Results of Proficiency Test
Jet Fuel A1
September 2010

Organised by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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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 of September 2010 was extended with PTs for the determination for FAME, BOCLE and Particle Size Distribution. In the regular PT, 141 laboratories in 65 different countries have participated; for BOCLE 14 laboratories participated, for FAME 25 and for Particle Size Distribution 56 laboratories. See appendix 4 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. In the regular Jet Fuel round robin, it was decided, depending on the registration for the different PTs, to send one sample 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" and/or one sample for BOCLE and/or one sample for FAME and/or one sample for Particle Size Distrubution.
The participants were requested to report rounded and unrounded results. The unrounded results were preferably used for statistical evaluation.

2.1 ACCREDITATION

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, is accredited in agreement with ISO guide 43 and ILAC-G13:2007, (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This ensures 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. The participants were asked to report the analytical results using the indicated units on the report form.

2.3 CONFIDENTIALITY STATEMENT

All data present 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 REGULAR JET FUEL

The necessary bulk material was obtained from a local refinery. The approx. 400 litre bulk material was homogenised and subsequently divided over 355 amber glass bottles of one litre with inner and outer caps and labelled #1054. The homogeneity of the subsamples #1054 was checked by the determination of Density in accordance with ASTM D 4052:09 on 12 stratified randomly selected samples.

Sample	Density @ 15°C in kg/L
#1054-1	0.79685
#1054-2	0.79685
#1054-3	0.79685
#1054-4	0.79684
#1054-5	0.79684
#1054-6	0.79684
#1054-7	0.79684
#1054-8	0.79684
#1054-9	0.79684
#1054-10	0.79684
#1054-11	0.79685
#1054-12	0.79684

table 1: homogeneity test of sub samples #1054

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/L
r (observed)	0.00001
reference method	D4052:09
0.3 x R (ref. method)	0.00015

Table 2: evaluation of repeatability of subsamples #1054

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 homogenized and subsequently divided over 42 amber glass bottles of 100 mL and labelled #1055. The homogeneity of the subsamples #1055 was checked by the determination of Density in accordance with ASTM D4052:09 on 8 stratified randomly selected samples.

Sample	Density @ 15°C in kg/L
#1055-1	0.81368
#1055-2	0.81368
#1055-3	0.81367
#1055-4	0.81368
#1055-5	0.81368
#1055-6	0.81368
#1055-7	0.81368
#1055-8	0.81367

table 3: homogeneity test of sub samples #1055

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/L
r (observed)	0.00001
reference method	D4052:09
0.3 x R (ref. method)	0.00015

Table 4: evaluation of repeatability of subsamples #1055

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

2.4.3 PARTICLE SIZE DETERMINATION

The third bulk material especially for the Particle Size determination was obtained from a participating laboratory. Of the approx. 50 litre bulk sample, which was homogenized, 88 amber glass bottles of 500 mL with inner and outer caps were filled and labelled #1056. The homogeneity of the subsamples #1056 was checked by the determination of Particle Size Distribution in accordance with IP564:02 on 7 stratified random selected samples.

Sample	> 4 µm	> 6 µm	> 14 µm	> 21 µm	> 25 µm	> 30 µm
#1056-1	25145	4935	221	48	18	8
#1056-2	24692	4776	206	41	17	7
#1056-3	24892	4847	211	42	17	7
#1056-4	25068	4926	221	45	17	7
#1056-5	25234	4995	219	44	14	7
#1056-6	25192	4998	217	47	19	8
#1056-7	25468	5029	201	40	15	6

Table 5: homogeneity test of sub samples #1056

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:

Sample	> 4 µm	> 6 µm	> 14 µm	> 21 µm	> 25 µm	> 30 µm
r (observed)	699.6	253.8	22.1	8.5	4.8	1.9
reference method	IP564:02	IP564:02	IP564:02	IP564:02	IP564:02	IP564:02
0.3 x R (ref. method)	1399.9	451.4	32.3	16.7	6.7	3.5

Table 6: evaluation of repeatabilities of subsamples #1056

The repeatabilities of the results for Particle Size are in agreement with the repeatabilities mentioned in IP564:10. Therefore, homogeneity of the subsamples #1056 was assumed.

2.4.4 Determination of Fatty Acid Methyl Ester (FAME)

The bulk material for the FAME determination was obtained from a local laboratory. The batch (approx. 5 L) was spiked with 110 mg FAME (#1036, from PT iis10G02). The batch was thoroughly homogenized and divided over 50 bottles of 100 mL labelled #1057. The homogeneity of the subsamples #1057 was checked by the determination of FAME in accordance with method IP PM-DY/09 on 4 stratified randomly selected samples each.

Sample	FAME in mg/kg
#1057-1	20
#1057-2	21
#1057-3	21
#1057-4	21

Table 7: homogeneity test of sub samples #1057

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)	1.4
reference method	IP585:10
0.3 x R (ref. method)	1.8

Table 8: evaluation of repeatabilities of subsamples #1057

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 September 1, 2010: 2 bottles regular Jet Fuel (2*1 litre, labelled #1054), 1 bottle especially for the BOCLE test (1*100 mL, labelled #1055), 1 bottle especially for the Particle Size Distribution (1*500 mL, labelled #1056) and 1 bottle for the FAME determination (1*100 mL, labelled #1057) 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 D4306:07. The material has been found sufficiently stable for the period of the proficiency test.

2.6 ANALYSIS

Depending on the registration the participants were requested to determine on sample #1054: Aromatics by FIA, Aromatics by HPLC, 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, Total Acidity and Total Sulphur and Viscosity @ -20°C. 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".
On sample #1055 was requested to determine the Ball-On-Cylinder-Lubricity Evaluator test.
On sample #1056 was requested to determine the particle size at >4µm, >6µm, >14µm, >21µm, >25µm and >30µm.
On sample #1057 was requested to determine the Fatty Acid Methyl Esters content.
To get comparable results detailed report forms, on which the units were prescribed, was sent together with each set of samples. Also a letter of instructions and a SDS were added to the package.

3 RESULTS

During four weeks after sample despatch, the results of the individual laboratories were gathered. The original data are tabulated per determination in 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.

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

3.2 GRAPHICS

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

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

The $z_{(target)}$ scores are listed in the result tables in appendix 1.
Absolute values for z<2 are very common and absolute values for z>3 are very rare.
Therefore, the usual interpretation of z-scores is as follows:

$\lvert z \rvert < 1$	good
$1 < \lvert z \rvert < 2$	satisfactory
$2 < \lvert z \rvert < 3$	questionable
$\lvert z \rvert > 3$	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 Côte D'Ivoire, Egypt, Jordan, Kazakhstan, Malaysia, Oman and Turkmenistan.
For the "regular Jet Fuel A1" PT, 22 participants reported the results after the final reporting date and 6 participants did not report any results at all.
For the PT "Particle Size", 6 participants reported the results after the final reporting date and 11 participants did not report any results at all.
For the PT "BOCLE", only 3 participants did not report any results.
For the PT "FAME", 3 participants reported the results after the final reporting date and 8 participants did not report any results at all.
In total, the participants reported 2759 numerical results. Observed were 59 outlying results, which is 2.1%. 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. Anormal distributions were found for the following determinations on sample #1054: Colour Saybolt, Density, Distillation 50% recovered, Existent Gum, Flash Point, Freezing Point, JFTOT, Mercaptan Sulphur, Naphthalenes, Smoke Point, Total Acidity, Total Sulphur and Viscosity. And for Particle Size distribution (sample #1056) >25 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 "Issue 24_October_2008". One must keep in mind that ISO-methods are not mentioned in the "Checklist".

Aromatics by: FIA (D1319): This determination was not problematic. One statistical outlier was observed and the calculated reproducibility is in good agreement with ASTM 1319:08.

Aromatics by: HPLC (D6379) The %M/M determination was problematic for several laboratories. Two statistical outliers were observed and one result was excluded for statistical evaluation as %V/V > % M/M. The calculated reproducibility after rejection of the statistical outliers, is not in agreement with ASTM D6379:04.
The %V/V determination may also be problematic. Regretfully, no precision data for the determination in %V/V is mentioned in ASTM D6379:04. however, when the precision data is compared with the precision data of the previous round robin (iis10J01) the – in this round robin calculated - reproducibility is much larger (4.92 vs 1.29 %V/V).

Colour Saybolt: This determination was very problematic in this round robin. Obviously, this was not an "easy" sample as reported results vary between 16 and 27. Two statistical outliers were observed and the calculated reproducibility, after rejection of the statistical outliers, is not in agreement with the requirements

of ASTM D156:07a. It may be advised to consider switching to ASTM D6045 to decrease the spread of the test results. Defstan 91-91, Issue 6 explains the impact when differences between test results as found in this round robin occur in normal Jet operations.

Density: This determination was rather 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 D4052:09.

Distillation: The automated mode distillation was not problematic. In total only two statistical outliers were observed. All calculated reproducibilities after rejection of the statistical outliers, are in agreement with the requirements of ASTM D86:09e1 (automated).
The manual mode distillation was problematic. Only one statistical outlier was observed. However, all calculated reproducibilities after rejection of the statistical outlier, are not in agreement with the requirements of ASTM D86:09e1 (manual mode), except for Initial Boiling Point which is in full agreement with the target requirement.

Existent Gum: This determination was not problematic. Only two statistical outliers were observed and the calculated reproducibility, after rejection of the statistical outliers, is in good agreement with ASTM D381:09.

Flash Point: This determination was not problematic. This in contrast with all previous round robins. The reason for the change in performance is the change in target reproducibility present in the latest version of IP170.
Four statistical outliers were observed. The calculated reproducibility, after rejection of the statistical outliers, is in good agreement with the requirements of IP170:09.
When the results for IP170 and ASTM D56 were evaluated separately, both calculated reproducibilities are in agreement with the requirements of the respective test method.

Freezing Point: This determination was not problematic. Only one statistical outlier was observed and the calculated reproducibility, after rejection of the statistical outliers, is in good agreement with the requirements of ASTM D2386:06.

JFTOT: Some reporting problems have been observed. Thirteen laboratories reported a higher volume than the maximum allowed (450 ± 45 mL may be pumped in a valid test, see ASTM D 3241:06-B 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. Also note that the pretest flush volume should not be included in the pumped volume.

Mercaptan Sulphur: This determination was problematic for a number of laboratories at this positive level of 0.0013%M/M. Five statistical outliers were observed. The calculated reproducibility, after rejection of the statistical outliers, is in full agreement with the requirements of ASTM D3227:04a. The use of either an acidic or an alkalinic solvent may explain (part of) the large spread observed.

MSEP: This determination was problematic. One statistical outlier was observed. However, the calculated reproducibility, after rejection of the statistical outliers, is not in agreement with the requirements of ASTM D3948:08.

Naphthalenes: This determination was not problematic. Only two statistical outliers were observed. The calculated reproducibility, after rejection of the statistical outliers, is in full agreement with the requirements of ASTM D1840:07-B.

Smoke Point: This determination was not problematic. No statistical outliers were observed. Also, the calculated reproducibility is in full agreement with the requirements of ASTM D1322:08.

Specific Energy: This determination may be problematic. Two statistical outliers were observed. Another two test results were excluded from statistical evaluation as the test method used is not compatible with ASTM D3338. The calculated reproducibility is not in agreement with the requirements of ASTM D3338:09. A possible reason for this fact is mentioned in note 5 of ASTM D3338:09.

Total Acidity: This determination was very problematic. Twelve (!) statistical outliers were observed. Also, seven results were excluded from statistical evaluation as the sample was not purged during the determination. The calculated reproducibility even after rejection of the 19 suspect test results, is not in agreement with the requirements of ASTM D3242:08.

Total Sulphur: This determination was problematic at the (high) level of Sulphur present in this sample (1200 mg/kg). Three statistical outliers were observed. After excluding the statistical outliers, the calculated reproducibility is not in agreement with the requirements of ASTM D5453:09.

Viscosity: This determination was not problematic. Four statistical outliers were observed. However, the calculated reproducibility, after rejection of the statistical outliers, is in full agreement with the requirements of ASTM D445:09.

BOCLE: This determination was not problematic. No statistical outliers were observed and the calculated reproducibility is in good agreement with the requirements of ASTM D5001:08.

FAME: This determination was problematic. One statistical outlier and two false negative results were observed. The calculated reproducibility after rejection

of the statistical outlier is not in agreement with the requirements of IP585:2010. The average recovery of FAME (theoretical increment of 25.4 mg FAME/kg) may be unsatisfactory: “less then 81%” (the actual blank FAME content is unknown).

Particle Size: This determination was problematic. In total four statistical outliers were observed. Also, three test results from one laboratory were excluded from statistical evaluation because the three other test results of this laboratory appeared to be statistical outliers. After rejection of the 7 suspect test results, the calculated reproducibilities for >4 µm, >6 µm and >14 µm are not in agreement with the requirements of IP564:10.

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 are compared in the next table.

Parameter	unit	n	Average	2.8 * sd	R (lit)
Aromatics (D1319)	%V/V	81	17.79	2.11	2.97
Aromatics (Total) (D6379)	%M/M	22	21.08	3.54	1.99
Aromatics (Total) (D6379)	%V/V	25	18.14	4.92	unknown
Colour Saybolt		107	18.7	3.3	2.0
Density at 15°C	kg/m^3	128	796.80	0.34	0.50
Initial Boiling Point (auto)	°C	107	152.70	6.27	8.40
10% recovered (auto)	°C	108	171.51	3.04	3.77
50% recovered (auto)	°C	107	195.90	2.44	2.97
90% recovered (auto)	°C	108	233.56	3.45	3.50
Final Boiling Point (auto)	°C	108	260.73	5.05	7.10
Initial Boiling Point (manual)	°C	23	151.93	4.53	4.53
10% recovered (manual)	°C	24	170.48	4.32	2.95
50% recovered (manual)	°C	24	195.04	3.77	2.82
90% recovered (manual)	°C	24	232.04	5.00	3.53
Final Boiling Point (manual)	°C	24	260.05	6.33	4.28
Existent Gum	mg/100mL	77	0.95	1.27	3.21
Flash Point	°C	125	42.86	2.54	3.20
Freezing Point	°C	113	-53.88	1.98	2.50
Mercaptan Sulphur	% M/M	81	0.00133	0.00031	0.00037
MSEP	rating	99	88.24	15.49	12.82
Naphthalenes	%V/V	73	1.060	0.094	0.097
Smoke Point	mm	103	23.96	2.96	3.00
Specific Energy	MJ/kg	75	43.2816	0.0663	0.0460
Total Acidity	mg KOH/g	71	0.00260	0.00296	0.00207
Total Sulphur	Mg/kg	86	1201.1	143.7	118.3
Viscosity @ -20°C	cSt	75	3.7424	0.0595	0.0711

table 9: comparison of the observed and target reproducibilities of sample #1054

Parameter	Unit	n	Average	2.8 * sd	R (lit)
BOCLE	mm	11	0.661	0.0053	0.061

table 10: comparison of the observed and target reproducibilities of sample #1055

Parameter	Unit	n	Average	2.8 * sd	R (lit)
FAME	mg/kg	14	20.50	7.98	6.06

table 11: comparison of the observed and target reproducibilities of sample #1057

Parameter	Unit	n	Average	2.8 * sd	R (lit)
Particle Size >4 µm	mL^{-1}	43	23611	14058	4400
Particle Size >6 µm	mL^{-1}	43	4825	3777	1474
Particle Size >14 µm	mL^{-1}	43	240.1	235.7	119.4
Particle Size >21 µm	mL^{-1}	42	62.4	81.6	79.1
Particle Size >25 µm	mL^{-1}	43	30.9	44.9	41.4
Particle Size >30 µm	mL^{-1}	43	13.3	21.4	22.0

table 12: comparison of the observed and target reproducibilities of sample #1056

Without further statistical calculations, it can be concluded that for several 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 2010 WITH PREVIOUS PTS

Parameter	September 2010	March 2010	September 2009	March 2009
Number of reporting labs	208	65	186	68
Number of results reported	2759	1257	2377	1238
Statistical outliers	59	64	73	43
Percentage outliers	2.1%	5.1%	3.1%	3.5%

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 2010	March 2010	September 2009	March 2009
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	--	--	+	--
Naphthalenes	+	++	--	+/-
Smoke Point	+/-	--	--	+/-
Specific Energy	--	--	++	-
Total Acidity	--	--	--	+
Total Sulphur	--	+	--	+
Viscosity @ -20°C	++	-	--	--
BOCLE	++	++	n.e.	++
FAME	--	--	n.e.	n.e.
Particle Size Distribution	--	--	+/-	n.e.

table 14: comparison determinations against the target requirements

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

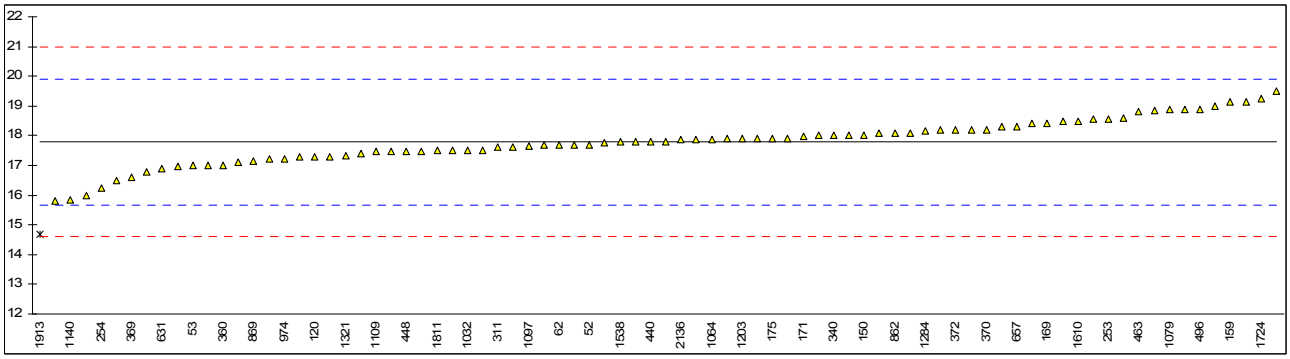
++: group performed much better than the standard
+ : group performed better than the standard
+/-: group performance equals the standard
- : group performed worse than the standard
-- : group performed much worse than the standard
n.d.: not determined
n.e.: not evaluated

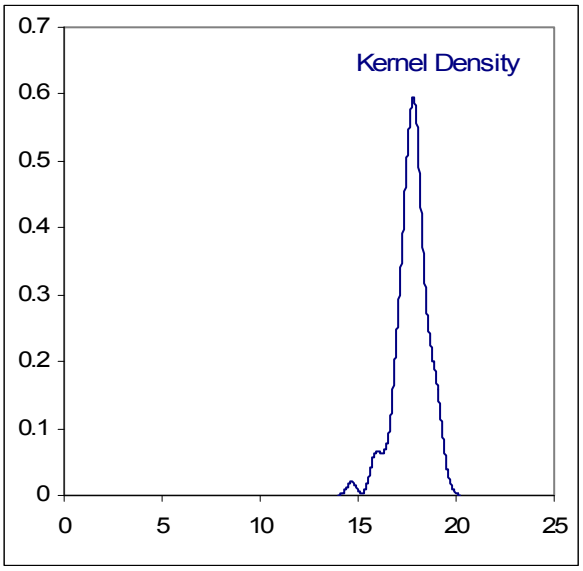
APPENDIX 1

Determination of Aromatics by FIA on sample #1054; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)	remarks
52	D1319	17.7		-0.09	1016		-----		-----	
53	D1319	17.0		-0.75	1017	D1319	17.48		-0.29	
62	D1319	17.7		-0.09	1021	D1319	18.5		0.67	
120	D1319	17.30		-0.46	1026		-----		-----	
132	D1319	18.98		1.12	1032	D1319	17.51		-0.27	
140	D1319	17.9		0.10	1034		-----		-----	
150	D1319	18.0		0.20	1038	D1319	18.86		1.01	
153	D1319	17.3		-0.46	1039		-----		-----	
159	D1319	19.13		1.26	1049		-----		-----	
169	D1319	18.4		0.57	1059	D1319	18.0		0.20	
171	D1319	17.99		0.19	1062	D1319	17.4		-0.37	
175	D1319	17.9		0.10	1064	D1319	17.87		0.07	
177	D1319	17.6		-0.18	1065		-----		-----	
194	D1319	18.87		1.02	1079	D1319	18.87		1.02	
217		-----		-----	1081	D1319	17.0		-0.75	
221		-----		-----	1082		-----		-----	
224		-----		-----	1097	D1319	17.64		-0.14	
225	D1319	17.1		-0.65	1108		-----		-----	
228		-----		-----	1109	D1319	17.46		-0.31	
230		-----		-----	1126		-----		-----	
237		-----		-----	1140	D1319	15.85		-1.83	
252		-----		-----	1161		-----		-----	
253	D1319	18.55		0.72	1167		-----		-----	
254	D1319	16.24		-1.47	1191		-----		-----	
256		-----		-----	1201		-----		-----	
258		-----		-----	1203	D1319	17.9		0.10	
273		-----		-----	1231	D1319	19.5	fr 20.38	1.61	
311	D1319	17.6		-0.18	1237		-----		-----	
323		-----		-----	1276	D1319	16.8		-0.94	
333		-----		-----	1277		-----		-----	
334		-----		-----	1284	D1319	18.17		0.36	
335		-----		-----	1297		-----		-----	
337		-----		-----	1299	D1319	17.9		0.10	
340	D1319	18.0		0.20	1316		-----		-----	
353		-----		-----	1318		-----		-----	
360	D1319	17.0		-0.75	1321	EN15553	17.34	fr 11.1	-0.43	
369	D1319	16.61		-1.12	1322	D1319	17.69		-0.10	
370	D1319	18.21		0.39	1347	D1319	17.80		0.01	
372	D1319	18.2		0.39	1348	D1319	17.7		-0.09	
391	D1319	18.2		0.39	1357		-----		-----	
398	D1319	17.52		-0.26	1372		-----		-----	
399		-----		-----	1417		-----		-----	
440	IP156	17.80		0.01	1419		-----		-----	
441	D1319	16.0		-1.69	1520	D1319	18.29		0.47	
445	D1319	17.2		-0.56	1538	D1319	17.8		0.01	
447	D1319	17.50		-0.28	1610	IP156	18.500		0.67	
448	D1319	17.47		-0.30	1613	D1319	17.3066		-0.46	
463	D1319	18.8		0.95	1631	D1319	17.46		-0.31	
468		-----		-----	1634		-----		-----	
475	D1319	17.865		0.07	1635	D1319	18.1		0.29	
485		-----		-----	1636	D1319	18.19		0.38	
495		-----		-----	1650	D1319	16.50		-1.22	
496	D1319	18.9		1.05	1651		-----		-----	
604		-----		-----	1715		-----		-----	
606		-----		-----	1720		-----		-----	
608	D1319	15.80		-1.88	1724	D1319	19.23		1.36	
631	D1319	16.9		-0.84	1810		-----		-----	
657	D1319	18.3		0.48	1811	D1319	17.50		-0.28	
663		-----		-----	1826	D1319	18.0		0.20	
671	D1319	16.9666		-0.78	1833	D1319	17.9		0.10	
732		-----		-----	1842		-----		-----	
823	D1319	17.8		0.01	1902	D1319	17.776		-0.02	
851		-----		-----	1913	D1319	14.68	G(0.01)	-2.94	
862	D1319	18.1		0.29	1948		-----		-----	
869	D1319	17.14		-0.62	2129	D1319	18.6		0.76	
962	D1319	18.4		0.57	2130	D1319	18.08		0.27	
963	D1319	18.54		0.71	2133	D1319	19.14		1.27	
974	D1319	17.21		-0.55	2136	D1319	17.86		0.06	
994		-----		-----						
995		-----		-----						
996		-----		-----						
997		-----		-----						

normality	OK
n	81
outliers	1
mean (n)	17.79
st.dev. (n)	0.754
R(calc.)	2.11
R(D1319:08)	2.97

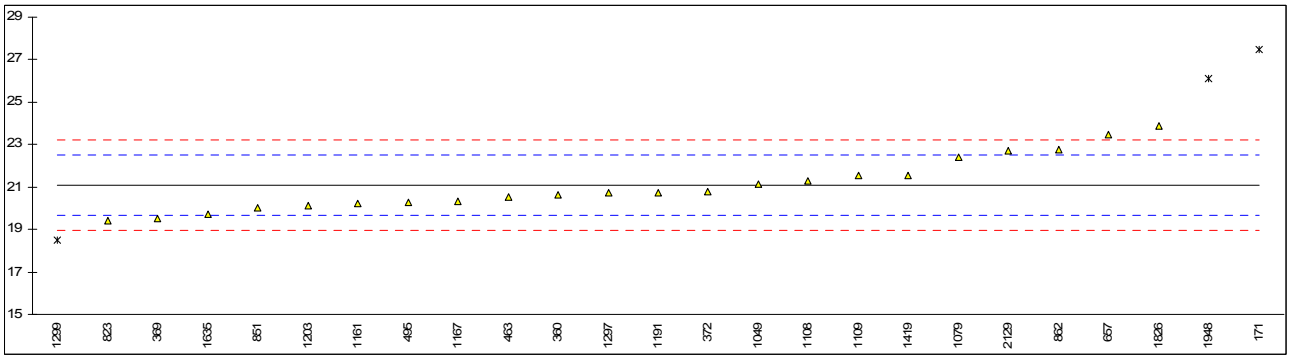


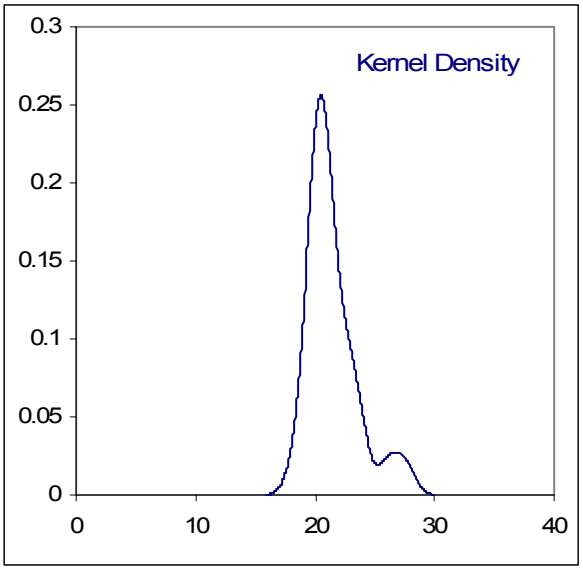


Determination of Aromatics by HPLC on sample #1054; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)	remarks
52		-----		-----	1016		-----		-----	
53		-----		-----	1017		-----		-----	
62		-----		-----	1021		-----		-----	
120		-----		-----	1026		-----		-----	
132		-----		-----	1032		-----		-----	
140		-----		-----	1034		-----		-----	
150		-----		-----	1038		-----		-----	
153		-----		-----	1039		-----		-----	
159		-----		-----	1049	D6379	21.161		0.11	
169		-----		-----	1059		-----		-----	
171	D6379	27.5	CG(0.05)	9.02	1062		-----		-----	
175		-----		-----	1064		-----		-----	
177		-----		-----	1065		-----		-----	
194		-----		-----	1079	D6379	22.4		1.85	
217		-----		-----	1081		-----		-----	
221		-----		-----	1082		-----		-----	
224		-----		-----	1097		-----		-----	
225		-----		-----	1108	D6379	21.3		0.31	
228		-----		-----	1109	D6591	21.53		0.63	
230		-----		-----	1126		-----		-----	
237		-----		-----	1140		-----		-----	
252		-----		-----	1161	EN12916	20.2	fr 15.97	-1.24	
253		-----		-----	1167	D6379	20.31		-1.08	
254		-----		-----	1191	D6379	20.75		-0.46	
256		-----		-----	1201		-----		-----	
258		-----		-----	1203	EN12916	20.1		-1.38	
273		-----		-----	1231		-----		-----	
311		-----		-----	1237		-----		-----	
323		-----		-----	1276		-----		-----	
333		-----		-----	1277		-----		-----	
334		-----		-----	1284		-----		-----	
335		-----		-----	1297	EN12916	20.73		-0.49	
337		-----		-----	1299	IP436	18.5	ex	-3.62	%V/V > %M/M
340		-----		-----	1316		-----		-----	
353		-----		-----	1318		-----		-----	
360	D6379	20.63		-0.63	1321		-----		-----	
369	D6379	19.53		-2.18	1322		-----		-----	
370		-----		-----	1347		-----		-----	
372	D6379	20.8		-0.39	1348		-----		-----	
391		-----		-----	1357		-----		-----	
398		-----		-----	1372		-----		-----	
399		-----		-----	1417		-----		-----	
440		-----		-----	1419	EN12916	21.55		0.66	
441		-----		-----	1520		-----		-----	
445		-----		-----	1538		-----		-----	
447		-----		-----	1610		-----		-----	
448		-----		-----	1613		-----		-----	
463	EN12916	20.535		-0.76	1631		-----		-----	
468		-----		-----	1634		-----		-----	
475		-----		-----	1635	EN12916	19.7		-1.94	
485		-----		-----	1636		-----		-----	
495	D6379	20.28		-1.12	1650		-----		-----	
496		-----		-----	1651		-----		-----	
604		-----		-----	1715		-----		-----	
606		-----		-----	1720		-----		-----	
608		-----		-----	1724		-----		-----	
631		-----		-----	1810		-----		-----	
657	IP436	23.48		3.37	1811		-----		-----	
663		-----		-----	1826	D6379	23.9		3.96	
671		-----		-----	1833		-----		-----	
732		-----		-----	1842		-----		-----	
823	D6379	19.4		-2.36	1902		-----		-----	
851	D6379	20.00		-1.52	1913		-----		-----	
862	D6379	22.77		2.37	1948	ISO12916	26.13	G(0.05)	7.09	
869		-----		-----	2129	D6379	22.6967		2.27	
962		-----		-----	2130		-----		-----	
963		-----		-----	2133		-----		-----	
974		-----		-----	2136		-----		-----	
994		-----		-----						
995		-----		-----						
996		-----		-----						
997		-----		-----						

normality	OK
n	22
outliers	2
mean (n)	21.08
st.dev. (n)	1.263
R(calc.)	3.54
R(D6379:04)	1.99

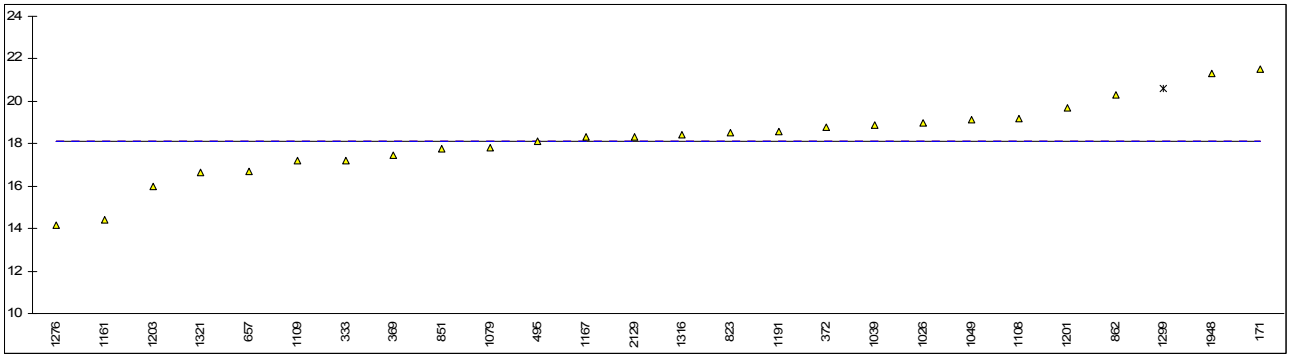


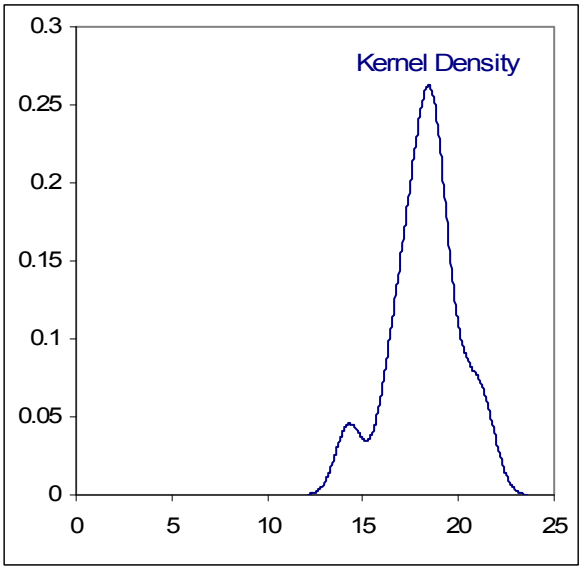


Determination of Aromatics by HPLC on sample #1054; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)	remarks
52		-----		-----	1016		-----		-----	
53		-----		-----	1017		-----		-----	
62		-----		-----	1021		-----		-----	
120		-----		-----	1026	IP436	19.0		-----	
132		-----		-----	1032		-----		-----	
140		-----		-----	1034		-----		-----	
150		-----		-----	1038		-----		-----	
153		-----		-----	1039	D6379	18.9		-----	
159		-----		-----	1049	D6379	19.1184		-----	
169		-----		-----	1059		-----		-----	
171	D6379	21.5	C	-----	1062		-----		-----	
175		-----		-----	1064		-----		-----	
177		-----		-----	1065		-----		-----	
194		-----		-----	1079	D6379	17.8		-----	
217		-----		-----	1081		-----		-----	
221		-----		-----	1082		-----		-----	
224		-----		-----	1097		-----		-----	
225		-----		-----	1108	D6379	19.2		-----	
228		-----		-----	1109	D6591	17.2		-----	
230		-----		-----	1126		-----		-----	
237		-----		-----	1140		-----		-----	
252		-----		-----	1161	EN12916	14.4		-----	
253		-----		-----	1167	D6379	18.31		-----	
254		-----		-----	1191	D6379	18.59		-----	
256		-----		-----	1201	D6379	19.7		-----	
258		-----		-----	1203	EN12916	16.0		-----	
273		-----		-----	1231		-----		-----	
311		-----		-----	1237		-----		-----	
323		-----		-----	1276	D6379	14.15		-----	
333	D6379	17.2		-----	1277		-----		-----	
334		-----		-----	1284		-----		-----	
335		-----		-----	1297		-----		-----	
337		-----		-----	1299	IP436	20.6	ex	-----	%V/V > %M/M
340		-----		-----	1316	IP391	18.4		-----	
353		-----		-----	1318		-----		-----	
360		-----		-----	1321	IP436	16.63		-----	
369	D6379	17.48		-----	1322		-----		-----	
370		-----		-----	1347		-----		-----	
372	D6379	18.8		-----	1348		-----		-----	
391		-----		-----	1357		-----		-----	
398		-----		-----	1372		-----		-----	
399		-----		-----	1417		-----		-----	
440		-----		-----	1419		-----		-----	
441		-----		-----	1520		-----		-----	
445		-----		-----	1538		-----		-----	
447		-----		-----	1610		-----		-----	
448		-----		-----	1613		-----		-----	
463		-----		-----	1631		-----		-----	
468		-----		-----	1634		-----		-----	
475		-----		-----	1635		-----		-----	
485		-----		-----	1636		-----		-----	
495	D6379	18.10		-----	1650		-----		-----	
496		-----		-----	1651		-----		-----	
604		-----		-----	1715		-----		-----	
606		-----		-----	1720		-----		-----	
608		-----		-----	1724		-----		-----	
631		-----		-----	1810		-----		-----	
657	IP436	16.70		-----	1811		-----		-----	
663		-----		-----	1826		-----		-----	
671		-----		-----	1833		-----		-----	
732		-----		-----	1842		-----		-----	
823	D6379	18.5		-----	1902		-----		-----	
851	D6379	17.76		-----	1913		-----		-----	
862	D6379	20.32		-----	1948	EN12916	21.30		-----	
869		-----		-----	2129	D6379	18.326		-----	
962		-----		-----	2130		-----		-----	
963		-----		-----	2133		-----		-----	
974		-----		-----	2136		-----		-----	
994		-----		-----						
995		-----		-----						
996		-----		-----						
997		-----		-----						

normality	OK
n	25
outliers	0
mean (n)	18.14
st.dev. (n)	1.757
R(calc.)	4.92
R(lit)	unknown



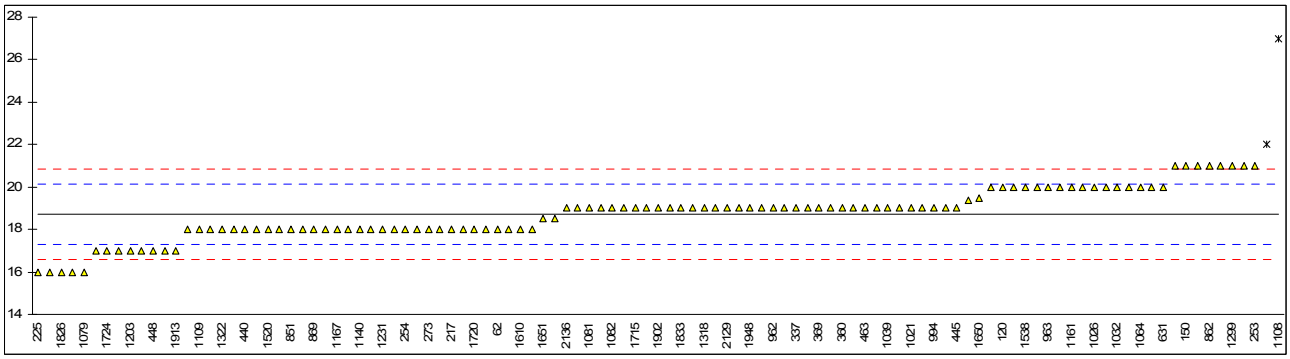


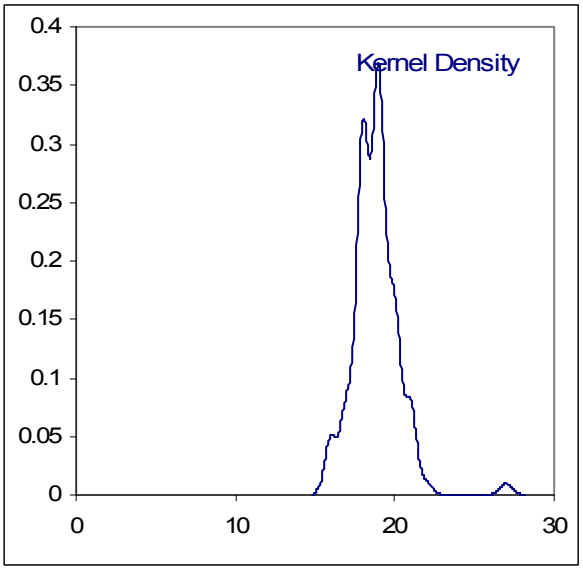
Determination of Colour Saybolt on sample #1054;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)	remarks
52	D156	19		0.39	1016		-----		-----	
53	D156	18		-1.01	1017		-----		-----	
62	D156	18		-1.01	1021	D6045	19		0.39	
120	D156	20		1.79	1026	D156	20		1.79	
132	D156	18		-1.01	1032	D156	20		1.79	
140	D156	21		3.19	1034		-----		-----	
150	D156	21		3.19	1038	D6045	18		-1.01	
153	D156	18		-1.01	1039	D156	19		0.39	
159	D156	19		0.39	1049		-----		-----	
169	D156	19		0.39	1059	D156	16	fr 13	-3.81	
171	D156	20		1.79	1062	D156	19		0.39	
175	D156	22	G(0.05)	4.59	1064	D156	20		1.79	
177	D156	20		1.79	1065		-----		-----	
194	D156	18		-1.01	1079	D156	16		-3.81	
217	D156	18		-1.01	1081	D6045	19		0.39	
221		-----		-----	1082	D6045	19		0.39	
224		-----		-----	1097	INH-003	19		0.39	
225	D156	16		-3.81	1108	D156	27	G(0.01)	11.59	
228		-----		-----	1109	D156	18		-1.01	
230	D156	19		0.39	1126		-----		-----	
237	D156	21		3.19	1140	D6045	18		-1.01	
252	D156	18.5		-0.31	1161	D6045	20		1.79	
253	D156	21		3.19	1167	D156	18		-1.01	
254	D156	18		-1.01	1191	D6045	19		0.39	
256		-----		-----	1201	D156	18		-1.01	
258	D156	18		-1.01	1203	D156	17	fr 16	-2.41	
273	D156	18		-1.01	1231	D156	18		-1.01	
311	D156	18		-1.01	1237		-----		-----	
323		-----		-----	1276	D156	21		3.19	
333		-----		-----	1277	D156	18		-1.01	
334		-----		-----	1284	D6045	19.4		0.95	
335		-----		-----	1297		-----		-----	
337	D156	19		0.39	1299	D156	21		3.19	
340	D156	19		0.39	1316		-----		-----	
353		-----		-----	1318	D156	19		0.39	
360	D156	19		0.39	1321		-----		-----	
369	D156	19		0.39	1322	D156	18		-1.01	
370	D156	19		0.39	1347	D156	20		1.79	
372	D156	19		0.39	1348	D156	18		-1.01	
391	D156	17		-2.41	1357		-----		-----	
398	D156	17		-2.41	1372		-----		-----	
399	D156	16		-3.81	1417		-----		-----	
440	D156	18		-1.01	1419	D156	18		-1.01	
441	D156	18		-1.01	1520	D156	18.0		-1.01	
445	D156	19		0.39	1538	D156	20		1.79	
447	D156	20		1.79	1610	D156	18		-1.01	
448	D156	17		-2.41	1613	D156	19		0.39	
463	D156	19		0.39	1631	D6045	18		-1.01	
468		-----		-----	1634		-----		-----	
475		-----		-----	1635	D156	19		0.39	
485		-----		-----	1636	D156	19		0.39	
495		-----		-----	1650	D156	19.5		1.09	
496	D156	21		3.19	1651	D156	18.5		-0.31	
604	D156	18		-1.01	1715	D6045	19		0.39	
606	D156	18		-1.01	1720	D156	18		-1.01	
608	D156	19		0.39	1724	D156	17		-2.41	
631	D156	20		1.79	1810		-----		-----	
657	D156	19		0.39	1811	D156	19		0.39	
663	D156	17		-2.41	1826	D156	16		-3.81	
671	D156	20		1.79	1833	D156	19		0.39	
732		-----		-----	1842		-----		-----	
823	D156	18		-1.01	1902	D156	19		0.39	
851	D156	18		-1.01	1913	D156	17		-2.41	
862	D156	21		3.19	1948	D156	19		0.39	
869	D156	18		-1.01	2129	D156	19		0.39	
962	D156	19		0.39	2130	D6045	19		0.39	
963	D156	20		1.79	2133		-----		-----	
974	D156	20		1.79	2136	D156	19		0.39	
994	D6045	19		0.39						
995	D156	20		1.79						
996	D6045	20		1.79						
997	D156	17		-2.41						

Only D156: Only D6045

normality	not OK	not OK	not OK
n	107	93	14
outliers	2	2	0
mean (n)	18.7	18.7	18.9
st.dev. (n)	1.18	1.24	0.68
R(calc.)	3.3	3.5	1.9
R(D156:07a)	2.0	2.0	1.24

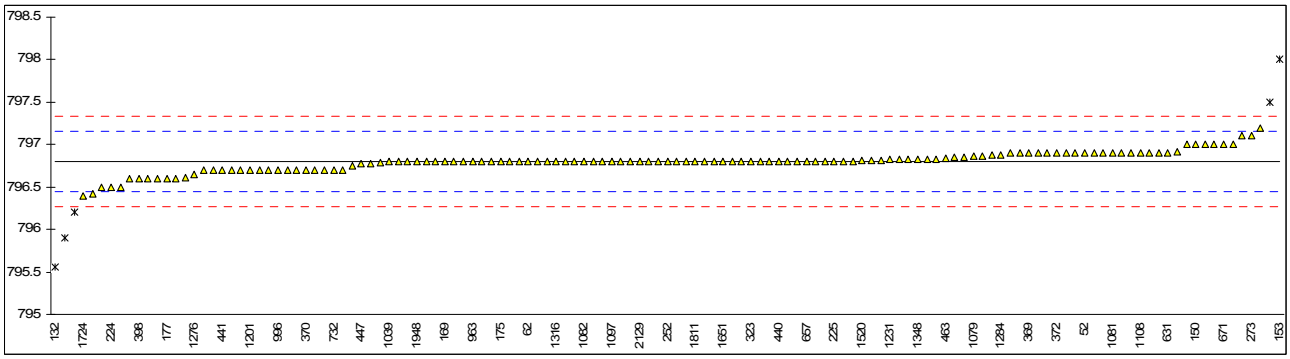


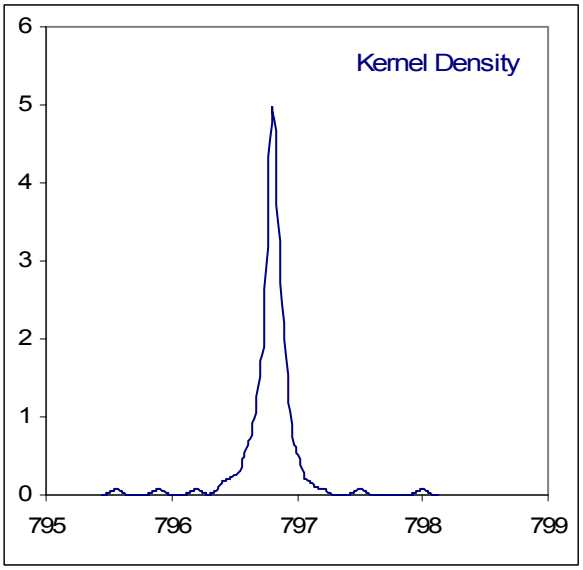


Determination of Density @ 15°C on sample #1054; results in kg/m^3

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)	remarks
52	D4052	796.9		0.57	1016		-----		-----	
53	D4052	796.8		0.01	1017	D4052	796.8		0.01	
62	D4052	796.8		0.01	1021	D4052	796.83	fr 799.8	0.18	
120	D4052	796.8		0.01	1026	D4052	796.8		0.01	
132	D4052	795.56	G(0.01)	-6.94	1032	D4052	796.8		0.01	
140	D4052	797.0		1.13	1034		-----		-----	
150	D4052	797.0		1.13	1038	D4052	796.9		0.57	
153	D4052	798.0	CG(0.01)	6.73	1039	D4052	796.8		0.01	
159	D4052	796.6		-1.11	1049	D4052	796.61		-1.06	
169	D4052	796.8	fr 0.7968	0.01	1059	D4052	796.8		0.01	
171	D4052	796.92		0.68	1062	D4052	796.8		0.01	
175	D4052	796.8		0.01	1064	D4052	796.7		-0.55	
177	D4052	796.6	fr 797.3	-1.11	1065	D4052	796.8		0.01	
194	D4052	797.00		1.13	1079	D4052	796.86		0.34	
217	D4052	795.9	G(0.01)	-5.03	1081	ISO12185	796.9		0.57	
221	D4052	796.9		0.57	1082	D4052	796.8		0.01	
224	D1298	796.5		-1.67	1097	ISO12185	796.8		0.01	
225	D4052	796.8		0.01	1108	D4052	796.9		0.57	
228	D1298	796.2	G(0.01)	-3.35	1109	D4052	796.85		0.29	
230	D4052	797.0		1.13	1126	D4052	796.83		0.18	
237	D1298	796.9		0.57	1140	D4052	796.8		0.01	
252	D4052	796.8		0.01	1161	ISO12185	796.7		-0.55	
253	D4052	796.7		-0.55	1167	D4052	796.8		0.01	
254	D4052	796.70		-0.55	1191	D4052	796.9		0.57	
256		-----		-----	1201	D4052	796.7		-0.55	
258	D1298	796.6		-1.11	1203	ISO12185	796.8		0.01	
273	D4052	797.1		1.69	1231	D4052	796.82		0.12	
311	D4052	796.9		0.57	1237	ISO12185	796.7		-0.55	
323	D4052	796.8		0.01	1276	D4052	796.65		-0.83	
333	D4052	796.9		0.57	1277	D1298	797.2		2.25	
334	D4052	796.9		0.57	1284	D4052	796.88		0.46	
335	D4052	797.0		1.13	1297	D4052	796.8		0.01	
337	D4052	796.8		0.01	1299	D4052	796.8		0.01	
340	D4052	796.81		0.06	1316	D4052	796.8		0.01	
353	IP160	796.8		0.01	1318	D4052	796.81		0.06	
360	D4052	796.8		0.01	1321	ISO12185	796.9		0.57	
369	D4052	796.9		0.57	1322		-----		-----	
370	D4052	796.7		-0.55	1347	D4052	796.88		0.46	
372	D4052	796.9		0.57	1348	D4052	796.82		0.12	
391	D4052	796.5		-1.67	1357		-----		-----	
398	D4052	796.6		-1.11	1372		-----		-----	
399	D4052	796.6		-1.11	1417	IP365	796.6		-1.11	
440	D4052	796.8		0.01	1419	ISO12185	796.8		0.01	
441	D4052	796.7		-0.55	1520	D4052	796.81		0.06	
445	D4052	796.8		0.01	1538	D4052	796.8		0.01	
447	D4052	796.78		-0.10	1610	IP336	796.8		0.01	
448	D4052	796.7		-0.55	1613	D4052	796.8		0.01	
463	D4052	796.84		0.23	1631	D4052	796.9		0.57	
468	D4052	796.8		0.01	1634	D4052	796.8		0.01	
475	D4052	796.8		0.01	1635	D4052	796.5		-1.67	
485	D4052	796.8		0.01	1636	D4052	796.8		0.01	
495	D4052	796.8		0.01	1650	D4052	796.82		0.12	
496	D4052	796.75		-0.27	1651	D4052	796.8		0.01	
604	D4052	796.82		0.12	1715	ISO12185	796.7		-0.55	
606	D4052	796.9		0.57	1720	D4052	797.1		1.69	
608	D4052	796.8		0.01	1724	D4052	796.4		-2.23	
631	D4052	796.9		0.57	1810	D4052	796.8		0.01	
657	D4052	796.8		0.01	1811	D4052	796.8		0.01	
663	D4052	796.9		0.57	1826	D4052	797.5	CG(0.01)	3.93	
671	D4052	797.0		1.13	1833	D4052	796.7	fr 0.7967	-0.55	
732	D4052	796.7		-0.55	1842		-----		-----	
823	D4052	796.8		0.01	1902	D4052	796.8		0.01	
851	D4052	796.80		0.01	1913	D4052	796.8		0.01	
862	D4052	796.85		0.29	1948	D4052	796.8		0.01	
869	D4052	796.86		0.34	2129	D4052	796.8		0.01	
962	D4052	796.8		0.01	2130	D4052	796.7		-0.55	
963	D4052	796.8		0.01	2133	D4052	796.42		-2.12	
974	D4052	796.9		0.57	2136	D4052	796.79		-0.05	
994	D4052	796.7		-0.55						
995	D4052	796.78		-0.10						
996	D1298	796.7		-0.55						
997	D4052	796.7		-0.55						

normality	not OK
n	128
outliers	5
mean (n)	796.80
st.dev. (n)	0.120
R(calc.)	0.34
R(D4052:09)	0.50





Determination of Distillation ASTM D86 (automated) on sample #1054; results in °C

lab	method	IBP	mark	10%	mark	50%	mark	90%	mark	FBP	mark	Remark
52	D86	156.2		171.4		196.6		235.0		261.6		
53	D86	153.1		172.7		194.8		234.5		264.5		
62	D86	153.9		171.4		196.6		234.4		261.5		
120	D86	151.9		171.3		195.5		232.1		259.4		
132	D86	151.3	fr 145.9	170.1		195.4		232.7		257.9		
140	D86	151.7		171.8		196.8		233.1		262.1		
150	D86	151.8		171.3		196.0		233.5		260.6		
153	D86	151.9		169.4		196.1		234.3		261.1		
159	D86	154.9		173.2		196.9		233.8		260.3		
169	D86	140.4	G(0.01)	168.6		194.1		231.2		257.8		
171	D86	154.2		171.0		196.2		233.9		262.3		
175	D86	156.6		171.7		197.3		235.7		263.9		
177	D86	155.5		171.4		193.4		231.4		261.3		
194	D86	151.11		171.67		195.78		234.00		260.78		
217		-----		-----		-----		-----		-----		
221		-----		-----		-----		-----		-----		
224		-----		-----		-----		-----		-----		
225		-----		-----		-----		-----		-----		
228		-----		-----		-----		-----		-----		
230		-----		-----		-----		-----		-----		
237		-----		-----		-----		-----		-----		
252	D86	150.9		171.8		194.7		233.8		257.7		
253		-----		-----		-----		-----		-----		
254		-----		-----		-----		-----		-----		
256		-----		-----		-----		-----		-----		
258	D86	150.4		171.0		197.0		235.4		259.9		
273	D86	151.2		172.3		196.8		236.0		259.8		
311	D86	152.1		170.8		196.0		233.3		262.8		
323	D86	152.9		171.0		196.7		235.0		261.3		
333	D86	152.1		171.8		196.3		235.0		260.0		
334	D86	151.9		170.5		196.7		233.8		260.7		
335	D86	154.5		171.7		196.5		233.5		258.7		
337	D86	153.0		170.7		195.2		231.7		260.1		
340	D86	151.9		172.6		196.7		234.4		260.8		
353	D86	151.2		171.5		196.1		234.5		263.4		
360	D86	150.8		170.8		195.1		232.5		257.5		
369	D86	152.7		172.0		196.3		234.0		262.6		
370		-----		-----		-----		-----		-----		
372	D86	152.8		171.6		196.1		233.6		260.3		
391	D86	155.1		169.6		196.7		234.8		262.1		
398	D86	154.4		169.5		196.3		234.7		261.7		
399	D86	154.4		173.7		195.9		230.9		262.5		
440	D86	153.5		171.6		196.0		232.6		263.1		
441	IP123	152.6		171.7		197.2		234.7		262.1		
445	D86	157.4		171.7		194.9		234.3		260.6		
447	D86	154.4		171.9		196.7		236.0		263.7		
448	D86	156.9		170.9		196.0		234.6		262.6		
463	D86	149.3		172.8		194.1		233.1		260.3		
468	D86	150.5		172.2		196.4		235.1		261.1		
475	D86	152.6		171.6		196.1		234.3		260.0		
485	D86	149.80		170.00		195.30		231.35		259.55		
495	D86	151.6		170.0		194.6		232.3		256.5		
496	D86	153.2		170.6		196.1		234.9		263.1		
604	D86	152.6		170.5		194.9		234.0		257.2		
606	D86	151.5		173.2		198.1		234.5		261.4		
608		-----		-----		-----		-----		-----		
631		-----		-----		-----		-----		-----		
657	D86	152.9		172.1		195.1		231.8		259.1		
663	D86	155.6		173.1		196.0		233.5		260.0		
671	D86	152.0		173.4		196.7		234.2		259.3		
732		-----		-----		-----		-----		-----		
823	D86	150.0		172.8		196.2		232.8		262.9		
851	D86	152.5		171.2		195.6		233.1		260.3		
862	D86	150.5		171.5		196.3		233.4		261.6		
869		-----		-----		-----		-----		-----		
962		-----		-----		-----		-----		-----		
963	D86	154.4		172.2		195.5		231.8		258.4		
974	D86	151.4		170.1		194.6		234.0		256.6		
994		-----		-----		-----		-----		-----		
995		-----		-----		-----		-----		-----		
996		-----		-----		-----		-----		-----		
997		-----		-----		-----		-----		-----		
1016		-----		-----		-----		-----		-----		

1017	D86	156.4		171.1	195.3		232.5	260.8	
1021	D86	152.7		170.7	195.7		234.0	260.6	
1026	ISO3405	150.7		174.7	196.4		233.6	260.8	
1032	D86	151.5		171.5	196.0		232.9	260.5	
1034		-----		-----	-----		-----	-----	
1038	D86	154.1		173.0	197.1		235.8	264.1	
1039	D86	150.4		172.6	196.4		235.1	259.4	
1049	D86	153.6		172.2	196.1		233.2	261.3	
1059	D86	151.0		171.6	196.6		233.6	260.9	
1062	D86	151.8		171.3	195.5		233.0	259.7	
1064	D86	154.6		172.2	195.9		234.5	262.7	
1065	D86	153.7		170.1	194.5		232.6	259.0	
1079	D86	153.5		172.2	196.5		233.3	260.5	
1081	D86	154.4		171.5	196.3		233.9	260.4	
1082	D86	154.0		171.1	199.3	G(0.05)	233.3	265.5	
1097	ISO3405	152.0		171.4	196.1		234.9	259.9	
1108	D86	154.6		170.1	193.3		230.5	258.7	
1109	D86	154.2		171.4	196.3		234.4	261.6	
1126	IN HOUSE	147.1		168.8	195.2		231.7	260.4	
1140	D86	148.0		169.6	194.7		231.2	258.4	
1161	ISO3405	153.2		172.6	197.5		233.5	262.5	
1167	D86	150.1		172.0	196.85		232.65	260.75	
1191	D86	152.8		171.7	196.0		233.7	260.8	
1201	D86	150.3		171.1	194.9		234.4	260.5	
1203	ISO3405	152.8		171.8	197.0		234.2	261.5	
1231	D86	151.0		171.8	196.2		234.0	262.0	
1237		-----		-----	-----		-----	-----	
1276	D86	154.5		170.7	194.2		231.5	260.2	
1277	D86	152.9		171.7	195.6		232.2	263.9	
1284	D86	152.1		171.1	195.3		233.4	259.4	
1297		-----		-----	-----		-----	-----	
1299	D86	156.3		173.0	196.9		236.3	263.5	
1316	D86	149.4		171.4	196.0		234.6	261.6	
1318	D86	151.3		171.4	195.6		232.8	260.6	
1321	ISO3405	149.2		171.2	196.0	fr 178.1	233.5	259.4	
1322		-----		-----	-----		-----	-----	
1347		-----		-----	-----		-----	-----	
1348	D86	156.5		173.1	194.9		233.7	261.1	
1357		-----		-----	-----		-----	-----	
1372		-----		-----	-----		-----	-----	
1417	IP123	152.7		171.7	196.5		234.7	260.3	
1419	ISO3405	154.1		171.1	195.6		232.4	262.2	
1520		-----		-----	-----		-----	-----	
1538	D86	158.0		171.6	195.7		233.7	259.6	
1610	IP123	155.6		171.8	195.7		234.2	262.5	
1613	D86	154.6		173.5	197.3	fr 235.5	235.5	fr 262.5	262.6	fr 98
1631	D86	151.9		170.8	195.9		233.7	259.8	
1634	D86	150.0		172.5	196.3		233.9	260.4	
1635		-----		-----	-----		-----	-----	
1636	D86	149.8		170.8	197.3		233.6	259.7	
1650	D86	152.5		169.6	194.6		234	260	
1651	D86	153.4		172.72	196.40		233.40	260.25	
1715	D86	153.9		172.1	195.6		233.1	261.2	
1720		-----		-----	-----		-----	-----	
1724	D86	152.2		172.2	196.5		233.5	260.2	
1810	D86	156.5		171.5	195.0		233.1	260.8	
1811	D86	154.5		171.9	195.6		233.0	262.1	
1826	D86	154.9		172.3	196.3		235.3	263.3	
1833	D86	155.9		172.0	195.7		232.0	257.3	
1842		-----		-----	-----		-----	-----	
1902	D86	155.6		173.3	196.2		233.2	260.3	
1913	D86	154.7		172.6	196.6		234.9	260.7	
1948	D86	149.1		170.6	195.2		231.7	259.4	
2129	D86	147.1	fr 145.5	168.8	194.2		231.1	255.1	
2130	D86	149.8		170.9	195.9		232.6	260.0	
2133	D86	148.6		170.4	195.3		231.5	258.6	
2136	D86	151.4		171.6	196.1		233.3	262.7	
	normality	OK		OK	not OK		OK	OK	
	n	107		108	107		108	108	
	outliers	1		0	1		0	0	
	mean (n)	152.70		171.51	195.90		233.56	260.73	
	st.dev. (n)	2.239		1.086	0.871		1.232	1.804	
	R(calc.)	6.27		3.04	2.44		3.45	5.05	
	R(D86:09e1-A)	8.40		3.77	2.97		3.50	7.10	

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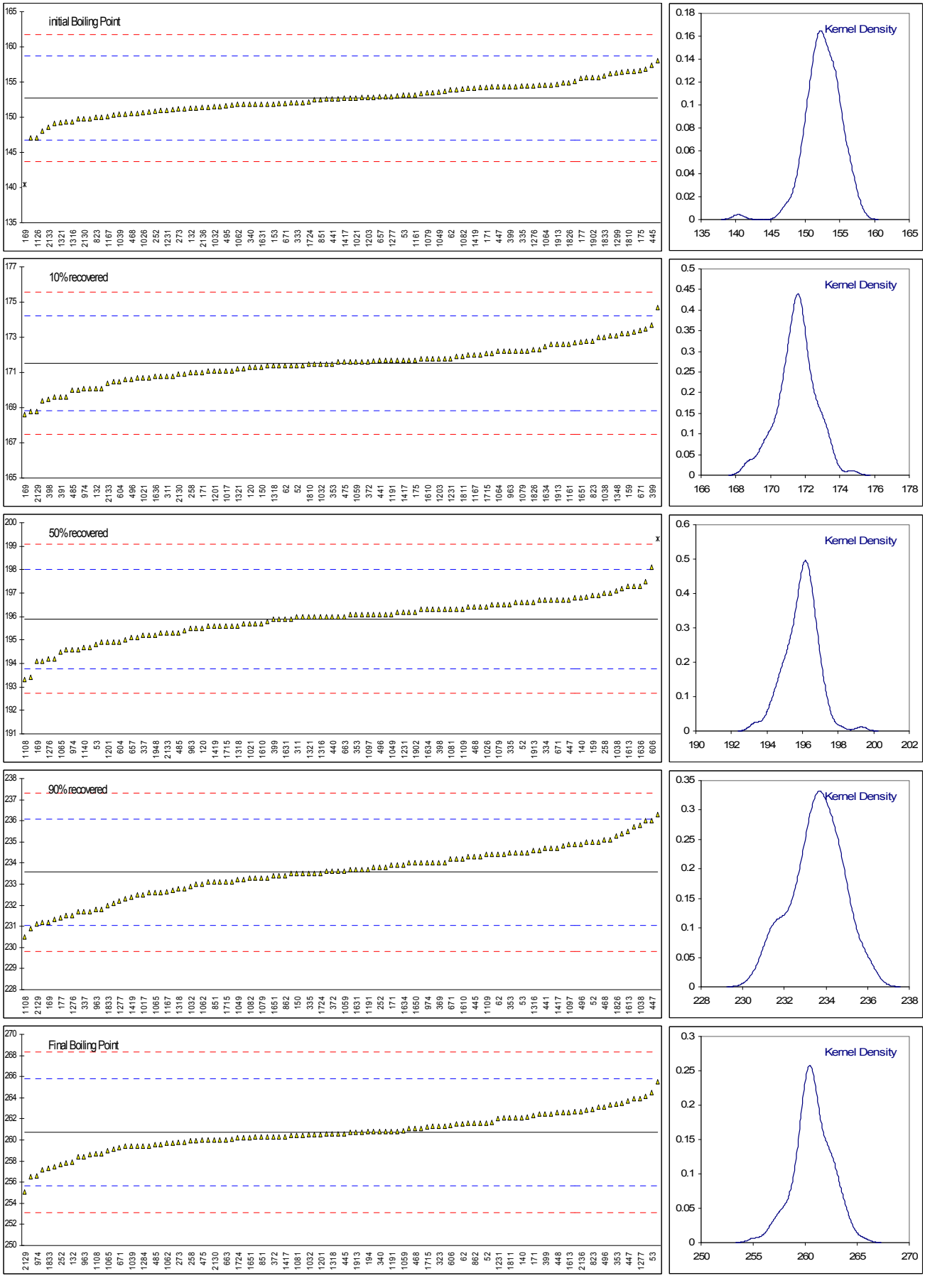
Determination of Distillation ASTM D86 (automated) on sample #1054; results in °C (graphics)



Determination of Distillation ASTM D86 (manual) on sample #1054; results in °C

lab	method	IBP	mark	10%	mark	50%	mark	90%	mark	FBP	mark	Remark
52		-----		-----		-----		-----		-----		
53		-----		-----		-----		-----		-----		
62		-----		-----		-----		-----		-----		
120		-----		-----		-----		-----		-----		
132		-----		-----		-----		-----		-----		
140		-----		-----		-----		-----		-----		
150		-----		-----		-----		-----		-----		
153		-----		-----		-----		-----		-----		
159		-----		-----		-----		-----		-----		
169		-----		-----		-----		-----		-----		
171		-----		-----		-----		-----		-----		
175		-----		-----		-----		-----		-----		
177		-----		-----		-----		-----		-----		
194		-----		-----		-----		-----		-----		
217	D86	149.0		170.0		193.0		231.0		257.0		
221	D86	154.0		171.0		195.0		228.5		260.0		
224	D86	153.09		171.36		196.11		233.12		263.10		
225	D86	154.0		169.0		196.0		234.0		262.0		
228	D86	150.0		169.0		193.0		230.0		256.0		
230	D86	153.5		170.1		195.2		233.5		263.0		
237	D86	150.0		170.5		196.0		233.5		260.0		
252		-----		-----		-----		-----		-----		
253	D86	150.5		171.0		195.0		233.5		259.0		
254	D86	152.0		170.0		196.0		232.0		259.0		
256		-----		-----		-----		-----		-----		
258		-----		-----		-----		-----		-----		
273		-----		-----		-----		-----		-----		
311		-----		-----		-----		-----		-----		
323		-----		-----		-----		-----		-----		
333		-----		-----		-----		-----		-----		
334		-----		-----		-----		-----		-----		
335		-----		-----		-----		-----		-----		
337		-----		-----		-----		-----		-----		
340		-----		-----		-----		-----		-----		
353		-----		-----		-----		-----		-----		
360		-----		-----		-----		-----		-----		
369		-----		-----		-----		-----		-----		
370	D86	153.5		171.0		196.5		233.5		259.5		
372		-----		-----		-----		-----		-----		
391		-----		-----		-----		-----		-----		
398		-----		-----		-----		-----		-----		
399		-----		-----		-----		-----		-----		
440		-----		-----		-----		-----		-----		
441		-----		-----		-----		-----		-----		
445		-----		-----		-----		-----		-----		
447		-----		-----		-----		-----		-----		
448		-----		-----		-----		-----		-----		
463		-----		-----		-----		-----		-----		
468		-----		-----		-----		-----		-----		
475	D86	151.0		168.0		193.0		229.0		257.0		
485		-----		-----		-----		-----		-----		
495		-----		-----		-----		-----		-----		
496		-----		-----		-----		-----		-----		
604		-----		-----		-----		-----		-----		
606		-----		-----		-----		-----		-----		
608	D86	151.0		171.0		193.0		229.0		258.0		
631	D86	152.0		170.0		194.0		233.0		258.0		
657		-----		-----		-----		-----		-----		
663		-----		-----		-----		-----		-----		
671		-----		-----		-----		-----		-----		
732	INH-2177	153.5		169.5		196.0		233.0		261.5		
823		-----		-----		-----		-----		-----		
851		-----		-----		-----		-----		-----		
862		-----		-----		-----		-----		-----		
869	D86	152.0		171.0		194.5		232.5		261.5		
962	D86	153.5		171.5		197.0		231.5		258.5		
963		-----		-----		-----		-----		-----		
974		-----		-----		-----		-----		-----		
994	D86	152.5		170.5		195.5		230.0		258.0		
995	D86	154		172		195.5		233		263		
996	D86	152		170		196		231		260		
997	D86	152		171.5		195		231.5		263		
1016		-----		-----		-----		-----		-----		

1017		-----		-----	-----	-----	-----
1021		-----		-----	-----	-----	-----
1026		-----		-----	-----	-----	-----
1032		-----		-----	-----	-----	-----
1034		-----		-----	-----	-----	-----
1038		-----		-----	-----	-----	-----
1039		-----		-----	-----	-----	-----
1049		-----		-----	-----	-----	-----
1059		-----		-----	-----	-----	-----
1062		-----		-----	-----	-----	-----
1064		-----		-----	-----	-----	-----
1065		-----		-----	-----	-----	-----
1079		-----		-----	-----	-----	-----
1081		-----		-----	-----	-----	-----
1082		-----		-----	-----	-----	-----
1097		-----		-----	-----	-----	-----
1108		-----		-----	-----	-----	-----
1109		-----		-----	-----	-----	-----
1126		-----		-----	-----	-----	-----
1140		-----		-----	-----	-----	-----
1161		-----		-----	-----	-----	-----
1167		-----		-----	-----	-----	-----
1191		-----		-----	-----	-----	-----
1201		-----		-----	-----	-----	-----
1203		-----		-----	-----	-----	-----
1231		-----		-----	-----	-----	-----
1237		-----		-----	-----	-----	-----
1276		-----		-----	-----	-----	-----
1277		-----		-----	-----	-----	-----
1284		-----		-----	-----	-----	-----
1297		-----		-----	-----	-----	-----
1299		-----		-----	-----	-----	-----
1316		-----		-----	-----	-----	-----
1318		-----		-----	-----	-----	-----
1321		-----		-----	-----	-----	-----
1322		-----		-----	-----	-----	-----
1347	D86	157.8	G(0.05)	174.4	196.7	234.4	263.3
1348		-----		-----	-----	-----	-----
1357		-----		-----	-----	-----	-----
1372		-----		-----	-----	-----	-----
1417		-----		-----	-----	-----	-----
1419		-----		-----	-----	-----	-----
1520	D86	150.7		169.1	193.5	231.4	258.9
1538		-----		-----	-----	-----	-----
1610		-----		-----	-----	-----	-----
1613		-----		-----	-----	-----	-----
1631		-----		-----	-----	-----	-----
1634		-----		-----	-----	-----	-----
1635	D86	152.0		167.0	193.0	232.0	259.0
1636		-----		-----	-----	-----	-----
1650		-----		-----	-----	-----	-----
1651		-----		-----	-----	-----	-----
1715		-----		-----	-----	-----	-----
1720	D86	148.5		173.0	196.5	235.0	263.0
1724		-----		-----	-----	-----	-----
1810		-----		-----	-----	-----	-----
1811		-----		-----	-----	-----	-----
1826		-----		-----	-----	-----	-----
1833		-----		-----	-----	-----	-----
1842		-----		-----	-----	-----	-----
1902		-----		-----	-----	-----	-----
1913		-----		-----	-----	-----	-----
1948		-----		-----	-----	-----	-----
2129		-----		-----	-----	-----	-----
2130		-----		-----	-----	-----	-----
2133		-----		-----	-----	-----	-----
2136		-----		-----	-----	-----	-----
	normality	OK		OK	OK	OK	OK
	n	23		24	24	24	24
	outliers	1		0	0	0	0
	mean (n)	151.93		170.48	195.04	232.04	260.05
	st.dev. (n)	1.617		1.544	1.345	1.786	2.262
	R(calc.)	4.53		4.32	3.77	5.00	6.33
	R(D86:09e1-M)	4.53		2.95	2.82	3.53	4.28

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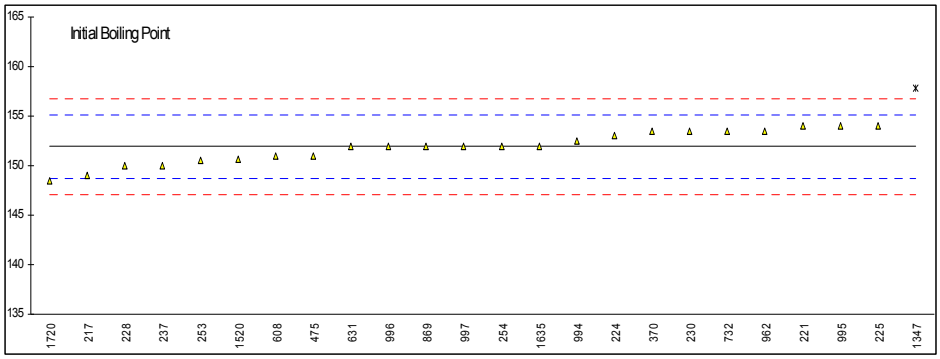
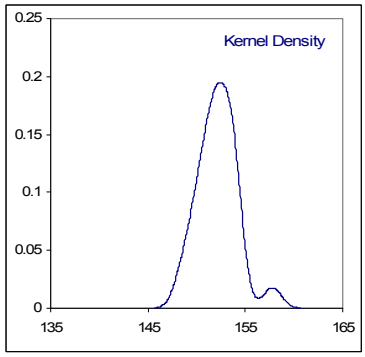
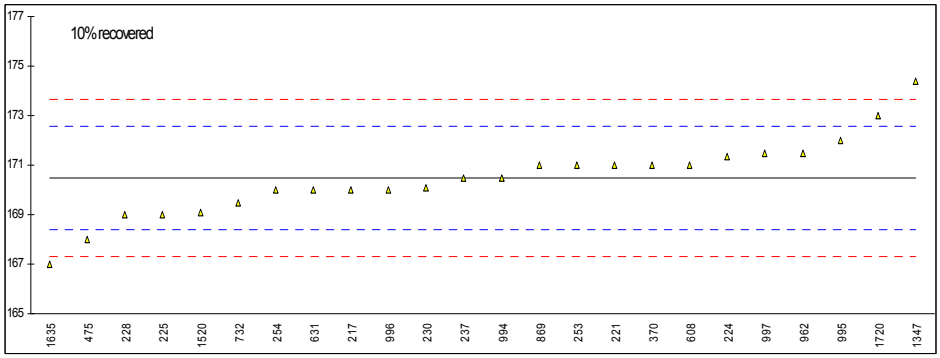
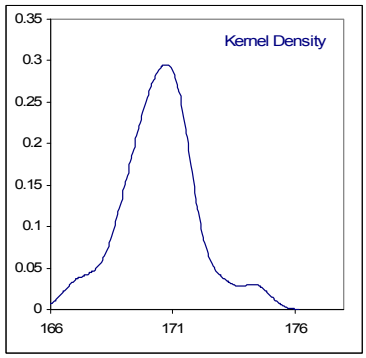
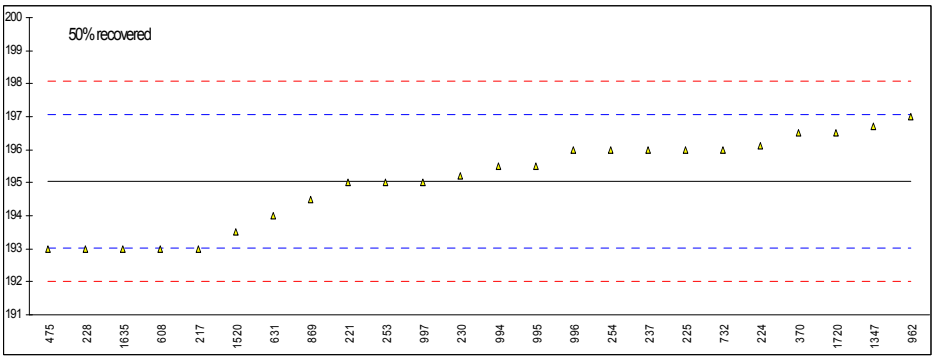
Determination of Distillation ASTM D86 (manual) on sample #1054; results in °C (graphics)

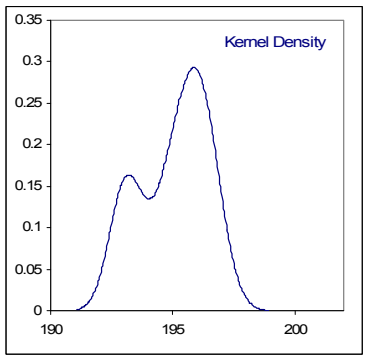


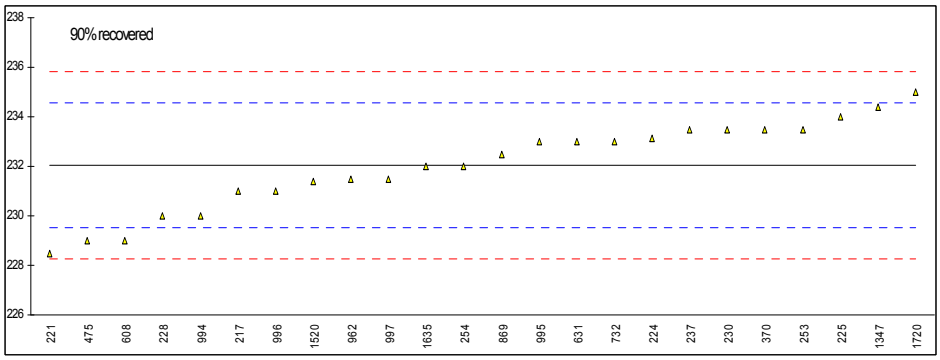


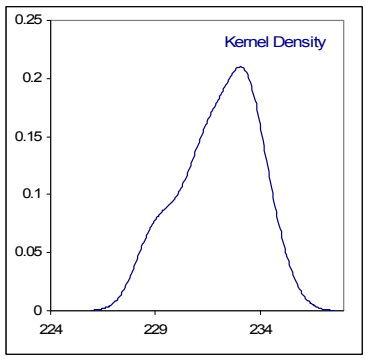


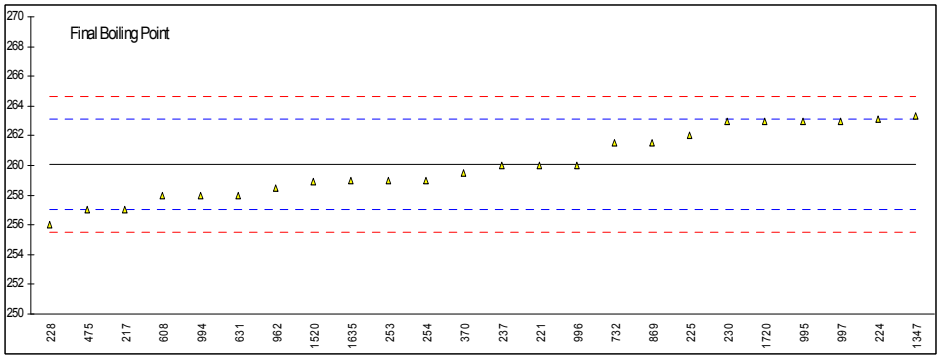


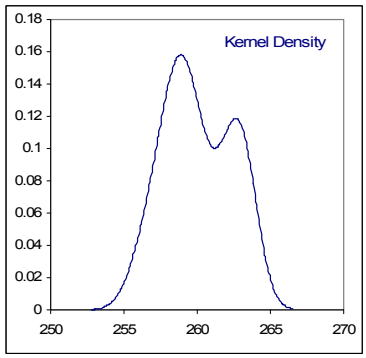








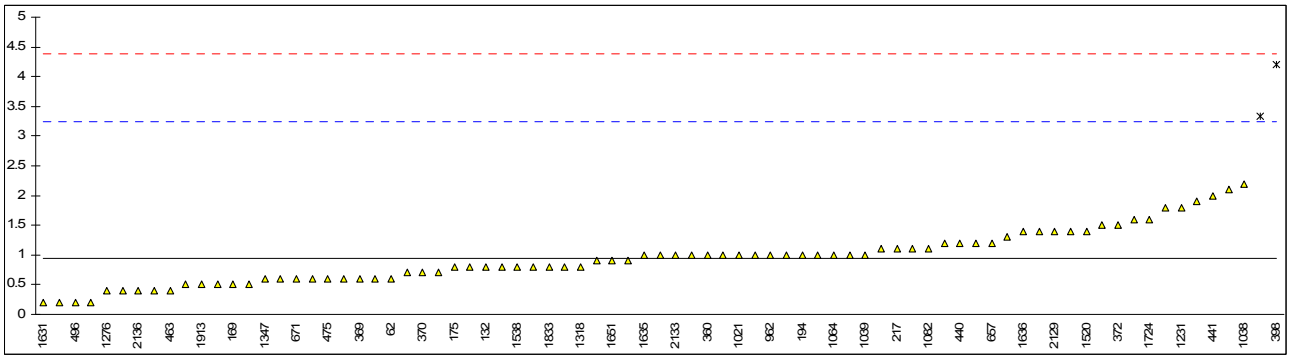


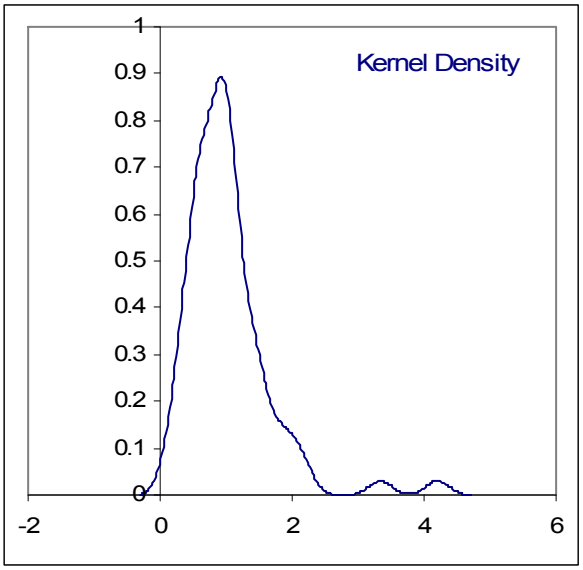


Determination of Existent Gum on sample #1054; results in mg/100 mL

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)	remarks
52	D381	1		0.04	1016		-----		-----	
53		-----		-----	1017		-----		-----	
62	IP540	0.6		-0.31	1021	IP540	1.0		0.04	
120		-----		-----	1026	ISO6246	<1		-----	
132	D381	0.8		-0.13	1032	D381	0.5		-0.39	
140		-----		-----	1034		-----		-----	
150	D381	<1.0		-----	1038	IP540	2.2		1.09	
153	D381	0.2		-0.66	1039	D381	1		0.04	
159		-----		-----	1049	D381	0.2		-0.66	
169	D381	0.5		-0.39	1059	D381	<1		-----	
171		-----		-----	1062	D381	<1.0		-----	
175	D381	0.8		-0.13	1064	D381	1.0		0.04	
177	D381	<1		-----	1065		-----		-----	
194	D381	1.0		0.04	1079	D381	0.8		-0.13	
217	D381	1.1		0.13	1081	D381	1.8		0.74	
221		-----		-----	1082	IP540	1.1		0.13	
224		-----		-----	1097	IP540	0.8		-0.13	
225	D381	1.0		0.04	1108	D381	0.4		-0.48	
228		-----		-----	1109	IP540	1.9		0.83	
230	IP540	2.1		1.00	1126		-----		-----	
237	D381	0.6		-0.31	1140	D381	<1		-----	
252		-----		-----	1161		-----		-----	
253	D381	<1		-----	1167	D381	1.0		0.04	
254		-----		-----	1191	IP540	1.5		0.48	
256		-----		-----	1201	D381	<0.5		-----	
258	D381	<1		-----	1203	ISO 6246	1.3		0.31	
273		-----		-----	1231	D381	1.8		0.74	
311	D381	<1		-----	1237		-----		-----	
323	D381	<1		-----	1276	D381	0.4		-0.48	
333		-----		-----	1277	D381	3.34	G(0.01)	2.09	
334		-----		-----	1284	D381	1.1		0.13	
335		-----		-----	1297		-----		-----	
337		-----		-----	1299	D381	0.8		-0.13	
340	D381	1.0		0.04	1316	D381	0.9		-0.04	
353		-----		-----	1318	D381	0.8		-0.13	
360	D381	1.0		0.04	1321	ISO6246	1.4		0.39	
369	D381	0.6		-0.31	1322	D381	1.2		0.22	
370	IP540	0.7		-0.22	1347	D381	0.6		-0.31	
372	IP540	1.5		0.48	1348	D381	0.6		-0.31	
391	D381	1		0.04	1357		-----		-----	
398	D381	4.2	G(0.01)	2.84	1372		-----		-----	
399		-----		-----	1417		-----		-----	
440	IP540	1.2		0.22	1419		-----		-----	
441	IP540	2		0.92	1520	D381	1.40		0.39	
445	IP540	<1		-----	1538	IP540	0.8		-0.13	
447	IP540	1.1		0.13	1610	IP540	0.7		-0.22	
448	D381	1.0		0.04	1613		-----		-----	
463	ip540	0.4		-0.48	1631	D381	0.2		-0.66	
468	D381	0.6		-0.31	1634	D381	<1		-----	
475	D381	0.6		-0.31	1635	D381	1.0		0.04	
485		-----		-----	1636	D381	1.4		0.39	
495	D381	<1		-----	1650		-----		-----	
496	D381	0.2		-0.66	1651	D381	0.9		-0.04	
604		-----		-----	1715		-----		-----	
606	IP540	0.6		-0.31	1720		-----		-----	
608	D381	<1		-----	1724	D381	1.6		0.57	
631	D381	1.2		0.22	1810	D381	1.6		0.57	
657	IP540	1.2		0.22	1811	D381	1.40		0.39	
663	D381	0.50		-0.39	1826	IP540	<1		-----	
671	D381	0.6		-0.31	1833	D381	0.8		-0.13	
732		-----		-----	1842		-----		-----	
823	D381	<1.0		-----	1902	D381	0.7		-0.22	
851	D381	0.5		-0.39	1913	IP540	0.50		-0.39	
862	D381	0.8		-0.13	1948		-----		-----	
869	D381	0.4		-0.48	2129	D381	1.4		0.39	
962	D381	1		0.04	2130	D381	1		0.04	
963	IP540	<1		-----	2133	D381	1.0		0.04	
974	D381	0.9		-0.04	2136	D381	0.4		-0.48	
994		-----		-----						
995		-----		-----						
996		-----		-----						
997		-----		-----						

normality	not OK
n	77
outliers	2
mean (n)	0.95
st.dev. (n)	0.453
R(calc.)	1.27
R(D381:09)	3.21





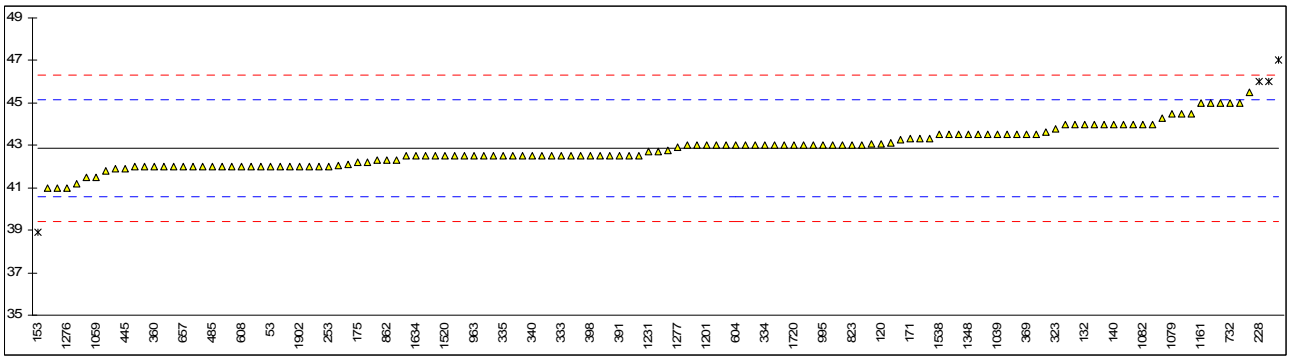
Determination of Flash Point on sample #1054; results in °C

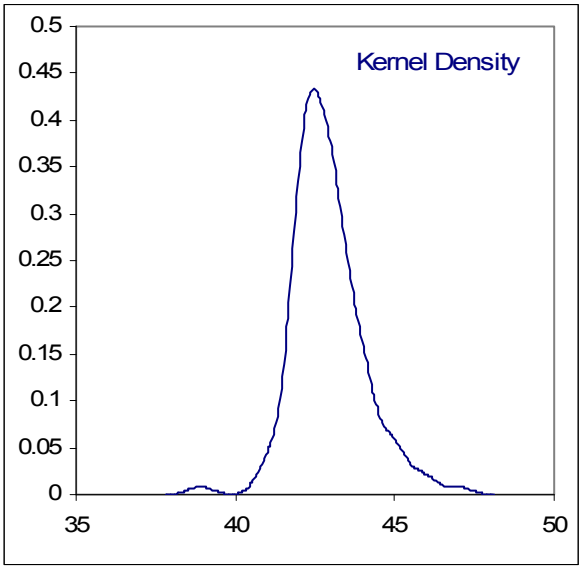
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)	remarks
52	D56-AE	43.5		0.56	1016	IP170-AE	43.0	fr 1.12	0.12	
53	D56-MF	42.0		-0.75	1017	D93-E	45.0		1.87	
62	D56-MF	42.0		-0.75	1021	D56-AE	44.269		1.23	
120	D56-E	43.0555		0.17	1026	IP170-AE	45.0		1.87	
132	D56-AE	44.0		1.00	1032	IP170-AE	42.5		-0.31	
140	D56-AE	44.0		1.00	1034		-----		-----	
150	D56-AE	44.0		1.00	1038	IP170-MF	43.5		0.56	
153	D56-F	38.9	G(0.05)	-3.46	1039	IP170-E	43.5		0.56	
159	D56-E	42.78		-0.07	1049	ISO13736-E	42.5		-0.31	
169	D56-M	43.61		0.66	1059	IP170-AE	41.5		-1.19	
171	D93a-AE	43.3		0.39	1062	IP170-E	42.0		-0.75	
175	D56-MF	42.2		-0.58	1064	IP170-AE	41.0		-1.63	
177	IP170-M	42.0		-0.75	1065		-----		-----	
194	D56-AF	41.8		-0.93	1079	IP170-AE	44.5		1.44	
217	IP170-MF	41.0		-1.63	1081	IP170-	42.5		-0.31	
221	D3828	42.0		-0.75	1082	D56-E	44.0		1.00	
224	IP170-MF	42.53		-0.29	1097	ISO13736-AF	42.5		-0.31	
225	IP170-	42.0		-0.75	1108	D56-AE	42.0		-0.75	
228	D93-ME	46.0	DG(0.05)	2.75	1109	IP170-F	43.0		0.12	
230	IP170-MF	43.0		0.12	1126		-----		-----	
237	IP170-MF	42.5		-0.31	1140	IP170-E	42.5		-0.31	
252	IP170-MF	43.04		0.16	1161	ISO2719-AE	45.0		1.87	
253	IP170-MF	42		-0.75	1167	IP170-AE	44.0		1.00	
254	IP170-F	42.5		-0.31	1191	D56-E	41.9		-0.84	
256		-----		-----	1201	IP170-AE	43.0		0.12	
258	IP170-F	43.29		0.38	1203	D56-AF	44.0		1.00	
273	IP170-MF	42		-0.75	1231	IP170-	42.7		-0.14	
311	IP170-E	42.5		-0.31	1237		-----		-----	
323	IP170-AE	43.8		0.82	1276	IP170-MF	41.0		-1.63	
333	IP170-F	42.5		-0.31	1277	IP170-A	42.9		0.04	
334	IP170-F	43.0		0.12	1284	D56-AF	42.5		-0.31	
335	IP170-AF	42.5		-0.31	1297	D56-E	45.0		1.87	
337	IP170-MF	42.0		-0.75	1299	IP170-E	44.5		1.44	
340	ISO13736-	42.5		-0.31	1316	IP170-AE	44.0		1.00	
353	IP170-	42.0		-0.75	1318	IP170-E	42.5		-0.31	
360	D56-AE	42.0		-0.75	1321	ISO13736-AE	42.0		-0.75	
369	IP170-AE	43.5		0.56	1322		-----		-----	
370	IP170-F	42.5		-0.31	1347	D56-MF	43.3		0.39	
372	IP170-AE	43.0		0.12	1348	IP170-MF	43.5		0.56	
391	IP170-MF	42.5		-0.31	1357		-----		-----	
398	IP170-ME	42.5		-0.31	1372		-----		-----	
399	IP170-MF	43.0		0.12	1417	IP170-AE	42.5		-0.31	
440	IP170-MF	42.0		-0.75	1419		-----		-----	
441	IP170-AF	43.1		0.21	1520	D56-AE	42.50		-0.31	
445	IP170-MF	41.9		-0.84	1538	D56	43.5	fr 46.0	0.56	
447	IP170-AF	42.0		-0.75	1610	IP170-AF	42.3		-0.49	
448	IP170-AF	43.3		0.39	1613	D56-E	43.5		0.56	
463	IP170-AF	43.0		0.12	1631	IP170-AE	44	fr 46.5	1.00	
468	IP170-AE	42.5		-0.31	1634	IP170-AE	42.5		-0.31	
475	IP170-E	43.0		0.12	1635	D93-MF	44.0	fr 47.5	1.00	
485	D56	42.0		-0.75	1636	D56-AE	43.0		0.12	
495	IP170-AE	43.0		0.12	1650	IP170-E	43.0		0.12	
496	D3828-MF	41.2		-1.45	1651	IP170-AE	42.7		-0.14	
604	IP170-AE	43.0		0.12	1715	D56-AE	44.5		1.44	
606	IP170-AE	43.5		0.56	1720	D3828-AF	43.0		0.12	
608	IP170-ME	42.0		-0.75	1724	IP170-AE	43.5		0.56	
631	IP170-F	42.1		-0.66	1810	D93-F	45.5		2.31	
657	IP170-AF	42.0		-0.75	1811	IP170-F	41.5		-1.19	
663	D56-MF	43.0		0.12	1826	IP170-AF	42.5		-0.31	
671	IP170-ME	42.0		-0.75	1833	IP170-F	43		0.12	
732	D93-MF	45		1.87	1842		-----		-----	
823	IP170-F	43.0		0.12	1902	IP170-ME	42.0		-0.75	
851	IP170-F	42.05		-0.71	1913	IP170-AF	42.3		-0.49	
862	IP170-MF	42.30		-0.49	1948	D93-AE	46	DG(0.05)	2.75	
869	IP170-MF	42.50		-0.31	2129	IP170-MF	42.0		-0.75	
962	IP170-MF	43.5		0.56	2130	IP170-AF	42.5		-0.31	
963	IP170-MF	42.5		-0.31	2133	D56-AE	47.0	G(0.05)	3.62	
974	IP170-MF	42.225		-0.56	2136	D56-AE	44.0		1.00	
994	IP170-MF	43.5		0.56						
995	IP170-MF	43		0.12						
996		-----		-----						
997	IP170-	43		0.12						

After excluding ASTM D93 / ISO2719

normality	not OK	not OK
n	125	120
outliers	4	2
mean (n)	42.86	42.79
st.dev. (n)	0.906	0.838
R(calc.)	2.54	2.35
R(IP170:09)	3.20	3.20

Only IP170/ISO13736		**Only ASTM D56**
normality	not OK	OK
n	88	28
outliers	0	101
mean (n)	42.68	43.14
st.dev. (n)	0.739	0.930
R(calc.)	2.07	2.60
R(IP170:09)	3.20	4.30

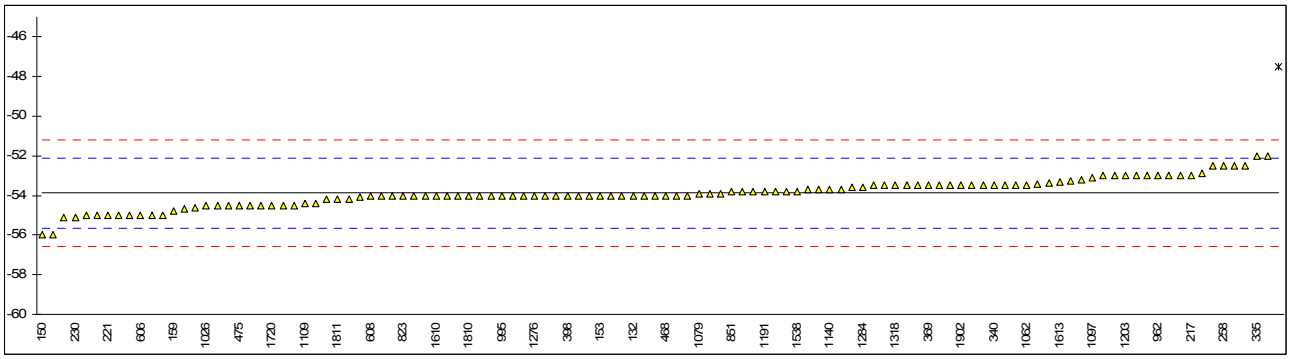


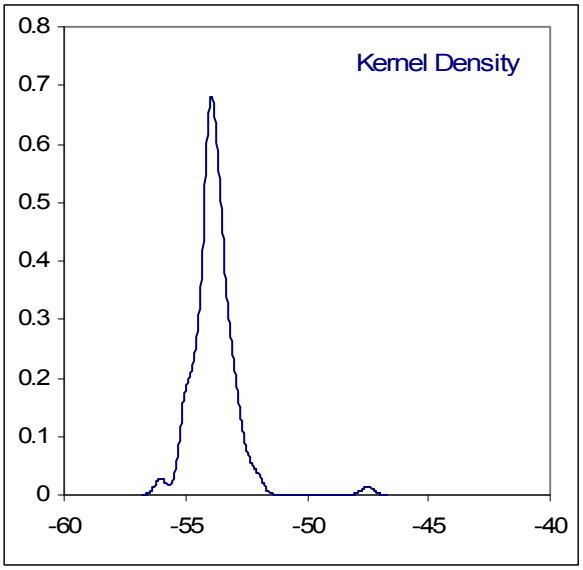


Determination of Freezing Point on sample #1054; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)	remarks
52	D2386-M	-54		-0.13	1016		-----		-----	
53	D2386-M	-54.0		-0.13	1017		-----		-----	
62	D5972-A	-53.7		0.20	1021	D2386-M	-54.65		-0.86	
120		-----		-----	1026	D2386-M	-54.5		-0.69	
132	D2386-M	-54.0		-0.13	1032	IP529-A	-53.6		0.32	
140	D5773	-54.2		-0.36	1034		-----		-----	
150	D2386-M	-56		-2.37	1038	D5972-A	-54.6		-0.80	
153	D2386-M	-54.0		-0.13	1039	IP529-A	-54.0		-0.13	
159	D2386-A	-54.8		-1.03	1049	D7153-A	-53.5		0.43	
169	D2386-M	-53.0		0.99	1059	D2386-M	-53.5		0.43	
171	D2386-M	-55		-1.25	1062	IP529	-53.5		0.43	
175	D2386-M	-47.5	G(0.01)	7.15	1064	D7153-A	-53.5		0.43	
177	D2386-M	-54.0		-0.13	1065		-----		-----	
194	D2386-M	-55.0		-1.25	1079	D5972-A	-53.9		-0.02	
217	D2386-M	-53		0.99	1081	D7153-A	-53.5		0.43	
221	D2386-	-55		-1.25	1082	IP529-A	-53.8		0.09	
224		-----		-----	1097	IP529-A	-53.1		0.88	
225	D2386-M	-53.0		0.99	1108	D5972-A	-54.1		-0.24	
228		-----		-----	1109	D5972-A	-54.4		-0.58	
230	D2386-M	-55.1		-1.36	1126		-----		-----	
237	D2386-M	-54.0		-0.13	1140	D7153-M	-53.7		0.20	
252	D2386-M	-52.5		1.55	1161		-----		-----	
253	D2386-M	-54.5		-0.69	1167		-----		-----	
254		-----		-----	1191	IP529-A	-53.8		0.09	
256		-----		-----	1201	D2386-M	-54.5		-0.69	
258	D2386-	-52.5		1.55	1203	D2386-M	-53		0.99	
273		-----		-----	1231	D2386-	-54.0		-0.13	
311	D2386-M	-52.0		2.11	1237		-----		-----	
323		-----		-----	1276	D2386-M	-54		-0.13	
333	D2386-A	-53.8		0.09	1277	D2386-A	-53.5	fr -50.6	0.43	
334	D7153-A	-53.4		0.54	1284	D7153-A	-53.6		0.32	
335	D2386-M	-52.0		2.11	1297		-----		-----	
337		-----		-----	1299	D2386-M	-54.0		-0.13	
340	D7153-A	-53.5		0.43	1316	D2386-A	-53.5		0.43	
353	D2386-	-54.0		-0.13	1318	D7153-A	-53.5		0.43	
360	D7153-A	-53.7		0.20	1321	IP529-A	-52.9		1.10	
369	D2386-M	-53.5		0.43	1322		-----		-----	
370	D2386-M	-53.5		0.43	1347	D2386-M	-54.0		-0.13	
372	D2386-M	-54.0		-0.13	1348	D2386-M	-53.0		0.99	
391	D2386-M	-54		-0.13	1357		-----		-----	
398	D2386-M	-54.0		-0.13	1372		-----		-----	
399	D2386-M	-55.1		-1.36	1417	IP529-A	-53.9		-0.02	
440	IP16-M	-52.5		1.55	1419	D2386-A	-54.2		-0.36	
441	IP529-A	-53.2		0.76	1520	D2386-M	-53.00		0.99	
445	D2386-M	-54.0		-0.13	1538	D5972-A	-53.8		0.09	
447	IP16-M	-53.5		0.43	1610	IP16-M	-54.0		-0.13	
448	D2386-M	-52.5		1.55	1613	D7153-A	-53.3		0.65	
463	D2386-M	-54.0		-0.13	1631	D7153-A	-53.8		0.09	
468	D2386-M	-54.0		-0.13	1634	D2386-M	-54.0		-0.13	
475	D2386-M	-54.5		-0.69	1635	D2386-M	-54		-0.13	
485		-----		-----	1636	D2386-M	-54.5		-0.69	
495	D2386-M	-55.0		-1.25	1650	D2386-M	-53.0		0.99	
496	D2386-M	-54.0		-0.13	1651	D2386-A	-53.9		-0.02	
604	D2386-M	-53.0		0.99	1715	D5972	-53.7		0.20	
606	D2386-M	-55.0		-1.25	1720	D5972-A	-54.5		-0.69	
608	D2386-M	-54.0		-0.13	1724	D2386-M	-54.5		-0.69	
631	D2386-M	-54.5		-0.69	1810	D2386-A	-54		-0.13	
657	D2386-	-56.0		-2.37	1811	D2386-	-54.2		-0.36	
663	D2386-A	-55		-1.25	1826	D5972-A	-54.4		-0.58	
671	D2386-	-53.38		0.56	1833	D2386-A	-53.5		0.43	
732		-----		-----	1842		-----		-----	
823	D2386-M	-54.0		-0.13	1902	D2386-	-53.5		0.43	
851	D2386-M	-53.82		0.07	1913	D7153-A	-53.8		0.09	
862	D2386-M	-53.25		0.71	1948		-----		-----	
869	D2386-M	-54.0		-0.13	2129	D2386-M	-54.5		-0.69	
962	D2386-M	-53.0		0.99	2130	D2386-M	-55.0		-1.25	
963	D2386-M	-54.0		-0.13	2133	D2386-A	-54.0		-0.13	
974	D2386-M	-55.0		-1.25	2136	D7153-A	-53.5		0.43	
994	D2386-M	-54.0		-0.13						
995	D2386-M	-54		-0.13						
996		-----		-----						
997		-----		-----						

normality	not OK
n	113
outliers	1
mean (n)	-53.88
st.dev. (n)	0.708
R(calc.)	1.98
R(D2386:06)	2.50





Determination of JFTOT; Tube Rating, Delta P in mmHg, Pumped Vol. in mL, Temp. in °C

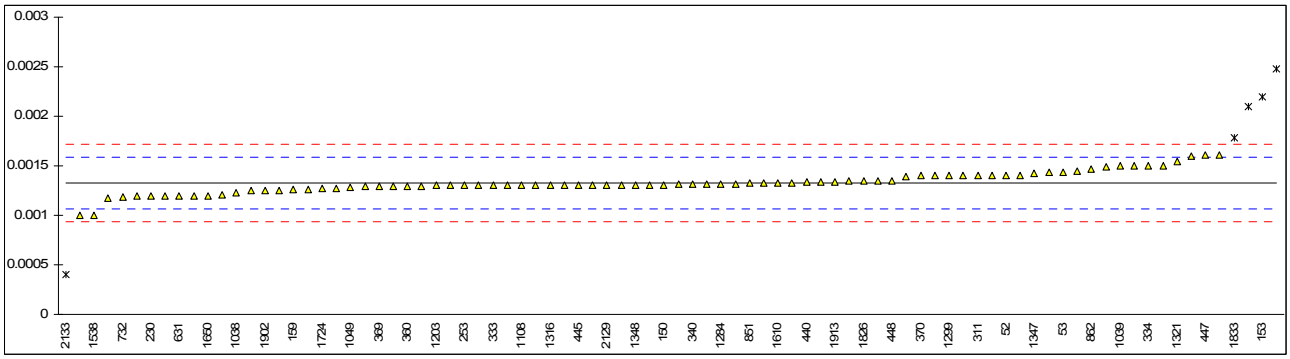
lab	method	tube	mark	Delta P	mark	volume	mark	temp	mark	remarks
52	D3241	<1		5	G(0.01)	420		260		
53	D3241	1		1		470		260		
62	D3241	2		0.3		420		260		
120	D3241	1		1		490		-----		
132	D3241	<1		0		450		260		
140	D3241	<1		0		450		260		
150	D3241	<1		1		450		260		
153	D3241	1		1.4		510	Ex	260		Volume >495mL
159	D3241	1		0		450		260		
169	D3241	<2		2		450		260		
171	D3241	<1		0		450		260		
175	D3241	<1		1		445		260		
177	D3241	1		1		450		260		
194	D3241	<1		1		450		260		
217		-----		-----		-----		-----		
221		-----		-----		-----		-----		
224		-----		-----		-----		-----		
225	D3241	1		2.3	G(0.05)	460		260		
228		-----		-----		-----		-----		
230	D3241	<1		<1		450		260		
237		-----		-----		-----		-----		
252		-----		-----		-----		-----		
253	D3241	<1		0		450		260		
254	D3241	<1		0		450		260		
256		-----		-----		-----		-----		
258	D3241	<1		0.1		450		260		
273		-----		-----		-----		-----		
311	D3241	<1		<1		450		260		
323	D3241	<1		1.1		450.0		260		
333	D3241	<1		0		460		260		
334	D3241	0		0		510	Ex	260		Volume >495mL
335	D3241	<1		0.0		510	Ex	260		Volume >495mL
337		-----		-----		-----		-----		
340	D3241	1		<1		460		260		
353		-----		-----		-----		-----		
360	D3241	0		0		450		260		
369	D3241	1		<1		450		260		
370	D3241	<1		<1		450		260		
372	D3241	<1		0		450		260		
391	D3241	0		0		450		260		
398		-----		-----		-----		-----		
399	D3241	1		0		600	Ex	260		Volume >495mL
440	IP323	<1		0		480		260		
441	IP323	1		<1		455		260		
445	D3241	1		<1		420		260		
447		-----		-----		-----		-----		
448	D3241	1		<1		455		260		
463		-----		-----		-----		-----		
468		-----		-----		-----		-----		
475		-----		-----		-----		-----		
485		-----		-----		-----		-----		
495	D3241	1		1		465		260		
496	D3241	<1		0.3		600	Ex	260		Volume >495mL
604		-----		-----		-----		-----		
606		-----		-----		-----		-----		
608		-----		-----		-----		-----		
631	D3241	-----		<1		460		260		
657	D3241	1		<1		440		260		
663		-----		-----		-----		-----		
671	D3241	<1		0		455		260		
732		-----		-----		-----		-----		
823	D3241	1		0.0		450		260		
851	D3241	<1		0		495		260		
862		-----		-----		-----		-----		
869	D3241	0		0		450		260		
962		-----		-----		-----		-----		
963	D3241	1		0		450		260		
974	D3241	<1		1		450		260		
994		-----		-----		-----		-----		
995		-----		-----		-----		-----		
996		-----		-----		-----		-----		
997		-----		-----		-----		-----		
1016	D3241	1		0.1		510	Ex	260		Volume >495mL

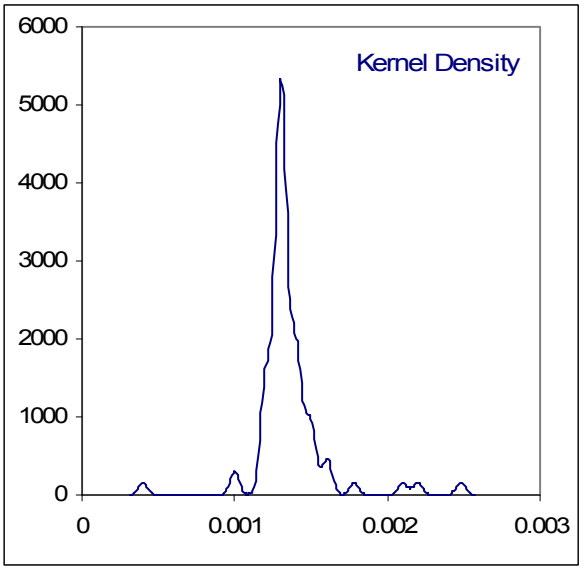
1017		-----	-----	-----		-----	
1021	D3241	0	0	450		260	
1026	D3241	<1	1.0	-----		260	
1032	D3241	<1	0.0	430		260	
1034		-----	-----	-----		-----	
1038		-----	-----	-----		-----	
1039	D3241	<1	0.2	450		260	
1049	D3241	1	0	510	Ex	260	Volume >495mL
1059		-----	-----	-----		-----	
1062	D3241	0	<1	500	Ex	260	Volume >495mL
1064	D3241	0	1	450		260	
1065		-----	-----	-----		-----	
1079	D3241	<1	0	450		260	
1081	D3241	0	0	475		260	
1082		-----	-----	-----		-----	
1097	D3241	1	0	490		260	
1108		-----	-----	-----		-----	
1109	D3241	<1	0	450		260	
1126		-----	-----	-----		-----	
1140	D3241	1	0.0	470		-----	
1161		-----	-----	-----		-----	
1167		-----	-----	-----		-----	
1191		-----	-----	-----		-----	
1201		-----	-----	-----		-----	
1203	D3241	1	0	450		260	
1231	D3241	1	2	450		260	
1237	D3241	<1	0.0	455		260	
1276	D3241	<1.0	0	450		260	
1277	D3241	1	2	450		260	
1284	D3241	1A	0.7	450		260	
1297		-----	-----	-----		-----	
1299	D3241	1	0	450		260	
1316		-----	-----	-----		-----	
1318	D3241	<1	0.0	510	Ex	260	Volume >495mL
1321	ISO6249	0	0	450		260	
1322		-----	-----	-----		-----	
1347	D3241	<1	0	410		260	
1348	D3241	1	0	500	Ex	260	Volume >495mL
1357		-----	-----	-----		-----	
1372		-----	-----	-----		-----	
1417	IP323	<1	0	455		260	
1419		-----	-----	-----		-----	
1520	D3241	1	<1	450		260	
1538	D3241	1	1	450		260	
1610	IP323	1	<1	450		260	
1613	D3241	<1	0.0	450		260	
1631	D3241	<1	0.0	450		260	
1634		-----	-----	-----		-----	
1635		-----	-----	-----		-----	
1636		-----	-----	-----		-----	
1650	D3241	<1	0	510	Ex	260	Volume >495mL
1651	D3241	1	0	450		260	
1715		-----	-----	-----		-----	
1720	D3241	1	1	447		260	
1724	D3241	<1	0	460		260	
1810		-----	-----	-----		-----	
1811		-----	-----	-----		-----	
1826		-----	-----	-----		-----	
1833	D3241	<1	0	510	Ex	260	Volume >495mL
1842		-----	0	-----		-----	
1902	D3241	1	<1	450		260	
1913	D3241	<1	0.0	450		260	
1948		-----	-----	-----		-----	
2129	D3241	1	0	450		260	
2130	D3241	1	0	450		260	
2133	D3241	<1	1	500	Ex	260	Volume >495mL
2136	D3241	1	0	450		260	
	normality	not OK	not OK	not OK		n.a.	
	n	44	71	72		84	
	outliers	0	2	0		0	
	mean (n)	0.82	0.33	452.0		260	
	st.dev. (n)	0.446	0.552	13.51		0	
	R(calc.)	1.25	1.55	37.8		0	
	R(D3241:09)	n.a.	n.a.	n.a.		n.a.	

Determination of Mercaptan Sulphur on sample #1054; results in % M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)	remarks
52	D3227	0.0014		0.55	1016		-----		-----	
53	D3227	0.00144		0.85	1017		-----		-----	
62	D3227	0.0013		-0.22	1021		-----		-----	
120	D3227	0.0013		-0.22	1026	D3227	0.0014		0.55	
132	D3227	0.0013		-0.22	1032		-----		-----	
140		-----		-----	1034		-----		-----	
150	D3227	0.0013		-0.22	1038	D3227	0.00123		-0.76	
153	D3227	0.0022	G(0.01)	6.67	1039	D3227	0.0015		1.31	
159	D3227	0.00126		-0.53	1049	D3227	0.001287		-0.32	
169	D3227	0.0015		1.31	1059	D3227	0.0014		0.55	
171	D3227	0.00131		-0.14	1062	D3227	0.0015		1.31	
175	D3227	0.0013		-0.22	1064	D3227	0.00134		0.09	
177		-----		-----	1065	D3227	0.0010		-2.52	
194	D3227	0.00125		-0.60	1079	D3227	0.0013	fr 12.646	-0.22	
217		-----		-----	1081		-----	fr 0.0019	-----	
221		-----		-----	1082		-----		-----	
224		-----		-----	1097	ISO3012	0.0012		-0.99	
225		-----		-----	1108	D3227	0.0013		-0.22	
228		-----		-----	1109	D3227	0.00132		-0.07	
230	D3227	0.0012		-0.99	1126		-----		-----	
237	D3227	0.00127		-0.45	1140	D3227	0.001442		0.87	
252		-----		-----	1161	ISO3012	0.001265		-0.49	
253	D3227	0.0013		-0.22	1167	D3227	0.00149		1.23	
254		-----		-----	1191	D3227	0.001318		-0.08	
256		-----		-----	1201	D3227	0.0016		2.08	
258		-----		-----	1203	UOP163	0.0013		-0.22	
273	D3227	0.00143		0.78	1231		-----		-----	
311	D3227	0.0014		0.55	1237		-----		-----	
323	D3227	0.0013		-0.22	1276	D3227	0.00248	G(0.01)	8.81	
333	D3227	0.0013		-0.22	1277		-----		-----	
334	D3227	0.0015		1.31	1284	D3227	0.00132		-0.07	
335		-----		-----	1297		-----		-----	
337		-----		-----	1299	D3227	0.0014		0.55	
340	D3227	0.00131		-0.14	1316	D3227	0.0013		-0.22	
353		-----		-----	1318		-----		-----	
360	D3227	0.00129		-0.30	1321	ISO3012	0.00154		1.62	
369	D3227	0.00129		-0.30	1322		-----		-----	
370	D3227	0.0014	fr 0.00014	0.55	1347	D3227	0.00142		0.70	
372	D3227	0.0014		0.55	1348	D3227	0.0013		-0.22	
391		-----		-----	1357		-----		-----	
398	D3227	0.0012		-0.99	1372		-----		-----	
399	D3227	0.001348		0.15	1417		-----		-----	
440	IP342	0.00134		0.09	1419		-----		-----	
441	D3227	0.0014		0.55	1520	D3227	0.00121		-0.91	
445	D3227	0.0013		-0.22	1538	D3227	0.0010	fr 0.00047	-2.52	
447	D3227	0.00161		2.15	1610	IP342	0.00133		0.01	
448	D3227	0.00135		0.16	1613		-----		-----	
463	IP30	POS		-----	1631	D3227	0.00133		0.01	
468		-----		-----	1634		-----		-----	
475		-----		-----	1635	D3227	0.00133		0.01	
485		-----		-----	1636	D3227	0.00135		0.16	
495	D3227	0.0013		-0.22	1650	D3227	0.0012		-0.99	
496	D3227	0.001175		-1.18	1651		-----		-----	
604		-----		-----	1715		-----		-----	
606		-----		-----	1720		-----		-----	
608	D3227	0.0021	G(0.01)	5.90	1724	D3227	0.00127		-0.45	
631	D3227	0.0012	fr 0.0006	-0.99	1810		-----		-----	
657	D3227	0.0012		-0.99	1811	D3227	0.001614	fr 0.0024	2.18	
663		-----		-----	1826	D3227	0.00135		0.16	
671		-----		-----	1833	D3227	0.00178	CG(0.01)	3.45	
732	D3227	0.001188		-1.08	1842		-----		-----	
823		-----		-----	1902	D3227	0.00125		-0.60	
851	D3227	0.00133		0.01	1913	D3227	0.00134		0.09	
862	D3227	0.00147		1.08	1948		-----		-----	
869	D3227	0.00130		-0.22	2129	D3227	0.0013		-0.22	
962		-----		-----	2130	D3227	0.00129		-0.30	
963	D3227	0.00129		-0.30	2133	D3227	0.0004	G(0.01)	-7.11	
974	D3227	0.001297		-0.24	2136	D3227	0.00125		-0.60	
994		-----		-----						
995	D3227	0.00139		0.47						
996		-----		-----						
997		-----		-----						

normality	not OK
n	81
outliers	5
mean (n)	0.00133
st.dev. (n)	0.000110
R(calc.)	0.00031
R(D3227:04a)	0.00037

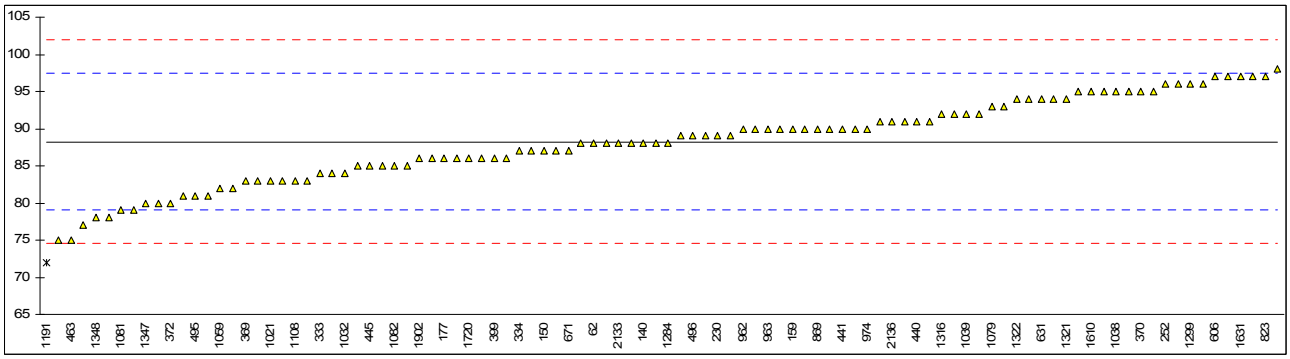


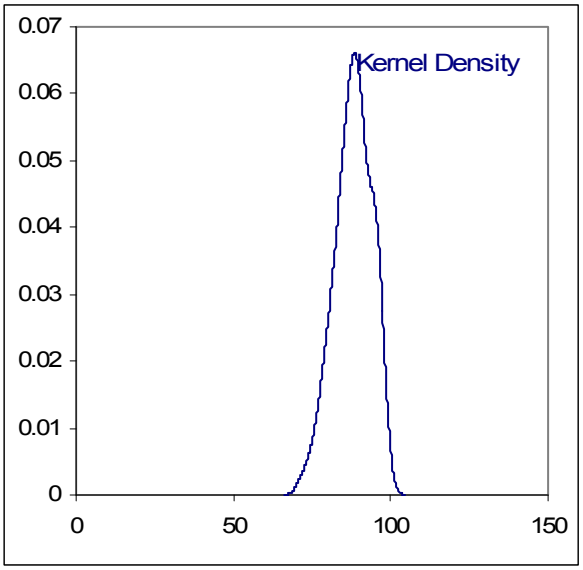


Determination of MSEP on sample #1054;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)	remarks
52	D3948	94		1.26	1016	D3948	88		-0.05	
53	D3948	90		0.38	1017		-----		-----	
62	D3948	88		-0.05	1021	D3948	83		-1.14	
120	D3948	82		-1.36	1026	D3948	86		-0.49	
132	D3948	93		1.04	1032	D3948	84		-0.93	
140	D3948	88		-0.05	1034		-----		-----	
150	D3948	87		-0.27	1038	D3948	95		1.48	
153	D3948	95		1.48	1039	D3948	92		0.82	
159	D3948	90		0.38	1049	D3948	86		-0.49	
169	D3948	78		-2.24	1059	D3948	82	fr 100	-1.36	
171	D3948	89		0.17	1062	D3948	85		-0.71	
175	D3948	77		-2.46	1064	D3948	81		-1.58	
177	D3948	86		-0.49	1065		-----		-----	
194	D3948	91		0.60	1079	D3948	93		1.04	
217	D3948	83		-1.14	1081	D3948	79	fr 68	-2.02	
221		-----		-----	1082	D3948	85		-0.71	
224		-----		-----	1097	D3948	75		-2.89	
225	D3948	81		-1.58	1108	D3948	83		-1.14	
228		-----		-----	1109	D3948	79		-2.02	
230	D3948	89		0.17	1126		-----		-----	
237	D3948	88		-0.05	1140	D3948	90		0.38	
252	D3948	96		1.69	1161		-----		-----	
253	D3948	90		0.38	1167		-----		-----	
254	D3948	86		-0.49	1191	D3948	72	G(0.05)	-3.55	
256		-----		-----	1201		-----		-----	
258	D3948	89		0.17	1203		-----		-----	
273		-----		-----	1231	D3948	90		0.38	
311	D3948	88		-0.05	1237		-----		-----	
323		-----		-----	1276		-----		-----	
333	D3948	84		-0.93	1277	D3948	83		-1.14	
334	D3949	87		-0.27	1284	D3948	88		-0.05	
335		-----		-----	1297		-----		-----	
337		-----		-----	1299	D3948	96		1.69	
340	D3948	85		-0.71	1316	D3948	92		0.82	
353	D3948	96		1.69	1318	D3948	94		1.26	
360	D3948	91		0.60	1321	D3948	94		1.26	
369	D3948	83		-1.14	1322	D3948	94		1.26	
370	D3948	95		1.48	1347	D3948	80		-1.80	
372	D3948	80		-1.80	1348	D3948	78		-2.24	
391	D3948	84		-0.93	1357		-----		-----	
398	D3948	86		-0.49	1372		-----		-----	
399	D3948	86		-0.49	1417		-----		-----	
440	D3948	91		0.60	1419		-----		-----	
441	D3948	90		0.38	1520		-----		-----	
445	D3948	85		-0.71	1538	D3948	98		2.13	
447	D3948	85		-0.71	1610	D3948	95		1.48	
448	D3948	90		0.38	1613	D3948	97		1.91	
463	D3948	75		-2.89	1631	D3948	97		1.91	
468		-----		-----	1634		-----		-----	
475		-----		-----	1635		-----		-----	
485		-----		-----	1636		-----		-----	
495	D3948	81		-1.58	1650	D3948	92		0.82	
496	D3948	89	fr 69	0.17	1651	D3948	87		-0.27	
604		-----		-----	1715		-----		-----	
606	D3948	97		1.91	1720	D3948	86		-0.49	
608	D3948	97		1.91	1724	D3948	89		0.17	
631	D3948	94		1.26	1810		-----		-----	
657	D3948	91		0.60	1811	D3948	96		1.69	
663	D3948	95		1.48	1826	D3948	83		-1.14	
671	D3948	87		-0.27	1833	D3948	92		0.82	
732		-----		-----	1842		-----		-----	
823	D3948	97		1.91	1902	D3948	86		-0.49	
851	D3948	95		1.48	1913	D3948	88		-0.05	
862	D3948	87		-0.27	1948		-----		-----	
869	D3948	90		0.38	2129	D3948	95		1.48	
962	D3948	90		0.38	2130	D3948	80		-1.80	
963	D3948	90		0.38	2133	D3948	88		-0.05	
974	D3948	90		0.38	2136	D3948	91		0.60	
994		-----		-----						
995		-----		-----						
996		-----		-----						
997		-----		-----						

normality	OK
n	99
outliers	1
mean (n)	88.24
st.dev. (n)	5.531
R(calc.)	15.49
R(D3948:08)	12.82



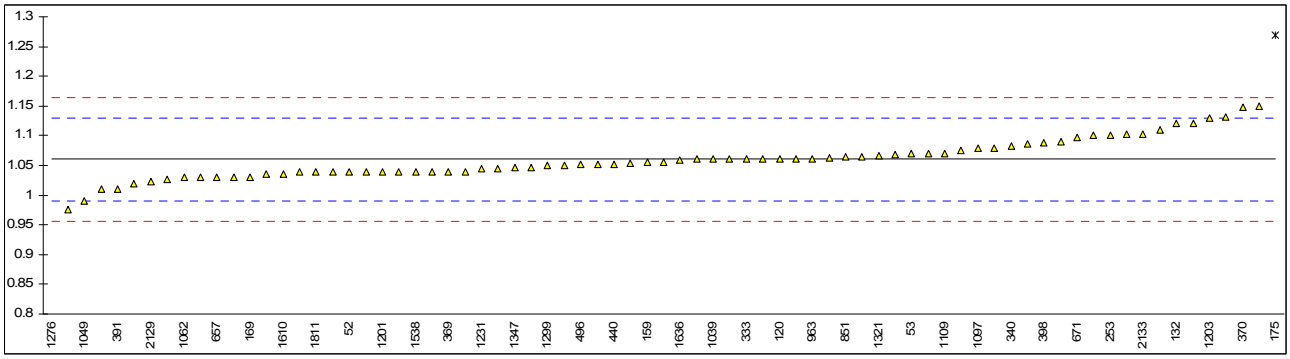


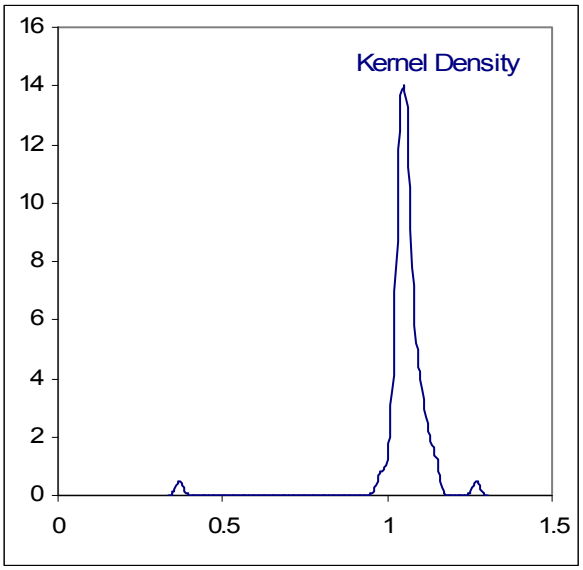
Determination of Naphthalenes on sample #1054; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)	remarks
52	D1840-B	1.04		-0.58	1016	D1840-	1.12		1.72	
53	D1840-B	1.07		0.28	1017		-----		-----	
62	D1840-B	1.03		-0.87	1021	D1840-B	1.02		-1.15	
120	D1840-	1.0603		0.01	1026		-----		-----	
132	D1840-A	1.12		1.72	1032		-----		-----	
140	D1840-B	1.04		-0.58	1034		-----		-----	
150	D1840-A	1.06	fr 1.17	0.00	1038	D1840-B	1.03		-0.87	
153	D1840-B	1.04		-0.58	1039	D1840-B	1.06		0.00	
159	D1840-B	1.055		-0.15	1049	D1840-A	0.99		-2.02	
169	D1840-B	1.03		-0.87	1059		-----		-----	
171	D1840-B	0.975		-2.45	1062	D1840-A	1.03		-0.87	
175	D1840-A	1.27	G(0.01)	6.04	1064	D1840-A	1.065		0.14	
177	D1840-	1.15		2.59	1065		-----		-----	
194	D1840-A	1.035		-0.72	1079	D1840-A	1.131		2.04	
217		-----		-----	1081	D1840-B	1.1		1.15	
221		-----		-----	1082		-----		-----	
224		-----		-----	1097	D1840-A	1.079	fr 1.251	0.54	
225		-----		-----	1108	D1840-	1.05		-0.29	
228		-----		-----	1109	D1840-A	1.070		0.28	
230		-----		-----	1126		-----		-----	
237		-----		-----	1140	D1840-	1.04		-0.58	
252		-----		-----	1161		-----		-----	
253	D1840-B	1.10		1.15	1167		-----		-----	
254		-----		-----	1191		-----		-----	
256		-----		-----	1201	D1840-A	1.04		-0.58	
258		-----		-----	1203	D1840-A	1.129		1.98	
273		-----		-----	1231	D1840-A	1.045		-0.43	
311	D1840-B	1.06		0.00	1237		-----		-----	
323	D1840-A	1.07	fr 0.91	0.28	1276	D1840-A	0.369	G(0.01)	-19.88	
333	D1840-A	1.06		0.00	1277		-----		-----	
334		-----		-----	1284		-----		-----	
335		-----		-----	1297		-----		-----	
337		-----		-----	1299	D1840-	1.05		-0.29	
340	D1840-B	1.083		0.66	1316	D1840-A	1.0608		0.02	
353		-----		-----	1318	D1840-B	1.086		0.74	
360		-----		-----	1321	D1840-B	1.066		0.17	
369	D1840-A	1.04		-0.58	1322		-----		-----	
370	D1840-A	1.148		2.53	1347	D1840-B	1.046		-0.41	
372	D1840-B	1.046		-0.41	1348	D1840-B	1.11		1.43	
391	D1840-B	1.01		-1.44	1357		-----		-----	
398	D1840-B	1.088		0.80	1372		-----		-----	
399		-----		-----	1417		-----		-----	
440	D1840-B	1.052		-0.23	1419	D1840-B	1.039		-0.61	
441	D1840-A	1.063		0.08	1520	D1840-B	1.045		-0.43	
445	D1840-B	1.027		-0.95	1538	D1840-B	1.04		-0.58	
447	D1840-B	1.103		1.23	1610	D1840-B	1.036		-0.69	
448	D1840-A	1.052		-0.23	1613		-----		-----	
463		-----		-----	1631		-----		-----	
468		-----		-----	1634		-----		-----	
475		-----		-----	1635	D1840-B	1.09		0.86	
485		-----		-----	1636	D1840-B	1.0595		-0.02	
495	D1840-B	1.01		-1.44	1650		-----		-----	
496	D1840-A	1.0510		-0.26	1651		-----		-----	
604		-----		-----	1715		-----		-----	
606		-----		-----	1720	D1840-A	1.04		-0.58	
608		-----		-----	1724		-----		-----	
631	D1840-A	1.04		-0.58	1810		-----		-----	
657	D1840-A	1.03	fr 1.17	-0.87	1811	D1840-A	1.04		-0.58	
663		-----		-----	1826	D1840-A	1.0761		0.46	
671	D1840-A	1.098	fr 1.3776	1.09	1833		-----		-----	
732		-----		-----	1842		-----		-----	
823	D1840-A	1.06	fr 0.11	0.00	1902	D1840-A	1.079		0.54	
851	D1840-A	1.064		0.11	1913	D1840-B	1.069		0.26	
862	D1840-B	1.054		-0.18	1948		-----		-----	
869	D1840-A	1.056		-0.12	2129	D1840-B	1.0226		-1.08	
962		-----		-----	2130		-----		-----	
963	D1840-A	1.061		0.03	2133	D1840-A	1.103		1.23	
974		-----		-----	2136		-----		-----	
994		-----		-----						
995		-----		-----						
996		-----		-----						
997		-----		-----						

normality	not OK
n	73
outliers	2
mean (n)	1.060
st.dev. (n)	0.0335
R(calc.)	0.094
R(D1840:07-B)	0.097

Compare R(D1840:07-A) = 0.062

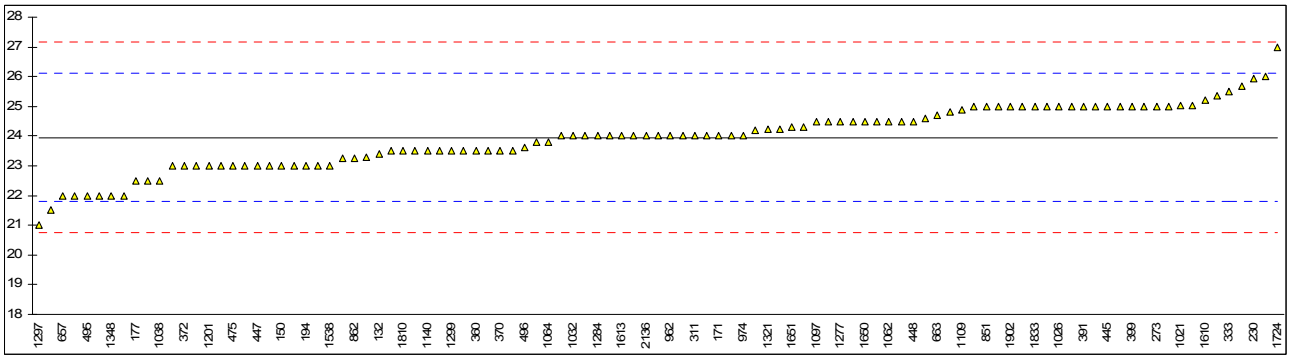


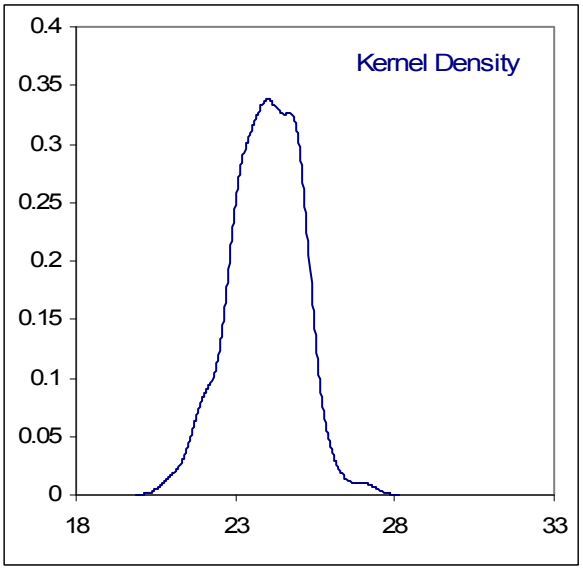


Determination of Smoke Point on sample #1054; results in mm

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)	remarks
52	D1322	23		-0.89	1016		-----		-----	
53	D1322	22.0		-1.82	1017		-----		-----	
62	D1322	23		-0.89	1021	D1322	25.03		1.00	
120		-----		-----	1026	D1322	25.0		0.98	
132	D1322	23.4		-0.52	1032	D1322	24		0.04	
140	D1322	25		0.98	1034		-----		-----	
150	D1322	23		-0.89	1038	D1322	22.5		-1.36	
153	D1322	22.0		-1.82	1039	D1322	23.5		-0.42	
159		-----		-----	1049	D1322	21.5		-2.29	
169	D1322	23.3		-0.61	1059	D1322	24.5		0.51	
171	D1322	24		0.04	1062	D1322	24.5		0.51	
175	D1322	25		0.98	1064	D1322	23.8		-0.14	
177	D1322	22.5		-1.36	1065		-----		-----	
194	D1322	23.0		-0.89	1079	D1322	22		-1.82	
217		-----		-----	1081	D1322	23.5		-0.42	
221		-----		-----	1082		-----		-----	
224		-----		-----	1097	D1322	24.48		0.49	
225	D1322	23.0		-0.89	1108		-----		-----	
228		-----		-----	1109	D1322	24.9		0.88	
230	D1322	25.9168		1.83	1126		-----		-----	
237	D1322	24.81		0.80	1140	D1322	23.5		-0.42	
252		-----		-----	1161	ISO3014	24.3		0.32	
253	D1322	24		0.04	1167		-----		-----	
254	D1322	25.0		0.98	1191		-----		-----	
256		-----		-----	1201	D1322	23.0		-0.89	
258		-----		-----	1203	D1322	23.8		-0.14	
273	D1322	25		0.98	1231	D1322	23.0		-0.89	
311	D1322	24.0		0.04	1237		-----		-----	
323	D1322	24.0		0.04	1276	D1322	23.0		-0.89	
333	D1322	25.5		1.44	1277	D1322	24.5		0.51	
334		-----		-----	1284	D1322	24		0.04	
335		-----		-----	1297	D1322	21		-2.76	
337		-----		-----	1299	D1322	23.5		-0.42	
340	D1322	23.0		-0.89	1316	D1322	24		0.04	
353		-----		-----	1318	D1322	23.24		-0.67	
360	D1322	23.5		-0.42	1321	D1322	24.25		0.28	
369	D1322	24.5		0.51	1322		-----		-----	
370	D1322	23.5		-0.42	1347	D1322	25.0		0.98	
372	D1322	23.0		-0.89	1348	D1322	22.0		-1.82	
391	D1322	25		0.98	1357		-----		-----	
398	D1322	25		0.98	1372		-----		-----	
399	D1322	25		0.98	1417		-----		-----	
440	IP57	24.0		0.04	1419	D1322	23.5		-0.42	
441	D1322	25.0		0.98	1520	D1322	23.50		-0.42	
445	D1322	25.0		0.98	1538	D1322	23.0		-0.89	
447	D1322	23.0		-0.89	1610	IP57	25.2		1.16	
448	D1322	24.5		0.51	1613	D1322	24		0.04	
463		-----		-----	1631	D1322	25		0.98	
468		-----		-----	1634		-----		-----	
475	D1322	23.0	fr 18.0	-0.89	1635	D1322	22.5		-1.36	
485		-----		-----	1636	D1322	24.25		0.28	
495	D1322	22.0		-1.82	1650	D1322	24.5		0.51	
496	D1322	23.6		-0.33	1651	D1322	24.3		0.32	
604		-----		-----	1715	D1322	24		0.04	
606		-----		-----	1720	D1322	23.5		-0.42	
608	D1322	24.5		0.51	1724	D1322	27		2.84	
631	D1322	25		0.98	1810	D1322	23.5		-0.42	
657	D1322	22.0		-1.82	1811	D1322	24.0		0.04	
663	D1322	24.7		0.70	1826	D1322	24.5		0.51	
671	D1322	25.36		1.31	1833	D1322	25		0.98	
732		-----		-----	1842		-----		-----	
823	D1322	23.0		-0.89	1902	D1322	25.0		0.98	
851	D1322	25.0		0.98	1913	D1322	24.2		0.23	
862	D1322	23.25		-0.66	1948		-----		-----	
869	D1322	25.0		0.98	2129	D1322	26.0		1.91	
962	D1322	24		0.04	2130	D1322	25.03		1.00	
963	D1322	24		0.04	2133	D1322	25.67		1.60	
974	D1322	24.0		0.04	2136	D1322	24.0		0.04	
994	D1322	23.5		-0.42						
995	D1322	24.6		0.60						
996	D1322	24		0.04						
997		-----		-----						

normality	not OK
n	103
outliers	0
mean (n)	23.96
st.dev. (n)	1.056
R(calc.)	2.96
R(D1322:08)	3.00



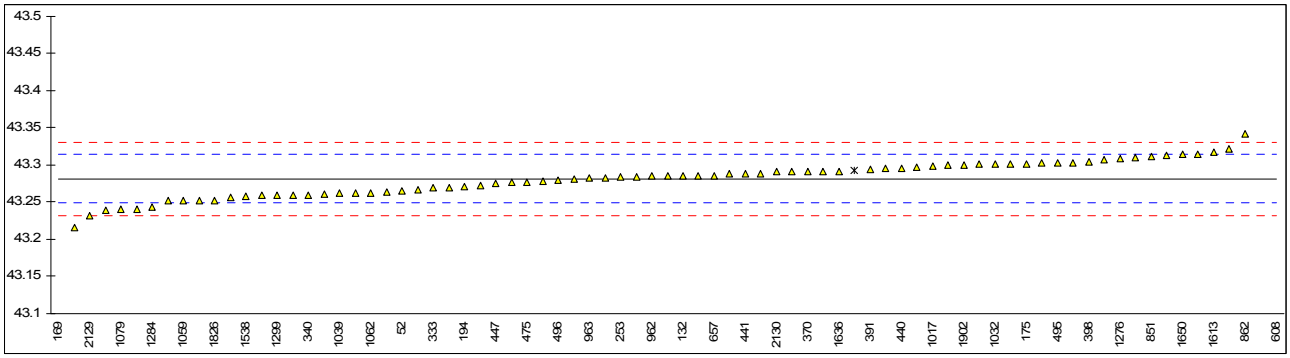


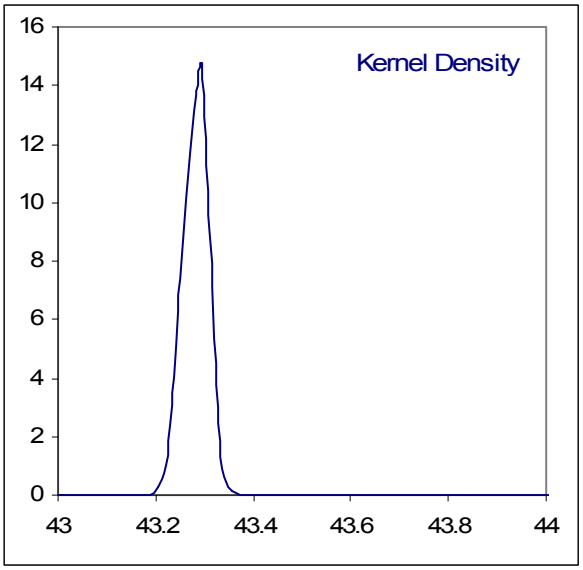
Determination of Specific Energy on sample #1054; results in MJ/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)	remarks
52	D3338	43.265		-1.01	1016		-----		-----	
53		-----		-----	1017	D3338	43.29886		1.05	
62	D3338	43.252		-1.80	1021		-----		-----	
120	D3338	43.302		1.24	1026		-----		-----	
132	D3338	43.286		0.27	1032	D3338	43.301		1.18	
140		-----		-----	1034		-----		-----	
150	D3338	43.292		0.64	1038		-----		-----	
153		-----		-----	1039	D3338	43.263		-1.13	
159	D3338	43.283		0.09	1049	D3338	43.286	fr 43.779	0.27	
169	D3338	42.687	G(0.01)	-36.19	1059	D3338	43.252		-1.80	
171	D240	43.2929	ex *)	0.69	1062	D3338	43.263		-1.13	
175	D3338	43.302		1.24	1064	D3338	43.2996		1.10	
177	D3338	43.252		-1.80	1065		-----		-----	
194	D3338	43.271		-0.64	1079	D3338	43.24		-2.53	
217		-----		-----	1081		-----		-----	
221		-----		-----	1082		-----		-----	
224		-----		-----	1097	D3338	43.263		-1.13	
225	D4529	43.31		1.73	1108		-----		-----	
228		-----		-----	1109	D3338	43.27		-0.70	
230		-----		-----	1126		-----		-----	
237		-----		-----	1140		-----		-----	
252		-----		-----	1161	D3338	43.322		2.46	
253	D3338	43.2834		0.11	1167	D3338	45.805	G(0.01)	153.60	
254		-----		-----	1191		-----		-----	
256		-----		-----	1201	D3338	43.284		0.15	
258		-----		-----	1203	D3338	43.26		-1.31	
273		-----		-----	1231	D3338	43.2165		-3.96	
311	D3338	43.257		-1.50	1237		-----		-----	
323		-----		-----	1276	D3338	43.309		1.67	
333	D3338	43.270		-0.70	1277		-----		-----	
334		-----		-----	1284	D3338	43.244		-2.29	
335		-----		-----	1297		-----		-----	
337		-----		-----	1299	D3338	43.26		-1.31	
340	D3338	43.260		-1.31	1316	D3338	43.289		0.45	
353		-----		-----	1318		-----		-----	
360	D3338	43.3132		1.93	1321	D3338	43.2860		0.27	
369	D3338	43.278		-0.22	1322		-----		-----	
370	D3338	43.2919		0.63	1347	D3338	43.3066		1.52	
372	D3338	43.291		0.57	1348	D3338	43.3032		1.32	
391	D3338	43.294		0.76	1357		-----		-----	
398	D3338	43.3037		1.35	1372		-----		-----	
399		-----		-----	1417		-----		-----	
440	D3338	43.2961		0.88	1419		-----		-----	
441	D3338	43.288		0.39	1520	D3338	43.277		-0.28	
445	D3338	43.239		-2.59	1538	D3338	43.258		-1.43	
447	D3338	43.275		-0.40	1610	D3338	43.288		0.39	
448	D3338	43.261		-1.25	1613	D3338	43.31699		2.16	
463		-----		-----	1631	D3338	43.301		1.18	
468		-----		-----	1634		-----		-----	
475	D3338	43.277		-0.28	1635	D3338	43.241		-2.47	
485		-----		-----	1636	D3338	43.2920		0.64	
495	D3338	43.303		1.30	1650	D3338	43.314		1.97	
496	D3338	43.279		-0.16	1651		-----		-----	
604		-----		-----	1715		-----		-----	
606		-----		-----	1720		-----		-----	
608	D240	46.517	ex *)	196.94	1724	D3338	43.28046		-0.07	
631	D3338	43.266		-0.95	1810		-----		-----	
657	D3338	43.286		0.27	1811	D3338	43.2635		-1.10	
663		-----		-----	1826	D3338	43.252		-1.80	
671		-----		-----	1833	D3338	43.26		-1.31	
732		-----		-----	1842		-----		-----	
823	D3338	43.297		0.94	1902	D3338	43.3007		1.16	
851	D3338	43.312	fr 43.312	1.85	1913	D3338	43.31452		2.01	
862	D3338	43.342		3.68	1948		-----		-----	
869	D3338	43.3029		1.30	2129	D3338	43.232		-3.02	
962	D3338	43.2857		0.25	2130	D3338	43.2908		0.56	
963	D3338	43.2825		0.06	2133	D3338	43.273		-0.52	
974		-----		-----	2136	D3338	43.296		0.88	
994		-----		-----						
995		-----		-----						
996		-----		-----						
997		-----		-----						

normality	OK
n	75
outliers	2
mean (n)	43.2816
st.dev. (n)	0.02367
R(calc.)	0.0663
R(D3338:09)	0.0460

Results for lab 171 and 608 were excluded from statistical evaluation as the test method used is not equivalent with method ASTM D3338



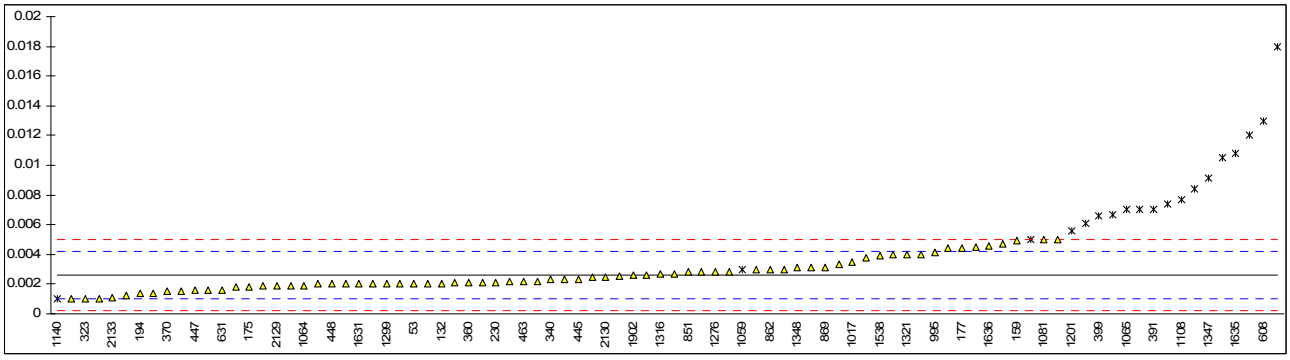


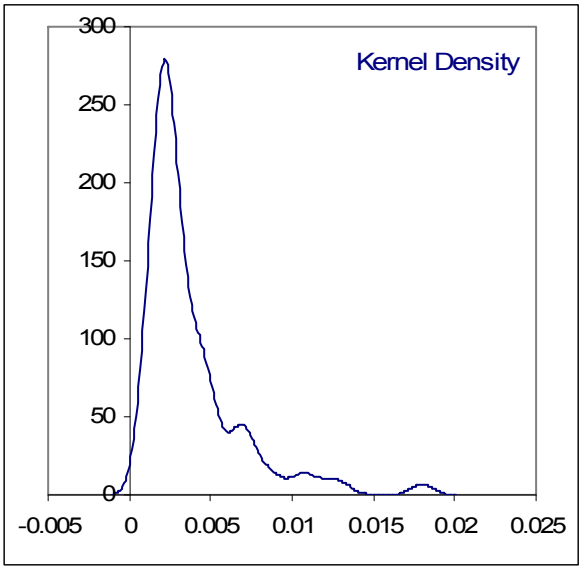
Determination of Total Acidity on sample #1054; results in mg KOH/g

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)	remarks
52	D3242-Y	0.001		-2.17	1016		-----		-----	
53	D3242-Y	0.002		-0.81	1017	D3242-Y	0.0035		1.22	
62	D3242-Y	0.005		3.24	1021	D3242-Y	0.002		-0.81	
120		-----		-----	1026	D3242	0.005	ex *)	3.24	
132	D3242-Y	0.002		-0.81	1032	D3242-Y	0.0031		0.67	
140	D3242-Y	0.0067	ex *)	5.54	1034		-----		-----	
150	D3242-Y	0.004	fr 0.011	1.89	1038	D3242-Y	0.0044		2.43	
153	D3242-Y	0.0027		0.13	1039	D3242-Y	0.001		-2.17	
159	D3242-Y	0.0049		3.11	1049	D3242-Y	0.00217		-0.58	
169	D3242-Y	0.018	G(0.01)	20.82	1059	D3242-N	0.003	ex *)	0.54	
171	D3242-Y	0.012	G(0.05)	12.71	1062	D3242-Y	0.007	G(0.05)	5.95	
175	D3242-Y	0.0018		-1.08	1064	D3242-Y	0.0019		-0.95	
177	D3242-Y	0.0044		2.43	1065	D3242-N	0.007	ex *)	5.95	
194	D3242-Y	0.0014		-1.62	1079	D3242-Y	0.0045		2.57	
217		-----		-----	1081	D3242-Y	0.005		3.24	
221		-----		-----	1082		-----		-----	
224		-----		-----	1097	D3242-Y	0.003		0.54	
225	D3242-Y	0.002		-0.81	1108	D3242-N	0.0077	ex *)	6.89	
228		-----		-----	1109	D3242-Y	0.0019		-0.95	
230	D3242-Y	0.0021		-0.68	1126		-----		-----	
237	D3242-Y	0.0019		-0.95	1140	D3242-N	0.001	ex *)	-2.17	
252		-----		-----	1161		-----		-----	
253		-----		-----	1167		-----		-----	
254		-----		-----	1191	D3242-Y	0.0014		-1.62	
256		-----		-----	1201	D3242-Y	0.0056	G(0.05)	4.05	
258		-----		-----	1203	D3242-Y	0.0074	G(0.05)	6.49	
273		-----		-----	1231		-----		-----	
311	D3242-Y	0.002		-0.81	1237		-----		-----	
323	D3242-Y	0.001		-2.17	1276	D3242-Y	0.0028		0.27	
333		-----		-----	1277		-----		-----	
334		-----		-----	1284	D3242-Y	0.0038		1.62	
335		-----		-----	1297		-----		-----	
337		-----		-----	1299	D3242-Y	0.002		-0.81	
340	D3242-Y	0.0023		-0.41	1316	D3242-Y	0.002695		0.13	
353		-----		-----	1318		-----		-----	
360	D3242-Y	0.0021		-0.68	1321	D3242-Y	0.004	fr 0.010	1.89	
369	D3242-Y	0.00253		-0.10	1322		-----		-----	
370	D3242-Y	0.0015		-1.49	1347	D3242-Y	0.0091	DG(0.05)	8.79	
372	D3242-Y	0.002		-0.81	1348	D3242-Y	0.00308		0.65	
391	D3242-Y	0.007	G(0.05)	5.95	1357		-----		-----	
398	D3242-N	0.0061	ex *)	4.73	1372		-----		-----	
399	D3242-Y	0.0066	G(0.05)	5.41	1417		-----		-----	
440	IP354-Y	0.0028		0.27	1419		-----		-----	
441	D3242-Y	0.00209		-0.69	1520	D3242-Y	0.0021		-0.68	
445	D3242-Y	0.0023		-0.41	1538	D3242-Y	0.0039		1.76	
447	D3242-Y	0.0016		-1.35	1610	IP354-Y	0.0028		0.27	
448	D3242-Y	0.002		-0.81	1613	D3242-Y	0.00261		0.01	
463	D3242-Y	0.0022		-0.54	1631	D3242-Y	0.002	fr 0.0082	-0.81	
468		-----		-----	1634		-----		-----	
475		-----		-----	1635	D3242-Y	0.0108	G(0.05)	11.09	
485		-----		-----	1636	D3242-Y	0.0046		2.70	
495	D3242-Y	0.004		1.89	1650	D3242-Y	0.0016		-1.35	
496	D3242-Y	0.0018		-1.08	1651	D3242-Y	0.0023		-0.41	
604		-----		-----	1715		-----		-----	
606		-----		-----	1720		-----		-----	
608	D664-Y	0.013	G(0.01)	14.06	1724	D3242-Y	0.0012		-1.89	
631	D3242-Y	0.0016		-1.35	1810		-----		-----	
657	D3242-Y	0.003		0.54	1811		-----		-----	
663		-----		-----	1826	D3242-Y	0.0105	G(0.05)	10.68	
671	D3242-Y	0.001522		-1.46	1833	D3242-Y	0.0033		0.94	
732		-----		-----	1842		-----		-----	
823	D3242-Y	0.002		-0.81	1902	D3242-Y	0.0026		0.00	
851	D3242-Y	0.0028		0.27	1913	D3242-Y	0.0022		-0.54	
862	D3242-Y	0.003		0.54	1948		-----		-----	
869	D3242-Y	0.0031		0.67	2129	D3242-Y	0.0019		-0.95	
962		-----		-----	2130	IP354-Y	0.0025		-0.14	
963	D3242-Y	0.0084	DG(0.05)	7.84	2133	D3242-Y	0.0011		-2.03	
974	D3242-Y	0.0047		2.84	2136	D3242-Y	0.0025		-0.14	
994		-----		-----						
995	D3242-Y	0.0041		2.03						
996		-----		-----						
997		-----		-----						

normality	not OK
n	71
outliers	12
mean (n)	0.00260
st.dev. (n)	0.001056
R(calc.)	0.00296
R(D3242:08)	0.00207

Ex = results are excluded as the sample was not purged with Nitrogen during the titration, see ASTM D3242.

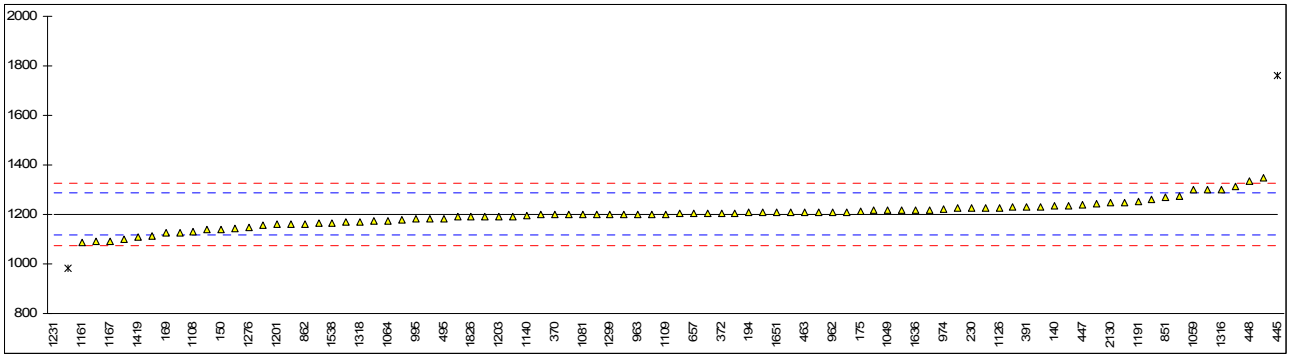


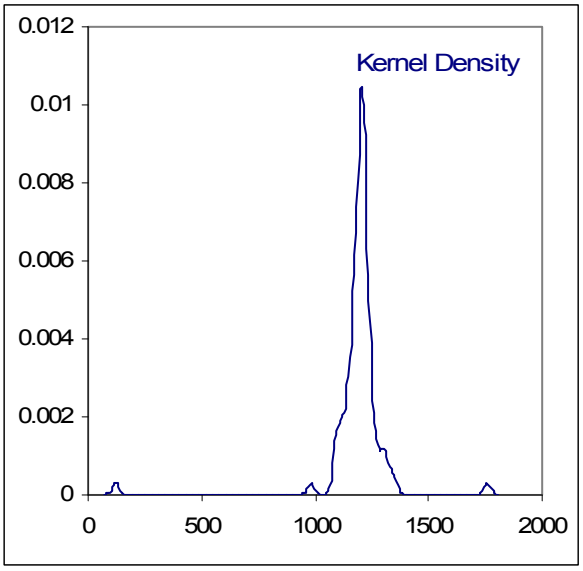


Determination of Total Sulphur on sample #1054; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)	remarks
52	D5453	1111		-2.13	1016		-----		-----	
53		-----		-----	1017		-----		-----	
62	D5453	1190		-0.26	1021	D2622	1225		0.57	
120	D4294	1190.7	fr 0.11907	-0.25	1026	ISO20884	1250		1.16	
132	D4294	1236		0.83	1032	D4294	1218		0.40	
140	D2622	1234		0.78	1034		-----		-----	
150	D5453	1139		-1.47	1038	D2622	1209.1		0.19	
153		-----		-----	1039	D2622	1210		0.21	
159	D4294	1245.2		1.04	1049	D5453	1217		0.38	
169	D4294	1125.5		-1.79	1059	ISO14596	1300		2.34	
171	D5453	1164.06		-0.88	1062	D4927	1190		-0.26	
175	D5453	1212		0.26	1064	D5453	1175.5		-0.61	
177		-----		-----	1065	D7212	1205		0.09	
194	D4294	1207.2		0.14	1079	D4294	1177		-0.57	
217		-----		-----	1081	D4294	1200		-0.03	
221		-----		-----	1082	D4294	1100		-2.39	
224		-----		-----	1097	D5453	1138		-1.49	
225		-----		-----	1108	D4294	1130		-1.68	
228		-----		-----	1109	D4294	1201		0.00	
230	D4294	1225		0.57	1126	ISO20846	1228.1		0.64	
237		-----		-----	1140	IP336	1197.4		-0.09	
252		-----		-----	1161	ISO20846	1089		-2.65	
253		-----		-----	1167	D5453	1092.9		-2.56	
254		-----		-----	1191	D5453	1254		1.25	
256		-----		-----	1201	D5453	1160		-0.97	
258		-----		-----	1203	ISO 14596	1190		-0.26	
273		-----		-----	1231	D2622	120.5	G(0.01)	-25.58	
311		-----		-----	1237		-----		-----	
323	D2622	1169		-0.76	1276	D5453	1150		-1.21	
333	D5453	1210		0.21	1277		-----		-----	
334		-----		-----	1284	D5453	1092.9		-2.56	
335		-----		-----	1297	D4294	1200		-0.03	
337		-----		-----	1299	D2622	1200		-0.03	
340	D5453	1230		0.68	1316	ICP-AES	1300		2.34	
353		-----		-----	1318	D4294	1170		-0.74	
360	D5453	1208		0.16	1321	INH-059	981.9	G(0.01)	-5.19	
369	D2622	1232		0.73	1322		-----		-----	
370	D4294	1199.9		-0.03	1347		-----		-----	
372	D5453	1206		0.12	1348	D4294	1126	fr 0.113	-1.78	
391	D2622	1230		0.68	1357		-----		-----	
398	ISO20884	1300		2.34	1372		-----		-----	
399		-----		-----	1417		-----		-----	
440	D5453	1161.3		-0.94	1419	ISO20846	1108.2	fr 1018.2	-2.20	
441	IP336	1350		3.52	1520	D4294	1203.0		0.04	
445	D5453	1759	CG(0.01)	13.21	1538	D5453	1165.8	fr 0.12	-0.84	
447	IP336	1240	fr 0.124	0.92	1610	IP336	1272	fr 127	1.68	
448	D4294	1335		3.17	1613		-----		-----	
463	D4294	1210		0.21	1631	IP336	1260		1.39	
468		-----		-----	1634		-----		-----	
475		-----		-----	1635	D4294	1199		-0.05	
485		-----		-----	1636	D4294	1217		0.38	
495	D5453	1184		-0.41	1650		-----		-----	
496	D2622	1183		-0.43	1651	D5453	1208.2		0.17	
604		-----		-----	1715		-----		-----	
606		-----		-----	1720		-----		-----	
608		-----		-----	1724	IP336	1145		-1.33	
631	D4294	1158		-1.02	1810	D5453	1315	fr 0.1315	2.70	
657	D5453	1204.5		0.08	1811	D5453	1200		-0.03	
663		-----		-----	1826	D2622	1190		-0.26	
671		-----		-----	1833	D5453	1216		0.35	
732		-----		-----	1842		-----		-----	
823		-----		-----	1902	D5453	1206.4		0.12	
851	D4294	1268		1.58	1913	D4294	1175		-0.62	
862	D5453	1161.8		-0.93	1948		-----		-----	
869	D4294	1226		0.59	2129	IP496	1200		-0.03	
962	D4294	1210		0.21	2130	IP496	1247		1.09	
963	D4294	1200		-0.03	2133	D4294	1200		-0.03	
974	D4294	1220		0.45	2136	D5453	1217		0.38	
994		-----		-----						
995	D4294	1180.7		-0.48						
996		-----		-----						
997		-----		-----						

normality	not OK
n	86
outliers	3
mean (n)	1201.1
st.dev. (n)	51.30
R(calc.)	143.7
R(D5453:09)	118.3

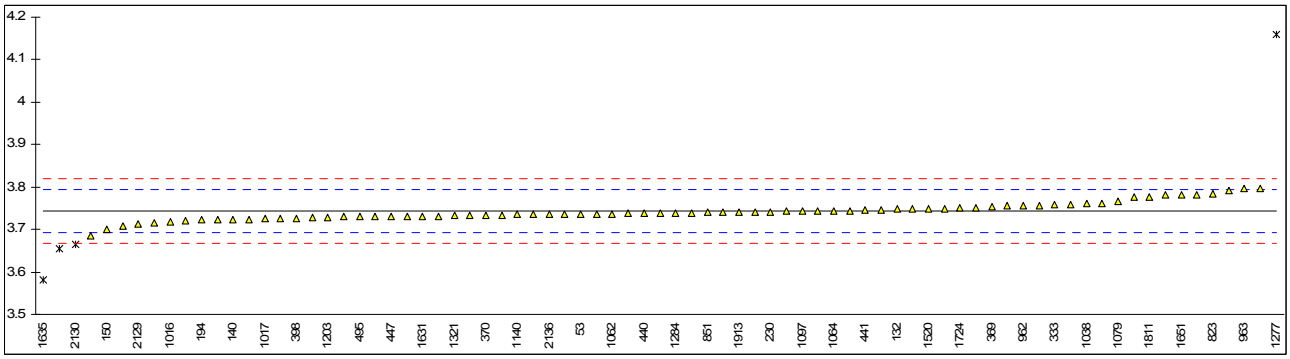


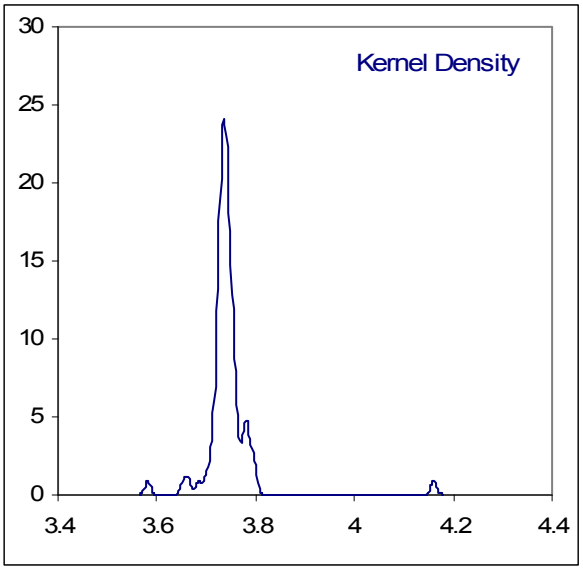


Determination of Viscosity @ -20°C on sample #1054; results in cSt

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)	remarks
52	D445-M	3.736		-0.25	1016	D445-A	3.7182		-0.95	
53	D445-M	3.736		-0.25	1017	D445-M	3.7256		-0.66	
62	D445-M	3.738		-0.17	1021		-----		-----	
120	D445-M	3.707		-1.39	1026		-----		-----	
132	D445-M	3.7473		0.19	1032	D445-M	3.7345		-0.31	
140	D445-M	3.724		-0.72	1034		-----		-----	
150	D445-M	3.6996		-1.69	1038	D445-M	3.7620		0.77	
153		-----		-----	1039	D445-M	3.728		-0.57	
159		-----		-----	1049	D445-M	3.733		-0.37	
169		-----		-----	1059	D445-M	3.716		-1.04	
171	D445-M	3.74		-0.09	1062	D445-M	3.737		-0.21	
175	D445-M	3.730		-0.49	1064	D445-A	3.7442		0.07	
177	D445-M	3.739		-0.13	1065		-----		-----	
194	D445-M	3.7227		-0.78	1079	D445-M	3.767	fr 3.832	0.97	
217		-----		-----	1081	D445-M	3.744		0.06	
221		-----		-----	1082	D445-M	3.684		-2.30	
224		-----		-----	1097	D445-M	3.743		0.02	
225		-----		-----	1108		-----		-----	
228		-----		-----	1109	D445-M	3.7825		1.58	
230	D445-M	3.742		-0.02	1126		-----		-----	
237		-----		-----	1140	D445-M	3.735		-0.29	
252		-----		-----	1161		-----		-----	
253	D445-M	3.798		2.19	1167		-----		-----	
254		-----		-----	1191	D445-M	3.724		-0.72	
256		-----		-----	1201		-----		-----	
258		-----		-----	1203	ISO3104-M	3.728		-0.57	
273		-----		-----	1231		-----		-----	
311	D445-M	3.759		0.65	1237		-----		-----	
323	D445-M	3.654	CG(0.05)	-3.48	1276		-----		-----	
333	D445-M	3.758		0.61	1277	D445-M	4.16	G(0.01)	16.44	
334		-----		-----	1284	D445-A	3.7389		-0.14	
335		-----		-----	1297		-----		-----	
337		-----		-----	1299	D445-M	3.756		0.54	
340	D445-	3.7752		1.29	1316	D445-M	3.7305		-0.47	
353		-----		-----	1318		-----		-----	
360	D445-M	3.7259		-0.65	1321	ISO3104-A	3.7321		-0.41	
369	D445-M	3.7532		0.43	1322		-----		-----	
370	D445-M	3.734	fr 3.6339	-0.33	1347		-----		-----	
372	D445-M	3.742		-0.02	1348		-----		-----	
391		-----		-----	1357		-----		-----	
398	D445-M	3.7261		-0.64	1372		-----		-----	
399		-----		-----	1417		-----		-----	
440	IP71-M	3.738		-0.17	1419		-----		-----	
441	D445-M	3.745		0.10	1520	D445-M	3.7488		0.25	
445	D445-M	3.7815		1.54	1538	D445-M	3.7620		0.77	
447	D445-M	3.7305		-0.47	1610	IP71-M	3.7202		-0.87	
448	D445-M	3.7471		0.19	1613	D445-A	3.7446		0.09	
463		-----		-----	1631	D445-A	3.731		-0.45	
468		-----		-----	1634		-----		-----	
475		-----		-----	1635	D445-M	3.582	G(0.01)	-6.32	
485		-----		-----	1636		-----		-----	
495	D445-M	3.730		-0.49	1650	D445-M	3.7423		0.00	
496	D445-A	3.7350		-0.29	1651	D445-A	3.7824		1.58	
604		-----		-----	1715		-----		-----	
606		-----		-----	1720		-----		-----	
608		-----		-----	1724	D445-	3.751		0.34	
631	D445-M	3.731	fr 3.797	-0.45	1810	D445-M	3.736		-0.25	
657	D445-M	3.749		0.26	1811	D445-A	3.7762		1.33	
663		-----		-----	1826	D445-A	3.74845		0.24	
671	D445-M	3.73012		-0.48	1833	D445-M	3.723		-0.76	
732		-----		-----	1842		-----		-----	
823	D7042-A	3.783	fr 3.803	1.60	1902		-----		-----	
851	D445-M	3.740		-0.09	1913	D445-A	3.7407		-0.07	
862	D445-M	3.7511		0.34	1948		-----		-----	
869	D445-M	3.7379		-0.18	2129	D445-M	3.713		-1.16	
962	D445-M	3.756		0.54	2130	D445-M	3.6640	G(0.05)	-3.09	
963	D445-M	3.796		2.11	2133		-----		-----	
974	D445-M	3.792		1.95	2136	D445-A	3.7357		-0.26	
994		-----		-----						
995	D445-M	3.755		0.50						
996		-----		-----						
997		-----		-----						

normality	not OK
n	75
outliers	4
mean (n)	3.7424
st.dev. (n)	0.02126
R(calc.)	0.0595
R(D445:09)	0.0711

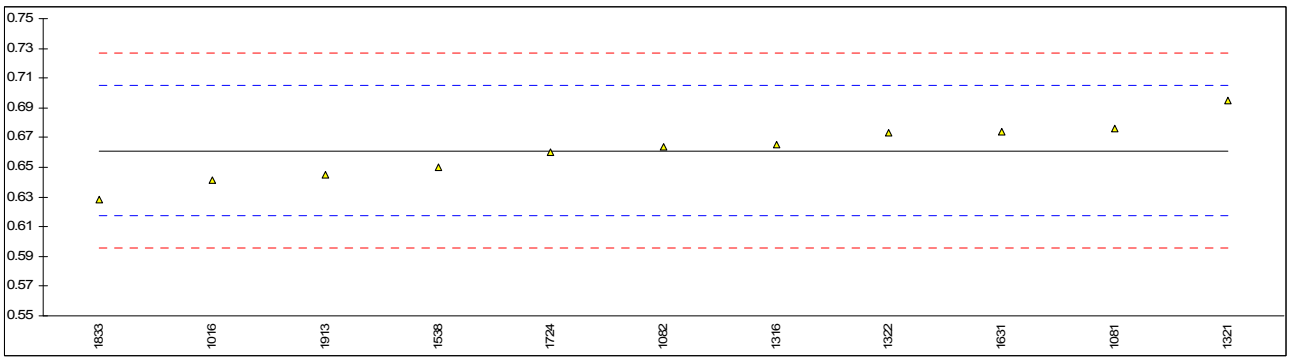


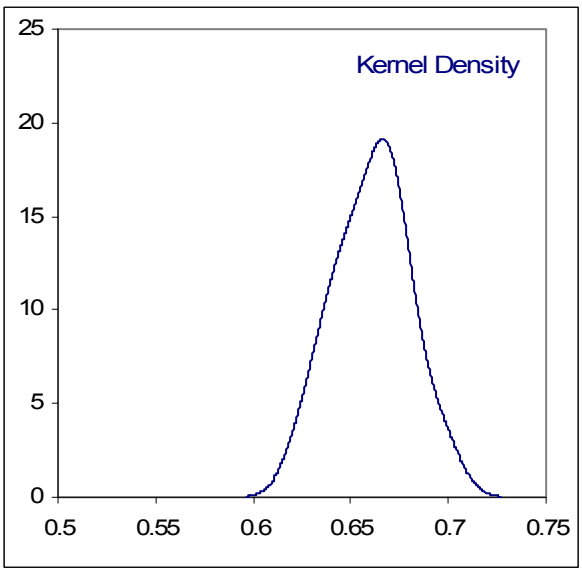


Determination of BOCLE on sample #1055; results in mm

lab	method	value	mark	z(targ)	remarks
1016	D5001	0.641		-0.91	
1081	D5001	0.676		0.69	
1082	D5001	0.664		0.14	
1191		-----		-----	
1316	D5001	0.665		0.18	
1321	D5001	0.695		1.56	
1322	D5001	0.673		0.55	
1538	D5001	0.65		-0.50	
1616		-----		-----	
1631	D5001	0.674		0.59	
1650		-----		-----	
1724	D5001	0.66		-0.05	
1833	D5001	0.628		-1.51	
1913	D5001	0.645		-0.73	

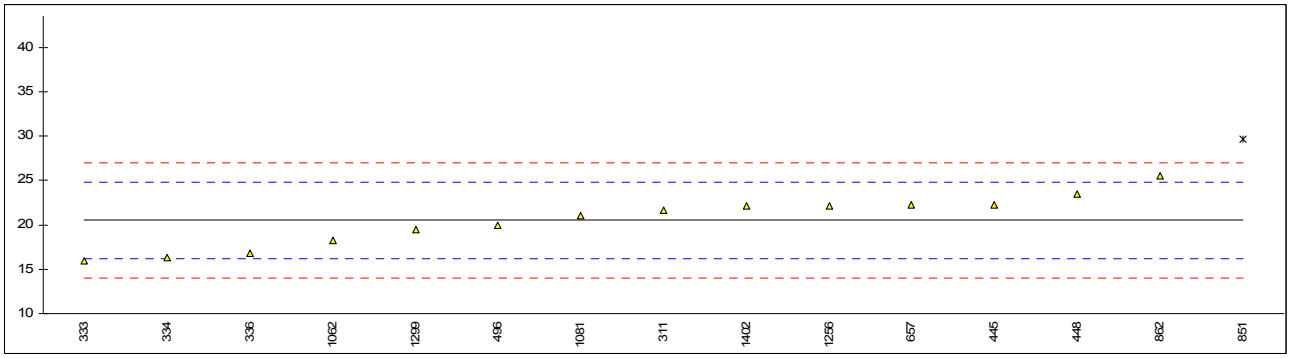
normality	OK
n	11
outliers	0
mean (n)	0.6610
st.dev. (n)	0.01894
R(calc.)	0.0530
R(D5001:08)	0.0612

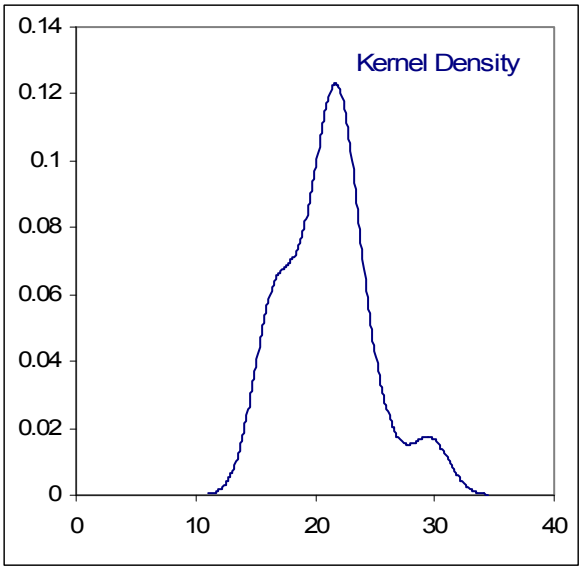




Determination of FAME on sample #1057; results in mg/kg

lab	method	value	mark	z(targ)	remarks
171		-----		-----	
311	IP PM-DY/09	21.6		0.51	
323		-----		-----	
333	IP PM-DY	15.9		-2.13	
334	IP PM-DY	16.3		-1.94	
336	IP PM-DY	16.8		-1.71	
445	IP585/10	22.289		0.83	
447		-----		-----	
448	IP PM-DY	23.45		1.36	
496	IP585	20.01		-0.23	
657	IP585	22.26		0.81	
851	IP PM-DY/09	29.64	G(0.05)	4.22	
862	IP PM-DY/09	25.51		2.31	
1062	INHOUSE	18.2		-1.06	
1081	INH-550	21		0.23	
1082		-----		-----	
1140		-----		-----	
1191		-----		-----	
1201	IP585	<5		<-7.16	False negative?
1256	IP585	22.1		0.74	
1299	IP585/10	19.5		-0.46	
1402	IP585	22.1		0.74	
1521		-----		-----	
1650	EN14078	not contain		-----	False negative?
1842		-----		-----	
	normality	OK			
	n	14			
	outliers	1	Spike		
	mean (n)	20.50	25.4	<81%	
	st.dev. (n)	2.851			
	R(calc.)	7.98			
	R(IP585:10)	6.06			





Determination of Particle Size Distribution on sample #1056; results per mL

lab	method	>4 µm	mark	>6 µm	mark	>14µm	mark	>21µm	mark	>25µm	mark	>30µm	mark
171	IP565	21484.0		3710.8		167.0		33.0		15.4		6.1	
225	IP564	16164		2834		72		31.5		27.7		26.1	
230	IP564	29612.2		6434.3		188.1		28.8		9.3		2.3	
252		-----		-----		-----		-----		-----		-----	
253	IP564	25700		7415		405		57		30		16	
254		-----		-----		-----		-----		-----		-----	
311	IP564	20215		3516		169		75		63		5.7	fr 57
323		-----		-----		-----		-----		-----		-----	
333	IP565	25772		5006		262		67		28		14	
334	IP565	23157		3839		203		41		17		7	
335		-----		-----		-----		-----		-----		-----	
340	IP565	17751.5		3392.6		189.8		42.3		17.1		7.2	
360	IP565	26787.5		5141.3		274.1		52.7		21.4		8.6	
370	IP564	26518.0		5950.7		57.5		7.9		1.8		0.1	
372	IP564	26521.8		7563.5		276.0		62.7		29.8		13.6	
391	IP564	34018		5792		268		76		43		21	
445		-----		-----		-----		-----		-----		-----	
495	IP564	26361		4738		169		35		14		6	
631	IP564	30543		6041		228.6		48.5		21.5		8.0	
657	IP564	15399.9		1928.1		44.0		17.6		14.9		13.8	
671	IP564	17383.8		4478.3		244.0		88.9		35.9		11.5	
851	IP564	26406.6		5985.6		304.7		55.4		18.0		5.2	
869	IP565	21965.3		4363.6		308.2		87.9		49.0		23.8	
963	IP565	25679		7031		308		2857	G(1)	28		14	
974		-----		-----		-----		-----		-----		-----	
1016	IP565	26728.5		4976.8		263.9		75.1		42.0		18.1	
1032	IP564	26582.7		4800.5		172.7		31.0		11.1		2.9	
1038	IP565	18106.9		3824.8		261.1		93.8		56.9		31.3	
1039	IP564	30885	fr495	7172	fr 57	346	fr 0.3	76	fr 0.1	34	fr 0.1	14	fr 0.0
1062	IP564	16224		3312		206.2		51.2		24.5		9.8	
1065	IP564	28632.3		5114.7		199.5		42.0		16.6		5.9	
1081	IP564	22253		4374		183		43		22		8	
1082		-----		-----		-----		-----		-----		-----	
1095		-----		-----		-----		-----		-----		-----	
1108	IP564	28321.5		4922.9		182.6		46.9		25.6		12.6	
1109	IP564	25204.6		5075.7		297.6		85.9		39.8		20.4	
1140	IP565	23854		4551		214		44		23		11	
1146	IP564Mod.	21502		4899		406		120		54		14	
1191	IP564	15837		3906		316		149		78		22	
1201		-----		-----		-----		-----		-----		-----	
1316	IP564	33650	ex	8165	ex	1405	G(1)	485	G(1)	272	G(1)	27	ex
1322	IP565	19779.8		3399.6		170.8		44.5		23.9		9.6	
1402	IP565	29521.9		5636.5		333.1		105.1		56.0		32.7	
1538	IP565	21281.2		3840.8		228.2		57.4		26.6		12.4	
1610	IP565	32398.7		7606.2		281.8		73.1		30.6		11.2	
1631	IP565	23977.6		5061.3		239.0		59.1		29.3		13.7	
1650		-----		-----		-----		-----		-----		-----	
1720		-----		-----		-----		-----		-----		-----	
1724	IP565	23588.3		4294.7		228.5		52.9		28.3		14.6	
1811	IP564	24626.1		5751.6		386.5		124.5		58.5		28.7	
1826	IP565	22208.8		5004.7		348.9		71.5		28.6		9.6	
1833	IP564	22614.3		3842.8		237.5		67.4		33.3		16.2	
1900	Inhouse	11743.7		2333.7		135.3		34.0		17.7		8.33	
1913	IP565	24935.8		4793.6		326.4		90.1		47.8		23.3	
2130	IP564	17005.6		3815.8		221.4		73.5		35.3		12.0	
	Normality	OK		OK		OK		OK		not OK		not OK	
	N	43		43		43		42		43		43	
	Outliers	1		1		1		2		1		1	
	mean (n)	23611		4825		240.1		62.4		30.9		13.3	
	st.dev. (n)	5020.7		1348.9		84.16		29.16		16.03		7.66	
	R(calc.)	14058		3777		235.7		81.6		44.9		21.4	
	R(IP564:10)	4400		1474		119.4		79.1		41.4		22.0	

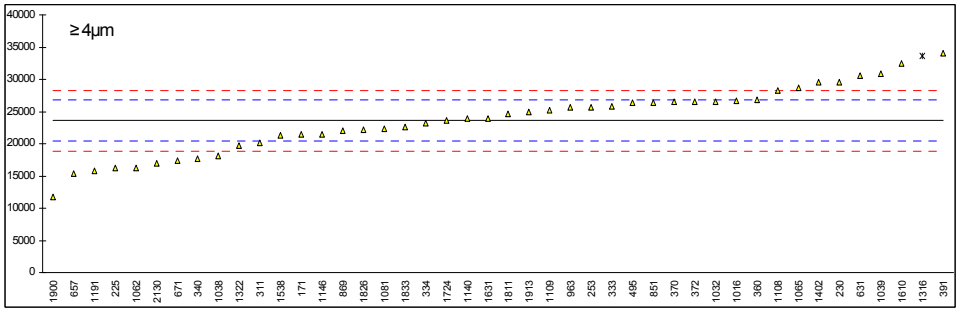
*) IP564 is used for calculation of the z-scores

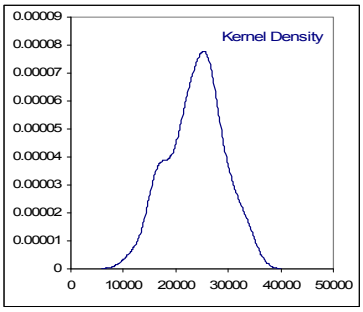
G(1) = Grubbs outlier G(0.01); DG(1) = Grubbs outlier DG(0.01)

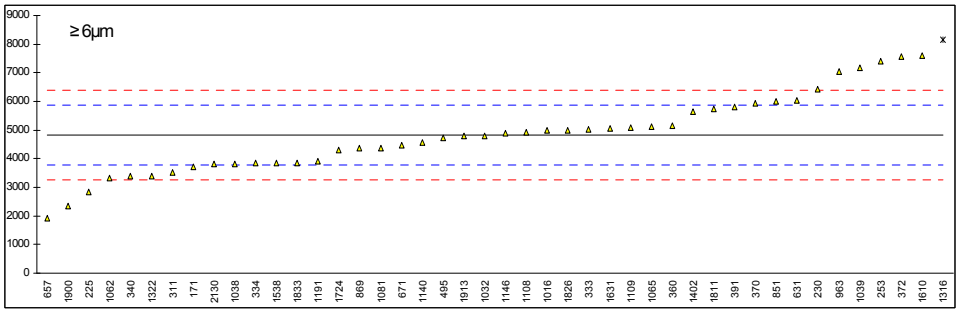
Lab 1316 = as ≥21µm, ≥25 µm and ≥30 µm were marked as outlier, ≥4µm, ≥6 µm and ≥30µm were excluded too.

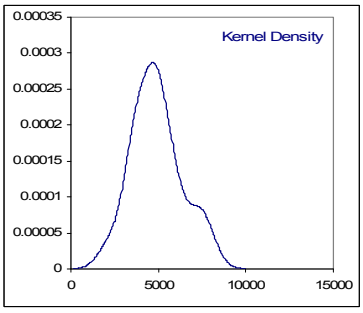
z-scores particle size distribution

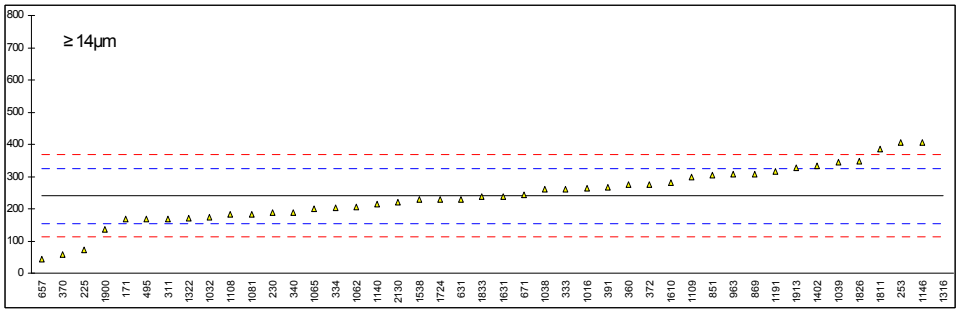
lab	>4 µm	>6 µm	>14µm	>21µm	>25µm	>30µm
171	-1.35	-2.12	-1.71	-1.04	-1.05	-0.92
225	-4.74	-3.78	-3.94	-1.09	-0.22	1.63
230	3.82	3.06	-1.22	-1.19	-1.46	-1.40
252	-----	-----	-----	-----	-----	-----
253	1.33	4.92	3.87	-0.19	-0.06	0.34
254	-----	-----	-----	-----	-----	-----
311	-2.16	-2.49	-1.67	0.45	2.17	-0.97
323	-----	-----	-----	-----	-----	-----
333	1.38	0.34	0.51	0.16	-0.20	0.09
334	-0.29	-1.87	-0.87	-0.76	-0.94	-0.80
335	-----	-----	-----	-----	-----	-----
340	-3.73	-2.72	-1.18	-0.71	-0.93	-0.78
360	2.02	0.60	0.80	-0.34	-0.64	-0.60
370	1.85	2.14	-4.28	-1.93	-1.97	-1.68
372	1.85	5.20	0.84	0.01	-0.07	0.04
391	6.62	1.84	0.65	0.48	0.82	0.98
445	-----	-----	-----	-----	-----	-----
495	1.75	-0.17	-1.67	-0.97	-1.14	-0.93
631	4.41	2.31	-0.27	-0.49	-0.64	-0.67
657	-5.22	-5.50	-4.60	-1.58	-1.08	0.06
671	-3.96	-0.66	0.09	0.94	0.34	-0.23
851	1.78	2.20	1.51	-0.25	-0.87	-1.03
869	-1.05	-0.88	1.60	0.90	1.23	1.33
963	1.32	4.19	1.59	98.96	-0.20	0.09
974	-----	-----	-----	-----	-----	-----
1016	1.98	0.29	0.56	0.45	0.75	0.61
1032	1.89	-0.05	-1.58	-1.11	-1.34	-1.32
1038	-3.50	-1.90	0.49	1.11	1.76	2.29
1039	4.63	4.46	2.48	0.48	0.21	0.09
1062	-4.70	-2.87	-0.79	-0.40	-0.43	-0.45
1065	3.20	0.55	-0.95	-0.72	-0.97	-0.94
1081	-0.86	-0.86	-1.34	-0.69	-0.60	-0.67
1082	-----	-----	-----	-----	-----	-----
1095	-----	-----	-----	-----	-----	-----
1108	3.00	0.19	-1.35	-0.55	-0.36	-0.09
1109	1.01	0.48	1.35	0.83	0.60	0.90
1140	0.15	-0.52	-0.61	-0.65	-0.53	-0.29
1146	-1.34	0.14	3.89	2.04	1.56	0.09
1191	-4.95	-1.75	1.78	3.07	3.19	1.10
1201	-----	-----	-----	-----	-----	-----
1316	6.39	6.34	27.31	14.97	16.32	1.74
1322	-2.44	-2.71	-1.62	-0.63	-0.47	-0.47
1402	3.76	1.54	2.18	1.51	1.70	2.46
1538	-1.48	-1.87	-0.28	-0.18	-0.29	-0.12
1610	5.59	5.28	0.98	0.38	-0.02	-0.27
1631	0.23	0.45	-0.03	-0.12	-0.11	0.05
1650	-----	-----	-----	-----	-----	-----
1720	-----	-----	-----	-----	-----	-----
1724	-0.01	-1.01	-0.27	-0.34	-0.18	0.16
1811	0.65	1.76	3.43	2.20	1.87	1.96
1826	-0.89	0.34	2.55	0.32	-0.15	-0.47
1833	-0.63	-1.87	-0.06	0.18	0.16	0.37
1900	-7.55	-4.73	-2.46	-1.00	-0.89	-0.63
1913	0.84	-0.06	2.02	0.98	1.14	1.27
2130	-4.20	-1.92	-0.44	0.39	0.30	-0.17

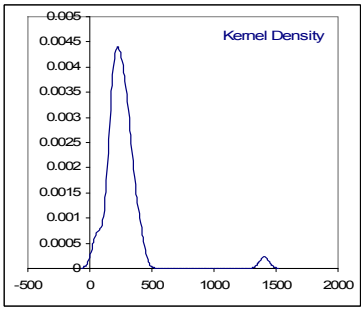

≥ 4µm

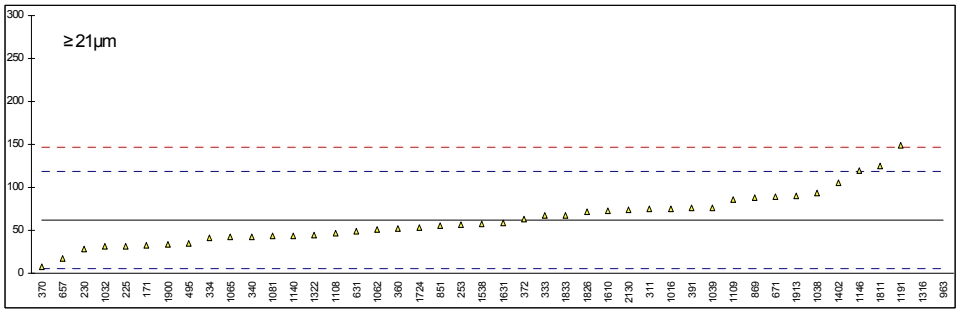

Kernel Density

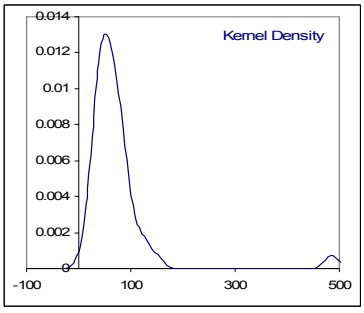

≥ 6µm

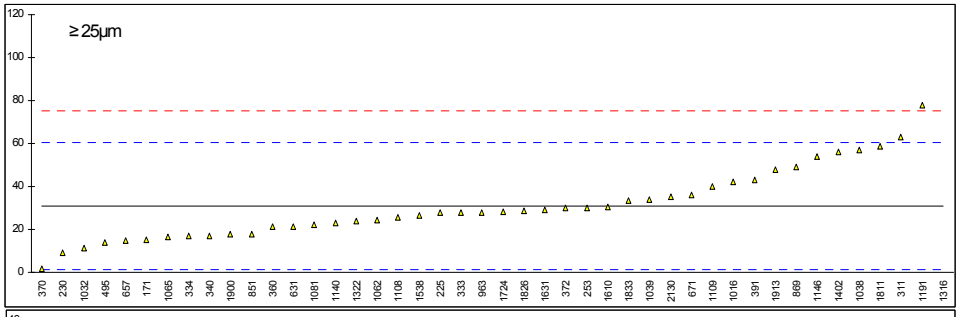

Kernel Density

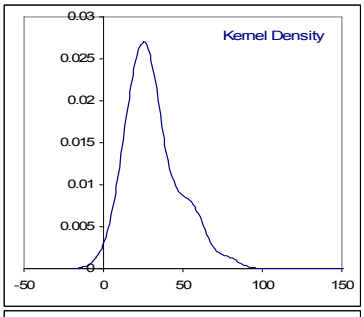

≥ 14µm

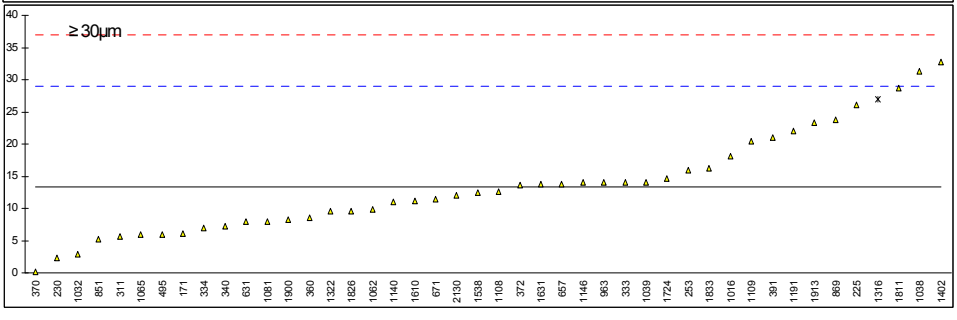

Kernel Density

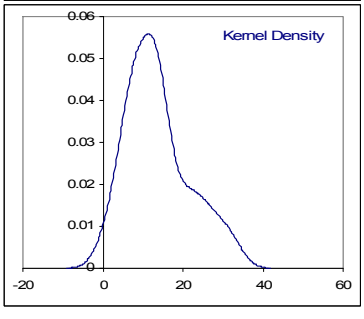

≥ 21µm


Kernel Density


≥ 25µm


Kernel Density


≥ 30µm


Kernel Density

APPENDIX 2
Z-scores of individual participants for distillation of sample #1054

lab	IBP-A	10%-A	50%-A	90%-A	FBP-A	IBP-M	10%-M	50%-M	90%-M	FBP-M
52	1.17	-0.08	0.66	1.15	0.34	-----	-----	-----	-----	-----
53	0.13	0.88	-1.04	0.75	1.49	-----	-----	-----	-----	-----
62	0.40	-0.08	0.66	0.67	0.31	-----	-----	-----	-----	-----
120	-0.27	-0.16	-0.38	-1.17	-0.52	-----	-----	-----	-----	-----
132	-0.47	-1.05	-0.47	-0.69	-1.11	-----	-----	-----	-----	-----
140	-0.33	0.22	0.85	-0.37	0.54	-----	-----	-----	-----	-----
150	-0.30	-0.16	0.09	-0.05	-0.05	-----	-----	-----	-----	-----
153	-0.27	-1.57	0.19	0.59	0.15	-----	-----	-----	-----	-----
159	0.73	1.25	0.94	0.19	-0.17	-----	-----	-----	-----	-----
169	-4.10	-2.16	-1.70	-1.89	-1.15	-----	-----	-----	-----	-----
171	0.50	-0.38	0.28	0.27	0.62	-----	-----	-----	-----	-----
175	1.30	0.14	1.32	1.71	1.25	-----	-----	-----	-----	-----
177	0.93	-0.08	-2.36	-1.73	0.23	-----	-----	-----	-----	-----
194	-0.53	0.12	-0.11	0.35	0.02	-----	-----	-----	-----	-----
217	-----	-----	-----	-----	-----	-1.81	-0.45	-2.03	-0.82	-2.00
221	-----	-----	-----	-----	-----	1.28	0.50	-0.04	-2.81	-0.04
224	-----	-----	-----	-----	-----	0.72	0.84	1.06	0.86	1.99
225	-----	-----	-----	-----	-----	1.28	-1.40	0.95	1.56	1.27
228	-----	-----	-----	-----	-----	-1.19	-1.40	-2.03	-1.62	-2.65
230	-----	-----	-----	-----	-----	0.97	-0.36	0.16	1.16	1.93
237	-----	-----	-----	-----	-----	-1.19	0.02	0.95	1.16	-0.04
252	-0.60	0.22	-1.13	0.19	-1.19	-----	-----	-----	-----	-----
253	-----	-----	-----	-----	-----	-0.88	0.50	-0.04	1.16	-0.69
254	-----	-----	-----	-----	-----	0.05	-0.45	0.95	-0.03	-0.69
256	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
258	-0.77	-0.38	1.04	1.47	-0.33	-----	-----	-----	-----	-----
273	-0.50	0.59	0.85	1.95	-0.37	-----	-----	-----	-----	-----
311	-0.20	-0.53	0.09	-0.21	0.82	-----	-----	-----	-----	-----
323	0.07	-0.38	0.75	1.15	0.23	-----	-----	-----	-----	-----
333	-0.20	0.22	0.38	1.15	-0.29	-----	-----	-----	-----	-----
334	-0.27	-0.75	0.75	0.19	-0.01	-----	-----	-----	-----	-----
335	0.60	0.14	0.57	-0.05	-0.80	-----	-----	-----	-----	-----
337	0.10	-0.60	-0.66	-1.49	-0.25	-----	-----	-----	-----	-----
340	-0.27	0.81	0.75	0.67	0.03	-----	-----	-----	-----	-----
353	-0.50	-0.01	0.19	0.75	1.05	-----	-----	-----	-----	-----
360	-0.63	-0.53	-0.75	-0.85	-1.27	-----	-----	-----	-----	-----
369	0.00	0.36	0.38	0.35	0.74	-----	-----	-----	-----	-----
370	-----	-----	-----	-----	-----	0.97	0.50	1.45	1.16	-0.36
372	0.03	0.07	0.19	0.03	-0.17	-----	-----	-----	-----	-----
391	0.80	-1.42	0.75	0.99	0.54	-----	-----	-----	-----	-----
398	0.57	-1.49	0.38	0.91	0.38	-----	-----	-----	-----	-----
399	0.57	1.63	0.00	-2.13	0.70	-----	-----	-----	-----	-----
440	0.27	0.07	0.09	-0.77	0.94	-----	-----	-----	-----	-----
441	-0.03	0.14	1.23	0.91	0.54	-----	-----	-----	-----	-----
445	1.57	0.14	-0.94	0.59	-0.05	-----	-----	-----	-----	-----
447	0.57	0.29	0.75	1.95	1.17	-----	-----	-----	-----	-----
448	1.40	-0.45	0.09	0.83	0.74	-----	-----	-----	-----	-----
463	-1.13	0.96	-1.70	-0.37	-0.17	-----	-----	-----	-----	-----
468	-0.73	0.51	0.47	1.23	0.15	-----	-----	-----	-----	-----
475	-0.03	0.07	0.19	0.59	-0.29	-0.57	-2.35	-2.03	-2.41	-2.00
485	-0.97	-1.12	-0.57	-1.77	-0.46	-----	-----	-----	-----	-----
495	-0.37	-1.12	-1.23	-1.01	-1.67	-----	-----	-----	-----	-----
496	0.17	-0.67	0.19	1.07	0.94	-----	-----	-----	-----	-----
604	-0.03	-0.75	-0.94	0.35	-1.39	-----	-----	-----	-----	-----
606	-0.40	1.25	2.07	0.75	0.27	-----	-----	-----	-----	-----
608	-----	-----	-----	-----	-----	-0.57	0.50	-2.03	-2.41	-1.34
631	-----	-----	-----	-----	-----	0.05	-0.45	-1.03	0.76	-1.34
657	0.07	0.44	-0.75	-1.41	-0.64	-----	-----	-----	-----	-----
663	0.97	1.18	0.09	-0.05	-0.29	-----	-----	-----	-----	-----
671	-0.23	1.40	0.75	0.51	-0.56	-----	-----	-----	-----	-----
732	-----	-----	-----	-----	-----	0.97	-0.93	0.95	0.76	0.95
823	-0.90	0.96	0.28	-0.61	0.86	-----	-----	-----	-----	-----
851	-0.07	-0.23	-0.28	-0.37	-0.17	-----	-----	-----	-----	-----
862	-0.73	-0.01	0.38	-0.13	0.34	-----	-----	-----	-----	-----
869	-----	-----	-----	-----	-----	0.05	0.50	-0.54	0.37	0.95
962	-----	-----	-----	-----	-----	0.97	0.97	1.94	-0.43	-1.02
963	0.57	0.51	-0.38	-1.41	-0.92	-----	-----	-----	-----	-----
974	-0.43	-1.05	-1.23	0.35	-1.63	-----	-----	-----	-----	-----
994	-----	-----	-----	-----	-----	0.36	0.02	0.45	-1.62	-1.34
995	-----	-----	-----	-----	-----	1.28	1.45	0.45	0.76	1.93
996	-----	-----	-----	-----	-----	0.05	-0.45	0.95	-0.82	-0.04
997	-----	-----	-----	-----	-----	0.05	0.97	-0.04	-0.43	1.93
1016	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

1017	1.23	-0.30	-0.57	-0.85	0.03	-----	-----	-----	-----	-----
1021	0.00	-0.60	-0.19	0.35	-0.05	-----	-----	-----	-----	-----
1026	-0.67	2.37	0.47	0.03	0.03	-----	-----	-----	-----	-----
1032	-0.40	-0.01	0.09	-0.53	-0.09	-----	-----	-----	-----	-----
1034	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1038	0.47	1.11	1.13	1.79	1.33	-----	-----	-----	-----	-----
1039	-0.77	0.81	0.47	1.23	-0.52	-----	-----	-----	-----	-----
1049	0.30	0.51	0.19	-0.29	0.23	-----	-----	-----	-----	-----
1059	-0.57	0.07	0.66	0.03	0.07	-----	-----	-----	-----	-----
1062	-0.30	-0.16	-0.38	-0.45	-0.40	-----	-----	-----	-----	-----
1064	0.63	0.51	0.00	0.75	0.78	-----	-----	-----	-----	-----
1065	0.33	-1.05	-1.32	-0.77	-0.68	-----	-----	-----	-----	-----
1079	0.27	0.51	0.57	-0.21	-0.09	-----	-----	-----	-----	-----
1081	0.57	-0.01	0.38	0.27	-0.13	-----	-----	-----	-----	-----
1082	0.43	-0.30	3.21	-0.21	1.88	-----	-----	-----	-----	-----
1097	-0.23	-0.08	0.19	1.07	-0.33	-----	-----	-----	-----	-----
1108	0.63	-1.05	-2.45	-2.45	-0.80	-----	-----	-----	-----	-----
1109	0.50	-0.08	0.38	0.67	0.34	-----	-----	-----	-----	-----
1126	-1.87	-2.01	-0.66	-1.49	-0.13	-----	-----	-----	-----	-----
1140	-1.57	-1.42	-1.13	-1.89	-0.92	-----	-----	-----	-----	-----
1161	0.17	0.81	1.51	-0.05	0.70	-----	-----	-----	-----	-----
1167	-0.87	0.36	0.90	-0.73	0.01	-----	-----	-----	-----	-----
1191	0.03	0.14	0.09	0.11	0.03	-----	-----	-----	-----	-----
1201	-0.80	-0.30	-0.94	0.67	-0.09	-----	-----	-----	-----	-----
1203	0.03	0.22	1.04	0.51	0.31	-----	-----	-----	-----	-----
1231	-0.57	0.22	0.28	0.35	0.50	-----	-----	-----	-----	-----
1237	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1276	0.60	-0.60	-1.60	-1.65	-0.21	-----	-----	-----	-----	-----
1277	0.07	0.14	-0.28	-1.09	1.25	-----	-----	-----	-----	-----
1284	-0.20	-0.30	-0.57	-0.13	-0.52	-----	-----	-----	-----	-----
1297	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1299	1.20	1.11	0.94	2.19	1.09	-----	-----	-----	-----	-----
1316	-1.10	-0.08	0.09	0.83	0.34	-----	-----	-----	-----	-----
1318	-0.47	-0.08	-0.28	-0.61	-0.05	-----	-----	-----	-----	-----
1321	-1.17	-0.23	0.09	-0.05	-0.52	-----	-----	-----	-----	-----
1322	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1347	-----	-----	-----	-----	-----	3.63	3.73	1.64	1.87	2.13
1348	1.27	1.18	-0.94	0.11	0.15	-----	-----	-----	-----	-----
1357	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1372	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1417	0.00	0.14	0.57	0.91	-0.17	-----	-----	-----	-----	-----
1419	0.47	-0.30	-0.28	-0.93	0.58	-----	-----	-----	-----	-----
1520	-----	-----	-----	-----	-----	-0.76	-1.31	-1.53	-0.51	-0.76
1538	1.77	0.07	-0.19	0.11	-0.44	-----	-----	-----	-----	-----
1610	0.97	0.22	-0.19	0.51	0.70	-----	-----	-----	-----	-----
1613	0.63	1.48	1.32	1.55	0.74	-----	-----	-----	-----	-----
1631	-0.27	-0.53	0.00	0.11	-0.37	-----	-----	-----	-----	-----
1634	-0.90	0.74	0.38	0.27	-0.13	-----	-----	-----	-----	-----
1635	-----	-----	-----	-----	-----	0.05	-3.30	-2.03	-0.03	-0.69
1636	-0.97	-0.53	1.32	0.03	-0.40	-----	-----	-----	-----	-----
1650	-0.07	-1.42	-1.23	0.35	-0.29	-----	-----	-----	-----	-----
1651	0.23	0.90	0.47	-0.13	-0.19	-----	-----	-----	-----	-----
1715	0.40	0.44	-0.28	-0.37	0.19	-----	-----	-----	-----	-----
1720	-----	-----	-----	-----	-----	-2.12	2.40	1.45	2.35	1.93
1724	-0.17	0.51	0.57	-0.05	-0.21	-----	-----	-----	-----	-----
1810	1.27	-0.01	-0.85	-0.37	0.03	-----	-----	-----	-----	-----
1811	0.60	0.29	-0.28	-0.45	0.54	-----	-----	-----	-----	-----
1826	0.73	0.59	0.38	1.39	1.02	-----	-----	-----	-----	-----
1833	1.07	0.36	-0.19	-1.25	-1.35	-----	-----	-----	-----	-----
1842	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1902	0.97	1.33	0.28	-0.29	-0.17	-----	-----	-----	-----	-----
1913	0.67	0.81	0.66	1.07	-0.01	-----	-----	-----	-----	-----
1948	-1.20	-0.67	-0.66	-1.49	-0.52	-----	-----	-----	-----	-----
2129	-1.87	-2.01	-1.60	-1.97	-2.22	-----	-----	-----	-----	-----
2130	-0.97	-0.45	0.00	-0.77	-0.29	-----	-----	-----	-----	-----
2133	-1.37	-0.82	-0.57	-1.65	-0.84	-----	-----	-----	-----	-----
2136	-0.43	0.07	0.19	-0.21	0.78	-----	-----	-----	-----	-----

APPENDIX 3

List of participants

2 laboratories in	AUSTRALIA
1 laboratory in	AZERBAIJAN
6 laboratories in	BELGIUM
1 laboratory in	BULGARIA
3 laboratories in	CANADA
1 laboratory in	CÔTE D'IVOIRE
1 laboratory in	CROATIA
2 laboratories in	CZECH REPUBLIC
1 laboratory in	DENMARK
1 laboratory in	EGYPT
2 laboratories in	ESTONIA
2 laboratories in	FINLAND
8 laboratories in	FRANCE
2 laboratories in	GEORGIA
6 laboratories in	GERMANY
2 laboratories in	GREECE
1 laboratory in	GUAM
1 laboratory in	HONG KONG
2 laboratories in	HUNGARY
1 laboratory in	IRELAND
1 laboratory in	ISRAEL
3 laboratories in	ITALY
1 laboratory in	JORDAN
1 laboratory in	KAZAKHSTAN
2 laboratories in	KENYA
1 laboratory in	KOREA
1 laboratory in	LATVIA
2 laboratories in	LEBANON
1 laboratory in	LITHUANIA
3 laboratories in	MALAYSIA
1 laboratory in	MAURITIUS
1 laboratory in	MOZAMBIQUE
1 laboratory in	NIGERIA
1 laboratory in	NORTHERN IRELAND
2 laboratories in	NORWAY
1 laboratory in	OMAN
3 laboratories in	P.R. of CHINA
1 laboratory in	PHILIPPINES
2 laboratories in	POLAND
1 laboratory in	PORTUGAL
2 laboratories in	QATAR
1 laboratory in	REPUBLIC OF DJIBOUTI
1 laboratory in	REPUBLIC OF GUINEE
2 laboratories in	REPUBLIC OF MACEDONIA
2 laboratories in	SAUDI ARABIA
1 laboratory in	SENEGAL
2 laboratories in	SINGAPORE
1 laboratory in	SLOVAKIA
2 laboratories in	SLOVENIA
1 laboratory in	SOUTH AFRICA
1 laboratory in	SPAIN
1 laboratory in	SUDAN
3 laboratories in	SWEDEN
1 laboratory in	TANZANIA
2 laboratories in	THAILAND
9 laboratories in	THE NETHERLANDS
1 laboratory in	TOGO
1 laboratory in	TUNESIA
7 laboratories in	TURKEY
1 laboratory in	TURKMENISTAN
2 laboratories in	U.A.E.
11 laboratories in	U.S.A.
10 laboratories in	UNITED KINGDOM
1 laboratory in	ZAMBIA

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

Literature:

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7 ISO 5725, parts 1-6, 1994

8 M. Thompson and R. Wood, J. AOAC Int, 76, 926, (1993)

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10 IP 367/84

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14 Analytical Methods Committee Technical Brief, No4 January 2001

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