Results of Proficiency Test
Jet Fuel
September 2012

Organised by: Institute for Interlaboratory Studies
                    Spijkenisse, the Netherlands

Author: Ing. R.J.Starink
Correctors: Dr. R.G. Visser & Ing. L. Sweere
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1   INTRODUCTION

Since 1995, the Institute for Interlaboratory Studies organises every year proficiency tests for Jet Fuel A1. The interlaboratory study on Jet Fuel A1 of September 2012 was extended with a PT for the determination for Particle Size Distribution, FAME and BOCLE.

In the main PT, 135 laboratories in 68 different countries have participated. In the PT for FAME in Jet Fuel, 32 laboratories in 16 different countries participated. In the PT for the BOCLE determination, 16 laboratories in 10 different countries and in the PT for the Particle Size Distribution, 53 laboratories in 31 different countries participated.

See appendix 3 for the number of participants per country. In this report, the results of the proficiency test are presented and discussed.

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 the main Jet Fuel round robin, it was decided to send two identical samples (2 *1 litre bottles sample labelled #12094) for the analyses according to the "Aviation Fuel Quality Requirements for Jointly Operated Systems (AFQRJOS)", sometimes referred to as the "Joint Fuelling System Check List For Jet A-1".

Depending on the registration also was sent: 1*0.5 litre sample, labelled #12096 for the Particle Size distribution round robin, 1*0.1 litre sample, labelled #12095 for the BOCLE determination and/or 1*0.1 litre sample, labelled #12097 for the determination of FAME in Jet Fuel.

The participants were requested to report the analytical results using the indicated units on the report form and to report rounded and unrounded results. The unrounded results were preferably used for statistical evaluation.

2.1   ACCREDITATION

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, is accredited in agreement with ISO/IEC 17043:2010, since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentially of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2   PROTOCOL

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

2.3   CONFIDENTIALITY STATEMENT

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

2.4   SAMPLES

2.4.1 JET FUEL (MAIN SAMPLE)

The necessary bulk material was obtained from local storage. The approx. 300 litre bulk sample was homogenised and divided over 300 amber glass bottles of one litre with inner and outer caps and labelled #12094. The homogeneity of the subsamples #12094 was checked by the determination of Density in accordance with ASTM D4052:11 on 8 stratified randomly selected samples.

	Density @ 15°C in kg/m^3
Sample #12094-1	795.37
Sample #12094-2	795.37
Sample #12094-3	795.37
Sample #12094-4	795.37
Sample #12094-5	795.37
Sample #12094-6	795.37
Sample #12094-7	795.37
Sample #12094-8	795.37

table 1: homogeneity test results of sub samples #12094

From the above test results, the repeatability was calculated and compared with 0.3 times the reproducibility of the reference method in agreement with the procedure of ISO 13528, Annex B2 in the next table:

	Density @ 15°C in kg/m^3
r (observed)	0.00
reference method	D 4052:11
0.3 x R (ref. method)	0.15

Table 2: evaluation of repeatability of subsamples #12094

The calculated repeatability is less than 0.3 times the reproducibility of the reference method. Therefore, homogeneity of all subsamples was assumed.

2.4.2 BOCLE DETERMINATION

The bulk material for the BOCLE determination was obtained from a local refinery. The approx. 5 litre bulk sample was homogenised and subsequently divided over 25 amber glass bottles of 100 mL and labelled #12095. The homogeneity of the subsamples

#12095 was checked by the determination of Density in accordance with ASTM D4052:11 on 4 stratified randomly selected samples.

Sample	Density @ 15°C in kg/L
#12095-1	813.68
#12095-2	813.68
#12095-3	813.67
#12095-4	813.68
#12095-5	813.68
#12095-6	813.68
#12095-7	813.68
#12095-8	813.67

table 3: homogeneity test results of sub samples #12095

From the above test results, the repeatability was calculated and compared with 0.3 times the reproducibility of the reference method in agreement with the procedure of ISO 13528, Annex B2 in the next table:

	Density @ 15°C in kg/m^3
r (observed)	0.01
reference method	D4052:11
0.3 x R (ref. method)	0.15

Table 4: evaluation of repeatability of subsamples #12095

The calculated repeatabilities are all smaller than the repeatabilities of the reference method. Therefore, homogeneity of the subsamples #12095 was assumed.

2.4.3 JET FUEL PARTICLE SIZE DETERMINATION

The third bulk material was obtained from a participating laboratory. The approx. 90 litre bulk sample was homogenised and divided over 88 amber glass bottles of 0.5 L with inner and outer caps and labelled #12096. The homogeneity of the subsamples #12096 was checked by the determination of Particle Size Distribution in accordance with IP564:10 on eight stratified randomly selected samples.

	> 4 µm	> 6 µm	> 14 µm	> 21 µm	> 25 µm	> 30 µm
Sample #12096-1	1565	371	14	4	2	1
Sample #12096-2	1507	346	11	3	2	1
Sample #12096-3	1529	360	14	4	2	1
Sample #12096-4	1642	348	13	4	2	1
Sample #12096-5	1525	349	10	3	1	1
Sample #12096-6	1560	366	14	5	3	1
Sample #12096-7	1495	347	13	4	2	1
Sample #12096-8	1551	354	11	3	2	1

Table 5: homogeneity test results of sub samples #12096

From the above test results, the repeatability was calculated and compared with the repeatability of the reference method.

	> 4 µm	> 6 µm	> 14 µm	> 21 µm	> 25 µm	> 30 µm
r (observed)	128.1	26.6	4.5	2.0	1.5	0.0
reference method	IP564:10	IP564:10	IP564:10	IP564:10	IP564:10	IP564:10
r (ref. method)	325.5	116.6	12.9	3.8	2.1	1.3

Table 6: evaluation of repeatabilities of subsamples #12096

The calculated repeatability is less than 0.3 times the reproducibility of the reference method. Therefore, homogeneity of subsamples #12096 was assumed.

2.4.4 DETERMINATION OF FATTY ACID METHYL ESTER (FAME)

It was decided to use a batch of approx. 10 litre from retained samples from previous FAME in Jet Fuel round robins. The batch was thoroughly homogenized and divided over 99 bottles of 100 mL and labelled #12097. The homogeneity of the subsamples #12097 was checked by the determination of FAME in accordance with method IP585 on 8 stratified randomly selected samples.

Sample	FAME in mg/kg
#12097-1	11.8
#12097-2	11.8
#12097-3	11.9
#12097-4	12.6
#12097-5	11.9
#12097-6	11.9
#12097-7	12.1
#12097-8	12.2

Table 7: homogeneity test results of sub samples #12097

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

	FAME in mg/kg
r (observed)	0.7
reference method	IP585:10
0.3 x R (ref. method)	1.1

Table 8: evaluation of repeatabilities of subsamples #12097

The calculated repeatability is less than 0.3 times the reproducibility of the reference method. Therefore, homogeneity of the subsamples was assumed.

Depending on the registration of each individual participant the following samples were dispatched on August 29, 2012: 2 bottles regular Jet Fuel (2*1 litre, labelled #12094), 1 bottle especially for the BOCLE test (1*100 mL, labelled #12095), 1 bottle especially for the Particle Size Distribution (1*500 mL, labelled #12096) and 1 bottle for the FAME determination (1*100 mL, labelled #12097) were sent to the participating laboratories.

2.5   STABILITY OF THE SAMPLES

The stability of Jet Fuel A1, packed in the brown glass bottles was checked. The type of bottle was chosen in accordance with ASTM D4306:12b. The material has been found sufficiently stable for the period of the proficiency test.

2.6   ANALYSIS

The participants were requested to determine on sample #12094: Aromatics by FIA, Aromatics by HPLC (in %M/M and %V/V), Colour Saybolt, Density @15°C, Distillation (IBP, 10%, 20%, 50%, 90% recovered and FBP), Existent Gum, Flash Point, Freezing Point, JFTOT, Mercaptans, MSEP, Naphthalenes, Smoke Point, Specific Energy (on Sulphur free basis), Total Acidity, Total Sulphur and Viscosity @ -20°C. The participants were requested to determine BOCLE only on sample #12095.The participants were requested to determine Particle Size only on sample #12096. And the participants were requested to determine FAME only on sample #12097.

The analyses should be performed according to the "Aviation Fuel Quality Requirements for Jointly Operated Systems (AFQRJOS)", also referred to as the "Joint Fuelling System Check List" or simply "Check List".

To get comparable results a detailed report form, on which the units were prescribed as well as some of the required standards and a letter of instructions were prepared and made available for download on the iis website (www.iisnl.com).
A SDS and a form to confirm receipt of the samples were added to the sample package.

3   RESULTS

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

Directly after deadline, a reminder fax was sent to those laboratories that had not yet reported. 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 (raw data of the) reported results. Additional or corrected results have been used for data analysis and the 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 Organization, 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 conclusions of statistical evaluation should be used with due care.

In accordance with 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 visualize the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported 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.14-15).

3.3 Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements, e.g. ASTM reproducibilities, the z-scores were calculated using a target standard deviation. This results in an

evaluation independent of the 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 according to:

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

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
| z | > 3   unsatisfactory

4   EVALUATION

In these interlaboratory studies, some major problems with couriers and/or customs clearance were encountered during dispatch of the samples to laboratories in Afghanistan, Azerbaijan, Côte D'Ivoire, Egypt, Iran, Jordan, Kazakhstan, Kenya, Mozambique, Oman, Qatar, Russia, Sudan, Tanzania, Togo, Tunisia and Turkmenistan.

For the "main Jet Fuel A1" PT, 35 (!) participants reported the results after the final reporting date and 7 participants did not report any results at all.

For the PT "BOCLE", only 3 participants reported the results after the final reporting date and 1 participant did not report any result at all.

For the PT "Particle Size", 9 participants reported the results after the final reporting date and 10 other participants did not report any results at all.

For the PT "FAME", 6 participants reported the results after the final reporting date and 4 other participants did not report any results at all.

In total, the 128 participants of the main round, the 15 participants of the BOCLE round, the 44 participants of the particle size round and the 27 participants of the FAME round, reported in total 2631 numerical results. Observed were 123 outlying results, which is 4.6%. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

4.1   EVALUATION PER TEST

Not all original data sets proved to have a normal distribution. Non Gaussian distributions were found for the following determinations on sample #12094 and sample #12096: Colour Saybolt (D156 & D6045), Density, Distillation 50% rec. & FBP (both automated), 50% & 90% rec. (both manual), Existent Gum, Flash Point, JFTOT, Mercaptan Sulphur, MSEP, Naphthalenes, Total Sulphur, Viscosity and Particle Size

>25μm and >30μm. Therefore, the statistical evaluation for these determinations should be used with care.

In this section, the results are discussed per test.

Since the checklist is continuously updated, the users are advised to monitor the updates. The latest version at this moment is "DEF STAN 91-91/Issue 7, dated: 18 February 2011" and ASTM D1655:12. One must keep in mind that ISO-methods are not mentioned in the "Checklist".

Aromatics by: FIA (D1319):	This determination was not problematic. Only one statistical outlier was observed and the calculated reproducibility after rejection of the statistical outlier is in good agreement with ASTM D1319:10.
Aromatics by: HPLC (D6379)	The %M/M determination was problematic for a number of laboratories. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with ASTM D6379:11. The %V/V determination may be problematic. Regretfully, no precision data for the determination in %V/V is mentioned in ASTM D6379:11, but the observed reproducibility was much larger than for the determination in %M/M.
Colour Saybolt:	This determination was problematic for both the manual (ASTM D156) and the automated (ASTM D6045) mode. In total six statistical outliers were observed. Both calculated reproducibilities are, after rejection of the statistical outliers, not in agreement with the respective requirements of ASTM D156:07a and ASTM D6045:09.
Density:	This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility, after rejection of the statistical outliers, is in good agreement with the requirements of ASTM D4052:11.
Distillation:	In total fifteen statistical outliers were observed. All calculated reproducibilities, except for 90% recovered, for the automated determination are, after rejection of the statistical outliers, in good agreement with the requirements of ASTM D86:11b (group 4, automated). However, the calculated reproducibilities for the manual determination for 10% rec., 90% rec. and FBP are, after rejection of the statistical outliers, not in agreement with the requirements of ASTM D86:11b (group 4, manual).
Existent Gum:	This determination was not problematic. Only one statistical outlier was observed. The calculated reproducibility, after rejection of the statistical outlier, is in good agreement with ASTM D381:12.
Flash Point:	This determination was not problematic. Only one statistical outlier was observed. The calculated reproducibility, after rejection of the

statistical outlier, is in full agreement with the requirements of IP170:09.

Six laboratories reported a method that is not mentioned in the Joint Fuelling System Checklist. After exclusion of these 6 test results, the calculated reproducibility is somewhat smaller and again in good agreement with the requirements of IP170:09.

Freezing Point: This determination was problematic for a number of laboratories. Five statistical outliers were observed. However, the calculated reproducibility, after rejection of the statistical outliers, is in good agreement with the requirements of ASTM D2386:12.

JFTOT: This determination was very problematic. Twenty-one of the seventy-five reporting laboratories (=28% !!) reported for the tube rating: 3 or higher and would have rejected the sample as off spec. (see appendix 4, lit.3 AFQRJOS product specification; max. less 3).

Fifteen laboratories reported a higher volume than the maximum allowed (450 ± 45 mL may be pumped in a valid test, see ASTM D 3241:11a table 2). It should be noted that a pumped volume higher than 495 mL or below 405 mL means that the test is not performed correctly and results obtained are suspect.

Copper: Five laboratories reported a numerical value for this determination. Three low results (2.8 µg/kg) and two high results (64 µg/kg), therefore no significant conclusions can be drawn.

Mercaptan Sulphur: This determination was problematic. Four statistical outliers were observed and the calculated reproducibility, after rejection of the statistical outliers, is not in agreement with the requirements of ASTM D3227:10.

MSEP: This determination may be problematic for a number of laboratories. Six statistical outliers were observed. Regretfully, the consensus value of the group (49.8) was found outside the precision application range of ASTM D3948:11 (see fig 10). Therefore no significant conclusions were drawn. The numerical test results reported by the participants vary large, from 0 – 99 mg/kg.

Naphthalenes: 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 D1840:07 procedure B and also not with procedure A.

Smoke Point: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of ASTM D1322:12.

Specific Energy: This determination was problematic for a number of laboratories. Four statistical outliers were observed. However, the calculated reproducibility, after rejection of the statistical outliers is in full agreement with the requirements of ASTM D3338:09. It was noticed that three laboratories possibly made a calculation or reporting error.

Total Acidity: This determination was problematic. Five statistical outliers were observed and the calculated reproducibility, after rejection of the statistical outliers, is not in agreement with the requirements of ASTM D3242:11.

Total Sulphur: 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 D5453:09.

Viscosity: This determination was very problematic. Ten statistical outliers were observed and the calculated reproducibility, after rejection of the statistical outliers, is still not in agreement with the requirements of ASTM D445:11.

BOCLE: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of ASTM D5001:10.

FAME: 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 IP585:10.

Particle Size: This determination was very problematic. In total ten statistical outliers were observed.
Three laboratories appeared to have reported inconsistent test results. For laboratory 1038, all the reported results, except one, scored a z-target outside 3s. For laboratories 1316 and 1613, three or more of the reported results turned out to be statistical outliers. As all test results of one laboratory are correlated to each, all test results of the laboratories 1038, 1316 and 1613 were excluded manually prior to the statistical analysis. After rejection of the suspect test results, all the calculated reproducibilities are not in agreement with the requirements of IP564:10. Strict adherence to the test method with regards to homogenisation is advised.

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 laboratories that participated. The reproducibilities derived from literature standards (in casu ASTM standards) and the calculated reproducibilities of samples #12094, #12095, #12096 and #12097 are compared in the next tables.

Parameter	unit	n	Average	2.8 * sd	R (lit)
Aromatics by FIA	%V/V	77	17.85	1.70	2.98
Aromatics by HPLC	%M/M	23	20.94	1.98	2.11
Aromatics by HPLC	%V/V	24	18.07	3.84	unknown
Colour Saybolt (ASTM D156)		82	22.6	3.8	2.0
Colour Saybolt (ASTM D6045)		33	23.5	2.1	1.2
Density at 15°C	kg/m^3	122	795.3	0.3	0.5
Initial Boiling Point (Auto)	°C	102	150.2	5.3	8.3
10% recovered (Auto)	°C	102	167.4	2.5	3.7
50% recovered (Auto)	°C	104	195.2	2.2	3.0
90% recovered (Auto)	°C	104	239.7	4.1	3.6
Final Boiling Point (Auto)	°C	104	266.4	4.9	7.1
Initial Boiling Point (Manual)	°C	18	150.6	4.3	4.3
10% recovered (Manual)	°C	19	166.8	3.9	3.0
50% recovered (Manual)	°C	17	194.7	2.9	3.0
90% recovered (Manual)	°C	18	238.6	4.8	3.7
Final Boiling Point (Manual)	°C	17	265.0	5.4	4.2
Existent Gum	mg/100mL	80	1.6	2.1	3.4
Flash Point	°C	118	42.06	2.89	3.20
Freezing Point	°C	104	-52.04	1.86	2.50
Mercaptan Sulphur	%M/M	73	0.0008	0.0004	0.0003
MSEP	rating	63	49.3	18.3	(27.1)
Naphthalenes	%V/V	61	1.08	0.13	0.10
Smoke Point	mm	84	23.9	3.8	3.0
Specific Energy	MJ/kg	62	43.308	0.046	0.046
Total Acidity	mg KOH/g	74	0.0030	0.0027	0.0022
Total Sulphur	mg/kg	86	567.8	72.0	67.4
Viscosity @ -20°C	cSt	71	3.703	0.089	0.070

table 9: comparison of the observed and target reproducibilities of sample #12094

results between brackets are below/outside the application range

Parameter	unit	n	Average	2.8 * sd	R (lit)
Wear Scar Diameter	mm	15	0.66	0.08	0.06

table 10: comparison of the observed and target reproducibility of sample #12095

Parameter	unit	n	Average	2.8 * sd	R (lit)
FAME	mg/kg	25	12.08	5.85	3.89

table 11: comparison of the observed and target reproducibility of sample #12097

Parameter	unit	n	Average	2.8 * sd	R (lit)
Particle Size >4 µm	mL^{-1}	41	3451	2914	796
Particle Size >6 µm	mL^{-1}	42	842	889	329
Particle Size >14 µm	mL^{-1}	41	33.9	47.1	26.5
Particle Size >21 µm	mL^{-1}	40	7.3	11.0	9.3
Particle Size >25 µm	mL^{-1}	39	3.1	5.0	4.2
Particle Size >30 µm	mL^{-1}	38	1.3	2.7	2.2

table 12: comparison of the observed and target reproducibilities of sample #12096

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 tests that are problematic have been discussed in paragraph 4.1.

4.3 COMPARISON OF THE PROFICIENCY TEST OF SEPTEMBER 2012 WITH PREVIOUS PTS

	September 2012	March 2012	September 2011	March 2011
Number of reporting labs	214	91	242	126
Number of results reported	2631	1704	2480	1713
Statistical outliers	123	53	71	80
Percentage outliers	4.6%	3.1%	2.9%	4.7%

table 13: 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:

Parameter	September 2012	March 2012	September 2011	March 2011
Aromatics by FIA	++	++	++	++
Aromatics by HPLC	+	+/-	--	++
Colour Saybolt	--	--	--	--
Density at 15°C	++	++	++	++
Distillation automated	++	++	+/-	++
Distillation manual	-	--	+/-	n.e.
Existent Gum	++	++	--	++
Flash Point	+	+/-	--	++
Freezing Point	++	++	--	++
Mercaptan Sulphur	-	+/-	(++)	++
MSEP	(++)	+/-	n.e.	-
Naphthalenes	-	+/-	--	--
Smoke Point	--	--	--	--
Specific Energy	+/-	-	++	++
Total Acidity	-	--	--	+/-
Total Sulphur	-	+/-	--	--
Viscosity @ -20°C	--	-	--	--
BOCLE	-	n.e.	+/-	n.e.
FAME	--	n.e.	+/-	n.e.
Particle Size Distribution	--	--	--	+/-

table 14: comparison determinations against the standard requirements
results between brackets are below/outside the application range

The performance of the determinations against the requirements of the respective standards is listed in the above table. The following performance categories were used:

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

APPENDIX 1
Determination of Aromatics by FIA on sample #12094; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D1319	16.9		-0.89	1016		-----		-----
62	D1319	16.85		-0.94	1017		-----		-----
132	D1319	18.00		0.14	1021		-----		-----
140	D1319	19.3		1.36	1026		-----		-----
150	D1319	18.0		0.14	1032	D1319	18.45		0.56
153	D1319	19.0		1.08	1038	D1319	19.5		1.55
159	D1319	19.3		1.36	1039		-----		-----
169	D1319	18.7		0.80	1049		-----		-----
171	D1319	17.3		-0.52	1059	D1319	17.5		-0.33
175		-----		-----	1062	D1319	18.1		0.24
177	D1319	18.1		0.24	1064	D1319	18.22		0.35
194	D1319	18.2		0.33	1065		-----		-----
216		-----		-----	1079	D1319	17.8		-0.05
221		-----		-----	1080		-----		-----
224		-----		-----	1081	D1319	18.4		0.52
225	D1319	17.96		0.10	1082		-----		-----
228		-----		-----	1097	D1319	17.7		-0.14
230	D1319	18.65		0.75	1108		-----		-----
237	D1319	17.50		-0.33	1109	D1319	17.53		-0.30
254		-----		-----	1126		-----		-----
256		-----		-----	1131	D1319	17.65		-0.19
258		-----		-----	1140	D1319	18.0		0.14
273		-----		-----	1150		-----		-----
311	D1319	17.8		-0.05	1194	D1319	18.4		0.52
317		-----		-----	1231	D1319	18.00		0.14
323	D1319	16.7		-1.08	1264	D1319	17.81		-0.04
333	D1319	16.7		-1.08	1279		-----		-----
334		-----		-----	1284	D1319	18.0		0.14
335	D1319	16.8		-0.99	1297		-----		-----
340	D1319	17.50		-0.33	1299	D1319	17.4		-0.42
353		-----		-----	1316		-----		-----
360	D1319	16.3		-1.46	1318		-----		-----
369	D1319	17.44		-0.39	1320	D1319	14.70	G(0.01)	-2.96
370	D1319	18.12		0.25	1372	D1319	18.28		0.40
371		-----		-----	1376	D1319	17.92		0.07
372	D1319	18.0		0.14	1399	D1319	17.2		-0.61
391	D1319	18.1		0.24	1417		-----		-----
399		-----		-----	1419	D1319	17.5		-0.33
402	D1319	17.48		-0.35	1447	D1319	18.91		1.00
440	D1319	17.50		-0.33	1448		-----		-----
445	D1319	17.5		-0.33	1483		-----		-----
447	D1319	17.8		-0.05	1496	D1319	17.9		0.05
448	D1319	18.35		0.47	1520	D1319	17.65		-0.19
463		-----		-----	1538	D1319	18.05		0.19
468		-----		-----	1610	IP156	18.6		0.71
473		-----		-----	1613	D1319	18.29		0.41
485		-----		-----	1631	D1319	17.55		-0.28
495		-----		-----	1634		-----		-----
496	D1319	18.1		0.24	1635	D1319	18.09		0.23
604		-----		-----	1636	D1319	17.44		-0.39
606		-----		-----	1710	D1319	17.0		-0.80
608		-----		-----	1715		-----		-----
631	D1319	17.39		-0.43	1720		-----		-----
657	D1319	17.2		-0.61	1724	D1319	17.87		0.02
663	D1319	17.58		-0.25	1811	D1319	17.7	C	-0.14
671		-----		-----	1833	D1319	17.42		-0.40
732		-----		-----	1842	D1319	17.0		-0.80
823	D1319	17.54		-0.29	1913	D1319	18.30		0.42
851		-----		-----	1948		-----		-----
862	D1319	17.98		0.12	1951		-----		-----
869	D1319	17.60		-0.24	1952	D1319	17.88		0.03
922		-----		-----	2129	D1319	18.1		0.24
962	D1319	18.28		0.40	2130		-----		-----
963	D1319	18.41		0.53	2133	D1319	18.07		0.21
974	D1319	17.32		-0.50	7001		-----		-----
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
998		-----		-----					

normality	OK
n	77
outliers	1
mean (n)	17.850
st.dev. (n)	0.6053
R(calc.)	1.695
R(D1319:10)	2.975

Lab 1811: first reported 15.7

Determination of Aromatics by HPLC on sample #12094; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1016		-----		-----
62		-----		-----	1017		-----		-----
132		-----		-----	1021		-----		-----
140		-----		-----	1026		-----		-----
150		-----		-----	1032		-----		-----
153		-----		-----	1038		-----		-----
159		-----		-----	1039		-----		-----
169		-----		-----	1049	D6379	20.93		-0.01
171	D6379	22.20		1.67	1059		-----		-----
175		-----		-----	1062		-----		-----
177		-----		-----	1064		-----		-----
194		-----		-----	1065		-----		-----
216		-----		-----	1079	D6379	24.2	G(0.01)	4.32
221		-----		-----	1080	EN12916	20.31		-0.83
224		-----		-----	1081		-----		-----
225		-----		-----	1082		-----		-----
228		-----		-----	1097		-----		-----
230		-----		-----	1108	D6379	22.2		1.67
237		-----		-----	1109	D6591	20.97		0.04
254		-----		-----	1126		-----		-----
256		-----		-----	1131		-----		-----
258		-----		-----	1140		-----		-----
273		-----		-----	1150		-----		-----
311		-----		-----	1194		-----		-----
317		-----		-----	1231		-----		-----
323		-----		-----	1264		-----		-----
333		-----		-----	1279		-----		-----
334		-----		-----	1284		-----		-----
335		-----		-----	1297	EN12916	20.82		-0.16
340		-----		-----	1299	IP436	21.3		0.48
353		-----		-----	1316		-----		-----
360	D6379	20.90		-0.05	1318		-----		-----
369	D6379	21.78		1.12	1320	EN12196	21.18		0.32
370	D6379	21.16		0.29	1372		-----		-----
371		-----		-----	1376		-----		-----
372	D6379	20.7		-0.31	1399		-----		-----
391		-----		-----	1417		-----		-----
399	D6379	24.62	G(0.05)	4.88	1419	EN12916	20.39		-0.72
402		-----		-----	1447	D6379	20.1		-1.11
440		-----		-----	1448		-----		-----
445		-----		-----	1483		-----		-----
447		-----		-----	1496		-----		-----
448		-----		-----	1520		-----		-----
463		-----		-----	1538		-----		-----
468		-----		-----	1610		-----		-----
473		-----		-----	1613		-----		-----
485		-----		-----	1631		-----		-----
495	D6379	20.45		-0.65	1634		-----		-----
496		-----		-----	1635	D6379	20.0		-1.24
604		-----		-----	1636		-----		-----
606		-----		-----	1710		-----		-----
608		-----		-----	1715		-----		-----
631		-----		-----	1720		-----		-----
657	IP436	21.3		0.48	1724		-----		-----
663		-----		-----	1811		-----		-----
671		-----		-----	1833	D6379	21.75		1.08
732		-----		-----	1842		-----		-----
823	D6379	20.84		-0.13	1913		-----		-----
851	D6379	19.11		-2.42	1948	EN12916	20.83		-0.14
862	D6379	21.133		0.26	1951		-----		-----
869		-----		-----	1952		-----		-----
922		-----		-----	2129	D6379	21.206		0.36
962		-----		-----	2130		-----		-----
963		-----		-----	2133		-----		-----
974		-----		-----	7001		-----		-----
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
998		-----		-----					

normality	OK
n	23
outliers	2
mean (n)	20.937
st.dev. (n)	0.7066
R(calc.)	1.978
R(D6379:11)	2.114
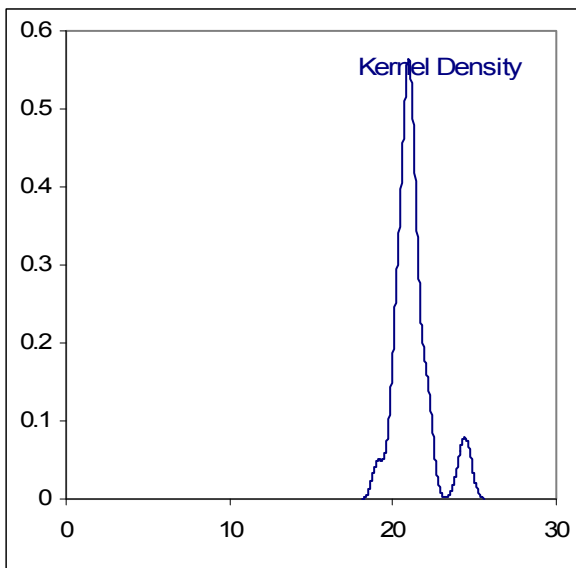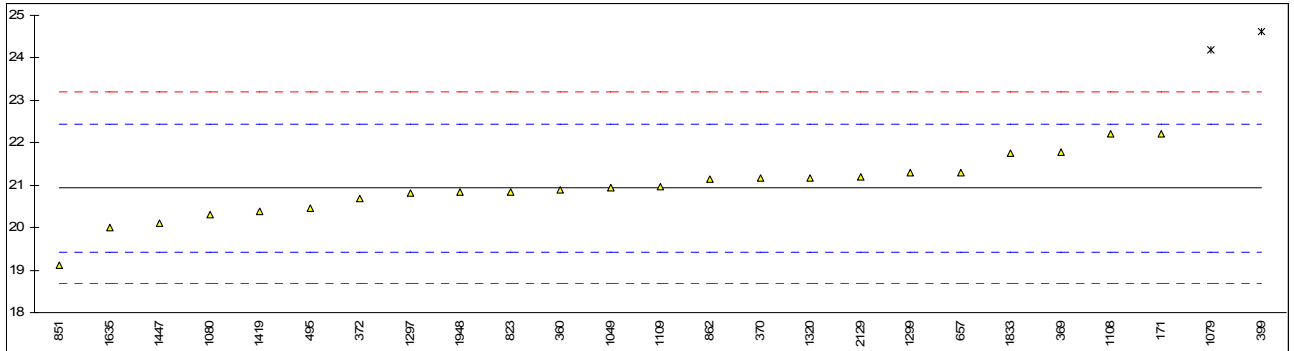
Kernel Density

Determination of Aromatics by HPLC on sample #12094; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1016	IP436	17.7		-----
62		-----		-----	1017		-----		-----
132		-----		-----	1021		-----		-----
140		-----		-----	1026	IP436	18.7		-----
150		-----		-----	1032		-----		-----
153		-----		-----	1038		-----		-----
159		-----		-----	1039	D6379	18.7		-----
169		-----		-----	1049	D6379	18.87		-----
171	D6379	20.07		-----	1059		-----		-----
175		-----		-----	1062		-----		-----
177		-----		-----	1064		-----		-----
194		-----		-----	1065		-----		-----
216		-----		-----	1079	D6379	21.5		-----
221		-----		-----	1080		-----		-----
224		-----		-----	1081		-----		-----
225		-----		-----	1082		-----		-----
228		-----		-----	1097		-----		-----
230		-----		-----	1108	D6379	19.9		-----
237		-----		-----	1109		-----		-----
254		-----		-----	1126		-----		-----
256		-----		-----	1131		-----		-----
258		-----		-----	1140		-----		-----
273		-----		-----	1150		-----		-----
311		-----		-----	1194		-----		-----
317		-----		-----	1231		-----		-----
323		-----		-----	1264		-----		-----
333	D6379	16.1		-----	1279		-----		-----
334		-----		-----	1284		-----		-----
335		-----		-----	1297	EN12916	18.16		-----
340		-----		-----	1299	IP436	18.7		-----
353		-----		-----	1316	IP391	17.3		-----
360		-----		-----	1318		-----		-----
369	D6379	18.57		-----	1320		-----		-----
370	D6379	19.24		-----	1372		-----		-----
371		-----		-----	1376		-----		-----
372	D6379	18.7		-----	1399	IP436	16.7		-----
391		-----		-----	1417		-----		-----
399		-----		-----	1419		-----		-----
402		-----		-----	1447	D6379	18.4		-----
440		-----		-----	1448		-----		-----
445		-----		-----	1483		-----		-----
447		-----		-----	1496		-----		-----
448		-----		-----	1520		-----		-----
463		-----		-----	1538		-----		-----
468		-----		-----	1610		-----		-----
473		-----		-----	1613		-----		-----
485		-----		-----	1631		-----		-----
495	D6379	18.40		-----	1634		-----		-----
496		-----		-----	1635		-----		-----
604		-----		-----	1636		-----		-----
606		-----		-----	1710		-----		-----
608		-----		-----	1715		-----		-----
631		-----		-----	1720		-----		-----
657	IP436	16.9		-----	1724		-----		-----
663		-----		-----	1811		-----		-----
671		-----		-----	1833	D6379	17.30		-----
732		-----		-----	1842		-----		-----
823	D6379	18.04		-----	1913		-----		-----
851	D6379	16.87		-----	1948	EN12916	16.58		-----
862		-----		-----	1951	D6379	15.5		-----
869		-----		-----	1952		-----		-----
922		-----		-----	2129	D6379	16.865		-----
962		-----		-----	2130		-----		-----
963		-----		-----	2133		-----		-----
974		-----		-----	7001		-----		-----
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
998		-----		-----					

normality	OK
n	24
outliers	0
mean (n)	18.074
st.dev. (n)	1.3729
R(calc.)	3.844
R(lit)	unknown

Compare R(iis12J01) = 3.557
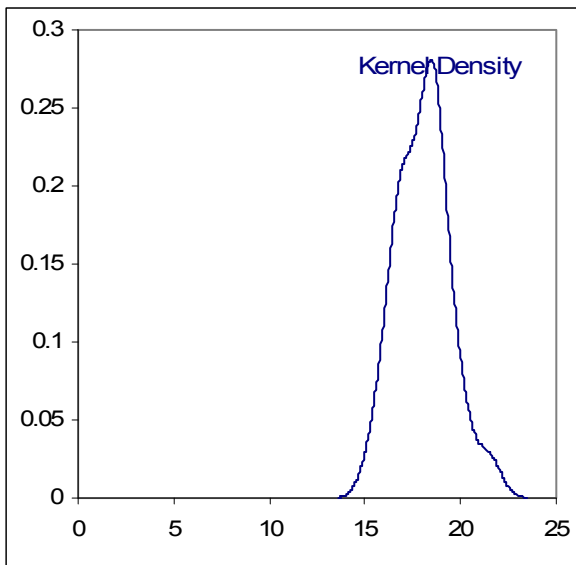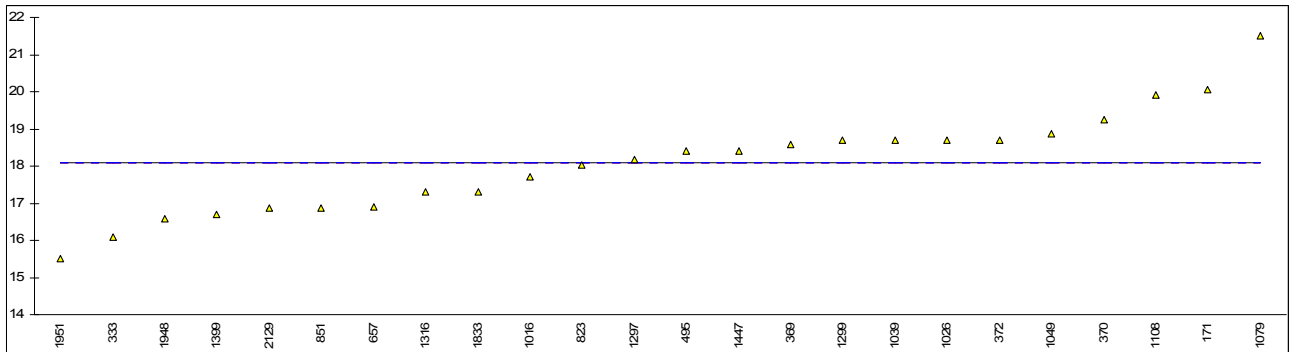
Determination of Colour Saybolt (D156) on sample #12094;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1016		-----		-----
62	D156-N	21		-2.21	1017		-----		-----
132	D156-N	22		-0.81	1021		-----		-----
140	D156-Y	21		-2.21	1026	D156-N	23		0.59
150	D156-N	24		1.99	1032	D156-N	23.3		1.01
153	D156-N	21		-2.21	1038		-----		-----
159	D156-N	24		1.99	1039	D156-N	24		1.99
169		-----		-----	1049		-----		-----
171	D156-N	24		1.99	1059	D156-N	22		-0.81
175		-----		-----	1062	D156-N	24		1.99
177	D156-N	23		0.59	1064	D156-N	24		1.99
194	D156-N	21		-2.21	1065		-----		-----
216		-----		-----	1079	D156-N	23		0.59
221		-----		-----	1080	D156-N	25		3.39
224		-----		-----	1081		-----		-----
225	D156-N	27	G(0.05)	6.19	1082		-----		-----
228		-----		-----	1097	INH-003-N	22		-0.81
230	D156-N	22		-0.81	1108	D156-N	24		1.99
237	D156-Y	23		0.59	1109	D156-N	22		-0.81
254		-----		-----	1126		-----		-----
256		-----		-----	1131		-----		-----
258	D156-N	24		1.99	1140		-----		-----
273	D156-N	23		0.59	1150		-----		-----
311		-----		-----	1194		-----		-----
317	D156-N	22		-0.81	1231	D156-N	22		-0.81
323	D156-N	26		4.79	1264		-----		-----
333		-----		-----	1279	D156-N	21		-2.21
334	D156-N	21		-2.21	1284		-----		-----
335	D156-N	23		0.59	1297		-----		-----
340	D156-Y	23		0.59	1299	D156-N	23		0.59
353		-----		-----	1316		-----		-----
360	D156-N	23		0.59	1318		-----		-----
369	D156-N	21		-2.21	1320		-----		-----
370	D156-N	24		1.99	1372		-----		-----
371		-----		-----	1376		-----		-----
372	D156-N	24		1.99	1399	D156-Y	24		1.99
391	D156-N	21		-2.21	1417		-----		-----
399	D156-Y	21		-2.21	1419	D156-N	23		0.59
402	D156-N	21.0		-2.21	1447	D156-N	23		0.59
440	D156-N	24		1.99	1448		-----		-----
445	D156-N	21		-2.21	1483		-----		-----
447	D156-N	23		0.59	1496	D156-N	23		0.59
448	D156-	23		0.59	1520	D156-N	21	C	-2.21
463	D156-N	23		0.59	1538	D156-N	21		-2.21
468		-----		-----	1610	D156-N	22		-0.81
473		-----		-----	1613	D156-N	24		1.99
485		-----		-----	1631		-----		-----
495	D156-N	22		-0.81	1634	D156-N	21		-2.21
496		-----		-----	1635	D156-Y	23		0.59
604	D156-N	19	G(0.05)	-5.01	1636	D156-Y	21		-2.21
606	D156-N	21		-2.21	1710	D156-N	23		0.59
608	D156-N	25		3.39	1715		-----		-----
631	D156-N	22		-0.81	1720		-----		-----
657	D156-N	22		-0.81	1724	D156-N	24		1.99
663	D156-N	23		0.59	1811	D156-N	23		0.59
671	D156-Y	21		-2.21	1833	D156-N	24		1.99
732		-----		-----	1842	D156-N	22		-0.81
823	D156-N	22		-0.81	1913	D156-N	21		-2.21
851	D156-N	22		-0.81	1948	D156-Y	25		3.39
862		-----		-----	1951	D156-	16	G(0.01)	-9.21
869	D156-N	21		-2.21	1952	D156-N	21		-2.21
922	D156-N	21		-2.21	2129	D156-N	21	C	-2.21
962	D156-	25		3.39	2130		-----		-----
963	D156-N	24		1.99	2133		-----		-----
974	D156-N	26		4.79	7001		-----		-----
994	D156-N	21		-2.21					
995	D156-N	22		-0.81					
996	D156-N	21		-2.21					
997	D156-N	21		-2.21					
998	D156-	20	G(0.05)	-3.61					

normality	not OK
n	82
outliers	4
mean (n)	22.58
st.dev. (n)	1.363
R(calc.)	3.82
R(D156:07a)	2.00

N: sample is not filtered before measurement
Y: sample is filtered before measurement

Lab 1520: first reported 19
Lab 2129: first reported 16
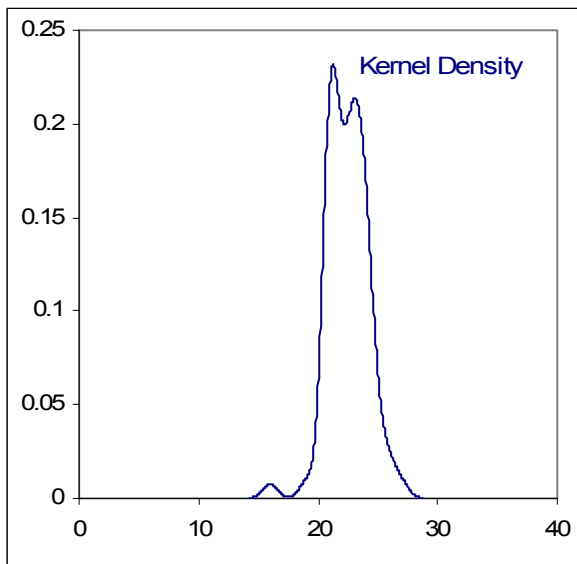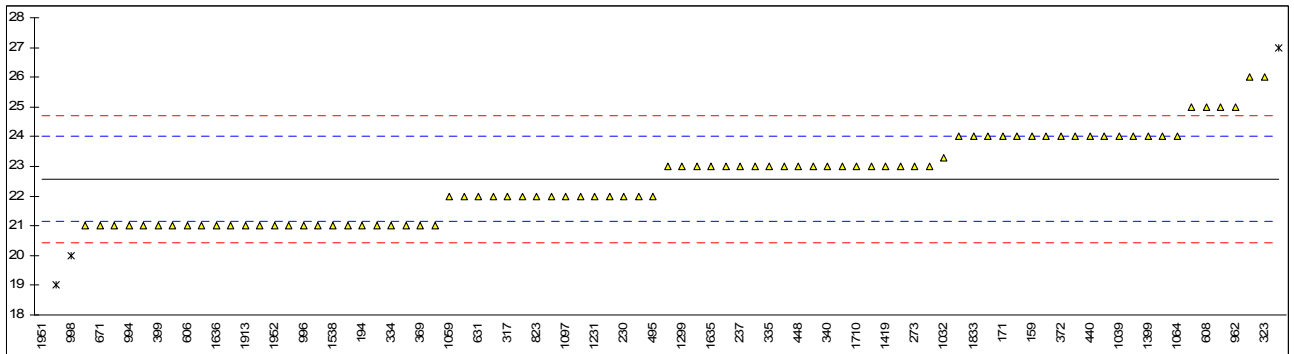
Determination of Colour Saybolt (D6045) on sample #12094;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D6045-N	24		1.05	1016		-----		-----
62		-----		-----	1017		-----		-----
132		-----		-----	1021	D6045-N	24		1.05
140		-----		-----	1026		-----		-----
150		-----		-----	1032		-----		-----
153		-----		-----	1038	D6045-N	24		1.05
159		-----		-----	1039		-----		-----
169	D6045-	23.1		-0.99	1049	D6045-N	26	G(0.05)	5.56
171	D6045-N	24		1.05	1059		-----		-----
175		-----		-----	1062		-----		-----
177		-----		-----	1064	D6045-N	22		-3.47
194		-----		-----	1065		-----		-----
216		-----		-----	1079	D6045-N	23		-1.21
221		-----		-----	1080		-----		-----
224		-----		-----	1081	D6045-N	24		1.05
225		-----		-----	1082	D6045-N	24		1.05
228		-----		-----	1097		-----		-----
230		-----		-----	1108		-----		-----
237		-----		-----	1109	D6045-N	23		-1.21
254		-----		-----	1126		-----		-----
256		-----		-----	1131		-----		-----
258		-----		-----	1140	D6045-N	23		-1.21
273		-----		-----	1150		-----		-----
311	D6045-N	24		1.05	1194		-----		-----
317		-----		-----	1231		-----		-----
323		-----		-----	1264	D6045-N	23		-1.21
333	D6045-N	23		-1.21	1279		-----		-----
334		-----		-----	1284	D6045-N	23		-1.21
335		-----		-----	1297		-----		-----
340		-----		-----	1299	D6045-N	22		-3.47
353	D6045-N	24		1.05	1316		-----		-----
360		-----		-----	1318	D6045-N	24		1.05
369		-----		-----	1320		-----		-----
370		-----		-----	1372	D6045-N	24		1.05
371	D6045-N	23		-1.21	1376	D6045-N	23		-1.21
372	D6045-N	24		1.05	1399		-----		-----
391		-----		-----	1417	D6045-	<0.5		-----
399		-----		-----	1419		-----		-----
402	D6045-N	22.0		-3.47	1447		-----		-----
440		-----		-----	1448		-----		-----
445		-----		-----	1483		-----		-----
447	D6045-N	23		-1.21	1496	D6045-N	24		1.05
448		-----		-----	1520		-----		-----
463		-----		-----	1538		-----		-----
468		-----		-----	1610		-----		-----
473	D6045-N	24		1.05	1613		-----		-----
485		-----		-----	1631	D6045-N	24		1.05
495		-----		-----	1634		-----		-----
496		-----		-----	1635		-----		-----
604		-----		-----	1636		-----		-----
606		-----		-----	1710		-----		-----
608		-----		-----	1715	D6045-N	23.9		0.82
631		-----		-----	1720		-----		-----
657		-----		-----	1724		-----		-----
663		-----		-----	1811		-----		-----
671		-----		-----	1833	D6045-N	25		3.30
732		-----		-----	1842		-----		-----
823	D6045-N	22.7		-1.89	1913		-----		-----
851		-----		-----	1948	D6045-Y	25		3.30
862		-----		-----	1951	D6045-	24		1.05
869		-----		-----	1952		-----		-----
922		-----		-----	2129	D6045-N	24		1.05
962		-----		-----	2130		-----		-----
963		-----		-----	2133		-----		-----
974	D6045-N	27	G(0.05)	7.82	7001		-----		-----
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
998		-----		-----					

normality	not OK
n	33
outliers	2
mean (n)	23.54
st.dev. (n)	0.759
R(calc.)	2.12
R(D6045:09)	1.24
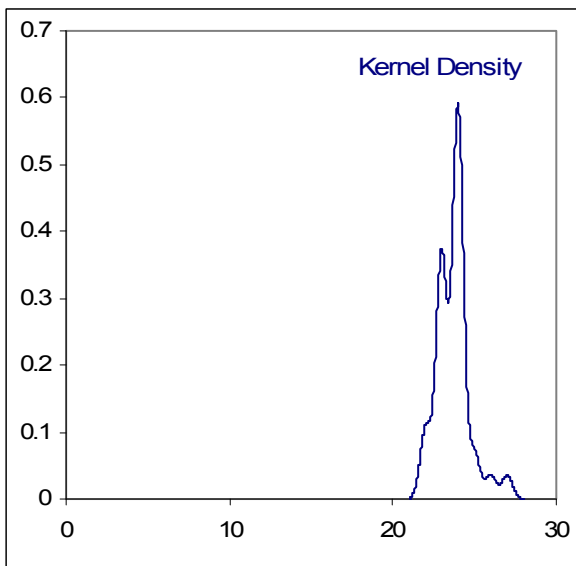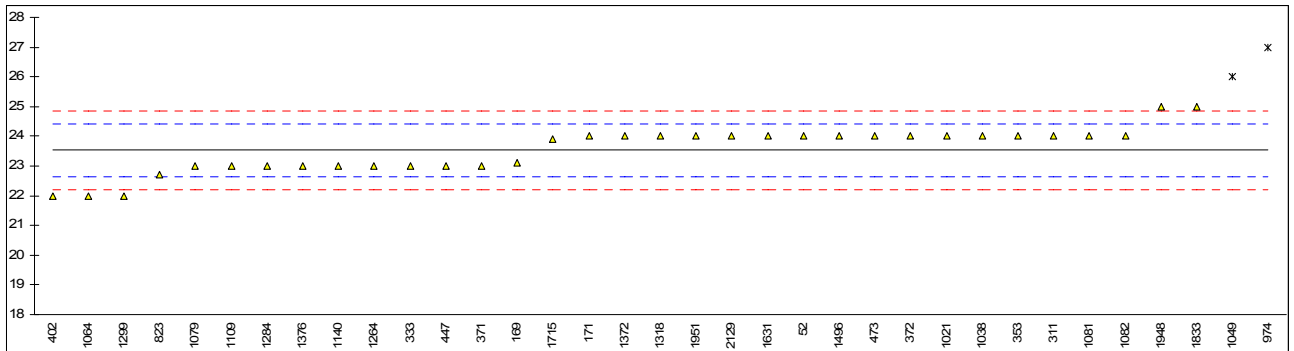
Determination of Density @ 15°C on sample #12094; results in kg/m^3

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4052	795.3		-0.15	1016		-----		-----
62	D4052	795.35		0.13	1017		-----		-----
132	D4052	795.33		0.02	1021	D4052	795.315		-0.06
140	D4052	795.4		0.41	1026	D4052	795.3		-0.15
150	D4052	795.3		-0.15	1032	D4052	795.31		-0.09
153		-----		-----	1038	D4052	795.1		-1.27
159	D4052	795.4	C	0.41	1039	D4052	795.2		-0.71
169	D4052	795.3		-0.15	1049	D4052	795.29		-0.20
171	D4052	795.375		0.27	1059	D4052	795.3		-0.15
175	D4052	795.3		-0.15	1062	D4052	795.4		0.41
177	D4052	795.1		-1.27	1064	D4052	795.2		-0.71
194	D4052	795.3		-0.15	1065	D4052	795.4		0.41
216	D1298	795.5		0.97	1079	D4052	795.3		-0.15
221	D4052	795.4		0.41	1080	D4052	795.3		-0.15
224	D1298	798.35	G(0.01)	16.93	1081	ISO12185	795.4		0.41
225	D4052	759.2	G(0.01)	-202.31	1082	D4052	795.3		-0.15
228		-----		-----	1097	ISO12185	795.3		-0.15
230	D1298	795.2		-0.71	1108	D4052	795.3		-0.15
237	D4052	795.2		-0.71	1109	D4052	795.37		0.25
254		-----		-----	1126	ISO12185	795.31		-0.09
256		-----		-----	1131	D4052	795.3		-0.15
258	D4052	795.0		-1.83	1140		-----		-----
273	D4052	795.3		-0.15	1150	ISO12185	795.10		-1.27
311	D4052	795.4		0.41	1194	INH-12185	790.4	G(0.01)	-27.59
317	D4052	795.3		-0.15	1231	D4052	795.3		-0.15
323	D4052	795.0		-1.83	1264	D4052	795.3		-0.15
333	D4052	795.4		0.41	1279	D4052	795.32		-0.03
334	D4052	795.4		0.41	1284	D4052	795.34		0.08
335	D4052	795.3		-0.15	1297	D4052	795.3		-0.15
340	D4052	795.22		-0.59	1299	D4052	795.3		-0.15
353	IP365	795.3		-0.15	1316	D4052	795.4		0.41
360	D4052	795.4		0.41	1318	D4052	795.29		-0.20
369	D4052	795.4		0.41	1320	ISO12185	795.4		0.41
370	D4052	795.2		-0.71	1372	D4052	795.30		-0.15
371	D4052	795.2		-0.71	1376	D4052	795.40	C	0.41
372	D4052	795.4		0.41	1399	D4052	795.4		0.41
391	D4052	795.3		-0.15	1417	IP365	795.3		-0.15
399	D4052	795.0		-1.83	1419	ISO12185	795.29		-0.20
402	D4052	795.4		0.41	1447	D4052	795.2		-0.71
440	D4052	795.3		-0.15	1448	D4052	795.35		0.13
445	D4052	795.4		0.41	1483		-----		-----
447	D4052	795.31		-0.09	1496	D1298	795.6		1.53
448	D4052	795.3		-0.15	1520	D4052	795.27		-0.31
463	D4052	795.34		0.08	1538	D4052	795.38		0.30
468	D4052	795.4		0.41	1610	IP365	795.3		-0.15
473	D4052	795.2		-0.71	1613	D4052	795.4		0.41
485	D4052	795.3		-0.15	1631	D1298	795.3		-0.15
495	D4052	795.32		-0.03	1634	D4052	795.325		-0.01
496	D4052	795.32		-0.03	1635	D4052	795.2		-0.71
604	D4052	795.33		0.02	1636	D4052	795.3		-0.15
606	D4052	795.4		0.41	1710	D4052	795.3		-0.15
608	D4052	795.1		-1.27	1715	ISO12185	795.3	C	-0.15
631	D4052	795.4		0.41	1720	D4052	795.6		1.53
657	D4052	795.4		0.41	1724	D4052	795.35		0.13
663	D4052	795.30		-0.15	1811	D4052	795.3		-0.15
671	D4052	795.4		0.41	1833	D4052	795.4		0.41
732	D4052	795.5		0.97	1842	D4052	795.2		-0.71
823	D4052	795.32		-0.03	1913	D4052	795.3		-0.15
851	D4052	795.4		0.41	1948	D4052	795.4		0.41
862	D4052	795.30		-0.15	1951	D4052	795.3	C	-0.15
869	D4052	795.54		1.20	1952	D4052	795.4		0.41
922	D4052	795.4		0.41	2129	D4052	795.3		-0.15
962	D4052	795.5		0.97	2130		-----		-----
963	D4052	795.5		0.97	2133	D4052	795.29		-0.20
974	D4052	795.5		0.97	7001		-----		-----
994	D4052	795.4		0.41					
995	D4052	795.32		-0.03					
996	D1298	795.3		-0.15					
997	D4052	795.5		0.97					
998	D1298	795.6	C	1.53					

normality	not OK
n	122
outliers	3
mean (n)	795.33
st.dev. (n)	0.106
R(calc.)	0.30
R(D4052:11)	0.50

Lab 159: reported 0.7954 (unit error?)
Lab 998: reported 0.7956 (unit error?)
Lab 1376: reported 0.79540 (unit error?)
Lab 1715: first reported 795.7
Lab 1915; first reported 0.7953
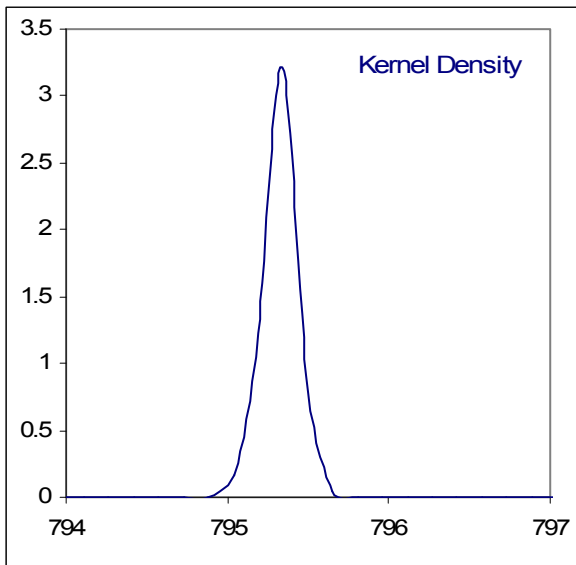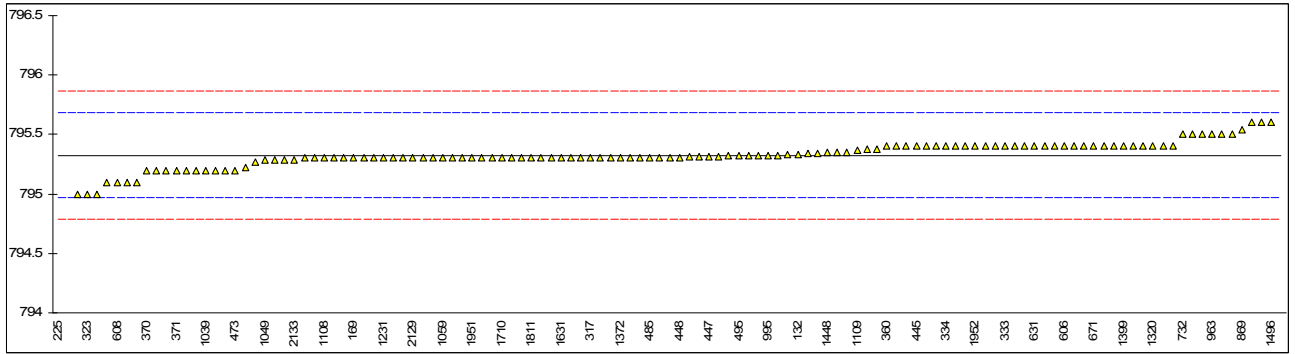
Determination of Distillation ASTM D86 (automated) on sample #12094; results in °C and %

lab	method	IBP	mark	10%	mark	50%	mark	90%	mark	FBP	mark	Residue
52	D86-A	152.7		167.2		195.4		241.5		266.3		1.2
62	D86-A	151.8		167.5		195.3		240.5		268.3		1.1
132	D86-A	149.4		166.9		195.2		240.4		266.6		1.4
140	D86-A	150.7		168.2		195.2		240.7		264.8		1.5
150	D86-A	150.8		167.8		195.2		240.4		265.2		1.3
153	D86-A	152.1		167.7		196.0		240.5		267.5		1.4
159	D86-A	151.1		168.2		196.2		241.3		267.6		1.4
169	D86-A	148.0		167.3		195.2		237.8		264.7		0.8
171	D86-A	148.6		167.3		195.3		240.7		265.0		1.3
175	D86-A	153.6		168.2		196.6		243.2		269.4		1.0
177	D86-A	150.4		166.9		194.0		237.1		265.4		0.8
194	D86-A	152.3		168.3		195.7		239.7		267.0		1.4
216		-----		-----		-----		-----		-----		-----
221		-----		-----		-----		-----		-----		-----
224		-----		-----		-----		-----		-----		-----
225		-----		-----		-----		-----		-----		-----
228		-----		-----		-----		-----		-----		-----
230	D86-A	151.6		167.1		194.8		240.6		265.0		1.0
237		-----		-----		-----		-----		-----		-----
254		-----		-----		-----		-----		-----		-----
256		-----		-----		-----		-----		-----		-----
258	D86-A	150.7		167.9		195.7		240		266.1		1.2
273	D86-A	151.2		167.6		194.9		239.3		266.5		1.1
311	D86-A	146.3		166.8		194.6		237.8		268.7		0.6
317	D86-A	148.4		167.8		195.0		239.0		265.8		1.4
323	D86-A	151.5		168.4		195.8		239.5		267.2		1.4
333	D86-A	150.5		167.2		194.5		238.5		266.3		0.5
334	D86-A	150.2		166.6		195.7		241.7		267.6		0.9
335	D86-A	151.3		166.0		195.2		240.9		264.7		1.2
340	D86-A	151.6		166.5		195.9		241.3		266.6		1.2
353	IP123-A	149.4		167.6		196.2		241.4		268.4		0.8
360	D86-A	146.3		168.1	C	195.6	C	237.1		261.7		1.0
369	D86-A	150.5		167.6		195.0		238.9		265.9		1.1
370	D86-A	151.3		166.3		195.3		239.0		267.4		0.5
371	D86-A	149.6		167.2		195.0		240.6		265.8		1.5
372	D86-A	149.3		167.1		195.4		240.0		266.7		1.4
391		-----		-----		-----		-----		-----		-----
399	D86-A	152.3		166.0		195.0		239.0		266.0		0.7
402	D86-A	152.5		168.1		196.0		243.6		269.6		1.3
440	IP123-A	150.2		167.6		195.6		241.1		268.4		1.1
445	D86-A	150.1		166.6		193.6		237.8		263.5		1.2
447	D86-	152.0		168.3		195.6		241.6		267.2		1.2
448	D86-	148.8		166.0		195.2		241.6		264.5		1.0
463	D86-A	149.1		167.3		195.2		239.4		267.2		1.3
468	D86-A	152.5		167.9		194.6		238.7		268.6		1.2
473	D86-A	149.5		167.5		195.3		240.3		266.5		1.2
485	D86-A	148.35		166.65		194.20		237.70		264.90		1.2
495	D86-A	152.9		167.2		194.3		239.2		265.5		1.2
496	D86-A	153.0		168.3		195.5		240.2		268.3		1.1
604	D86-A	146.2		167.1		194.3		238.7		265.2		1.2
606	D86-A	152.4		168.4		197.0		240.2		267.7		1.2
608		-----		-----		-----		-----		-----		-----
631		-----		-----		-----		-----		-----		-----
657	D86-A	150.3		168.0		195.5		239.1		265.9		0.8
663	D86-A	151.3		168.8		195.6		240.6		267.4		1.3
671	D86-A	148.7		168.3		195.2		237.2		262.8		1.2
732		-----		-----		-----		-----		-----		-----
823	D86-A	147.8		166.8		194.8		238.5		265.9		1.1
851	D86-A	153.5		167.6		194.3		239.3		268.6		1.0
862	D86-A	150.0		168.1		195.8		240.1		269.3		1.3
869		-----		-----		-----		-----		-----		-----
922		-----		-----		-----		-----		-----		-----
962		-----		-----		-----		-----		-----		-----
963	D86-A	151.3		167.9		196.8		241.1		267.3		1.0
974	D86-A	147.0		165.4		193.9		240.1		255.4	G(0.01)	1.0
994		-----		-----		-----		-----		-----		-----
995		-----		-----		-----		-----		-----		-----
996		-----		-----		-----		-----		-----		-----
997		-----		-----		-----		-----		-----		-----
998	D86-	150.0		168.0		195.0		240.0		267.5		1.0
1016		-----		-----		-----		-----		-----		-----
1017		-----		-----		-----		-----		-----		-----
1021	D86-A	149.3		166.7		195.4		241.7		265.7		1.3
1026	ISO3405-A	146.9		169.5		195.8		239.4		267.6		1.3
1032	D86-A	151.1		168.4		195.2		239.2		266.1		1.2
1038	D86-A	150.5		167.1		194.6		239.9		266.3		1.2

1039	D86-A	149.0		166.1		196.5		239.0		267.1	-----
1049	D86-A	150.4		168.4		195.5		240.5		267.2	1.1
1059	D86-A	147.9		166.7		194.7		238.3		264.8	1.4
1062	D86-A	157.5	G(0.05)	171.8	G(0.01)	193.6		234.4	G(0.05)	269.6	1.4
1064	D86-A	152.2		168.4		196.4		242.0		268.2	1.2
1065	D86-A	149.0		165.4		194.1		238.6		265.3	1.4
1079	D86-A	150.4		168.1		195.4		239.4		266.5	1.2
1080	D86-A	150.3		165.6		193.4		238.4		264.1	1.4
1081	D86-A	150.9		166.8		195.4		240.5		267.3	1.0
1082	D86-A	150.1		168.2		196.0		239.8		267.0	1.3
1097	ISO3405-A	151.8		168.2		195.4		239.9		266.9	0.8
1108	D86-A	149.5		168.9		194.0		236.9		265.2	1.1
1109	D86-A	150.6		167.0		195.8		242.2		266.7	1.2
1126	in house-A	148.3		165.5		196.3		238.6		267.1	-----
1131		-----		-----		-----		-----		-----	-----
1140	D86-A	143.5	DG(0.05)	166.8		194.7		239.5		266.2	1.2
1150	ISO3405-A	153.16		167.16		193.93		237.35		267.98	1.0
1194	D86-A	151.7		166.5		195.3		237.9		261.8	1.4
1231	D86-A	149.7		168.1		195.3		239.5		266.4	1.3
1264	D86-A	146.3		165.7		195.3		240.5		267.0	1.0
1279	D86-A	152.65		168.45		195.3		238.9		267.7	1.2
1284		149.4		166.6		193.5		238.3		261.8	1.2
1297	D86-A	152.0		167.9		194.7		239.2		265.7	1.2
1299	D86-A	148.4		167.3		194.7		240.9		266.7	1.2
1316	D86-A	147.9		166.9		195.4	C	241.9		266.4	1.4
1318	D86-A	150.0		167.7		195.5		240.5		265.9	1.2
1320	ISO3405-A	150.1		168.2		194.8		238.5		262.4	1.5
1372	D86-A	145.6		167.8		194.6		239.2		263.4	1.5
1376	D86-A	147.8		164.3	G(0.01)	193.3		236.5		266.2	1.0
1399	D86-A	143.1	DG(0.05)	168.2		196.1		239.4		267.3	1.0
1417	IP123-	150		167.5		197.0		243.0		268.0	1.3
1419	D86-A	150.7		167.2		195.3		239.4		265.2	-----
1447		-----		-----		-----		-----		-----	-----
1448	D86-A	149.5		169.3		196.8		241.2		267.9	1.3
1483		-----		-----		-----		-----		-----	-----
1496	D86-A	152.0		169.3		196.3		242.1		269.3	1.2
1520		-----		-----		-----		-----		-----	-----
1538	D86-A	153.3		168.8		195.7		238.7		265.0	1.2
1610	D86-A	153.1		168.2		196.0		241.3		266.7	1.5
1613	D86-A	149.7		167.9		195.3		239.6		267.5	1.2
1631		-----		-----		-----		-----		-----	-----
1634	D86-A	148.6		167.3		194.9		239.8		266.6	1.2
1635	D86-A	149.1		166.6		194.5		239.0		262.0	1.2
1636	D86-A	151.2		167.9		195.6		239.7		266.9	1.2
1710	D86-A	151.3		167.7		195.5		240.6		268.5	1.3
1715	D86-A	151.1		167.8		195.1		240.0		265.8	1.4
1720	D86-A	149.2		166.0		193.4		238.2		266.1	1.2
1724	D86-A	149.1		166.3		195.7		239.5		267.4	1.2
1811	D86-A	148.8		166.1		194.4		239.4		266.9	1.2
1833	D86-A	152.0		167.6		194.4		238.3		266.5	1.3
1842		-----		-----		-----		-----		-----	-----
1913		-----		-----		-----		-----		-----	-----
1948	D86-A	153.3		168.0		194.8		238.0		266.9	1.3
1951	D86-A	152.9		167.4		195.2		241.0		269.0	1.0
1952	D86-A	148.3		165.8		196.2		237.9		264.8	1.4
2129	D86-A	144.9		164.7	G(0.01)	192.1	G(0.05)	236.5		262.4	1.4
2130		-----		-----		-----		-----		-----	-----
2133	D86-A	148.5		168.2		195.8		239.7		266.6	1.2
7001		-----		-----		-----		-----		-----	-----
	normality	OK		OK		not OK		OK		not OK	
	n	102		102		104		104		104	
	outliers	3		3		1		1		1	
	mean (n)	150.20		167.43		195.21		239.71		266.38	
	st.dev. (n)	1.908		0.899		0.796		1.446		1.735	
	R(calc.)	5.34		2.52		2.23		4.05		4.86	
	R(D86:11b-A)	8.26		3.68		2.97		3.60		7.10	

Lab 360: first reported 164.6, 192.9
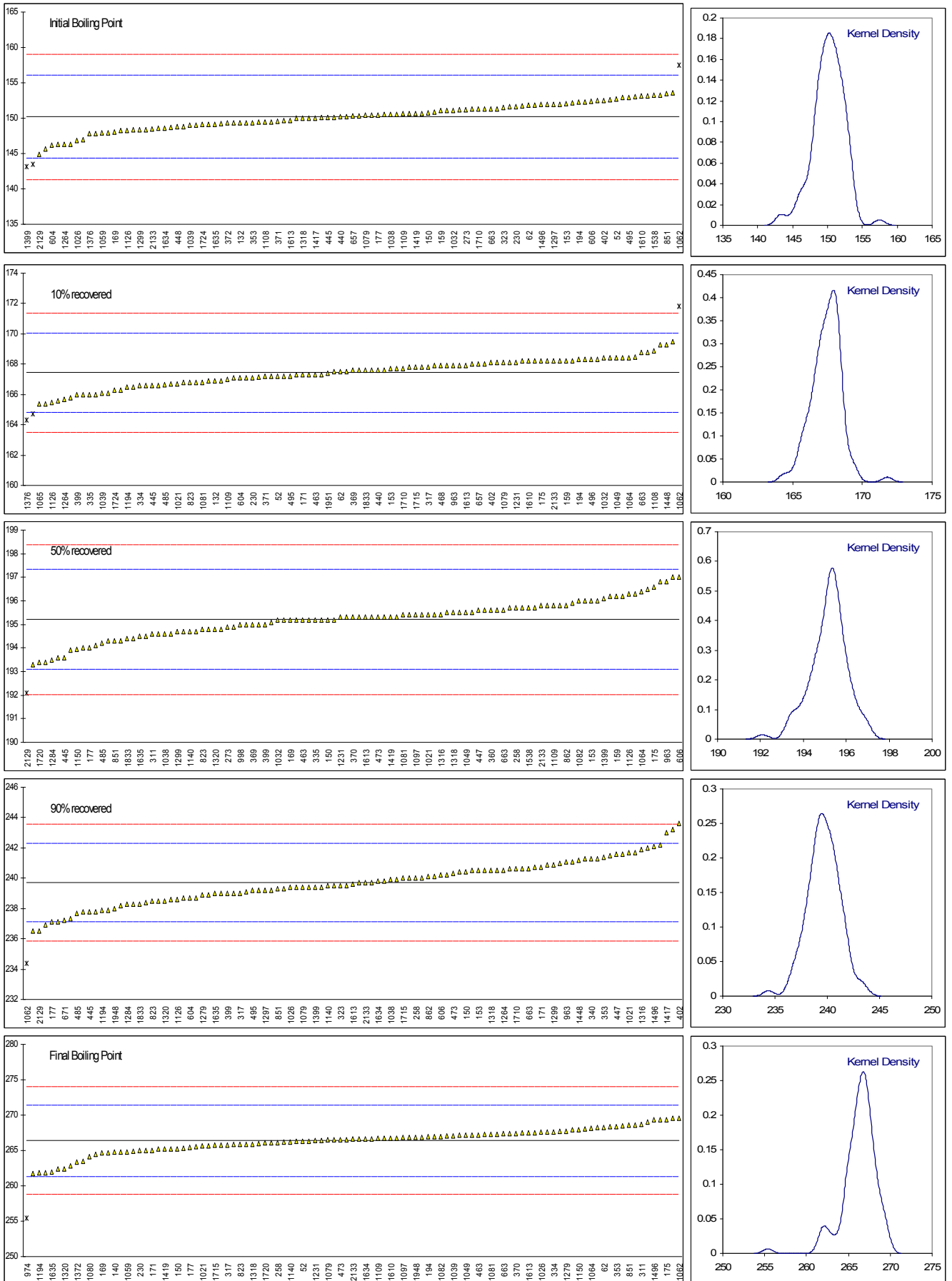Lab 1316: first reported 174.2

Determination of Distillation ASTM D86 (manual) on sample #12094; results in °C and %

lab	method	IBP	mark	10%	mark	50%	mark	90%	mark	FBP	mark	Residue
52		-----		-----		-----		-----		-----		-----
62		-----		-----		-----		-----		-----		-----
132		-----		-----		-----		-----		-----		-----
140		-----		-----		-----		-----		-----		-----
150		-----		-----		-----		-----		-----		-----
153		-----		-----		-----		-----		-----		-----
159		-----		-----		-----		-----		-----		-----
169		-----		-----		-----		-----		-----		-----
171		-----		-----		-----		-----		-----		-----
175		-----		-----		-----		-----		-----		-----
177		-----		-----		-----		-----		-----		-----
194		-----		-----		-----		-----		-----		-----
216	D86-M	147.0		165.0		191.5	DG(0.05)	235.0		263.5		1.2
221	D86-M	144.0	G(0.05)	168.0		194.0		238.0		267.0		1.4
224	D86-M	152.04		167.30		195.55		239.81		266.54		1.4
225	D86-M	151.0		165.0		195.5		240.0		267.0		1.4
228		-----		-----		-----		-----		-----		-----
230		-----		-----		-----		-----		-----		-----
237	D86-M	150.0		167.0		195.0		239.0		264.0		1.7
254		-----		-----		-----		-----		-----		-----
256		-----		-----		-----		-----		-----		-----
258		-----		-----		-----		-----		-----		-----
273		-----		-----		-----		-----		-----		-----
311		-----		-----		-----		-----		-----		-----
317		-----		-----		-----		-----		-----		-----
323		-----		-----		-----		-----		-----		-----
333		-----		-----		-----		-----		-----		-----
334		-----		-----		-----		-----		-----		-----
335		-----		-----		-----		-----		-----		-----
340		-----		-----		-----		-----		-----		-----
353		-----		-----		-----		-----		-----		-----
360		-----		-----		-----		-----		-----		-----
369		-----		-----		-----		-----		-----		-----
370		-----		-----		-----		-----		-----		-----
371		-----		-----		-----		-----		-----		-----
372		-----		-----		-----		-----		-----		-----
391	D86-M	150		167		195		240		267		1.0
399		-----		-----		-----		-----		-----		-----
402		-----		-----		-----		-----		-----		-----
440		-----		-----		-----		-----		-----		-----
445		-----		-----		-----		-----		-----		-----
447		-----		-----		-----		-----		-----		-----
448		-----		-----		-----		-----		-----		-----
463		-----		-----		-----		-----		-----		-----
468		-----		-----		-----		-----		-----		-----
473		-----		-----		-----		-----		-----		-----
485		-----		-----		-----		-----		-----		-----
495		-----		-----		-----		-----		-----		-----
496		-----		-----		-----		-----		-----		-----
604		-----		-----		-----		-----		-----		-----
606		-----		-----		-----		-----		-----		-----
608	D86-M	150.5		168.5		196.0		240.5		270.5	G(0.01)	1.1
631	D86-M	151.0		165.0		195.0		239.0		260.0	G(0.01)	0.8
657		-----		-----		-----		-----		-----		-----
663		-----		-----		-----		-----		-----		-----
671		-----		-----		-----		-----		-----		-----
732	INH-2177-M	151.5		169.0		195.0		234.0	G(0.05)	261.5		0.5
823		-----		-----		-----		-----		-----		-----
851		-----		-----		-----		-----		-----		-----
862		-----		-----		-----		-----		-----		-----
869	D86-M	153.5		168.5		194.0		238.5		266.0		1.0
922	D86-M	149.12		165.12		191.63	DG(0.05)	235.14		263.12		0.9
962	D86-M	151.5		167.5		196.5		240.5		267.0		1.0
963		-----		-----		-----		-----		-----		-----
974		-----		-----		-----		-----		-----		-----
994	D86-M	150.5		165.0		193.0		238.0		263.0		-----
995	D86-M	150.2		167.0		194.0		238.0		264.0		1.2
996	D86-M	149.5		165.5		194.5		239.5		266.5		1.0
997	D86-M	151.5		167.0		195.0		238.0		263.5		1.2
998		-----		-----		-----		-----		-----		-----
1016		-----		-----		-----		-----		-----		-----
1017		-----		-----		-----		-----		-----		-----
1021		-----		-----		-----		-----		-----		-----
1026		-----		-----		-----		-----		-----		-----
1032		-----		-----		-----		-----		-----		-----
1038		-----		-----		-----		-----		-----		-----

1039		-----	-----	-----	-----	-----	-----
1049		-----	-----	-----	-----	-----	-----
1059		-----	-----	-----	-----	-----	-----
1062		-----	-----	-----	-----	-----	-----
1064		-----	-----	-----	-----	-----	-----
1065		-----	-----	-----	-----	-----	-----
1079		-----	-----	-----	-----	-----	-----
1080		-----	-----	-----	-----	-----	-----
1081		-----	-----	-----	-----	-----	-----
1082		-----	-----	-----	-----	-----	-----
1097		-----	-----	-----	-----	-----	-----
1108		-----	-----	-----	-----	-----	-----
1109		-----	-----	-----	-----	-----	-----
1126		-----	-----	-----	-----	-----	-----
1131		-----	-----	-----	-----	-----	-----
1140		-----	-----	-----	-----	-----	-----
1150		-----	-----	-----	-----	-----	-----
1194		-----	-----	-----	-----	-----	-----
1231		-----	-----	-----	-----	-----	-----
1264		-----	-----	-----	-----	-----	-----
1279		-----	-----	-----	-----	-----	-----
1284		-----	-----	-----	-----	-----	-----
1297		-----	-----	-----	-----	-----	-----
1299		-----	-----	-----	-----	-----	-----
1316		-----	-----	-----	-----	-----	-----
1318		-----	-----	-----	-----	-----	-----
1320		-----	-----	-----	-----	-----	-----
1372		-----	-----	-----	-----	-----	-----
1376		-----	-----	-----	-----	-----	-----
1399		-----	-----	-----	-----	-----	-----
1417		-----	-----	-----	-----	-----	-----
1419		-----	-----	-----	-----	-----	-----
1447	D86-M	152.0	167.0	194.0	239.0	265.0	1.0
1448		-----	-----	-----	-----	-----	-----
1483		-----	-----	-----	-----	-----	-----
1496		-----	-----	-----	-----	-----	-----
1520	D86-M	148.3	166.8	192.4	235.9	262.9	1.3
1538		-----	-----	-----	-----	-----	-----
1610		-----	-----	-----	-----	-----	-----
1613		-----	-----	-----	-----	-----	-----
1631		-----	-----	-----	-----	-----	-----
1634		-----	-----	-----	-----	-----	-----
1635		-----	-----	-----	-----	-----	-----
1636		-----	-----	-----	-----	-----	-----
1710		-----	-----	-----	-----	-----	-----
1715		-----	-----	-----	-----	-----	-----
1720		-----	-----	-----	-----	-----	-----
1724		-----	-----	-----	-----	-----	-----
1811		-----	-----	-----	-----	-----	-----
1833		-----	-----	-----	-----	-----	-----
1842		-----	-----	-----	-----	-----	-----
1913	D86-M	152.0	168.75	195.25	240.0	267.5	1.1
1948		-----	-----	-----	-----	-----	-----
1951		-----	-----	-----	-----	-----	-----
1952		-----	-----	-----	-----	-----	-----
2129		-----	-----	-----	-----	-----	-----
2130		-----	-----	-----	-----	-----	-----
2133		-----	-----	-----	-----	-----	-----
7001		-----	-----	-----	-----	-----	-----
	normality	OK	OK	not OK	not OK	OK	
	n	18	19	17	18	17	
	outliers	1	0	2	1	2	
	mean (n)	150.62	166.84	194.69	238.55	265.00	
	st.dev. (n)	1.528	1.379	1.038	1.706	1.913	
	R(calc.)	4.28	3.86	2.91	4.78	5.36	
	R(D86:11b-M)	4.31	2.97	2.99	3.67	4.21	
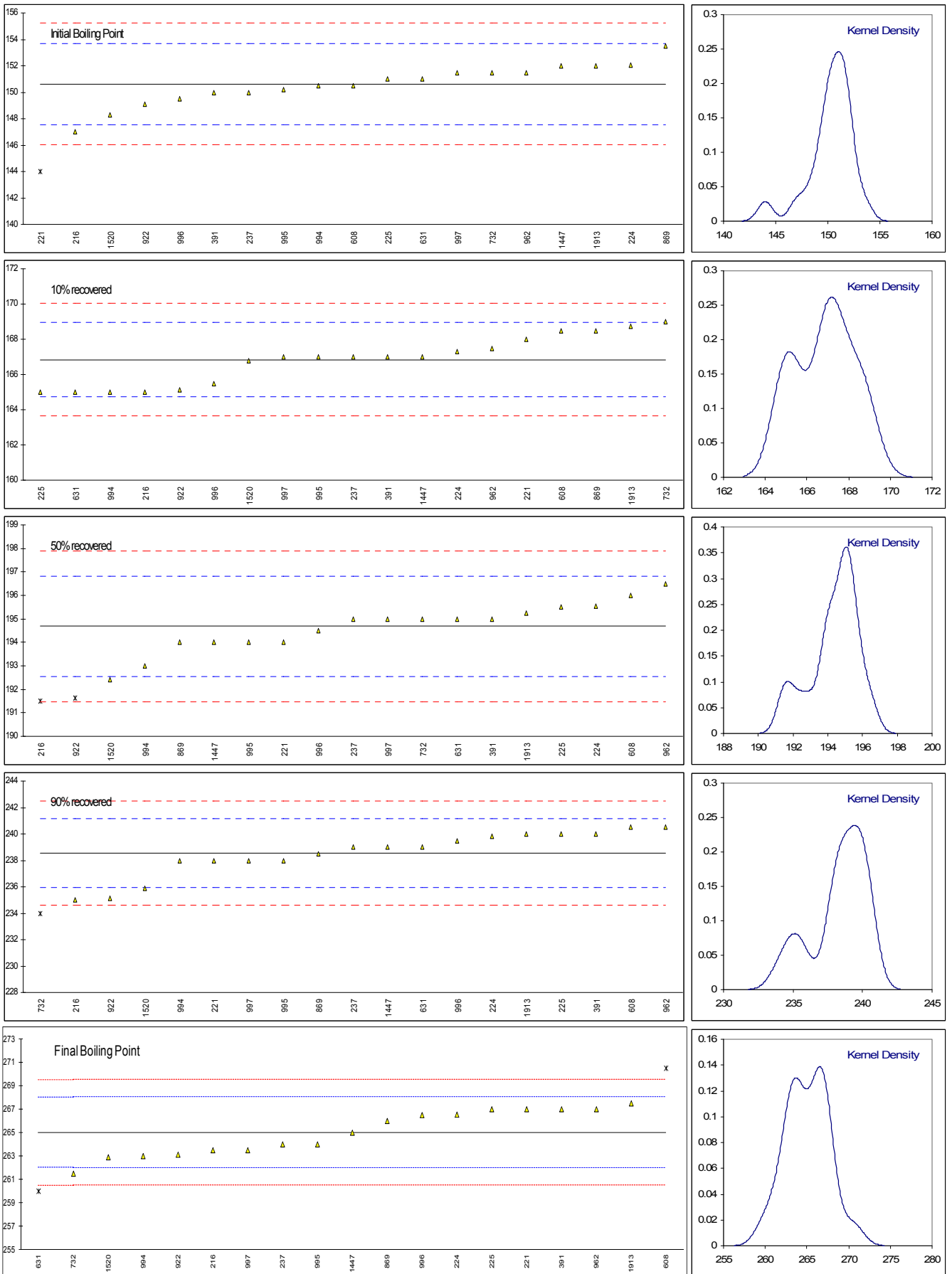
Determination of Existent Gum on sample #12094; results in mg/100 mL

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D381	<1		-----	1016		-----		-----
62		-----		-----	1017		-----		-----
132	D381	1		-0.50	1021		-----		-----
140	D381	0.2		-1.16	1026		-----		-----
150	D381	0.8		-0.67	1032	D381	1.4		-0.17
153		-----		-----	1038	IP540	1		-0.50
159	D381	0.2		-1.16	1039	D381	2		0.32
169	D381	0.5		-0.92	1049	D381	2.6		0.82
171	D381	0.2		-1.16	1059	D381	3		1.15
175		-----		-----	1062	D381	2.0		0.32
177	D381	1.0		-0.50	1064	D381	1.2		-0.34
194	D381	0.2		-1.16	1065		-----		-----
216	D381	0.8		-0.67	1079	D381	2		0.32
221		-----		-----	1080		-----	W	-----
224		-----		-----	1081	D381	2.0		0.32
225		-----		-----	1082	IP540	2.2		0.49
228		-----		-----	1097	IP540	1.4		-0.17
230	IP540	1.7		0.08	1108		-----		-----
237	D381	2.2		0.49	1109	IP540	1.8		0.16
254		-----		-----	1126		-----		-----
256		-----		-----	1131		-----		-----
258	D381	1.0		-0.50	1140	D381	3.2		1.31
273		-----		-----	1150		-----		-----
311	D381	3		1.15	1194		-----		-----
317	D381	1		-0.50	1231	IP540	2	C	0.32
323	D381	<1		-----	1264		-----		-----
333		-----		-----	1279		-----		-----
334		-----		-----	1284	D381	1.4		-0.17
335	D381	3		1.15	1297		-----		-----
340	D381	2.2		0.49	1299	D381	2.0		0.32
353	IP540	1.6		-0.01	1316	D381	2.1		0.41
360	D381	1.8		0.16	1318	D381	1.8		0.16
369	D381	1.4		-0.17	1320	ISO6246	1.7		0.08
370	IP540	0.6		-0.83	1372	D381	2.3		0.57
371		-----		-----	1376	D381	1.60		-0.01
372	IP540	1.4		-0.17	1399	D381	1		-0.50
391	D381	2		0.32	1417	IP540	1		-0.50
399		-----		-----	1419	D381	2.7		0.90
402		-----		-----	1447	D381	3.6		1.64
440	IP540	3.2		1.31	1448		-----		-----
445	IP540	2		0.32	1483		-----		-----
447	IP540	1.9		0.24	1496	D381	1.4		-0.17
448	D381	2.0		0.32	1520	D381	1	C	-0.50
463		-----		-----	1538		-----		-----
468	D381	0.5	C	-0.92	1610	IP540	2.9		1.07
473	IP540	<1		-----	1613	D381	0.7		-0.75
485		-----		-----	1631		-----		-----
495	D381	<1		-----	1634	D381	1.7		0.08
496	D381	2.0		0.32	1635	D381	0.8		-0.67
604		-----		-----	1636	IP540	2.2		0.49
606		-----		-----	1710	D381	1.1		-0.42
608	D381	2		0.32	1715		-----		-----
631	IP540	1.3		-0.25	1720	D381	1.6	C	-0.01
657	D381	1.4		-0.17	1724	D381	2.0		0.32
663	D381	2.1		0.41	1811	D381	0.4		-1.00
671	D381	2.0		0.32	1833	D381	1.8		0.16
732		-----		-----	1842	D381	2.2		0.49
823	D381	0.67		-0.77	1913	D381	2.00		0.32
851	IP540	1.0		-0.50	1948	D381	2		0.32
862	D381	2.0		0.32	1951		-----		-----
869	D381	1.2		-0.34	1952		-----		-----
922		-----		-----	2129	D381	1.0	C	-0.50
962		-----		-----	2130		-----		-----
963	D381	0.8		-0.67	2133	D381	1.00		-0.50
974	D381	6.5	G(0.01)	4.04	7001		-----		-----
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
998		-----		-----					

normality	not OK
n	80
outliers	1
mean (n)	1.608
st.dev. (n)	0.7660
R(calc.)	2.145
R(D381:12)	3.390

Lab 468: first reported 5
Lab 1231: first reported 6.6
Lab 1520: first reported 4
Lab 1720: first reported 5.2
Lab 2129: first reported 4.0

Kernel Density
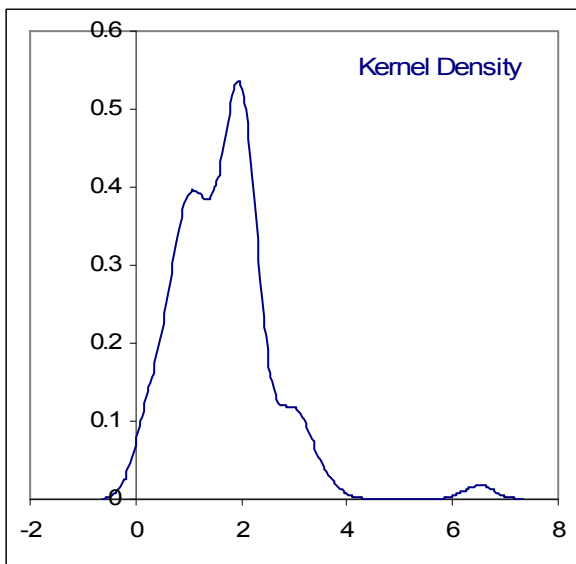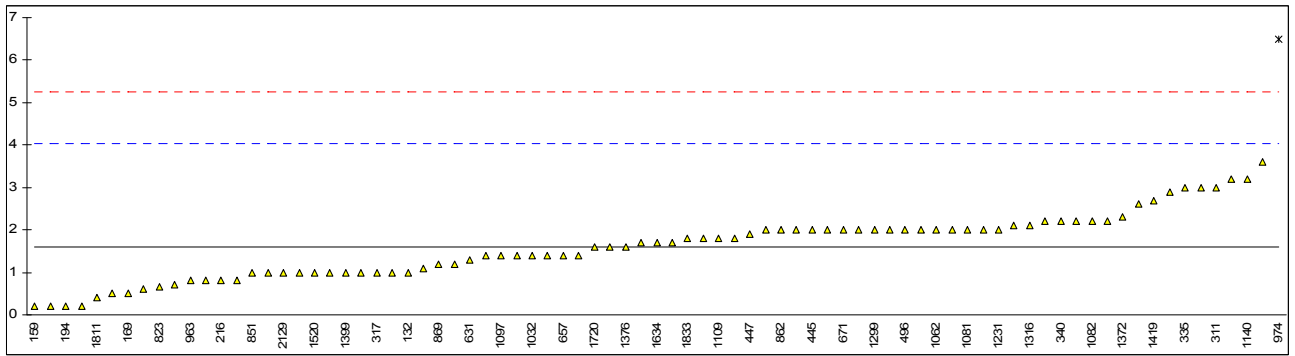
Determination of Flash Point on sample #12094; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D56	44.5		2.14	1016	IP170-AE	43.0		0.83
62	D56-F	40.5		-1.36	1017		-----		-----
132	D56-AE	41.5		-0.49	1021	D56-AE	42.5		0.39
140	D56-AE	43	C	0.83	1026		-----		-----
150	D56-AE	44.0		1.70	1032	IP170-AE	41.5		-0.49
153	D56-F	41.5		-0.49	1038	IP170-AE	42.5		0.39
159	D56-AE	42.2		0.13	1039	IP170-AE	42.5		0.39
169	D56-MF	44.4		2.05	1049	IP170-AE	42.0		-0.05
171	D56-AF	41.0		-0.92	1059	IP170-AE	41.5		-0.49
175	D56-MF	41		-0.92	1062	IP170-E	43.0		0.83
177	IP170-MF	42.5		0.39	1064	IP170-E	41.5		-0.49
194	D56-AF	41.5		-0.49	1065		-----		-----
216	IP170-	41.0		-0.92	1079	IP170-E	43.5	C	1.26
221	D3828-MF	42.0		-0.05	1080	IP170-AE	42.5		0.39
224	IP170-MF	41.80		-0.22	1081	IP170-	41.5		-0.49
225	IP170-MF	44.0		1.70	1082	IP170-E	42.0		-0.05
228		-----		-----	1097	ISO13736AF	41.3		-0.66
230	IP170-MF	41.9		-0.14	1108	D56-E	41.0		-0.92
237	IP170-MF	42.0		-0.05	1109	IP170-AF	40.5		-1.36
254		-----		-----	1126	D93E	42.5		0.39
256		-----		-----	1131		-----		-----
258	IP170-MF	41.1		-0.84	1140	IP170-F	41.0		-0.92
273	IP170-E	42.0		-0.05	1150	D56-AF	44.75		2.36
311	IP170-AE	43.0		0.83	1194		-----		-----
317	IP170-AE	41.5		-0.49	1231	IP170-F	42.0		-0.05
323		-----		-----	1264	IP170-F	40.5		-1.36
333	IP170-AF	43.0		0.83	1279	D56-AE	43.5		1.26
334	IP170-F	41.0		-0.92	1284	IP170-	41.5		-0.49
335	IP170-AF	40.5		-1.36	1297	D56-AE	43.0		0.83
340	IP170-F	42.5		0.39	1299	IP170-AF	43.0		0.83
353	IP170-MF	41.625		-0.38	1316	IP170-AE	42		-0.05
360	D56	43.0		0.83	1318	IP170-E	42.5		0.39
369	IP170-AE	41.5		-0.49	1320	ISO2719-E	45		2.58
370	IP170-MF	42.7		0.56	1372	IP170-F	42.0		-0.05
371	IP170-AF	41.0		-0.92	1376	D56-F	42.0		-0.05
372	IP170-E	42.0		-0.05	1399	IP170-E	43.0		0.83
391	IP170-MF	40.5		-1.36	1417	IP170-	41.5		-0.49
399	IP170-MF	42.0		-0.05	1419	D56-F	43.0		0.83
402		-----		-----	1447	IP170-AE	42		-0.05
440	IP170-MF	42.0		-0.05	1448	IP170-AE	41.5		-0.49
445	IP170-F	42.58		0.46	1483		-----		-----
447	IP170-E	41.5		-0.49	1496	IP170-MF	40.9		-1.01
448	IP170-	40.6		-1.27	1520	D56-AE	42.3		0.21
463	IP170-E	43.0		0.83	1538	IP170-A	43.15		0.96
468	IP170-E	41.5		-0.49	1610	IP170-E	42.0		-0.05
473	IP170-AE	44.0		1.70	1613	D56-AE	42.0		-0.05
485	D56-F	40.8		-1.10	1631		-----		-----
495	IP170-AE	43.0		0.83	1634	IP170-E	41.1		-0.84
496	D3828-MF	40.9		-1.01	1635	D56-AE	44.0		1.70
604	IP170-AF	42.5		0.39	1636	IP170-AE	42.9		0.74
606	IP170-AE	43.0		0.83	1710	D56-F	42.5		0.39
608	IP170-MF	41.0		-0.92	1715	D56-AE	42.5		0.39
631	IP170-MF	41.0		-0.92	1720	D3828-AF	41.5		-0.49
657	IP170-AF	42.0		-0.05	1724	IP170-F	41.5		-0.49
663	D56-F	42.5		0.39	1811	IP170-F	40.0		-1.80
671	IP170-MF	41.033		-0.90	1833	IP170-E	42		-0.05
732	D93-F	41.0		-0.92	1842	IP170-E	41.0		-0.92
823	IP170-AF	41.0		-0.92	1913	IP170-AF	43.8		1.53
851	IP170-MF	41.1		-0.84	1948	EN2719-AE	48.0	G(0.01)	5.20
862	IP170-AE	41.5		-0.49	1951	IP170-	41.8		-0.22
869	IP170-F	41.2		-0.75	1952		-----		-----
922	IP170-E	42.0		-0.05	2129	IP170-MF	42.0		-0.05
962	IP170-	41.5		-0.49	2130		-----		-----
963	IP170-MF	41.3		-0.66	2133	D93-E	45.0		2.58
974	IP170-MF	41.5		-0.49	7001		-----		-----
994	D56-MF	42.0		-0.05					
995	IP170-MF	41.5		-0.49					
996		-----		-----					
997	IP170-MF	41.5		-0.49					
998	D93	43.0		0.83					

ASTM D93 excluded   Only IP170/ISO13736   Only D56

normality	not OK	not OK	not OK	OK
n	118	113	83	27
outliers	1	0	0	0
mean (n)	42.057	42.002	41.872	42.461
st.dev. (n)	1.0318	0.9668	0.8517	1.1873
R(calc.)	2.889	2.707	2.385	3.324
R(IP170:09)	3.200	3.200	3.200	4.300

M= Manual; A = Automated; F = Flame; E = Electric

Lab 140: first reported 47
Lab 1079: first reported 33.5
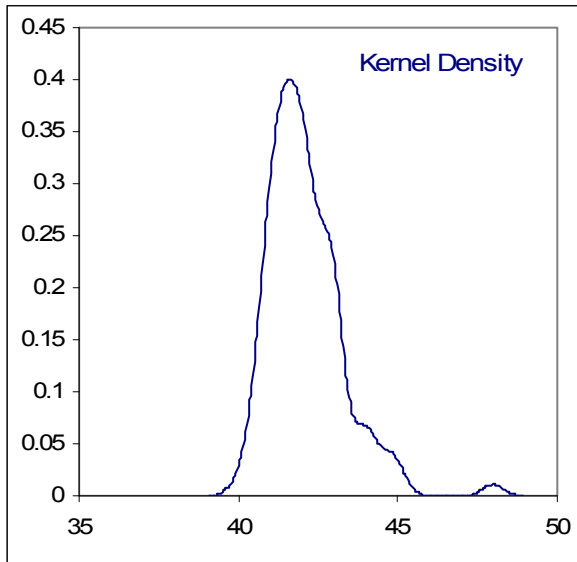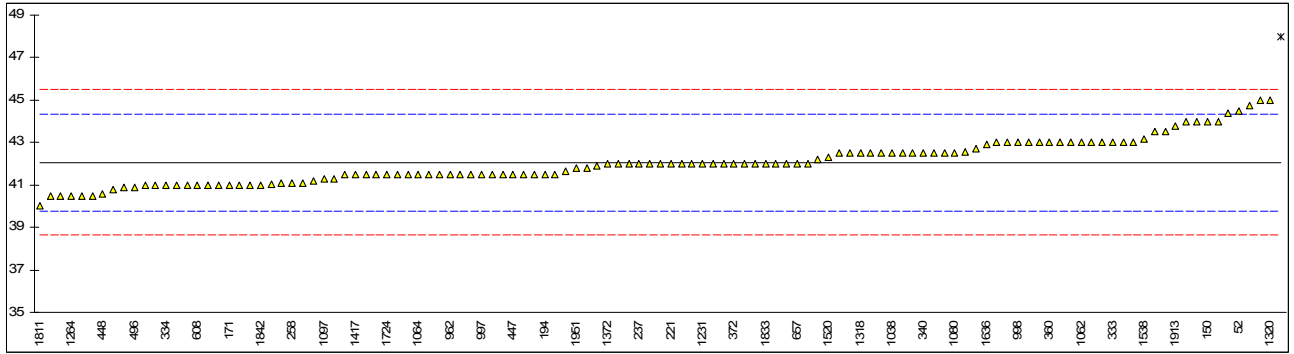
Determination of Freezing Point on sample #12094; results in °C

| lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D5972-A	-52.9		-0.97	1016		-----		-----
62	D5972-A	-51.9		0.15	1017		-----		-----
132	D2386-M	-52.5		-0.52	1021		-----		-----
140	D5972-A	-51.7		0.38	1026	D5972-A	-51.0		1.16
150	D2386-M	-51.5		0.60	1032	IP529-A	-51.8		0.26
153	D2386-M	-51.0		1.16	1038	D5972-A	-52.9		-0.97
159	D2386-	-52.98		-1.06	1039	IP529-A	-52.5		-0.52
169	D2386-M	-55.0	G(0.05)	-3.32	1049	D7153-A	-52.0		0.04
171	D2386-M	-59.0	G(0.01)	-7.80	1059	D2386-M	-51.5		0.60
175	D2386-M	-52		0.04	1062	IP529-A	-52.3		-0.30
177	D2386-M	-51.0		1.16	1064	D7153-A	-51.7		0.38
194	D2386-M	-51.0		1.16	1065		-----		-----
216		-----		-----	1079	D2386-A	-52.4		-0.41
221	D2386-M	-52.0		0.04	1080		-----		-----
224		-----		-----	1081	D7153-A	-51.6		0.49
225	D2386-M	-51.0		1.16	1082	IP529-A	-52		0.04
228		-----		-----	1097	IP529-A	-52.0		0.04
230	D2386-M	-51.88		0.18	1108	D5792-A	-51.7		0.38
237	D2386-M	-51.5		0.60	1109	D5972-A	-52.8		-0.86
254		-----		-----	1126		-----		-----
256		-----		-----	1131	D7153-A	-52.3		-0.30
258	D2386-	-51.0		1.16	1140	D2386-A	-51.8		0.26
273		-----		-----	1150	D2386-M	-51.75		0.32
311	D2386-M	-52.0		0.04	1194		-----		-----
317	D5972-A	-52.6		-0.63	1231	D2386-M	-52.0		0.04
323	D2386-M	-50.5		1.72	1264	D2386-M	-51.0		1.16
333	IP529-A	-52.1		-0.07	1279	D2386-M	-52.0		0.04
334	IP529-A	-51.8		0.26	1284	D7153-A	-52.5		-0.52
335	D2386-M	-53.0		-1.08	1297	D5972	-50.9		1.27
340	D2386-A	-51.9		0.15	1299	D2386-M	-50.5		1.72
353	D2386-M	-52.17		-0.15	1316	D2386-A	-51.9		0.15
360	D2386-A	-52.1		-0.07	1318	D7153-A	-51.8		0.26
369	D2386-M	-52.5		-0.52	1320	D2386-A	-52.1		-0.07
370	D2386-M	-52.5		-0.52	1372	D7153-A	-52.3		-0.30
371	D2386-M	-52.0		0.04	1376	D2386-M	-51.14		1.00
372	D2386-M	-51.5		0.60	1399	D2386-M	-51.0		1.16
391	D2386-M	-52		0.04	1417		-----		-----
399	D5972-A	-51.8		0.26	1419	D5972-A	-52.2		-0.18
402	D2386-M	-52.15		-0.13	1447	D2386-A	-48.0	G(0.01)	4.52
440	IP16-M	-52.0		0.04	1448		-----		-----
445	D2386-M	-52.24		-0.23	1483		-----		-----
447	IP529	-51.2		0.94	1496	D2386-M	-52.04		0.00
448	IP529-A	-51.5		0.60	1520	D2386-M	-52.3		-0.30
463		-----		-----	1538	D5972-A	-49.55	G(0.05)	2.78
468	D2386-M	-53.0		-1.08	1610	IP16-M	-52.0		0.04
473	D2386-M	-53.0		-1.08	1613	D7153-A	-51.9		0.15
485		-----		-----	1631	D7153	-52.5		-0.52
495	D2386-M	-46.5	G(0.01)	6.20	1634	D2386-M	-53.5		-1.64
496	D2386-M	-52.5		-0.52	1635		-----		-----
604		-----		-----	1636	D2386-M	-52.0		0.04
606	D2386-M	-51.5		0.60	1710	D7153-A	-52.2		-0.18
608	D2386-M	-52.5		-0.52	1715	D5972-A	-52		0.04
631	D2386-M	-53.0		-1.08	1720	D5972-A	-51.2		0.94
657	D2386-M	-53.5		-1.64	1724	IP435-A	-53		-1.08
663	D2386-M	-53.0		-1.08	1811	D2386-	-51.65		0.43
671	D2386-M	-51.5		0.60	1833	D2386-A	-51.9		0.15
732		-----		-----	1842	D2386-M	-52.5		-0.52
823	D2386-M	-53.5		-1.64	1913	D7153-A	-52.2		-0.18
851	D2386-M	-50.88		1.30	1948		-----		-----
862	D2386-M	-53.0		-1.08	1951	D2386-A	-51.4		0.71
869	D2386-M	-51.8		0.26	1952	D2386-M	-53		-1.08
922	D2386-M	-53.0		-1.08	2129	D2386-M	-51		1.16
962	D2386-M	-52		0.04	2130		-----		-----
963	D2386-M	-53		-1.08	2133	D7153-A	-52.5		-0.52
974	D2386-M	-52.0		0.04	7001		-----		-----
994	D2386-M	-52.5		-0.52					
995	D2386-M	-52.5		-0.52					
996		-----		-----					
997	D2386-M	-52.5		-0.52					
998		-----		-----					

|	
normality	OK
n	104
outliers	5
mean (n)	-52.036
st.dev. (n)	0.6627
R(calc.)	1.856
R(D2386:12)	2.500
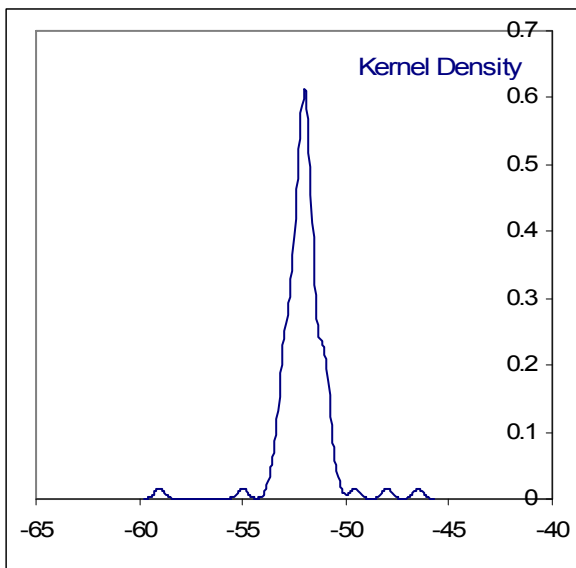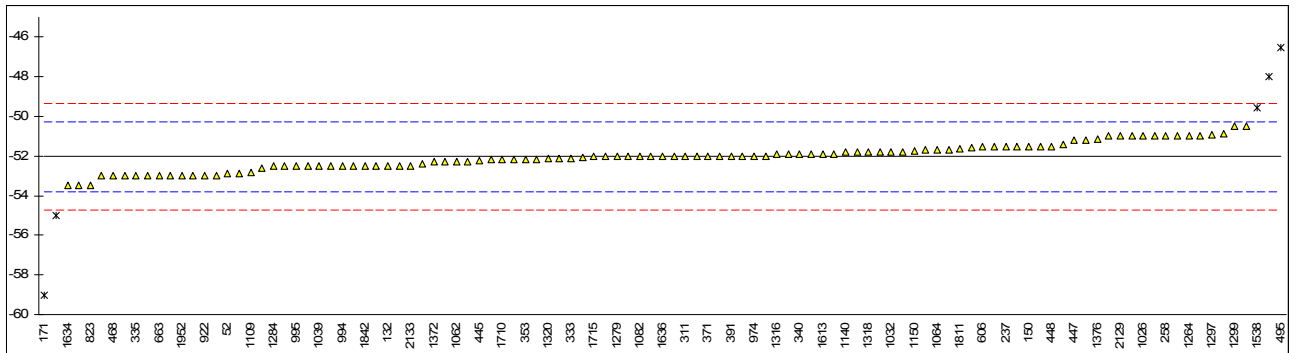
Determination of JFTOT; Tube Rating, Delta P in mmHg, Pumped Vol. in mL, Temp. in °C

lab	method	tube	mark	Delta P	mark	volume	temp	software type	remarks
52	D3241	<2A		0		410	260		
62		-----		-----		-----	-----		
132	D3241	<4P		0.0		450	260	Version 3.4	
140	D3241	<1		1		450	260		
150	D3241	<1		1		450	260		
153		-----		-----		-----	-----		
159	D3241	<3		0		450	260	Version 2.1	
169	D3241	3		1		450	260		
171	D3241	<4		0		508	260		Volume > 495 mL
175		-----		-----		-----	-----		
177	D3241	1		1		450	260		
194	D3241	<4		1		450	260	Version 2.1	
216		-----		-----		-----	-----		
221		-----		-----		-----	-----		
224		-----		-----		-----	-----		
225		-----		-----		-----	-----		
228		-----		-----		-----	-----		
230	D3241	<1		<1		450	260		
237	D3241	1		0.0		450.0	260	Version 3.4	
254		-----		-----		-----	-----		
256		-----		-----		-----	-----		
258	D3241	<1		0.1		440	260		
273		-----		-----		-----	-----		
311	D3241	<2		<1		460	260	Version 3.4	
317		-----		-----		-----	-----		
323	D3241	<1		<1		450	260	Alcor	
333	D3241	<1		0		490	260	Version 3.4	
334	D3241	1		0		510	260		Volume > 495 mL
335	D3241	1		0		435	260		
340	D3241	1		0		510	260	Version 3.4	Volume > 495 mL
353		-----		-----		-----	-----		
360	D3241	<2P		0		465	260	Version 1.5	
369	D3241	<3		0.2		450	260		
370	D3241	<1		<3		510	260	Version 3.2	Volume > 495 mL
371		-----		-----		-----	-----		
372	D3241	<3A		0		450	260	Version 2.1	
391	D3241	0		0		450	260		
399	D3241	1		0		600	260		Volume > 495 mL
402	D3241	<2P		0		450	260	Version 2.1	
440	IP323	1		0		430	260		
445	D3241	1		<1		480	260	Version 3.4	
447	D3241	3		1		450	260	Version 3.1	
448	D3241	2A		<1		455	260	Version 3.4	
463		-----		-----		-----	-----		
468		-----		-----		-----	-----		
473		-----		-----		-----	-----		
485		-----		-----		-----	-----		
495	D3241	>4P		2		460	260		
496		-----		-----		-----	-----		
604		-----		-----		-----	-----		
606		-----		-----		-----	-----		
608		-----		-----		-----	-----		
631	D3241	<1		<1.0		470	260		
657	D3241	<4P		<1		450	260	Version 2.1	
663		-----		-----		-----	-----		
671	D3241	1P		0.2		450	260.0		
732		-----		-----		-----	-----		
823	D3241	1		0.0		450	260	Version 3.4	
851	D3241	<1		0.1		510	260	Version 3.4	Volume > 495 mL
862	D3241	<1		0		510	260	Version 3.4	Volume > 495 mL
869	D3241	<1		<1		450	260		
922		-----		-----		-----	-----		
962		-----		-----		-----	-----		
963	D3241	<3		0.0		470	260	Version 3.4	
974	D3241	4P		0		450	260	Version 2.0	
994		-----		-----		-----	-----		
995		-----		-----		-----	-----		
996		-----		-----		-----	-----		
997		-----		-----		-----	-----		
998		-----		-----		-----	-----		
1016	D3241	<3		<1		-----	260		
1017		-----		-----		-----	-----		
1021		-----		-----		-----	-----		
1026	D3241	<1		-----		-----	-----		
1032	D3241	<1P		0.0		510	260		Volume > 495 mL
1038	D3241	<1		0		450	260		
1039	D3241	<1		0.0		450	<1	Version 3.4	False negative

1049	D3241	<2A	0	465.0	260	Version 3.4	
1059		-----	-----	-----	-----		
1062	D3241	0	0.1	510	260	Version 3.2	Volume > 495 mL
1064	D3241	1	0	510	260	Version 3.4	Volume > 495 mL
1065		-----	-----	-----	-----		
1079	D3241	<1	0	450	260		
1080		-----	-----	-----	-----		
1081	D3241	>4	1	-----	260		
1082		-----	-----	-----	-----		
1097	D3241	3A	0	455	260	Version 3.4	
1108	D3241	1A	0	450	260	Version 3.4	
1109	D3241	3	0.0	460	260	Version 3.4	
1126		-----	-----	-----	-----		
1131	D3241	<1	0	458	260		
1140	D3241	<1	0.0	450	260		
1150		-----	-----	-----	-----		
1194		-----	-----	-----	-----		
1231		-----	-----	-----	-----		
1264	D3241	<4	0	450	260	Version 3.1	
1279	D3241	<4	0.0	510	260	Version 3.2	Volume > 495 mL
1284		-----	-----	-----	-----		
1297		-----	-----	-----	-----		
1299	D3241	1	0	460	260		
1316	D3241	2A	0	465	260		
1318	D3241	<1	0.0	450	260	Version 3.1	
1320		-----	-----	-----	-----		
1372	D3241	1	0.0	455	260		
1376	D3241	3	0	460	260		
1399		-----	-----	-----	-----		
1417	IP323	<3	0.1	450	260		
1419		-----	-----	-----	-----		
1447	D3241	4P	0	510	260	Version 3.2	Volume > 495 mL
1448		-----	-----	-----	-----		
1483		-----	-----	-----	-----		
1496	D3241	3	0.0	450	260		
1520	D3241	2	<1	450	260	Version 2.1	
1538	D3241	1	0.1	450	260	Version 3.2	
1610	IP323	2	<1	450	260		
1613	D3241	<1	0.0	450	260		
1631		-----	-----	-----	-----		
1634		-----	-----	-----	-----		
1635		-----	-----	-----	-----		
1636		-----	-----	-----	-----		
1710	D3241	2	0	450	260		
1715		-----	-----	-----	-----		
1720		-----	-----	-----	-----		
1724	D3241	3	0	600	260	Version 3.1	Volume > 495 mL
1811		-----	-----	-----	-----		
1833	D3241	<4	0	510	260		Volume > 495 mL
1842	IP323	<4A	<1	-----	-----	Version 3.4	
1913	D3241	<2	0.0	450	260	Version 3.1	
1948		-----	-----	-----	-----		
1951	D3241	4	2	460	260		
1952		-----	-----	-----	-----		
2129	D3241	2	0	450	260		
2130		-----	-----	-----	-----		
2133	D3241	<4A	<1	510	260	Version 3.4	Volume > 495 mL
7001		-----	-----	-----	-----		
	normality	n.a.	n.a.	n.a.	n.a.		
	n	75	61	72	73		
	outliers	0	0	0	0		
	mean (n)	1.78	0.20	467.1	260		
	st.dev. (n)	1.263	0.462	33.05	0		
	R(calc.)	3.54	1.29	92.5	0		
	R(D3241:11a)	n.a.	n.a.	n.a.	n.a.		

*) In the calculation of the mean, standard deviation, the reproducibility and in below graph, a reported value of '<x' is changed into x-0.5 (for example <4 into 3.5)
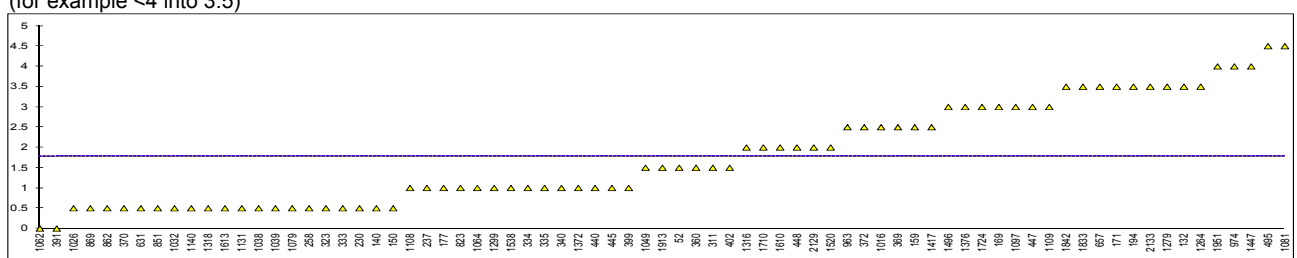
Determination of Copper on sample #12094; results in µg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1016		-----		-----
62		-----		-----	1017		-----		-----
132		-----		-----	1021		-----		-----
140		-----		-----	1026		-----		-----
150		-----		-----	1032		-----		-----
153		-----		-----	1038		-----		-----
159		-----		-----	1039		-----		-----
169		-----		-----	1049	D130	1A		-----
171		-----		-----	1059		-----		-----
175		-----		-----	1062		-----		-----
177		-----		-----	1064		-----		-----
194		-----		-----	1065		2.2		-----
216	D130	1A		-----	1079		-----		-----
221		-----		-----	1080		-----		-----
224		-----		-----	1081		-----		-----
225		-----		-----	1082		-----		-----
228		-----		-----	1097		-----		-----
230		-----		-----	1108		-----		-----
237		-----		-----	1109		-----		-----
254		-----		-----	1126		-----		-----
256		-----		-----	1131		-----		-----
258		-----		-----	1140		-----		-----
273		-----		-----	1150		-----		-----
311		-----		-----	1194		-----		-----
317		-----		-----	1231		-----		-----
323		-----		-----	1264		-----		-----
333		-----		-----	1279		-----		-----
334		-----		-----	1284		-----		-----
335		-----		-----	1297		-----		-----
340		-----		-----	1299		-----		-----
353		-----		-----	1316		3		-----
360		-----		-----	1318	6732	2.8		-----
369		-----		-----	1320		-----		-----
370		-----		-----	1372		-----		-----
371		-----		-----	1376		-----		-----
372		-----		-----	1399		-----		-----
391		-----		-----	1417		-----		-----
399		-----		-----	1419		-----		-----
402		-----		-----	1447	IP225	70		-----
440		-----		-----	1448		-----		-----
445		-----		-----	1483		-----		-----
447		-----		-----	1496	D130	1A		-----
448		-----		-----	1520		-----		-----
463		-----		-----	1538		-----		-----
468		-----		-----	1610		-----		-----
473		-----		-----	1613		-----		-----
485		-----		-----	1631		-----		-----
495		-----		-----	1634	D130	1A		-----
496		-----		-----	1635		-----		-----
604		-----		-----	1636		-----		-----
606		-----		-----	1710		-----		-----
608		-----		-----	1715		-----		-----
631		-----		-----	1720		-----		-----
657		-----		-----	1724		-----		-----
663		-----		-----	1811		-----		-----
671		-----		-----	1833		-----		-----
732		-----		-----	1842		-----		-----
823		-----		-----	1913		-----		-----
851		-----		-----	1948		-----		-----
862		-----		-----	1951		-----		-----
869		-----		-----	1952		-----		-----
922		-----		-----	2129		-----		-----
962		-----		-----	2130		-----		-----
963		-----		-----	2133	ICP	57.4		-----
974		-----		-----	7001		-----		-----
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
998		-----		-----					

| normality	n.a.
n	5
outliers	0
mean (n)	27.1
st.dev. (n)	n.a.
R(calc.)	n.a.
R(lit)	n.a.

Determination of Mercaptan Sulphur on sample #12094; results in % M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3227	0.0007		-0.60	1016	D3227	0.0007		-0.60
62	D3227	0.00073		-0.35	1017		-----		-----
132	D3227	0.0008		0.22	1021		-----		-----
140	D3227	0.002	G(0.01)	10.03	1026	D3227	0.0007		-0.60
150	D3227	0.0012		3.49	1032		-----		-----
153	D3227	0.0010		1.85	1038	D3227	0.0008		0.22
159	D3227	0.00077		-0.03	1039	D3227	0.0008		0.22
169	D3227	0.0008		0.22	1049	D3227	0.00072		-0.43
171	D3227	0.00107		2.43	1059	D3227	0.0010		1.85
175	D3227	0.0008		0.22	1062	D3227	0.0009		1.04
177		-----		-----	1064	D3227	0.00069		-0.68
194		-----		-----	1065	D3227	0.000646		-1.04
216		-----		-----	1079	D3227	0.0007		-0.60
221		-----		-----	1080		-----		-----
224		-----		-----	1081	D3227	0.0007		-0.60
225		-----		-----	1082		-----		-----
228		-----		-----	1097	ISO3012	0.00079		0.14
230	D3227	0.00133	G(0.05)	4.55	1108	D3227	0.00074		-0.27
237	D3227	0.00085		0.63	1109	D3227	0.00074		-0.27
254		-----		-----	1126		-----		-----
256		-----		-----	1131		-----		-----
258		-----		-----	1140	D3227	0.0014	C,G(0.05)	5.12
273		-----		-----	1150		-----		-----
311	D3227	0.0008		0.22	1194		-----		-----
317		-----		-----	1231	D3227	0.0008		0.22
323	D3227	0.0007		-0.60	1264	D3227	0.00074		-0.27
333	D3227	0.0006		-1.42	1279		-----		-----
334		-----		-----	1284	D3227	0.00074		-0.27
335		-----		-----	1297		-----		-----
340	D3227	0.00062		-1.25	1299	D3227	0.0008		0.22
353		-----		-----	1316		-----		-----
360	D3227	0.00074		-0.27	1318		-----		-----
369	D3227	0.0007		-0.60	1320	D3227	0.0010		1.85
370	D3227	0.00064		-1.09	1372	D3227	0.00082		0.38
371	D3227	0.0007		-0.60	1376	D3227	0.0007		-0.60
372	D3227	0.0008		0.22	1399	D3227	0.0008		0.22
391		-----		-----	1417		-----		-----
399		-----		-----	1419		-----		-----
402	D3227	0.00093		1.28	1447	D3227	0	ex	-6.32
440	D3227	0.00057		-1.66	1448		-----		-----
445	D3227	0.0007		-0.60	1483		-----		-----
447	D3227	0.0010		1.85	1496	D3227	0.000731		-0.34
448	D3227	0.00083		0.46	1520	D3227	0.00070		-0.60
463		-----		-----	1538	D3227	0.00067		-0.84
468		-----		-----	1610	IP342	0.00074		-0.27
473		-----		-----	1613		-----		-----
485		-----		-----	1631	D3227	0.00076		-0.11
495		-----		-----	1634		-----		-----
496	D3227	0.000735		-0.31	1635	D3227	0.0007		-0.60
604		-----		-----	1636	D3227	0.00044		-2.72
606		-----		-----	1710	D3227	0.00084		0.55
608		-----		-----	1715		-----		-----
631		-----		-----	1720		-----		-----
657	D3227	0.0007		-0.60	1724	D3227	0.00076		-0.11
663	D3227	0.00038		-3.21	1811		-----		-----
671		-----		-----	1833	D3227	0.00075		-0.19
732	D3227	0.00066		-0.93	1842	IP342	0.0007		-0.60
823	D3227	0.00076		-0.11	1913	D3227	0.0008		0.22
851	D3227	0.00068		-0.76	1948	D3227	0.0009		1.04
862	D3227	0.00077		-0.03	1951		-----		-----
869	D3227	0.00068		-0.76	1952	D3227	0.0011		2.67
922		-----		-----	2129	D3227	0.0007		-0.60
962	D3227	0.00076		-0.11	2130		-----		-----
963	D3227	0.0008		0.22	2133	D3227	0.00022	G(0.05)	-4.52
974	D3227	0.0011		2.67	7001		-----		-----
994		-----		-----					
995	D3227	0.00105		2.26					
996		-----		-----					
997		-----		-----					
998		-----		-----					

normality	not OK	
n	73	
outliers	4	+ 1 excluded
mean (n)	0.00077	
st.dev. (n)	0.000139	
R(calc.)	0.00039	
R(D3227:10)	0.00034	

Lab 1140: first reported 14
Lab 1447: result excluded as zero is not a real result
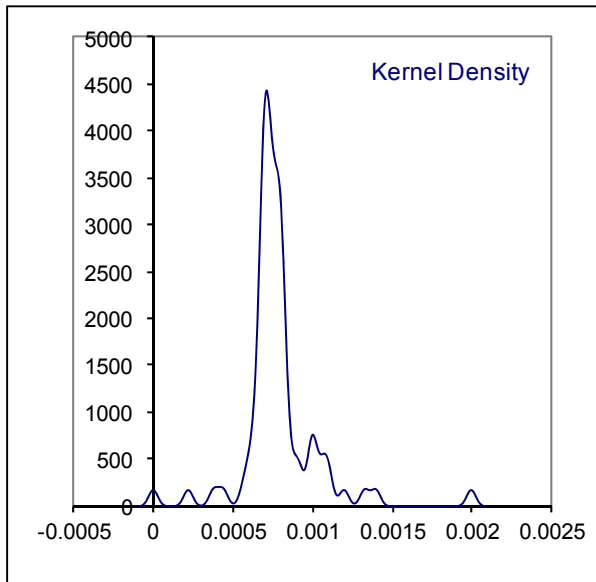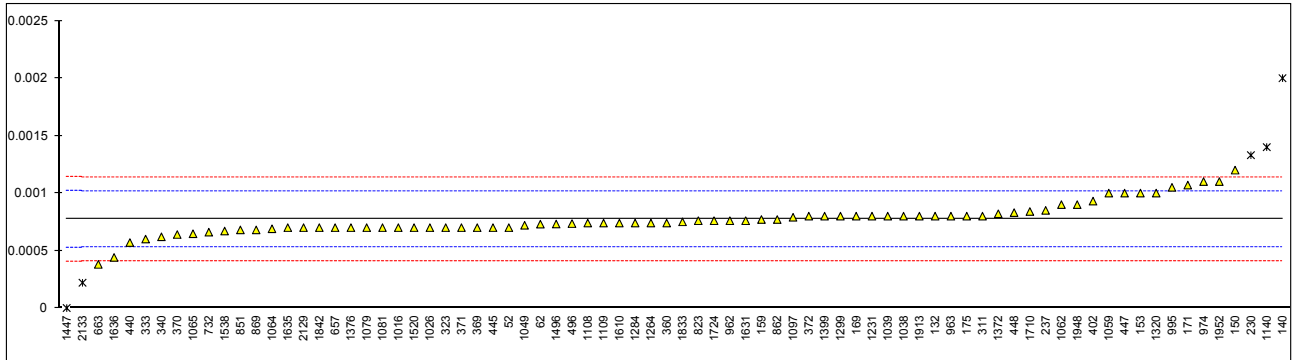
Determination of MSEP on sample #12094;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3948	59		-----	1016	D3948	<50	Reported 0	-----
62	D3948	53		-----	1017		-----		-----
132	D3948	58		-----	1021		-----		-----
140		-----		-----	1026	D3948	44		-----
150	D3948	<50		-----	1032	D3948	<50	Reported 0	-----
153	D3948	47		-----	1038		-----		-----
159	D3948	55		-----	1039	D3948	44		-----
169	D3948	<50		-----	1049	D3948	<50	Reported 0	-----
171	D3948	48		-----	1059	D3948	46		-----
175	D3948	46		-----	1062	D3948	49		-----
177	D3948	<50		-----	1064	D3948	55		-----
194	D3948	46		-----	1065		-----		-----
216	D3948	45		-----	1079	D3948	56		-----
221		-----		-----	1080		-----		-----
224		-----		-----	1081	D3948	<50		-----
225	D3948	54		-----	1082	D3948	43		-----
228		-----		-----	1097	D3948	44		-----
230		-----		-----	1108	D3948	44		-----
237		-----		-----	1109	D3948	48		-----
254		-----		-----	1126		-----		-----
256		-----		-----	1131	D3948	60	C	-----
258	D3948	96	DG(0.05)	-----	1140	D3948	46		-----
273		-----		-----	1150		-----		-----
311		-----		-----	1194		-----		-----
317	D3948	50		-----	1231	D3948	43		-----
323		-----		-----	1264	D3948	45		-----
333	D3948	41		-----	1279	D3948	46		-----
334	D3948	61		-----	1284		-----		-----
335		-----		-----	1297		-----		-----
340	D3948	44		-----	1299	D3948	49		-----
353		-----		-----	1316	D3948	44		-----
360	D3948	65		-----	1318	D3948	61		-----
369	D3948	44		-----	1320		-----		-----
370	D3948	<50	C	-----	1372	D3948	44		-----
371		-----		-----	1376	D3948	45		-----
372	D3948	<50		-----	1399	D3948	59		-----
391	D3948	58		-----	1417		-----		-----
399		-----		-----	1419		-----		-----
402	D3948	50		-----	1447		-----		-----
440	D3948	44		-----	1448		-----		-----
445	D3948	48		-----	1483		-----		-----
447	D3948	48		-----	1496	D3948	59		-----
448	D3948	45		-----	1520		-----		-----
463	D3948	45.5		-----	1538		-----		-----
468		-----		-----	1610	D3948	48		-----
473		-----		-----	1613		-----		-----
485		-----		-----	1631		-----		-----
495	D3948	43	C	-----	1634	D3948	56	C	-----
496	D3948	50		-----	1635		-----		-----
604		-----		-----	1636		-----		-----
606	D3948	42		-----	1710	D3948	50		-----
608	D3948	85	G(0.05)	-----	1715		-----		-----
631	D3948	78	DG(0.01)	-----	1720	D3948	40.0		-----
657	D3948	99	DG(0.05)	-----	1724	D3948	44		-----
663		-----		-----	1811		-----		-----
671	D3948	57	C	-----	1833	D3948	43		-----
732		-----		-----	1842	D3948	45		-----
823		-----		-----	1913	D3948	68		-----
851	D3948	56		-----	1948		-----		-----
862	D3948	76	DG(0.01)	-----	1951	D3948	46		-----
869	D3948	54		-----	1952		-----		-----
922		-----		-----	2129	D3948	41		-----
962		-----		-----	2130		-----		-----
963	D3948	46		-----	2133	D3948	48		-----
974	D3948	75	G(0.05)	-----	7001		-----		-----
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
998		-----		-----					

normality   not OK
n   63
outliers   6
mean (n)   49.3
st.dev. (n)   6.54
R(calc.)   18.3
R(D3948:11)   (27.1)   Application range 55 -100

Lab 370: first reported 70
Lab 495: first reported 0
Lab 671: first reported 0
Lab 1131: first reported 90
Lab 1634: first reported 68
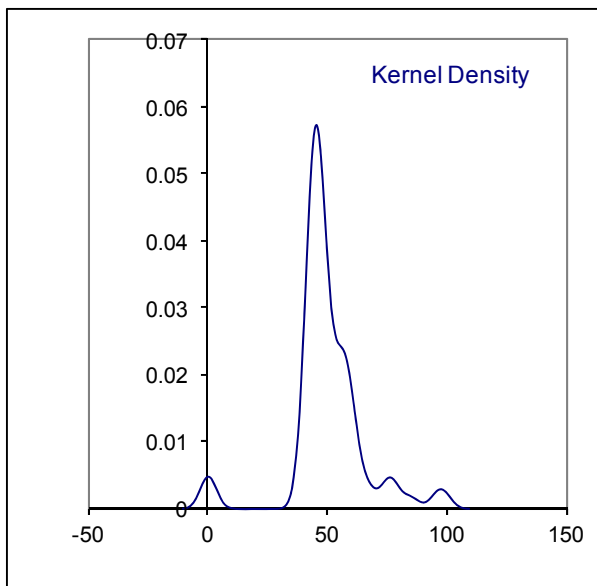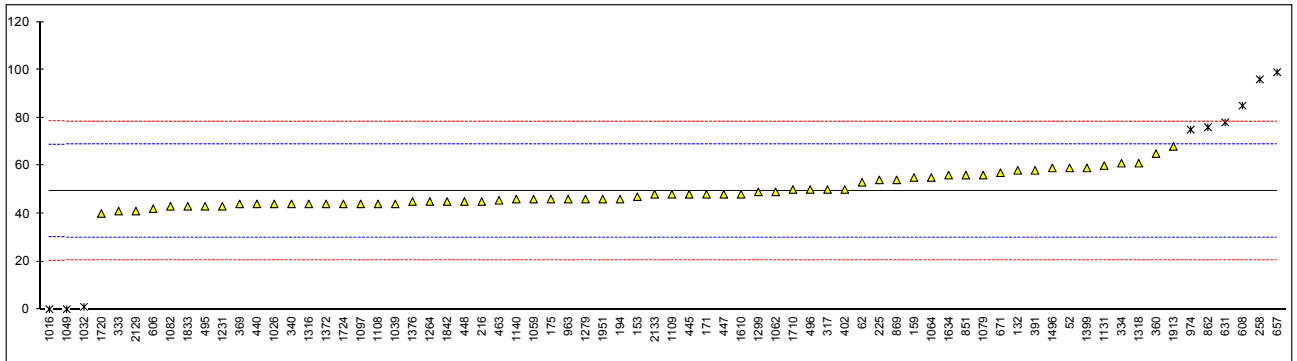
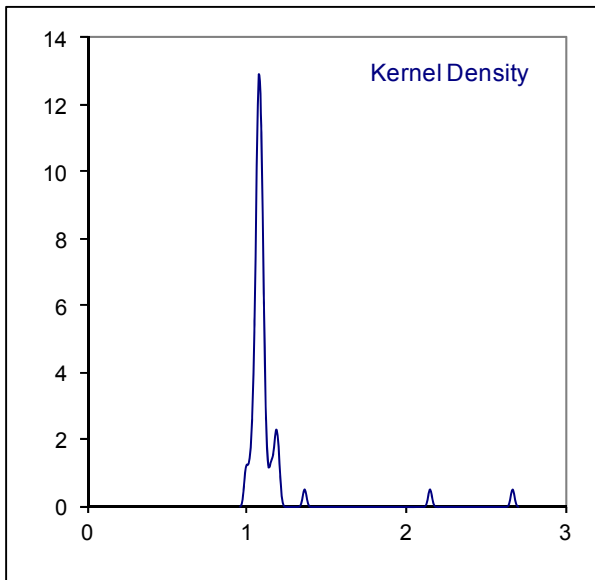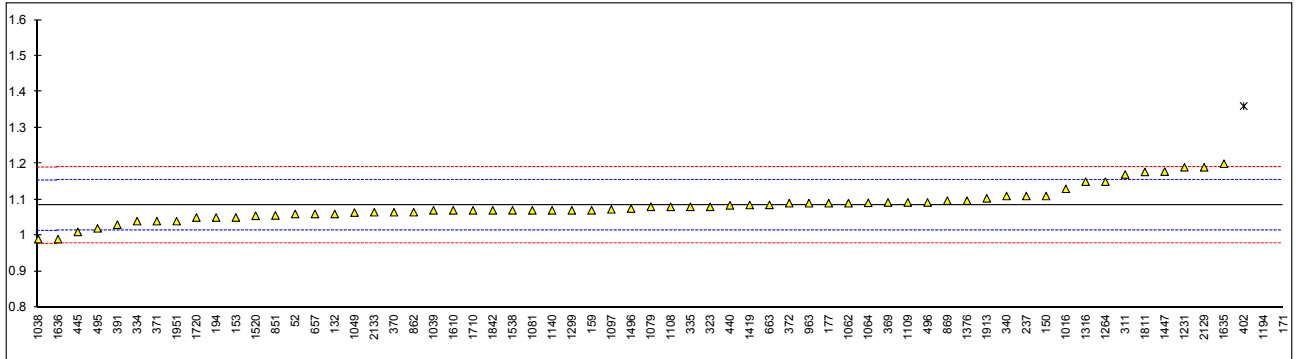## Determination of Naphthalenes on sample #12094; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D1840-B	1.06		-0.67	1016	D1840-	1.13		1.32
62		-----		-----	1017		-----		-----
132	D1840-B	1.06		-0.67	1021		-----		-----
140		-----		-----	1026		-----		-----
150	D1840-	1.11		0.75	1032		-----		-----
153	D1840-A	1.05		-0.95	1038	D1840-B	0.99		-2.66
159	D1840-B	1.07		-0.39	1039	D1840-B	1.07		-0.39
169		-----		-----	1049	D1840-A	1.064		-0.56
171	D1840-B	2.67	G(0.01)	45.03	1059		-----		-----
175		-----		-----	1062	D1840-A	1.09		0.18
177	D1840-	1.09		0.18	1064	D1840-A	1.091		0.21
194	D1840-A	1.05		-0.95	1065		-----		-----
216		-----		-----	1079	D1840-A	1.08		-0.10
221		-----		-----	1080		-----		-----
224		-----		-----	1081	D1840-B	1.07		-0.39
225		-----		-----	1082		-----		-----
228		-----		-----	1097	D1840-A	1.073		-0.30
230		-----		-----	1108	D1840-B	1.08		-0.10
237	D1840-B	1.11		0.75	1109	D1840-A	1.092		0.24
254		-----		-----	1126		-----		-----
256		-----		-----	1131		-----		-----
258		-----		-----	1140	D1840-A	1.07		-0.39
273		-----		-----	1150		-----		-----
311	D1840-B	1.17		2.45	1194	INH-1840-	2.15	G(0.01)	30.27
317		-----		-----	1231	D1840-	1.19	C	3.02
323	D1840-A	1.08		-0.10	1264	D1840-A	1.15		1.88
333		-----		-----	1279		-----		-----
334	D1840-B	1.04		-1.24	1284		-----		-----
335	D1840-B	1.08		-0.10	1297		-----		-----
340	D1840-B	1.110		0.75	1299	D1840-	1.07		-0.39
353		-----		-----	1316	D1840-A	1.15		1.88
360		-----		-----	1318		-----		-----
369	D1840-B	1.092		0.24	1320		-----		-----
370	D1840-A	1.065		-0.53	1372		-----		-----
371	D1840-B	1.04		-1.24	1376	D1840-A	1.097		0.38
372	D1840-	1.09		0.18	1399		-----		-----
391	D1840-B	1.03		-1.52	1417		-----		-----
399		-----		-----	1419	D1840-B	1.085		0.04
402	D1840-B	1.36	G(0.01)	7.84	1447	D1840-B	1.178	C	2.68
440	D1840-B	1.084		0.01	1448		-----		-----
445	D1840-	1.01		-2.09	1483		-----		-----
447		-----		-----	1496	D1840-B	1.075		-0.25
448		-----		-----	1520	D1840-A	1.055		-0.81
463		-----		-----	1538	D1840-A	1.07		-0.39
468		-----		-----	1610	D1840-A	1.07		-0.39
473		-----		-----	1613		-----		-----
485		-----		-----	1631		-----		-----
495	D1840-B	1.02		-1.81	1634		-----		-----
496	D1840-A	1.092		0.24	1635	D1840-B	1.2		3.30
604		-----		-----	1636	D1840-B	0.990		-2.66
606		-----		-----	1710	D1840-A	1.07		-0.39
608		-----		-----	1715		-----		-----
631		-----		-----	1720	D1840-B	1.05		-0.95
657	D1840-A	1.06		-0.67	1724		-----		-----
663	D1840-A	1.0853		0.05	1811	D1840-A	1.177		2.65
671		-----		-----	1833		-----		-----
732		-----		-----	1842	D1840-A	1.07		-0.39
823		-----		-----	1913	D1840-B	1.1035		0.56
851	D1840-B	1.056		-0.78	1948		-----		-----
862	D1840-B	1.065		-0.53	1951	D1840-	1.04		-1.24
869	D1840-A	1.097		0.38	1952		-----		-----
922		-----		-----	2129	D1840-B	1.190		3.02
962		-----		-----	2130		-----		-----
963	D1840-B	1.09		0.18	2133	D1840-A	1.065		-0.53
974		-----		-----	7001		-----		-----
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
998		-----		-----					

Only method B					Only method A

normality	not OK		OK	not OK
n	61		28	25
outliers	3		2	0
mean (n)	1.084		1.0807	1.0845
st.dev. (n)	0.0449		0.05276	0.03155
R(calc.)	0.126		0.1477	0.0883
R(D1840:07-B)	0.099		0.0985	--
R(D1840:07-A)	0.062		--	0.0623

Lab 1231: first reported 2.72
Lab 1447: first reported 0.042

Determination of Smoke Point on sample #12094; results in mm

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D1322	24.0		0.13	1016		-----		-----
62	D1322	23.4		-0.43	1017		-----		-----
132	D1322	23.3		-0.52	1021		-----		-----
140	D1322	26		2.00	1026	D1322	25.0		1.06
150	D1322	24		0.13	1032	D1322	23.3		-0.52
153	D1322	26.7		2.65	1038	D1322	22.0		-1.74
159	D1322	22		-1.74	1039	D1322	25.0		1.06
169	D1322	22		-1.74	1049	D1322	24.0		0.13
171	D1322	22.0		-1.74	1059	D1322	25.0		1.06
175		-----		-----	1062	D1322	25.0		1.06
177	D1322	22		-1.74	1064	D1322	23.73		-0.12
194	D1322	26.5		2.46	1065		-----		-----
216		-----		-----	1079	D1322	23.5		-0.34
221		-----		-----	1080		-----		-----
224		-----		-----	1081	D1322	22.5		-1.27
225		-----		-----	1082		-----		-----
228		-----		-----	1097	D1322	24.6		0.69
230	D1322	25.27		1.32	1108		-----		-----
237	D1322	24.0		0.13	1109	D1322	22.8		-0.99
254		-----		-----	1126		-----		-----
256		-----		-----	1131		-----		-----
258		-----		-----	1140	D1322	24.0		0.13
273		-----		-----	1150		-----		-----
311	D1322	24.5		0.60	1194	INH-1322	21.7		-2.02
317		-----		-----	1231	D1322	23.0	C	-0.80
323	D1322	24.5		0.60	1264	D1322	24.5		0.60
333	D1322	23.5		-0.34	1279		-----		-----
334		-----		-----	1284	D1322	23.0		-0.80
335		-----		-----	1297	D1322	23		-0.80
340	D1322	24.7		0.78	1299	D1322	22.0		-1.74
353		-----		-----	1316	D1322	22		-1.74
360	D1322	26.0		2.00	1318	D1322	22.46		-1.31
369	D1322	24.75		0.83	1320	D1322	25.0		1.06
370	D1322	22.7		-1.08	1372	D1322	23.7		-0.15
371		-----		-----	1376	D1322	22.22		-1.53
372	D1322	23.0		-0.80	1399	D1322	26		2.00
391		-----		-----	1417		-----		-----
399		-----		-----	1419	D1322	23.5		-0.34
402	D1322	20.33		-3.29	1447	D1322	25.5		1.53
440	D1322	24.5		0.60	1448		-----		-----
445	D1322	23.0		-0.80	1483		-----		-----
447	D1322	24		0.13	1496	D1322	22.4		-1.36
448	D1322	25		1.06	1520	D1322	25.50		1.53
463		-----		-----	1538	D1322	22.9		-0.90
468		-----		-----	1610	IP57	23.8		-0.06
473		-----		-----	1613	D1322	23		-0.80
485		-----		-----	1631	D1322	25		1.06
495	D1322	21.0		-2.67	1634		-----		-----
496	D1322	22.4		-1.36	1635	D1322	24.5		0.60
604		-----		-----	1636	D1322	22.88		-0.91
606		-----		-----	1710	D1322	24		0.13
608		-----		-----	1715	D1322	25		1.06
631	D1322	24.5		0.60	1720		-----		-----
657	D1322	24.0		0.13	1724	D1322	26.0		2.00
663	D1322	23.0		-0.80	1811	D1322	23		-0.80
671		-----		-----	1833	D1322	25		1.06
732		-----		-----	1842	D1322	24.5		0.60
823	D1322	24.0		0.13	1913	D1322	24.2		0.32
851	D1322	24.0		0.13	1948		-----		-----
862	D1322	25.5		1.53	1951	D1322	26		2.00
869	D1322	25.0		1.06	1952		-----		-----
922		-----		-----	2129	D1322	25.0		1.06
962	D1322	22.5		-1.27	2130		-----		-----
963	D1322	24		0.13	2133	D1322	25.83		1.84
974	D1322	21.653		-2.06	7001		-----		-----
994		-----		-----					
995	D1322	24.49		0.59					
996		-----		-----					
997		-----		-----					
998		-----		-----					

normality	OK
n	84
outliers	0
mean (n)	23.86
st.dev. (n)	1.346
R(calc.)	3.77
R(D1322:12)	3.00

Lab 1231: first reported 21.0
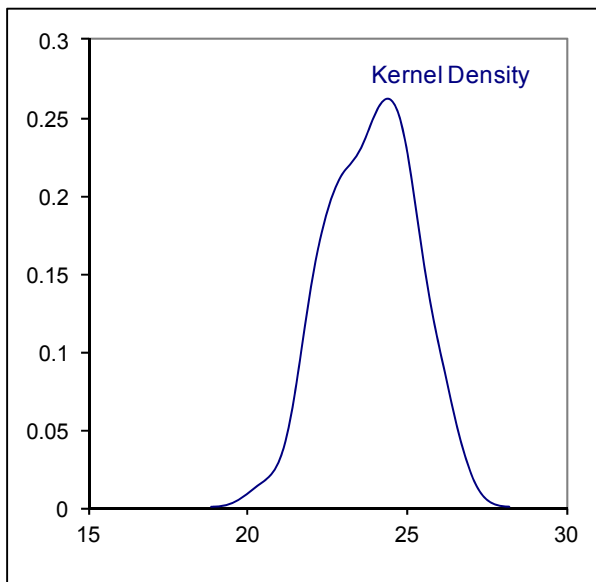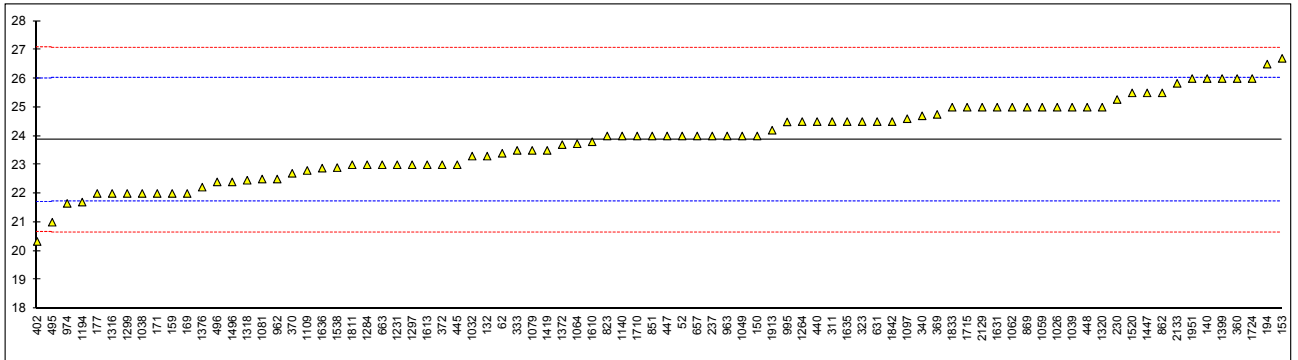
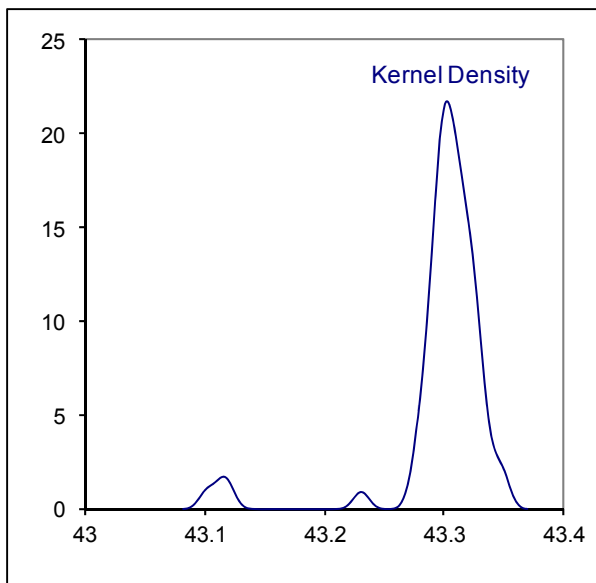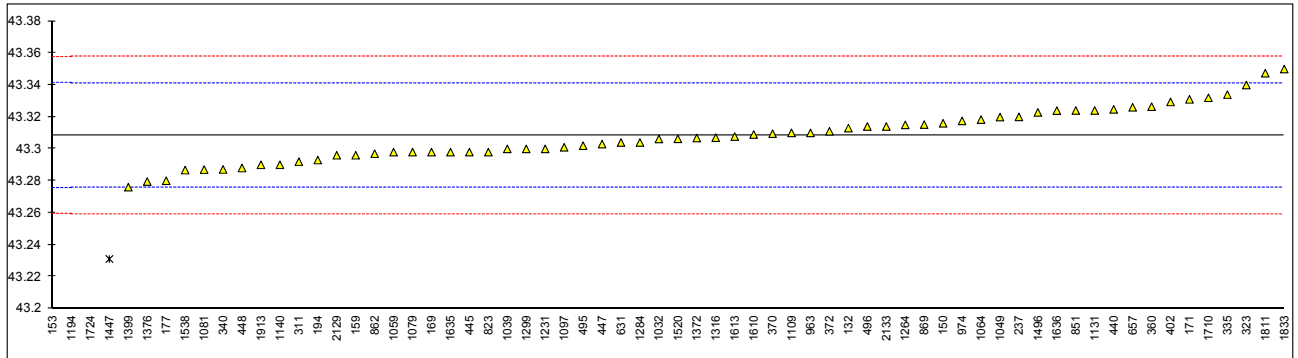## Determination of Specific Energy on sample #12094; results in MJ/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1016		-----		-----
62		-----		-----	1017		-----		-----
132	D3338	43.313		0.28	1021		-----		-----
140		-----		-----	1026		-----		-----
150	D3338	43.316		0.46	1032	D3338	43.3062		-0.14
153	D3338	43.102	C,G(0.01)	-12.56	1038		-----		-----
159	D3338	43.296		-0.76	1039	D3338	43.300		-0.51
169	D3338	43.298		-0.63	1049	D3338	43.3199	C	0.70
171	D3338	43.331		1.37	1059	D3338	43.298		-0.63
175		-----		-----	1062		-----		-----
177	D3338	43.28		-1.73	1064	D3338	43.3183		0.60
194	D3338	43.293		-0.94	1065		-----		-----
216		-----		-----	1079	D3338	43.298		-0.63
221		-----		-----	1080		-----		-----
224		-----		-----	1081	D3338	43.287		-1.30
225		-----		-----	1082		-----		-----
228		-----		-----	1097	D3338	43.301		-0.45
230		-----		-----	1108		-----		-----
237	D3338	43.320		0.70	1109	D3338	43.31		0.10
254		-----		-----	1126		-----		-----
256		-----		-----	1131	D4529	43.324		0.95
258		-----		-----	1140	D3338	43.290		-1.12
273		-----		-----	1150		-----		-----
311	D3338	43.292		-1.00	1194	INH-3338	43.114	G(0.01), E	-11.83
317		-----		-----	1231	D3338	43.300		-0.51
323	D3338	43.340		1.92	1264	D3338	43.315		0.40
333		-----		-----	1279		-----		-----
334		-----		-----	1284	D3338	43.304		-0.27
335	D3338	43.334		1.56	1297		-----		-----
340	D3338	43.2871		-1.30	1299	D3338	43.3		-0.51
353		-----		-----	1316	D3338	43.307		-0.09
360	D3338	43.3264		1.09	1318		-----		-----
369		-----		-----	1320		-----		-----
370	D3338	43.3095		0.07	1372	D3338	43.3068		-0.10
371		-----		-----	1376	D3338	43.2795		-1.76
372	D3338	43.311		0.16	1399	D3338	43.276	E	-1.97
391		-----		-----	1417		-----		-----
399		-----		-----	1419		-----		-----
402	D3338	43.3294		1.28	1447	D3338	43.2310	G(0.01)	-4.71
440	D3338	43.3247		0.99	1448		-----		-----
445	D3338	43.298		-0.63	1483		-----		-----
447	D3338	43.303		-0.33	1496	D3338	43.3228		0.88
448	D3338	43.288		-1.24	1520	D3338	43.3063		-0.13
463		-----		-----	1538	D3338	43.2867		-1.32
468		-----		-----	1610	D3338	43.309		0.04
473		-----		-----	1613	D3338	43.3077		-0.04
485		-----		-----	1631		-----		-----
495	D3338	43.302		-0.39	1634		-----		-----
496	D3338	43.314		0.34	1635	D3338	43.298		-0.63
604		-----		-----	1636	D3338	43.3239		0.94
606		-----		-----	1710	D3338	43.332		1.44
608		-----		-----	1715		-----		-----
631	D3338	43.3040		-0.27	1720		-----		-----
657	D3338	43.326		1.07	1724	D3338	43.120	G(0.01), E	-11.47
663		-----		-----	1811	D3338	43.3474		2.37
671		-----		-----	1833	D3338	43.35		2.53
732		-----		-----	1842		-----		-----
823	D3338	43.298		-0.63	1913	D3338	43.29		-1.12
851	D3338	43.324		0.95	1948		-----		-----
862	D3338	43.297		-0.70	1951		-----		-----
869	D3338	43.315		0.41	1952		-----		-----
922		-----		-----	2129	D3338	43.296		-0.76
962		-----		-----	2130		-----		-----
963	D3338	43.3100		0.10	2133	D3338	43.314	C	0.34
974	D3338	43.3175		0.55	7001		-----		-----
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
998		-----		-----					

After recalculation:

normality	OK		OK
n	62		64
outliers	4		2
mean (n)	43.3084		43.3100
st.dev. (n)	0.01624		0.01668
R(calc.)	0.0455		0.0467
R(D3338:09)	0.0460		0.0460

Lab 1194: calculation error, iis calculated 43.356
Lab 1399: calculation error, iis calculated 43.328
Lab 1724: calculation error, iis calculated 43.313

Lab 153: first reported 198.82193
Lab 1049: first reported 43.5494
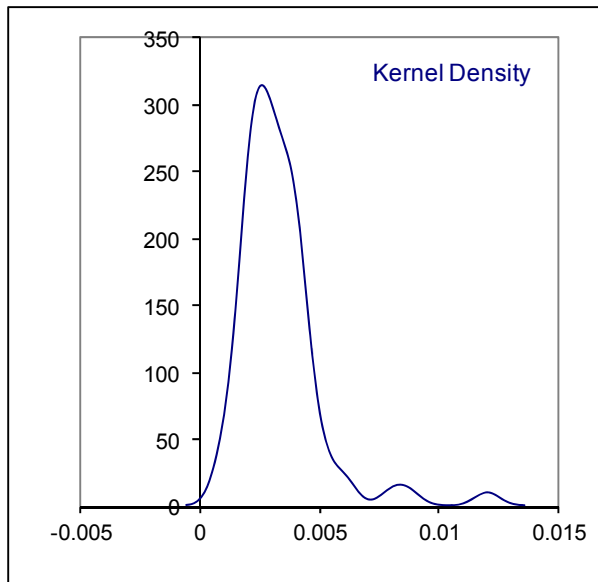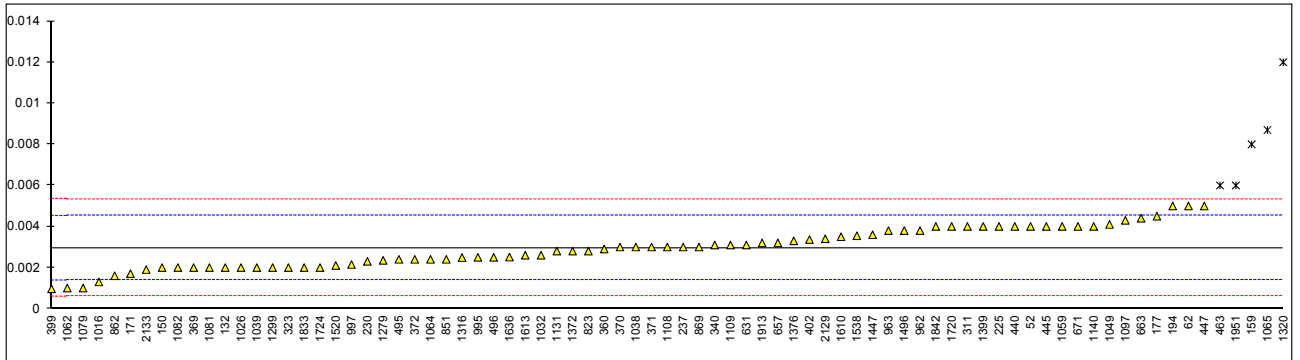Lab 2133; first reported 44.578

Determination of Total Acidity on sample #12094; results in mg KOH/g

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3242-Y	0.004		1.33	1016	D3242-Y	0.0013		-2.10
62	D3242-Y	0.005		2.60	1017		-----		-----
132	D3242-Y	0.0020		-1.21	1021		-----		-----
140		-----		-----	1026	D3242-N	0.002		-1.21
150	D3242-Y	0.002		-1.21	1032	D3242-Y	0.0026		-0.45
153		-----		-----	1038	D3242-Y	0.003		0.06
159	D3242-Y	0.008	G(0.01)	6.40	1039	D3242-Y	0.002		-1.21
169		-----		-----	1049	D3242-Y	0.0041		1.45
171	D3242-Y	0.0017		-1.59	1059	D3242-Y	0.004		1.33
175		-----		-----	1062	D3242-Y	0.0010		-2.48
177	D3242-Y	0.0045		1.96	1064	D3242-Y	0.0024		-0.70
194	D3242-Y	0.005		2.60	1065	D3242-N	0.0087	C,G(0.01)	7.29
216		-----		-----	1079	D3242-Y	0.001		-2.48
221		-----		-----	1080		-----		-----
224		-----		-----	1081	D3242-Y	0.002		-1.21
225	D3242-Y	0.004		1.33	1082	D3242-Y	0.002		-1.21
228		-----		-----	1097	D3242-Y	0.0043		1.71
230	D3242-Y	0.0023		-0.83	1108	D3242-Y	0.003		0.06
237	D3242-Y	0.003		0.06	1109	D3242-Y	0.0031		0.19
254		-----		-----	1126		-----		-----
256		-----		-----	1131	D3242-Y	0.0028		-0.19
258		-----		-----	1140	D3242-Y	0.004		1.33
273		-----		-----	1150		-----		-----
311	D3242-Y	0.004		1.33	1194		-----		-----
317		-----		-----	1231		-----		-----
323	D3242-Y	0.002		-1.21	1264		-----		-----
333		-----		-----	1279	D3242-Y	0.00235		-0.77
334		-----		-----	1284		-----		-----
335		-----		-----	1297		-----		-----
340	D3242-Y	0.0031		0.19	1299	D3242-Y	0.002		-1.21
353		-----		-----	1316	D3242-	0.002486		-0.59
360	D3242-Y	0.0029		-0.07	1318		-----		-----
369	D3242-Y	0.0020		-1.21	1320	D3242-Y	0.012	G(0.01)	11.48
370	D3242-Y	0.0030		0.06	1372	D3242-Y	0.0028		-0.19
371	D3242-Y	0.003		0.06	1376	D3242-Y	0.0033		0.44
372	D3242-Y	0.0024		-0.70	1399	D3242-Y	0.004		1.33
391		-----		-----	1417		-----		-----
399	D3242-Y	0.00096		-2.53	1419		-----		-----
402	D3242-Y	0.003364		0.52	1447	D3242-N	0.0036		0.82
440	D3242-Y	0.0040		1.33	1448		-----		-----
445	D3242-Y	0.004		1.33	1483		-----		-----
447	D3242-Y	0.0050		2.60	1496	D3242-Y	0.0038		1.07
448		-----		-----	1520	D3242-Y	0.0021		-1.08
463	D3242-	0.006	C,DG(0.05)	3.87	1538	D3242-Y	0.00355		0.76
468		-----		-----	1610	IP354-Y	0.0035		0.69
473		-----		-----	1613	D3242-Y	0.0026		-0.45
485		-----		-----	1631		-----		-----
495	D3242-Y	0.0024	C	-0.70	1634		-----		-----
496	D3242-Y	0.0025		-0.58	1635		-----		-----
604		-----		-----	1636	D3242-Y	0.00251		-0.56
606		-----		-----	1710		-----	W	-----
608		-----		-----	1715		-----		-----
631	D3242-Y	0.0031		0.19	1720	D3242-Y	0.004		1.33
657	D3242-Y	0.0032		0.31	1724	D3242-Y	0.002		-1.21
663	D3242-Y	0.0044		1.84	1811		-----		-----
671	D3242-Y	0.004		1.33	1833	D3242-Y	0.002		-1.21
732		-----		-----	1842	IP354-Y	0.004		1.33
823	D3242-Y	0.0028		-0.19	1913	D3242-Y	0.0032		0.31
851	D3242-Y	0.0024		-0.70	1948		-----		-----
862	D3242-Y	0.0016		-1.72	1951	D3242-	0.006	DG(0.05)	3.87
869	D3242-Y	0.0030		0.06	1952		-----		-----
922		-----		-----	2129	D3242-Y	0.0034		0.57
962	D3242-Y	0.0038		1.07	2130		-----		-----
963	D3242-Y	0.0038		1.07	2133	D3242-Y	0.0019		-1.34
974		-----		-----	7001		-----		-----
994		-----		-----					
995	D3242-Y	0.0025		-0.58					
996		-----		-----					
997	D3242-Y	0.00215		-1.02					
998		-----		-----					

normality	OK
n	74
outliers	5
mean (n)	0.00295
st.dev. (n)	0.000976
R(calc.)	0.00273
R(D3242:11)	0.00221

Lab 463: first reported 0.007
Lab 495; first reported 0.014
Lab 1065: first reported 0.0105

Determination of Total Sulphur on sample #12094; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D5453	523		-1.86	1016		-----		-----
62	D5453	536.1		-1.32	1017		-----		-----
132	D2622	574.7		0.29	1021	D2622	566		-0.07
140	D5453	570	C	0.09	1026	D2622	600		1.34
150	D5453	554		-0.57	1032		-----		-----
153		-----		-----	1038		-----		-----
159	D4294	582.1		0.59	1039	D2622	574		0.26
169		-----		-----	1049	D5453	578.0	C	0.42
171	D5453	569		0.05	1059	ISO14596	560		-0.32
175		-----		-----	1062	D5453	562		-0.24
177	D5453	562		-0.24	1064	D5453	588	C	0.84
194	D5453	546.6		-0.88	1065	D7212	606.4		1.60
216		-----		-----	1079	D5453	580		0.51
221		-----		-----	1080	D5453	529		-1.61
224		-----		-----	1081	D4294	574		0.26
225		-----		-----	1082		-----		-----
228		-----		-----	1097	D5453	587		0.80
230		-----		-----	1108	D4294	590		0.92
237	D4294	570		0.09	1109	D2622	542.3		-1.06
254		-----		-----	1126	ISO20846	558.40		-0.39
256		-----		-----	1131		-----		-----
258		-----		-----	1140	D5453	600		1.34
273		-----		-----	1150		-----		-----
311	D2622	569		0.05	1194	D4294	569		0.05
317		-----		-----	1231		-----	W	-----
323		-----		-----	1264	D5453	545		-0.95
333	D5453	550		-0.74	1279		-----		-----
334	D5453	569		0.05	1284		-----		-----
335	D4294	580	C	0.51	1297	D4294	577.8		0.42
340	D5453	542.4		-1.05	1299	D2622	570		0.09
353		-----		-----	1316	D4294	582		0.59
360	D5453	530		-1.57	1318	D4294	573.0		0.22
369		-----		-----	1320		-----		-----
370	D4294	590.8		0.96	1372	D5453	498		-2.90
371	D5453	615.5		1.98	1376	D7039	562		-0.24
372	D5453	580		0.51	1399	IP336	564		-0.16
391		-----		-----	1417	in house	500	C	-2.81
399	D5453	590	C	0.92	1419	ISO20884	558		-0.41
402	D5453	580		0.51	1447	D5453	542.6	C	-1.05
440	D5453	540.2		-1.15	1448		-----		-----
445	D5453	542.1		-1.07	1483		-----		-----
447	IP336	570		0.09	1496	D4294	585.8	C	0.75
448	D4294	601		1.38	1520	D4294	589		0.88
463	D4294	546.8		-0.87	1538	D5453	551		-0.70
468	D5453	527		-1.69	1610	IP336	620		2.17
473		-----		-----	1613		-----		-----
485		-----		-----	1631	D5453	583		0.63
495	D5453	571		0.13	1634		-----		-----
496	D2622	542.85		-1.04	1635	D4294	567		-0.03
604		-----		-----	1636	D4294	608		1.67
606		-----		-----	1710	D2622	568		0.01
608		-----		-----	1715		-----		-----
631		-----		-----	1720	D5453	556.0		-0.49
657	D5453	562		-0.24	1724	IP336	580		0.51
663	D5453	567		-0.03	1811	D5453	527.9		-1.66
671	D3243	549.695	C	-0.75	1833	D5453	601.2		1.39
732	D4294	500.0		-2.81	1842		-----		-----
823	D4294	603		1.46	1913	D4294	581.0		0.55
851	D2622	596.24		1.18	1948	D5453	526		-1.74
862	D5453	565.5		-0.09	1951	D5453	625.9		2.41
869	D4294	581		0.55	1952	D5453	680	G(0.05)	4.66
922	D5453	398.28	C,G(0.01)	-7.04	2129	IP496	574	C	0.26
962		-----		-----	2130		-----		-----
963	D4294	581.2		0.56	2133	D5453	566.4		-0.06
974		-----		-----	7001		-----		-----
994	D5453	592		1.01					
995	D4294	587		0.80					
996	D5453	573		0.22					
997		-----		-----					
998		-----		-----					

normality	not OK
n	86
outliers	2
mean (n)	567.78
st.dev. (n)	25.729
R(calc.)	72.04
R(D5453:09)	67.43

Lab 140: first reported 491
Lab 335; first reported 500
Lab 399: first reported 490
Lab 671: first reported 508
Lab 922 first reported 378.28
Lab 1049: first reported 0.05780
Lab 1064: first reported 0.0588
Lab 1417: first reported 0.05
Lab 1447: first reported 0
Lab 1496: first reported 0.05858
Lab 2129: first reported 466.3
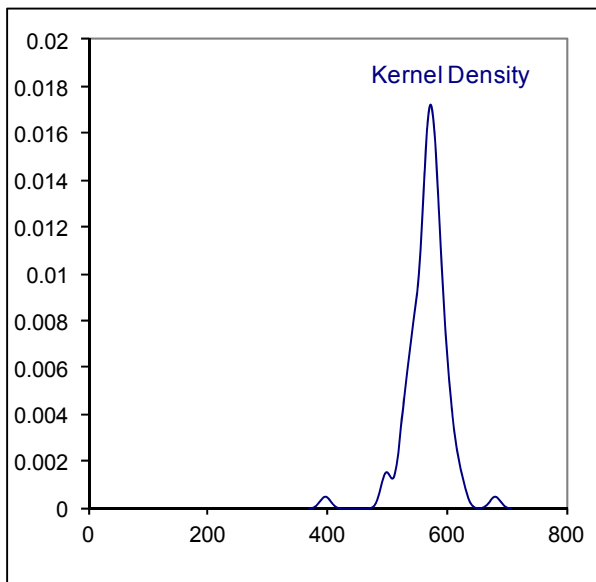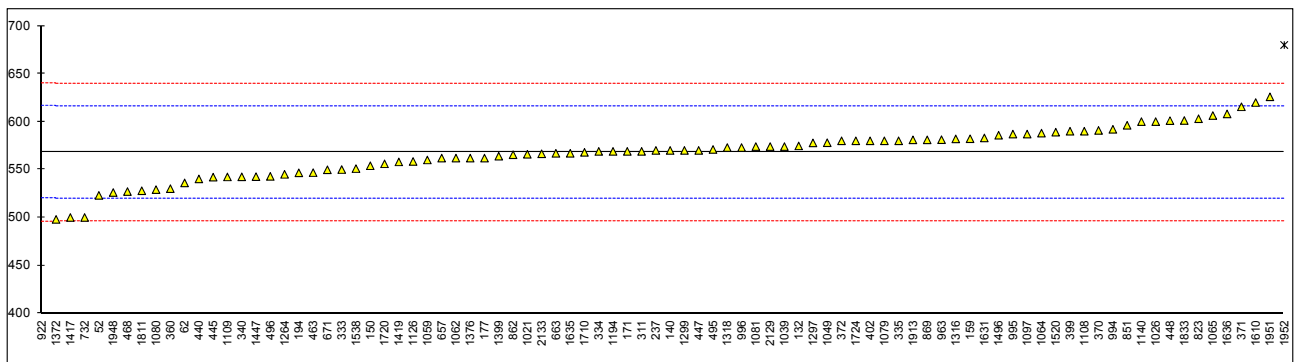
Determination of Viscosity @ -20°C on sample #12094; results in cSt

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D445-M	3.693		-0.40	1016	D445-A	3.6870		-0.64
62	D445-M	3.703		-0.01	1017		-----		-----
132	D445-M	3.6793		-0.95	1021		-----		-----
140	D445-M	3.698		-0.20	1026	ISO3104-M	2.742	G(0.01)	-38.25
150	D445-A	3.712		0.35	1032	D445-M	3.721		0.71
153		-----		-----	1038	D445-M	3.683		-0.80
159	D445-M	3.6991		-0.16	1039	D445-M	3.889	G(0.01)	7.40
169	D445-M	3.3887	G(0.05)	-12.51	1049	D445-M	3.7099		0.27
171	D445-M	3.707		0.15	1059	D445-M	3.780	C	3.06
175	D445-M	3.688		-0.60	1062	D445-M	3.691		-0.48
177	D445-M	3.635		-2.71	1064	D445-A	3.7063		0.13
194	D445-M	3.653		-2.00	1065		-----		-----
216		-----		-----	1079	D445-M	3.712		0.35
221		-----		-----	1080		-----		-----
224		-----		-----	1081	D445-M	3.705		0.07
225	D445-M	3.744		1.63	1082	D445-M	3.6014		-4.05
228		-----		-----	1097	ISO3104-M	3.718		0.59
230	D445-M	3.7029		-0.01	1108	D445-M	3.769		2.62
237	D445-M	3.7071		0.16	1109	D445-M	3.7029		-0.01
254		-----		-----	1126		-----		-----
256		-----		-----	1131	D445-A	3.7194		0.65
258		-----		-----	1140	D445-A	3.691		-0.48
273		-----		-----	1150		-----		-----
311	D445-A	3.693		-0.40	1194		-----		-----
317		-----		-----	1231	D445-M	3.704		0.03
323	D445-M	3.648		-2.19	1264		-----		-----
333	D445-M	3.686		-0.68	1279		-----		-----
334		-----		-----	1284		-----		-----
335		-----		-----	1297		-----		-----
340	D445-M	3.6880		-0.60	1299	D445-M	3.719		0.63
353		-----		-----	1316	D445-M	3.650		-2.12
360	D445-M	3.7320		1.15	1318		-----		-----
369	D445-M	3.7039		0.03	1320	D445-M	3.803		3.97
370	D445-M	3.7150		0.47	1372	D445-M	3.6706		-1.30
371		-----		-----	1376	D445-M	3.7620		2.34
372	D445-M	3.699		-0.17	1399	D445-M	3.8840	G(0.01)	7.20
391	D445-M	3.949	G(0.01)	9.78	1417	D445-	3.70		-0.13
399		-----		-----	1419	D445-M	3.724		0.83
402	D445-M	3.4833	G(0.01)	-8.75	1447	D445-M	3.7570		2.14
440	D445-M	3.694		-0.36	1448		-----		-----
445	D445-M	3.7493		1.84	1483		-----		-----
447	D445-M	3.6925		-0.42	1496	D445-M	3.6675		-1.42
448	D445-M	3.693		-0.40	1520	D445-M	3.6847		-0.73
463		-----		-----	1538	D445-	3.72706		0.95
468		-----		-----	1610	IP71-M	3.726		0.91
473		-----		-----	1613	D445-A	3.6807		-0.89
485		-----		-----	1631		-----		-----
495	D445-M	3.691		-0.48	1634		-----		-----
496	D445-A	3.7050		0.07	1635	D445-M	4.080	G(0.01)	15.00
604		-----		-----	1636		-----		-----
606		-----		-----	1710	D445-M	3.704		0.03
608		-----		-----	1715		-----		-----
631	D445-M	3.7048		0.07	1720		-----		-----
657	D445-M	3.697		-0.24	1724	D445-M	3.706		0.11
663		-----		-----	1811	D445-A	3.697		-0.24
671	D445-M	3.727	C	0.95	1833	D445-M	3.691		-0.48
732		-----		-----	1842		-----		-----
823		-----		-----	1913	D445-A	3.692		-0.44
851	D445-M	3.684		-0.76	1948		-----		-----
862	D445-M	3.7361		1.31	1951	D445-M	3.969	G(0.05)	10.58
869	D445-M	3.7567		2.13	1952	D445-M	3.833	G(0.01)	5.17
922		-----		-----	2129	D445-M	3.682588		-0.82
962		-----		-----	2130		-----		-----
963	D445-M	3.671		-1.28	2133	D445-A	3.6887		-0.57
974	D445-M	3.420	G(0.01)	-11.27	7001		-----		-----
994		-----		-----					
995	D445-M	3.702		-0.05					
996		-----		-----					
997		-----		-----					
998		-----		-----					

normality	not OK
n	71
outliers	10
mean (n)	3.7031
st.dev. (n)	0.03177
R(calc.)	0.0890
R(D445:12)	0.0704

Lab 671: first reported 4.28876
Lab 1059: first reported 3.882
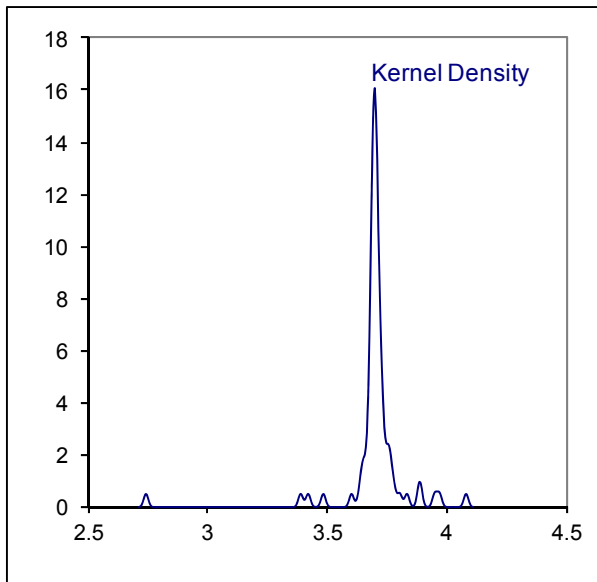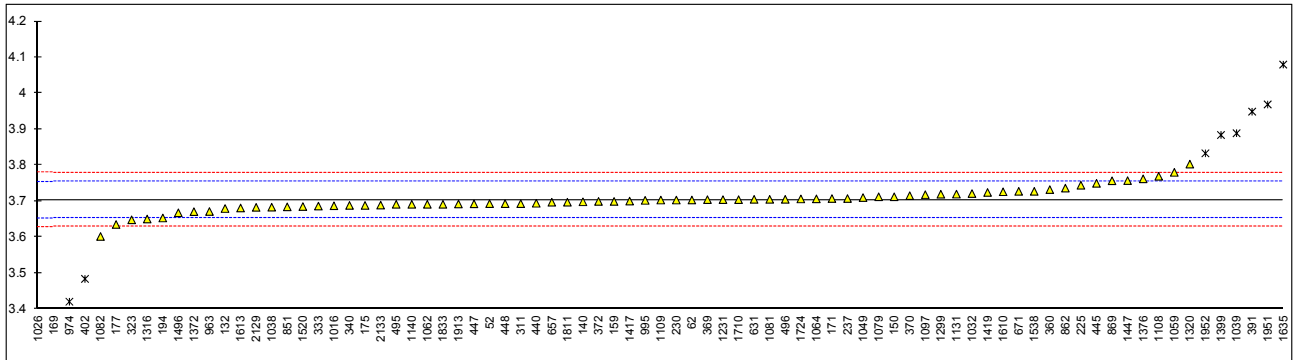
Determination of BOCLE on sample #12095; results in mm

lab	method	value	mark	z(targ)	remarks
334	D5001	0.614		-2.24	
1016	D5001	0.652		-0.50	
1026		-----		-----	
1081	D5001	0.67		0.32	
1082	D5001	0.677		0.63	
1131	D5001	0.674		0.50	
1264	D5001	0.70		1.68	
1316	D5001	0.725		2.82	
1320	D5001	0.67		0.32	
1322	D5001	0.661		-0.09	
1419	D5001	0.683		0.91	
1538	D5001	0.655		-0.37	
1631	D5001	0.650		-0.60	
1724	D5001	0.64		-1.05	
1833	D5001	0.64		-1.05	
1913	D5001	0.635		-1.28	

normality	OK			
n	15			
outliers	0			
mean (n)	0.6631			
st.dev. (n)	0.02755			
R(calc.)	0.0772			
R(D5001:10)	0.0615	(semi)	R(D5001:10) = 0.0352 (full automatic)	
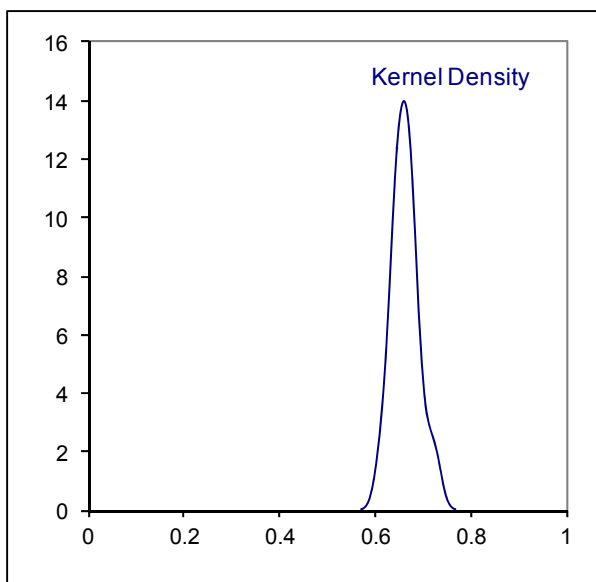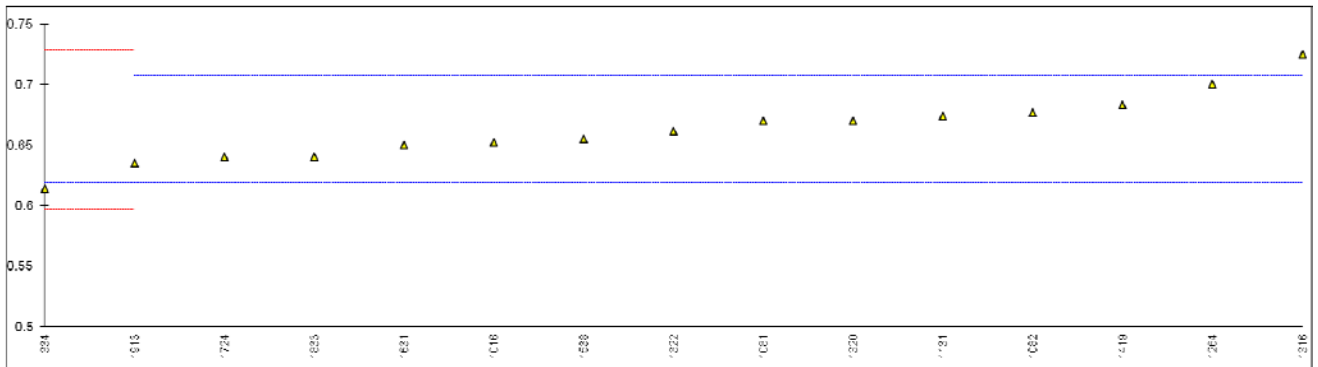
Determination of FAME on sample #12097; results in mg/kg

lab	method	value	mark	z(targ)	remarks
171	IP585	<0.1		<-8.63	False negative?
311	IP585	11		-0.78	
323	IP585	11.0		-0.78	
333	IP585	11.5		-0.42	
334	IP585	11.2		-0.64	
336	IP585	12.3		0.16	
445	IP585	13.73		1.18	
447	IP585	15.745		2.64	
448	IP585	9		-2.22	
496	IP585	15.58		2.52	
657	IP585	7.49		-3.31	
823	IP585	15.2		2.24	
851	IP PM-DY/09	11.47		-0.44	
862		-----		-----	
1017		-----		-----	
1026	IP590	12.9		0.59	
1062	in house	10.5		-1.14	
1064	IP PM-DY/09	11.9		-0.13	
1080	in house	9.46		-1.89	
1081	IP585	10		-1.50	
1082	In-house	4.61	G(0.05)	-5.38	
1095	IP585	14.6		1.81	
1121	IP585	0.47	G(0.01)	-8.36	
1299	IP585	11.65		-0.31	
1316		-----		-----	
1610	IP590	9.977		-1.52	
1631	IP590	13.94		1.34	
1634	IP585	13.3		0.88	
1724	IP590	12.95		0.62	
1833	IP590	12.8		0.52	
1842	IP590	12.9		0.59	
2130		-----		-----	

normality	OK
n	25
outliers	2
mean (n)	12.084
st.dev. (n)	2.0897
R(calc.)	5.851
R(IP585:10)	3.890
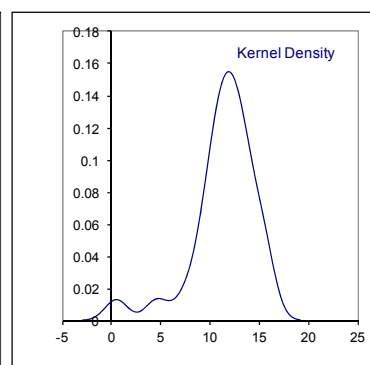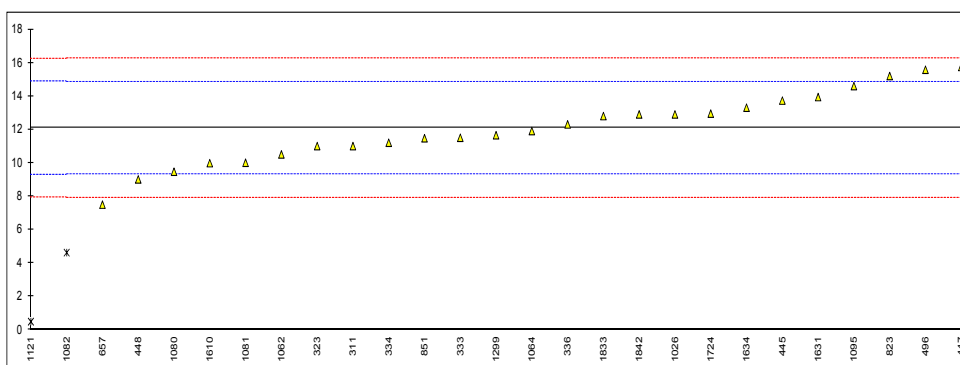
Determination of Particle Size Distribution on sample #12098; results per mL

lab	method	>4 µm	mark	>6 µm	mark	>14µm	mark	>21µm	mark	>25µm	mark	>30µm	mark
171	IP565	4059.4	C	1282.1		33.0		4.2		2.0		0.7	
230	IP564	2698.0		578.9		15.9		4.6		2.2		0.8	
311	IP564	2706		587	C	18	C	5	C	3	C	2	C
323	IP565	3858		825		42		7		3		2	
333	IP565	4110		1500		38		4		1		1	
334	IP565	4395		1136		46		8		3		1	
335		-----		-----		-----		-----		-----		-----	
340		-----		-----		-----		-----		-----		-----	
360	IP565	4119.9		1115.0		41.1		7.9		3.5		1.0	
369	IP564	1270.7		435.5		21.5		3.8		1.4		0.2	
370	IP564	3790.4		873.4		37.7		9.0		3.1		1.5	
372	IP564	3924.1		782.1		20.7		4.70		2.50		1.32	
391	IP565	6214		1384		76		16		6		3	
445	IP565	1850.8		633.3		34.6		8.6		3.5		1.3	
495		-----		-----		-----		-----		-----		-----	
657	IP565	3584.3		865.1		60.8		12.5		4.1		1.6	
671	IP564	2772.8		569.7		28.8		16.2		13.9	G(1)	11.5	G(1)
823		-----		-----		-----		-----		-----		-----	
851	IP564	1791.8		401.8		10.5		1.9		0.8		0.3	
869	IP565	2385.2		612.6	C	18.2		3.7		1.5		0.6	
963		-----		-----		-----		-----		-----		-----	
974	IP564	2180.400		496.900		16.500		3.500		1.400		0.300	
1016	IP565	3847.1		1027.1		41.1		8.5		2.5		0.9	
1017		-----		-----		-----		-----		-----		-----	
1026	IP565	3636.75		1175.5		69		15		7		3	
1032	IP564	3155.7		799.9		37.7		7.1		3.0		0.8	
1038	IP565	2218.0	ex	953.2	ex	83.3	ex	19.6	ex	9.6	ex	4.3	ex
1039	IP565	4018		1093		48		≥11		≥6		≥3	
1062	IP564	3924		955		20.4		2.2		0.7		0.3	
1064	IP564	3070.5		526.1		13.0		2.2		1.1		0.3	
1065	IP564	5125.9		1286.6		49.5		12.9		5.6		2.4	
1081	IP564	3177		664		21		4.8		2		0.8	
1095	IP565	3881		1106		66		13		5		2	
1097	IP564	2499.7		580.5		19.4		4.4		2.3		0.9	
1108	IP564	4697.2		850.4		24.8		4.1		1.6		0.3	
1109	IP565	3043.5		1142.3		59.5		11.8		5.7		2.8	
1131	IP565	5484		1247		56		13		6		3	
1146	IP564	3047.60	C	492.53		23.13		6.13		2.60		0.47	
1200	IP565	1949.0		596.2		26.1		6.2		2.6		1.2	
1264	IP564	8218.1	G(1)	1433.2		42.7		8.8		5.6		4.0	
1316	IP564	3735	ex	1097	ex	289	G(1)	160	G(1)	81	G(1)	16	G(1)
1419	IP564	2290.1		291.1		11.0		8.0		7.4		7.0	G(1)
1538	IP565	2896.6		632.9		24.5		6.4		2.9		1.2	
1610	IP565	4027.0		1075.6		37.7		6.0		2.4		0.5	
1613	IP565	2616.6	ex	775.8	ex	71.2	ex	50.5	G(1)	48.2	G(1)	46.8	G(1)
1631		-----		-----		-----		-----		-----		-----	
1710	IP565	4385.3		778.7		32.5		9.2		5.5		3.0	
1720		-----		-----		-----		-----		-----		-----	
1724	IP565	3079.4		403.5		11.8		2.1		0.8		0.4	
1811	IP564	3763.0		912.4		34.6		7.5		2.5		1.2	
1833	IP564	2907.5		561.7		23.3		4.6		2.3		1.1	
1913	IP564	4434.2		814.0		36.0		7.6		3.1		1.2	
2130		-----		-----		-----		-----		-----		-----	
	normality	OK		OK		OK		OK		not OK		not OK	
	n	40		41		41		40		39		38	
	outliers	1		0		1		1		3		4	
	mean (n)	3451.27		842.04		33.85		7.30		3.14		1.33	
	st.dev. (n)	1041.032		317.350		16.809		3.910		1.792		0.966	
	R(calc.)	2914.89		888.58		47.07		10.95		5.02		2.70	
	R(IP564:10)	795.89		328.56		26.51		9.26		4.20`		2.19	

Lab 311 first reported: 2277, 436, 12, 3, 1, <1
Lab 869 first reported: 1301.1, 332.8
Lab 1131 first reported 4884

z-scores of particle size distribution

lab	>4 µm	>6 µm	>14µm	>21µm	>25µm	>30µm
171	2.14	3.75	-0.09	-0.94	-0.76	-0.80
230	-2.65	-2.24	-1.90	-0.82	-0.63	-0.67
311	-2.62	-2.17	-1.67	-0.70	-0.09	0.86
323	1.43	-0.15	0.86	-0.09	-0.09	0.86
333	2.32	5.61	0.44	-1.00	-1.42	-0.42
334	3.32	2.51	1.28	0.21	-0.09	-0.42
335	-----	-----	-----	-----	-----	-----
340	-----	-----	-----	-----	-----	-----
360	2.35	2.33	0.77	0.18	0.24	-0.42
369	-7.67	-3.46	-1.30	-1.06	-1.16	-1.44
370	1.19	0.27	0.41	0.51	-0.03	0.22
372	1.66	-0.51	-1.39	-0.79	-0.43	-0.01
391	9.72	4.62	4.45	2.63	1.91	2.14
445	-5.63	-1.78	0.08	0.39	0.24	-0.03
495	-----	-----	-----	-----	-----	-----
657	0.47	0.20	2.85	1.57	0.64	0.35
671	-2.39	-2.32	-0.53	2.69	7.17	12.98
823	-----	-----	-----	-----	-----	-----
851	-5.84	-3.75	-2.47	-1.63	-1.56	-1.31
869	-3.75	-1.96	-1.65	-1.09	-1.09	-0.93
963	-----	-----	-----	-----	-----	-----
974	-4.47	-2.94	-1.83	-1.15	-1.16	-1.31
1016	1.39	1.58	0.77	0.36	-0.43	-0.54
1017	-----	-----	-----	-----	-----	-----
1026	0.65	2.84	3.71	2.33	2.57	2.14
1032	-1.04	-0.36	0.41	-0.06	-0.09	-0.67
1038	-4.34	0.95	5.22	3.72	4.31	3.79
1039	1.99	2.14	1.49	-----	-----	-----
1062	1.66	0.96	-1.42	-1.54	-1.62	-1.31
1064	-1.34	-2.69	-2.20	-1.54	-1.36	-1.31
1065	5.89	3.79	1.65	1.69	1.64	1.37
1081	-0.96	-1.52	-1.36	-0.76	-0.63	-0.67
1095	1.51	2.25	3.39	1.72	1.24	0.86
1097	-3.35	-2.23	-1.53	-0.88	-0.56	-0.54
1108	4.38	0.07	-0.96	-0.97	-1.03	-1.31
1109	-1.43	2.56	2.71	1.36	1.71	1.88
1131	7.15	3.45	2.34	1.72	1.91	2.14
1146	-1.42	-2.98	-1.13	-0.35	-0.36	-1.09
1200	-5.29	-2.10	-0.82	-0.33	-0.36	-0.16
1264	16.77	5.04	0.93	0.45	1.64	3.41
1316	1.00	2.17	26.94	46.17	51.88	18.72
1419	-4.09	-4.70	-2.41	0.21	2.84	7.24
1538	-1.95	-1.78	-0.99	-0.27	-0.16	-0.16
1610	2.03	1.99	0.41	-0.39	-0.49	-1.05
1613	-2.94	-0.56	3.94	13.06	30.02	58.02
1631	-----	-----	-----	-----	-----	-----
1710	3.29	-0.54	-0.14	0.57	1.57	2.14
1720	-----	-----	-----	-----	-----	-----
1724	-1.31	-3.74	-2.33	-1.57	-1.56	-1.18
1811	1.10	0.60	0.08	0.06	-0.43	-0.16
1833	-1.91	-2.39	-1.11	-0.82	-0.56	-0.29
1913	3.46	-0.24	0.23	0.09	-0.03	-0.16
2130	-----	-----	-----	-----	-----	-----
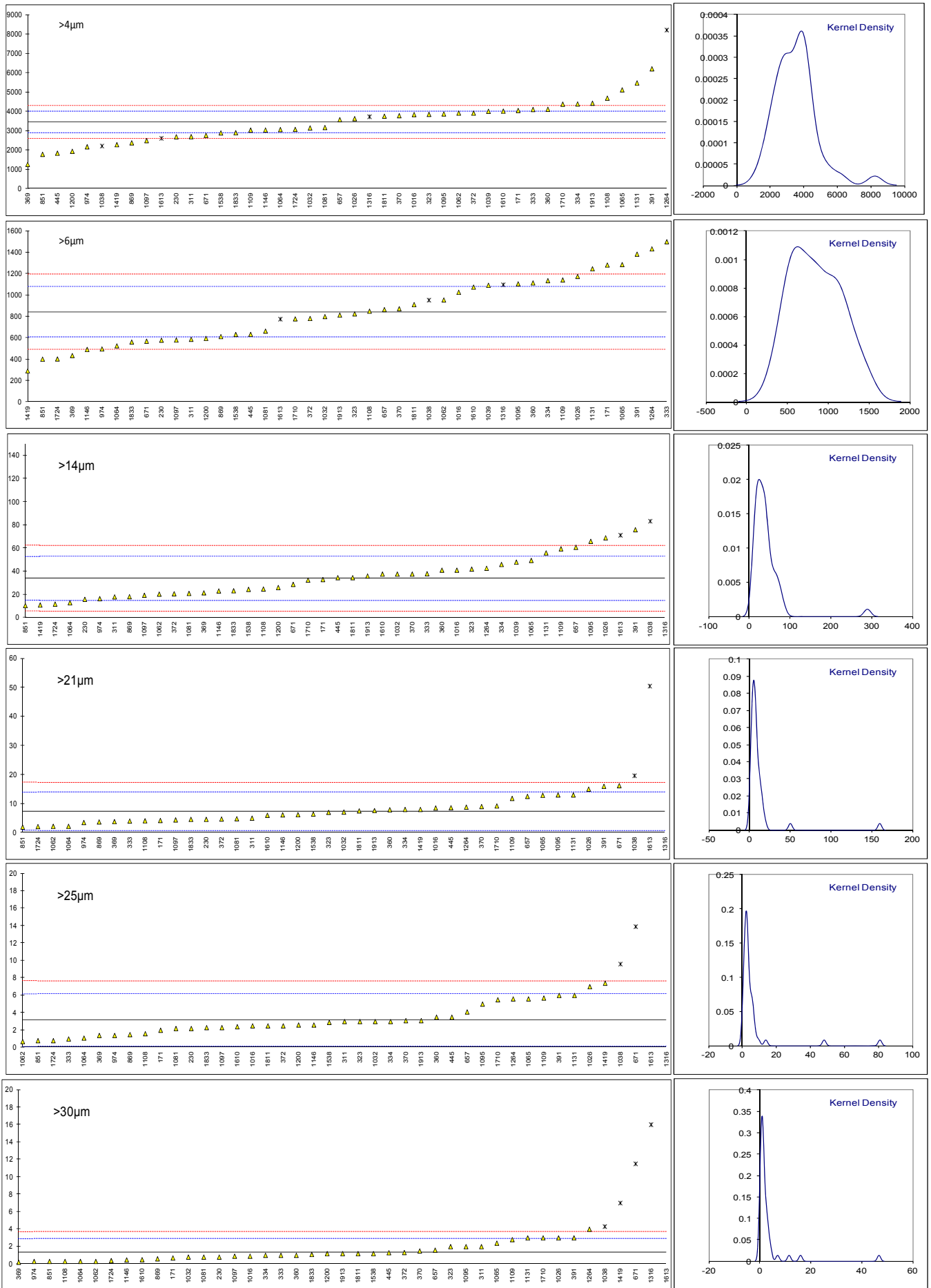
APPENDIX 2
Z-scores of individual participants for distillation of sample #12094

lab	IBP-A	10%-A	50%-A	90%-A	FBP-A	IBP-M	10%-M	50%-M	90%-M	FBP-M
52	0.85	-0.18	0.18	1.39	-0.03	-----	-----	-----	-----	-----
62	0.54	0.05	0.08	0.62	0.76	-----	-----	-----	-----	-----
132	-0.27	-0.41	-0.01	0.54	0.09	-----	-----	-----	-----	-----
140	0.17	0.58	-0.01	0.77	-0.62	-----	-----	-----	-----	-----
150	0.20	0.28	-0.01	0.54	-0.47	-----	-----	-----	-----	-----
153	0.64	0.20	0.74	0.62	0.44	-----	-----	-----	-----	-----
159	0.30	0.58	0.93	1.24	0.48	-----	-----	-----	-----	-----
169	-0.75	-0.10	-0.01	-1.49	-0.66	-----	-----	-----	-----	-----
171	-0.54	-0.10	0.08	0.77	-0.54	-----	-----	-----	-----	-----
175	1.15	0.58	1.31	2.72	1.19	-----	-----	-----	-----	-----
177	0.07	-0.41	-1.14	-2.03	-0.39	-----	-----	-----	-----	-----
194	0.71	0.66	0.46	-0.01	0.24	-----	-----	-----	-----	-----
216	-----	-----	-----	-----	-----	-2.35	-1.73	-2.98	-2.71	-1.02
221	-----	-----	-----	-----	-----	-4.30	1.09	-0.64	-0.42	1.31
224	-----	-----	-----	-----	-----	0.92	0.43	0.81	0.96	1.00
225	-----	-----	-----	-----	-----	0.25	-1.73	0.76	1.11	1.31
228	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
230	0.47	-0.25	-0.39	0.69	-0.54	-----	-----	-----	-----	-----
237	-----	-----	-----	-----	-----	-0.40	0.15	0.29	0.35	-0.68
254	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
256	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
258	0.17	0.35	0.46	0.23	-0.11	-----	-----	-----	-----	-----
273	0.34	0.13	-0.29	-0.32	0.05	-----	-----	-----	-----	-----
311	-1.32	-0.48	-0.58	-1.49	0.91	-----	-----	-----	-----	-----
317	-0.61	0.28	-0.20	-0.55	-0.23	-----	-----	-----	-----	-----
323	0.44	0.73	0.55	-0.16	0.32	-----	-----	-----	-----	-----
333	0.10	-0.18	-0.67	-0.94	-0.03	-----	-----	-----	-----	-----
334	0.00	-0.63	0.46	1.55	0.48	-----	-----	-----	-----	-----
335	0.37	-1.09	-0.01	0.93	-0.66	-----	-----	-----	-----	-----
340	0.47	-0.71	0.65	1.24	0.09	-----	-----	-----	-----	-----
353	-0.27	0.13	0.93	1.32	0.80	-----	-----	-----	-----	-----
360	-1.32	0.51	0.37	-2.03	-1.85	-----	-----	-----	-----	-----
369	0.10	0.13	-0.20	-0.63	-0.19	-----	-----	-----	-----	-----
370	0.37	-0.86	0.08	-0.55	0.40	-----	-----	-----	-----	-----
371	-0.20	-0.18	-0.20	0.69	-0.23	-----	-----	-----	-----	-----
372	-0.31	-0.25	0.18	0.23	0.13	-----	-----	-----	-----	-----
391	-----	-----	-----	-----	-----	-0.40	0.15	0.29	1.11	1.31
399	0.71	-1.09	-0.20	-0.55	-0.15	-----	-----	-----	-----	-----
402	0.78	0.51	0.74	3.03	1.27	-----	-----	-----	-----	-----
440	0.00	0.13	0.37	1.08	0.80	-----	-----	-----	-----	-----
445	-0.03	-0.63	-1.52	-1.49	-1.14	-----	-----	-----	-----	-----
447	0.61	0.66	0.37	1.47	0.32	-----	-----	-----	-----	-----
448	-0.47	-1.09	-0.01	1.47	-0.74	-----	-----	-----	-----	-----
463	-0.37	-0.10	-0.01	-0.24	0.32	-----	-----	-----	-----	-----
468	0.78	0.35	-0.58	-0.79	0.88	-----	-----	-----	-----	-----
473	-0.24	0.05	0.08	0.46	0.05	-----	-----	-----	-----	-----
485	-0.63	-0.60	-0.95	-1.56	-0.58	-----	-----	-----	-----	-----
495	0.91	-0.18	-0.86	-0.40	-0.35	-----	-----	-----	-----	-----
496	0.95	0.66	0.27	0.38	0.76	-----	-----	-----	-----	-----
604	-1.36	-0.25	-0.86	-0.79	-0.47	-----	-----	-----	-----	-----
606	0.75	0.73	1.69	0.38	0.52	-----	-----	-----	-----	-----
608	-----	-----	-----	-----	-----	-0.08	1.56	1.23	1.49	3.64
631	-----	-----	-----	-----	-----	0.25	-1.73	0.29	0.35	-3.34
657	0.03	0.43	0.27	-0.47	-0.19	-----	-----	-----	-----	-----
663	0.37	1.04	0.37	0.69	0.40	-----	-----	-----	-----	-----
671	-0.51	0.66	-0.01	-1.95	-1.41	-----	-----	-----	-----	-----
732	-----	-----	-----	-----	-----	0.57	2.03	0.29	-3.47	-2.35
823	-0.81	-0.48	-0.39	-0.94	-0.19	-----	-----	-----	-----	-----
851	1.12	0.13	-0.86	-0.32	0.88	-----	-----	-----	-----	-----
862	-0.07	0.51	0.55	0.30	1.15	-----	-----	-----	-----	-----
869	-----	-----	-----	-----	-----	1.87	1.56	-0.64	-0.04	0.65
922	-----	-----	-----	-----	-----	-0.97	-1.62	-2.86	-2.60	-1.27
962	-----	-----	-----	-----	-----	0.57	0.62	1.70	1.49	1.31
963	0.37	0.35	1.50	1.08	0.36	-----	-----	-----	-----	-----
974	-1.08	-1.55	-1.24	0.30	-4.33	-----	-----	-----	-----	-----
994	-----	-----	-----	-----	-----	-0.08	-1.73	-1.58	-0.42	-1.35
995	-----	-----	-----	-----	-----	-0.27	0.15	-0.64	-0.42	-0.68
996	-----	-----	-----	-----	-----	-0.73	-1.26	-0.18	0.73	0.98
997	-----	-----	-----	-----	-----	0.57	0.15	0.29	-0.42	-1.02
998	-0.07	0.43	-0.20	0.23	0.44	-----	-----	-----	-----	-----
1016	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1017	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1021	-0.31	-0.56	0.18	1.55	-0.27	-----	-----	-----	-----	-----
1026	-1.12	1.57	0.55	-0.24	0.48	-----	-----	-----	-----	-----
1032	0.30	0.73	-0.01	-0.40	-0.11	-----	-----	-----	-----	-----
1038	0.10	-0.25	-0.58	0.15	-0.03	-----	-----	-----	-----	-----
1039	-0.41	-1.01	1.21	-0.55	0.28	-----	-----	-----	-----	-----

1049	0.07	0.73	0.27	0.62	0.32	-----	-----	-----	-----	-----
1059	-0.78	-0.56	-0.48	-1.10	-0.62	-----	-----	-----	-----	-----
1062	2.47	3.32	-1.52	-4.13	1.27	-----	-----	-----	-----	-----
1064	0.68	0.73	1.12	1.78	0.72	-----	-----	-----	-----	-----
1065	-0.41	-1.55	-1.05	-0.86	-0.43	-----	-----	-----	-----	-----
1079	0.07	0.51	0.18	-0.24	0.05	-----	-----	-----	-----	-----
1080	0.03	-1.39	-1.71	-1.02	-0.90	-----	-----	-----	-----	-----
1081	0.24	-0.48	0.18	0.62	0.36	-----	-----	-----	-----	-----
1082	-0.03	0.58	0.74	0.07	0.24	-----	-----	-----	-----	-----
1097	0.54	0.58	0.18	0.15	0.20	-----	-----	-----	-----	-----
1108	-0.24	1.11	-1.14	-2.19	-0.47	-----	-----	-----	-----	-----
1109	0.14	-0.33	0.55	1.94	0.13	-----	-----	-----	-----	-----
1126	-0.64	-1.47	1.03	-0.86	0.28	-----	-----	-----	-----	-----
1131	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1140	-2.27	-0.48	-0.48	-0.16	-0.07	-----	-----	-----	-----	-----
1150	1.00	-0.21	-1.21	-1.84	0.63	-----	-----	-----	-----	-----
1194	0.51	-0.71	0.08	-1.41	-1.81	-----	-----	-----	-----	-----
1231	-0.17	0.51	0.08	-0.16	0.01	-----	-----	-----	-----	-----
1264	-1.32	-1.32	0.08	0.62	0.24	-----	-----	-----	-----	-----
1279	0.83	0.77	0.08	-0.63	0.52	-----	-----	-----	-----	-----
1284	-0.27	-0.63	-1.61	-1.10	-1.81	-----	-----	-----	-----	-----
1297	0.61	0.35	-0.48	-0.40	-0.27	-----	-----	-----	-----	-----
1299	-0.61	-0.10	-0.48	0.93	0.13	-----	-----	-----	-----	-----
1316	-0.78	-0.41	0.18	1.71	0.01	-----	-----	-----	-----	-----
1318	-0.07	0.20	0.27	0.62	-0.19	-----	-----	-----	-----	-----
1320	-0.03	0.58	-0.39	-0.94	-1.57	-----	-----	-----	-----	-----
1372	-1.56	0.28	-0.58	-0.40	-1.18	-----	-----	-----	-----	-----
1376	-0.81	-2.38	-1.80	-2.50	-0.07	-----	-----	-----	-----	-----
1399	-2.41	0.58	0.84	-0.24	0.36	-----	-----	-----	-----	-----
1417	-0.07	0.05	1.69	2.56	0.64	-----	-----	-----	-----	-----
1419	0.17	-0.18	0.08	-0.24	-0.47	-----	-----	-----	-----	-----
1447	-----	-----	-----	-----	-----	0.90	0.15	-0.64	0.35	-0.02
1448	-0.24	1.42	1.50	1.16	0.60	-----	-----	-----	-----	-----
1483	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1496	0.61	1.42	1.03	1.86	1.15	-----	-----	-----	-----	-----
1520	-----	-----	-----	-----	-----	-1.51	-0.04	-2.14	-2.02	-1.42
1538	1.05	1.04	0.46	-0.79	-0.54	-----	-----	-----	-----	-----
1610	0.98	0.58	0.74	1.24	0.13	-----	-----	-----	-----	-----
1613	-0.17	0.35	0.08	-0.08	0.44	-----	-----	-----	-----	-----
1631	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1634	-0.54	-0.10	-0.29	0.07	0.09	-----	-----	-----	-----	-----
1635	-0.37	-0.63	-0.67	-0.55	-1.73	-----	-----	-----	-----	-----
1636	0.34	0.35	0.37	-0.01	0.20	-----	-----	-----	-----	-----
1710	0.37	0.20	0.27	0.69	0.84	-----	-----	-----	-----	-----
1715	0.30	0.28	-0.11	0.23	-0.23	-----	-----	-----	-----	-----
1720	-0.34	-1.09	-1.71	-1.18	-0.11	-----	-----	-----	-----	-----
1724	-0.37	-0.86	0.46	-0.16	0.40	-----	-----	-----	-----	-----
1811	-0.47	-1.01	-0.77	-0.24	0.20	-----	-----	-----	-----	-----
1833	0.61	0.13	-0.77	-1.10	0.05	-----	-----	-----	-----	-----
1842	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1913	-----	-----	-----	-----	-----	0.90	1.80	0.53	1.11	1.64
1948	1.05	0.43	-0.39	-1.33	0.20	-----	-----	-----	-----	-----
1951	0.91	-0.03	-0.01	1.01	1.03	-----	-----	-----	-----	-----
1952	-0.64	-1.24	0.93	-1.41	-0.62	-----	-----	-----	-----	-----
2129	-1.80	-2.08	-2.93	-2.50	-1.57	-----	-----	-----	-----	-----
2130	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2133	-0.58	0.58	0.55	-0.01	0.09	-----	-----	-----	-----	-----
7001	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

APPENDIX 3

Number of participants per country

1 lab in AFGHANISTAN	1 lab in NIGERIA
2 labs in AUSTRALIA	1 lab in NORTHERN IRELAND
1 lab in AZERBAIJAN	2 labs in NORWAY
6 labs in BELGIUM	1 lab in OMAN
2 labs in BULGARIA	5 labs in P.R. of CHINA
2 labs in CANADA	1 lab in PAKISTAN
1 lab in CÔTE D'IVOIRE	1 lab in PHILIPPINES
1 lab in CROATIA	2 labs in POLAND
1 lab in CYPRUS	1 lab in PORTUGAL
1 lab in CZECH REPUBLIC	1 lab in QATAR
1 lab in DENMARK	1 lab in REPUBLIC OF GUINEE
1 lab in EGYPT	1 lab in REPUBLIC OF MACEDONIA
2 labs in ESTONIA	1 lab in ROMANIA
1 lab in FINLAND	1 lab in RUSSIA
5 labs in FRANCE	3 labs in SAUDI ARABIA
2 labs in GEORGIA	1 lab in SENEGAL
3 labs in GERMANY	1 lab in SINGAPORE
2 labs in GREECE	2 labs in SLOVAK REPUBLIC
1 lab in GUAM	1 lab in SLOVENIA
1 lab in HONG KONG	2 labs in SOUTH AFRICA
3 labs in HUNGARY	1 lab in SPAIN
1 lab in IRAN	1 lab in SUDAN
1 lab in IRELAND	3 labs in SWEDEN
1 lab in ISRAEL	1 lab in TANZANIA
2 labs in ITALY	2 labs in THAILAND
1 lab in JORDAN	8 labs in THE NETHERLANDS
1 lab in KAZAKHSTAN	1 lab in TOGO
1 lab in KENYA	1 lab in TUNISIA
1 lab in KOREA	4 labs in TURKEY
2 labs in LATVIA	1 lab in TURKMENISTAN
2 labs in LITHUANIA	1 lab in U.A.E.
4 labs in MALAYSIA	10 labs in U.S.A.
2 labs in MAURITIUS	10 labs in UNITED KINGDOM
1 lab in MOZAMBIQUE	1 lab in URUGUAY

APPENDIX 4

Abbreviations:

C	= final result after checking of first reported suspect result
U	= reported in wrong unit
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
ex	= excluded from calculations
E	= error in calculations
n.a.	= not applicable
W	= withdrawn on request participant
fr.	= first reported
U	= reported in a deviating unit
SDS	= Safety Data Sheet

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