Results of Proficiency Test Gasoline (ASTM specification) February 2014

Organised by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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1 INTRODUCTION

Since 1995, the Institute organizes a proficiency scheme for Gasoline. During the annual proficiency testing program 2013/2014, it was decided to continue the round robin for the analysis of Gasoline in accordance with the most recent version of the specification ASTM D4814. 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 2014 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 bottle euro 95 Gasoline (labelled #14009) and/or 1*1 litre bottle (± 750 mL filled) euro 95 Gasoline (labelled #14010) 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 agreement with ISO/IEC 17043:2010 (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentially of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

The protocol followed in the organisation of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: 'Protocol for the Organisation, Statistics and Evaluation' of January 2010 (iis-protocol, version 3.2). 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 2013. After transferring 500 liter into a 500 liter mixing vessel and homogenisation, 142 amber glass bottles of 1 litre with approx. 800 mL were filled and labelled #14010 “for DVPE only”. The homogeneity of the subsamples #14010 was checked by determination of Dry Vapour Pressure Equivalent in accordance with ASTM D5191 on 7 stratified randomly selected samples.

	DVPE in psi
Sample #14010-1	8.50
Sample #14010-2	8.44
Sample #14010-3	8.44
Sample #14010-4	8.46
Sample #14010-5	8.47
Sample #14010-6	8.44
Sample #14010-7	8.46

Table 1: homogeneity test results of subsamples #14010

From the remaining material in the 500L mixing vessel, 349 amber glass bottles of 1 litre were filled and labelled #14009.
The homogeneity of the subsamples #14009 was checked by determination of Density @15°C in accordance with ASTM D4052 on 10 stratified randomly selected samples.

	Density @ 15°C in kg/m^3
Sample #14009-1	749.50
Sample #14009-2	749.51
Sample #14009-3	749.59
Sample #14009-4	749.50
Sample #14009-5	749.49
Sample #14009-6	749.53
Sample #14009-7	749.51
Sample #14009-8	749.53
Sample #14009-9	749.55
Sample #14009-10	749.50

Table 2: homogeneity test results of subsamples #14009

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 psi
r (sample #14009)	0.08	----
r (sample #14010)	----	0.059
reference method	ASTM D4052:11	ASTM D5191:13
0.3 x R (ref. method)	0.57	0.096

Table 3: repeatabilities of subsamples #14009 and #14010

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 #14009 and #14010 was assumed.

To the participants, depending on their registration, 2*1 litre bottle of sample #14009 and/or 1*1 litre bottle (± 750 mL filled) of sample #14010 were sent on February 5, 2014.

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 or manual), Existent gum, Lead, Phosphorus, Olefins by FIA, DIPE, Ethanol, ETBE, MTBE, Iso-Butanol, Iso-Propanol, TAME, t-Butanol, Methanol, Oxygen, Oxidation Stability, Total Oxygenates, Sulphur, RON and MON on sample #14009.
On sample #14010, 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 a variant of the Kolmogorov-Smirnov test and by the calculation of skewness and kurtosis. Evaluation of the three normality indicators in combination with the visual evaluation of the graphic Kernel density plot, lead to judgement of the normality being either ‘unknown’, ‘OK’, ‘suspect’ or ‘not OK’. After removal of outliers, this check was repeated. Not all data sets proved to have a normal distribution, in which cases the statistical evaluation of the results should be used with due care.
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 and by R(0.01) for the Rosner General ESD test (see appendix 4, no.15). Stragglers are marked by D(0.05) for the Dixon test, by G(0.05) or DG(0.05) for the Grubbs test and by R(0.05). Both outliers and stragglers were not included in the calculations of the averages and the standard deviations.

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

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

3.2 GRAPHICS

In order to visualise the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for 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). Also a normal Gauss curve was projected over the Kernel Density Graph.

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 whether the reported test result is fit-for-use.
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:

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

4 EVALUATION

In this proficiency test problems were encountered with the despatch of the samples. Several laboratories in Brazil, Chile, Costa Rica, Jordan, Malaysia, Niger, Oman, Russia, Sudan, Tanzania and U.S.A. received the samples late or not at all.
From the 134 participants, 5 participants did not report any results and 24 participants did report the results after the deadline. Finally 129 laboratories did report 1930 numerical results. Observed were 73 outlying results, which is 3.8%. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

4.1 EVALUATION PER TEST

In this section, the results are discussed per sample and per test. The methods, which are used by the various laboratories, are taken into account for explaining the observed differences where possible and applicable. These methods are also in the tables together with the reported data. The abbreviations, used in these tables, are listed in appendix 4.
In the iis PT reports, ASTM methods are referred to with a number (e.g. D2086) and an added designation for the year that the method was adopted or revised (e.g. D2086-08). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D2086-08 (2013)). In the results tables of Appendix 1 only the method number and year of adoption or revision will be used.

Not all data sets proved to have a normal distribution. Not normal (or suspect) distributions were found for sample #14009: Benzene, Density, Distillation Automated (70% evap and

90% evap), Distillation Manual (IBP), Ethanol, Other Oxygenates (ETBE, IPA, MeOH), Sulphur, DVPE (acc. to EPA). In these cases, the statistical evaluation should be used with care.

Remarkably a number of laboratories reported to have used **EN**22854 for several components. The correct method description is **ISO**22854 or EN-ISO-22854. ISO developed the standard ISO22854 and this standard was later adopted by the Comité Européen de Normalisation (CEN) to give EN-ISO-22854.

API Gravity: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of ASTM D4052:11.

Benzene: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D3606:10.

Copper strip: No problems have been observed. All participants agreed on classification 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 ten statistical outliers were observed. The calculated reproducibilities after rejection of the statistical outliers are all in agreement with the requirements of ASTM D86:12 for the automated mode, except for 50% evaporated.
The manual mode determination was not problematic. In total thirteen statistical outliers were observed. The calculated reproducibilities after rejection of the statistical outliers are all in agreement with the requirements of ASTM D86:12 for the manual mode.

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

Existent Gum: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of ASTM D381:12.

Olefins by FIA: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D1319:10. When the ASTM D1319/EN15553 results were evaluated separately, the calculated

reproducibility is larger but still in agreement with the requirements of ASTM D1319:10. Remarkably 5 laboratories reported to have used a GC method.

Aromatics by FIA: This determination was problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of ASTM D1319:10. When the ASTM D1319:10/EN15553 results were evaluated separately, the calculated reproducibility somewhat smaller but still not in agreement with the requirements of ASTM D1319:10. Remarkably 5 laboratories reported to have used a GC method.

Lead: The consensus value of the group was below the application range (2.5 – 25 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 D3231:13. Therefore, no significant conclusions were drawn.

Oxidation stability: The majority of the laboratories agreed that the Oxidation Stability is >360 (or even >900) minutes.

Ethanol: 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 agreement with the requirements of ASTM D4815:13.

MTBE: This determination was problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D4815:13. The large spread may (partly) be explained by the variety of test methods used.
Sixteen laboratories reported to have used to ASTM D4815 and fourteen laboratories reported to have used to EN13132, both calculated reproducibilities are not in agreement with the respective requirements of ASTM D4815 and EN13132.
Sixteen laboratories reported to have used to ISO22854, the calculated reproducibility for these test results is in agreement with the less strict requirements for ISO22854.

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 five observed false positive test results were observed, two for TAME and three for ETBE.

Total Oxygenates: This determination was problematic for number of laboratories. Five statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the estimated requirements of ASTM D4815:13 based on reproducibilities of Ethanol and MTBE.

Oxygen content: 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 D5599:00(2010) and D4815:13.

Sulphur: This determination was problematic for number of laboratories. Seven statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ASTM D5453:12.

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 D2699:13a.

MON: This determination was not problematic. Only one statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of ASTM D2700:13b.

TVP: 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 D5191:13.

DVPE: The conversion of the measured Total Vapour Pressure to the corresponding Dry Vapour Pressure Equivalent (DVPE) as described in ASTM D5191:13 and to the U.S. EPA guidelines (40 CFR Part 80, App. E, Method 3), showed in in total 4 statistical outliers.
Both calculated reproducibilities after rejection of the statistical outliers are in agreement with the respective requirements of ASTM D5191:13 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 #14009 and #14010, 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		-----	61	57.18	0.25	0.49
Benzene		% V/V	68	0.92	0.10	0.17
Copper Strip 3 hrs @ 50°C		-----	109	1	n.a.	n.a.
Density @ 15 °C		kg/m^3	120	749.6	0.6	1.9
Dist. Auto.	IBP	ºC	91	37.0	4.9	5.2
	10%-evap.	ºC	89	52.4	1.4	3.2
	50%-evap.	ºC	91	94.8	2.3	1.9
	70%-evap.	ºC	89	120.5	1.9	5.2
	90%-evap.	ºC	88	147.3	2.0	3.9
	FBP	ºC	92	181.9	6.0	6.8
Dist. Man.	IBP	ºC	29	39.1	4.0	4.0
	10%-evap.	ºC	28	52.5	2.1	3.3
	50%-evap.	ºC	27	94.5	3.9	3.3
	70%-evap.	ºC	24	120.0	3.7	3.6
	90%-evap.	ºC	25	147.8	4.0	4.5
	FBP	ºC	26	181.8	4.9	4.5
Doctor Test		-----	68	Negative	n.a.	n.a.
Existent gum (washed)		mg/100mL	51	0.65	0.87	2.19
Olefins by FIA		%V/V	58	6.5	2.2	2.5
Aromatics by FIA		%V/V	61	33.2	4.6	3.7
Lead as Pb		mg/L	44	<2.5	n.a.	n.a
Phosphorus as P		mg/L	12	<0.2	n.a.	n.a
Oxidation Stability		min	57	>360	n.a.	n.a.
Ethanol		%V/V	65	4.68	0.47	0.55
MTBE		%V/V	64	2.97	0.33	0.25
Total Oxygenates		%M/M	52	7.75	0.57	0.61
Oxygen content		%M/M	60	2.27	0.20	0.26
Sulphur		mg/kg	90	4.91	1.90	1.91
RON		-----	62	95.4	0.8	0.7
MON		-----	44	85.3	0.9	0.9

table 4: performance evaluation sample #14009

* 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	67	9.30	0.26	0.33
DVPE acc. to ASTM D5191	psi	84	8.43	0.24	0.32
DVPE acc. EPA	psi	54	8.57	0.24	0.32

table 5: performance evaluation sample #14010

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 2014 WITH PREVIOUS PTS

	February 2014	*February 2013*	*October 2012*	*February 2012*
Number of rep. participants	129	120	95	119
Number of results reported	1930	2048	1709	1962
Statistical outliers	73	65	55	62
Percentage outliers	3.8%	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 2014*	*February 2013*	*October 2012*	*February 2012*
API Gravity	++	++	+	++
Benzene	+	++	--	++
Density @ 15°C	++	++	--	++
Distillation Automated	+	+	-	++
Distillation Manual	+	+/-	+/-	++
Existent gum (washed)	++	++	(+)	++
Olefins by FIA	+	-	(-)	+
Aromatics by FIA	-	--	+	-
Lead as Pb	n.e.	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

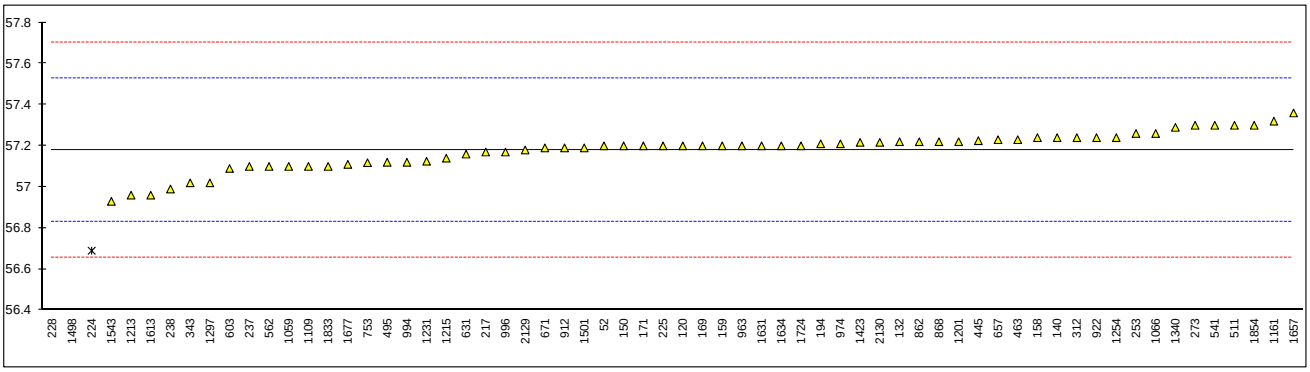
APPENDIX 1

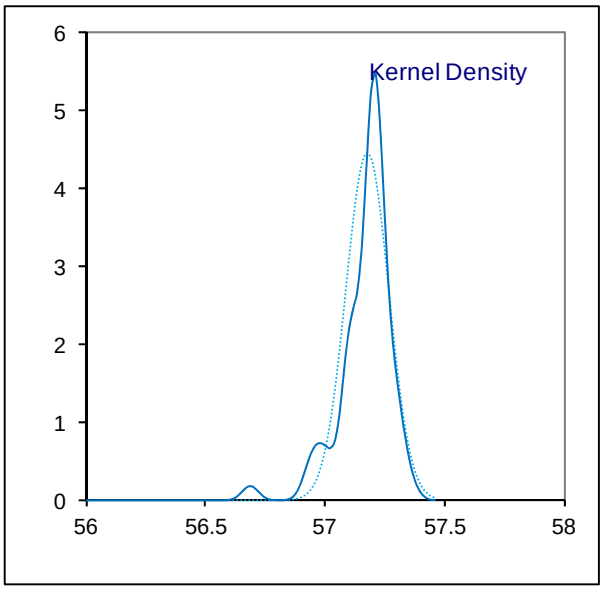
Determination of API Gravity on sample #14009;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4052	57.2		0.12	1017		-----		-----
120	D4052	57.2		0.12	1026		-----		-----
132	D4052	57.22		0.23	1059	D4052	57.10		-0.46
140	D4052	57.24		0.35	1066	D4052	57.26		0.46
150	D4052	57.2		0.12	1080		-----		-----
158	D4052	57.24		0.35	1081		-----		-----
159	D4052	57.20		0.12	1109	D287	57.10		-0.46
169	D4052	57.2		0.12	1126		-----		-----
171	D4052	57.2		0.12	1161	D4052	57.32		0.81
193		-----		-----	1167		-----		-----
194	D4052	57.21		0.17	1186		-----		-----
212		-----		-----	1201	D4052	57.22		0.23
217	D4052	57.17		-0.06	1213	D4052	56.96		-1.26
221		-----		-----	1215	D4052	57.14		-0.23
224	D1298	56.69	G(0.01)	-2.81	1231	D4052	57.125		-0.31
225	D4052	57.2		0.12	1237		-----		-----
228	Conv.	52.70	G(0.01)	-25.75	1254	D4052	57.24		0.35
230		-----		-----	1259		-----		-----
237	D4052	57.10		-0.46	1297	D4052	57.02		-0.92
238	D1298	56.99		-1.09	1299		-----		-----
252		-----		-----	1340	D1298	57.29		0.63
253	D4052	57.26		0.46	1347		-----		-----
254		-----		-----	1348		-----		-----
256		-----		-----	1385		-----		-----
258		-----		-----	1395		-----		-----
273	D4052	57.3		0.69	1397		-----		-----
311		-----		-----	1423	D1298	57.2169		0.21
312	D4052	57.24		0.35	1428		-----		-----
323		-----		-----	1450		-----		-----
333		-----		-----	1484		-----		-----
334		-----		-----	1498	D1298	54.17	G(0.01)	-17.30
335		-----		-----	1501	D4052	57.19		0.06
336		-----		-----	1531		-----		-----
337		-----		-----	1543	D4052	56.93		-1.44
338		-----		-----	1546		-----		-----
340		-----		-----	1556		-----		-----
343	D4052	57.02		-0.92	1564		-----		-----
353		-----		-----	1602		-----		-----
370		-----		-----	1603		-----		-----
431		-----		-----	1613	D4052	56.96		-1.26
444		-----		-----	1631	D4052	57.2		0.12
445	D4052	57.225		0.26	1634	D4052	57.2		0.12
447		-----		-----	1654		-----		-----
463	D4052	57.23		0.29	1657	D4052	57.36		1.04
485		-----		-----	1667		-----		-----
495	D4052	57.12		-0.34	1677	D4052	57.11		-0.40
511	D1298	57.3		0.69	1720		-----		-----
541	D4052	57.3		0.69	1724	D4052	57.2		0.12
557		-----		-----	1730		-----		-----
562	D1298	57.1		-0.46	1740		-----		-----
603	D4052	57.09		-0.52	1746		-----		-----
631	D4052	57.16		-0.11	1776		-----		-----
657	D4052	57.23		0.29	1783		-----		-----
671	D4052	57.19		0.06	1807		-----		-----
753	D4052	57.118		-0.35	1810		-----		-----
862	D4052	57.22		0.23	1811		-----		-----
868	D4052	57.22		0.23	1833	D4052	57.1		-0.46
912	D4052	57.19		0.06	1849		-----		-----
922	D4052	57.24		0.35	1851		-----		-----
963	D4052	57.2		0.12	1854	D4052	57.3		0.69
970		-----		-----	1936		-----		-----
974	D4052	57.21		0.17	1937		-----		-----
994	D4052	57.12		-0.34	1938		-----		-----
995		-----		-----	1948		-----		-----
996	Calc.	57.17		-0.06	1951		-----		-----
1006		-----		-----	2129	D4052	57.18		0.00
1016		-----		-----	2130	D4052	57.217	C	0.21

normality	OK
n	61
outliers	3
mean (n)	57.180
st.dev. (n)	0.0897
R(calc.)	0.251
R(D4052:11)	0.487

Lab 2130 first reported: 46.510

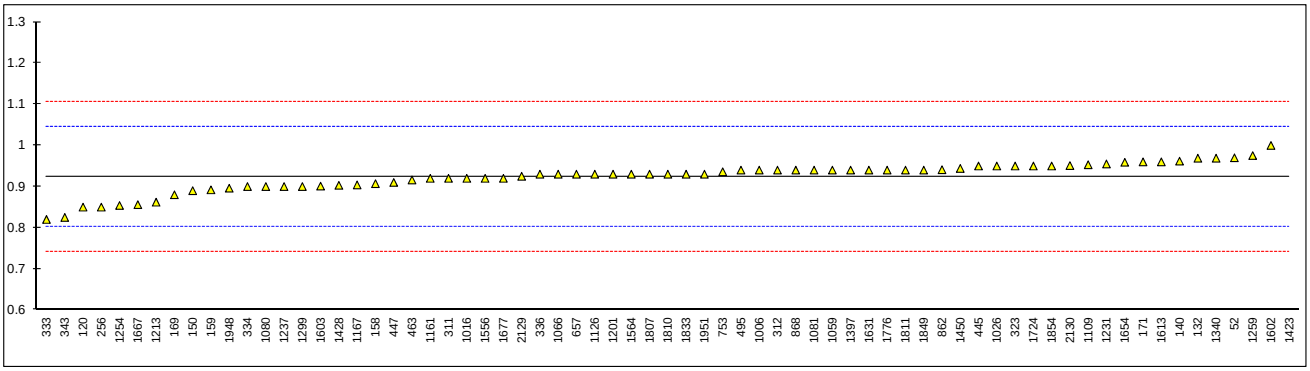


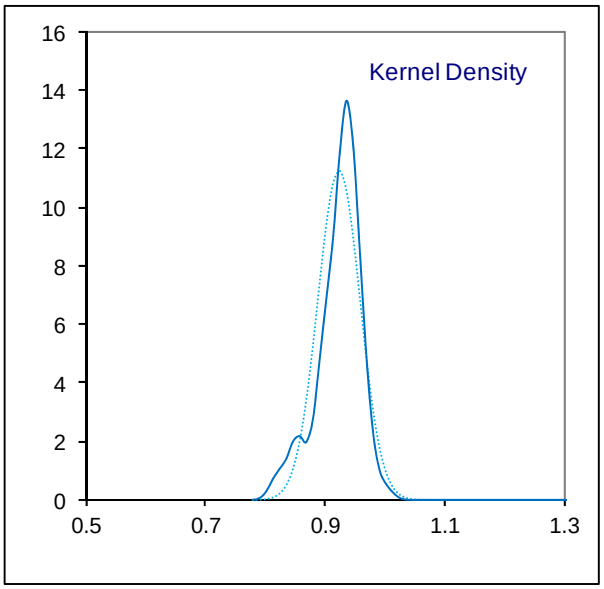


Determination of Benzene on sample #14009; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	INH-14	0.97		0.76	1017		-----		-----
120	D3606	0.85		-1.22	1026	EN12177	0.95		0.43
132	D3606	0.969		0.74	1059	ISO22854	0.94		0.26
140	D3606	0.9618		0.62	1066	EN22854	0.93		0.10
150	D3606	0.89		-0.56	1080	INH-M3	0.90		-0.40
158	D3606	0.907		-0.28	1081	ISO22854	0.94		0.26
159	D3606	0.892		-0.53	1109	D3606	0.953		0.48
169	D3606	0.88		-0.72	1126	in house	0.93		0.10
171	D3606	0.96		0.59	1161	EN22854	0.92		-0.07
193		-----		-----	1167	D3606	0.904		-0.33
194		-----		-----	1186		-----		-----
212		-----		-----	1201	D3606	0.93		0.10
217		-----		-----	1213	D3606	0.862		-1.02
221		-----		-----	1215		-----		-----
224		-----		-----	1231	D5580	0.955		0.51
225		-----		-----	1237	D3606	0.9		-0.40
228		-----		-----	1254	IP429	0.854		-1.15
230		-----		-----	1259	ISO12177	0.9754		0.85
237		-----		-----	1297		-----		-----
238		-----		-----	1299	EN238	0.9		-0.40
252		-----		-----	1340	EN12177	0.969		0.74
253		-----		-----	1347		-----		-----
254		-----		-----	1348		-----		-----
256	D5986	0.85		-1.22	1385		-----		-----
258		-----		-----	1395		-----		-----
273		-----		-----	1397	EN238	0.94		0.26
311	D6839	0.92		-0.07	1423	INH-101	3.6	G(0.01)	44.04
312	EN22854	0.94		0.26	1428	EN12177	0.903		-0.35
323	ISO22854	0.95		0.43	1450	D3606	0.944		0.33
333	EN238	0.82		-1.71	1484		-----		-----
334	EN238	0.9		-0.40	1498		-----		-----
335		-----		-----	1501		-----		-----
336	EN238	0.93		0.10	1531		-----		-----
337		-----		-----	1543		-----		-----
338		-----		-----	1546		-----		-----
340		-----		-----	1556	ISO22854	0.92		-0.07
343	EN238	0.825		-1.63	1564	EN12177	0.93		0.10
353		-----		-----	1602	EN12177	1.0		1.25
370		-----		-----	1603	in house	0.901		-0.38
431		-----		-----	1613	D6839	0.96		0.59
444		-----		-----	1631	ISO22854	0.94		0.26
445	D6839	0.95		0.43	1634		-----		-----
447	IP429	0.91		-0.23	1654	D6729	0.9590		0.58
463	EN238	0.916		-0.13	1657		-----		-----
485		-----		-----	1667	EN12177	0.856		-1.12
495	D6839	0.94		0.26	1677	D3606	0.92		-0.07
511		-----		-----	1720		-----		-----
541		-----		-----	1724	EN22854	0.95		0.43
557		-----		-----	1730		-----		-----
562		-----		-----	1740		-----		-----
603		-----		-----	1746		-----		-----
631		-----		-----	1776	ISO22854	0.94		0.26
657	D5580	0.93		0.10	1783		-----		-----
671		-----		-----	1807	ISO22854	0.93		0.10
753	D6729	0.936		0.20	1810	EN22854	0.93		0.10
862	D5580	0.941		0.28	1811	D3606	0.94		0.26
868	D5580	0.94		0.26	1833	EN22854	0.93		0.10
912		-----		-----	1849	EN12177	0.94		0.26
922		-----		-----	1851		-----		-----
963		-----		-----	1854	EN13132	0.95		0.43
970		-----		-----	1936		-----		-----
974		-----		-----	1937		-----		-----
994		-----		-----	1938		-----		-----
995		-----		-----	1948	D3606	0.896		-0.46
996		-----		-----	1951	IP425	0.93		0.10
1006	D5580	0.94		0.26	2129	D6730	0.925		0.02
1016	ISO22854	0.92		-0.07	2130	D6730	0.951		0.44

normality	suspect
n	68
outliers	1
mean (n)	0.924
st.dev. (n)	0.0354
R(calc.)	0.099
R(D3606:10)	0.170


1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
333 343 120 256 1254 1667 1213 169 150 159 1948 334 1080 1237 1299 1603 1428 1167 158 447 463 1161 311 1016 1556 1677 2129 336 1066 657 1126 1201 1564 1807 1810 1833 1951 753 495 1006 312 868 1081 1059 1397 1631 1776 1811 1849 862 1450 445 1026 323 1724 1854 2130 1109 1231 1654 171 1613 140 132 1340 52 1259 1602 1423


Kernel Density
16
14
12
10
8
6
4
2
0
0.5
0.7
0.9
1.1
1.3

Determination of Copper strip 3hrs/50°C on sample #14009;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D130	1A		-----	1017	D130	1A		-----
120	D130	1A		-----	1026	ISO2160	1B		-----
132	D130	1A		-----	1059	D130	1A		-----
140	D130	1A		-----	1066	D130	1A		-----
150	D130	1A		-----	1080	D130	1A		-----
158	D130	1A		-----	1081	D130	1A		-----
159	D130	1A		-----	1109	D130	1A		-----
169	D130	1A		-----	1126		-----		-----
171	D130	1A		-----	1161	ISO2160	1		-----
193		-----		-----	1167	ISO2160	1A		-----
194	D130	1A		-----	1186	D130	1A		-----
212	D130	1A		-----	1201	D130	1A		-----
217	D130	1A		-----	1213	D130	1A		-----
221	D130	1A		-----	1215		-----		-----
224		-----		-----	1231	D130	1A		-----
225	D130	1A		-----	1237		-----		-----
228	D130	1B		-----	1254	D130	1A		-----
230	D130	1A		-----	1259	ISO2160	1		-----
237	D130	1A		-----	1297	D130	1A		-----
238	D130	1A		-----	1299	D130	1A		-----
252	D130	1A		-----	1340	ISO2160	1A		-----
253	D130	1A		-----	1347	D130	1A		-----
254	D130	1A		-----	1348	D130	1B		-----
256	D130	1A		-----	1385	D130	1A		-----
258	D130	1A		-----	1395	D130	1A		-----
273	D130	1A		-----	1397	D130	1.0		-----
311	D130	1A		-----	1423	D130	1A		-----
312	D130	1A		-----	1428	ISO2160	1A		-----
323	D130	1A		-----	1450		-----		-----
333		-----		-----	1484		-----		-----
334		-----		-----	1498		-----		-----
335	D130	1A		-----	1501	D130	1A		-----
336	D130	1		-----	1531	D130	1B		-----
337	D130	1A		-----	1543		-----		-----
338		-----		-----	1546	ISO2160	1A		-----
340		-----		-----	1556	ISO2160	1		-----
343	D130	1A		-----	1564	D130	1A		-----
353	D130	1A		-----	1602	ISO2160	1A		-----
370		-----		-----	1603	in house	1A		-----
431		-----		-----	1613	D130	1A		-----
444		-----		-----	1631	ISO2160	1		-----
445	D130	1A		-----	1634	D130	1A		-----
447	D130	1A		-----	1654	ISO2160	1A		-----
463	D130	1A		-----	1657	D130	1A		-----
485		-----		-----	1667		-----		-----
495	D130	1		-----	1677	D130	1A		-----
511	D130	1A		-----	1720		-----		-----
541	D130	1A		-----	1724	D130	1A		-----
557		-----		-----	1730		-----		-----
562		-----		-----	1740	D130	1A		-----
603	D130	1A		-----	1746	D130	1A		-----
631	D130	1A		-----	1776	D130	1B		-----
657	D130	1A		-----	1783		-----		-----
671	D130	1A		-----	1807	D130	1A		-----
753	D130	1A		-----	1810		-----		-----
862	D130	1A		-----	1811		-----		-----
868	D130	1A		-----	1833	D130	1		-----
912	D130	1A		-----	1849	D130	1A		-----
922	D130	1A		-----	1851		-----		-----
963	D130	1A		-----	1854	D130	1A		-----
970		-----		-----	1936		-----		-----
974	D130	1A		-----	1937		-----		-----
994	D130	1A		-----	1938		-----		-----
995	D130	1A		-----	1948	D130	1A		-----
996	D130	1A		-----	1951	D130	1		-----
1006	D130	1A		-----	2129	D130	1A		-----
1016	D130	1A		-----	2130	D130	1A		-----

normality	n.a
n	109
outliers	n.a
mean (n)	1
st.dev. (n)	n.a
R(calc.)	n.a
R(D130:12)	n.a

Determination of Density @ 15°C on sample #14009; results in kg/m^3

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4052	749.7		0.11	1017	D4052	749.79		0.24
120	D4052	749.6		-0.04	1026	D4052	749.9	C	0.40
132	D4052	749.56		-0.10	1059	D4052	749.5		-0.18
140	D4052	749.6		-0.04	1066	D4052	749.6		-0.04
150	D4052	749.5		-0.18	1080	D4052	749.5		-0.18
158	D4052	749.4		-0.33	1081	ISO12185	749.6		-0.04
159	D4052	749.6		-0.04	1109	D4052	749.6	C	-0.04
169	D4052	749.5		-0.18	1126	ISO12185	749.76		0.20
171	D4052	749.6		-0.04	1161	D4052	749.4		-0.33
193		-----		-----	1167	ISO12185	749.6		-0.04
194	D4052	749.6		-0.04	1186	D1298	750.1		0.69
212	ISO12185	749.6		-0.04	1201	D4052	749.5		-0.18
217	D4052	749.3		-0.48	1213	D4052	750.13		0.74
221	D4052	749.5		-0.18	1215	D4052	749.93		0.45
224	D1298	751.65	G(0.01)	2.96	1231	D4052	749.93		0.45
225	D4052	749.7		0.11	1237	D4052	749.4		-0.33
228	D4052	749.6		-0.04	1254	D4052	749.52		-0.16
230		-----		-----	1259	D4052	750.1		0.69
237	D4052	749.5		-0.18	1297	D4052	749.9		0.40
238	D1298	750.5	G(0.05)	1.28	1299	D4052	749.8		0.25
252		-----		-----	1340	ISO12185	749.5		-0.18
253	D4052	749.4		-0.33	1347	D4052	750.17		0.80
254	D4052	749.3		-0.48	1348	D4052	750.2		0.84
256	D4052	749.5		-0.18	1385	D4052	751.1	G(0.01)	2.16
258	D1298	749.2		-0.62	1395	D4052	749.4		-0.33
273	D4052	749.4		-0.33	1397	D4052	749.2		-0.62
311	D4052	749.6		-0.04	1423	D1298	749.8	C	0.25
312	D4052	749.5		-0.18	1428	ISO12185	749.6		-0.04
323	D4052	749.3		-0.48	1450	D4052	749.89		0.39
333	D4052	749.3		-0.48	1484		-----		-----
334	D4052	749.6		-0.04	1498	D1298	749.8		0.25
335	D4052	749.7		0.11	1501	D4052	749.6		-0.04
336	D4052	749.8		0.25	1531	D4052	753.0	G(0.01)	4.94
337	D4052	749.7		0.11	1543	D4052	750.2	C	0.84
338	ISO12185	749.7		0.11	1546	ISO12185	749.7		0.11
340	D4052	749.83		0.30	1556	ISO12185	749.78		0.23
343	D4052	749.85		0.33	1564	D4052	749.6	C	-0.04
353	IP365	749.6		-0.04	1602	ISO12185	749.60		-0.04
370		-----		-----	1603	in house	749.72		0.14
431	ISO12185	749.48		-0.21	1613	D4052	750.1		0.69
444	D4052	749.8		0.25	1631	D4052	749.5		-0.18
445	D4052	749.5		-0.18	1634	D4052	749.639		0.02
447	D4052	749.6		-0.04	1654	ISO12185	749.735		0.16
463	D4052	749.53		-0.14	1657	D4052	749.0		-0.92
485	D4052	749.5		-0.18	1667	ISO3675	749.0		-0.92
495	D4052	749.5		-0.18	1677	D4052	749.5		-0.18
511	D4052	749.54		-0.13	1720		-----		-----
541	D4052	749.6		-0.04	1724	D4052	749.66		0.05
557		-----		-----	1730	D4052	749.4		-0.33
562	D1298	750.0		0.55	1740	ISO3675	749.4		-0.33
603	D4052	749.52	C	-0.16	1746	D4052	749.8		0.25
631	D4052	749.8		0.25	1776	ISO12185	749.5		-0.18
657	D4052	749.5		-0.18	1783	D4052	749.8	C	0.25
671	D4052	749.7		0.11	1807	D4052	749.7		0.11
753	D4052	749.5		-0.18	1810	D4052	749.6		-0.04
862	D4052	749.53		-0.14	1811	D4052	749.9		0.40
868	D4052	749.56		-0.10	1833	D4052	749.7		0.11
912	D4052	749.59	C	-0.05	1849	D4052	749.528		-0.14
922	D4052	749.5		-0.18	1851		-----		-----
963	D4052	749.5		-0.18	1854	D4052	749.4		-0.33
970		-----		-----	1936	ISO12185	749.6		-0.04
974	D4052	749.6		-0.04	1937	ISO12185	749.6		-0.04
994	D4052	749.9		0.40	1938	D4052	749.6		-0.04
995	D4052	749.73		0.15	1948	D4052	749.7		0.11
996	D1298	749.8		0.25	1951	D1298	749.6	C	-0.04
1006	D4052	749.8		0.25	2129	D4052	749.5		-0.18
1016		-----		-----	2130	D4052	749.6		-0.04

normality	suspect
n	120
outliers	4
mean (n)	749.63
st.dev. (n)	0.217
R(calc.)	0.61
R(D4052:11)	1.91

First reported Lab 1109: 0.7496 Probably unit error Lab 603: reported: 0.74952

First reported Lab 1543: 5750.2

First reported Lab 1564: 0.7496

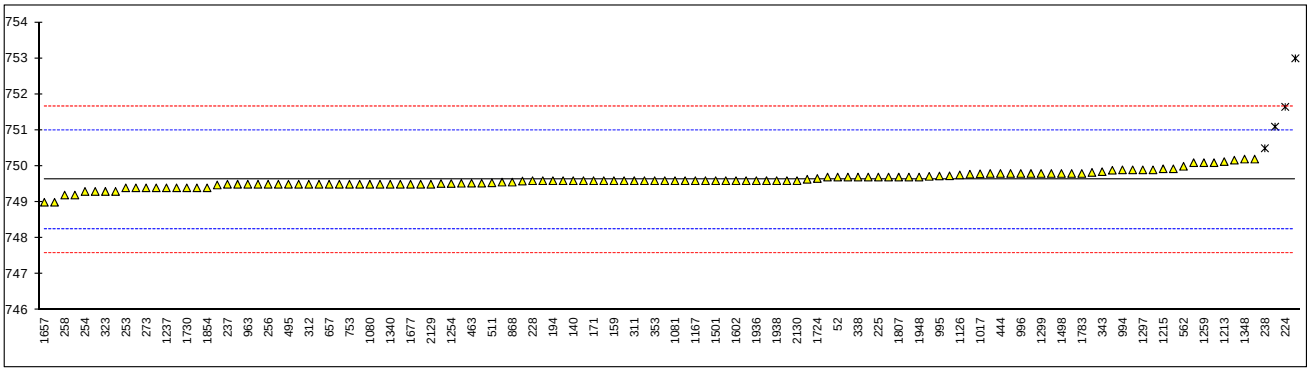
First reported Lab 1783: 0.7498

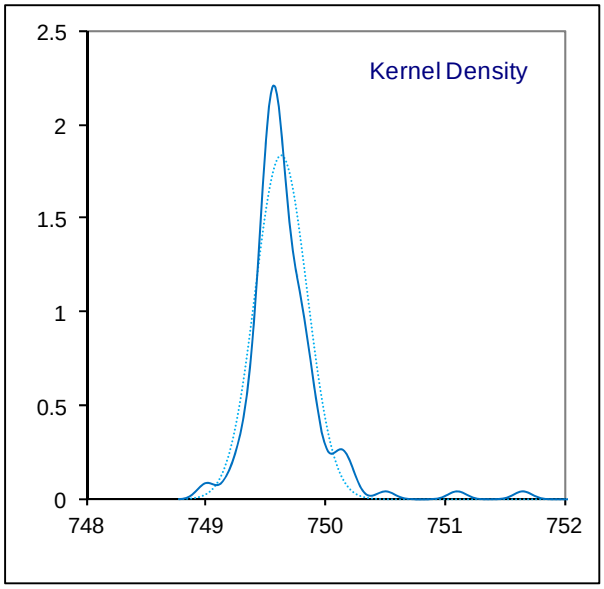
First reported Lab 1951: 0.74961

Probably unit error Lab 912, reported: 0.74959

Probably unit error Lab 1026, reported: 0.7499

Probably unit error Lab 1423, reported: 0.7498





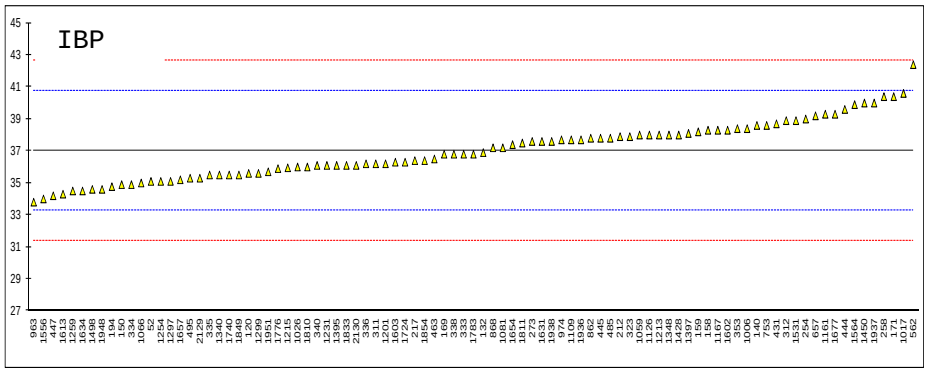
Determination of Distillation ASTM D86 (automated) on sample #14009; results in °C

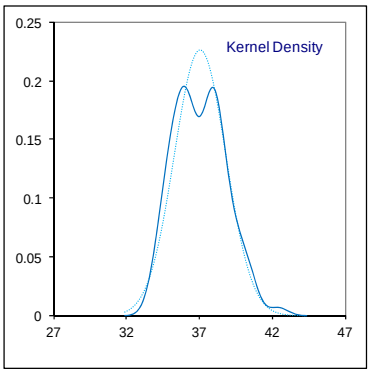
lab	method	IBP	mark	10% eva	mark	50% eva	mark	70% eva	mark	90% eva	mark	FBP	mark
52	D86-A	35.1		51.5		94.3		120.5		147.1		181.2	
120	D86-A	35.6		52.1		94.8		120.3		147.0		179.2	
132	D86-A	36.9		52.7		95.5		121.3		147.9		185.1	
140	D86-A	38.6		53.8		96.4		121.0		147.5		183.1	
150	D86-A	34.9		52.4		94.8		120.6		147.2		180.6	
158	D86-A	38.3		52.9		94.3		108.15	G(0.01)	146.6		184.0	
159	D86-A	38.2		52.7		95.7		121.6		147.8		182.7	
169	D86-A	36.8		52.9		95.3		121.1		148.5		184.9	
171	D86-A	40.4	C	52.9	C	95.6	C	120.7	C	147.5	C	182.4	C
193		-----		-----		-----		-----		-----		-----	
194	D86-A	34.77		52.11		94.17		120.27		147.16		179.64	
212	D86-A	37.9		53.7		96.4		122.8		151.2	R(0.01)	181.2	
217	D86-A	36.4		52.3		94.3		120.5		147.0		179.7	
221		-----		-----		-----		-----		-----		-----	
224		-----		-----		-----		-----		-----		-----	
225		-----		-----		-----		-----		-----		-----	
228		-----		-----		-----		-----		-----		-----	
230		-----		-----		-----		-----		-----		-----	
237		-----		-----		-----		-----		-----		-----	
238		-----		-----		-----		-----		-----		-----	
252		-----		-----		-----		-----		-----		-----	
253		-----		-----		-----		-----		-----		-----	
254	D86	39.0		53.0		97.0		-----		150.0	R(0.05)	183.0	
256		-----		-----		-----		-----		-----		-----	
258	D86-A	40.4		53.4		96.4		122.4		150.7	R(0.05)	184.0	
273	D86-A	37.6		53.0		93.8		120.8		147.2		178.6	
311	D86-A	36.2		52.5		94.4		119.9		147.2		183.2	
312	D86-A	38.9		52.0		95.0		120.8		147.5		182.0	
323	D86-A	37.9		52.2		94.3		120.7		147.4		183.5	
333	D86-A	36.8		52.4		94.9		120.0		146.8		182.5	
334	D86-A	34.9		51.2		95.8		120.3		146.9		182.3	
335	D86-A	35.5		51.6		95.3		120.9		146.5		180.7	
336	D86-A	36.2		52.8		95.7		120.9		147.6		182.2	
337		-----		-----		-----		-----		-----		-----	
338	ISO3405-A	36.8		53.1		95.2		120.8		147.3		179.4	
340	D86-A	36.1		52.0		95.3		121.5		148.1		179.8	
343		-----		-----		-----		-----		-----		-----	
353	IP123-A	38.4		51.7		95.0		120.3		147.5		181.5	
370		-----		-----		-----		-----		-----		-----	
431	ISO3405-A	38.7		52.0		96.4		121.7		150.1	R(0.05)	182.4	
444	D86-A	39.6		55.9	G(0.01)	95.2		118.6		145.9		184.8	C
445	D86-A	37.8		52.8		93.9		120.3		147.4		180.2	
447	D86-A	34.2		52.3		95.1		120.7		147.6		183.4	
463	D86-A	36.5		52.1		95.1		120.9		148.1		185.7	
485	D86-A	37.80		52.05		94.95		120.10		147.35		182.60	
495	D86-A	35.3		51.9		93.5		119.8		146.6		181.3	
511		-----		-----		-----		-----		-----		-----	
541		-----		-----		-----		-----		-----		-----	
557		-----		-----		-----		-----		-----		-----	
562	D86-A	42.4		52.7		95.0		120.1		148.7		184.7	
603		-----		-----		-----		-----		-----		-----	
631		-----		-----		-----		-----		-----		-----	
657	D86-A	39.2		52.3		95.3		121.2		147.7		186.7	
671		-----		-----		-----		-----		-----		-----	
753	D86-A	38.6		52.3		90.4	G(0.01)	117.9	G(0.05)	146.0		176.4	
862	D86-A	37.8		52.0		94.3		120.1		146.8		180.7	
868	D86-A	37.2		52.9		95.2		121.3		148.0		183.4	
912		-----		-----		-----		-----		-----		-----	
922		-----		-----		-----		-----		-----		-----	
963	D86-A	33.8		51.7		94.0		119.4		146.3		181.1	
970		-----		-----		-----		-----		-----		-----	
974	D86-A	37.7		51.9		94.5		120.6		147.7		183.4	
994		-----		-----		-----		-----		-----		-----	
995		-----		-----		-----		-----		-----		-----	
996		-----		-----		-----		-----		-----		-----	
1006	D86-A	38.4		52.1		95.8		121.0		147.3		180.9	
1016		-----		-----		-----		-----		-----		-----	
1017	D86-A	40.6		52.8		93.8		120.1		146.7		181.3	
1026	ISO3405-A	36.0		51.9		93.6		120.1		146.7		180.3	
1059	D86-A	38.0		51.6		94.4		120.2		147.1		180.4	
1066	D86-A	35.0		53.1		96.5		122.0		149.2		182.1	
1080		-----		-----		-----		-----		-----		-----	
1081	D86-A	37.2		52.4		94.5		120.9		146.9		180.2	
1109	D86-A	37.7		51.9		94.6		120.3		146.9		185.4	
1126	D86-A	38.0		52.1		94.8		121.0		148.7		186.0	
1161	ISO3405	39.3		52.5		93.1		119.8		147.2		178.9	

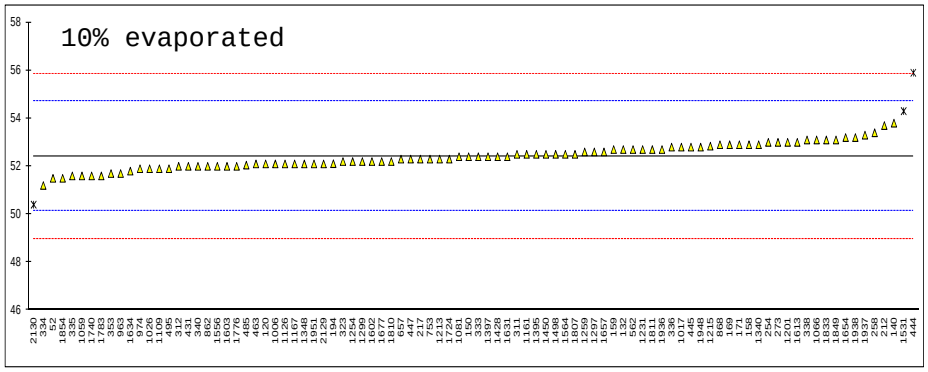
1167	ISO3405-A	38.3		52.1		93.0		119.7		146.4		179.1									
1186		-----		-----		-----		-----		-----		-----									
1201	D86-A	36.2		53.0		94.9		120.7		147.4		179.8									
1213	D86-A	38.0		52.3		94.2		120.2		147.7		179.5									
1215	D86-A	35.95		52.84		94.92		120.93		147.58		181.75									
1231	D86-A	36.1		52.7		95.0		121.1		147.65		179.15									
1237		-----		-----		-----		-----		-----		-----									
1254	D86-A	35.1		52.2		95.2		121.1		148.0		180.1									
1259	D86-A	34.5		52.6		93.4		118.8		145.0		181.9									
1297	D86-A	35.1		52.6		95.1		120.9		147.6		180.7									
1299	D86-A	35.6		52.2		94.0		120.1		147.7		181.9									
1340	D86-A	35.5		52.9		95.4		120.0		147.0		181.8									
1347		-----		-----		-----		-----		-----		-----									
1348	D86-A	38.0		52.1		94.1		119.9		148.9		181.6									
1385		-----		-----		-----		-----		-----		-----									
1395	D86-A	36.1	C	52.5	C	94.4	C	120.2	C	147.1	C	178.3	C								
1397	D86-A	38.1		52.4		95.2		120.5		146.6		182.4									
1423		-----		-----		-----		-----		-----		-----									
1428	ISO3405-A	38.0		52.4		95.4		120.8		147.4		185.3									
1450	D86-A	40.0		52.5		94.2		119.5		146.4		180.5									
1484		-----		-----		-----		-----		-----		-----									
1498	D86-A	34.6		52.5		94.8		120.8		147.7		180.0									
1501		-----		-----		-----		-----		-----		-----									
1531	D86-A	38.9		54.3	G(0.05)	94.4		120.5		147.3		181.5									
1543		-----		-----		-----		-----		-----		-----									
1546		-----		-----		-----		-----		-----		-----									
1556	ISO3405-A	34.0		52.0		95.1		120.9		147.6		182.6									
1564	D86-A	39.9		52.5		95.4		120.2		147.7		185.7									
1602	ISO3405-A	38.3		52.2		95.0		120.1		147.5		181.2									
1603	in house-A	36.3		52.0		94.1		120.0		147.2		180.9									
1613	D86-A	34.3		53.0		96.3		121.8		149.4		179.1									
1631	D86-A	37.6		52.4		94.8		120.5		147.8		184.6									
1634	D86-A	34.5		51.8		93.9		120.0		147.3		180.2									
1654	D86-A	37.4		53.2		94.2		120.7		147.7		182.5									
1657	D86-A	35.2		52.6		95.2		120.5		146.0		181.9									
1667		-----		-----		-----		-----		-----		-----									
1677	D86-A	39.3		52.2		93.9		119.4		146.5		177.7									
1720		-----		-----		-----		-----		-----		-----									
1724	D86-A	36.3		52.3		94.6		120.1		146.8		182.7									
1730		-----		-----		-----		-----		-----		-----									
1740	ISO3405-A	35.5		51.6		94.1		120.2		147.0		182.6									
1746		-----		-----		-----		-----		-----		-----									
1776	ISO3405-A	35.9		52.0		93.5		119.7		147.0		182.5									
1783	D86-A	36.8		51.6		93.9		120.4		147.5		181.6									
1807		-----		52.5		95.5		121.2		146.8		187.6									
1810	D86-A	36.0		52.2		94.4		120.3		147.1		183.6									
1811	D86-A	37.5		52.7		94.8		120.7		147.7		182.0									
1833	D86-A	36.1		53.1		95.7		121		147.3		184.3									
1849	D86-A	35.5		53.1		95.6		121.1		147.6		184.9									
1851		-----		-----		-----		-----		-----		-----									
1854	D86-A	36.4		51.5		94.2		120.7		146.7		182.0									
1936	ISO3405-A	37.7		52.7		94.0		119.9		146.6		182.1									
1937	ISO3405-A	40.0		53.3		94.3		120.3		147.1		180.1									
1938	D86-A	37.6		53.2		94.1		120.6		147.2		180.6									
1948	D86-A	34.6		52.8		94.8		121.0		148.7		180.2									
1951	D86-A	35.7		52.1		94.8		121.0		147.7		183.3									
2129	D86-A	35.3		52.1		95.4		121.1		147.1		182.2									
2130	D86-A	36.1		50.4	G(0.05)	93.1		119.0		145.5		185.9									
	normality	OK		OK		OK		suspect		suspect		OK									
	n	91		89		91		89		88		92									
	outliers	0		3		1		2		4		0									
	mean (n)	37.02		52.41		94.79		120.54		147.29		181.94									
	st.dev. (n)	1.762		0.514		0.818		0.694		0.731		2.134									
	R(calc.)	4.93		1.44		2.29		1.94		2.05		5.97									
	R(D86A:12)	5.25		3.20		1.88		5.23		3.93		6.78									

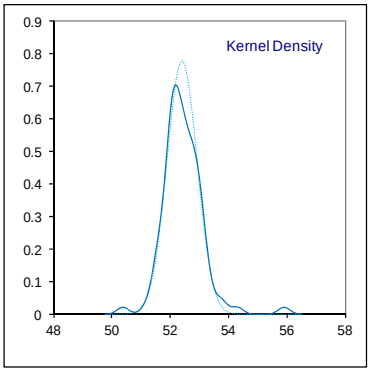
first reported results:

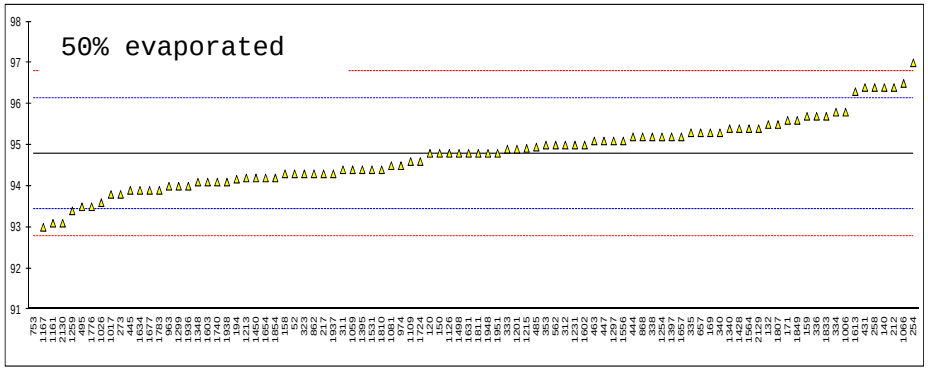
Lab 171: IBP 104.7 ºF, 10% eva 127.9 ºF, 50% eva 205.0 ºF, 70% eva 249.8 ºF , 90% eva 298.4 ºF , FBP 360.3 ºF
Lab 444: FBP 184.8
Lab 1395: IBP 35.9, 10% eva 51.9, 50% eva 92.8, 70% eva 119.6, 90% eva 147.2, FBP 175.1

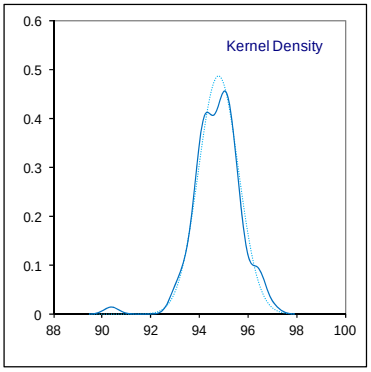

IBP

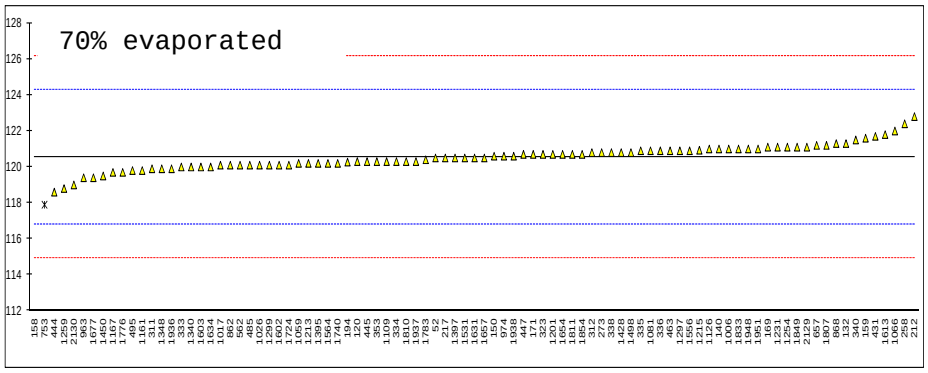

Kernel Density

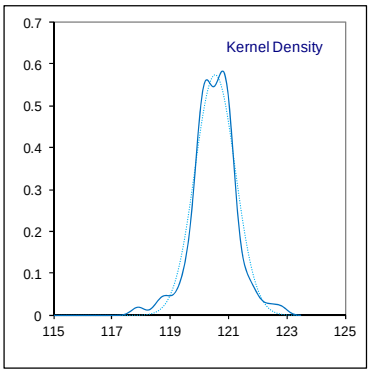

10% evaporated

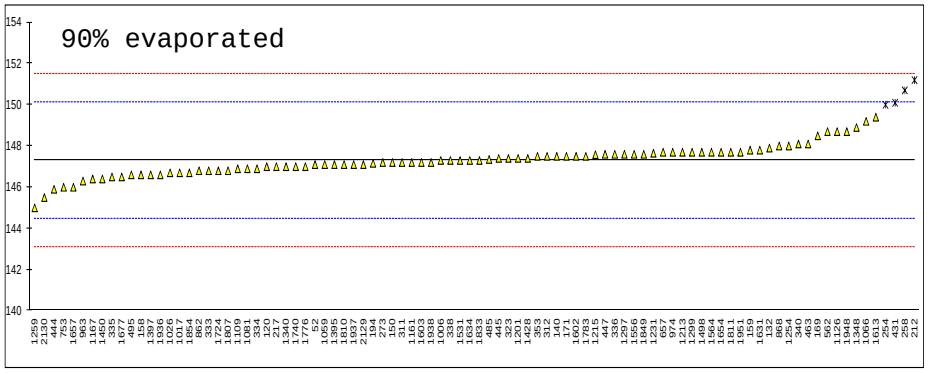

Kernel Density

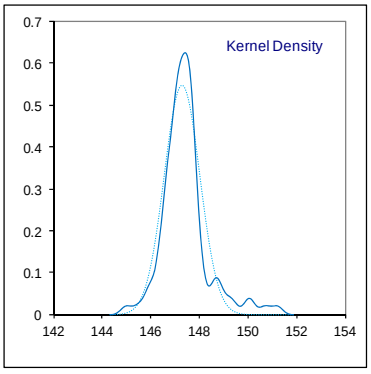

50% evaporated

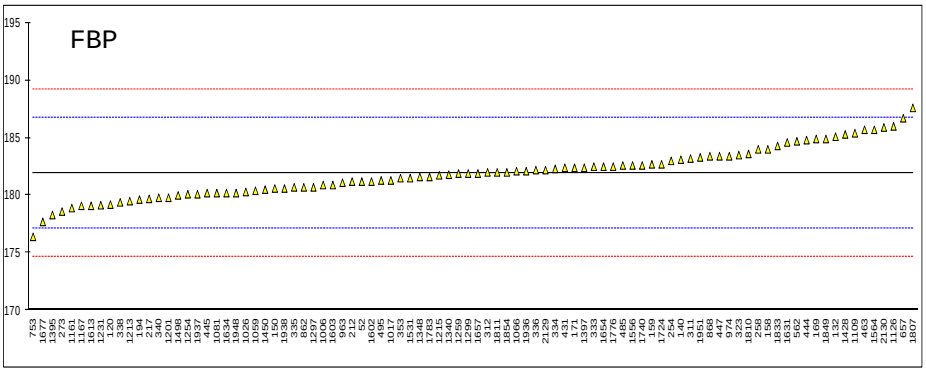

Kernel Density

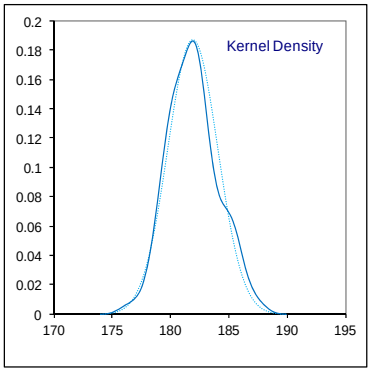

70% evaporated


Kernel Density


90% evaporated


Kernel Density


FBP
195
190
185
180
175
170


Kernel Density
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
170
175
180
185
190
195

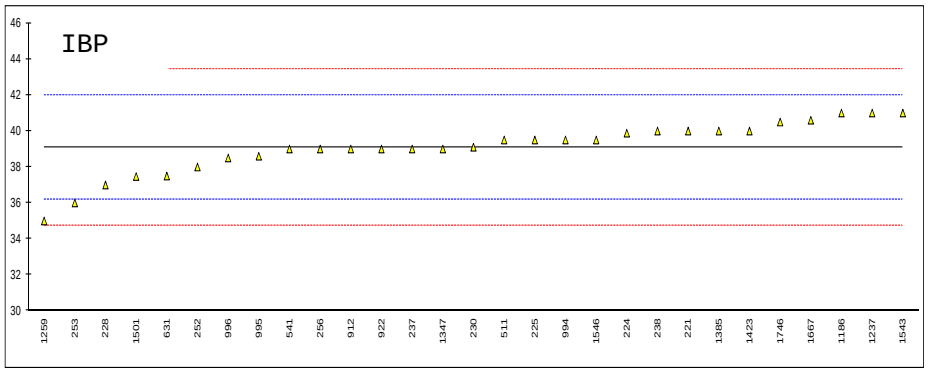
Determination of Distillation ASTM D86 (Manual) on sample #14009; results in °C

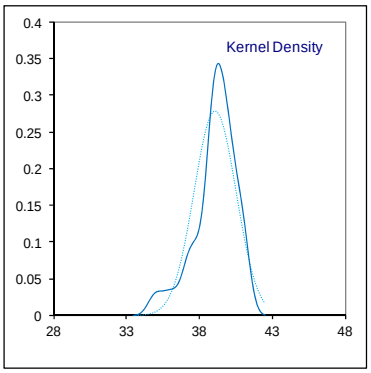
lab	method	IBP	mark	10% eva	mark	50% eva	mark	70% eva	mark	90% eva	mark	FBP	mark
52		-----		-----		-----		-----		-----		-----	
120		-----		-----		-----		-----		-----		-----	
132		-----		-----		-----		-----		-----		-----	
140		-----		-----		-----		-----		-----		-----	
150		-----		-----		-----		-----		-----		-----	
158		-----		-----		-----		-----		-----		-----	
159		-----		-----		-----		-----		-----		-----	
169		-----		-----		-----		-----		-----		-----	
171		-----		-----		-----		-----		-----		-----	
193		-----		-----		-----		-----		-----		-----	
194		-----		-----		-----		-----		-----		-----	
212		-----		-----		-----		-----		-----		-----	
217		-----		-----		-----		-----		-----		-----	
221	D86-M	40.0		54.0		96.0		120.0		148.0		183.0	
224	D86-M	39.88		52.58		91.52		117.45		142.70	DG(0.05)	180.51	
225	D86-M	39.5		51.5		93.0		118.5		147.0		183.0	
228	D86-M	37.0		52.7		89.4	G(0.05)	115.4	DG(0.05)	142.2	DG(0.05)	180.0	
230	D86-M	39.1		51.6		95.3		121.3		148.4		184.6	C
237	D86-M	39.0		51.8		93.6		119.6		145.6		180.0	
238	D86-M	40.0		52.4		94.5		122.5		147.7		180.4	
252	D86-M	38.0		53.0		95.0		-----		148.0		182.0	
253	D86-M	36.0		51.7		92.0		118.0		145.7		180.0	
254		-----		-----		-----		-----		-----		-----	
256	D86-M	39.0		52.0		95.5		-----		149.0		180.0	
258		-----		-----		-----		-----		-----		-----	
273		-----		-----		-----		-----		-----		-----	
311		-----		-----		-----		-----		-----		-----	
312		-----		-----		-----		-----		-----		-----	
323		-----		-----		-----		-----		-----		-----	
333		-----		-----		-----		-----		-----		-----	
334		-----		-----		-----		-----		-----		-----	
335		-----		-----		-----		-----		-----		-----	
336		-----		-----		-----		-----		-----		-----	
337		-----		-----		-----		-----		-----		-----	
338		-----		-----		-----		-----		-----		-----	
340		-----		-----		-----		-----		-----		-----	
343		-----		-----		-----		-----		-----		-----	
353		-----		-----		-----		-----		-----		-----	
370		-----		-----		-----		-----		-----		-----	
431		-----		-----		-----		-----		-----		-----	
444		-----		-----		-----		-----		-----		-----	
445		-----		-----		-----		-----		-----		-----	
447		-----		-----		-----		-----		-----		-----	
463		-----		-----		-----		-----		-----		-----	
485		-----		-----		-----		-----		-----		-----	
495		-----		-----		-----		-----		-----		-----	
511	D86-M	39.5		52.5		95.0		120.0		148.0		181.5	
541	D86-M	39.0		53.0		96.0		121.0		149.0		180.0	
557		-----		-----		-----		-----		-----		-----	
562		-----		-----		-----		-----		-----		-----	
603		-----		-----		-----		-----		-----		-----	
631	D86-M	37.5		51.5		94.5		119.0		147.0		182.0	
657		-----		-----		-----		-----		-----		-----	
671		-----		-----		-----		-----		-----		-----	
753		-----		-----		-----		-----		-----		-----	
862		-----		-----		-----		-----		-----		-----	
868		-----		-----		-----		-----		-----		-----	
912	D86-M	39.0		53.0		97.0		122.0		149.0		180.0	
922	D86-M	39		53		94		122		149		180	
963		-----		-----		-----		-----		-----		-----	
970		-----		-----		-----		-----		-----		-----	
974		-----		-----		-----		-----		-----		-----	
994	D86-M	39.5		50.8		94.9		119.8		148.6		181.0	
995	D86-M	38.6		52.0		94.6		119.8		147.4		181.0	
996	D86-M	38.5		52.0		96.0		120.5		149.5		181.5	
1006		-----		-----		-----		-----		-----		-----	
1016		-----		-----		-----		-----		-----		-----	
1017		-----		-----		-----		-----		-----		-----	
1026		-----		-----		-----		-----		-----		-----	
1059		-----		-----		-----		-----		-----		-----	
1066		-----		-----		-----		-----		-----		-----	
1080		-----		-----		-----		-----		-----		-----	
1081		-----		-----		-----		-----		-----		-----	
1109		-----		-----		-----		-----		-----		-----	
1126		-----		-----		-----		-----		-----		-----	
1161		-----		-----		-----		-----		-----		-----	

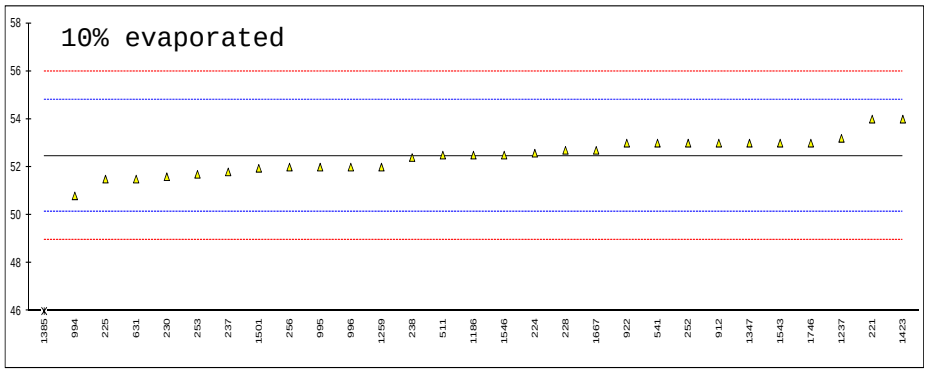
1167		-----	-----		-----		-----		-----		-----
1186	D86-M	41.0	52.5		91.0		115	C,DG(0.05)	141.0	DG(0.05)	164.0	C,G(0.01)
1201		-----	-----		-----		-----		-----		-----	
1213		-----	-----		-----		-----		-----		-----	
1215		-----	-----		-----		-----		-----		-----	
1231		-----	-----		-----		-----		-----		-----	
1237	D86-M	41.0	53.2		95.0		120.0		146.8		186.0	
1254		-----	-----		-----		-----		-----		-----	
1259	D86-M	35.0	52.0		93.0		118.0		146.0		181.0	
1297		-----	-----		-----		-----		-----		-----	
1299		-----	-----		-----		-----		-----		-----	
1340		-----	-----		-----		-----		-----		-----	
1347	D86-M	39	53		94		119		146		172	G(0.01)
1348		-----	-----		-----		-----		-----		-----	
1385	D86-M	40	46	R(0.05)	88	G(0.05)	112	G(0.01)	140	DG(0.05)	181	
1395		-----	-----		-----		-----		-----		-----	
1397		-----	-----		-----		-----		-----		-----	
1423	D86-M	40.00	54.00		95.00		119.00		145.00		183.00	
1428		-----	-----		-----		-----		-----		-----	
1450		-----	-----		-----		-----		-----		-----	
1484		-----	-----		-----		-----		-----		-----	
1498		-----	-----		-----		-----		-----		-----	
1501	D86-M	37.47	51.95		94.40		119.91		147.04		183.72	
1531		-----	-----		-----		-----		-----		-----	
1543	D86-M	41	53		95		119		151		190	G(0.01)
1546	ISO3405-M	39.5	52.5		95.5		121.0		148.0		184.5	
1556		-----	-----		-----		-----		-----		-----	
1564		-----	-----		-----		-----		-----		-----	
1602		-----	-----		-----		-----		-----		-----	
1603		-----	-----		-----		-----		-----		-----	
1613		-----	-----		-----		-----		-----		-----	
1631		-----	-----		-----		-----		-----		-----	
1634		-----	-----		-----		-----		-----		-----	
1654		-----	-----		-----		-----		-----		-----	
1657		-----	-----		-----		-----		-----		-----	
1667	ISO3405-M	40.6	52.7		94.9		121.0		149.1		183.3	
1677		-----	-----		-----		-----		-----		-----	
1720		-----	-----		-----		-----		-----		-----	
1724		-----	-----		-----		-----		-----		-----	
1730		-----	-----		-----		-----		-----		-----	
1740		-----	-----		-----		-----		-----		-----	
1746	D86-M	40.5	53.0		94.0		120.5		148.0		183.5	
1776		-----	-----		-----		-----		-----		-----	
1783		-----	-----		-----		-----		-----		-----	
1807		-----	-----		-----		-----		-----		-----	
1810		-----	-----		-----		-----		-----		-----	
1811		-----	-----		-----		-----		-----		-----	
1833		-----	-----		-----		-----		-----		-----	
1849		-----	-----		-----		-----		-----		-----	
1851		-----	-----		-----		-----		-----		-----	
1854		-----	-----		-----		-----		-----		-----	
1936		-----	-----		-----		-----		-----		-----	
1937		-----	-----		-----		-----		-----		-----	
1938		-----	-----		-----		-----		-----		-----	
1948		-----	-----		-----		-----		-----		-----	
1951		-----	-----		-----		-----		-----		-----	
2129		-----	-----		-----		-----		-----		-----	
2130		-----	-----		-----		-----		-----		-----	
	normality	Susp	OK		OK		OK		OK		OK	
	n	29	28		27		24		25		26	
	outliers	0	1		2		3		4		3	
	mean (n)	39.07	52.46		94.45		119.95		147.75		181.79	
	st.dev. (n)	1.432	0.744		1.395		1.325		1.419		1.732	
	R(calc.)	4.01	2.08		3.91		3.71		3.97		4.85	
	R(D86M:12)	4.05	3.27		3.30		3.57		4.54		4.53	

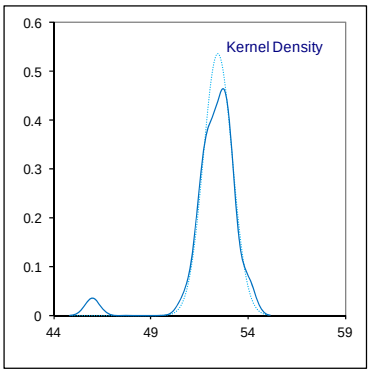
First reported results:

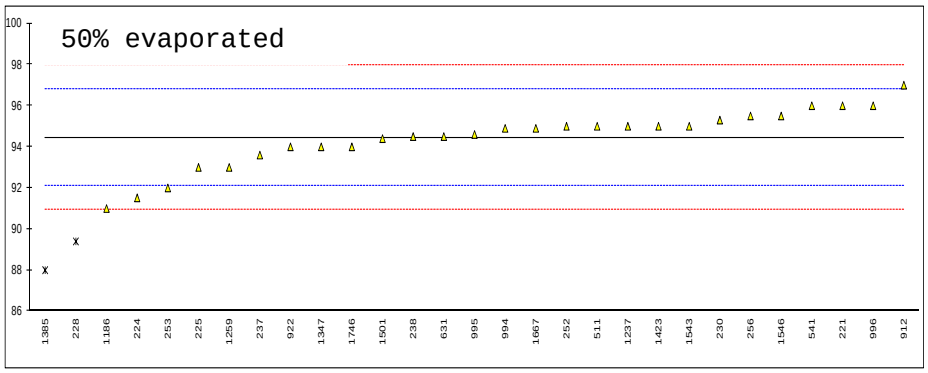
Lab 230: 186.9
Lab 1186:70% eva 115, FBP 164

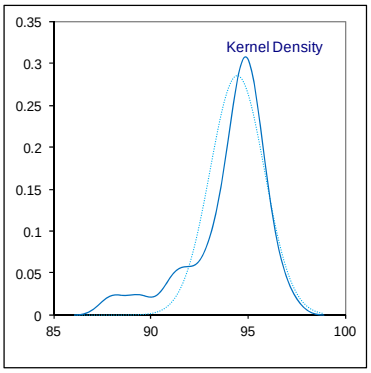

IBP

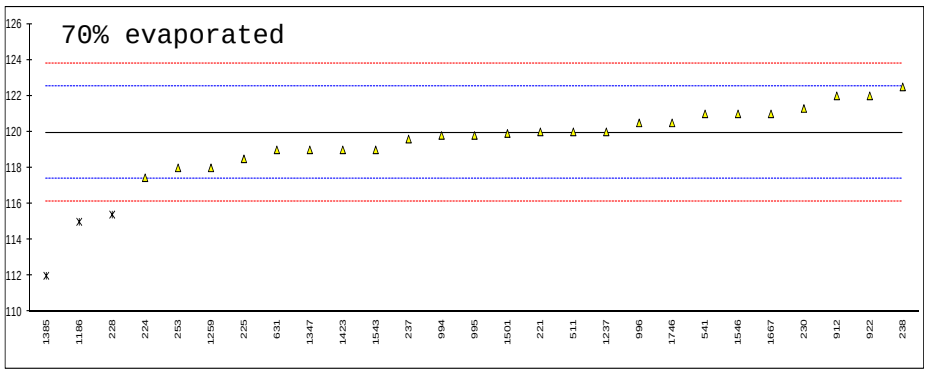

Kernel Density

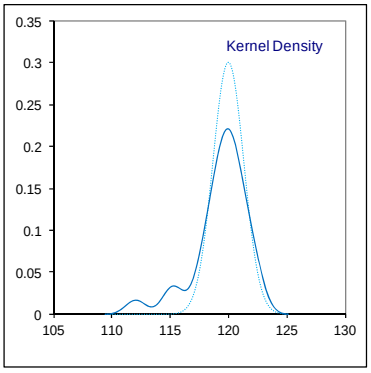

10% evaporated

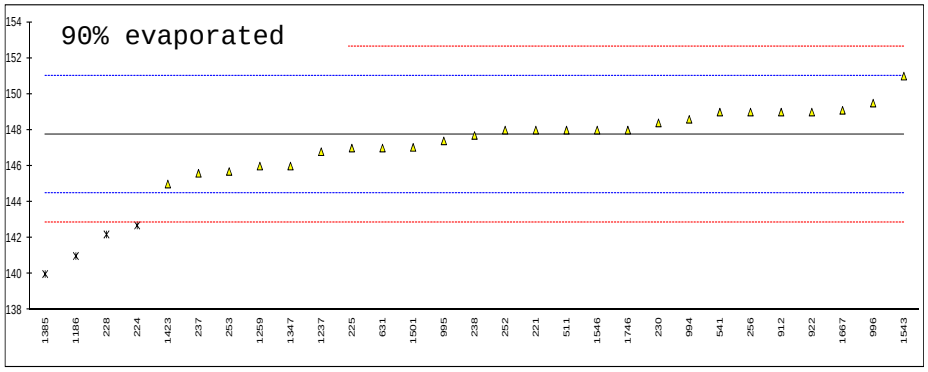

Kernel Density

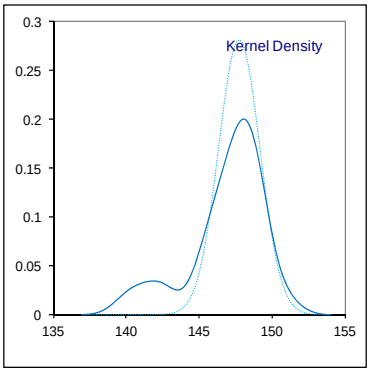

50% evaporated

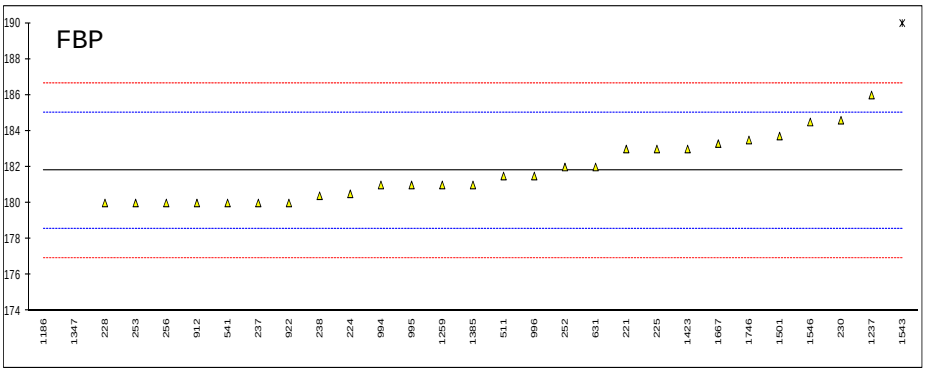

Kernel Density

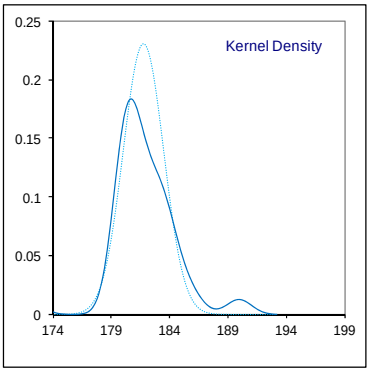

70% evaporated


Kernel Density


90% evaporated


Kernel Density


FBP
190
188
186
184
182
180
178
176
174
1186
1347
228
253
256
912
541
237
922
238
224
994
995
1259
1385
511
996
252
631
221
225
1423
1667
1746
1501
1546
230
1237
1543


Kernel Density
0.25
0.2
0.15
0.1
0.05
0
174
179
184
189
194
199

Determination of Doctor Test on sample #14009;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4952	neg		-----	1017		-----		-----
120	D4952	neg		-----	1026	D4952	neg		-----
132	D4952	neg		-----	1059	D4952	neg		-----
140		-----		-----	1066	D4952	neg		-----
150	D4952	neg		-----	1080		-----		-----
158	D4952	neg		-----	1081	D4952	neg		-----
159	D4952	neg		-----	1109	IP30	neg		-----
169		-----		-----	1126		-----		-----
171	D4952	neg		-----	1161		-----		-----
193		-----		-----	1167		-----		-----
194	D4952	neg		-----	1186		-----		-----
212		-----		-----	1201	D4952	neg		-----
217	D4952	neg		-----	1213	D4952	neg		-----
221		-----		-----	1215		-----		-----
224		-----		-----	1231		-----		-----
225	D4952	neg		-----	1237		-----		-----
228		-----		-----	1254	D4952	neg		-----
230	D4952	neg		-----	1259	D4952	neg		-----
237	D4952	neg		-----	1297		-----		-----
238	D4952	neg		-----	1299		-----		-----
252	D4952	neg		-----	1340	D4952	neg		-----
253		-----		-----	1347		-----		-----
254	D4952	neg		-----	1348		-----		-----
256	D4952	neg		-----	1385		-----		-----
258	D4952	neg		-----	1395		-----		-----
273	D4952	neg		-----	1397	D4952	neg		-----
311	D4952	neg		-----	1423		-----		-----
312	IP30	neg		-----	1428	D4952	neg		-----
323	D4952	neg		-----	1450		-----		-----
333		-----		-----	1484		-----		-----
334		-----		-----	1498		-----		-----
335		-----		-----	1501	D4952	neg		-----
336		-----		-----	1531		-----		-----
337		-----		-----	1543		-----		-----
338		-----		-----	1546		-----		-----
340	D4952	neg		-----	1556	D4952	neg		-----
343		-----		-----	1564		-----		-----
353		-----		-----	1602		-----		-----
370		-----		-----	1603	in house	neg		-----
431		-----		-----	1613	IP30	neg		-----
444		-----		-----	1631	D4952	neg		-----
445	D4952	neg		-----	1634		-----		-----
447	D4952	neg		-----	1654		-----		-----
463	D4952	neg		-----	1657	D4952	neg	reported: -ve	-----
485		-----		-----	1667		-----		-----
495	D4952	neg		-----	1677	D4952	neg		-----
511		-----		-----	1720		-----		-----
541	IP30	neg		-----	1724	IP30	neg		-----
557		-----		-----	1730		-----		-----
562		-----		-----	1740	D4952	neg		-----
603		-----		-----	1746	D4952	neg		-----
631		-----		-----	1776	D4952	neg		-----
657	IP30	neg		-----	1783		-----		-----
671		-----		-----	1807		-----		-----
753		-----		-----	1810		-----		-----
862	D4952	neg		-----	1811	D4952	neg		-----
868	D4952	neg		-----	1833	D4952	neg		-----
912	D4952	neg		-----	1849	D4952	neg		-----
922	D4952	neg		-----	1851		-----		-----
963	D4952	neg		-----	1854	D4952	neg		-----
970		-----		-----	1936		-----		-----
974	D4952	neg		-----	1937		-----		-----
994	D4952	neg		-----	1938		-----		-----
995	D4952	neg		-----	1948		-----		-----
996	D4952	neg		-----	1951	IP30	neg		-----
1006		-----		-----	2129	IP30	neg		-----
1016	D4952	neg		-----	2130	IP30	neg		-----

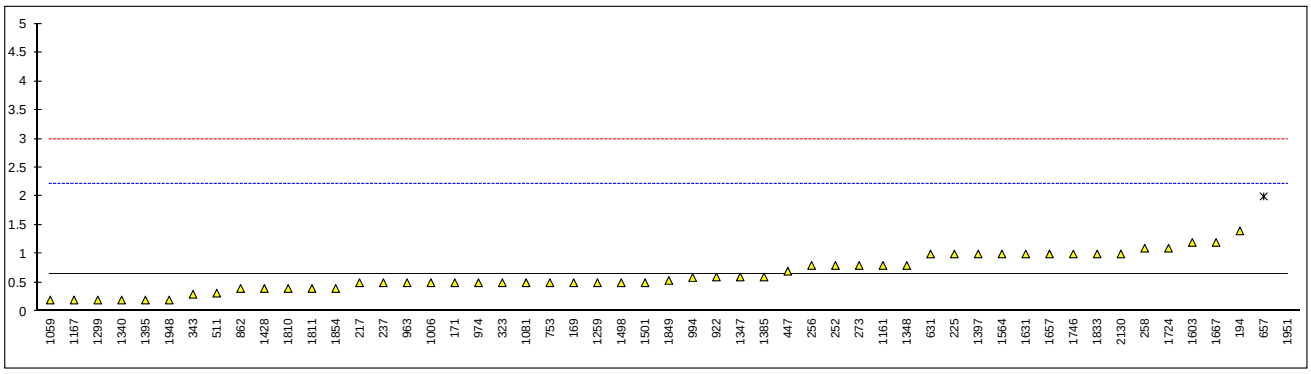
normality	n.a.
n	68
outliers	n.a.
mean (n)	negative
st.dev. (n)	n.a.
R(calc.)	n.a.
R(D4952:12)	n.a.

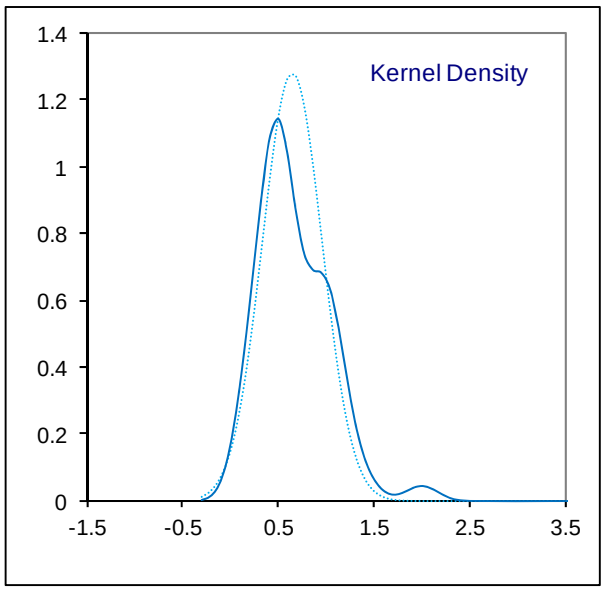
Determination of Existent Gum (washed) on sample #14009; results in mg/100mL

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D381	<1		-----	1017	D381	<0.5		-----
120	D381	<0.5		-----	1026	ISO6246	<0.5		-----
132	D381	<0.5		-----	1059	D381	0.2		-0.57
140		-----		-----	1066		-----		-----
150	D381	<0.5		-----	1080		-----		-----
158		-----		-----	1081	D381	0.5		-0.19
159		-----		-----	1109	D381	<0.5		-----
169	D381	0.5		-0.19	1126		-----		-----
171	D381	0.5		-0.19	1161	ISO6246	0.8		0.20
193		-----		-----	1167	D381	0.2		-0.57
194	D381	1.4		0.96	1186		-----		-----
212		-----		-----	1201	D381	<0.5		-----
217	D381	0.5		-0.19	1213	D381	<0.5		-----
221		-----		-----	1215		-----		-----
224		-----		-----	1231	D381	<0.5		-----
225	D381	1.0		0.45	1237		-----		-----
228		-----		-----	1254	D381	<0.5		-----
230		-----		-----	1259	ISO6246	0.5		-0.19
237	D381	0.5		-0.19	1297		-----		-----
238		-----		-----	1299	D381	0.2		-0.57
252	D381	0.8		0.20	1340	ISO6246	0.2		-0.57
253	D381	<0.1		-----	1347	D381	0.6		-0.06
254		-----		-----	1348	D381	0.8		0.20
256	D381	0.8		0.20	1385	D381	0.6		-0.06
258	D381	1.1		0.58	1395	D381	0.2		-0.57
273	D381	0.8		0.20	1397	D381	1.0		0.45
311	D381	<0.5		-----	1423		-----		-----
312	D381	<0.5		-----	1428	ISO6246	0.4		-0.31
323	D381	0.5		-0.19	1450		-----		-----
333		-----		-----	1484		-----		-----
334		-----		-----	1498	D381	0.5		-0.19
335		-----		-----	1501	D381	0.5		-0.19
336		-----		-----	1531		-----		-----
337		-----		-----	1543		-----		-----
338		-----		-----	1546		-----		-----
340	ISO6246	<1		-----	1556	ISO6246	<1		-----
343	D381	0.3		-0.44	1564	D381	1	C	0.45
353	D381	<1		-----	1602		-----		-----
370		-----		-----	1603	in house	1.2		0.71
431		-----		-----	1613	D381	<0.5		-----
444		-----		-----	1631	ISO6246	1.0		0.45
445	D381	<0.5		-----	1634		-----		-----
447	D381	0.7		0.07	1654		-----		-----
463	D381	<0.5		-----	1657	D381	1.0		0.45
485		-----		-----	1667	ISO6246	1.2		0.71
495	D381	<1		-----	1677	D381	<0.5		-----
511	D381	0.32		-0.42	1720		-----		-----
541		-----		-----	1724	D381	1.1		0.58
557		-----		-----	1730		-----		-----
562		-----		-----	1740		-----		-----
603		-----		-----	1746	D381	1.0		0.45
631	D381	1.0		0.45	1776		-----		-----
657	D381	2.0	G(0.01)	1.73	1783		-----		-----
671	D381	<0.5		-----	1807	D381	<0.5		-----
753	D381	0.5		-0.19	1810	D381	0.4		-0.31
862	D381	0.4		-0.31	1811	D381	0.4		-0.31
868	D381	<0.5		-----	1833	ISO6246	1.0		0.45
912	D381	<0.5		-----	1849	D381	0.54		-0.14
922	D381	0.60		-0.06	1851		-----		-----
963	D381	0.50		-0.19	1854	D381	0.4		-0.31
970		-----		-----	1936		-----		-----
974	D381	0.5		-0.19	1937		-----		-----
994	D381	0.59		-0.07	1938		-----		-----
995		-----		-----	1948	D381	0.2		-0.57
996		-----		-----	1951	D381	22	G(0.01)	27.3
1006	D381	0.5		-0.19	2129	D381	<1		-----
1016		-----		-----	2130	D381	1		0.45

normality	OK
n	51
outliers	2
mean (n)	0.646
st.dev. (n)	0.3119
R(calc.)	0.873
R(D381:12)	2.188

first reported Lab 1564: 33


5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1059 1167 1299 1340 1395 1948 343 511 862 1428 1810 1811 1854 217 237 963 1006 171 974 323 1081 753 169 1259 1498 1501 1849 994 922 1347 1385 447 256 252 273 1161 1348 631 225 1397 1564 1631 1657 1746 1833 2130 258 1724 1603 1667 194 657 1951


Kernel Density
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-1.5
-0.5
0.5
1.5
2.5
3.5

Determination of Olefins by FIA on sample #14009; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1017	D1319	5.20		-1.49
120	D1319	5.6		-1.05	1026	D6729	5.8		-0.83
132	D1319	7.03		0.53	1059	D1319	7.4	C	0.94
140		-----		-----	1066		-----		-----
150	D1319	8.0		1.61	1080	INH-M3	6.80		0.28
158	D1319	7.1		0.61	1081	ISO22854	7.15		0.67
159	D1319	5.8		-0.83	1109	D1319	4.48	C	-2.29
169	D1319	7.7		1.27	1126	in house	7.20		0.72
171	D1319	17.8	G(0.01)	12.44	1161	EN22854	6.79		0.27
193		-----		-----	1167	ISO22854	6.65		0.11
194	D1319	6.84		0.32	1186		-----		-----
212		-----		-----	1201		-----		-----
217		-----		-----	1213	D1319	4.93		-1.79
221		-----		-----	1215		-----		-----
224		-----		-----	1231		-----		-----
225	D1319	6.6		0.06	1237		-----		-----
228		-----		-----	1254	D1319	6.78		0.26
230		-----		-----	1259	D1319	6.8		0.28
237	D1319	7.45		1.00	1297		-----		-----
238		-----		-----	1299		-----		-----
252		-----		-----	1340	D1319	6.82		0.30
253	D1319	3.68	G(0.05)	-3.17	1347		-----		-----
254		-----		-----	1348		-----		-----
256		-----		-----	1385		-----		-----
258		-----		-----	1395		-----		-----
273	D1319	6.7	C	0.17	1397	D1319	6.3		-0.27
311	D1319	5.5		-1.16	1423		-----		-----
312	D1319	6.1		-0.50	1428	EN15553	6.9		0.39
323	ISO22854	6.9		0.39	1450		-----		-----
333	D1319	4.8		-1.93	1484		-----		-----
334		-----		-----	1498		-----		-----
335		-----		-----	1501		-----		-----
336		-----		-----	1531		-----		-----
337		-----		-----	1543		-----		-----
338		-----		-----	1546		-----		-----
340		-----		-----	1556	ISO22854	6.98		0.48
343	D1319	5.85		-0.77	1564	D1319	7.5		1.05
353		-----		-----	1602	EN15553	6.0		-0.61
370		-----		-----	1603		-----		-----
431		-----		-----	1613	D6839	6.01		-0.59
444		-----		-----	1631	D1319	6.51		-0.04
445	D1319	5.20	C	-1.49	1634		-----		-----
447	D1319	5.5		-1.16	1654		-----		-----
463	D1319	7.6		1.16	1657	D1319	6.64		0.10
485		-----		-----	1667		-----		-----
495	D1319	7.5		1.05	1677	D1319	5.2		-1.49
511		-----		-----	1720		-----		-----
541		-----		-----	1724	D1319	6.41		-0.15
557		-----		-----	1730		-----		-----
562		-----		-----	1740		-----		-----
603		-----		-----	1746		-----		-----
631	D1319	5.33		-1.35	1776	ISO22854	6.9		0.39
657	D1319	7.5		1.05	1783		-----		-----
671		-----		-----	1807		-----		-----
753		-----		-----	1810		-----		-----
862	D1319	6.51		-0.04	1811		-----		-----
868	D1319	6.96		0.46	1833	D1319	7.22		0.74
912	D1319	6.095		-0.50	1849	EN15553	6.80		0.28
922	D1319	6.48		-0.08	1851		-----		-----
963		-----		-----	1854	D1319	7.00		0.50
970		-----		-----	1936		-----		-----
974	D1319	7.16		0.68	1937		-----		-----
994		-----		-----	1938		-----		-----
995		-----		-----	1948	D1319	6.68		0.15
996		-----		-----	1951	IP566	7.04		0.54
1006	D6730	7.19		0.71	2129	D1319	6.8		0.28
1016		-----		-----	2130	D1319	7.1		0.61

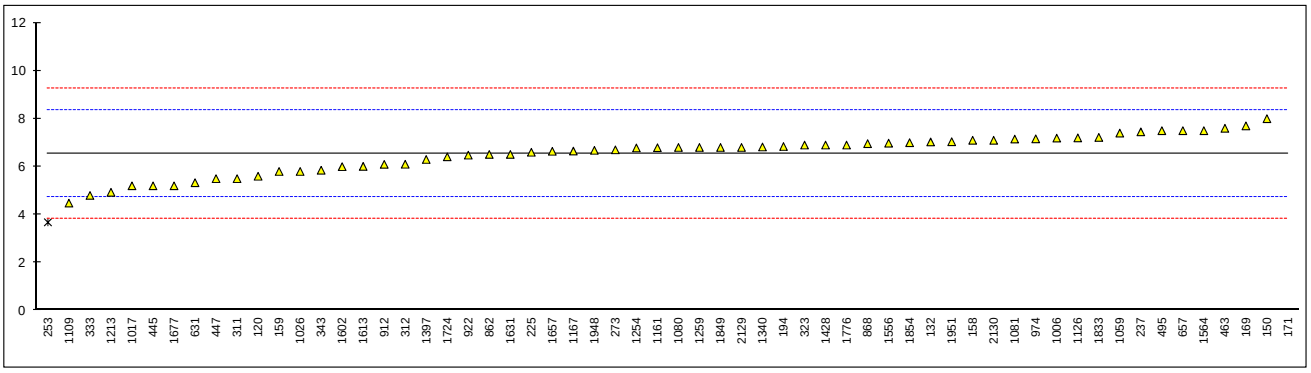
				Only D1319/IP156 data/ EN15553
	normality	OK		OK
	n	58		47
	outliers	2		1
	mean (n)	6.55		6.43
	st.dev. (n)	0.796		0.942
	R(calc.)	2.23		2.64
	R(D1319:10)	2.53		2.50

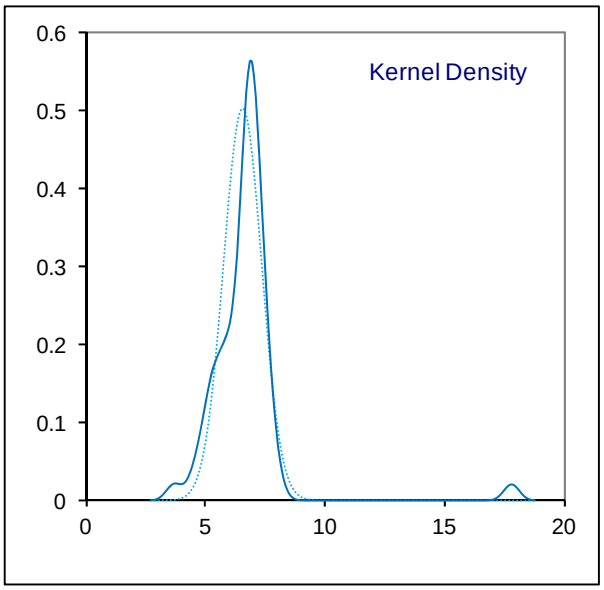
first reported Lab 273: 9.7

first reported Lab 445:32.65

first reported Lab 1059: 10.9

first reported Lab 1109: 32.08





Determination of Aromatics by FIA on sample #14009; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1017	D1319	34.72		1.17
120	D1319	34.0		0.62	1026	D6729	32.8		-0.29
132	D1319	32.72		-0.35	1059	D1319	34.8	C	1.23
140		-----		-----	1066		-----		-----
150	D1319	35.4		1.68	1080	INH-M3	31.10		-1.57
158	D1319	31.0		-1.65	1081	ISO22854	31.69		-1.13
159	D1319	33.2		0.02	1109	D1319	32.08	C	-0.83
169	D1319	33.6		0.32	1126	in house	31.47		-1.29
171	D1319	23.6	G(0.01)	-7.25	1161	EN22854	31.53		-1.25
193		-----		-----	1167	ISO22854	31.32		-1.41
194	D1319	34.58		1.06	1186		-----		-----
212		-----		-----	1201		-----		-----
217		-----		-----	1213	D1319	33.12		-0.05
221		-----		-----	1215		-----		-----
224		-----		-----	1231	D5580	31.96		-0.92
225	D1319	35.5		1.76	1237		-----		-----
228		-----		-----	1254	D1319	34.58		1.06
230		-----		-----	1259	D1319	34.5		1.00
237	D1319	33.4		0.17	1297		-----		-----
238		-----		-----	1299		-----		-----
252		-----		-----	1340	D1319	31.875		-0.99
253	D1319	35.30		1.60	1347		-----		-----
254		-----		-----	1348		-----		-----
256	D1319	34.6		1.07	1385		-----		-----
258		-----		-----	1395		-----		-----
273	D1319	37.8		3.50	1397	D1319	34.5		1.00
311	D1319	33.7		0.39	1423		-----		-----
312	D1319	33.1		-0.06	1428	EN15553	34.1		0.70
323	ISO22854	31.7		-1.12	1450		-----		-----
333	D1319	32.9		-0.21	1484		-----		-----
334		-----		-----	1498		-----		-----
335		-----		-----	1501		-----		-----
336		-----		-----	1531		-----		-----
337		-----		-----	1543		-----		-----
338		-----		-----	1546		-----		-----
340		-----		-----	1556	ISO22854	31.24		-1.47
343	D1319	31.65		-1.16	1564	D1319	31.4		-1.35
353		-----		-----	1602	EN15553	32.7		-0.36
370		-----		-----	1603		-----		-----
431		-----		-----	1613	D6839	31.88		-0.98
444		-----		-----	1631	D1319	32.22		-0.73
445	D1319	32.65	C	-0.40	1634		-----		-----
447	D1319	32.4		-0.59	1654		-----		-----
463	D1319	33.7		0.39	1657	D1319	35.15		1.49
485		-----		-----	1667		-----		-----
495	D1319	30.6		-1.95	1677	D1319	32.1	C	-0.82
511		-----		-----	1720		-----		-----
541		-----		-----	1724	D1319	32.29		-0.67
557		-----		-----	1730		-----		-----
562		-----		-----	1740		-----		-----
603		-----		-----	1746		-----		-----
631	D1319	31.50		-1.27	1776	ISO22854	31.8		-1.04
657	D1319	37.1		2.97	1783		-----		-----
671		-----		-----	1807		-----		-----
753		-----		-----	1810		-----		-----
862	D1319	33.60		0.32	1811		-----		-----
868	D1319	35.73		1.93	1833	D1319	32.56		-0.47
912	D1319	36.105		2.21	1849	EN15553	34.78		1.21
922	D1319	33.42		0.18	1851		-----		-----
963		-----		-----	1854	D1319	31.74		-1.09
970		-----		-----	1936		-----		-----
974	D1319	32.58		-0.45	1937		-----		-----
994		-----		-----	1938		-----		-----
995		-----		-----	1948	D1319	31.91		-0.96
996		-----		-----	1951	IP566	31.15		-1.54
1006	D6730	32.19		-0.75	2129	D1319	35.4		1.68
1016		-----		-----	2130	D1319	33.8		0.47

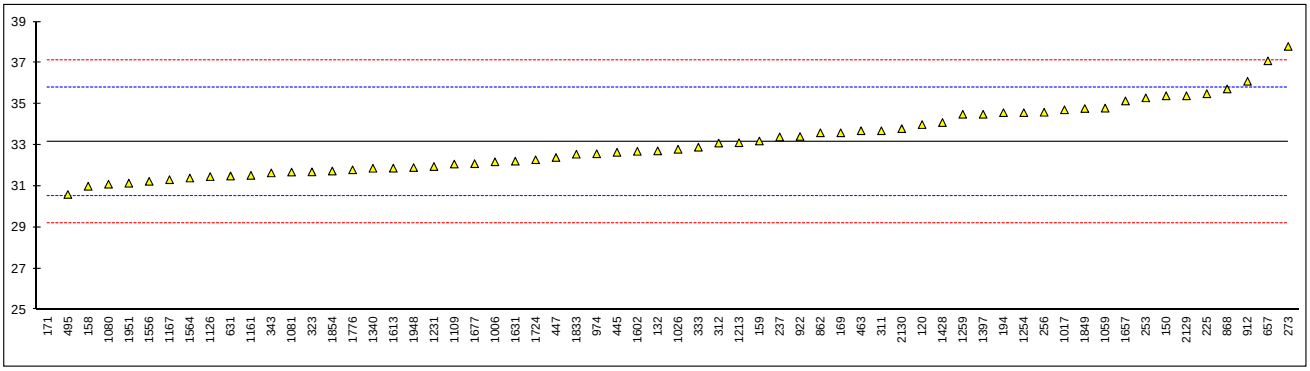
			Only D1319 data/EN15553	
	normality	OK	OK	
	n	61	48	
	outliers	1	1	
	mean (n)	33.18	33.59	
	st.dev. (n)	1.626	1.589	
	R(calc.)	4.55	4.45	
	R(D1319:10)	3.70	3.70	

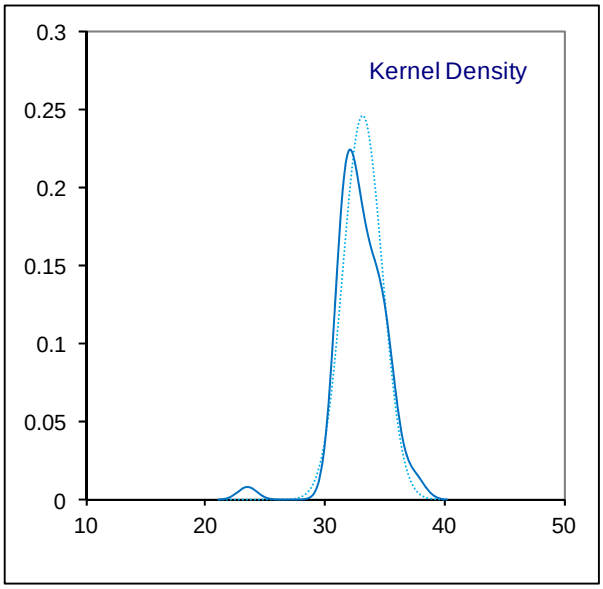
first reported Lab 445: 5.20

first reported Lab 1059: 35.7

first reported Lab 1109: 4.48

first reported Lab 1677: 62.7





Determination of Lead as Pb on sample #14009; results in mg/L

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3237	<2.5		-----	1017		-----		-----
120		-----		-----	1026	D3237	<1		-----
132	D3237	<0.010		-----	1059	EN13723	<1.0		-----
140		-----		-----	1066	D3237	<2.5		-----
150	D3237	<2.6		-----	1080		-----		-----
158		-----		-----	1081	D5059	<2.5		-----
159		-----		-----	1109	D3237	<2.5		-----
169		-----		-----	1126		-----		-----
171	D3237	<2.5		-----	1161	EN237	<5		-----
193		-----		-----	1167	EN237	<2.5		-----
194		-----		-----	1186	D3237	1.3		-----
212		-----		-----	1201	D3237	<1		-----
217		-----		-----	1213	D3237	<2.5		-----
221		-----		-----	1215		-----		-----
224		-----		-----	1231		-----		-----
225		-----		-----	1237		-----		-----
228		-----		-----	1254	D3237	<2.5		-----
230	D3237	<2.5		-----	1259	D3237	<2.5		-----
237		-----		-----	1297		-----		-----
238		-----		-----	1299	D3237	<2.5		-----
252		-----		-----	1340	EN237	0.3462		-----
253		-----		-----	1347	D3237	n.d.		-----
254		-----		-----	1348	D3237	<1	unit error?,rep: <0.001	-----
256		-----		-----	1385		-----		-----
258		-----		-----	1395		-----		-----
273		-----		-----	1397	EN13723	<4		-----
311		-----		-----	1423		-----		-----
312	EN237	<2.5		-----	1428	EN237	<2.5		-----
323	D3237	<2.5		-----	1450		-----		-----
333		-----		-----	1484		-----		-----
334		-----		-----	1498		-----		-----
335		-----		-----	1501	D3237	0.42		-----
336		-----		-----	1531		-----		-----
337		-----		-----	1543		-----		-----
338		-----		-----	1546		-----		-----
340		-----		-----	1556		-----		-----
343	D3237	<2.5		-----	1564	D3237	<1	unit error?,rep: <0.001	-----
353		-----		-----	1602	EN237	<1		-----
370		-----		-----	1603		-----		-----
431		-----		-----	1613	D3237	<2.5		-----
444		-----		-----	1631	EN237	<3.0		-----
445		-----		-----	1634		-----		-----
447	D3237	<2.5		-----	1654	EN237	<2.5		-----
463	D3237	<2.5		-----	1657		-----		-----
485		-----		-----	1667		-----		-----
495	D3237	0.5		-----	1677	D3237	<2.5		-----
511	D3237	0.0113		-----	1720		-----		-----
541	D3237	<2.5		-----	1724	EN237	<3.0		-----
557		-----		-----	1730		-----		-----
562	D3237	<2.5		-----	1740		-----		-----
603		-----		-----	1746		-----		-----
631	D3237	<2.5		-----	1776		-----		-----
657	D3237	<2.5		-----	1783		-----		-----
671		-----		-----	1807		-----		-----
753	UOP952	2.8	unit error?,rep. 0.0028	-----	1810		-----		-----
862	D3237	<2.5		-----	1811		-----		-----
868	D3237	<2.5		-----	1833	EN237	<3.0		-----
912		-----		-----	1849	EN237	<2.5		-----
922		-----		-----	1851		-----		-----
963		-----		-----	1854		-----		-----
970		-----		-----	1936		-----		-----
974		-----		-----	1937		-----		-----
994		-----		-----	1938		-----		-----
995		-----		-----	1948	D3237	0.7		-----
996		-----		-----	1951		-----		-----
1006	D3237	<2.5		-----	2129	D3237	0.148		-----
1016		-----		-----	2130	IP352	<2		-----

normality	n.a
n	44
outliers	n.a
mean (n)	<2.5
st.dev. (n)	n.a
R(calc.)	n.a
R(D3237:12)	n.a

application range: 2.5 – 25 mg/L

Determination of Phosphorus as P on sample #14009; results in mg/L

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3231	<0.2		-----	1017		-----		-----
120		-----		-----	1026		-----		-----
132	D3231	<0.2		-----	1059		-----		-----
140		-----		-----	1066		-----		-----
150	D3231	<0.1		-----	1080		-----		-----
158		-----		-----	1081		-----		-----
159		-----		-----	1109	D3231	0.04		-----
169		-----		-----	1126		-----		-----
171	D3231	<2.0		-----	1161		-----		-----
193		-----		-----	1167		-----		-----
194	D3231	<0.01		-----	1186		-----		-----
212		-----		-----	1201	D3231	<1		-----
217		-----		-----	1213		-----		-----
221		-----		-----	1215		-----		-----
224		-----		-----	1231		-----		-----
225		-----		-----	1237		-----		-----
228		-----		-----	1254		-----		-----
230		-----		-----	1259		-----		-----
237		-----		-----	1297		-----		-----
238		-----		-----	1299		-----		-----
252		-----		-----	1340		-----		-----
253		-----		-----	1347		-----		-----
254		-----		-----	1348		-----		-----
256		-----		-----	1385		-----		-----
258		-----		-----	1395		-----		-----
273		-----		-----	1397	in house	<5		-----
311		-----		-----	1423		-----		-----
312	D3231	<0.2		-----	1428		-----		-----
323		-----		-----	1450		-----		-----
333		-----		-----	1484		-----		-----
334		-----		-----	1498		-----		-----
335		-----		-----	1501		-----		-----
336		-----		-----	1531		-----		-----
337		-----		-----	1543		-----		-----
338		-----		-----	1546		-----		-----
340		-----		-----	1556		-----		-----
343		-----		-----	1564		-----		-----
353		-----		-----	1602		-----		-----
370		-----		-----	1603		-----		-----
431		-----		-----	1613		-----		-----
444		-----		-----	1631		-----		-----
445		-----		-----	1634		-----		-----
447		-----		-----	1654		-----		-----
463		-----		-----	1657		-----		-----
485		-----		-----	1667		-----		-----
495		-----		-----	1677	D3231	<0.2		-----
511		-----		-----	1720		-----		-----
541		-----		-----	1724		-----		-----
557		-----		-----	1730		-----		-----
562		-----		-----	1740		-----		-----
603		-----		-----	1746		-----		-----
631		-----		-----	1776		-----		-----
657	D3231	<0.2		-----	1783		-----		-----
671		-----		-----	1807		-----		-----
753	D3231	<0.05		-----	1810		-----		-----
862	D3231	0.05		-----	1811		-----		-----
868	D3231	<0.20		-----	1833		-----		-----
912		-----		-----	1849		-----		-----
922		-----		-----	1851		-----		-----
963		-----		-----	1854		-----		-----
970		-----		-----	1936		-----		-----
974		-----		-----	1937		-----		-----
994		-----		-----	1938		-----		-----
995		-----		-----	1948		-----		-----
996		-----		-----	1951		-----		-----
1006		-----		-----	2129	D3231	<0.2		-----
1016		-----		-----	2130		-----		-----

normality	n.a
n	12
outliers	n.a
mean (n)	<0.20
st.dev. (n)	n.a
R(calc.)	n.a
R(D3231:13)	n.a

application range: 0.2- 40 mg/L

Determination of Oxidation Stability on sample #14009; results in minutes

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D525	>900		-----	1017		-----		-----
120		-----		-----	1026		-----		-----
132	D525	>1258		-----	1059	ISO7536	>360		-----
140		-----		-----	1066		-----		-----
150	D525	>900		-----	1080		-----		-----
158		-----		-----	1081		-----		-----
159		-----		-----	1109	D525	>2400		-----
169		-----		-----	1126		-----		-----
171	D525	>240		-----	1161	ISO7536	>900		-----
193		-----		-----	1167		-----		-----
194	D525	>900		-----	1186		-----		-----
212		-----		-----	1201	D525	>900		-----
217		-----		-----	1213	D525	>780		-----
221		-----		-----	1215		-----		-----
224		-----		-----	1231		-----		-----
225		-----		-----	1237		-----		-----
228	D525	>900		-----	1254	D525	>900		-----
230		-----		-----	1259		-----		-----
237	D525	>900		-----	1297		-----		-----
238		-----		-----	1299	D525	>900		-----
252	D525	>900		-----	1340	ISO7536	>360		-----
253		-----		-----	1347	D525	>360		-----
254		-----		-----	1348	D525	>480		-----
256	D525	>900		-----	1385	D525	>360		-----
258		-----		-----	1395	D525	>900		-----
273		-----		-----	1397		-----		-----
311	D525	>900		-----	1423		-----		-----
312	D525	>900		-----	1428	ISO7536	>900		-----
323	D525	+900		-----	1450		-----		-----
333		-----		-----	1484		-----		-----
334		-----		-----	1498		-----		-----
335		-----		-----	1501	D525	>900		-----
336	D525	>900		-----	1531		-----		-----
337		-----		-----	1543		-----		-----
338		-----		-----	1546		-----		-----
340	D525	>960		-----	1556	ISO7536	>900		-----
343	D525	>900		-----	1564	D525	>500		-----
353		-----		-----	1602	ISO7536	>900		-----
370		-----		-----	1603	in house	>1000		-----
431		-----		-----	1613	D525	>900		-----
444		-----		-----	1631	D525	>900		-----
445	D525	>900		-----	1634		-----		-----
447	D525	>900		-----	1654	ISO7536	>360		-----
463	D525	>360		-----	1657		-----		-----
485		-----		-----	1667		-----		-----
495	D525	>900		-----	1677		-----		-----
511	D525	>900		-----	1720		-----		-----
541	D525	>900		-----	1724	D525	>900		-----
557		-----		-----	1730		-----		-----
562		-----		-----	1740		-----		-----
603		-----		-----	1746		-----		-----
631	D525	>900		-----	1776		-----		-----
657	D525	>900		-----	1783		-----		-----
671		-----		-----	1807	D525	>380		-----
753		-----		-----	1810		-----		-----
862	D525	>900		-----	1811		-----		-----
868	D525	>900		-----	1833	ISO7536	>900		-----
912		-----		-----	1849	D525	795		-----
922	D525	>900		-----	1851		-----		-----
963	D525	>360		-----	1854		-----		-----
970		-----		-----	1936		-----		-----
974	D525	600		-----	1937		-----		-----
994		-----		-----	1938		-----		-----
995		-----		-----	1948		-----		-----
996		-----		-----	1951	D525	>900		-----
1006	D525	>900		-----	2129	D525	>900		-----
1016		-----		-----	2130	D525	>900		-----

normality	n.a
n	57
outliers	n.a
mean (n)	>360
st.dev. (n)	n.a
R(calc.)	n.a
R(D525:12a)	n.a

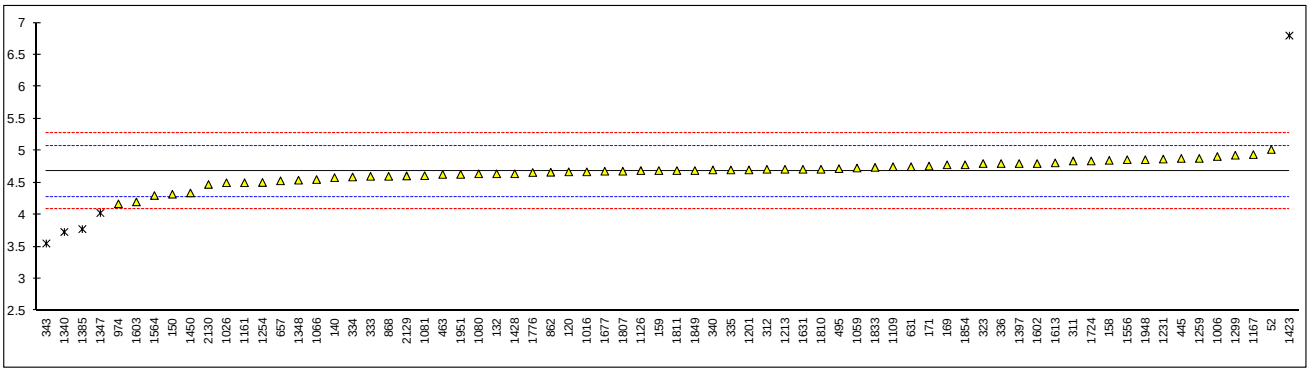
Determination of Ethanol on sample #14009; results in %V/V

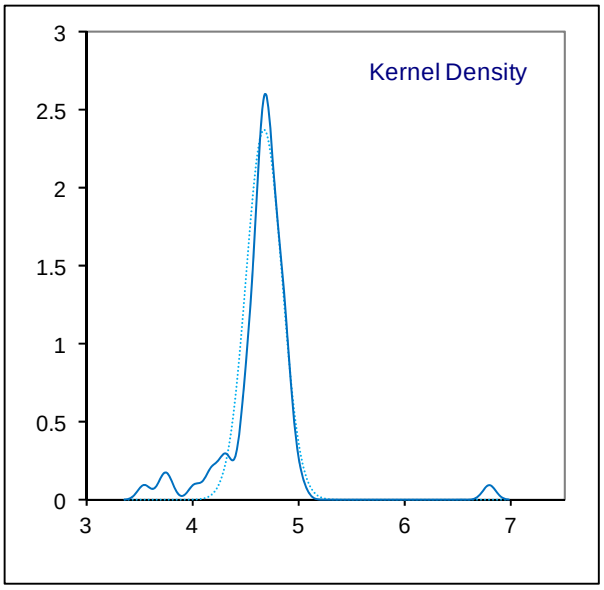
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	INH-14	5.02		1.72	1017		-----		-----
120	D5599	4.67		-0.04	1026	EN13132	4.5		-0.90
132	D5599	4.64		-0.20	1059	ISO22854	4.73		0.26
140	D5599	4.58		-0.50	1066	EN22854	4.55		-0.65
150	D5599	4.32		-1.81	1080	INH-M3	4.64		-0.20
158	D5599	4.85		0.87	1081	ISO22854	4.61		-0.35
159	D5599	4.69		0.06	1109	D6839	4.75		0.36
169	D4815	4.78		0.51	1126	in house	4.69		0.06
171	D4815	4.76		0.41	1161	EN13132	4.5		-0.90
193		-----		-----	1167	EN13132	4.94		1.32
194		-----		-----	1186		-----		-----
212		-----		-----	1201	ISO22854	4.70		0.11
217		-----		-----	1213	D4815	4.71		0.16
221		-----		-----	1215		-----		-----
224		-----		-----	1231	D4815	4.87		0.97
225		-----		-----	1237		-----		-----
228		-----		-----	1254	D4815	4.504		-0.88
230		-----		-----	1259	ISO13132	4.88		1.02
237		-----		-----	1297		-----		-----
238		-----		-----	1299	ISO22854	4.93		1.27
252		-----		-----	1340	EN22854	3.73	R(0.01)	-4.79
253		-----		-----	1347	D4815	4.027	R(0.05)	-3.29
254		-----		-----	1348	D4815	4.54		-0.70
256		-----		-----	1385	D4815	3.775	R(0.01)	-4.57
258		-----		-----	1395		-----		-----
273		-----		-----	1397	EN13132	4.8		0.61
311	D6839	4.84		0.81	1423	INH-101	6.80	R(0.01)	10.72
312	EN22854	4.71		0.16	1428	EN13132	4.64		-0.20
323	ISO22854	4.80		0.61	1450	D4815	4.34		-1.71
333	EN13132	4.6		-0.40	1484		-----		-----
334	EN116	4.59		-0.45	1498		-----		-----
335	EN1601	4.7		0.11	1501		-----		-----
336	EN1601	4.8		0.61	1531		-----		-----
337		-----		-----	1543		-----		-----
338		-----		-----	1546		-----		-----
340	EN1601	4.70		0.11	1556	ISO22854	4.86		0.92
343	EN13132	3.55	C,R(0.01)	-5.70	1564	EN13132	4.3		-1.91
353		-----		-----	1602	EN13132	4.8		0.61
370		-----		-----	1603	in house	4.200		-2.42
431		-----		-----	1613	D6839	4.81		0.66
444		-----		-----	1631	ISO22854	4.71		0.16
445	D4815	4.88		1.02	1634		-----		-----
447		-----		-----	1654		-----		-----
463	EN13132	4.63		-0.25	1657		-----		-----
485		-----		-----	1667		-----		-----
495	D6839	4.72		0.21	1677	EN13132	4.68		0.01
511		-----		-----	1720		-----		-----
541		-----		-----	1724	EN22854	4.84		0.81
557		-----		-----	1730		-----		-----
562		-----		-----	1740		-----		-----
603		-----		-----	1746		-----		-----
631	D4815	4.75		0.36	1776	ISO22854	4.66		-0.09
657	D4815	4.53		-0.75	1783		-----		-----
671		-----		-----	1807	ISO22854	4.68		0.01
753		-----		-----	1810	EN22854	4.71		0.16
862	D4815	4.664		-0.07	1811	D4815	4.69		0.06
868	D4815	4.60		-0.40	1833	EN22854	4.74		0.31
912		-----		-----	1849	EN13132	4.69		0.06
922		-----		-----	1851		-----		-----
963		-----		-----	1854	EN13132	4.78		0.51
970		-----		-----	1936		-----		-----
974	D4815	4.17		-2.57	1937		-----		-----
994		-----		-----	1938		-----		-----
995		-----		-----	1948	D4815	4.86	C	0.92
996		-----		-----	1951	IP566	4.63		-0.25
1006	D4815	4.91		1.17	2129	D6730	4.607		-0.36
1016	ISO22854	4.67		-0.04	2130	D6730	4.473		-1.04

normality	suspect
n	65
outliers	5
mean (n)	4.679
st.dev. (n)	0.1683
R(calc.)	0.471
R(D4815:13)	0.554

first reported Lab 343: 2.87

first reported Lab 1948: 5.43





Determination of MTBE on sample #14009; results in %V/V

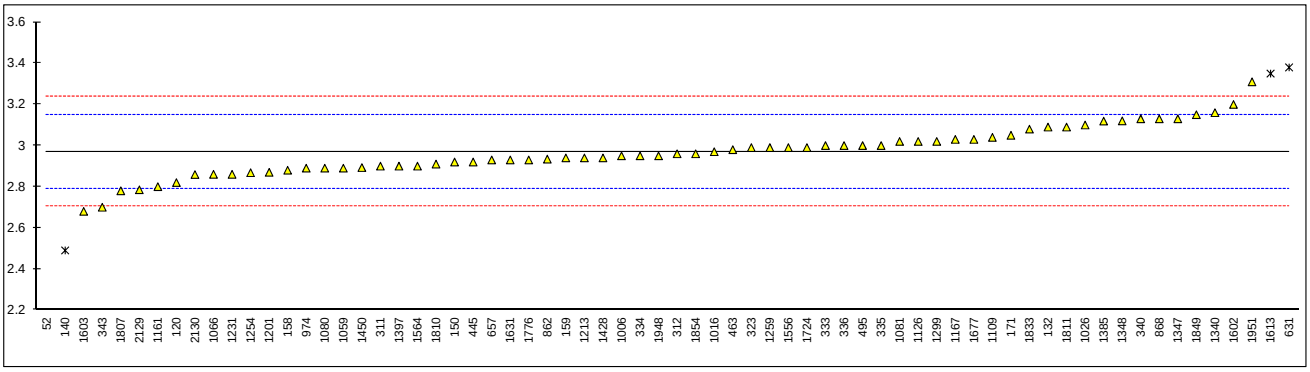
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	INH-14	0	G(0.01)	-33.41	1017		-----		-----
120	D5599	2.82		-1.68	1026	EN13132	3.1		1.47
132	D5599	3.09		1.36	1059	ISO22854	2.89		-0.89
140	D5599	2.49	G(0.05)	-5.39	1066	EN22854	2.86		-1.23
150	D5599	2.92		-0.55	1080	INH-M3	2.89		-0.89
158	D5599	2.88		-1.00	1081	ISO22854	3.02		0.57
159	D5599	2.94		-0.33	1109	D6839	3.04		0.80
169		-----		-----	1126	in house	3.02		0.57
171	D4815	3.05		0.91	1161	EN13132	2.8		-1.90
193		-----		-----	1167	EN13132	3.03		0.69
194		-----		-----	1186		-----		-----
212		-----		-----	1201	ISO22854	2.87		-1.11
217		-----		-----	1213	D4815	2.94		-0.33
221		-----		-----	1215		-----		-----
224		-----		-----	1231	D4815	2.86		-1.23
225		-----		-----	1237		-----		-----
228		-----		-----	1254	D4815	2.868		-1.14
230		-----		-----	1259	ISO13132	2.99		0.24
237		-----		-----	1297		-----		-----
238		-----		-----	1299	ISO22854	3.02		0.57
252		-----		-----	1340	EN22854	3.16		2.15
253		-----		-----	1347	D4815	3.130		1.81
254		-----		-----	1348	D4815	3.12		1.70
256		-----		-----	1385	D4815	3.119		1.69
258		-----		-----	1395		-----		-----
273		-----		-----	1397	EN13132	2.9		-0.78
311	D6839	2.90		-0.78	1423		-----		-----
312	EN22854	2.96		-0.10	1428	EN13132	2.94		-0.33
323	ISO22854	2.99		0.24	1450	D4815	2.893		-0.86
333	EN13132	3.0		0.35	1484		-----		-----
334	EN116	2.95		-0.21	1498		-----		-----
335	EN1601	3.0		0.35	1501		-----		-----
336	EN1601	3.0		0.35	1531		-----		-----
337		-----		-----	1543		-----		-----
338		-----		-----	1546		-----		-----
340	EN1601	3.13		1.81	1556	ISO22854	2.99		0.24
343	EN13132	2.7	C	-3.03	1564	EN13132	2.9		-0.78
353		-----		-----	1602	EN13132	3.2		2.60
370		-----		-----	1603	in house	2.680		-3.25
431		-----		-----	1613	D6839	3.35	DG(0.05)	4.29
444		-----		-----	1631	ISO22854	2.93		-0.44
445	D4815	2.92	C	-0.55	1634		-----		-----
447		-----		-----	1654		-----		-----
463	EN13132	2.98		0.12	1657		-----		-----
485		-----		-----	1667		-----		-----
495	D6839	3.00		0.35	1677	EN13132	3.03		0.69
511		-----		-----	1720		-----		-----
541		-----		-----	1724	EN22854	2.99		0.24
557		-----		-----	1730		-----		-----
562		-----		-----	1740		-----		-----
603		-----		-----	1746		-----		-----
631	D4815	3.38	DG(0.05)	4.63	1776	ISO22854	2.93		-0.44
657	D4815	2.93		-0.44	1783		-----		-----
671		-----		-----	1807	ISO22854	2.78	C	-2.13
753		-----		-----	1810	EN22854	2.91		-0.66
862	D4815	2.934		-0.39	1811	D4815	3.09		1.36
868	D4815	3.13		1.81	1833	EN22854	3.08		1.25
912		-----		-----	1849	EN13132	3.15		2.04
922		-----		-----	1851		-----		-----
963		-----		-----	1854	EN13132	2.96		-0.10
970		-----		-----	1936		-----		-----
974	D4815	2.89		-0.89	1937		-----		-----
994		-----		-----	1938		-----		-----
995		-----		-----	1948	D4815	2.95		-0.21
996		-----		-----	1951	IP566	3.31		3.84
1006	D4815	2.95		-0.21	2129	D6730	2.785		-2.07
1016	ISO22854	2.97		0.01	2130	D6730	2.859		-1.24

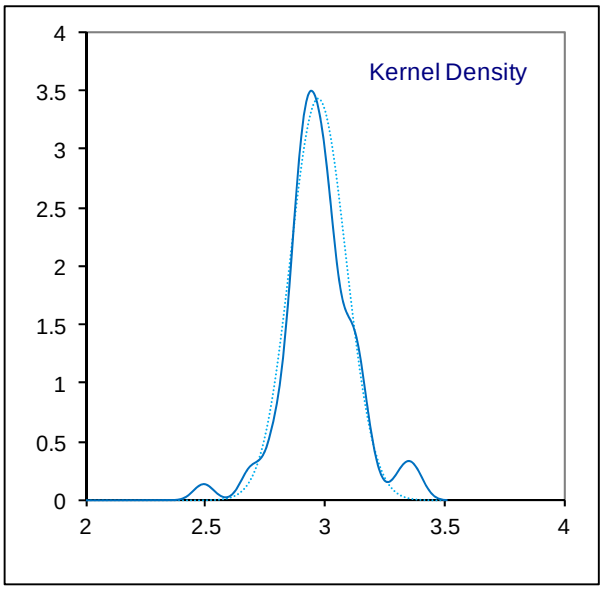
		Only D4815	Only EN13132	Only ISO22854
normality	OK	OK	OK	OK
n	64	16	14	16
outliers	4	1	0	0
mean (n)	2.969	2.986	2.977	2.959
st.dev. (n)	0.1161	0.1015	0.1309	0.0910
R(calc.)	0.325	0.284	0.366	0.255
R(D4815:13)	0.249	0.250	0.300	0.426

first reported Lab 343: 2.42

first reported Lab 445: 3.31

first reported Lab 1807: <0.1





Determination of other oxygenates on sample #14009; results in %V/V

lab	method	DIPE	ETBE	i-BuOH	IPA	MeOH	TAME	t-BuOH
52	INH-14	0	0	0	0	0	0.02	0
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	D5599	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150	D5599	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
158	D5599	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
159		-----	-----	-----	-----	-----	-----	-----
169		-----	-----	-----	-----	-----	-----	-----
171	D4815	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
193		-----	-----	-----	-----	-----	-----	-----
194		-----	-----	-----	-----	-----	-----	-----
212		-----	-----	-----	-----	-----	-----	-----
217		-----	-----	-----	-----	-----	-----	-----
221		-----	-----	-----	-----	-----	-----	-----
224		-----	-----	-----	-----	-----	-----	-----
225		-----	-----	-----	-----	-----	-----	-----
228		-----	-----	-----	-----	-----	-----	-----
230		-----	-----	-----	-----	-----	-----	-----
237		-----	-----	-----	-----	-----	-----	-----
238		-----	-----	-----	-----	-----	-----	-----
252		-----	-----	-----	-----	-----	-----	-----
253		-----	-----	-----	-----	-----	-----	-----
254		-----	-----	-----	-----	-----	-----	-----
256		-----	-----	-----	-----	-----	-----	-----
258		-----	-----	-----	-----	-----	-----	-----
273		-----	-----	-----	-----	-----	-----	-----
311	D6839	0.05	<0.10	<0.10	<0.10	<0.10	0.03	<0.10
312	EN22854	0.06	<0.01	<0.01	<0.01	<0.01	0.03	<0.01
323	ISO22854	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
333		-----	<0.17	-----	-----	<0.17	-----	-----
334	EN116	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
335		-----	-----	-----	-----	-----	-----	-----
336		-----	<0.17	-----	-----	-----	-----	-----
337		-----	-----	-----	-----	-----	-----	-----
338		-----	-----	-----	-----	-----	-----	-----
340	EN1601	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
343		-----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
353		-----	-----	-----	-----	-----	-----	-----
370		-----	-----	-----	-----	-----	-----	-----
431		-----	-----	-----	-----	-----	-----	-----
444		-----	-----	-----	-----	-----	-----	-----
445	D4815	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
447		-----	-----	-----	-----	-----	-----	-----
463	EN13132	<0.2	<0.2	<0.2	-----	<0.2	<0.2	<0.2
485		-----	-----	-----	-----	-----	-----	-----
495	D6839	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
511		-----	-----	-----	-----	-----	-----	-----
541		-----	-----	-----	-----	-----	-----	-----
557		-----	-----	-----	-----	-----	-----	-----
562		-----	-----	-----	-----	-----	-----	-----
603		-----	-----	-----	-----	-----	-----	-----
631		-----	-----	-----	-----	-----	-----	-----
657	D4815	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
671		-----	-----	-----	-----	-----	-----	-----
753		-----	-----	-----	-----	-----	-----	-----
862	D4815	<0.01	<0.01	<0.01	0.01	<0.01	0.03	<0.01
868	D4815	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
912		-----	-----	-----	-----	-----	-----	-----
922		-----	-----	-----	-----	-----	-----	-----
963		-----	-----	-----	-----	-----	-----	-----
970		-----	-----	-----	-----	-----	-----	-----
974		-----	-----	-----	-----	-----	**0.53**	-----
994		-----	-----	-----	-----	-----	-----	-----
995		-----	-----	-----	-----	-----	-----	-----
996		-----	-----	-----	-----	-----	-----	-----
1006	D4815	n.d.	n.d.	-----	-----	n.d.	n.d.	n.d.
1016	ISO22854	<0.1	<0.10	0.03	<0.10	<0.10	-----	<0.10
1017		-----	-----	-----	-----	-----	-----	-----
1026		-----	<0.1	<0.1	<0.1	<0.1	-----	<0.1
1059	ISO22854	0.05	<0.20	<0.20	0.05	<0.20	0.03	<0.20
1066	EN22854	0.05	<0.01	0.04	<0.01	<0.01	<0.01	<0.01
1080	INH-M3	0.06	0.00	-----	-----	-----	0.03	-----
1081		-----	0.00	-----	-----	0.00	-----	-----
1109	D6839	<0.1	<0.1	0.04	<0.1	<0.1	0.03	<0.1
1126		-----	-----	-----	-----	-----	-----	-----
1161		-----	-----	-----	-----	0.2	**0.46**	-----

1167		-----	<0.1	<0.1	<0.1	0.13	-----	0.08
1186		-----	-----	-----	-----	-----	-----	-----
1201	ISO22854	0.05	0.03	0.04	<0.01	<0.01	0.07	<0.01
1213		-----	<0.2	<0.2	<0.2	<0.2	-----	<0.2
1215		-----	-----	-----	-----	-----	-----	-----
1231		-----	-----	-----	-----	0.00	-----	-----
1237		-----	-----	-----	-----	-----	-----	-----
1254	D4815	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1259		-----	-----	-----	-----	-----	-----	-----
1297		-----	-----	-----	-----	-----	-----	-----
1299		-----	<0.01	0.04	-----	<0.01	<0.01	-----
1340		-----	-----	-----	-----	-----	0.03	0.04
1347	D4815	0.046	0.150	0.074	0.037	n.d.	0.040	0.020
1348	D4815	<0.1	*0.26*	<0.1	<0.1	<0.1	<0.1	<0.1
1385	D4815	0.058	*0.202*	0.051	0	0	0.091	0.014
1395		-----	-----	-----	-----	-----	-----	-----
1397		-----	*0.3*	-----	-----	-----	-----	-----
1423		-----	-----	-----	-----	-----	-----	-----
1428		-----	<0.17	<0.17	<0.17	<0.17	-----	<0.17
1450	D4815	<0.2	-----	<0.2	<0.2	<0.2	<0.2	<0.2
1484		-----	-----	-----	-----	-----	-----	-----
1498		-----	-----	-----	-----	-----	-----	-----
1501		-----	-----	-----	-----	-----	-----	-----
1531		-----	-----	-----	-----	-----	-----	-----
1543		-----	-----	-----	-----	-----	-----	-----
1546		-----	-----	-----	-----	-----	-----	-----
1556		-----	-----	-----	-----	-----	-----	-----
1564		-----	-----	-----	-----	-----	-----	-----
1602		-----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1603		-----	-----	-----	-----	0.0018	-----	-----
1613	D6839	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1631		-----	-----	-----	-----	-----	-----	-----
1634		-----	-----	-----	-----	-----	-----	-----
1654		-----	-----	-----	-----	-----	-----	-----
1657		-----	-----	-----	-----	-----	-----	-----
1667		-----	-----	-----	-----	-----	-----	-----
1677	EN13132	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	0.01
1720		-----	-----	-----	-----	-----	-----	-----
1724		-----	-----	-----	-----	-----	-----	-----
1730		-----	-----	-----	-----	-----	-----	-----
1740		-----	-----	-----	-----	-----	-----	-----
1746		-----	-----	-----	-----	-----	-----	-----
1776	ISO22854	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.04
1783		-----	-----	-----	-----	-----	-----	-----
1807		-----	<0.1	<0.1	<0.1	<0.1	-----	-----
1810		-----	0.05	-----	-----	-----	-----	-----
1811	D4815	0.06	0	0	0	0	0.03	0.03
1833		-----	-----	-----	-----	-----	-----	-----
1849		-----	-----	-----	-----	-----	-----	-----
1851		-----	-----	-----	-----	-----	-----	-----
1854	EN13132	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.04
1936		-----	-----	-----	-----	-----	-----	-----
1937		-----	-----	-----	-----	-----	-----	-----
1938		-----	-----	-----	-----	-----	-----	-----
1948	D4815	0.027	<0.01	<0.01	<0.01	0.21	0.051	0.040
1951	IP566	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2129	D6730	<0.01	<0.01	<0.01	<0.01	<0.01	0.024	<0.01
2130	D6730	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	normality	OK	suspect	OK	suspect	suspect	not OK	OK
	n	14	12	11	8	11	17	12
	outliers	0	0	0	0	0	2	0
	mean (n)	0.039	0.083	0.029	0.012	0.049	0.033	0.026
	st.dev. (n)	0.0231	0.1137	0.0252	0.0200	0.0862	0.0218	0.0237
	R(calc.)	0.065	0.318	0.071	0.056	0.241	0.061	0.066
	R(D4815:13)	(0.048)	(0.054)	(0.039)	(0.022)	(0.059)	(0.055)	(0.017)

underlined and Italic test results: Lab 1348, Lab 1385, Lab 1397 false positive?

Bold and underlined test results: statistical outliers acc. to Grubbs/Dixon/Rosner outlier test for TAME lab 974 and lab 1161.

Determination of Total Oxygenates on sample #14009; results in %V/V

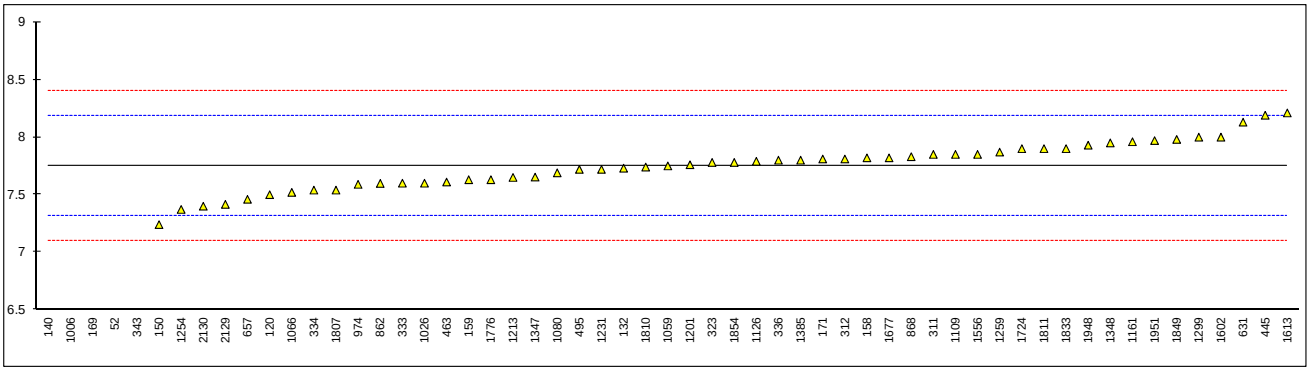
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	INH-14	5.04	G(0.01)	-12.50	1017		-----		-----
120	D5599	7.50		-1.16	1026	EN13132	7.6		-0.70
132	D5599	7.73		-0.10	1059	ISO22854	7.75		-0.01
140	D5599	0.0	G(0.01)	-35.73	1066	EN22854	7.52		-1.07
150	D5599	7.24		-2.36	1080	INH-M3	7.69		-0.29
158	D5599	7.82		0.31	1081		-----		-----
159	D5599	7.63		-0.57	1109	D6839	7.85		0.45
169	D4815	4.78	G(0.01)	-13.70	1126	in house	7.79		0.17
171	D4815	7.81		0.26	1161	EN13132	7.96		0.96
193		-----		-----	1167		-----		-----
194		-----		-----	1186		-----		-----
212		-----		-----	1201	ISO22854	7.76		0.03
217		-----		-----	1213	D4815	7.65		-0.47
221		-----		-----	1215		-----		-----
224		-----		-----	1231	D4815	7.72		-0.15
225		-----		-----	1237		-----		-----
228		-----		-----	1254	D4815	7.372		-1.75
230		-----		-----	1259	ISO13132	7.87		0.54
237		-----		-----	1297		-----		-----
238		-----		-----	1299	ISO22854	8.00		1.14
252		-----		-----	1340		-----		-----
253		-----		-----	1347	D4815	7.653		-0.46
254		-----		-----	1348	D4815	7.95		0.91
256		-----		-----	1385	D4815	7.8		0.22
258		-----		-----	1395		-----		-----
273		-----		-----	1397		-----		-----
311	D6839	7.85		0.45	1423		-----		-----
312	EN22854	7.81		0.26	1428		-----		-----
323	ISO22854	7.78		0.13	1450		-----		-----
333	EN13132	7.6		-0.70	1484		-----		-----
334	EN116	7.54		-0.98	1498		-----		-----
335		-----		-----	1501		-----		-----
336	EN1601	7.8		0.22	1531		-----		-----
337		-----		-----	1543		-----		-----
338		-----		-----	1546		-----		-----
340		-----		-----	1556	ISO22854	7.85		0.45
343	EN13132	6.26	C,G(0.01)	-6.88	1564		-----		-----
353		-----		-----	1602	EN13132	8.0		1.14
370		-----		-----	1603		-----		-----
431		-----		-----	1613	D6839	8.21		2.11
444		-----		-----	1631		-----		-----
445	D4815	8.19		2.02	1634		-----		-----
447		-----		-----	1654		-----		-----
463	EN13132	7.61		-0.66	1657		-----		-----
485		-----		-----	1667		-----		-----
495	D6839	7.72		-0.15	1677	EN13132	7.82		0.31
511		-----		-----	1720		-----		-----
541		-----		-----	1724	EN22854	7.90		0.68
557		-----		-----	1730		-----		-----
562		-----		-----	1740		-----		-----
603		-----		-----	1746		-----		-----
631	D4815	8.13		1.74	1776	ISO22854	7.63		-0.57
657	D4815	7.46		-1.35	1783		-----		-----
671		-----		-----	1807	ISO22854	7.54	C	-0.98
753		-----		-----	1810	EN22854	7.74		-0.06
862	D4815	7.598		-0.71	1811	D4815	7.9		0.68
868	D4815	7.83		0.36	1833	EN22854	7.90		0.68
912		-----		-----	1849	EN13132	7.98		1.05
922		-----		-----	1851		-----		-----
963		-----		-----	1854	EN13132	7.78		0.13
970		-----		-----	1936		-----		-----
974	D4815	7.59		-0.75	1937		-----		-----
994		-----		-----	1938		-----		-----
995		-----		-----	1948	D4815	7.93	C	0.82
996		-----		-----	1951	EN13132	7.97		1.00
1006	D4815	2.30	G(0.01)	-25.13	2129	D6730	7.416		-1.55
1016		-----		-----	2130	D6730	7.4		-1.63

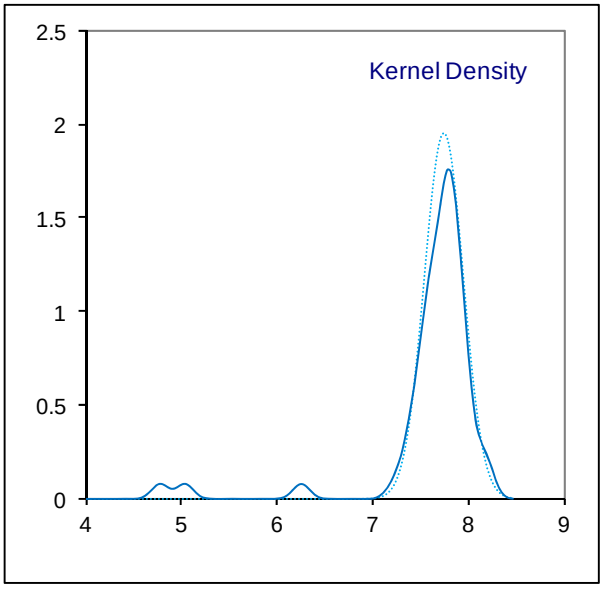
	normality	OK	
	n	52	
	outliers	5	
	mean (n)	7.753	
	st.dev. (n)	0.2043	
	R(calc.)	0.572	
			(R(EtOH) + R(MTBE))
	R(D4815:13)	0.608	

first reported Lab 343: 5.31

first reported Lab 1807: 7.32

first reported Lab 1948: 8.82





Determination of Oxygen Content on sample #14009; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1017		-----		-----
120	D5599	2.23		-0.42	1026	EN13132	2.28		0.13
132	D5599	2.3		0.35	1059	ISO22854	2.29		0.24
140	D5599	2.0	G(0.05)	-2.93	1066	EN22854	2.21		-0.64
150	D5599	2.12		-1.62	1080	INH-M3	2.25		-0.20
158	D5599	2.3		0.35	1081		-----		-----
159	D5599	2.26		-0.09	1109	D6839	2.31		0.46
169		-----		-----	1126	in house	2.29		0.24
171	D5599	2.2		-0.74	1161	EN13132	2.3		0.35
193		-----		-----	1167	EN13132	2.437		1.84
194		-----		-----	1186		-----		-----
212		-----		-----	1201	D5599	2.28		0.13
217		-----		-----	1213	D4815	2.26		-0.09
221		-----		-----	1215		-----		-----
224		-----		-----	1231		-----		-----
225		-----		-----	1237		-----		-----
228		-----		-----	1254	D4815	2.21		-0.64
230		-----		-----	1259	D5599	2.3403		0.79
237		-----		-----	1297		-----		-----
238		-----		-----	1299	ISO22854	2.37		1.11
252		-----		-----	1340	EN22854	1.97	G(0.05)	-3.25
253		-----		-----	1347	D5599	2.140		-1.40
254		-----		-----	1348	D4815	2.19		-0.85
256		-----		-----	1385	D4815	2.07		-2.16
258		-----		-----	1395		-----		-----
273		-----		-----	1397	EN13132	2.34		0.78
311	D6839	2.33		0.67	1423		-----		-----
312	EN22854	2.29		0.24	1428	EN13132	2.28		0.13
323	ISO22854	2.30		0.35	1450	D5599	2.122		-1.60
333	EN13132	2.23		-0.42	1484		-----		-----
334	EN116	2.22		-0.53	1498		-----		-----
335	EN1601	2.28		0.13	1501		-----		-----
336	EN1601	2.30		0.35	1531		-----		-----
337		-----		-----	1543		-----		-----
338		-----		-----	1546		-----		-----
340	EN1601	2.33		0.67	1556	ISO22854	2.33		0.67
343	EN13132	1.80	C,G(0.01)	-5.11	1564	EN13132	2.12		-1.62
353		-----		-----	1602	EN13132	2.26		-0.09
370		-----		-----	1603		-----		-----
431		-----		-----	1613	D6839	2.39		1.33
444		-----		-----	1631		-----		-----
445	D4815	2.29		0.24	1634		-----		-----
447		-----		-----	1654		-----		-----
463	EN13132	2.24		-0.31	1657		-----		-----
485		-----		-----	1667		-----		-----
495	D6839	2.3		0.35	1677	EN13132	2.30		0.35
511		-----		-----	1720		-----		-----
541		-----		-----	1724	EN22854	2.34		0.78
557		-----		-----	1730		-----		-----
562		-----		-----	1740		-----		-----
603		-----		-----	1746		-----		-----
631	D4815	2.36		1.00	1776	ISO22854	2.26		-0.09
657	D5599	2.19		-0.85	1783		-----		-----
671		-----		-----	1807	ISO22854	2.24	C	-0.31
753		-----		-----	1810	EN22854	2.29		0.24
862	D4815	2.25		-0.20	1811	D5599	2.29		0.24
868	D4815	2.27		0.02	1833	EN22854	2.31		0.46
912		-----		-----	1849	EN13132	2.32		0.57
922		-----		-----	1851		-----		-----
963		-----		-----	1854	D5599	2.30		0.35
970		-----		-----	1936		-----		-----
974	D4815	2.14		-1.40	1937		-----		-----
994		-----		-----	1938		-----		-----
995		-----		-----	1948	D5599	2.37	C	1.11
996		-----		-----	1951	Calc.	2.32		0.57
1006	D4815	2.30		0.35	2129	D6730	2.204		-0.70
1016	ISO22854	2.28		0.13	2130	D6730	2.17		-1.07

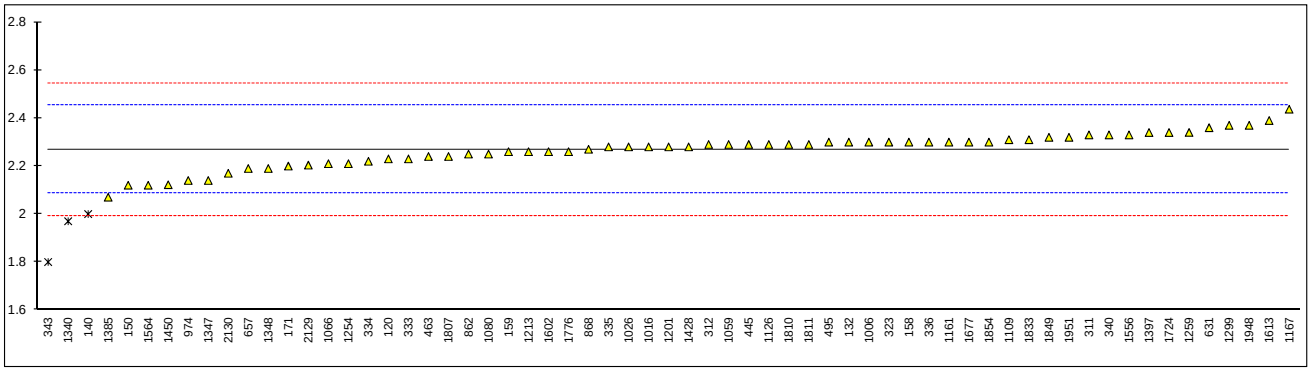
normality	OK
n	60
outliers	3
mean (n)	2.268
st.dev. (n)	0.0717
R(calc.)	0.201
R(D5599:00)	0.257

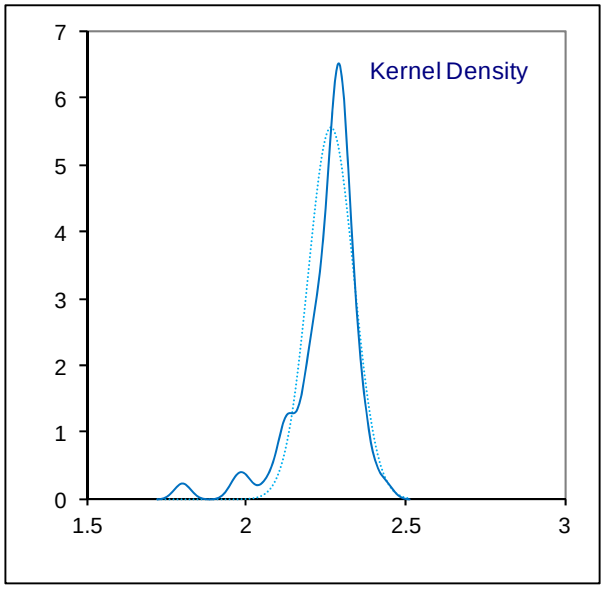
Compare R(D4815:13) = 0.255

first reported Lab 343: 1.5

first reported Lab 1807: 2.14

first reported Lab 1948: 2.58



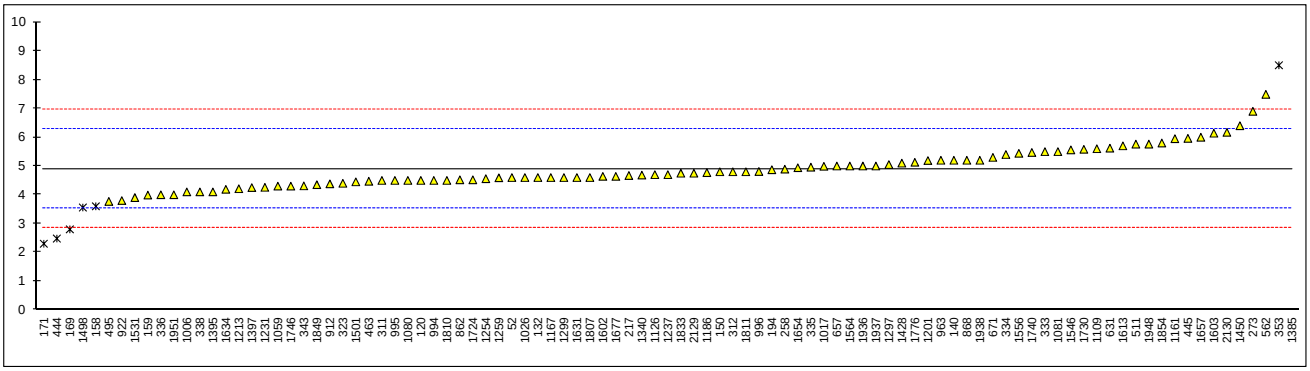


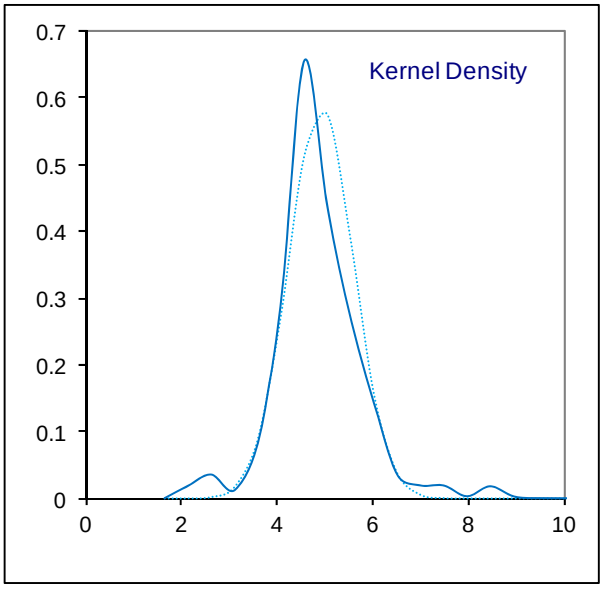
Determination of Sulphur on sample #14009; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D5453	4.6		-0.45	1017	ISO20846	4.99		0.12
120	D2622	4.5		-0.59	1026	ISO20846	4.6		-0.45
132	D2622	4.60		-0.45	1059	ISO20846	4.3		-0.89
140	D2622	5.2		0.43	1066		-----		-----
150	D5453	4.8		-0.15	1080	D5453	4.5		-0.59
158	D5453	3.6	R(0.01)	-1.91	1081	ISO20846	5.5		0.87
159	D5453	3.99		-1.34	1109	D7039	5.6		1.02
169	D5453	2.8	R(0.01)	-3.08	1126	ISO20846	4.70		-0.30
171	D5453	2.3	R(0.01)	-3.82	1161	ISO20846	5.95		1.53
193		-----		-----	1167	ISO20846	4.6		-0.45
194	D5453	4.871		-0.05	1186	D5453	4.77		-0.20
212		-----		-----	1201	D5453	5.19		0.42
217	D5453	4.67		-0.34	1213	D5453	4.21		-1.02
221		-----		-----	1215		-----		-----
224		-----		-----	1231	D5453	4.26		-0.95
225		-----		-----	1237	D5453	4.7		-0.30
228		-----		-----	1254	D5453	4.56		-0.51
230		-----		-----	1259	D5453	4.59		-0.46
237		-----		-----	1297	D5453	5.05		0.21
238		-----		-----	1299	ISO20884	4.6		-0.45
252		-----		-----	1340	ISO20846	4.6842		-0.32
253		-----		-----	1347	D4294	<100		-----
254	D4294	<20		-----	1348		-----		-----
256	D4294	<17		-----	1385	D5453	125	R(0.01)	175.99
258	D5453	4.89		-0.02	1395	D5453	4.1		-1.18
273	D5453	6.9		2.92	1397	D5453	4.25		-0.96
311	D5453	4.5		-0.59	1423		-----		-----
312	D5453	4.8		-0.15	1428	EN20846	5.1		0.29
323	ISO20846	4.4		-0.74	1450	D5453	6.4		2.19
333	D5453	5.5		0.87	1484		-----		-----
334	D5453	5.4		0.73	1498	D5453	3.559	R(0.01)	-1.97
335	ISO20846	4.96		0.08	1501	D5453	4.45		-0.67
336	ISO20846	4.0		-1.33	1531	ISO20846	3.904		-1.47
337		-----		-----	1543		-----		-----
338	ISO20846	4.1		-1.18	1546	ISO20846	5.56		0.96
340		-----		-----	1556	ISO20846	5.44		0.78
343	EN20846	4.31		-0.87	1564	ISO20846	5		0.14
353	IP531	8.50	R(0.01)	5.27	1602	D5453	4.64		-0.39
370		-----		-----	1603	in house	6.14		1.81
431		-----		-----	1613	D5453	5.70		1.16
444	D5453	2.48	C,R(0.01)	-3.55	1631	D5453	4.6		-0.45
445	D5453	5.96		1.55	1634	ISO20846	4.19		-1.05
447		-----		-----	1654	EN20846	4.94		0.05
463	EN13132	4.47		-0.64	1657	D5453	6.0		1.60
485		-----		-----	1667		-----		-----
495	D5453	3.77		-1.66	1677	D5453	4.64		-0.39
511	D5453	5.76		1.25	1720		-----		-----
541		-----		-----	1724	D5453	4.52		-0.56
557		-----		-----	1730	ISO20846	5.58		0.99
562	D5453	7.49		3.79	1740	ISO20846	5.47		0.83
603		-----		-----	1746	D5453	4.3		-0.89
631	D5453	5.62		1.05	1776	ISO20846	5.13		0.33
657	D5453	5.0		0.14	1783		-----		-----
671	D5453	5.3		0.58	1807	D5453	4.6		-0.45
753		-----		-----	1810	D5453	4.5		-0.59
862	D5453	4.52		-0.56	1811	D5453	4.80		-0.15
868	D5453	5.2		0.43	1833	D5453	4.75		-0.23
912	D5453	4.38		-0.77	1849	D5453	4.35		-0.81
922	D5453	3.80		-1.62	1851		-----		-----
963	D5453	5.2		0.43	1854	ISO20846	5.8		1.31
970		-----		-----	1936	EN20846	5.0		0.14
974		-----		-----	1937	ISO20846	5.0		0.14
994	D5453	4.5		-0.59	1938	D5453	5.2		0.43
995	D5453	4.5		-0.59	1948	D5453	5.76		1.25
996	D5453	4.81		-0.14	1951	IP497	4.0		-1.33
1006	D5453	4.1		-1.18	2129	D5453	4.75		-0.23
1016		-----		-----	2130	D5453	6.17		1.85

normality	not OK
n	90
outliers	7
mean (n)	4.905
st.dev. (n)	0.6802
R(calc.)	1.905
R(D5453:12)	1.911

first reported Lab 444: 60.19

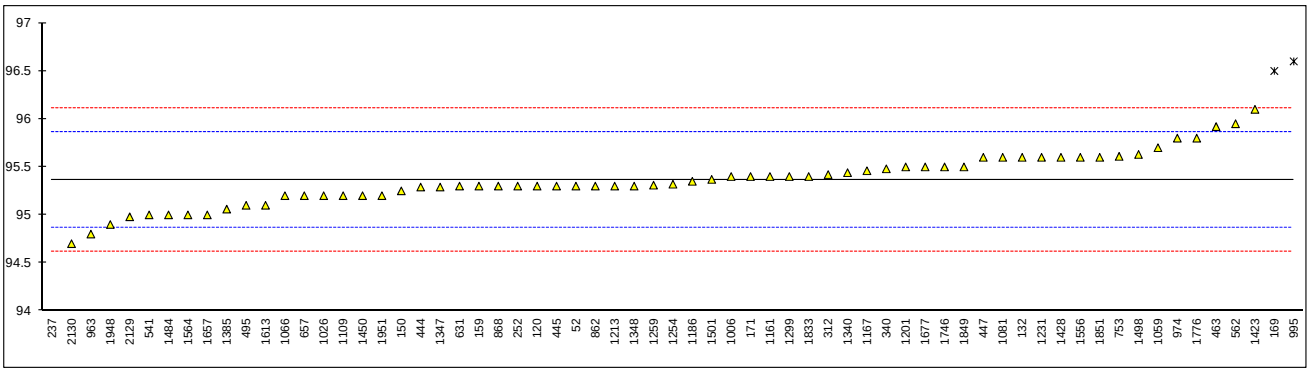


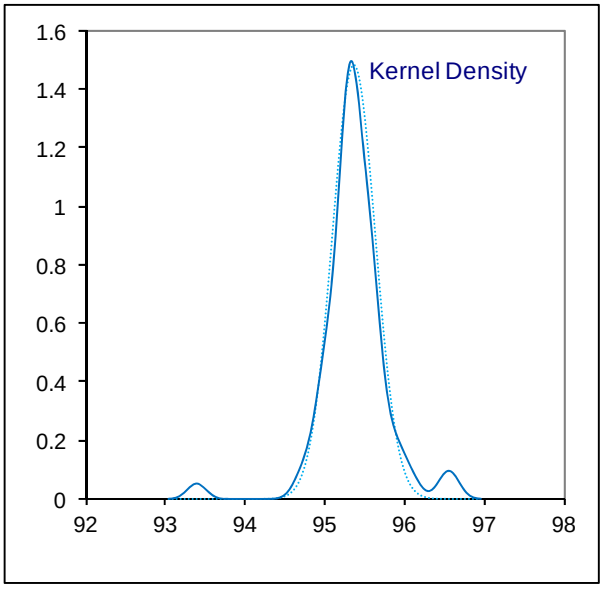


Determination of RON on sample #14009;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D2699	95.3		-0.25	1017		-----		-----
120	D2699	95.3		-0.25	1026	ISO5164	95.2		-0.65
132	D2699	95.6		0.95	1059	D2699	95.7		1.35
140		-----		-----	1066	D2699	95.2		-0.65
150	D2699	95.25		-0.45	1080		-----		-----
158		-----		-----	1081	D2699	95.6		0.95
159	D2699	95.3		-0.25	1109	D2699	95.2		-0.65
169	D2699	96.50	G(0.01)	4.55	1126		-----		-----
171	D2699	95.4		0.15	1161	ISO5164	95.4		0.15
193		-----		-----	1167	ISO5264	95.46		0.39
194		-----		-----	1186	D2699	95.35		-0.05
212		-----		-----	1201	D2699	95.5		0.55
217		-----		-----	1213	D2699	95.3		-0.25
221		-----		-----	1215		-----		-----
224		-----		-----	1231	D2699	95.6		0.95
225		-----		-----	1237		-----		-----
228		-----		-----	1254	D2699	95.32		-0.17
230		-----		-----	1259	D2699	95.31		-0.21
237	D2699	93.4	G(0.01)	-7.85	1297		-----		-----
238		-----		-----	1299	D2699	95.4		0.15
252	D2699	95.3		-0.25	1340	D2699	95.44		0.31
253		-----		-----	1347	D2699	95.29		-0.29
254		-----		-----	1348	D2699	95.3		-0.25
256		-----		-----	1385	D2699	95.06		-1.21
258		-----		-----	1395		-----		-----
273		-----		-----	1397		-----		-----
311		-----		-----	1423	INH-101	96.10		2.95
312	D2699	95.42		0.23	1428	D2699	95.6		0.95
323		-----		-----	1450	D2699	95.20		-0.65
333		-----		-----	1484	ISO5164	95.0		-1.45
334		-----		-----	1498	D2699	95.63		1.07
335		-----		-----	1501	D2699	95.37		0.03
336		-----		-----	1531		-----		-----
337		-----		-----	1543		-----		-----
338		-----		-----	1546		-----		-----
340	ISO5164	95.48		0.47	1556	ISO5164	95.6		0.95
343		-----		-----	1564	D2699	95.0		-1.45
353		-----		-----	1602		-----		-----
370		-----		-----	1603		-----		-----
431		-----		-----	1613	D2699	95.10		-1.05
444	D2699	95.29		-0.29	1631		-----		-----
445	D2699	95.3		-0.25	1634		-----		-----
447	D2699	95.6		0.95	1654		-----		-----
463	D2699	95.92		2.23	1657	D2699	95.0		-1.45
485		-----		-----	1667		-----		-----
495	D2699	95.1		-1.05	1677	D2699	95.5		0.55
511		-----		-----	1720		-----		-----
541	D2699	95.0		-1.45	1724		-----		-----
557		-----		-----	1730		-----		-----
562	D2699	95.95		2.35	1740		-----		-----
603		-----		-----	1746	D2699	95.5		0.55
631	D2699	95.3		-0.25	1776	ISO5164	95.8		1.75
657	D2699	95.2		-0.65	1783		-----		-----
671		-----		-----	1807		-----		-----
753	D2699	95.61		0.99	1810		-----		-----
862	D2699	95.3		-0.25	1811		-----		-----
868	D2699	95.3		-0.25	1833	ISO5164	95.4		0.15
912		-----		-----	1849	D2699	95.5		0.55
922		-----		-----	1851	D2699	95.60		0.95
963	D2699	94.8		-2.25	1854		-----		-----
970		-----		-----	1936		-----		-----
974	D2699	95.8		1.75	1937		-----		-----
994		-----		-----	1938		-----		-----
995	D2699	96.6	G(0.05)	4.95	1948	D2699	94.9		-1.85
996		-----		-----	1951	D2699	95.2		-0.65
1006	D2699	95.4		0.15	2129	D2699	94.98		-1.53
1016		-----		-----	2130	D2699	94.7		-2.65

normality	OK
n	62
outliers	3
mean (n)	95.36
st.dev. (n)	0.270
R(calc.)	0.76
R(D2699:13a)	0.70


97
96.5
96
95.5
95
94.5
94
237 2130 963 1948 2129 541 1484 1564 1657 1385 495 1613 1066 657 1026 1109 1450 1951 150 444 1347 631 159 868 252 120 445 52 862 1213 1348 1259 1254 1186 1501 1006 171 1161 1299 1833 312 1340 1167 340 1201 1677 1746 1849 447 1081 132 1231 1428 1556 1851 753 1498 1059 974 1776 463 562 1423 169 995

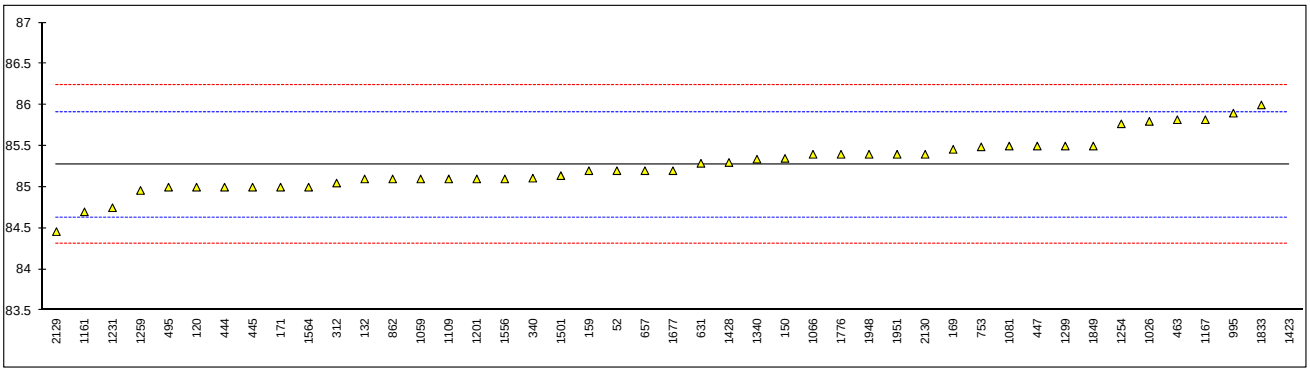

Kernel Density
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
92 93 94 95 96 97 98

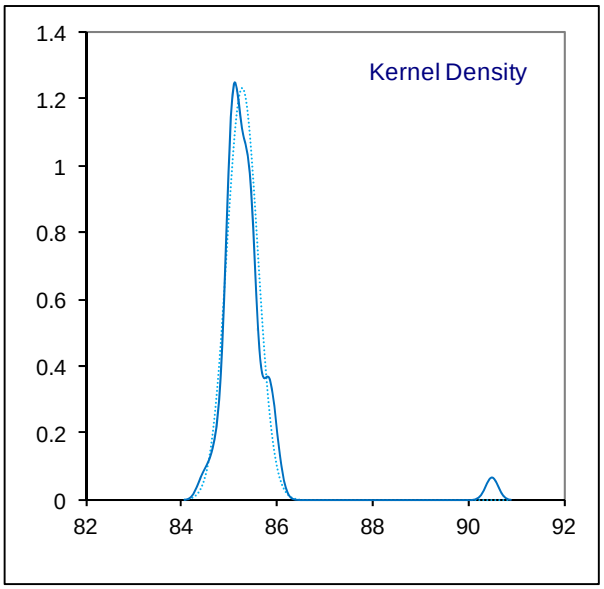
Determination of MON on sample #14009;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D2700	85.2		-0.22	1017		-----		-----
120	D2700	85.0		-0.84	1026	ISO5163	85.8		1.65
132	D2700	85.1		-0.53	1059	D2700	85.1		-0.53
140		-----		-----	1066	D2700	85.4		0.40
150	D2700	85.35		0.25	1080		-----		-----
158		-----		-----	1081	D2700	85.5		0.71
159	D2700	85.2		-0.22	1109	D2700	85.1		-0.53
169	D2700	85.46		0.59	1126		-----		-----
171	D2700	85.0		-0.84	1161	ISO5163	84.7		-1.78
193		-----		-----	1167	ISO5263	85.82		1.71
194		-----		-----	1186		-----		-----
212		-----		-----	1201	D2700	85.1		-0.53
217		-----		-----	1213		-----		-----
221		-----		-----	1215		-----		-----
224		-----		-----	1231	D2700	84.75		-1.62
225		-----		-----	1237		-----		-----
228		-----		-----	1254	D2700	85.77		1.55
230		-----		-----	1259	D2700	84.96		-0.97
237		-----		-----	1297		-----		-----
238		-----		-----	1299	D2700	85.5		0.71
252		-----		-----	1340	D2700	85.34		0.22
253		-----		-----	1347		-----		-----
254		-----		-----	1348		-----		-----
256		-----		-----	1385		-----		-----
258		-----		-----	1395		-----		-----
273		-----		-----	1397		-----		-----
311		-----		-----	1423	INH-101	90.50	R(0.05)	16.27
312	D2700	85.05		-0.69	1428	D2700	85.3		0.09
323		-----		-----	1450		-----		-----
333		-----		-----	1484		-----		-----
334		-----		-----	1498		-----		-----
335		-----		-----	1501	D2700	85.14		-0.41
336		-----		-----	1531		-----		-----
337		-----		-----	1543		-----		-----
338		-----		-----	1546		-----		-----
340	ISO5163	85.11		-0.50	1556	ISO5163	85.1		-0.53
343		-----		-----	1564	D2700	85.0		-0.84
353		-----		-----	1602		-----		-----
370		-----		-----	1603		-----		-----
431		-----		-----	1613		-----		-----
444	D2700	85.0	C	-0.84	1631		-----		-----
445	D2700	85.0		-0.84	1634		-----		-----
447	D2700	85.5		0.71	1654		-----		-----
463	D2700	85.82		1.71	1657		-----		-----
485		-----		-----	1667		-----		-----
495	D2700	85.0		-0.84	1677	D2700	85.2		-0.22
511		-----		-----	1720		-----		-----
541		-----		-----	1724		-----		-----
557		-----		-----	1730		-----		-----
562		-----		-----	1740		-----		-----
603		-----		-----	1746		-----		-----
631	D2700	85.29		0.06	1776	ISO5163	85.4		0.40
657	D2700	85.2		-0.22	1783		-----		-----
671		-----		-----	1807		-----		-----
753	D2700	85.49		0.68	1810		-----		-----
862	D2700	85.1		-0.53	1811		-----		-----
868		-----		-----	1833	ISO5163	86		2.27
912		-----		-----	1849	D2700	85.5		0.71
922		-----		-----	1851		-----		-----
963		-----		-----	1854		-----		-----
970		-----		-----	1936		-----		-----
974		-----		-----	1937		-----		-----
994		-----		-----	1938		-----		-----
995	D2700	85.9		1.96	1948	D2700	85.4		0.40
996		-----		-----	1951	D2700	85.4		0.40
1006		-----		-----	2129	D2700	84.46		-2.52
1016		-----		-----	2130	D2700	85.4		0.40

normality	OK
n	44
outliers	1
mean (n)	85.27
st.dev. (n)	0.324
R(calc.)	0.91
R(D2700:13b)	0.90

first reported Lab 444: 84.0


87
86.5
86
85.5
85
84.5
84
83.5
2129 1161 1231 1259 495 120 444 445 171 1564 312 132 862 1059 1109 1201 1556 340 1501 159 52 657 1677 631 1428 1340 150 1066 1776 1948 1951 2130 169 753 1081 447 1299 1849 1254 1026 463 1167 995 1833 1423

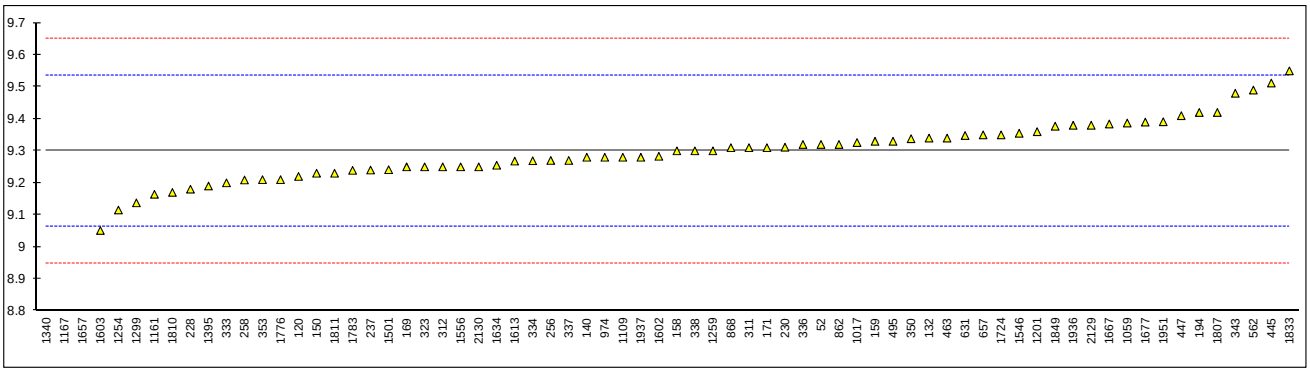

Kernel Density
1.4
1.2
1
0.8
0.6
0.4
0.2
0
82
84
86
88
90
92

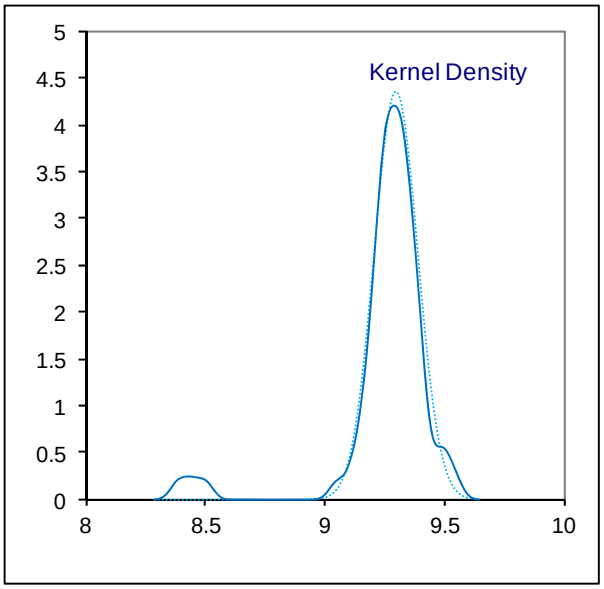
Determination of TVP on sample #14010; results in psi

lab	method	value	mark	z(targ)	remarks
52	D5191	9.32		0.17	
53		-----		-----	
120	D5191	9.22		-0.67	
132	D5191	9.34		0.34	
140	D5191	9.28		-0.16	
150	D5191	9.23		-0.59	
158	D5191	9.30		0.00	
159	D5191	9.33		0.26	
169	D5191	9.25		-0.42	
171	D5191	9.31		0.09	
193		-----		-----	
194	D5191	9.42		1.02	
225		-----		-----	
228	D5191	9.180		-1.01	
230	D5191	9.3114		0.10	
237	D5191	9.24		-0.50	
238		-----		-----	
256	D5191	9.27		-0.25	
258	D5191	9.209		-0.77	
311	D5191	9.31		0.09	
312	D5191	9.25		-0.42	
323	D5191	9.25		-0.42	
333	D5191	9.2		-0.84	
334	D5191	9.269		-0.26	
335		-----		-----	
336	D5191	9.32		0.17	
337	D5191	9.27		-0.25	
338	D5191	9.3	C	0.00	first reported: 61.0
340		-----		-----	
343	D5191	9.48		1.53	
350	EN13016-1	9.338		0.33	
353	D5191	9.210		-0.76	
370		-----		-----	
431		-----		-----	
445	D5191	9.512		1.81	
447	D5191	9.41	C	0.94	reported 64.9 kPa; iis converted kPa to psi
463	D5191	9.340		0.34	
485		-----		-----	
495	D5191	9.33		0.26	
557		-----		-----	
562	D5191	9.49		1.62	
631	D5191	9.348		0.41	
657	D5191	9.35		0.43	
862	D5191	9.32		0.17	
868	D5191	9.31		0.09	
970		-----		-----	
974	D5191	9.28		-0.16	
1006		-----		-----	
1017	D5191	9.326		0.23	
1026		-----		-----	
1059	D5191	9.387		0.74	
1081		-----		-----	
1109	D5191	9.28		-0.16	
1161	EN13016-1	9.164		-1.15	
1167	EN13016-1	8.44	C,G(0.01)	-7.30	reported 58.2 kPa; iis converted kPa to psi
1201	D5191	9.36		0.51	
1231		-----		-----	
1254	D5191	9.115		-1.57	
1259	D5191	9.30		0.00	
1299	D5191	9.1374		-1.38	
1340	EN13016-1	8.3832	G(0.01)	-7.78	
1395	D5191	9.19		-0.93	
1428		-----		-----	
1501	D5191	9.241		-0.50	
1546	EN13016-1	9.355		0.47	
1556	EN13016-1	9.25		-0.42	
1564		-----		-----	
1602	EN13016-1	9.283		-0.14	
1603	in house	9.051		-2.11	
1613	D5191	9.268		-0.27	
1631		-----		-----	
1634	D5191	9.255		-0.38	
1654		-----		-----	
1657	D5191	8.50	G(0.01)	-6.79	
1667	EN13016-1	9.384		0.72	
1677	D5191	9.39		0.77	

1724	IP394	9.35		0.43	
1730		-----		-----	
1740		-----		-----	
1776	EN13016	9.21	C	-0.76	first reported:9.87
1783	D5191	9.239		-0.51	
1789		-----		-----	
1807	D5191	9.42		1.02	
1810	D5191	9.17		-1.10	
1811	D5191	9.23		-0.59	
1833	D5191	9.55		2.13	
1849	ISO13016-1	9.377		0.66	
1851		-----		-----	
1854		-----		-----	
1936	EN13016-1	9.38		0.68	
1937	EN13016-1	9.28		-0.16	
1938		-----		-----	
1951	IP394	9.391		0.78	
2129	D5191	9.380		0.68	
2130	D5191	9.25		-0.42	

normality	OK
n	67
outliers	3
mean (n)	9.299
st.dev. (n)	0.0917
R(calc.)	0.257
R(D5191:13)	0.330



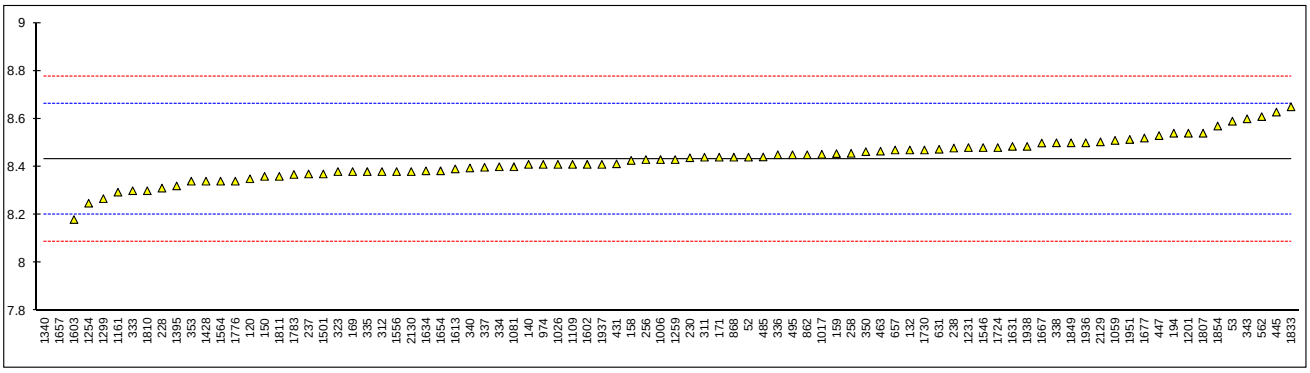


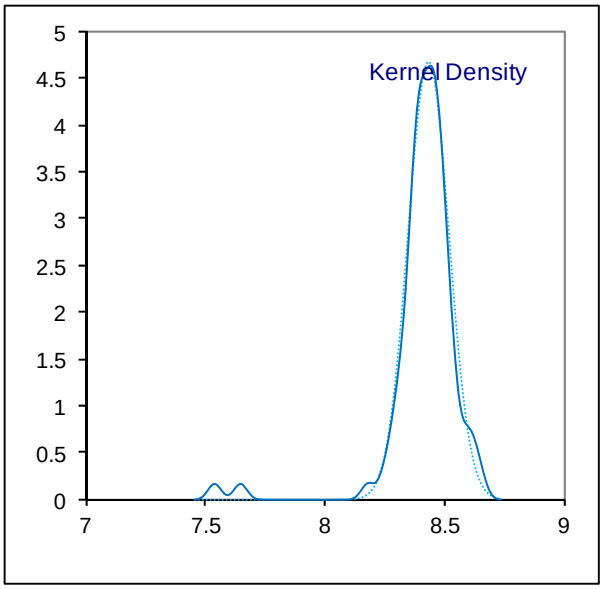
Determination of DVPE (acc. to ASTM D5191) on sample #14010; results in psi

lab	method	value	mark	z(targ)	remarks
52	D5191	8.44		0.07	
53	D5191	8.59		1.38	
120	D5191	8.35		-0.71	
132	D5191	8.47		0.33	
140	D5191	8.41		-0.19	
150	D5191	8.36		-0.63	
158	D5191	8.4265		-0.05	
159	D5191	8.455		0.20	
169	D5191	8.38		-0.45	
171	D5191	8.44		0.07	
193		-----		-----	
194	D5191	8.54		0.94	
225		-----		-----	
228	D5191	8.311		-1.05	
230	D5191	8.4375		0.05	
237	D5191	8.37		-0.54	
238	D5191	8.478		0.40	
256	D5191	8.43		-0.02	
258	D5191	8.456		0.21	
311	D5191	8.44		0.07	
312	D5191	8.38		-0.45	
323	D5191	8.38		-0.45	
333	D5191	8.3		-1.15	
334	D5191	8.40		-0.28	
335	D5191	8.38		-0.45	
336	D5191	8.45		0.16	
337	D5191	8.398		-0.30	
338	D5191	8.5	C	0.60	first reported: 58.3
340	EN13016-1	8.395		-0.32	
343	D5191	8.60		1.47	
350	EN13016-1	8.463		0.27	
353	D5191	8.340		-0.80	
370		-----		-----	
431	D5191	8.412189		-0.17	
445	D5191	8.628		1.71	
447	D5191	8.53	C	0.86	reported 58.8 kPa; iis converted kPa to psi
463	D5191	8.465		0.29	
485	D5191	8.441		0.08	
495	D5191	8.45		0.16	
557		-----		-----	
562	D5191	8.609		1.55	
631	D5191	8.473		0.36	
657	D5191	8.47		0.33	
862	D5191	8.45		0.16	
868	D5191	8.44		0.07	
970		-----		-----	
974	D5191	8.41		-0.19	
1006	D5191	8.43		-0.02	
1017	D5191	8.452		0.18	
1026	D5191	8.41		-0.19	
1059	D5191	8.510		0.68	
1081	D5191	8.4		-0.28	
1109	D5191	8.41		-0.19	
1161	EN13016-1	8.294		-1.20	
1167		-----		-----	
1201	D5191	8.54		0.94	
1231	D5191	8.48	C	0.42	reported 58.5 kPa; iis converted kPa to psi
1254	D5191	8.248		-1.60	
1259	D5191	8.43		-0.02	
1299	D5191	8.2672		-1.44	
1340	EN13016-1	7.542	G(0.01)	-7.77	
1395	D5191	8.32		-0.98	
1428	EN13016-1	8.34		-0.80	
1501	D5191	8.370		-0.54	
1546	EN13016-1	8.480		0.42	
1556	EN13016-1	8.38		-0.45	
1564	EN13016	8.34		-0.80	
1602	EN13016-1	8.410		-0.19	
1603	in house	8.180		-2.20	
1613	D5191	8.391		-0.36	
1631	EN13016-1	8.485		0.46	
1634	D5191	8.383		-0.43	
1654	EN13016-1	8.383		-0.43	
1657	D5191	7.65	G(0.01)	-6.82	
1667	EN13016-1	8.499		0.59	
1677	D5191	8.52		0.77	

1724	IP394	8.48		0.42	
1730	EN13016-1	8.470		0.33	
1740		-----		-----	
1776	EN13016	8.34	C	-0.80	first reported: 8.98
1783	D5191	8.368		-0.56	
1789		-----		-----	
1807	D5191	8.54		0.94	
1810	D5191	8.30		-1.15	
1811	D5191	8.36		-0.63	
1833	D5191	8.65		1.90	
1849	ISO13016-1	8.500		0.60	
1851		-----		-----	
1854	D5191	8.57		1.21	
1936	EN13016-1	8.50		0.60	
1937	EN13016-1	8.41		-0.19	
1938	D5191	8.485		0.46	
1951	IP394	8.514		0.72	
2129	D5191	8.504		0.63	
2130	D5191	8.38		-0.45	

normality	OK
n	84
outliers	2
mean (n)	8.432
st.dev. (n)	0.0852
R(calc.)	0.239
R(D5191:13)	0.321



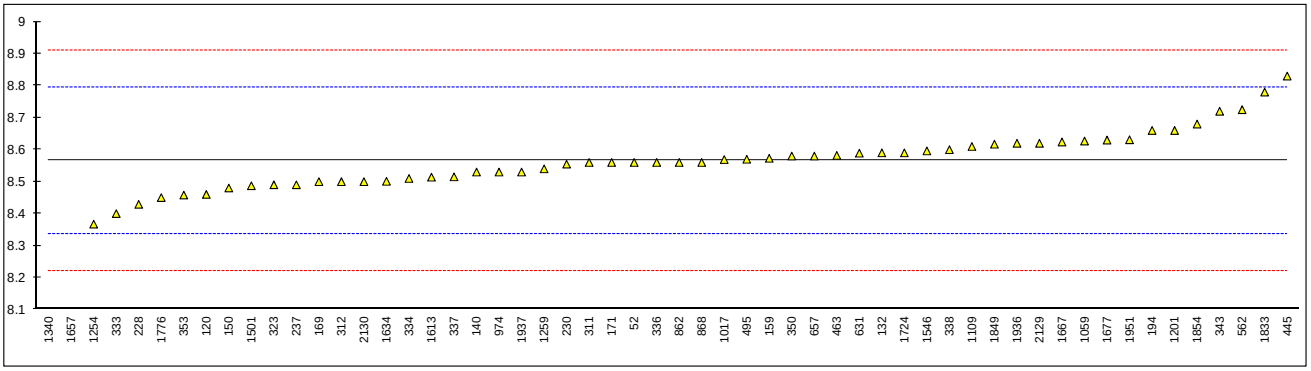


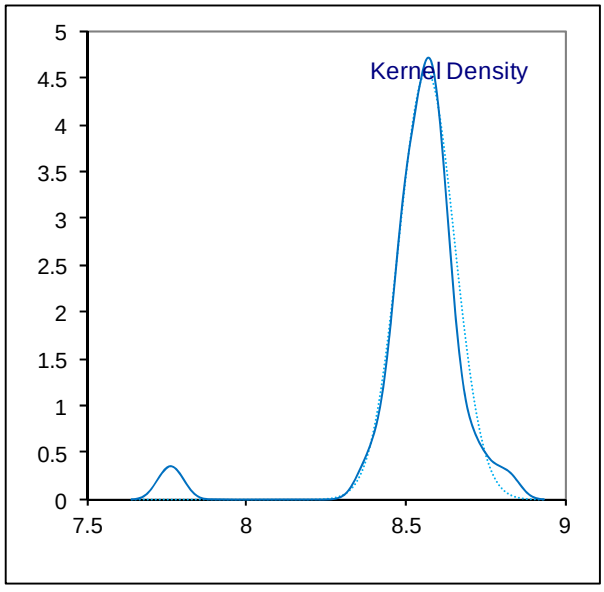
Determination of DVPE (acc. to EPA) on sample #14010; results in psi

lab	method	value	mark	z(targ)	remarks
52	D5191	8.56		-0.05	
53		-----		-----	
120	D5191	8.46		-0.92	
132	D5191	8.59		0.21	
140	D5191	8.53		-0.31	
150	D5191	8.48		-0.75	
158		-----		-----	
159	D5191	8.573		0.06	
169	D5191	8.50		-0.57	
171	D5191	8.56		-0.05	
193		-----		-----	
194	D5191	8.66		0.82	
225		-----		-----	
228	D5191	8.429		-1.19	
230	D5191	8.5547		-0.10	
237	D5191	8.49		-0.66	
238		-----		-----	
256		-----		-----	
258		-----		-----	
311	D5191	8.56		-0.05	
312	D5191	8.50		-0.57	
323	D5191	8.49		-0.66	
333	D5191	8.4		-1.44	
334	D5191	8.51		-0.48	
335		-----		-----	
336	D5191	8.56		-0.05	
337	D5191	8.515		-0.44	
338	D5191	8.6	C	0.30	first reported: 59.1
340		-----		-----	
343	D5191	8.72		1.34	
350	EN13016-1	8.580		0.12	
353	D5191	8.458		-0.94	
370		-----		-----	
431		-----		-----	
445	D5191	8.830		2.30	
447		-----		-----	
463	D5191	8.582		0.14	
485		-----		-----	
495	D5191	8.57		0.04	
557		-----		-----	
562	D5191	8.725		1.38	
631	D5191	8.589		0.20	
657	D5191	8.58		0.12	
862	D5191	8.56		-0.05	
868	D5191	8.56		-0.05	
970		-----		-----	
974	D5191	8.53		-0.31	
1006		-----		-----	
1017	D5191	8.569		0.03	
1026		-----		-----	
1059	D5191	8.627		0.53	
1081		-----		-----	
1109	D5191	8.61		0.38	
1161		-----		-----	
1167		-----		-----	
1201	D5191	8.66		0.82	
1231		-----		-----	
1254	D5191	8.367		-1.73	
1259	D5191	8.54		-0.22	
1299		-----		-----	
1340	EN13016-1	7.743	G(0.01)	-7.15	
1395		-----		-----	
1428		-----		-----	
1501	D5191	8.487		-0.68	
1546	EN13016-1	8.596		0.26	
1556		-----		-----	
1564		-----		-----	
1602		-----		-----	
1603		-----		-----	
1613	D5191	8.514		-0.45	
1631		-----		-----	
1634	D5191	8.501		-0.56	
1654		-----		-----	
1657	D5191	7.78	G(0.01)	-6.83	
1667	EN13016-1	8.624		0.51	
1677	D5191	8.63		0.56	

1724	IP394	8.59		0.21	
1730		-----		-----	
1740		-----		-----	
1776	D5191	8.45	C	-1.01	first reported: 9.08
1783		-----		-----	
1789		-----		-----	
1807		-----		-----	
1810		-----		-----	
1811		-----		-----	
1833	D5191	8.78		1.86	
1849	ISO13016-1	8.617		0.45	
1851		-----		-----	
1854	D5191	8.68		0.99	
1936	EN13016-1	8.62		0.47	
1937	EN13016-1	8.53		-0.31	
1938		-----		-----	
1951	IP394	8.631		0.57	
2129	D5191	8.620		0.47	
2130	D5191	8.50		-0.57	

normality	suspect
n	54
outliers	2
mean (n)	8.566
st.dev. (n)	0.0873
R(calc.)	0.244
R(D5191:13)	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	-1.03	-0.80	-0.72	-0.02	-0.14	-0.31	-----	-----	-----	-----	-----	-----
120	-0.76	-0.27	0.02	-0.13	-0.21	-1.13	-----	-----	-----	-----	-----	-----
132	-0.07	0.25	1.06	0.41	0.43	1.30	-----	-----	-----	-----	-----	-----
140	0.84	1.21	2.40	0.25	0.15	0.48	-----	-----	-----	-----	-----	-----
150	-1.13	-0.01	0.02	0.03	-0.07	-0.55	-----	-----	-----	-----	-----	-----
158	0.68	0.43	-0.72	**-6.64**	-0.49	0.85	-----	-----	-----	-----	-----	-----
159	0.63	0.25	1.36	0.57	0.36	0.31	-----	-----	-----	-----	-----	-----
169	-0.12	0.43	0.77	0.30	0.86	1.22	-----	-----	-----	-----	-----	-----
171	1.80	0.43	1.21	0.08	0.15	0.19	-----	-----	-----	-----	-----	-----
193	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
194	-1.20	-0.27	-0.92	-0.15	-0.09	-0.95	-----	-----	-----	-----	-----	-----
212	0.47	1.13	2.40	1.21	**2.78**	-0.31	-----	-----	-----	-----	-----	-----
217	-0.33	-0.10	-0.72	-0.02	-0.21	-0.93	-----	-----	-----	-----	-----	-----
221	-----	-----	-----	-----	-----	-----	0.64	1.32	1.31	0.04	0.15	0.75
224	-----	-----	-----	-----	-----	-----	0.56	0.10	-2.49	-1.96	**-3.12**	-0.79
225	-----	-----	-----	-----	-----	-----	0.29	-0.82	-1.23	-1.14	-0.46	0.75
228	-----	-----	-----	-----	-----	-----	-1.44	0.20	**-4.29**	**-3.57**	**-3.42**	-1.11
230	-----	-----	-----	-----	-----	-----	0.02	-0.74	0.72	1.06	0.40	1.74
237	-----	-----	-----	-----	-----	-----	-0.05	-0.57	-0.72	-0.28	-1.33	-1.11
238	-----	-----	-----	-----	-----	-----	0.64	-0.05	0.04	2.00	-0.03	-0.86
252	-----	-----	-----	-----	-----	-----	-0.74	0.46	0.47	-----	0.15	0.13
253	-----	-----	-----	-----	-----	-----	-2.13	-0.65	-2.08	-1.53	-1.27	-1.11
254	1.05	0.51	3.30	-----	**1.93**	0.44	-----	-----	-----	-----	-----	-----
256	-----	-----	-----	-----	-----	-----	-0.05	-0.40	0.89	-----	0.77	-1.11
258	1.80	0.86	2.40	1.00	**2.43**	0.85	-----	-----	-----	-----	-----	-----
273	0.31	0.51	-1.47	0.14	-0.07	-1.38	-----	-----	-----	-----	-----	-----
311	-0.44	0.08	-0.58	-0.34	-0.07	0.52	-----	-----	-----	-----	-----	-----
312	1.00	-0.36	0.32	0.14	0.15	0.02	-----	-----	-----	-----	-----	-----
323	0.47	-0.19	-0.72	0.08	0.08	0.64	-----	-----	-----	-----	-----	-----
333	-0.12	-0.01	0.17	-0.29	-0.35	0.23	-----	-----	-----	-----	-----	-----
334	-1.13	-1.06	1.51	-0.13	-0.28	0.15	-----	-----	-----	-----	-----	-----
335	-0.81	-0.71	0.77	0.19	-0.56	-0.51	-----	-----	-----	-----	-----	-----
336	-0.44	0.34	1.36	0.19	0.22	0.11	-----	-----	-----	-----	-----	-----
337	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
338	-0.12	0.60	0.62	0.14	0.01	-1.05	-----	-----	-----	-----	-----	-----
340	-0.49	-0.36	0.77	0.51	0.58	-0.88	-----	-----	-----	-----	-----	-----
343	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
353	0.73	-0.62	0.32	-0.13	0.15	-0.18	-----	-----	-----	-----	-----	-----
370	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
431	0.89	-0.36	2.40	0.62	**2.00**	0.19	-----	-----	-----	-----	-----	-----
444	1.37	**3.05**	0.62	-1.04	-0.99	1.18	-----	-----	-----	-----	-----	-----
445	0.41	0.34	-1.32	-0.13	0.08	-0.72	-----	-----	-----	-----	-----	-----
447	-1.51	-0.10	0.47	0.08	0.22	0.60	-----	-----	-----	-----	-----	-----
463	-0.28	-0.27	0.47	0.19	0.58	1.55	-----	-----	-----	-----	-----	-----
485	0.41	-0.32	0.24	-0.24	0.04	0.27	-----	-----	-----	-----	-----	-----
495	-0.92	-0.45	-1.92	-0.40	-0.49	-0.27	-----	-----	-----	-----	-----	-----
511	-----	-----	-----	-----	-----	-----	0.29	0.03	0.47	0.04	0.15	-0.18
541	-----	-----	-----	-----	-----	-----	-0.05	0.46	1.31	0.82	0.77	-1.11
557	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
562	2.87	0.25	0.32	-0.24	1.00	1.14	-----	-----	-----	-----	-----	-----
603	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
631	-----	-----	-----	-----	-----	-----	-1.09	-0.82	0.04	-0.75	-0.46	0.13
657	1.16	-0.10	0.77	0.35	0.29	1.97	-----	-----	-----	-----	-----	-----
671	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
753	0.84	-0.10	**-6.53**	**-1.42**	-0.92	-2.29	-----	-----	-----	-----	-----	-----
862	0.41	-0.36	-0.72	-0.24	-0.35	-0.51	-----	-----	-----	-----	-----	-----
868	0.09	0.43	0.62	0.41	0.50	0.60	-----	-----	-----	-----	-----	-----
912	-----	-----	-----	-----	-----	-----	-0.05	0.46	2.16	1.60	0.77	-1.11
922	-----	-----	-----	-----	-----	-----	-0.05	0.46	-0.38	1.60	0.77	-1.11
963	-1.72	-0.62	-1.17	-0.61	-0.71	-0.35	-----	-----	-----	-----	-----	-----
970	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
974	0.36	-0.45	-0.43	0.03	0.29	0.60	-----	-----	-----	-----	-----	-----
994	-----	-----	-----	-----	-----	-----	0.29	-1.42	0.38	-0.12	0.52	-0.49
995	-----	-----	-----	-----	-----	-----	-0.33	-0.40	0.13	-0.12	-0.22	-0.49
996	-----	-----	-----	-----	-----	-----	-0.40	-0.40	1.31	0.43	1.08	-0.18
1006	0.73	-0.27	1.51	0.25	0.01	-0.43	-----	-----	-----	-----	-----	-----
1016	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1017	1.91	0.34	-1.47	-0.24	-0.42	-0.27	-----	-----	-----	-----	-----	-----
1026	-0.55	-0.45	-1.77	-0.24	-0.42	-0.68	-----	-----	-----	-----	-----	-----
1059	0.52	-0.71	-0.58	-0.18	-0.14	-0.64	-----	-----	-----	-----	-----	-----
1066	-1.08	0.60	2.55	0.78	1.36	0.07	-----	-----	-----	-----	-----	-----
1080	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1081	0.09	-0.01	-0.43	0.19	-0.28	-0.72	-----	-----	-----	-----	-----	-----

1109	0.36	-0.45	-0.28	-0.13	-0.28	1.43	-----	-----	-----	-----	-----	-----
1126	0.52	-0.27	0.02	0.25	1.00	1.68	-----	-----	-----	-----	-----	-----
1161	1.21	0.08	-2.51	-0.40	-0.07	-1.26	-----	-----	-----	-----	-----	-----
1167	0.68	-0.27	-2.66	-0.45	-0.63	-1.17	-----	-----	-----	-----	-----	-----
1186	-----	-----	-----	-----	-----	-----	1.33	0.03	-2.93	**-3.88**	**-4.16**	**-11.00**
1201	-0.44	0.51	0.17	0.08	0.08	-0.88	-----	-----	-----	-----	-----	-----
1213	0.52	-0.10	-0.87	-0.18	0.29	-1.01	-----	-----	-----	-----	-----	-----
1215	-0.57	0.37	0.20	0.21	0.21	-0.08	-----	-----	-----	-----	-----	-----
1231	-0.49	0.25	0.32	0.30	0.26	-1.15	-----	-----	-----	-----	-----	-----
1237	-----	-----	-----	-----	-----	-----	1.33	0.63	0.47	0.04	-0.59	2.60
1254	-1.03	-0.19	0.62	0.30	0.50	-0.76	-----	-----	-----	-----	-----	-----
1259	-1.35	0.16	-2.06	-0.93	-1.63	-0.02	-2.82	-0.40	-1.23	-1.53	-1.08	-0.49
1297	-1.03	0.16	0.47	0.19	0.22	-0.51	-----	-----	-----	-----	-----	-----
1299	-0.76	-0.19	-1.17	-0.24	0.29	-0.02	-----	-----	-----	-----	-----	-----
1340	-0.81	0.43	0.91	-0.29	-0.21	-0.06	-----	-----	-----	-----	-----	-----
1347	-----	-----	-----	-----	-----	-----	-0.05	0.46	-0.38	-0.75	-1.08	**-6.05**
1348	0.52	-0.27	-1.02	-0.34	1.14	-0.14	-----	-----	-----	-----	-----	-----
1385	-----	-----	-----	-----	-----	-----	0.64	**-5.53**	**-5.48**	**-6.23**	**-4.78**	-0.49
1395	-0.49	0.08	-0.58	-0.18	-0.14	-1.50	-----	-----	-----	-----	-----	-----
1397	0.57	-0.01	0.62	-0.02	-0.49	0.19	-----	-----	-----	-----	-----	-----
1423	-----	-----	-----	-----	-----	-----	0.64	1.32	0.47	-0.75	-1.70	0.75
1428	0.52	-0.01	0.91	0.14	0.08	1.39	-----	-----	-----	-----	-----	-----
1450	1.59	0.08	-0.87	-0.56	-0.63	-0.60	-----	-----	-----	-----	-----	-----
1484	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1498	-1.29	0.08	0.02	0.14	0.29	-0.80	-----	-----	-----	-----	-----	-----
1501	-----	-----	-----	-----	-----	-----	-1.11	-0.44	-0.04	-0.03	-0.44	1.19
1531	1.00	**1.65**	-0.58	-0.02	0.01	-0.18	-----	-----	-----	-----	-----	-----
1543	-----	-----	-----	-----	-----	-----	1.33	0.46	0.47	-0.75	2.00	**5.08**
1546	-----	-----	-----	-----	-----	-----	0.29	0.03	0.89	0.82	0.15	1.68
1556	-1.61	-0.36	0.47	0.19	0.22	0.27	-----	-----	-----	-----	-----	-----
1564	1.53	0.08	0.91	-0.18	0.29	1.55	-----	-----	-----	-----	-----	-----
1602	0.68	-0.19	0.32	-0.24	0.15	-0.31	-----	-----	-----	-----	-----	-----
1603	-0.39	-0.36	-1.02	-0.29	-0.07	-0.43	-----	-----	-----	-----	-----	-----
1613	-1.45	0.51	2.25	0.67	1.50	-1.17	-----	-----	-----	-----	-----	-----
1631	0.31	-0.01	0.02	-0.02	0.36	1.10	-----	-----	-----	-----	-----	-----
1634	-1.35	-0.54	-1.32	-0.29	0.01	-0.72	-----	-----	-----	-----	-----	-----
1654	0.20	0.69	-0.87	0.08	0.29	0.23	-----	-----	-----	-----	-----	-----
1657	-0.97	0.16	0.62	-0.02	-0.92	-0.02	-----	-----	-----	-----	-----	-----
1667	-----	-----	-----	-----	-----	-----	1.06	0.20	0.38	0.82	0.83	0.93
1677	1.21	-0.19	-1.32	-0.61	-0.56	-1.75	-----	-----	-----	-----	-----	-----
1720	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1724	-0.39	-0.10	-0.28	-0.24	-0.35	0.31	-----	-----	-----	-----	-----	-----
1730	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1740	-0.81	-0.71	-1.02	-0.18	-0.21	0.27	-----	-----	-----	-----	-----	-----
1746	-----	-----	-----	-----	-----	-----	0.99	0.46	-0.38	0.43	0.15	1.06
1776	-0.60	-0.36	-1.92	-0.45	-0.21	0.23	-----	-----	-----	-----	-----	-----
1783	-0.12	-0.71	-1.32	-0.08	0.15	-0.14	-----	-----	-----	-----	-----	-----
1807	-----	0.08	1.06	0.35	-0.35	2.34	-----	-----	-----	-----	-----	-----
1810	-0.55	-0.19	-0.58	-0.13	-0.14	0.68	-----	-----	-----	-----	-----	-----
1811	0.25	0.25	0.02	0.08	0.29	0.02	-----	-----	-----	-----	-----	-----
1833	-0.49	0.60	1.36	0.25	0.01	0.97	-----	-----	-----	-----	-----	-----
1849	-0.81	0.60	1.21	0.30	0.22	1.22	-----	-----	-----	-----	-----	-----
1851	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1854	-0.33	-0.80	-0.87	0.08	-0.42	0.02	-----	-----	-----	-----	-----	-----
1936	0.36	0.25	-1.17	-0.34	-0.49	0.07	-----	-----	-----	-----	-----	-----
1937	1.59	0.78	-0.72	-0.13	-0.14	-0.76	-----	-----	-----	-----	-----	-----
1938	0.31	0.69	-1.02	0.03	-0.07	-0.55	-----	-----	-----	-----	-----	-----
1948	-1.29	0.34	0.02	0.25	1.00	-0.72	-----	-----	-----	-----	-----	-----
1951	-0.71	-0.27	0.02	0.25	0.29	0.56	-----	-----	-----	-----	-----	-----
2129	-0.92	-0.27	0.91	0.30	-0.14	0.11	-----	-----	-----	-----	-----	-----
2130	-0.49	**-1.76**	-2.51	-0.83	-1.27	1.63	-----	-----	-----	-----	-----	-----

Z-scores underlined and bold belong to the statistical outliers acc. to Grubbs/Dixon/Rosner outlier test.

APPENDIX 3

Number of participants per country

1 lab in	ARGENTINA
2 labs in	AUSTRALIA
1 lab in	AUSTRIA
1 lab in	AZERBAIJAN
2 labs in	BELGIUM
1 lab in	BOSNIA and HERZEGOVINA
1 lab in	BRAZIL
3 labs in	BULGARIA
2 lab in	CANADA
2 labs in	CHILE
3 labs in	CHINA, People's Republic
1 lab in	COSTA RICA
1 lab in	COTE D'IVOIRE
2 labs in	CROATIA
2 labs in	CZECH REPUBLIC
1 lab in	DJIBOUTI
1 lab in	ESTONIA
7 labs in	FRANCE
1 lab in	GEORGIA
2 labs in	GERMANY
6 labs in	GREECE
1 lab in	GUAM
1 lab in	GUINEA REPUBLIC
1 lab in	HUNGARY
1 lab in	INDIA
1 lab in	IRELAND
1 lab in	ISRAEL
1 lab in	JORDAN
2 labs in	KENYA
1 lab in	LATVIA
3 labs in	LEBANON
2 labs in	LITHUANIA
2 labs in	MALAYSIA
1 lab in	MAURITIUS
1 lab in	MOROCCO
1 lab in	MOZAMBIQUE
8 labs in	NETHERLANDS
1 lab in	NIGER
3 labs in	NIGERIA
1 lab in	OMAN
1 lab in	PAKISTAN
1 lab in	PERU
1 lab in	PHILIPPINES
2 labs in	POLAND
1 lab in	PORTUGAL
1 lab in	RUSSIAN FEDERATION
1 lab in	SAUDI ARABIA
1 lab in	SENEGAL
1 lab in	SINGAPORE
2 labs in	SLOVENIA
1 lab in	SOUTH AFRICA
6 labs in	SPAIN
2 labs in	SUDAN
3 labs in	SWEDEN
1 lab in	TAIWAN
1 lab in	TANZANIA
2 labs in	THAILAND
1 lab in	TOGO
1 lab in	TUNISIA
12 labs in	TURKEY
1 lab in	TURKMENISTAN
1 lab in	UNITED ARAB EMIRATES
6 labs in	UNITED KINGDOM
10 labs in	UNITED STATES OF AMERICA
1 lab in	VIETNAM

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
R(0.01)	= outlier in Rosner outlier test
R(0.05)	= straggler in Rosner 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:

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11 J.N. Miller, Analyst, 118, 455, (1993)

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13 The Royal Society of Chemistry 2002, Analyst 2002, 127 page 1359-1364, P.J. Lowthian and M. Thompson (see http://www.rsc.org/suppdata/an/b2/b205600n/).

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