Results of Proficiency Test
Jet Fuel A1
September 2021

CONTENTS

Appendices:

1   INTRODUCTION

Since 1995 the Institute for Interlaboratory Studies (iis) organizes a proficiency scheme for the analysis of Jet Fuel A1 twice a year in accordance with the latest version of the "Aviation Fuel Quality Requirements for Jointly Operated Systems (AFQRJOS)", sometimes referred to as the "Joint Fuelling System Check List for Jet A-1". The interlaboratory study on Jet Fuel was extended with separate PTs for the determination of Particle Size Distribution, BOCLE, FAME, JFTOT and Particulate Contamination. During the annual proficiency testing program of 2021/2022 it was decided to continue the round robin for the analysis of Jet Fuel A1.

In this interlaboratory study registered for participation:
- 154 laboratories in 69 countries on Jet Fuel A1 regular round (iis21J02)
- 26 laboratories in 17 countries on Jet Fuel A1 BOCLE (iis21J02BOCLE)
- 65 laboratories in 32 countries on Jet Fuel A1 Particle Size (iis21J02PS)
- 71 laboratories in 35 countries on Jet Fuel A1 FAME (iis21J02FAME)
- 94 laboratories in 48 countries on Jet Fuel A1 JFTOT (iis21J02JF)
- 59 laboratories in 32 countries on Jet Fuel A1 Particulate Contamination (iis21J02CP)

In total 169 laboratories in 70 different countries registered for participation in one or more rounds. See appendix 5 for the number of participants per country. In this report the results of the Jet Fuel proficiency tests are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

2   SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organizer of this proficiency test (PT). Sample analyzes for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC17025 accredited laboratory.
In this proficiency test the participants received, depending on the registration, from one up to seven different samples of Jet Fuel, see table below.

Sample ID	Quantity	Purpose
#21150	2x 1L	Regular analyzes
#21151	1x 100mL	BOCLE
#21152	1x 0.5L	Particle Size Distribution
#21153	1x 100mL	FAME
#21154	1x 100mL	FAME
#21155	1x 1L, 70% filled	JFTOT
#21156	4x 1L	Particulate Contamination

Table 1: Jet Fuel samples used in PT iis21J02

Participants were requested to report rounded and unrounded test results. The unrounded test 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/IEC17043:2010 (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This PT falls under the accredited scope. This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentiality 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 Organisation, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5). This protocol is electronically available through the iis website www.iisnl.com, from the FAQ page.

2.3 CONFIDENTIALITY STATEMENT

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

2.4 SAMPLES

For the preparation of the sample for the regular PT Jet Fuel A1 a batch of approximately 500 liters of Jet Fuel A1 was obtained from a third party. After homogenization 350 amber glass bottles of 1L were filled and labelled #21150.
The homogeneity of the subsamples was checked by the determination of Density in accordance with ASTM D4052 on 10 stratified randomly selected subsamples.

	Density at 15°C in kg/m^3
sample #21150-1	803.55
sample #21150-2	803.55
sample #21150-3	803.54
sample #21150-4	803.54
sample #21150-5	803.54
sample #21150-6	803.54
sample #21150-7	803.54
sample #21150-8	803.56
sample #21150-9	803.55
sample #21150-10	803.54

Table 2: homogeneity test results of subsamples #21150

From the above test results the repeatability was calculated and compared with 0.3 times the reproducibility of the reference test method in agreement with the procedure of ISO13528, Annex B2 in the next table.

	Density at 15°C in kg/m³
r (observed)	0.02
reference test method	ASTM D4052:18a
0.3 x R (reference test method)	0.15

Table 3: evaluation of the repeatability of subsamples #21150

The calculated repeatability is in agreement with 0.3 times the reproducibility of the reference test method. Therefore, homogeneity of the subsamples was assumed.

For the preparation of the BOCLE sample a batch of approximately 5 liters of Jet Fuel A1 was obtained from a local refinery. After homogenization 50 amber glass bottles of 100mL were filled and labelled #21151.
The homogeneity of the subsamples was checked by the determination of Density in accordance with ASTM D4052 on 8 stratified randomly selected subsamples.

	Density at 15°C in kg/m³
sample #21151-1	801.63
sample #21151-2	801.63
sample #21151-3	801.64
sample #21151-4	801.64
sample #21151-5	801.63
sample #21151-6	801.64
sample #21151-7	801.64
sample #21151-8	801.64

Table 4: homogeneity test results of subsamples #21151

From the above test results the repeatability was calculated and compared with 0.3 times the reproducibility of the reference test method in agreement with the procedure of ISO13528, Annex B2 in the next table.

	Density at 15°C in kg/m³
r (observed)	0.01
reference test method	D4052:18a
0.3 x R (reference test method)	0.15

Table 5: evaluation of the repeatability of subsamples #21151

The calculated repeatability is in agreement with 0.3 times the reproducibility of the reference test method. Therefore, homogeneity of the subsamples was assumed.

For the preparation of the sample for the Jet Fuel A1 Particle Size a batch of approximately 85 liters of Jet Fuel A1 was obtained from a local refinery. After homogenization 100 amber glass bottles of 0.5L were filled and labelled #21152. Each bottle was spiked with 1mL of Lube oil which contained suspended Arizona Dust before filling with Jet Fuel A1.
The homogeneity of the subsamples was checked by the determination of Particle Size Distribution in accordance with IP565 on 8 stratified randomly selected subsamples.

	> 4 µm (c) counts/mL	> 6 µm (c) counts/mL	> 14 µm (c) counts/mL
sample #21152-1	9191	3413	134
sample #21152-2	9436	3589	156
sample #21152-3	9534	3583	147
sample #21152-4	9494	3580	142
sample #21152-5	9726	3672	126
sample #21152-6	9459	3496	124
sample #21152-7	9664	3668	153
sample #21152-8	9677	3655	153

Table 6: homogeneity test results of subsamples #21152

From the above test results the relative standard deviations (RSD) were calculated and compared with 0.3 times the corresponding average relative standard deviation obtained from fifteen iis PTs of IP565 test data from 2014 - 2021 in agreement with the procedure of ISO13528, Annex B2 in the next table.

	> 4 µm (c)	> 6 µm (c)	> 14 µm (c)
RSD% (observed)	2	3	9
reference method	iis PTs	iis PTs	iis PTs
0.3 x RSD% (reference method)	5	6	11

Table 7: evaluation of the relative standard deviations of subsamples #21152

The calculated relative standard deviations are in agreement with 0.3 times the corresponding average relative standard deviation obtained from the previous iis PTs. Therefore, homogeneity of the subsamples was assumed.

For the preparation of the samples for the Jet Fuel A1 FAME determination it was decided to prepare two different PT samples with low(er) and high(er) level of FAME.
A batch of approximately 10 liters of Jet Fuel A1 was spiked with approximately 0.4 grams Biodiesel B100. After homogenization 100 amber glass bottles of 100mL were filled and labelled #21153.
Another Jet Fuel A1 batch of approximately 10 liters was spiked with approximately 0.1 grams Biodiesel B100. After homogenization 100 amber glas bottles of 100mL were filled and labelled #21154.
The homogeneity of the subsamples #21153 and #21154 was checked by the determination of FAME in accordance with method IP585 on 8 stratified randomly selected subsamples.

	FAME in mg/kg #21153	FAME in mg/kg #21154
sample 1	44.4	16.4
sample 2	44.9	17.6
sample 3	47.3	17.0
sample 4	44.9	18.0
sample 5	47.2	18.3
sample 6	47.4	17.8
sample 7	45.7	17.6
sample 8	44.5	18.4

Table 8: homogeneity test results of subsamples #21153 and #21154

From the above test results the relative standard deviations (RSD) were calculated and compared with 0.3 times the corresponding average relative standard deviation obtained from five iis PTs (2016 -2020) in agreement with the procedure of ISO13528, Annex B2 in the next table.

	FAME #21153	FAME #21154
RSD% (observed)	3	4
reference method	iis PTs	iis PTs
0.3 x RSD% (reference method)	4	5

Table 9: evaluation of the repeatabilities of subsamples #21153 and #21154

The calculated relative standard deviations are in agreement with 0.3 times the corresponding average relative standard deviation obtained from the previous iis PTs. Therefore, homogeneity of the subsamples was assumed.

For the preparation of the JFTOT sample a batch of approximately 200 liters of Jet Fuel was obtained from a third party. After homogenization 128 amber glass bottles of 1L were filled at a level of 70% and labelled #21155.
The homogeneity of the subsamples was checked by the determination of Density in accordance with ASTM D4052 on 8 stratified randomly selected subsamples.

	Density at 15°C in kg/m^3
sample #21155-1	803.56
sample #21155-2	803.56
sample #21155-3	803.54
sample #21155-4	803.55
sample #21155-5	803.56
sample #21155-6	803.55
sample #21155-7	803.55
sample #21155-8	803.55

Table 10: homogeneity test results of subsamples #21155

From the above test results the repeatability was calculated and compared with 0.3 times the reproducibility of the reference test method in agreement with the procedure of ISO13528, Annex B2 in the next table.

	Density at 15°C in kg/m³
r (observed)	0.02
reference test method	ASTM D4052:18a
0.3 x R (reference test method)	0.15

Table 11: evaluation of the repeatability of subsamples #21155

The calculated repeatability is in agreement with 0.3 times the reproducibility of the reference test method. Therefore, homogeneity of the subsamples was assumed.

For the preparation of the sample for Particulate Contamination a batch of approximately 280 liters of Jet Fuel A1 was obtained from a third party. After homogenization 270 amber glass bottles of 1L were filled and labelled #21156.
The homogeneity of the subsamples was checked by the determination of Density in accordance with ASTM D4052 on 8 stratified randomly selected subsamples.

	Density at 15°C in kg/m³
sample #21156-1	800.01
sample #21156-2	800.01
sample #21156-3	800.01
sample #21156-4	800.00
sample #21156-5	800.01
sample #21156-6	800.01
sample #21156-7	800.01
sample #21156-8	800.01

Table 12: homogeneity test results of subsamples #21156

From the above test results the repeatability was calculated and compared with 0.3 times the reproducibility of the reference test method in agreement with the procedure of ISO13528, Annex B2 in the next table.

	Density at 15°C in kg/m³
r (observed)	0.01
reference test method	ASTM D4052:18a
0.3 x R (reference test method)	0.15

Table 13: evaluation of the repeatability of subsamples #21156

The calculated repeatability is in agreement with 0.3 times the reproducibility of the reference test method. Therefore, homogeneity of the subsamples was assumed.

Depending on the registration of the participant the appropriate set of PT samples was dispatched on August 11, 2021. An SDS was added to the sample package.

2.5 STABILITY OF THE SAMPLES

The stability of Jet Fuel A1 packed in the amber glass bottles was checked. The type of bottle was chosen in accordance with ASTM D4306:20. The material has been found sufficiently stable for the period of the proficiency test.

2.6 ANALYZES

The participants were requested to determine on sample #21150: Appearance, Total Acidity, Aromatics by FIA, Mono Aromatics (MAH), Di Aromatics (DAH) and Total Aromatics by HPLC, Color Saybolt (automated and manual), Copper Corrosion 2 hrs at 100°C, Density at 15°C, Distillation at 760 mmHg (IBP, Temperature at 10%, 50%, 90% recovered and FBP), Existent Gum (unwashed), Flash Point, Freezing Point, Kinematic Viscosity at -20°C, Mercaptan Sulfur as S, MSEP, Naphthalenes, Smoke Point, Specific Energy (Net, on Sulfur free basis) and Total Sulfur.
On sample #21151 it was requested to determine: Wear Scar Diameter.
On sample #21152 it was requested to determine: Particle Size Distribution.
On samples #21153 and #21154 it was requested to determine: FAME content.
On sample #21155 it was requested to determine: Copper and JFTOT.
On sample #21156 it was requested to determine: Particulate Contamination.

It was explicitly requested to treat the samples as if they were routine samples and to report the test results using the indicated units on the report form and not to round the test results, but report as much significant figures as possible. It was also requested not to report 'less than' test results, which are above the detection limit, because such test results cannot be used for meaningful statistical evaluations.

To get comparable test results a detailed report form and a letter of instructions are prepared. On the report form the reporting units are given as well as the reference test methods (when applicable) that will be used during the evaluation. The detailed report form and the letter of instructions are both made available on the data entry portal www.kpmd.co.uk/sgs-iis/. The participating laboratories are also requested to confirm the sample receipt on this data entry portal. The letter of instructions can also be downloaded from the iis website www.iisnl.com.

3 RESULTS

During five weeks after sample dispatch, the test results of the individual laboratories were gathered via the data entry portal www.kpmd.co.uk/sgs-iis/. The reported test results are tabulated per determination in appendix 1 of this report. The laboratories are presented by their code numbers.

Directly after the deadline, a reminder was sent to those laboratories that had not reported test results at that moment. Shortly after the deadline, the available test results were screened for suspect data. A test 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 reported test results (no reanalyzes). Additional or corrected test results are used for data analysis and the original test results are placed under 'Remarks' in the result tables in appendix 1. Test results that came in after the deadline were not taken into account in this screening for suspect data and thus these participants were not requested for checks.

3.1   STATISTICS

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 Organisation, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5).
For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as '<…' or '>…' were not used in the statistical evaluation.

First, the normality of the distribution of the various data sets per determination was checked by means of the Lilliefors-test, a variant of the Kolmogorov-Smirnov test and by the calculation of skewness and kurtosis. Evaluation of the three normality indicators in combination with the visual evaluation of the graphic Kernel density plot, lead to judgement of the normality being either 'unknown', 'OK', 'suspect' or 'not OK'. After removal of outliers, this check was repeated. If a data set does not have a normal distribution, the (results of the) statistical evaluation should be used with due care.

The assigned value is determined by consensus based on the test results of the group of participants after rejection of the statistical outliers and/or suspect data.

According to ISO13528 all (original received or corrected) results per determination were submitted to outlier tests. In the iis procedure for proficiency tests, outliers are detected prior to calculation of the mean, standard deviation and reproducibility. For small data sets, Dixon (up to 20 test results) or Grubbs (up to 40 test results) outlier tests can be used. For larger data sets (above 20 test results) Rosner's outlier test can be used. Outliers are marked by D(0.01) for the Dixon's test, by G(0.01) or DG(0.01) for the Grubbs' test and by R(0.01) for the Rosner's test. Stragglers are marked by D(0.05) for the Dixon's test, by G(0.05) or DG(0.05) for the Grubbs' test and by R(0.05) for the Rosner's 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. In this PT, the criterion of ISO13528, paragraph 9.2.1. was met for all evaluated tests, therefore, the uncertainty of all assigned values may be negligible and need not be included in the PT report.

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

3.2 GRAPHICS

In order to visualize the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported test results are plotted. The corresponding laboratory numbers are on 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 reference test method. 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. Also, a normal Gauss curve (dotted line) was projected over the Kernel Density Graph (smooth line) for reference. The Gauss curve is calculated from the consensus value and the corresponding standard deviation.

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 (derived from e.g. ISO or ASTM test methods), the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the variation in this interlaboratory study.

The target standard deviation was calculated from the literature reproducibility by division with 2.8. In case no literature reproducibility was available, other target values were used, like Horwitz or an estimated reproducibility based on former iis proficiency tests.

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

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

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

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

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

4   EVALUATION

Some problems were encountered with the dispatch of the samples due to COVID-19 pandemic. Therefore, the reporting time on the data entry portal was extended with another week. For the regular analyzes Jet Fuel A1 three participants reported test results after the extended reporting date and twelve other participants did not report any test results.
For the BOCLE round one participant reported test results after the extended reporting date and four other participants did not report any test results.
For the Particle Size Distribution round three participants reported test results after the extended reporting date and ten other participants did not report any test results.
For the FAME round three participants reported test results after the extended reporting date and eleven other participants did not report any test results.
For the JFTOT round two participants reported test results after the extended reporting date and eight other participants did not report any test results.
For the Particulate Contamination round one participant reported test results after the extended reporting date and eight other participants did not report any test results.
Not all participants were able to report all tests requested.
In total 160 participants reported 3091 numerical test results. Observed were 42 outlying test results, which is 1.4%. In proficiency tests outlier percentages of 3% - 7.5% are quite normal.

Not all data sets proved to have a normal Gaussian distribution. These are referred to as "not OK" or "suspect". The statistical evaluation of these data sets should be used with due care, see also paragraph 3.1.

4.1   EVALUATION PER SAMPLE AND PER TEST

In this section the reported test results are discussed per sample and per test. The test methods which were used by the various laboratories were taken into account for explaining the observed differences when possible and applicable. These test methods are also in the tables together with the original data. The abbreviations, used in these tables, are explained in appendix 6.

In the iis PT reports ASTM test methods are referred to with a number (e.g. D3242) and an added designation for the year that the test method was adopted or revised (e.g. D3242:11). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D3242:11(2017)). In the test results tables of appendix 1 only the test method number and year of adoption or revision (e.g. D3242:11) will be used.

Since the Joint Fuelling System Check List for Jet-A1 is continuously updated, the participants are advised to monitor the updates. The latest version at the time of this Round Robin is DEF STAN 91-091/Issue 12, September 2020 and ASTM D1655:20d. One must keep in mind that ISO test methods are not mentioned in the "Checklist".

sample #21150
Appearance: This determination was not problematic. All reporting participants agreed about the appearance being Clear and Bright (Pass).

Total Acidity: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of ASTM D3242:11(2017).

Aromatics by FIA: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with ASTM D1319:20a.

Mono Aromatics (MAH) by HPLC: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of ASTM D6379:21.

Di Aromatics (DAH) by HPLC: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not at all in agreement with the requirements of ASTM D6379:21.

Total Aromatics by HPLC in %M/M: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with ASTM D6379:21.

Total Aromatics by HPLC in %V/V: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with ASTM D6379:21.

Color Saybolt: The determination was very problematic for the automated test method. No statistical outliers were observed but one test result was excluded. The calculated reproducibility after rejection of the suspect data is not at all in agreement with the requirements of ASTM D6045:20.
The determination for the manual test method was also problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of ASTM D156:15.

Copper Corrosion: This determination was not problematic. All reporting participants agreed on a result of 1 (1a/1b).

Density at 15°C: This determination was not problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D4052:18a.

Distillation at 760 mmHg: This determination may be problematic dependent on the method used. Three statistical outliers were observed over five parameters. The calculated reproducibilities after rejection of the statistical outliers are all in agreement with the requirements of the automated method of ASTM D86:20b.
When compared to the manual method requirements of ASTM D86:20b the calculated reproducibilities for IBP and FBP only are not in agreement.

Existent Gum (unwashed): This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with ASTM D381:19.

Flash Point: This determination was not problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of IP170:21.

Freezing Point: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D2386:19.

Kinematic Viscosity at -20°C: 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 IP71-1:96(2020).
It was decided not to evaluate against the requirements of ASTM D445:21 because the requirements in this version are very strict compared to the requirements from version ASTM D445:19 and to IP71-1:96(2020).

Mercaptan Sulfur: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of ASTM D3227:16.

MSEP: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D3948:20.

Naphthalenes: This determination may be problematic depending on the procedure used. Five statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ASTM D1840:07(2017) procedure B but not with the stricter requirements of procedure A.

Smoke Point: This determination may be problematic depending on the procedure used. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D1322:19 manual procedure but not with the stricter requirements of ASTM D1322:19 automated procedure.

Specific Energy: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of ASTM D3338:20. Two calculation differences were observed.

Total Sulfur: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of ASTM D5453:19a.

sample #21151

BOCLE: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of ASTM D5001:19e1 either semi-automatic or full-automatic. Also, when the test results from semi-automatic and full-automatic methods were evaluated separately, the calculated reproducibilities are still not in agreement with the requirements of ASTM D5001:19e1.

sample #21152 Particle Size Distribution Determination

The Joint Fuelling System Check List for Jet-A1 lists test methods IP565 and IP577 as the reference test methods to determine the Particle Size Distribution in Jet Fuel A1

Almost all reporting participants mentioned to have used IP565. Two participants used IP577, one participant used ASTM D7169 which is not mentioned in the Checklist and one participant used IP564 which is not mentioned in the Checklist as test method since 2020. At the end of September 2019, the Energy Institute announced that it has suspended test method IP564. Therefore, it was decided to exclude the reported test results determined with IP564 or ASTM D7169.

The test results from IP577 were also excluded from statical evaluation as it was observed in previous iis PTs that IP577 gives deviating results compared to IP565.

Further it is observed that almost all particiants:
- used ISO11171 for the calibration
- used ISO4406 for calculating the scale numbers from the counts per mL
- correctly calculated the ISO code from the test results in counts/mL, three participants calculated a slightly different ISO code compared to iis calculation.

One participant had three or more outliers in the particle size determination. The other test results from this laboratory in counts/mL or ISO scale numbers were excluded as the test results are not independent from each other.

IP counts: This determination was problematic. In total three statistical outliers were observed for the six particle size parameters and twenty-seven other test results were excluded. The calculated reproducibilities after rejection of the suspect data are not in agreement with the requirements of IP565:13.

ISO class: The determination expressed in ISO scale numbers was not problematic for two parameters. One statistical outlier was observed and fourteen other test results were excluded. The calculated reproducibilities ≥6 µm (c) and ≥14 µm (c) are in agreement with the indicative requirements of IP565:13 Annex C, but not for ≥4 µm (c).

sample #21153 FAME content determination

GCMS/HPLC: 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 IP585:10(2015) or IP590:10.
When the test results were evaluated separately for IP585 and IP590 the calculated reproducibilities are still not in agreement with the requirements of the respective test methods.

FTIR: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of IP583:15.

sample #21154 FAME content determination

GCMS/HPLC: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of IP585:10(2015) but not with the stricter requirements of IP590:10.

FTIR: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of IP583:15.

sample #21155 JFTOT determination

Copper: Only two participants reported a numeric test result. Therefore, no z-scores are calculated.

JFTOT: Using the criteria from AFQRJOS on the test results (including the laboratories that did not report a pass or fail) all laboratories would rate the sample as a pass.

sample #21156

Particulate Contamination: This determination was not problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of the ASTM D5452:12

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the reference test method and the reproducibility as found for the group of participating laboratories. The number of significant test results, the average, the calculated reproducibility (2.8 * standard deviation) and the target reproducibility derived from literature reference test methods (in casu ASTM and IP test methods) are compared in the next tables.

Parameter	unit	n	average	2.8 * sd	R(lit)
Appearance		101	Cl.&Br.	n.a.	n.a.
Total Acidity	mg KOH/g	87	0.0014	0.0019	0.0015
Aromatics by FIA	%V/V	71	16.1	1.7	2.7
Mono Aromatics (MAH) by HPLC	%M/M	39	17.1	1.3	1.1
Di Aromatics (DAH) by HPLC	%M/M	40	1.85	0.48	0.20
Total Aromatics by HPLC	%M/M	40	18.9	1.2	1.2
Total Aromatics by HPLC	%V/V	51	16.9	1.2	1.0
Color Saybolt (automated)		65	27.9	3.5	1.2
Color Saybolt (manual)		70	27.5	4.0	2
Copper Corrosion 2hrs at 100°C		114	1 (1a/1b)	n.a.	n.a.
Density at 15°C	kg/m^3	132	803.5	0.2	0.5
Initial Boiling Point	°C	133	149.8	6.8	8.2
Temp at 10% recovered	°C	133	171.1	2.5	3.8
Temp at 50% recovered	°C	134	198.9	2.0	3.0
Temp at 90% recovered	°C	134	235.9	3.0	3.5
Final Boiling Point	°C	132	254.5	4.5	7.1
Existent Gum (unwashed)	mg/100mL	74	0.7	1.2	3.1
Flash Point	°C	131	42.9	2.8	3.2
Freezing Point	°C	119	-52.8	2.1	2.5
Kinematic Viscosity at -20°C	mm^2/s	93	3.987	0.091	0.076
Mercaptan Sulfur as S	%M/M	93	0.0005	0.0003	0.0003
MSEP		107	96.3	5.9	6.6
Naphthalenes	%V/V	74	1.23	0.10	0.11
Smoke Point	mm	103	23.5	2.4	3.7
Specific Energy (Net)	MJ/kg	82	43.249	0.049	0.046
Total Sulfur	mg/kg	112	456	69	58
BOCLE	mm	22	0.72	0.08	0.07

Table 14: reproducibilities of tests on samples #21150 and #21151

Parameter	unit	n	average	2.8 * sd	R(lit)
Particle Size ≥4 µm (c)	counts/mL	48	9942	2304	1189
Particle Size ≥6 µm (c)	counts/mL	49	3612	1228	820
Particle Size ≥14 µm (c)	counts/mL	48	188	168	104
Particle Size ≥21 µm (c)	counts/mL	48	24	43	21
Particle Size ≥25 µm (c)	counts/mL	48	9	19	10
Particle Size ≥30 µm (c)	counts/mL	48	3	8	5
Particle Size ≥4 µm (c)	ISO scale	46	20.4	1.4	1.0
Particle Size ≥6 µm (c)	ISO scale	46	19.0	0.0	1.4
Particle Size ≥14 µm (c)	ISO scale	46	14.7	1.8	2.2

Table 15: reproducibilities of tests on sample #21152 according to IP565

Parameter	unit	n	average	2.8 * sd	R(lit)
FAME content GCMS/HPLC	mg/kg	34	53.0	18.0	14.4
FAME content FTIR	mg/kg	21	62.1	13.8	8.1

Table 16: reproducibilities of tests on sample #21153

Parameter	unit	n	average	2.8 * sd	R(lit)
FAME content GCMS/HPLC	mg/kg	35	23.3	7.0	6.8
FAME content FTIR	mg/kg	22	30.4	10.4	6.5

Table 17: reproducibilities of tests on sample #21154

Parameter	unit	n	average	2.8 * sd	R(lit)
Copper as Cu	µg/kg	4	<10	n.a.	n.a.
VTR (visual)		81	0 - <2	n.a.	n.a.
ITR (interferometric)	Nm	17	2.6 - 37.7	n.a.	n.a.
ETR (elliptometric)	nm	12	3.2 - 27.5	n.a.	n.a.
Delta P	mmHg	83	0 - 2	n.a.	n.a.
JFTOT Evaluation (Pass/Fail)		79	Pass	n.a.	n.a.
Particulate Contamination	mg/L	46	0.34	0.21	0.42

Table 18: reproducibilities of tests on sample #21155 and #21156

Without further statistical calculations, it can be concluded that for many tests there is a good compliance of the group of participants with the reference test methods. The problematic tests have been discussed in paragraph 4.1.

4.3 COMPARISON OF THE PROFICIENCY TEST OF SEPTEMBER 2021 WITH PREVIOUS PTS

	September 2021	March 2021	September 2020	March 2020	September 2019
Number of reporting laboratories	160	91	152	90	154
Number of test results	3091	1676	2992	1666	3043
Number of statistical outliers	42	58	94	67	78
Percentage of statistical outliers	1.4%	3.5%	3.1%	4.0%	2.6%

Table 19: 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 to the requirements of the reference test methods. The conclusions are given in the following table.

Parameter	September 2021	March 2021	September 2020	March 2020	September 2019
Total Acidity	-	-	-	-	-
Aromatics by FIA	+	+	+	+	+
Aromatics by HPLC	-	+	+	+/-	+/-
Color Saybolt (automated)	--	--	--	-	-

Parameter	September 2021	March 2021	September 2020	March 2020	September 2019
Color Saybolt (manual)	--	-	-	-	-
Density at 15°C	++	++	++	++	++
Distillation at 760 mmHg	+	+	+	+	+
Existent Gum (unwashed)	++	++	++	++	++
Flash Point	+	+/-	+/-	+	+
Freezing Point	+	+	+	+	+
Kinematic Viscosity at -20°C	-	-	-	+/-	+
Mercaptan Sulfur	+/-	+	+	+	+
MSEP	+	+	+	+/-	+/-
Naphthalenes	+/-	+/-	+	+	+
Smoke Point	+	++	++	++	+
Specific Energy (Net)	+/-	+/-	-	-	-
Total Sulfur	-	+	+	-	+/-
BOCLE	-	n.e.	+/-	n.e.	--
Particulate Contamination	+	n.e.	+/-	n.e.	+/-
IP565 cumilative counts/mL	-	--	-	-	--
IP565 ISO scale numbers	+	+	+	+/-	+/-
FAME content	-	n.e.	-	n.e.	-
JFTOT finding correct Pass/Fail	+	n.e.	+	n.e.	+

Table 20: comparison determinations against the reference test methods

The following performance categories were used:

       ++   : group performed much better than the reference test method

       +   : group performed better than the reference test method

       +/-   : group performance equals the reference test method

       -       : group performed worse than the reference test method

       --   : group performed much worse than the reference test method

    n.e.   : not evaluated

APPENDIX 1
Determination of Appearance on sample #21150;

lab	method	value	z(targ)	lab	method	value	z(targ)
52	Visual	C & B	-----	1062	Visual	pass	-----
62	Visual	C+B	-----	1064	Visual	C&B	-----
120	Visual	C & B	-----	1065		-----	-----
140		-----	-----	1082		-----	-----
150	Visual	Clear & Bright	-----	1097	Visual	Clair et limpide	-----
159	Visual	Clear & Bright	-----	1105	Visual	C&B	-----
169	Visual	Clear and Bright	-----	1109	Visual	Pass	-----
171	Visual	Clear and Bright	-----	1121	Visual	Clear & Bright	-----
175	Visual	Clear & Bright	-----	1126		-----	-----
177		-----	-----	1140	Visual	C&B	-----
221		-----	-----	1143	Visual	clear & bright	-----
224	Visual	clear& Bright	-----	1182		-----	-----
225		-----	-----	1191		-----	-----
228	Visual	clear and bright	-----	1205		-----	-----
235	Visual	Clear	-----	1212	Visual	C&B	-----
237	Visual	CLEAR & BRIGHT	-----	1237		-----	-----
						C&B, visually free from solid matter and	
238	Visual	B & C	-----	1275	Visual	undissolved water at ambient fuel temp.	-----
253	Visual	Clear and Bright	-----	1279	Visual	C&B, visually free from solid matter	-----
254	Visual	Clear and Bright	-----	1316		-----	-----
256	Visual	Clear & Bright	-----	1318	Visual	Pass	-----
258	Visual	B&C	-----	1320		-----	-----
273	Visual	Pass	-----	1357	Visual	Clear&Bright	-----
311	Visual	Clear	-----	1372		-----	-----
317	Visual	Clear and bright	-----	1373		-----	-----
323	Visual	pass	-----	1397		-----	-----
328	Visual	C&B	-----	1399		-----	-----
333		-----	-----	1417		-----	-----
334	Visual	clear and bright	-----	1438		-----	-----
335		-----	-----	1441	Visual	Clear and Bright	-----
365	Visual	C+B	-----	1448		-----	-----
369	Visual	Clear & Bright	-----	1496	Visual	CBFFSM	-----
372	Visual	C&B	-----	1528	D4176	C&B	-----
391	Visual	C&B	-----	1538	Visual	C&B	-----
396	Visual	Clear and Bright	-----	1544	Visual	clear and bright	-----
399	Visual	C&B	-----	1586	Visual	Clear & Bright	-----
440		-----	-----	1587	Visual	Br&Cl	-----
445	Visual	C&B	-----	1610	Visual	Clear and Bright	-----
447	Visual	Clear & Bright	-----	1613	Visual	B&C	-----
460	Visual	C+B	-----	1631	Visual	Clear and Bright	-----
467	Visual	Bright & Clear	-----	1634	Visual	Clear and Bright	-----
480		-----	-----	1650	Visual	clear and bright	-----
496	Visual	clear&bright	-----	1710	Visual	Clear & Bright	-----
594		-----	-----	1715		-----	-----
603	Visual	Clear and bright	-----	1720		-----	-----
608	Visual	C&B, visually free from solid matter	-----	1724	Visual	clear and bright	-----
631	Visual	Clear and Bright	-----	1730		-----	-----
657	Visual	Bright & Clear	-----	1741		-----	-----
798		-----	-----	1770		-----	-----
823	Visual	C&B	-----	1776		-----	-----
824	Visual	Clear & Bright	-----	1780		-----	-----
851	D4176	C&B, visually free from solid matter	-----	1810		-----	-----
854	Visual	clear&bright	-----	1811		-----	-----
862	Visual	Clear & Bright	-----	1833	Visual	Clear and Bright	-----
869	Visual	C&B	-----	1852	Visual	c&b, no solid matter no undissolved water	-----
904	Visual	C&B	-----	1883		-----	-----
914	Visual	Clear and Bright	-----	1913	Visual	C&B, visually free from solid matter	-----
962		-----	-----	1961		-----	-----
963		-----	-----	2130	Visual	C&B	-----
970	Visual	B&C	-----	2133	Visual	Clear & Bright	-----
974	Visual	C & B	-----	6028	Visual	C&B	-----
994	Visual	c@b	-----	6041	Visual	pass	-----
995	Visual	C@B	-----	6054	Visual	Clear and Bright	-----
996		-----	-----	6075		-----	-----
997	Visual	1;Clear&Bright	-----	6114	Visual	C&B	-----
1011		-----	-----	6135		-----	-----
1016		-----	-----	6142	Visual	Clear & Bright	-----
1023	Visual	Clear & Bright	-----	6174	Visual	Clear and Bright	-----
1039	Visual	clear & bright	-----	6201	Visual	Br & Cl	-----
1047	Visual	clear and bright	-----	6203	Visual	Clear	-----
1049	Visual	Br & Cl	-----	6249		-----	-----
1059	Visual	Clear & Bright	-----	6262	Visual	Cl. & Br.	-----

lab	method	value	z(targ)	lab	method	value	z(targ)
6266		-----	-----	6346		-----	-----
6308	Visual	C&B	-----	6358	In house	Clear, Bright, without solids and free water	-----
6312		-----	-----	6359		-----	-----
6321		-----	-----	6384		-----	-----
6324	Visual	Cl. & Br.	-----	6386	Visual	Clear and bright	-----
6332		-----	-----	6404		-----	-----

n	101
mean (n)	Clear and Bright (Pass)

Determination of Total Acidity on sample #21150; results in mg KOH/g

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3242	0.001		-0.81	1062	D3242	0		-2.63
62	D3242	0.0012		-0.45	1064	D3242	0.0003		-2.08
120	D3242	0.002		1.00	1065	D664-A	0.0029		2.63
140		-----		-----	1082	D3242	0.000975		-0.86
150	D3242	0.003		2.81	1097	D3242	0.00099		-0.83
159		-----		-----	1105	D3242	0.00078		-1.21
169	D3242	0.002	C	1.00	1109	D3242	0.0015		0.09
171	D3242	0.0036		3.90	1121		-----		-----
175		-----		-----	1126		-----		-----
177		-----		-----	1140	D3242	0.0014		-0.09
221		-----		-----	1143		-----		-----
224		-----		-----	1182		-----		-----
225		-----		-----	1191	D3242	0.0010		-0.81
228		-----		-----	1205		-----		-----
235	D3242	0.002		1.00	1212	D3242	0.0010		-0.81
237	D3242	0.0012		-0.45	1237		-----		-----
238		-----		-----	1275	IP354	0.00172	C	0.49
253	D3242	0.002		1.00	1279	D3242	0.0012		-0.45
254		-----		-----	1316	D3242	0.001		-0.81
256		-----		-----	1318	D3242	0.0006		-1.54
258		-----		-----	1320	D3242	0.0011		-0.63
273	D3242	0.00165	C	0.36	1357	D3242	0.0017		0.45
311	D3242	<0.001		-----	1372	D3242	0.0011		-0.63
317		-----		-----	1373		-----		-----
323	D3242	0.001		-0.81	1397		-----		-----
328		-----		-----	1399		-----		-----
333	D3242	0.001		-0.81	1417		-----		-----
334	D664-A	0.001		-0.81	1438		-----		-----
335	D3242	0.002		1.00	1441		-----		-----
365		-----		-----	1448		-----		-----
369	D3242	0.0011		-0.63	1496	D3242	0.0016		0.27
372	D3242	0.001		-0.81	1528	D3242	0.0006		-1.54
391	D3242	0.001		-0.81	1538	D3242	0.0012		-0.45
396		-----		-----	1544		-----		-----
399	D3242	0.0016		0.27	1586	D3242	0.0031	C	2.99
440		-----		-----	1587		-----		-----
445	D3242	0.0014		-0.09	1610	IP354	0.0015		0.09
447	D3242	0.001		-0.81	1613	D3242	0.001828		0.69
460	D3242	0.0015		0.09	1631	D3242	0.0024		1.72
467	D3242	0.0017		0.45	1634	D3242	0.0009		-1.00
480		-----		-----	1650	D3242	0.00107		-0.69
496		-----		-----	1710	D3242	0.003		2.81
594		-----		-----	1715		-----		-----
603		-----		-----	1720		-----		-----
608		-----		-----	1724	D3242	0.0011		-0.63
631		-----		-----	1730		-----		-----
657	D3242	0.0013		-0.27	1741	D3242	0.0009		-1.00
798		-----		-----	1770		-----		-----
823	D3242	0.002		1.00	1776	D664-A	0.0017		0.45
824	D3242	0.002		1.00	1780		-----		-----
851	D3242	0.001		-0.81	1810	D3242	0.0019		0.82
854	D3242	0.0012		-0.45	1811	D3242	0.0017		0.45
862	D3242	0.0009		-1.00	1833	D3242	0.0012		-0.45
869	D3242	0.001		-0.81	1852	D3242	0.00105		-0.72
904		-----		-----	1883		-----		-----
914	D3242	0.0005		-1.72	1913	D3242	0.0010		-0.81
962		-----		-----	1961		-----		-----
963		-----		-----	2130	IP354	0.00245		1.81
970		-----		-----	2133	D3242	0.00119		-0.47
974	D3242	0.0016		0.27	6028	D664-A	0.002	C	1.00
994	D3242	0.0024		1.72	6041	D3242	0.00145		0.00
995	D3242	0.0022		1.36	6054		-----		-----
996		-----		-----	6075	D3242	0.00058		-1.57
997	D3242	0.0015		0.09	6114	D3242	0.00106		-0.71
1011	D3242	0.001		-0.81	6135		-----		-----
1016	D3242	0.0006		-1.54	6142		-----		-----
1023		-----		-----	6174		-----		-----
1039	D3242	0.001		-0.81	6201	D3242	0.002		1.00
1047		-----		-----	6203	D3242	0.0028		2.45
1049	D3242	0.00159		0.25	6249		-----		-----
1059	D3242	<0,001		-----	6262	D3242	0.0025	C	1.90

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266		-----		-----	6346		-----		-----
6308	D3242	0.024	R(0.01)	40.85	6358	D3242	0.0012		-0.45
6312		-----		-----	6359	D3242	0.0010		-0.81
6321	IP354	<0.001		-----	6384	D3242	0.00132		-0.23
6324	D3242	0.0022		1.36	6386	D3242	0.0006		-1.54
6332		-----		-----	6404		-----		-----

	normality	OK
	n	87
	outliers	1
	mean (n)	0.00145
	st.dev. (n)	0.000675
	R(calc.)	0.00189
	st.dev.(D3242:11)	0.000552
	R(D3242:11)	0.00155

Lab 169 first reported 0.008
Lab 273 first reported 0.0065
Lab 1275 first reported 0.0172
Lab 1586 first reported 0.031
Lab 6028 first reported 0.12
Lab 6262 first reported 0.004314
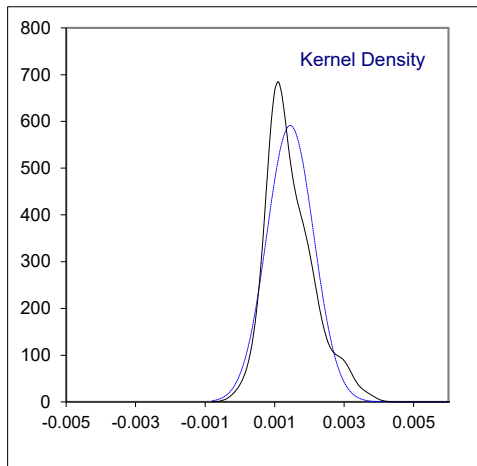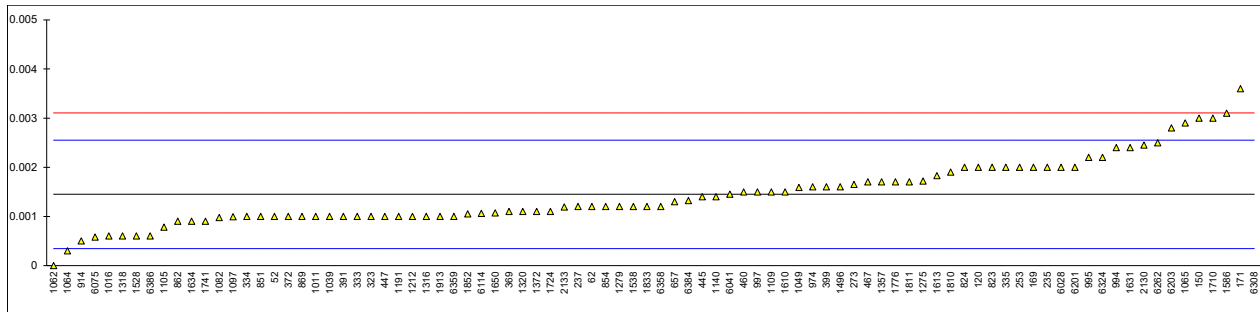
Determination of Aromatics by FIA on sample #21150; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D1319	15.6		-0.52	1062		-----		-----
62	D1319	15.6		-0.52	1064	D1319	16.5		0.42
120		-----		-----	1065		-----		-----
140		-----		-----	1082		-----		-----
150		-----		-----	1097	D1319	16.1		0.00
159		-----		-----	1105	D1319	16.73		0.66
169	D1319	13.9	C,R(0.05)	-2.30	1109	D1319	15.80		-0.31
171		-----		-----	1121		-----		-----
175		-----		-----	1126		-----		-----
177	D1319	16.2		0.10	1140		-----		-----
221		-----		-----	1143		-----		-----
224		-----		-----	1182		-----		-----
225		-----		-----	1191		-----		-----
228		-----		-----	1205		-----		-----
235	D1319	17.0		0.94	1212	D1319	15.87		-0.24
237	D1319	15.8		-0.31	1237	D1319	16.1		0.00
238		-----		-----	1275	IP156	16.21		0.12
253	D1319	16.2		0.10	1279	D1319	16.4		0.31
254	D1319	15.82		-0.29	1316		-----		-----
256		-----		-----	1318		-----		-----
258		-----		-----	1320	D1319	16.6		0.52
273	D1319	16.28		0.19	1357	D1319	15.6		-0.52
311		-----		-----	1372	D1319	15.942		-0.16
317		-----		-----	1373		-----		-----
323	D1319	15.2		-0.94	1397		-----		-----
328		-----		-----	1399		-----		-----
333		-----		-----	1417		-----		-----
334		-----		-----	1438		-----		-----
335	D1319	16.2		0.10	1441	D1319	15.8		-0.31
365		-----		-----	1448		-----		-----
369	D1319	16.08		-0.02	1496	D1319	16.3		0.21
372	D1319	16.0		-0.10	1528	D1319	16.72		0.65
391	D1319	16.2		0.10	1538	D1319	16.7		0.63
396		-----		-----	1544		-----		-----
399	D1319	16.0		-0.10	1586	D1319	17.1		1.04
440		-----		-----	1587		-----		-----
445	D1319	16.55		0.47	1610	IP156	16.3		0.21
447	D1319	15.712		-0.40	1613	D1319	15.82		-0.29
460	D1319	17.4		1.36	1631	D1319	14.6		-1.56
467	D1319	15.35		-0.78	1634		-----		-----
480		-----		-----	1650	D1319	15.80		-0.31
496		-----		-----	1710		-----		-----
594		-----		-----	1715		-----		-----
603		-----		-----	1720		-----		-----
608		-----		-----	1724	D1319	16.0		-0.10
631		-----		-----	1730		-----		-----
657	D1319	16.5		0.42	1741	D1319	17.10		1.04
798		-----		-----	1770		-----		-----
823	D1319	16.6		0.52	1776		-----		-----
824	D1319	16.62		0.54	1780		-----		-----
851		-----		-----	1810		-----		-----
854		-----		-----	1811	D1319	15.01		-1.14
862	D1319	17.7		1.67	1833	D1319	16.1		0.00
869	D1319	15.3		-0.83	1852	D1319	14.86		-1.29
904		-----		-----	1883		-----		-----
914	D1319	15.8		-0.31	1913	D1319	16.58		0.50
962		-----		-----	1961		-----		-----
963		-----		-----	2130	IP156	16.8		0.73
970	D1319	16.8		0.73	2133	D1319	16.89		0.82
974		-----		-----	6028	D1319	14.9		-1.25
994		-----		-----	6041	D1319	16.65		0.57
995	D1319	16.25		0.16	6054	D1319	15.365		-0.77
996		-----		-----	6075	D1319	16.04		-0.06
997		-----		-----	6114	D1319	16.76		0.69
1011	D1319	16.2		0.10	6135	D1319	16.53		0.45
1016		-----		-----	6142		-----		-----
1023		-----		-----	6174		-----		-----
1039		-----		-----	6201	D1319	15.4		-0.73
1047		-----		-----	6203	D1319	16.0		-0.10
1049		-----		-----	6249		-----		-----
1059	D1319	15.9		-0.21	6262	D1319	15.6		-0.52

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266		-----		-----	6346		-----		-----
6308		-----		-----	6358	D1319	15.5		-0.63
6312		-----		-----	6359	D1319	15.7		-0.42
6321	IP156	16.3		0.21	6384	D1319	15.2		-0.94
6324	D1319	15.78		-0.33	6386	D1319	16.16		0.06
6332		-----		-----	6404		-----		-----

normality	OK
n	71
outliers	1
mean (n)	16.100
st.dev. (n)	0.6023
R(calc.)	1.686
st.dev.(D1319:20a)	0.9583
R(D1319:20a)	2.683

Lab 169 first reported 13.1
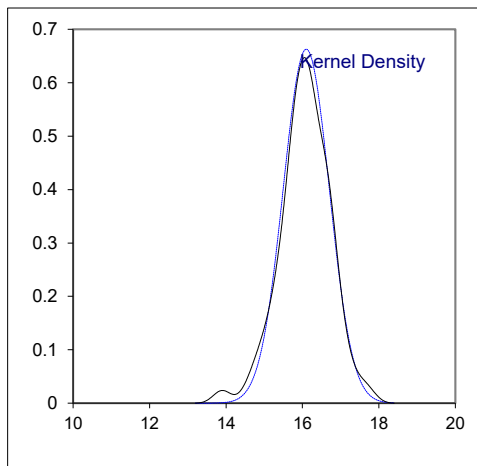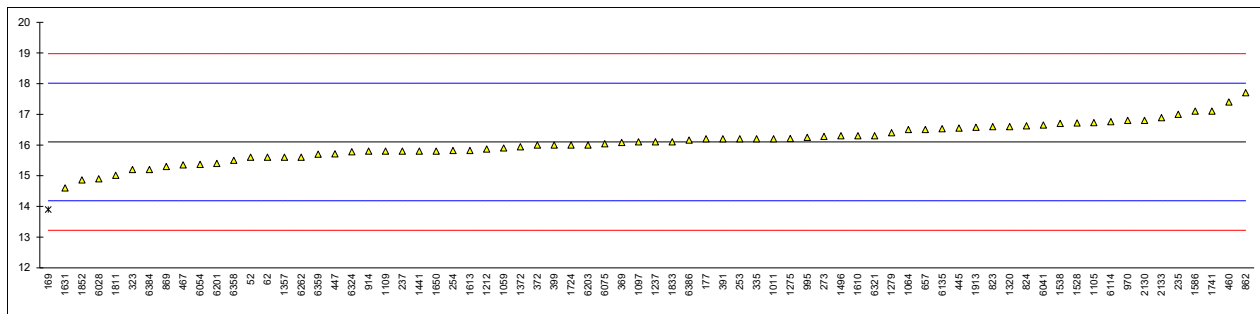
Determination of Mono Aromatics (MAH) by HPLC on sample #21150; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1062		-----		-----
62		-----		-----	1064	D6379	17.06		-0.01
120		-----		-----	1065	IP436	16.5		-1.46
140		-----		-----	1082		-----		-----
150	D6379	16.8		-0.68	1097		-----		-----
159		-----		-----	1105	D6379	17.84		2.02
169		-----		-----	1109		-----		-----
171		-----		-----	1121		-----		-----
175		-----		-----	1126	EN12916	17.0		-0.16
177		-----		-----	1140		-----		-----
221		-----		-----	1143		-----		-----
224		-----		-----	1182		-----		-----
225		-----		-----	1191		-----		-----
228		-----		-----	1205	D8267	17.313		0.65
235		-----		-----	1212	D6379	17.14		0.20
237		-----		-----	1237		-----		-----
238		-----		-----	1275	IP436	16.47		-1.54
253		-----		-----	1279		-----		-----
254		-----		-----	1316		-----		-----
256		-----		-----	1318	D6379	16.695		-0.95
258		-----		-----	1320	D6379	17.00		-0.16
273		-----		-----	1357		-----		-----
311		-----		-----	1372		-----		-----
317		-----		-----	1373		-----		-----
323		-----		-----	1397		-----		-----
328		-----		-----	1399		-----		-----
333		-----		-----	1417		-----		-----
334	D6379	17.2		0.36	1438		-----		-----
335		-----		-----	1441		-----		-----
365		-----		-----	1448		-----		-----
369		-----		-----	1496		-----		-----
372	D6379	17.08		0.05	1528	D6379	18.03		2.51
391		-----		-----	1538	D6379	16.41		-1.69
396		-----		-----	1544	EN12916	17.06		-0.01
399		-----		-----	1586	D6379	14.5	C,R(0.01)	-6.66
440		-----		-----	1587		-----		-----
445	IP436	17.996		2.42	1610		-----		-----
447		-----		-----	1613		-----		-----
460		-----		-----	1631		-----		-----
467	D6379	17.30		0.62	1634	D6379	16.2		-2.24
480		-----		-----	1650		-----		-----
496	D6379	17.10		0.10	1710		-----		-----
594		-----		-----	1715		-----		-----
603		-----		-----	1720		-----		-----
608		-----		-----	1724		-----		-----
631		-----		-----	1730		-----		-----
657	IP436	17.4		0.88	1741	D6379	17.17		0.28
798		-----		-----	1770		-----		-----
823	D6379	17.3		0.62	1776		-----		-----
824	D6379	16.7		-0.94	1780		-----		-----
851	D6379	16.43		-1.64	1810	D6379	16.2		-2.24
854	D6379	17.36		0.77	1811	D6379	17.20		0.36
862	D6379	17.3		0.62	1833		-----		-----
869		-----		-----	1852	D6379	16.172		-2.31
904		-----		-----	1883		-----		-----
914		-----		-----	1913		-----		-----
962		-----		-----	1961		-----		-----
963		-----		-----	2130		-----		-----
970		-----		-----	2133		-----		-----
974	D6379	17.40		0.88	6028		-----		-----
994	EN12916	17.074		0.03	6041		-----		-----
995	D6379	17.42		0.93	6054		-----		-----
996		-----		-----	6075		-----		-----
997		-----		-----	6114		-----		-----
1011	D6379	17.1		0.10	6135		-----		-----
1016		-----		-----	6142		-----		-----
1023		-----		-----	6174		-----		-----
1039		-----		-----	6201	D6379	16.968		-0.25
1047		-----		-----	6203	D6379	17.26		0.51
1049	D6379	17.061		0.00	6249		-----		-----
1059	D6379	17.2		0.36	6262	EN12916	16.98		-0.21

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266		-----		-----	6346		-----		-----
6308		-----		-----	6358		-----		-----
6312		-----		-----	6359		-----		-----
6321		-----		-----	6384		-----		-----
6324		-----		-----	6386	D6379	17.55		1.27
6332		-----		-----	6404		-----		-----

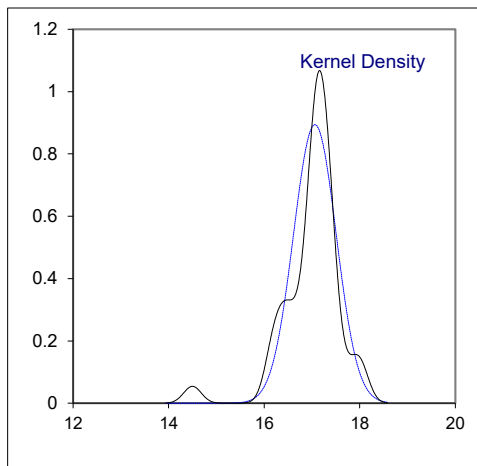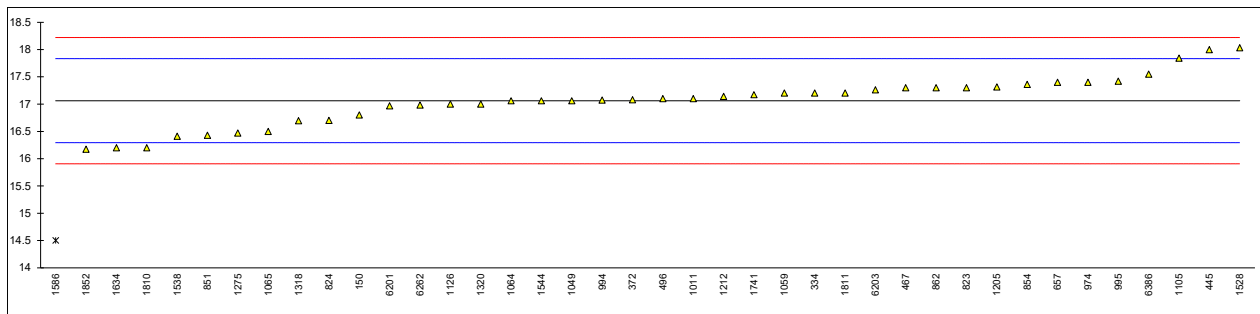|	
normality	OK
n	39
outliers	1
mean (n)	17.063
st.dev. (n)	0.4465
R(calc.)	1.250
st.dev.(D6379:21)	0.3850
R(D6379:21)	1.078

Lab 1586 first reported 12.2

Determination of Di Aromatics (DAH) by HPLC on sample #21150; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1062		-----		-----
62		-----		-----	1064	D6379	1.82		-0.36
120		-----		-----	1065	IP436	2.2		5.01
140		-----		-----	1082		-----		-----
150	D6379	1.9		0.77	1097		-----		-----
159		-----		-----	1105	D6379	1.74		-1.49
169		-----		-----	1109		-----		-----
171		-----		-----	1121		-----		-----
175		-----		-----	1126	EN12916	1.8		-0.64
177		-----		-----	1140		-----		-----
221		-----		-----	1143		-----		-----
224		-----		-----	1182		-----		-----
225		-----		-----	1191		-----		-----
228		-----		-----	1205	D8267	1.601		-3.45
235		-----		-----	1212	D6379	1.75		-1.35
237		-----		-----	1237		-----		-----
238		-----		-----	1275	IP436	2.04		2.75
253		-----		-----	1279		-----		-----
254		-----		-----	1316		-----		-----
256		-----		-----	1318	D6379	1.926		1.14
258		-----		-----	1320	D6379	2.02		2.47
273		-----		-----	1357		-----		-----
311		-----		-----	1372		-----		-----
317		-----		-----	1373		-----		-----
323		-----		-----	1397		-----		-----
328		-----		-----	1399		-----		-----
333		-----		-----	1417		-----		-----
334	D6379	2.1		3.60	1438		-----		-----
335		-----		-----	1441		-----		-----
365		-----		-----	1448		-----		-----
369		-----		-----	1496		-----		-----
372	D6379	1.71		-1.91	1528	D6379	2.05		2.89
391		-----		-----	1538	D6379	2.00		2.18
396		-----		-----	1544	EN12916	1.69		-2.20
399		-----		-----	1586	D6379	1.5	C	-4.88
440		-----		-----	1587		-----		-----
445	IP436	1.512		-4.71	1610		-----		-----
447		-----		-----	1613		-----		-----
460		-----		-----	1631		-----		-----
467	D6379	1.86		0.21	1634	D6379	2.3		6.42
480		-----		-----	1650		-----		-----
496	D6379	1.90		0.77	1710		-----		-----
594		-----		-----	1715		-----		-----
603		-----		-----	1720		-----		-----
608		-----		-----	1724		-----		-----
631		-----		-----	1730		-----		-----
657	IP436	1.9		0.77	1741	D6379	1.93		1.19
798		-----		-----	1770		-----		-----
823	D6379	1.9		0.77	1776		-----		-----
824	D6379	1.9		0.77	1780		-----		-----
851	D6379	1.74		-1.49	1810	D6379	1.5		-4.88
854	D6379	1.931		1.21	1811	D6379	1.72		-1.77
862	D6379	1.7		-2.06	1833		-----		-----
869		-----		-----	1852	D6379	1.870		0.35
904		-----		-----	1883		-----		-----
914		-----		-----	1913		-----		-----
962		-----		-----	1961		-----		-----
963		-----		-----	2130		-----		-----
970		-----		-----	2133		-----		-----
974	D6379	1.83		-0.22	6028		-----		-----
994	EN12916	1.862		0.23	6041		-----		-----
995	D6379	1.92		1.05	6054		-----		-----
996		-----		-----	6075		-----		-----
997		-----		-----	6114		-----		-----
1011	D6379	1.7		-2.06	6135		-----		-----
1016		-----		-----	6142		-----		-----
1023		-----		-----	6174		-----		-----
1039		-----		-----	6201	D6379	1.793		-0.74
1047		-----		-----	6203	D6379	1.98		1.90
1049	D6379	1.724		-1.72	6249		-----		-----
1059	D6379	1.9		0.77	6262	EN12916	1.75		-1.35

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266		-----		-----	6346		-----		-----
6308		-----		-----	6358		-----		-----
6312		-----		-----	6359		-----		-----
6321		-----		-----	6384		-----		-----
6324		-----		-----	6386	D6379	1.85		0.06
6332		-----		-----	6404		-----		-----

normality	OK
n	40
outliers	0
mean (n)	1.845
st.dev. (n)	0.1729
R(calc.)	0.484
st.dev.(D6379:21)	0.0708
R(D6379:21)	0.198

Lab 1586 first reported 0.778
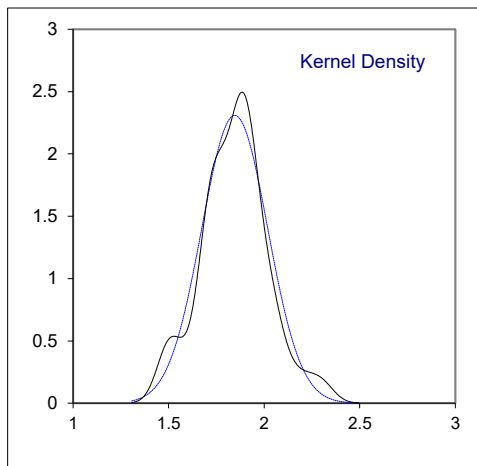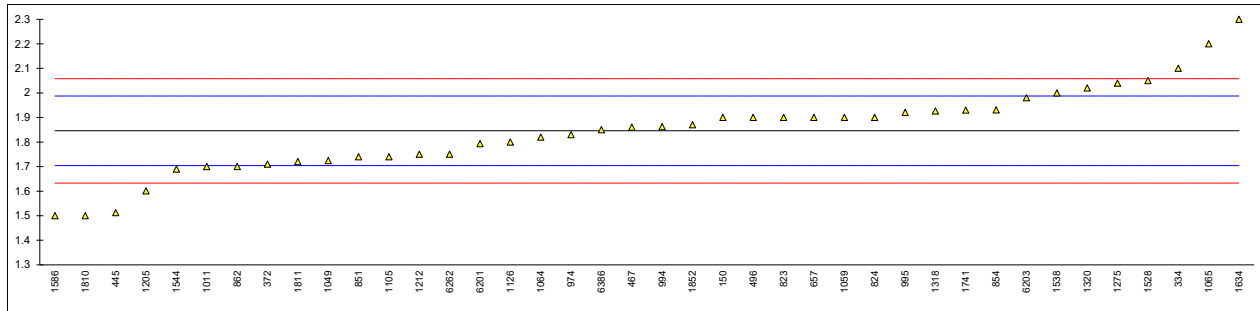
Determination of Total Aromatics by HPLC on sample #21150; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1062		-----		-----
62		-----		-----	1064	D6379	18.87		-0.13
120		-----		-----	1065		-----		-----
140		-----		-----	1082		-----		-----
150	D6379	18.7		-0.52	1097		-----		-----
159		-----		-----	1105	D6379	19.58		1.53
169		-----		-----	1109		-----		-----
171		-----		-----	1121		-----		-----
175		-----		-----	1126	EN12916	18.8		-0.29
177		-----		-----	1140		-----		-----
221		-----		-----	1143		-----		-----
224		-----		-----	1182		-----		-----
225		-----		-----	1191		-----		-----
228		-----		-----	1205	D8267	18.914		-0.02
235		-----		-----	1212	D6379	18.89		-0.08
237		-----		-----	1237		-----		-----
238		-----		-----	1275	IP436	18.51		-0.97
253		-----		-----	1279		-----		-----
254		-----		-----	1316		-----		-----
256		-----		-----	1318	D6379	18.62		-0.71
258		-----		-----	1320	D6379	19.01		0.20
273		-----		-----	1357		-----		-----
311		-----		-----	1372		-----		-----
317		-----		-----	1373		-----		-----
323		-----		-----	1397		-----		-----
328		-----		-----	1399		-----		-----
333		-----		-----	1417		-----		-----
334	D6379	19.3		0.88	1438		-----		-----
335		-----		-----	1441		-----		-----
365		-----		-----	1448		-----		-----
369		-----		-----	1496		-----		-----
372	D6379	18.79		-0.31	1528	D6379	20.08		2.70
391		-----		-----	1538	D6379	18.41		-1.20
396		-----		-----	1544	EN12916	18.75		-0.41
399		-----		-----	1586	D6379	16.0	C,R(0.01)	-6.83
440		-----		-----	1587		-----		-----
445	IP436	19.508		1.36	1610		-----		-----
447		-----		-----	1613		-----		-----
460		-----		-----	1631		-----	W	-----
467	D6379	19.16		0.55	1634	D6379	18.6		-0.76
480		-----		-----	1650		-----		-----
496	D6379	19.00		0.18	1710		-----		-----
594		-----		-----	1715		-----		-----
603		-----		-----	1720		-----		-----
608		-----		-----	1724		-----		-----
631		-----		-----	1730	IP436	19.38		1.06
657	IP436	19.3		0.88	1741	D6379	19.10		0.41
798		-----		-----	1770		-----		-----
823	D6379	19.2		0.64	1776		-----		-----
824	D6379	18.6		-0.76	1780		-----		-----
851	D6379	18.17		-1.76	1810	D6379	17.8		-2.63
854	D6379	19.291		0.86	1811	D6379	18.92		-0.01
862	D6379	19.0		0.18	1833		-----		-----
869		-----		-----	1852	D6379	18.042		-2.06
904		-----		-----	1883		-----		-----
914		-----		-----	1913		-----		-----
962		-----		-----	1961		-----		-----
963		-----		-----	2130		-----		-----
970		-----		-----	2133		-----		-----
974	D6379	19.23		0.71	6028		-----		-----
994	EN12916	18.936		0.03	6041		-----		-----
995	D6379	19.34		0.97	6054		-----		-----
996		-----		-----	6075		-----		-----
997		-----		-----	6114		-----		-----
1011	D6379	18.8		-0.29	6135		-----		-----
1016		-----		-----	6142		-----		-----
1023		-----		-----	6174		-----		-----
1039		-----		-----	6201	D6379	18.761		-0.38
1047		-----		-----	6203	D6379	19.24		0.74
1049	D6379	18.785		-0.33	6249		-----		-----
1059	D6379	19.0		0.18	6262	EN12916	18.73		-0.45

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266		-----		-----	6346		-----		-----
6308		-----		-----	6358		-----		-----
6312		-----		-----	6359		-----		-----
6321		-----		-----	6384		-----		-----
6324	D6379	18.40		-1.22	6386	D6379	19.45		1.23
6332		-----		-----	6404		-----		-----

normality	OK
n	40
outliers	1
mean (n)	18.924
st.dev. (n)	0.4357
R(calc.)	1.220
st.dev.(D6379:21)	0.4280
R(D6379:21)	1.198

Lab 1586 first reported 12.92
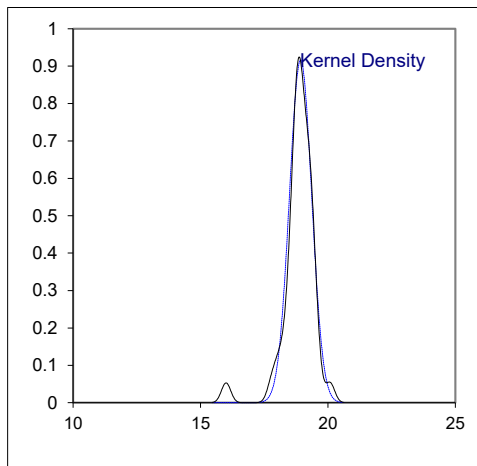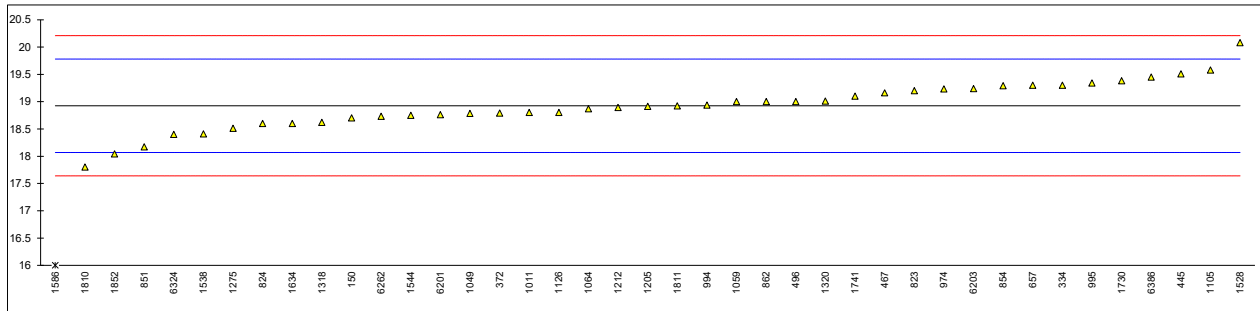Lab 1631 test result withdrawn, reported 13.6

Determination of Total Aromatics by HPLC on sample #21150; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1062	D6379	17.2		0.74
62		-----		-----	1064	D6379	16.36		-1.54
120	D6379	17.135		0.56	1065		-----		-----
140		-----		-----	1082	D6379	16.6155		-0.85
150	D6379	16.9		-0.08	1097		-----		-----
159	D6379	16.458	C	-1.27	1105	D6379	17.665		2.00
169		-----		-----	1109	D6379	17.22		0.79
171		-----		-----	1121		-----		-----
175		-----		-----	1126		-----		-----
177		-----		-----	1140		-----		-----
221		-----		-----	1143		-----		-----
224		-----		-----	1182		-----		-----
225		-----		-----	1191	D6379	16.6155		-0.85
228		-----		-----	1205	D8267	16.848		-0.22
235		-----		-----	1212	D6379	16.74		-0.51
237		-----		-----	1237		-----		-----
238		-----		-----	1275	IP436	16.6		-0.89
253		-----		-----	1279		-----		-----
254		-----		-----	1316	D6379	16.3		-1.70
256		-----		-----	1318	D6379	16.81		-0.32
258		-----		-----	1320	D6379	16.92		-0.02
273		-----		-----	1357		n.a.		-----
311	D6379	17.1		0.46	1372		-----		-----
317		-----		-----	1373		-----		-----
323		-----		-----	1397	D6379	16.10		-2.24
328		-----		-----	1399		-----		-----
333	D6379	16.9		-0.08	1417		-----		-----
334	D6379	17.3		1.01	1438		-----		-----
335		-----		-----	1441		-----		-----
365		-----		-----	1448		-----		-----
369		-----		-----	1496		-----		-----
372	D6379	16.85		-0.21	1528	D6379	17.97		2.82
391		-----		-----	1538	D6379	16.47		-1.24
396		-----		-----	1544		-----		-----
399		-----		-----	1586		-----		-----
440		-----		-----	1587		-----		-----
445	IP436	17.362		1.17	1610		-----		-----
447	IP436	17.4		1.28	1613		-----		-----
460		-----		-----	1631	D6379	16.9		-0.08
467	D6379	17.19		0.71	1634	D6379	16.6		-0.89
480		-----		-----	1650		-----		-----
496	D6379	17.16		0.63	1710	D6379	16.9		-0.08
594		-----		-----	1715		-----		-----
603		-----		-----	1720		-----		-----
608		-----		-----	1724	D6379	17.0		0.19
631		-----		-----	1730		-----		-----
657	IP436	17.5		1.55	1741	D6379	17.16		0.63
798		-----		-----	1770		-----		-----
823		-----		-----	1776	EN12916	15.9		-2.79
824	D6379	16.9		-0.08	1780		-----		-----
851	D6379	16.29		-1.73	1810	D6379	16.4		-1.43
854	D6379	17.3		1.01	1811		-----		-----
862		-----		-----	1833		-----		-----
869	D6379	16.98		0.14	1852	D6379	16.141		-2.13
904		-----		-----	1883		-----		-----
914		-----		-----	1913		-----		-----
962		-----		-----	1961		-----		-----
963		-----		-----	2130		-----		-----
970		-----		-----	2133		-----		-----
974	D6379	17.10		0.46	6028		-----		-----
994		-----		-----	6041		-----		-----
995	D6379	17.15		0.60	6054		-----		-----
996		-----		-----	6075		-----		-----
997		-----		-----	6114		-----		-----
1011	D6379	16.9		-0.08	6135		-----		-----
1016	IP436	16.836		-0.25	6142		-----		-----
1023		-----		-----	6174		-----		-----
1039	D6379	17.4		1.28	6201	D6379	16.87	C	-0.16
1047		-----		-----	6203	D6379	17.26		0.90
1049	D6379	17.066		0.37	6249		-----		-----
1059		-----		-----	6262	EN12916	17.71		2.12

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266		-----		-----	6346		-----		-----
6308		-----		-----	6358		-----		-----
6312		-----		-----	6359		-----		-----
6321		-----		-----	6384	D6379	16.5		-1.16
6324	D6379	16.92		-0.02	6386	D6379	17.48		1.49
6332		-----		-----	6404		-----		-----

normality	OK
n	51
outliers	0
mean (n)	16.928
st.dev. (n)	0.4307
R(calc.)	1.206
st.dev.(D6379:21)	0.3691
R(D6379:21)	1.033

Lab 159 first reported 15.217
Lab 6201 first reported 15.07
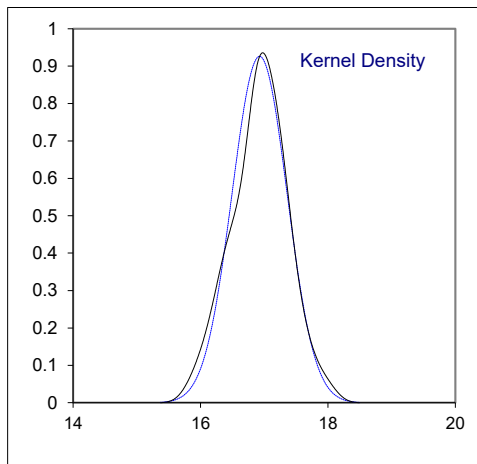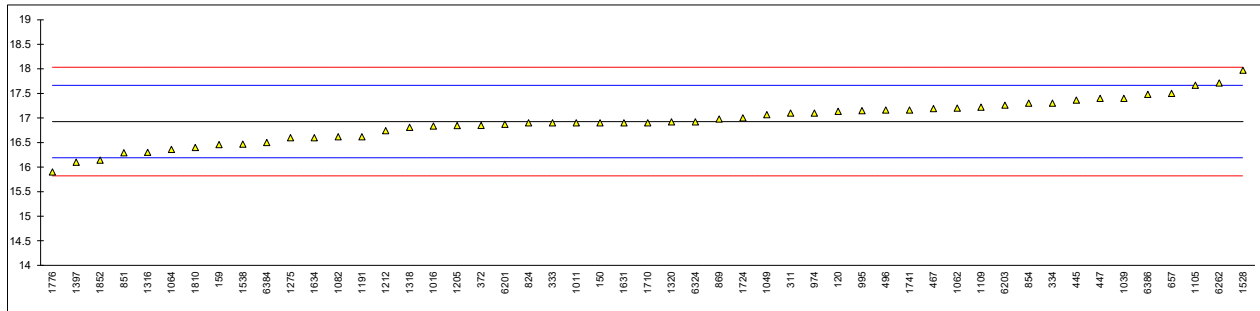
Determination of Color Saybolt (automated) on sample #21150;

lab	method	cell size	value	mark	z(targ)	lab	method	cell size	value	mark	z(targ)
52	D6045	100 mm	28		0.19	1062	D6045	50 mm	27		-2.06
62		-----	-----		-----	1064	D6045	50 mm	29		2.45
120	D6045	50 mm	27		-2.06	1065		-----	-----		-----
140		-----	-----		-----	1082	D6045	-----	29		2.45
150	D6045	100 mm	28		0.19	1097		-----	-----		-----
159		-----	-----		-----	1105	D6045	50 mm	29		2.45
169	D6045	50 mm	26		-4.32	1109	D6045	100 mm	30		4.71
171	D6045	-----	27		-2.06	1121	D6045	100 mm	27		-2.06
175		-----	-----		-----	1126		-----	-----		-----
177		-----	-----		-----	1140	D6045	50 mm	27		-2.06
221	D6045	33 mm	30		4.71	1143		-----	-----		-----
224		-----	-----		-----	1182		-----	-----		-----
225		-----	-----		-----	1191	D6045	-----	26		-4.32
228		-----	-----		-----	1205		-----	-----		-----
235		-----	-----		-----	1212		-----	-----		-----
237		-----	-----		-----	1237	D6045	50 mm	29.0		2.45
238		-----	-----		-----	1275		-----	-----		-----
253		-----	-----		-----	1279	D6045	50 mm	28		0.19
254		-----	-----		-----	1316		-----	-----		-----
256		-----	-----		-----	1318	D6045	100 mm	28		0.19
258		-----	-----		-----	1320		-----	-----		-----
273		-----	-----		-----	1357		-----	n.a.		-----
311		-----	-----		-----	1372	D6045	-----	30		4.71
317		-----	-----		-----	1373		-----	-----		-----
323	D6045	50 mm	27		-2.06	1397		-----	-----		-----
328		-----	-----		-----	1399		-----	-----		-----
333	D6045	-----	28		0.19	1417	D6045	-----	26		-4.32
334		-----	-----		-----	1438		-----	-----		-----
335	D156	50 mm	24	ex	-8.84	1441		-----	-----		-----
365	D6045	-----	27		-2.06	1448		-----	-----		-----
369	D6045	50 mm	27		-2.06	1496	D6045	100 mm	27		-2.06
372	D6045	50 mm	30		4.71	1528	D6045	50 mm	27		-2.06
391		-----	-----		-----	1538		-----	-----		-----
396		-----	-----		-----	1544		-----	-----		-----
399		-----	-----		-----	1586	D6045	50 mm	29		2.45
440		-----	-----		-----	1587	D6045	50 mm	27		-2.06
445	D6045	50 mm	27		-2.06	1610	D6045	33 mm	28		0.19
447	D6045	100 mm	28		0.19	1613		50 mm	-----		-----
460		-----	-----		-----	1631	D6045	10 mm	28		0.19
467		-----	-----		-----	1634		-----	-----		-----
480		-----	-----		-----	1650		-----	-----		-----
496		-----	-----		-----	1710	D6045	100 mm	29.0		2.45
594		-----	-----		-----	1715	D6045	100 mm	28		0.19
603		100 mm	-----		-----	1720		-----	-----		-----
608		-----	-----		-----	1724	D6045	-----	27		-2.06
631	D6045	100 mm	29		2.45	1730	D6045	-----	28		0.19
657	D6045	100 mm	29		2.45	1741	D6045	100 mm	25		-6.58
798		-----	-----		-----	1770		-----	-----		-----
823	D6045	50 mm	29		2.45	1776	D6045	-----	27		-2.06
824	D6045	50 mm	29		2.45	1780		-----	-----		-----
851		-----	-----		-----	1810	D6045	50 mm	28		0.19
854		-----	-----		-----	1811	D6045	50 mm	28		0.19
862		-----	-----		-----	1833		-----	29		2.45
869	D6045	50 mm	27		-2.06	1852	D6045	50 mm	26.39		-3.44
904	D6045	-----	30		4.71	1883		-----	-----		-----
914	D6045	10 mm	28		0.19	1913	D6045	-----	27.0		-2.06
962		-----	-----		-----	1961		-----	-----		-----
963		-----	-----		-----	2130	D6045	-----	30		4.71
970		-----	-----		-----	2133		-----	-----		-----
974	D6045	100 mm	29		2.45	6028		-----	-----		-----
994		-----	-----		-----	6041		-----	-----		-----
995		-----	-----		-----	6054	D6045	50 mm	27		-2.06
996		-----	-----		-----	6075		50 mm	-----		-----
997		-----	-----		-----	6114		-----	-----		-----
1011	D6045	100 mm	29		2.45	6135		-----	-----		-----
1016		-----	28		0.19	6142		-----	-----		-----
1023	D6045	50 mm	29.0		2.45	6174		-----	-----		-----
1039		100 mm	-----		-----	6201	D6045	-----	28		0.19
1047		-----	-----		-----	6203	D6045	50 mm	25		-6.58
1049	D6045	50 mm	27		-2.06	6249		-----	-----		-----
1059	D6045	50 mm	29		2.45	6262	D6045	50 mm	26.0		-4.32

lab	method	cell size	value	mark	z(targ)	lab	method	cell size	value	mark	z(targ)
6266		-----	-----		-----	6346		-----	-----		-----
6308	D6045	50 mm	30		4.71	6358		-----	-----		-----
6312		-----	-----		-----	6359	D6045	-----	28		0.19
6321	D6045	50 mm	27		-2.06	6384	D6045	-----	28		0.19
6324		-----	-----		-----	6386		-----	-----		-----
6332		-----	-----		-----	6404		-----	-----		-----

			Only 50mm cell	Only 100mm cell
normality		OK	OK	not OK
n		65	29	14
outliers		0 +1ex	0 +1ex	0
mean (n)		27.91	27.70	28.14
st.dev. (n)		1.238	1.268	1.231
R(calc.)		3.47	3.55	3.45
st.dev.(D6045:20)		0.443	0.443	0.443
R(D6045:20)		1.24	1.24	1.24

Lab 335 test result excluded as used method is not automated
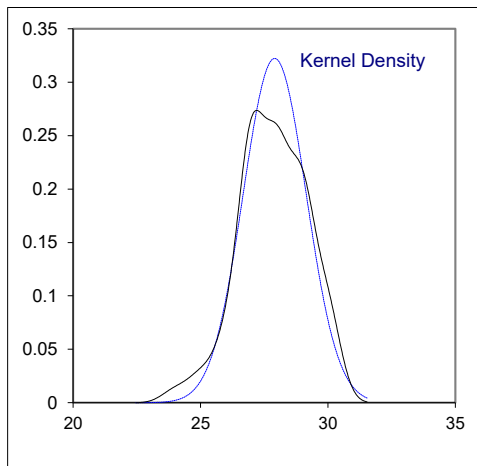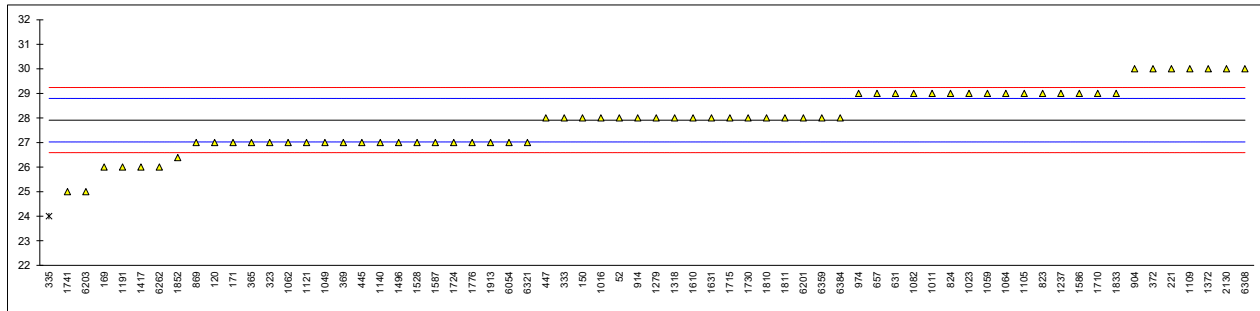
Determination of Color Saybolt (manual) on sample #21150;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1062		-----		-----
62	D156	23		-6.30	1064		-----		-----
120		-----		-----	1065		-----		-----
140		-----		-----	1082		-----		-----
150		-----		-----	1097	NF M07-003	27		-0.70
159		-----		-----	1105		-----		-----
169		-----		-----	1109	D156	29		2.10
171	D156	28		0.70	1121	D156	27		-0.70
175		-----		-----	1126		-----		-----
177	D156	26		-2.10	1140		-----		-----
221		-----		-----	1143	D156	25		-3.50
224		-----		-----	1182		-----		-----
225		-----		-----	1191		-----		-----
228	D156	29		2.10	1205		-----		-----
235	D156	26		-2.10	1212	D156	26		-2.10
237	D156	28		0.70	1237		-----		-----
238	D156	26		-2.10	1275	D156	30		3.50
253	D156	28		0.70	1279	D156	27		-0.70
254	D156	28		0.70	1316	D156	28		0.70
256	D156	28		0.70	1318		-----		-----
258	D156	28		0.70	1320	D156	27		-0.70
273	D156	27	C	-0.70	1357	D156	27		-0.70
311		-----		-----	1372		-----		-----
317	D156	26		-2.10	1373		-----		-----
323		-----		-----	1397		-----		-----
328	D156	28		0.70	1399		-----		-----
333		-----		-----	1417		-----		-----
334	D156	27		-0.70	1438		-----		-----
335		-----		-----	1441		-----		-----
365		-----		-----	1448		-----		-----
369	D156	27		-0.70	1496	D156	27		-0.70
372	D156	30		3.50	1528	D156	27		-0.70
391	D156	28		0.70	1538	D156	26		-2.10
396	D156	30		3.50	1544	D156	28.0		0.70
399	D156	29		2.10	1586		-----		-----
440		-----		-----	1587		-----		-----
445		-----		-----	1610		-----		-----
447	D156	28		0.70	1613	D156	29		2.10
460	D156	25		-3.50	1631		-----		-----
467	D156	29		2.10	1634		-----		-----
480		-----		-----	1650	D156	28		0.70
496		-----		-----	1710	D156	29		2.10
594		-----		-----	1715		-----		-----
603	D156	27		-0.70	1720		-----		-----
608	D156	27		-0.70	1724	D156	27		-0.70
631		-----		-----	1730		-----		-----
657	D156	28		0.70	1741	D156	25		-3.50
798		-----		-----	1770		-----		-----
823	D156	29		2.10	1776		-----		-----
824	D156	28		0.70	1780		-----		-----
851	D156	28		0.70	1810		-----		-----
854	D156	27		-0.70	1811		-----		-----
862	D156	27		-0.70	1833		30		3.50
869	D156	27		-0.70	1852		-----		-----
904	D156	30		3.50	1883	D156	29		2.10
914		-----		-----	1913	D156	26		-2.10
962		-----		-----	1961		-----		-----
963		-----		-----	2130		-----		-----
970	D156	28		0.70	2133		-----		-----
974	D156	28		0.70	6028	D156	30		3.50
994	D156	26		-2.10	6041	D156	26		-2.10
995	D156	27		-0.70	6054		-----		-----
996		-----		-----	6075	D156	>30		>3.50
997	D156	27		-0.70	6114	D156	29		2.10
1011		-----		-----	6135	D156	25		-3.50
1016		-----		-----	6142		-----		-----
1023		-----		-----	6174	D156	28		0.70
1039	D156	29		2.10	6201	D156	28		0.70
1047		-----		-----	6203	D156	21	R(0.01)	-9.10
1049		-----		-----	6249		-----		-----
1059	D156	27		-0.70	6262		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266		-----		-----	6346		-----		-----
6308		-----		-----	6358		-----		-----
6312		-----		-----	6359		-----		-----
6321		-----		-----	6384		-----		-----
6324	D156	26		-2.10	6386	D156	27		-0.70
6332		-----		-----	6404		-----		-----

normality	OK
n	70
outliers	1
mean (n)	27.50
st.dev. (n)	1.412
R(calc.)	3.95
st.dev.(D156:15)	0.714
R(D156:15)	2

Lab 273 first reported 17
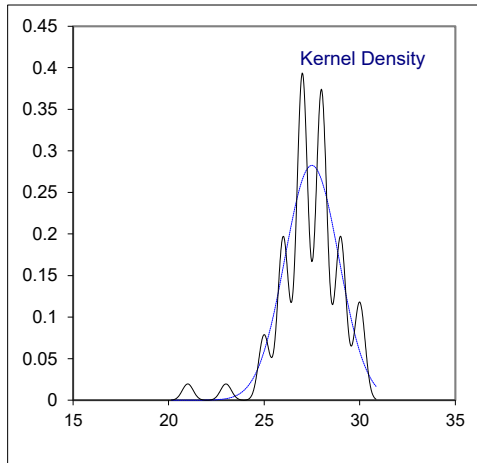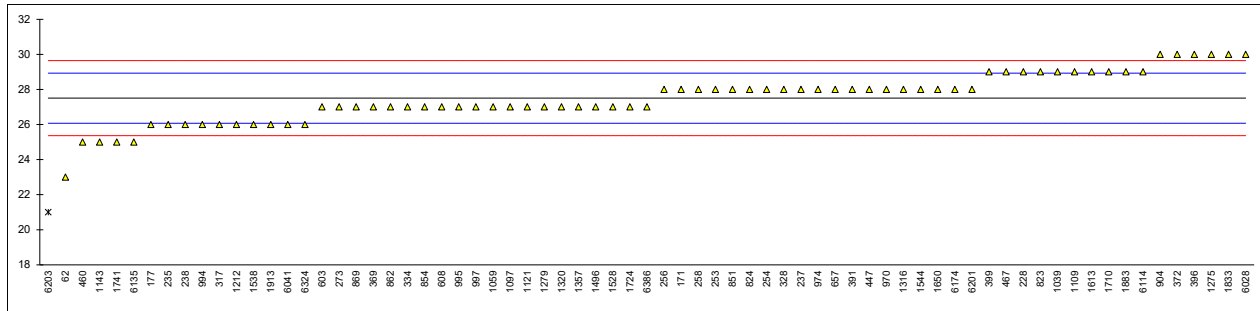
Determination of Copper Corrosion 2 hrs at 100°C on sample #21150;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D130	1a		-----	1062	D130	1A		-----
62	D130	1a		-----	1064	D130	1a		-----
120	D130	1A		-----	1065		-----		-----
140		-----		-----	1082		-----		-----
150		-----		-----	1097	ISO2160	1a		-----
159	D130	1A		-----	1105	D130	1a		-----
169	D130	1a		-----	1109	D130	1a		-----
171	D130	1a		-----	1121	IP154	1a		-----
175		-----		-----	1126		-----		-----
177	D130	1b		-----	1140	IP154	1B		-----
221	D130	1		-----	1143		-----		-----
224	D130	1A		-----	1182		-----		-----
225		-----		-----	1191		-----		-----
228	D130	1A		-----	1205		-----		-----
235	D130	1a		-----	1212	D130	1A		-----
237	D130	1A		-----	1237	ISO2160	1a		-----
238	D130	1a		-----	1275	IP154	1A		-----
253	D130	1A		-----	1279	D130	1a		-----
254	D130	1a		-----	1316	D130	1a		-----
256	D130	1A		-----	1318	D130	1a		-----
258	D130	1a		-----	1320	D130	1a		-----
273	D130	1a		-----	1357	D130	1a		-----
311	D130	1A		-----	1372	D130	1a		-----
317	D130	1a		-----	1373		-----		-----
323	D130	1A		-----	1397	D130	1		-----
328		-----		-----	1399		-----		-----
333	D130	1a		-----	1417	D130	1B		-----
334	D130	1A		-----	1438		-----		-----
335	D130	1		-----	1441	D130	1a		-----
365	IP154	1a		-----	1448	D130	1a		-----
369	D130	1A		-----	1496	D130	1a		-----
372	D130	1a		-----	1528	D130	1a		-----
391	D130	1A		-----	1538	D130	1		-----
396	D130	1a		-----	1544	D130	1a		-----
399	D130	1A		-----	1586	D130	1A		-----
440		-----		-----	1587	D130	1a		-----
445	IP154	1a		-----	1610	D130	1a		-----
447	IP154	1a		-----	1613	D130	1a		-----
460	D130	1a		-----	1631	D130	1		-----
467	D130	1A		-----	1634	D130	1a		-----
480		-----		-----	1650	D130	1a		-----
496	D130	1A		-----	1710	D130	1a		-----
594		-----		-----	1715		-----		-----
603	D130	1A		-----	1720		-----		-----
608	D130	1a		-----	1724	D130	1a		-----
631	D130	1A		-----	1730		-----		-----
657	D130	1A		-----	1741	D130	Class 1a		-----
798		-----		-----	1770	D130	1a		-----
823	D130	1a		-----	1776		-----		-----
824	D130	1a		-----	1780		-----		-----
851	D130	1a		-----	1810		-----		-----
854	D130	1a		-----	1811		-----		-----
862	D130	1a		-----	1833	D130	No.1		-----
869	D130	1a		-----	1852	D130	1b		-----
904	D130	1a		-----	1883	D130	1a		-----
914	D130	1a		-----	1913	D130	1a		-----
962		-----		-----	1961	D130	1a		-----
963		-----		-----	2130	IP154	1a		-----
970	D130	1a		-----	2133	D130	1a		-----
974	D130	1A		-----	6028	ISO2160	1a		-----
994	D130	1a		-----	6041	D130	1b		-----
995	D130	1A		-----	6054	D130	1a		-----
996		-----		-----	6075		-----		-----
997		-----		-----	6114	D130	1a		-----
1011	D130	1b		-----	6135		-----		-----
1016		-----		-----	6142		-----		-----
1023	D130	1a		-----	6174	D130	1a		-----
1039	ISO2160	1a		-----	6201	D130	1a		-----
1047	ISO2160	1		-----	6203	D130	1b		-----
1049	D130	1A		-----	6249		-----		-----
1059	D130	1b		-----	6262	D130	1A		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266		-----		-----	6346		-----		-----
6308	D130	1a		-----	6358	D130	1a		-----
6312		-----		-----	6359	D130	1		-----
6321	IP154	1A		-----	6384	D130	1a		-----
6324	D130	1a		-----	6386	D130	1a		-----
6332		-----		-----	6404		-----		-----

	n	114
	mean (n)	1 (1a/1b)

Determination of Density at 15°C on sample #21150; results in kg/m^3

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4052	803.5		-0.20	1062	D4052	803.6		0.36
62	D4052	803.5		-0.20	1064	D4052	803.4		-0.76
120	D4052	803.6		0.36	1065	D4052	803.6		0.36
140	D4052	803.6		0.36	1082	ISO12185	803.55		0.08
150	D4052	803.6		0.36	1097	ISO12185	803.51		-0.15
159	D4052	803.5		-0.20	1105	D4052	803.57		0.19
169	D4052	803.2	R(0.05)	-1.88	1109	D4052	803.55		0.08
171	D4052	803.6		0.36	1121	D4052	803.5		-0.20
175	D4052	803.5		-0.20	1126	ISO12185	803.46		-0.43
177	D4052	803.8		1.48	1140	D4052	803.5		-0.20
221	D4052	803.6		0.36	1143	ISO12185	803.6		0.36
224	D1298	802.76	R(0.01)	-4.35	1182	ISO12185	803.559		0.13
225		-----		-----	1191	ISO12185	803.7		0.92
228	D4052	803.6		0.36	1205	ISO12185	803.55		0.08
235	D4052	803.6		0.36	1212	D4052	803.5		-0.20
237	D4052	803.5		-0.20	1237	ISO12185	803.4		-0.76
238	D4052	803.5		-0.20	1275	IP365	803.48		-0.31
253	D4052	803.4		-0.76	1279	D4052	803.51		-0.15
254	D4052	803.4		-0.76	1316	D4052	803.4		-0.76
256	D4052	803.6		0.36	1318	D4052	803.53		-0.03
258	D4052	803.6		0.36	1320	D4052	803.53		-0.03
273	D4052	803.25		-1.60	1357	D4052	803.9	R(0.05)	2.04
311	D4052	803.5		-0.20	1372	D4052	803.43		-0.59
317	D4052	803.5		-0.20	1373	In house	803.5		-0.20
323	D4052	803.5		-0.20	1397	D4052	803.5		-0.20
328	D4052	803.3		-1.32	1399		-----		-----
333	D4052	803.5		-0.20	1417	IP365	803.6		0.36
334	D4052	803.5		-0.20	1438		-----		-----
335	D4052	803.6		0.36	1441	D4052	803.5		-0.20
365	IP365	803.5		-0.20	1448	D4052	803.56		0.13
369	D4052	803.6		0.36	1496	D1298	803.6		0.36
372	D4052	803.5		-0.20	1528	D4052	803.5		-0.20
391	D4052	803.1	R(0.01)	-2.44	1538	D1298	803.5		-0.20
396	D4052	803.5		-0.20	1544	D4052	803.45		-0.48
399	D4052	803.6		0.36	1586	D4052	803.6		0.36
440		-----		-----	1587	D4052	803.56		0.13
445	D4052	803.5		-0.20	1610	IP365	803.5		-0.20
447	D4052	803.5		-0.20	1613	D4052	803.58		0.25
460	D4052	803.5		-0.20	1631	D4052	803.6		0.36
467	D4052	803.55		0.08	1634	D4052	803.54		0.02
480	D4052	803.4		-0.76	1650	D4052	803.53		-0.03
496	D4052	803.50		-0.20	1710	D4052	803.5		-0.20
594		-----		-----	1715	ISO12185	803.4		-0.76
603	D4052	803.5		-0.20	1720		-----		-----
608	D4052	803.6		0.36	1724	D1298	803.6		0.36
631	D4052	803.71		0.97	1730	D4052	803.54		0.02
657	D4052	803.6		0.36	1741	D4052	803.8		1.48
798		-----		-----	1770	D4052	803.6		0.36
823	D4052	803.6		0.36	1776	ISO12185	803.6		0.36
824	D4052	803.5		-0.20	1780		-----		-----
851	D4052	803.4		-0.76	1810	D4052	803.4		-0.76
854	D4052	803.53		-0.03	1811	D4052	803.6		0.36
862	D4052	803.6		0.36	1833	D4052	803.6		0.36
869	D4052	803.6		0.36	1852	IP365	803.5		-0.20
904	D4052	803.7		0.92	1883	D1298	803.7		0.92
914	D4052	803.5		-0.20	1913	D4052	803.66		0.69
962		-----		-----	1961		-----		-----
963		-----		-----	2130	IP365	803.4		-0.76
970	D4052	803.5		-0.20	2133	D4052	803.52		-0.09
974	D1298	803.5		-0.20	6028	ISO12185	803.5		-0.20
994	ISO12185	803.6		0.36	6041	D4052	803.6		0.36
995	D4052	803.6		0.36	6054	D4052	803.57		0.19
996		-----		-----	6075	D4052	803.27		-1.49
997	D4052	803.6		0.36	6114	D4052	803.4		-0.76
1011	D4052	803.5		-0.20	6135	D4052	803.5		-0.20
1016		-----		-----	6142	ISO12185	803.7		0.92
1023	D4052	803.73		1.09	6174	D4052	803.58		0.25
1039	ISO12185	803.4		-0.76	6201	D4052	803.6		0.36
1047	ISO12185	803.53		-0.03	6203	D4052	803.5		-0.20
1049	D4052	803.48		-0.31	6249		-----		-----
1059	D4052	803.5		-0.20	6262	D4052	803.6		0.36

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266	D4052	803.59		0.30	6346		-----		-----
6308	D4052	803.6		0.36	6358	D4052	803.559		0.13
6312		-----		-----	6359	D4052	803.5		-0.20
6321	IP365	803.5		-0.20	6384	D4052	803.4		-0.76
6324	D4052	803.57		0.19	6386	D4052	803.6		0.36
6332		-----		-----	6404		-----		-----

normality	suspect
n	132
outliers	4
mean (n)	803.536
st.dev. (n)	0.0886
R(calc.)	0.248
st.dev.(D4052:18a)	0.1786
R(D4052:18a)	0.5
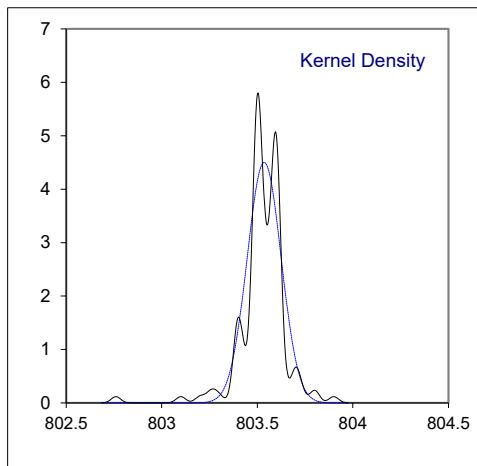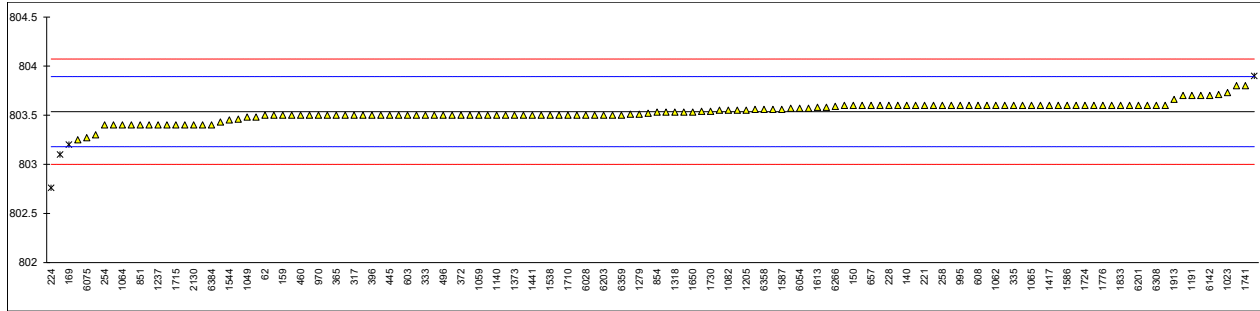
Determination of Distillation at 760 mmHg on sample #21150; results in °C

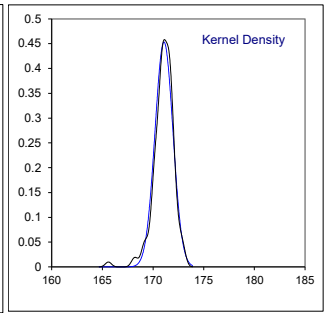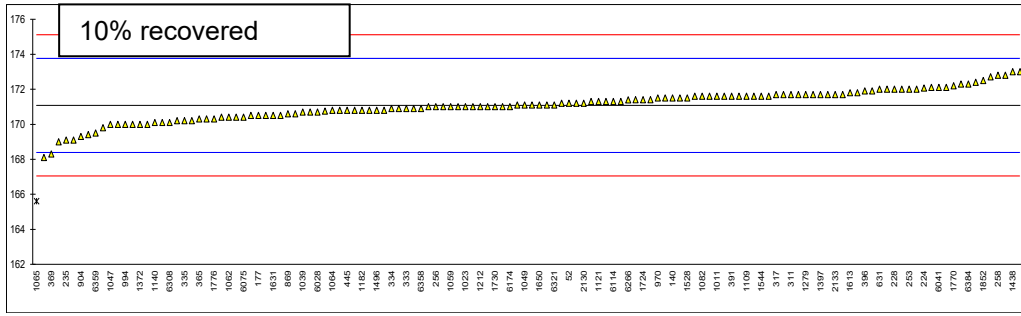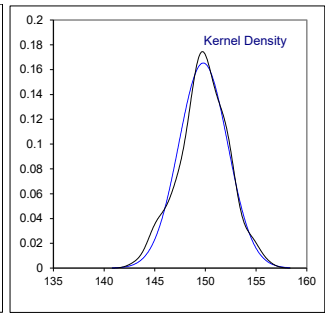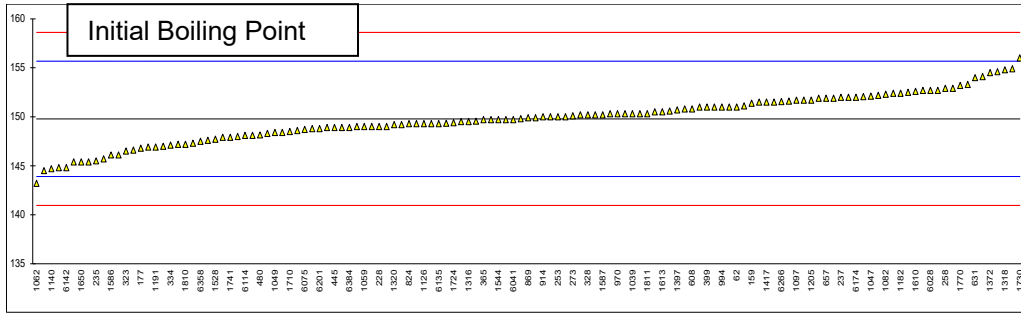| lab	method	IBP	mark	10% rec	mark	50% rec	mark	90% rec	mark	FBP	mark	Res.	Loss
52	D86-automated	149.0		171.2		198.2		235.5		257.9		1.2	0.2
62	D86-automated	151.0		172.3		199.5		236.4		258.8		0.9	0.3
120	D86-automated	149.0		171.1		198.6		235.0		254.0		0.8	0.9
140	D86-automated	147.3		171.5		198.6		235.3		254.6		1.2	0.4
150	D86-automated	144.8		170.2		198.4		235.7		252.3		1.3	0.7
159	D86-automated	151.4		171.6		199.6		235.6		255.8		0.9	-----
169	D86-automated	150.2		171.7		198.6		235.9		254.7		1.2	0.9
171		-----		-----		-----		-----		-----		-----	-----
175	D86-automated	148.9		170.8		199.1		237.5		255.8		1.0	1.3
177	D86-automated	146.8		170.5		199.1		235.5		254.3		1.3	0.5
221	D86-automated	144.5		170.2		199.7		237.0		254.6		1.2	0.9
224	D86-manual	152.06		172.07		198.57		233.53		254.08		1.4	0.6
225		-----		-----		-----		-----		-----		-----	-----
228	D86-manual	149.0		172.0		200.0		236.0		258.0		1.0	0.5
235	D86-manual	145.5		169.1		196.8		233.8		251.3		1.2	0.5
237	D86-manual	152.0		172.0		200.0		235.0		253.0		1.0	0.5
238	D86-manual	147.0		169.0		199.0		237.0		257.0		0.5	0.5
253	D86-manual	150		172		198		235		255		1.0	1.0
254	D86-manual	151.0		171.0		200.0		237.0		256.0		1.2	0.6
256	D86-manual	150.0		171.0		199.0		236.0		265.0	R(1)	-----	-----
258	D86-automated	152.9		172.8		199.6		236.5		255.3		1.0	0.3
273	D86-automated	150.1		171.4		198.4		235.5		254.5		1.3	0.2
311	D86-automated	151.5		171.7		199.0		235.7		253.7		1.2	0.3
317	D86-automated	150.6		171.7		198.8		235.8		255.5		1.1	0.4
323	D86-automated	146.5		172.7		199.7		237.1		253.6		1.2	1.0
328	D86-automated	150.2		170.9		198.2		234.9		253.3		1.2	0.2
333	D86-automated	147.9		170.9		198.7		235.1		253.1		1.2	0.6
334	D86-automated	147.1		170.9		198.2		235.1		252.4		1.2	0.3
335	D86-automated	148.0		170.2		198.0		236.2		254.1		1.3	0.3
365	IP123-automated	149.7		170.3		198.4		236.9		251.8		1.5	0.6
369	D86-automated	152.7		168.3		199.1		235.6		253.6		1.0	0.4
372	D86-automated	150.3		170.4		198.6		235.7		255.1		1.2	0.3
391	ISO3405-automated	146.9		171.6		198.8		235.5		254.3		1.3	0.4
396	D86-manual	154.9		171.9		198.9		232.9		255.9		1	0.8
399	D86-manual	151.0		171.0		199.0		235.0		255.0		0.8	0.8
440		-----		-----		-----		-----		-----		-----	-----
445	D86-automated	148.9		170.8		198.7		236.5		253.9		1.4	0.5
447	D86-automated	148.3		171.1		198.9		237.1		253.4		1.2	1.1
460	D86-automated	149.7		171.0		198.8		237.2		253.1		1.2	1.3
467	D86-automated	151.7		171.6		198.9		236.0		254.1		1.4	0.8
480	D86-automated	148.15		170.75		198.45		235.30		253.10		1.15	0.45
496	D86-automated	150.8		171.5		199.2		236.5		254.7		1.0	0.6
594		-----		-----		-----		-----		-----		-----	-----
603		-----		-----		-----		-----		-----		-----	-----
608	D86-automated	150.8		171.6		199.0		235.9		255.2		1.2	0.4
631	D86-manual	154.0		172.0		198.5		236.0		254.0	C	0.9	0.1
657	D86-automated	151.9		172.4		199.6		236.9		254.5		1.4	0.6
798		-----		-----		-----		-----		-----		-----	-----
823	D86-automated	152.5		171.2		198.5		235.9		255.0		1.0	0.4
824	D86-automated	149.3		171.3	C	199.1		236.4		254.1		1.4	0.6
851	D86-automated	149.8		171.6		199.0		235.8		253.6		1.2	0.6
854	D86-automated	151.9		171.7		199.3		236.5		255.2		1.2	0.5
862	D86-automated	149.3		170.8		199.1		236.3		252.8		1.0	0.9
869	D86-automated	149.9		170.6		199.3		236.4		253.8		1.2	0.9
904	D86-automated	150.3		169.3		197.8		233.4		251.7		1.2	1.1
914	D86-automated	150.0		170.5		198.2		234.3	C	258.4	C	1.2	0.7
962		-----		-----		-----		-----		-----		-----	-----
963		-----		-----		-----		-----		-----		-----	-----
970	D86-automated	150.3		171.5		199.2		236.3		254.6		1.0	1.0
974	D86-automated	151.0		172.0		199.5		236.7		254.7		1.0	1.0
994	D86-manual	151.0		170.0		198.0		236.0		256.0		1.4	0.1
995	D86-manual	151.0		170.0		198.5		235.5		254.5		1.3	0.2
996		-----		-----		-----		-----		-----		-----	-----
997	D86-manual	149.5		170.0		199.0		236.0		255.0		1.0	0.5
1011	D86-automated	149.0		171.6		199.1		236.2		254.3		1.2	0.5
1016		-----		-----		-----		-----		-----		-----	-----
1023	D86-automated	152.4		171.0		198.6		236.5		253.9		1.2	0.9
1039	ISO3405-automated	150.3		170.7		199.5		235.3		256.9		-----	-----
1047	ISO3405-automated	152.1		170.0		197.8		236.0		252.3		1.2	1.6
1049	D86-automated	148.4		171.1		199.2		236.8		253.8		1.2	1.0
1059	D86-automated	149.0		171.0		198.9		235.3		253.5		1.2	0.3
1062	D86-automated	143.2		170.4		197.9		234.9		253.0		1.2	0.3
1064	D86-automated	151.1		170.8		198.6		236.5		253.7		1.2	0.7
1065		147.2		165.6	R(1)	199.8		236.9		265.4	R(1)	1.4	0.6
1082	ISO3405-automated	152.3		171.6		199.5		236.4		255.2		1.4	1.4

lab	method	IBP	mark	10% rec	mark	50% rec	mark	90% rec	mark	FBP	mark	Res.	Loss
1097	ISO3405-automated	151.7		171.0		199.5		236.9		253.7		1.3	0.5
1105	D86-automated	148.8		171.5		199.5		237.9		254.2		1.2	1.3
1109	D86-automated	148.9		171.6		198.7		236.1		253.7		1.3	0.5
1121	D86-automated	152.2		171.3		198.6		234.9		255.2		0.0	1.4
1126		149.3		170.3		198.5		234.7		258.8	C	1.2	0.2
1140	D86-automated	144.7		170.1		198.4		235.6		252.5		1.0	0.9
1143	ISO3405-automated	149.3		171.3		199.1		236.5		256.8		1.1	0.9
1182		152.4		170.8		198.9		235.7		254.2		1.1	0.7
1191	ISO3405-automated	146.9		171.6		198.4		235.5		254.0		1.3	1.3
1205	D86-automated	151.7		172.1		199.2		235.6		255.6		1.2	0.4
1212	D86-automated	146.6		171.0		198.8		236.6		253.4		1.2	1.0
1237	ISO3405-automated	150.2		170.8		198.3		235.1		253.1		1.2	0.4
1275	IP123-automated	145.4		170.5		197.8		235.6		252.2		1.2	0.9
1279	D86-automated	150.3		171.7		199.3		235.8		253.1		1.4	0.3
1316	D86-automated	149.5		171.7		199.1		236.0		254.6		1.1	0.3
1318	D86-automated	154.8		171.0		198.4		236.3		253.3		1.2	0.6
1320		149.2		170.7		198.5		235.9		252.5		1.2	0.8
1357	D86-automated	152.9		172.0		200.2		237.0		254.6		1.2	0.5
1372	D86-automated	154.5		170.0		196.4		232.5		254.0		1.1	0.6
1373	D86-manual	149.34		169.10		199.11		236.11		251.12		1.50	0
1397	D86-automated	150.7		171.7		199.1		235.5		253.9		1.2	0.4
1399		-----		-----		-----		-----		-----		-----	-----
1417	IP123-automated	151.5		171.7		199.7		238.8		254.8		1.5	1.5
1438	D86-automated	150.5		173.0		200.5		237.8		254.9		1.2	1.4
1441	D86-automated	153.3		170.9		198.3		235.4		256.8		1.2	1.1
1448		-----		-----		-----		-----		-----		-----	-----
1496	D86-automated	149.9		170.8		199.3		236.9		254.9		1.3	0.6
1528	D86-automated	147.7		171.5		198.9		236.4		253.8		1.5	0.4
1538	D86-automated	151.9		170.0		198.9		234.9		257.1		0.8	0.4
1544	D86-automated	149.70		171.60		199.40		235.70		253.60		1.2	0.7
1586	D86-automated	146.1		170.1		198.2		235.7		253.5		1.4	0.4
1587	D86-automated	150.2		170.8		198.4		235.8		253.9		1.2	0.1
1610	IP123-automated	152.6		171.6		199.2		237.0		255.4		1.2	0.5
1613	D86-automated	150.5		171.8		199.7		236.6		257.9		1.0	0.5
1631	D86-automated	145.7		170.5		198.2		235.5		253.9		1.2	0.2
1634	D86-automated	149.7		170.4		198.8		236.3		255.0		1.2	0.4
1650	D86-automated	145.4		171.1		199.1		236.3		254.5		1.3	0.5
1710	D86-automated	148.5		171.9		198.5		235.8		253.7		0.9	0.5
1715	ISO3405-automated	154.1	C	173		201		237.8		258.2		1	0.7
1720		-----		-----		-----		-----		-----		-----	-----
1724	D86-automated	149.4		171.4		198.4		235.1		254.4		1.2	0.6
1730	D86-automated	156		171		200		237		255		0.8	0.9
1741	D86-automated	147.9		170.5		197.8		235.1		252.7		1.2	0.8
1770		153.2		172.2		199.5		237.0		253.7		-----	-----
1776	ISO3405-automated	146.1		170.3		198.6		236.6		253.2		1.2	1.3
1780		-----		-----		-----		-----		-----		-----	-----
1810	D86-automated	147.2		171.8		198.7		234.9		254		1.2	0.2
1811		150.3		168.1		197.5		234.7		254.0		1.2	0.7
1833	D86-manual	145.4		169.8		197.9		234.9		254.1		1.2	0.2
1852	D86-automated	152.0		172.5		199.8		236.7		257.4		1.1	0.7
1883	D86-manual	150		171		199		236		254		1	1
1913	D86-automated	149.55		171.20		198.65		236.10		252.35		1.4	0.6
1961		-----		-----		-----		-----		-----		-----	-----
2130	IP123-automated	147.6		171.2		199.2		236.7		253.9		1.2	1.1
2133		148.4		171.7		199.1		236.3		255.0		1.2	0.7
6028	D86-automated	152.7		170.7		198.3		233.9		252.4		0.9	0.6
6041	D86-automated	149.7		172.1		200.5		238.9		256.3		1.2	1.0
6054	D86-automated	151.5		172.1		199.2		235.9		255.2		1.4	0.2
6075	D86-automated	148.7		170.4		198.7		236.5		256.9		1.1	0.7
6114	D86-automated	148.1		171.3		199.0		235.6		253.7		1.2	0.6
6135	D86-automated	149.3		171.4		199.4		237.1		255.4		1.2	0.6
6142	ISO3405-automated	144.8		169.4		197.3		234.6		251.6		1.2	0.6
6174	D86-manual	152.0		171.0		199.0		236.0		255.0		0.5	0.5
6201	D86-automated	148.8		171.1		199.2		238.2		255.1		1.8	1.2
6203	D86-automated	149.2		170.6		199.0		235.9		254.3		1.2	0.1
6249		-----		-----		-----		-----		-----		-----	-----
6262	D86-automated	148.1		171.3		199.1		235.1		253.9		1.4	0.1
6266		151.55		171.39		198.39		234.75		254.38		1.4	0.1
6308	D86-automated	152.7		170.1		197.1		235.2		254.2		1.2	0.9
6312		-----		-----		-----		-----		-----		-----	-----
6321	IP123-automated	148.6		171.1		199.2		236.4		253.2		-----	-----
6324	D86-manual	151.60		171.70		197.70		233.80		259.8		1.20	0.30
6332		-----		-----		-----		-----		-----		-----	-----
6346		-----		-----		-----		-----		-----		-----	-----
6358	D86-automated	147.5		170.9		198.2		235.2		252.2		1.2	0.7
6359		-----		169.5		197.6		234.8		255.8		1.1	0.3
6384	D86-automated	148.9		172.3		199.8		237.5		254.0		1.2	0.9
6386	D86-automated	154.6		172.8		200.10		238.7		256.7		0.9	1.0

| lab	method	IBP	mark	10% rec	mark	50% rec	mark	90% rec	mark	FBP	mark	Res.	Loss
6404		-----		-----		-----		-----		-----		-----	-----
	normality	OK		suspect		suspect		suspect		suspect			
	n	133		133		134		134		132			
	outliers	0		1		0		0		2			
	mean (n)	149.80		171.08		198.85		235.94		254.47			
	st.dev. (n)	2.413		0.880		0.719		1.058		1.601			
	R(calc.)	6.76		2.46		2.01		2.96		4.48			
	st.dev.(D86-A:20b)	2.942		1.344		1.071		1.264		2.536			
	R(D86-A:20b)	8.24		3.76		3.0		3.54		7.1			
Compare													
	R(D86-M:20b)	4.78		3.10		2.88		3.28		3.88			

Lab 631 first reported 264.0
Lab 824 first reported 166.2
Lab 914 first reported 235.3 and 262.4 respectively
Lab 1126 first reported 242.9
Lab 1715 first reported 154.1

Initial Boiling Point

Kernel Density

10% recovered

Kernel Density

50% recovered

Kernel Density

90% recovered

Kernel Density

Final Boiling Point

Kernel Density
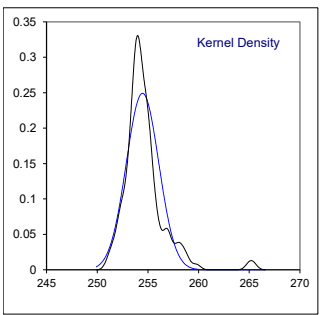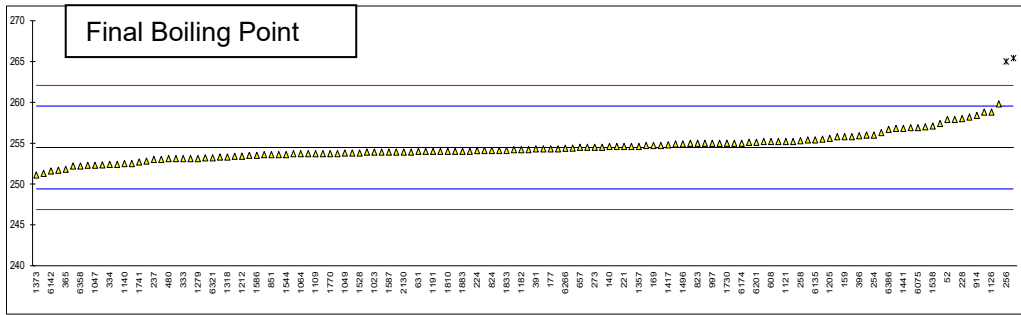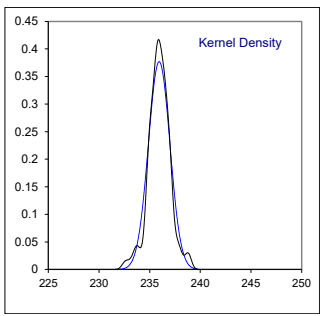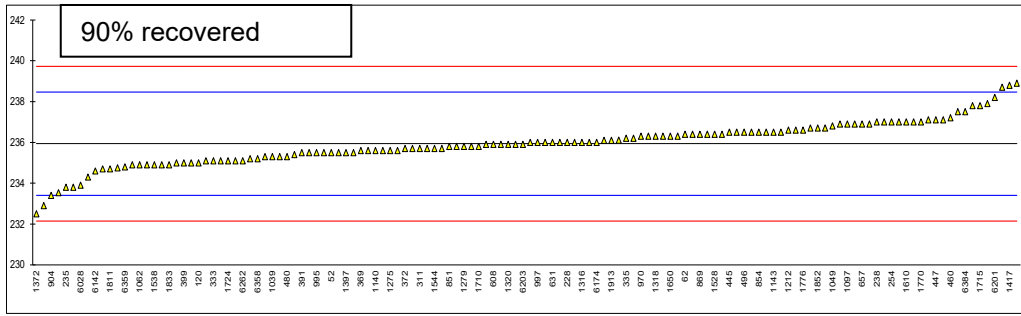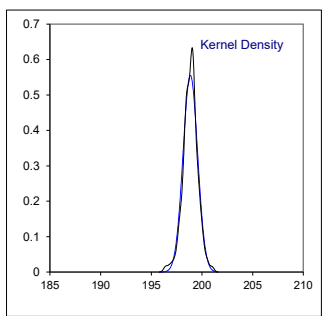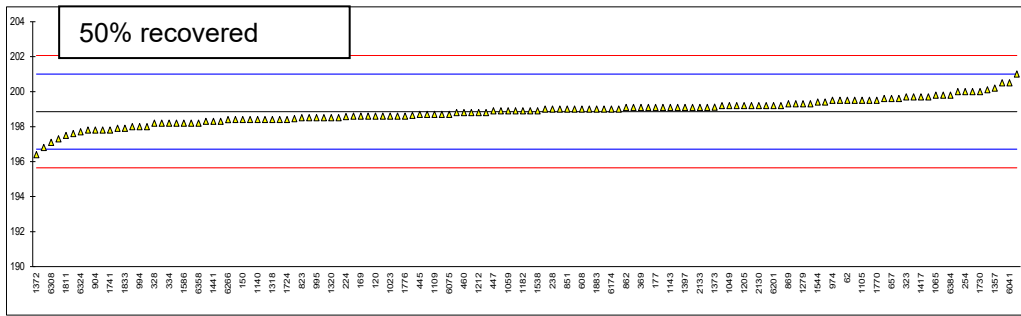
Determination of Existent Gum (unwashed) on sample #21150; results in mg/100mL

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D381	1		0.29	1062	D381	1.0		0.29
62	D381	<1		-----	1064	D381	0		-0.61
120	IP540	1		0.29	1065		-----		-----
140	D381	1		0.29	1082	IP540	-0.1		-0.69
150		-----		-----	1097	IP540	0.1		-0.52
159		-----		-----	1105	D381	0.50		-0.16
169	D381	0.0		-0.61	1109	IP540	0.0		-0.61
171	D381	<1		-----	1121		-----		-----
175		-----		-----	1126		-----		-----
177	D381	1		0.29	1140	IP540	0.6		-0.07
221	D381	<1		-----	1143	D381	0.8		0.11
224		-----		-----	1182		-----		-----
225		-----		-----	1191	IP540	0.44		-0.21
228	D381	1.0		0.29	1205		-----		-----
235	D381	0.4		-0.25	1212	D381	0.4		-0.25
237	D381	<1		-----	1237		-----		-----
238		-----		-----	1275	IP540	0.2		-0.43
253	D381	< 1.0		-----	1279	D381	<1		-----
254	D381	0.6		-0.07	1316	D381	<1		-----
256	IP540	0.6		-0.07	1318	IP540	0.14		-0.48
258	D381	0.5		-0.16	1320		-----		-----
273	D381	<0.5		-----	1357	IP540	1.0		0.29
311	IP540	<1		-----	1372	IP540	0.6		-0.07
317	D381	<1		-----	1373		-----		-----
323	D381	< 1		-----	1397		-----		-----
328	D381	1.0		0.29	1399		-----		-----
333		-----		-----	1417		-----		-----
334	D381	<0.5		-----	1438		-----		-----
335	IP540	1.0		0.29	1441		-----		-----
365	IP540	1.0		0.29	1448		-----		-----
369	IP540	0.8		0.11	1496	D381	0.8		0.11
372	IP540	0.8		0.11	1528	IP540	0.2		-0.43
391		-----		-----	1538	D381	1.8		1.00
396	D381	<1		-----	1544		-----		-----
399	IP540	0.6		-0.07	1586	IP540	0.50		-0.16
440		-----		-----	1587	IP540	0.2		-0.43
445	D381	<1		-----	1610	IP540	0.3		-0.34
447	D381	<1		-----	1613	D381	0.8		0.11
460	IP540	0		-0.61	1631	IP540	1		0.29
467	IP540	0.2		-0.43	1634	D381	0.4		-0.25
480		-----		-----	1650	D381	0.40		-0.25
496	D381	1.7		0.92	1710	IP540	1.0		0.29
594		-----		-----	1715		-----		-----
603	D381	0.8		0.11	1720		-----		-----
608	D381	<1		-----	1724	IP540	<0,5		-----
631	D381	<1		-----	1730		-----		-----
657	IP540	<1 [0.6]		-----	1741	D381	0.8		0.11
798		-----		-----	1770	D381	<1		-----
823	D381	<1.0		-----	1776	IP540	<1		-----
824	D381	0.6		-0.07	1780		-----		-----
851	IP540	1.7		0.92	1810	D381	1.8		1.00
854	IP540	1		0.29	1811	D381	1.1		0.38
862	D381	<1		-----	1833	IP540	0.6		-0.07
869	IP540	1		0.29	1852	IP540	0.2		-0.43
904		-----		-----	1883	D381	0.8		0.11
914	D381	0.4		-0.25	1913	D381	0.70		0.02
962		-----		-----	1961		-----		-----
963		-----		-----	2130	IP540	1.8		1.00
970	D381	0.6		-0.07	2133	D381	0.4		-0.25
974	IP540	0.6		-0.07	6028	ISO6246	0.5		-0.16
994	D381	0.6		-0.07	6041	D381	0.60		-0.07
995		-----		-----	6054	IP540	0.5		-0.16
996		-----		-----	6075	IP540	0		-0.61
997		-----		-----	6114	IP540	0.2		-0.43
1011	D381	<1		-----	6135		-----		-----
1016	D381	<1		-----	6142		-----		-----
1023	IP540	1.0		0.29	6174	D381	0.6		-0.07
1039	ISO6246	<1		-----	6201	D381	<1		-----
1047	ISO6246	<0,5		-----	6203	D381	1.2		0.47
1049	D381	0.2		-0.43	6249		-----		-----
1059	D381	<1		-----	6262	D381	<1		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266		-----		-----	6346		-----		-----
6308	D381	<1		-----	6358	D381	0.5		-0.16
6312		-----		-----	6359	D381	1		0.29
6321	IP540	<1		-----	6384	D381	<1.0		-----
6324	D381	1.0		0.29	6386	D381	<1		-----
6332		-----		-----	6404		-----		-----

normality	OK
n	74
outliers	0
mean (n)	0.677
st.dev. (n)	0.4418
R(calc.)	1.237
st.dev.(D381:19)	1.1179
R(D381:19)	3.130

Kernel Density
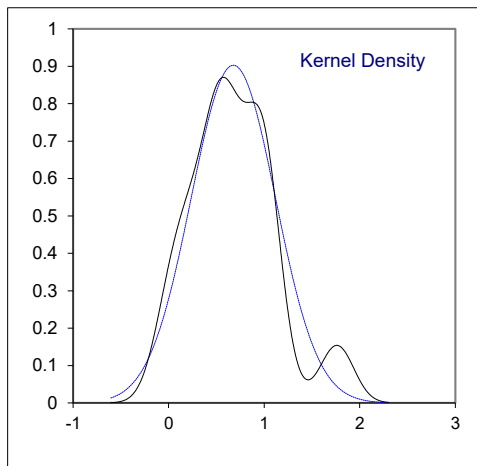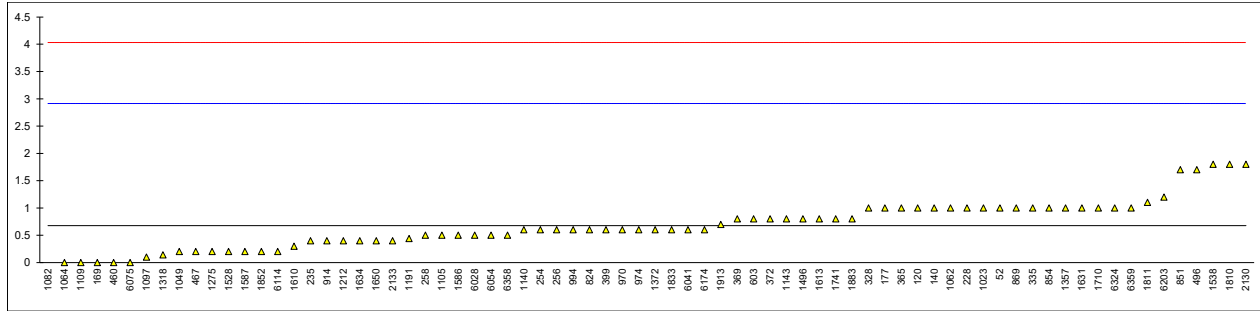
Determination of Flash Point on sample #21150; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D56	43.5		0.52	1062	IP170	42.5		-0.35
62	D56	43.0		0.09	1064	IP170	42.0		-0.79
120	D56	42.8		-0.09	1065		-----		-----
140	D56	42.0		-0.79	1082	ISO13736	42.25		-0.57
150	D56	43.5		0.52	1097	ISO13736	41.3		-1.40
159	D56	43.0		0.09	1105	IP170	41.5		-1.23
169	D56	44.5		1.40	1109	IP170	40.5		-2.10
171	D56	50.5	R(0.01)	6.65	1121	IP170	41.5		-1.23
175	D93	45		1.84	1126	D93	47.0	R(0.05)	3.59
177	D56	46.0		2.71	1140	IP170	43.0		0.09
221	IP170	43.0		0.09	1143	IP170	42.0		-0.79
224	IP170	42.01		-0.78	1182	D93	46		2.71
225		-----		-----	1191	ISO13736	44		0.96
228	IP170	42.5		-0.35	1205	D56	43.4		0.44
235	IP170	43.0		0.09	1212	IP170	41.5		-1.23
237	IP170	42.0		-0.79	1237	D56	43.0		0.09
238	IP170	43.0		0.09	1275	IP170	41.0		-1.66
253	IP170	42.5		-0.35	1279	IP170	43.5		0.52
254	IP170	43.0		0.09	1316	IP170	43.0		0.09
256	IP170	42.5		-0.35	1318	IP170	42.0		-0.79
258	IP170	42.5		-0.35	1320	D56	42.5		-0.35
273	IP170	43.0		0.09	1357	IP170	44.5		1.40
311	IP170	42.5		-0.35	1372	IP170	43.5		0.52
317	IP170	42.5		-0.35	1373	D56	42.08		-0.72
323	IP170	43.0		0.09	1397	D56	43.0		0.09
328		-----		-----	1399		-----		-----
333	IP170	41.5		-1.23	1417	IP170	43.5		0.52
334	IP170	43.0		0.09	1438		-----		-----
335	IP170	42.0		-0.79	1441	D93	45.5		2.27
365	IP170	42.600		-0.26	1448		-----		-----
369	IP170	43.5		0.52	1496	IP170	42.0		-0.79
372	IP170	42.5		-0.35	1528	D56	45		1.84
391	IP170	42.0		-0.79	1538	D56	43.0		0.09
396	IP170	43		0.09	1544		-----		-----
399	IP170	43		0.09	1586	IP170	41.5		-1.23
440		-----		-----	1587	IP170	42.5		-0.35
445	IP170	42.0		-0.79	1610	IP170	42.5		-0.35
447	IP170	42.5		-0.35	1613	D56	43.5		0.52
460	IP170	43.5		0.52	1631	IP170	43		0.09
467	IP170	43.25		0.31	1634	IP170	43.0		0.09
480	D56	43.0		0.09	1650	IP170	43.0		0.09
496	ISO13736	44.0		0.96	1710	D56	44.0		0.96
594		-----		-----	1715	D56	43.8		0.79
603	IP170	43.5		0.52	1720		-----		-----
608	IP170	42.5		-0.35	1724	IP170	42.5		-0.35
631	D56	41.0		-1.66	1730	D56	42.0		-0.79
657	IP170	42.0		-0.79	1741	IP170	42.0		-0.79
798		-----		-----	1770	D56	42.5		-0.35
823	IP170	42.5		-0.35	1776	IP170	56.0	R(0.01)	11.46
824	IP170	42.0		-0.79	1780		-----		-----
851	IP170	43.0		0.09	1810	D56	43.5		0.52
854	IP170	42.5		-0.35	1811	IP170	43.5		0.52
862	IP170	42.5		-0.35	1833	IP170	43.5		0.52
869	IP170	43.0		0.09	1852	IP170	43.5		0.52
904	D56	43.5		0.52	1883	D3828	42.5		-0.35
914	IP170	41.5		-1.23	1913	IP170	42.6		-0.26
962		-----		-----	1961		-----		-----
963		-----		-----	2130	IP170	42.5		-0.35
970	D3828	42.5		-0.35	2133	D93	43.0		0.09
974	IP170	42.5		-0.35	6028	ISO2719	45.0		1.84
994	D93	43.5		0.52	6041	IP170	43.0		0.09
995	IP170	42.5		-0.35	6054	D93	45.0		1.84
996		-----		-----	6075	IP170	41.5		-1.23
997	IP170	43.0		0.09	6114	IP170	43.5		0.52
1011	IP170	42.5		-0.35	6135	ISO13736	42.5		-0.35
1016	IP170	43.5		0.52	6142	ISO13736	43.5		0.52
1023	ISO13736	44.5		1.40	6174	IP170	42.5		-0.35
1039	IP170	42.5		-0.35	6201	IP170	43.0		0.09
1047	D56	45.5		2.27	6203	D93	44.5		1.40
1049	ISO13736	42.0		-0.79	6249		-----		-----
1059	IP170	43.0		0.09	6262	IP170	44.0		0.96

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266	IP170	44.7		1.57	6346		-----		-----
6308	IP170	42.5		-0.35	6358	D56	43.75		0.74
6312	IP170	41.5		-1.23	6359	D56	42.0		-0.79
6321	IP170	42.0		-0.79	6384	IP170	43.5		0.52
6324	IP170	43.50		0.52	6386	IP170	41.0		-1.66
6332		-----		-----	6404		-----		-----

normality	OK	
n	131	
outliers	3	
mean (n)	42.901	
st.dev. (n)	1.0093	
R(calc.)	2.826	
st.dev.(IP170:21)	1.1429	
R(IP170:21)	3.2	

Kernel Density
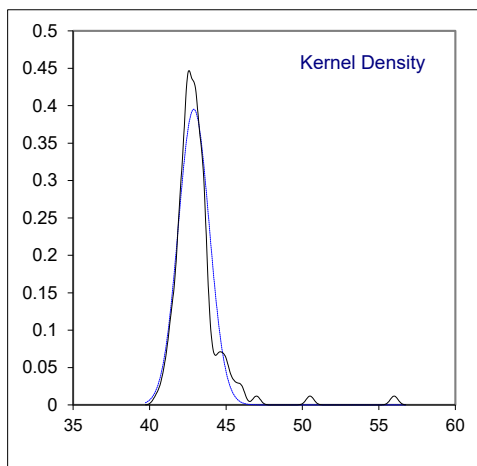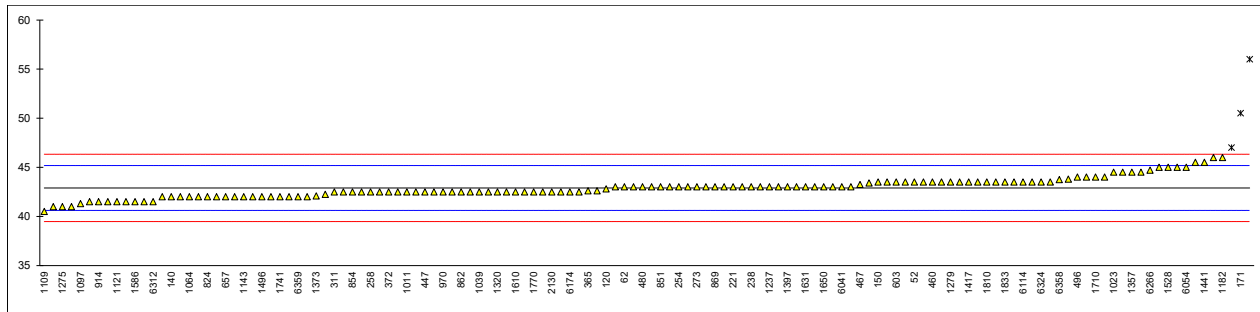
Determination of Freezing Point on sample #21150; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D5972	-51.8		1.17	1062	D7153	-52.1		0.83
62	D5972	-53.8		-1.07	1064	D7153	-52.4		0.49
120	D5972	-53.9		-1.19	1065	D2386	-52.7		0.16
140	D5972	-53.2	C	-0.40	1082	IP529	-52.55		0.33
150	D2386	-53.0		-0.18	1097	IP529	-52.5		0.38
159	D2386	-54.0	C	-1.30	1105	D7153	-52.2		0.72
169	D2386	-52.0		0.94	1109	D5972	-54.3		-1.63
171	D2386	-53.0		-0.18	1121	D2386	-52.0		0.94
175	D2386	-52		0.94	1126		-----		-----
177	D2386	-54.0		-1.30	1140	D7153	-52.8		0.05
221	D2386	-52		0.94	1143	ISO3013	-52.0		0.94
224		-----		-----	1182	D5972	-52.7		0.16
225		-----		-----	1191	IP529	-52.35		0.55
228	D2386	-51		2.06	1205		-----		-----
235	D2386	-54.25		-1.58	1212	D2386	-55.0	C	-2.42
237	D2386	-52.5		0.38	1237	D2386	-53.0		-0.18
238		-----		-----	1275	IP529	-52.0		0.94
253	D2386	-52.0		0.94	1279	D7153	-52.2		0.72
254	D2386	-53.0	C	-0.18	1316	D7153	-53.1		-0.29
256	D2386	-53.5		-0.74	1318	D7153	-52.4		0.49
258	D2386	-57.0	R(0.01)	-4.66	1320	D5972	-52.8		0.05
273	D2386	-54		-1.30	1357	D5972	-53.2		-0.40
311	D2386	-53.5		-0.74	1372	D7153	-52.7		0.16
317	D2386	-52.5		0.38	1373		-----		-----
323	D2386	-54.5		-1.86	1397	D7153	-52.2		0.72
328		-----		-----	1399		-----		-----
333		-----		-----	1417		-----		-----
334	D5972	-52.1		0.83	1438		-----		-----
335	IP529	-52.3		0.61	1441	D5972	-53.7		-0.96
365	IP16	-53.5		-0.74	1448		-----		-----
369	D2386	-53.1		-0.29	1496	D2386	-53.0		-0.18
372	D2386	-52.5		0.38	1528	D7153	-52.7		0.16
391	D2386	-54.5		-1.86	1538	D5972	-52.5		0.38
396	D2386	-53.5	C	-0.74	1544		-----		-----
399	D7153	-53.1		-0.29	1586	D2386	-53.5		-0.74
440		-----		-----	1587	IP529	-52.5		0.38
445	D2386	-52.4		0.49	1610	IP435	-54.2		-1.52
447	D2386	-52.5		0.38	1613	D7153	-53.0		-0.18
460	IP529	-52.7		0.16	1631	D5972	-52.5		0.38
467	D2386	-53.0		-0.18	1634	D2386	-53.0		-0.18
480		-----		-----	1650	D2386	-52.5		0.38
496		-----		-----	1710	D7153	-52.6		0.27
594		-----		-----	1715	D5972	-52.8		0.05
603	D2386	-53.0		-0.18	1720		-----		-----
608		-----		-----	1724	D2386	-53.5		-0.74
631	D5972	-52.6		0.27	1730	D2386	-52.5		0.38
657	D7153	-53.0		-0.18	1741	D2386	-52.0		0.94
798		-----		-----	1770	D7153	-52.6		0.27
823	D2386	-52.5		0.38	1776	IP529	-52.5		0.38
824	D2386	-52.0		0.94	1780		-----		-----
851	D2386	-52.5		0.38	1810	D2386	-53.4		-0.63
854	D2386	-53.5		-0.74	1811	D2386	-53.6		-0.85
862	D2386	-53.5		-0.74	1833	D7153	-52.1		0.83
869	D2386	-53.5		-0.74	1852	D7153	-52.2		0.72
904		-----		-----	1883	D2386	-53		-0.18
914	D7153	-52.6		0.27	1913	D7153	-52.3		0.61
962		-----		-----	1961		-----		-----
963		-----		-----	2130	IP529	-52.0		0.94
970	D2386	-52.0		0.94	2133	D7153	-53.2		-0.40
974	D2386	-52.0		0.94	6028	D7153	-52.45		0.44
994	D2386	-53.0		-0.18	6041	D2386	-53.0		-0.18
995	D2386	-53.0		-0.18	6054	D7153	-52.85		-0.01
996		-----		-----	6075	IP529	-52.1	C	0.83
997	D2386	-53.0		-0.18	6114	D2386	-52.5		0.38
1011	D2386	-53.5		-0.74	6135	D5972	-53.2		-0.40
1016	D5972	-52.9		-0.07	6142		-----		-----
1023	D7153	-52.4		0.49	6174		-----	W	-----
1039	IP529	-52.0		0.94	6201	D2386	-52.3		0.61
1047	D7153	-52.7		0.16	6203	D2386	-55		-2.42
1049	D7153	-52.3		0.61	6249		-----		-----
1059	D2386	-54.0		-1.30	6262	D2386	-50.5		2.62

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266		-----		-----	6346		-----		-----
6308	D5972	-52.1		0.83	6358	D7153	-52.15		0.77
6312		-----		-----	6359	D2386	-53.0		-0.18
6321	D5972	-52.8		0.05	6384	D2386	-54.4		-1.75
6324	D2386	-54.0		-1.30	6386	D2386	-53.0		-0.18
6332		-----		-----	6404		-----		-----

normality	OK
n	119
outliers	1
mean (n)	-52.84
st.dev. (n)	0.756
R(calc.)	2.12
st.dev.(D2386:19)	0.893
R(D2386:19)	2.5

Lab 140 first reported -50.2
Lab 159 first reported -55.5
Lab 254 first reported -56.0
Lab 396 first reported -55.5
Lab 1212 first reported -55.5
Lab 6075 first reported 52.1
Lab 6174 test result withdrawn, reported -56.0
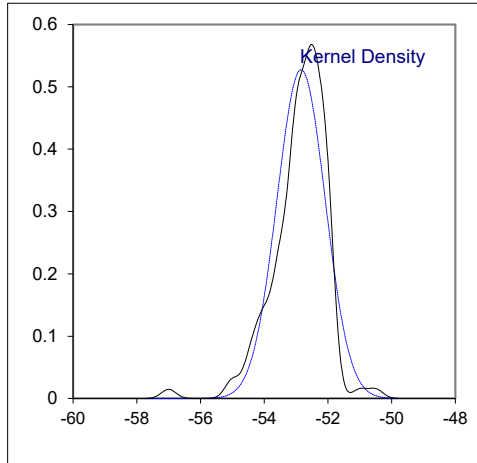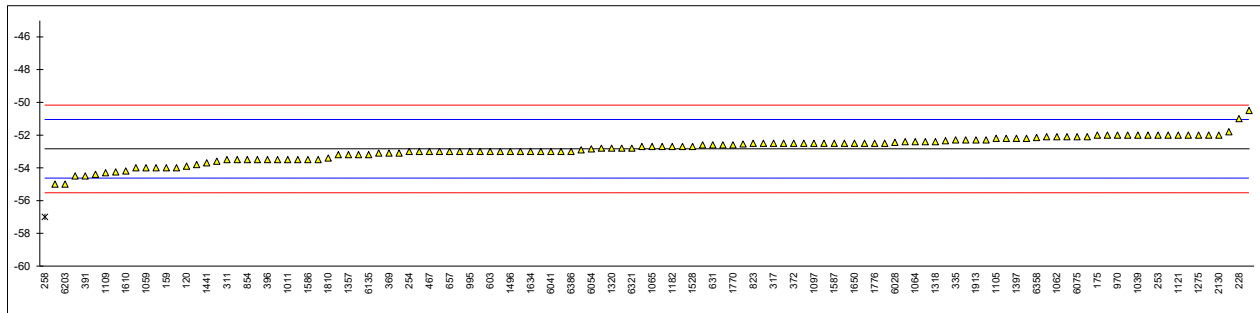
Determination of Kinematic Viscosity at -20°C on sample #21150; results in mm^2/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D445	3.974		-0.48	1062	D445	3.9756		-0.42
62	D445	3.959		-1.03	1064	D445	3.984		-0.11
120	D445	5.5167	R(0.01)	56.55	1065		-----		-----
140	D445	3.893	C	-3.47	1082	ISO3104	3.98410		-0.10
150	D445	4.053	C	2.44	1097	ISO3104	3.983		-0.14
159	D445	3.957		-1.11	1105	D445	4.0460		2.18
169	D445	3.888	C	-3.66	1109	D445	3.9900		0.11
171		-----		-----	1121		-----		-----
175	D445	3.971		-0.59	1126		-----		-----
177	D445	4.0245		1.39	1140	D445	3.937		-1.84
221	D445	4.041		2.00	1143		-----		-----
224		-----		-----	1182	D7042	3.8442	C,R(0.01)	-5.27
225		-----		-----	1191	ISO3104	3.9759		-0.41
228		-----		-----	1205		-----		-----
235	D445	4.063	C	2.81	1212	D7042	4.033		1.70
237	D445	4.019		1.19	1237		-----		-----
238		-----		-----	1275	IP71	4.0049		0.67
253	D445	3.92		-2.47	1279	D445	3.978		-0.33
254	D445	3.989		0.08	1316	ISO3104	3.995		0.30
256	D445	4.021		1.26	1318	D7042	3.958		-1.07
258		-----		-----	1320	D445	3.965		-0.81
273		-----		-----	1357	D445	n.a.		-----
311	D445	3.979		-0.29	1372	D7042	3.9124		-2.75
317		-----		-----	1373		-----		-----
323	D445	3.996		0.34	1397	D7042	3.993		0.23
328		-----		-----	1399		-----		-----
333	D445	4.021		1.26	1417	D445	3.983		-0.14
334	D445	3.987		0.00	1438		-----		-----
335	D445	3.977		-0.37	1441	D445	3.999		0.45
365		-----		-----	1448		-----		-----
369	D445	3.9805		-0.24	1496	D445	3.952		-1.29
372	D445	3.980		-0.26	1528	D445	4.0190		1.19
391		-----		-----	1538		-----		-----
396		-----		-----	1544		-----		-----
399	D445	3.976		-0.40	1586	D445	4.010		0.85
440		-----		-----	1587	D445	3.9957		0.33
445	D7042	3.9737		-0.49	1610	D7042	3.9562		-1.13
447	D445	3.979		-0.29	1613	D445	4.006		0.71
460	D445	3.996		0.34	1631	D7945	3.985		-0.07
467	D7042	3.9847		-0.08	1634	D445	3.975		-0.44
480		-----		-----	1650	D445	3.9791		-0.29
496	D445	3.9978		0.40	1710	D445	4.009		0.82
594		-----		-----	1715		-----		-----
603		-----		-----	1720		-----		-----
608		-----		-----	1724	D445	3.994	C	0.26
631	D445	4.010	C	0.85	1730		-----		-----
657	D445	3.996		0.34	1741	D445	3.955		-1.18
798		-----		-----	1770		-----		-----
823	D445	3.988		0.04	1776	D445	3.924		-2.33
824	D445	3.956		-1.14	1780		-----		-----
851	D445	3.996		0.34	1810	D445	3.988		0.04
854	D445	3.990		0.11	1811	D445	3.9854		-0.06
862	D445	4.018		1.15	1833	D445	3.988		0.04
869	D445	4.005		0.67	1852	D445	3.9778		-0.34
904		-----		-----	1883		-----		-----
914	D445	3.986		-0.03	1913	D445	3.9745		-0.46
962		-----		-----	1961		-----		-----
963		-----		-----	2130	IP71	4.031		1.63
970		-----		-----	2133		-----		-----
974	D445	3.960		-0.99	6028		-----		-----
994		-----		-----	6041	D445	3.984		-0.11
995	D445	3.976		-0.40	6054	D445	4.2233	R(0.01)	8.74
996		-----		-----	6075	D445	3.9766		-0.38
997		-----		-----	6114	D445	4.0221		1.30
1011	D445	3.980		-0.26	6135		-----		-----
1016	D445	3.9679		-0.70	6142		-----		-----
1023		-----		-----	6174		-----		-----
1039	ISO3104	3.986		-0.03	6201	D445	4.064	C	2.85
1047	ISO3104	4.020		1.22	6203		-----		-----
1049	D445	3.991		0.15	6249		-----		-----
1059	D445	3.977		-0.37	6262	D7042	3.907		-2.95

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266	D7042	4.053		2.44	6346		-----		-----
6308	D7042	3.9972		0.38	6358	D445	3.970		-0.62
6312		-----		-----	6359	D445	4.033		1.70
6321	IP71	3.996		0.34	6384	D445	3.9915		0.17
6324		-----		-----	6386	D445	3.9829	C	-0.15
6332		-----		-----	6404		-----		-----

	normality	suspect
	n	93
	outliers	3
	mean (n)	3.98690
	st.dev. (n)	0.032643
	R(calc.)	0.09140
	st.dev.(IP71-1:96)	0.027054
	R(IP71-1:96)	0.07575
Compare		
	R(D445:19)	0.07575
	R(D445:21)	0.02010

Lab 140 first reported 4.077
Lab 150 first reported 4.096
Lab 169 first reported 3.743
Lab 235 first reported 3.858
Lab 631 first reported 3.75899
Lab 1182 first reported 3.7808
Lab 1724 first reported 4.089
Lab 6201 first reported 4.21525
Lab 6386 first reported 3.779

Kernel Density
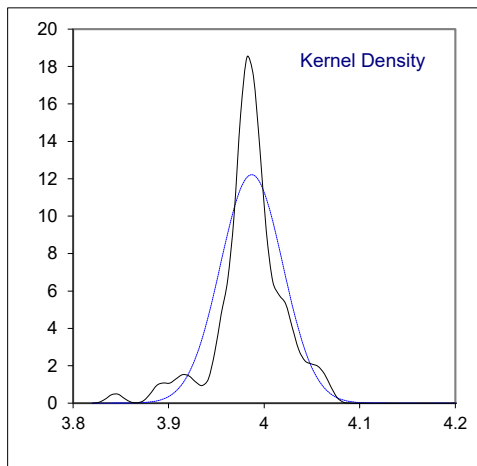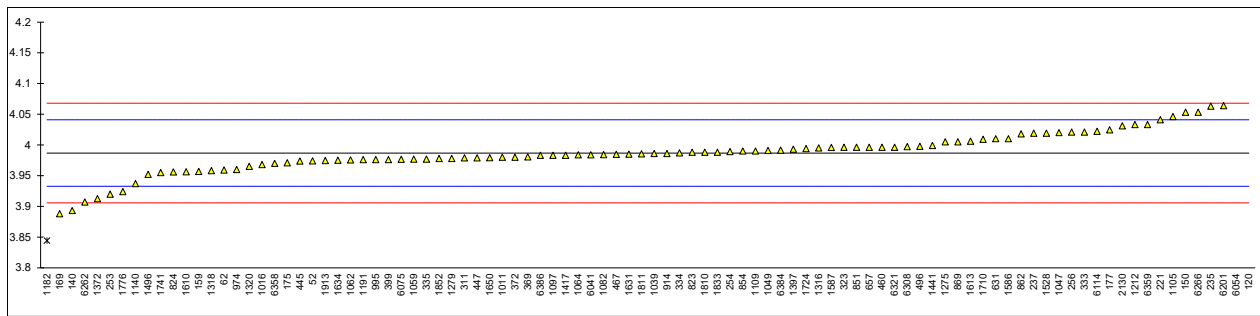
Determination of Mercaptan Sulfur as S on sample #21150; converted results to %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3227	0.0005		0.14	1062	D3227	0.00046		-0.20
62	D3227	0.0004		-0.71	1064	D3227	0.00043		-0.45
120	D3227	0.00041		-0.62	1065	D3227	0.00044		-0.37
140	D3227	<0.0003		-----	1082		-----		-----
150	D3227	0.0004		-0.71	1097	ISO3012	0.00038		-0.88
159	D3227	0.0005		0.14	1105	D3227	0.000453		-0.26
169	D3227	0.0007	C	1.84	1109	D3227	0.00045		-0.28
171	D3227	0.0003		-1.55	1121		-----		-----
175	D3227	0.0005		0.14	1126		-----		-----
177	D3227	0.000568		0.72	1140	D3227	0.000615		1.12
221		-----		-----	1143		-----		-----
224		-----		-----	1182		-----		-----
225		-----		-----	1191	ISO3012	0.000473		-0.09
228		-----		-----	1205		-----		-----
235	D3227	0.0005		0.14	1212	D3227	0.0004		-0.71
237	D3227	0.0004		-0.71	1237		-----		-----
238		-----		-----	1275	IP342	0.00048		-0.03
253	D3227	0.0004		-0.71	1279	D3227	0.00055		0.57
254		-----		-----	1316	D3227	0.0005		0.14
256		-----		-----	1318	D3227	0.0005		0.14
258		-----		-----	1320		-----		-----
273	D3227	0.00046		-0.20	1357	D3227	0.00033		-1.30
311	D3227	0.00048		-0.03	1372	D3227	0.0008	C	2.69
317		-----		-----	1373		-----		-----
323	D3227	0.0006		0.99	1397	D3227	0.0005		0.14
328		-----		-----	1399		-----		-----
333		-----		-----	1417		-----		-----
334	D3227	0.0003		-1.55	1438		-----		-----
335	D3227	0.0007		1.84	1441		-----		-----
365		-----		-----	1448		-----		-----
369	D3227	0.00048		-0.03	1496	D3227	0.00043		-0.45
372	D3227	0.00056		0.65	1528	D3227	0.0004		-0.71
391	D3227	0.0006		0.99	1538	D3227	0.00049		0.06
396		-----		-----	1544	D3227	0.00050		0.14
399	D3227	0.0005		0.14	1586	D3227	0.0004		-0.71
440		-----		-----	1587		-----		-----
445	D3227	0.0004		-0.71	1610	IP342	0.00055		0.57
447	D3227	0.0006		0.99	1613	D3227	0.00065		1.41
460	D3227	0.00047		-0.11	1631	D3227	0.00057		0.74
467	D3227	0.00043		-0.45	1634	D3227	0.0004804		-0.02
480		-----		-----	1650	D3227	0.00025		-1.98
496		-----		-----	1710	D3227	0.00045		-0.28
594		-----		-----	1715		-----		-----
603		-----		-----	1720		-----		-----
608		-----		-----	1724	D3227	0.00048		-0.03
631		-----		-----	1730	D3227	0.00084		3.02
657	D3227	0.0005		0.14	1741	D3227	0.0004		-0.71
798		-----		-----	1770		-----		-----
823	D3227	0.0005		0.14	1776		-----		-----
824	D3227	0.00047		-0.11	1780		-----		-----
851	D3227	0.00044		-0.37	1810	D3227	0.00057		0.74
854	D3227	0.0006		0.99	1811	D3227	0.00063	C	1.24
862	D3227	0.0004		-0.71	1833	D3227	0.00048		-0.03
869	D3227	0.0004		-0.71	1852	D3227	0.0003		-1.55
904	D3227	0.0005		0.14	1883		-----		-----
914	D3227	0.00057		0.74	1913	D3227	0.00046		-0.20
962		-----		-----	1961		-----		-----
963		-----		-----	2130	IP342	0.000543		0.51
970		-----		-----	2133	D3227	0.00014		-2.91
974	D3227	0.0005		0.14	6028	UOP163	0.0004	C	-0.71
994	D3227	0.00046		-0.20	6041	D3227	0.00044		-0.37
995	D3227	0.00042		-0.54	6054		-----		-----
996		-----		-----	6075	D3227	0.0004	C	-0.71
997		-----		-----	6114	D3227	0.0008		2.69
1011	D3227	0.0004		-0.71	6135		-----		-----
1016	D3227	0.0005		0.14	6142	IP342	0.00055		0.57
1023		-----		-----	6174		-----		-----
1039	D3227	0.0004		-0.71	6201	D3227	0.0004		-0.71
1047	D3227	0.00045		-0.28	6203	D3227	0.00066		1.50
1049	D3227	0.000445		-0.32	6249		-----		-----
1059	D3227	0.0006		0.99	6262	UOP163	0.00065		1.41

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266		-----		-----	6346		-----		-----
6308	D3227	0.0005		0.14	6358	D3227	0.00037		-0.96
6312		-----		-----	6359	D3227	0.0005		0.14
6321	IP342	0.0014	R(0.01)	7.77	6384	D3227	0.000322		-1.37
6324		-----		-----	6386	D3227	0.00046		-0.20
6332		-----		-----	6404		-----		-----

normality	suspect
n	93
outliers	1
mean (n)	0.000483
st.dev. (n)	0.0001124
R(calc.)	0.000315
st.dev.(D3227:16)	0.0001180
R(D3227:16)	0.000330

Lab 169 first reported 0.0011
Lab 1372 first reported 0.0015
Lab 1811 first reported 0.00095
Lab 6028 first reported 12.0 mg/kg
Lab 6075 first reported 0.0008

Kernel Density
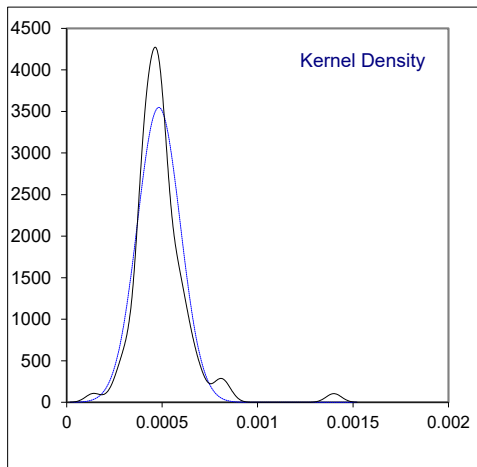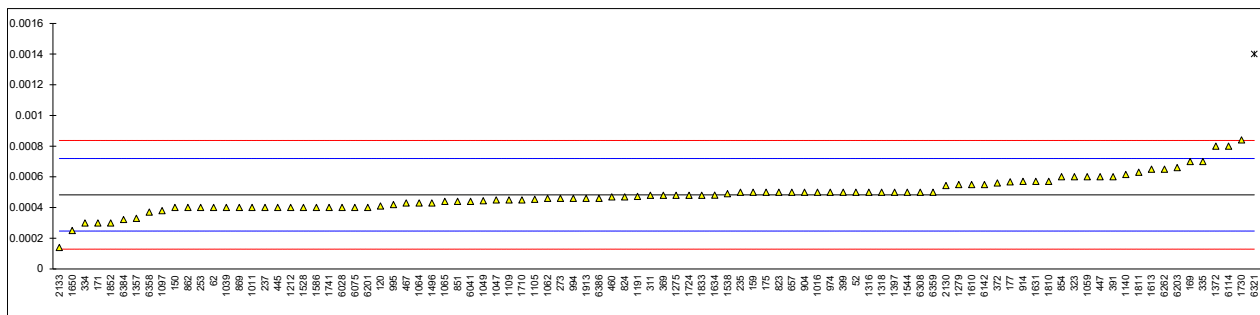
Determination of MSEP on sample #21150;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3948	93		-1.40	1062	D3948	96		-0.13
62	D3948	94		-0.98	1064	D7224	95		-0.55
120	D3948	95		-0.55	1065		-----		-----
140	D3948	94		-0.98	1082	D3948	97		0.30
150	D3948	94		-0.98	1097	D3948	94		-0.98
159		-----		-----	1105	D7224	93		-1.40
169	D3948	96		-0.13	1109	D3948	93		-1.40
171	D3948	96		-0.13	1121		-----		-----
175		-----		-----	1126		-----		-----
177	D3948	97		0.30	1140	D3948	97		0.30
221		-----		-----	1143	D3948	93		-1.40
224		-----		-----	1182		-----		-----
225		-----		-----	1191	D3948	96		-0.13
228	D3948	98.0		0.72	1205		-----		-----
235	D7224	99		1.15	1212	D7224	98		0.72
237	D7224	98		0.72	1237		-----		-----
238		-----		-----	1275	D3948	97		0.30
253	D3948	97		0.30	1279	D3948	96		-0.13
254		-----		-----	1316	D3948	94		-0.98
256	D7224	97		0.30	1318	D7224	98		0.72
258		-----		-----	1320	D3948	96		-0.13
273		-----		-----	1357	D7224	95		-0.55
311	D7224	97		0.30	1372	D3948	95		-0.55
317	D7224	98		0.72	1373		-----		-----
323	D7224	98		0.72	1397	D7224	97		0.30
328	D7224	95		-0.55	1399		-----		-----
333	D7224	92		-1.83	1417		-----		-----
334	D7224	96		-0.13	1438		-----		-----
335	D7224	97		0.30	1441		-----		-----
365	D7224	96		-0.13	1448		-----		-----
369	D7224	99		1.15	1496	D3948	99		1.15
372	D3948	96		-0.13	1528	D3948	92	C	-1.83
391		-----		-----	1538	D3948	97		0.30
396	D3948	96		-0.13	1544		-----		-----
399	D3948	94		-0.98	1586	D3948	98		0.72
440		-----		-----	1587	D7224	97		0.30
445	D3948	97		0.30	1610	D3948	96		-0.13
447	D3948	98		0.72	1613	D3948	93		-1.40
460	D3948	95		-0.55	1631	D3948	99		1.15
467	D3948	96		-0.13	1634	D7224	95		-0.55
480		-----		-----	1650	D3948	99		1.15
496	D3948	100		1.57	1710	D7224	99		1.15
594		-----		-----	1715		-----		-----
603		-----		-----	1720		-----		-----
608	D3948	99		1.15	1724	D3948	98		0.72
631	D7224	95		-0.55	1730	D3948	96		-0.13
657	D3948	98		0.72	1741	D3948	97		0.30
798		-----		-----	1770		-----		-----
823	D3948	90		-2.68	1776	D3948	97		0.30
824	D3948	90		-2.68	1780		-----		-----
851	D7224	94		-0.98	1810	D3948	98		0.72
854	D3948	97		0.30	1811	D3948	95		-0.55
862	D3948	94		-0.98	1833	D3948	98		0.72
869	D3948	99		1.15	1852	D3948	98		0.72
904		-----		-----	1883	D3948	98		0.72
914	D3948	97		0.30	1913	D7224	97		0.30
962		-----		-----	1961	D3948	96		-0.13
963		-----		-----	2130	D3948	96		-0.13
970	D3948	97		0.30	2133	D3948	98		0.72
974	D7224	97		0.30	6028		-----		-----
994		-----		-----	6041	D3948	98		0.72
995		-----		-----	6054	D3948	99		1.15
996		-----		-----	6075	D3948	98.5		0.94
997		-----		-----	6114	D7224	98		0.72
1011	D3948	97		0.30	6135	D3948	97		0.30
1016	D3948	90		-2.68	6142		-----		-----
1023	D3948	98		0.72	6174	D3948	98		0.72
1039	D3948	97		0.30	6201	D3948	99		1.15
1047	D3948	97.5		0.51	6203	D3948	94		-0.98
1049	D3948	95		-0.55	6249		-----		-----
1059	D3948	98		0.72	6262	D3948	98		0.72

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266		-----		-----	6346		-----		-----
6308	D7224	96		-0.13	6358	D3948	95		-0.55
6312		-----		-----	6359	D3948	98		0.72
6321	D3948	94		-0.98	6384	D3948	96		-0.13
6324	D3948	93		-1.40	6386	D8073	98.9		1.11
6332		-----		-----	6404		-----		-----

|	
normality	OK
n	107
outliers	0
mean (n)	96.30
st.dev. (n)	2.102
R(calc.)	5.89
st.dev.(D3948:20)	2.352
R(D3948:20)	6.59

Lab 1528 first reported 88
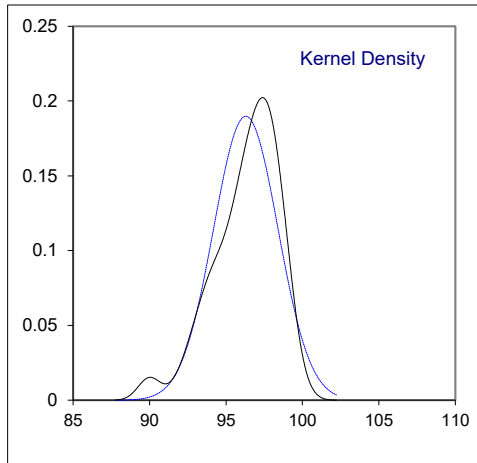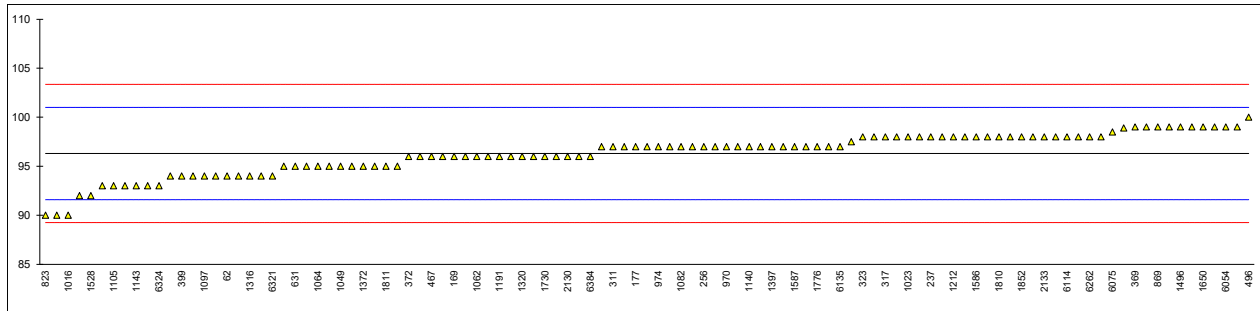
Determination of Naphthalenes on sample #21150; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D1840-A	1.23		0.04	1062	D1840-A	1.26		0.83
62	D1840-A	1.197	C	-0.83	1064	D1840-A	1.220		-0.23
120	D1840-B	1.241		0.33	1065	D1840-A	1.28		1.35
140		-----		-----	1082		-----		-----
150	D1840-B	1.17		-1.54	1097	D1840-A	1.256		0.72
159	D1840-B	1.2133	C	-0.40	1105	D1840-A	1.234		0.14
169	D1840-B	1.15		-2.07	1109	D1840-B	1.22		-0.23
171	D1840-A	1.22		-0.23	1121		-----		-----
175		-----		-----	1126		-----		-----
177	D1840-B	1.22		-0.23	1140	D1840-B	0.76	C,R(0.01)	-12.34
221		-----		-----	1143		-----		-----
224		-----		-----	1182		-----		-----
225		-----		-----	1191	D1840-B	1.2028		-0.68
228		-----		-----	1205		-----		-----
235	D1840-B	1.20		-0.75	1212	D1840-B	1.26		0.83
237	D1840-B	1.22		-0.23	1237	D1840-B	1.233		0.12
238		-----		-----	1275	D1840-A	1.141		-2.31
253	D1840-A	1.24		0.30	1279	D1840-B	1.25		0.56
254		-----		-----	1316	D1840-B	1.23		0.04
256		-----		-----	1318	D1840-A	1.21		-0.49
258		-----		-----	1320		-----		-----
273	D1840-A	1.21		-0.49	1357		n.a.		-----
311	D1840-B	1.29		1.62	1372		-----		-----
317		-----		-----	1373		-----		-----
323	D1840-A	1.61	R(0.01)	10.04	1397		-----		-----
328		-----		-----	1399		-----		-----
333	D1840-B	1.19		-1.02	1417		-----		-----
334	D1840-A	1.26		0.83	1438		-----		-----
335		-----		-----	1441		-----		-----
365		-----		-----	1448		-----		-----
369	D1840-B	1.20	C	-0.75	1496	D1840-B	1.241		0.33
372	D1840-B	1.23		0.04	1528	D1840-B	1.25		0.56
391		-----		-----	1538	D1840-B	1.222		-0.17
396		-----		-----	1544		-----		-----
399		-----		-----	1586	D1840-A	1.20	C	-0.75
440		-----		-----	1587		-----		-----
445	D1840-A	1.244		0.41	1610	D1840-B	1.26		0.83
447	D1840-B	1.07	R(0.01)	-4.17	1613		-----		-----
460	D1840-A	1.487	R(0.01)	6.80	1631	D1840-A	1.27		1.09
467	D1840-B	1.270		1.09	1634	D1840-A	1.20		-0.75
480		-----		-----	1650		-----		-----
496		-----		-----	1710	D1840-A	1.203		-0.67
594		-----		-----	1715		-----		-----
603		-----		-----	1720		-----		-----
608		-----		-----	1724		-----		-----
631	D1840-A	1.271		1.12	1730		-----		-----
657	D1840-A	1.28		1.35	1741	D1840-A	1.240		0.30
798		-----		-----	1770		-----		-----
823	D1840-B	1.23		0.04	1776	D1840-A	1.12		-2.86
824	D1840-B	1.21		-0.49	1780		-----		-----
851	D1840-A	1.2339		0.14	1810	D1840-A	1.2500		0.56
854	D1840-A	1.20		-0.75	1811	D1840-A	1.2094		-0.50
862	D1840-B	1.23		0.04	1833		-----		-----
869	D1840-A	1.24		0.30	1852	D1840-B	1.24		0.30
904		-----		-----	1883		-----		-----
914	D1840-A	1.24		0.30	1913	D1840-B	1.217		-0.30
962		-----		-----	1961		-----		-----
963		-----		-----	2130	D1840-A	1.21		-0.49
970		-----		-----	2133	D1840-A	1.28		1.35
974	D1840-A	1.24		0.30	6028		-----		-----
994		-----		-----	6041	D1840-A	1.2426		0.37
995		-----		-----	6054		-----		-----
996		-----		-----	6075	D1840-B	1.25		0.56
997		-----		-----	6114	D1840-A	1.328		2.62
1011	D1840-B	1.21		-0.49	6135		-----		-----
1016	D1840-B	1.22		-0.23	6142		-----		-----
1023		-----		-----	6174		-----		-----
1039	D1840-B	1.22		-0.23	6201	D1840-A	1.23	C	0.04
1047		-----		-----	6203	D1840-B	1.23		0.04
1049	D1840-A	1.224		-0.12	6249		-----		-----
1059	D1840-B	1.24		0.30	6262	D1840-A	1.15		-2.07

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266		-----		-----	6346		-----		-----
6308	D1840-B	3.1	R(0.01)	49.27	6358	D1840-B	1.220		-0.23
6312		-----		-----	6359	D1840-A	1.21		-0.49
6321	D1840-B	1.21		-0.49	6384	D1840-B	1.33		2.67
6324		-----		-----	6386	D1840-A	1.22		-0.23
6332		-----		-----	6404		-----		-----

	normality	suspect
	n	74
	outliers	5
	mean (n)	1.2286
	st.dev. (n)	0.03558
	R(calc.)	0.0996
	st.dev.(D1840-B:07)	0.03798
	R(D1840-B:07)	0.1064
Compare		
	R(D1840-A:07)	0.0666

Lab 62 first reported 0.0004
Lab 159 first reported 1.1027
Lab 369 first reported 0.97
Lab 1140 first reported 0.95
Lab 1586 first reported 0.60
Lab 6201 first reported 1.355
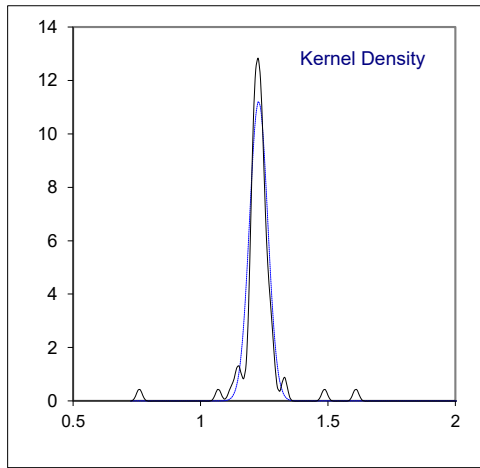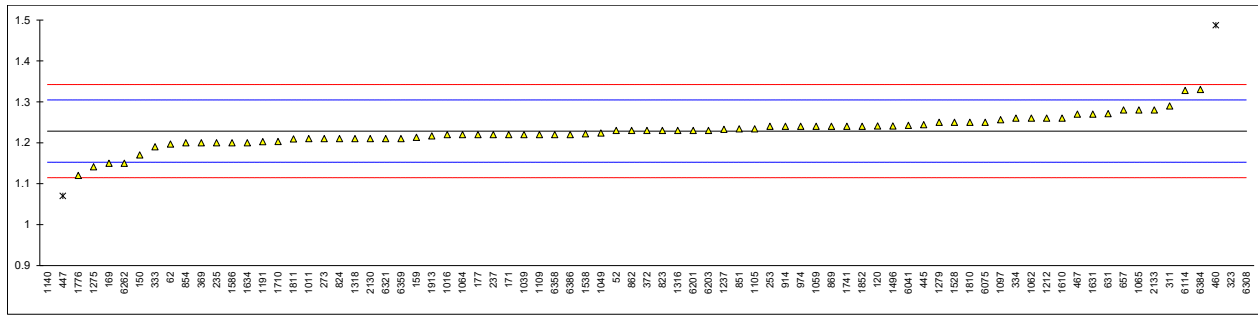
Determination of Smoke Point on sample #21150; results in mm

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D1322-manual	24.0		0.36	1062	D1322-manual	24.0		0.36
62	D1322-manual	22.5		-0.78	1064	D1322-automated	23.6		0.06
120		-----		-----	1065	D1322-automated	23.1		-0.32
140	D1322-automated	22.2		-1.00	1082	D1322-automated	23.1		-0.32
150	D1322-automated	23.1		-0.32	1097	D1322-automated	23.6		0.06
159		-----		-----	1105	D1322-automated	23.30		-0.17
169	D1322-automated	23.2		-0.25	1109	D1322-automated	23.5		-0.02
171		-----		-----	1121	D1322-manual	24.0		0.36
175		-----		-----	1126		-----		-----
177	D1322-automated	22.5		-0.78	1140	D1322-manual	24.0		0.36
221		-----		-----	1143		-----		-----
224		-----		-----	1182		-----		-----
225		-----		-----	1191	D1322-automated	23.4		-0.09
228		-----		-----	1205		-----		-----
235	D1322-manual	25.9		1.80	1212	D1322-manual	23.0		-0.40
237	D1322-automated	22.4		-0.85	1237		-----		-----
238		-----		-----	1275	IP598-automated	23.6		0.06
253	D1322-manual	23		-0.40	1279	D1322-automated	23.3		-0.17
254	D1322-manual	23.0		-0.40	1316	D1322-automated	23.1		-0.32
256	D1322	23		-0.40	1318	D1322-automated	23.2		-0.25
258	D1322-manual	24.0		0.36	1320	D1322-automated	23.1		-0.32
273		-----		-----	1357	D1322-manual	24		0.36
311	D1322-manual	23.3		-0.17	1372	D1322-automated	23.2		-0.25
317		-----		-----	1373		-----		-----
323	D1322-automated	23.4		-0.09	1397	D1322-manual	26.0		1.87
328		-----		-----	1399		-----		-----
333	D1322-automated	22.8		-0.55	1417		-----		-----
334	D1322-automated	22.9		-0.47	1438		-----		-----
335		-----		-----	1441		-----		-----
365	IP57-manual	22.79		-0.56	1448		-----		-----
369	D1322-manual	24.75		0.93	1496	D1322-automated	22.5		-0.78
372	D1322-automated	22.9		-0.47	1528	D1322-manual	23.7		0.13
391	D1322-manual	21.0		-1.91	1538	D1322-manual	23.3		-0.17
396		-----		-----	1544		-----		-----
399	D1322-manual	24		0.36	1586	D1322-manual	22.5		-0.78
440		-----		-----	1587	D1322-automated	23.7		0.13
445	D1322-manual	24.0		0.36	1610	IP598-manual	22.0		-1.15
447	D1322-manual	25.0		1.12	1613	D1322-automated	23.4		-0.09
460	D1322-manual	24		0.36	1631	D1322-automated	25		1.12
467	D1322-manual	23.47		-0.04	1634	D1322-automated	23.5		-0.02
480		-----		-----	1650	D1322-manual	25.5		1.49
496	D1322-manual	23.09		-0.33	1710	D1322-manual	23.0		-0.40
594		-----		-----	1715	D1322-manual	24.5		0.74
603		-----		-----	1720		-----		-----
608		-----		-----	1724	D1322-manual	25		1.12
631	D1322-automated	22.7		-0.62	1730	D1322-automated	23.4		-0.09
657	D1322-automated	22.8		-0.55	1741	D1322-automated	23.8		0.21
798		-----		-----	1770	D1322-automated	23.6		0.06
823	D1322-automated	23.2		-0.25	1776	D1322-automated	23.1		-0.32
824	D1322-automated	23.3		-0.17	1780		-----		-----
851	D1322-manual	25.0		1.12	1810	D1322-automated	23.2		-0.25
854	D1322-manual	24.0		0.36	1811	D1322-automated	22.8		-0.55
862	D1322-manual	24.0		0.36	1833	D1322-automated	23.3		-0.17
869	D1322-manual	24.0		0.36	1852	D1322-automated	23.2		-0.25
904	D1322-manual	25		1.12	1883		-----		-----
914	D1322-manual	23		-0.40	1913	D1322-automated	22.95		-0.43
962		-----		-----	1961		-----		-----
963		-----		-----	2130	IP598-automated	22.7		-0.62
970	D1322-manual	23		-0.40	2133	D1322-manual	25.83		1.74
974	D1322-automated	23.4		-0.09	6028		-----		-----
994	D1322-manual	24.0		0.36	6041	D1322-automated	22.7		-0.62
995	D1322-manual	23.8		0.21	6054		-----		-----
996		-----		-----	6075	D1322-automated	23.9		0.28
997		-----		-----	6114	D1322-manual	24.0		0.36
1011	D1322-automated	22.9		-0.47	6135		-----		-----
1016	IP598-automated	25.3		1.34	6142		-----		-----
1023		-----		-----	6174		-----		-----
1039	D1322-automated	23.1		-0.32	6201	D1322-automated	23.0		-0.40
1047	D1322-manual	22.5		-0.78	6203	D1322-manual	25		1.12
1049	D1322-automated	22.9		-0.47	6249		-----		-----
1059	D1322-manual	23.0		-0.40	6262	D1322-automated	23.4		-0.09

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266	D1322-automated	23.15		-0.28	6346		-----		-----
6308	D1322-automated	23.5		-0.02	6358	D1322-manual	24.0	C	0.36
6312		-----		-----	6359	D1322-manual	24.0		0.36
6321	D1322-automated	23.0		-0.40	6384	D1322-automated	23.5		-0.02
6324	D1322-manual	25		1.12	6386	D1322-manual	24.20		0.51
6332		-----		-----	6404		-----		-----

|		
	normality	suspect
	n	103
	outliers	0
	mean (n)	23.52
	st.dev. (n)	0.856
	R(calc.)	2.40
	st.dev.(D1322-M:19)	1.322
	R(D1322-M:19)	3.70
Compare		
	R(D1322-A:19)	0.88

Lab 6358 first reported 27.0
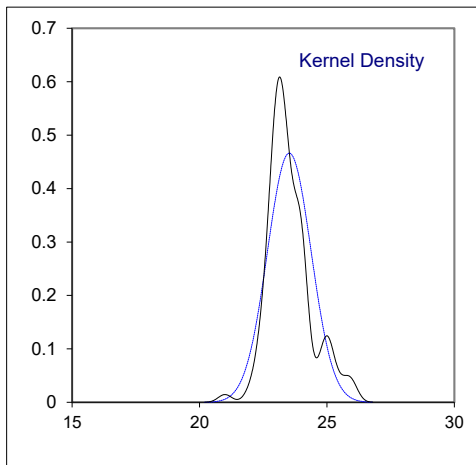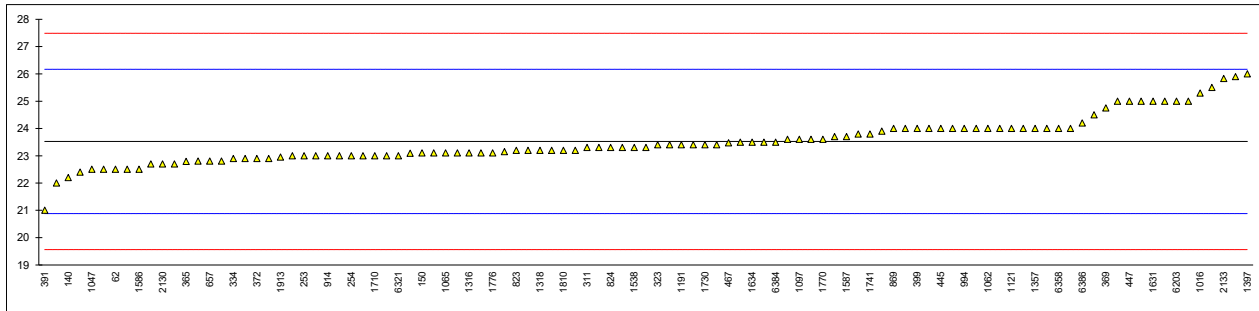
Determination of Specific Energy (Net) on Sulfur free basis on sample #21150; results in MJ/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3338	43.251		0.12	1062	D3338	43.222		-1.65
62		-----		-----	1064	D3338	43.254		0.30
120	D3338	43.241		-0.49	1065		-----		-----
140		-----		-----	1082	D3338	43.2362		-0.78
150	D3338	43.258		0.54	1097	D3338	43.251		0.12
159		-----		-----	1105	D3338	43.25		0.06
169	D3338	43.295		2.80	1109	D3338	43.25		0.06
171		-----		-----	1121		-----		-----
175		-----		-----	1126		-----		-----
177	D3338	43.253		0.24	1140		-----		-----
221		-----		-----	1143	ISO3648	43.200		-2.99
224		-----		-----	1182		-----		-----
225		-----		-----	1191	D3338	43.2352		-0.84
228		-----		-----	1205		-----		-----
235	D3338	43.219		-1.83	1212	D3338	43.249		0.00
237	D3338	43.234		-0.92	1237		-----		-----
238		-----		-----	1275	D3338	43.232		-1.04
253	D3338	43.2526		0.22	1279	D3338	43.242		-0.43
254		-----		-----	1316	D3338	43.258		0.54
256		-----		-----	1318	D3338	43.247		-0.13
258		-----		-----	1320	D3338	43.234		-0.92
273		-----		-----	1357	D3338	43.268		1.15
311	D3338	43.261		0.73	1372	D3338	43.24		-0.55
317		-----		-----	1373		-----		-----
323	D3338	43.278		1.76	1397	D3338	43.27		1.27
328		-----		-----	1399		-----		-----
333		-----		-----	1417		-----		-----
334	D3338	43.208		-2.50	1438		-----		-----
335		-----		-----	1441	D3338	43.262		0.79
365		-----		-----	1448		-----		-----
369	D3338	43.238		-0.67	1496	D3338	43.255		0.36
372	D3338	43.260		0.67	1528	D3338	43.230		-1.16
391	D3338	43.3		3.10	1538	D3338	43.233		-0.98
396		-----		-----	1544		-----		-----
399	D3338	43.24		-0.55	1586	D3338	43.239		-0.61
440		-----		-----	1587		-----		-----
445	D3338	43.251		0.12	1610	D3338	43.241		-0.49
447	D3338	43.268		1.15	1613	D3338	43.266		1.03
460	D3338	43.241		-0.49	1631	D3338	43.265		0.97
467	D3338	43.258		0.54	1634	D3338	43.266		1.03
480		-----		-----	1650	D3338	43.250		0.06
496	D3338	43.259		0.60	1710		-----	W	-----
594		-----		-----	1715		-----		-----
603		-----		-----	1720		-----		-----
608		-----		-----	1724		-----		-----
631		-----		-----	1730		-----		-----
657	D3338	43.256		0.42	1741	D3338	43.220		-1.77
798		-----		-----	1770		-----		-----
823	D3338	43.235		-0.86	1776	D3338	43.24		-0.55
824	D3338	43.255		0.36	1780		-----		-----
851	D3338	43.260		0.67	1810	D3338	43.257		0.48
854	D3338	43.260		0.67	1811	D3338	43.2672		1.10
862	D3338	43.216		-2.01	1833	D3338	43.239		-0.61
869	D3338	43.260		0.67	1852	D3338	43.2637		0.89
904		-----		-----	1883		-----		-----
914	D3338	43.261		0.73	1913	D3338	43.233		-0.98
962		-----		-----	1961		-----		-----
963		-----		-----	2130	D3338	43.238		-0.67
970	D3338	43.216		-2.01	2133	D3338	43.2483		-0.05
974	D3338	43.263		0.85	6028		-----		-----
994	D3338	43.25	C	0.06	6041	D3338	43.2526		0.22
995	D3338	43.253		0.24	6054	D3338	43.273		1.46
996		-----		-----	6075	D3338	43.2621		0.79
997		-----		-----	6114	D3338	43.235		-0.86
1011	D3338	43.247		-0.13	6135		-----		-----
1016		-----		-----	6142		-----		-----
1023		-----		-----	6174		-----		-----
1039	D3338	43.240		-0.55	6201	D3338	43.137	R(0.01),E	-6.82
1047		-----		-----	6203	D3338	43.2588		0.59
1049	D3338	43.24594		-0.19	6249		-----		-----
1059	D3338	43.250		0.06	6262	D3338	43.232		-1.04

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266		-----		-----	6346		-----		-----
6308		-----		-----	6358	D3338	43.265		0.97
6312		-----		-----	6359	D3338	43.24		-0.55
6321	D3338	43.240		-0.55	6384	D3338	43.28		1.88
6324		-----		-----	6386	D3338	42.9738	C,R(0.01),E	-16.76
6332		-----		-----	6404		-----		-----

normality	OK
n	82
outliers	2
mean (n)	43.2491
st.dev. (n)	0.01739
R(calc.)	0.0487
st.dev.(D3338:20)	0.01643
R(D3338:20)	0.0460

Lab 994 first reported 43.38
Lab 1710 test result withdrawn, reported 43.083
Lab 6201 iis calculated 43.274
Lab 6386 first reported 42.809, iis calculated 43.266
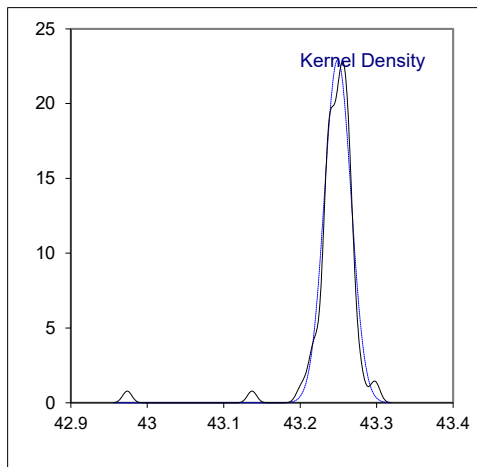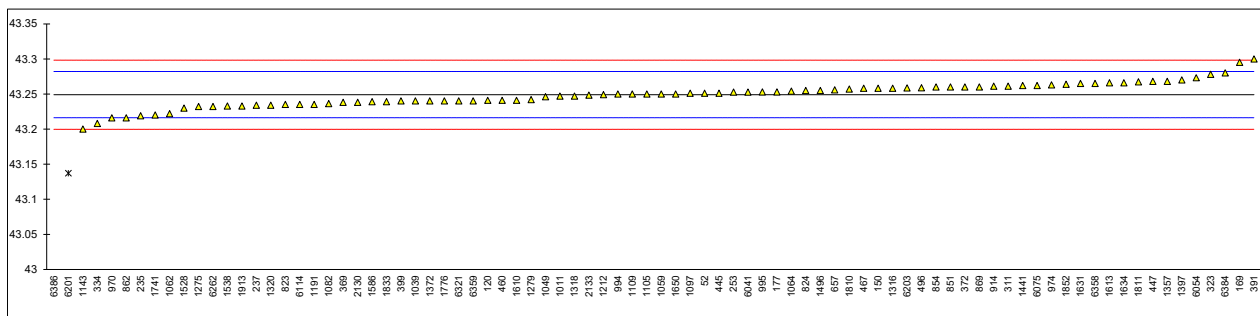
Determination of Total Sulfur on sample #21150; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D5453	459		0.14	1062	D5453	470		0.67
62	D5453	444		-0.59	1064	D5453	479.1		1.11
120	D4294	430.05		-1.27	1065	D4294	460		0.19
140	D2622	464		0.38	1082	ISO8754	450.5		-0.27
150	D4294	425	C	-1.51	1097	D5453	448.83		-0.36
159	D5453	482.0		1.25	1105	D4294	449.46		-0.33
169	D4294	495	C	1.88	1109	D2622	460.87		0.23
171		-----		-----	1121	IP336	479		1.11
175		-----		-----	1126	ISO20846	459.3		0.15
177	D4294	477	C	1.01	1140	IP336	456		-0.01
221		-----		-----	1143	D5453	429		-1.32
224	D4294	438.83		-0.84	1182		-----		-----
225		-----		-----	1191	ISO8754	444		-0.59
228		-----		-----	1205	ISO14596	463.9		0.37
235	D4294	445.5	C	-0.52	1212	D5453	429.6		-1.29
237	D4294	456		-0.01	1237	ISO8754	470	C	0.67
238		-----		-----	1275	D4294	453.99		-0.11
253	D4294	430		-1.27	1279	D4294	481.8		1.24
254		-----		-----	1316	D4294	459.4		0.16
256		-----		-----	1318	D5453	467.7		0.56
258		-----		-----	1320		-----		-----
273	D5453	454		-0.11	1357	D5453	457		0.04
311	D5453	423		-1.61	1372	D4294	471		0.72
317		-----		-----	1373		-----		-----
323	D5453	457		0.04	1397	D2622	418		-1.85
328		-----		-----	1399		-----		-----
333	D4294	432		-1.17	1417	In house	490		1.64
334	ISO20846	491		1.69	1438		-----		-----
335	D4294	448	C	-0.40	1441		-----		-----
365		-----		-----	1448		-----		-----
369	IP336	473		0.82	1496	D4294	464		0.38
372	D5453	460		0.19	1528	ISO8754	477.8		1.05
391	D4294	475		0.91	1538	D5453	459		0.14
396		-----		-----	1544	ISO20884	460.3		0.20
399	D4294	484		1.35	1586	D5453	446		-0.49
440		-----		-----	1587	D4294	494.6		1.86
445	D5453	426.05		-1.46	1610	IP336	533	C	3.72
447	IP336	460	C	0.19	1613	D4294	454.0		-0.11
460	IP336	466	C	0.48	1631	D5453	460		0.19
467	D5453	451.2		-0.24	1634	D5453	455		-0.06
480	D4294	463.2		0.34	1650	D5453	453.3		-0.14
496	D2622	435.3		-1.01	1710	D5453	458		0.09
594		-----		-----	1715		-----		-----
603		-----		-----	1720		-----		-----
608	D4294	445		-0.54	1724	IP336	440	C	-0.78
631	D4294	463		0.33	1730	D4294	480		1.15
657	D5453	470		0.67	1741	D5453	431		-1.22
798		-----		-----	1770		-----		-----
823	D5453	476		0.96	1776	D5453	451		-0.25
824	D4294	406.7	C	-2.40	1780		-----		-----
851	D4294	405		-2.48	1810	D4294	478.5		1.08
854	D5453	414		-2.04	1811	D5453	458.9		0.13
862	D5453	497		1.98	1833	D5453	433		-1.12
869	D5453	428		-1.36	1852	ISO8754	435.0		-1.03
904	D4294	452		-0.20	1883		-----		-----
914	D4294	434		-1.07	1913	D4294	497.0		1.98
962		-----		-----	1961		-----		-----
963		-----		-----	2130	IP336	400	C	-2.72
970	D5453	452		-0.20	2133	D4294	460.2		0.20
974	D4294	460		0.19	6028	ISO20846	422.0		-1.66
994	D5453	440	C	-0.78	6041	D5453	451		-0.25
995	D5453	401		-2.67	6054	D4294	440		-0.78
996		-----		-----	6075	D5453	490		1.64
997		-----		-----	6114	D4294	462	C	0.28
1011	D4294	490		1.64	6135	D5453	460		0.19
1016		-----		-----	6142	ISO20846	405		-2.48
1023		-----		-----	6174		-----		-----
1039	D2622	457		0.04	6201	D5453	425.242		-1.50
1047	ISO8754	490		1.64	6203	D2622	443		-0.64
1049		-----		-----	6249	ISO20884	463.38		0.35
1059	ISO14596	400		-2.72	6262	D2622	447.6		-0.42

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6266		-----		-----	6346		-----		-----
6308	D5453	488		1.54	6358	D5453	502.08		2.22
6312		-----		-----	6359	D2622	470		0.67
6321	IP336	460		0.19	6384	D4294	479.5		1.13
6324	D5453	455		-0.06	6386	D4294	503.25		2.28
6332		-----		-----	6404	ISO8754	470		0.67

	normality	OK
	n	112
	outliers	0
	mean (n)	456.17
	st.dev. (n)	24.464
	R(calc.)	68.50
	st.dev.(D5453:19a)	20.642
	R(D5453:19a)	57.80
Compare		
	R(D2622:16)	57.81

Lab 150 first reported 0.0425 mg/kg
Lab 169 first reported 0.04951 mg/kg
Lab 177 first reported 0.0477 mg/kg
Lab 235 first reported 0.04455 mg/kg
Lab 335 first reported 0.0448 mg/kg
Lab 447 first reported 0.046 mg/kg
Lab 460 first reported 0.0466 mg/kg
Lab 824 first reported 0.04067 mg/kg
Lab 994 first reported 384.5
Lab 1237 first reported 0.047 mg/kg
Lab 1610 first reported 0.0533 mg/kg
Lab 1724 first reported 0.044 mg/kg
Lab 2130 first reported 0.040 mg/kg
Lab 6114 first reported 0.0462 mg/kg
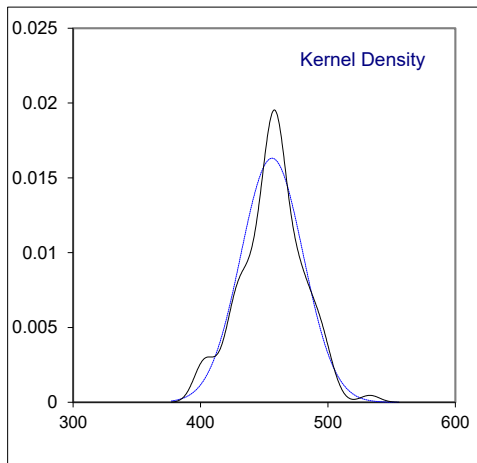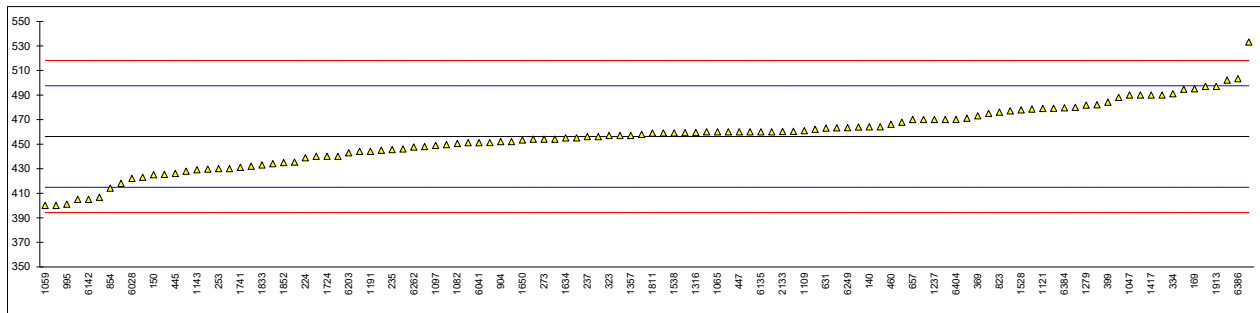
Determination of BOCLE on sample #21151; results in mm

lab	method	value	mark	z(targ)	remarks
150	D5001 semi-automated	0.671		-1.97	
171		-----		-----	
237	D5001 semi-automated	0.69		-1.21	
323		-----		-----	
334	D5001 semi-automated	0.699		-0.85	
496	D5001 full-automated	0.779		2.35	
862	D5001semi-automated	0.71		-0.41	
963		-----		-----	
1016	D5001 semi-automated	0.678		-1.69	
1064	D5001 full-automated	0.708		-0.49	
1082	D5001 semi-automated	0.70		-0.81	
1135	D5001 full-automated	0.69		-1.21	
1279	D5001 full-automated	0.698		-0.89	
1316	D5001 semi-automated	0.78		2.39	
1320	D5001 semi-automated	0.76		1.59	
1357	D5001 full-automated	0.72	C	-0.01	first reported 0.62
1399		-----		-----	
1496	D5001 full-automated	0.735		0.59	
1631	D5001 semi-automated	0.72		-0.01	
1724	D5001 full-automated	0.748		1.11	
1741	D5001 full-automated	0.747		1.07	
1810	D5001 full-automated	0.699	C	-0.85	first reported 699
1833	D5001 full-automated	0.74		0.79	
1913	D5001 semi-automated	0.728		0.31	
6041	D5001 full-automated	0.712		-0.33	
6358	D5001 semi-automated	0.732		0.47	

			Only semi-automatic	Only full-automatic
normality		OK	OK	OK
n		22	11	11
outliers		0	0	0
mean (n)		0.7202	0.7153	0.7251
st.dev. (n)		0.03013	0.03342	0.02714
R(calc.)		0.0844	0.0936	0.0760
st.dev.(D5001:19e1 semi-automatic)		0.02502	0.02475	-----
R(D5001:19e1 semi-automatic)		0.0701	0.0693	-----
Compare				
R(D5001:19e1 full-automatic)		0.0433	-----	0.0440
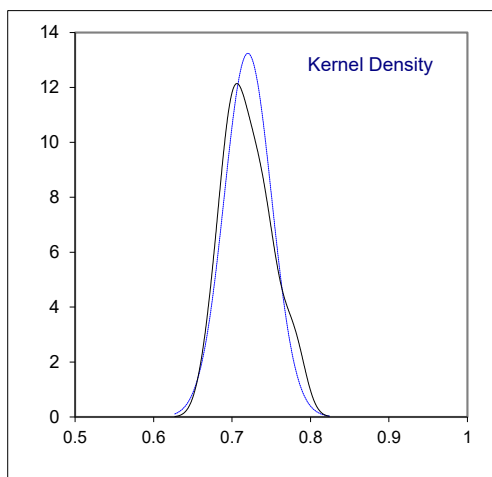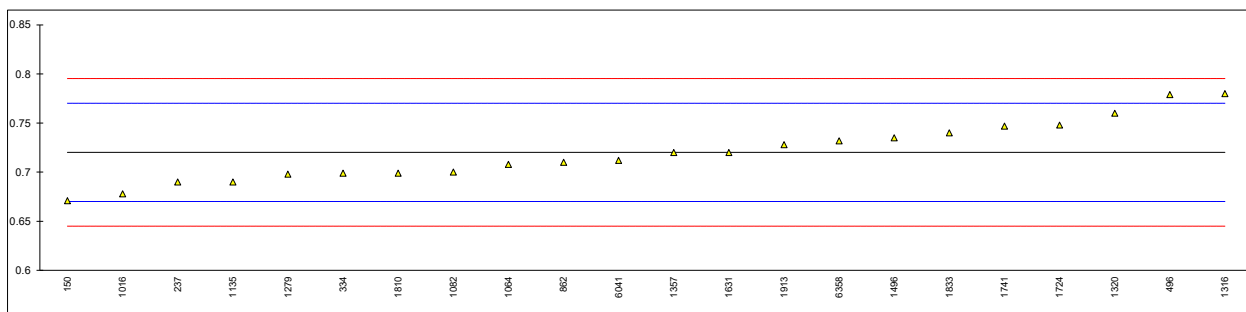
Determination of Particle Size Distribution on sample #21152 acc. to IP565, results in counts/mL

| lab	method	≥4 µm (c)	m	≥6 µm(c)	m	≥14 µm (c)	m	≥21 µm (c)	m	≥25 µm (c)	m	≥30 µm (c)	m
140		-----		-----		-----		-----		-----		-----	
150		-----		-----		-----		-----		-----		-----	
171	IP565	10856		4023		115		7		2		1	
225		-----		-----		-----		-----		-----		-----	
237		-----		-----		-----		-----		-----		-----	
311	IP565	9655		3628		169		14		4		1	
323		-----		-----		-----		-----		-----		-----	
333	IP565	10184		3852		207		19		6		2	
334	IP565	9657		3414		118		10		3		1	
335	IP565	8224.8		3058.2		111.6		6.0		1.3		0.4	
372	IP565	9563		3346		161		23.4		7.5		1.46	
447	IP565	10024		3710		191		23		7		3	
496	D7169	7593	ex	2931	ex	184	ex	-----		57	ex	33	ex
657	IP565	9845.4		4313.6		213.7		34.6		12.2		4.5	
823	IP565	9641		3892		189		17		5		2	
824	IP565	10804		3878		222		31		10		4	
862	IP565	8479		2597		41		4		1		0	
963		-----		-----		-----		-----		-----		-----	
974	IP565	3654.0	R(1)	1370.1	R(1)	170.3	ex	42.5	ex	20.8	ex	6.2	ex
1011	IP565	8308		2997		126	C	5		1		0	
1016	IP565	10110.0		3809.8		184.0		17.7		4.4		1.2	
1039	IP565	10535.7		3762.1		216.0		43.6		20.7		6.3	
1062	IP565	10156		3724		115.9		11.2		4.0		1.0	
1064	IP565	9681.4		3702.0		126.4		3.0		0.6		0.2	
1065	IP565	10396.0		3428.9		176.7		19.7		9.7		3.9	
1082	IP565	9413		3219		115		7.8		2.3		0.5	
1097	IP564	8343.4	ex	3407.2	ex	105.5	ex	13.1	ex	4.0	ex	0.7	ex
1109	IP565	10501.4		3932.2		254.3		55.5		22.5		9.9	
1135	IP565	9093		3002		129		7		2		1	
1191	IP565	9593.9		3444.0		219.8		24.6		8.0		2.6	
1212	IP565	12269.7		4687.7		363.2		45.8		21.2		9.1	
1279	IP565	9047.6		3628.8		123.6		36.4		20.0		8.5	
1316	IP577	7883.9	ex	3100.9	ex	180.2	ex	25.2	ex	9.8	ex	0.1	ex
1318	IP565	9887.5		3410.7		130.3		8.1		2.9		1.1	
1320		-----		-----		-----		-----		-----		-----	
1357	IP565	9857.2		3424.1		210.3		18.0		7.3		2.8	
1397	IP565	10721.1		3956.6		223.1		31.3		11.6		3.4	
1399		-----		-----		-----		-----		-----		-----	
1402	IP565	9932.1		3872.2		251.8		51.2		21.3		6.7	
1496	IP565	10066.8	C	3816.6	C	216.4	C	32.0	C	10.8	C	3.5	C
1528	IP565	16433.9	C,R(1)	2743.4		249.7		47.5		16.0		4.9	
1538	IP565	11319.8		4403.4		-----	W	-----		-----		-----	
1587	IP565	8748.4		2964.9		123.1		5.4		1.4		0.4	
1610	IP565	8875.5		3084.8		135.9		26.1		11.1		4.6	
1613	IP565	10374.2		4085.3		205.0		29.5		10.7		4.0	
1631	IP565	10904.6		3986.5		221.5		30.9		10.2		2.4	
1634	IP565	9783.1		3606.8		230.4		48.5		19.6		7.0	
1710	IP565	9846.4		3581.9		175.0		11.5		3.3		0.9	
1724	IP565	9826.2		3629.4		268.7		32.3		13.7		5	
1741	IP565	9949.1		3884.4		243.1		48.6		15.2		4.2	
1833	IP565	10664.6		3777.8		239		-----		-----		-----	
1852	IP565	10439.1		3889.8		144.4		12.9		4.2		1.2	
1913	IP565	9500.50		3275.80		206.90		32.00		11.60		4.40	
1961	IP577	9803	ex	4149	ex	285	ex	70	ex	34	ex	12	ex
2130	IP565	9710.8		3164.6		197.3		15.3		5.8		1.8	
6054		-----		-----		-----		-----		-----		-----	
6075	IP565	9949.4		3679.8		210.4		31.0		9.1		3.3	
6112	IP565	10072.5		3558.1		207.6		49.6		21.0		6.0	
6141		-----		-----		-----		-----		-----		-----	
6201	IP565	11233.2		3963.4		233.7		13.7		3.7		1.7	
6203	IP565	10296.8		3680.6		129.6		9.0		2.3		0.7	
6308	IP565	10746		3942		286		32		15		7	
6315	IP565	10438		3955		266		52		22		10	
6321	IP565	8021.5		2610.1		121.5		10.5		4.0		1.4	
6359		-----	W	-----	W	-----	W	16		10		7	
normality		OK		OK		OK		OK		OK		OK	
n		48		49		48		48		48		48	
outliers		2 +4ex		1 +4ex		0 +5ex		0 +4ex		0 +5ex		0 +5ex	
mean (n)		9941.74		3612.19		187.81		24.19		9.15		3.33	
st.dev. (n)		822.897		438.716		59.931		15.350		6.764		2.750	
R(calc.)		2304.11		1228.40		167.81		42.98		18.94		7.70	
st.dev.(IP565:13)		424.742		292.700		37.158		7.581		3.622		1.749	
R(IP565:13)		1189.28		819.56		104.04		21.23		10.14		4.90	

Lab 496 test results excluded as test method D7169 was used for the determination, see also §4.1
Lab 974 test results excluded as there were three or more outliers in related test results
Lab 1011 first reported 59
Lab 1097 test results excluded as test method IP564 was used for the determination, see also §4.1
Lab 1316 test results excluded as test method IP577 was used for the determination, see also §4.1
Lab 1496 first reported 7945.9, 2469.9, 28.6, 1.4, 0.3 and 0.2 respectively
Lab 1528 first reported 6433.9
Lab 1538 test result withdrawn, reported 407.5
Lab 1961 test results excluded as test method IP577 was used for the determination, see also §4.1
Lab 6359 test results withdrawn, reported 6660, 2156 and 61 respectively
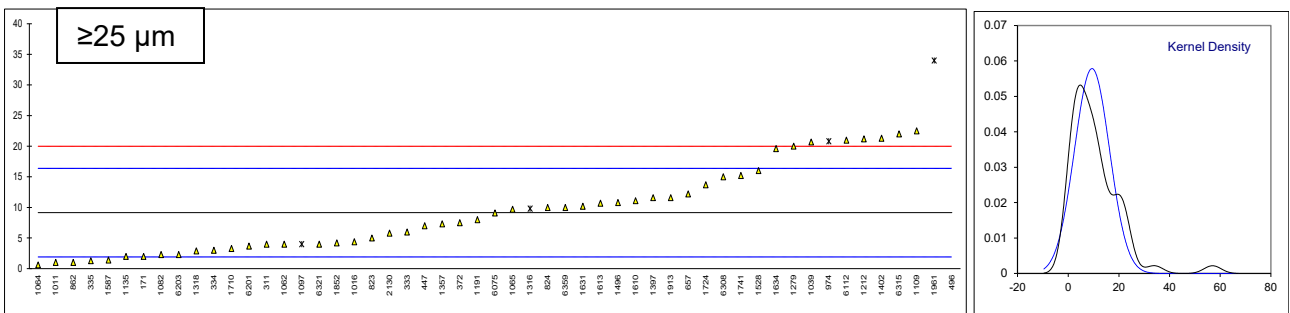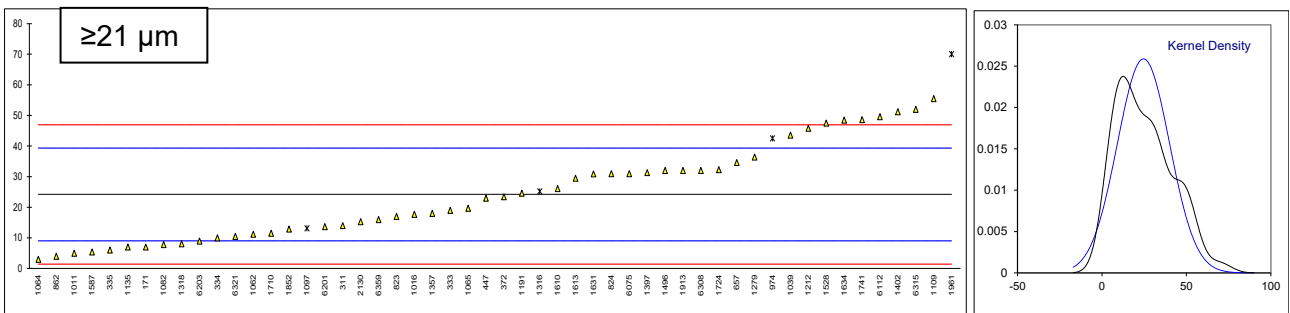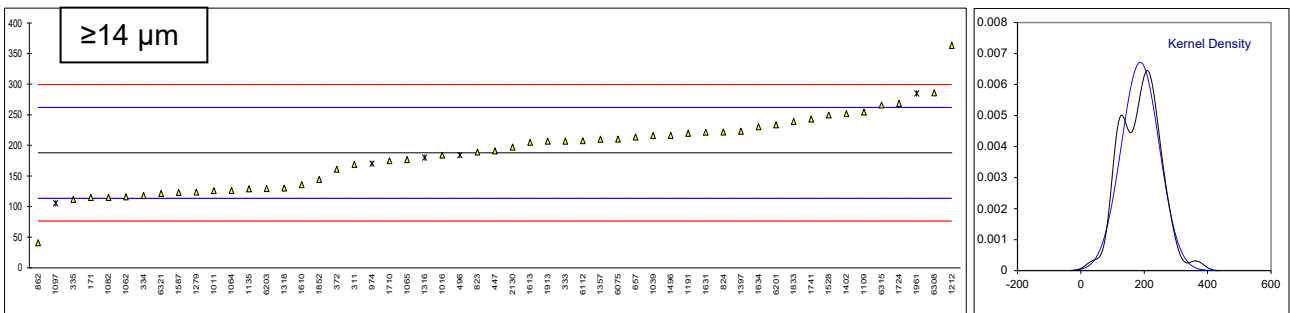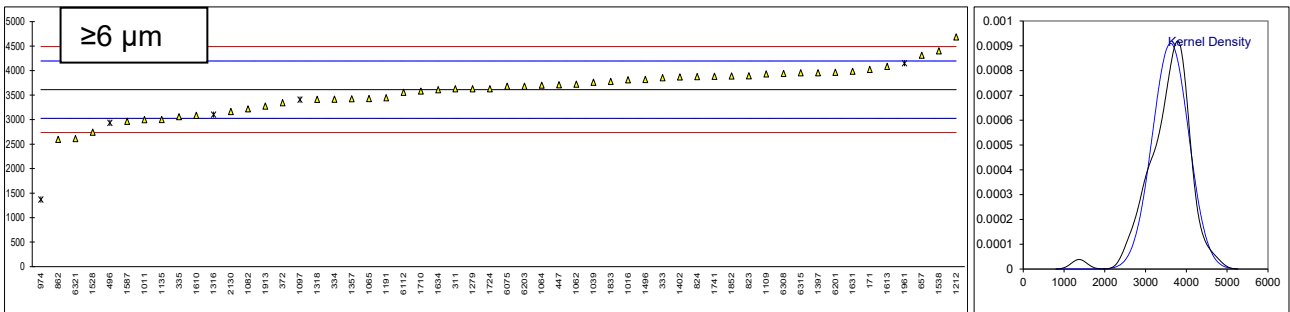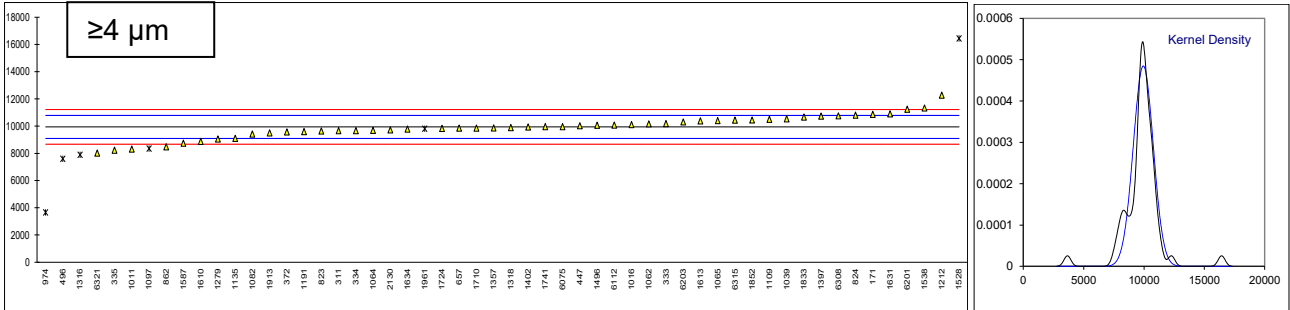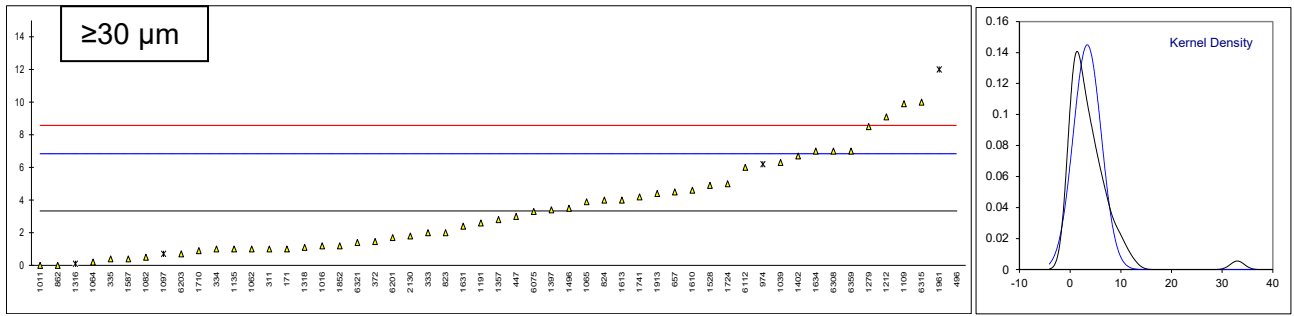
Determination of Particle Size Distribution on sample #21152 acc. to IP565, in ISO scale numbers

lab	method	≥4µm(c)	mark	z(targ)	≥6µm(c)	mark	z(targ)	≥14 µm (c)	mark	z(targ)
140		-----		-----	-----		-----	-----		-----
150		-----		-----	-----		-----	-----		-----
171		-----		-----	-----		-----	-----		-----
225		-----		-----	-----		-----	-----		-----
237		-----		-----	-----		-----	-----		-----
311	ISO4406 acc. to IP565	20		-1.07	19		0.00	15		0.38
323		-----		-----	-----		-----	-----		-----
333	ISO4406 acc. to IP565	21		1.67	19		0.00	15		0.38
334	ISO4406 acc. to IP565	20		-1.07	19		0.00	14		-0.88
335	ISO4406	20		-1.07	19		0.00	14		-0.88
372	ISO4406 acc. to IP565	20		-1.07	19		0.00	15		0.38
447	ISO4406 acc. to IP565	21		1.67	19		0.00	15		0.38
496	ISO4406	20.0	ex	-1.07	18.7	ex	-0.59	14.7	ex	0.01
657	ISO4406	20		-1.07	19		0.00	15		0.38
823	ISO4406 acc. to IP565	20		-1.07	19		0.00	15		0.38
824	ISO4406	21		1.67	19		0.00	15		0.38
862	ISO4406 acc. to IP565	20		-1.07	19		0.00	13		-2.14
963		-----		-----	-----		-----	-----		-----
974	ISO4406 acc. to IP565	19	ex	-3.81	18	G(0.01)	-1.96	15	ex	0.38
1011	ISO4406 acc. to IP565	20		-1.07	19		0.00	13		-2.14
1016		-----		-----	-----		-----	-----		-----
1039	ISO4406 acc. to IP565	21		1.67	19		0.00	15		0.38
1062	ISO4406 acc. to IP565	20		-1.07	19		0.00	14		-0.88
1064	ISO4406 acc. to IP565	20		-1.07	19		0.00	14		-0.88
1065		-----		-----	-----		-----	-----		-----
1082	ISO4406 acc. to IP565	20		-1.07	19		0.00	14		-0.88
1097	ISO4406 acc. to IP564	20	ex	-1.07	19	ex	0.00	14	ex	-0.88
1109	ISO4406 acc. to IP565	21		1.67	19		0.00	15		0.38
1135	ISO4406 acc. to IP565	20		-1.07	19		0.00	14		-0.88
1191	ISO4406 acc. to IP565	20		-1.07	19		0.00	15		0.38
1212	ISO4406 acc. to IP565	21		1.67	19		0.00	16		1.64
1279	ISO4406 acc. to IP565	20		-1.07	19		0.00	15		0.38
1316	ISO4406 acc. to IP577	20	ex	-1.07	19	ex	0.00	15	ex	0.38
1318	ISO4406 acc. to IP565	20		-1.07	19		0.00	14		-0.88
1320		-----		-----	-----		-----	-----		-----
1357	ISO4406 acc. to IP565	20		-1.07	19		0.00	15		0.38
1397	ISO4406	21		1.67	19		0.00	15		0.38
1399		-----		-----	-----		-----	-----		-----
1402	ISO4406 acc. to IP565	20		-1.07	19		0.00	15		0.38
1496	ISO4406 acc. to IP565	21	C	1.67	19	C	0.00	15	C	0.38
1528	ISO4406 acc. to IP565	20		-1.07	19		0.00	15		0.38
1538	ISO4406 acc. to IP565	21		1.67	19		0.00	16		1.64
1587		20		-1.07	19		0.00	14		-0.88
1610	ISO4406 acc. to IP565	20		-1.07	19		0.00	14		-0.88
1613	ISO4406 acc. to IP565	21		1.67	19		0.00	15		0.38
1631	ISO4406 acc. to IP565	21		1.67	19		0.00	15		0.38
1634	ISO4406 acc. to IP565	20		-1.07	19		0.00	15		0.38
1710	ISO4406 acc. to IP565	20		-1.07	19		0.00	15		0.38
1724	ISO4406 acc. to IP565	20		-1.07	19		0.00	15		0.38
1741		20		-1.07	19		0.00	15		0.38
1833	ISO4406 acc. to IP565	21		1.67	19		0.00	15		0.38
1852		21		1.67	19		0.00	14		-0.88
1913	ISO4406 acc. to IP565	20		-1.07	19		0.00	15		0.38
1961	ISO4406 acc. to IP577	20	ex	-1.07	19	ex	0.00	15	ex	0.38
2130		20		-1.07	19		0.00	15		0.38
6054		-----		-----	-----		-----	-----		-----
6075	ISO4406 acc. to IP565	20		-1.07	19		0.00	15		0.38
6112	ISO4406	21		1.67	19		0.00	15		0.38
6141		-----		-----	-----		-----	-----		-----
6201	ISO4406 acc. to IP565	21		1.67	19		0.00	15		0.38
6203	ISO4406 acc. to IP565	21		1.67	19		0.00	14		-0.88
6308	ISO4406 acc. to IP565	21		1.67	19		0.00	15		0.38
6315	ISO4406 acc. to IP565	21		1.67	19		0.00	15		0.38
6321	ISO4406 acc. to IP565	20		-1.07	19		0.00	14		-0.88
6359		-----	W	-----	-----	W	-----	-----	W	-----
	normality	OK			unknown			OK		
	n	46			46			46		
	outliers	0 +5ex			1 +4ex			0 +5ex		
	mean (n)	20.39			19.00			14.70		
	st.dev. (n)	0.493			0.000			0.628		
	R(calc.)	1.38			0.00			1.76		
	st.dev.(IP565:13)	0.365			0.510			0.794		
	R(IP565:13)	1.02			1.43			2.22		

Lab 496 test results excluded as test method D7169 was used for the determination, see also §4.1
Lab 974 test results excluded as there were three or more outliers in related test results
Lab 1097 test results excluded as test method IP564 was used for the determination, see also §4.1
Lab 1316 test results excluded as test method IP577 was used for the determination, see also §4.1
Lab 1961 test results excluded as test method IP577 was used for the determination, see also §4.1
Lab 6359 test results withdrawn, reported 20, 18 and 13 respectively
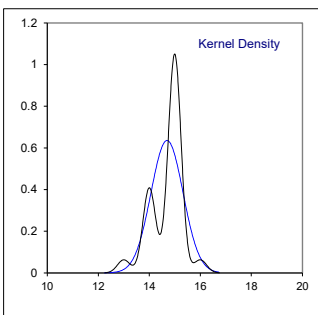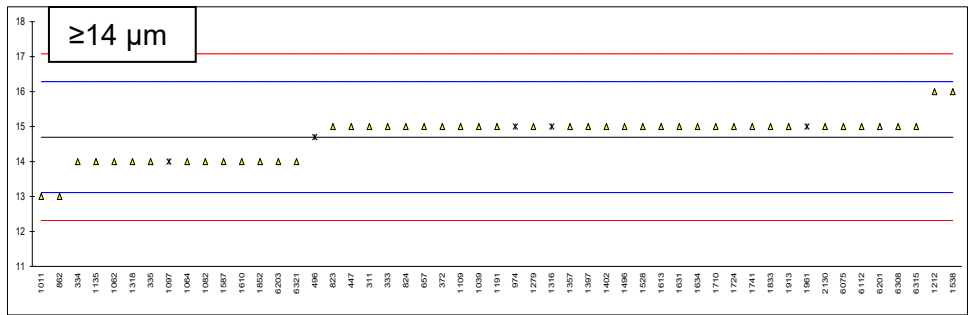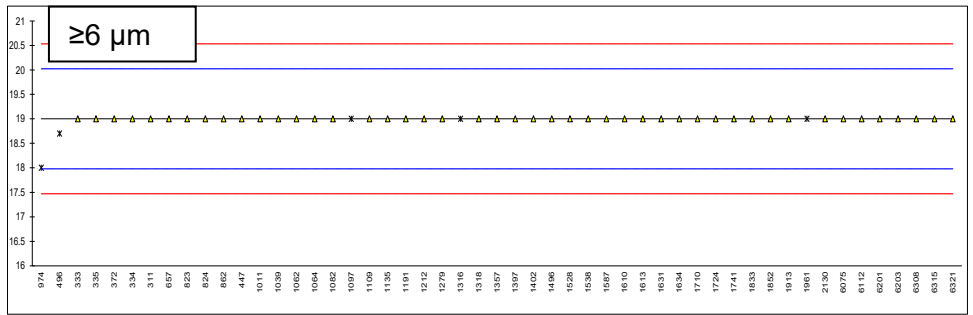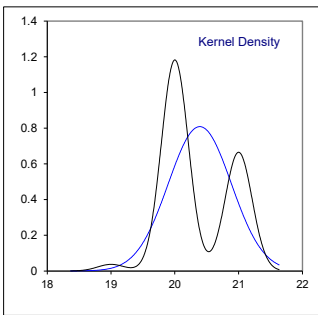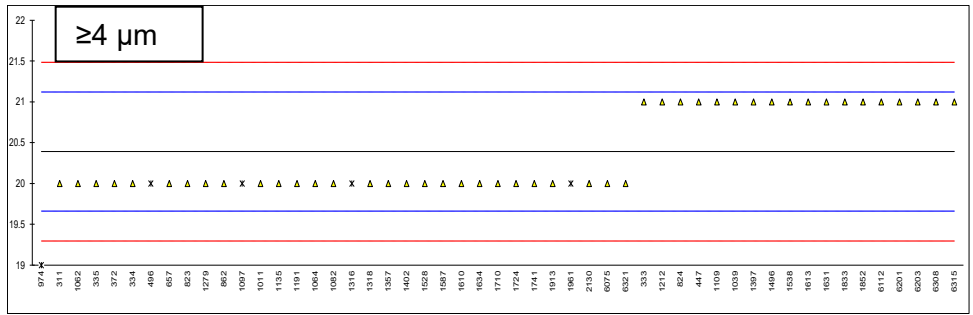
Determination of FAME content – GCMS/HPLC on sample #21153; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62		-----		-----	
140		-----		-----	
171	IP585	22.2	R(0.01)	-5.97	
228		-----		-----	
235	IP585	55.22		0.44	
237		-----		-----	
253		-----		-----	
254		-----		-----	
311	IP585	48.3		-0.90	
317	IP585	46.1		-1.33	
323	IP585	55.4		0.47	
328	IP585	49.2		-0.73	
333	IP585	55.3		0.45	
334	IP585	56.2		0.63	
335	IP585	51.0		-0.38	
369		-----		-----	
372	IP590	52.9		-0.01	
399	IP585	51.0		-0.38	
445	IP585	52.69		-0.05	
447		-----		-----	
460		-----		-----	
467		-----		-----	
496	IP585	38.53		-2.80	
631		-----		-----	
657	IP585	49.0		-0.77	
823		-----		-----	
824	IP585	61.01	C	1.56	first reported 53.87
851		-----		-----	
862	IP585	53.0		0.01	
974		-----		-----	
1011		-----		-----	
1023		-----		-----	
1047		-----		-----	
1049		-----		-----	
1062		-----		-----	
1064	IP585	49.584		-0.65	
1095	IP585	21.3	C,R(0.01)	-6.14	first reported 24.8
1097		-----		-----	
1105	IP585	53.65		0.13	
1212		-----		-----	
1237	IP585	60.34		1.43	
1275	IP585	54.8		0.36	
1279		-----		-----	
1316	IP585	59.4		1.25	
1318	IP585	53.28		0.06	
1357	IP585	n.a.		-----	
1399		-----		-----	
1402	IP585	49.1		-0.75	
1496	IP585	54.3086		0.26	
1538		-----		-----	
1587		-----		-----	
1610		-----		-----	
1613	IP599	56.694		0.72	
1631	IP590	46.77		-1.20	
1634	IP585	65.85		2.50	
1724	IP590	49.3		-0.71	
1833		-----		-----	
2130	IP585	40.3		-2.46	
2133	IP585	61.62	C	1.68	first reported 124.73
6041		-----		-----	
6075	IP590	39.83		-2.55	
6103		-----		-----	
6112		-----		-----	
6114	IP590	61.98		1.75	
6201	IP585	63.2		1.99	
6262		-----		-----	
6308	IP590	279.1	R(0.01)	43.88	
6315	IP590	52.153		-0.16	
6321		-----		-----	
6379	IP585	53.58		0.12	

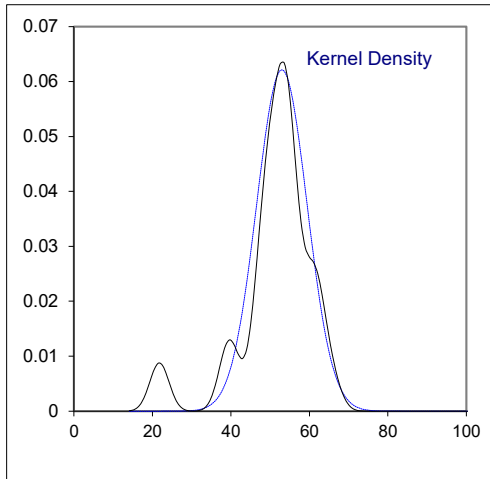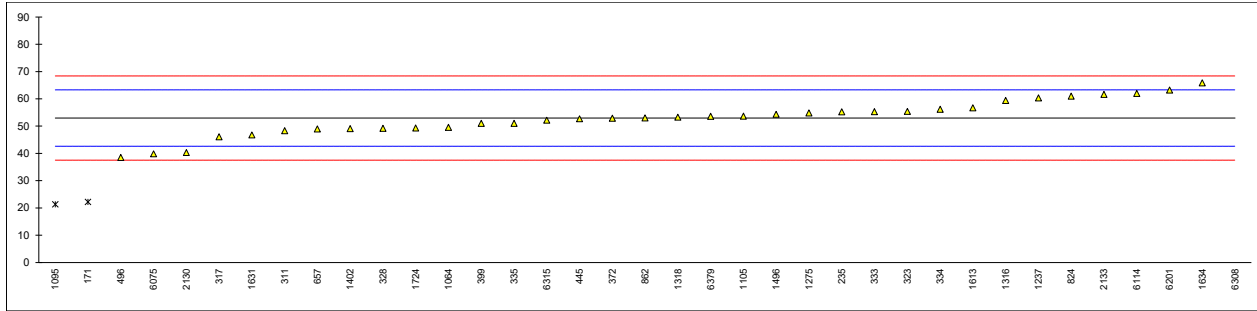|		IP585 only	IP590 only
normality	OK	OK	unknown
n	34	27	6
outliers	3	2	1
mean (n)	52.959	53.369	50.489
st.dev. (n)	6.4224	6.3142	7.3414
R(calc.)	17.983	17.680	20.556
st.dev.(IP585:10)	5.1542	5.1920	-----
R(IP585:10)	14.432	14.538	-----
Compare			
R(IP590:10)	11.517	-----	11.018

Determination of FAME content – FTIR on sample #21153; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62		-----		-----	
140		-----		-----	
171		-----		-----	
228		-----		-----	
235		-----		-----	
237	D7797	62.35		0.09	
253	IP583	60.12		-0.69	
254	D7797	52.60		-3.30	
311		-----		-----	
317		-----		-----	
323		-----		-----	
328		-----		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
369	IP583	64.82	C	0.95	first reported 32.44
372		-----		-----	
399		-----		-----	
445		-----		-----	
447	IP583	67.7		1.95	
460	IP583	>10		-----	
467	IP583	63.86		0.61	
496		-----		-----	
631	D7797	57.48		-1.61	
657		-----		-----	
823		-----		-----	
824		-----		-----	
851	D7797	64.58	C	0.86	first reported 30.27
862		-----		-----	
974	IP583	61.19		-0.32	
1011		-----		-----	
1023	D7797	55.27		-2.37	
1047		-----		-----	
1049	IP583	60.89		-0.42	
1062	IP583	40	R(0.01)	-7.68	
1064		-----		-----	
1095		-----		-----	
1097	IP583	71.97		3.43	
1105	D7797	62.09		0.00	
1212		-----		-----	
1237		-----		-----	
1275		-----		-----	
1279	D7797	66.05		1.37	
1316		-----		-----	
1318		-----		-----	
1357	IP583	n.a.		-----	
1399		-----		-----	
1402	IP583	51.41		-3.72	
1496		-----		-----	
1538	D7797	65.79		1.28	
1587	IP583	63.87		0.62	
1610	IP583	63.75		0.57	
1613		-----		-----	
1631		-----		-----	
1634		-----		-----	
1724		-----		-----	
1833		-----		-----	
2130		-----		-----	
2133		-----		-----	
6041		-----		-----	
6075		-----		-----	
6103	D7797	66.78		1.63	
6112	IP583	60.9		-0.42	
6114		-----		-----	
6201		-----		-----	
6262		-----		-----	
6308		-----		-----	
6315		-----		-----	
6321	IP583	60.56		-0.53	
6379		-----		-----	

normality	OK
n	21
outliers	1
mean (n)	62.097
st.dev. (n)	4.9245
R(calc.)	13.788
st.dev.(IP583:15)	2.8755
R(IP583:15)	8.051
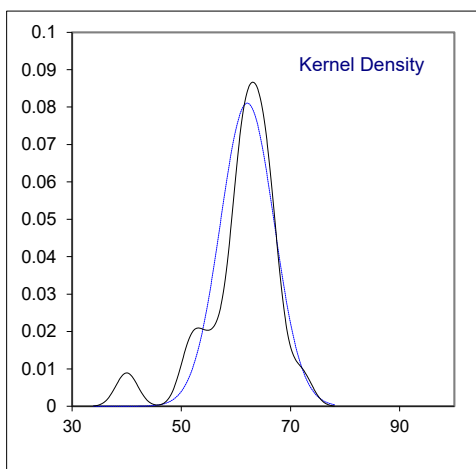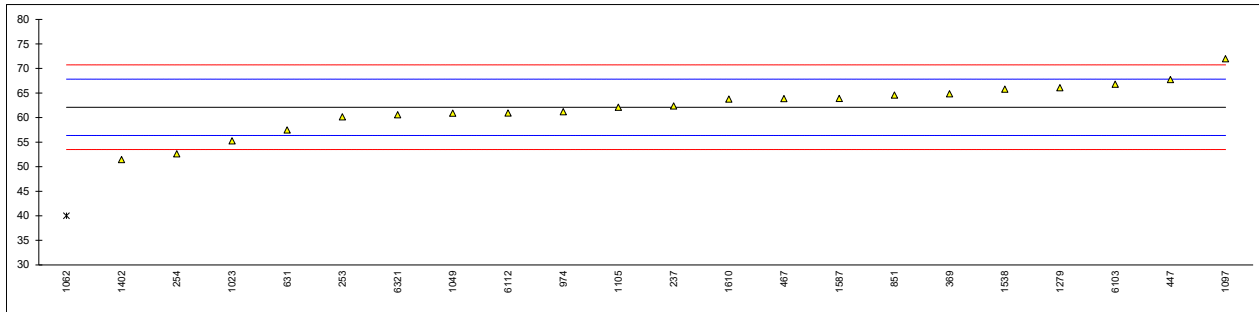
Determination of FAME content – GCMS/HPLC on sample #21154; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62		-----		-----	
140		-----		-----	
171	IP585	11.9	R(0.01)	-4.70	
228		-----		-----	
235	IP585	24.098		0.35	
237		-----		-----	
253		-----		-----	
254		-----		-----	
311	IP585	21.9		-0.56	
317	IP585	22.8		-0.19	
323	IP585	23.2		-0.03	
328	IP585	24.1		0.35	
333	IP585	26.0		1.13	
334	IP585	25.7		1.01	
335	IP585	21.6		-0.69	
369		-----		-----	
372	IP590	24.1		0.35	
399	IP585	23.67		0.17	
445	IP585	23.25		-0.01	
447		-----		-----	
460		-----		-----	
467		-----		-----	
496	IP585	17.12		-2.54	
631		-----		-----	
657		21.3		-0.81	
823		-----		-----	
824	IP585	29.35	C	2.52	first reported 24.87
851		-----		-----	
862	IP585	23.5		0.10	
974		-----		-----	
1011		-----		-----	
1023		-----		-----	
1047		-----		-----	
1049		-----		-----	
1062		-----		-----	
1064	IP585	21.028		-0.92	
1095		-----		-----	
1097		-----		-----	
1105	IP585	22.82		-0.18	
1212	IP585	21.20		-0.85	
1237	IP585	23.69		0.18	
1275	IP585	24.1		0.35	
1279		-----		-----	
1316	IP585	24.5		0.51	
1318	IP585	22.83		-0.18	
1357		-----		-----	
1399		-----		-----	
1402	IP585	22.8		-0.19	
1496	IP585	19.1295	C	-1.71	first reported 38.3271
1538		-----		-----	
1587		-----		-----	
1610		-----		-----	
1613	IP599	24.709		0.60	
1631	IP590	23.38		0.05	
1634	IP585	29.69		2.66	
1724	IP590	23.18		-0.03	
1833		-----		-----	
2130	IP585	21.2		-0.85	
2133	IP585	21.09		-0.90	
6041		-----		-----	
6075	IP590	21.88	C	-0.57	first reported 18.21
6103		-----		-----	
6112		-----		-----	
6114	IP590	28.26		2.07	
6201	IP585	20.85		-1.00	
6262		-----		-----	
6308	IP590	167.9	R(0.01)	59.79	
6315	IP590	23.29		0.01	
6321		-----		-----	
6379	IP585	22.90		-0.15	

normality	suspect
n	35
outliers	2
mean (n)	23.263
st.dev. (n)	2.5077
R(calc.)	7.022
st.dev.(IP585:10)	2.4190
R(IP585:10)	6.773
Compare	
R(IP590:10)	5.513
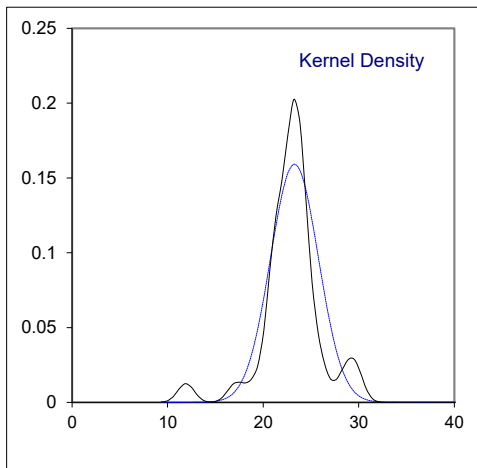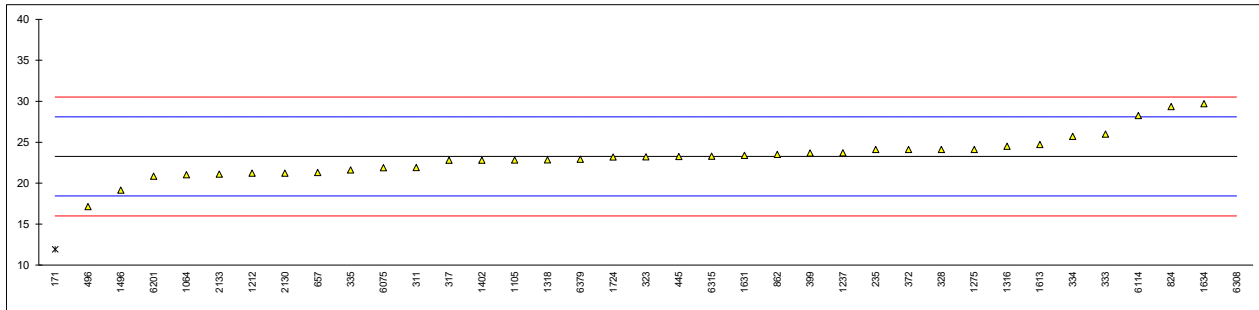
Determination of FAME content – FTIR on sample #21154; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62		-----		-----	
140		-----		-----	
171		-----		-----	
228		-----		-----	
235		-----		-----	
237	D7797	29.80		-0.26	
253	IP583	30.2		-0.09	
254	D7797	24.76		-2.44	
311		-----		-----	
317		-----		-----	
323		-----		-----	
328		-----		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
369	IP583	32.44	C	0.88	first reported 64.82
372		-----		-----	
399		-----		-----	
445		-----		-----	
447	IP583	32.4		0.86	
460	IP583	0.0	R(0.01)	-13.14	
467	IP583	32.62		0.96	
496		-----		-----	
631	D7797	24.22		-2.67	
657		-----		-----	
823		-----		-----	
824		-----		-----	
851	D7797	30.27	C	-0.06	first reported 64.58
862		-----		-----	
974	IP583	29.14		-0.55	
1011		-----		-----	
1023	D7797	24.39		-2.60	
1047		-----		-----	
1049	IP583	33.0		1.12	
1062	IP583	22		-3.63	
1064		-----		-----	
1095		-----		-----	
1097	IP583	30.48		0.03	
1105	D7797	29.46		-0.41	
1212		-----		-----	
1237		-----		-----	
1275		-----		-----	
1279	D7797	32.74		1.01	
1316		-----		-----	
1318		-----		-----	
1357		-----		-----	
1399		-----		-----	
1402	IP583	32.02		0.70	
1496		-----		-----	
1538	D7797	34.06		1.58	
1587	IP583	30.61		0.09	
1610	IP583	30.92		0.22	
1613		-----		-----	
1631		-----		-----	
1634		-----		-----	
1724		-----		-----	
1833		-----		-----	
2130		-----		-----	
2133		-----		-----	
6041		-----		-----	
6075		-----		-----	
6103	D7797	33.06		1.15	
6112	IP583	37.8		3.20	
6114		-----		-----	
6201		-----		-----	
6262		-----		-----	
6308		-----		-----	
6315		-----		-----	
6321	IP583	32.50		0.91	
6379		-----		-----	

normality	OK
n	22
outliers	1
mean (n)	30.404
st.dev. (n)	3.6999
R(calc.)	10.360
st.dev.(IP583:15)	2.3133
R(IP583:15)	6.477
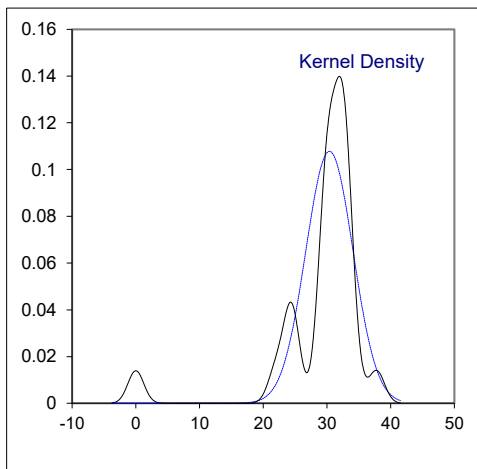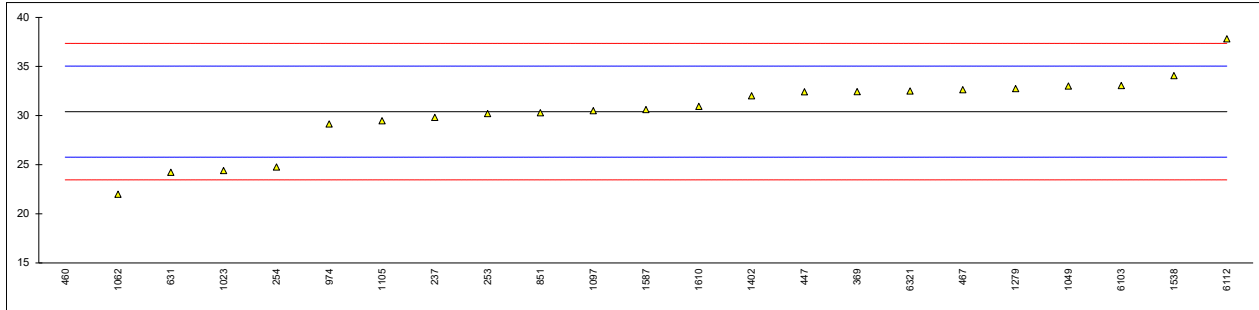
Determination of Copper as Cu on sample #21155; results in µg/kg

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
120		-----		-----	
140		-----		-----	
150		-----		-----	
159		-----		-----	
171		-----		-----	
175		-----		-----	
177		-----		-----	
225		-----		-----	
235		-----		-----	
237		-----		-----	
253		-----		-----	
254		-----		-----	
256		-----		-----	
311		-----		-----	
323		-----		-----	
334		-----		-----	
335		-----		-----	
372		-----		-----	
391		-----		-----	
398		-----		-----	
399		-----		-----	
440		-----		-----	
445		-----		-----	
447		-----		-----	
467		-----		-----	
496		-----		-----	
631		-----		-----	
657		-----		-----	
823		-----		-----	
824		-----		-----	
851		-----		-----	
862	D5185	<10		-----	
869		-----		-----	
922		-----		-----	
962		-----		-----	
963		-----		-----	
974		-----		-----	
994		-----		-----	
1016		-----		-----	
1026		-----		-----	
1047		-----		-----	
1049		-----		-----	
1064		-----		-----	
1082		-----		-----	
1097		-----		-----	
1109		-----		-----	
1146	D5185	<10		-----	
1191		-----		-----	
1212	D7111	2		-----	
1237		-----		-----	
1279		-----		-----	
1316	D7111	1.07		-----	
1320		-----		-----	
1357	D6732	n.a.		-----	
1399		-----		-----	
1417		-----		-----	
1496		-----		-----	
1528		-----		-----	
1586		-----		-----	
1587		-----		-----	
1610		-----		-----	
1613		-----		-----	
1631		-----		-----	
1634		-----		-----	
1650		-----		-----	
1720		-----		-----	
1724		-----		-----	
1730		-----		-----	
1741		-----		-----	
1810		-----		-----	
1811		-----		-----	
1833		-----		-----	
1852		-----		-----	
1854		-----		-----	

| lab	method	value	mark	z(targ)	remarks
1913		-----		-----	
1961		-----		-----	
2130		-----		-----	
6028		-----		-----	
6041		-----		-----	
6054		-----		-----	
6075		-----		-----	
6114		-----		-----	
6174		-----		-----	
6201		-----		-----	
6262		-----		-----	
6308		-----		-----	
6315		-----		-----	
6321		-----		-----	
6324		-----		-----	
6358		-----		-----	
6359		-----		-----	
6366		-----		-----	
6384		-----		-----	
	n	4			
	mean (n)	<10			

Determination of JFTOT at 260 °C on sample #21155; Visual tube rating (VTR), Interferometric tube rating (ITR) in nm and Ellipsometric tube rating (ETR) in nm, Delta P in mmHg, Evaluation Pass/Fail

lab	method	VTR	ITR	ETR	Delta P	Time to 25 mmHg (min)	Pumped Vol. (mL)	Heater Temp. (°C)	Pass/Fail
52	D3241-A1	1	-----	-----	0	-----	480	260	Pass
120	D3241-A1	<1	13.1	-----	0	-----	500	260	Pass
140		-----	-----	-----	-----	-----	-----	-----	-----
150	D3241-A1	<1	9.3	-----	0	-----	450	260	Pass
159		-----	15.5	-----	0.0	0.0	986	260	Pass
171	D3241-A1	<1	-----	-----	1	-----	450	260	Pass
175	D3241-A1	<1	-----	-----	1	N/A	440	260	Pass
177	D3241-A1	1	2.6	-----	0	150	450	260	pass
225	D3241-A1	1	-----	-----	0.0	150	515	260.2	Pass
235	D3241-A1	<1	-----	-----	<1	-----	490	260	Pass
237	D3241-A1	1	21.2	-----	1.6	0	460	260	PASS
253	D3241-A1	<1	-----	-----	0	-----	421	260	Pass
254	D3241-A1	1	-----	-----	1	-----	480	260	-----
256	D3241	1	-----	-----	0.2	0	443	260	Pass
311	D3241-A1	<1	-----	-----	<1	-----	460	260	Pass
323	D3241-A1	< 1	-----	-----	< 1	< 1	421	260	pass
334		-----	9.0	-----	0.0	0	505	260.0	PASS
335	D3241-A1	<1	15.9	-----	0	0	510	260	pass
372	D3241-A1	1	-----	-----	1	-----	450	260	pass
391	D3241-A1	0	-----	-----	0	-----	450	260	Pass
398	D3241-A1	<1	-----	-----	0.1	0	-----	260	Pass
399	D3241-A1	<1	-----	8.11	0	0	460	260	PASS
440		-----	-----	-----	-----	-----	-----	-----	-----
445	IP323-B	1	-----	-----	<0.1	-----	460	260	Pass
447	IP323-B	1	-----	-----	<1	-----	462	260	PASS
467	D3241-A1	1	-----	18.03	0.0	n/a	449	260.0	pass
496	D3241-A1	1	-----	-----	0.0	-----	510	260	Pass
631	D3241-A1	<1	-----	-----	0.2	-----	500	260.0	Pass
657	D3241-A1	<1	-----	27.46 C	<1	0	461	260	Pass
823	D3241-A1	1	-----	-----	0	0	450	260	Pass
824	D3241-A1	1	-----	-----	0	0	510	260	pass
851	D3241-A1	1	8	-----	0.1	-----	450	260	pass
862		-----	-----	-----	-----	-----	-----	-----	-----
869	D3241-A1	1	-----	5.18	0	0	433	260	Pass
922		-----	16.9	-----	0	-----	450	260	pass
962		-----	-----	-----	-----	-----	-----	-----	-----
963		-----	-----	-----	-----	-----	-----	-----	-----
974	D3241-A1	<1	-----	-----	0	0	450	260	-----
994		-----	-----	-----	-----	-----	-----	-----	-----
1016	D3241-A1	<1	-----	-----	0.1	-----	510	260	Pass
1026	D3241-A1	<1	8.3	-----	0	-----	510	260	Pass
1047	D3241-A1	<1	-----	-----	2	-----	475	260	pass
1049	D3241-A1	1	-----	17.39	0	NA	443	260	Pass
1064	D3241-A1	1	-----	3.28	0	-----	462.04	260	Pass
1082		-----	-----	-----	-----	-----	-----	-----	-----
1097	D3241-A1	1	-----	-----	0	-----	455	260	Pass
1109	D3241-A1	<1	-----	-----	0	0	450	260	Pass
1146	D3241-A1	<1	11.6	-----	0	0	435	260	pass
1191	D3241-A1	1	16.5	-----	0.0	-----	433	260	pass
1212	D3241-A1	<1	6.05	-----	<1	-----	450	260	Pass
1237	D3241-A1	1	-----	-----	0.0	-----	450	260	pass
1279	D3241-A1	<1	-----	7.57	0.0	0.00	454	260	pass
1316	D3241-A1	1	-----	5.21	-----	0.0	460	260	Pass
1320	D3241-A1	1	-----	-----	0	0.00	428	260	pass
1357	D3241-A1	1	n.a.	n.a.	1	n.a.	460	260.0	Pass
1399		-----	-----	-----	-----	-----	-----	-----	-----
1417	IP323-B	<2	-----	-----	0.0	-----	455	260	PASS
1496	D3241-A1	0	-----	-----	0.1	0	477	260	pass
1528	D3241-A1	1	-----	-----	0	-----	450	260	Pass
1586	IP323-B	1	-----	-----	-----	-----	510	260	pass
1587	D3241-A1	<1	-----	-----	0.0	-----	446	260	pass
1610	IP323-B	<1	-----	-----	<1	-----	445	260	Pass
1613	D3241-A1	<1	-----	-----	0.0	0.0	450	260	Pass
1631	D3241-A1	<1	-----	-----	0	-----	-----	260	-----
1634	D3241-A1	1	-----	-----	0	-----	500	260	Pass
1650	D3241-A1	1	-----	-----	0	0	510	260	Pass
1720		-----	-----	-----	-----	-----	-----	-----	-----
1724	D3241-A1	1	-----	-----	0.1	0	510	260	pass
1730	D3241-A1	1	2.7	-----	0	-----	450	260	PASS
1741	D3241-A1	1	-----	-----	0.7	0	448	260	pass
1810	D3241-A1	1	-----	-----	0.5	-----	-----	260	Pass
1811	D3241-A1	1	-----	-----	0	-----	492	260	-----

lab	method	VTR	ITR		ETR	Delta P	Time to 25 mmHg (min)	Pumped Vol. (mL)	Heater Temp. (°C)	Pass/Fail
1833		-----	-----		-----	0	0	-----	260	Pass
1852	D3241-A1	<1	-----		3.98	0.0	0.0	454.0	260	pass
1854	D3241-A1	1	-----		-----	0	-----	450	260	Pass
1913	D3241-A1	<1	-----		-----	0.0	-----	450	260	Pass
1961	D3241-A1	<1	-----		-----	0.0	-----	460	260	Pass
2130	IP323-B	<1	-----		-----	0.2	-----	427.99	260.0	-----
6028	D3241-A1	1	-----		-----	0	-----	-----	-----	Pass
6041	D3241-A1	1	11.0		5.94	0.1	0.00	453	260	pass
6054	D3241-A1	<1	-----		-----	0.1	-----	-----	260	pass
6075	D3241-A1	1	37.7	C	-----	0.0	-----	450	260	Pass
6114	D3241-A1	1	-----		-----	0.4	-----	441	260	Pass
6174	D3241-A1	<1	-----		-----	0	-----	450	260	Pass
6201	D3241-A1	1	-----		-----	0	-----	416	-----	-----
6262	D3241-A1	<1	-----		-----	0.0	-----	450	260.0	Pass
6308	D3241-A1	<1	-----		-----	0.2	-----	500	260	Pass
6315	D3241-A1	1	-----		8	0.0	0.00	468	260	pass
6321	IP323-B	<1	10.2		-----	<1	-----	455	260	Pass
6324	D3241-A1	1.0	-----		-----	1.0	-----	465	260	Pass
6358	D3241-A1	1	-----		-----	0.0	0	455	260	Pass
6359	D3241-A1	1	-----		-----	0.6	-----	-----	260	Pass
6366	D3241-A1	<1	-----		-----	<1	-----	450	260	Pass
6384	D3241-A1	1	-----		3.22	0.0	-----	459	260.0	Pass
	n	81	17		12	83				79 (Pass)
	Range of results									
	Min.	0	2.6		3.22	0				
	Max.	<2	37.7		27.46	2				

Lab 657 first reported 45.63
Lab 6075 first reported 31.3

Pass according to specification AFQRJOS is when VTR is less than 3 (no peacock or abnormal color), ITR/ETR is less than 85 and Delta P is maximum 25.
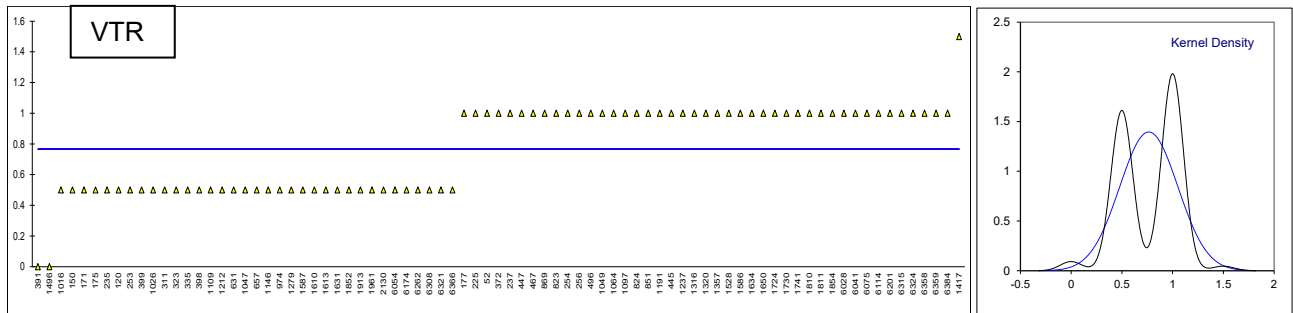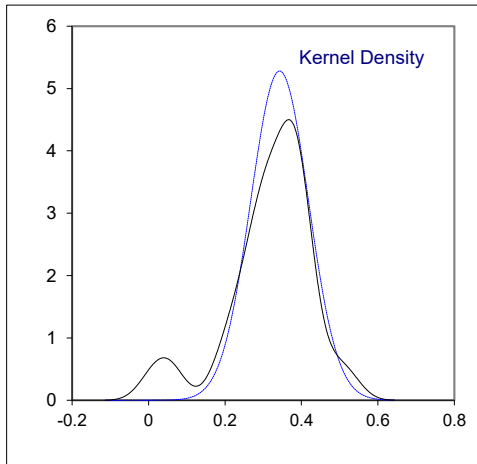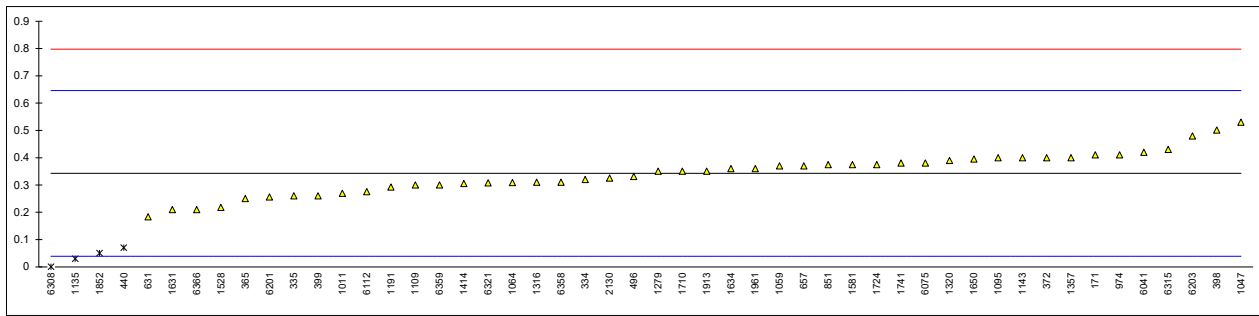

For graphical display the alfanumeric values were calculated as follows: visual tube rating:< x as (x-0.5) and > x as (x+0.5)
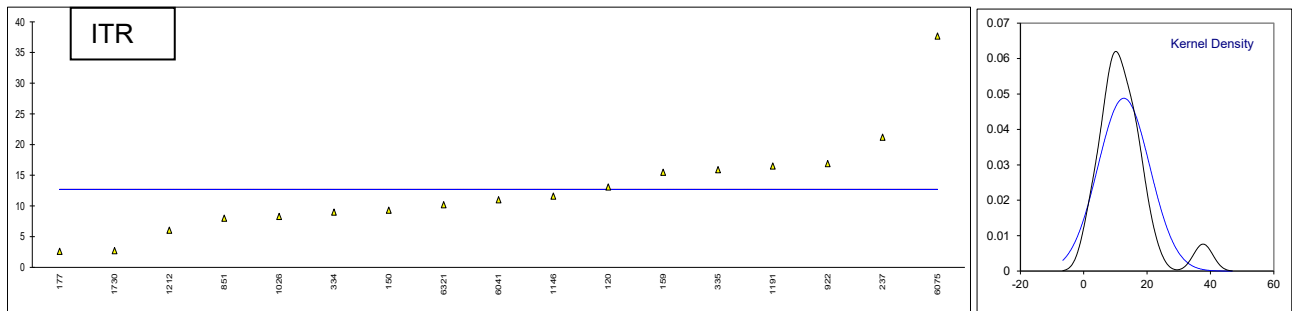
Determination of Particulate Contamination on sample #21156; Particulate matter in mg/L,
Filtration time in minutes and Volume of fuel filtered in mL

lab	method	part. matter	mark	z(targ)	filtr. time	vol. filtered	remarks
140		-----		-----	-----	-----	
150		-----		-----	-----	-----	
169		-----		-----	-----	-----	
171	D5452	0.41		0.44	-----	2900	
334	D5452	0.32		-0.15	-----	3.8	
335	D5452	0.26		-0.54	-----	-----	
365	IP423	0.25		-0.61	7	4000	
372	D5452	0.4		0.38	8	4000	
398	D5452	0.501		1.04	-----	3800	
399	D5452	0.26		-0.54	6.4	3785	
440	D5452	0.07	R(0.05)	-1.80	45	4000	
496	D5452	0.331		-0.08	-----	3808	
631	D5452	0.183		-1.05	137.21	3820	
657	D5452	0.37		0.18	4.38	3801	
851	D5452	0.375		0.21	7	4000	
962		-----		-----	-----	-----	
963		-----		-----	-----	-----	
974	D5452	0.41	C	0.44	4	3.8	first reported 0.71
1011	D5452	0.27		-0.48	-----	3860	
1047	D5452	0.53		1.23	8	1.89	
1059	D5452	0.37		0.18	60	3880	
1064	D5452	0.309		-0.22	6:40	3885	
1095	D5452	0.4		0.38	-----	4000	
1109	D5452	0.30		-0.28	10	3800	
1135	D5452	0.03	R(0.05)	-2.06	16.76	3837	
1143	D5452	0.4		0.38	25	4000	
1191	D5452	0.2925		-0.33	-----	4000	
1279	D5452	0.35		0.05	25	4000	
1316	D5452	0.31		-0.22	-----	4000	
1320	D5452	0.39		0.31	-----	3900	
1357	D5452	0.4		0.38	n.a.	3900	
1399		-----		-----	-----	-----	
1414	D5452	0.305		-0.25	3.2	2000	
1528	D5452	0.218		-0.82	10	3900	
1581	D5452	0.375		0.21	7min 34 sec	4000	
1610		-----		-----	>60	3.785	
1631	D5452	0.21		-0.87	-----	-----	
1634	D5452	0.36		0.11	-----	4	
1650	D5452	0.3947		0.34	7	3.8	
1710	D5452	0.35		0.05	18:36	4000	
1724	IP423	0.375		0.21	-----	-----	
1741	D5452	0.38		0.25	10	3950	
1833		-----		-----	-----	-----	
1852	D5452	0.0500	R(0.05)	-1.93	5.0	4000	
1913	D5452	0.35		0.05	12	4000	
1961	D5452	0.36		0.11	-----	3690	
2130	D5452	0.325		-0.12	18	4	
6041	D5452	0.42		0.51	-----	4.0	
6075	D5452	0.38		0.25	-----	3800	
6112	D5452	0.275		-0.45	3 22	4.000	
6141		-----		-----	-----	-----	
6201	D5452	0.256		-0.57	1.80	3901.48	
6203	D5452	0.48		0.90	9 min , 27 sec	3900	
6308	D5452	0.0007	R(0.05)	-2.25	-----	3860	
6315	D5452	0.43		0.58	12	3930	
6321	IP423	0.308		-0.23	-----	3900	
6358	D5452	0.31		-0.22	12	3850	
6359	D5452	0.3		-0.28	2	4000	
6366	D5452	0.21		-0.87	71820	3800	

	normality	OK	
	n	46	
	outliers	4	
	mean (n)	0.343	
	st.dev. (n)	0.0755	
	R(calc.)	0.212	
	st.dev.(D5452:12)	0.1518	
	R(D5452:12)	0.425	

APPENDIX 2   z-scores of Distillation at 760 mmHg

lab	IBP	10% rec	50% rec	90% rec	FBP
52	-0.27	0.09	-0.61	-0.35	1.35
62	0.41	0.91	0.60	0.37	1.71
120	-0.27	0.01	-0.24	-0.74	-0.19
140	-0.85	0.31	-0.24	-0.50	0.05
150	-1.70	-0.66	-0.42	-0.19	-0.86
159	0.55	0.39	0.70	-0.27	0.52
169	0.14	0.46	-0.24	-0.03	0.09
171	-----	-----	-----	-----	-----
175	-0.30	-0.21	0.23	1.24	0.52
177	-1.02	-0.43	0.23	-0.35	-0.07
221	-1.80	-0.66	0.79	0.84	0.05
224	0.77	0.74	-0.27	-1.90	-0.16
225	-----	-----	-----	-----	-----
228	-0.27	0.68	1.07	0.05	1.39
235	-1.46	-1.47	-1.92	-1.69	-1.25
237	0.75	0.68	1.07	-0.74	-0.58
238	-0.95	-1.55	0.14	0.84	1.00
253	0.07	0.68	-0.80	-0.74	0.21
254	0.41	-0.06	1.07	0.84	0.60
256	0.07	-0.06	0.14	0.05	4.15
258	1.05	1.28	0.70	0.45	0.33
273	0.10	0.24	-0.42	-0.35	0.01
311	0.58	0.46	0.14	-0.19	-0.31
317	0.27	0.46	-0.05	-0.11	0.40
323	-1.12	1.20	0.79	0.92	-0.34
328	0.14	-0.13	-0.61	-0.82	-0.46
333	-0.64	-0.13	-0.14	-0.66	-0.54
334	-0.92	-0.13	-0.61	-0.66	-0.82
335	-0.61	-0.66	-0.80	0.21	-0.15
365	-0.03	-0.58	-0.42	0.76	-1.05
369	0.99	-2.07	0.23	-0.27	-0.34
372	0.17	-0.51	-0.24	-0.19	0.25
391	-0.98	0.39	-0.05	-0.35	-0.07
396	1.73	0.61	0.04	-2.40	0.56
399	0.41	-0.06	0.14	-0.74	0.21
440	-----	-----	-----	-----	-----
445	-0.30	-0.21	-0.14	0.45	-0.23
447	-0.51	0.01	0.04	0.92	-0.42
460	-0.03	-0.06	-0.05	1.00	-0.54
467	0.65	0.39	0.04	0.05	-0.15
480	-0.56	-0.25	-0.38	-0.50	-0.54
496	0.34	0.31	0.32	0.45	0.09
594	-----	-----	-----	-----	-----
603	-----	-----	-----	-----	-----
608	0.34	0.39	0.14	-0.03	0.29
631	1.43	0.68	-0.33	0.05	-0.19
657	0.72	0.98	0.70	0.76	0.01
798	-----	-----	-----	-----	-----
823	0.92	0.09	-0.33	-0.03	0.21
824	-0.17	0.16	0.23	0.37	-0.15
851	0.00	0.39	0.14	-0.11	-0.34
854	0.72	0.46	0.42	0.45	0.29
862	-0.17	-0.21	0.23	0.29	-0.66
869	0.04	-0.36	0.42	0.37	-0.27
904	0.17	-1.33	-0.98	-2.01	-1.09
914	0.07	-0.43	-0.61	-1.30	1.55
962	-----	-----	-----	-----	-----
963	-----	-----	-----	-----	-----
970	0.17	0.31	0.32	0.29	0.05
974	0.41	0.68	0.60	0.60	0.09
994	0.41	-0.80	-0.80	0.05	0.60
995	0.41	-0.80	-0.33	-0.35	0.01
996	-----	-----	-----	-----	-----
997	-0.10	-0.80	0.14	0.05	0.21
1011	-0.27	0.39	0.23	0.21	-0.07
1016	-----	-----	-----	-----	-----
1023	0.89	-0.06	-0.24	0.45	-0.23
1039	0.17	-0.28	0.60	-0.50	0.96
1047	0.78	-0.80	-0.98	0.05	-0.86
1049	-0.47	0.01	0.32	0.68	-0.27
1059	-0.27	-0.06	0.04	-0.50	-0.38
1062	-2.24	-0.51	-0.89	-0.82	-0.58
1064	0.44	-0.21	-0.24	0.45	-0.31
1065	-0.88	-4.08	0.88	0.76	4.31
1082	0.85	0.39	0.60	0.37	0.29
1097	0.65	-0.06	0.60	0.76	-0.31

lab	IBP	10% rec	50% rec	90% rec	FBP
1105	-0.34	0.31	0.60	1.55	-0.11
1109	-0.30	0.39	-0.14	0.13	-0.31
1121	0.82	0.16	-0.24	-0.82	0.29
1126	-0.17	-0.58	-0.33	-0.98	1.71
1140	-1.73	-0.73	-0.42	-0.27	-0.78
1143	-0.17	0.16	0.23	0.45	0.92
1182	0.89	-0.21	0.04	-0.19	-0.11
1191	-0.98	0.39	-0.42	-0.35	-0.19
1205	0.65	0.76	0.32	-0.27	0.44
1212	-1.09	-0.06	-0.05	0.52	-0.42
1237	0.14	-0.21	-0.52	-0.66	-0.54
1275	-1.49	-0.43	-0.98	-0.27	-0.90
1279	0.17	0.46	0.42	-0.11	-0.54
1316	-0.10	0.46	0.23	0.05	0.05
1318	1.70	-0.06	-0.42	0.29	-0.46
1320	-0.20	-0.28	-0.33	-0.03	-0.78
1357	1.05	0.68	1.26	0.84	0.05
1372	1.60	-0.80	-2.29	-2.72	-0.19
1373	-0.15	-1.47	0.24	0.14	-1.32
1397	0.31	0.46	0.23	-0.35	-0.23
1399	-----	-----	-----	-----	-----
1417	0.58	0.46	0.79	2.26	0.13
1438	0.24	1.43	1.54	1.47	0.17
1441	1.19	-0.13	-0.52	-0.43	0.92
1448	-----	-----	-----	-----	-----
1496	0.04	-0.21	0.42	0.76	0.17
1528	-0.71	0.31	0.04	0.37	-0.27
1538	0.72	-0.80	0.04	-0.82	1.04
1544	-0.03	0.39	0.51	-0.19	-0.34
1586	-1.26	-0.73	-0.61	-0.19	-0.38
1587	0.14	-0.21	-0.42	-0.11	-0.23
1610	0.95	0.39	0.32	0.84	0.36
1613	0.24	0.53	0.79	0.52	1.35
1631	-1.39	-0.43	-0.61	-0.35	-0.23
1634	-0.03	-0.51	-0.05	0.29	0.21
1650	-1.49	0.01	0.23	0.29	0.01
1710	-0.44	0.61	-0.33	-0.11	-0.31
1715	1.46	1.43	2.00	1.47	1.47
1720	-----	-----	-----	-----	-----
1724	-0.13	0.24	-0.42	-0.66	-0.03
1730	2.11	-0.06	1.07	0.84	0.21
1741	-0.64	-0.43	-0.98	-0.66	-0.70
1770	1.16	0.83	0.60	0.84	-0.31
1776	-1.26	-0.58	-0.24	0.52	-0.50
1780	-----	-----	-----	-----	-----
1810	-0.88	0.53	-0.14	-0.82	-0.19
1811	0.17	-2.22	-1.26	-0.98	-0.19
1833	-1.49	-0.95	-0.89	-0.82	-0.15
1852	0.75	1.06	0.88	0.60	1.15
1883	0.07	-0.06	0.14	0.05	-0.19
1913	-0.08	0.09	-0.19	0.13	-0.84
1961	-----	-----	-----	-----	-----
2130	-0.75	0.09	0.32	0.60	-0.23
2133	-0.47	0.46	0.23	0.29	0.21
6028	0.99	-0.28	-0.52	-1.61	-0.82
6041	-0.03	0.76	1.54	2.34	0.72
6054	0.58	0.76	0.32	-0.03	0.29
6075	-0.37	-0.51	-0.14	0.45	0.96
6114	-0.58	0.16	0.14	-0.27	-0.31
6135	-0.17	0.24	0.51	0.92	0.36
6142	-1.70	-1.25	-1.45	-1.06	-1.13
6174	0.75	-0.06	0.14	0.05	0.21
6201	-0.34	0.01	0.32	1.79	0.25
6203	-0.20	-0.36	0.14	-0.03	-0.07
6249	-----	-----	-----	-----	-----
6262	-0.58	0.16	0.23	-0.66	-0.23
6266	0.60	0.23	-0.43	-0.94	-0.04
6308	0.99	-0.73	-1.64	-0.58	-0.11
6312	-----	-----	-----	-----	-----
6321	-0.41	0.01	0.32	0.37	-0.50
6324	0.61	0.46	-1.08	-1.69	2.10
6332	-----	-----	-----	-----	-----
6346	-----	-----	-----	-----	-----
6358	-0.78	-0.13	-0.61	-0.58	-0.90
6359	-----	-1.18	-1.17	-0.90	0.52
6384	-0.30	0.91	0.88	1.24	-0.19
6386	1.63	1.28	1.16	2.19	0.88
6404	-----	-----	-----	-----	-----

APPENDIX 3 Equipment used in Particle Size distribution

lab	Equipment	Test Method based on equipment	Test Method reported	Calibration method reported	Remark
140					
150	Stanhope-Seta	IP565	IP565	ISO11171	
171	Stanhope-Seta	IP565	IP565		
225					
237					
311	Stanhope-Seta	IP565	IP565	ISO11171	
323					
333	Stanhope-Seta	IP565	IP565	ISO11171	
334	Stanhope-Seta	IP565	IP565	ISO11171	
335	Stanhope-Seta	IP565	IP565	ISO11171	
372	Stanhope-Seta	IP565	IP565	ISO11171	
447	Stanhope-Seta	IP565	IP565	ISO11171	
496	Pamas	IP577	D7169	ISO11171	
657	Stanhope-Seta	IP565	IP565	ISO11171	
823	Stanhope-Seta	IP565	IP565		
824	Stanhope-Seta	IP565	IP565	ISO11171	
862	Pamas	IP577	IP565		
963					
974	Stanhope-Seta	IP565	IP565	ISO11171	
1011	Stanhope-Seta	IP565	IP565		
1016	Stanhope-Seta	IP565	IP565		
1039	Stanhope-Seta	IP565	IP565	ISO11171	
1062	Stanhope-Seta	IP565	IP565	ISO11171	
1064	Stanhope-Seta	IP565	IP565	ISO11171	
1065			IP565		
1082	Stanhope-Seta	IP565	IP565	ISO11171	
1097	Parker Hannifin	IP564	IP564	ISO11171	
1109	Stanhope-Seta	IP565	IP565	ISO11171	
1135	Stanhope-Seta	IP565	IP565	ISO11171	
1191	Stanhope-Seta	IP565	IP565	ISO11171	
1212	Seta Analytics	IP565	IP565	ISO11171	
1279	Stanhope-Seta	IP565	IP565	ISO11171	
1316	Pamas	IP577	IP577	ISO11171	
1318	Stanhope-Seta	IP565	IP565	ISO11171	
1320					
1357	Stanhope-Seta	IP565	IP565	External Calibration through Seta	
1397	Stanhope-Seta	IP565	IP565	ISO11171	
1399					
1402	Stanhope-Seta	IP565	IP565	ISO11171	
1496	Stanhope-Seta	IP565	IP565	ISO11171	
1528	Stanhope-Seta	IP565	IP565	ISO11171	
1538	Stanhope-Seta	IP565	IP565	ISO11171	
1587	Stanhope-Seta	IP565	IP565	ISO11171	
1610	Stanhope-Seta	IP565	IP565	ISO11171	
1613	Stanhope-Seta	IP565	IP565	ISO11171	
1631	Stanhope-Seta	IP565	IP565	ISO11171	
1634	Stanhope-Seta	IP565	IP565	ISO11171	
1710	Stanhope-Seta	IP565	IP565	ISO11171	
1724	Stanhope-Seta	IP565	IP565	ISO11171	
1741	Stanhope-Seta	IP565	IP565		
1833	Stanhope-Seta	IP565	IP565	ISO11171	
1852	Stanhope-Seta	IP565	IP565	ISO11171	
1913	Stanhope-Seta	IP565	IP565	ISO11171	
1961	Pamas	IP577	IP577	ISO11171	
2130	Stanhope-Seta	IP565	IP565		
6054					
6075	Stanhope-Seta	IP565	IP565	ISO11171	
6112	Stanhope-Seta	IP565	IP565		
6141					

lab	Equipment	Test Method based on equipment	Test Method reported	Calibration method reported	Remark
6201	Stanhope-Seta	IP565	IP565	ISO11171	
6203	Stanhope-Seta	IP565	IP565	ISO11171	
6308	Stanhope-Seta	IP565	IP565	ISO11171	
6315	Stanhope-Seta	IP565	IP565	ISO11171	
6321	Stanhope-Seta	IP565	IP565	ISO11171	
6359	Stanhope-Seta	IP565	IP565		

APPENDIX 4   z-scores of Particle Size Distribution

lab	≥4 µm	≥6 µm	≥14 µm	≥21 µm	≥25 µm	≥30 µm
140	-----	-----	-----	-----	-----	-----
150	-----	-----	-----	-----	-----	-----
171	2.15	1.40	-1.96	-2.27	-1.97	-1.33
225	-----	-----	-----	-----	-----	-----
237	-----	-----	-----	-----	-----	-----
311	-0.68	0.05	-0.51	-1.34	-1.42	-1.33
323	-----	-----	-----	-----	-----	-----
333	0.57	0.82	0.52	-0.68	-0.87	-0.76
334	-0.67	-0.68	-1.88	-1.87	-1.70	-1.33
335	-4.04	-1.89	-2.05	-2.40	-2.17	-1.68
372	-0.89	-0.91	-0.72	-0.10	-0.46	-1.07
447	0.19	0.33	0.09	-0.16	-0.59	-0.19
496	-5.53	-2.33	-0.10	-----	13.21	16.96
657	-0.23	2.40	0.70	1.37	0.84	0.67
823	-0.71	0.96	0.03	-0.95	-1.15	-0.76
824	2.03	0.91	0.92	0.90	0.23	0.38
862	-3.44	-3.47	-3.95	-2.66	-2.25	-1.90
963	-----	-----	-----	-----	-----	-----
974	-14.80	-7.66	-0.47	2.41	3.22	1.64
1011	-3.85	-2.10	-1.66	-2.53	-2.25	-1.90
1016	0.40	0.68	-0.10	-0.86	-1.31	-1.22
1039	1.40	0.51	0.76	2.56	3.19	1.70
1062	0.50	0.38	-1.94	-1.71	-1.42	-1.33
1064	-0.61	0.31	-1.65	-2.80	-2.36	-1.79
1065	1.07	-0.63	-0.30	-0.59	0.15	0.32
1082	-1.24	-1.34	-1.96	-2.16	-1.89	-1.62
1097	-3.76	-0.70	-2.22	-1.46	-1.42	-1.50
1109	1.32	1.09	1.79	4.13	3.69	3.75
1135	-2.00	-2.08	-1.58	-2.27	-1.97	-1.33
1191	-0.82	-0.57	0.86	0.05	-0.32	-0.42
1212	5.48	3.67	4.72	2.85	3.33	3.30
1279	-2.11	0.06	-1.73	1.61	3.00	2.95
1316	-4.84	-1.75	-0.20	0.13	0.18	-1.85
1318	-0.13	-0.69	-1.55	-2.12	-1.73	-1.28
1320	-----	-----	-----	-----	-----	-----
1357	-0.20	-0.64	0.61	-0.82	-0.51	-0.30
1397	1.83	1.18	0.95	0.94	0.68	0.04
1399	-----	-----	-----	-----	-----	-----
1402	-0.02	0.89	1.72	3.56	3.35	1.92
1496	0.29	0.70	0.77	1.03	0.46	0.10
1528	15.28	-2.97	1.67	3.07	1.89	0.90
1538	3.24	2.70	-----	-----	-----	-----
1587	-2.81	-2.21	-1.74	-2.48	-2.14	-1.68
1610	-2.51	-1.80	-1.40	0.25	0.54	0.72
1613	1.02	1.62	0.46	0.70	0.43	0.38
1631	2.27	1.28	0.91	0.88	0.29	-0.53
1634	-0.37	-0.02	1.15	3.21	2.89	2.10
1710	-0.22	-0.10	-0.34	-1.67	-1.62	-1.39
1724	-0.27	0.06	2.18	1.07	1.26	0.95
1741	0.02	0.93	1.49	3.22	1.67	0.50
1833	1.70	0.57	1.38	-----	-----	-----
1852	1.17	0.95	-1.17	-1.49	-1.37	-1.22
1913	-1.04	-1.15	0.51	1.03	0.68	0.61
1961	-0.33	1.83	2.62	6.04	6.86	4.95
2130	-0.54	-1.53	0.26	-1.17	-0.92	-0.88
6054	-----	-----	-----	-----	-----	-----
6075	0.02	0.23	0.61	0.90	-0.01	-0.02
6112	0.31	-0.18	0.53	3.35	3.27	1.52
6141	-----	-----	-----	-----	-----	-----
6201	3.04	1.20	1.24	-1.38	-1.50	-0.93
6203	0.84	0.23	-1.57	-2.00	-1.89	-1.50
6308	1.89	1.13	2.64	1.03	1.62	2.10
6315	1.17	1.17	2.10	3.67	3.55	3.81
6321	-4.52	-3.42	-1.78	-1.81	-1.42	-1.10
6359	-----	-----	-----	-1.08	0.23	2.10

APPENDIX 5

Number of participants per country

1 lab in	ALGERIA	4 labs in	MALAYSIA
1 lab in	AUSTRALIA	1 lab in	MALTA
1 lab in	AUSTRIA	1 lab in	MARTINIQUE
1 lab in	AZERBAIJAN	1 lab in	MAURITIUS
6 labs in	BELGIUM	1 lab in	MOROCCO
1 lab in	BOSNIA and HERZEGOVINA	1 lab in	MOZAMBIQUE
1 lab in	BULGARIA	9 labs in	NETHERLANDS
2 labs in	CANADA	2 labs in	NIGERIA
9 labs in	CHINA, People's Republic	2 labs in	NORWAY
2 labs in	COTE D'IVOIRE	2 labs in	OMAN
1 lab in	CROATIA	2 labs in	PAKISTAN
2 labs in	CZECH REPUBLIC	2 labs in	PHILIPPINES
2 labs in	DENMARK	5 labs in	POLAND
1 lab in	DJIBOUTI	4 labs in	PORTUGAL
1 lab in	EGYPT	2 labs in	ROMANIA
1 lab in	ESTONIA	1 lab in	RUSSIAN FEDERATION
3 labs in	FINLAND	4 labs in	SAUDI ARABIA
5 labs in	FRANCE	1 lab in	SENEGAL
1 lab in	FRENCH GUIANA	2 labs in	SERBIA
2 labs in	GEORGIA	1 lab in	SINGAPORE
4 labs in	GERMANY	1 lab in	SLOVAKIA
5 labs in	GREECE	2 labs in	SLOVENIA
1 lab in	GUINEA REPUBLIC	1 lab in	SOMALIA
1 lab in	HONG KONG	2 labs in	SOUTH AFRICA
2 labs in	HUNGARY	1 lab in	SPAIN
1 lab in	INDIA	1 lab in	SUDAN
2 labs in	IRELAND	5 labs in	SWEDEN
2 labs in	ISRAEL	3 labs in	TANZANIA
4 labs in	ITALY	1 lab in	TOGO
1 lab in	JORDAN	1 lab in	TUNISIA
2 labs in	KENYA	4 labs in	TURKEY
3 labs in	KOREA, Republic of	1 lab in	TURKMENISTAN
1 lab in	LATVIA	2 labs in	UNITED ARAB EMIRATES
1 lab in	LEBANON	14 labs in	UNITED KINGDOM
1 lab in	MACEDONIA	8 labs in	UNITED STATES OF AMERICA

APPENDIX 6

Abbreviations

C	= final test result after checking of first reported suspect test result
D(0.01)	= outlier in Dixon's outlier test
D(0.05)	= straggler in Dixon's outlier test
G(0.01)	= outlier in Grubbs' outlier test
G(0.05)	= straggler in Grubbs' outlier test
DG(0.01)	= outlier in Double Grubbs' outlier test
DG(0.05)	= straggler in Double Grubbs' outlier test
R(0.01) or R(1)	= outlier in Rosner's outlier test
R(0.05) or R(5)	= straggler in Rosner's outlier test
E	= calculation difference between reported test result and result calculated by iis
W	= test result withdrawn on request of participant
ex	= test result excluded from statistical evaluation
n.a.	= not applicable
n.e.	= not evaluated
n.d.	= not detected
fr.	= first reported
f+?	= possibly a false positive test result?
f-?	= possibly a false negative test result?
SDS	= Safety Data Sheet

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