Results of Proficiency Test
Jet Fuel
September 2011

Organised by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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CONTENTS

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 2011 was extended with PTs for the determination for FAME, BOCLE and Particle Size Distribution.
In the regular PT, 136 laboratories in 62 different countries did participate; for BOCLE 21 laboratories participated, for FAME 30 and for Particle Size Distribution 55 laboratories. See appendix 3 for the number of participants per country.
In this report, the results of the proficiency test are presented and discussed.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, The Netherlands, was the organiser of this proficiency test. It was decided to use 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" and a separate for BOCLE and a positive sample for FAME and another positive sample for Particle Size Distrubution.
For the regular sample this time by exception not a Jet Fuel A1 quality as usual was used, but an AvCat, a high flash point Jet Fuel type, containing FSII was used, which quality is identical to Jet Fuel A1. This rare - on JFTOT off spec - material was kindly donated by a participating laboratory (see also §4.0).
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 strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentially of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

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

2.3 CONFIDENTIALITY STATEMENT

All data 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 participating laboratory. The approx. 400 litre bulk material was homogenised and subsequently divided over 350 amber glass bottles of one litre with inner and outer caps and labelled #11063. The homogeneity of the subsamples #11063 was checked by the determination of Density in accordance with ASTM D 4052:09 on 10 stratified randomly selected samples.

Sample	Density @ 15°C in kg/L
#11063-1	0.81782
#11063-2	0.81782
#11063-3	0.81782
#11063-4	0.81782
#11063-5	0.81783
#11063-6	0.81782
#11063-7	0.81782
#11063-8	0.81782
#11063-9	0.81782
#11063-10	0.81783

table 1: homogeneity test results of sub samples #11063

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 #11063

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 25 amber glass bottles of 100 mL and labelled #11064. The homogeneity of the subsamples #11064 was checked by the determination of Density in accordance with ASTM D4052:09 on 4 stratified randomly selected samples.

Sample	Density @ 15°C in kg/L
#11064-1	0.82063
#11064-2	0.82064
#11064-3	0.82064
#11064-4	0.82063

table 3: homogeneity test results of sub samples #11064

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)	0.00002
reference method	D4052:09
0.3 x R (ref. method)	0.00015

Table 4: evaluation of repeatability of subsamples #11064

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 #11065. The homogeneity of the subsamples #11065 was checked by the determination of Particle Size Distribution in accordance with IP564:02 on 7 stratified randomly selected samples.

Sample	> 4 µm	> 6 µm	> 14 µm	> 21 µm	> 25 µm	> 30 µm
#11065-1	3448	771	44	14	7	3
#11065-2	4051	897	46	15	7	3
#11065-3	4004	880	46	14	7	2
#11065-4	3684	827	45	14	7	2
#11065-5	4048	896	44	13	6	2
#11065-6	4602	1000	47	13	6	2
#11065-7	4369	986	49	15	6	2

Table 5: homogeneity test results of sub samples #11065

From the above test results, the repeatability was calculated and compared with the repeatability of the reference method in the next table:

Sample	> 4 µm	> 6 µm	> 14 µm	> 21 µm	> 25 µm	> 30 µm
r (observed)	1086	227	5.0	2.3	1.5	1.4
reference method	IP564:02	IP564:02	IP564:02	IP564:02	IP564:02	IP564:02
r (ref. method)	643	213	24.4	14.2	6.9	2.9

Table 6: evaluation of repeatabilities of subsamples #11065

The repeatabilities of the results for Particle Size are in agreement with the repeatabilities mentioned in IP564:10, except for the particles >4µm.
Therefore, homogeneity of the subsamples #11065 was assumed.

2.4.4 DETERMINATION OF FATTY ACID METHYL ESTER (FAME)

First it was tried to add FAME to the AvGas material that was used for sample #11063. However, upon testing it appeared not to be possible to determine the FAME content using test method IP585, due to significant interference of unknown high boiling components. Therefore it was decided to use the retained samples #1057 of last year's PT iis10J02. In order to have sufficient material 2 liters of regular Jet Fuel A1 was used to dilute the 2.4 liters of #1057. The batch was thoroughly homogenized and divided over 37 bottles of 100 mL labelled #11067. The homogeneity of the subsamples #11067 was checked by the determination of FAME in accordance with method IP585 on 4 stratified randomly selected samples.

Sample	FAME in mg/kg
#11067-1	13.5
#11067-2	13.8
#11067-3	13.6
#11067-4	13.4

Table 7: homogeneity test results of sub samples #11067

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

	FAME in mg/kg
r (observed)	0.5
reference method	IP585:10
0.3 x R (ref. method)	1.3

Table 8: evaluation of repeatabilities of subsamples #11067

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

Depending on the registration of each individual participant the following samples were dispatched on August 31, 2011: 2 bottles regular Jet Fuel (2*1 litre, labelled #11063), 1 bottle

especially for the BOCLE test (1*100 mL, labelled #11064), 1 bottle especially for the Particle Size Distribution (1*500 mL, labelled #11065) and 1 bottle for the FAME determination (1*100 mL, labelled #11067) 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. However, the stability of AvCat Jet Fuel F44 is still to be determined.

2.6 ANALYSIS

Depending on the registration the participants were requested to determine on sample #11063: 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 #11064 was requested to determine the Ball-On-Cylinder-Lubricity Evaluator test.
On sample #11065 was requested to determine the particle size at >4µm, >6µm, >14µm, >21µm, >25µm and >30µm.
On sample #11067 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.

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

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

3.2 GRAPHICS

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

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

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

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

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 this proficiency test a special Jet Fuel was used on request of several participants.
This Jet Fuel also known as Jet Fuel F44 or AvCat was known to be “off spec” on JFTOT.
After comparison of the Jet Fuel F44 specification (DEF STAN 91-86) with the regular Jet Fuel A1 specification (DEF STAN 91-91) it was decided not to use the Jet Fuel F44 for a special sample only. Although most parameters will give approximately the same test results, only the MSEP test parameter was excluded from testing.
Several laboratories responded to have some queries about the sample to be Jet Fuel, due to deviating Colour, Flash Point and Distillation test results.

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, Georgia, Guam, Mozambique, Norway, Oman, Romania, South Africa and U.S.A.
For the ”regular Jet Fuel A1” PT, 24 participants reported the results after the final reporting date and 7 participants did not report any results at all.
For the PT “Particle Size”, 14 participants reported the results after the final reporting date and 9 participants did not report any results at all.
For the PT “BOCLE”, 6 participants reported the results after the final reporting date and 5 participants did not report any results at all.
For the PT “FAME”, 4 participants reported the results after the final reporting date and 11 participants did not report any results at all.
In total, the participants reported 2480 numerical results. Observed were 71 outlying results, which is 2.9%. 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 #11063: Aromatics (FIA), Colour Saybolt (D156), Density, Distillation 10% and 50% recovered (automatic), Distillation 10% recovered

and Final Boiling Point (manual), Freezing Point, JFTOT, Mercaptan Sulphur, Naphthalenes, Smoke Point, Total Acidity and Total Sulphur. 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 25_May_2011”. One must keep in mind that ISO-methods are not mentioned in the “Checklist”.

Aromatics by: FIA (D1319): This determination was not problematic. No statistical outliers were observed and the calculated reproducibility is in good agreement with ASTM 1319:10.

Aromatics by: HPLC (D6379) The %M/M determination was problematic. Only one statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier, is not in agreement with ASTM D6379:11.
The %V/V determination may also be problematic. Regretfully, no precision data for the determination in %V/V is mentioned in ASTM D6379:11. However, when the precision data is compared with the precision data of the previous round robin (iis11J01) the – in this round robin calculated - reproducibility is large (2.44 vs 1.31 %V/V).
Note: The checklist requires results in %V/V.

Colour Saybolt: The determination by the manual test method ASTM D156 was very problematic. Obviously, this was a very difficult sample as the reported test results vary between -15 and +23 (!). Only one statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is not at all in agreement with the requirements of ASTM D156:07a.
The determination by the automated test method ASTM D6045 was also problematic. The reported test results vary between -3.5 and +7. Only one statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is not at all in agreement with the requirements of ASTM D6045:07a.
Filtering the sample or not doing so obviously is not effecting the results.

Density: This determination was not problematic. Four statistical outliers were observed. 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 somewhat problematic. In total seven statistical outliers were observed and one result was excluded from the statistical evaluation. After rejection of the statistical outliers, only the calculated reproducibilities of IBP, 10% and 50% recovered are in agreement with the requirements of ASTM D86:11 (automated), for 90% and FBP the calculated reproducibility is not all in agreement with the target requirements.

The manual mode distillation was also problematic. Only one statistical outlier was observed. However, all calculated reproducibilities after rejection of the statistical outlier, are in agreement with the requirements of ASTM D86:11 (manual mode), except for Final Boiling Point which is not at all in agreement with the target requirements. The problems with the final boiling point may be explained by the presence of a high boiling contaminant.

Existent Gum: This determination of the unexpectedly high existent gum content was problematic. Six statistical outliers were observed and the calculated reproducibility, after rejection of the statistical outliers, is not at all in agreement with ASTM D381:09. The observed high existent gum content may be explained by the presence of a high boiling contaminant.

Flash Point: This determination was problematic. Four statistical outliers were observed. The calculated reproducibility, after rejection of the statistical outliers, is not in agreement with the requirements of IP170:09. The problems may be explained by the fact that a number of the participating laboratories will test only flash points around 43°C.

Freezing Point: This determination was very problematic. Six statistical outliers were observed and the calculated reproducibility, after rejection of the statistical outliers, is not at all in agreement with the requirements of ASTM D2386:06. When the results of ASTM D2386, D5972 and D7153 were evaluated separately, none of the calculated reproducibilities was in agreement with the requirements of the respective testmethod.

JFTOT: Significant problems have been observed for this test on a positive sample. Twentyeight laboratories reported erratically <1 or 1 for the (visually evaluated) tube rating and fifteen a pressure drop of less than 100 mmHg (evaluated either manually or via the apparatus software). The other fortyfour laboratories agreed that the sample was clearly off-spec on JFTOT.
It is remarkable to see that at least fourteen laboratories used a software version that may contain a bug that may give false positive test results for all measurements after testing of one positive JFTOT sample, like sample #11063. The versions 3.0, 3.1, 3.2 and 3.3 are suspect and it is strongly advised to upgrade to version 3.4.

Copper as Cu: Only six participants reported a numerical result. But this determination appears not to be problematic. One statistical outlier was observed. And the calculated reproducibility, after rejection of the statistical outlier, is in good agreement with the estimated requirements calculated using the Horwitz equation. All laboratories agreed that copper is present in the sample.

Mercaptan Sulphur: As the mercaptan concentration was below the application range of the test method (0.0003 – 0.01 %M/M) no significant conclusions were drawn.

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

Smoke Point: This determination was problematic. Only one statistical outlier was observed. However, the calculated reproducibility, after rejection of the statistical outlier is not in agreement with the requirements of ASTM D1322:08.

Specific Energy: This determination was not problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of ASTM D3338:09.

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

Total Sulphur: This determination was problematic at the level of Sulphur present in this sample (104 mg/kg). Five statistical outliers were observed. After excluding the statistical outliers, the calculated reproducibility is not in agreement with the requirements of ASTM D5453:09. When the results of ASTM D5453, D4294 and D2622 were evaluated separately, only the calculated reproducibility for the ASTM D4294 results is within the requirements of the respective test method.

Viscosity @-20ºC: This determination was problematic. Five statistical outliers were observed and the calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D445:11. The problems may be explained by the fact that the freezing point is -23°C, which is very close to -20°C.

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

FAME: This determination was not problematic. No statistical outliers were observed and the calculated reproducibility is in agreement with the requirements of IP585:2010. The average recovery of FAME (theoretical increment of 14.6 mg FAME/kg) may be good: “less then 107%” (the actual blank FAME content is unknown).

Particle Size: This determination was problematic. In total 15 (!) statistical outliers were observed. Also, 13 other test results were excluded from the statistical evaluation. After rejection of the 28 (!) suspect test results, the calculated reproducibilities for >4 µm, >6 µm and >14 µm are still not in agreement with the requirements of IP564:10. Strict adherence to the method with regards to homogenistaion is adviced.

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	79	20.26	2.52	3.38
Aromatics (D6379)	%M/M	30	23.74	2.94	2.30
Aromatics (D6379)	%V/V	23	21.70	2.44	n.a.
Colour Saybolt (D156)		76	-1.6	14.9	2.0
Colour Saybolt (D6045)		23	-0.5	4.6	1.2
Density at 15°C	kg/m^3	122	817.8	0.3	0.5
Initial Boiling Point (auto)	°C	102	183.7	6.1	10.1
10% recovered (auto)	°C	103	195.4	2.3	4.3
50% recovered (auto)	°C	102	213.3	2.5	3.0
90% recovered (auto)	°C	103	255.8	6.7	3.8
Final Boiling Point (auto)	°C	102	309.5	20.2	7.1
Initial Boiling Point (manual)	°C	20	183.2	3.9	3.9
10% recovered (manual)	°C	20	194.6	2.5	2.6
50% recovered (manual)	°C	20	213.4	2.3	2.8
90% recovered (manual)	°C	19	254.5	3.6	4.3
Final Boiling Point (manual)	°C	20	306.3	28.4	5.3
Existent Gum	mg/100mL	77	3.85	7.33	4.02
Flash Point	°C	118	64.43	4.56	3.20
Freezing Point	°C	96	-23.22	8.57	2.50
JFTOT tube rating		44	2.9	2.1	n.a.
JFTOT pressure drop	mmHg	51	248	142	n.a.
Copper as Cu	µg/kg	5	65.3	35.0	44.1
Mercaptan Sulphur	%M/M	43	0.00015	0.00028	(0.00032)
Naphthalenes	%V/V	71	0.706	0.137	0.076
Smoke Point	mm	93	21.12	4.35	3.00
Specific Energy	MJ/kg	71	43.130	0.040	0.046
Total Acidity	mg KOH/g	85	0.0041	0.0038	0.0026
Total Sulphur	mg/kg	89	104.0	25.3	18.9
Viscosity @ -20°C	cSt	78	6.078	0.135	0.116

table 9: comparison of the observed and target reproducibilities of sample #11063

Parameter	Unit	n	Average	2.8 * sd	R (lit)
BOCLE	mm	16	0.648	0.061	0.059

table 10: comparison of the observed and target reproducibilities of sample #11064

Parameter	Unit	n	Average	2.8 * sd	R (lit)
FAME	mg/kg	19	15.59	5.18	4.79

table 11: comparison of the observed and target reproducibilities of sample #11067

Parameter	Unit	n	Average	2.8 * sd	R (lit)
Particle Size >4 µm	mL^{-1}	41	4033.6	3566.4	900.0
Particle Size >6 µm	mL^{-1}	41	812.6	753.4	320.1
Particle Size >14 µm	mL^{-1}	40	41.2	43.5	29.8
Particle Size >21 µm	mL^{-1}	40	9.00	12.14	11.41
Particle Size >25 µm	mL^{-1}	40	3.80	5.34	5.09
Particle Size >30 µm	mL^{-1}	40	1.43	2.34	2.36

table 12: comparison of the observed and target reproducibilities of sample #11065

Without further statistical calculations, it can be concluded that for almost al tests there is not a 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 2011 WITH PREVIOUS PTS

	September 2011	March 2011	September 2010	March 2010
Number of reporting labs	242	126	208	65
Number of results reported	2480	1713	2759	1257
Statistical outliers	71	80	59	64
Percentage outliers	2.9%	4.7%	2.1%	5.1%

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:

	September 2011	March 2011	September 2010	March 2010
Aromatics by FIA	++	++	++	++
Aromatics by HPLC	--	++	--	++
Colour Saybolt	--	--	--	--
Density at 15°C	++	++	++	++
Distillation automated	+/-	++	++	++
Distillation manual	+/-	n.e.	--	n.e.
Existent Gum	--	++	++	++
Flash Point	--	++	++	++
Freezing Point	--	++	++	++
Copper as Cu	++	n.e.	n.e.	n.e.
Mercaptan Sulphur	(++)	++	++	+/-
MSEP	n.e.	-	--	--
Naphthalenes	--	--	+	++
Smoke Point	--	--	+/-	--
Specific Energy	++	++	--	--
Total Acidity	--	+/-	--	--
Total Sulphur	--	--	--	+
Viscosity @ -20°C	--	--	++	-
BOCLE	+/-	n.e.	++	++
FAME	+/-	n.e.	--	--
Particle Size Distribution	--	+/-	--	--

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

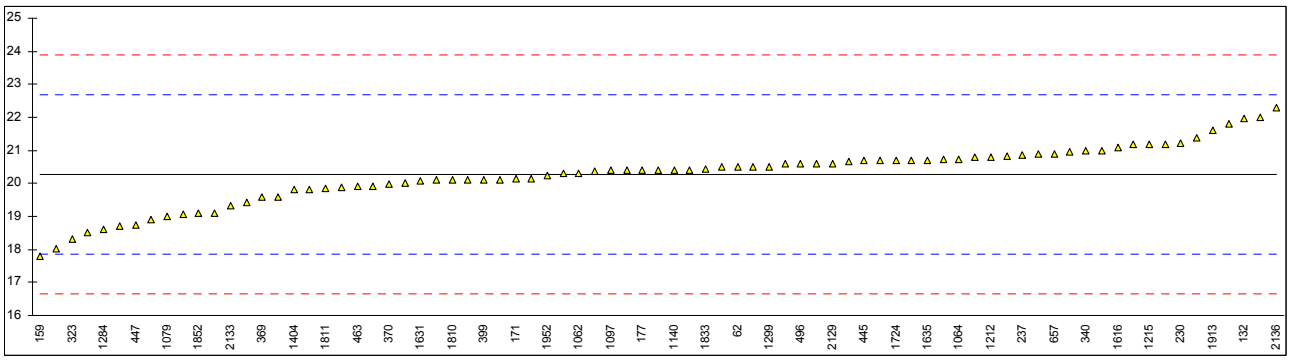
APPENDIX 1

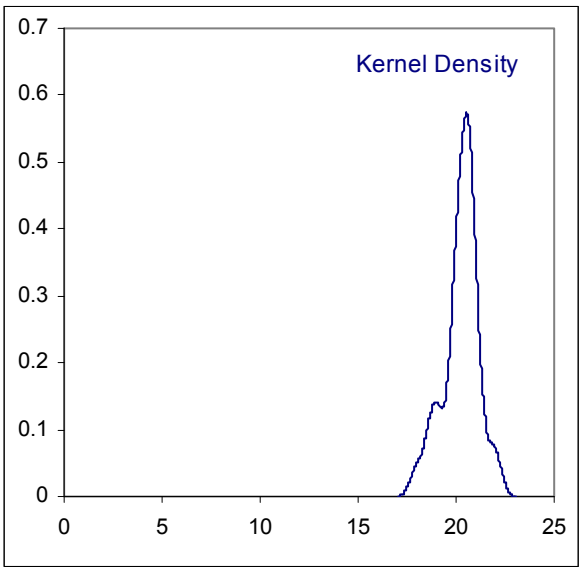
Determination of Aromatics by FIA on sample #11063; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D1319	20.6	C	0.28	1032	D1319	19.44		-0.68
53	D1319	20.0		-0.22	1038		-----		-----
62	D1319	20.5		0.20	1039		-----		-----
120	D1319	19.8		-0.38	1049		-----		-----
132	D1319	21.97		1.41	1059	D1319	18.7		-1.30
140	D1319	20.7		0.36	1062	D1319	20.3		0.03
150	D1319	20.8		0.44	1064	D1319	20.74		0.39
153	D1319	21.2		0.78	1065		-----		-----
159	D1319	17.8		-2.04	1079	D1319	19.0		-1.05
169	D1319	22.0		1.44	1080		-----		-----
171	D1319	20.13		-0.11	1081	D1319	20.5		0.20
175		-----		-----	1082		-----		-----
177	D1319	20.4		0.11	1097	D1319	20.4		0.11
194		-----		-----	1108		-----		-----
216		-----		-----	1109	D1319	20.30		0.03
221		-----		-----	1126		-----		-----
224		-----		-----	1140	D1319	20.4		0.11
225		-----		-----	1150		-----		-----
228		-----		-----	1191		-----		-----
230	D1319	21.21		0.78	1212	D1319	20.80		0.44
237	D1319	20.85		0.49	1215	D1319	21.2		0.78
252	D1319	18.51		-1.45	1264	D1319	18.01		-1.87
253	D1319	20.67		0.34	1279		-----		-----
254	D1319	18.89		-1.14	1284	D1319	18.6		-1.38
256		-----		-----	1297		-----		-----
258		-----		-----	1299	D1319	20.5		0.20
273		-----		-----	1316		-----		-----
311	D1319	19.6		-0.55	1318		-----		-----
317		-----		-----	1357		-----		-----
323	D1319	18.3		-1.63	1378	D1319	19.9		-0.30
333		-----		-----	1395		-----		-----
334		-----		-----	1399		-----		-----
335		-----		-----	1404	D1319	19.8		-0.38
340	D1319	21.0		0.61	1419	D1319	20.4		0.11
353		-----		-----	1433		-----		-----
360	D1319	19.1		-0.97	1447	D1319	21.81		1.28
369	D1319	19.58		-0.57	1448		-----		-----
370	D1319	19.97		-0.24	1520	D1319	19.87		-0.33
372	D1319	20.4		0.11	1528	D1319	20.15		-0.09
391	D1319	20.5		0.20	1538	D1319	21.2		0.78
399	D1319	20.10		-0.14	1610	IP156	20.097		-0.14
440	D1319	20.12		-0.12	1616	D1319	21.1		0.69
441	D1319	20.1		-0.14	1631	D1319	20.09		-0.14
445	D1319	20.7		0.36	1634		-----		-----
447	D1319	18.73		-1.27	1635	D1319	20.7		0.36
448	D1319	20.74		0.39	1636	D1319	21.38		0.93
463	D1319	19.9		-0.30	1651		-----		-----
468		-----		-----	1715		-----		-----
473		-----		-----	1720		-----		-----
485		-----		-----	1724	D1319	20.7		0.36
496	D1319	20.60		0.28	1738		-----		-----
604		-----		-----	1810	D1319	20.1		-0.14
606		-----		-----	1811	D1319	19.85		-0.34
608		-----		-----	1833	D1319	20.45		0.15
631	D1319	19.05		-1.01	1842		-----		-----
657	D1319	20.9		0.53	1852	D1319	19.1		-0.97
663		-----		-----	1913	D1319	21.62		1.12
671		-----		-----	1948		-----		-----
823	D1319	20.9		0.53	1952	D1319	20.245		-0.02
851		-----		-----	2129	D1319	20.6		0.28
862	D1319	20.36		0.08	2130		-----		-----
869	D1319	20.96		0.58	2133	D1319	19.33		-0.77
962	D1319	20.7		0.36	2136	D1319	22.29		1.68
963	D1319	20.84		0.48					
974	D1319	20.41		0.12					
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
1016		-----		-----					
1017	D1319	20.60		0.28					
1021	D1319	21.0		0.61					
1026		-----		-----					

normality	not OK
n	79
outliers	0
mean (n)	20.264
st.dev. (n)	0.8981
R(calc.)	2.515
R(D1319:10)	3.377

Corrections:
Lab 52 first reported 15.6



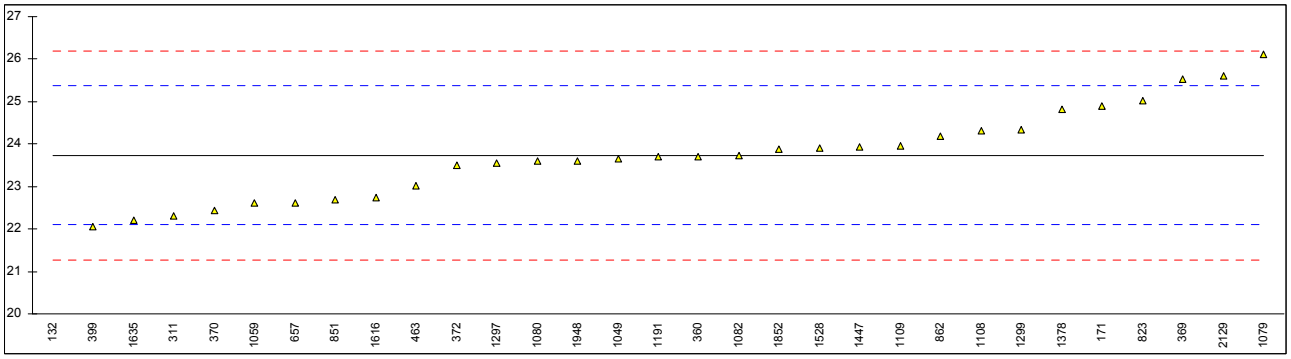


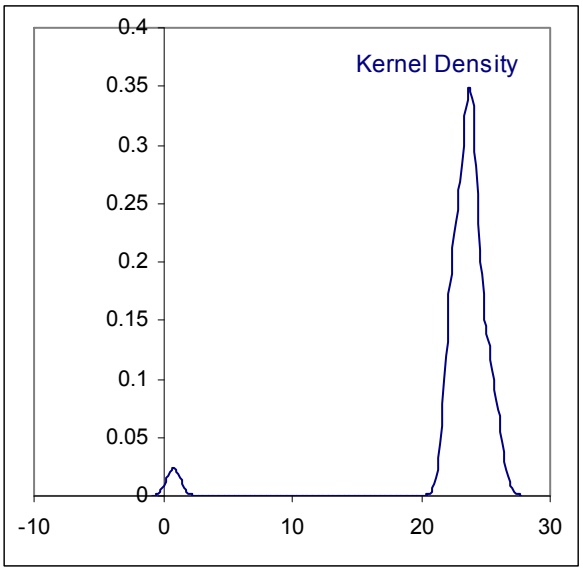
Determination of Aromatics by HPLC on sample #11063; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1032		-----		-----
53		-----		-----	1038		-----		-----
62		-----		-----	1039		-----		-----
120		-----		-----	1049	D6379	23.650		-0.11
132	D6379	0.81	G(0.01)	-27.93	1059	EN12916	22.6		-1.38
140		-----		-----	1062		-----		-----
150		-----		-----	1064		-----		-----
153		-----		-----	1065		-----		-----
159		-----		-----	1079	D6379	26.1		2.88
169		-----		-----	1080	EN12916	23.59		-0.18
171	D6379	24.9017		1.42	1081		-----		-----
175		-----		-----	1082	D6379	23.73		-0.01
177		-----		-----	1097		-----		-----
194		-----		-----	1108	D6379	24.3		0.69
216		-----		-----	1109	D6591	23.95		0.26
221		-----		-----	1126		-----		-----
224		-----		-----	1140		-----		-----
225		-----		-----	1150		-----		-----
228		-----		-----	1191	D6379	23.70		-0.04
230		-----		-----	1212		-----		-----
237		-----		-----	1215		-----		-----
252		-----		-----	1264		-----		-----
253		-----		-----	1279		-----		-----
254		-----		-----	1284		-----		-----
256		-----		-----	1297	EN12916	23.56		-0.22
258		-----		-----	1299	IP436	24.33		0.72
273		-----		-----	1316		-----		-----
311	D6379	22.3		-1.75	1318		-----		-----
317		-----		-----	1357		-----		-----
323		-----		-----	1378	D6379	24.83		1.33
333		-----		-----	1395		-----		-----
334		-----		-----	1399		-----		-----
335		-----		-----	1404		-----		-----
340		-----		-----	1419		-----		-----
353		-----		-----	1433		-----		-----
360	D6379	23.71		-0.03	1447	D6379	23.92		0.22
369	D6379	25.53		2.18	1448		-----		-----
370	D6379	22.43		-1.59	1520		-----		-----
372	D6379	23.5		-0.29	1528	D6379	23.9		0.20
391		-----		-----	1538		-----		-----
399	D6379	22.045		-2.06	1610		-----		-----
440		-----		-----	1616	D6379	22.738		-1.22
441		-----		-----	1631		-----		-----
445		-----		-----	1634		-----		-----
447		-----		-----	1635	EN12916	22.2		-1.87
448		-----		-----	1636		-----		-----
463	EN12916	23.02		-0.87	1651		-----		-----
468		-----		-----	1715		-----		-----
473		-----		-----	1720		-----		-----
485		-----		-----	1724		-----		-----
496		-----		-----	1738		-----		-----
604		-----		-----	1810		-----		-----
606		-----		-----	1811		-----		-----
608		-----		-----	1833		-----		-----
631		-----		-----	1842		-----		-----
657	D6379	22.6		-1.38	1852	D6379	23.88	C	0.17
663		-----		-----	1913		-----		-----
671		-----		-----	1948	D6379	23.59		-0.18
823	D6379	25.03		1.58	1952		-----		-----
851	D6379	22.68		-1.29	2129	IP391	25.61		2.28
862	D6379	24.18		0.54	2130		-----		-----
869		-----		-----	2133		-----		-----
962		-----		-----	2136		-----		-----
963		-----		-----					
974		-----		-----					
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
1016		-----		-----					
1017		-----		-----					
1021		-----		-----					
1026		-----		-----					

normality	OK
n	30
outliers	1
mean (n)	23.737
st.dev. (n)	1.0484
R(calc.)	2.935
R(D6379:11)	2.299

Corrections:
Lab 1852 first reported 17.759



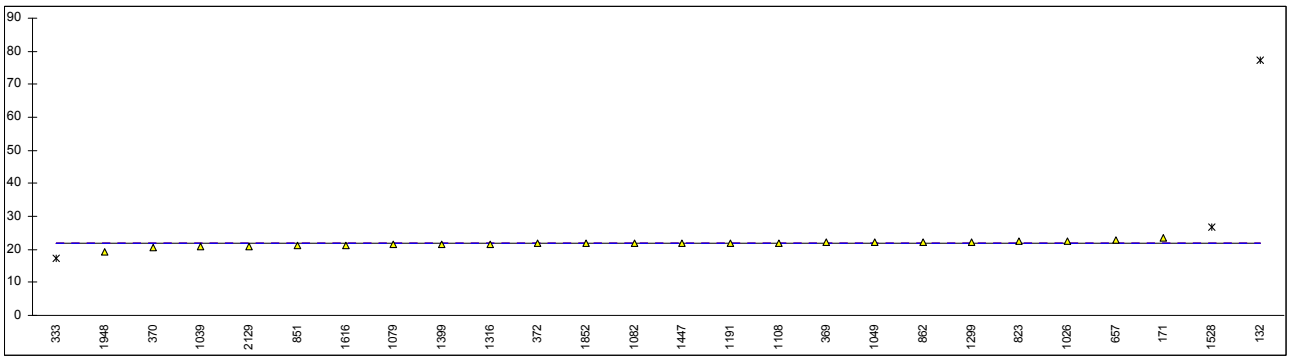


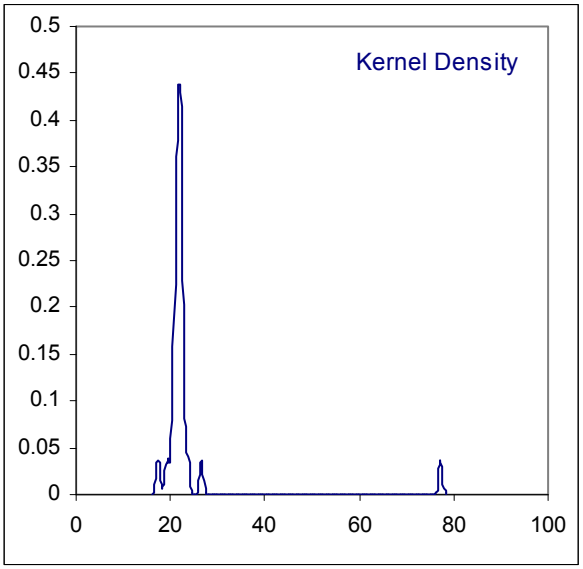
Determination of Aromatics by HPLC on sample #11063; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1032		-----		-----
53		-----		-----	1038		-----		-----
62		-----		-----	1039	D6379	20.9		-----
120		-----		-----	1049	D6379	22.06497		-----
132	D6379	77.22	G(0.01)	-----	1059		-----		-----
140		-----		-----	1062		-----		-----
150		-----		-----	1064		-----		-----
153		-----		-----	1065		-----		-----
159		-----		-----	1079	D6379	21.4		-----
169		-----		-----	1080		-----		-----
171	D6379	23.6266		-----	1081		-----		-----
175		-----		-----	1082	D6379	21.82		-----
177		-----		-----	1097		-----		-----
194		-----		-----	1108	D6379	22.0		-----
216		-----		-----	1109		-----		-----
221		-----		-----	1126		-----		-----
224		-----		-----	1140		-----		-----
225		-----		-----	1150		-----		-----
228		-----		-----	1191	D6379	21.94		-----
230		-----		-----	1212		-----		-----
237		-----		-----	1215		-----		-----
252		-----		-----	1264		-----		-----
253		-----		-----	1279		-----		-----
254		-----		-----	1284		-----		-----
256		-----		-----	1297		-----		-----
258		-----		-----	1299	IP436	22.32		-----
273		-----		-----	1316	IP391	21.5		-----
311		-----		-----	1318		-----		-----
317		-----		-----	1357		-----		-----
323		-----		-----	1378		-----		-----
333	D6379	17.4	G(0.01)	-----	1395		-----		-----
334		-----		-----	1399	IP436	21.48		-----
335		-----		-----	1404		-----		-----
340		-----		-----	1419		-----		-----
353		-----		-----	1433		-----		-----
360		-----		-----	1447	D6379	21.88		-----
369	D6379	22.06		-----	1448		-----		-----
370	D6379	20.39		-----	1520		-----		-----
372	D6379	21.7		-----	1528	D6379	26.6	G(0.05)	-----
391		-----		-----	1538		-----		-----
399		-----		-----	1610		-----		-----
440		-----		-----	1616	D6379	21.175		-----
441		-----		-----	1631		-----		-----
445		-----		-----	1634		-----		-----
447		-----		-----	1635		-----		-----
448		-----		-----	1636		-----		-----
463		-----		-----	1651		-----		-----
468		-----		-----	1715		-----		-----
473		-----		-----	1720		-----		-----
485		-----		-----	1724		-----		-----
496		-----		-----	1738		-----		-----
604		-----		-----	1810		-----		-----
606		-----		-----	1811		-----		-----
608		-----		-----	1833		-----		-----
631		-----		-----	1842		-----		-----
657	D6379	22.8		-----	1852	D6379	21.716		-----
663		-----		-----	1913		-----		-----
671		-----		-----	1948	D6379	19.29		-----
823	D6379	22.40		-----	1952		-----		-----
851	D6379	21.04		-----	2129	IP391Calc	20.9		-----
862	D6379	22.26		-----	2130		-----		-----
869		-----		-----	2133		-----		-----
962		-----		-----	2136		-----		-----
963		-----		-----					
974		-----		-----					
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
1016		-----		-----					
1017		-----		-----					
1021		-----		-----					
1026	IP436	22.4		-----					

normality	OK
n	23
outliers	3
mean (n)	21.698
st.dev. (n)	0.8726
R(calc.)	2.443
R(target)	n.a.

Compare R(iis11J01) = 1.310





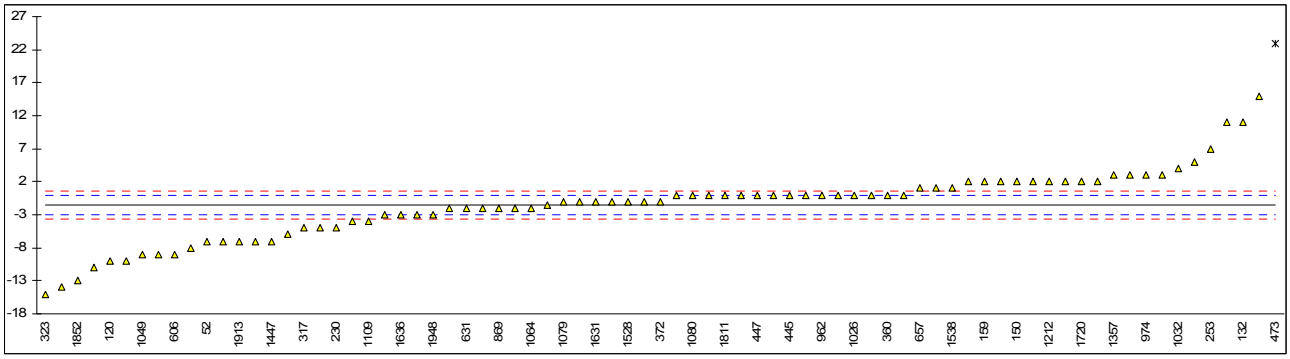
Determination of Colour Saybolt (D156) on sample #11063;

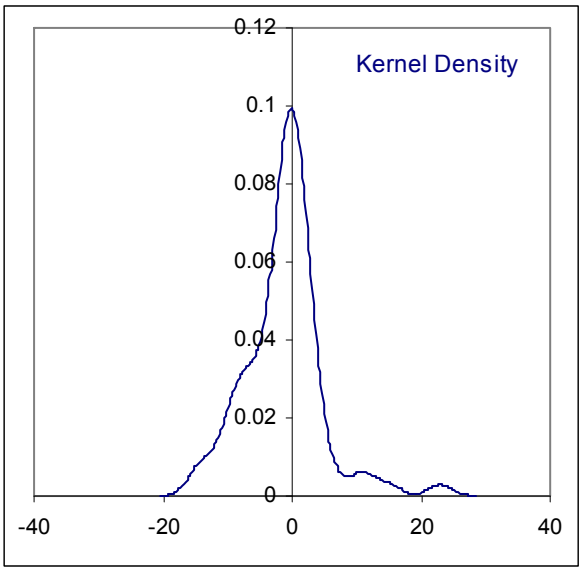
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D156-Y	-7	C	-7.62	1032	D156-N	4		7.78
53	D156-Y	-7	C	-7.62	1038		-----		-----
62	D156-N	-7		-7.62	1039	D156-N	0		2.18
120	D156-N	-10		-11.82	1049	D156-N	-9		-10.42
132	D156-N	11		17.58	1059		-----		-----
140	D156-N	15		23.18	1062		-----		-----
150	D156-N	2		4.98	1064	D156-N	-2		-0.62
153	D156-N	-1		0.78	1065		-----		-----
159	D156-N	2		4.98	1079	D156-N	-1		0.78
169		-----		-----	1080	D156	0		2.18
171	D156-N	5		9.18	1081		-----		-----
175		-----		-----	1082		-----		-----
177	D156-N	2		4.98	1097	INH-7009-N	-3		-2.02
194		-----		-----	1108	D156-N	0		2.18
216		-----		-----	1109	D156-N	-4		-3.42
221		-----		-----	1126		-----		-----
224		-----		-----	1140		-----		-----
225		-----		-----	1150		-----		-----
228		-----		-----	1191		-----		-----
230	D156-N	-5		-4.82	1212	D156-N	2		4.98
237	D156-Y	2		4.98	1215		-----		-----
252	D156-N	<0		-----	1264		-----		-----
253	D156-N	7		11.98	1279	D156-N	-2		-0.62
254	D156-N	<0		-----	1284		-----		-----
256		-----		-----	1297		-----		-----
258	D156-N	-1		0.78	1299	D156-N	3		6.38
273	D156-N	-14	C	-17.42	1316		-----		-----
311	D156-N	2		4.98	1318	D156-N	-5		-4.82
317	D156-N	-5		-4.82	1357	D156-N	3		6.38
323	D156-N	-15	C	-18.82	1378		-----		-----
333		-----		-----	1395		-----		-----
334		-----		-----	1399	D156	0		2.18
335		-----		-----	1404	D156-N	11		17.58
340	D156-Y	-9		-10.42	1419	D156-N	2		4.98
353		-----		-----	1433		-----		-----
360	D156-N	0		2.18	1447	D156-N	-7		-7.62
369	D156-N	-1		0.78	1448		-----		-----
370	D156-N	0		2.18	1520	D156-N	3		6.38
372	D156-N	-1		0.78	1528	D156-N	-1		0.78
391		-----		-----	1538	D156-N	1		3.58
399		-----		-----	1610	D156-N	-11		-13.22
440	D156-N	2		4.98	1616		-----		-----
441		-----		-----	1631	D156-Y	-1		0.78
445	D156-N	0		2.18	1634	D156-N	-4		-3.42
447	D156-N	0		2.18	1635	D156-Y	1		3.58
448		-----		-----	1636	D156-Y	-3		-2.02
463		-----		-----	1651	D156-Y	-1.5		0.08
468		-----		-----	1715		-----		-----
473	D156-N	23	G(0.01)	34.38	1720	D156-Y	2		4.98
485		-----		-----	1724		-----		-----
496		-----		-----	1738		-----		-----
604	D156-N	-10		-11.82	1810		-----		-----
606	D156-N	-9		-10.42	1811	D156-Y	0		2.18
608	D156-N	0		2.18	1833	D156-Y	0		2.18
631	D156-Y	-2		-0.62	1842		-----		-----
657	D156-N	1		3.58	1852	D156-Y	-13		-16.02
663	D156-N	-3		-2.02	1913	D156-Y	-7		-7.62
671	D156-N	-2		-0.62	1948	D156-N	-3		-2.02
823	D156-N	-8		-9.02	1952	D156-Y	0		2.18
851	D156-N	-6		-6.22	2129		-----		-----
862	D156-N	-2		-0.62	2130		-----		-----
869	D156-N	-2		-0.62	2133		-----		-----
962	D156-N	0		2.18	2136	D156-N	0		2.18
963		-----		-----					
974	D156-N	3		6.38					
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
1016		-----		-----					
1017		-----		-----					
1021		-----		-----					
1026	D156-Y	0		2.18					

N = sample not filtered before use
Y = sample filtered before use

normality	not OK
n	76
outliers	1
mean (n)	-1.56
st.dev. (n)	5.320
R(calc.)	14.90
R(D156:07a)	2.00

Corrections
Lab 52 first reported -15
Lab 53 first reported -15
Lab 273 first reported -16
Lab 323 first reported <-16



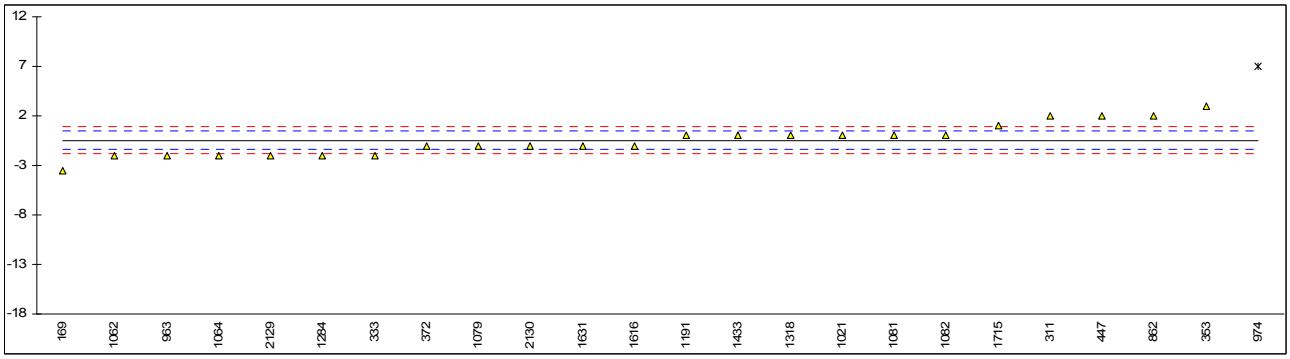


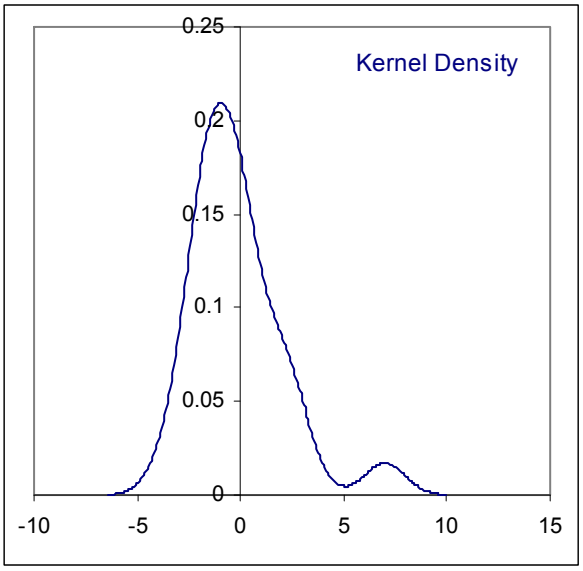
Determination of Colour Saybolt (D6045) on sample #11063;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1032		-----		-----
53		-----		-----	1038		-----		-----
62		-----		-----	1039		-----		-----
120		-----		-----	1049		-----		-----
132		-----		-----	1059		-----		-----
140		-----		-----	1062	D6045-Y	-2		-3.49
150		-----		-----	1064	D6045-N	-2		-3.49
153		-----		-----	1065		-----		-----
159		-----		-----	1079	D6045-N	-1		-1.23
169	D6045-N	-3.5		-6.87	1080		-----		-----
171		-----		-----	1081	D6045-N	0		1.03
175		-----		-----	1082	D6045-N	0		1.03
177		-----		-----	1097		-----		-----
194		-----		-----	1108		-----		-----
216		-----		-----	1109		-----		-----
221		-----		-----	1126		-----		-----
224		-----		-----	1140		-----		-----
225		-----		-----	1150		-----		-----
228		-----		-----	1191	D6045-N	0		1.03
230		-----		-----	1212		-----		-----
237		-----		-----	1215		-----		-----
252		-----		-----	1264		-----		-----
253		-----		-----	1279		-----		-----
254		-----		-----	1284	D6045-N	-2.0		-3.49
256		-----		-----	1297		-----		-----
258		-----		-----	1299		-----		-----
273		-----		-----	1316		-----		-----
311	D6045-N	2		5.55	1318	D6045-N	0		1.03
317		-----		-----	1357		-----		-----
323		-----		-----	1378		-----		-----
333	D6045	-2		-3.49	1395		-----		-----
334		-----		-----	1399		-----		-----
335		-----		-----	1404		-----		-----
340		-----		-----	1419		-----		-----
353	D6045-N	3		7.81	1433	D6045-N	0		1.03
360		-----		-----	1447		-----		-----
369		-----		-----	1448		-----		-----
370		-----		-----	1520		-----		-----
372	D6045-N	-1		-1.23	1528		-----		-----
391		-----		-----	1538		-----		-----
399		-----		-----	1610		-----		-----
440		-----		-----	1616	D6045-N	-1		-1.23
441		-----		-----	1631	D6045-Y	-1		-1.23
445		-----		-----	1634		-----		-----
447	D6045-N	2		5.55	1635		-----		-----
448		-----		-----	1636		-----		-----
463		-----		-----	1651		-----		-----
468		-----		-----	1715	D6045-N	1		3.29
473		-----		-----	1720		-----		-----
485		-----		-----	1724		-----		-----
496		-----		-----	1738		-----		-----
604		-----		-----	1810		-----		-----
606		-----		-----	1811		-----		-----
608		-----		-----	1833		-----		-----
631		-----		-----	1842		-----		-----
657		-----		-----	1852		-----		-----
663		-----		-----	1913		-----		-----
671		-----		-----	1948		-----		-----
823		-----		-----	1952		-----		-----
851		-----		-----	2129	D6045-N	-2		-3.49
862	D6045-N	2		5.55	2130	D6045-N	-1		-1.23
869		-----		-----	2133		-----		-----
962		-----		-----	2136		-----		-----
963	D6045-N	-2		-3.49					
974	D6045-N	7	G(0.01)	16.84					
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
1016		-----		-----					
1017		-----		-----					
1021	D6045-N	0		1.03					
1026		-----		-----					

N = sample not filtered before use
Y = sample filtered before use

normality	OK
n	23
outliers	1
mean (n)	-0.46
st.dev. (n)	1.630
R(calc.)	4.56
R(D6045:09)	1.24



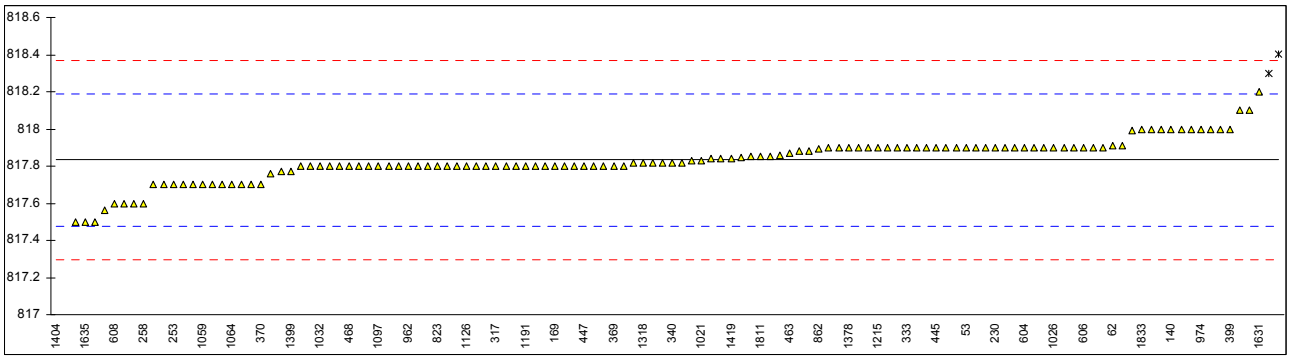


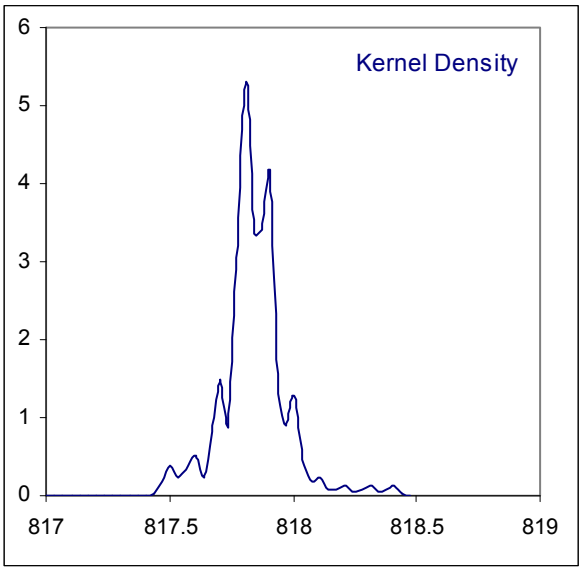
Determination of Density @ 15°C on sample #11063; results in kg/m^3

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4052	817.9		0.38	1032	D4052	817.8		-0.18
53	D4052	817.9		0.38	1038		-----		-----
62	D4052	817.91		0.44	1039	D4052	817.8		-0.18
120	D4052	818.0		0.94	1049	D4052	817.82		-0.07
132	D4052	817.88	C	0.27	1059	D4052	817.7		-0.74
140	D4052	818.0		0.94	1062	D4052	817.8		-0.18
150	D4052	818.0		0.94	1064	D4052	817.7		-0.74
153		-----		-----	1065	D4052	817.76		-0.40
159	D4052	817.9		0.38	1079	D4052	817.8		-0.18
169	D4052	817.8		-0.18	1080	D4052	817.9		0.38
171	D4052	817.91		0.44	1081	ISO12185	818.0		0.94
175	D4052	817.9		0.38	1082	D4052	817.9		0.38
177	D4052	817.5		-1.86	1097	ISO12185	817.8		-0.18
194		-----		-----	1108	D4052	817.99		0.88
216	D1298	817.7		-0.74	1109	D4052	817.82		-0.07
221	D4052	817.9		0.38	1126	D4052	817.8		-0.18
224	D1298	817.9		0.38	1140	IP365	818.0		0.94
225		-----		-----	1150	ISO12185	817.7		-0.74
228	D1298	817.6		-1.30	1191	D4052	817.8		-0.18
230	D1298	817.9		0.38	1212	D4052	817.9		0.38
237	D4052	817.6		-1.30	1215	D4052	817.9		0.38
252	D1298	817.56		-1.52	1264	D4052	817.9		0.38
253	D4052	817.7		-0.74	1279	D1298	817.8		-0.18
254	D4052	817.77		-0.35	1284	D1298	818.3	G(0.05)	2.62
256	D4052	818.1		1.50	1297	D4052	817.8		-0.18
258	D1298	817.6	C	-1.30	1299	D4052	817.8		-0.18
273	D4052	817.8		-0.18	1316	D4052	817.8		-0.18
311	D4052	817.8		-0.18	1318	D4052	817.82		-0.07
317	D4052	817.8		-0.18	1357	D4052	817.8		-0.18
323	D4052	817.8		-0.18	1378	D4052	817.9		0.38
333	D4052	817.9		0.38	1395	D4052	817.8		-0.18
334	D4052	818.4	G(0.01)	3.18	1399	D4052	817.772		-0.34
335		-----		-----	1404	D4052	810.0	G(0.01)	-43.86
340	D4052	817.82		-0.07	1419	ISO12185	817.84		0.04
353	IP365	817.9		0.38	1433	D4052	817.8		-0.18
360	D4052	817.9		0.38	1447	D4052	817.5		-1.86
369	D4052	817.8		-0.18	1448	D4052	817.82		-0.07
370	D4052	817.7		-0.74	1520	D4052	817.84		0.04
372	D4052	817.9		0.38	1528	D4052	817.83		-0.01
391	D4052	817.9		0.38	1538	D4052	817.85		0.10
399	D4052	818.0		0.94	1610	IP365	817.7		-0.74
440	D4052	817.8		-0.18	1616	D4052	817.8		-0.18
441		-----		-----	1631	D4052	818.2		2.06
445	D4052	817.9		0.38	1634	D4052	817.849		0.09
447	D4052	817.8		-0.18	1635	D1298	817.5		-1.86
448	D4052	817.7		-0.74	1636	D4052	817.8		-0.18
463	D4052	817.87		0.21	1651	D4052	817.88	C	0.27
468	D4052	817.8		-0.18	1715	ISO12185	817.9		0.38
473	D4052	817.7		-0.74	1720	D4052	818.1		1.50
485	D4052	817.9		0.38	1724	D4052	817.86		0.16
496	D4052	817.85		0.10	1738	D1298	817.9	C	0.38
604	D4052	817.90		0.38	1810	D4052	817.8		-0.18
606	D4052	817.9		0.38	1811	D4052	817.85		0.10
608	D4052	817.6		-1.30	1833	D4052	818.0		0.94
631	D4052	818.0		0.94	1842		-----		-----
657	D4052	817.7		-0.74	1852	D4052	817.8		-0.18
663	D4052	817.9		0.38	1913	D4052	817.8		-0.18
671	D4052	817.9		0.38	1948	D4052	817.9		0.38
823	D4052	817.8		-0.18	1952	D4052	815.5	G(0.01)	-13.06
851	D4052	817.8		-0.18	2129	D4052	818.0	C	0.94
862	D4052	817.89		0.32	2130	D4052	817.8		-0.18
869	D4052	817.84		0.04	2133	D4052	817.82		-0.07
962	D4052	817.8		-0.18	2136	D4052	817.80		-0.18
963	D4052	817.8		-0.18					
974	D4052	818.0		0.94					
994	D4052	817.7		-0.74					
995		-----		-----					
996	D1298	817.7		-0.74					
997		-----		-----					
1016		-----		-----					
1017	D4052	817.90		0.38					
1021	D4052	817.83		-0.01					
1026	D4052	817.9		0.38					

normality	not OK
n	122
outliers	4
mean (n)	817.83
st.dev. (n)	0.116
R(calc.)	0.32
R(D4052:09)	0.50

Corrections
Lab 132 first reported 0.81788
Lab 1651 first reported 796.18





Determination of Distillation ASTM D86 (automated) on sample #11063; results in °C

lab	method	IBP	mark	10%	mark	50%	mark	90%	mark	FBP	mark	Remark
52	D86-A	187.7		196.4		214.7		260.0		317.6		
53	D86-A	184.8		196.0		214.4		256.8		318.7		
62	D86-A	187.8		195.7		213.7		256.0		318.5		
120	D86-A	173.8	G(0.05)	195.7		213.9		256.3		301.4		
132	D86-A	183.0		195.0		213.8		258.7		314.2		
140	D86-A	179.0		195.5		212.5		252.4		297.1		
150	D86-A	182.0		195.0		213.5		256.5		303.5		
153	D86-A	184.6		195.3		213.5		257.1		302.7		
159	D86-A	183.3		195.6		213.9		256.4		308.2		
169	D86-A	184.9		196.2		214.0		257.2		312.7		
171	D86-A	185.1		196.0		214.2		260.2		322.0		
175	D86-A	184.8		195.2		213.2		257.4		303.3		
177	D86-A	183.6		194.3		211.2		253.1		315.7		
194		-----		-----		-----		-----		-----		
216		-----		-----		-----		-----		-----		
221		-----		-----		-----		-----		-----		
224		-----		-----		-----		-----		-----		
225		-----		-----		-----		-----		-----		
228		-----		-----		-----		-----		-----		
230	D86-A	184.9		194.8		212.8		256.3		305.2		
237		-----		-----		-----		-----		-----		
252		-----		-----		-----		-----		-----		
253		-----		-----		-----		-----		-----		
254		-----		-----		-----		-----		-----		
256		-----		-----		-----		-----		-----		
258	D86-A	188.2		196.5		214.5		259.5		302.3		
273	D86-A	184.7		195.3		213.3		257.5		301.3		
311	D86-A	185.7		195.1		213.3		255.7		314.3		
317	D86-A	180.7		195.6		213.7		255.2		314.4		
323	D86-A	182.6		194.8		213.4		254.9		308.5		
333	D86-A	185.0		195.4		213.3		255.6		297.9		
334	D86-A	184.6		196.4		214.1		257.6		317.5		
335		-----		-----		-----		-----		-----		
340	D86-A	180.4		195.7		214.2		255.7		299.0		
353	IP123-A	185.4		195.4		214.4		258.6		311.7		
360	D86-A	181.4		194.4		211.8		252.9		305.8		
369	D86-A	186.5		196.0		215.7		257.1		324.0		
370		-----		-----		-----		-----		-----		
372	D86-A	183.2		195.0		213.0		256.0		305.6		
391		-----		-----		-----		-----		-----		
399	D86-A	189.5		196.3		213.1		252.5		326.7		
440	IP123-A	186.4		195.5		213.8		253.9		311.8		
441	IP123-A	189.8		194.6		213.1		258.4		308.7		
445	D86	186.0		194.9		212.2		257.1		312.9		
447	D86-A	182.8		195.6		213.9		258.7		317.3		
448	D86-A	187.2		195.1		212.7		255.0		320.3		
463	D86-A	183.5		195.6		213.5		255.2		308.9		
468	D86-A	182.3		196.0		213.6		257.2		305.9		
473	D86-A	182.9		195.3		213.1		253.7		312.9		
485	D86-A	182.85		195.55		213.45		253.40		301.50		
496	D86-A	185.6		195.9		214.2		260.8		318.6		
604	D86-A	181.5		195.1		213.0		254.9		306.1		
606	D86-A	183.7		197.1		213.9		255.7		313.0		
608		-----		-----		-----		-----		-----		
631	D86-A	185.8		195.2		213.1		259.0		312.0		
657	D86	181.9		195.2		214.0		259.8		309.5		
663	D86-A	186.9		196.0		213.8		255.7		314.0		
671	D86-A	184.2		196.1		213.4		254.1		306.5		
823	D86-A	184.8		196.7		213.9		254.5		311.9		
851	D86-A	185.4		196.6		214.8		258.8		308.6		
862	D86-A	184.7		195.7		213.7		254.7		307.6		
869		-----		-----		-----		-----		-----		
962		-----		-----		-----		-----		-----		
963		-----		-----		-----		-----		-----		
974	D86-A	183.4		193.4		211.3		255.0		303.7		
994		-----		-----		-----		-----		-----		
995		-----		-----		-----		-----		-----		
996		-----		-----		-----		-----		-----		
997		-----		-----		-----		-----		-----		
1016		-----		-----		-----		-----		-----		
1017	D86-A	186.7		195.2		211.8		252.7		302.2		
1021	D86-A	183.1		196.0		213.9		258.9		295.2		
1026	ISO3405-A	181.5		195.2		213.0		253.8		299.8		

1032	D86-A	185.3		195.4		213.2		253.8		307.5	
1038		-----		-----		-----		-----		-----	
1039	D86-A	182.7		196.8		214.3		260.9		317.6	
1049	D86-A	182.2		196.0		213.8		255.1		318.8	
1059	D86-A	182.2		194.6		213.4		253.0		305.5	
1062	D86-A	181.4		195.6		213.9		254.7		310.2	
1064	D86-A	184.8		196.2		213.7		255.6		315.9	
1065	D86-A	201.5	G(0.01)	211.9	G(0.01)	230.5	G(0.01)	277.0	G(0.01)	330.8	ex
1079	D86-A	180.5		195.9		214.6		259.9		316.9	
1080	D86-A	182.4		193.3		211.6		253.9		299.6	
1081	D86-A	184		196.6		214.2		258.6		307.4	
1082	D86-A	185.6		196.1		213.8		257.0		318.1	
1097	ISO3405-A	183.5		196.6		214.2		254.8		284.5	G(0.05)
1108	D86-A	184.3		194.4		212.6		254.0		319.4	
1109	D86-A	182.7		196.0		213.6		259.3		308.0	
1126	in house	183.3		194.1		214.6		259.2		312.2	
1140	D86	181.0		194.5		212.5		254.2		301.3	
1150	ISO3405-A	183.9		195.0		212.6	C	252.7	C	302.6	
1191	D86-A	182.6		195.7		213.8		257.1		315.0	
1212		-----		-----		-----		-----		-----	
1215	D86-A	182.4		195.6		213.5		257.7		316.2	
1264		-----		-----		-----		-----		-----	
1279		-----		-----		-----		-----		-----	
1284	D86-A	184.9		193.4		211.9		255.3		312.2	
1297		-----		-----		-----		-----		-----	
1299	D86-A	184.8		195.4		213.5		257.7		318.3	
1316	D86-A	182.0		195.1		213.3		256.5		305.8	
1318	D86-A	180.2		195.3		213.1		254.6		310.0	
1357	D86-A	181.6		193.9		211.3		255.8		310.8	
1378	D86-A	181.4		194.1		211.8		254.9		305.9	
1395	D86-A	181.8		195.0		213.1		252.9		308.0	
1399	D86-A	181.1		194.8		213.5		253.7		301.8	
1404	D86-A	184.3		194.9		212.1		251.2		303.5	
1419	ISO3405-A	182.8		195.0		213.1		253.9		299.7	
1433	D86-A	184.4		194.8		213.2		254.7		312.3	
1447		-----		-----		-----		-----		-----	
1448	D86-A	183.2		197.0		214.8		256.5		314.2	
1520		-----		-----		-----		-----		-----	
1528	D86-A	184.2		195.3		213.1		255.4		313.8	
1538	D86-A	187.9		195.7		213.2		252.8		303.8	
1610	IP123-A	184.9		196.2		214.5		259.8		308.0	
1616	D86-A	184.7		194.1		211.8		251.5		290.5	
1631	D86-A	181.4		195.1		213.5		251.5		303.6	
1634	D86-A	180.3		195.5		213.2		255.8		313.0	
1635	D86-A	181.1		195.1		212.8		254.6		310.1	
1636	D86-A	185.2		195.8		213.9		257.9		317.1	
1651	D86-A	183.3		196.15		213.5		254.35		299.35	
1715	D86-A	185.0		195.3		213.4		257.0		308.5	
1720	D86-A	181.2		193.4		211.8		252.9		315.5	
1724	D86-A	183.6		195.6		213.4		255.0		307.5	
1738	D86	180.5		194		211.5		252.5		294.5	
1810	D86-A	184.4		193.9		212.0		253.6		311.7	
1811		-----		-----		-----		-----		-----	
1833	D86-A	183.6		194.9		212.7		252.3		315.2	
1842		-----		-----		-----		-----		-----	
1852	D86-A	179.4		195.2		213.0		252.9		301.6	
1913	D86-A	186.2		196.8		214.0		257.3		299.8	
1948	D86-A	182.9		195.9		213.8		255.9		316.7	
1952	D86-A	187.8		196.4		216.6	G(0.05)	255.7		317.9	
2129	D86-A	182.2		194.1		211.5		252.0		301.9	
2130	D86-A	184.1		195.2		213.2		261.8		321.6	
2133	D86-A	180.9		195.3		213.0		253.0		306.0	
2136	D86-A	182.4		195.9		213.2		253.8		318.5	
	normality	OK		not OK		not OK		OK		OK	
	n	102		103		102		103		102	
	outliers	2		1		2		1		2	
	mean (n)	183.73		195.38		213.32		255.75		309.51	
	st.dev. (n)	2.176		0.815		0.876		2.403		7.201	
	R(calc.)	6.09		2.28		2.45		6.73		20.16	
	R(D86:11-A)	10.11		4.30		2.97		3.84		7.10	

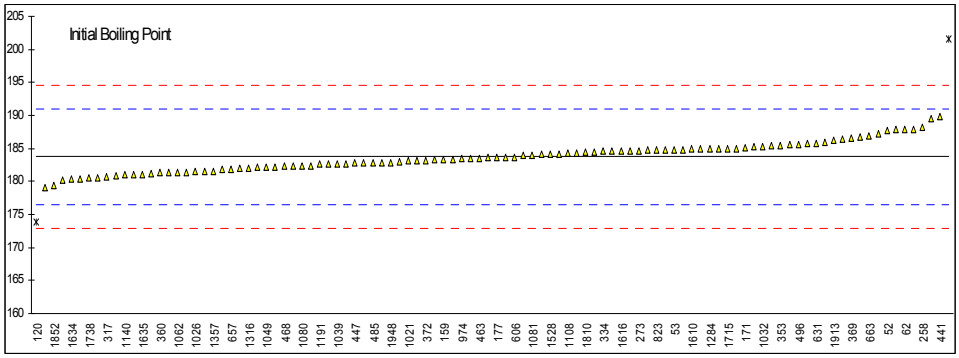
Corrections:
Lab 1150 first reported 193.8 (50%), 227.5 (90%)

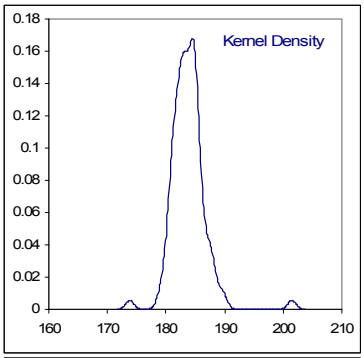
Determination of Distillation ASTM D86 (automated) on sample #11063; results in %V/V

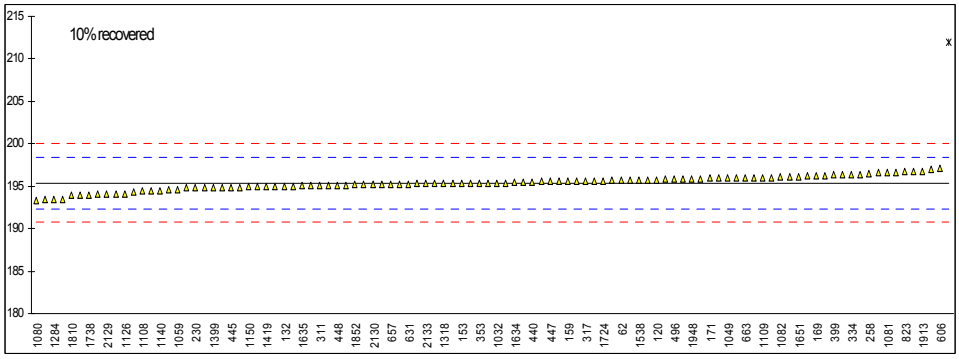
lab	method	residue	mark	loss	mark	Remark
52	D86-A	1.4		1.7		
53	D86-A	1.2		0.9		
62	D86-A	1.5		0.4		
120	D86-A	1.5		1.1		
132	D86-A	1.5		1.4		
140	D86-A	1.5		0.8		
150	D86-A	1.7		0.8		
153	D86-A	2.2		0.3		
159	D86-A	1.5		1.1		
169	D86-A	1.4		1.0		
171	D86-A	1.3		1.4		
175	D86-A	1.5		1.3		
177	D86-A	1.3		0.5		
194		-----		-----		
216		-----		-----		
221		-----		-----		
224		-----		-----		
225		-----		-----		
228		-----		-----		
230	D86-A	1.7		0.5		
237		-----		-----		
252		-----		-----		
253		-----		-----		
254		-----		-----		
256		-----		-----		
258	D86-A	1.5		1.5		
273	D86-A	2.1		0.5		
311	D86-A	0.7		<0.1		
317	D86-A	0.7		1.3		
323	D86-A	1.5		0.6		
333	D86-A	1.5		1.0		
334	D86-A	0.9		1.0		
335		-----		-----		
340	D86-A	2.0		0.6		
353	IP123-A	1.8		0.8		
360	D86-A	1.2		0.6		
369	D86-A	1.1		0.6		
370		-----		-----		
372	D86-A	2.0		0.2		
391		-----		-----		
399	D86-A	0.5		0.5		
440	IP123-A	1.2		0		
441	IP123-A	1.7		1.2		
445	D86	1.5		1.4		
447	D86-A	1.3		1.9		
448	D86-A	1.2		1.1		
463	D86-A	1.8		0.3		
468	D86-A	1.5		1.1		
473	D86-A	1.2		0.7		
485	D86-A	1.85		0.20		
496	D86-A	1.3		2.0		
604	D86-A	1.2		1.1		
606	D86-A	1.2		1.0		
608		-----		-----		
631	D86-A	1.5		1.9		
657	D86	1.5		1.4		
663	D86-A	1.8		0.2		
671	D86-A	1.5		0.7		
823	D86-A	1.0		1.0		
851	D86-A	1.8		0.2		
862	D86-A	1.8		0.4		
869		-----		-----		
962		-----		-----		
963		-----		-----		
974	D86-A	1.0		0.9		
994		-----		-----		
995		-----		-----		
996		-----		-----		
997		-----		-----		
1016		-----		-----		
1017	D86-A	1.8		0.0		
1021	D86-A	2.1		1.4		
1026	ISO3405-A	2.1		0.3		

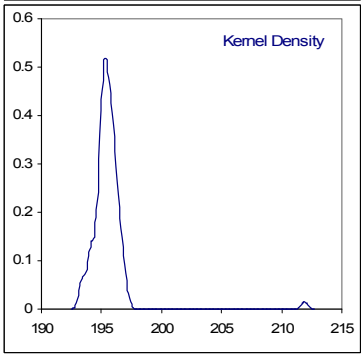
1032	D86-A	1.2	0.6
1038		-----	-----
1039	D86-A	1.5	1.6
1049	D86-A	1.2	0.8
1059	D86-A	1.8	1.0
1062	D86-A	1.6	0.5
1064	D86-A	1.2	0.7
1065	D86-A	1.9	0.6
1079	D86-A	1.3	1.9
1080	D86-A	1.6	0.8
1081	D86-A	1.6	-----
1082	D86-A	1.6	0.9
1097	ISO3405-A	2.5	0.3
1108	D86-A	1	0.7
1109	D86-A	1.6	1.1
1126		-----	-----
1140	D86	1.2	1.0
1150	ISO3405-A	2.2	0.8
1191	D86-A	1.4	1.3
1212		-----	-----
1215	D86-A	1.5	1.1
1264		-----	-----
1279		-----	-----
1284	D86-A	1.2	1.5
1297		-----	-----
1299	D86-A	1.3	1.3
1316	D86-A	1.5	0.7
1318	D86-A	1.2	0.7
1357	D86-A	1.3	2.1
1378	D86-A	1.4	1.0
1395	D86-A	1.2	0
1399	D86-A	1.0	0.8
1404	D86-A	1.0	<0.1
1419		-----	-----
1433	D86-A	1.5	1.3
1447		-----	-----
1448	D86-A	1.5	0.5
1520		-----	-----
1528	D86-A	1.6	0.4
1538	D86-A	0.8	0.8
1610	IP123-A	2.1	0.4
1616	D86-A	1.8	0.2
1631	D86-A	0.9	0.5
1634	D86-A	1.7	0.4
1635	D86-A	1.2	0.8
1636	D86-A	1.7	0.9
1651	D86-A	1.95	0.65
1715	D86-A	1.4	1.2
1720	D86-A	1.2	0.3
1724	D86-A	1.9	0.6
1738	D86	2.1	0.5
1810	D86-A	1.0	1.3
1811		-----	-----
1833	D86-A	1.2	0.7
1842		-----	-----
1852	D86-A	2.0	0.4
1913	D86-A	2.0	0.8
1948	D86-A	1.7	0.3
1952	D86-A	1.6	0.5
2129	D86-A	1.7	0.1
2130	D86-A	1.2	1.3
2133	D86-A	1.6	0.8
2136	D86-A	1.2	2.0

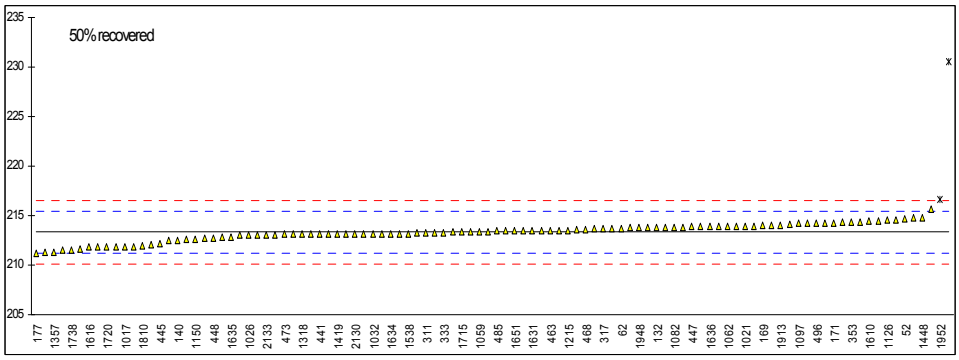
Determination of Distillation ASTM D86 (automated) on sample #11063; results in °C (graphics)

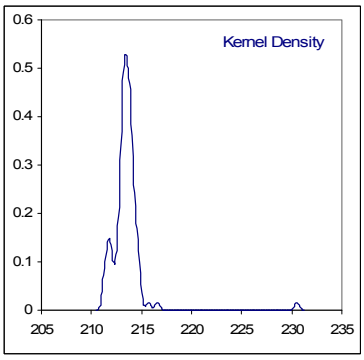


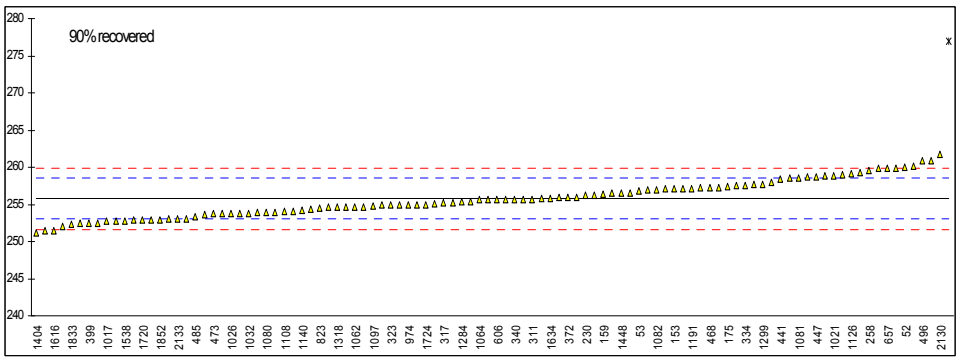


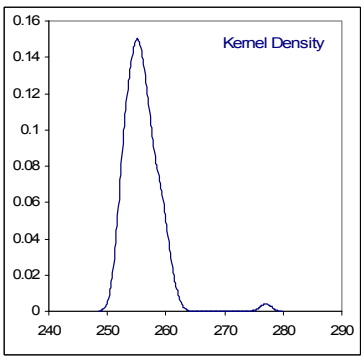


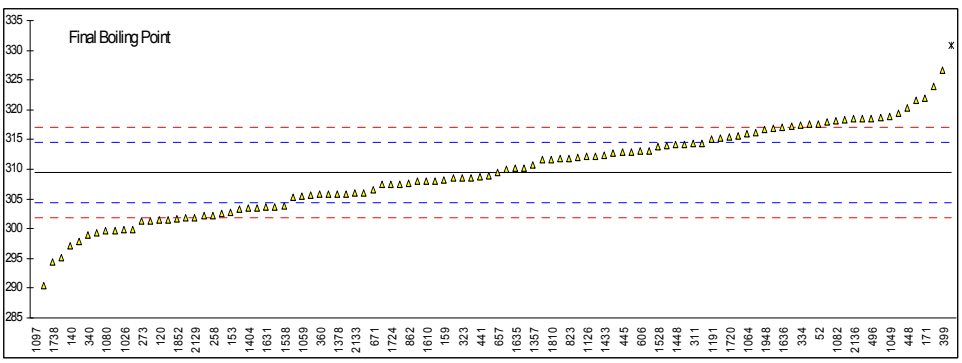


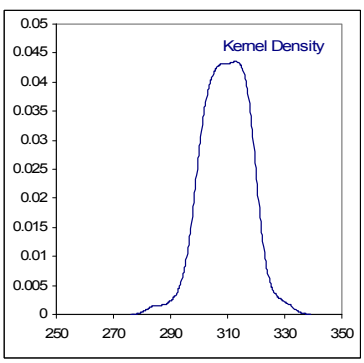












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Determination of Distillation ASTM D86 (manual) on sample #11063; results in °C

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		-----		-----		-----		-----		-----		
216	D86-M	182.0		195.0		214.0		255.0		315.0		
221	D86-M	182.0		196.0		214.0		253.0		316.0		
224	D86-M	183.92		195.15		213.65		254.06		299.93		
225		-----		-----		-----		-----		-----		
228	D86-M	185.0		195.0		213.0		255.0		292.0		
230		-----		-----		-----		-----		-----		
237	D86-M	181.5		195.5		213.0		255.5		299.0		
252	D86-M	181.0		193.0		213.0		254.0		296.0		
253	D86-M	183.0		194.0		212.0		254.0		305.0		
254	D86-M	181.0		193.0		213.0		254.0		296.0		
256		-----		-----		-----		-----		-----		
258		-----		-----		-----		-----		-----		
273		-----		-----		-----		-----		-----		
311		-----		-----		-----		-----		-----		
317		-----		-----		-----		-----		-----		
323		-----		-----		-----		-----		-----		
333		-----		-----		-----		-----		-----		
334		-----		-----		-----		-----		-----		
335		-----		-----		-----		-----		-----		
340		-----		-----		-----		-----		-----		
353		-----		-----		-----		-----		-----		
360		-----		-----		-----		-----		-----		
369		-----		-----		-----		-----		-----		
370	D86-M	184.6		195.1		213.0		252.0		305.9		
372		-----		-----		-----		-----		-----		
391		-----		-----		-----		-----		-----		
399		-----		-----		-----		-----		-----		
440		-----		-----		-----		-----		-----		
441		-----		-----		-----		-----		-----		
445		-----		-----		-----		-----		-----		
447		-----		-----		-----		-----		-----		
448		-----		-----		-----		-----		-----		
463		-----		-----		-----		-----		-----		
468		-----		-----		-----		-----		-----		
473		-----		-----		-----		-----		-----		
485		-----		-----		-----		-----		-----		
496		-----		-----		-----		-----		-----		
604		-----		-----		-----		-----		-----		
606		-----		-----		-----		-----		-----		
608	D86-M	182.5		194.0		213.5		254.5		284.5		
631		-----		-----		-----		-----		-----		
657		-----		-----		-----		-----		-----		
663		-----		-----		-----		-----		-----		
671		-----		-----		-----		-----		-----		
823		-----		-----		-----		-----		-----		
851		-----		-----		-----		-----		-----		
862		-----		-----		-----		-----		-----		
869	D86-M	183.5		195.0		215.0		259.5	G(0.05)	306.0		
962	D86-M	184.0		195.0		213.5		254.5		299.5		
963	D86-M	184.5		195.5		213.5		255.0		299.0		
974		-----		-----		-----		-----		-----		
994	D86-M	183.5		195.0		214.0		255.0		314.5		
995		-----		-----		-----		-----		-----		
996	D86-M	183.5		195.0		213.5		254.5		314.0		
997		-----		-----		-----		-----		-----		
1016		-----		-----		-----		-----		-----		
1017		-----		-----		-----		-----		-----		
1021		-----		-----		-----		-----		-----		
1026		-----		-----		-----		-----		-----		

1032		-----	-----	-----	-----	-----
1038		-----	-----	-----	-----	-----
1039		-----	-----	-----	-----	-----
1049		-----	-----	-----	-----	-----
1059		-----	-----	-----	-----	-----
1062		-----	-----	-----	-----	-----
1064		-----	-----	-----	-----	-----
1065		-----	-----	-----	-----	-----
1079		-----	-----	-----	-----	-----
1080		-----	-----	-----	-----	-----
1081		-----	-----	-----	-----	-----
1082		-----	-----	-----	-----	-----
1097		-----	-----	-----	-----	-----
1108		-----	-----	-----	-----	-----
1109		-----	-----	-----	-----	-----
1126		-----	-----	-----	-----	-----
1140		-----	-----	-----	-----	-----
1150		-----	-----	-----	-----	-----
1191		-----	-----	-----	-----	-----
1212		-----	-----	-----	-----	-----
1215		-----	-----	-----	-----	-----
1264	D86-M	181.0	193.0	212.0	252.0	317.0
1279	D86-M	185.0	194.5	214.0	257.5	317.0
1284		-----	-----	-----	-----	-----
1297		-----	-----	-----	-----	-----
1299		-----	-----	-----	-----	-----
1316		-----	-----	-----	-----	-----
1318		-----	-----	-----	-----	-----
1357		-----	-----	-----	-----	-----
1378		-----	-----	-----	-----	-----
1395		-----	-----	-----	-----	-----
1399		-----	-----	-----	-----	-----
1404		-----	-----	-----	-----	-----
1419		-----	-----	-----	-----	-----
1433		-----	-----	-----	-----	-----
1447	D86-M	183.62	194.36	214.68	255.66	315.10
1448		-----	-----	-----	-----	-----
1520	D86-M	185.0	195.5	213.0	255.5	321.0
1528		-----	-----	-----	-----	-----
1538		-----	-----	-----	-----	-----
1610		-----	-----	-----	-----	-----
1616		-----	-----	-----	-----	-----
1631		-----	-----	-----	-----	-----
1634		-----	-----	-----	-----	-----
1635		-----	-----	-----	-----	-----
1636		-----	-----	-----	-----	-----
1651		-----	-----	-----	-----	-----
1715		-----	-----	-----	-----	-----
1720		-----	-----	-----	-----	-----
1724		-----	-----	-----	-----	-----
1738		-----	-----	-----	-----	-----
1810		-----	-----	-----	-----	-----
1811	D86-M	184.0	193.5	211.8	254.8	313.2
1833		-----	-----	-----	-----	-----
1842		-----	-----	-----	-----	-----
1852		-----	-----	-----	-----	-----
1913		-----	-----	-----	-----	-----
1948		-----	-----	-----	-----	-----
1952		-----	-----	-----	-----	-----
2129		-----	-----	-----	-----	-----
2130		-----	-----	-----	-----	-----
2133		-----	-----	-----	-----	-----
2136		-----	-----	-----	-----	-----
	normality	OK	not OK	OK	OK	not OK
	n	20	20	20	19	20
	outliers	0	0	0	1	0
	mean (n)	183.21	194.61	213.36	254.50	306.28
	st.dev. (n)	1.385	0.906	0.832	1.272	10.140
	R(calc.)	3.88	2.54	2.33	3.56	28.39
	R(D86:11-M)	3.86	2.60	2.80	4.27	5.27

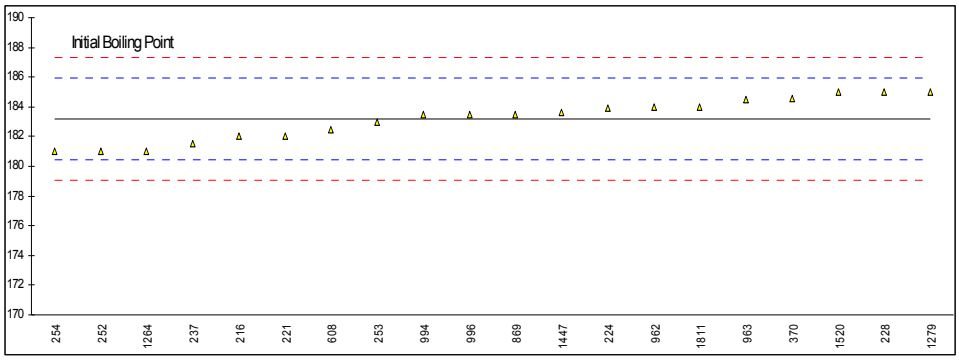
Corrections:
Lab 1738 first reported 198.5 (50%)

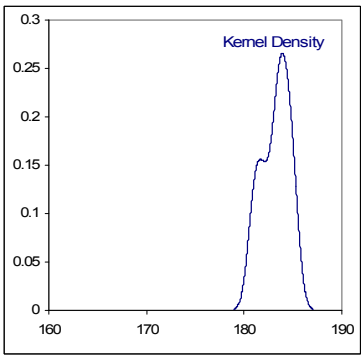
Determination of Distillation ASTM D86 (manual) on sample #11063; results in %V/V

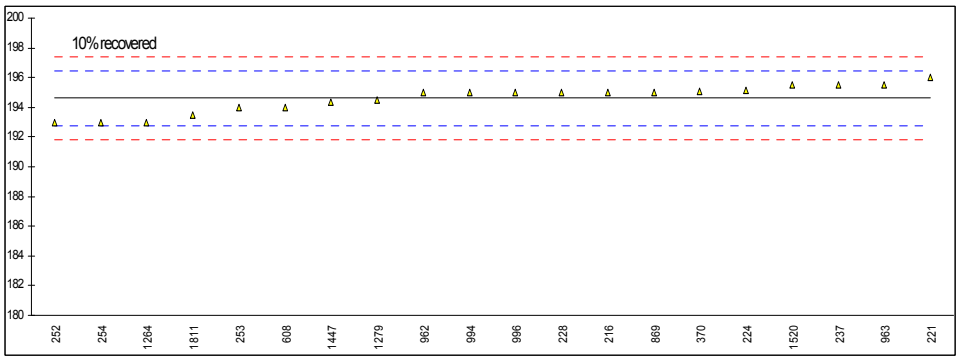
lab	method	residue	mark	loss	mark	Remark
52		-----		-----		
53		-----		-----		
62		-----		-----		
120		-----		-----		
132		-----		-----		
140		-----		-----		
150		-----		-----		
153		-----		-----		
159		-----		-----		
169		-----		-----		
171		-----		-----		
175		-----		-----		
177		-----		-----		
194		-----		-----		
216	D86-M	1.0		0.3		
221	D86-M	1.9		0.1		
224	D86-M	2.0		0.5		
225		-----		-----		
228	D86-M	2.4		0.6		
230		-----		-----		
237	D86-M	1.0		0.5		
252		-----		-----		
253	D86-M	1.2		0.7		
254		-----		-----		
256		-----		-----		
258		-----		-----		
273		-----		-----		
311		-----		-----		
317		-----		-----		
323		-----		-----		
333		-----		-----		
334		-----		-----		
335		-----		-----		
340		-----		-----		
353		-----		-----		
360		-----		-----		
369		-----		-----		
370	D86-M	1.5		0.0		
372		-----		-----		
391		-----		-----		
399		-----		-----		
440		-----		-----		
441		-----		-----		
445		-----		-----		
447		-----		-----		
448		-----		-----		
463		-----		-----		
468		-----		-----		
473		-----		-----		
485		-----		-----		
496		-----		-----		
604		-----		-----		
606		-----		-----		
608	D86	3.4		0.1		
631		-----		-----		
657		-----		-----		
663		-----		-----		
671		-----		-----		
823		-----		-----		
851		-----		-----		
862		-----		-----		
869	D86-M	2.1		0.9		
962	D86-M	1.5		0.5		
963	D86-M	1.5		0.5		
974		-----		-----		
994	D86-M	1.0		0.5		
995		-----		-----		
996	D86-M	1.5		0.5		
997		-----		-----		
1016		-----		-----		
1017		-----		-----		
1021		-----		-----		
1026		-----		-----		

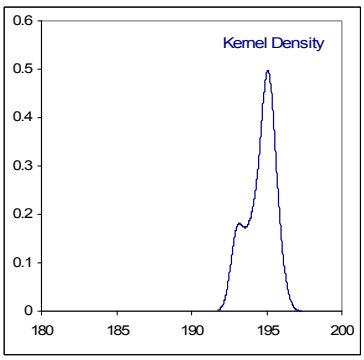
1032		-----	-----
1038		-----	-----
1039		-----	-----
1049		-----	-----
1059		-----	-----
1062		-----	-----
1064		-----	-----
1065		-----	-----
1079		-----	-----
1080		-----	-----
1081		-----	-----
1082		-----	-----
1097		-----	-----
1108		-----	-----
1109		-----	-----
1126		-----	-----
1140		-----	-----
1150		-----	-----
1191		-----	-----
1212		-----	-----
1215		-----	-----
1264	D86-M	1.5	0.5
1279	D86-M	1.4	0.4
1284		-----	-----
1297		-----	-----
1299		-----	-----
1316		-----	-----
1318		-----	-----
1357		-----	-----
1378		-----	-----
1395		-----	-----
1399		-----	-----
1404		-----	-----
1419		-----	-----
1433		-----	-----
1447	D86-M	1.0	1.0
1448		-----	-----
1520	D86-M	1.3	0.2
1528		-----	-----
1538		-----	-----
1610		-----	-----
1616		-----	-----
1631		-----	-----
1634		-----	-----
1635		-----	-----
1636		-----	-----
1651		-----	-----
1715		-----	-----
1720		-----	-----
1724		-----	-----
1738		-----	-----
1810		-----	-----
1811	D86-M	1.2	1.3
1833		-----	-----
1842		-----	-----
1852		-----	-----
1913		-----	-----
1948		-----	-----
1952		-----	-----
2129		-----	-----
2130		-----	-----
2133		-----	-----
2136		-----	-----

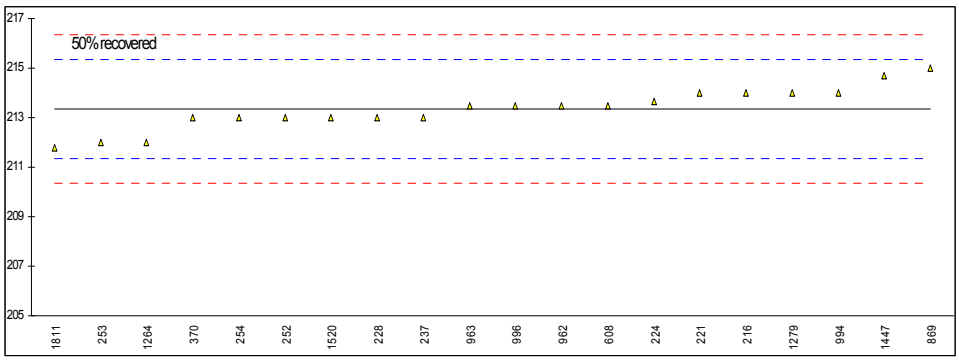
Determination of Distillation ASTM D86 (manual) on sample #11063; results in °C (graphics)

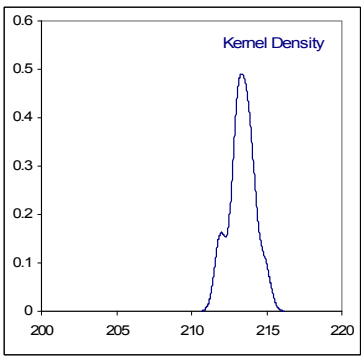


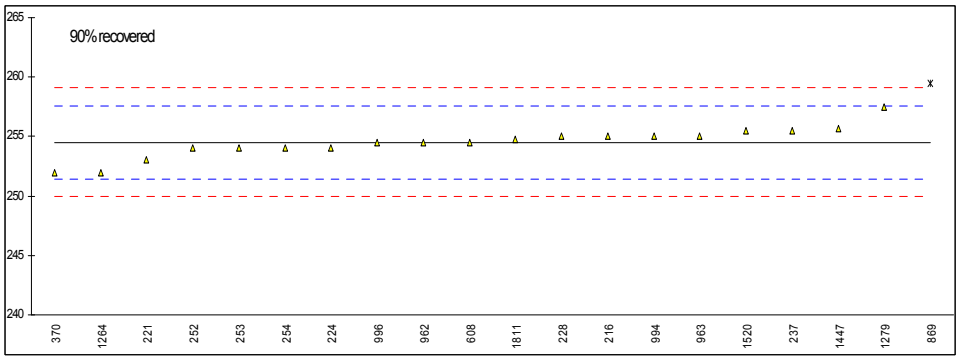


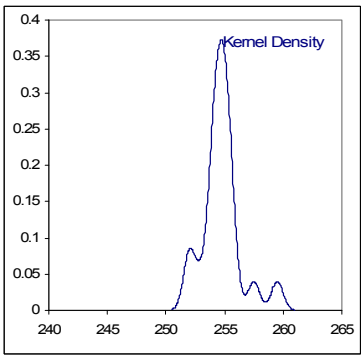


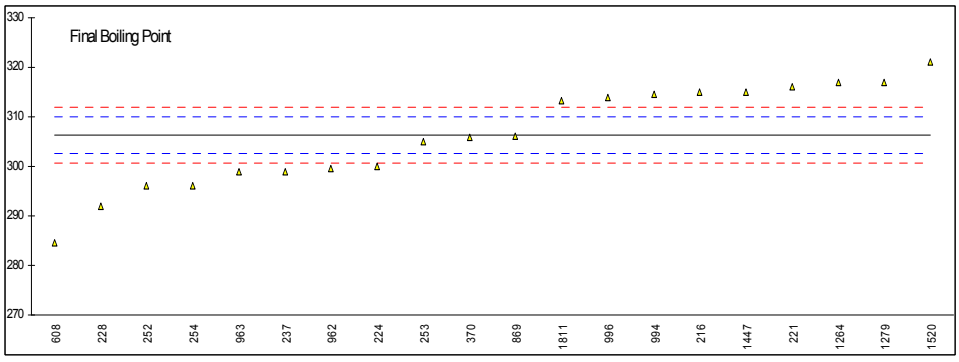


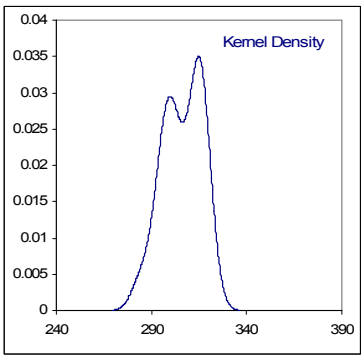












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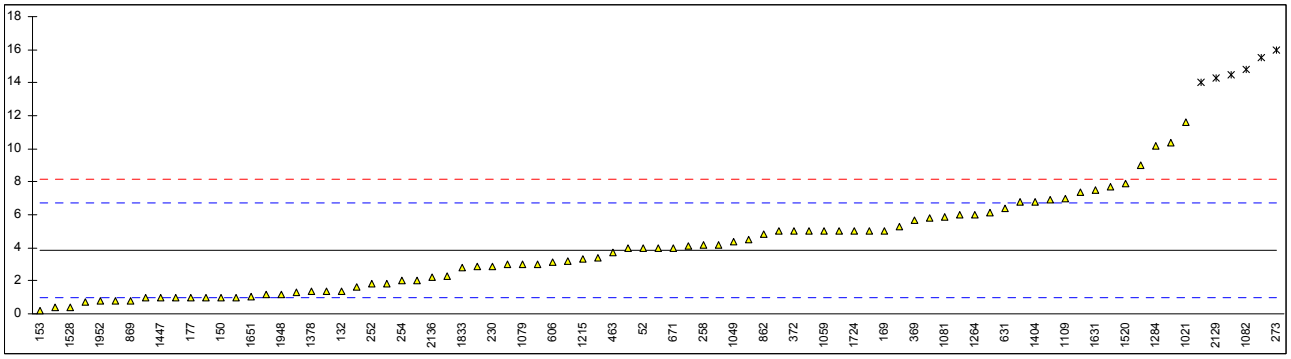
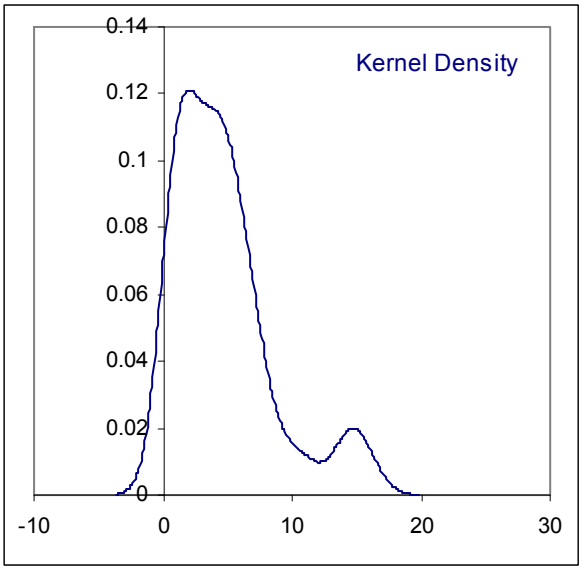
Determination of Existent Gum on sample #11063; results in mg/100 mL

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D381	4		0.10	1032	D381	1.3		-1.78
53	D381	4.5		0.45	1038		-----		-----
62	IP540	6.1		1.57	1039	D381	14	G(0.05)	7.07
120	D381	0.7		-2.20	1049	D381	4.4		0.38
132	D381	1.4		-1.71	1059	D381	5		0.80
140	D381	1		-1.99	1062	D381	<1		<-1.99
150	D381	1.0		-1.99	1064	D381	0.4		-2.41
153	D381	0.2		-2.55	1065		-----		-----
159		-----		-----	1079	D381	3		-0.59
169	D381	5.0		0.80	1080		-----	W	-----
171	D381	1.0		-1.99	1081	D381	5.9		1.43
175		-----		-----	1082	IP540	14.8	DG(0.05)	7.63
177	D381	1.0		-1.99	1097	IP540	4.2		0.24
194		-----		-----	1108		-----		-----
216	D381	4.1		0.17	1109	IP540	7.0		2.19
221		-----		-----	1126		-----		-----
224		-----		-----	1140		-----		-----
225		-----		-----	1150	ISO6246	10.4		4.56
228		-----		-----	1191	IP540	15.5	DG(0.05)	8.12
230	IP540	2.9		-0.66	1212		-----		-----
237	D381	6.9		2.12	1215	D381	3.3		-0.39
252	D381	1.8		-1.43	1264	D381	6.0		1.50
253		-----		-----	1279		-----		-----
254	D381	2		-1.29	1284	D381	10.2		4.42
256		-----		-----	1297		-----		-----
258	D381	4.2		0.24	1299	D381	3		-0.59
273	D381	16	DG(0.05)	8.47	1316	D381	3.2		-0.45
311	D381	4		0.10	1318		-----		-----
317	D381	4		0.10	1357		-----		-----
323		-----		-----	1378	D381	1.4		-1.71
333		-----		-----	1395		-----		-----
334		-----		-----	1399		-----		-----
335		-----		-----	1404	D381	6.8		2.05
340		-----		-----	1419	ISO6246	1.6		-1.57
353	IP540	1.2		-1.85	1433		-----		-----
360	D381	2.9		-0.66	1447	D381	1.0		-1.99
369	IP540	5.7		1.29	1448		-----		-----
370		-----		-----	1520	D381	7.9		2.82
372	IP540	5		0.80	1528	IP540	0.4		-2.41
391	D381	5		0.80	1538		-----		-----
399		-----		-----	1610	IP123	5.3		1.01
440	IP540	7.7		2.68	1616	IP540	5		0.80
441	IP540	5		0.80	1631	D381	7.5		2.54
445	IP540	2		-1.29	1634	D381	1.0		-1.99
447	IP540	14.5	DG(0.05)	7.42	1635		-----		-----
448	D381	9		3.59	1636		-----		-----
463	D381	3.7		-0.11	1651	D381	1.05		-1.95
468		-----		-----	1715		-----		-----
473	D381	7.4		2.47	1720		-----		-----
485		-----		-----	1724	D381	5.0		0.80
496	D381	2.3		-1.08	1738		-----		-----
604		-----		-----	1810		-----		-----
606	IP540	3.1		-0.52	1811		-----		-----
608	D381	1.0		-1.99	1833	D381	2.8		-0.73
631	IP540	6.4		1.78	1842		-----		-----
657	D381	5	C	0.80	1852	IP540	6.8		2.05
663		-----		-----	1913	D381	3.4		-0.32
671	D381	4		0.10	1948	D381	1.2		-1.85
823	D381	1.8		-1.43	1952	D381	0.8		-2.13
851	D381	0.8		-2.13	2129	D381	14.3	C,G(0.05)	7.28
862	D381	4.8		0.66	2130	D381	6		1.50
869	D381	0.8		-2.13	2133	D381	1.40		-1.71
962		-----		-----	2136	D381	2.2		-1.15
963		-----		-----					
974	D381	5.8		1.36					
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
1016		-----		-----					
1017		-----		-----					
1021	D381	11.6		5.40					
1026	ISO6246	3		-0.59					

normality	OK
n	77
outliers	6
mean (n)	3.853
st.dev. (n)	2.6177
R(calc.)	7.329
R(D381:09)	4.017

Corrections
Lab 273 first reported 40
Lab 657 first reported 19
Lab 2129 first reported 3.8



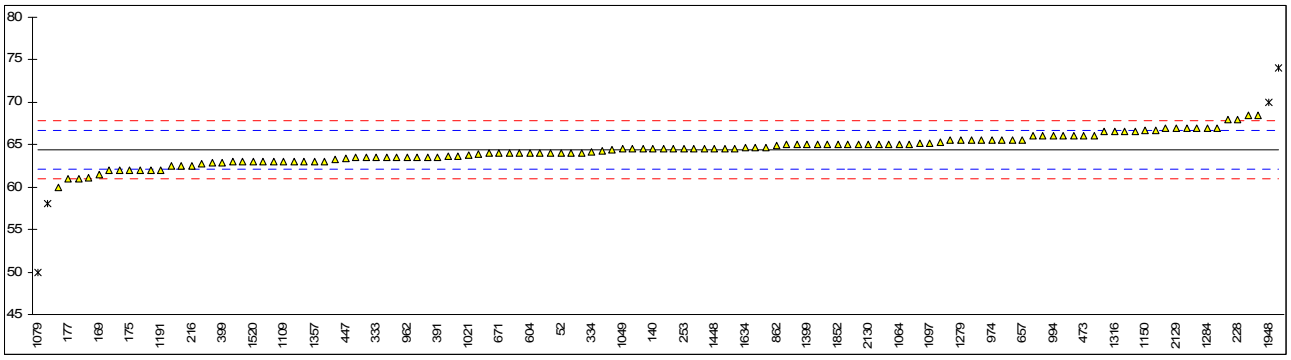


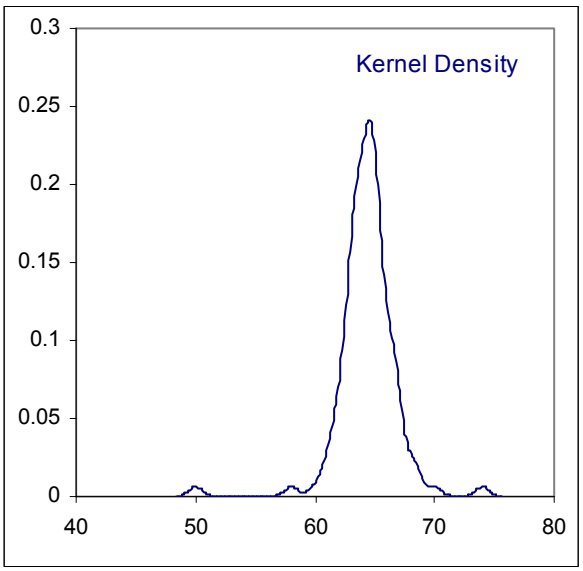
Determination of Flash Point on sample #11063; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D56	64.0		-0.37	1032	IP170-AE	64.5		0.06
53	D56-F	63.5		-0.81	1038		-----		-----
62	D93-F	67.0		2.25	1039	IP170-E	63.5		-0.81
120	D56-E	66.7		1.99	1049	ISO13736-E	64.5		0.06
132	D56-AE	63.0		-1.25	1059	IP170-E	64.5		0.06
140	D56-AE	64.5		0.06	1062	IP170-	66.0		1.38
150	D56-AE	65.5		0.94	1064	IP170-E	65.0		0.50
153	D56-F	63.3		-0.99	1065		-----		-----
159	D56-E	63.89		-0.47	1079	IP170-AE	50.0	G(0.01)	-12.62
169	D56-MF	61.5		-2.56	1080	D93-AE	65		0.50
171	IP170-AF	68.5		3.56	1081	IP170-	65.5		0.94
175	D56-MF	62.0		-2.12	1082	D56-AE	64.3		-0.11
177	D56-MF	61.0		-3.00	1097	ISO13736-AF	65.2		0.68
194		-----		-----	1108	D56-E	60		-3.87
216	IP170-F	62.5		-1.69	1109	IP170-AF	63.0		-1.25
221	D3828-MF	64.0		-0.37	1126	D93-AE	66.5		1.81
224	IP170-MF	64.03		-0.35	1140	IP170-AE	63.5		-0.81
225		-----		-----	1150	D56-MF	66.65		1.94
228	D3828-ME	68.0		3.13	1191	D56-AE	62.0		-2.12
230	IP170-MF	64.4		-0.02	1212	IP170-MF	>65.0		-----
237	IP170-ME	64.5		0.06	1215	IP170-	64.0		-0.37
252	IP170-MF	64.0		-0.37	1264	IP170-M	63		-1.25
253	IP170-MF	64.5		0.06	1279	IP170-E	65.5		0.94
254	IP170-MF	>60.0		-----	1284	IP170-E	67.0		2.25
256		-----		-----	1297	D56-AE	63.0		-1.25
258	IP170-MF	64.6		0.15	1299	IP170-AE	65.5		0.94
273		-----		-----	1316	IP170-AE	66.5		1.81
311	IP170-E	65.5		0.94	1318	IP170-AE	65.0		0.50
317	IP170-E	64.5		0.06	1357	IP170-AE	63.0		-1.25
323	IP170-AF	65.0		0.50	1378	IP170-AE	64.5		0.06
333	IP170-F	63.5		-0.81	1395		-----		-----
334	IP170-F	64.2		-0.20	1399	IP170-	65.0		0.50
335		-----		-----	1404	IP170-AF	68.0		3.13
340	IP170-AF	66.0		1.38	1419	D56-AF	64.5		0.06
353	IP170-	61.975		-2.15	1433	D93-AE	66	C	1.38
360	D56-AE	64.5		0.06	1447	IP170-AE	67		2.25
369	IP170-AE	63.0		-1.25	1448	IP170-AE	64.5		0.06
370	IP170-MF	62.8		-1.42	1520	D56AE	63.00		-1.25
372	IP170-AE	64.0		-0.37	1528	D56-AE	65.0		0.50
391	IP170-MF	63.5		-0.81	1538	D56-E	64.7		0.24
399	IP170-MF	62.9		-1.34	1610	IP170-F	63.5		-0.81
440	IP170-MF	63.7		-0.64	1616	IP170-AF	63.5		-0.81
441	IP170-AF	62.0		-2.12	1631	IP170-E	67		2.25
445	IP170-MF	63.5		-0.81	1634	IP170-AE	64.6		0.15
447	IP170-AF	63.4		-0.90	1635	D56-MF	68.5		3.56
448	IP170-AF	65.25		0.72	1636	D56-AE	65.0		0.50
463	IP170-AF	65.5		0.94	1651	IP170-AE	64.5		0.06
468	IP170-E	65.0		0.50	1715	D56-AE	61		-3.00
473	IP170-E	66.0		1.38	1720	D3828-AF	64.0		-0.37
485	D56-MF	62.5		-1.69	1724	IP170-F	64.0		-0.37
496	D3828	58.0	G(0.05)	-5.62	1738	IP170-	61.1		-2.91
604	IP170-AF	64.0		-0.37	1810	D93-F	67.0		2.25
606	IP170-AE	66.0		1.38	1811	IP170-AF	62.0		-2.12
608	IP170-MF	63.58		-0.74	1833	IP170-AE	62		-2.12
631	D56-F	63.0		-1.25	1842		-----		-----
657	IP170-F	65.5	C	0.94	1852	IP170-E	65.0		0.50
663	D56-MF	63.0		-1.25	1913	IP170-F	65.2		0.68
671	IP170-F	64		-0.37	1948	IP170-AE	70.0	G(0.05)	4.88
823	IP170-F	65.0		0.50	1952	IP170-AE	74.0	G(0.01)	8.38
851	IP170-F	62.95		-1.29	2129	IP170-F	67.0		2.25
862	IP170-AE	64.88		0.40	2130	IP170-AF	65.0		0.50
869	IP170-MF	62.88		-1.35	2133	D93-AE	66.5		1.81
962	IP170-	63.5		-0.81	2136	D56-AE	62.5		-1.69
963	IP170-MF	65.0		0.50					
974	IP170-MF	65.5		0.94					
994	D93-MF	66.0		1.38					
995		-----		-----					
996	D93-MF	66.5		1.81					
997		-----		-----					
1016		-----		-----					
1017	IP170-E	65.0		0.50					
1021	D56-AE	63.802		-0.55					
1026	IP170-AE	66.0		1.38					

		After excl. D93 results	Only IP170 results	Only ASTM D56 results
normality	OK	OK	OK	OK
n	118	110	78	29
outliers	4	4	3	0
mean (n)	64.43	64.29	64.49	63.65
st.dev. (n)	1.627	1.592	1.407	1.843
R(calc.)	4.56	4.46	3.94	5.16
R(IP170:09)	3.20	3.20	3.20	5.80

Corrections
Lab 657 first reported 42.0
Lab 1433 first reported 52.5



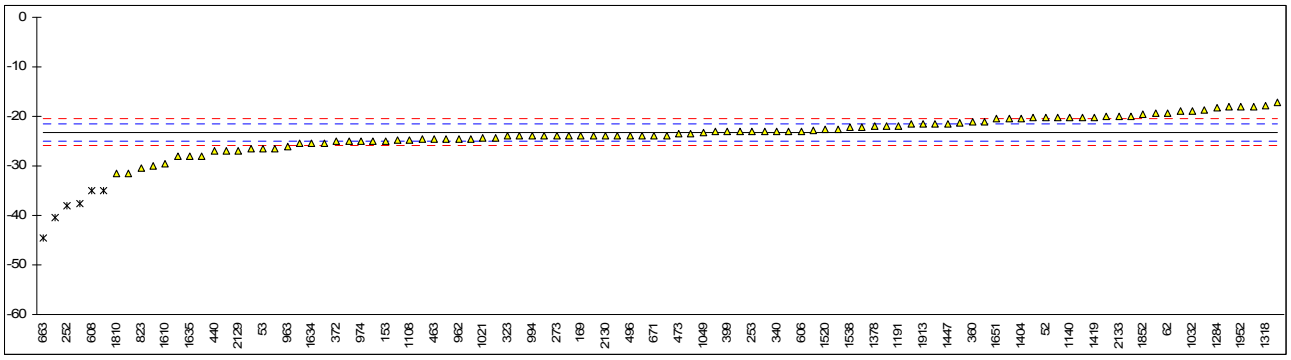


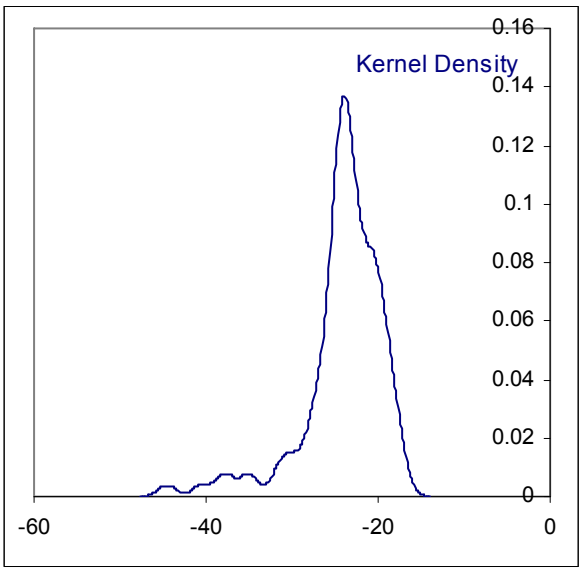
Determination of Freezing Point on sample #11063; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D5972	-20.3		3.27	1032	D5972-A	-19		4.73
53	D2386-M	-26.5		-3.67	1038		-----		-----
62	D5972-A	-19.3		4.39	1039	D2386-A	-22.9		0.36
120	D5972-A	-21		2.49	1049	D7153-A	-23.3		-0.09
132		-----		-----	1059	D2386-M	-23.0		0.25
140	D5972	-25.5		-2.55	1062	IP529-A	-17.1		6.85
150	D2386-M	-26.5		-3.67	1064	D2386-M	-22.5		0.81
153	D2386-M	-25.0		-1.99	1065		-----		-----
159	D2386-A	-40.50	G(0.01)	-19.35	1079	D5972-A	-20.2		3.38
169	D2386-M	-24.0		-0.87	1080		-----		-----
171	D5922-A	-24		-0.87	1081	D7153-A	-18		5.85
175		-----		-----	1082	IP529-A	-19.4		4.28
177	D2386-M	-25.0		-1.99	1097	ISO3013-M	-22.0		1.37
194		-----		-----	1108	D5901	-24.7		-1.66
216	D2386-M	-28.0		-5.35	1109	D5972-A	-21.6		1.81
221		-----		-----	1126		-----		-----
224		-----		-----	1140	D7153-A	-20.2		3.38
225		-----		-----	1150	ISO3013-M	-31.5		-9.27
228		-----		-----	1191	IP529-A	-21.85		1.53
230		-----		-----	1212		-----		-----
237	D2386-M	-23.0		0.25	1215	D2386-M	-25.0		-1.99
252	D2386-M	-38.0	C,G(0.05)	-16.55	1264		-----		-----
253	D2386-M	-23		0.25	1279	D2386-	-24.0		-0.87
254	D2386-M	-37.5	G(0.05)	-15.99	1284	D7153-A	-18.2		5.62
256		-----		-----	1297		-----		-----
258	D2386-M	-35.0	DG(0.01)	-13.19	1299	D2386-M	-24.5		-1.43
273	D2386-M	-24		-0.87	1316	D2386-A	-20.1		3.49
311	D2386-M	-25.5		-2.55	1318	D7153-A	-17.9		5.96
317	D5972-A	-23.5		-0.31	1357		-----		-----
323	D2386-M	-24.0		-0.87	1378	D2386-M	-22		1.37
333	IP529A	-20.3		3.27	1395		-----		-----
334		-----		-----	1399	D5972-A	-20.0		3.61
335		-----		-----	1404	D2386-A	-20.4		3.16
340	D2386-M	-23.0		0.25	1419	D5972-A	-20.2		3.38
353	IP16M	-23.95		-0.82	1433		-----		-----
360	D7153-A	-21.1		2.37	1447	D2386-A	-21.5		1.93
369	D2386-M	-24		-0.87	1448		-----		-----
370	D2386-M	-24.5		-1.43	1520	D2386-M	-22.5		0.81
372	D2386-M	-25		-1.99	1528	D7154-A	-22.10		1.25
391	D2386-M	-24		-0.87	1538	D5972-A	-22.2		1.14
399	D2386-M	-23.0		0.25	1610	IP16-M	-29.5		-7.03
440	IP16-M	-27.0		-4.23	1616	D7153-A	-20.5		3.05
441	IP529-A	-18.8		4.95	1631	D2386-A	-21.3		2.15
445	D2386-M	-24.5		-1.43	1634	D2386-M	-25.5		-2.55
447	D2386-M	-27.0		-4.23	1635	D2386-M	-28		-5.35
448	D2386-M	-23.0		0.25	1636	D2386-M	-30.0		-7.59
463	D2386-M	-24.5		-1.43	1651	D2386-A	-20.54		3.00
468	D2386-M	-24.0		-0.87	1715		-----		-----
473	D2386-M	-23.5		-0.31	1720	D2386-A	-19.0		4.73
485		-----		-----	1724	D2386-M	-24.0		-0.87
496	D2386-M	-24.0		-0.87	1738		-----		-----
604		-----		-----	1810	D2386-M	-31.5		-9.27
606	D2386-M	-23.0		0.25	1811	D2386-A	-21.5		1.93
608	D2386-M	-35	DG(0.01)	-13.19	1833	D2386-A	-20.3		3.27
631		-----		-----	1842		-----		-----
657	D2386-M	-28.0		-5.35	1852	D7153-A	-19.5		4.17
663	D2386-A	-44.5	C,G(0.01)	-23.83	1913	D7153-A	-21.5		1.93
671	D2386-	-24.0		-0.87	1948		-----		-----
823	D2386-M	-30.5		-8.15	1952	D7153-A	-18.1		5.73
851	D2386-M	-24.4		-1.32	2129	D2386-M	-27.0		-4.23
862	D2386-A	-26.51		-3.68	2130	D2386-M	-24.0		-0.87
869	D2386-M	-24.8		-1.77	2133	D7153-A	-20.1		3.49
962	D2386-M	-24.5		-1.43	2136	D7153-A	-18.1		5.73
963	D2386-M	-26		-3.11					
974	D2386-M	-25.0	C	-1.99					
994	D2386-M	-24		-0.87					
995		-----		-----					
996		-----		-----					
997		-----		-----					
1016		-----		-----					
1017		-----		-----					
1021	D2386-M	-24.42		-1.34					
1026	D2386-M	-23		0.25					

		Only D2386	Only D5972	Only D7153
normality	not OK	not OK	not OK	OK
n	96	63	13	18
outliers	6	6	0	0
mean (n)	-23.22	-24.41	-21.32	-19.78
st.dev. (n)	3.062	2.476	1.961	1.733
R(calc.)	8.57	6.93	5.49	4.85
R(D2386:06)	2.50	2.50	0.80	0.90

Corrections
Lab 252 first reported -37
Lab 663 first reported -40.5





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

lab	method	tube	mark	Delta P	mark	volume	temp	software type	remarks
52	D3241	3P		<5	false-?	450	260	none	
53		-----		-----		-----	-----		
62	D3241	<2		>25		-----	260		
120	D3241	1	false-?	-----		470	260	2.1	
132	D3241	<3		280.1		450	260	3.4	
140	D3241	<3		-----		450	260	2.1	
150	D3241	3		>250		450	-----	2.1	
153	D3241	3A		285.5		510	260	3.1	
159	D3241	<4		>250		450	260	2.1	
169	D3241	<2P		250		450	260	2.1	
171	D3241	<1	false-?	125		450	260	2.1	
175	D3241	<3		250		440	260	2.1	
177	D3241	<3		250		450	260	2.1	
194		-----		-----		-----	-----		
216		-----		-----		-----	-----		
221		-----		-----		-----	-----		
224		-----		-----		-----	-----		
225		-----		-----		-----	-----		
228		-----		-----		-----	-----		
230	D3241	<1	false-?	<1	false-?	450	260		
237	D3241	3		180		450	260	3.1	
252	D3241	<1	false-?	>25		450	260	2.0	
253	D3241	>3		>250		450	260		
254	D3241	<1	false-?	>25		450	260	1.5	
256		-----		-----		-----	-----		
258	D3241	<1.0	false-?	0.2	false-?	445	260	none	
273		-----		-----		-----	-----		
311	D3241	3AP		280		440	260	3.4	
317		-----		-----		-----	-----		
323		-----		-----		-----	-----		
333	D3241	2		280		291	260	3.4	
334	D3241	2P		280		450	260	3.4	
335		-----		-----		-----	-----		
340	D3241	3A		125		450	260	3.4	
353		-----		-----		-----	-----		
360		-----		-----		-----	-----		
369	D3241	<3		<25	false-?	420	260		
370		-----		-----		-----	-----		
372	D3241	<4A		MAX250		450	260	2.1	
391		-----		-----		-----	-----		
399	D3241	2		0	false-?	450	260		
440	IP323	3		250		330	260		
441	IP123	2		280		455	260	3.1	
445	D3241	3P		280		450	260		
447	D3241	3P		251		450	260	2.1	
448	D3241	<3		>125		455	260	3.4	
463		-----		-----		-----	-----		
468		-----		-----		-----	-----		
473		-----		-----		-----	-----		
485		-----		-----		-----	-----		
496		-----		-----		-----	-----		
604		-----		-----		-----	-----		
606	D3241	2		0.0	false-?	370	260	none	
608		-----		-----		-----	-----		
631		-----		-----		-----	-----		
657	D3241	1	false-?	250		450	260	2.1	
663		-----		-----		-----	-----		
671	D3241	2P		249		450	260		
823	D3241	4		280		450	260	3.4	
851	D3241	2P		256		500	260	3.4	
862	D3241	1A	false-?	280.0		500	260	3.4	
869		-----		-----		-----	-----		
962		-----		-----		-----	-----		
963	D3241	1	false-?	280		450	260	3.1	
974	D3241	<1/NP	false-?	250		450	260	2.03	
994		-----		-----		-----	-----		
995		-----		-----		-----	-----		
996		-----		-----		-----	-----		
997		-----		-----		-----	-----		
1016	D3241	3A		>280		460	260	3.4	
1017		-----		-----		-----	-----		
1021		-----		-----		-----	-----	2.1	
1026	D3241	<1	false-?	1.0	false-?	-----	260		

1032	D3241	<4		125		430	260	
1038		-----		-----		-----	-----	
1039	D3241	<1	false-?	0.1	false-?	450	260	
1049	D3241	1	false-?	280.0		450	260	
1059		-----		-----		-----	-----	
1062	D3241	3P		280		510	260	3.2
1064	D3241	3		280		450	260	
1065		-----		-----		-----	-----	
1079	D3241	<1	false-?	280		450	260	3.4
1080		-----		-----		-----	-----	
1081		-----		-----		-----	-----	
1082		-----		-----		-----	-----	
1097	D3241	4P		125		340	260	
1108		-----		-----		-----	-----	
1109	D3241	<3		251		435	260	2.1
1126		-----		-----		-----	-----	
1140	IP323	<1	false-?	11.3	false-?	450	-----	3.1
1150		-----		-----		-----	-----	
1191		-----		97		-----	260	
1212	D3241	<1	false-?	<2	false-?	515	260	none
1215	D3241	1	false-?	250		450	260	
1264		-----		-----		-----	-----	
1279	D3241	3		280		510	260	3.2
1284		-----		-----		-----	-----	
1297		-----		-----		-----	-----	
1299	D3241	>4P		280		460	260	3.2
1316	D3241	4P		150		440	260	none
1318	D3241	<4P		280.1		450	260	3.1
1357		-----		-----		-----	-----	
1378	D3241	1	false-?	1	false-?	480	260	2.1
1395		-----		-----		-----	-----	
1399		-----		-----		-----	-----	
1404		-----		-----		-----	-----	
1419		-----		-----		-----	-----	
1433	D3241	1	false-?	191		450	260	2.0B
1447	D3241	<3		280		510	260	3.2
1448		-----		-----		-----	-----	
1520	D3241	4		>250		470	260	2.1
1528	D3241	1	false-?	250		450	260	2.1
1538	D3241	1	false-?	280		450	260	3.2
1610	D3241	2		25	false-?	159	260	
1616		-----		-----		-----	-----	
1631	D3241	<1	false-?	280		510	260	
1634		-----		-----		-----	-----	
1635		-----		-----		-----	-----	
1636		-----		-----		-----	-----	
1651	D3241	1	false-?	1	false-?	450	260	2.1
1715		-----		-----		-----	-----	
1720	D3241	<1	false-?	280		510	260	3.2
1724	D3241	<1	false-?	280.0		450	260	3.1
1738		-----		-----		-----	-----	
1810		-----		-----		-----	-----	
1811		-----		-----		-----	-----	
1833	D3241	<4.0		280		510	260	
1842		-----		-----		-----	-----	
1852	D3241	2		36		340	260	2.1
1913	D3241	<1	false-?	280		450	260	3.1
1948		-----		-----		-----	-----	
1952	D3241	0	false-?	2	false-?	460	260	
2129	D3241	4P		25	false-?	410	260	none
2130	D3241	1	false-?	>25		450	260	none
2133	D3241	<4A		280.0		510	260	3.4
2136	D3241	3		280.0		450	260	3.4

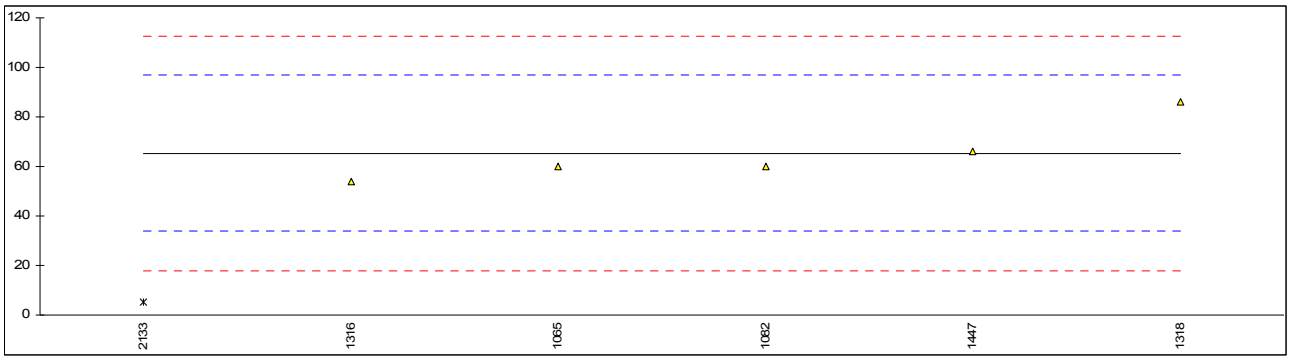
normality	not OK	not OK
n	45	52
excluded	28	15
mean (n)	2.84	248.9
st.dev. (n)	0.737	50.28
R(calc.)	2.06	140.8
R(D3241:11)	n.a.	n.a.

In the calculation of the mean, standard deviation and reproducibility a reported value of '**<x**' was changed into '**x - 0.5**' (for example **<3** into **2.5**) and '**xa**' is changed into '**x**' (for example **4A** into **4**)

Determination of Copper on sample #11063; results in µg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1032		-----		-----
53		-----		-----	1038		-----		-----
62		-----		-----	1039		-----		-----
120		-----		-----	1049		-----		-----
132		-----		-----	1059		-----		-----
140		-----		-----	1062		-----		-----
150		-----		-----	1064		-----		-----
153		-----		-----	1065	D6732	60		-0.33
159		-----		-----	1079		-----		-----
169		-----		-----	1080		-----		-----
171		-----		-----	1081		-----		-----
175		-----		-----	1082	D5185	60	U, C	-0.33
177		-----		-----	1097		-----		-----
194		-----		-----	1108		-----		-----
216		-----		-----	1109		-----		-----
221		-----		-----	1126		-----		-----
224		-----		-----	1140		-----		-----
225		-----		-----	1150		-----		-----
228		-----		-----	1191		-----		-----
230	D130	1A	Wrong method	-----	1212		-----		-----
237		-----		-----	1215		-----		-----
252		-----		-----	1264		-----		-----
253		-----		-----	1279		-----		-----
254		-----		-----	1284		-----		-----
256		-----		-----	1297		-----		-----
258		-----		-----	1299		-----		-----
273		-----		-----	1316	D3227	54		-0.72
311		-----		-----	1318	D6732	86.3		1.34
317		-----		-----	1357		-----		-----
323		-----		-----	1378		-----		-----
333		-----		-----	1395		-----		-----
334		-----		-----	1399		-----		-----
335		-----		-----	1404		-----		-----
340		-----		-----	1419		-----		-----
353		-----		-----	1433		-----		-----
360		-----		-----	1447	IP225	66		0.05
369		-----		-----	1448		-----		-----
370		-----		-----	1520		-----		-----
372		-----		-----	1528		-----		-----
391		-----		-----	1538		-----		-----
399		-----		-----	1610		-----		-----
440		-----		-----	1616		-----		-----
441		-----		-----	1631		-----		-----
445		-----		-----	1634		-----		-----
447		-----		-----	1635		-----		-----
448		-----		-----	1636		-----		-----
463		-----		-----	1651		-----		-----
468		-----		-----	1715		-----		-----
473		-----		-----	1720		-----		-----
485		-----		-----	1724		-----		-----
496		-----		-----	1738		-----		-----
604		-----		-----	1810		-----		-----
606		-----		-----	1811		-----		-----
608		-----		-----	1833		-----		-----
631		-----		-----	1842		-----		-----
657		-----		-----	1852		-----		-----
663		-----		-----	1913		-----		-----
671		-----		-----	1948		-----		-----
823		-----		-----	1952		-----		-----
851		-----		-----	2129		-----		-----
862		-----		-----	2130		-----		-----
869		-----		-----	2133	ICP-OES	5.3		-3.81
962		-----		-----	2136		-----		-----
963		-----		-----					
974		-----		-----					
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
1016		-----		-----					
1017		-----		-----					
1021		-----		-----					
1026		-----		-----					

normality	OK
n	5
outliers	1
mean (n)	65.3
st.dev. (n)	12.50
R(calc.)	35.0
R(Horwitz)	44.1

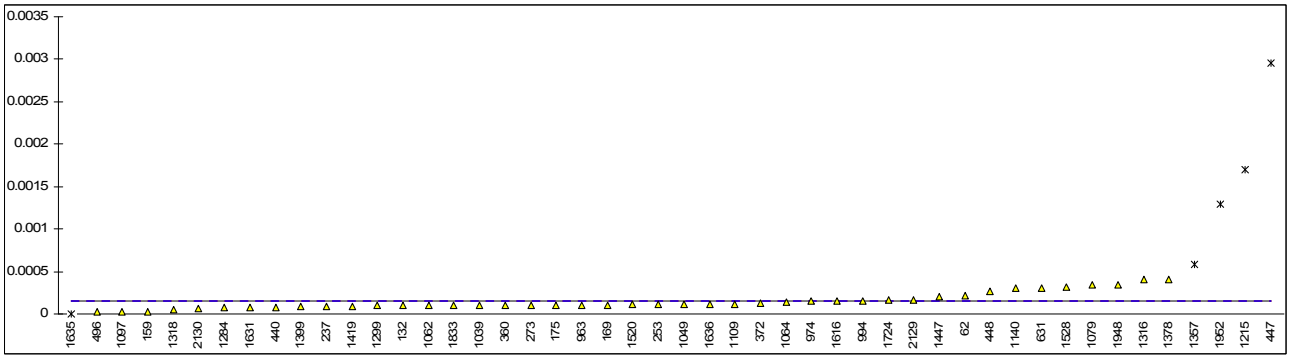


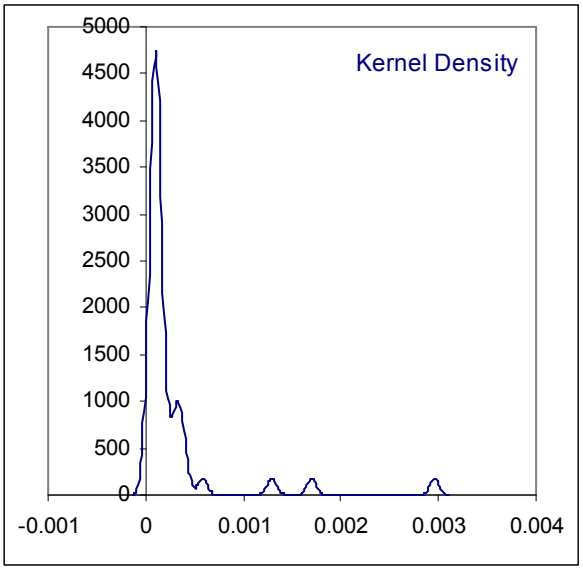
Determination of Mercaptan Sulphur on sample #11063; results in % M/M

lab	method	value	mark	z(targ)
52	D3227	<0.0003		-----
53	D3227	<0.0003		-----
62	D3227	0.00021		-----
120	D3227	<0.0001		-----
132	D3227	0.0001		-----
140		-----		-----
150	D3227	<0.0003		-----
153		-----		-----
159	D3227	0.00003		-----
169	D3227	0.0001		-----
171	D3227	<0.0003		-----
175	D3227	0.0001		-----
177		-----		-----
194		-----		-----
216		-----		-----
221		-----		-----
224		-----		-----
225		-----		-----
228		-----		-----
230		-----		-----
237	D3227	0.00009		-----
252		-----		-----
253	D3227	0.00011		-----
254		-----		-----
256		-----		-----
258		-----		-----
273	D3227	0.00010		-----
311	D3227	<0.0003		-----
317		-----		-----
323	D3227	<0.0003		-----
333	D3227	<0.0003		-----
334		-----		-----
335		-----		-----
340	D3227	<0.0001		-----
353		-----		-----
360	D3227	0.0001		-----
369	D3227	<0.0003		-----
370		-----		-----
372	D3227	0.00013		-----
391		-----		-----
399		-----		-----
440	D3227	0.00008		-----
441		-----		-----
445	IP342	<0.0003		-----
447	D3227	0.00296	G(0.01)	-----
448	D3227	0.00026		-----
463	IP30	NEG		-----
468		-----		-----
473		-----		-----
485		-----		-----
496	D3227	0.00002		-----
604		-----		-----
606		-----		-----
608		-----		-----
631	D3227	0.00031		-----
657	D3227	<0.0003		-----
663		-----		-----
671		-----		-----
823	D3227	<0.0003		-----
851	D3227	<0.0003		-----
862	D3227	<0.0003		-----
869	D3227	<0.0003		-----
962	D3227	<0.0003		-----
963	D3227	0.0001		-----
974	D3227	0.00015		-----
994	D3227	0.00015	C	-----
995		-----		-----
996		-----		-----
997		-----		-----
1016		-----		-----
1017		-----		-----
1021		-----		-----
1026	D3227	<1		-----
1032		-----		-----
1038		-----		-----
1039	D3227	0.0001		-----
1049	D3227	0.000112		-----
1059	D3227	<0.0003		-----
1062	D3227	0.0001		-----
1064	D3227	0.00014		-----
1065		-----		-----
1079	D3227	0.000348		-----
1080		-----		-----
1081	D3227	<0.001		-----
1082		-----		-----
1097	ISO3012	0.00003		-----
1108		-----		-----
1109	D3227	0.00012		-----
1126		-----		-----
1140	D3227	0.0003		-----
1150		-----		-----
1191	D3227	<0.0003		-----
1212	D3227	<0.0003	C	-----
1215	D3227	0.0017	G(0.01)	-----
1264	D3227	<0.0003		-----
1279		-----		-----
1284	D3227	0.000071		-----
1297		-----		-----
1299	D3227	0.0001		-----
1316	D3227	0.0004		-----
1318	D3227	0.000053		-----
1357	D3227	0.000586	G(0.01)	-----
1378	D3227	0.0004		-----
1395		-----		-----
1399	D3227	0.000089		-----
1404	D3227	<0.0003		-----
1419	D3227	0.000094		-----
1433		-----		-----
1447	D3227	0.0002		-----
1448		-----		-----
1520	D3227	0.00011		-----
1528	D3227	0.00032		-----
1538		-----		-----
1610		-----		-----
1616	D3227	0.00015		-----
1631	D3227	0.000078	C	-----
1634		-----		-----
1635	D3227	0	ex	-----
1636	D3227	0.00012		-----
1651		-----		-----
1715		-----		-----
1720		-----		-----
1724	D3227	0.00016		-----
1738		-----		-----
1810		-----		-----
1811		-----		-----
1833	D3227	0.0001		-----
1842		-----		-----
1852		-----		-----
1913	D3227	<0.0003		-----
1948	D3227	0.000348	C	-----
1952	D3227	0.001291	G(0.01)	-----
2129	D3227	0.00017	C	-----
2130	D3227	0.00006		-----
2133	D3227	<0.0001		-----
2136		-----		-----

normality	not OK
n	43
outliers	4
mean (n)	0.00015
st.dev. (n)	0.000100
R(calc.)	0.00028
R(D3227:10)	(0.00032)

Corrections
Lab 994 first reported 0.00075
Lab 1212 first reported <3
Lab 1631 first reported 0.78
Lab 1948 first reported 3.48
Lab 2129 first reported 0.0001



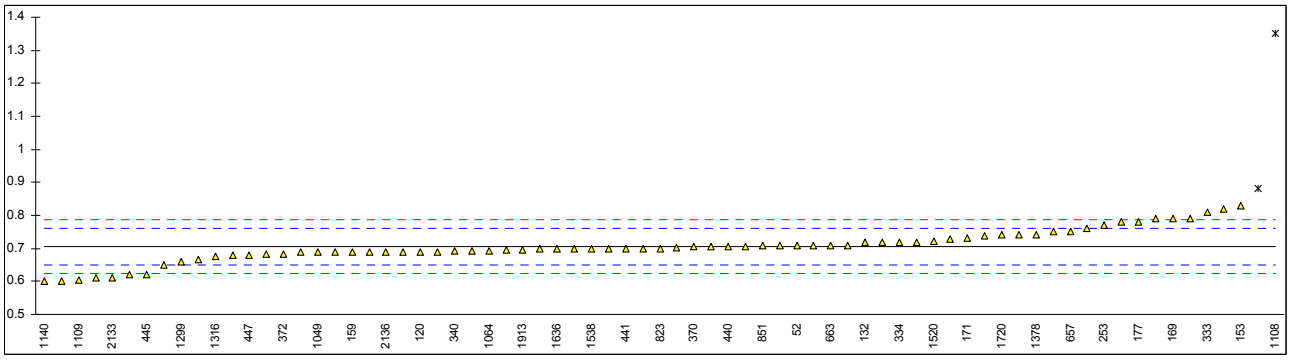


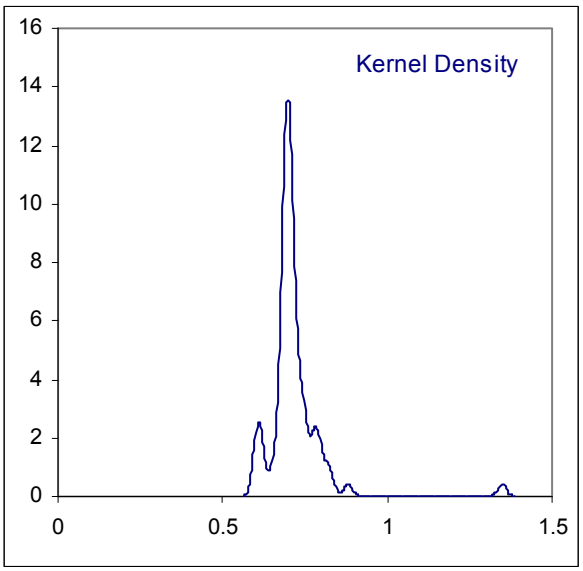
Determination of Naphthalenes on sample #11063; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D1840-B	0.71		0.14	1032		-----		-----
53	D1840-B	0.72		0.51	1038		-----		-----
62	D1840	0.69		-0.59	1039	D1840-B	0.69		-0.59
120	D1840-B	0.69		-0.59	1049	D1840-A	0.69		-0.59
132	D1840-B	0.72		0.51	1059		-----		-----
140	D1840-B	0.61		-3.53	1062	D1840-A	0.71		0.14
150	D1840-A	0.65		-2.06	1064	D1840-A	0.693		-0.48
153	D1840-B	0.83		4.55	1065		-----		-----
159	D1840	0.69		-0.59	1079	D1840-A	0.881	G(0.05)	6.42
169	D1840-B	0.79		3.08	1080		-----		-----
171	D1840-A	0.73		0.88	1081	D1840-B	0.69		-0.59
175		-----		-----	1082		-----		-----
177	D1840	0.78		2.71	1097	D1840-A	0.703		-0.11
194		-----		-----	1108	D1840-B	1.35	G(0.01)	23.64
216		-----		-----	1109	D1840-A	0.605		-3.71
221		-----		-----	1126		-----		-----
224		-----		-----	1140	D1840	0.60		-3.89
225		-----		-----	1150		-----		-----
228		-----		-----	1191	D1840-B	0.62		-3.16
230		-----		-----	1212		-----		-----
237	D1840-B	0.70		-0.22	1215	D1840-A	0.82		4.18
252		-----		-----	1264		-----		-----
253	D1840-B	0.770		2.35	1279		-----		-----
254		-----		-----	1284		-----		-----
256		-----		-----	1297		-----		-----
258		-----		-----	1299	D1840-B	0.66		-1.69
273	D1840-A	0.699		-0.26	1316	D1840-A	0.675		-1.14
311	D1840-B	0.69		-0.59	1318	D1840-B	0.740		1.25
317		-----		-----	1357		-----		-----
323		-----		-----	1378	D1840-A	0.74	C	1.25
333	D1840-B	0.81		3.82	1395		-----		-----
334	D1840	0.72		0.51	1399		-----		-----
335		-----		-----	1404		-----		-----
340	D1840-B	0.691		-0.55	1419	D1840-B	0.707		0.03
353		-----		-----	1433		-----		-----
360		-----		-----	1447	D1840-B	0.728		0.81
369		-----		-----	1448		-----		-----
370	D1840-A	0.704		-0.08	1520	D1840-B	0.721		0.55
372	D1840-B	0.684		-0.81	1528	D1840-B	0.79		3.08
391	D1840	0.72		0.51	1538	D1840-B	0.699		-0.26
399		-----		-----	1610	D1840	0.6648		-1.51
440	D1840-B	0.706		0.00	1616	D1840-A	0.698		-0.30
441	D1840-A	0.70		-0.22	1631		-----		-----
445	D1840-B	0.622		-3.09	1634		-----		-----
447	D1840-B	0.68		-0.96	1635	D1840	0.76		1.98
448	D1840-A	0.692		-0.52	1636	D1840-B	0.698		-0.30
463	D1840-B	0.678		-1.03	1651		-----		-----
468		-----		-----	1715		-----		-----
473		-----		-----	1720	D1840-B	0.74	C	1.25
485		-----		-----	1724		-----		-----
496	D1840-A	0.709		0.11	1738		-----		-----
604		-----		-----	1810		-----		-----
606		-----		-----	1811	D1840-A	0.698		-0.30
608		-----		-----	1833		-----		-----
631	D1840-B	0.79	C	3.08	1842		-----		-----
657	D1840-A	0.75		1.61	1852	D1840-B	0.602		-3.82
663	D1840-A	0.71		0.14	1913	D1840-B	0.696		-0.37
671		-----		-----	1948		-----		-----
823	D1840-B	0.70		-0.22	1952		-----		-----
851	D1840-A	0.708		0.07	2129	D1840-B	0.70415		-0.07
862	D1840-A	0.682		-0.88	2130		-----		-----
869	D1840-A	0.688		-0.66	2133	D1840-A	0.611		-3.49
962	D1840-B	0.75		1.61	2136	D1840-A	0.69		-0.59
963	D1840-A	0.696		-0.37					
974	D1840-B	0.738		1.17					
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
1016	D1840	0.78		2.71					
1017		-----		-----					
1021	D1840-B	0.71	C	0.14					
1026		-----		-----					

normality	not OK
n	71
outliers	2
mean (n)	0.706
st.dev. (n)	0.0490
R(calc.)	0.137
R(D1840:07-B)	0.076

Corrections
Lab 631 first reported 1.047
Lab 1021 first reported 7.1
Lab 1378 first reported 2.429
Lab 1720 first reported 0.58



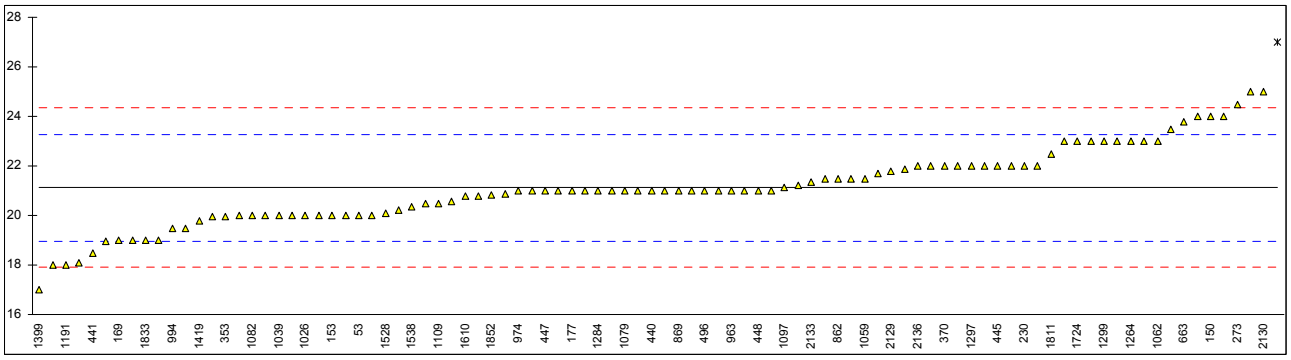


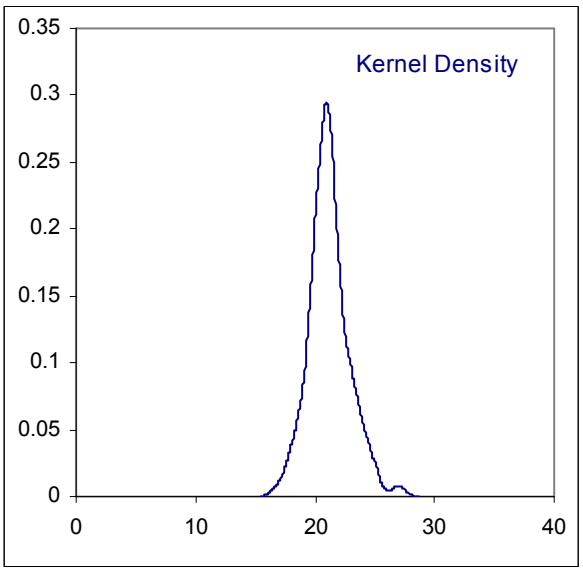
Determination of Smoke Point on sample #11063; results in mm

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D1322	20.0		-1.04	1032	D1322	21		-0.11
53	D1322	20.0		-1.04	1038		-----		-----
62	D1322	20.0		-1.04	1039	D1322	20.0		-1.04
120	D1322	19.0		-1.98	1049	D1322	20.5		-0.58
132	D1322	21.7		0.54	1059	D1322	21.5		0.36
140	D1322	23		1.76	1062	D1322	23.0		1.76
150	D1322	24		2.69	1064	D1322	21.2		0.08
153	D1322	20.0		-1.04	1065		-----		-----
159		-----		-----	1079	D1322	21.0		-0.11
169	D1322	19		-1.98	1080		-----		-----
171	D1322	21.0		-0.11	1081	D1322	22.0		0.82
175		-----		-----	1082	D1322	20		-1.04
177	D1322	21.0		-0.11	1097	D1322	21.12		0.00
194		-----		-----	1108		-----		-----
216		-----		-----	1109	D1322	20.5		-0.58
221		-----		-----	1126		-----		-----
224		-----		-----	1140	D1322	22		0.82
225		-----		-----	1150		-----		-----
228		-----		-----	1191	D1322	18		-2.91
230	D1322	22.0		0.82	1212		-----		-----
237	D1322	21.0		-0.11	1215		-----		-----
252	D1322	24.0		2.69	1264	D1322	23		1.76
253	D1322	21		-0.11	1279		-----		-----
254	D1322	24.0		2.69	1284	D1322	21.0		-0.11
256		-----		-----	1297	D1322	22		0.82
258		-----		-----	1299	D1322	23.0		1.76
273	D1322	24.5		3.16	1316	D1322	22		0.82
311	D1322	21.5		0.36	1318	D1322	21.860		0.69
317		-----		-----	1357	D1322	25.0		3.62
323	D1322	23.0		1.76	1378	D1322	23		1.76
333	D1322	21.0		-0.11	1395		-----		-----
334		-----		-----	1399	D1322	17		-3.84
335		-----		-----	1404	D1322	18.0		-2.91
340	D1322	21.0		-0.11	1419	D1322	19.8		-1.23
353	IP57	19.97		-1.07	1433	D1322	20.2		-0.86
360	D1322	20.0		-1.04	1447	D1322	20.853		-0.25
369	D1322	19.5		-1.51	1448		-----		-----
370	D1322	22.0		0.82	1520	D1322	21.0		-0.11
372	D1322	23.0		1.76	1528	D1322	20.1		-0.95
391		-----		-----	1538	D1322	20.33		-0.74
399		-----		-----	1610	IP56	20.8		-0.30
440	D1322	21.0		-0.11	1616	D1322	22		0.82
441	D1322	18.5		-2.44	1631	D1322	27	C,G(0.05)	5.49
445	D1322	22.0		0.82	1634		-----		-----
447	D1322	21.0		-0.11	1635	D1322	21.0		-0.11
448	D1322	21.0		-0.11	1636	D1322	20.56		-0.52
463	D1322	19.95		-1.09	1651	D1322	23.5		2.22
468		-----		-----	1715	D1322	21.5		0.36
473		-----		-----	1720		-----		-----
485		-----		-----	1724	D1322	23.0		1.76
496	D1322	21		-0.11	1738		-----		-----
604		-----		-----	1810	D1322	18.1		-2.82
606		-----		-----	1811	D1322	22.5		1.29
608		-----		-----	1833	D1322	19		-1.98
631	D1322	22	C	0.82	1842		-----		-----
657	D1322	20.0		-1.04	1852	D1322	20.82		-0.28
663	D1322	23.8		2.50	1913	D1322	20.8		-0.30
671	D1322	18.96		-2.02	1948		-----		-----
823	D1322	19.0		-1.98	1952	D1322	20.0		-1.04
851	D1322	21.0		-0.11	2129	D1322	21.8		0.64
862	D1322	21.5		0.36	2130	D1322	25.0		3.62
869	D1322	21.0		-0.11	2133	D1322	21.33		0.20
962	D1322	21.0		-0.11	2136	D1322	22.0		0.82
963	D1322	21.0		-0.11					
974	D1322	20.989		-0.12					
994	D1322	19.5		-1.51					
995		-----		-----					
996		-----		-----					
997		-----		-----					
1016		-----		-----					
1017		-----		-----					
1021	D1322	20.02		-1.03					
1026	D1322	20.0		-1.04					

normality	not OK
n	93
outliers	1
mean (n)	21.119
st.dev. (n)	1.5531
R(calc.)	4.349
R(D1322:08)	3.000

Corrections
Lab 631 first reported 14.9
Lab 1631 first reported 27



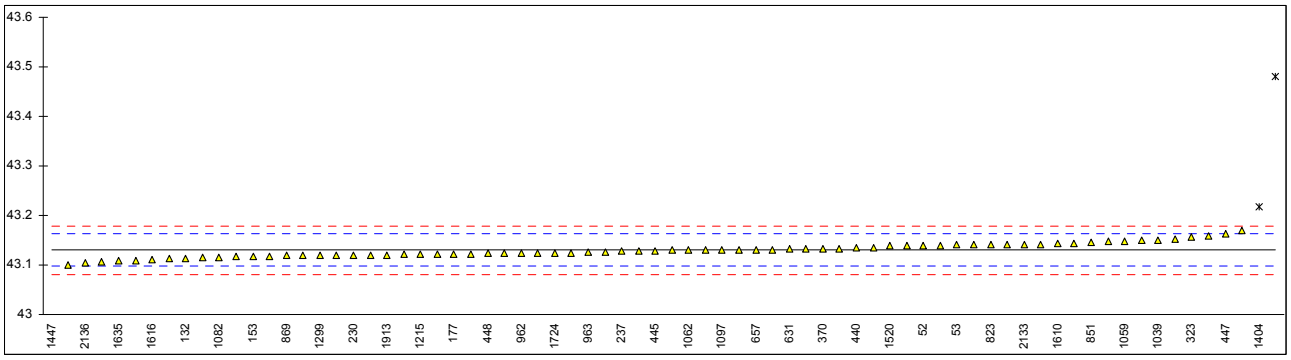


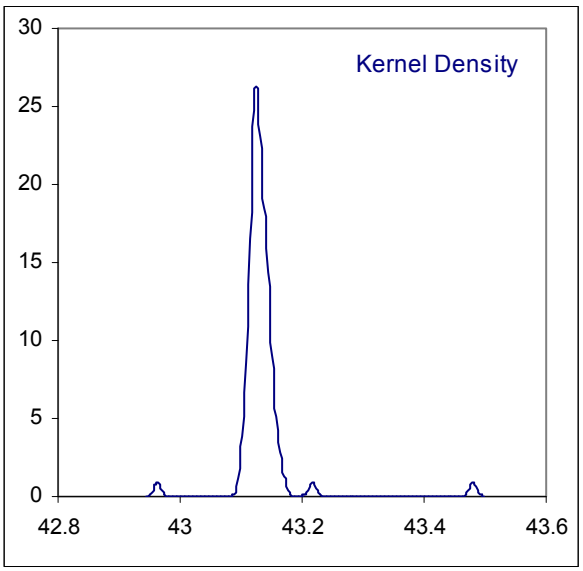
Determination of Specific Energy on sample #11063; results in MJ/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3338	43.139	C	0.55	1032	D3338	43.144		0.85
53	D3338	43.141		0.67	1038		-----		-----
62	D3338	43.128		-0.12	1039	D3338	43.151		1.28
120	D3338	43.141		0.67	1049	D3338	43.1074		-1.37
132	D3338	43.114		-0.97	1059	D3338	43.148		1.10
140		-----		-----	1062	D3338	43.130		0.00
150	D3338	43.126		-0.24	1064	D3338	43.1312		0.08
153	D3338	43.117		-0.79	1065		-----		-----
159	D3338	43.169		2.38	1079	D3338	43.158		1.71
169	D3338	43.121		-0.55	1080		-----		-----
171	D3338	43.142		0.73	1081		-----		-----
175		-----		-----	1082	D3338	43.116		-0.85
177	D3338	43.122		-0.48	1097	D3338	43.131		0.06
194		-----		-----	1108		-----		-----
216		-----		-----	1109	D3338	43.14		0.61
221		-----		-----	1126		-----		-----
224		-----		-----	1140	D3338	43.118		-0.73
225		-----		-----	1150		-----		-----
228		-----		-----	1191	D3338	43.112		-1.09
230	D3338	43.12		-0.61	1212		-----		-----
237	D3338	43.128		-0.12	1215	D3338	43.121		-0.55
252		-----		-----	1264	D3338	43.153		1.40
253	D3338	43.1226		-0.45	1279		-----		-----
254		-----		-----	1284	D3338	43.151		1.28
256		-----		-----	1297		-----		-----
258		-----		-----	1299	D3338	43.12		-0.61
273		-----		-----	1316	D3338	43.1		-1.82
311	D3338	43.125		-0.30	1318		-----		-----
317		-----		-----	1357		-----		-----
323	D3338	43.156		1.59	1378		-----		-----
333		-----		-----	1395		-----		-----
334		-----		-----	1399		-----		-----
335		-----		-----	1404	D3338	43.217	C, G(0.01)	5.30
340	D3338	43.12		-0.61	1419		-----		-----
353		-----		-----	1433		-----		-----
360	D3338	43.1423		0.75	1447	D3338	42.963	G(0.05)	-10.16
369	D3338	43.147		1.04	1448		-----		-----
370	D3338	43.1319		0.12	1520	D3338	43.1386		0.53
372	D3338	43.131		0.06	1528	D3338	43.13291		0.18
391		-----		-----	1538	D3338	43.117		-0.79
399	D3338	43.13		0.00	1610	D3338	43.143		0.79
440	D3338	43.1343		0.26	1616	D3338	43.111		-1.15
441	D3338	43.135		0.31	1631		-----		-----
445	D3338	43.129		-0.06	1634		-----		-----
447	D3338	43.162		1.95	1635	D3338	43.108		-1.34
448	D3338	43.124		-0.36	1636	D3338	43.1242		-0.35
463	D3338	43.13		0.00	1651		-----		-----
468		-----		-----	1715		-----		-----
473		-----		-----	1720		-----		-----
485		-----		-----	1724	D3338	43.125		-0.30
496	D3338	43.139		0.55	1738		-----		-----
604		-----		-----	1810		-----		-----
606		-----		-----	1811	D3338	43.1319		0.12
608		-----		-----	1833	D3338	43.12		-0.61
631	D3338	43.1317		0.11	1842		-----		-----
657	D3338	43.131		0.06	1852	D3338	43.1089		-1.28
663		-----		-----	1913	D3338	43.12		-0.61
671		-----		-----	1948		-----		-----
823	D3338	43.142		0.73	1952	D3338	43.4804	G(0.01)	21.33
851	D3338	43.146		0.98	2129	D3338	43.116		-0.85
862	D3338	43.1250		-0.30	2130		-----		-----
869	D3338	43.1189		-0.67	2133	D3338	43.142		0.73
962	D3338	43.1249		-0.31	2136	D3338	43.104		-1.58
963	D3338	43.1257		-0.26					
974	D3338	43.119		-0.67					
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
1016		-----		-----					
1017	D3338	43.1211		-0.54					
1021		-----		-----					
1026		-----		-----					

normality	OK
n	71
outliers	3
mean (n)	43.1300
st.dev. (n)	0.01416
R(calc.)	0.0396
R(D3338:09)	0.0460

Corrections
Lab 52 first reported 43.2



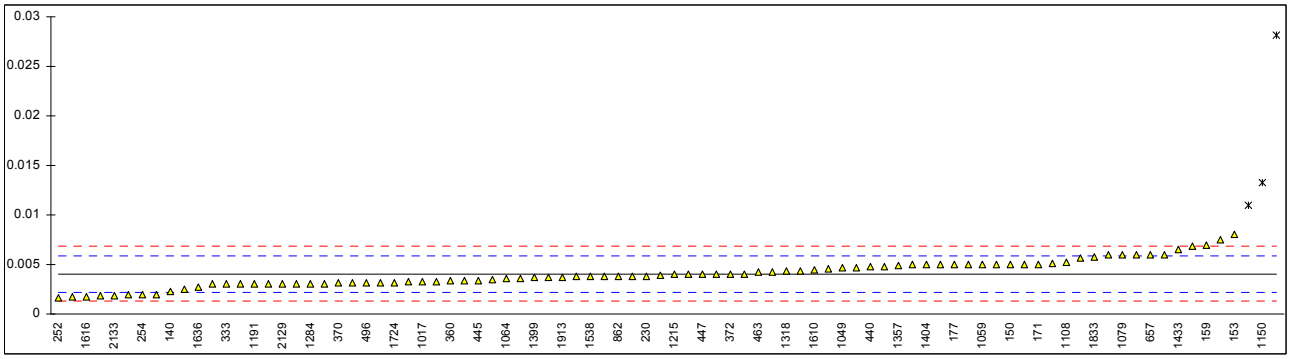


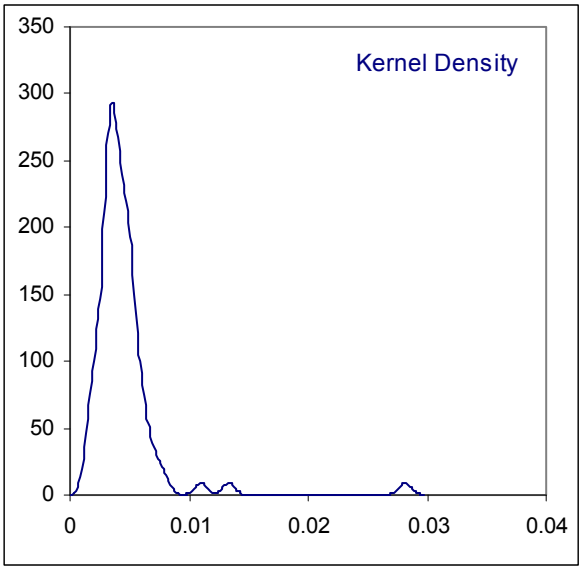
Determination of Total Acidity on sample #11063; results in mg KOH/g

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3242-Y	0.005		1.02	1032		-----		-----
53	D3242-Y	0.005		1.02	1038		-----		-----
62	D3242-Y	0.002		-2.23	1039	D3242-Y	0.002		-2.23
120	D3242-Y	0.011	G(0.01)	7.51	1049	D3242-Y	0.00462		0.60
132	D3242-Y	0.0038		-0.28	1059	D3242-Y	0.005		1.02
140	D3242-Y	0.002287		-1.92	1062	D3242-Y	<0.001		-----
150	D3242-Y	0.005		1.02	1064	D3242-Y	0.0036		-0.50
153	D3242-Y	0.008		4.26	1065		-----		-----
159	D3242-Y	0.0070		3.18	1079	D3242-Y	0.006		2.10
169	D3242-Y	0.0025		-1.69	1080		-----		-----
171	D3242-Y	0.005048		1.07	1081	D3242-Y	0.003		-1.15
175	D3242-Y	0.003		-1.15	1082	D3242-Y	0.0036		-0.50
177	D3242-Y	0.005		1.02	1097	D3242-Y	0.0046		0.58
194		-----		-----	1108	D3242-Y	0.0052		1.23
216		-----		-----	1109	D3242-Y	0.0051		1.12
221		-----		-----	1126		-----		-----
224		-----		-----	1140	D3242-Y	0.004		-0.07
225		-----		-----	1150	D1752-N	0.0133	C,G(0.01)	10.00
228		-----		-----	1191	D3242-Y	0.003		-1.15
230	D3242-Y	0.0038		-0.28	1212		-----		-----
237	D3242-Y	0.003		-1.15	1215	D3242-Y	0.004		-0.07
252	D3242-Y	0.0016		-2.66	1264	D3242-Y	0.0017		-2.56
253		-----		-----	1279	D3242-Y	0.0039		-0.17
254	D3242-Y	0.002		-2.23	1284	D3242-Y	0.003		-1.15
256		-----		-----	1297		-----		-----
258		-----		-----	1299	D3242-Y	0.003		-1.15
273		-----		-----	1316		-----		-----
311	D3242-Y	0.003		-1.15	1318	D3242-Y	0.0043		0.26
317		-----		-----	1357	D3242-Y	0.0049		0.91
323		-----		-----	1378	D3242-Y	0.0031		-1.04
333	D3242	0.003		-1.15	1395		-----		-----
334		-----		-----	1399	D3242-Y	0.00365		-0.45
335		-----		-----	1404	D3242-Y	0.005		1.02
340	D3242-Y	0.0032		-0.93	1419	D3242-Y	0.0034		-0.72
353		-----		-----	1433	D3242-Y	0.0065		2.64
360	D3242-Y	0.0034		-0.72	1447	D3242-Y	0.0048		0.80
369	D3242-Y	0.0068		2.96	1448		-----		-----
370	D3242-Y	0.0031		-1.04	1520	D3242-Y	0.0038		-0.28
372	D3242-Y	0.004		-0.07	1528	D3242-Y	0.0056		1.66
391	D3242-Y	0.004		-0.07	1538	D3242-Y	0.0038		-0.28
399	D3242-Y	0.0018		-2.45	1610	IP354-Y	0.00446		0.43
440	D3242-Y	0.0048		0.80	1616	D3242-Y	0.0017		-2.56
441	D3242-Y	0.005		1.02	1631	D3242-Y	0.0075		3.72
445	D3242-Y	0.0034		-0.72	1634		-----		-----
447	D3242-Y	0.0040		-0.07	1635		-----		-----
448	D3242-Y	0.006		2.10	1636	D3242-Y	0.00277		-1.40
463	D3242-Y	0.0042		0.15	1651		-----		-----
468		-----		-----	1715		-----		-----
473		-----		-----	1720	D3242-Y	0.005		1.02
485		-----		-----	1724	D3242-Y	0.0032		-0.93
496	D3242-Y	0.0032		-0.93	1738		-----		-----
604		-----		-----	1810		-----		-----
606		-----		-----	1811		-----		-----
608		-----		-----	1833	D3242-Y	0.0058		1.88
631	D3242-N	0.0033		-0.82	1842		-----		-----
657	D3242-Y	0.006		2.10	1852	D3242-Y	0.0047		0.69
663		-----		-----	1913	D3242-Y	0.0037		-0.39
671	D3242-Y	0.00429		0.25	1948		-----		-----
823	D3242-Y	0.006		2.10	1952	D3242-Y	0.028164	G(0.01)	26.08
851	D3242-Y	0.0035		-0.61	2129	D3242-Y	0.0030		-1.15
862	D3242-Y	0.0038		-0.28	2130	D3242	0.006		2.10
869	D3242-Y	0.0050		1.02	2133	D3242-Y	0.0019		-2.34
962	D3242-Y	0.0037		-0.39	2136	D3242-Y	0.0033		-0.82
963	D3242-Y	0.0038		-0.28					
974		-----		-----					
994		-----		-----					
995		-----		-----		Y = N_2 purged			
996		-----		-----		N = not purged			
997		-----		-----					
1016		-----		-----					
1017	D3242-Y	0.0033		-0.82					
1021	D3242-Y	0.004		-0.07					
1026	D3242-Y	0.0044		0.37					

normality	not OK
n	85
outliers	3
mean (n)	0.00406
st.dev. (n)	0.001354
R(calc.)	0.00379
R(D3242:11)	0.00259

Y = N_2 purged
N = not purged



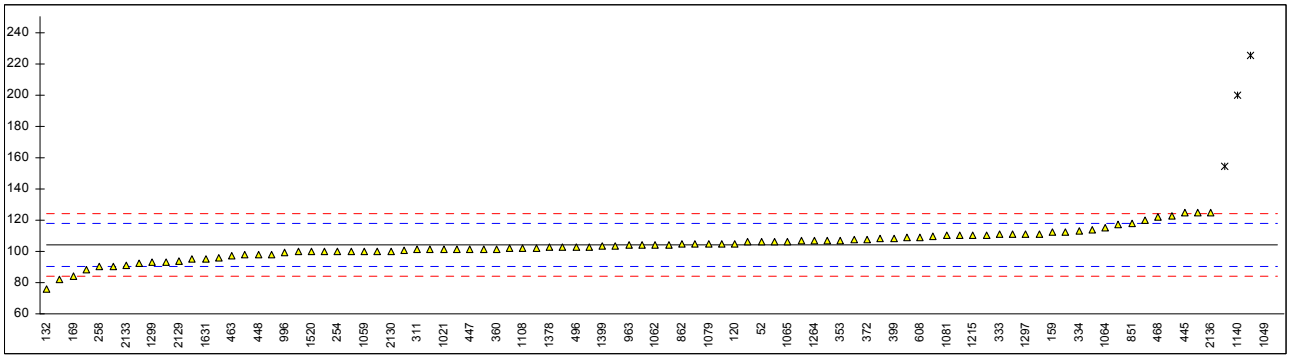


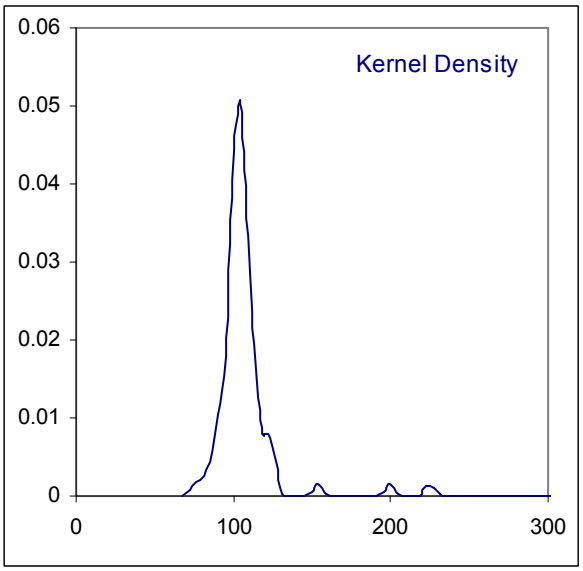
Determination of Total Sulphur on sample #11063; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D5453	106		0.29	1032	D4294	90	C	-2.08
53		-----		-----	1038		-----		-----
62	D5453	102		-0.30	1039	D2622	107	C	0.44
120	D2622	105		0.14	1049	D5453	605.6	C, G(0.01)	74.37
132	D2622	75.5		-4.23	1059	ISO14596	100		-0.60
140	D5453	100		-0.60	1062	D5453	104		-0.01
150	D5453	109		0.74	1064	D5453	115.2		1.66
153		-----		-----	1065	D7212	106.2		0.32
159	D5453	112		1.18	1079	D4294	105		0.14
169	D5453	84		-2.97	1080	D5453	92.2		-1.76
171	D5453	97.98		-0.90	1081	D4292	110		0.88
175		-----		-----	1082		-----		-----
177		-----		-----	1097	D5453	105		0.14
194		-----		-----	1108	D4294	102		-0.30
216		-----		-----	1109	D2622	104.9		0.13
221		-----		-----	1126	ISO20846	1226.8	G(0.01)	166.47
224		-----		-----	1140	IP336	200	G(0.01)	14.23
225		-----		-----	1150		-----		-----
228		-----		-----	1191		-----		-----
230	D4294	106		0.29	1212	D5453	104.0		-0.01
237	D4294	125	C	3.11	1215	D5453	110		0.88
252	D4294	100		-0.60	1264	D5453	106.8		0.41
253		-----		-----	1279		-----		-----
254	D4294	100		-0.60	1284	D5453	114		1.48
256		-----		-----	1297	D4294	111.0		1.03
258	D5453	90		-2.08	1299	EN20846	93.2		-1.61
273		-----		-----	1316	D5453	120		2.37
311	D2622	101		-0.45	1318		-----		-----
317		-----		-----	1357	D4294	111		1.03
323	D2622	104		-0.01	1378	D5453	103		-0.15
333	D5453	111		1.03	1395		-----		-----
334	D5453	113		1.33	1399	D5453	103.3		-0.11
335		-----		-----	1404	ISO20846	93.2		-1.61
340	D5453	110		0.88	1419	ISO20884	101.0		-0.45
353	IP531	107.1		0.45	1433		-----		-----
360	D5453	101.6		-0.36	1447	D5453	103.58		-0.07
369	D2622	109.9		0.87	1448		-----		-----
370	D5453	101.3		-0.41	1520	D5453	99.8		-0.63
372	D5453	107.5		0.51	1528	D2622	116.8		1.89
391		-----		-----	1538	D5453	99.7		-0.64
399	D5453	108		0.59	1610	IP336	225	C, G(0.01)	17.94
440	D5453	100.7		-0.49	1616	D5453	106		0.29
441	IP336	101.5	C	-0.38	1631	D5453	95.08		-1.33
445	D5453	124.5		3.03	1634		-----		-----
447	D5453	101.4		-0.39	1635	D5453	107.3		0.48
448	D4294	98		-0.90	1636	D5453	106.8		0.41
463	D5453	97.30		-1.00	1651		-----		-----
468	D5453	122		2.66	1715		-----		-----
473		-----		-----	1720	D5453	108		0.59
485		-----		-----	1724	D5453	95.0		-1.34
496	D2622	103		-0.15	1738		-----		-----
604		-----		-----	1810	D5453	103		-0.15
606		-----		-----	1811	D5453	102.0		-0.30
608	D5453	109.05		0.74	1833	D5453	112.46		1.25
631		-----		-----	1842		-----		-----
657	D5453	95.5		-1.27	1852	D5453	98		-0.90
663		-----		-----	1913	D5453	111.2		1.06
671		-----		-----	1948	D5453	110.2		0.91
823	D5453	88		-2.38	1952	D5453	154	G(0.01)	7.41
851	D4294	118		2.07	2129	D5453	93.9		-1.50
862	D4294	104.5		0.07	2130	D5453	100.1		-0.58
869	D4294	122.7		2.77	2133	D5453	91.0		-1.93
962	D5453	100		-0.60	2136	D5453	125		3.11
963	D4294	104		-0.01					
974		-----		-----					
994	D5453	103		-0.15					
995		-----		-----					
996	D5453	99.43		-0.68					
997		-----		-----					
1016		-----		-----					
1017		-----		-----					
1021	D2622	101		-0.45					
1026	ISO20884	82		-3.27					

		Only D5453 data	Only D4294 data	Only D2622 data
normality	not OK	OK	OK	not OK
n	89	57	15	10
outliers	5	2	0	0
mean (n)	104.04	104.30	107.15	102.81
st.dev. (n)	9.033	8.430	9.432	10.680
R(calc.)	25.29	23.60	26.41	29.90
R(D5453:09)	18.88	18.92	39.03	16.96

Corrections
Lab 237 first reported 60
Lab 1032 first reported 0.0090
Lab 1039 first reported 0.0.107



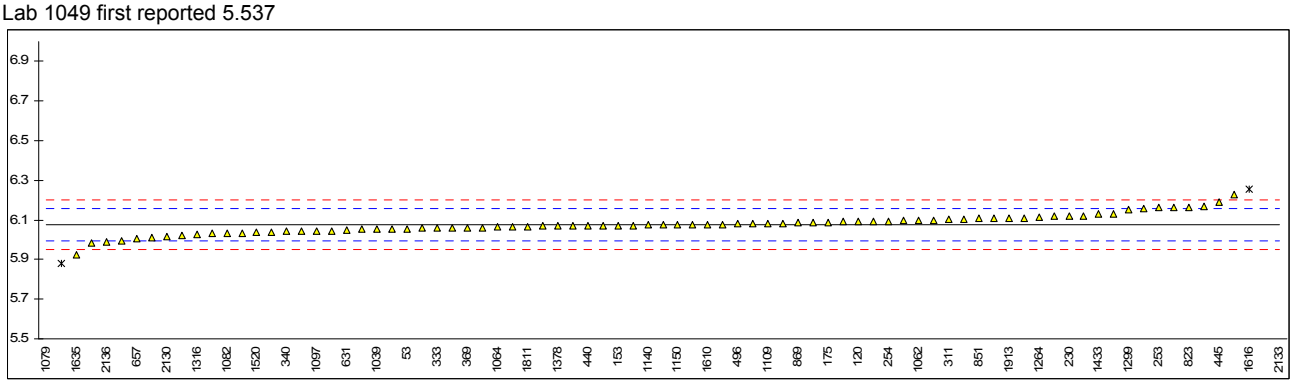


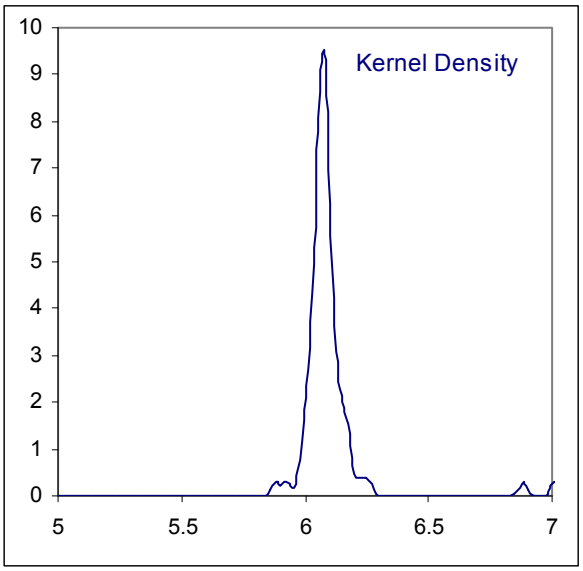
Determination of Viscosity @ -20°C on sample #11063; results in cSt

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D445-M	6.052		-0.62	1032	D445-M	6.0819		0.11
53	D445-M	6.057		-0.50	1038		-----		-----
62	D445-M	6.131		1.30	1039	D445-M	6.054		-0.57
120	D445-M	6.090		0.30	1049	D445-M	6.065	C	-0.30
132	D445-M	5.996		-1.98	1059	D445-M	6.118		0.98
140	D445-M	6.059		-0.45	1062	D445-M	6.100		0.55
150	D445-A	5.984		-2.27	1064	D445-A	6.0650		-0.30
153	D445-M	6.071		-0.16	1065		-----		-----
159		-----		-----	1079	D445-M	2.172	G(0.01)	-94.70
169	D445-M	6.0596		-0.43	1080		-----		-----
171	D445-A	6.111		0.81	1081	D445-M	6.078		0.01
175	D445-M	6.087		0.23	1082	D445-M	6.0333		-1.07
177	D445-M	6.010		-1.64	1097	ISO3104-M	6.046		-0.76
194		-----		-----	1108		-----		-----
216		-----		-----	1109	D445-M	6.0824		0.12
221		-----		-----	1126		-----		-----
224		-----		-----	1140	IP71	6.074		-0.08
225		-----		-----	1150	ISO3104-A	6.076		-0.04
228		-----		-----	1191	D445-M	6.1095		0.78
230	D445-M	6.1185		0.99	1212	D7042-A	6.1617		2.04
237	D445-M	6.077	C	-0.01	1215		-----		-----
252	D445-M	6.0897		0.30	1264	D445-M	6.1168		0.95
253	D445-M	6.161		2.02	1279		-----		-----
254	D445-M	6.095		0.42	1284		-----		-----
256		-----		-----	1297		-----		-----
258		-----		-----	1299	D445-M	6.15		1.76
273		-----		-----	1316	D445-M	6.025		-1.27
311	D445-M	6.102		0.59	1318		-----		-----
317		-----		-----	1357		-----	W	-----
323		-----		-----	1378	D445-M	6.069		-0.21
333	D445-M	6.059		-0.45	1395		-----		-----
334		-----		-----	1399	D445-M	6.1659		2.14
335		-----		-----	1404	D445-M	6.122		1.08
340	D445-M	6.0444		-0.80	1419	ISO3104-M	6.087		0.23
353		-----		-----	1433	D445-M	6.12996		1.27
360	D445-M	6.0707		-0.16	1447	D445-M	6.0452		-0.78
369	D445-M	6.0595		-0.44	1448		-----		-----
370	D445-M	6.0695		-0.19	1520	D445-M	6.0361		-1.00
372	D445-M	6.076		-0.04	1528	D445-M	6.0572		-0.49
391		-----		-----	1538	D445-M	6.1564		1.91
399		-----		-----	1610	IP71-M	6.077		-0.01
440	D445-M	6.0697		-0.19	1616	D445-M	6.258	G(0.05)	4.38
441	D445-M	6.068		-0.23	1631	D445-A	6.0225		-1.33
445	D445-M	6.1925		2.79	1634		-----		-----
447		-----		-----	1635	D445	5.9265		-3.66
448	D445-M	6.0723		-0.13	1636		-----		-----
463		-----		-----	1651	D445-A	6.2261		3.60
468		-----		-----	1715		-----		-----
473		-----		-----	1720		-----		-----
485		-----		-----	1724	D445-M	5.880	G(0.05)	-4.79
496	D445-A	6.0815		0.10	1738		-----		-----
604		-----		-----	1810	D445	6.100		0.55
606		-----		-----	1811	D445-A	6.0657		-0.29
608		-----		-----	1833	D445-M	6.034		-1.05
631	D445-M	6.051	C	-0.64	1842		-----		-----
657	D445-M	6.005		-1.76	1852	D445-M	6.0327		-1.09
663		-----		-----	1913	D445-A	6.110		0.79
671	D445-M	6.1022		0.60	1948		-----		-----
823	D445-M	6.162		2.05	1952		-----		-----
851	D445-M	6.1083		0.75	2129	D445-M	6.055		-0.55
862	D445-M	6.0952		0.43	2130	D445-M	6.018		-1.44
869	D445-M	6.0850		0.18	2133	D445-A	86.157	G(0.01)	1941.78
962	D445-M	6.090		0.30	2136	D445-A	5.9907		-2.10
963	D445-M	6.083		0.13					
974	D445-M	6.046		-0.76					
994		-----		-----					
995		-----		-----					
996		-----		-----					
997		-----		-----					
1016		-----		-----					
1017	D445-M	7.0135	G(0.01)	22.70					
1021		-----		-----					
1026	ISO3104	6.040		-0.91					

		Only Manual	Only Automated
normality	OK	OK	OK
n	78	66	11
outliers	5	4	1
mean (n)	6.0775	6.0763	6.0813
st.dev. (n)	0.04827	0.04463	0.07128
R(calc.)	0.1352	0.1250	0.1996
R(D445:11)	0.1155	0.1154	0.1155

Corrections
Lab 237 first reported 5.896
Lab 631 first reported 5.7010
Lab 1049 first reported 5.537

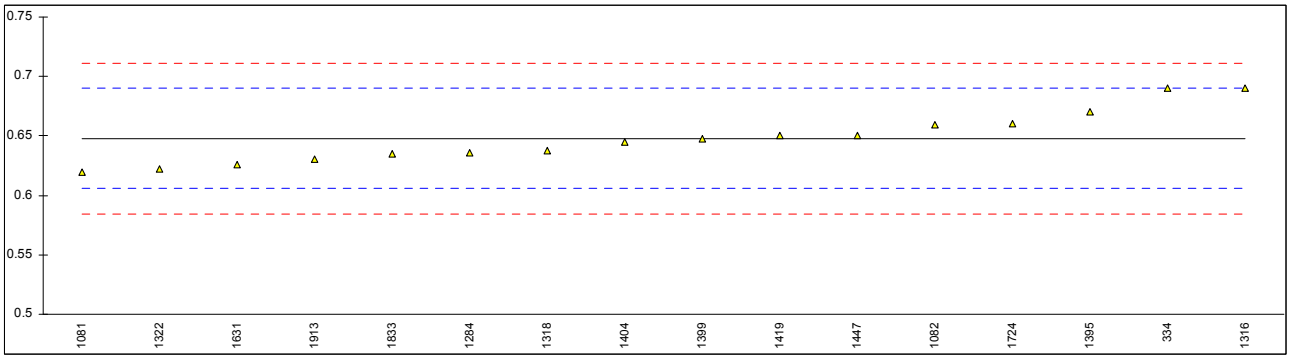


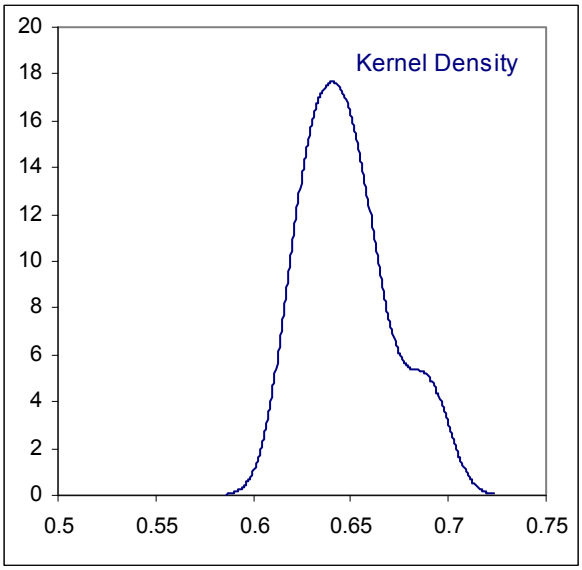


Determination of BOCLE on sample #11064; results in mm

lab	method	value	mark	z(targ)	remarks
334	D5001	0.690		1.98	
671		-----		-----	
1081	D5001	0.6195		-1.35	
1082	D5001	0.659		0.52	
1284	D5001	0.636		-0.57	
1316	D5001	0.69		1.98	
1318	D5001	0.6375		-0.50	
1322	D5001	0.622		-1.23	
1395	D5001	0.67		1.04	
1399	D5001	0.648		0.00	
1404	D5001	0.645		-0.14	
1419	D5001	0.65		0.09	
1433		-----		-----	
1447	D5001	0.650		0.09	
1538		-----		-----	
1616		-----		-----	
1631	D5001	0.626		-1.04	
1724	D5001	0.66		0.57	
1833	D5001	0.635		-0.61	
1842		-----		-----	
1913	D5001	0.630		-0.85	

normality	OK
n	16
outliers	0
mean (n)	0.648
st.dev. (n)	0.0216
R(calc.)	0.061
R(D5001:08)	0.059

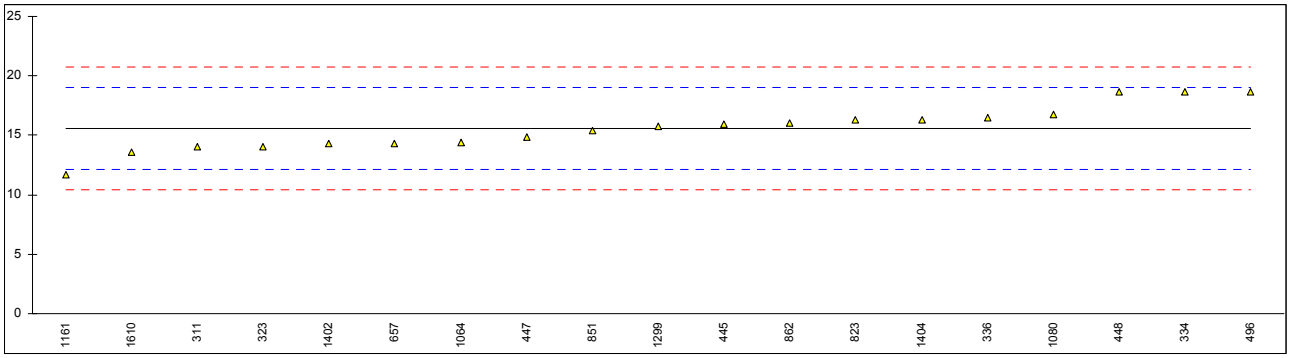


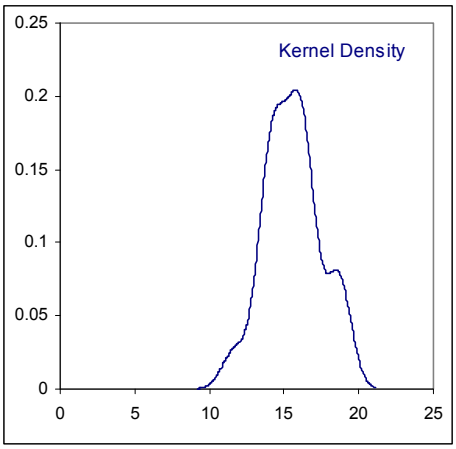


Determination of FAME on sample #11065; results in mg/kg

lab	method	value	mark	z(targ)	remarks
171		-----		-----	
311	IP585	14		-0.93	
323	IP585	14		-0.93	
333		-----		-----	
334	IP585	18.66		1.80	
336	IP585	16.5		0.53	
445	IP585	15.9		0.18	
447	IP585	14.88		-0.41	
448	IP585	18.65		1.79	
496	IP585	18.67		1.80	
657	IP585	14.30		-0.75	
671		-----		-----	
823	IP585	16.3		0.42	
851	IP PM DY/09	15.4237		-0.09	
862	IP PM DY/09	16.076		0.29	
1017		-----		-----	
1062		-----		-----	
1064	IP PM DY/09	14.4		-0.69	
1080	In house	16.8		0.71	
1081		-----		-----	
1082		-----		-----	
1140		-----		-----	
1161	IP585	11.68		-2.28	
1299	IP585	15.72		0.08	
1402	IP585	14.27		-0.77	
1404	IP585	16.31		0.42	
1610	IP590	13.6	C	-1.16	First reported 4.817
1631		-----		-----	
1833		-----		-----	
1842		-----		-----	

normality	OK
n	19
outliers	0
mean (n)	15.586
st.dev. (n)	1.8499
R(calc.)	5.180
R(IP585:10)	4.793

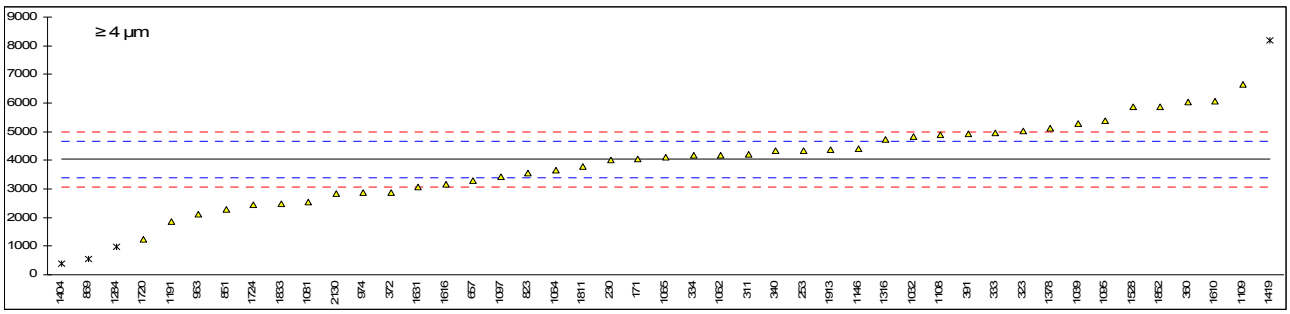


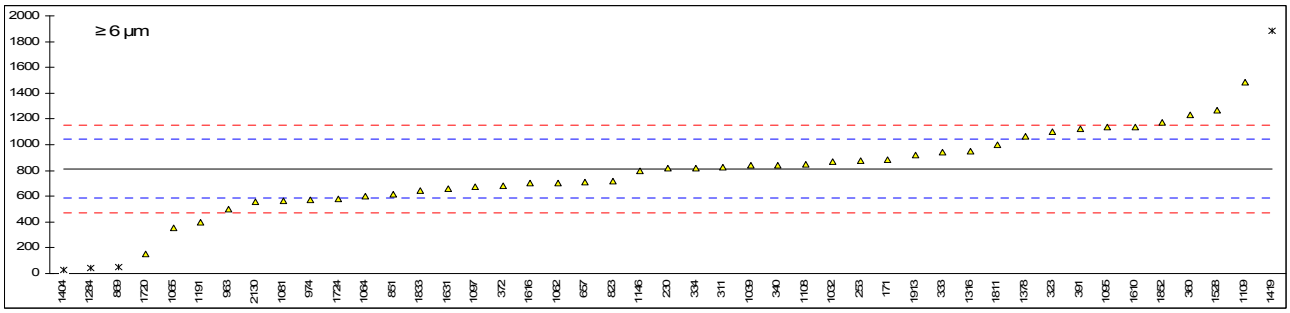


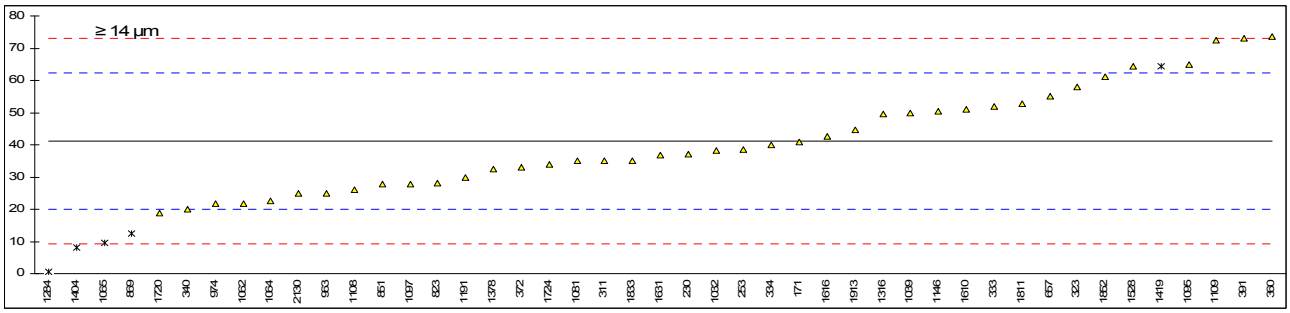
Determination of Particle Size Distribution on sample #11065; results per mL

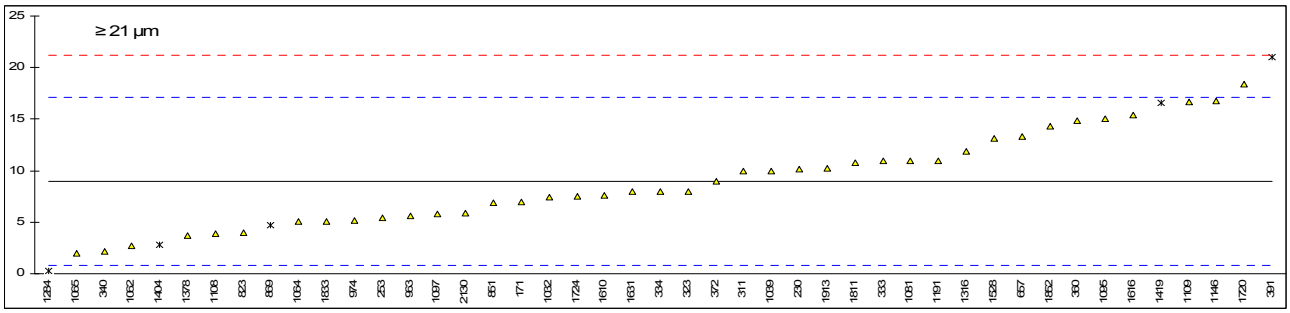
lab	method	>4 µm	mark	>6 µm	mark	>14µm	mark	>21µm	mark	>25µm	mark	>30µm	mark
171	IP565	4041		886		41		7		2		1	
225		-----		-----		-----		-----		-----		-----	
230	IP564	4007.6		816.8		37.2		10.1		3.6		0.6	
253	IP564	4352.6		877.7		38.6		5.4		2.8		1.5	
254		-----		-----		-----		-----		-----		-----	
311	IP564	4219		826		35		10		4		1	
323	IP565	5030		1102		58		8		4		2	
333	IP565	4964		940		52		11		4		2	
334	IP564	4170		819		40		8		4		2	
335		-----		-----		-----		-----		-----		-----	
340	IP565	4336.4		839.4		20.1	C	2.2		0.6		0.2	
360	IP565	6045.9		1231.3	C	73.6		14.9		5.9		2.1	
370		-----		-----		-----		-----		-----		-----	
372	IP564	2878		682		33		9		4		2	
391	IP564	4926		1124		73		21	G(5)	10	G(5)	4	G(5)
445		-----		-----		-----		-----		-----		-----	
657	IP565	3302.5		706.7		55.0		13.3		4.8		1.7	
823	IP565	3558		714		28		4		2		1	
851	IP564	2283.3		614.9		27.9		6.9		2.3		0.8	
869	IP565	551.9	G(5)	48.7	G(5)	12.4	G(5)	4.7	ex	2.9	ex	1.7	ex
963	IP564	2112.2		498.2		25.0		5.6		2.6		0.9	
974	IP564	2874.175		575.200		21.625		5.200		2.250		0.775	
1032	IP564	4821.0		870.5		38.3		7.4		2.9		0.9	
1038		-----		-----		-----		-----		-----		-----	
1039	IP565	5289		839		50		10		4		1	
1062	IP564	4172		705		21.7		2.7		0.9		0.2	
1064	IP565	3651.8		598.9		22.6		5.1		3.0		2.0	
1065	IP564	4122.0		353.9		9.7	G(5)	2.0		0.6		0.2	
1081	IP564	2544		563		35		11		5.4		1.5	
1095	IP565	5393		1140		65		15		7		3	
1097	IP565	3437.0		673.8		27.9		5.8		2.4		0.8	
1108	IP564	4894.5		844.7		26.2		3.9		1.5		0.3	
1109	IP564	6645.2		1483.9		72.5		16.7		6.6		3.3	
1146	IP564	4392.2		798.8		50.4		16.8		7.3		2.1	
1191	IP564	1865		395		30		11		6		2	
1284	IP564	965.9	G(5)	42.1	G(5)	0.7	G(5)	0.3	ex	0.1	ex	0.1	ex
1316	IP564	4737.5		945.9		49.5		11.9		4.5		1.3	
1378	IP564	5106.9		1062.4		32.4		3.7		2.4		0.4	
1404	IP565	405.9	G(5)	27.5	G(5)	8.1	G(5)	2.8	ex	1.4	ex	0.7	ex
1419	IP564	8174.0	G(5)	1887.0	G(5)	64.4	ex	16.6	ex	8.2	ex	3.5	ex
1433		-----		-----		-----		-----		-----		-----	
1528	IP565	5863.8		1264.9		64.3		13.1		5.7		2.4	
1538		-----		-----		-----		-----		-----		-----	
1610	IP565	6060.8		1140.1		51.1		7.6		2.7		1.1	
1616	IP564	3172.1		704.1		42.7		15.4		7.5		2.7	
1631	IP564	3077.3		657.3		36.9		8.0		3.5		1.5	
1720	IP564	1243.9		149.7	C	18.8	C	18.4		6.7		2.6	
1724	IP565	2433.1		577.0		33.8		7.5		3.1		1.5	
1811	IP564	3784.7		997.5		52.8		10.8		4.8		1.1	
1833	IP564	2481		647		35.2		5.1		1.8		0.6	
1842		-----		-----		-----		-----		-----		-----	
1852	IP565	5885.5		1176.7		61.1		14.3		6.8		2.9	
1913	IP564	4370.6		917.1		44.5		10.2		4.2		1.7	
2130	IP564	2833.9		556.1		24.9		5.9		2.0		0.4	
	normality	OK		OK		OK		OK		OK		OK	
	n	41		41		40		40		40		40	
	outliers	4		4		4		1		1		1	
	mean (n)	4033.62		812.57		41.17		9.00		3.80		1.43	
	st.dev. (n)	1273.714		269.052		15.549		4.336		1.908		0.834	
	R(calc.)	3566.40		753.35		43.54		12.14		5.34		2.34	
	R(IP564:10)	900.01		320.09		29.81		11.41		5.09		2.36	

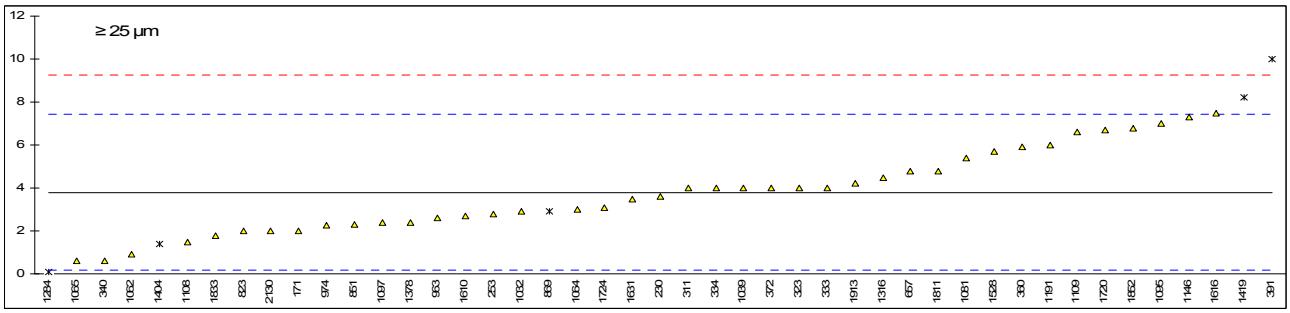
Corrections
Lab 340 first reported 80.1
Lab 360 first reported 1359.6
Lab 1404 first reported
Lab 1720 first reported 404.8 and 86.3

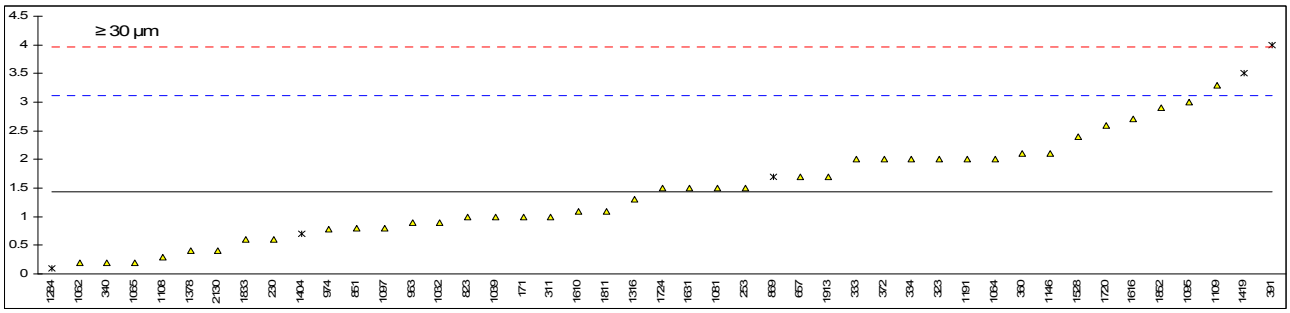

≥ 4 µm


≥ 6 µm


≥ 14 µm


≥ 21 µm


≥ 25 µm


≥ 30 µm

z-scores of particle size distribution

lab	>4 µm	>6 µm	>14µm	>21µm	>25µm	>30µm
171	0.02	0.64	-0.02	-0.49	-0.99	-0.51
225	-----	-----	-----	-----	-----	-----
230	-0.08	0.04	-0.37	0.27	-0.11	-0.98
253	0.99	0.57	-0.24	-0.88	-0.55	0.09
254	-----	-----	-----	-----	-----	-----
311	0.58	0.12	-0.58	0.25	0.11	-0.51
323	3.10	2.53	1.58	-0.24	0.11	0.68
333	2.89	1.11	1.02	0.49	0.11	0.68
334	0.42	0.06	-0.11	-0.24	0.11	0.68
335	-----	-----	-----	-----	-----	-----
340	0.94	0.23	-1.98	-1.67	-1.76	-1.45
360	6.26	3.66	3.05	1.45	1.15	0.80
370	-----	-----	-----	-----	-----	-----
372	-3.60	-1.14	-0.77	0.00	0.11	0.68
391	2.78	2.72	2.99	2.95	3.41	3.05
445	-----	-----	-----	-----	-----	-----
657	-2.27	-0.93	1.30	1.06	0.55	0.32
823	-1.48	-0.86	-1.24	-1.23	-0.99	-0.51
851	-5.45	-1.73	-1.25	-0.51	-0.83	-0.74
869	-10.83	-6.68	-2.70	-1.05	-0.50	0.32
963	-5.98	-2.75	-1.52	-0.83	-0.66	-0.62
974	-3.61	-2.08	-1.84	-0.93	-0.85	-0.77
1032	2.45	0.51	-0.27	-0.39	-0.50	-0.62
1038	-----	-----	-----	-----	-----	-----
1039	3.91	0.23	0.83	0.25	0.11	-0.51
1062	0.43	-0.94	-1.83	-1.55	-1.60	-1.45
1064	-1.19	-1.87	-1.74	-0.96	-0.44	0.68
1065	0.27	-4.01	-2.96	-1.72	-1.76	-1.45
1081	-4.63	-2.18	-0.58	0.49	0.88	0.09
1095	4.23	2.86	2.24	1.47	1.76	1.87
1097	-1.86	-1.21	-1.25	-0.78	-0.77	-0.74
1108	2.68	0.28	-1.41	-1.25	-1.27	-1.34
1109	8.12	5.87	2.94	1.89	1.54	2.22
1146	1.12	-0.12	0.87	1.91	1.92	0.80
1191	-6.75	-3.65	-1.05	0.49	1.21	0.68
1284	-9.54	-6.74	-3.80	-2.13	-2.04	-1.57
1316	2.19	1.17	0.78	0.71	0.38	-0.15
1378	3.34	2.19	-0.82	-1.30	-0.77	-1.22
1404	-11.29	-6.87	-3.11	-1.52	-1.32	-0.86
1419	12.88	9.40	2.18	1.87	2.42	2.46
1433	-----	-----	-----	-----	-----	-----
1528	5.69	3.96	2.17	1.01	1.04	1.15
1538	-----	-----	-----	-----	-----	-----
1610	6.31	2.87	0.93	-0.34	-0.61	-0.39
1616	-2.68	-0.95	0.14	1.57	2.03	1.51
1631	-2.98	-1.36	-0.40	-0.24	-0.17	0.09
1720	-8.68	-5.80	-2.10	2.31	1.59	1.39
1724	-4.98	-2.06	-0.69	-0.37	-0.39	0.09
1811	-0.77	1.62	1.09	0.44	0.55	-0.39
1833	-4.83	-1.45	-0.56	-0.96	-1.10	-0.98
1842	-----	-----	-----	-----	-----	-----
1852	5.76	3.19	1.87	1.30	1.65	1.75
1913	1.05	0.91	0.31	0.30	0.22	0.32
2130	-3.73	-2.24	-1.53	-0.76	-0.99	-1.22

APPENDIX 2

Z-scores of individual participants for distillation of sample #11063

lab	IBP-A	10%-A	50%-A	90%-A	FBP-A	IBP-M	10%-M	50%-M	90%-M	FBP-M
52	1.10	0.66	1.30	3.10	3.19	-----	-----	-----	-----	-----
53	0.30	0.40	1.02	0.76	3.63	-----	-----	-----	-----	-----
62	1.13	0.21	0.36	0.18	3.55	-----	-----	-----	-----	-----
120	-2.75	0.21	0.54	0.40	-3.20	-----	-----	-----	-----	-----
132	-0.20	-0.25	0.45	2.15	1.85	-----	-----	-----	-----	-----
140	-1.31	0.08	-0.78	-2.45	-4.89	-----	-----	-----	-----	-----
150	-0.48	-0.25	0.17	0.54	-2.37	-----	-----	-----	-----	-----
153	0.24	-0.05	0.17	0.98	-2.68	-----	-----	-----	-----	-----
159	-0.12	0.14	0.54	0.47	-0.51	-----	-----	-----	-----	-----
169	0.32	0.53	0.64	1.05	1.26	-----	-----	-----	-----	-----
171	0.38	0.40	0.83	3.24	4.93	-----	-----	-----	-----	-----
175	0.30	-0.12	-0.12	1.20	-2.45	-----	-----	-----	-----	-----
177	-0.04	-0.70	-2.00	-1.94	2.44	-----	-----	-----	-----	-----
194	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
216	-----	-----	-----	-----	-----	-0.88	0.42	0.64	0.33	4.63
221	-----	-----	-----	-----	-----	-0.88	1.50	0.64	-0.98	5.16
224	-----	-----	-----	-----	-----	0.52	0.59	0.29	-0.29	-3.37
225	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
228	-----	-----	-----	-----	-----	1.30	0.42	-0.36	0.33	-7.58
230	0.32	-0.38	-0.49	0.40	-1.70	-----	-----	-----	-----	-----
237	-----	-----	-----	-----	-----	-1.24	0.96	-0.36	0.65	-3.87
252	-----	-----	-----	-----	-----	-1.60	-1.73	-0.36	-0.33	-5.46
253	-----	-----	-----	-----	-----	-0.15	-0.65	-1.36	-0.33	-0.68
254	-----	-----	-----	-----	-----	-1.60	-1.73	-0.36	-0.33	-5.46
256	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
258	1.24	0.73	1.11	2.73	-2.84	-----	-----	-----	-----	-----
273	0.27	-0.05	-0.02	1.27	-3.24	-----	-----	-----	-----	-----
311	0.54	-0.18	-0.02	-0.04	1.89	-----	-----	-----	-----	-----
317	-0.84	0.14	0.36	-0.40	1.93	-----	-----	-----	-----	-----
323	-0.31	-0.38	0.07	-0.62	-0.40	-----	-----	-----	-----	-----
333	0.35	0.01	-0.02	-0.11	-4.58	-----	-----	-----	-----	-----
334	0.24	0.66	0.73	1.35	3.15	-----	-----	-----	-----	-----
335	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
340	-0.92	0.21	0.83	-0.04	-4.14	-----	-----	-----	-----	-----
353	0.46	0.01	1.02	2.08	0.87	-----	-----	-----	-----	-----
360	-0.65	-0.64	-1.43	-2.08	-1.46	-----	-----	-----	-----	-----
369	0.77	0.40	2.24	0.98	5.72	-----	-----	-----	-----	-----
370	-----	-----	-----	-----	-----	1.01	0.53	-0.36	-1.64	-0.20
372	-0.15	-0.25	-0.30	0.18	-1.54	-----	-----	-----	-----	-----
391	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
399	1.60	0.60	-0.21	-2.38	6.78	-----	-----	-----	-----	-----
440	0.74	0.08	0.45	-1.35	0.90	-----	-----	-----	-----	-----
441	1.68	-0.51	-0.21	1.93	-0.32	-----	-----	-----	-----	-----
445	0.63	-0.31	-1.06	0.98	1.34	-----	-----	-----	-----	-----
447	-0.26	0.14	0.54	2.15	3.07	-----	-----	-----	-----	-----
448	0.96	-0.18	-0.59	-0.55	4.26	-----	-----	-----	-----	-----
463	-0.06	0.14	0.17	-0.40	-0.24	-----	-----	-----	-----	-----
468	-0.40	0.40	0.26	1.05	-1.42	-----	-----	-----	-----	-----
473	-0.23	-0.05	-0.21	-1.50	1.34	-----	-----	-----	-----	-----
485	-0.24	0.11	0.12	-1.72	-3.16	-----	-----	-----	-----	-----
496	0.52	0.34	0.83	3.68	3.59	-----	-----	-----	-----	-----
604	-0.62	-0.18	-0.30	-0.62	-1.34	-----	-----	-----	-----	-----
606	-0.01	1.12	0.54	-0.04	1.38	-----	-----	-----	-----	-----
608	-----	-----	-----	-----	-----	-0.51	-0.65	0.14	0.00	-11.56
631	0.57	-0.12	-0.21	2.37	0.98	-----	-----	-----	-----	-----
657	-0.51	-0.12	0.64	2.95	0.00	-----	-----	-----	-----	-----
663	0.88	0.40	0.45	-0.04	1.77	-----	-----	-----	-----	-----
671	0.13	0.47	0.07	-1.21	-1.19	-----	-----	-----	-----	-----
823	0.30	0.86	0.54	-0.92	0.94	-----	-----	-----	-----	-----
851	0.46	0.79	1.39	2.22	-0.36	-----	-----	-----	-----	-----
862	0.27	0.21	0.36	-0.77	-0.75	-----	-----	-----	-----	-----
869	-----	-----	-----	-----	-----	0.21	0.42	1.65	3.28	-0.15
962	-----	-----	-----	-----	-----	0.58	0.42	0.14	0.00	-3.60
963	-----	-----	-----	-----	-----	0.94	0.96	0.14	0.33	-3.87
974	-0.09	-1.29	-1.91	-0.55	-2.29	-----	-----	-----	-----	-----
994	-----	-----	-----	-----	-----	0.21	0.42	0.64	0.33	4.36
995	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
996	-----	-----	-----	-----	-----	0.21	0.42	0.14	0.00	4.10
997	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1016	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1017	0.82	-0.12	-1.43	-2.23	-2.88	-----	-----	-----	-----	-----
1021	-0.18	0.40	0.54	2.30	-5.64	-----	-----	-----	-----	-----
1026	-0.62	-0.12	-0.30	-1.43	-3.83	-----	-----	-----	-----	-----

1032	0.43	0.01	-0.12	-1.43	-0.79	-----	-----	-----	-----	-----
1038	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1039	-0.29	0.93	0.92	3.76	3.19	-----	-----	-----	-----	-----
1049	-0.42	0.40	0.45	-0.48	3.67	-----	-----	-----	-----	-----
1059	-0.42	-0.51	0.07	-2.01	-1.58	-----	-----	-----	-----	-----
1062	-0.65	0.14	0.54	-0.77	0.27	-----	-----	-----	-----	-----
1064	0.30	0.53	0.36	-0.11	2.52	-----	-----	-----	-----	-----
1065	4.92	10.76	16.19	15.51	8.40	-----	-----	-----	-----	-----
1079	-0.90	0.34	1.20	3.03	2.92	-----	-----	-----	-----	-----
1080	-0.37	-1.35	-1.62	-1.35	-3.91	-----	-----	-----	-----	-----
1081	0.07	0.79	0.83	2.08	-0.83	-----	-----	-----	-----	-----
1082	0.52	0.47	0.45	0.91	3.39	-----	-----	-----	-----	-----
1097	-0.06	0.79	0.83	-0.70	-9.86	-----	-----	-----	-----	-----
1108	0.16	-0.64	-0.68	-1.28	3.90	-----	-----	-----	-----	-----
1109	-0.29	0.40	0.26	2.59	-0.59	-----	-----	-----	-----	-----
1126	-0.12	-0.83	1.20	2.51	1.06	-----	-----	-----	-----	-----
1140	-0.76	-0.57	-0.78	-1.13	-3.24	-----	-----	-----	-----	-----
1150	0.05	-0.25	-0.68	-2.23	-2.72	-----	-----	-----	-----	-----
1191	-0.31	0.21	0.45	0.98	2.17	-----	-----	-----	-----	-----
1212	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1215	-0.37	0.14	0.17	1.42	2.64	-----	-----	-----	-----	-----
1264	-----	-----	-----	-----	-----	-1.60	-1.73	-1.36	-1.64	5.69
1279	-----	-----	-----	-----	-----	1.30	-0.11	0.64	1.97	5.69
1284	0.32	-1.29	-1.34	-0.33	1.06	-----	-----	-----	-----	-----
1297	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1299	0.30	0.01	0.17	1.42	3.47	-----	-----	-----	-----	-----
1316	-0.48	-0.18	-0.02	0.54	-1.46	-----	-----	-----	-----	-----
1318	-0.98	-0.05	-0.21	-0.84	0.20	-----	-----	-----	-----	-----
1357	-0.59	-0.96	-1.91	0.03	0.51	-----	-----	-----	-----	-----
1378	-0.65	-0.83	-1.43	-0.62	-1.42	-----	-----	-----	-----	-----
1395	-0.54	-0.25	-0.21	-2.08	-0.59	-----	-----	-----	-----	-----
1399	-0.73	-0.38	0.17	-1.50	-3.04	-----	-----	-----	-----	-----
1404	0.16	-0.31	-1.15	-3.32	-2.37	-----	-----	-----	-----	-----
1419	-0.26	-0.25	-0.21	-1.35	-3.87	-----	-----	-----	-----	-----
1433	0.18	-0.38	-0.12	-0.77	1.10	-----	-----	-----	-----	-----
1447	-----	-----	-----	-----	-----	0.30	-0.26	1.33	0.76	4.68
1448	-0.15	1.06	1.39	0.54	1.85	-----	-----	-----	-----	-----
1520	-----	-----	-----	-----	-----	1.30	0.96	-0.36	0.65	7.81
1528	0.13	-0.05	-0.21	-0.26	1.69	-----	-----	-----	-----	-----
1538	1.15	0.21	-0.12	-2.16	-2.25	-----	-----	-----	-----	-----
1610	0.32	0.53	1.11	2.95	-0.59	-----	-----	-----	-----	-----
1616	0.27	-0.83	-1.43	-3.11	-7.50	-----	-----	-----	-----	-----
1631	-0.65	-0.18	0.17	-3.11	-2.33	-----	-----	-----	-----	-----
1634	-0.95	0.08	-0.12	0.03	1.38	-----	-----	-----	-----	-----
1635	-0.73	-0.18	-0.49	-0.84	0.23	-----	-----	-----	-----	-----
1636	0.41	0.27	0.54	1.57	3.00	-----	-----	-----	-----	-----
1651	-0.12	0.50	0.17	-1.03	-4.00	-----	-----	-----	-----	-----
1715	0.35	-0.05	0.07	0.91	-0.40	-----	-----	-----	-----	-----
1720	-0.70	-1.29	-1.43	-2.08	2.36	-----	-----	-----	-----	-----
1724	-0.04	0.14	0.07	-0.55	-0.79	-----	-----	-----	-----	-----
1738	-0.90	-0.90	-1.72	-2.38	-5.92	-----	-----	-----	-----	-----
1810	0.18	-0.96	-1.25	-1.57	0.87	-----	-----	-----	-----	-----
1811	-----	-----	-----	-----	-----	0.58	-1.19	-1.56	0.20	3.67
1833	-0.04	-0.31	-0.59	-2.52	2.25	-----	-----	-----	-----	-----
1842	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1852	-1.20	-0.12	-0.30	-2.08	-3.12	-----	-----	-----	-----	-----
1913	0.68	0.93	0.64	1.13	-3.83	-----	-----	-----	-----	-----
1948	-0.23	0.34	0.45	0.11	2.84	-----	-----	-----	-----	-----
1952	1.13	0.66	3.09	-0.04	3.31	-----	-----	-----	-----	-----
2129	-0.42	-0.83	-1.72	-2.74	-3.00	-----	-----	-----	-----	-----
2130	0.10	-0.12	-0.12	4.41	4.77	-----	-----	-----	-----	-----
2133	-0.79	-0.05	-0.30	-2.01	-1.38	-----	-----	-----	-----	-----
2136	-0.37	0.34	-0.12	-1.43	3.55	-----	-----	-----	-----	-----

APPENDIX 3

Number of participants per country

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

APPENDIX 4

Abbreviations:

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

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