Results of Proficiency Test Gasoline (ASTM specification) February 2012

Organised by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

Author: ing. R.J. Starink
Correctors: dr. R.G. Visser & ing. L. Sweere

Report: iis12B01ASTM

May 2012

— empty page ---

CONTENTS

1 INTRODUCTION

Since 1995, the Institute organizes a proficiency scheme for Gasoline. During the annual proficiency testing program 2011/2012, it was decided to continue the round robin for the analysis of Gasoline in accordance with the latest applicable version of ASTM D4814:11b specification. In this interlaboratory study 126 laboratories in 66 different countries have participated. See appendix 3 for the number of participants per country. In this report, the results of the gasoline proficiency test are presented and discussed. This report is also electronically available through the iis internet site www.iisnl.com.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organiser of this proficiency test. Sample analyses for fit-for-use and homogeneity testing were subcontracted. In this proficiency test, the participants received, depending on their registration, 2*1 litre euro 95 Gasoline (labelled #12006) and/or 1*1 litre (± 800 mL filled) euro 95 Gasoline (labelled #12007) for DVPE only. The Gasoline for sample #12006 was enriched with Avgas (with 0.55 g Pb/L) to find a positive result on Lead.
Participants were requested to report rounded and unrounded results. The unrounded results were preferably used for statistical evaluation.

2.1 ACCREDITATION

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, is accredited in accordance with ISO17043:2010 and ILAC-G13:2007, (R007), since January 2000, by the Dutch Accreditation Council: RvA (Raad voor Accreditatie). This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentially of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

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

2.3 CONFIDENTIALITY STATEMENT

All data present 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, 400 litre of Gasoline Euro 95 was obtained from a local petrol station in the Netherlands in August 2011. After transferring the 400 liter into a 500 liter mixing vessel, 4 liter Avgas (iis11B02, #11033) was added. After homogenisation, first 100 amber glass bottles of 1 litre with approx. 800 mL, for Vapour Pressure only, were filled and labelled #12007. The homogeneity of the subsamples #12007 was checked by determination of Dry Vapour Pressure Equivalent in accordance with ASTM D5191:10 on 8 stratified randomly selected samples.

	DVPE in psi
Sample #12007-1	8.82
Sample #12007-2	8.82
Sample #12007-3	8.80
Sample #12007-4	8.80
Sample #12007-5	8.80
Sample #12007-6	8.82
Sample #12007-7	8.79
Sample #12007-8	8.78

Table 1: homogeneity test of subsamples #12007

From the remaining material in the 500L mixing vessel, 310 amber glass bottles of 1 litre were filled and labelled #12006. The homogeneity of the subsamples #12006 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 #12006-1	747.50
Sample #12006-2	747.49
Sample #12006-3	747.50
Sample #12006-4	747.53
Sample #12006-5	747.51
Sample #12006-6	747.52
Sample #12006-7	747.50
Sample #12006-8	747.53
Sample #12006-9	747.47
Sample #12006-10	747.47

Table 2: homogeneity test of subsamples #12006

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 #12006)	0.06	----
r (sample #12007)	----	0.04
reference method	ASTM D4052:11	ASTM D5191:10
0.3 x R (ref. method)	0.60	0.10

Table 3: repeatabilities of subsamples #12006 and #12007

The repeatabilities of the results of homogeneity test for Density and DVPE were in agreement with the respective repeatabilities required by ASTM D4052 and ASTM D5191. Therefore, homogeneity of subsamples #12006 and #12007 was assumed.

To the participants, depending on their registration, 2*1 litre bottle of sample #12006 and/or 1*1 litre bottle (± 800 mL filled) of sample #12007 were sent on February 8, 2012.

2.5 STABILITY OF THE SAMPLES

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

2.6 ANALYSIS

The participants were requested to determine API Gravity, Aromatics by FIA, Benzene, Copper Strip Corrosion, Doctor Test, Density @ 15°C, Distillation (automated and manual), Existent gum, Lead, Phosphorus, Olefins by FIA, DIPE, Ethanol, ETBE, MTBE, Iso-Butanol, TAME, t-Butanol, Methanol, Oxygen, Oxidation Stability, Total Oxygenates, Sulphur, RON and MON on sample #12006.
On sample #12007, 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 and the preferred test methods were printed, was sent together with each set of samples. In addition, a letter of instructions and a SDS were added to the package.

3 RESULTS

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

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

3.1 STATISTICS

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

First, the normality of the distribution of the various data sets per determination was checked by means of the Lilliefors-test. After removal of outliers, this check was repeated. Not all data sets proved to have a normal distribution, in which cases the statistical evaluation of the results should be used with due care.
In accordance to ISO 5725 (1986 and 1994) the original results per determination were submitted subsequently to Dixon and Grubbs outlier tests. Outliers are marked by D(0.01) for the Dixon test, by G(0.01) or DG(0.01) for the Grubbs test. Stragglers are marked by D(0.05) for the Dixon test, by G(0.05) or DG(0.05) for the Grubbs test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

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

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

3.2 GRAPHICS

In order to visualise the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported analysis results are plotted. The corresponding laboratory numbers are under the X-axis.
The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected standard. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle.
Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms (see appendix 4; nr.13 and 14).

3.3 Z-SCORES

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

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

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

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

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

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

4 EVALUATION

In this proficiency test, problems were encountered during the transport of the samples to the laboratories in Argentina, Belarus Republic, Bolivia, Brazil, Chile, Costa Rica, Côte D'Ivory, Iran, Malaysia, Oman, Qatar, Russia, Saudi Arabia, Sudan, Tanzania, Tunesia, Turkey and U.S. Virgin Islands. The samples to these laboratories arrived near of after the final reporting date.
From the 126 participants, 40 participants did report the results after the deadline for reporting and 7 participants did not report any results at all. The 119 reporting laboratories did send in 1962 numerical results. Observed were 62 outlying results, which is 3.2%. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

4.1 EVALUATION PER TEST

In this section, the results are discussed per test.
Not all data sets proved to have a normal distribution. Not normal distributions were found for the following determinations for sample #12006: API gravity, Benzene, Density, Distillation (for automated: 70 and 90% evaporated), Aromatics by FIA, Ethanol and Sulphur. For sample #12007: TVP, DVPE (acc. ASTM and EPA). In these cases, the statistical evaluation should be used with care.

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

Benzene: 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 D3606:10.

Copper strip: No problems have been observed, all participants agreed on a result of 1 (1A).

Density @ 15°C: This determination was not problematic. Seven 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 D86:11, except for 50% evaporated.
Also the manual mode determination was not problematic. In total three statistical outliers were observed. The calculated reproducibilities after rejection of the statistical outliers, are all in agreement with the requirements of ASTM D86:11, except for 90% evaporated.

Doctor Test: No analytical problems have been observed, all participants, except two, 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 D381:09.

Olefins by FIA: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ASTM D1319:10.

Aromatics by FIA: This determination was problematic. Five statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D1319:10. When the results for FIA were evaluated separately, the spread was even larger and again not in agreement with the requirements of ASTM D1319:10.

Lead: Serious analytical problems have been observed. The sample was enriched with Avgas containing 0.55 g Pb/L. Therefore the minimal Lead concentration to be found was known (added amount = 5.5 mg Pb/L). The laboratories should be able to find at least 2.9 mg Pb/L [5.5 mgPb/$L_{(\text{added amount})}$ – 2.6 mg Pb/$L_{(R\ D3237)}$].
However, 19 of the 41 laboratories reported a lower concentration than 2.9

mg Pb/L (of which 11 <2.5 mg/L) and therefore these test results were rejected prior to data analysis.
Finally, three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is still not in agreement with the requirements of ASTM D3237:06e1.

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

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

Ethanol: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of ASTM D4815:09.

MTBE: The consensus value of the group (0.087%V/V) was below the application range (0.20 – 20.0 %V/V). Therefore, no significant conclusions were drawn. Two false positive results were observed.

Other Oxygenates: The concentrations of other oxygenates were 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.

Total Oxygenates: Regretfully no precison data are available for this determination. Therefore no significant conclusions were drawn. Two statistical outliers and two false negative results were observed. When the calculated reproducibility of this PT is compared with the calculated reproducibility of the PT from February 2011 (iis11B01), a significant improvement is visible (0.84 vs 1.79 %M/M).
It was observed that a large number of participants (18!!) reported for total oxygenates in %M/M exactly the same result as for Ethanol in %V/V.

Oxygen content: This determination was problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D5599:10.

Sulphur: This determination was problematic at the low level of 5.36 mg/kg. Seven statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D5453:09.

RON: This determination was problematic. Two statistical outliers were observed and the calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D2699:11.

MON: This determination was problematic for a number of participants. Four statistical outliers were observed. However, the calculated reproducibility

after rejection of the statistical outliers is in full agreement with the requirements of ASTM D2700:11.

TVP: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility, after rejection of the statistical outliers, is in agreement with the requirements of ASTM D5191:10.

DVPE: The conversion of the measured Total Vapour Pressure to the corresponding Dry Vapour Pressure Equivalent (DVPE) as described in ASTM D5191 and the U.S. EPA guidelines (40 CFR Part 80, App. E, Method3), showed in total only one statistical outlier.
Both calculated reproducibilities of DVPE after rejection of the statistical outlier, are in good agreement with the requirements of ASTM D5191 and EPA guidelines. No calculation errors with the conversion of TVP to DVPE were observed.

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 #12006 and #12007, 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		-----	66	57.70	0.24	0.51
Benzene		% V/V	72	0.83	0.12	0.16
Copper Strip 3 hrs @ 50°C		-----	85	1 (1a)	n.a.	n.a.
Density @ 15 °C		kg/m^3	106	747.6	0.6	2.0
Dist. Auto.	IBP	ºC	90	36.2	4.7	5.2
	10%-evap.	ºC	88	50.7	1.7	3.2
	50%-evap.	ºC	90	95.4	2.3	1.9
	70%-evap.	ºC	91	123.5	2.2	5.5
	90%-evap.	ºC	91	152.3	2.1	4.0
	FBP	ºC	89	184.0	6.0	6.8
Dist. Man.	IBP	ºC	22	37.7	5.1	5.6
	10%-evap.	ºC	22	51.0	3.2	4.0
	50%-evap.	ºC	22	94.8	3.2	4.1
	70%-evap.	ºC	20	122.8	3.3	4.5
	90%-evap.	ºC	21	151.5	4.8	4.3
	FBP	ºC	20	183.6	4.8	7.2
Doctor Test		-----	64	negative	n.a.	n.a.
Existent gum (washed)		mg/100mL	45	0.5	0.7	2.1
Olefins by FIA		%V/V	61	8.37	2.58	2.93
Aromatics by FIA		%V/V	60	32.90	4.09	3.70
Lead as Pb		mg/L	20	5.8	3.5	2.6
Phosphorus as P		mg/L	9	0.03	0.06	(0.13)
Oxidation Stability		min	52	>300	n.a.	n.a.
Ethanol		%V/V	63	4.61	0.76	0.55
MTBE		%V/V	35	0.09	0.09	(0.02)
Total Oxygenates		%M/M	49	4.77	0.84	unknown
Oxygen content		%M/M	56	1.73	0.23	0.21
Sulphur		mg/kg	83	5.36	2.83	2.04
RON		-----	60	95.9	0.8	0.7
MON		-----	40	85.3	1.0	0.9

table 4: performance evaluation sample #12006

* 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	61	9.69	0.28	0.33
DVPE acc. to ASTM D5191	psi	75	8.80	0.28	0.32
DVPE acc. EPA	psi	58	8.90	0.25	0.33

table 5: performance evaluation sample #12007

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 2012 WITH PREVIOUS PTS

	February 2012	*October 2011*	*February 2011*	*October 2010*
Number of rep. participants	119	111	107	91
Number of results reported	1962	2153	1990	1827
Statistical outliers	62	68	84	77
Percentage outliers	3.2%	3.2%	4.2%	4.2%

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 the following table:

Determination	*February 2012*	*October 2011*	*February 2011*	*October 2010*
API Gravity	++	+	+	+
Benzene	++	--	++	--
Density @ 15°C	++	+	++	-
Distillation Automated	++	-	++	+
Distillation Manual	++	+/-	+/-	-
Existent gum (washed)	++	(-)	(++)	(+/-)
Olefins by FIA	+	--	+	(--)
Aromatics by FIA	-	-	+	++
Lead as Pb	--	(++)	(++)	(++)
Phosphorus as P	(+)	n.e.	(--)	n.e.
Ethanol	--	--	--	--
MTBE	(--)	+	--	-
Oxygen content	+/-	-	--	n.e.
Sulphur	--	+	+	+/-
RON	-	+	+/-	+/-
MON	+/-	+	-	-
TVP	++	+	+	++
DVPE ASTM D5191	++	+	+/-	++

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
n.d.: not determined

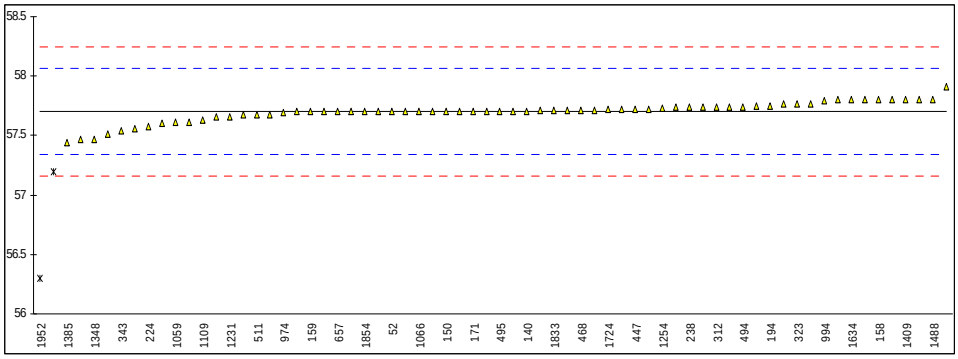
APPENDIX 1

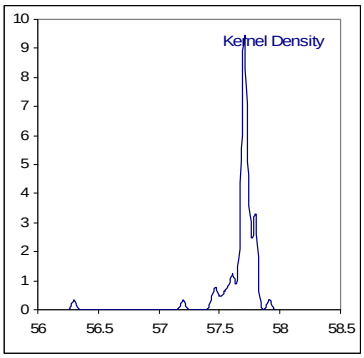
Determination of API Gravity on sample #12006;

lab	method	value	mark	z(targ)	remarks
52	D4052	57.7		0.00	
62	CALC	57.7		0.00	
120	D4052	57.74		0.22	
132	D4052	57.70		0.00	
140	D4052	57.705		0.03	
150	D4052	57.7	C	0.00	First reported 56.4
158	D4052	57.8		0.55	
159	D4052	57.70		0.00	
169	D4052	57.7		0.00	
171	D4052	57.7		0.00	
180		-----		-----	
193	D4052	57.747		0.26	
194	D4052	57.75		0.28	
217		-----		-----	
221		-----		-----	
224	D1298	57.58		-0.66	
225	CALC	57.735		0.19	
228	D1298	57.68		-0.11	
230		-----		-----	
237	D4052	57.8		0.55	
238	D1298	57.74		0.22	
252		-----		-----	
253	D4052	57.74		0.22	
254		-----		-----	
256		-----		-----	
258	IP1250	57.91		1.16	
273	D4052	57.8		0.55	
312	D4052	57.74		0.22	
323	D4052	57.77		0.39	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340	D4052	57.71		0.06	
343	CALC	57.54		-0.88	
353		-----		-----	
399	D4052	57.70		0.00	
431		-----		-----	
433		-----		-----	
447	CALC	57.72		0.11	
463	D4052	57.71		0.06	
468	D4052	57.71	C	0.06	First reported 56.18
485		-----		-----	
494	D4052	57.74		0.22	
495	D4052	57.70		0.00	
511	D4052	57.68		-0.11	
541	D4052	57.7		0.00	
557	D4052	57.2	G(0.01)	-2.75	
562		-----		-----	
592		-----		-----	
604	D4052	57.61		-0.49	
631	D4052	57.66		-0.22	
657	D4052	57.7		0.00	
663	D4052	57.7		0.00	
671	D4052	57.68		-0.11	
823	D4052	57.6		-0.55	
862	D4052	57.70		0.00	
868	D4052	57.72		0.11	
875		-----		-----	
912		-----		-----	
962	D4052	57.70		0.00	
974	D4052	57.69		-0.05	
994	D1250	57.798		0.54	
995	D4052	57.77		0.39	
996	CALC	57.80		0.55	
1006		-----		-----	
1016		-----		-----	
1017		-----		-----	
1026		-----		-----	
1033		-----		-----	
1038		-----		-----	
1059	D4052	57.61		-0.49	
1066	D4052	57.7		0.00	

1080		-----		-----	
1081		-----		-----	
1108		-----		-----	
1109	D287	57.63		-0.38	
1126		-----		-----	
1186		-----		-----	
1205		-----		-----	
1215	D1298	57.7		0.00	
1231	D4052	57.66		-0.22	
1237		-----		-----	
1254	D4052	57.73		0.17	
1276	D4052	57.77		0.39	
1347	D1298	57.8		0.55	
1348	D4052	57.47		-1.27	
1385	D1298	57.44		-1.43	
1395		-----		-----	
1397		-----		-----	
1404		-----		-----	
1409	D4052	57.8		0.55	
1419		-----		-----	
1428		-----		-----	
1432		-----		-----	
1487		-----		-----	
1488	D1298	57.803		0.57	
1490		-----		-----	
1531		-----		-----	
1613	D4052	57.51		-1.05	
1616	D4052	57.72		0.11	
1631	ISO12185	57.71	C	0.06	First reported 51.71
1634	D4052	57.8		0.55	
1656		-----		-----	
1710		-----		-----	
1720		-----		-----	
1724	D4052	57.72		0.11	
1730		-----		-----	
1740		-----		-----	
1807		-----		-----	
1833	D4052	57.71		0.06	
1849		-----		-----	
1851		-----		-----	
1854	D4052	57.7		0.00	
1864		-----		-----	
1911		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1948		-----		-----	
1952	D4052	56.3	C,G(0.01)	-7.72	First reported 56.539
2129	D4052	57.56		-0.77	
2130	D4052	57.469		-1.27	
7003		-----		-----	

normality	not OK
n	66
outliers	2
mean (n)	57.700
st.dev. (n)	0.0851
R(calc.)	0.238
R(D4052:11)	0.508



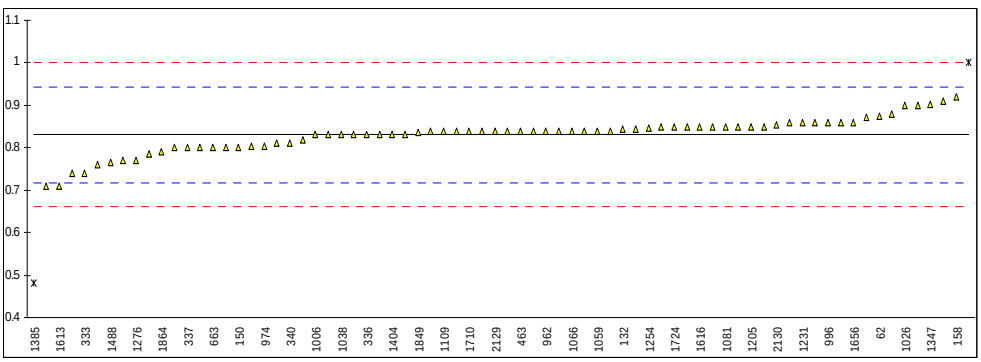


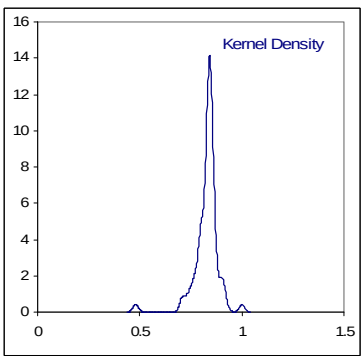
Determination of Benzene on sample #12006; results in %V/V

lab	method	value	mark	z(targ)	remarks
52	INH-14	0.84		0.16	
62	D5580	0.874		0.77	
120	D3606	0.844		0.24	
132	D3606	0.843		0.22	
140	D3606	0.74	C	-1.61	First reported 0.6684
150	D3606	0.80		-0.54	
158	D3606	0.92		1.58	
159	D3606	0.76		-1.25	
169	D3606	0.860		0.52	
171	D3606	0.849161		0.33	
180		-----		-----	
193	D3606	0.802764		-0.50	
194		-----		-----	
217		-----		-----	
221		-----		-----	
224		-----		-----	
225		-----		-----	
228		-----		-----	
230		-----		-----	
237		-----		-----	
238		-----		-----	
252		-----		-----	
253		-----		-----	
254		-----		-----	
256		-----		-----	
258		-----		-----	
273		-----		-----	
312	ISO22854	0.84		0.16	
323	EN22854	0.85		0.34	
333	EN238	0.74		-1.61	
334	EN238Mod.	0.80		-0.54	
335		-----		-----	
336	EN238	0.83		-0.01	
337	EN238	0.8		-0.54	
338		-----		-----	
340	EN	0.81		-0.37	
343	EN238	0.8		-0.54	
353		-----		-----	
399	ISO22854	0.84		0.16	
431		-----		-----	
433		-----		-----	
447	IP429	0.91		1.40	
463	EN238	0.84		0.16	
468		-----		-----	
485		-----		-----	
494	EN22854	0.83		-0.01	
495	D5580	0.85		0.34	
511		-----		-----	
541		-----		-----	
557		-----		-----	
562		-----		-----	
592		-----		-----	
604		-----		-----	
631		-----		-----	
657	D5580	0.77		-1.08	
663	D5580	0.80		-0.54	
671		-----		-----	
823		-----		-----	
862	D3606	0.838		0.13	
868	D6839	0.84		0.16	
875		-----		-----	
912		-----		-----	
962	D6839	0.84		0.16	
974	D3606	0.803		-0.49	
994		-----		-----	
995	D6729	0.71		-2.14	
996	D6277	0.86		0.52	
1006	D5580	0.83		-0.01	
1016		-----		-----	
1017		-----		-----	
1026	EN12177	0.90		1.23	
1033		-----		-----	
1038	D6839	0.83		-0.01	
1059	ISO22854	0.84		0.16	
1066	EN22854	0.84		0.16	
1080	INH-3	0.84		0.16	

1081	EN14517	0.85		0.34	
1108	EN238	0.83		-0.01	
1109	D6839	0.84		0.16	
1126	reformulyzer	0.85		0.34	
1186		-----		-----	
1205	ISO22854	0.85		0.34	
1215		-----		-----	
1231	D6293	0.86		0.52	
1237	EN238	0.8		-0.54	
1254	IP429	0.846		0.27	
1276	EN238	0.77		-1.08	
1347	D3606	0.901		1.25	
1348	D3606	1.0	G(0.01)	3.00	
1385	D3606	0.480	G(0.01)	-6.22	
1395		-----		-----	
1397	EN238	0.83		-0.01	
1404	ISO22854	0.83		-0.01	
1409	ISO22854	0.83		-0.01	
1419	ISO22854	0.84		0.16	
1428	EN13132	0.786		-0.79	
1432		-----		-----	
1487		-----		-----	
1488	EN12177	0.7662		-1.14	
1490	D6277	0.81		-0.37	
1531		-----		-----	
1613	D6839	0.71		-2.14	
1616	D6839	0.85		0.34	
1631	ISO22854	0.86		0.52	
1634		-----		-----	
1656	EN14517	0.86		0.52	
1710	D5580	0.84		0.16	
1720		-----		-----	
1724	ISO22854	0.85		0.34	
1730		-----		-----	
1740		-----		-----	
1807	D3606	0.90		1.23	
1833	EN22854	0.88		0.87	
1849	D3606	0.836		0.09	
1851		-----		-----	
1854	EN13132	0.84		0.16	
1864	EN12177	0.79		-0.72	
1911	EN12177	0.818		-0.23	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1948	D3606	0.86		0.52	
1952	D4815	0.85	C	0.34	First reported 1.079
2129	D6730	0.84		0.16	
2130	D6730	0.855		0.43	
7003	D5134	0.871		0.71	

normality	not OK
n	72
outliers	2
mean (n)	0.831
st.dev. (n)	0.0411
R(calc.)	0.115
R(D3606:10)	0.158





Determination of Copper strip 3hrs/50°C on sample #12006;

lab	method	value	mark	z(targ)	remarks
52	D130	1A		-----	
62	D130	1B		-----	
120	D130	1A		-----	
132	D130	1A		-----	
140	D130	1A		-----	
150	D130	1A		-----	
158	D130	1A		-----	
159	D130	1A		-----	
169	D130	1A		-----	
171	D130	1A		-----	
180		-----		-----	
193	D130	1A		-----	
194	D130	1A		-----	
217	D130	1A		-----	
221	D130	1A		-----	
224		-----		-----	
225	D130	1A		-----	
228	D130	1		-----	
230	D130	1A		-----	
237	D130	1A		-----	
238	D130	1A		-----	
252	D130	1A		-----	
253	D130	1A		-----	
254	D130	1A		-----	
256		-----		-----	
258	D130	1A		-----	
273	D130	1A		-----	
312	D130	1A		-----	
323	D130	1A		-----	
333		-----		-----	
334	D130	1A		-----	
335	D130	1A		-----	
336		-----		-----	
337	ISO2160	1		-----	
338		-----		-----	
340	D130	1A		-----	
343	D130	1A		-----	
353	D130	1A		-----	
399	D130	1A		-----	
431		-----		-----	
433		-----		-----	
447	D130	1A		-----	
463	D130	1A		-----	
468	D130	1A		-----	
485		-----		-----	
494	D130	1A		-----	
495	D130	1		-----	
511	D130	1A		-----	
541	D130	1		-----	
557	D130	1A		-----	
562		-----		-----	
592		-----		-----	
604		-----		-----	
631	D130	1A		-----	
657	D130	1		-----	
663	D130	1A		-----	
671	D130	1A		-----	
823	D130	1A		-----	
862	D130	1A		-----	
868	D130	1A		-----	
875		-----		-----	
912	D130	1A		-----	
962	D130	1A		-----	
974	D130	1A		-----	
994	D130	1A		-----	
995	D130	1A		-----	
996	D130	1A		-----	
1006	D130	1A		-----	
1016	D130	1A		-----	
1017		-----		-----	
1026		-----		-----	
1033	IP154	1A		-----	
1038	D130	1A		-----	
1059	ISO2160	1A		-----	
1066		-----		-----	
1080	D130	1A		-----	

1081	D130	1A	-----
1108	D130	1A	-----
1109	D130	1A	-----
1126		-----	-----
1186	D130	1A	-----
1205		-----	-----
1215	D130	1A	-----
1231	D130	1A	-----
1237	ISO2160	1A	-----
1254	D130	1A	-----
1276	D130	1A	-----
1347	D130	1A	-----
1348	D130	1A	-----
1385	D130	1A	-----
1395	D130	1A	-----
1397	D130	1	-----
1404	D130	1A	-----
1409	D130	1A	-----
1419	D130	1A	-----
1428	ISO2160	1A	-----
1432		-----	-----
1487	D130	1A	-----
1488	D130	1A	-----
1490	ISO2160	1A	-----
1531		-----	-----
1613	D130	1A	-----
1616	D130	1A	-----
1631	ISO2160	1	-----
1634	D130	1A	-----
1656	ISO2160	1	-----
1710	D130	1A	-----
1720		-----	-----
1724	D130	1A	-----
1730		-----	-----
1740		-----	-----
1807	D130	1A	-----
1833	D130	1A	-----
1849	D130	1A	-----
1851		-----	-----
1854		-----	-----
1864	D130	1A	-----
1911	ISO2160	1A	-----
1936		-----	-----
1937		-----	-----
1938		-----	-----
1948	D130	1A	-----
1952	D130	1	-----
2129	D130	1A	-----
2130	D130	1A	-----
7003		-----	-----

normality	n.a.
n	85
outliers	0
mean (n)	1 (1A)
st.dev. (n)	n.a.
R(calc.)	n.a.
R(D130:10)	n.a.

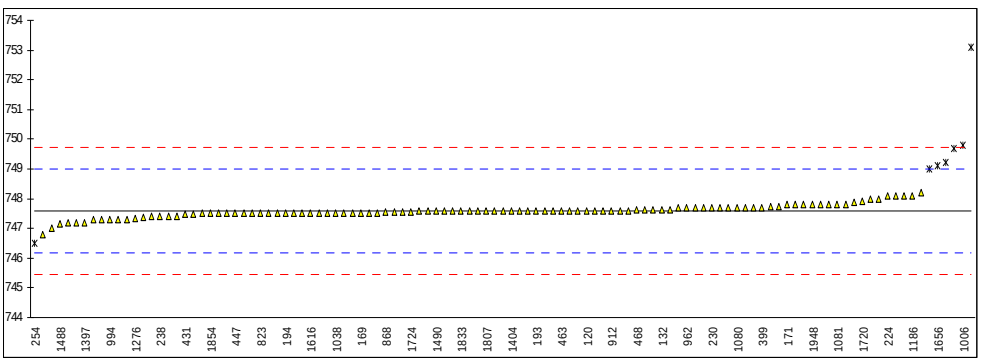
Determination of Density @ 15°C on sample #12006; results in kg/m^3

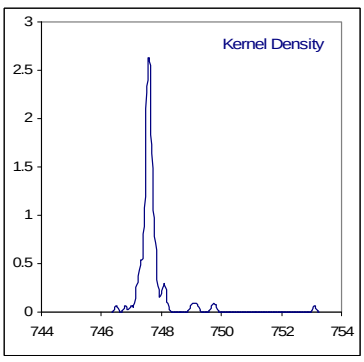
lab	method	value	mark	z(targ)	remarks
52	D4052	747.6		0.02	
62	D4052	747.60		0.02	
120	D4052	747.6		0.02	
132	D4052	747.63		0.06	
140	D4052	747.6		0.02	
150	D4052	749.2	G(0.01)	2.28	
158	D4052	747.2		-0.54	
159	D4052	747.6		0.02	
169	D4052	747.5		-0.12	
171	D4052	747.8		0.30	
180		-----		-----	
193	D4052	747.6	C	0.02	Reported 0.7476, deviating unit?
194	D4052	747.5		-0.12	
217	D4052	747.7		0.16	
221	D4052	747.5		-0.12	
224	D1298	748.1		0.73	
225	D4052	747.5		-0.12	
228	D1298	747.7		0.16	
230	D1298	747.7		0.16	
237	D4052	747.2		-0.54	
238	D1298	747.4		-0.26	
252		-----		-----	
253	D4052	747.5		-0.12	
254	D4052	746.50	G(0.05)	-1.53	
256	D4052	747.3		-0.40	
258	D1298	746.8		-1.11	
273	D4052	747.4		-0.26	
312	D4052	747.5		-0.12	
323	D4052	747.3		-0.40	
333	D4052	747.5		-0.12	
334	D4052	747.6		0.02	
335	D4052	747.3		-0.40	
336	ISO12185	747.6		0.02	
337	D4052	748.0		0.59	
338	ISO12185	747.5		-0.12	
340	D4052	747.62		0.05	
343	D4052	747.86		0.39	
353	IP365	747.0		-0.83	
399	D4052	747.7		0.16	
431	D4052	747.47		-0.16	
433	EN12185	747.5		-0.12	
447	D4052	747.5		-0.12	
463	D4052	747.60		0.02	
468	D4052	747.61	C	0.03	First reported 753.71
485	D4052	747.5		-0.12	
494	D4052	747.5		-0.12	
495	D4052	747.5		-0.12	
511	D4052	747.73		0.20	
541	D4052	747.6		0.02	
557	D4052	749.7	G(0.01)	2.99	
562		-----		-----	
592		-----		-----	
604	D4052	747.59		0.01	
631	D4052	747.8		0.30	
657	D4052	747.6		0.02	
663	D4052	747.6		0.02	
671	D4052	747.7		0.16	
823	D4052	747.5		-0.12	
862	D4052	747.59		0.01	
868	D4052	747.54		-0.06	
875		-----		-----	
912	D4052	747.6		0.02	
962	D4052	747.7		0.16	
974	D4052	747.7	C	0.16	Reported 0.7477, deviating unit?
994	D4052	747.3		-0.40	
995	D4052	747.37		-0.30	
996	D1298	747.3		-0.40	
1006	D4052	749.8	G(0.01)	3.13	
1016		-----		-----	
1017		-----		-----	
1026		-----		-----	
1033	IP365	747.8		0.30	
1038	D4052	747.5		-0.12	
1059	D4052	747.5		-0.12	
1066	D4052	747.4		-0.26	
1080	ISO12185	747.7		0.16	

1081	ISO12185	747.8		0.30	
1108	D4052	747.6		0.02	
1109	D4052	747.5		-0.12	
1126	ISO12185	747.72		0.19	
1186	D1298	748.1		0.73	
1205		-----		-----	
1215	D1298	747.6		0.02	
1231	D4052	747.8	C	0.30	Reported 0.7478, deviating unit?
1237	EN12185	747.4		-0.26	
1254	D4052	747.55		-0.05	
1276	D4052	747.32		-0.37	
1347	D4052	747.64		0.08	
1348	D4052	748.1		0.73	
1385	D4052	748.2		0.87	
1395	D4052	747.5		-0.12	
1397	D1298	747.2		-0.54	
1404	D4052	747.6		0.02	
1409	ISO12185	747.6		0.02	
1419	ISO12185	747.49		-0.13	
1428	ISO12185	747.5		-0.12	
1432		-----		-----	
1487	D1298	749	C,G(0.01)	2.00	Reported 0.749, deviating unit?
1488	D1298	747.158		-0.60	
1490	ISO12185	747.59		0.01	
1531		-----		-----	
1613	D4052	748.0		0.59	
1616	D4052	747.5		-0.12	
1631	ISO12185	747.6		0.02	
1634	D4052	747.626		0.06	
1656	ISO12185	749.1	G(0.01)	2.14	
1710	D4052	747.7		0.16	
1720	D4052	747.9		0.44	
1724	D4052	747.56		-0.04	
1730	D4052	747.8		0.30	
1740	ISO3675	747.7		0.16	
1807	D4052	747.6		0.02	
1833	D4052	747.6	C	0.02	Reported 0.7476, deviating unit?
1849	ISO12185	747.576		-0.01	
1851		-----		-----	
1854	D4052	747.5		-0.12	
1864	D4052	747.58		-0.01	
1911	ISO12185	747.60		0.02	
1936	ISO12185	747.5		-0.12	
1937	ISO12185	747.7		0.16	
1938	D4052	747.8		0.30	
1948	D4052	747.8		0.30	
1952	D4052	753.1	C,G(0.01)	7.79	First reported 752.03
2129	D4052	748.1		0.73	
2130		-----		-----	
7003	D4052	747.55		-0.05	

	normality	not OK
	n	106
	outliers	7
	mean (n)	747.59
	st.dev. (n)	0.217
	R(calc.)	0.61
	R(D4052:11)	1.98

Compare R(D4052:02e1) = 0.50

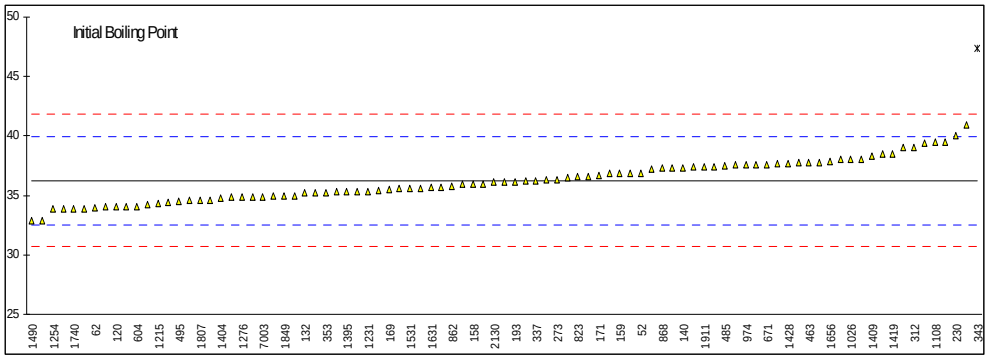


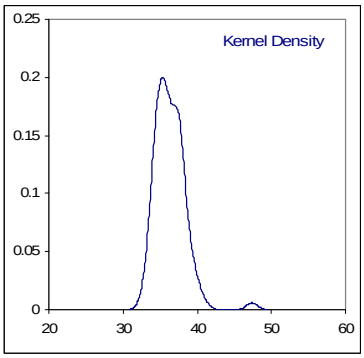


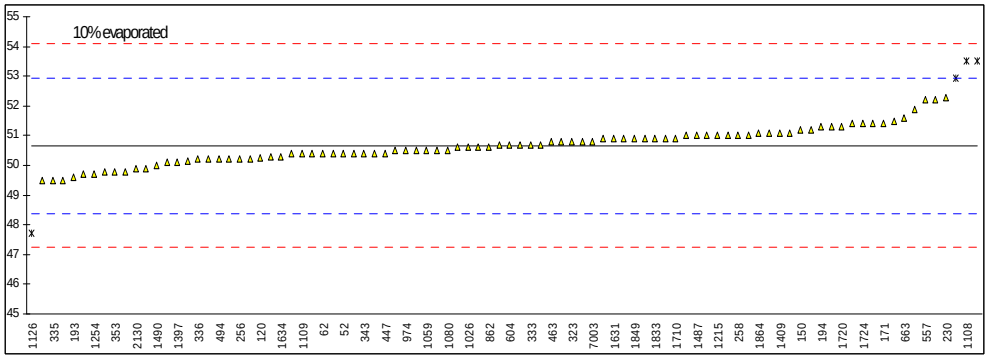
Determination of Distillation ASTM D86 (automated) on sample #12006; results in °C

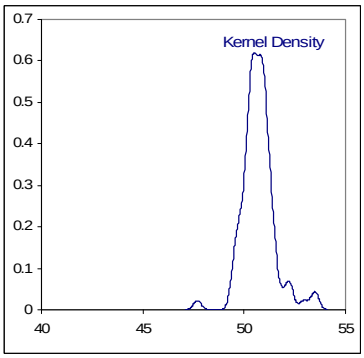
lab	method	IBP	Mark	10% eva	Mark	50% eva	Mark	70% eva	Mark	90% eva	Mark	FBP	Mark
52	D86-A	36.9		50.4		94.5		123.8		152.7		183.8	
62	D86-A	34.0		50.4		95.3		123.9		151.6		183.8	
120	D86-A	34.06		50.25		95.67		123.67		151.81		181.94	
132	D86-A	35.2		50.4		95.4		123.8		152.6		184.3	
140	D86-A	37.3		51.4		95.8		124.0		153.2		182.5	
150	D86-A	37.8		51.2		96.2		124.0		152.8		185.1	
158	D86-A	36.0		50.4		94.0		122.1		152.4		182.9	
159	D86-A	36.9		51.0		96.6		124.3		152.8		186.7	
169	D86-A	35.5		52.2		95.5		123.4		151.3		185.4	
171	D86-A	36.7		51.4		95.0		123.4		152.5		181.4	
180		-----		-----		-----		-----		-----		-----	
193	D86	36.1		49.6		95.5		122.4		152.2		185.0	
194	D86-A	36.6		51.3		95.4		123.9		152.7		183.8	
217		-----		-----		-----		-----		-----		-----	
221		-----		-----		-----		-----		-----		-----	
224		-----		-----		-----		-----		-----		-----	
225		-----		-----		-----		-----		-----		-----	
228		-----		-----		-----		-----		-----		-----	
230	D86-A	40.0		52.3		97.9		126.2		153.9		188.6	
237		-----		-----		-----		-----		-----		-----	
238		-----		-----		-----		-----		-----		-----	
252		-----		-----		-----		-----		-----		-----	
253		-----		-----		-----		-----		-----		-----	
254		-----		-----		-----		-----		-----		-----	
256	D86	34.05		50.2		95.0		126.1		157.2	G(0.01)	185.4	
258	D86-A	37.8		51.0		98.6	G(0.05)	124.4		151.3		186.5	
273	D86-A	36.3		50.9		96.2		123.9		152.1		185.4	
312	D86-A	39.0		50.7		96.0		123.8		152.1		186.2	
323	D86-A	39.5		50.8		95.9		123.8		152.3		183.6	
333	D86-A	34.6		50.7		94.8		124.0		152.4		183.7	
334	D86-A	34.2		50.7		96.7	Fr 54.7	124.0	Fr 96.7	153.0		180.0	
335	D86	33.9		49.5		94.0		122.4		151.4		180.4	
336	ISO3405-A	35.2		50.2		95.5		123.6		151.5		184.9	
337	D86	36.2		50.2		95.3		123.4		152.0		183.1	
338	D86-A	37.4		49.5		93.9		123.2		152.8		188.2	
340	D86-A	36.9		51.0		94.6		123.5		152.2		180.0	
343	D86-A	47.4	G(0.01)	50.4		94.2		121.8		151.1		182.5	
353	IP123-A	35.2		49.8		95.8		123.8		152.2		183.9	
399	D86-A	34.9		50.5		94.8		123.1		150.6		181.9	Fr 18.9
431		-----		49.8		96.5		123.8		152.9		-----	
433		-----		-----		-----		-----		-----		-----	
447	D86-A	37.2		50.4		94.4		123.5		151.2		184.2	
463	D86-A	37.8		50.8		95.5		123.5		152.6		182.6	
468	D86-A	35.0		50.2		95.3		123.1		152.2		181.6	
485	D86-A	37.50		50.70		95.05		123.15		152.30		186.10	
494	D86-A	32.9		50.2		94.5		123.0		151.9		181.3	
495	D86-A	34.5		49.5		93		121.7		150.3		181.9	
511		-----		-----		-----		-----		-----		-----	
541		-----		-----		-----		-----		-----		-----	
557	D86	38.5		52.2		95.2		123.6		152.3		182.9	
562		-----		-----		-----		-----		-----		-----	
592		-----		-----		-----		-----		-----		-----	
604	D86-A	34.1		50.7		95.0		123.5		151.7		181.7	
631		-----		-----		-----		-----		-----		-----	
657	D86-A	37.3		50.4		96.0		123.9		152.3		183.6	
663	D86-A	39.0		51.6		95.8		123.6		152.8		185.9	
671	D86-A	37.6		53.5	G(0.01)	97.0		121.9		151.8		182.0	
823	D86-A	36.6		49.9		96.0		123.6		151.6		184.3	
862	D86-A	35.8		50.6		96.0		123.6		152.8		184.8	
868	D86-A	37.3		50.9		96.5		124.5		152.7	Fr154.1	185.0	
875		-----		-----		-----		-----		-----		-----	
912		-----		-----		-----		-----		-----		-----	
962		-----		-----		-----		-----		-----		-----	
974	D86-A	37.6		50.5		94.5		123.2		151.3		182.3	
994		-----		-----		-----		-----		-----		-----	
995		-----		-----		-----		-----		-----		-----	
996		-----		-----		-----		-----		-----		-----	
1006	D86-A	37.6		51.0		96.1		124.1		153.3		187.9	
1016		-----		-----		-----		-----		-----		-----	
1017		-----		-----		-----		-----		-----		-----	
1026	ISO3405-A	38.0		50.6		95.2		123.3		152.8		183.6	
1033	D86-A	35.6		49.8		94.4		123.6		151.9		186.8	
1038	D86-A	35.3		50.3		94.7		122.9		151.8		183.7	
1059	D86-A	34.4		50.5		95.4		123.4		152.4		186.5	
1066	D86-A	36.3		51.2		95.6		123.9		152.3		184.8	

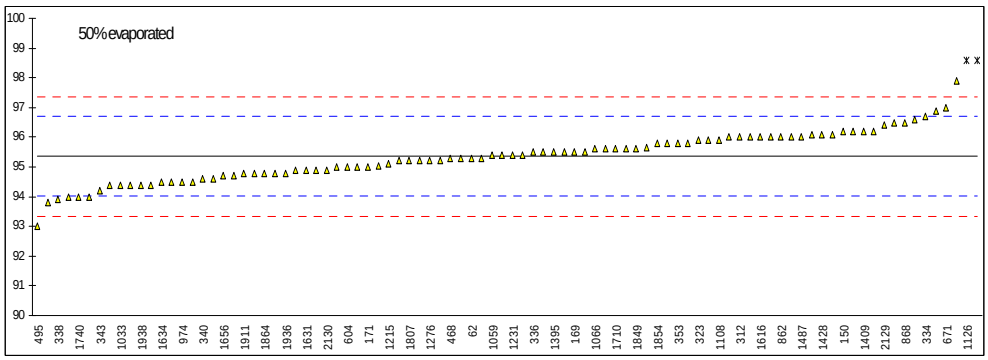
1080	D86-A	36.5	50.5		94.4		122.8	151.8	182.1	
1081	D86-A	39.4	49.7		95.6		-----	152.8	183.5	
1108	D86-A	39.5	53.5	G(0.05)	95.9		121.6	151.2	186.7	
1109	D86-A	36.1	50.4		95.5		123.2	152.3	186.7	
1126	in house-A	40.9	47.7	G(0.05)	98.6	G(0.05)	125.8	153.0	181.6	
1186		-----	-----		-----		-----	-----	-----	
1205		-----	-----		-----		-----	-----	-----	
1215	D86-A	34.3	51.0		95.1		123.5	152.1	183.8	
1231	D86-A	35.3	51.1		95.4		123.8	152.8	184.9	
1237		-----	-----		-----		-----	-----	-----	
1254	D86-A	33.9	49.7		93.8		122.5	151.9	180.2	
1276	D86-A	34.9	50.8		95.2		122.6	151.9	182.0	
1347		-----	-----		-----		-----	-----	-----	
1348	D86-A	38.0	51.3		95.0		123.4	151.0	185.6	
1385		-----	-----		-----		-----	-----	-----	
1395	D86-A	35.3	51.5		95.5		123.2	152.0	185.0	
1397	D86-A	36.9	50.1		96.9		124.4	154.1	182.4	
1404	D86-A	34.8	50.2		95.2		123.5	151.9	182.7	
1409	D86-A	38.3	51.1		96.2		123.9	151.9	184.1	
1419	D86-A	38.5	51.1		95.9		123.6	152.7	187.0	
1428	ISO3405-A	37.7	50.5		96.1		123.8	152.5	187.9	
1432		-----	-----		-----		-----	-----	-----	
1487	D86-A	38.0	51.0		96.0		123.0	154.0	182	Fr 196
1488		-----	-----		-----		-----	-----	-----	
1490	ISO3405-A	32.9	50.0		94.6		123.1	150.7	177.5	G(0.05)
1531	D86-A	35.6	50.1		96.1		124.2	152.3	185.2	
1613	D86-A	33.9	50.8		95.6		123.8	151.1	184.1	
1616	D86-A	35.7	51.4		96.0		123.6	152.7	184.3	
1631	ISO3405-A	35.7	50.9		94.9		122.9	152.7	184.7	
1634	D86-A	34.1	50.3		94.5		122.9	152.4	181.8	
1656	ISO3405-A	37.9	50.4		94.7		123.4	152.5	184.2	
1710	D86-A	37.7	50.9		95.6		123.3	152.3	185.7	
1720	D86-A	37.4	51.3		96.0		124.3	153.9	182.0	
1724	D86-A	35.6	51.4		96.0		124.4	153.3	183.2	
1730		-----	-----		-----		-----	-----	-----	
1740	ISO3405-A	33.9	50.4		94.0		122.6	151.9	185.6	
1807	D86-A	34.6	50.6		95.2		123.5	152.6	182.2	
1833	D86-A	35.0	50.9		94.9		123.3	152.4	183.0	
1849	D86-A	35.0	50.9		95.6		124.1	152.85	190.35	
1851		-----	-----		-----		-----	-----	-----	
1854	D86-A	36.0	51.9		95.8		123.3	152.4	185.7	
1864	D86-A	35.3	51.1		94.8		123.5	152.7	179.8	
1911	ISO3405-A	37.40	50.15		94.80		123.00	151.95	180.55	
1936	ISO3405-A-	36.2	50.9		94.8		123.0	152.0	184.6	
1937	ISO3405-A	35.4	50.9		95.3		123.4	152.1	186	
1938	D86-A	34.6	50.5		94.4		122.7	151.4	180.2	
1948	D86-A	37.6	51.0		96.2	Fr 53.4	124.2	152.4	184.0	
1952	D86-A	34.9	52.95	G(0.05)	94.9		122.55	154.6	Fr150.2	184.25
2129	D86-A	36.0	50.6		96.4		124.2	153.2	184.6	
2130	D86-A	36.1	49.9		94.9		122.5	151.1	185.2	
7003	D86-A	34.9	50.8		94.4		123	152.1	178.1	G(0.05)
	normality	OK	OK		OK		not OK	not OK	OK	
	n	90	88		90		91	91	89	
	outliers	1	4		2		0	1	2	
	mean (n)	36.24	50.66		95.35		123.49	152.27	183.98	
	st.dev. (n)	1.691	0.596		0.809		0.781	0.764	2.133	
	R(calc.)	4.73	1.67		2.27		2.19	2.14	5.97	
	R(D86:11)	5.20	3.20		1.88		5.45	4.03	6.78	

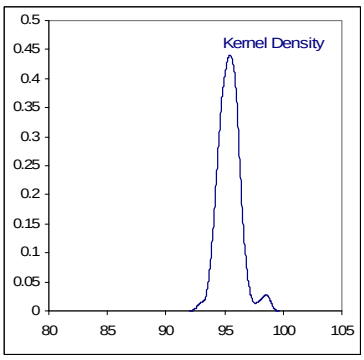

Initial Boiling Point

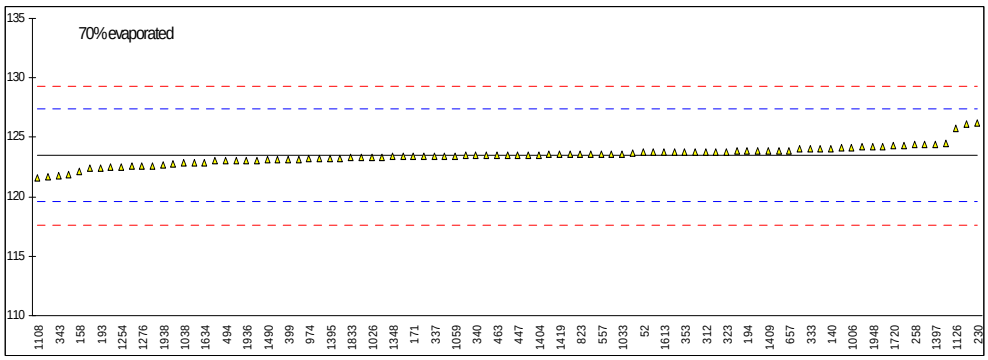

Kernel Density

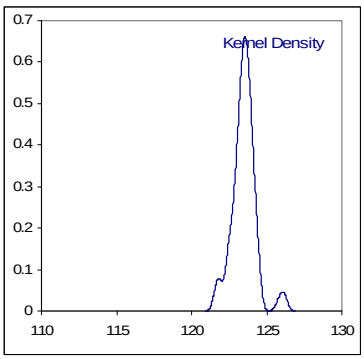

10% evaporated

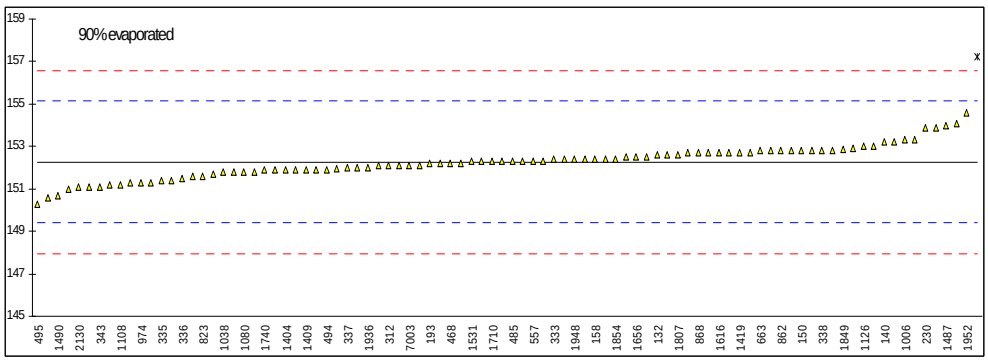

Kernel Density

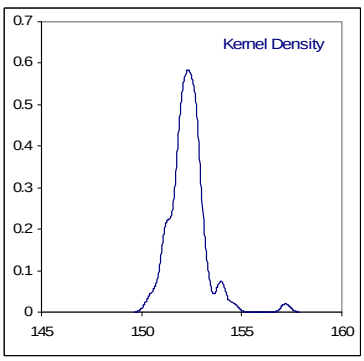

50% evaporated

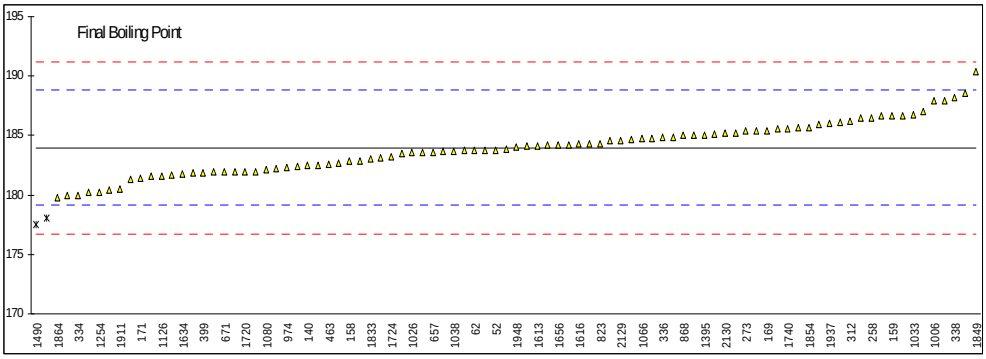

Kernel Density

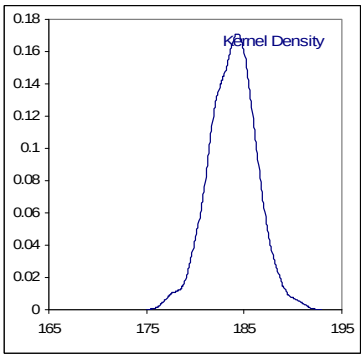

70% evaporated


Kernel Density


90% evaporated


Kernel Density

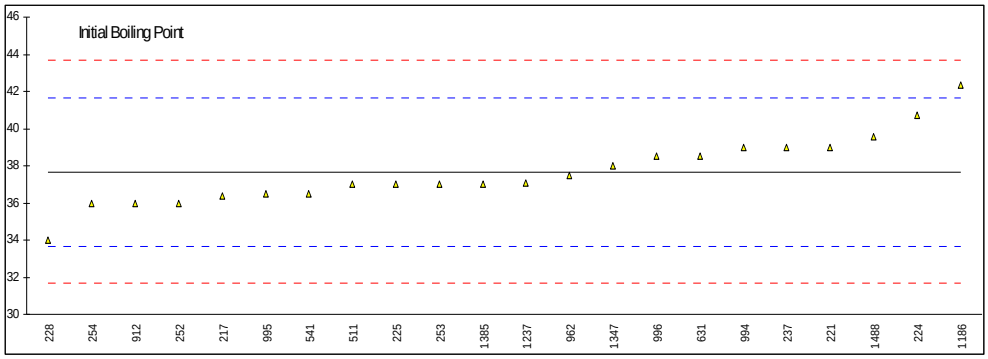

Final Boiling Point
195
190
185
180
175
170
1490 1864 334 1254 1911 171 1126 1634 399 671 1720 1080 974 140 463 158 1833 1724 1026 657 1038 62 52 1948 1613 1656 1616 823 2129 1066 336 868 1395 2130 273 169 1740 1854 1937 312 258 159 1033 1006 338 1849

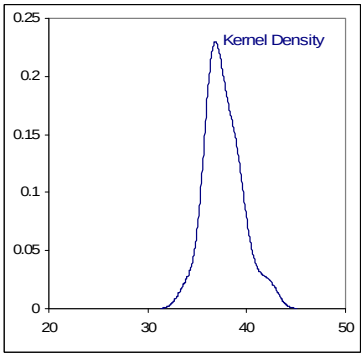

Kernel Density
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
165
175
185
195

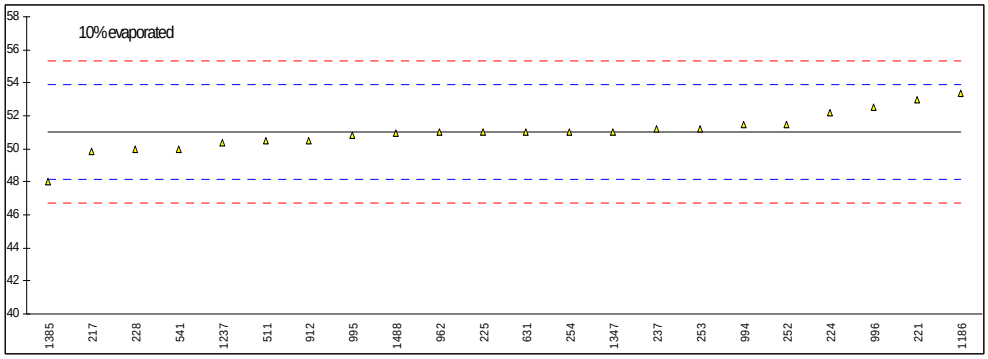
Determination of Distillation ASTM D86 (Manual) on sample #12006; results in °C

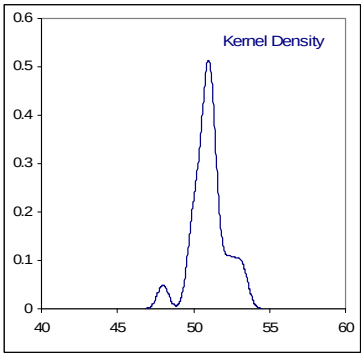
lab	method	IBP	Mark	10% eva	Mark	50% eva	Mark	70% eva	Mark	90% eva	Mark	FBP	Mark
52		-----		-----		-----		-----		-----		-----	
62		-----		-----		-----		-----		-----		-----	
120		-----		-----		-----		-----		-----		-----	
132		-----		-----		-----		-----		-----		-----	
140		-----		-----		-----		-----		-----		-----	
150		-----		-----		-----		-----		-----		-----	
158		-----		-----		-----		-----		-----		-----	
159		-----		-----		-----		-----		-----		-----	
169		-----		-----		-----		-----		-----		-----	
171		-----		-----		-----		-----		-----		-----	
180		-----		-----		-----		-----		-----		-----	
193		-----		-----		-----		-----		-----		-----	
194		-----		-----		-----		-----		-----		-----	
217	D86-M	36.36		49.82		93.56		121.55		148.70		190.04	DG(0.05)
221	D86-M	39.0		53.0		95.0		123.0		152.0		184.0	
224	D86-M	40.74		52.18		95.11		122.27		151.72		184.44	
225	D86-M	37.0		51.0		95.0		124.0		153.0		184.0	
228	D86-M	34.0		50.0		92.0		120.0		150.0		184.0	
230		-----		-----		-----		-----		-----		-----	
237	D86-M	39.0		51.2		94.25		122.35		148.4		183.0	
238		-----		-----		-----		-----		-----		-----	
252	D86-M	36.0		51.5		93.5		-----		149.5		182.0	
253	D86-M	37.0		51.25		95.25		123.50		151.50		183.50	
254	D86-M	36.0		51.0		94.0		-----		150.0		183.0	
256		-----		-----		-----		-----		-----		-----	
258		-----		-----		-----		-----		-----		-----	
273		-----		-----		-----		-----		-----		-----	
312		-----		-----		-----		-----		-----		-----	
323		-----		-----		-----		-----		-----		-----	
333		-----		-----		-----		-----		-----		-----	
334		-----		-----		-----		-----		-----		-----	
335		-----		-----		-----		-----		-----		-----	
336		-----		-----		-----		-----		-----		-----	
337		-----		-----		-----		-----		-----		-----	
338		-----		-----		-----		-----		-----		-----	
340		-----		-----		-----		-----		-----		-----	
343		-----		-----		-----		-----		-----		-----	
353		-----		-----		-----		-----		-----		-----	
399		-----		-----		-----		-----		-----		-----	
431		-----		-----		-----		-----		-----		-----	
433		-----		-----		-----		-----		-----		-----	
447		-----		-----		-----		-----		-----		-----	
463		-----		-----		-----		-----		-----		-----	
468		-----		-----		-----		-----		-----		-----	
485		-----		-----		-----		-----		-----		-----	
494		-----		-----		-----		-----		-----		-----	
495		-----		-----		-----		-----		-----		-----	
511	D86-M	37.0		50.5		97.0		123.0		153.0		186.5	
541	D86-M	36.5		50.0		94.0		123.0		151.5		182.0	
557		-----		-----		-----		-----		-----		-----	
562		-----		-----		-----		-----		-----		-----	
592		-----		-----		-----		-----		-----		-----	
604		-----		-----		-----		-----		-----		-----	
631	D86-M	38.5		51.0		94.5		122.5		150.5		184.0	
657		-----		-----		-----		-----		-----		-----	
663		-----		-----		-----		-----		-----		-----	
671		-----		-----		-----		-----		-----		-----	
823		-----		-----		-----		-----		-----		-----	
862		-----		-----		-----		-----		-----		-----	
868		-----		-----		-----		-----		-----		-----	
875		-----		-----		-----		-----		-----		-----	
912	D86-M	36.0		50.5		94.5		122.0		150.0		184.0	
962	D86-M	37.5		51.0		95.5		124.0		152.5		183.5	
974		-----		-----		-----		-----		-----		-----	
994	D86-M	39.0		51.5		94.5		123		153.5		183.5	
995	D86-M	36.5		50.84		94.64		122.75		151.97		187.0	
996	D86-M	38.5		52.5		94.5		123.5		154.5		184.5	
1006		-----		-----		-----		-----		-----		-----	
1016		-----		-----		-----		-----		-----		-----	
1017		-----		-----		-----		-----		-----		-----	
1026		-----		-----		-----		-----		-----		-----	
1033		-----		-----		-----		-----		-----		-----	
1038		-----		-----		-----		-----		-----		-----	
1059		-----		-----		-----		-----		-----		-----	
1066		-----		-----		-----		-----		-----		-----	

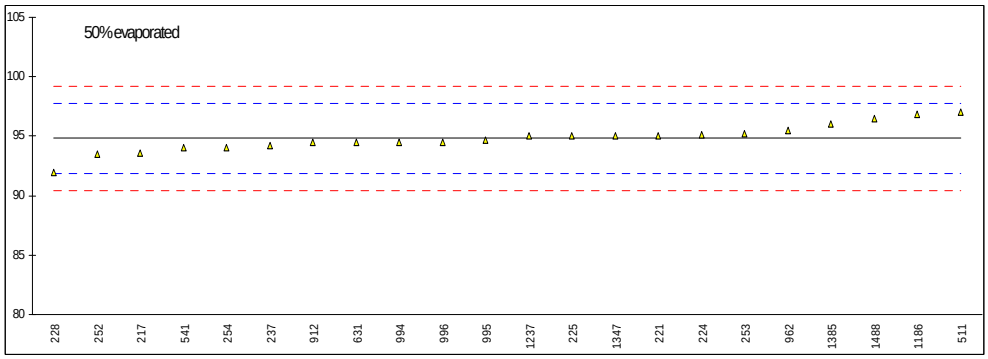
1080		-----		-----	-----	-----	-----	-----	
1081		-----		-----	-----	-----	-----	-----	
1108		-----		-----	-----	-----	-----	-----	
1109		-----		-----	-----	-----	-----	-----	
1126		-----		-----	-----	-----	-----	-----	
1186	D86-M	42.35		53.35	96.85	120.85	157.85	G(0.05) 179.35	
1205		-----		-----	-----	-----	-----	-----	
1215		-----		-----	-----	-----	-----	-----	
1231		-----		-----	-----	-----	-----	-----	
1237	ISO3405-M	37.1		50.4	95.0	124.2	153.0	181.1	
1254		-----		-----	-----	-----	-----	-----	
1276		-----		-----	-----	-----	-----	-----	
1347	D86-M	38		51	95	122	150	190	DG(0.05)
1348		-----		-----	-----	-----	-----	-----	
1385	D86-M	37		48	96	124	152	185	
1395		-----		-----	-----	-----	-----	-----	
1397		-----		-----	-----	-----	-----	-----	
1404		-----		-----	-----	-----	-----	-----	
1409		-----		-----	-----	-----	-----	-----	
1419		-----		-----	-----	-----	-----	-----	
1428		-----		-----	-----	-----	-----	-----	
1432		-----		-----	-----	-----	-----	-----	
1487		-----		-----	-----	-----	-----	-----	
1488	D86-M	39.59	Fr42.59	50.97	96.50	124.55	153.65	184.01	
1490		-----		-----	-----	-----	-----	-----	
1531		-----		-----	-----	-----	-----	-----	
1613		-----		-----	-----	-----	-----	-----	
1616		-----		-----	-----	-----	-----	-----	
1631		-----		-----	-----	-----	-----	-----	
1634		-----		-----	-----	-----	-----	-----	
1656		-----		-----	-----	-----	-----	-----	
1710		-----		-----	-----	-----	-----	-----	
1720		-----		-----	-----	-----	-----	-----	
1724		-----		-----	-----	-----	-----	-----	
1730		-----		-----	-----	-----	-----	-----	
1740		-----		-----	-----	-----	-----	-----	
1807		-----		-----	-----	-----	-----	-----	
1833		-----		-----	-----	-----	-----	-----	
1849		-----		-----	-----	-----	-----	-----	
1851		-----		-----	-----	-----	-----	-----	
1854		-----		-----	-----	-----	-----	-----	
1864		-----		-----	-----	-----	-----	-----	
1911		-----		-----	-----	-----	-----	-----	
1936		-----		-----	-----	-----	-----	-----	
1937		-----		-----	-----	-----	-----	-----	
1938		-----		-----	-----	-----	-----	-----	
1948		-----		-----	-----	-----	-----	-----	
1952		-----		-----	-----	-----	-----	-----	
2129		-----		-----	-----	-----	-----	-----	
2130		-----		-----	-----	-----	-----	-----	
7003		-----		-----	-----	-----	-----	-----	
	normality	OK		OK	OK	OK	OK	OK	
	n	22		22	22	20	21	20	
	outliers	0		0	0	0	1	2	
	mean (n)	37.67		51.02	94.83	122.80	151.47	183.62	
	st.dev. (n)	1.829		1.135	1.141	1.159	1.697	1.695	
	R(calc.)	5.12		3.18	3.19	3.25	4.75	4.75	
	R(D86:11)	5.60		3.99	4.08	4.48	4.33	7.20	

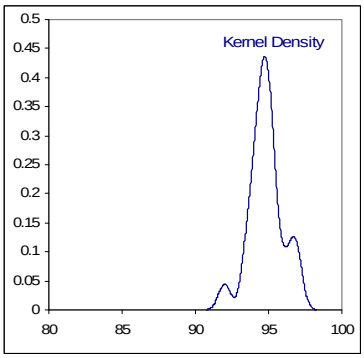

Initial Boiling Point
228 254 912 252 217 995 541 511 225 253 1385 1237 962 1347 996 631 994 237 221 1488 224 1186

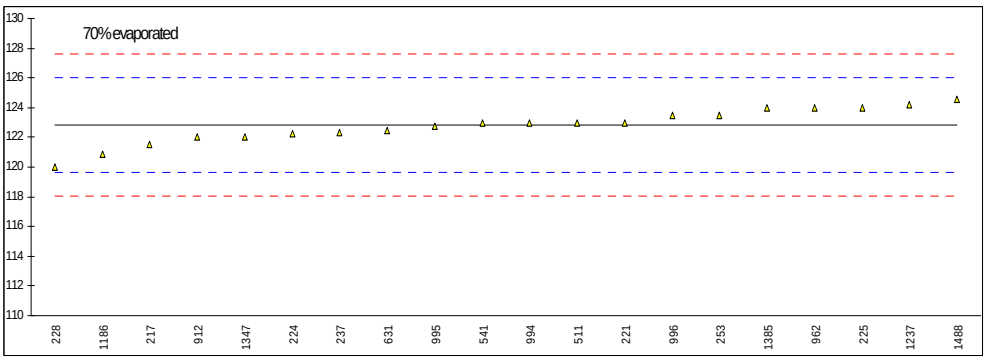

Kernel Density

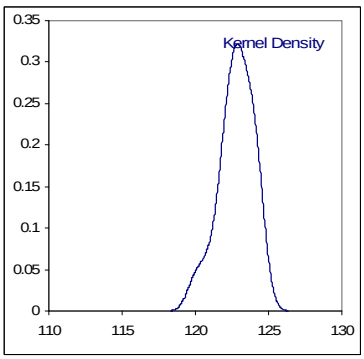

10% evaporated
1385 217 228 541 1237 511 912 995 1488 962 225 631 254 1347 237 253 994 252 224 996 221 1186

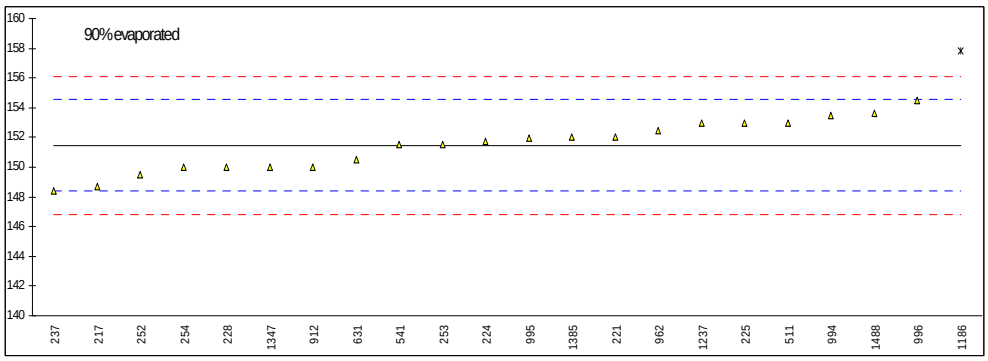

Kernel Density

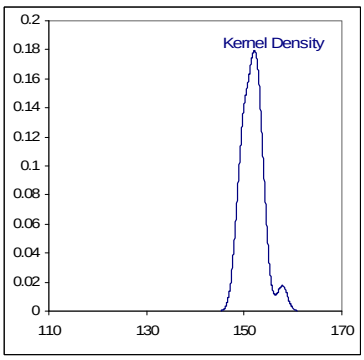

50% evaporated
228 252 217 541 254 237 912 631 994 996 995 1237 225 1347 221 224 253 962 1385 1488 1186 511

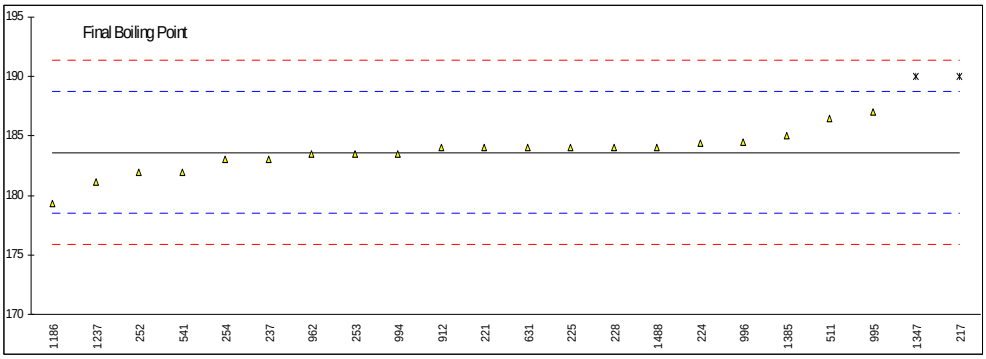

Kernel Density

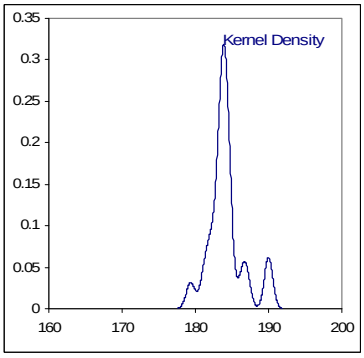

70% evaporated
228 1186 217 912 1347 224 237 631 995 541 994 511 221 996 253 1385 962 225 1237 1488


Kernel Density


90% evaporated
237 217 252 254 228 1347 912 631 541 253 224 995 1385 221 962 1237 225 511 994 1488 996 1186


Kernel Density


Final Boiling Point
195
190
185
180
175
170
1186
1237
252
541
254
237
962
253
994
912
221
631
225
228
1488
224
996
1385
511
995
1347
217


Kernel Density
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
160
170
180
190
200

Determination of Doctor Test on sample #12006;

lab	method	value	mark	z(targ)	remarks
52	D4952	NEG		-----	
62		-----		-----	
120	D4952	NEG		-----	
132	D4952	NEG		-----	
140	D4952	NEG		-----	
150	D4952	NEG		-----	
158		-----		-----	
159	D4952	NEG		-----	
169		-----		-----	
171	D4952	NEG		-----	
180		-----		-----	
193		-----		-----	
194	D4952	NEG		-----	
217	D4952	NEG		-----	
221		-----		-----	
224		-----		-----	
225	D4952	NEG		-----	
228		-----		-----	
230	D4952	NEG		-----	
237	D4952	NEG		-----	
238	D4952	NEG		-----	
252	D4952	NEG		-----	
253		-----		-----	
254	D4952	NEG		-----	
256	D4952	NEG		-----	
258	D4952	NEG		-----	
273		-----		-----	
312	IP30	POS		-----	False positive?
323	D4952	NEG		-----	
333		-----		-----	
334	D4952	1.1		-----	False positive?
335		-----		-----	
336		-----		-----	
337	D4952	NEG		-----	
338		-----		-----	
340	D4952	NEG		-----	
343		-----		-----	
353		-----		-----	
399	D4952	NEG		-----	
431		-----		-----	
433		-----		-----	
447	D4952	NEG		-----	
463	D4952	NEG		-----	
468		-----		-----	
485		-----		-----	
494	D4952	NEG		-----	
495	D4952	NEG		-----	
511		-----		-----	
541	D4952	NEG		-----	
557	D4952	NEG		-----	
562		-----		-----	
592		-----		-----	
604		-----		-----	
631		-----		-----	
657	D4952	NEG		-----	
663	D4952	NEG		-----	
671	D4952	NEG		-----	
823	D4952	NEG		-----	
862	D4952	NEG		-----	
868	D4952	NEG		-----	
875		-----		-----	
912		-----		-----	
962	D4952	NEG		-----	
974	D4952	NEG		-----	
994	D4952	NEG		-----	
995	D4952	NEG		-----	
996	D4952	NEG		-----	
1006		-----		-----	
1016	D4952	NEG		-----	
1017		-----		-----	
1026	D4952	NEG		-----	
1033		-----		-----	
1038	IP30	NEG		-----	
1059	D4952	NEG		-----	
1066		-----		-----	
1080		-----		-----	

1081	D4952	NEG	-----
1108		-----	-----
1109	IP30	NEG	-----
1126		-----	-----
1186		-----	-----
1205		-----	-----
1215		-----	-----
1231		-----	-----
1237		-----	-----
1254	D4952	NEG	-----
1276	IP30	NEG	-----
1347	D4952	NEG	-----
1348	D4952	NEG	-----
1385		-----	-----
1395		-----	-----
1397	D4952	NEG	-----
1404	D4952	NEG	-----
1409		-----	-----
1419		-----	-----
1428	D4952	NEG	-----
1432		-----	-----
1487		-----	-----
1488	D4952	NEG	-----
1490		-----	-----
1531		-----	-----
1613	D4952	NEG	-----
1616	D4952	NEG	-----
1631	D4952	NEG	-----
1634		-----	-----
1656		-----	-----
1710	D4952	NEG	-----
1720	D4952	NEG	-----
1724	IP30	NEG	-----
1730		-----	-----
1740		-----	-----
1807		-----	-----
1833	D4952	NEG	-----
1849	D4952	NEG	-----
1851		-----	-----
1854		-----	-----
1864	D4952	NEG	-----
1911		-----	-----
1936		-----	-----
1937		-----	-----
1938		-----	-----
1948		-----	-----
1952	D4952	NEG	-----
2129	D4952	NEG	-----
2130	D4952	NEG	-----
7003		-----	-----

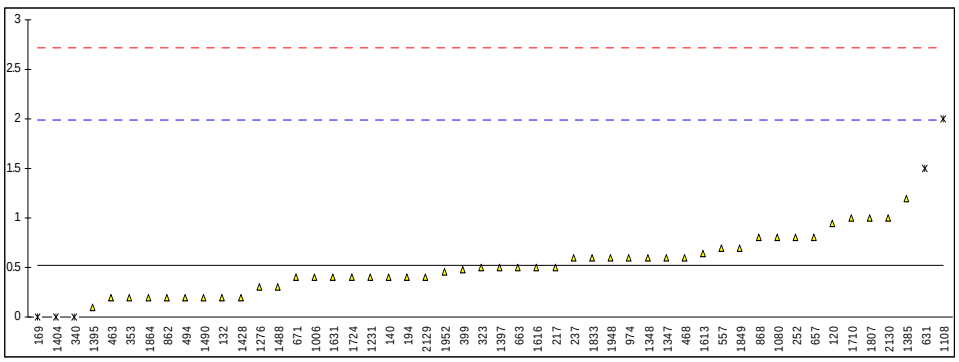
normality	n.a.	
n	64	2 reported positive
outliers	0	
mean (n)	Negative	
st.dev. (n)	n.a.	
R(calc.)	n.a.	
R(D4952:09)	n.a.	

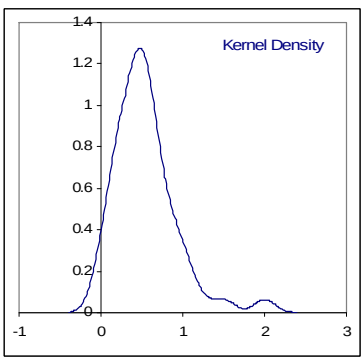
Determination of Existent Gum (washed) on sample #12006; results in mg/100mL

lab	method	value	mark	z(targ)	remarks
52	D381	<0.5		-----	
62	D381	>0.5		-----	
120	D381	0.95		0.58	
132	D381	0.2		-0.44	
140	D381	0.4		-0.17	
150	D381	<0.5		-----	
158		-----		-----	
159		-----		-----	
169	D381	0.0	ex	-0.71	Result excluded, zero is not a real result
171	D381	<0.5		-----	
180		-----		-----	
193		-----		-----	
194	D381	0.4		-0.17	
217	D381	0.5		-0.03	
221		-----		-----	
224		-----		-----	
225		-----		-----	
228		-----		-----	
230		-----		-----	
237	D381	0.6		0.11	
238		-----		-----	
252	D381	0.8		0.38	
253	D381	<0.5		-----	
254		-----		-----	
256		-----		-----	
258		-----		-----	
273		-----		-----	
312		-----		-----	
323	D381	0.5		-0.03	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340	D381	0	ex	-0.71	Result excluded, zero is not a real result
343	D381	<0.5	C	-----	First reported 33.4
353	IP131	0.2		-0.44	
399	D381	0.48		-0.06	
431		-----		-----	
433		-----		-----	
447	D381	<0.5		-----	
463	D381	0.2		-0.44	
468	D381	0.6		0.11	
485		-----		-----	
494	D381	0.2		-0.44	
495	D381	<0.5		-----	
511	D381	<0.5		-----	
541		-----		-----	
557	D381	0.7		0.24	
562		-----		-----	
592		-----		-----	
604		-----		-----	
631	D381	1.5	G(0.05)	1.33	
657	D381	0.8		0.38	
663	D381	0.5		-0.03	
671	D381	0.4		-0.17	
823	D381	<0.5		-----	
862	D381	0.2		-0.44	
868	D381	0.8		0.38	
875		-----		-----	
912		-----		-----	
962	D381	<0.5		-----	
974	D381	0.6		0.11	
994		-----		-----	
995		-----		-----	
996		-----		-----	
1006	D381	0.4		-0.17	
1016		-----		-----	
1017		-----		-----	
1026		-----		-----	
1033	IP131	<0.1		-----	
1038		-----		-----	
1059	D381	<1		-----	
1066		-----	W	-----	
1080	ISO6246	0.8		0.38	

1081	D381	<0.5	C	-----	First reported 2.0
1108	D381	2	G(0.01)	2.01	
1109	D381	<0.5		-----	
1126		-----		-----	
1186		-----		-----	
1205		-----		-----	
1215		-----		-----	
1231	D381	0.4		-0.17	
1237		-----		-----	
1254	D381	<0.5		-----	
1276	D381	0.3		-0.30	
1347	D381	0.60		0.11	
1348	D381	0.6		0.11	
1385	D381	1.2		0.92	
1395	D381	0.1		-0.58	
1397	D381	0.5		-0.03	
1404	D381	0	ex	-0.71	Result excluded, zero is not a real result
1409	ISO6246	<1		-----	
1419	D381	<1		-----	
1428	ISO6246	0.2		-0.44	
1432		-----		-----	
1487		-----		-----	
1488	D381	0.30		-0.30	
1490	ISO6246	0.2		-0.44	
1531		-----		-----	
1613	D381	0.64		0.16	
1616	D381	0.5		-0.03	
1631	ISO6246	0.4		-0.17	
1634		-----		-----	
1656	ISO6246	<1		-----	
1710	D381	1.0		0.65	
1720		-----		-----	
1724	D381	0.4		-0.17	
1730		-----		-----	
1740		-----		-----	
1807	D381	1.0		0.65	
1833	D381	0.6		0.11	
1849	D381	0.70		0.24	
1851		-----		-----	
1854		-----		-----	
1864	D381	0.2		-0.44	
1911		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1948	D381	0.6		0.11	
1952	D381	0.46		-0.09	
2129	D381	0.4		-0.17	
2130	D381	1		0.65	
7003	D381	<0.5		-----	

normality	OK
n	45
outliers	2
mean (n)	0.52
st.dev. (n)	0.261
R(calc.)	0.73
R(D381:09)	2.05



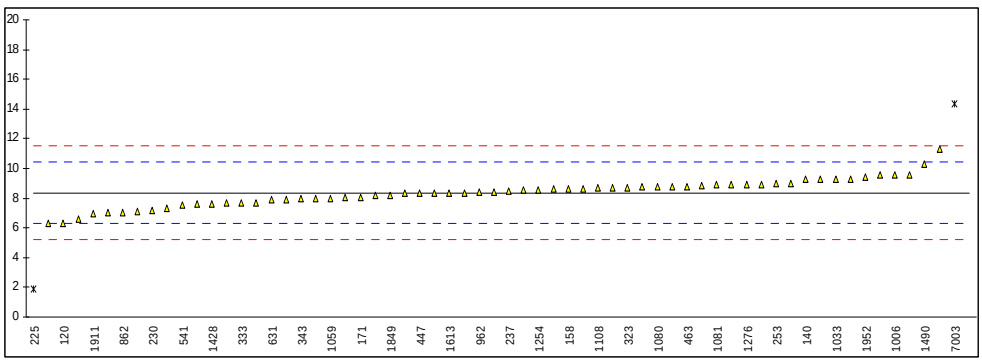


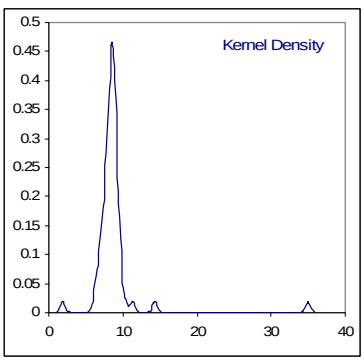
Determination of Olefins by FIA on sample #12006; results in %V/V

lab	method	value	mark	z(targ)	remarks
52	D1319	7.3		-1.02	
62	D1319	8.6		0.22	
120	D1319	6.30		-1.97	
132	D1319	8.44		0.07	
140	D1319	9.25	C	0.84	First reported 32.55
150	D1319	9.3		0.89	
158	D1319	8.6		0.22	
159	D1319	8.05		-0.30	
169	D1319	8.36		-0.01	
171	D1319	8.075		-0.28	
180		-----		-----	
193	D1319	7.0		-1.30	
194	D1319	8.7384		0.35	
217		-----		-----	
221		-----		-----	
224		-----		-----	
225	D1319	1.86	G(0.01)	-6.21	
228		-----		-----	
230	D1319	7.18	C	-1.13	First reported 3.94
237	D1319	8.47		0.10	
238		-----		-----	
252		-----		-----	
253	D1319	9.0		0.60	
254		-----		-----	
256		-----		-----	
258		-----		-----	
273		-----		-----	
312	D1319	6.6		-1.69	
323	EN22854	8.7		0.32	
333	D1319	7.7		-0.64	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	D1319	7.97	C	-0.38	First reported 12.65
353		-----		-----	
399	ISO22854	8.54		0.17	
431		-----		-----	
433		-----		-----	
447	D1319	8.32		-0.04	
463	D1319	8.8		0.41	
468		-----		-----	
485		-----		-----	
494		-----		-----	
495	D1319	7.7		-0.64	
511		-----		-----	
541	D6730	7.55		-0.78	
557	D1319	35.00	G(0.01)	25.42	
562		-----		-----	
592		-----		-----	
604		-----		-----	
631	D1319	7.88		-0.46	
657	D1319	9.3		0.89	
663		-----		-----	
671		-----		-----	
823	D1319	8.3		-0.06	
862	D1319	7.05		-1.26	
868		-----		-----	
875		-----		-----	
912		-----		-----	
962	D1319	8.4		0.03	
974	D1319	8.34		-0.03	
994		-----		-----	
995	D6729	11.34		2.84	
996		-----		-----	
1006	D6293	9.6		1.18	
1016		-----		-----	
1017		-----		-----	
1026	D6729	8.7		0.32	
1033	IP156	9.3		0.89	
1038	D6839	8.9		0.51	
1059	D1319	8.0		-0.35	
1066		-----		-----	
1080	INH-3	8.75		0.37	

1081	EN14517	8.90		0.51	
1108	EN22854	8.7		0.32	
1109	D1319	6.27		-2.00	
1126		-----		-----	
1186		-----		-----	
1205		-----		-----	
1215		-----		-----	
1231		-----		-----	
1237		-----		-----	
1254	D1319	8.548		0.17	
1276	D1319	8.90		0.51	
1347		-----		-----	
1348		-----		-----	
1385		-----		-----	
1395		-----		-----	
1397	D1319	8.9		0.51	
1404	ISO22854	8.76		0.38	
1409	ISO22854	9.0		0.60	
1419	ISO22854	7.98		-0.37	
1428	ISO3837	7.6		-0.73	
1432		-----		-----	
1487		-----		-----	
1488		-----		-----	
1490	E1655	10.3	C	1.85	First reported 4.9
1531		-----		-----	
1613	D6839	8.35		-0.02	
1616	D1319	7.7		-0.64	
1631	EN15553	8.85		0.46	
1634		-----		-----	
1656	EN14517	9.6		1.18	
1710		-----		-----	
1720		-----		-----	
1724	D1319	7.91		-0.44	
1730		-----		-----	
1740		-----		-----	
1807		-----		-----	
1833	D1319	8.2		-0.16	
1849	D1319	8.21		-0.15	
1851		-----		-----	
1854	D1319	7.1		-1.21	
1864		-----		-----	
1911	EN15553	6.97		-1.33	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1948	D1319	8.62		0.24	
1952	D1319	9.45		1.03	
2129	D1319	7.6		-0.73	
2130	D1319	9.57		1.15	
7003	D5134	14.335	G(0.01)	5.70	

normality	OK
n	61
outliers	3
mean (n)	8.367
st.dev. (n)	0.9203
R(calc.)	2.577
R(D1319:10)	2.933



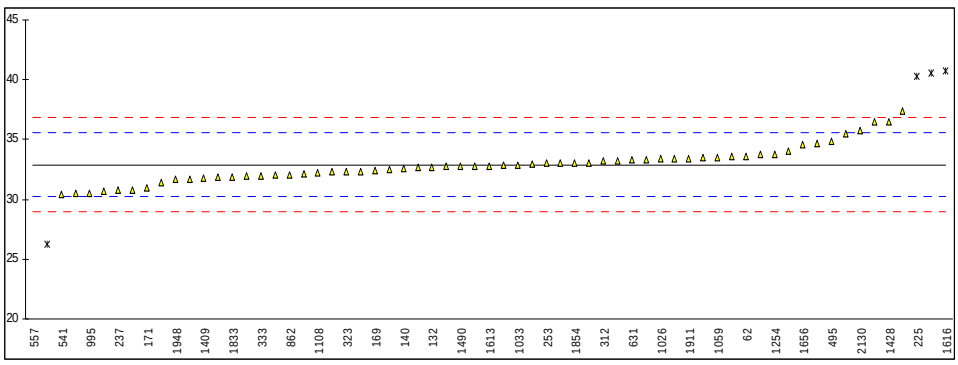


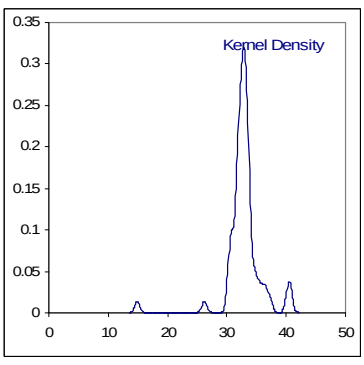
Determination of Aromatics by FIA on sample #12006; results in %V/V

lab	method	value	mark	z(targ)	remarks
52	D1319	35.5		1.97	
62	D1319	33.6		0.53	
120	D1319	31.40		-1.14	
132	D1319	32.70		-0.15	
140	D1319	32.55	C	-0.27	First reported 9.25
150	D1319	33.0		0.08	
158	D1319	30.7		-1.67	
159	D1319	33.6		0.53	
169	D1319	32.37		-0.40	
171	D1319	30.985		-1.45	
180		-----		-----	
193	D1319	30.5		-1.82	
194	D1319	34.0318		0.86	
217		-----		-----	
221		-----		-----	
224		-----		-----	
225	D1319	40.3	G(0.01)	5.60	
228		-----		-----	
230	D1319	36.48	C	2.71	First reported 38.4
237	D1319	30.75	C	-1.63	First reported 37.47
238		-----		-----	
252		-----		-----	
253	D1319	33.0		0.08	
254		-----		-----	
256		-----		-----	
258		-----		-----	
273		-----		-----	
312	D1319	33.2		0.23	
323	EN22854	32.3		-0.45	
333	D1319	32.0		-0.68	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	D1319	31.90		-0.76	
353		-----		-----	
399	ISO22854	32.69		-0.16	
431		-----		-----	
433		-----		-----	
447	D1319	33.20		0.23	
463	D1319	32.3		-0.45	
468		-----		-----	
485		-----		-----	
494		-----		-----	
495	D1319	34.9		1.51	
511		-----		-----	
541	D6730	30.43	C	-1.87	First reported 27.39
557	D1319	14.93	G(0.01)	-13.60	
562		-----		-----	
592		-----		-----	
604		-----		-----	
631	D1319	33.30		0.30	
657	D1319	34.7		1.36	
663	D5580	40.6	C,G(0.05)	5.83	First reported 38.05
671		-----		-----	
823	D1319	32.9		0.00	
862	D1319	32.09		-0.61	
868		-----		-----	
875		-----		-----	
912		-----		-----	
962	D1319	33.0		0.08	
974	D1319	33.35		0.34	
994		-----		-----	
995	D6729	30.55		-1.78	
996		-----		-----	
1006	D6293	32.03		-0.66	
1016		-----		-----	
1017		-----		-----	
1026	D6729	33.4		0.38	
1033	IP156	32.9		0.00	
1038	D6839	32.3		-0.45	
1059	D1319	33.5		0.45	
1066		-----		-----	
1080	INH-3	31.99		-0.69	

1081	EN14517	32.54		-0.27
1108	EN22854	32.2		-0.53
1109	D1319	30.78		-1.60
1126		-----		-----
1186		-----		-----
1205		-----		-----
1215		-----		-----
1231		-----		-----
1237		-----		-----
1254	D1319	33.812		0.69
1276	D1319	33.74		0.64
1347		-----		-----
1348		-----		-----
1385		-----		-----
1395		-----		-----
1397	D1319	33.4		0.38
1404	ISO22854	32.18		-0.55
1409	ISO22854	31.8		-0.83
1419	ISO22854	32.78		-0.09
1428	ISO3837	36.5		2.72
1432		-----		-----
1487		-----		-----
1488		-----		-----
1490	E1655	32.8		-0.08
1531		-----		-----
1613	D6839	32.81		-0.07
1616	D1319	40.7	G(0.05)	5.90
1631	EN15553	32.8		-0.08
1634		-----		-----
1656	EN14517	34.6		1.29
1710		-----		-----
1720		-----		-----
1724	D1319	31.70		-0.91
1730		-----		-----
1740		-----		-----
1807		-----		-----
1833	D1319	31.9		-0.76
1849	D1319	32.972		0.05
1851		-----		-----
1854	D1319	33.0		0.08
1864		-----		-----
1911	EN15553	33.41		0.39
1936		-----		-----
1937		-----		-----
1938		-----		-----
1948	D1319	31.64		-0.95
1952	D1319	37.35		3.37
2129	D1319	33.5		0.45
2130	D1319	35.74		2.15
7003	D5134	26.244	G(0.05)	-5.04

			Only D1319 results:
	normality	not OK	OK
	n	60	41
	outliers	5	2
	mean (n)	32.901	33.023
	st.dev. (n)	1.4596	1.5195
	R(calc.)	4.087	4.255
	R(D1319:10)	3.700	3.700



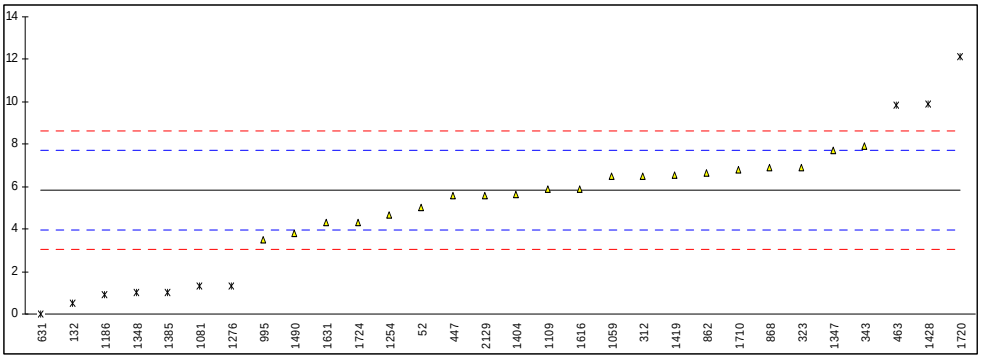


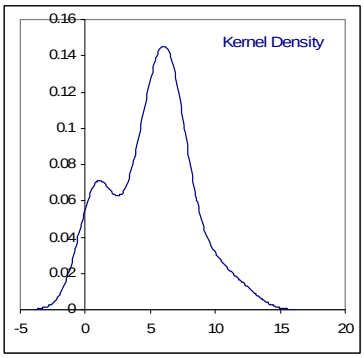
Determination of Lead as Pb on sample #12006; results in mg/L

lab	method	value	mark	z(targ)	remarks
52	D3237	5		-0.90	
62		-----		-----	
120		-----		-----	
132	D3237	0.526	ex	-5.71	Excluded, see §4.1
140		-----		-----	
150	D3237	<2.5		-----	
158		-----		-----	
159		-----		-----	
169		-----		-----	
171	D3237	<0.001		-----	
180		-----		-----	
193		-----		-----	
194		-----		-----	
217		-----		-----	
221		-----		-----	
224		-----		-----	
225		-----		-----	
228		-----		-----	
230		-----		-----	
237		-----		-----	
238		-----		-----	
252		-----		-----	
253		-----		-----	
254	D3237	<2.5		-----	
256		-----		-----	
258		-----		-----	
273		-----		-----	
312	EN237	6.5		0.72	
323	D3237	6.9		1.15	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	D3237	7.93		2.26	
353		-----		-----	
399		-----		-----	
431		-----		-----	
433		-----		-----	
447	IP428	5.6		-0.25	
463	D3237	9.85	G(0.05)	4.33	
468		-----		-----	
485		-----		-----	
494		-----		-----	
495	D3237	<2.5		-----	
511		-----		-----	
541		-----		-----	
557		-----		-----	
562		-----		-----	
592		-----		-----	
604		-----		-----	
631	D3237	0.0059	ex	-6.28	Excluded, see §4.1
657		-----		-----	
663		-----		-----	
671		-----		-----	
823		-----		-----	
862	D3237	6.66		0.89	
868	D3237	6.88		1.13	
875		-----		-----	
912		-----		-----	
962		-----		-----	
974		-----		-----	
994		-----		-----	
995	D3237	3.5		-2.51	
996		-----		-----	
1006	D3237	<0.0025		-----	
1016		-----		-----	
1017		-----		-----	
1026		-----		-----	
1033		-----		-----	
1038		-----		-----	
1059	EN13723	6.5		0.72	
1066		-----		-----	
1080		-----		-----	

1081	D5059	1.3	ex	-4.88	Excluded, see §4.1
1108		-----		-----	
1109	D3237	5.88		0.05	
1126		-----		-----	
1186	D3237	0.92	ex	-5.29	Excluded, see §4.1
1205		-----		-----	
1215		-----		-----	
1231		-----		-----	
1237		-----		-----	
1254	D3237	4.68		-1.24	
1276	IP428	1.3	ex	-4.88	Excluded, see §4.1
1347	D5059	7.73		2.04	
1348	D3237	1	ex	-5.20	Excluded, see §4.1
1385	D3237	1	ex	-5.20	Excluded, see §4.1
1395		-----		-----	
1397		-----		-----	
1404	EN237	5.64		-0.21	
1409	EN237	<2.5		-----	
1419	EN237	6.55		0.77	
1428	EN237	9.9	DG(0.05)	4.38	
1432		-----		-----	
1487		-----		-----	
1488		-----		-----	
1490	EN237	3.8		-2.19	
1531		-----		-----	
1613	D3237	<2.5		-----	
1616	IP224	5.90		0.07	
1631	EN237	4.3		-1.65	
1634		-----		-----	
1656	EN237	<2.5		-----	
1710	EN237	6.8		1.04	
1720	D3237	12.13	C,DG(0.05)	6.78	First reported 48.2
1724	D3237	4.3041		-1.65	
1730		-----		-----	
1740		-----		-----	
1807		-----		-----	
1833	D3237	<2.5		-----	
1849	EN237	<2.5		-----	
1851		-----		-----	
1854		-----		-----	
1864	EN237	<2.5		-----	
1911		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1948	D3237	<2.5		-----	
1952		-----		-----	
2129	D3237	5.6		-0.25	
2130		-----		-----	
7003		-----		-----	

normality	OK		
n	20		
outliers	3	Spike	
mean (n)	5.83	5.5	Recovery 105%
st.dev. (n)	1.250		
R(calc.)	3.50		
R(D3237:06e1)	2.60		





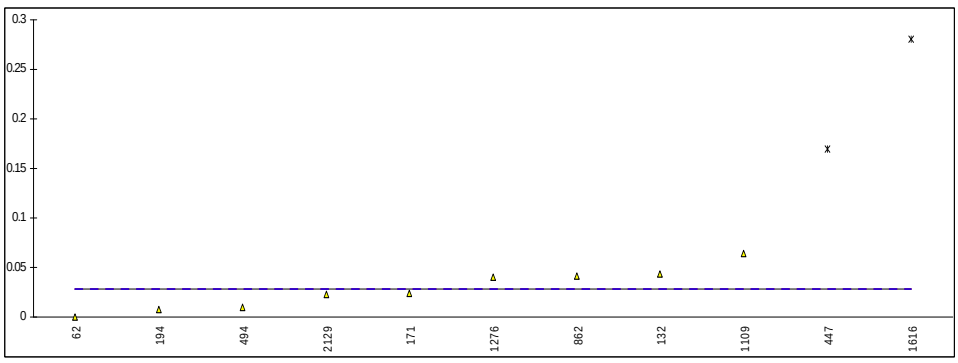
Determination of Phosphorus as P on sample #12006; results in mg/L

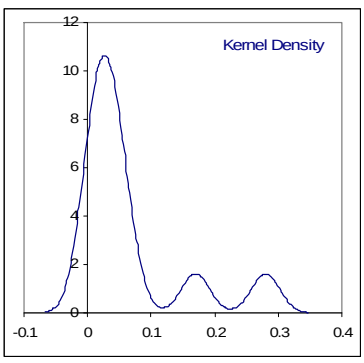
lab	method	value	mark	z(targ)	remarks
52	D3231	<0.2		-----	
62	D3231	0.0		-----	
120	D3231	<0.5		-----	
132	D3231	0.044		-----	
140		-----		-----	
150	D3231	<0.1		-----	
158		-----		-----	
159		-----		-----	
169		-----		-----	
171	D3231	0.024203		-----	
180		-----		-----	
193		-----		-----	
194	D3231	0.0078		-----	
217		-----		-----	
221		-----		-----	
224		-----		-----	
225		-----		-----	
228		-----		-----	
230		-----		-----	
237		-----		-----	
238		-----		-----	
252		-----		-----	
253		-----		-----	
254		-----		-----	
256		-----		-----	
258		-----		-----	
273		-----		-----	
312		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343		-----		-----	
353		-----		-----	
399		-----		-----	
431		-----		-----	
433		-----		-----	
447	D3231	0.17	G(0.01)	-----	
463		-----		-----	
468		-----		-----	
485		-----		-----	
494	D3231	0.01		-----	
495	D3231	<0.2		-----	
511		-----		-----	
541		-----		-----	
557		-----		-----	
562		-----		-----	
592		-----		-----	
604		-----		-----	
631		-----		-----	
657		-----		-----	
663		-----		-----	
671		-----		-----	
823	D3231	<0.2		-----	
862	D3231	0.041		-----	
868	D3231	<0.2		-----	
875		-----		-----	
912		-----		-----	
962		-----		-----	
974		-----		-----	
994		-----		-----	
995		-----		-----	
996		-----		-----	
1006		-----		-----	
1016		-----		-----	
1017		-----		-----	
1026		-----		-----	
1033		-----		-----	
1038		-----		-----	
1059		-----		-----	
1066		-----		-----	
1080		-----		-----	

1081		-----		-----
1108		-----		-----
1109	D3231	0.064		-----
1126		-----		-----
1186		-----		-----
1205		-----		-----
1215		-----		-----
1231		-----		-----
1237		-----		-----
1254		-----		-----
1276	D3231	0.04		-----
1347		-----		-----
1348		-----		-----
1385		-----		-----
1395		-----		-----
1397		-----		-----
1404		-----		-----
1409		-----		-----
1419		-----		-----
1428		-----		-----
1432		-----		-----
1487		-----		-----
1488		-----		-----
1490		-----		-----
1531		-----		-----
1613		-----		-----
1616	D3231	0.28	G(0.05)	-----
1631		-----		-----
1634		-----		-----
1656		-----		-----
1710		-----		-----
1720		-----		-----
1724		-----		-----
1730		-----		-----
1740		-----		-----
1807		-----		-----
1833		-----		-----
1849		-----		-----
1851		-----		-----
1854		-----		-----
1864		-----		-----
1911		-----		-----
1936		-----		-----
1937		-----		-----
1938		-----		-----
1948		-----		-----
1952		-----		-----
2129	D3231	0.023		-----
2130		-----		-----
7003		-----		-----

normality	OK
n	9
outliers	2
mean (n)	0.03
st.dev. (n)	0.021
R(calc.)	0.06
R(D3231:11)	(0.13)

Application range: 0.2 – 40 mg/l





Determination of Oxidation Stability on sample #12006; results in minutes

lab	method	value	mark	z(targ)	remarks
52	D525	>900		-----	
62	D525	>900		-----	
120		-----		-----	
132	D525	>2866		-----	
140		-----		-----	
150	D525	>240		-----	
158		-----		-----	
159		-----		-----	
169		-----		-----	
171	D525	>900		-----	
180		-----		-----	
193		-----		-----	
194	D525	>240		-----	
217		-----		-----	
221		-----		-----	
224		-----		-----	
225		-----		-----	
228		-----		-----	
230		-----		-----	
237	D525	>360		-----	
238		-----		-----	
252	D525	>360		-----	
253		-----		-----	
254		-----		-----	
256		-----		-----	
258		-----		-----	
273		-----		-----	
312	D525	>900		-----	
323	D525	>900		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336	D525	>900		-----	
337		-----		-----	
338		-----		-----	
340	D525	>360		-----	
343	D525	400		-----	
353		-----		-----	
399		-----		-----	
431		-----		-----	
433		-----		-----	
447	D525	>900		-----	
463	D525	>900		-----	
468		-----		-----	
485		-----		-----	
494	D525	>900		-----	
495	D525	>1200		-----	
511	D525	>1300		-----	
541	D525	>900		-----	
557	D525	>900		-----	
562		-----		-----	
592		-----		-----	
604		-----		-----	
631	D525	>900		-----	
657	D525	>900		-----	
663		-----		-----	
671		-----		-----	
823		-----		-----	
862	D525	>900		-----	
868	D525	>900		-----	
875		-----		-----	
912		-----		-----	
962	D525	>900		-----	
974	D525	>900		-----	
994		-----		-----	
995		-----		-----	
996		-----		-----	
1006	D525	>900		-----	
1016		-----		-----	
1017		-----		-----	
1026	ISO7536	>360		-----	
1033	IP40	>960		-----	
1038		-----		-----	
1059	ISO7536	>900		-----	
1066	D525	>360		-----	
1080		-----		-----	

1081	D525	>1000	-----
1108	D525	1500	-----
1109		-----	-----
1126		-----	-----
1186		-----	-----
1205		-----	-----
1215		-----	-----
1231		-----	-----
1237	ISO7536	>900	-----
1254	D525	>900	-----
1276	D525	>360	-----
1347		-----	-----
1348	D525	>900	-----
1385		-----	-----
1395	D525	>900	-----
1397		-----	-----
1404	D525	>900	-----
1409	D525	>900	-----
1419	D525	>900	-----
1428	ISO7536	>900	-----
1432		-----	-----
1487		-----	-----
1488	D525	>900	-----
1490	ISO7536	>900	-----
1531		-----	-----
1613	D525	>900	-----
1616	D525	>900	-----
1631	ISO7536	>900	-----
1634		-----	-----
1656	ISO7536	>900	-----
1710		-----	-----
1720		-----	-----
1724	D525	>900	-----
1730		-----	-----
1740		-----	-----
1807		-----	-----
1833	D525	>900	-----
1849	ISO7536	532.5	-----
1851		-----	-----
1854		-----	-----
1864	D525	>360	-----
1911		-----	-----
1936		-----	-----
1937		-----	-----
1938		-----	-----
1948	D525	>900	-----
1952		-----	-----
2129	D525	>900	-----
2130		-----	-----
7003		-----	-----

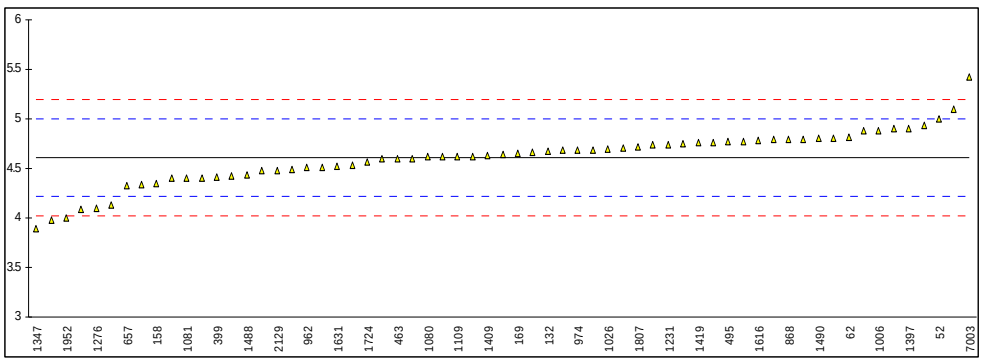
normality	n.a.
n	52
outliers	0
mean (n)	>300
st.dev. (n)	n.a.
R(calc.)	n.a.
R(D525:05)	n.a.

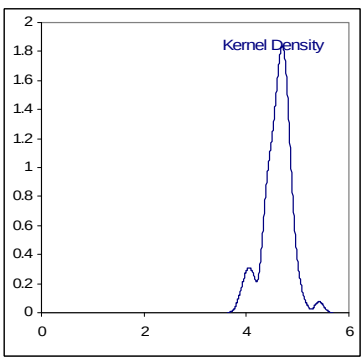
Determination of Ethanol on sample #12006; results in %V/V

lab	method	value	mark	z(targ)	remarks
52	INH-14	5.0		1.99	
62	D4815	4.82		1.08	
120	D5599	4.492		-0.60	
132	D5599	4.67		0.31	
140		-----		-----	
150	D5599	4.40		-1.06	
158	D5599	4.35		-1.32	
159	D5599	4.94		1.69	
169	D4815	4.652		0.22	
171	D4815	4.641		0.16	
180		-----		-----	
193	D5599	4.337		-1.38	
194		-----		-----	
217		-----		-----	
221		-----		-----	
224		-----		-----	
225		-----		-----	
228		-----		-----	
230		-----		-----	
237		-----		-----	
238		-----		-----	
252		-----		-----	
253		-----		-----	
254		-----		-----	
256		-----		-----	
258		-----		-----	
273		-----		-----	
312	ISO22854	4.77		0.82	
323	EN22854	4.69		0.41	
333	EN13132	4.6		-0.04	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN13132	5.10		2.50	
353		-----		-----	
399	ISO22854	4.41		-1.01	
431		-----		-----	
433		-----		-----	
447	D4815	4.88		1.38	
463	EN13132	4.60		-0.04	
468		-----		-----	
485		-----		-----	
494	EN22854	4.66		0.26	
495	D4815	4.77		0.82	
511		-----		-----	
541		-----		-----	
557		-----		-----	
562		-----		-----	
592		-----		-----	
604		-----		-----	
631		-----		-----	
657	D4815	4.33		-1.42	
663		-----		-----	
671		-----		-----	
823	D4815	4.79		0.92	
862	D4815	4.532		-0.39	
868	D4815	4.79		0.92	
875		-----		-----	
912		-----		-----	
962	D6839	4.51		-0.50	
974	D4815	4.6832		0.38	
994		-----		-----	
995		-----		-----	
996		-----		-----	
1006	D4815	4.88		1.38	
1016		-----		-----	
1017		-----		-----	
1026	EN13132	4.7		0.46	
1033		-----		-----	
1038		-----		-----	
1059	ISO22854	4.62		0.06	
1066	EN22854	4.51		-0.50	
1080	INH-3	4.62		0.06	

1081	EN14517	4.40	C	-1.06	First reported 0.44
1108	EN22854	4.76		0.77	
1109	D6839	4.62		0.06	
1126	reformulyzer	4.79		0.92	
1186		-----		-----	
1205	ISO22854	4.74		0.67	
1215		-----		-----	
1231	D4815	4.74		0.67	
1237		-----		-----	
1254	D4815	4.401		-1.06	
1276	D4815	4.096		-2.61	
1347	D4815	3.893		-3.65	
1348	D4815	4.09		-2.64	
1385	D4815	4.13		-2.44	
1395		-----		-----	
1397	EN13132	4.9	C	1.48	First reported 0.3
1404	D4815	4.90		1.48	
1409	ISO22854	4.63		0.11	
1419	ISO22854	4.76		0.77	
1428	EN13132	4.419		-0.97	
1432		-----		-----	
1487	extr.	NIL		-----	False negative?
1488	EN13132	4.432		-0.90	
1490	D5845	4.8		0.97	
1531		-----		-----	
1613	D6839	4.68		0.36	
1616	D6839	4.78		0.87	
1631	ISO22854	4.52		-0.45	
1634		-----		-----	
1656	EN14517	4.8		0.97	
1710	D4815	4.60		-0.04	
1720		-----		-----	
1724	ISO22854	4.56		-0.25	
1730		-----		-----	
1740		-----		-----	
1807	ISO22854	4.72		0.57	
1833	EN13132	4.48		-0.66	
1849		-----		-----	
1851		-----		-----	
1854		-----		-----	
1864	EN13132	4.75		0.72	
1911	EN13132	4.62		0.06	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1948	D4815	4.71		0.52	
1952	D4815	4.0028		-3.09	
2129	D6730	4.48		-0.66	
2130	D6730	3.982		-3.19	
7003	D5134	5.421		4.14	

normality	not OK
n	63
outliers	0
mean (n)	4.609
st.dev. (n)	0.2697
R(calc.)	0.755
R(D4815:09)	0.550





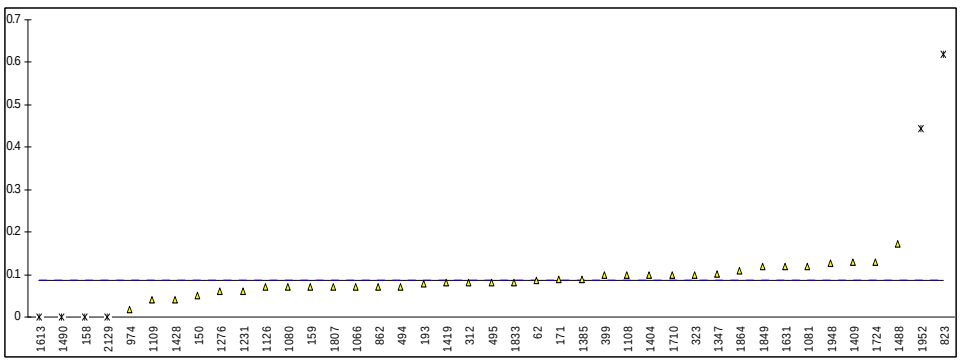
Determination of MTBE on sample #12006; results in %V/V

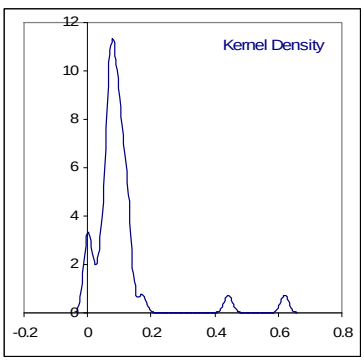
lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62	D4815	0.086		-----	
120	D5599	<0.01		-----	
132	D5599	<0.1		-----	
140		-----		-----	
150	D5599	0.05		-----	
158	D5599	0.00	ex	-----	Result excluded, zero not a real result
159	D5599	0.07		-----	
169	D4815	n.d.		-----	
171	D4815	0.09		-----	
180		-----		-----	
193	D5599	0.0792		-----	
194		-----		-----	
217		-----		-----	
221		-----		-----	
224		-----		-----	
225		-----		-----	
228		-----		-----	
230		-----		-----	
237		-----		-----	
238		-----		-----	
252		-----		-----	
253		-----		-----	
254		-----		-----	
256		-----		-----	
258		-----		-----	
273		-----		-----	
312	ISO22854	0.08		-----	
323	EN22854	0.10		-----	
333	EN13132	<0.17		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN13132	<0.17		-----	
353		-----		-----	
399	ISO22854	0.10		-----	
431		-----		-----	
433		-----		-----	
447	D4815	<0.2		-----	
463	EN13132	<0.2		-----	
468		-----		-----	
485		-----		-----	
494	EN22854	0.07		-----	
495	D4815	0.08		-----	
511		-----		-----	
541		-----		-----	
557		-----		-----	
562		-----		-----	
592		-----		-----	
604		-----		-----	
631		-----		-----	
657	D4815	<0.2		-----	
663		-----		-----	
671		-----		-----	
823	D4815	0.62	C,G(0.01)	-----	First reported 0.26, False positive result?
862	D4815	0.07		-----	
868	D4815	<0.1		-----	
875		-----		-----	
912		-----		-----	
962		-----		-----	
974	D4815	0.0169	C	-----	First reported 0.1826
994		-----		-----	
995		-----		-----	
996		-----		-----	
1006	D4815	n.d.		-----	
1016		-----		-----	
1017		-----		-----	
1026	EN13132	<0.1		-----	
1033		-----		-----	
1038		-----		-----	
1059	ISO22854	<0.20		-----	
1066	EN22854	0.07		-----	
1080	INH-3	0.07		-----	

1081	EN14517	0.12		-----	
1108	EN22854	0.10		-----	
1109	D6839	0.04		-----	
1126	reformulyzer	0.07		-----	
1186		-----		-----	
1205	ISO22854	n.d.		-----	
1215		-----		-----	
1231	D4815	0.06		-----	
1237		-----		-----	
1254	D4815	<0.2		-----	
1276	D4815	0.06		-----	
1347	D4815	0.102		-----	
1348	D4815	<0.1		-----	
1385	D4815	0.09		-----	
1395		-----		-----	
1397	EN13132	<0.2		-----	
1404	D4815	0.10		-----	
1409	ISO22854	0.13		-----	
1419	ISO22854	0.08		-----	
1428	EN13132	0.041		-----	
1432		-----		-----	
1487		-----		-----	
1488	EN13132	0.1718		-----	
1490	D5845	0.0	ex	-----	Result excluded, zero not a real result
1531		-----		-----	
1613	D6839	0.00	ex	-----	Result excluded, zero not a real result
1616		-----		-----	
1631	ISO22854	0.12		-----	
1634		-----		-----	
1656	EN14517	<0.1		-----	
1710	D4815	0.10		-----	
1720		-----		-----	
1724	ISO22854	0.13		-----	
1730		-----		-----	
1740		-----		-----	
1807	ISO22854	0.07		-----	
1833	EN13132	0.08		-----	
1849	EN14517	0.12		-----	
1851		-----		-----	
1854		-----		-----	
1864	EN13132	0.11		-----	
1911	EN13132	<0.17		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1948	D4815	0.126		-----	
1952	D4815	0.4430	G(0.01)	-----	False positive result?
2129	D6730	0	ex	-----	Result excluded, zero not a real result
2130		-----		-----	
7003		-----		-----	

normality	OK
n	35
outliers	2
mean (n)	0.087
st.dev. (n)	0.0305
R(calc.)	0.085
R(D4815:09)	(0.023)

Application range: 0.20 – 20.0 %M/M





Determination of other oxygenates on sample #12006; results in %V/V

lab	method	DIPE	ETBE	i-buOH	i-prOH	MeOH	TAME	Tert-buOH
52		-----	-----	-----	-----	<0.1	-----	-----
62		-----	0	0	0	0	0	-----
120	D5599	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
132	D5599	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
140		-----	-----	-----	-----	-----	-----	-----
150	D5599	0.07	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
158	D5599	0.00	0.00	0.00	0.00	0.00	0.00	0.00
159	D5599	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
169	D4815	0.000	0.000	0.000	0.000	0.000	0.000	0.000
171	D4815	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
180		-----	-----	-----	-----	-----	-----	-----
193	D5599	0.060	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
194		-----	-----	-----	-----	-----	-----	-----
217		-----	-----	-----	-----	-----	-----	-----
221		-----	-----	-----	-----	-----	-----	-----
224		-----	-----	-----	-----	-----	-----	-----
225		-----	-----	-----	-----	-----	-----	-----
228		-----	-----	-----	-----	-----	-----	-----
230		-----	-----	-----	-----	-----	-----	-----
237		-----	-----	-----	-----	-----	-----	-----
238		-----	-----	-----	-----	-----	-----	-----
252		-----	-----	-----	-----	-----	-----	-----
253		-----	-----	-----	-----	-----	-----	-----
254		-----	-----	-----	-----	-----	-----	-----
256		-----	-----	-----	-----	-----	-----	-----
258		-----	-----	-----	-----	-----	-----	-----
273		-----	-----	-----	-----	-----	-----	-----
312	ISO22854	0.05	<0.01	0.03	<0.01	<0.01	<0.01	<0.01
323	EN22854	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
333	EN13132	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
334		-----	-----	-----	-----	-----	-----	-----
335		-----	-----	-----	-----	-----	-----	-----
336		-----	-----	-----	-----	-----	-----	-----
337		-----	-----	-----	-----	-----	-----	-----
338		-----	-----	-----	-----	-----	-----	-----
340		-----	-----	-----	-----	-----	-----	-----
343		-----	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
353		-----	-----	-----	-----	-----	-----	-----
399	ISO22854	<0.01	<0.01	<0.01	<0.01	<0.01	0.14	<0.01
431		-----	-----	-----	-----	-----	-----	-----
433		-----	-----	-----	-----	-----	-----	-----
447	D4815	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
463		-----	<0.2	<0.2	<0.2	<0.2	***0.585***	<0.2
468		-----	-----	-----	-----	-----	-----	-----
485		-----	-----	-----	-----	-----	-----	-----
494	EN22854	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
495	D4815	<0.1	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
511		-----	-----	-----	-----	-----	-----	-----
541		-----	-----	-----	-----	-----	-----	-----
557		-----	-----	-----	-----	-----	-----	-----
562		-----	-----	-----	-----	-----	-----	-----
592		-----	-----	-----	-----	-----	-----	-----
604		-----	-----	-----	-----	-----	-----	-----
631		-----	-----	-----	-----	-----	-----	-----
657	D4815	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
663		-----	-----	-----	-----	-----	-----	-----
671		-----	-----	-----	-----	-----	-----	-----
823	D4815	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
862	D4815	0.04	<0.01	<0.01	0.02	<0.01	<0.01	0.03
868	D4815	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
875		-----	-----	-----	-----	-----	-----	-----
912		-----	-----	-----	-----	-----	-----	-----
962		-----	-----	-----	-----	-----	0.14	-----
974		-----	-----	0.0232	0.0211	0.0334	0.1156	-----
994		-----	-----	-----	-----	-----	-----	-----
995		-----	-----	-----	-----	-----	-----	-----
996		-----	-----	-----	-----	-----	-----	-----
1006	D4815	n.d.	n.d.	-----	-----	-----	0.17	-----
1016		-----	-----	-----	-----	-----	-----	-----
1017		-----	-----	-----	-----	-----	-----	-----
1026	EN13132	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1033		-----	-----	-----	-----	-----	-----	-----
1038		-----	-----	-----	-----	-----	-----	-----
1059	ISO22854	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1066	EN22854	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1080	INH-3	0.05	0.01	-----	-----	0.01	-----	-----

1081		-----	0.00	-----	-----	0.00	-----	-----
1108		-----	0.05	-----	-----	-----	<0.01	-----
1109	D6839	<0.01	0.02	<0.01	<0.01	<0.01	0.04	<0.01
1126	reformulyzer	0.05	-----	0.1	-----	-----	-----	0.02
1186		-----	-----	-----	-----	-----	-----	-----
1205	ISO22854	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
1215		-----	-----	-----	-----	-----	-----	-----
1231		-----	-----	-----	-----	-----	-----	-----
1237		-----	-----	-----	-----	-----	-----	-----
1254	D4815	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1276	D4815	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1347	D4815	0.066	***0.230***	***0.130***	0.046	-----	0.146	0.025
1348	D4815	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1385	D4815	0.06	***0.36***	***0.21***	n.d.	n.d.	0.03	0.01
1395		-----	-----	-----	-----	-----	-----	-----
1397		-----	-----	-----	-----	-----	<0.2	-----
1404	D4815	0.08	<0.01	<0.01	0.05	<0.01	<0.01	<0.01
1409	ISO22854	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
1419		-----	-----	-----	-----	-----	-----	-----
1428		-----	<0.17	<0.17	<0.17	<0.17	-----	<0.17
1432		-----	-----	-----	-----	-----	-----	-----
1487		-----	-----	-----	-----	-----	-----	-----
1488	EN13132	***2.399***	***0.7565***	<0.17	<0.17	***0.1614***	0.0054	0.0257
1490	D6277/D5845	0.0	***0.6***	0.0	0.0	0.0	0.0	0.0
1531		-----	-----	-----	-----	-----	-----	-----
1613	D6839	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1616		-----	-----	-----	-----	-----	-----	-----
1631		-----	-----	-----	-----	-----	-----	-----
1634		-----	-----	-----	-----	-----	-----	-----
1656	EN14517	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1710		-----	-----	-----	-----	-----	-----	-----
1720		-----	-----	-----	-----	-----	-----	-----
1724		-----	-----	-----	-----	-----	-----	-----
1730		-----	-----	-----	-----	-----	-----	-----
1740		-----	-----	-----	-----	-----	-----	-----
1807	ISO22854	0.04	-----	0.04	-----	-----	-----	-----
1833	EN13132	0.05	-----	0.02	-----	-----	-----	-----
1849		-----	-----	-----	-----	-----	-----	-----
1851		-----	-----	-----	-----	-----	-----	-----
1854		-----	-----	-----	-----	-----	-----	-----
1864	EN13132	0.05	0.12	n.d.	n.d.	n.d.	n.d.	0.06
1911		-----	<0.17	<0.17	<0.17	<0.17	-----	<0.17
1936		-----	-----	-----	-----	-----	-----	-----
1937		-----	-----	-----	-----	-----	-----	-----
1938		-----	-----	-----	-----	-----	-----	-----
1948	D4815	0.038	<0.01	<0.01	0.042	0.01	0.072	0.046
1952	D4815	0.1567	***0.2252***	-----	0.0316	-----	***0.5233***	0.0396
2129	D6730	0	0	0	0	0	0	0
2130		-----	-----	-----	-----	-----	-----	-----
7003		-----	-----	-----	-----	-----	-----	-----
	normality	OK	not OK	not OK	not OK	not OK	not OK	not OK
	n	22	12	12	13	11	16	15
	outliers	1	5	2	0	1	2	0
	mean (n)	0.043	0.018	0.014	0.016	0.005	0.054	0.018
	st.dev. (n)	0.0362	0.0354	0.0184	0.0200	0.0103	0.0655	0.0194
	R(calc.)	0.101	0.099	0.051	0.056	0.029	0.183	0.054
	R(D4815:09)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Bold, italic and underlined results were marked as false positive results and there fore excluded for statistical evaluation.

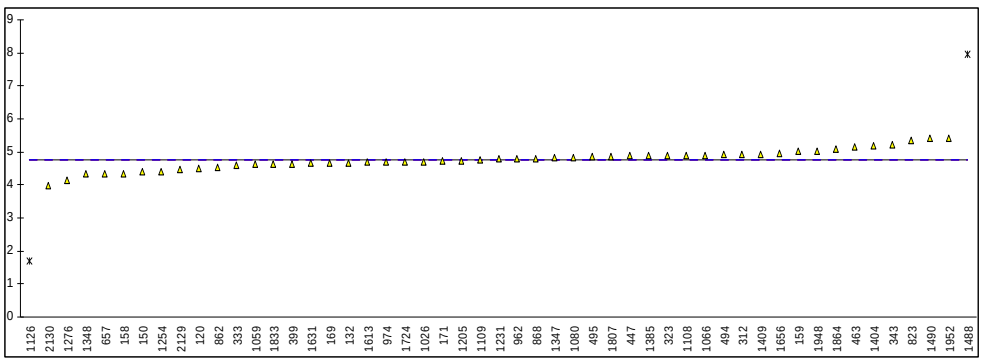
Determination of Total Oxygenates on sample #12006; results in %M/M

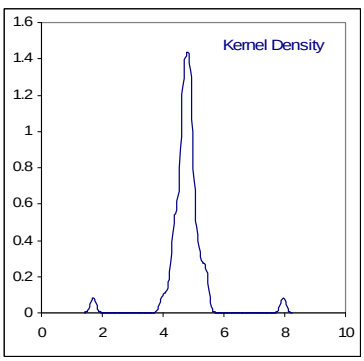
lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62		-----		-----	
120	D5599	4.492		-----	
132	D5599	4.67		-----	
140		-----		-----	
150	D5599	4.40		-----	
158	D5599	4.35		-----	
159	D5599	5.01		-----	
169	D4815	4.652		-----	
171	D4815	4.73		-----	
180		-----		-----	
193	D5599	<0.01		-----	False negative?
194		-----		-----	
217		-----		-----	
221		-----		-----	
224		-----		-----	
225		-----		-----	
228		-----		-----	
230		-----		-----	
237		-----		-----	
238		-----		-----	
252		-----		-----	
253		-----		-----	
254		-----		-----	
256		-----		-----	
258		-----		-----	
273		-----		-----	
312	ISO22854	4.93		-----	
323	EN22854	4.9		-----	
333	EN13132	4.6		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN13132	5.21		-----	
353		-----		-----	
399	ISO22854	4.64		-----	
431		-----		-----	
433		-----		-----	
447	D4815	4.88		-----	
463	EN13132	5.15		-----	
468		-----		-----	
485		-----		-----	
494	EN22854	4.92		-----	
495	D4815	4.87		-----	
511		-----		-----	
541		-----		-----	
557		-----		-----	
562		-----		-----	
592		-----		-----	
604		-----		-----	
631		-----		-----	
657	D4815	4.33		-----	
663		-----		-----	
671		-----		-----	
823	D4815	5.36		-----	
862	D4815	4.532		-----	
868	D4815	4.79		-----	
875		-----		-----	
912		-----		-----	
962	D6839	4.79		-----	
974	D4815	4.6832		-----	
994		-----		-----	
995		-----		-----	
996		-----		-----	
1006		-----		-----	
1016		-----		-----	
1017		-----		-----	
1026	EN13132	4.7		-----	
1033		-----		-----	
1038		-----		-----	
1059	ISO22854	4.62		-----	
1066	EN22854	4.9		-----	
1080	INH-3	4.83		-----	

1081		-----		-----	
1108	EN22854	4.90		-----	
1109	D6839	4.75		-----	
1126	reformulyzer	1.70	G(0.01)	-----	
1186		-----		-----	
1205	ISO22854	4.74		-----	
1215		-----		-----	
1231	D4815	4.79		-----	
1237		-----		-----	
1254	D4815	4.401		-----	
1276	D4815	4.156		-----	
1347	D4815	4.830		-----	
1348	D4815	4.33		-----	
1385	D4815	4.89		-----	
1395		-----		-----	
1397		-----		-----	
1404	D4815	5.18		-----	
1409	ISO22854	4.93		-----	
1419		-----		-----	
1428		-----	W	-----	
1432		-----		-----	
1487		-----		-----	
1488	EN13132	7.952	C,G(0.01)	-----	First reported 8.434
1490	D5845	5.4		-----	
1531		-----		-----	
1613	D6839	4.68		-----	
1616		-----		-----	
1631	ISO22854	4.65		-----	
1634		-----		-----	
1656	EN14517	4.95		-----	
1710		-----		-----	
1720		-----		-----	
1724	ISO22854	4.69		-----	
1730		-----		-----	
1740		-----		-----	
1807	ISO22854	4.87		-----	
1833	EN13132	4.63		-----	
1849		-----		-----	
1851		-----		-----	
1854		-----		-----	
1864	EN13132	5.09		-----	
1911	EN13132	<0.17		-----	False negative?
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1948	D4815	5.03		-----	
1952	D4815	5.4222		-----	
2129	D6730	4.48		-----	
2130	D6730	3.982		-----	
7003		-----		-----	

	normality	OK
	n	49
	outliers	2
	mean (n)	4.769
	st.dev. (n)	0.3001
	R(calc.)	0.840
	R(D4815)	unknown

Compare R(iis11B01) = 1.791 @ 5.775%M/M



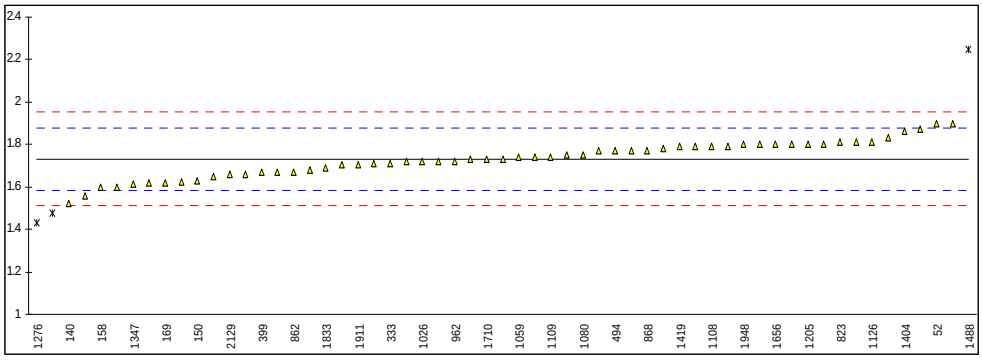


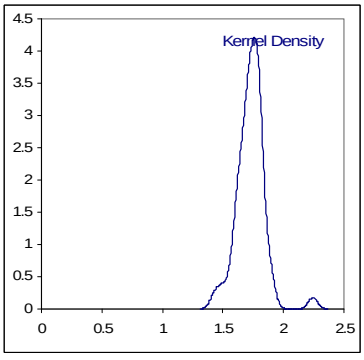
Determination of Oxygen Content on sample #12006; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	INH-14	1.9		2.30	
62		-----		-----	
120	D5599	1.660		-0.98	
132	D5599	1.72		-0.16	
140	D5599	1.52		-2.89	
150	D5599	1.63		-1.39	
158	D5599	1.60		-1.80	
159	D5599	1.83		1.35	
169	D4815	1.62		-1.52	
171	D4815	1.70284		-0.39	
180		-----		-----	
193	D5599	1.62		-1.52	
194		-----		-----	
217		-----		-----	
221		-----		-----	
224		-----		-----	
225		-----		-----	
228		-----		-----	
230		-----		-----	
237		-----		-----	
238		-----		-----	
252		-----		-----	
253		-----		-----	
254		-----		-----	
256		-----		-----	
258		-----		-----	
273		-----		-----	
312	ISO22854	1.79		0.80	
323	EN22854Cal.	1.8		0.53	
333	EN13132	1.71		-0.29	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN13132	1.90		2.30	
353		-----		-----	
399	ISO22854	1.67		-0.84	
431		-----		-----	
433		-----		-----	
447	D4815	1.80		0.94	
463	EN13132	1.79		0.80	
468		-----		-----	
485		-----		-----	
494	EN22854	1.77		0.53	
495	D5599	1.78		0.66	
511		-----		-----	
541		-----		-----	
557		-----		-----	
562		-----		-----	
592		-----		-----	
604		-----		-----	
631		-----		-----	
657	D4815	1.60		-1.80	
663		-----		-----	
671		-----		-----	
823	D5599	1.81		1.07	
862	D5599	1.670		-0.84	
868	D4815	1.77		0.53	
875		-----		-----	
912		-----		-----	
962	D6839	1.72		-0.16	
974	D4815	1.73		-0.02	
994		-----		-----	
995		-----		-----	
996		-----		-----	
1006	D4815	1.65		-1.11	
1016		-----		-----	
1017		-----		-----	
1026	EN13132	1.72		-0.16	
1033		-----		-----	
1038		-----		-----	
1059	ISO22854	1.74		0.12	
1066	EN22854	1.68		-0.70	
1080	INH-3	1.75		0.25	

1081		-----		-----	
1108	EN22854	1.79		0.80	
1109	D6839	1.74		0.12	
1126	reformulyzer	1.81		1.07	
1186		-----		-----	
1205	ISO22854	1.8		0.94	
1215		-----		-----	
1231		-----		-----	
1237		-----		-----	
1254	D4815	1.623		-1.48	
1276	D4815	1.43	DG(0.05)	-4.12	
1347	D4815	1.615		-1.59	
1348	D4815	1.56		-2.34	
1385	D4815	1.72		-0.16	
1395		-----		-----	
1397	EN13132	1.75		0.25	
1404	D4815	1.86		1.76	
1409	ISO22854	1.80		0.94	
1419	ISO22854	1.79		0.80	
1428		-----		-----	
1432		-----		-----	
1487		-----		-----	
1488	EN13132	2.2458	C,G(0.01)	7.02	First reported 2.32
1490	D5845	1.87		1.89	
1531		-----		-----	
1613	D6839	1.73		-0.02	
1616	D6839	1.8		0.94	
1631	ISO22854	1.67		-0.84	
1634		-----		-----	
1656	EN14517	1.80		0.94	
1710	D5599	1.73		-0.02	
1720		-----		-----	
1724	ISO22854	1.71		-0.29	
1730		-----		-----	
1740		-----		-----	
1807	ISO22854	1.77		0.53	
1833	EN13132	1.69		-0.57	
1849	EN14517	1.74		0.12	
1851		-----		-----	
1854		-----		-----	
1864	EN13132	1.81		1.07	
1911	EN13132	1.705		-0.36	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1948	D5599	1.80		0.94	
1952		-----		-----	
2129	D6730	1.657		-1.02	
2130	D6730	1.476	DG(0.05)	-3.49	
7003		-----		-----	

normality	OK
n	56
outliers	3
mean (n)	1.731
st.dev. (n)	0.0828
R(calc.)	0.232
R(D5599:10)	0.205



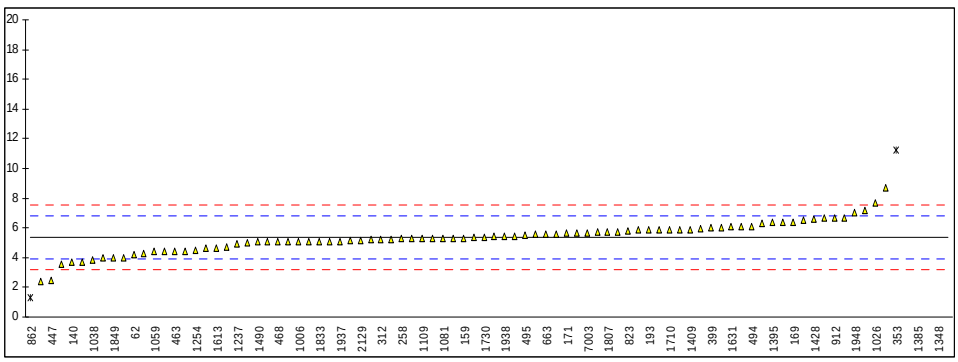


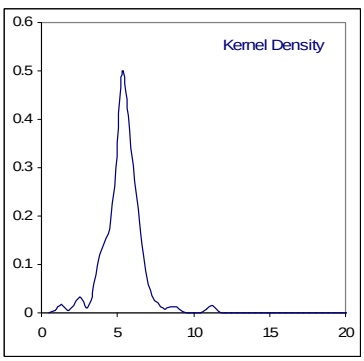
Determination of Sulphur on sample #12006; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52	D5453	5.3		-0.08	
62	D5453	4.2		-1.59	
120	D7039	6.02		0.90	
132	D5453	5.75		0.53	
140	D5453	3.68		-2.30	
150	D5453	5.2		-0.22	
158	D5453	4.0		-1.86	
159	D5453	5.3		-0.08	
169	D5453	6.41		1.44	
171	D5453	5.62		0.36	
180		-----		-----	
193	D7039	5.85		0.67	
194	D5453	5.606		0.34	
217		-----		-----	
221		-----		-----	
224		-----		-----	
225		-----		-----	
228		-----		-----	
230	D4294	80	C,G(0.01)	102.34	First reported 92
237		-----		-----	
238		-----		-----	
252		-----		-----	
253		-----		-----	
254	D4294	<100		-----	
256		-----		-----	
258	D5453	5.27		-0.12	
273		-----		-----	
312	D5453	5.2		-0.22	
323	D5453	5.9		0.74	
333		-----		-----	
334		-----		-----	
335	D5453	4.3		-1.45	
336	ISO20846	4.4		-1.32	
337	ISO20846	5.1		-0.36	
338	ISO20846	4.61		-1.03	
340	ISO20846	4.74		-0.85	
343	ISO20846	3.71		-2.26	
353	IP531	11.2	G(0.01)	8.01	
399	D5453	6.0		0.88	
431		-----		-----	
433		-----		-----	
447	D5453	2.49		-3.94	
463	D5453	4.4		-1.32	
468	D5453	5.1		-0.36	
485		-----		-----	
494	D5453	6.11		1.03	
495	D5453	5.5		0.19	
511	D5453	5.44		0.11	
541	D5453	6.4		1.43	
557	D4294	101.4	G(0.01)	131.68	
562		-----		-----	
592		-----		-----	
604		-----		-----	
631		-----		-----	
657	D5453	5.95		0.81	
663	D5453	5.6		0.33	
671	D5453	6.68		1.81	
823	D5453	5.8		0.60	
862	D5453	1.3	G(0.05)	-5.57	
868	D3120	5.7		0.47	
875		-----		-----	
912	D5453	6.7		1.84	
962		-----		-----	
974		-----		-----	
994	D5453	5.22		-0.19	
995	D5453	5.55		0.26	
996	D5453	5.10		-0.36	
1006	D5453	5.1		-0.36	
1016		-----		-----	
1017		-----		-----	
1026	ISO20846	7.7		3.21	
1033		-----		-----	
1038	D2622	3.85		-2.07	
1059	ISO20846	4.4		-1.32	
1066		-----		-----	
1080	D5453	5.35		-0.01	

1081	ISO20846	5.3		-0.08	
1108	D5453	5.3		-0.08	
1109	D7039	5.3		-0.08	
1126	ISO20846	3.96		-1.92	
1186	D5453	5.13		-0.32	
1205	ISO20884	7.2		2.52	
1215	D5453	5.86		0.69	
1231		-----		-----	
1237	ISO20846	4.9		-0.63	
1254	D5453	4.49		-1.19	
1276	D5453	2.42		-4.03	
1347	D4294	66	G(0.01)	83.14	
1348	D4294	100	G(0.01)	129.76	
1385	D4294	75	G(0.01)	95.48	
1395	D5453	6.35		1.36	
1397	D5453	6.3		1.29	
1404	ISO20846	5.4		0.05	
1409	ISO20846	5.9		0.74	
1419	ISO20846	5.84		0.66	
1428	ISO20846	6.6		1.70	
1432		-----		-----	
1487		-----		-----	
1488		-----		-----	
1490	ISO20846	5.09		-0.37	
1531		-----		-----	
1613	D5453	4.65		-0.97	
1616	D5453	8.70		4.58	
1631	ISO20846	6.09		1.00	
1634		-----		-----	
1656	ISO20846	5.3		-0.08	
1710	D5453	5.9		0.74	
1720	D5453	6.5	C	1.56	First reported 15
1724	D5453	6.701		1.84	
1730	D5453	5.38		0.03	
1740	ISO20846	4.41		-1.30	
1807	D5453	5.7		0.47	
1833	D5453	5.1		-0.36	
1849	EN20846	3.97		-1.91	
1851		-----		-----	
1854	ISO20846	5.1		-0.36	
1864	D5453	5.63		0.37	
1911	ISO20846	6.09		1.00	
1936	EN20846	5.1		-0.36	
1937	EN20846	5.1		-0.36	
1938	D5453	5.4		0.05	
1948	D5453	7.05		2.32	
1952	D5453	3.53		-2.51	
2129	D5453	5.18		-0.25	
2130	D5453	5.02		-0.47	
7003	D5453	5.64		0.38	

normality	not OK
n	83
outliers	7
mean (n)	5.360
st.dev. (n)	1.0107
R(calc.)	2.830
R(D5453:09)	2.042



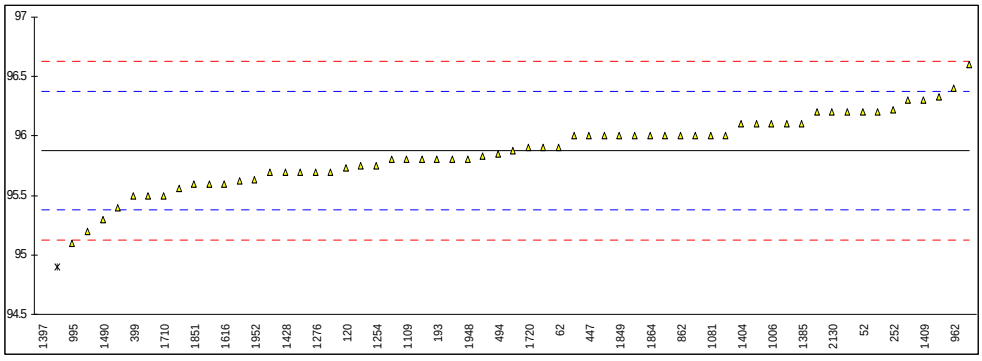


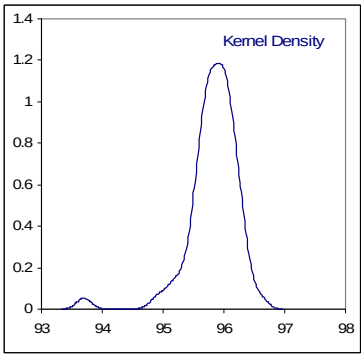
Determination of RON on sample #12006;

lab	method	value	mark	z(targ)	remarks
52	D2699	96.2		1.30	
62	D2699	95.9		0.10	
120	D2699	95.73		-0.58	
132	D2699	96.0		0.50	
140		-----		-----	
150	D2699	96.1		0.90	
158		-----		-----	
159		-----		-----	
169		-----		-----	
171	D2699	96.0		0.50	
180		-----		-----	
193	D2699	95.8		-0.30	
194		-----		-----	
217		-----		-----	
221		-----		-----	
224		-----		-----	
225		-----		-----	
228		-----		-----	
230		-----		-----	
237	D2699	96.6	C	2.90	First reported 98.5
238		-----		-----	
252	D2699	96.22		1.38	
253		-----		-----	
254		-----		-----	
256		-----		-----	
258		-----		-----	
273	D2699	95.8		-0.30	
312	D2699	95.88		0.02	
323		-----		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340	D2699	96.3		1.70	
343		-----		-----	
353		-----		-----	
399	D2699	95.5		-1.50	
431		-----		-----	
433		-----		-----	
447	D2699	96.0		0.50	
463	D2699	96.0		0.50	
468		-----		-----	
485		-----		-----	
494	D2699	95.85		-0.10	
495	D2699	95.5		-1.50	
511	D2699	95.4		-1.90	
541	D2699	96.1		0.90	
557		-----		-----	
562		-----		-----	
592		-----		-----	
604		-----		-----	
631	D2699	95.75		-0.50	
657	D2699	96.2		1.30	
663		-----		-----	
671		-----		-----	
823	D2699	95.7		-0.70	
862	D2699	96.0		0.50	
868	D2699	96.0		0.50	
875		-----		-----	
912		-----		-----	
962	D2699	96.4		2.10	
974	D2699	96.2		1.30	
994		-----		-----	
995	D2699	95.1		-3.10	
996		-----		-----	
1006	D2699	96.1		0.90	
1016		-----		-----	
1017		-----		-----	
1026	ISO5164	95.7		-0.70	
1033		-----		-----	
1038	D2699	95.8		-0.30	
1059	D2699	95.9		0.10	
1066	D2699	95.2		-2.70	
1080		-----		-----	

1081	D2699	96.0		0.50	
1108		-----		-----	
1109	D2699	95.8		-0.30	
1126		-----		-----	
1186	D2699	95.83		-0.18	
1205		-----		-----	
1215	D2699	95.7		-0.70	
1231	D2699	96.0		0.50	
1237		-----		-----	
1254	D2699	95.75		-0.50	
1276	D2699	95.7		-0.70	
1347	D2699	96.33		1.82	
1348	D2699	95.8		-0.30	
1385	D2699	96.1		0.90	
1395		-----		-----	
1397	in house	93.7	G(0.01)	-8.70	
1404	D2699	96.1		0.90	
1409	D2699	96.3		1.70	
1419		-----		-----	
1428	ISO5164	95.7		-0.70	
1432		-----		-----	
1487	D2699	94.9	C,G(0.05)	-3.90	First reported 98.5
1488		-----		-----	
1490	E1655	95.3		-2.30	
1531		-----		-----	
1613	D2699	95.6		-1.10	
1616	D2699	95.6		-1.10	
1631		-----		-----	
1634		-----		-----	
1656	D2699	96.2		1.30	
1710	ISO5164	95.5		-1.50	
1720	D2699	95.9		0.10	
1724		-----		-----	
1730		-----		-----	
1740		-----		-----	
1807		-----		-----	
1833	D2699	96.0		0.50	
1849	ISO5164	96.0		0.50	
1851	D2699	95.6		-1.10	
1854		-----		-----	
1864	D2699	96.0		0.50	
1911	ISO5164	95.56		-1.26	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1948	D2699	95.8		-0.30	
1952	D2699	95.636		-0.96	
2129	D2699	95.62		-1.02	
2130	D2699	96.2		1.30	
7003		-----		-----	

normality	OK
n	60
outliers	2
mean (n)	95.88
st.dev. (n)	0.296
R(calc.)	0.83
R(D2699:11)	0.70



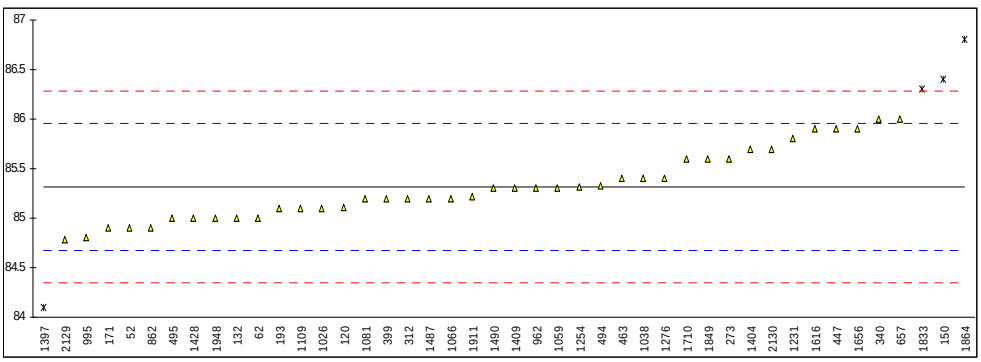


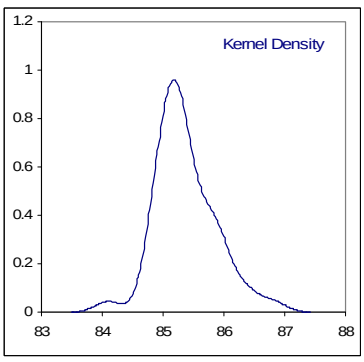
Determination of MON on sample #12006;

lab	method	value	mark	z(targ)	remarks
52	D2700	84.9		-1.30	
62	D2700	85.0		-0.98	
120	D2700	85.11		-0.64	
132	D2700	85.0		-0.98	
140		-----		-----	
150	D2700	86.4	G(0.05)	3.37	
158		-----		-----	
159		-----		-----	
169		-----		-----	
171	D2700	84.9		-1.30	
180		-----		-----	
193	D2700	85.1		-0.67	
194		-----		-----	
217		-----		-----	
221		-----		-----	
224		-----		-----	
225		-----		-----	
228		-----		-----	
230		-----		-----	
237		-----		-----	
238		-----		-----	
252		-----		-----	
253		-----		-----	
254		-----		-----	
256		-----		-----	
258		-----		-----	
273	D2700	85.6		0.88	
312	D2700	85.2		-0.36	
323		-----		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340	D2700	86.0		2.13	
343		-----		-----	
353		-----		-----	
399	D2700	85.2		-0.36	
431		-----		-----	
433		-----		-----	
447	D2700	85.9		1.82	
463	D2700	85.4		0.26	
468		-----		-----	
485		-----		-----	
494	D2700	85.33		0.04	
495	D2700	85.0		-0.98	
511		-----		-----	
541		-----		-----	
557		-----		-----	
562		-----		-----	
592		-----		-----	
604		-----		-----	
631		-----		-----	
657	D2700	86.0		2.13	
663		-----		-----	
671		-----		-----	
823		-----		-----	
862	D2700	84.9		-1.30	
868		-----		-----	
875		-----		-----	
912		-----		-----	
962	D2700	85.3		-0.05	
974		-----		-----	
994		-----		-----	
995	D2700	84.8		-1.61	
996		-----		-----	
1006		-----		-----	
1016		-----		-----	
1017		-----		-----	
1026	ISO5163	85.1		-0.67	
1033		-----		-----	
1038	D2700	85.4		0.26	
1059	D2700	85.3		-0.05	
1066	D2700	85.2		-0.36	
1080		-----		-----	

1081	D2700	85.2		-0.36
1108		-----		-----
1109	D2700	85.1		-0.67
1126		-----		-----
1186		-----		-----
1205		-----		-----
1215		-----		-----
1231	D2700	85.8		1.50
1237		-----		-----
1254	D2700	85.32		0.01
1276	D2700	85.4		0.26
1347		-----		-----
1348		-----		-----
1385		-----		-----
1395		-----		-----
1397	D2700	84.1	G(0.01)	-3.78
1404	D2700	85.7		1.19
1409	D2700	85.3		-0.05
1419		-----		-----
1428	ISO5163	85.0		-0.98
1432		-----		-----
1487	D2700	85.2		-0.36
1488		-----		-----
1490	E1655	85.3		-0.05
1531		-----		-----
1613		-----		-----
1616	D2700	85.9		1.82
1631		-----		-----
1634		-----		-----
1656	D2700	85.9		1.82
1710	ISO5163	85.6		0.88
1720		-----		-----
1724		-----		-----
1730		-----		-----
1740		-----		-----
1807		-----		-----
1833	D2700	86.3	G(0.05)	3.06
1849	ISO5163	85.6		0.88
1851		-----		-----
1854		-----		-----
1864	D2700	86.8	G(0.05)	4.62
1911	ISO5163	85.22		-0.30
1936		-----		-----
1937		-----		-----
1938		-----		-----
1948	D2700	85.0		-0.98
1952		-----		-----
2129	D2700	84.78		-1.67
2130	D2700	85.7		1.19
7003		-----		-----

normality	OK
n	40
outliers	4
mean (n)	85.32
st.dev. (n)	0.343
R(calc.)	0.96
R(D2700:11)	0.90



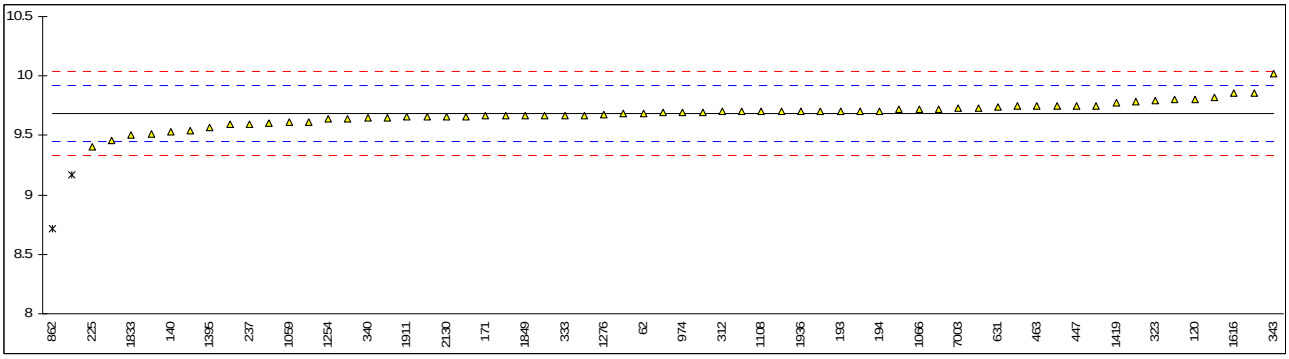


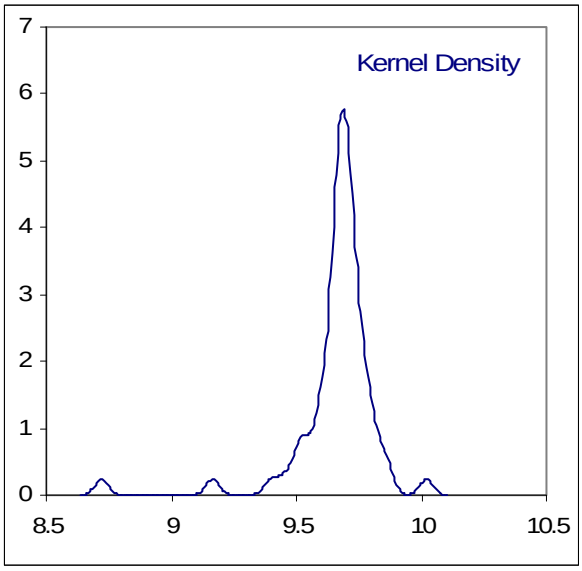
Determination of TVP on sample #12007; results in psi

lab	method	value	mark	z(targ)	remarks
52	D5191	9.75		0.55	
62	D5191	9.689		0.03	
120	D5191	9.805		1.01	
132	D5191	9.70		0.13	
140	D5191	9.53		-1.30	
150	D5191	9.54		-1.22	
158	D5191	9.69		0.04	
159	D5191	9.70		0.13	
169	D5191	9.67		-0.13	
171	D5191	9.665		-0.17	
180		-----		-----	
193	D5191	9.70		0.13	
194	D5191	9.70		0.13	
225	D5191	9.40		-2.39	
228	D5191	9.616		-0.58	
230	D5191	9.5145		-1.43	
237	D5191	9.5985		-0.73	
258	D5191	9.746		0.51	
312	D5191	9.70		0.13	
323	D5191	9.79		0.88	
333	D5191	9.67		-0.13	
334	D5191	9.59		-0.80	
335		-----		-----	
336	EN13016	9.66		-0.21	
337		-----		-----	
338	D5191	9.166	C,G(0.01)	-4.36	First reported 63.2 kPa
340	D5191	9.645		-0.34	
343	D5191	10.021		2.82	
353	D5191	9.86		1.47	
399	D5191	9.70		0.13	
431		-----		-----	
433		-----		-----	
447	D5191	9.75		0.55	
463	D5191	9.7465		0.52	
468	D5191	9.6861		0.01	
485		-----		-----	
494	D5191	9.724		0.33	
495	D5191	9.67		-0.13	
557	D5191	9.8		0.97	
562		-----		-----	
631	D5191	9.74		0.46	
657	D5191	9.70		0.13	
862	D5191	8.72	G(0.01)	-8.10	
868		-----		-----	
875		-----		-----	
974	D5191	9.690		0.04	
1006		-----		-----	
1017		-----		-----	
1033	IP394	9.601		-0.71	
1038	D5191	9.732		0.39	
1059	D5191	9.612		-0.61	
1066	D5191	9.72		0.29	
1080	D5191	9.66		-0.21	
1081		-----		-----	
1108	D5191	9.70		0.13	
1109	D5191	9.69		0.04	
1231		-----		-----	
1254	D5191	9.635		-0.42	
1276	D5191	9.68		-0.04	
1395	D5191	9.57		-0.97	
1409	EN13016	9.72		0.29	
1419	EN13016	9.773		0.74	
1428		-----	W	-----	
1490	EN13016	9.456		-1.92	
1613	D5191	9.6450		-0.34	
1616	D5191	9.86		1.47	
1631		-----		-----	
1656		-----		-----	
1710	D5191	9.64		-0.38	
1724	D5191	9.78		0.80	
1730		-----		-----	
1807	D5191	9.82		1.13	
1833	D5191	9.5		-1.55	
1849	D5191	9.67		-0.13	
1851		-----		-----	
1854		-----	W	-----	

1911	EN13016	9.659		-0.22	
1936	EN13016	9.7		0.13	
1937	EN13016	9.67		-0.13	
1938		-----		-----	
1948	D5191	9.747	C	0.52	Reported 67.2 kPa
2130	D5191	9.66		-0.21	
7003	D6378	9.73		0.38	

normality	not OK
n	61
outliers	2
mean (n)	9.685
st.dev. (n)	0.0985
R(calc.)	0.276
R(D5191:10)	0.334



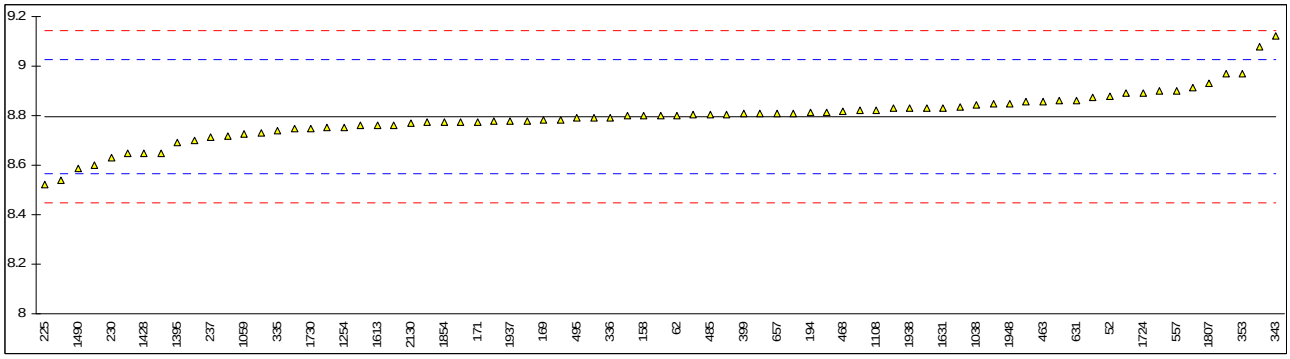


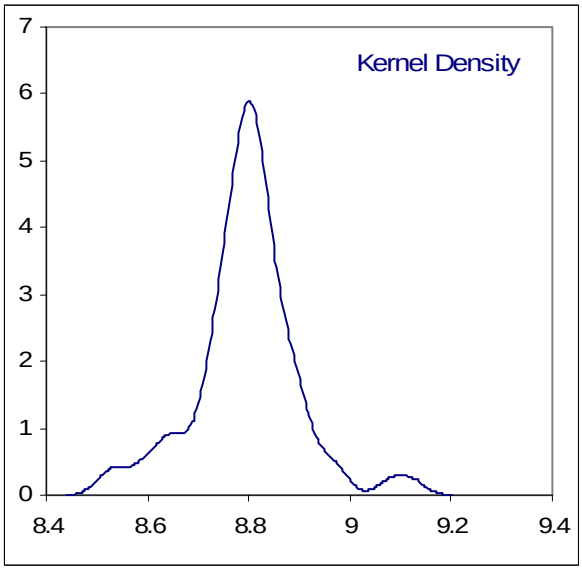
Determination of DVPE (acc. to ASTM D5191) on sample #12007; results in psi

lab	method	value	mark	z(targ)	remarks
52	D5191	8.88		0.73	
62	D5191	8.802		0.06	
120	D5191	8.914		1.02	
132	D5191	8.81		0.13	
140	D5191	8.64845		-1.27	
150	D5191	8.65		-1.25	
158	D5191	8.80		0.04	
159	D5191	8.81		0.13	
169	D5191	8.784		-0.10	
171	D5191	8.775		-0.17	
180		-----		-----	
193	D5191	8.8125		0.15	
194	D5191	8.812		0.14	
225	D5191	8.52		-2.38	
228	D5191	8.731		-0.55	
230	D5191	8.6298		-1.43	
237	D5191	8.7145		-0.70	
258	D5191	8.856		0.52	
312	D5191	8.82		0.21	
323	D5191	8.90		0.90	
333	D5191	8.78		-0.13	
334	D5191	8.70		-0.82	
335	D5191	8.74		-0.48	
336	D5191	8.79		-0.05	
337		-----		-----	
338	D5191	8.759	C	-0.31	Reported 60.4 kPa
340	EN13016	8.760		-0.30	
343	D5191	9.122		2.82	
353	D5191	8.97		1.51	
399	D5191	8.81		0.13	
431	EN13016	8.7457		-0.43	
433	EN13016	8.847		0.45	
447	D5191	8.86		0.56	
463	D5191	8.8574		0.54	
468	D5191	8.8183		0.20	
485	D5191	8.803		0.07	
494	D5191	8.836		0.35	
495	D5191	8.79		-0.05	
557	D5191	8.9		0.90	
562		-----		-----	
631	D5191	8.86		0.56	
657	D5191	8.81		0.13	
862		-----		-----	
868		-----		-----	
875		-----		-----	
974	D5191	8.803		0.07	
1006	D5191	8.78		-0.13	
1017		-----		-----	
1033	D5191	8.717		-0.68	
1038	D5191	8.843		0.41	
1059	D5191	8.728		-0.58	
1066	D5191	8.83		0.30	
1080	D5191	8.774		-0.18	
1081	D5191	8.804	C	0.08	Reported 60.70 kPa
1108	D5191	8.82		0.21	
1109	D5191	8.802		0.06	
1231	D4953	8.54		-2.20	
1254	D5191	8.750		-0.39	
1276	D5191	8.79		-0.05	
1395	D5191	8.69		-0.91	
1409	EN13016	8.83		0.30	
1419	EN13016	8.875		0.69	
1428	D5191	8.65	C	-1.25	Reported value first as TVP
1490	EN13016	8.586		-1.81	
1613	D5191	8.7594		-0.31	
1616	D5191	8.97		1.51	
1631	EN13016	8.83		0.30	
1656	D5191	9.08		2.46	
1710	D5191	8.75		-0.39	
1724	D5191	8.89		0.82	
1730	EN13016	8.746		-0.42	
1807	D5191	8.93		1.16	
1833	D5191	8.6		-1.69	
1849	D5191	8.784		-0.10	
1851		-----		-----	
1854	D5191	8.774	C	-0.18	First reported 7.92

1911	EN13016	8.773		-0.19	
1936	EN13016	8.8		0.04	
1937	EN13016	8.78		-0.13	
1938	D5191	8.83		0.30	
1948	D5191	8.847	C	0.45	Reported 61.0 kPa
2130	D5191	8.77		-0.22	
7003	D6378	8.89		0.82	

normality	not OK
n	75
outliers	0
mean (n)	8.795
st.dev. (n)	0.1002
R(calc.)	0.281
R(D5191:10)	0.324



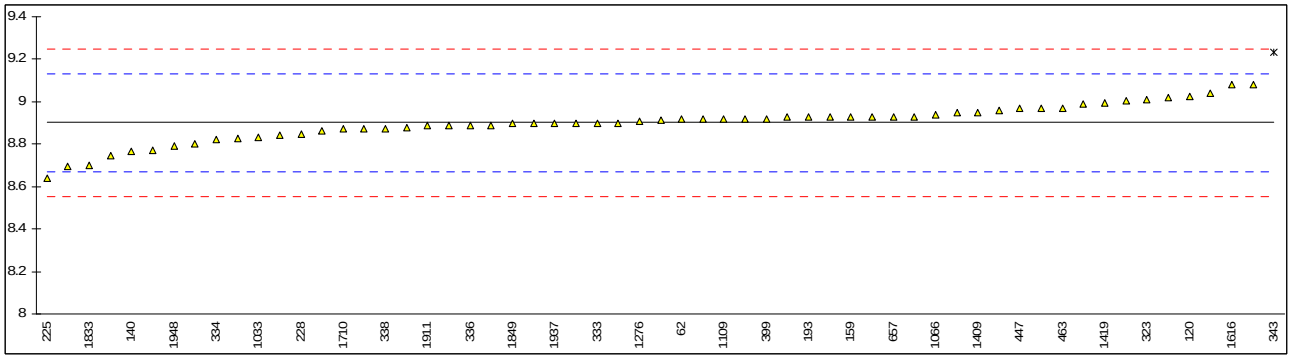


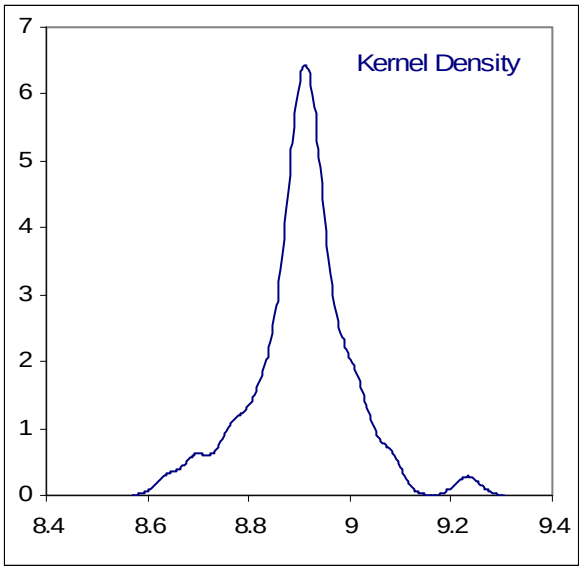
Determination of DVPE (acc. to EPA) on sample #12007; results in psi

lab	method	value	mark	z(targ)	remarks
52	D5191	8.99		0.77	
62	D5191	8.916		0.13	
120	D5191	9.026		1.08	
132	D5191	8.93		0.25	
140	D5191	8.76368		-1.18	
150	D5191	8.77		-1.13	
158	D5191	8.92		0.16	
159	D5191	8.93		0.25	
169	D5191	8.898		-0.02	
171	D5191	8.900		-0.01	
180		-----		-----	
193	D5191	8.9262		0.22	
194	D5191	8.926		0.22	
225	D5191	8.64		-2.24	
228	D5191	8.846		-0.47	
230	D5191	8.7458		-1.33	
237	D5191	8.8292		-0.62	
258		-----		-----	
312	D5191	8.93		0.25	
323	D5191	9.01		0.94	
333	D5191	8.90		-0.01	
334	D5191	8.82104		-0.69	
335		-----		-----	
336	D5191	8.89		-0.09	
337		-----		-----	
338	D5191	8.875	C	-0.22	Reported 61.2 kPa
340	D5191	8.878		-0.20	
343	D5191	9.233	G(0.05)	2.86	
353	D5191	9.08		1.54	
399	D5191	8.92		0.16	
431		-----		-----	
433		-----		-----	
447	D5191	8.97		0.59	
463	D5191	8.9706		0.60	
468	D5191	8.9129		0.10	
485		-----		-----	
494	D5191	8.949		0.41	
495	D5191	8.90		-0.01	
557	D5191	8.8		-0.87	
562		-----		-----	
631	D5191	8.97		0.59	
657	D5191	8.93		0.25	
862		-----		-----	
868		-----		-----	
875		-----		-----	
974	D5191	8.917		0.14	
1006		-----		-----	
1017		-----		-----	
1033	D5191	8.832		-0.59	
1038	D5191	8.957		0.48	
1059	D5191	8.842		-0.51	
1066	D5191	8.94		0.34	
1080	D5191	8.888		-0.11	
1081		-----		-----	
1108	D5191	8.93		0.25	
1109	D5191	8.917		0.14	
1231		-----		-----	
1254	D5191	8.864		-0.32	
1276	D5191	8.91		0.08	
1395		-----		-----	
1409	EN13016	8.95		0.42	
1419	EN13016	8.996		0.82	
1428		-----		-----	
1490	EN13016	8.693		-1.79	
1613	D5191	8.8736		-0.23	
1616	D5191	9.08		1.54	
1631		-----		-----	
1656		-----		-----	
1710	D5191	8.87		-0.27	
1724	D5191	9.003		0.88	
1730		-----		-----	
1807	D5191	9.04		1.20	
1833	D5191	8.7		-1.73	
1849	D5191	8.897		-0.03	
1851		-----		-----	
1854		-----	W	-----	

1911	EN13016	8.887		-0.12	
1936		-----		-----	
1937	EN13016	8.90		-0.01	
1938		-----		-----	
1948	D5191	8.789	C	-0.96	Reported 60.6 kPa
2130	D5191	8.89		-0.09	
7003	D6378	9.02		1.02	

normality	not OK
n	58
outliers	1
mean (n)	8.901
st.dev. (n)	0.0884
R(calc.)	0.248
R(D5191:10)	0.326





APPENDIX 2

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

	Automated mode						Manual mode					
lab	IBP	10%eva	50%eva	70%eva	90%eva	FBP	IBP	10%eva	50%eva	70%eva	90%eva	FBP
52	0.35	-0.23	-1.26	0.16	0.30	-0.07	-----	-----	-----	-----	-----	-----
62	-1.21	-0.23	-0.07	0.21	-0.46	-0.07	-----	-----	-----	-----	-----	-----
120	-1.17	-0.36	0.48	0.09	-0.32	-0.84	-----	-----	-----	-----	-----	-----
132	-0.56	-0.23	0.08	0.16	0.23	0.13	-----	-----	-----	-----	-----	-----
140	0.57	0.65	0.67	0.26	0.65	-0.61	-----	-----	-----	-----	-----	-----
150	0.84	0.47	1.27	0.26	0.37	0.46	-----	-----	-----	-----	-----	-----
158	-0.13	-0.23	-2.01	-0.71	0.09	-0.44	-----	-----	-----	-----	-----	-----
159	0.35	0.30	1.87	0.42	0.37	1.12	-----	-----	-----	-----	-----	-----
169	-0.40	1.35	0.23	-0.05	-0.67	0.59	-----	-----	-----	-----	-----	-----
171	0.25	0.65	-0.52	-0.05	0.16	-1.06	-----	-----	-----	-----	-----	-----
180	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
193	-0.08	-0.93	0.23	-0.56	-0.05	0.42	-----	-----	-----	-----	-----	-----
194	0.19	0.56	0.08	0.21	0.30	-0.07	-----	-----	-----	-----	-----	-----
217	-----	-----	-----	-----	-----	-----	-0.65	-0.84	-0.87	-0.78	-1.79	2.50
221	-----	-----	-----	-----	-----	-----	0.67	1.39	0.12	0.12	0.34	0.15
224	-----	-----	-----	-----	-----	-----	1.54	0.81	0.20	-0.33	0.16	0.32
225	-----	-----	-----	-----	-----	-----	-0.33	-0.02	0.12	0.75	0.99	0.15
228	-----	-----	-----	-----	-----	-----	-1.83	-0.72	-1.94	-1.76	-0.95	0.15
230	2.02	1.43	3.80	1.39	1.14	1.91	-----	-----	-----	-----	-----	-----
237	-----	-----	-----	-----	-----	-----	0.67	0.12	-0.39	-0.28	-1.99	-0.24
238	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
252	-----	-----	-----	-----	-----	-----	-0.83	0.33	-0.91	-----	-1.28	-0.63
253	-----	-----	-----	-----	-----	-----	-0.33	0.16	0.29	0.44	0.02	-0.05
254	-----	-----	-----	-----	-----	-----	-0.83	-0.02	-0.57	-----	-0.95	-0.24
256	-1.18	-0.40	-0.52	1.34	3.43	0.59	-----	-----	-----	-----	-----	-----
258	0.84	0.30	4.85	0.47	-0.67	1.04	-----	-----	-----	-----	-----	-----
273	0.03	0.21	1.27	0.21	-0.12	0.59	-----	-----	-----	-----	-----	-----
312	1.48	0.03	0.97	0.16	-0.12	0.92	-----	-----	-----	-----	-----	-----
323	1.75	0.12	0.82	0.16	0.02	-0.16	-----	-----	-----	-----	-----	-----
333	-0.88	0.03	-0.81	0.26	0.09	-0.11	-----	-----	-----	-----	-----	-----
334	-1.10	0.03	2.02	0.26	0.51	-1.64	-----	-----	-----	-----	-----	-----
335	-1.26	-1.02	-2.01	-0.56	-0.60	-1.48	-----	-----	-----	-----	-----	-----
336	-0.56	-0.40	0.23	0.06	-0.53	0.38	-----	-----	-----	-----	-----	-----
337	-0.02	-0.40	-0.07	-0.05	-0.18	-0.36	-----	-----	-----	-----	-----	-----
338	0.62	-1.02	-2.15	-0.15	0.37	1.74	-----	-----	-----	-----	-----	-----
340	0.35	0.30	-1.11	0.01	-0.05	-1.64	-----	-----	-----	-----	-----	-----
343	6.01	-0.23	-1.71	-0.87	-0.81	-0.61	-----	-----	-----	-----	-----	-----
353	-0.56	-0.75	0.67	0.16	-0.05	-0.03	-----	-----	-----	-----	-----	-----
399	-0.72	-0.14	-0.81	-0.20	-1.16	-0.86	-----	-----	-----	-----	-----	-----
431	-----	-0.75	1.72	0.16	0.44	-----	-----	-----	-----	-----	-----	-----
433	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
447	0.52	-0.23	-1.41	0.01	-0.74	0.09	-----	-----	-----	-----	-----	-----
463	0.84	0.12	0.23	0.01	0.23	-0.57	-----	-----	-----	-----	-----	-----
468	-0.67	-0.40	-0.07	-0.20	-0.05	-0.98	-----	-----	-----	-----	-----	-----
485	0.68	0.03	-0.44	-0.17	0.02	0.88	-----	-----	-----	-----	-----	-----
494	-1.80	-0.40	-1.26	-0.25	-0.25	-1.11	-----	-----	-----	-----	-----	-----
495	-0.94	-1.02	-3.50	-0.92	-1.37	-0.86	-----	-----	-----	-----	-----	-----
511	-----	-----	-----	-----	-----	-----	-0.33	-0.37	1.49	0.12	0.99	1.12
541	-----	-----	-----	-----	-----	-----	-0.58	-0.72	-0.57	0.12	0.02	-0.63
557	1.22	1.35	-0.22	0.06	0.02	-0.44	-----	-----	-----	-----	-----	-----
562	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
592	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
604	-1.15	0.03	-0.52	0.01	-0.39	-0.94	-----	-----	-----	-----	-----	-----
631	-----	-----	-----	-----	-----	-----	0.42	-0.02	-0.22	-0.19	-0.63	0.15
657	0.57	-0.23	0.97	0.21	0.02	-0.16	-----	-----	-----	-----	-----	-----
663	1.48	0.82	0.67	0.06	0.37	0.79	-----	-----	-----	-----	-----	-----
671	0.73	2.48	2.46	-0.82	-0.32	-0.82	-----	-----	-----	-----	-----	-----
823	0.19	-0.67	0.97	0.06	-0.46	0.13	-----	-----	-----	-----	-----	-----
862	-0.24	-0.05	0.97	0.06	0.37	0.34	-----	-----	-----	-----	-----	-----
868	0.57	0.21	1.72	0.52	0.30	0.42	-----	-----	-----	-----	-----	-----
875	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
912	-----	-----	-----	-----	-----	-----	-0.83	-0.37	-0.22	-0.50	-0.95	0.15
962	-----	-----	-----	-----	-----	-----	-0.08	-0.02	0.46	0.75	0.66	-0.05
974	0.73	-0.14	-1.26	-0.15	-0.67	-0.69	-----	-----	-----	-----	-----	-----
994	-----	-----	-----	-----	-----	-----	0.67	0.33	-0.22	0.12	1.31	-0.05
995	-----	-----	-----	-----	-----	-----	-0.58	-0.13	-0.13	-0.03	0.32	1.31
996	-----	-----	-----	-----	-----	-----	0.42	1.04	-0.22	0.44	1.96	0.34
1006	0.73	0.30	1.12	0.31	0.72	1.62	-----	-----	-----	-----	-----	-----
1016	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1017	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1026	0.95	-0.05	-0.22	-0.10	0.37	-0.16	-----	-----	-----	-----	-----	-----
1033	-0.35	-0.75	-1.41	0.06	-0.25	1.17	-----	-----	-----	-----	-----	-----

1038	-0.51	-0.32	-0.96	-0.30	-0.32	-0.11	-----	-----	-----	-----	-----	-----
1059	-0.99	-0.14	0.08	-0.05	0.09	1.04	-----	-----	-----	-----	-----	-----
1066	0.03	0.47	0.38	0.21	0.02	0.34	-----	-----	-----	-----	-----	-----
1080	0.14	-0.14	-1.41	-0.35	-0.32	-0.77	-----	-----	-----	-----	-----	-----
1081	1.70	-0.84	0.38	-----	0.37	-0.20	-----	-----	-----	-----	-----	-----
1108	1.75	2.48	0.82	-0.97	-0.74	1.12	-----	-----	-----	-----	-----	-----
1109	-0.08	-0.23	0.23	-0.15	0.02	1.12	-----	-----	-----	-----	-----	-----
1126	2.51	-2.59	4.85	1.19	0.51	-0.98	-----	-----	-----	-----	-----	-----
1186	-----	-----	-----	-----	-----	-----	2.34	1.63	1.39	-1.22	4.13	-1.66
1205	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1215	-1.05	0.30	-0.37	0.01	-0.12	-0.07	-----	-----	-----	-----	-----	-----
1231	-0.51	0.38	0.08	0.16	0.37	0.38	-----	-----	-----	-----	-----	-----
1237	-----	-----	-----	-----	-----	-----	-0.28	-0.44	0.12	0.88	0.99	-0.98
1254	-1.26	-0.84	-2.30	-0.51	-0.25	-1.56	-----	-----	-----	-----	-----	-----
1276	-0.72	0.12	-0.22	-0.46	-0.25	-0.82	-----	-----	-----	-----	-----	-----
1347	-----	-----	-----	-----	-----	-----	0.17	-0.02	0.12	-0.50	-0.95	2.48
1348	0.95	0.56	-0.52	-0.05	-0.88	0.67	-----	-----	-----	-----	-----	-----
1385	-----	-----	-----	-----	-----	-----	-0.33	-2.12	0.81	0.75	0.34	0.54
1395	-0.51	0.73	0.23	-0.15	-0.18	0.42	-----	-----	-----	-----	-----	-----
1397	0.35	-0.49	2.31	0.47	1.27	-0.65	-----	-----	-----	-----	-----	-----
1404	-0.78	-0.40	-0.22	0.01	-0.25	-0.53	-----	-----	-----	-----	-----	-----
1409	1.11	0.38	1.27	0.21	-0.25	0.05	-----	-----	-----	-----	-----	-----
1419	1.22	0.38	0.82	0.06	0.30	1.25	-----	-----	-----	-----	-----	-----
1428	0.78	-0.14	1.12	0.16	0.16	1.62	-----	-----	-----	-----	-----	-----
1432	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1487	0.95	0.30	0.97	-0.25	1.21	-0.82	-----	-----	-----	-----	-----	-----
1488	-----	-----	-----	-----	-----	-----	0.96	-0.04	1.15	1.10	1.41	0.15
1490	-1.80	-0.58	-1.11	-0.20	-1.09	-2.67	-----	-----	-----	-----	-----	-----
1531	-0.35	-0.49	1.12	0.37	0.02	0.51	-----	-----	-----	-----	-----	-----
1613	-1.26	0.12	0.38	0.16	-0.81	0.05	-----	-----	-----	-----	-----	-----
1616	-0.29	0.65	0.97	0.06	0.30	0.13	-----	-----	-----	-----	-----	-----
1631	-0.29	0.21	-0.67	-0.30	0.30	0.30	-----	-----	-----	-----	-----	-----
1634	-1.15	-0.32	-1.26	-0.30	0.09	-0.90	-----	-----	-----	-----	-----	-----
1656	0.89	-0.23	-0.96	-0.05	0.16	0.09	-----	-----	-----	-----	-----	-----
1710	0.78	0.21	0.38	-0.10	0.02	0.71	-----	-----	-----	-----	-----	-----
1720	0.62	0.56	0.97	0.42	1.14	-0.82	-----	-----	-----	-----	-----	-----
1724	-0.35	0.65	0.97	0.47	0.72	-0.32	-----	-----	-----	-----	-----	-----
1730	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1740	-1.26	-0.23	-2.01	-0.46	-0.25	0.67	-----	-----	-----	-----	-----	-----
1807	-0.88	-0.05	-0.22	0.01	0.23	-0.73	-----	-----	-----	-----	-----	-----
1833	-0.67	0.21	-0.67	-0.10	0.09	-0.40	-----	-----	-----	-----	-----	-----
1849	-0.67	0.21	0.38	0.31	0.41	2.63	-----	-----	-----	-----	-----	-----
1851	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1854	-0.13	1.08	0.67	-0.10	0.09	0.71	-----	-----	-----	-----	-----	-----
1864	-0.51	0.38	-0.81	0.01	0.30	-1.72	-----	-----	-----	-----	-----	-----
1911	0.62	-0.45	-0.81	-0.25	-0.22	-1.41	-----	-----	-----	-----	-----	-----
1936	-0.02	0.21	-0.81	-0.25	-0.18	0.26	-----	-----	-----	-----	-----	-----
1937	-0.45	0.21	-0.07	-0.05	-0.12	0.84	-----	-----	-----	-----	-----	-----
1938	-0.88	-0.14	-1.41	-0.40	-0.60	-1.56	-----	-----	-----	-----	-----	-----
1948	0.73	0.30	1.27	0.37	0.09	0.01	-----	-----	-----	-----	-----	-----
1952	-0.72	2.00	-0.67	-0.48	1.62	0.11	-----	-----	-----	-----	-----	-----
2129	-0.13	-0.05	1.57	0.37	0.65	0.26	-----	-----	-----	-----	-----	-----
2130	-0.08	-0.67	-0.67	-0.51	-0.81	0.51	-----	-----	-----	-----	-----	-----
7003	-0.72	0.12	-1.41	-0.25	-0.12	-2.43	-----	-----	-----	-----	-----	-----

APPENDIX 3
Number of participants per country

1 laboratory in	ARGENTINA
2 laboratories in	AUSTRALIA
2 laboratories in	AUSTRIA
1 laboratory in	AZERBAIJAN
1 laboratory in	BELARUS REPUBLIC
4 laboratories in	BELGIUM
1 laboratory in	BOLIVIA
1 laboratory in	BRAZIL
1 laboratory in	BULGARIA
2 laboratories in	CANADA
1 laboratory in	CHILE
1 laboratory in	COSTA RICA
1 laboratory in	CÔTE D'IVOIRE
1 laboratory in	CROATIA
8 laboratories in	FRANCE
1 laboratory in	GEORGIA
2 laboratories in	GERMANY
5 laboratories in	GREECE
1 laboratory in	GUAM
2 laboratories in	HUNGARY
1 laboratory in	INDIA
1 laboratory in	IRAN
1 laboratory in	IRELAND
1 laboratory in	ISRAEL
1 laboratory in	ITALY
1 laboratory in	JORDAN
2 laboratories in	KENYA
1 laboratory in	KOREA
1 laboratory in	LATVIA
3 laboratories in	LEBANON
1 laboratory in	MALAYSIA
1 laboratory in	MAURITIUS
1 laboratory in	MOZAMBIQUE
3 laboratories in	NIGERIA
1 laboratory in	OMAN
2 laboratories in	P.R. of CHINA
1 laboratory in	PERU
1 laboratory in	PHILIPPINES
2 laboratories in	POLAND
1 laboratory in	PORTUGAL
1 laboratory in	QATAR
1 laboratory in	REPUBLIC OF DJIBOUTI
1 laboratory in	REPUBLIC OF GUINEE
1 laboratory in	RUSSIA
1 laboratory in	SAUDI ARABIA
1 laboratory in	SENEGAL
1 laboratory in	SERBIA
1 laboratory in	SINGAPORE
1 laboratory in	SLOVAKIA
2 laboratories in	SLOVENIA
1 laboratory in	SOUTH AFRICA
3 laboratories in	SPAIN
1 laboratory in	SUDAN
2 laboratories in	SWEDEN
1 laboratory in	TAIWAN R.O.C.
1 laboratory in	TANZANIA
3 laboratories in	THAILAND
6 laboratories in	THE NETHERLANDS
1 laboratory in	TOGO
1 laboratory in	TUNISIA
11 laboratories in	TURKEY
1 laboratory in	TURKMENISTAN
1 laboratory in	U.A.E.
1 laboratory in	U.S. VIRGIN ISLANDS
10 laboratories in	U.S.A.
5 laboratories in	UNITED KINGDOM

APPENDIX 4

Abbreviations:

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

Literature:

1 iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, January 2010
2 ASTM E178-02
3 ASTM E1301-03
4 ISO13528-05
4 ISO 5725-86
5 ISO 5725, parts 1-6, 1994
6 M. Thompson and R. Wood, J. AOAC Int, 76, 926, (1993)
7 W.J. Youden and E.H. Steiner, Statistical Manual of the AOAC, (1975)
8 IP 367/96
9 DIN 38402 T41/42
10 P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
11 J.N. Miller, Analyst, 118, 455, (1993)
12 Analytical Methods Committee Technical brief, No4 January 2001.
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/).
14 H. Verplaetse and M. Lacourt, Accred Qual Assur (2006) 11:521-522