0.30	-----	-----	-----	-----	-----	-----
159	0.84	0.28	1.82	0.22	0.22	0.71	-----	-----	-----	-----	-----	-----
169	-0.23	0.01	0.03	0.06	0.08	0.05	-----	-----	-----	-----	-----	-----
171	-0.34	-0.51	-2.50	-0.46	-0.62	-1.81	-----	-----	-----	-----	-----	-----
193	0.14	-0.25	-0.41	-0.10	-0.20	0.96	-----	-----	-----	-----	-----	-----
194	-0.66	0.16	0.69	0.31	0.01	0.25	-----	-----	-----	-----	-----	-----
212	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
217	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
221	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
224	-----	-----	-----	-----	-----	-----	1.45	0.67	0.25	0.04	0.03	1.04
225	-----	-----	-----	-----	-----	-----	1.03	0.53	0.28	1.16	0.47	-0.13
228	-----	-----	-----	-----	-----	-----	-0.73	0.96	0.28	-0.38	-1.50	1.16
230	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
237	-----	-----	-----	-----	-----	-----	-0.73	-0.80	-0.88	-1.19	-1.50	-0.45
238	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
252	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
253	-----	-----	-----	-----	-----	-----	-0.73	0.32	-0.96	-0.77	0.80	-4.63
254	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
256	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
258	0.73	0.63	-0.26	-0.10	0.01	0.80	-----	-----	-----	-----	-----	-----
273	0.89	1.59	-2.05	-0.52	-1.96	-1.27	-----	-----	-----	-----	-----	-----
311	-1.35	-0.60	-2.20	-0.57	-0.27	0.14	-----	-----	-----	-----	-----	-----
312	0.68	-0.51	0.63	0.11	-0.13	0.34	-----	-----	-----	-----	-----	-----
323	-0.87	0.10	1.52	0.53	0.71	-0.81	-----	-----	-----	-----	-----	-----
333	-1.19	-0.51	0.18	0.22	-0.13	-0.15	-----	-----	-----	-----	-----	-----
334	0.94	1.68	0.78	0.11	0.01	0.51	-----	-----	-----	-----	-----	-----
336	-0.44	-0.34	0.18	0.01	-0.55	-0.77	-----	-----	-----	-----	-----	-----
337	-0.34	-1.39	-2.35	-0.88	-0.69	-0.48	-----	-----	-----	-----	-----	-----
338	-0.12	0.45	-0.41	0.32	-0.20	2.20	-----	-----	-----	-----	-----	-----
353	-0.07	-1.12	-1.16	-0.04	0.22	0.14	-----	-----	-----	-----	-----	-----
360	-1.61	-0.34	-1.31	-0.31	-0.06	0.01	-----	-----	-----	-----	-----	-----
399	1.16	0.71	-1.46	-1.20	-1.75	-1.35	-----	-----	-----	-----	-----	-----
430	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
431	-----	-2.26	0.63	0.17	1.14	-----	-----	-----	-----	-----	-----	-----
433	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
444	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
447	-0.76	-0.16	-0.71	-0.04	-0.13	0.55	-----	-----	-----	-----	-----	-----
463	0.46	-0.60	-1.16	-0.20	0.01	-1.14	-----	-----	-----	-----	-----	-----
468	0.25	-0.16	0.93	0.22	1.21	-0.61	-----	-----	-----	-----	-----	-----
485	0.78	-0.34	-0.26	-0.31	-0.23	0.26	-----	-----	-----	-----	-----	-----
494	-0.97	-0.16	-1.01	-0.10	-0.20	0.01	-----	-----	-----	-----	-----	-----
495	-1.13	-0.60	-0.56	0.06	-0.41	-1.02	-----	-----	-----	-----	-----	-----
511	-----	-----	-----	-----	-----	-----	0.33	0.10	1.93	1.55	1.45	0.19
541	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
557	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
592	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
631	-----	-----	-----	-----	-----	-----	2.08	0.53	0.28	0.39	0.80	1.16
657	-1.08	-0.34	-0.56	-0.31	-0.55	-0.53	-----	-----	-----	-----	-----	-----
663	-1.13	0.28	1.52	0.17	0.57	1.33	-----	-----	-----	-----	-----	-----
671	0.94	0.19	-0.71	-0.20	-0.83	-0.24	-----	-----	-----	-----	-----	-----
862	-0.50	-0.42	-1.75	-0.67	-0.97	0.51	-----	-----	-----	-----	-----	-----
868	1.10	0.36	1.22	0.58	1.00	-0.86	-----	-----	-----	-----	-----	-----
875	-----	-----	-----	-----	-----	-----	-0.73	0.10	0.28	0.39	0.14	0.19
902	-----	-----	-----	-----	-----	-----	-1.08	-0.32	-1.37	-0.38	-0.84	0.84
912	-----	-----	-----	-----	-----	-----	-0.73	0.10	13.51	1.16	0.47	1.80
922	-----	-----	-----	-----	-----	-----	0.70	0.14	-1.34	1.19	0.50	-1.38
962	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
974	-----	-----	-----	-----	-----	-----	2.08	-0.75	0.28	0.39	2.44	-0.77
994	-----	-----	-----	-----	-----	-----	0.82	0.96	0.94	0.39	0.14	-1.28
995	-----	-----	-----	-----	-----	-----	-0.38	0.12	-0.38	0.28	-0.04	-1.54
996	-----	-----	-----	-----	-----	-----	-0.02	0.10	0.28	-1.15	0.47	-0.77
1006	0.14	0.01	-0.12	0.22	0.43	0.47	-----	-----	-----	-----	-----	-----
1016	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1017	0.52	0.98	0.18	0.11	0.15	0.34	-----	-----	-----	-----	-----	-----
1033	2.38	0.28	0.93	0.22	0.36	0.92	-----	-----	-----	-----	-----	-----
1038	-0.28	-0.25	-0.12	-0.10	-0.34	-0.48	-----	-----	-----	-----	-----	-----
1047	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

1059	0.04	-0.95	-1.01	-0.41	-0.62	-0.32	-----	-----	-----	-----	-----	-----
1067	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1080	0.30	-0.69	-0.56	-0.10	-0.20	-0.40	-----	-----	-----	-----	-----	-----
1081	1.85	-0.95	0.63	-0.15	-0.13	-0.15	-----	-----	-----	-----	-----	-----
1108	1.26	0.54	1.97	0.53	0.22	1.79	-----	-----	-----	-----	-----	-----
1109	0.89	-0.42	0.93	-0.10	-0.34	-0.07	-----	-----	-----	-----	-----	-----
1126	-0.65	-6.37	6.44	-0.57	-0.41	-0.94	-----	-----	-----	-----	-----	-----
1134	-1.19	0.19	0.33	0.22	-0.20	0.38	-----	-----	-----	-----	-----	-----
1161	0.14	0.71	2.27	-0.15	-0.90	-0.44	-----	-----	-----	-----	-----	-----
1171	-----	-----	-----	-----	-----	-----	-1.27	0.11	1.27	0.96	0.65	2.58
1186	-----	-----	-----	-----	-----	-----	-1.55	0.38	-0.71	-1.70	-1.65	-2.21
1194	-0.81	0.89	-2.75	0.62	1.00	-1.20	-----	-----	-----	-----	-----	-----
1215	-0.87	0.19	-0.86	0.11	0.22	0.05	-----	-----	-----	-----	-----	-----
1231	-0.52	-0.12	-0.71	0.11	-0.09	-0.50	-----	-----	-----	-----	-----	-----
1237	-----	-----	-----	-----	-----	-----	0.82	1.72	1.02	-1.70	0.01	1.35
1257	-0.39	0.36	2.27	0.64	0.57	-0.53	-----	-----	-----	-----	-----	-----
1297	-0.92	0.80	1.08	0.43	0.36	-0.40	-----	-----	-----	-----	-----	-----
1299	-0.44	-0.16	-0.41	0.06	-0.27	2.12	-----	-----	-----	-----	-----	-----
1300	1.05	-0.16	-2.65	-0.46	0.36	-0.40	-1.43	-2.03	-1.29	-0.07	1.06	-0.77
1347	-----	-----	-----	-----	-----	-----	2.08	-0.75	0.28	-1.15	-0.84	-4.63
1348	1.48	0.01	1.37	0.17	0.01	0.88	-----	-----	-----	-----	-----	-----
1385	-----	-----	-----	-----	-----	-----	-1.43	-1.60	-5.51	-5.02	-2.81	-2.70
1395	0.36	0.71	1.22	0.58	0.64	2.78	-----	-----	-----	-----	-----	-----
1397	2.65	-0.16	1.52	0.43	0.29	0.63	-----	-----	-----	-----	-----	-----
1398	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1428	0.89	-0.07	0.93	0.11	-0.20	0.75	-----	-----	-----	-----	-----	-----
1484	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1498	0.68	-0.25	0.33	-0.15	0.15	2.03	-----	-----	-----	-----	-----	-----
1501	-----	-----	-----	-----	-----	-----	-0.59	-0.57	-0.46	0.58	-0.24	1.68
1531	1.16	0.01	1.37	0.53	1.14	1.21	-----	-----	-----	-----	-----	-----
1538	-1.13	-0.16	-0.41	-0.10	-0.20	0.05	-----	-----	-----	-----	-----	-----
1564	0.73	0.10	2.12	0.27	0.15	1.42	-----	-----	-----	-----	-----	-----
1575	1.16	0.63	-6.37	0.27	0.43	-1.02	-----	-----	-----	-----	-----	-----
1590	-0.60	0.45	-3.69	-1.09	-0.97	-1.52	-----	-----	-----	-----	-----	-----
1603	-0.60	0.45	0.78	0.37	0.29	0.05	-----	-----	-----	-----	-----	-----
1613	1.05	2.20	0.03	1.27	2.19	0.09	-----	-----	-----	-----	-----	-----
1616	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1631	-0.07	-0.07	-0.26	-0.04	0.22	-0.28	-----	-----	-----	-----	-----	-----
1634	-1.13	-0.25	-0.41	0.01	0.15	-0.86	-----	-----	-----	-----	-----	-----
1656	0.52	0.10	1.67	0.37	0.43	-1.56	-----	-----	-----	-----	-----	-----
1657	-0.34	0.36	0.63	-0.04	-0.20	0.47	-----	-----	-----	-----	-----	-----
1668	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1669	1.96	0.01	0.78	-0.15	-0.06	-0.24	-----	-----	-----	-----	-----	-----
1677	-1.19	-0.51	1.22	-----	1.35	0.05	-----	-----	-----	-----	-----	-----
1720	0.46	1.33	1.22	0.06	0.50	-0.65	-----	-----	-----	-----	-----	-----
1724	-0.07	0.45	0.48	-0.20	-0.27	-0.48	-----	-----	-----	-----	-----	-----
1730	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1740	-1.08	-0.60	-1.90	-0.36	-0.13	-0.44	-----	-----	-----	-----	-----	-----
1807	-1.51	-0.60	0.63	0.22	-0.69	0.92	-----	-----	-----	-----	-----	-----
1810	0.14	0.54	1.22	0.17	0.43	0.59	-----	-----	-----	-----	-----	-----
1811	0.20	0.01	1.08	0.32	0.71	-1.60	-----	-----	-----	-----	-----	-----
1842	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1849	-0.07	-0.07	-0.12	-0.57	-0.13	0.05	-----	-----	-----	-----	-----	-----
1851	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1854	0.46	0.63	1.82	0.79	0.64	0.71	-----	-----	-----	-----	-----	-----
1936	-0.23	-0.16	-1.31	-0.41	-0.48	-1.06	-----	-----	-----	-----	-----	-----
1937	-0.34	0.10	-0.41	-0.10	-0.06	0.18	-----	-----	-----	-----	-----	-----
1938	0.09	-0.51	-0.71	-0.25	-0.83	-1.48	-----	-----	-----	-----	-----	-----
1951	0.14	0.19	0.03	-0.57	-0.20	-0.03	-----	-----	-----	-----	-----	-----
2129	-1.35	-0.25	-0.12	0.01	-0.13	-0.03	-----	-----	-----	-----	-----	-----
2130	0.09	-0.07	0.03	-0.20	-0.48	0.84	-----	-----	-----	-----	-----	-----

APPENDIX 3

Number of participants per country

```
 1 laboratory in  ARGENTINA
 2 laboratories in AUSTRALIA
 3 laboratories in AUSTRIA
 1 laboratory in  AZERBAIJAN
 2 laboratories in BELGIUM
 1 laboratory in  BOLIVIA
 1 laboratory in  BOSNIA and HERZEGOVINA
 1 laboratory in  BRAZIL
 2 laboratories  in BULGARIA
 2 laboratories in CANADA
 1 laboratory in  CHILE
 2 laboratories in COSTA RICA
 1 laboratory in  CÔTE D'IVOIRE
 1 laboratory in  CROATIA
 1 laboratory in  CYPRUS
 2 laboratories in CZECH REPUBLIC
 2 laboratories in ESTONIA
 5 laboratories in FRANCE
 1 laboratory in  GEORGIA
 3 laboratories in GERMANY
 6 laboratories in GREECE
 1 laboratory in  GUAM
 1 laboratory in  HUNGARY
 1 laboratory in  INDIA
 1 laboratory in  IRELAND
 1 laboratory in  ISRAEL
 1 laboratory in  ITALY
 1 laboratory in  JORDAN
 2 laboratories in KENYA
 3 laboratories in LEBANON
 1 laboratory in  LITHUANIA
 1 laboratory in  MALAYSIA
 1 laboratory in  MAURITIUS
 1 laboratory in  MOROCCO
 1 laboratory in  MOZAMBIQUE
 2 laboratories in NIGERIA
 2 laboratories in P.R. of CHINA
 1 laboratory in  PAKISTAN
 1 laboratory in  PERU
 1 laboratory in  PHILIPPINES
 3 laboratories in POLAND
 1 laboratory in  PORTUGAL
 1 laboratory in  QATAR
 1 laboratory in  REPUBLIC OF DJIBOUTI
 1 laboratory in  REPUBLIC OF GUINEE
 3 laboratories in RUSSIA
 1 laboratory in  SAUDI ARABIA
 1 laboratory in  SENEGAL
 1 laboratory in  SINGAPORE
 2 laboratories in SLOVENIA
 1 laboratory in  SOUTH AFRICA
 5 laboratories in SPAIN
 1 laboratory in  SUDAN
 2 laboratories in SWEDEN
 1 laboratory in  TAIWAN R.O.C.
 1 laboratory in  TANZANIA
 3 laboratories in THAILAND
 6 laboratories in THE NETHERLANDS
 1 laboratory in  TOGO
 1 laboratory in  TUNISIA
 9 laboratories in TURKEY
 1 laboratory in  TURKMENISTAN
 3 laboratories in U.A.E.
10 laboratories in U.S.A.
 9 laboratories in UNITED KINGDOM
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APPENDIX 4

Abbreviations:

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

Literature:

1   iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, January 2010
2   ASTM E178-02
3   ASTM E1301-03
4   ISO13528-05
4   ISO 5725-86
5   ISO 5725, parts 1-6, 1994
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