Results of Proficiency Test
Jet Fuel A1
September 2019

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CONTENTS

1   INTRODUCTION

Since 1995, the Institute for Interlaboratory Studies organises proficiency tests (PT) for Jet Fuel A1 twice a year. The interlaboratory study on Jet Fuel was extended with PTs for the determination of Particle Size Distribution, BOCLE, FAME, JFTOT and Particulate Contamination. The latter four parameters are tested once a year. In the annual proficiency testing program of 2019/2020, it was decided to continue the PT on Jet Fuel A1 in accordance with the latest applicable 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". This is Issue 30 from November 2018.

The number of participants per Jet Fuel PT are: 154 laboratories in 67 countries for the main round (iis19J02), 30 laboratories in 9 countries for BOCLE (iis19J02BOCLE), 69 laboratories in 34 countries for Particle Size Distribution (iis19J02PS), 76 laboratories in 37 countries for FAME (iis19J02FAME), 97 laboratories in 48 countries for JFTOT (iis19J02JF) and 36 laboratories in 23 countries (iis19J02CP).

In this interlaboratory study a total of 166 laboratories in 70 different countries registered for participation. See appendix 4 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 organiser of this proficiency test. Sample analyses 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.

Samples	Type of bottle	Purpose
#19150	2 x 1 L	For regular analyzes
#19151	100 ml	For BOCLE
#19152	0.5 L	For Particle Size Distribution
#19153	100 ml	For FAME
#19154	100 ml	For FAME
#19155	1 L	For JFTOT
#19156	4 x 1 L bottles	For Particulate Contamination

Table 1: Seven different Jet Fuel samples used in iis19J02

The 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 organisation of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5). This protocol can be downloaded from 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

2.4.1 JET FUEL A1 (MAIN ROUND)

The necessary bulk material of Jet Fuel A1, approximately 400 litres, was obtained from a trader and homogenised in a mixing vessel. From this batch, 370 amber glass bottles of one litre were filled, closed with inner and outer caps and labelled #19150. The homogeneity of the subsamples #19150 was checked by the determination of Density in accordance with ASTM D4052 on ten stratified randomly selected samples.

	Density at 15°C in kg/m^3
Sample #19150-1	792.88
Sample #19150-2	792.84
Sample #19150-3	792.85
Sample #19150-4	792.86
Sample #19150-5	792.86
Sample #19150-6	792.87
Sample #19150-7	792.87

	Density at 15°C in kg/m^3
Sample #19150-8	792.87
Sample #19150-9	792.88
Sample #19150-10	792.84

Table 2: homogeneity test results of subsamples #19150

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/m^3
r (observed)	0.04
reference test method	ASTM D4052:18a
0.3 x R (ref. test method)	0.15

Table 3: evaluation of repeatability of subsamples #19150

The calculated repeatability was in agreement with 0.3 times the corresponding reproducibility of the target method. Therefore, homogeneity of the subsamples #19150 was assumed.

2.4.2 BOCLE (BALL-ON-CYLINDER LUBRICITY EVALUATOR) DETERMINATION

For the preparation of the BOCLE sample Jet Fuel A1 material was used that was obtained from a participating laboratory. Approximately 10 litre was homogenized and 48 amber glass bottles of 0.1 liter were filled and labelled #19151. The homogeneity of the subsamples #19151 was checked by the determination of Density in accordance with ASTM D4052 on 8 stratified randomly selected samples.

	Density at 15°C in kg/m^3
Sample #19151-1	801.60
Sample #19151-2	801.63
Sample #19151-3	801.63
Sample #19151-4	801.65
Sample #19151-5	801.64
Sample #19151-6	801.64
Sample #19151-7	801.64
Sample #19151-8	801.63

Table 4: homogeneity test results of subsamples #19151

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

	Density at 15°C in kg/m^3
r (observed)	0.04
reference test method	D4052:18a
0.3 x R (ref. test method)	0.15

Table 5: evaluation of repeatability of subsamples #19151

The calculated repeatability was in agreement with 0.3 times the corresponding reproducibility of the target method. Therefore, homogeneity of the subsamples #19151 was assumed.

2.4.3 PARTICLE SIZE DISTRIBUTION DETERMINATION (PS)

A batch of Jet Fuel A1 was obtained from a trader for Particle Size Distribution Determination. Approximately 90 litres bulk material was homogenized and 80 amber glass bottles of 0.5 litres were filled under constant mixing. The botlles were spiked with Arizona Dust and labelled #19152. The homogeneity of the subsamples #19152 was checked by the determination of Particle Size Distribution in accordance with IP565 on four stratified randomly selected samples.

	≥ 4 µm (c) counts/ml	≥ 6 µm (c) counts/ml	≥ 14 µm (c) counts/ml
Sample #19152-1	38865	12597	431
Sample #19152-2	39359	12781	410
Sample #19152-3	38285	12367	425
Sample #19152-4	37809	12219	418

Table 6: homogeneity test results of subsamples #19152

From the above test results, the repeatabilities were calculated and compared with the repeatabilities of the reference test method in agreement with the procedure of ISO13528, Annex B2 in the next table.

	≥ 4 µm (c) counts/ml	≥ 6 µm (c) counts/ml	≥ 14 µm (c) counts/ml
r (observed)	1892	695	25
reference test method	IP565:13	IP565:13	IP565:13
r (ref. test method)	3190	2007	161

Table 7: evaluation of repeatabilities of subsamples #19152

The calculated repeatabilities for the particle sizes ≥ 4 µm (c), ≥ 6 µm (c) and ≥ 14 µm (c) were in agreement with the target repeatability of the reference test method. Therefore, homogeneity of the subsamples of #19152 was assumed.

2.4.4 Fatty Acid Methyl Ester (FAME) determination

It was decided to prepare two different samples for FAME determination in Jet Fuel with low and high level of FAME. A Jet Fuel batch of 10 litres was spiked with 0.40 gram Biodiesel B100 and homogenised. From this batch 100 amber glass bottles of 0.1 liter were filled and labelled #19153. Another Jet Fuel batch of 10 litres was spiked with 0.14 gram Biodiesel B100 and homogenized. From this batch 100 amber glas bottles of 0.1 liter were filled and labelled #19154.

The homogeneity of the subsamples #19153 and #19154 was checked by the determination of FAME in accordance with method IP585 on 8 stratified randomly selected samples.

	FAME in mg/kg #19153	FAME in mg/kg #19154
Sample-1	50.9	24.5
Sample-2	53.0	22.8
Sample-3	48.0	22.7
Sample-4	53.2	25.1
Sample-5	48.7	23.6
Sample-6	50.0	22.5
Sample-7	53.8	22.5
Sample-8	53.0	24.3

Table 8: homogeneity test results of subsamples #19153 and #19154

From the above test results, the repeatabilities were 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.

	FAME in mg/kg #19153	FAME in mg/kg #19154
r (observed)	6.3	2.9
reference test method	IP585:10	IP585:10
r (ref. test method)	8.9	4.3

Table 9: evaluation of repeatabilities of subsamples #19153 and #19154

The calculated repeatabilities were in agreement with the corresponding repeatability of the target method. Therefore, homogeneity of the subsamples of #19153 and #19154 was assumed.

2.4.5 JFTOT determination

A batch of 100 liter of bulk Jet Fuel A1 material was homogenized and 118 amber glass bottles of 1 liter were filled with approximately 0.7 liter Jet Fuel and labelled #19155. The homogeneity of the subsamples #19155 was checked by the determination of Density in accordance with ASTM D4052 on 8 stratified randomly selected samples.

	Density at 15°C in kg/m³
Sample #19155-1	793.90
Sample #19155-2	793.89
Sample #19155-3	793.90
Sample #19155-4	793.90
Sample #19155-5	793.90
Sample #19155-6	793.90
Sample #19155-7	793.90
Sample #19155-8	793.90

Table 10: homogeneity test results of subsamples #19155

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 (ref. test method)	0.15

Table 11: evaluation of repeatability of subsamples #19155

The calculated repeatability was in agreement with 0.3 times the corresponding reproducibility of the target method. Therefore, homogeneity of the subsamples #19155 was assumed.

2.4.6 PARTICULATE CONTAMINATION DETERMINATION

For the preparation of the Particulate Contamination sample a batch of Jet Fuel A1 was used that was obtained from a participating laboratory. Approximately 200 liters was homogenized and 190 amber glass bottles of 1 liter were filled and labelled #19156. The homogeneity of the subsamples #19156 was checked by the determination of Density in accordance with ASTM D4052 on 8 stratified randomly selected samples.

	Density at 15°C in kg/m³
Sample #19156-1	795.79
Sample #19156-2	795.78
Sample #19156-3	795.78
Sample #19156-4	795.77
Sample #19156-5	795.77
Sample #19156-6	795.76
Sample #19156-7	795.76
Sample #19156-8	795.76

Table 12: homogeneity test results of subsamples #19156

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

	Density at 15°C in kg/m^3
r (observed)	0.03
reference test method	D4052:18a
0.3 x R (ref. test method)	0.15

Table 13: evaluation of repeatability of subsamples #19156

The calculated repeatability was in agreement with 0.3 times the corresponding reproducibility of the target method. Therefore, homogeneity of the subsamples #19156 was assumed.

Depending on the registration of the participant the appropriate set of PT samples was dispatched on August 14, 2019. 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 D4306:15. The material has been found sufficiently stable for the period of the proficiency test.

2.6   ANALYSES

The participants were requested to determine on sample #19150: Visual Appearance, Total Acidity, Total Aromatics by FIA, Mono-Aromatics, Di-Aromatics and Total Aromatics by HPLC, Color Saybolt (automated and manual), Copper Corrosion 2 hrs at 100°C, Density at 15°C, Distillation (IBP, temperature at 10%, 50%, 90% recovered and FBP), Existent Gum (unwashed), Flash Point, Freezing Point, Kinematic Viscosity at -20°C, Mercaptan Sulfur, MSEP, Naphthalenes, Smoke Point, Specific Energy (Net, on Sulfur free basis) and Total Sulfur. The participants were requested to determine on sample #19151 BOCLE only, on sample #19152 Particle Size Distribution only, on samples #19153 and #19154 FAME only, on #19155 Copper and JFTOT only and on #19156 Particulate Contamination only.
The analyses should be performed according to the latest version of "Aviation Fuel Quality Requirements for Jointly Operated Systems (AFQRJOS)", also referred to as the "Joint Fuelling System Check List" or simply "Check List".

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 appropriate reference test

methods 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 original test results are placed under 'Remarks' in the test 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.

According to ISO5725 the original test results per determination were submitted to Dixon's, Grubbs' and/or Rosner's outlier tests. 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 visualise the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis, the reported 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 was projected over the Kernel Density Graph for reference.

3.3 Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements, e.g. ASTM reproducibilities, the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the variation of 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. In some cases, a reproducibility based on former iis proficiency tests could be used.

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.
The usual interpretation of z-scores is as follows:

$$| z | < 1 \quad \text{good}$$
$$1 < | z | < 2 \quad \text{satisfactory}$$
$$2 < | z | < 3 \quad \text{questionable}$$
$$3 < | z | \qquad \text{unsatisfactory}$$

4   EVALUATION

In this interlaboratory study some problems were encountered with the dispatch of the samples to Africa and China.

For the main round Jet Fuel A1, twelve participants did not report any test results, for the BOCLE round, nine participants did not report any test results , for the Particle Size Distribution round, thirteen participants did not report any test results, for the FAME round, thirteen participants did not report any test, for the JFTOT round, thirteen participants did not report any test results and for the Particulate Contamination round, three participants did not report any test results. In all rounds, no participants reported the test results after the final reporting date.

Finally, in total 3043 numerical test results were reported. Observed were 78 outlying test results, which is 2.6% of the reported numerical test results. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

Not all original 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 where possible and applicable. These test methods are also in the tables together with the reported test results. The abbreviations, used in these tables, are listed in appendix 5.

In the iis PT reports, ASTM test methods are referred to with a number and if appropriate an indication of sub test method (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 10, dated: November 2018" and ASTM D1655:19. One must keep in mind that ISO test methods are not mentioned in the "Checklist".

<u>Sample #19150</u>

<u>Visual Appearance</u>: Almost all participants agreed that the Visual Appearance of the sample was Clear and Bright. One participant presumably reported a Color Saybolt result.

<u>Total Acidity</u>: This determination was problematic. Five statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D3242:11(2017).
A possible cause for the observed high reproducibility may be the nitrogen purge. Strict adherence to the test method in this respect is key.

<u>Aromatics by FIA, Total</u>: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with ASTM D1319:19.
The participants were also requested to report the lotnumber of the used Dyed Gel (see appendix 2). Of the sixty-two reporting participants thirty-three reported to have used a lotnumber of Dyed Gel that is still allowed. Seven participants reported other numbers (like a CAS number). No participants reported a lotnumber that is not allowed to be used for this test according to the specification (see also the discussion in paragraph 5).

<u>Mono-Aromatics by HPLC</u>: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ASTM D6379:11(2019).

<u>Di-Aromatics by HPLC</u>: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D65379:11(2019).

<u>Aromatics by HPLC, Total</u>: The determination in %M/M was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in good agreement with ASTM D6379:11(2019).
The determination in %V/V may be problematic. One statistical outlier was observed. Regretfully, no precision data for the determination in %V/V is mentioned in ASTM D6379:11(2019). The calculated reproducibility was higher than the calculated reproducibility in %V/V of the previous proficiency tests iis18J02 and iis19J01.

<u>Color Saybolt</u>: The determination was problematic for the automatic test method. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D6045:12(2017).
The determination for the manual test method was also problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of ASTM D156:15.

Please note: Equipment should be checked on a regular basis for performance characteristics. Especially the light source, although this is usually considered as having a long life it can deteriorate rapidly.

Copper corrosion: This determination was not problematic. One-hundred and thirteen participants reported a test result and agreed on a result of 1 (1a/1b).

Density: This determination was not problematic. Four statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of ASTM D4052:18a.

Distillation: This determination was not problematic. No statistical outliers were observed over five parameters. The calculated reproducibilities are all in agreement with the requirements of the automated mode of ASTM D86:18.

Existent Gum: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with ASTM D381:12(2017).

Flash Point: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of IP170:14.

Freezing Point: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D2386:19.

Kin. Viscosity at -20°C: This determination may be problematic for a number of laboratories. Ten statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D445:19.
A source of the deviating high test results might be condensation of water in the viscosity tube prior or during measurement, especially under humid conditions.

Mercaptan Sulfur: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in 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 D3948:14(2018).

Naphthalenes: This determination was not problematic. Five statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D1840:07(2017) procedure B and procedure A.

Smoke Point: This determination was problematic depending on the test method used. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D1322:18 Manual mode, but not with the requirements of ASTM D1322:18 Automated mode.
When the test results from the reported manual and automated modes are evaluated separately, only the calculated reproducibility of the manual method is in agreement with the respective requirements of ASTM D1322:18.

Specific Energy: 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 D3338:09e2(2014). No calculation errors were observed.

Sulfur, Total: This determination was not problematic. Four statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D5453:19a.

Sample #19151

BOCLE: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of the ASTM D5001:10(2014) semi-automatic and full-automatic. When the test results from the reported semi-automatic and full-automatic methods were evaluated separately, the calculated reproducibilities of both the semi-automatic and the full-automatic modes are again not in agreement with the requirements of ASTM D5001:10(2014).

Sample #19156

Particulate Contamination: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of the ASTM D5452:12

Sample #19152:

Particle Size Distribution Determination:

The Joint Fuelling System Check List for Jet-A1 lists test methods IP564, IP565 and IP577 as the reference test methods to determine the Particle Size Distribution in Jet Fuel A1. Over the last years, iis has observed and concluded that these methods are biased and not as interchangeable as it appears from the checklist. Although no equipment suppliers are mentioned in the test methods, the make of the equipment defines the test method. Therefore, the automatic particle counter (APC) in test method IP564 is Parker Hannifin, in test method IP565 it is Stanhope-Seta and in test method IP IP577 it is Pamas.

The participants were requested to specify the brand of the particle counter, the actual test method performed and the test method used for determining ISO code scaling. Almost all participants mentioned the equipment used, twelve participants used IP564, thirty-one used IP565 and one participant used IP577. All reporting laboratories (some after a correction) have used the method that corresponds with the equipment used. All laboratories used ISO4406 for calculating the scale numbers from the counts per ml. All participants calculated the ISO code from the test results in counts/ml correctly.

In this PT it was again found that the test results of IP564 were significantly lower than those of IP565. Therefore, it was again decided to evaluate both methods separately. The results of the participants performing IP577 were evaluated in the group of IP565 but excluded in the statistical evaluation.

At the end of September, after the deadline of this PT, the Energy Institute announced that it has suspended test method IP564. See also https://publishing.energyinst.org/ip-test-methods/full-list-of-ip-test-methods-publications/ip-564-determination-of-the-level-of-cleanliness-of-aviation-turbine-fuel-laboratory-automatic-particle-counter-method. For this report, IP564 was evaluated, but in the future this method might not be accepted for testing particle size in Jet Fuel.

Nine laboratories had two or more outliers for the six different particle sizes in counts/ml or ISO scale numbers. The other test results in counts/ml or ISO scale numbers for these laboratories were excluded.

IP564:   The determination according to IP564 was problematic. In total eight statistical outliers were observed for the six particle size categories and eleven other test results were excluded. The calculated reproducibilities after rejection of the suspect data are not in agreement with the requirements of IP564:13.
The determination expressed in ISO scale numbers may not be problematic. Five statistical outliers were observed and one other test result was excluded. The calculated reproducibilities for ≥6 μm (c) and for ≥14 μm (c) are in agreement with the indicative requirements of IP564:13 Annex C.

IP565:   The determination according to IP565 was problematic. In total sixteen statistical outliers were observed for the six particle size categories and twenty-eight other test results were excluded. The calculated reproducibilities after rejection of the suspect data are not agreement with the requirements of IP565:13.
The determination expressed in ISO scale numbers may not be problematic. No statistical outliers were observed and five test results were excluded. The calculated reproducibilities for ≥4 μm (c) and ≥6 μm (c) are in agreement with the indicative requirements of IP565:13 Annex C.

Samples #19153 and #19154

FAME (#19153): This determination was problematic. Three statistical outlier were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of IP585:10, IP583:15 or IP590:10.
When the test results were evaluated separately for IP583, IP585 and IP590, the calculated reproducibilities are still not in agreement with the requirements of the respective test methods.

FAME (#19154): This determination was problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of IP585:10, IP583:15 or IP590:10.
When the test results were evaluated separately for IP583, IP585 and IP590, the calculated reproducibilities are still not in agreement with the requirements of the respective test methods.

Sample #19155

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

JFTOT: Using the criteria from AFQRJOS on all test results (including the laboratories that did not report a pass or fail), almost all the reporting laboratories would rate the sample as a pass, while 3 reporting laboratories would rate it as a fail.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

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

Parameter	unit	n	average	2.8 * sd	R (lit)
Visual Appearance		93	Clear&Bright	n.a.	n.a.
Total Acidity	mg KOH/g	86	0.0018	0.0025	0.0017
Aromatics by FIA	%V/V	62	16.9	2.1	2.8
Mono-Aromatics by HPLC	%M/M	34	18.9	1.8	1.9
Di-Aromatics by HPLC	%M/M	37	1.0	0.5	0.5
Total Aromatics by HPLC	%M/M	40	20.0	2.0	2.0
Total Aromatics by HPLC	%V/V	43	17.7	1.6	n.a.
Color Saybolt (automated)		63	17.7	2.4	1.2
Color Saybolt (manual)		71	17.4	2.6	2
Copper Corrosion 2hrs at 100°C		113	1	n.a.	n.a.
Density at 15°C	kg/m^3	132	792.8	0.2	0.5
Initial Boiling Point	°C	135	149.1	5.4	8.2
Temp at 10% recovered	°C	135	167.5	2.6	3.7

Parameter	unit	n	average	2.8 * sd	R (lit)
Temp at 50% recovered	°C	135	193.8	2.3	3.0
Temp at 90% recovered	°C	135	238.5	3.7	3.6
Final Boiling Point	°C	135	266.1	5.0	7.1
Existent Gum (unwashed)	mg/100mL	88	0.79	1.04	3.16
Flash Point	°C	130	41.5	2.9	3.2
Freezing Point	°C	121	-54.0	1.9	2.5
Kinematic Viscosity at -20°C	mm^2/s	85	3.631	0.060	0.069
Mercaptan Sulfur as S	%M/M	87	0.0005	0.0003	0.0003
MSEP	rating	104	91.5	11.6	10.8
Naphthalenes	%V/V	80	0.65	0.05	0.07
Smoke Point	mm	103	24.7	2.5	3.8
Specific Energy (Net)	MJ/kg	74	43.336	0.066	0.046
Sulfur, Total	mg/kg	107	901	90	95
BOCLE (#19151)	mm	21	0.72	0.10	0.07
Particulate Matter (#19156)	mg/L	32	1.11	0.47	0.77

Table 14: reproducibilities of tests on samples #19150, #19151 and #1956

Parameter - IP564	unit	n	average	2.8 * sd	R (lit)
Particle Size ≥4 µm (c)	counts/ml	9	23594	10646	4397
Particle Size ≥6 µm (c)	counts/ml	9	8497	5353	2531
Particle Size ≥14 µm (c)	counts/ml	9	158	179	82
Particle Size ≥21 µm (c)	counts/ml	8	17.8	34.5	22.6
Particle Size ≥25 µm (c)	counts/ml	7	4.9	9.0	6.6
Particle Size ≥30 µm (c)	counts/ml	8	1.7	5.2	2.9
Particle Size ≥4 µm (c)	ISO scale	10	21.8	1.2	1.0
Particle Size ≥6 µm (c)	ISO scale	10	20.3	1.4	1.4
Particle Size ≥14 µm (c)	ISO scale	10	14.7	2.3	2.2

Table 15: reproducibilities of tests on sample #19152 according to IP564

Parameter - IP565	unit	n	average	2.8 * sd	R (lit)
Particle Size ≥4 µm (c)	counts/ml	34	36800	7734	3864
Particle Size ≥6 µm (c)	counts/ml	36	12284	4814	2548
Particle Size ≥14 µm (c)	counts/ml	36	409	403	205
Particle Size ≥21 µm (c)	counts/ml	36	54.5	94.8	43.3
Particle Size ≥25 µm (c)	counts/ml	36	17.4	34.7	17.6
Particle Size ≥30 µm (c)	counts/ml	36	5.1	11.5	7.1
Particle Size ≥4 µm (c)	ISO scale	30	22.1	0.9	1.0
Particle Size ≥6 µm (c)	ISO scale	31	20.9	0.7	1.0
Particle Size ≥14 µm (c)	ISO scale	33	15.9	1.6	1.4

Table 16: reproducibilities of tests on sample #19152 according to IP565

Parameter	unit	n	average	2.8 * sd	R (lit)
FAME (#19153)	mg/kg	57	56.7	20.6	15.4
FAME (#19154)	mg/kg	56	25.8	11.6	7.4

Table 17: reproducibilities of tests on sample #19153 and #19154

Parameter	unit	n	average	2.8 * sd	R (lit)
Copper as Cu	μg/kg	2	<10	n.a.	n.a.
VTR (visual)		73	0 – >4	n.a.	n.a.
ITR (interferometric)	nm	12	3 – 60	n.a.	n.a.
ETR (elliptometric)	nm	5	13 – 179	n.a.	n.a.
Delta P	mmHg	81	0 – 39	n.a.	n.a.
JFTOT Evaluation (Pass/Fail)		74	Pass	n.a.	n.a.

Table 18: reproducibilities of tests on sample #19155

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

4.3 COMPARISON OF THE PROFICIENCY TEST OF SEPTEMBER 2019 WITH PREVIOUS PTS

	September 2019	March 2019	September 2018	March 2018	September 2017
Number of reporting labs	154	93	152	99	144
Number of test results reported	3043	1789	2678	1671	2706
Number of statistical outliers	78	53	57	46	83
Percentage outliers	2.6%	3.0%	2.1%	2.8%	3.1%

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 against the requirements of the respective reference test methods. The conclusions are given the following table.

Parameter	September 2019	March 2019	September 2018	March 2018	September 2017
Total Acidity	-	-	-	-	-
Aromatics by FIA	+	+	+	+	+
Aromatics by HPLC	+/-	+	+	+	+/-
Color Saybolt (automated)	-	--	--	--	--
Color Saybolt (manual)	-	-	--	--	-
Density at 15°C	++	+	+	+	+
Distillation	+	+	+	+	+
Existent Gum	++	++	++	++	++
Flash Point	+	+/-	+/-	+/-	+

Parameter	September 2019	March 2019	September 2018	March 2018	September 2017
Freezing Point	+	+	+/-	+/-	+
Kinematic Viscosity at -20°C	+	+/-	+/-	-	+/-
Mercaptan Sulfur	+	+	+	-	+
MSEP	+/-	-	+	+	+
Naphthalenes	+	+	+/-	+/-	-
Smoke Point	+	++	++	+	+
Specific Energy (Net)	-	-	+	+	+/-
Sulfur, Total	+/-	+/-	-	+	-
BOCLE	-	n.e.	+/-	n.e.	-
Particulate Contamination	+	n.e.	n.e.	n.e.	n.e.
- IP 564 Cumulative counts/ml	--	-	--	--	-
- IP 564 ISO scale numbers	+/-	+/-	-	+	+/-
- IP565 Cumulative counts/ml	--	-	--	--	-
- IP565 ISO scale numbers	+/-	+/-	+/-	-	+/-
FAME	-	n.e.	-	n.e.	+/-
JFTOT finding correct Pass/Fail	+	n.e.	+	n.e.	-

Table 20: comparison determinations against the requirements of the reference test methods

The performance of the determinations against the requirements of the respective reference test methods is listed in the above table. 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

## 5	DISCUSSION

At November 30, 2018 a new JIG Bulletin No.117 / issue 30 November 2018 was published. One of the topics of this bulletin concerns the determination of Hydrocarbons by FIA according ASTM D1319 with a new batch of Fluorescent indicator dyed gel. ASTM D 1319 is a very widely used test that has been around for decades. It is simple, robust and relatively inexpensive. At the heart of the test is a dyed silica gel. The gel has only ever been manufactured by one company. For various technical HSE and commercial reasons the gel can no longer be manufactured using the same components. Several alternative formulations have been tried, but none yield the same results as the original formulation. In use, the revised gels give misleading results. This is also acknowlegded in the letter to "CEN/TC 19/WG21 – FIA Dye issue" of 22 November 2018. Fortunately, this issue was not visible in the aromatics determination by FIA in the 2019 proficiency test of Jet Fuel. However, it is advised that each participant evaluate this determination and check the dyed gel used.

APPENDIX 1

Determination of Visual Appearance on sample #19150;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	Visual	Pass		-----	1047	Visual	C&B		-----
62	Visual	C&B		-----	1049	Visual	C&B		-----
120	Visual	undyed		-----	1059	Visual	C&B		-----
140	Visual	C&B		-----	1062		-----		-----
150	Visual	C&B		-----	1064	Visual	C&B		-----
159	Visual	C&B		-----	1065		-----		-----
169		-----		-----	1079	Visual	CFSM		-----
171		-----		-----	1080		-----		-----
175	Visual	C&B		-----	1082		-----		-----
177		-----		-----	1097	Visual	C&B		-----
194	Visual	C&B		-----	1105	Visual	C&B		-----
221		-----		-----	1109	Visual	Pass		-----
224	Visual	C&B		-----	1121	Visual	C&B		-----
225	Visual	C&B		-----	1126		-----		-----
228	Visual	C&B		-----	1146	Visual	Clear		-----
230	Visual	Pass		-----	1150		-----		-----
237	Visual	C&B		-----	1191		-----		-----
238	Visual	C&B		-----	1203	Visual	C & T		-----
253	Visual	C&B		-----	1212	Visual	C&B		-----
254	Visual	C&B		-----	1237	Visual	C&B		-----
256	Visual	C&B		-----	1275	Visual	CBWSFW		-----
258	Visual	C&B		-----	1277		-----		-----
273		-----		-----	1279		-----		-----
311		-----		-----	1299	Visual	19		-----
317	INH-001	C&B		-----	1316		-----		-----
323	D4176	C&B		-----	1318	Visual	C&B		-----
333	Visual	CBFFSM		-----	1347		-----		-----
334		-----		-----	1348		-----		-----
335	Visual	C&B		-----	1357	Visual	C&B		-----
336	Visual	CBFFSM		-----	1372		-----		-----
353	Visual	C&B		-----	1373		-----		-----
369		-----		-----	1399		-----		-----
370	Visual	C&B		-----	1412		-----		-----
372	Visual	C&B		-----	1417		-----		-----
391	Visual	C&B		-----	1496	Visual	CBFFSM		-----
399	Visual	C&B		-----	1528	D4176	C&B		-----
440	Visual	C&B		-----	1538	Visual	C&B		-----
445	Visual	C&B		-----	1575	Visual	C&B		-----
447	Visual	C&B		-----	1586	Visual	C&B		-----
448	Visual	C&B		-----	1587		-----		-----
453		-----		-----	1610	Visual	C&B		-----
463	Visual	Pass		-----	1613	Visual	C&B		-----
468	Visual	Pass		-----	1616	Visual	C&B		-----
485		-----		-----	1631		-----		-----
496	Visual	C&B		-----	1634	Visual	C&B		-----
603		-----		-----	1650		-----		-----
608	Visual	CBFFSM		-----	1715		-----		-----
631	Visual	C&B		-----	1720		-----		-----
633	Visual	CBFFSM		-----	1724	Visual	C&B		-----
657	Visual	BTC		-----	1730		-----		-----
704	Visual	CBWSFW		-----	1755	Visual	clear		-----
732		-----		-----	1776		-----		-----
798		-----		-----	1810		-----		-----
823	Visual	C&B		-----	1811		-----		-----
824	Visual	C&B		-----	1833	Visual	C&B		-----
851	D4176	C&B		-----	1852		-----		-----
854		-----		-----	1883	Visual	C&B		-----
862	Visual	C&B		-----	1913	Visual	CBFFSM		-----
869	Visual	C&B		-----	1961		-----		-----
873		-----		-----	2129	Visual	C&B		-----
904	Visual	C&B		-----	2130	Visual	C&B		-----
962	Visual	C&B		-----	6035		-----		-----
963	Visual	C&B		-----	6041		-----		-----
970	Visual	C&B		-----	6054		-----		-----
974	Visual	C&B		-----	6075		-----		-----
994	Visual	C&B		-----	6103	Visual	clear		-----
995	D4176	C&B		-----	6135		-----		-----
996		-----		-----	6142		-----		-----
997	D4176	C&B		-----	6147		-----		-----
998	Visual	C&B		-----	6201	Visual	pass		-----
1011		-----		-----	6203	Visual	CBFFSM		-----
1012		-----		-----	6238		-----		-----
1016		-----		-----	6240	Visual	C&B		-----
1039	Visual	C&B		-----	6241	Visual	clear		-----

lab	method	value	mark	z(targ)
6244		-----		-----
6262		-----		-----
6266		-----		-----
6274	Visual	C&B		-----
9014		-----		-----
9128		-----		-----
	n	93		

C&B   = Clear and Bright
C&T   = Clear and Transparant
CBFFSM   = Clear, Bright and free from solid matter
CBWSFW   = Clear, Bright, without solids and free water

Determination of Total Acidity on sample #19150; results in mg KOH/g

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3242	0.002		0.35	1047	D3242	0.0011		-1.12
62	D3242	0.002	C	0.35	1049	D3242	0.00388		3.41
120	D3242	0.0029		1.81	1059	D3242	0.001		-1.28
140	D3242	0.0034	C	2.63	1062	D3242	0.0010		-1.28
150		-----		-----	1064	D3242	0.0032	C	2.30
159	D3242	0.002		0.35	1065	D664-A	0.006	R(0.01)	6.87
169	D3242	0.001		-1.28	1079	D3242	0.00158		-0.34
171	D3242	0.001		-1.28	1080	D664-A	<0,01		-----
175		-----		-----	1082	D3242	0.00128		-0.83
177	D3242	0		-2.92	1097	D3242	0.0014		-0.63
194		-----		-----	1105	D3242	0.000528		-2.05
221		-----		-----	1109	D3242	0.00097		-1.33
224		-----		-----	1121		-----		-----
225	D3242	0.0017		-0.14	1126		-----		-----
228	D3242	0.003	C	1.98	1146		-----		-----
230	D3242	0.0027		1.49	1150		-----		-----
237	D3242	0.002		0.35	1191	D3242	0.0009		-1.45
238		-----		-----	1203	ISO6618	0.0049	R(0.05)	5.08
253	D3242	0.0019		0.18	1212	D3242	0.0020		0.35
254		-----		-----	1237		-----		-----
256		-----		-----	1275	IP354	0.0009		-1.45
258		-----		-----	1277	D664-A	0.02	R(0.01)	29.71
273	D3242	0.0010		-1.28	1279		-----		-----
311	D3242	0.0011		-1.12	1299	D3242	0.001		-1.28
317		-----		-----	1316	D3242	0.0009		-1.45
323	D3242	0.0013		-0.80	1318	D3242	0.0009		-1.45
333	D3242	0.001		-1.28	1347	D3242	0.00115		-1.04
334	D3242	0.001		-1.28	1348	D3242	0.0010		-1.28
335	D3242	0.002		0.35	1357	D3242	NA		-----
336		-----		-----	1372		-----		-----
353		-----		-----	1373		-----		-----
369		-----		-----	1399		-----		-----
370		-----		-----	1412		-----		-----
372	D3242	0.0012		-0.96	1417		-----		-----
391		-----		-----	1496	D3242	0.0022		0.67
399	D3242	0.0011	C	-1.12	1528	D3242	0.0036		2.96
440	D3242	0.003		1.98	1538		-----		-----
445	D3242	0.003		1.98	1575		-----		-----
447	D3242	0.002		0.35	1586	D3242	0.001	C	-1.28
448	D3242	0.003		1.98	1587		-----		-----
453	IP354	0.001		-1.28	1610		-----		-----
463	D664-A	0.0016		-0.31	1613	D3242	0.00178		-0.01
468		-----		-----	1616	D3242	0.0018		0.02
485		-----		-----	1631		-----		-----
496	D3242	0.00035		-2.35	1634	D3242	0.0011		-1.12
603		-----		-----	1650	D3242	0.0014		-0.63
608		-----		-----	1715		-----		-----
631		-----		-----	1720	D3242	0.0013		-0.80
633		-----		-----	1724	D3242	0.0013		-0.80
657	D3242	0.0015		-0.47	1730	D3242	0.010	R(0.01)	13.39
704	D3242	0.0018		0.02	1755		-----		-----
732		-----		-----	1776	D3242	0.00251		1.18
798		-----		-----	1810	D3242	0.0006		-1.94
823	D3242	0.002		0.35	1811	D3242	0.000995		-1.29
824		-----		-----	1833	D3242	0.003		1.98
851	D3242	0.00314		2.21	1852	D3242	0.0012		-0.96
854	D3242	0.0017		-0.14	1883		-----		-----
862	D3242	0.0013		-0.80	1913	D3242	0.0025		1.16
869	D3242	0.0019		0.18	1961		-----		-----
873		-----		-----	2129	D3242	0.00099		-1.30
904		-----		-----	2130	IP354	0.003		1.98
962	D3242	0.0015		-0.47	6035		-----		-----
963	D3242	0.0016		-0.31	6041	D3242	0.0021		0.51
970		-----		-----	6054		-----		-----
974	D3242	0.0018		0.02	6075	D3242	0.0048	R(0.05)	4.91
994	D3242	0.0022		0.67	6103	D3242	0.0014		-0.63
995	D3242	0.003		1.98	6135	D3242	0.0017		-0.14
996		-----		-----	6142		-----		-----
997	D3242	0.003		1.98	6147		-----		-----
998		-----		-----	6201	D3242	0.003		1.98
1011	D3242	0.001		-1.28	6203	D3242	0.0022		0.67
1012		-----		-----	6238		-----		-----
1016	D3242	0.0007		-1.77	6240	D3242	0.003		1.98
1039	D3242	0.004		3.61	6241		-----		-----

lab	method	value	mark	z(targ)	
6244		-----		-----	
6262		-----		-----	
6266		-----		-----	
6274	D3242	0.004		3.61	
9014		-----		-----	
9128		-----		-----	

normality	OK	
n	86	
outliers	5	
mean (n)	0.00179	
st.dev. (n)	0.000905	
R(calc.)	0.00253	
st.dev.(D3242:11)	0.000613	
R(D3242:11)	0.00172	

Lab 62: first reported 0.008
Lab 140: first reported 0.0078
Lab 228: first reported 0.005
Lab 399: first reported 0.0057

Lab 1064: first reported 0.0052
Lab 1586: first reported 0.01

Kernel Density
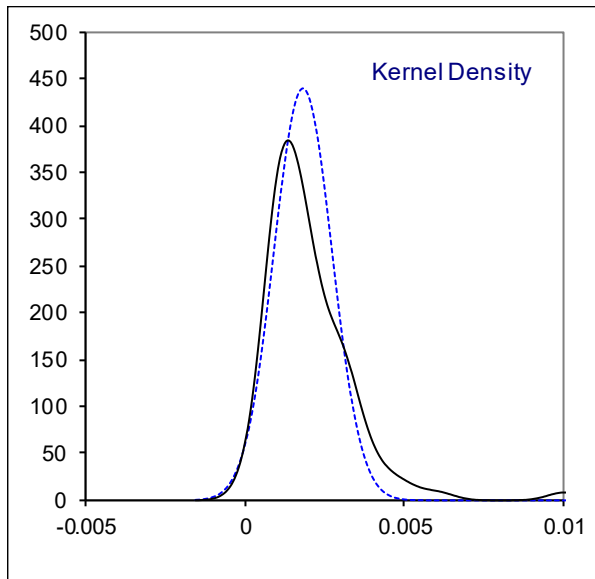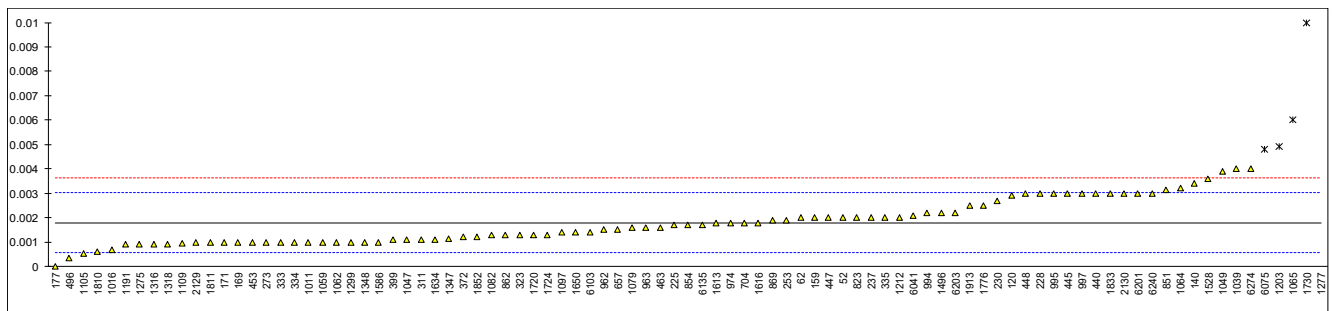
Determination of Total Aromatics by FIA on sample #19150; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D1319	17.4		0.53	1047	D1319	16.5		-0.37
62		-----		-----	1049		-----		-----
120		-----		-----	1059	D1319	15.7		-1.16
140		-----		-----	1062	D1319	17.2		0.33
150	D1319	16.0		-0.87	1064	D1319	17.12		0.25
159		-----		-----	1065		-----		-----
169	D1319	18.2		1.33	1079	D1319	17.0		0.13
171		-----		-----	1080		-----		-----
175	D1319	16.9		0.03	1082		-----		-----
177		-----		-----	1097	D1319	16.59		-0.28
194		-----		-----	1105	D1319	15.45		-1.41
221		-----		-----	1109	D1319	16.77		-0.10
224		-----		-----	1121		-----		-----
225	D1319	21.4	R(0.01)	4.51	1126		-----		-----
228		-----		-----	1146		-----		-----
230	D1319	16.93		0.06	1150		-----		-----
237	D1319	16.7		-0.17	1191		-----		-----
238		-----		-----	1203	EN15553	16.6		-0.27
253	D1319	17.20		0.33	1212	D1319	16.84		-0.03
254		-----		-----	1237	D1319	10.25	R(0.01)	-6.59
256		-----		-----	1275		-----		-----
258		-----		-----	1277		-----		-----
273	D1319	14.7		-2.16	1279		-----		-----
311		-----		-----	1299		-----		-----
317		-----		-----	1316		-----		-----
323	D1319	16.5		-0.37	1318		-----		-----
333		-----		-----	1347	D1319	18.70		1.82
334		-----		-----	1348	D1319	17.6		0.73
335	D1319	16.2		-0.67	1357	D1319	16.1		-0.77
336		-----		-----	1372		-----		-----
353		-----		-----	1373		-----		-----
369		-----		-----	1399		-----		-----
370	D1319	16.80		-0.07	1412		-----		-----
372	D1319	16.73		-0.14	1417		-----		-----
391	D1319	17.2		0.33	1496	D1319	17.1		0.23
399		-----		-----	1528	D1319	17.26		0.39
440	D1319	16.66		-0.21	1538		-----		-----
445	D1319	16.55		-0.32	1575		-----		-----
447	D1319	16.921		0.05	1586		-----		-----
448	D1319	16.8		-0.07	1587		-----		-----
453	IP156	17.05		0.18	1610	D1319	17.7		0.83
463	D1319	15.9		-0.97	1613	D1319	17.8525		0.98
468		-----		-----	1616	D1319	16.5		-0.37
485		-----		-----	1631		-----		-----
496	D1319	17.30		0.43	1634		-----		-----
603		-----		-----	1650	D1319	16.58		-0.29
608		-----		-----	1715		-----		-----
631	D1319	16.9		0.03	1720		-----		-----
633		-----		-----	1724	D1319	17.30		0.43
657	D1319	16.9		0.03	1730		-----		-----
704		-----		-----	1755		-----		-----
732		-----		-----	1776		-----		-----
798		-----		-----	1810		-----		-----
823	D1319	16.9		0.03	1811	D1319	16.29		-0.58
824	D1319	16.8		-0.07	1833		-----		-----
851		-----		-----	1852		-----		-----
854	D1319	15.58		-1.28	1883		-----		-----
862	D1319	17.4		0.53	1913	D1319	17.34		0.47
869	D1319	15.92		-0.95	1961		-----		-----
873		-----		-----	2129	D1319	18.2		1.33
904		-----		-----	2130	D1319	16.7		-0.17
962	D1319	16.5		-0.37	6035	EN15553	18.4		1.52
963		-----		-----	6041	D1319	16.575		-0.29
970		-----		-----	6054		-----		-----
974	D1319	17.1		0.23	6075	D1319	15.18		-1.68
994		-----		-----	6103	D1319	16.61		-0.26
995	D1319	18.3		1.42	6135	D1319	16.756		-0.11
996		-----		-----	6142		-----		-----
997		-----		-----	6147		-----		-----
998		-----		-----	6201	D1319	19.8	R(0.05)	2.92
1011	D1319	17.2		0.33	6203	D1319	18.2		1.33
1012		-----		-----	6238		-----		-----
1016		-----		-----	6240		-----		-----
1039		-----		-----	6241	D1319	17.04		0.17

lab	method	value	mark	z(targ)
6244		-----		-----
6262		-----		-----
6266		-----		-----
6274		-----		-----
9014		-----		-----
9128		-----		-----

normality	OK
n	62
outliers	3
mean (n)	16.869
st.dev. (n)	0.7577
R(calc.)	2.121
st.dev.(D1319:19)	1.0041
R(D1319:19)	2.812

Kernel Density
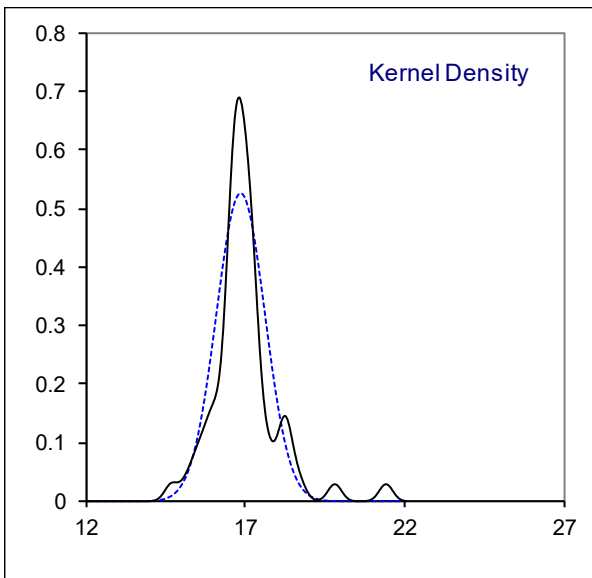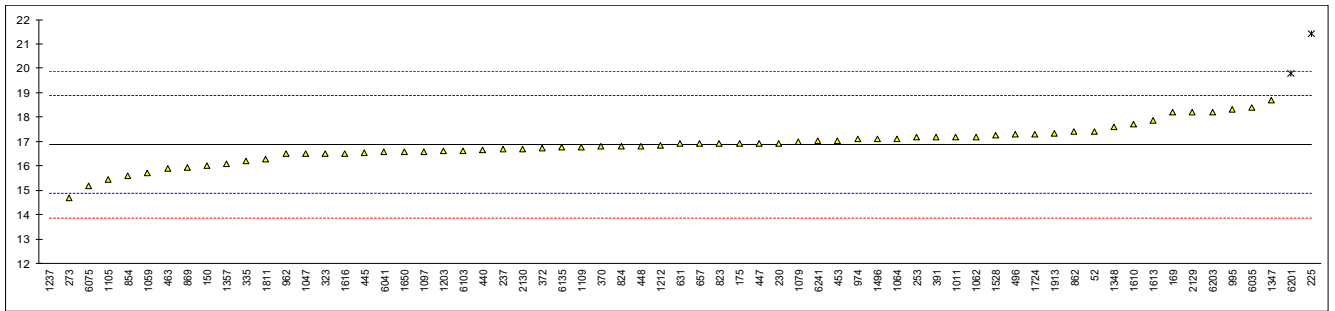
Determination of Mono-Aromatics by HPLC on sample #19150; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D6379	19.6		1.09	1047	EN12916	17.1		-2.69
62		-----		-----	1049	D6379	19.121		0.36
120		-----		-----	1059		-----		-----
140	D6379	18.5		-0.58	1062		-----		-----
150	D6379	19.39		0.77	1064	D6379	19.09		0.31
159		-----		-----	1065		-----		-----
169		-----		-----	1079		-----		-----
171	D6379	19.1		0.33	1080	D6379	19.1		0.33
175		-----		-----	1082		-----		-----
177	D6379	16.58	C,R(0.05)	-3.48	1097		-----		-----
194		-----		-----	1105	D6379	19.95		1.61
221		-----		-----	1109		-----		-----
224		-----		-----	1121		-----		-----
225		-----		-----	1126		-----		-----
228		-----		-----	1146		-----		-----
230		-----		-----	1150		-----		-----
237		-----		-----	1191		-----		-----
238		-----		-----	1203		-----		-----
253		-----		-----	1212	D6379	18.59		-0.44
254		-----		-----	1237		-----		-----
256		-----		-----	1275	IP436	18.5995		-0.43
258		-----		-----	1277	D6733	5.892	R(0.01)	-19.63
273		-----		-----	1279		-----		-----
311		-----		-----	1299		-----		-----
317		-----		-----	1316		-----		-----
323		-----		-----	1318	D6379	18.212		-1.01
333		-----		-----	1347		-----		-----
334	D6379	19.3		0.63	1348		-----		-----
335		-----		-----	1357	D6379	NA		-----
336		-----		-----	1372		-----		-----
353		-----		-----	1373		-----		-----
369	D6379	19.8		1.39	1399		-----		-----
370		-----		-----	1412		-----		-----
372	D6379	18.95		0.10	1417		-----		-----
391		-----		-----	1496		-----		-----
399	D6379	18.22		-1.00	1528	D6379	19.34		0.69
440		-----		-----	1538	D6379	18.6		-0.43
445		-----		-----	1575		-----		-----
447		-----		-----	1586		-----		-----
448		-----		-----	1587		-----		-----
453		-----		-----	1610		-----		-----
463	D6379	19.13		0.37	1613		-----		-----
468		-----		-----	1616	D6379	18.193		-1.04
485		-----		-----	1631		-----		-----
496	D6379	17.77		-1.68	1634	D6379	20.1	C	1.84
603		-----		-----	1650		-----		-----
608		-----		-----	1715		-----		-----
631		-----		-----	1720		-----		-----
633		-----		-----	1724		-----		-----
657	IP436	18.8		-0.12	1730		-----		-----
704	D6379	19.23		0.53	1755		-----		-----
732		-----		-----	1776		-----		-----
798		-----		-----	1810	D6379	18.7		-0.28
823	D6379	19.33		0.68	1811	D6379	19.44		0.84
824	D6379	19.1		0.33	1833		-----		-----
851	D6379	18.42		-0.70	1852	D6379	18.085		-1.20
854		-----		-----	1883		-----		-----
862		-----		-----	1913		-----		-----
869		-----		-----	1961		-----		-----
873		-----		-----	2129	IP391	19.50		0.93
904		-----		-----	2130		-----		-----
962		-----		-----	6035		-----		-----
963	D6379	18.476		-0.61	6041		-----		-----
970		-----		-----	6054		-----		-----
974		-----		-----	6075		-----		-----
994		-----		-----	6103		-----		-----
995		-----		-----	6135		-----		-----
996		-----		-----	6142		-----		-----
997		-----		-----	6147		-----		-----
998		-----		-----	6201	IP391	20.844	R(0.05)	2.97
1011		-----		-----	6203	D6379	18.55		-0.50
1012		-----		-----	6238		-----		-----
1016		-----		-----	6240	D6379	18.6		-0.43
1039		-----		-----	6241		-----		-----

lab	method	value	mark	z(targ)	
6244		-----		-----	
6262		-----		-----	
6266		-----		-----	
6274		-----		-----	
9014		-----		-----	
9128		-----		-----	
	normality	OK			
	n	34			
	outliers	3			
	mean (n)	18.882			
	st.dev. (n)	0.6362			
	R(calc.)	1.781			
	st.dev.(D6379:11)	0.6616			
	R(D6379:11)	1.853			

Lab 177: first reported 16.16
Lab 1634: first reported 15.9
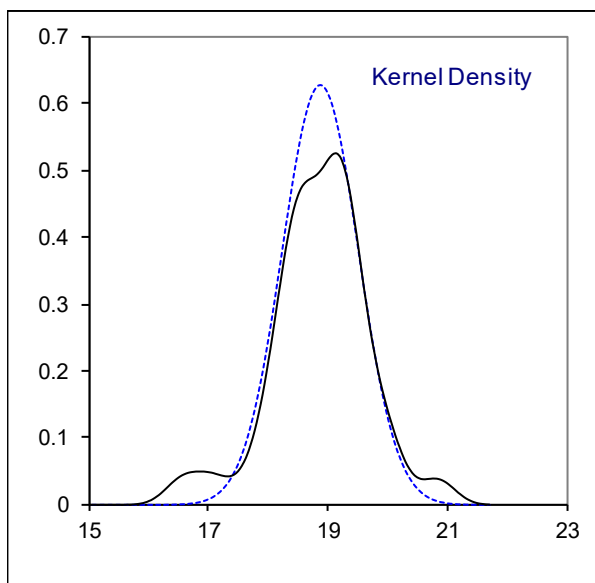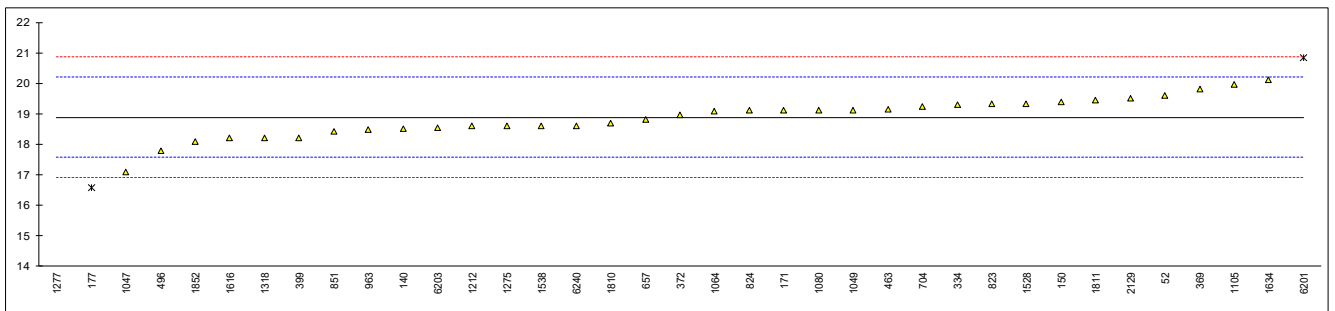
Determination of Di-Aromatics by HPLC on sample #19150; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D6379	1.0		-0.01	1047	EN12916	0.9		-0.56
62		-----		-----	1049	D6379	0.709		-1.59
120		-----		-----	1059		-----		-----
140	D6379	0.9		-0.56	1062		-----		-----
150	D6379	0.90		-0.56	1064	D6379	0.81		-1.05
159		-----		-----	1065		-----		-----
169		-----		-----	1079		-----		-----
171	D6379	1.1		0.53	1080	D6379	1.07		0.37
175		-----		-----	1082		-----		-----
177	D6379	0.80	C	-1.10	1097		-----		-----
194		-----		-----	1105	D6379	0.938		-0.35
221		-----		-----	1109		-----		-----
224		-----		-----	1121		-----		-----
225		-----		-----	1126		-----		-----
228		-----		-----	1146		-----		-----
230		-----		-----	1150		-----		-----
237		-----		-----	1191		-----		-----
238		-----		-----	1203		-----		-----
253		-----		-----	1212	D6379	1.00		-0.01
254		-----		-----	1237		-----		-----
256		-----		-----	1275	IP436	0.96		-0.23
258		-----		-----	1277	D6733	1.355		1.92
273		-----		-----	1279		-----		-----
311		-----		-----	1299		-----		-----
317		-----		-----	1316		-----		-----
323		-----		-----	1318	D6379	1.052		0.27
333		-----		-----	1347		-----		-----
334	D6379	1.3		1.62	1348		-----		-----
335		-----		-----	1357	D6379	NA		-----
336		-----		-----	1372		-----		-----
353		-----		-----	1373		-----		-----
369	D6379	1.2		1.08	1399		-----		-----
370		-----		-----	1412		-----		-----
372	D6379	0.92		-0.45	1417		-----		-----
391		-----		-----	1496		-----		-----
399	D6379	0.92		-0.45	1528	D6379	0.91		-0.50
440		-----		-----	1538	D6379	1.2		1.08
445		-----		-----	1575		-----		-----
447		-----		-----	1586		-----		-----
448		-----		-----	1587		-----		-----
453		-----		-----	1610		-----		-----
463	D6379	0.985		-0.09	1613		-----		-----
468		-----		-----	1616	D6379	0.629		-2.03
485		-----		-----	1631		-----		-----
496	D6379	1.02		0.10	1634	D6379	0.9	C	-0.56
603		-----		-----	1650		-----		-----
608		-----		-----	1715		-----		-----
631		-----		-----	1720		-----		-----
633		-----		-----	1724		-----		-----
657	IP436	1.1		0.53	1730		-----		-----
704	D6379	1.13		0.70	1755		-----		-----
732		-----		-----	1776		-----		-----
798		-----		-----	1810	D6379	1.1		0.53
823	D6379	0.93		-0.39	1811	D6379	0.993		-0.05
824	D6379	1.1		0.53	1833		-----		-----
851	D6379	0.93		-0.39	1852	D6379	0.980		-0.12
854		-----		-----	1883		-----		-----
862		-----		-----	1913		-----		-----
869		-----		-----	1961		-----		-----
873		-----		-----	2129	IP391	0.86		-0.77
904		-----		-----	2130		-----		-----
962		-----		-----	6035		-----		-----
963	D6379	0.796		-1.12	6041		-----		-----
970		-----		-----	6054		-----		-----
974		-----		-----	6075		-----		-----
994		-----		-----	6103		-----		-----
995		-----		-----	6135		-----		-----
996		-----		-----	6142		-----		-----
997		-----		-----	6147		-----		-----
998		-----		-----	6201	IP391	1.236		1.27
1011		-----		-----	6203	D6379	1.04		0.21
1012		-----		-----	6238		-----		-----
1016		-----		-----	6240	D6379	1.4		2.17
1039		-----		-----	6241		-----		-----

lab	method	value	mark	z(targ)	
6244		-----		-----	
6262		-----		-----	
6266		-----		-----	
6274		-----		-----	
9014		-----		-----	
9128		-----		-----	

normality	OK
n	37
outliers	0
mean (n)	1.0020
st.dev. (n)	0.16787
R(calc.)	0.4701
st.dev.(D6379:11)	0.18369
R(D6379:11)	0.5143

Lab 177: first reported 0.71
Lab 1634: first reported 0.7
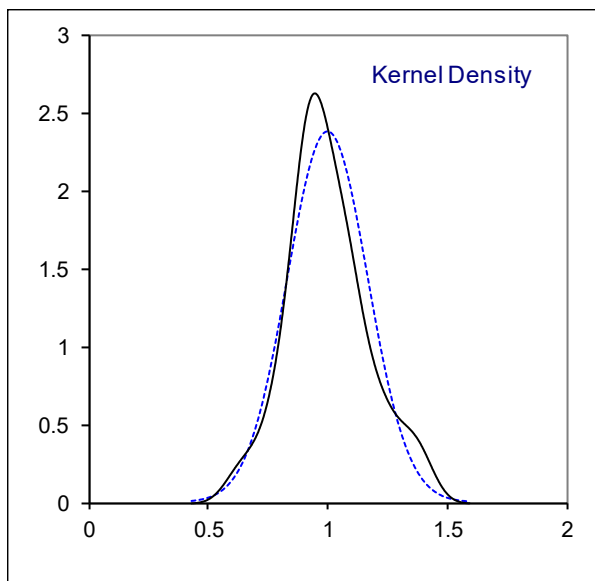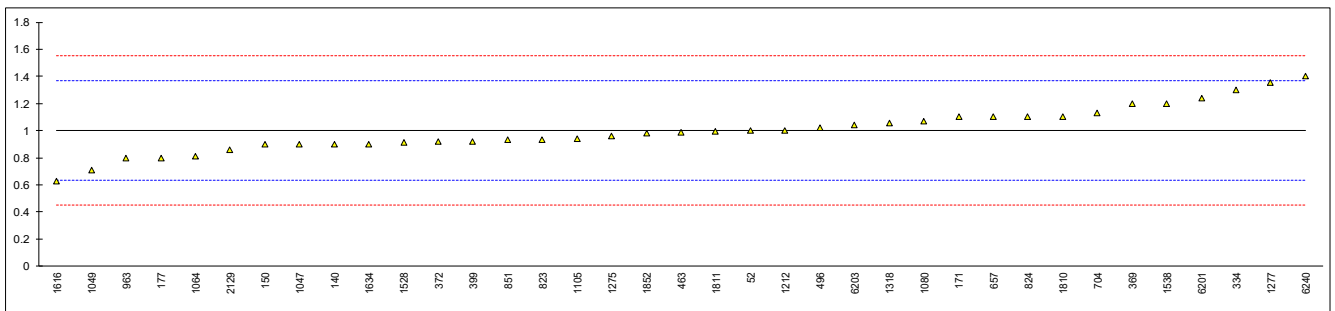
Kernel Density

Determination of Total Aromatics by HPLC on sample #19150; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D6379	20.6		0.88	1047	EN12916	19.0		-1.30
62		-----		-----	1049	D6379	19.830		-0.17
120		-----		-----	1059		-----		-----
140	D6379	19.4		-0.76	1062		-----		-----
150	D6379	20.3		0.47	1064	D6379	19.90		-0.07
159		-----		-----	1065	D6379	20.7		1.02
169		-----		-----	1079		-----		-----
171	D6379	20.2		0.34	1080	D6379	20.17		0.30
175		-----		-----	1082		-----		-----
177	D6379	17.38	C,R(0.05)	-3.52	1097		-----		-----
194		-----		-----	1105	D6379	20.889		1.28
221		-----		-----	1109		-----		-----
224		-----		-----	1121		-----		-----
225		-----		-----	1126		-----		-----
228		-----		-----	1146		-----		-----
230		-----		-----	1150		-----		-----
237		-----		-----	1191		-----		-----
238		-----		-----	1203		-----		-----
253		-----		-----	1212	D6379	19.60		-0.48
254		-----		-----	1237		-----		-----
256		-----		-----	1275	IP436	19.56		-0.54
258		-----		-----	1277		-----		-----
273		-----		-----	1279		-----		-----
311		-----		-----	1299	IP436	20.7		1.02
317		-----		-----	1316		-----		-----
323		-----		-----	1318	D6379	19.26		-0.95
333		-----		-----	1347		-----		-----
334	D6379	20.6		0.88	1348		-----		-----
335		-----		-----	1357	D6379	NA		-----
336		-----		-----	1372		-----		-----
353		-----		-----	1373		-----		-----
369	D6379	21.0		1.43	1399		-----		-----
370		-----		-----	1412		-----		-----
372	D6379	19.87		-0.11	1417		-----		-----
391		-----		-----	1496		-----		-----
399	D6379	19.14		-1.11	1528	D6379	20.25		0.40
440		-----		-----	1538	D6379	19.8		-0.21
445		-----		-----	1575		-----		-----
447		-----		-----	1586		-----		-----
448		-----		-----	1587		-----		-----
453		-----		-----	1610		-----		-----
463	D6379	20.11		0.21	1613		-----		-----
468		-----		-----	1616	D6379	18.822		-1.55
485		-----		-----	1631		-----		-----
496	D6379	18.79		-1.59	1634	D6379	21.0	C	1.43
603		-----		-----	1650		-----		-----
608		-----		-----	1715		-----		-----
631		-----		-----	1720		-----		-----
633		-----		-----	1724		-----		-----
657	IP436	19.9		-0.07	1730		-----		-----
704	D6379	20.36		0.56	1755		-----		-----
732		-----		-----	1776		-----		-----
798		-----		-----	1810	D6379	19.8		-0.21
823	D6379	20.26		0.42	1811	D6379	20.434		0.66
824	D6379	20.2		0.34	1833		-----		-----
851	D6379	19.35		-0.83	1852	D6379	19.065		-1.22
854		-----		-----	1883		-----		-----
862	D6379	20.0		0.06	1913		-----		-----
869		-----		-----	1961		-----		-----
873		-----		-----	2129	IP391	20.36		0.56
904		-----		-----	2130		-----		-----
962		-----		-----	6035		-----		-----
963	D6379	19.272		-0.93	6041		-----		-----
970		-----		-----	6054		-----		-----
974	D6379	19.5		-0.62	6075		-----		-----
994		-----		-----	6103		-----		-----
995		-----		-----	6135		-----		-----
996		-----		-----	6142		-----		-----
997		-----		-----	6147		-----		-----
998		-----		-----	6201	IP391	22.08		2.91
1011		-----		-----	6203	D6379	19.59		-0.50
1012		-----		-----	6238		-----		-----
1016		-----		-----	6240	D6379	20.0		0.06
1039	D6379	18.5		-1.99	6241		-----		-----

lab	method	value	mark	z(targ)	
6244		-----		-----	
6262		-----		-----	
6266		-----		-----	
6274		-----		-----	
9014		-----		-----	
9128		-----		-----	

normality	OK
n	40
outliers	1
mean (n)	19.954
st.dev. (n)	0.7164
R(calc.)	2.006
st.dev.(D6379:11)	0.7312
R(D6379:11)	2.047

Lab 177: first reported 16.87
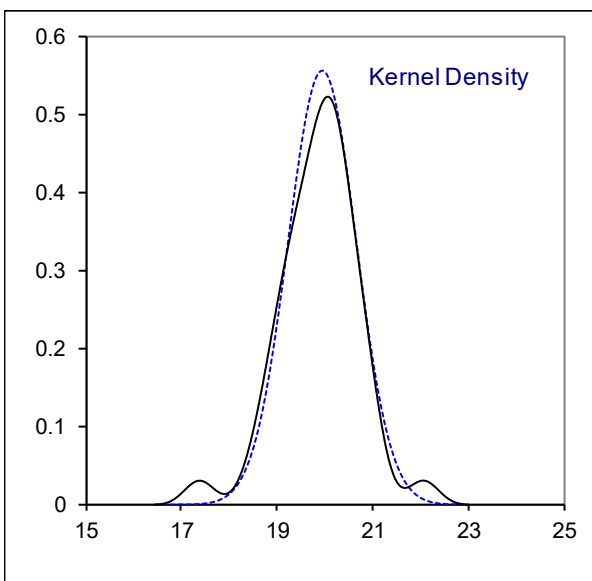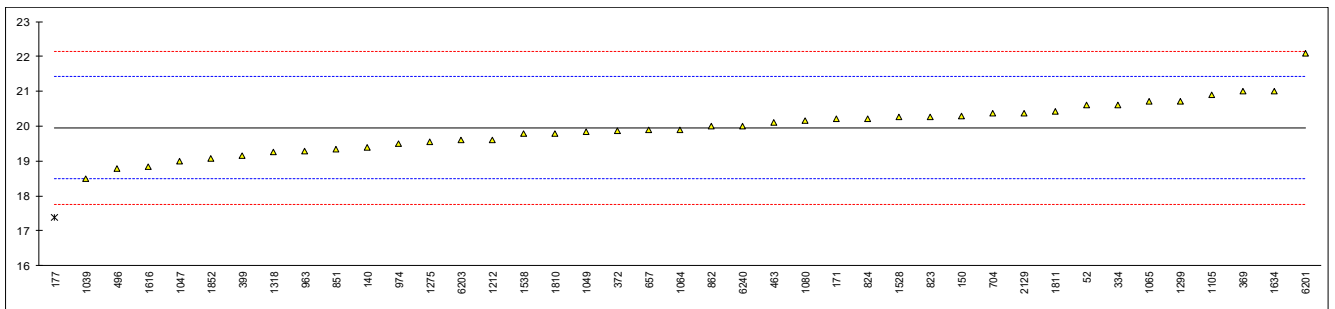Lab 1634: first reported 16.6

Kernel Density

Determination of Total Aromatics by HPLC on sample #19150; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D6379	18.5		-----	1047		-----		-----
62		-----		-----	1049	D6379	17.90774		-----
120		-----		-----	1059		-----		-----
140		-----		-----	1062		-----		-----
150	D6379	18.2		-----	1064	D6379	18.28		-----
159		-----		-----	1065		-----		-----
169		-----		-----	1079	D6379	17.66		-----
171		-----		-----	1080		-----		-----
175		-----		-----	1082	D6379	17.11		-----
177	D6379	16.9		-----	1097		-----		-----
194		-----		-----	1105	D6379	18.705		-----
221		-----		-----	1109	D6379	16.86		-----
224		-----		-----	1121		-----		-----
225		-----		-----	1126		-----		-----
228		-----		-----	1146		-----		-----
230		-----		-----	1150		-----		-----
237		-----		-----	1191	D6379	17.206	C	-----
238		-----		-----	1203		-----		-----
253		-----		-----	1212	D6379	17.60		-----
254		-----		-----	1237		-----		-----
256		-----		-----	1275	IP436	17.5		-----
258		-----		-----	1277	D6733	13.028	R(0.01), f-?	-----
273		-----		-----	1279		-----		-----
311	D6379	17.9		-----	1299	IP436	18.0		-----
317		-----		-----	1316	D6379	17.6		-----
323		-----		-----	1318	D6379	17.26		-----
333	D6379	18.0		-----	1347		-----		-----
334	D6379	18.3		-----	1348		-----		-----
335		-----		-----	1357	D6379	NA		-----
336		-----		-----	1372		-----		-----
353		-----		-----	1373		-----		-----
369	D6379	18.7		-----	1399		-----		-----
370		-----		-----	1412		-----		-----
372	D6379	17.68		-----	1417		-----		-----
391		-----		-----	1496		-----		-----
399	D6379	16.83		-----	1528	D6379	18.03		-----
440		-----		-----	1538	D6379	17.6		-----
445	IP436	18.07		-----	1575		-----		-----
447	IP436	18.01		-----	1586		-----		-----
448		-----		-----	1587		-----		-----
453		-----		-----	1610		-----		-----
463	D6379	17.91		-----	1613		-----		-----
468		-----		-----	1616	D6379	17.239		-----
485		-----		-----	1631		-----		-----
496	D6379	16.85		-----	1634	D6379	18.7		-----
603		-----		-----	1650		-----		-----
608		-----		-----	1715		-----		-----
631		-----		-----	1720	D6379	17.1		-----
633		-----		-----	1724	D6379	17.267		-----
657	IP436	17.9		-----	1730		-----		-----
704	D6379	18.23		-----	1755		-----		-----
732		-----		-----	1776	D6379	17.15156		-----
798		-----		-----	1810	D6379	18.3		-----
823		-----		-----	1811		-----		-----
824	D6379	17.9		-----	1833	D6379	16.6		-----
851	D6379	17.45		-----	1852	D6379	17.078	C	-----
854		-----		-----	1883		-----		-----
862		-----		-----	1913		-----		-----
869		-----		-----	1961		-----		-----
873		-----		-----	2129	IP391	18.18		-----
904		-----		-----	2130		-----		-----
962		-----		-----	6035		-----		-----
963		-----		-----	6041		-----		-----
970		-----		-----	6054		-----		-----
974		-----		-----	6075		-----		-----
994		-----		-----	6103		-----		-----
995		-----		-----	6135		-----		-----
996		-----		-----	6142		-----		-----
997		-----		-----	6147		-----		-----
998		-----		-----	6201		-----		-----
1011		-----		-----	6203	D6379	17.44		-----
1012		-----		-----	6238		-----		-----
1016	IP436	17.228		-----	6240		-----		-----
1039		-----		-----	6241		-----		-----

lab	method	value	mark	z(targ)
6244		-----		-----
6262		-----		-----
6266		-----		-----
6274	D6379	18.15		-----
9014		-----		-----
9128		-----		-----

	normality	OK
	n	43
	outliers	1
	mean (n)	17.700
	st.dev. (n)	0.5583
	R(calc.)	1.563
	st.dev.(lit)	unknown
	R(lit)	unknown
Compare		
	R(iis19J01)	1.382
	R(iis18J02)	0.968

Lab 1191: first reported 13.46
Lab 1852: first reported 21.861

Kernel Density
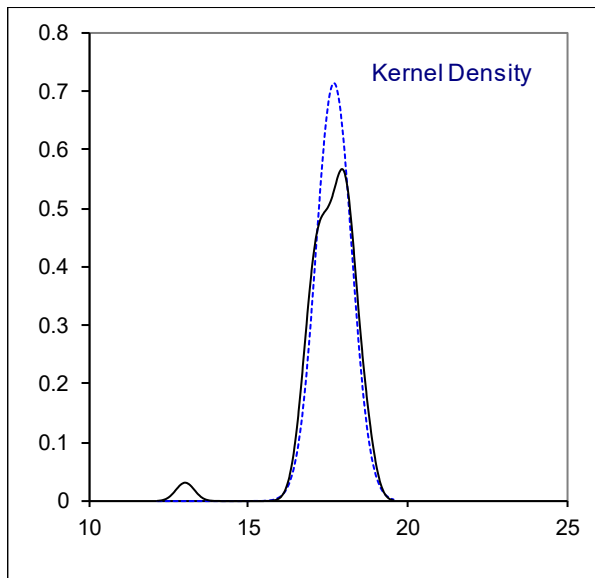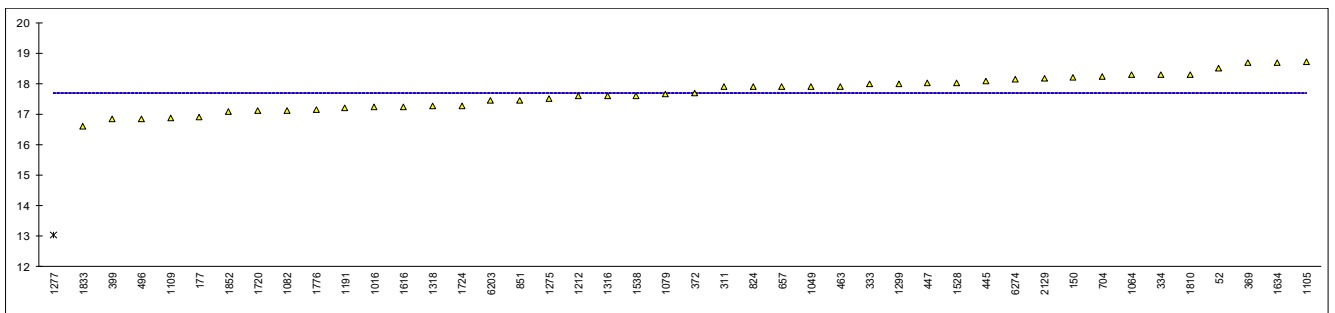
Determination of Color Saybolt (Automated) on sample #19150;

lab	method	cell (mm)	value	mark	z(targ)	lab	method	cell (mm)	value	mark	z(targ)
52	D6045	100	17		-1.60	1047		-----	-----		-----
62		-----	-----		-----	1049	D6045	50	18		0.66
120	D6045	-----	19		2.91	1059	D6045	50	17		-1.60
140		-----	-----		-----	1062	D6045	100	17		-1.60
150	D6045	-----	17	C	-1.60	1064	D6045	50	18		0.66
159	D6045	-----	18		0.66	1065		-----	-----		-----
169	D6045	-----	15		-6.12	1079	D6045	100	17		-1.60
171	D6045	-----	18		0.66	1080		-----	-----		-----
175		-----	-----		-----	1082	D6045	100	19		2.91
177		-----	-----		-----	1097		-----	-----		-----
194		-----	-----		-----	1105	D6045	50	18		0.66
221		-----	-----		-----	1109	D6045	100	19		2.91
224		-----	-----		-----	1121	D6045	100	17		-1.60
225	D6045	50	18		0.66	1126		-----	-----		-----
228		-----	-----		-----	1146		-----	-----		-----
230		-----	-----		-----	1150		-----	-----		-----
237	D6045	50	18.71		2.26	1191	D6045	100	18		0.66
238		-----	-----		-----	1203		-----	-----		-----
253		-----	-----		-----	1212		-----	-----		-----
254		-----	-----		-----	1237	D6045	50	17.0		-1.60
256		-----	-----		-----	1275		-----	-----		-----
258		-----	-----		-----	1277	D6045	100	22	R(0.01)	9.69
273		-----	-----		-----	1279		-----	-----		-----
311	D6045	-----	17		-1.60	1299	D6045	-----	19		2.91
317		-----	-----		-----	1316		-----	-----		-----
323	D6045	-----	16		-3.86	1318	D6045	100	18		0.66
333	D6045	100	18		0.66	1347		-----	-----		-----
334		-----	-----		-----	1348		-----	-----		-----
335	D6045	-----	18		0.66	1357	D6045	-----	NA		-----
336		-----	-----		-----	1372		-----	-----		-----
353	D6045	-----	18		0.66	1373		-----	-----		-----
369	D6045	50	17		-1.60	1399		-----	-----		-----
370	D6045	50	18		0.66	1412		-----	-----		-----
372	D6045	50	17		-1.60	1417	D6045	-----	17		-1.60
391		-----	-----		-----	1496	D6045	100	17		-1.60
399		-----	-----		-----	1528	D6045	50	17		-1.60
440	D6045	-----	18		0.66	1538		-----	-----		-----
445	D6045	50	18		0.66	1575		-----	-----		-----
447	D6045	100	19		2.91	1586	D6045	50	18		0.66
448		-----	-----		-----	1587	D6045	50	18		0.66
453	D6045	50	17		-1.60	1610	D6045	-----	17		-1.60
463		-----	-----		-----	1613		-----	-----		-----
468		-----	-----		-----	1616	D6045	50	18		0.66
485		-----	-----		-----	1631		-----	-----		-----
496	D6045	-----	18		0.66	1634		-----	-----		-----
603		-----	-----		-----	1650		-----	-----		-----
608		-----	-----		-----	1715	D6045	100	19		2.91
631	D6045	100	18		0.66	1720	D6045	50	19		2.91
633		-----	-----		-----	1724		-----	-----		-----
657	D6045	100	18		0.66	1730		-----	-----		-----
704		-----	-----		-----	1755		-----	-----		-----
732		-----	-----		-----	1776	D6045	-----	21.0	R(0.05)	7.43
798		-----	-----		-----	1810		-----	-----		-----
823	D6045	50	18		0.66	1811	D6045	-----	18		0.66
824	D6045	50	19		2.91	1833	D6045	-----	19		2.91
851		-----	-----		-----	1852	D6045	-----	16		-3.86
854		-----	-----		-----	1883		-----	-----		-----
862		-----	-----		-----	1913	D6045	50	16		-3.86
869		-----	-----		-----	1961		-----	-----		-----
873		-----	-----		-----	2129	D6045	50	17.0		-1.60
904	D6045	50	18		0.66	2130	D6045	50	18		0.66
962	D6045	50	18		0.66	6035	D6045	100	18		0.66
963	D6045	50	17		-1.60	6041		-----	-----		-----
970		-----	-----		-----	6054		-----	-----		-----
974	D6045	100	17		-1.60	6075		-----	-----		-----
994		-----	-----		-----	6103	D6045	100	18.0		0.66
995		-----	-----		-----	6135		-----	-----		-----
996		-----	-----		-----	6142		-----	-----		-----
997		-----	-----		-----	6147		-----	-----		-----
998		-----	-----		-----	6201	D6045	-----	17		-1.60
1011		-----	-----		-----	6203		-----	-----		-----
1012	D6045	-----	18		0.66	6238		-----	-----		-----
1016		-----	-----		-----	6240	D6045	100	18		0.66
1039		-----	-----		-----	6241		-----	-----		-----

lab	method	cell (mm)	value	mark	z(targ)			
6244		-----	-----		-----			
6262		-----	-----		-----			
6266		-----	-----		-----			
6274	D6045	-----	18		0.66			
9014		-----	-----		-----			
9128		-----	-----		-----			
							50 mm cel only:	100 mm cel only:
	normality		OK				OK	OK
	n		63				25	18
	outliers		2				0	1
	mean (n)		17.71				17.71	17.89
	st.dev. (n)		0.844				0.718	0.758
	R(calc.)		2.36				2.01	2.12
	st.dev.(D6045:12)		0.443				0.443	0.443
	R(D6045:12)		1.24				1.24	1.24

Lab 150: first reported 25

Kernel Density
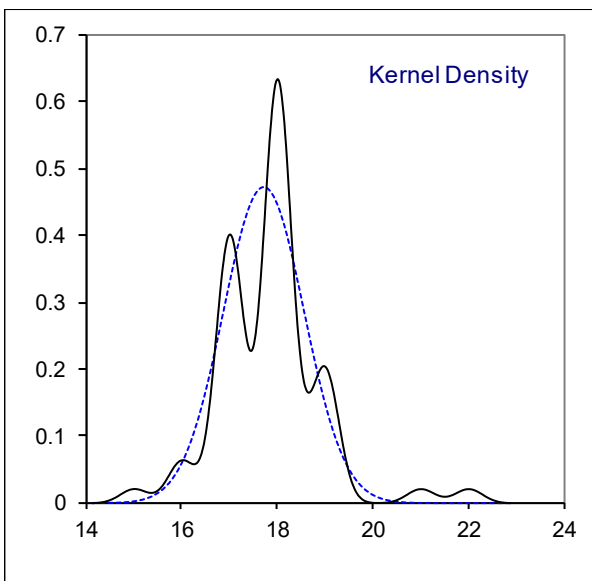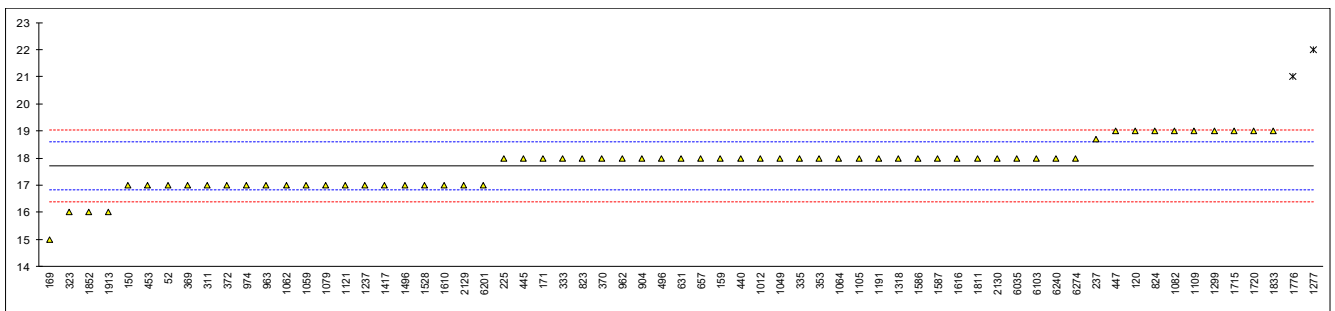
Determination of Color Saybolt (Manual) on sample #19150;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1047		-----		-----
62		-----		-----	1049		-----		-----
120		-----		-----	1059	D156	18		0.91
140	D156	17		-0.49	1062		-----		-----
150		-----		-----	1064		-----		-----
159		-----		-----	1065		-----		-----
169		-----		-----	1079		-----		-----
171	D156	18		0.91	1080		-----		-----
175		-----		-----	1082		-----		-----
177	D156	18		0.91	1097	NF M07-003	18		0.91
194		-----		-----	1105		-----		-----
221		-----		-----	1109	D156	18		0.91
224		-----		-----	1121	D156	18	C	0.91
225		-----		-----	1126		-----		-----
228	D156	17		-0.49	1146		-----		-----
230	D156	19		2.31	1150		-----		-----
237	D156	19		2.31	1191		-----		-----
238	D156	19		2.31	1203	D156	18		0.91
253	D156	18		0.91	1212		-----		-----
254	D156	17		-0.49	1237		-----		-----
256	D156	17		-0.49	1275	D156	16		-1.89
258	D156	18		0.91	1277		-----		-----
273	D156	18		0.91	1279		-----		-----
311		-----		-----	1299		-----		-----
317	D156	18		0.91	1316	D156	19		2.31
323		-----		-----	1318		-----		-----
333		-----		-----	1347	D156	18		0.91
334	D156	18		0.91	1348	D156	18		0.91
335		-----		-----	1357	D156	17.5		0.21
336	D156	18		0.91	1372		-----		-----
353		-----		-----	1373		-----		-----
369	D156	17		-0.49	1399		-----		-----
370		-----		-----	1412		-----		-----
372	D156	17		-0.49	1417		-----		-----
391	D156	18		0.91	1496	D156	16		-1.89
399	D156	16		-1.89	1528	D156	17		-0.49
440		-----		-----	1538		-----		-----
445		-----		-----	1575		-----		-----
447	D156	18		0.91	1586		-----		-----
448	D156	17		-0.49	1587		-----		-----
453		-----		-----	1610		-----		-----
463	D156	19.3		2.73	1613	D156	18		0.91
468	D156	16		-1.89	1616		-----		-----
485		-----		-----	1631		-----		-----
496		-----		-----	1634	D156	17		-0.49
603	D156	16		-1.89	1650	D156	18	C	0.91
608	D156	18		0.91	1715		-----		-----
631		-----		-----	1720		-----		-----
633	D156	18		0.91	1724	D156	16		-1.89
657	D156	18		0.91	1730	D156	17		-0.49
704	D156	16		-1.89	1755	D156	18		0.91
732		-----		-----	1776		-----		-----
798		-----		-----	1810		-----		-----
823	D156	17		-0.49	1811		-----		-----
824	D156	17		-0.49	1833	D156	17		-0.49
851	D156	18		0.91	1852		-----		-----
854	D156	17		-0.49	1883	D156	16		-1.89
862	D156	17		-0.49	1913	D156	17		-0.49
869	D156	17		-0.49	1961		-----		-----
873		-----		-----	2129	D156	18.0		0.91
904	D156	18		0.91	2130		-----		-----
962	D156	18		0.91	6035		-----		-----
963		-----		-----	6041	D156	16		-1.89
970	D156	18		0.91	6054		-----		-----
974	D156	17		-0.49	6075	D156	18		0.91
994	D156	16		-1.89	6103		-----		-----
995		-----		-----	6135	D156	16		-1.89
996		-----		-----	6142		-----		-----
997	D156	17		-0.49	6147		-----		-----
998	D156	17		-0.49	6201	D156	16		-1.89
1011	D156	16		-1.89	6203	D156	16		-1.89
1012		-----		-----	6238		-----		-----
1016		-----		-----	6240		-----		-----
1039	D156	18		0.91	6241	D156	15		-3.29

lab	method	value	mark	z(targ)	
6244		-----		-----	
6262		-----		-----	
6266		-----		-----	
6274		-----		-----	
9014		-----		-----	
9128		-----		-----	
	normality	OK			
	n	71			
	outliers	0			
	mean (n)	17.35			
	st.dev. (n)	0.933			
	R(calc.)	2.61			
	st.dev.(D156:15)	0.714			
	R(D156:15)	2			

Lab 1121: first reported 22
Lab 1650: first reported 23

Kernel Density
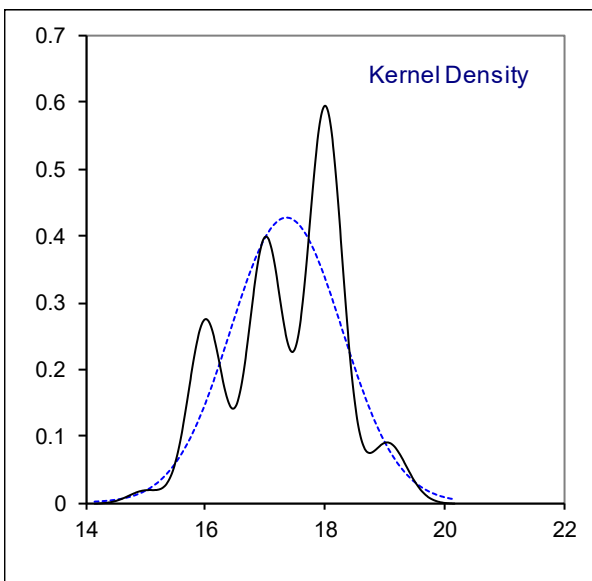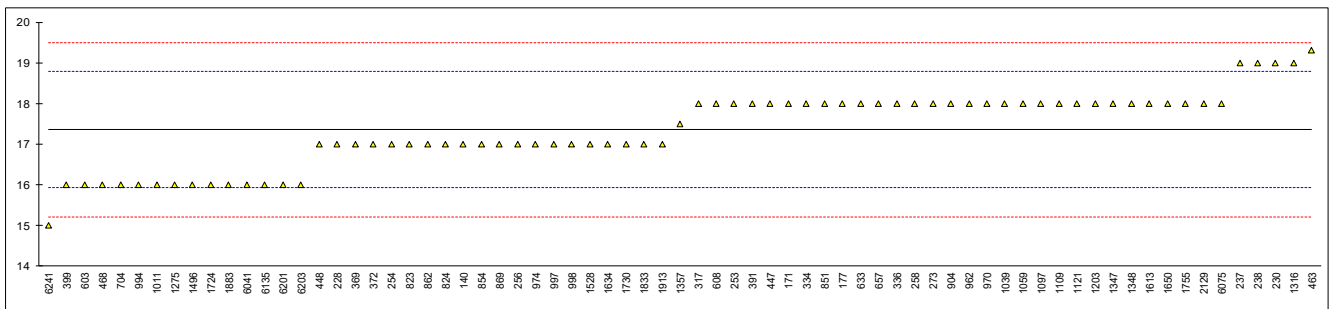
Determination of Copper Corrosion 2 hrs at 100°C on sample #19150;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D130	1a		-----	1047	D130	1		-----
62	D130	1a		-----	1049	D130	1A		-----
120	D130	1A		-----	1059	D130	1a		-----
140	D130	1a		-----	1062	D130	1		-----
150	D130	1a		-----	1064	D130	1a		-----
159	D130	1A		-----	1065		-----		-----
169	D130	1a		-----	1079	D130	1A		-----
171	D130	1a		-----	1080		-----		-----
175		-----		-----	1082		-----		-----
177	D130	1b		-----	1097	ISO2160	1a		-----
194		-----		-----	1105	D130	1a		-----
221		-----		-----	1109	D130	1a		-----
224	D130	1a		-----	1121	IP154	1a		-----
225	D130	1a		-----	1126		-----		-----
228	D130	1a		-----	1146		-----		-----
230	D130	1a		-----	1150	ISO2160	1a		-----
237	D130	1A		-----	1191		-----		-----
238	D130	1A		-----	1203	ISO2160	1a		-----
253	D130	1A		-----	1212	D130	1A		-----
254	D130	1A		-----	1237	ISO2160	1a		-----
256	D130	1A		-----	1275	IP154	1a		-----
258	D130	1a		-----	1277	D130	1		-----
273	D130	1a		-----	1279		-----		-----
311	D130	1A		-----	1299		-----		-----
317	D130	1a		-----	1316	D130	1a		-----
323	D130	1A		-----	1318	D130	1a		-----
333	D130	1A		-----	1347	D130	1A		-----
334	D130	1A		-----	1348	D130	1A		-----
335	D130	1a		-----	1357	D130	1a		-----
336		-----		-----	1372		-----		-----
353	IP154	1a		-----	1373		-----		-----
369	D130	1A		-----	1399		-----		-----
370	D130	1A		-----	1412	D130	1a		-----
372	D130	1a		-----	1417	IP154	1B		-----
391	D130	1a		-----	1496	D130	1a		-----
399	D130	1A		-----	1528	D130	1b		-----
440	IP154	1A		-----	1538		-----		-----
445	IP154	1A		-----	1575	D130	1b		-----
447	IP154	1a		-----	1586	D130	1a		-----
448	D130	1A		-----	1587	D130	1A		-----
453	IP154	1A		-----	1610	D130	1a		-----
463	ISO2160	1A		-----	1613	D130	1a		-----
468		-----		-----	1616	D130	1a		-----
485		-----		-----	1631		-----		-----
496	D130	1a		-----	1634	D130	1a		-----
603	D130	1a		-----	1650	D130	1a		-----
608	D130	1a		-----	1715		-----		-----
631	D130	1a		-----	1720	D130	1a		-----
633	D130	1a		-----	1724	D130	No. 1a		-----
657	D130	1a		-----	1730	D130	1A		-----
704	D130	1		-----	1755	D130	1A		-----
732		-----		-----	1776		-----		-----
798		-----		-----	1810		-----		-----
823	D130	1a		-----	1811		-----		-----
824		-----		-----	1833	D130	1		-----
851	D130	1b		-----	1852	D130	1 b		-----
854		-----		-----	1883	D130	1		-----
862	D130	1a		-----	1913	D130	1a		-----
869	D130	1a		-----	1961	D130	1a		-----
873		-----		-----	2129	D130	1a		-----
904	D130	1a		-----	2130	D130	1b		-----
962	D130	1A		-----	6035	ISO2160	1a		-----
963	D130	1a		-----	6041		1b		-----
970	D130	1a		-----	6054		-----		-----
974	D130	1a		-----	6075	D130	1a		-----
994	D130	1a		-----	6103	D130	1a		-----
995	D130	1a		-----	6135		1b		-----
996		-----		-----	6142		-----		-----
997		-----		-----	6147		-----		-----
998	D130	1A		-----	6201	D130	1A		-----
1011		-----		-----	6203	D130	1a		-----
1012	D130	1a		-----	6238		-----		-----
1016		-----		-----	6240	D130	1a		-----
1039	ISO6251	1A		-----	6241	D130	1		-----

lab	method	value	mark	z(targ)
6244		-----		-----
6262		-----		-----
6266		-----		-----
6274	D130	1		-----
9014		-----		-----
9128		-----		-----
	n	113		
	mean (n)	1 (1A/1B)		

Determination of Density at 15°C on sample #19150; results in kg/m^3

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4052	792.8		-0.27	1047	D4052	792.8		-0.27
62	D4052	792.8		-0.27	1049	D4052	792.85		0.01
120	D4052	792.7		-0.83	1059	D4052	792.8		-0.27
140	D4052	792.8		-0.27	1062	D4052	792.9		0.29
150	D4052	793.0		0.85	1064	D4052	792.7		-0.83
159	D4052	793.0		0.85	1065	D4052	792.9		0.29
169	D4052	792.8	C	-0.27	1079	D4052	792.8		-0.27
171	D4052	792.9		0.29	1080	D4052	793.5	R(0.01)	3.65
175	D4052	792.8		-0.27	1082	D4052	792.9		0.29
177	D4052	793.3	R(0.01)	2.53	1097	ISO12185	792.8		-0.27
194	D4052	792.8		-0.27	1105	D4052	792.90		0.29
221		-----		-----	1109	D4052	792.8		-0.27
224	D1298	792.55		-1.67	1121	D4052	792.9		0.29
225	D4052	792.9		0.29	1126	D4052	792.81		-0.22
228	D4052	792.89		0.23	1146	D4052	792.8		-0.27
230	D4052	792.84		-0.05	1150	ISO12185	792.85		0.01
237	D4052	792.9		0.29	1191	D4052	792.9		0.29
238	D4052	792.66		-1.06	1203	ISO12185	792.8		-0.27
253	D4052	792.9		0.29	1212	D4052	792.8		-0.27
254	D4052	792.7		-0.83	1237	ISO12185	792.7		-0.83
256	D4052	792.9		0.29	1275	IP365	792.8		-0.27
258	D4052	792.9		0.29	1277	D4052	792.7		-0.83
273	D4052	792.7		-0.83	1279		-----		-----
311	D4052	792.8		-0.27	1299	D4052	792.8		-0.27
317		-----		-----	1316	D4052	792.8		-0.27
323	D4052	792.9		0.29	1318	D4052	792.79		-0.33
333	D4052	792.8		-0.27	1347	D4052	792.88		0.18
334	D4052	792.9		0.29	1348	D4052	792.9		0.29
335	D4052	792.9		0.29	1357	D4052	792.9		0.29
336	D4052	792.6		-1.39	1372		-----		-----
353	IP365	792.8		-0.27	1373	In house	792.9		0.29
369	D4052	792.8		-0.27	1399		-----		-----
370	D4052	792.9		0.29	1412	D4052	792.8		-0.27
372	D4052	792.8		-0.27	1417	IP365	792.8		-0.27
391	ISO12185	792.7		-0.83	1496	D1298	793.0		0.85
399	D4052	792.8		-0.27	1528	D4052	792.81		-0.22
440	D4052	792.9		0.29	1538	D4052	792.9		0.29
445	D4052	792.8		-0.27	1575		-----		-----
447	D4052	792.8		-0.27	1586	D4052	792.9		0.29
448	D4052	792.8		-0.27	1587	D4052	792.81		-0.22
453	IP365	792.8		-0.27	1610	IP365	792.8		-0.27
463	D4052	793.01		0.90	1613	D4052	792.88		0.18
468	D4052	792.7		-0.83	1616	D4052	792.94		0.51
485	D4052	792.8		-0.27	1631		-----		-----
496	D4052	792.81		-0.22	1634	D4052	792.825		-0.13
603	D4052	792.9		0.29	1650	D4052	792.83		-0.10
608	D4052	793.1		1.41	1715	ISO12185	792.9		0.29
631	D4052	792.92		0.40	1720	D4052	792.8		-0.27
633	D1298	793.4	R(0.01)	3.09	1724	D4052	792.88		0.18
657	D4052	792.8		-0.27	1730	D4052	792.84		-0.05
704	D4052	792.84		-0.05	1755	D4052	792.94		0.51
732	ISO12185	792.9		0.29	1776	ISO12185	792.9		0.29
798		-----		-----	1810	D4052	792.8		-0.27
823	D4052	792.8		-0.27	1811	D4052	792.9		0.29
824	D4052	792.8		-0.27	1833	D4052	792.9		0.29
851	D4052	793.1		1.41	1852	IP365	792.75		-0.55
854	D4052	792.85		0.01	1883	D1298	793.1		1.41
862	D4052	792.9		0.29	1913	D4052	792.90		0.29
869	D4052	792.88		0.18	1961		-----		-----
873		-----		-----	2129	D4052	792.8		-0.27
904	D4052	793.0		0.85	2130	D4052	792.8		-0.27
962	D4052	792.9		0.29	6035	ISO12185	792.8		-0.27
963	D4052	792.9		0.29	6041	D4052	792.9		0.29
970	D4052	792.8		-0.27	6054		-----		-----
974	D1298	792.9		0.29	6075	ISO12185	792.89		0.23
994	D4052	792.9		0.29	6103	ISO12185	793.07		1.24
995	D4052	792.9		0.29	6135	D4052	792.8		-0.27
996		-----		-----	6142	D4052	792.95		0.57
997	D4052	792.9		0.29	6147	D4052	792.9		0.29
998	D4052	792.77		-0.44	6201	D4052	792.8		-0.27
1011	D4052	792.8		-0.27	6203	D4052	792.9		0.29
1012	D4052	792.85	C	0.01	6238		-----		-----
1016		-----		-----	6240	D4052	792.9		0.29
1039	ISO12185	792.9		0.29	6241	D4052	793.2	C,R(0.05)	1.97

lab	method	value	mark	z(targ)
6244		-----		-----
6262		-----		-----
6266		-----		-----
6274	D4052	792.9		0.29
9014		-----		-----
9128	D4052	792.9		0.29

normality	suspect	
n	132	
outliers	4	
mean (n)	792.849	
st.dev. (n)	0.0874	
R(calc.)	0.245	
st.dev.(D4052:18a)	0.1786	
R(D4052:18a)	0.5	

Lab 169: first reported 0.7934
Lab 1012: first reported 0.00079285 kg/m³
Lab 6241: first reported 794.4

Kernel Density
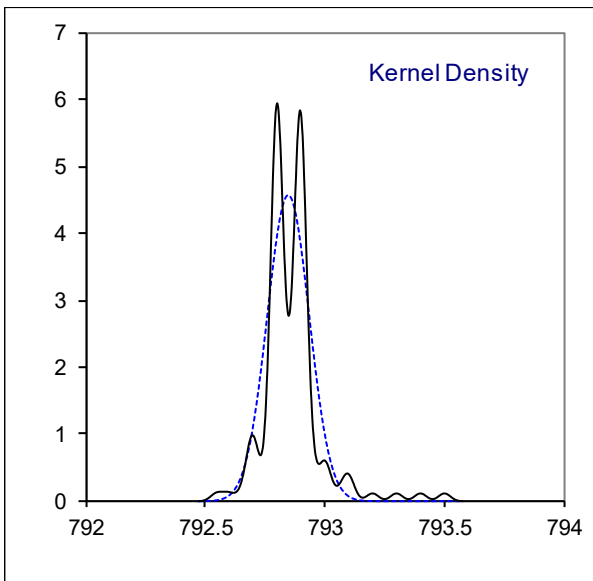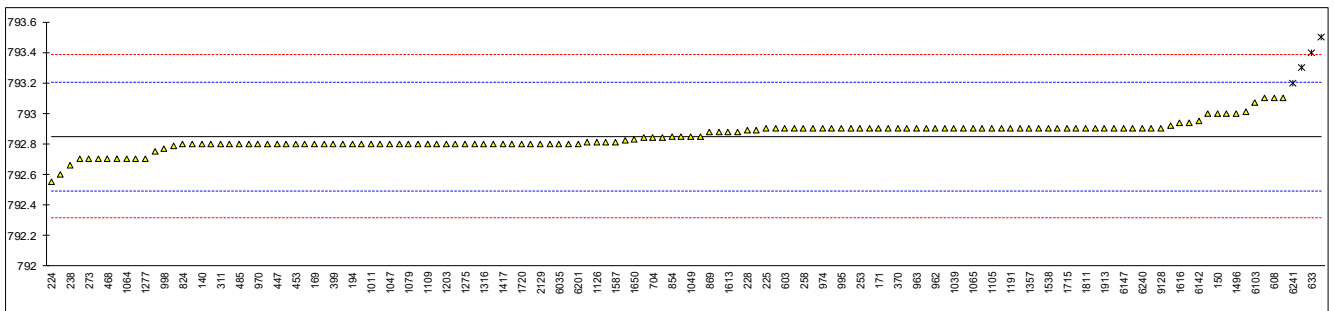
Determination of Distillation ASTM D86 on sample #19150; results in °C

lab	method	IBP	mark	10% rec	mark	50% rec	mark	90% rec	mark	FBP	mark	residue	loss
52	D86-automated	148.6		167.8		193.6		237.5		266.8		1.0	0.4
62	D86-automated	149.9		167.7		194.1		239.7		265.9		1.0	0.8
120	D86-automated	152.7		166.6		193.8		240.4		266.9		1.0	1.6
140	D86-automated	150.8		167.8		193.6		236.8		266.7		1.2	0.2
150	D86-automated	148.2		166.5		193.1		238.6		265.3		0.7	1.0
159		147.4		166.4		193.4		236.6		265.2		1.2	0.3
169	D86-automated	150.9		168.5		194.5		238.5		267.1		1.2	0.4
171	D86-automated	149.6		166.1		193.1		238.0		265.0		1.4	1.1
175	D86-automated	146.8		166.4		194.1		239.8		265.3		1.1	1.2
177	D86-automated	145.0		166.7		193.8		236.9		265.4		0.4	1.0
194	D86-automated	150.5		168.2		194.3		238.0		267.4		1.2	0.3
221		-----		-----		-----		-----		-----		-----	-----
224	D86-manual	149.98		168.47		193.97		236.97		264.45		1.5	0.7
225	D86-manual	148.5		167.0		193.0		236.5		265.0		1.2	0.4
228	D86-manual	148		165		192		236		263		0.6	0.4
230	D86-automated	146.8		165.9		191.8		235.4		262.5		1.1	0.2
237	D86-manual	150.0		168.0		195.0		239.0		268.0		1.0	0.5
238	D86-manual	148.0		167.5		193.5		237.5		268.0		0.5	0.5
253	D86-manual	147.0		167.0		194.0		238.0		266.0		1.0	1.0
254	D86-manual	150.0		169.0		195.0		241.0		267.0		-----	-----
256	D86-manual	149.0		168.0		195.0		240.0		266.0		-----	-----
258	D86-automated	152.0		170.3		195.8		240.2		264.5		1.2	0.9
273	D86-automated	149.6		168.2		193.1		237.3		266.8		1.1	-----
311	D86-automated	149.8		166.8		193.4		238.2		265.4		1.5	0.3
317	D86-automated	146.2		167.5		193.5		237.8		267.1		1.3	0.4
323	D86-automated	150.1		169.2		194.3		239.6		266.2		1.4	1.0
333	D86-automated	147.0		166.8		193.5		237.2		264.3		1.2	0.6
334	D86-automated	143.7		166.3		193.6		237.6		263.7		1.2	0.3
335	D86-automated	146.1		165.8		192.6		238.1		264.5		1.0	0.3
336	D86-automated	147.1		166.4		193.0		236.2		263.9		1.3	0.3
353	IP123-automated	149.4		165.9		192.8		239		265.1		1.2	0.4
369	D86-automated	151.4		165.2		194.2		238.0		266.2		1.1	0.5
370	D86-automated	148.3		166.6		193.6		236.1		265.9		0.5	0.4
372	D86-automated	150.5		166.8		194.2		238.4		266.6		1.2	0.3
391	D86-automated	151.2		168.5		194.3		238.4		267.7		1.4	0.2
399	D86-automated	148.4		166.2		193.6		238.0		267.9		0.9	0.9
440	D86-automated	151.6		168.2		193.7		236.7		267.7		0.1	0.0
445	D86-automated	147.1		167.0		193.0		238.7		265.3		1.3	1.1
447	D86-automated	149.6		167.8		194.1		239.4		266.6		1.2	0.9
448	D86-automated	149.3		167.6		194.6		240.5		267.6		1.2	1.2
453	IP123-automated	150.5		168.1		194.0		239.4		267.3		-----	-----
463	D86-automated	149.7		168.5		194.5		238.2		266.1		1.3	0.2
468		-----		-----		-----		-----		-----		-----	-----
485	D86-automated	150.35		168.55		194.05		237.65		266.90		1.25	0.10
496	D86-automated	149.5		167.6		194.5		239.4		267.8		1.1	0.9
603	D86-automated	151.3		169.1		195.2		240.4		270.7		1.2	1.0
608	D86-automated	147.5		167.6		193.8		238.6		265.8		1.2	1.2
631	D86-automated	151.0		169.3		195.0		240.0		268.3		0.5	0.2
633	D86-automated	150.3		167.8		193.7		239.4		267.2		1.1	0.8
657	D86-automated	149.4		167.9		194.2		240.0		267.6		1.0	0.8
704	D86-manual	150.5		167.5		194.0		238.5		268.0		1.4	0.6
732	ISO3405-manual	150.0		167.5		195.0		240.0		268.5		1.0	0.5
798		-----		-----		-----		-----		-----		-----	-----
823	D86-automated	148.9		168.3		193.9		238.7		266.9		1.2	0.6
824	D86-automated	149.4		167.3		193.5		238.2		265.3		1.2	0.7
851	D86-automated	147.8		166.5		193.5		236.6		264.2		1.5	0
854	D86-automated	148.6		167.8		194.4		239.6		267.0		1.2	0.6
862	D86-automated	147.6		167.8		193.2		238.2		264.3		1.2	0.6
869	D86-automated	148.7		167.1		194.0		238.1		264.9		1.1	0.6
873		-----		-----		-----		-----		-----		-----	-----
904	D86-automated	150.9		166.4		191.6		234.7		260.9		1.0	1.0
962	D86-automated	149.0		168.1		194.1		237.7		266.2		1.2	0.5
963	D86-automated	148.05		167.74		193.88		237.89		267.20		1.2	0.5
970	D86-automated	147.7		167.9		194.2		237.9		265.9		1.2	1.0
974	D86-automated	148.5		168.7		195.0		239.0		265.7		1.2	1.0
994	D86-manual	150.0		167.0		194.0		238.5		268.5		1.3	0.5
995	D86-manual	149.0		167.5		195.5		240.0		270.5		1.5	0.5
996		-----		-----		-----		-----		-----		-----	-----
997	D86-manual	148.0		167.0		195.5		240.0		270.0		1.5	0.5
998	D86-manual	149.5		166.5		192.5		237.0		268.0		1.0	0
1011	D86-automated	149.0		167.3		193.7		238.9		267.0		1.4	0.4
1012	D86-automated	146.3		166.5		192.6		236.4		265.3		1.2	0.8
1016		-----		-----		-----		-----		-----		-----	-----
1039	ISO3405-automated	152.8		168.4		194.3		238.3		267.2		1.4	0.2
1047	D86-automated	152.7		166.3		192.7		239.4		263.7		1.4	0.2
1049	D86-automated	149.0		167.9		194.1		240.1		267.3		1.2	1.1

lab	method	IBP	mark	10% rec	mark	50% rec	mark	90% rec	mark	FBP	mark	residue	loss
1059	D86-automated	146.9		166.9		193.2		236.8		266.4		1.2	0.4
1062	D86-automated	147.4		168.5		193.5		237.8		265.9		1.4	0.3
1064	D86-automated	150.4		168.3		194.6		240.4		267.8		1.4	0.7
1065		149.8		166.8		193.0		239.0		262.7		2.7	0.1
1079	D86-automated	152.1		168.2		194.8		240.0		267.0		1.2	1.1
1080		-----		-----		-----		-----		-----		-----	-----
1082	D86-automated	150.2		167.7		194.5		239.8		267.8		1.5	0.6
1097	ISO3405-automated	149.6		167.5		194.2		239.6		266.8		1.4	0.4
1105	D86-automated	148.2		168.2		194.1		238.3		264.8		1.2	0.3
1109	D86-automated	149.2		166.7		193.9		238.4		265.5		0.9	0.9
1121		148.0		167.5		193.5		238.5		269.0		0.8	0.2
1126		-----		-----		-----		-----		-----		-----	-----
1146	D86-automated	147.6		168.6		193.4		236.0		266.8		0.9	na
1150	ISO3405-automated	144.4		166.7		192.9		239.0		262.1		1.2	1.4
1191		-----		-----		-----		-----		-----		-----	-----
1203	ISO3405-automated	149.5		167.7		193.8		239.8		265.2		1.2	1.3
1212	D86-automated	150.0		168.0		194.1		239.6		267.1		1.3	0.8
1237	ISO3405-automated	150.8		167.9		193.1		237.1		265.0		1.2	0.3
1275	IP123-automated	147.7		167.1		193.5		238.2		266.1		1.0	0.7
1277	D86-automated	146.1		166.8		195.7		240.2		267.6		1.0	0.810
1279		-----		-----		-----		-----		-----		-----	-----
1299	D86-automated	150.7		168.1		194.2		239.6		268.1		1.2	0.6
1316		150.3		167.8		193.4		238.6		266.5		1.2	0.4
1318	D86-automated	149.3		167.4		193.5		239.0		265.8		1.2	0.6
1347	D86-manual	149		167		193		238		262		1.6	0.4
1348	D86-automated	147.4		166.2		191.5		237.8		263.3		1.3	1.0
1357	D86-automated	147.8		168.8		194.3		239.1		266.1		1.2	0.5
1372		-----		-----		-----		-----		-----		-----	-----
1373	D86-manual	148.92		166.94		193.47		237.78		265.13		1.4	0.1
1399		-----		-----		-----		-----		-----		-----	-----
1412	D86-manual	149.5		168.0		194.0		237.5		266.5		1.2	0.5
1417	D86-automated	153.3		168.8		195.0		241.5		266.0		1.3	1.5
1496	D86-automated	148.9		167.5		194.4		238.8		265.9		1.3	0.7
1528	D86-automated	149.7		168.0		193.7		238.3		265.3		1.4	0.4
1538	ISO3405-automated	147.9		166.6		192.8		238.6		263.4		0.6	0.6
1575	D86-automated	152.6		168.4		195.2		240.4		269.7		1.0	0.6
1586	D86-automated	150.7		167.8		194.4		239.6		267.1		0.7	1.3
1587	D86-automated	151.9		168.3		193.9		237.1		267.4		1.2	0.1
1610		149.8		168.1		194.2		239.2		266.5		1.3	0.7
1613	D86-automated	153.0		168.7		194.9		237.7		269.0		1.0	0.2
1616	D86-automated	147.5		166.5		193.0		236.7		265.6		1.2	0.4
1631		-----		-----		-----		-----		-----		-----	-----
1634	D86-automated	149.5		167.5		194.4		239.6		266.6		1.2	0.8
1650	D86-automated	145.7		167.7		194.1		238.8		266.6		1.4	0.6
1715	ISO3405-automated	153.6		168.5		194.6		240.3		268.2		1.2	0.8
1720	D86-automated	150.2		168.2		194.4		238.8		267.9		1.2	0.4
1724	D86-automated	150.3		168.5		193.4		237.7		266.1		1.2	0.4
1730		150		168		196		241		269		1.0	1.0
1755	D86-automated	147.7		165.4		192.9		239.6		266.2		1.0	1.2
1776	D86-automated	148.0		167.0		193.7		239.4		264.3		1.2	1.1
1810	D86-manual	145.2		165.5		191.3		234.5		263		1.2	0.1
1811	D86-automated	149.9		167.4		193.0		236.8		264.2		1.2	0.1
1833	D86-automated	147.0		166.8		193.0		237.5		266.7		1.2	0.9
1852	D86-automated	148.5		168.1		194.2		238.1		267.9		1.3	0.6
1883	D86-manual	150		168		195		239		263		1	1
1913	D86-automated	148.55		168.75		194.05		238.60		263.85		1.4	0.6
1961		-----		-----		-----		-----		-----		-----	-----
2129	D86-automated	146.1		166.4		193.0		238.3		265.4		1.2	0.6
2130	D86-automated	153.6		168.3		194.8		238.9		267.2		1.2	0.2
6035	ISO3405-automated	148.2		167.1		193.6		237.8		262.0		1.0	0.6
6041	D86-automated	146.7		167.1		194.0		238.0		266.8		1.3	0.2
6054		-----		-----		-----		-----		-----		-----	-----
6075	D86-automated	149.2		166.6		193.4		238.6		264.3		1.3	0.6
6103	ISO3405-automated	149.8		167.3		194.0		238.8		265.9		1.3	0.6
6135	D86-automated	148.0		167.7		194.1		239.0		266.9		1.2	0.4
6142	D86-automated	144.4		165.8		193.8		238.3		265.7		1.2	0.6
6147	D86-automated	149.8		168.2		193.6		237.4		264.7		1.2	0.3
6201		150.8		166.7		193.4		237.1		265.7		1.2	0.2
6203	D86-automated	149.8		168.0		194.3		239.7		265.5		1.2	0.9
6238		-----		-----		-----		-----		-----		-----	-----
6240	D86-automated	149.1		167.7		193.9		238.1		266.9		1.2	0.7
6241	D86-automated	151		168		193		237		263		1.3	1.0
6244	D86-manual	145.79		165.56		193.85		241.96		262.2	C	2.1	0.9
6262		-----		-----		-----		-----		-----		-----	-----
6266		-----		-----		-----		-----		-----		-----	-----
6274		151.0		167.0		193.1		236.4		265.7		1.2	0.9
9014		-----		-----		-----		-----		-----		-----	-----
9128	D86-automated	150.1		168.4		194.0		238.5		266.6		1.0	0.3

	IBP	10% rec	50% rec	mrk	90% rec	FBP
normality	OK	OK	OK		OK	OK
n	135	135	135		135	135
outliers	0	0	0		0	0
mean (n)	149.12	167.47	193.84		238.45	266.08
st.dev. (n)	1.917	0.930	0.826		1.330	1.789
R(calc.)	5.37	2.60	2.31		3.73	5.01
st.dev.(D86-A:18)	2.929	1.316	1.071		1.277	2.536
R(D86-A:18)	8.20	3.68	3.00		3.58	7.10

Lab 6244: first reported 254.936
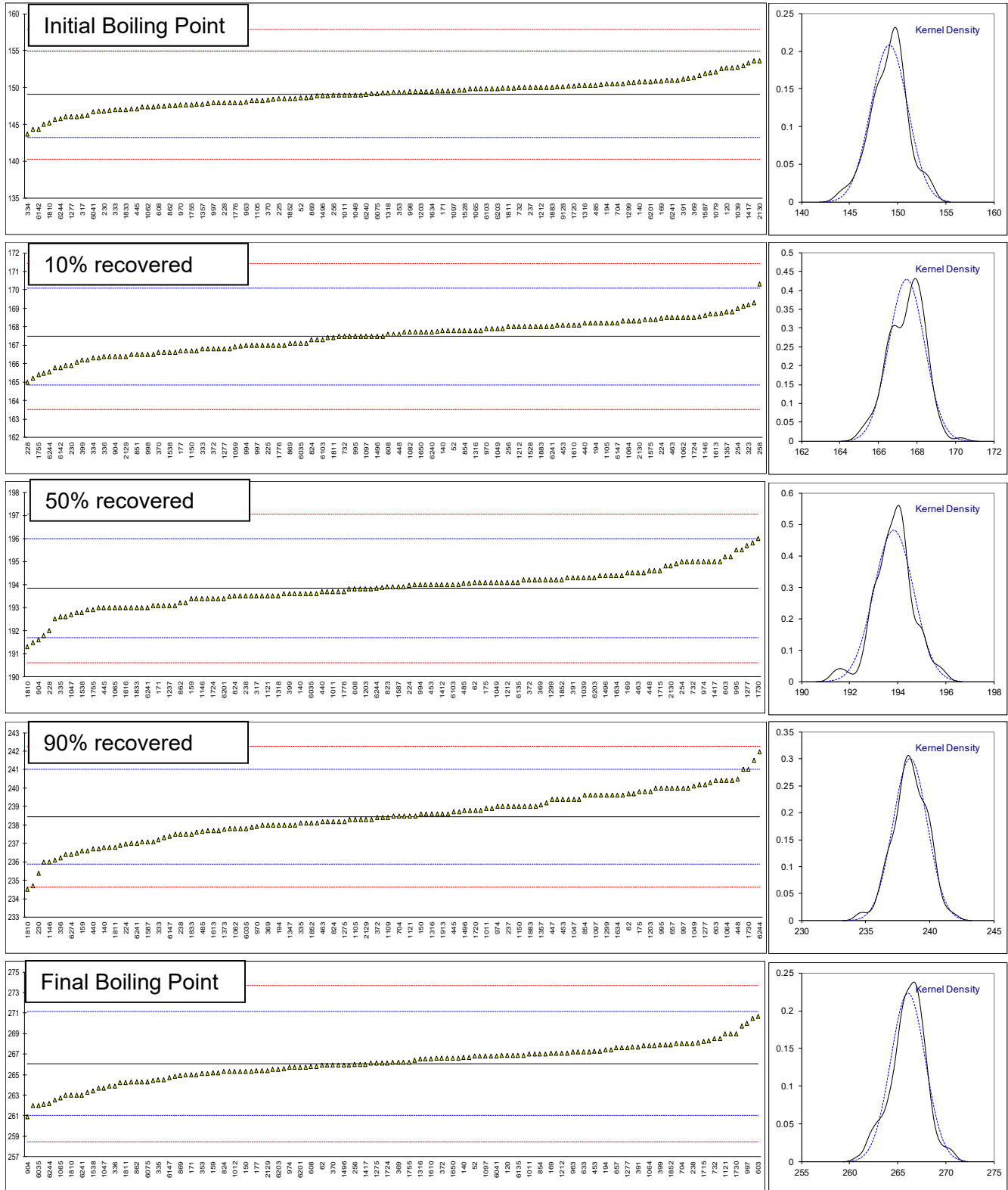
z-scores

lab	IBP	10% rec	50% rec	90% rec	FBP	lab	IBP	10% rec	50% rec	90% rec	FBP
52	-0.18	0.25	-0.22	-0.74	0.28	1062	-0.59	0.78	-0.32	-0.51	-0.07
62	0.27	0.18	0.24	0.98	-0.07	1064	0.44	0.63	0.71	1.53	0.68
120	1.22	-0.66	-0.04	1.53	0.32	1065	0.23	-0.51	-0.78	0.43	-1.33
140	0.57	0.25	-0.22	-1.29	0.24	1079	1.02	0.56	0.90	1.21	0.36
150	-0.31	-0.74	-0.69	0.12	-0.31	1080	-----	-----	-----	-----	-----
159	-0.59	-0.81	-0.41	-1.45	-0.35	1082	0.37	0.18	0.62	1.06	0.68
169	0.61	0.78	0.62	0.04	0.40	1097	0.16	0.02	0.34	0.90	0.28
171	0.16	-1.04	-0.69	-0.35	-0.43	1105	-0.31	0.56	0.24	-0.12	-0.51
175	-0.79	-0.81	0.24	1.06	-0.31	1109	0.03	-0.58	0.06	-0.04	-0.23
177	-1.41	-0.58	-0.04	-1.21	-0.27	1121	-0.38	0.02	-0.32	0.04	1.15
194	0.47	0.56	0.43	-0.35	0.52	1126	-----	-----	-----	-----	-----
221	-----	-----	-----	-----	-----	1146	-0.52	0.86	-0.41	-1.92	0.28
224	0.29	0.76	0.12	-1.16	-0.64	1150	-1.61	-0.58	-0.88	0.43	-1.57
225	-0.21	-0.36	-0.78	-1.53	-0.43	1191	-----	-----	-----	-----	-----
228	-0.38	-1.88	-1.72	-1.92	-1.22	1203	0.13	0.18	-0.04	1.06	-0.35
230	-0.79	-1.19	-1.90	-2.39	-1.41	1212	0.30	0.40	0.24	0.90	0.40
237	0.30	0.40	1.08	0.43	0.76	1237	0.57	0.33	-0.69	-1.06	-0.43
238	-0.38	0.02	-0.32	-0.74	0.76	1275	-0.48	-0.28	-0.32	-0.20	0.01
253	-0.72	-0.36	0.15	-0.35	-0.03	1277	-1.03	-0.51	1.74	1.37	0.60
254	0.30	1.16	1.08	2.00	0.36	1279	-----	-----	-----	-----	-----
256	-0.04	0.40	1.08	1.21	-0.03	1299	0.54	0.48	0.34	0.90	0.80
258	0.98	2.15	1.83	1.37	-0.62	1316	0.40	0.25	-0.41	0.12	0.16
273	0.16	0.56	-0.69	-0.90	0.28	1318	0.06	-0.05	-0.32	0.43	-0.11
311	0.23	-0.51	-0.41	-0.20	-0.27	1347	-0.04	-0.36	-0.78	-0.35	-1.61
317	-1.00	0.02	-0.32	-0.51	0.40	1348	-0.59	-0.96	-2.18	-0.51	-1.10
323	0.33	1.31	0.43	0.90	0.05	1357	-0.45	1.01	0.43	0.51	0.01
333	-0.72	-0.51	-0.32	-0.98	-0.70	1372	-----	-----	-----	-----	-----
334	-1.85	-0.89	-0.22	-0.66	-0.94	1373	-0.07	-0.40	-0.34	-0.52	-0.38
335	-1.03	-1.27	-1.16	-0.27	-0.62	1399	-----	-----	-----	-----	-----
336	-0.69	-0.81	-0.78	-1.76	-0.86	1412	0.13	0.40	0.15	-0.74	0.16
353	0.10	-1.19	-0.97	0.43	-0.39	1417	1.43	1.01	1.08	2.39	-0.03
369	0.78	-1.72	0.34	-0.35	0.05	1496	-0.08	0.02	0.52	0.27	-0.07
370	-0.28	-0.66	-0.22	-1.84	-0.07	1528	0.20	0.40	-0.13	-0.12	-0.31
372	0.47	-0.51	0.34	-0.04	0.20	1538	-0.42	-0.66	-0.97	0.12	-1.06
391	0.71	0.78	0.43	-0.04	0.64	1575	1.19	0.71	1.27	1.53	1.43
399	-0.25	-0.96	-0.22	-0.35	0.72	1586	0.54	0.25	0.52	0.90	0.40
440	0.85	0.56	-0.13	-1.37	0.64	1587	0.95	0.63	0.06	-1.06	0.52
445	-0.69	-0.36	-0.78	0.20	-0.31	1610	0.23	0.48	0.34	0.59	0.16
447	0.16	0.25	0.24	0.74	0.20	1613	1.32	0.93	0.99	-0.59	1.15
448	0.06	0.10	0.71	1.61	0.60	1616	-0.55	-0.74	-0.78	-1.37	-0.19
453	0.47	0.48	0.15	0.74	0.48	1631	-----	-----	-----	-----	-----
463	0.20	0.78	0.62	-0.20	0.01	1634	0.13	0.02	0.52	0.90	0.20
468	-----	-----	-----	-----	-----	1650	-1.17	0.18	0.24	0.27	0.20
485	0.42	0.82	0.20	-0.63	0.32	1715	1.53	0.78	0.71	1.45	0.84
496	0.13	0.10	0.62	0.74	0.68	1720	0.37	0.56	0.52	0.27	0.72
603	0.74	1.24	1.27	1.53	1.82	1724	0.40	0.78	-0.41	-0.59	0.01
608	-0.55	0.10	-0.04	0.12	-0.11	1730	0.30	0.40	2.02	2.00	1.15
631	0.64	1.39	1.08	1.21	0.87	1755	-0.48	-1.57	-0.88	0.90	0.05
633	0.40	0.25	-0.13	0.74	0.44	1776	-0.38	-0.36	-0.13	0.74	-0.70
657	0.10	0.33	0.34	1.21	0.60	1810	-1.34	-1.50	-2.37	-3.09	-1.22
704	0.47	0.02	0.15	0.04	0.76	1811	0.27	-0.05	-0.78	-1.29	-0.74
732	0.30	0.02	1.08	1.21	0.95	1833	-0.72	-0.51	-0.78	-0.74	0.24
798	-----	-----	-----	-----	-----	1852	-0.21	0.48	0.34	-0.27	0.72
823	-0.08	0.63	0.06	0.20	0.32	1883	0.30	0.40	1.08	0.43	-1.22
824	0.10	-0.13	-0.32	-0.20	-0.31	1913	-0.19	0.97	0.20	0.12	-0.88
851	-0.45	-0.74	-0.32	-1.45	-0.74	1961	-----	-----	-----	-----	-----
854	-0.18	0.25	0.52	0.90	0.36	2129	-1.03	-0.81	-0.78	-0.12	-0.27
862	-0.52	0.25	-0.60	-0.20	-0.70	2130	1.53	0.63	0.90	0.35	0.44
869	-0.14	-0.28	0.15	-0.27	-0.47	6035	-0.31	-0.28	-0.22	-0.51	-1.61
873	-----	-----	-----	-----	-----	6041	-0.83	-0.28	0.15	-0.35	0.28
904	0.61	-0.81	-2.09	-2.94	-2.04	6054	-----	-----	-----	-----	-----
962	-0.04	0.48	0.24	-0.59	0.05	6075	0.03	-0.66	-0.41	0.12	-0.70
963	-0.37	0.21	0.04	-0.44	0.44	6103	0.23	-0.13	0.15	0.27	-0.07
970	-0.48	0.33	0.34	-0.43	-0.07	6135	-0.38	0.18	0.24	0.43	0.32
974	-0.21	0.93	1.08	0.43	-0.15	6142	-1.61	-1.27	-0.04	-0.12	-0.15
994	0.30	-0.36	0.15	0.04	0.95	6147	0.23	0.56	-0.22	-0.82	-0.55
995	-0.04	0.02	1.55	1.21	1.74	6201	0.57	-0.58	-0.41	-1.06	-0.15
996	-----	-----	-----	-----	-----	6203	0.23	0.40	0.43	0.98	-0.23
997	-0.38	-0.36	1.55	1.21	1.54	6238	-----	-----	-----	-----	-----
998	0.13	-0.74	-1.25	-1.13	0.76	6240	-0.01	0.18	0.06	-0.27	0.32
1011	-0.04	-0.13	-0.13	0.35	0.36	6241	0.64	0.40	-0.78	-1.13	-1.22
1012	-0.96	-0.74	-1.16	-1.60	-0.31	6244	-1.14	-1.45	0.01	2.75	-1.53
1016	-----	-----	-----	-----	-----	6262	-----	-----	-----	-----	-----
1039	1.26	0.71	0.43	-0.12	0.44	6266	-----	-----	-----	-----	-----
1047	1.22	-0.89	-1.06	0.74	-0.94	6274	0.64	-0.36	-0.69	-1.60	-0.15
1049	-0.04	0.33	0.24	1.29	0.48	9014	-----	-----	-----	-----	-----
1059	-0.76	-0.43	-0.60	-1.29	0.13	9128	0.33	0.71	0.15	0.04	0.20

Determination of Existent Gum (unwashed) on sample #19150; results in mg/100mL

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	IP540	1		0.19	1047	ISO6246	<0,5		-----
62	D381	<1		-----	1049	D381	0.4		-0.34
120	D381	1.0		0.19	1059	D381Mod.	<1		-----
140	D381	<1.0		-----	1062	D381	1.0		0.19
150	D381	1.0		0.19	1064	D381	0.0		-0.70
159	D381	1.0		0.19	1065		-----		-----
169	D381	0.0		-0.70	1079	D381	0.2		-0.52
171	D381	<1		-----	1080	ISO6246	0.8		0.01
175		-----		-----	1082	IP540	0.42		-0.33
177	D381	1.0		0.19	1097	IP540	0.4		-0.34
194	D381	0.5		-0.26	1105	D381	0.9		0.10
221		-----		-----	1109	IP540	0.2		-0.52
224		-----		-----	1121		-----		-----
225	D381	0.7		-0.08	1126		-----		-----
228		-----		-----	1146		-----		-----
230	D381	1.6		0.72	1150	ISO6246	0.9		0.10
237	D381	1.0		0.19	1191	IP540	0.67		-0.11
238		-----		-----	1203	ISO6246	0.75		-0.03
253	IP540	<1		-----	1212	IP540	1.3		0.45
254	D381	0.8		0.01	1237		-----		-----
256	IP540	0.8		0.01	1275	IP540	0.0		-0.70
258	D381	1.1		0.28	1277		-----		-----
273	D381	<1		-----	1279		-----		-----
311	IP540	<1		-----	1299	IP540	0.8		0.01
317	IP540	1		0.19	1316	D381	<1		-----
323	D381	1.5		0.63	1318	IP540	0.96		0.15
333		-----		-----	1347	D381	0.6		-0.17
334	D381	0.2		-0.52	1348	D381	0.8		0.01
335	D381	<0.5		-----	1357	IP540	<1		-----
336		-----		-----	1372		-----		-----
353	IP540	1.6		0.72	1373		-----		-----
369	IP540	<1		-----	1399		-----		-----
370	IP540	0.5		-0.26	1412	D381	0.9		0.10
372	IP540	0.6		-0.17	1417	IP540	1.0		0.19
391	D381	1		0.19	1496	D381	0.4		-0.34
399	IP540	1.2		0.36	1528	IP540	1.6		0.72
440	IP540	<1		-----	1538		-----		-----
445	D381	< 1		-----	1575	D381	1		0.19
447	D381	1		0.19	1586	D381	1		0.19
448	D381	1		0.19	1587	IP540	0.80		0.01
453	IP540	0.4		-0.34	1610		-----		-----
463	D381	0.4		-0.34	1613	D381	0.4		-0.34
468		-----		-----	1616	IP540	0.6		-0.17
485		-----		-----	1631		-----		-----
496		-----		-----	1634	D381	<1		-----
603	IP540	<1.0		-----	1650	IP540	0.1		-0.61
608	D381	0.9		0.10	1715		-----		-----
631	IP540	<1		-----	1720	D381	1.4		0.54
633	D381	1.1		0.28	1724	IP540	1.0		0.19
657	IP540	1		0.19	1730	D381	2.0		1.07
704	GOST1567	0.9		0.10	1755		-----		-----
732		-----		-----	1776	IP540	0.8		0.01
798		-----		-----	1810	D381	0.9		0.10
823	D381	0.8		0.01	1811	D381	0.8		0.01
824	D381	0.4		-0.34	1833	IP540	1.0		0.19
851	IP540	0.5		-0.26	1852	D381	0.3		-0.43
854	D381	0.8		0.01	1883	D381	0.8		0.01
862	D381	0.6		-0.17	1913	D381	0.40		-0.34
869	D381	0.8		0.01	1961		-----		-----
873		-----		-----	2129	D381	0.8		0.01
904	D381	1.0		0.19	2130	IP540	<1		-----
962	D381	1		0.19	6035	ISO6246	1		0.19
963	D381	0.8		0.01	6041	D381	<1		-----
970	D381	0.6		-0.17	6054		-----		-----
974	D381	0.6		-0.17	6075	IP540	0.8		0.01
994	D381	0.8		0.01	6103	D381	0.7		-0.08
995		-----		-----	6135		-----		-----
996		-----		-----	6142		-----		-----
997		-----		-----	6147	IP540	0.2		-0.52
998	D381	0.8		0.01	6201	D381	<1		-----
1011	D381	1		0.19	6203	D381	0.91		0.11
1012		-----		-----	6238		-----		-----
1016		-----		-----	6240		-----		-----
1039	ISO6246	<1		-----	6241		-----		-----

lab	method	value	mark	z(targ)
6244		-----		-----
6262		-----		-----
6266		-----		-----
6274	D381	0.4		-0.34
9014		-----		-----
9128		-----		-----

normality	OK
n	88
outliers	0
mean (n)	0.789
st.dev. (n)	0.3708
R(calc.)	1.038
st.dev.(D381:12)	1.1291
R(D381:12)	3.161
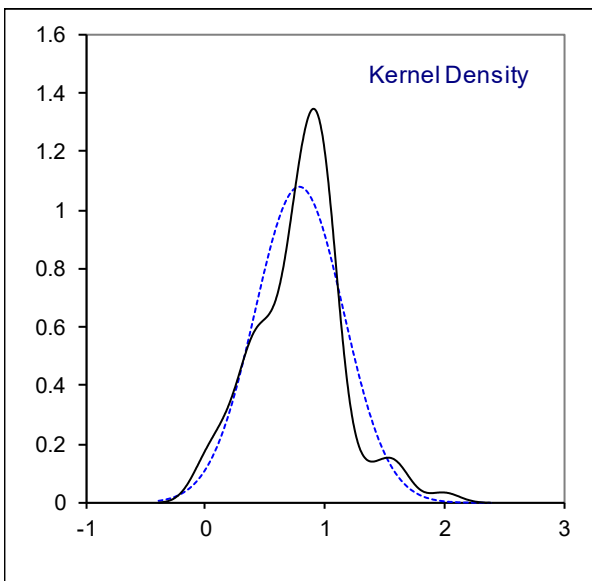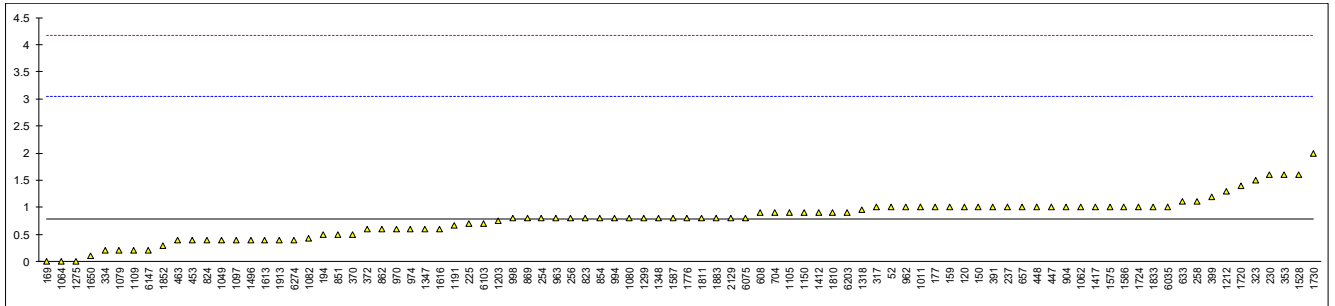
Determination of Flash Point on sample #19150; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D56	41.5		-0.01	1047	D56	40.9		-0.53
62	D56	43.0		1.30	1049	ISO13736	40.0		-1.32
120	D56	41.1		-0.36	1059	IP170	40.5		-0.88
140	D56	42.5		0.87	1062	IP170	41.0		-0.45
150	D56	42.5		0.87	1064	IP170	40.0		-1.32
159	D56	42.0		0.43	1065		-----		-----
169	D56	40.5		-0.88	1079	IP170	41.0		-0.45
171		-----		-----	1080		-----		-----
175	D56	43		1.30	1082	IP170	42.0		0.43
177	D56	41.0		-0.45	1097	ISO13736	40.8		-0.62
194	D93	41.5		-0.01	1105	IP170	40.75		-0.67
221		-----		-----	1109	IP170	41.0		-0.45
224	IP170	41.03		-0.42	1121	IP170	40.5		-0.88
225	IP170	42.0		0.43	1126	ISO2719	44.5		2.62
228	IP170	41.0		-0.45	1146	D93	44.0		2.18
230	IP170	42.5		0.87	1150	D56	43.0		1.30
237	IP170	40.0		-1.32	1191	IP170	43.0		1.30
238	IP170	40.5		-0.88	1203	ISO2719	43.5		1.74
253	IP170	41.0		-0.45	1212	IP170	41.0		-0.45
254	IP170	41.5		-0.01	1237	D56	41.5		-0.01
256	IP170	41.5		-0.01	1275	IP170	40.0		-1.32
258	IP170	41.0		-0.45	1277	IP170	45.0		3.05
273	IP170	40		-1.32	1279		-----		-----
311	IP170	41.5		-0.01	1299	IP170	43.0		1.30
317	IP170	40.5		-0.88	1316	IP170	41.0		-0.45
323	IP170	40.5		-0.88	1318	IP170	42.0		0.43
333	IP170	41.0		-0.45	1347	IP170	41.0		-0.45
334	IP170	41.0		-0.45	1348	IP170	43		1.30
335	IP170	40.5		-0.88	1357	IP170	41.5		-0.01
336		-----		-----	1372		-----		-----
353	IP170	40.575		-0.82	1373	D56	40.78		-0.64
369	IP170	41.0		-0.45	1399		-----		-----
370	IP170	43.0		1.30	1412	D93	42.0		0.43
372	IP170	41.5		-0.01	1417	IP170	42.2		0.60
391	IP170	41		-0.45	1496	IP170	40.5		-0.88
399	IP170	42		0.43	1528	D56	43.5		1.74
440	IP170	41.3		-0.18	1538		-----		-----
445	IP170	42.5		0.87	1575	D56	43		1.30
447	IP170	41.0		-0.45	1586	IP170	41.0		-0.45
448	IP170	41.2		-0.27	1587	IP170	41.5		-0.01
453	IP170	40.5		-0.88	1610	IP170	41.5		-0.01
463	IP170	41.7		0.17	1613	D56	42.5		0.87
468		-----		-----	1616	IP170	41.2		-0.27
485	D56	40.5		-0.88	1631		-----		-----
496	ISO13736	43.0		1.30	1634	IP170	40.95		-0.49
603		-----		-----	1650	IP170	41.5		-0.01
608	IP170	41.5		-0.01	1715	D56	41.5		-0.01
631	D56	39.0		-2.20	1720	D3828	43.0		1.30
633	D56	42.175		0.58	1724	IP170	42.0		0.43
657	IP170	41.0		-0.45	1730	D56	41.0		-0.45
704	ISO2719	41.5		-0.01	1755	D56	42.1		0.52
732	ISO2719	42.0		0.43	1776	IP170	42.0		0.43
798		-----		-----	1810	IP170	41.5		-0.01
823	IP170	42.0		0.43	1811	D56	40.2		-1.15
824	IP170	40.0		-1.32	1833	IP170	41.5		-0.01
851	IP170	40.5		-0.88	1852	IP170	42.0		0.43
854	IP170	41.0		-0.45	1883	D3828	42		0.43
862	IP170	41.0		-0.45	1913	IP170	41.4		-0.10
869	IP170	41.0		-0.45	1961		-----		-----
873		-----		-----	2129	IP170	41.5		-0.01
904	IP170	44.0		2.18	2130	IP170	41.5		-0.01
962	D56	41.0		-0.45	6035	ISO2719	41.0		-0.45
963	IP170	40.0		-1.32	6041	IP170	40.5		-0.88
970	IP170	41.0		-0.45	6054		-----		-----
974	IP170	41.0		-0.45	6075	IP170	44.15		2.31
994	D56	42.0		0.43	6103	ISO13736	41.1		-0.36
995	IP170	42.0		0.43	6135	D93	43.0		1.30
996		-----		-----	6142	IP170	42.0		0.43
997		-----		-----	6147	IP170	41.0		-0.45
998	IP170	42.0		0.43	6201	IP170	39.5		-1.76
1011	IP170	41.0		-0.45	6203	D56	43.5		1.74
1012		-----		-----	6238		-----		-----
1016		-----		-----	6240	IP170	40.7		-0.71
1039	IP170	42.5		0.87	6241	IP170	40.5		-0.88

lab	method	value	mark	z(targ)
6244	D56	41.13		-0.33
6262		-----		-----
6266		-----		-----
6274	IP170	41.5		-0.01
9014		-----		-----
9128	IP170	40.5		-0.88

|		
normality	OK	
n	130	
outliers	0	
mean (n)	41.51	
st.dev. (n)	1.049	
R(calc.)	2.94	
st.dev.(IP170:14)	1.143	
R(IP170:14)	3.2	
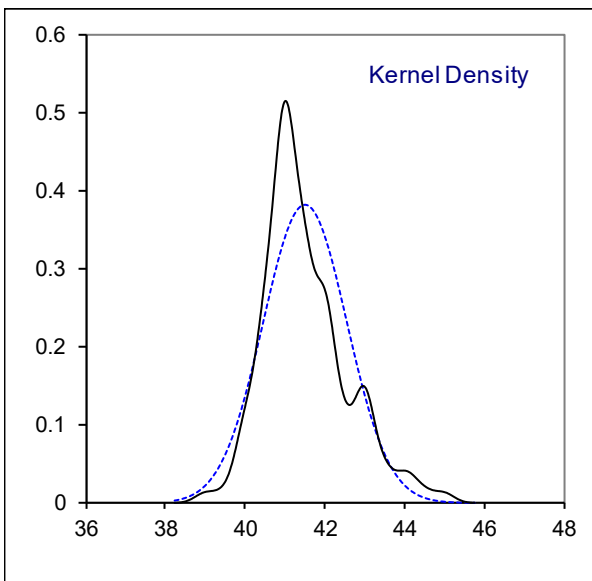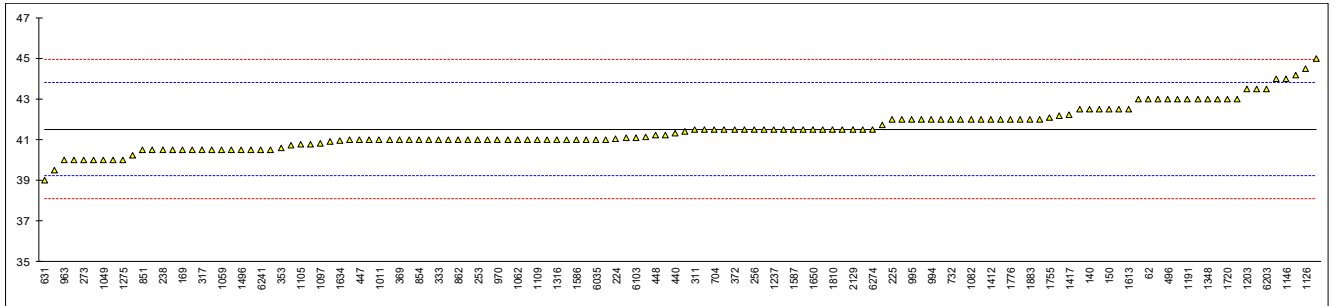
Determination of Freezing Point on sample #19150; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D5972	-53.7		0.37	1047	D7153	-54.1		-0.08
62	D5972	-55.0		-1.09	1049	D7153	-54.0		0.03
120	D5972	-53.3		0.81	1059	D2386	-55.5		-1.65
140	D5972	-55.5		-1.65	1062	D7153	-54.3		-0.31
150	D7153	-54.3		-0.31	1064	D7153	-53.7		0.37
159	D2386	-55		-1.09	1065	D2386	-54.1		-0.08
169	D2386	-52		2.27	1079	D5972	-55.4		-1.54
171	D2386	-55.0	C	-1.09	1080		-----		-----
175		-----		-----	1082	IP529	-54.1		-0.08
177	D2386	-55.0		-1.09	1097	IP529	-53.7		0.37
194		-----		-----	1105	D7153	-53.5		0.59
221		-----		-----	1109	D5972	-54.4		-0.42
224		-----		-----	1121	D2386	-54.0		0.03
225	D2386	-55.0		-1.09	1126		-----		-----
228	D2386	-52	C	2.27	1146		-----		-----
230	D2386	-54.25		-0.25	1150	D2386	-54		0.03
237	D2386	-53.0		1.15	1191	IP529	-53.6		0.48
238		-----		-----	1203	D2386	-54.5		-0.53
253	D2386	-54.0		0.03	1212	D2386	-54.5		-0.53
254	D2386	-55.5		-1.65	1237	D2386	-54.5		-0.53
256	D2386	-54.5		-0.53	1275	IP529	-53.9		0.14
258	D2386	-54.0		0.03	1277	D7153	-54.3		-0.31
273	D2386	-52		2.27	1279		-----		-----
311	D2386	-54.0		0.03	1299	D2386	-53.0		1.15
317	D5972	-54.1		-0.08	1316	D7153	-54.1		-0.08
323	D2386	-55.0		-1.09	1318	D7153	-53.7		0.37
333	IP529	-53.8		0.25	1347	D2386	-54.0		0.03
334	D2386	-53.6		0.48	1348	D2386	-54		0.03
335	IP529	-54.0		0.03	1357	D2386	-53.8		0.25
336		-----		-----	1372		-----		-----
353	IP16	-54.0		0.03	1373		-----		-----
369	D2386	-53.5		0.59	1399		-----		-----
370	D2386	-53.5		0.59	1412		-----		-----
372	D2386	-53.5		0.59	1417		-----		-----
391	D2386	-54.0		0.03	1496	D2386	-54.4		-0.42
399	D7153	-54.3		-0.31	1528	D7153	-54.1		-0.08
440	IP16	-54.0		0.03	1538		-----		-----
445	D2386	-54.2		-0.19	1575	D2386	-53		1.15
447	IP529	-53.8		0.25	1586	D2386	-54.5		-0.53
448	D2386	-53.8		0.25	1587	IP529	-54.3		-0.31
453	D5972	-54.95		-1.03	1610	D5972	-54.9		-0.98
463	D2386	-54.0		0.03	1613	D7153	-54.3		-0.31
468		-----		-----	1616	D7153	-53.3		0.81
485		-----		-----	1631	D2386	-54		0.03
496	D2386	-54.0		0.03	1634	D2386	-55.0		-1.09
603	D2386	-53.5		0.59	1650	D2386	-53.5		0.59
608	D2386	-55.5		-1.65	1715	D5972	-54		0.03
631	D5972	-54.0		0.03	1720	D7153	-54.5		-0.53
633		-----		-----	1724	IP435	-54.0		0.03
657	D7153	-54.5		-0.53	1730	D2386	-54.0		0.03
704	D2386	-54		0.03	1755	D2386	-53.27		0.85
732		-----		-----	1776	IP529	-55		-1.09
798		-----		-----	1810	D7153	-53.7		0.37
823	D2386	-53.0		1.15	1811	D2386	-54.4		-0.42
824	D2386	-54.5		-0.53	1852	D7153	-53.6		0.48
851	D7153	-53.3		0.81	1852	D7153	-53.6		0.48
854	D2386	-54.0		0.03	1883	D2386	-54		0.03
862	D2386	-54.0		0.03	1913	D7153	-53.8		0.25
869	D2386	-54.0		0.03	1961		-----		-----
873		-----		-----	2129	D2386	-53.0		1.15
904		-----		-----	2130	D7153	-53.4		0.70
962	D2386	-55		-1.09	6035	D7153	-54.4		-0.42
963	D2386	-54.0		0.03	6041	D7153	-53.7		0.37
970	D2386	-54.0		0.03	6054		-----		-----
974	D2386	-54.0		0.03	6075	IP529	-53.3		0.81
994	D2386	-53.5		0.59	6103	D7153	-54.2		-0.19
995	D2386	-54.0		0.03	6135	D5972	-54.3		-0.31
996		-----		-----	6142		-----		-----
997	D2386	-54		0.03	6147	D7153	-53.7		0.37
998	D2386	-53.0		1.15	6201	D7153	-53.8		0.25
1011	D5972	-53.6		0.48	6203	D2386	-54.5		-0.53
1012		-----		-----	6238		-----		-----
1016		-----		-----	6240	D2386	-53.5		0.59
1039	IP529	-53.8		0.25	6241	D7153	-54.1		-0.08

lab	method	value	mark	z(targ)
6244	D2386	-53.38		0.72
6262		-----		-----
6266		-----		-----
6274	D5972	-55.5		-1.65
9014		-----		-----
9128	D7153	-54.0		0.03

normality	suspect
n	121
outliers	0
mean (n)	-54.03
st.dev. (n)	0.661
R(calc.)	1.85
st.dev.(D2386:19)	0.893
R(D2386:19)	2.5

Lab 171: first reported -60.0
Lab 228: first reported -47

Kernel Density
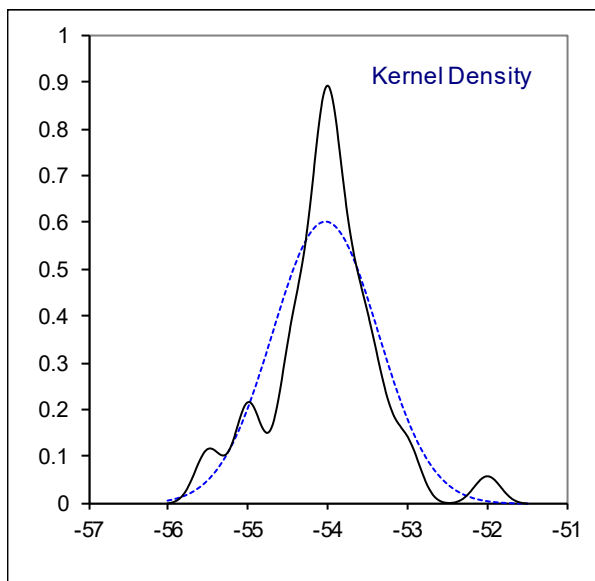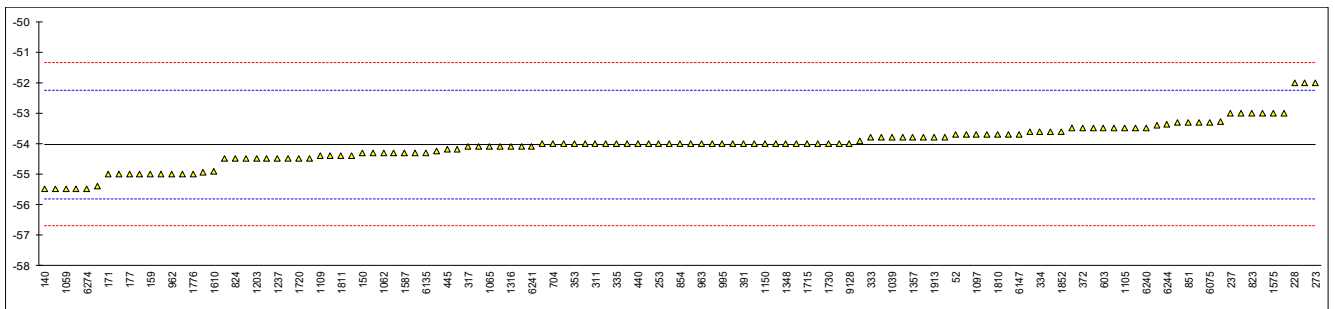
Determination of Kinematic Viscosity at -20°C on sample #19150; results in mm^2/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D445	3.626		-0.19	1047	D445	3.638		0.29
62	D445	3.624		-0.28	1049	D445	3.633		0.09
120	D445	3.6312		0.02	1059	D445	3.624		-0.28
140	D445	3.666	C	1.43	1062	D445	3.617		-0.56
150	D445	3.627		-0.15	1064	D445	3.632		0.05
159	D445	3.628		-0.11	1065	D445	3.709	R(0.01)	3.17
169	D445	3.9221	C,R(0.01)	11.82	1079	D445	3.637		0.25
171	D445	3.626		-0.19	1080	D7042	3.5833		-1.93
175	D445	3.629		-0.07	1082	D445	3.6279		-0.12
177	D445	3.655	C	0.98	1097	ISO3104	3.6436		0.52
194		-----		-----	1105	D445	3.6125		-0.74
221		-----		-----	1109	D445	3.6366		0.24
224		-----		-----	1121		-----		-----
225	D445	3.624		-0.28	1126		-----		-----
228		-----		-----	1146		-----		-----
230	D445	3.646	C	0.62	1150	ISO3104	3.5746	C	-2.28
237	D445	3.677		1.88	1191	D445	3.6502		0.79
238		-----		-----	1203	ISO3104	3.606	C	-1.01
253	D445	3.615		-0.64	1212		-----		-----
254	D445	3.620		-0.44	1237		-----		-----
256	D445	3.621		-0.40	1275	IP71	3.7136	R(0.01)	3.36
258		-----		-----	1277	D445	2.86	C,R(0.01)	-31.29
273		-----		-----	1279		-----		-----
311	D445	3.639		0.33	1299	D445	3.655		0.98
317		-----		-----	1316	D445	3.647		0.66
323	D445	3.548	R(0.01)	-3.36	1318	D7042	3.611		-0.80
333	D445	3.601		-1.21	1347		-----		-----
334	D445	3.627		-0.15	1348	D445	3.703	C	2.93
335	D445	3.646		0.62	1357	D445	3.646		0.62
336		-----		-----	1372		-----		-----
353		-----		-----	1373		-----		-----
369	D445	3.621		-0.40	1399		-----		-----
370	D445	3.6365		0.23	1412		-----		-----
372	D445	3.624		-0.28	1417	D445	3.63		-0.03
391		-----		-----	1496	D445	3.604		-1.09
399	D445	3.632	C	0.05	1528	D445	3.6380		0.29
440	D445	3.6582		1.11	1538		-----		-----
445	D7042	3.6201		-0.43	1575		-----		-----
447	D445	3.637		0.25	1586	D445	3.639		0.33
448	D445	3.658	C	1.10	1587	D445	3.59706		-1.37
453	IP71	3.632		0.05	1610		-----		-----
463	D7042	3.6459		0.61	1613	D445	3.6271		-0.15
468		-----		-----	1616	D445	3.6264		-0.18
485		-----		-----	1631		-----		-----
496	D445	3.6648		1.38	1634	D445	3.621		-0.40
603		-----		-----	1650	D445	3.6437		0.52
608		-----		-----	1715		-----		-----
631	D445	3.6509		0.82	1720	D445	3.833	C,R(0.01)	8.21
633		-----		-----	1724	D445	3.56835		-2.53
657		-----		-----	1730	D445	2.881	R(0.01)	-30.43
704		-----		-----	1755	D445	3.5676	C	-2.57
732		-----		-----	1776	D445	3.449	R(0.01)	-7.38
798		-----		-----	1810	D7042	3.630		-0.03
823	D445	3.622		-0.36	1811	D445	3.6219		-0.36
824	D445	3.629		-0.07	1833		-----	W	-----
851	D445	3.63713		0.26	1852	D445	3.6338		0.12
854	D445	3.6415		0.43	1883		-----		-----
862	D445	3.652		0.86	1913	D445	3.626		-0.19
869	D445	3.641		0.41	1961		-----		-----
873		-----		-----	2129	D445	3.634		0.13
904		-----		-----	2130	D445	3.629		-0.07
962		-----		-----	6035	ISO3104	3.610		-0.84
963	D445	3.654		0.94	6041	D445	3.643		0.50
970		-----		-----	6054		-----		-----
974	D445	3.638		0.29	6075	D445	3.9044	R(0.01)	11.10
994		-----		-----	6103	ISO3104	3.647		0.66
995	D445	3.612		-0.76	6135	D445	3.641		0.41
996		-----		-----	6142		-----		-----
997		-----		-----	6147		-----		-----
998		-----		-----	6201	D445	3.934	R(0.01)	12.31
1011	D445	3.647		0.66	6203	D445	3.6103		-0.83
1012		-----		-----	6238		-----		-----
1016		-----		-----	6240		-----		-----
1039	D445	3.619		-0.48	6241	D7042	3.608		-0.93

lab	method	value	mark	z(targ)
6244		-----		-----
6262		-----		-----
6266		-----		-----
6274	D7042	3.643		0.50
9014		-----		-----
9128		-----		-----

normality	not OK
n	85
outliers	10
mean (n)	3.6308
st.dev. (n)	0.02128
R(calc.)	0.0596
st.dev.(D445:19)	0.02464
R(D445:19)	0.0690

Lab 140: first reported 3.715　　　　　　　　　　　　　　Lab 1203: first reported 3.860
Lab 169: first reported 3.7005　　　　　　　　　　　　　Lab 1277: first reported 3.89
Lab 177: first reported 3.700　　　　　　　　　　　　　　Lab 1348: first reported 3.737
Lab 230: first reported 3.4768　　　　　　　　　　　　　Lab 1720: first reported 3.322
Lab 399: first reported 3.947　　　　　　　　　　　　　　Lab 1755: first reported 3.541
Lab 448: first reported 3.875　　　　　　　　　　　　　　Lab 1833: first reported 3.323
Lab 1150: first reported 3.4746

Kernel Density
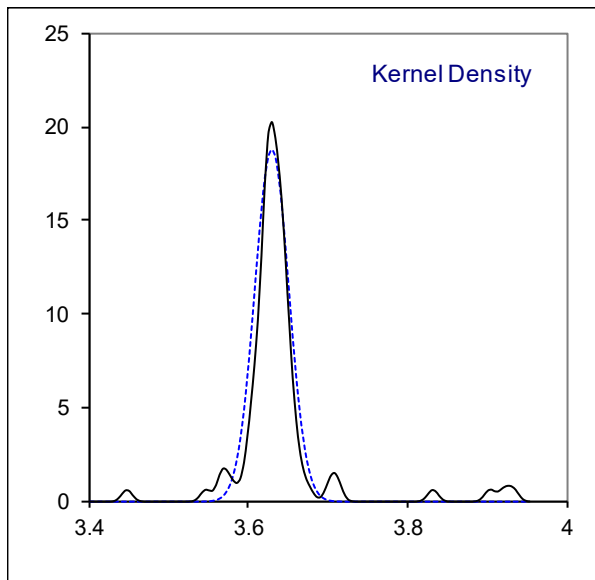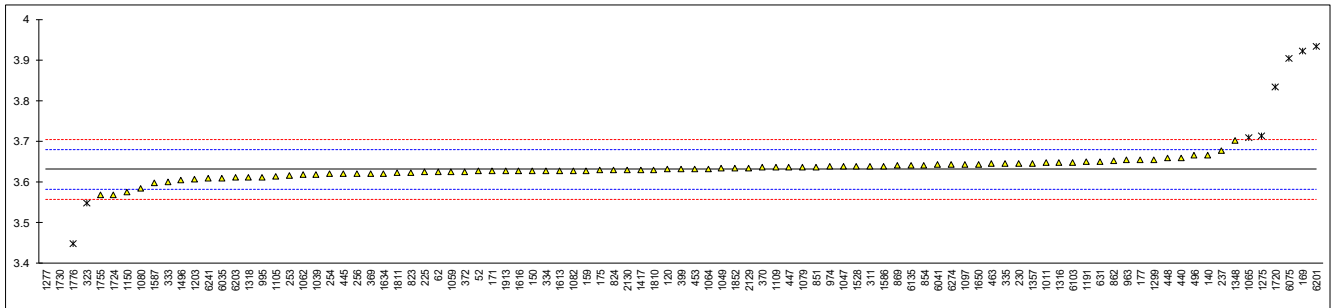
Determination of Mercaptan Sulfur as S on sample #19150; converted results to %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3227	0.0004		-0.88	1047	D3227	0.00047		-0.28
62	D3227	0.0006		0.82	1049	D3227	0.000485		-0.16
120	D3227	0.00045		-0.45	1059	D3227	0.0006		0.82
140	D3227	0.0007		1.66	1062	D3227	0.00052		0.14
150	D3227	0.0005		-0.03	1064	D3227	0.00049		-0.11
159	D3227	0.0004		-0.88	1065	D3227	0.0004		-0.88
169	D3227	0.0006		0.82	1079	D3227	0.00047		-0.28
171	D3227	0.0004		-0.88	1080		-----		-----
175	D3227	0.0005		-0.03	1082	D3227	0.000551		0.40
177	D3227	0.0004		-0.88	1097	ISO3012	0.00046		-0.37
194		-----		-----	1105	D3227	0.00055		0.39
221		-----		-----	1109	D3227	0.00049		-0.11
224		-----		-----	1121		-----		-----
225		-----		-----	1126		-----		-----
228		-----		-----	1146		-----		-----
230	D3227	0.00051		0.06	1150		-----		-----
237	D3227	0.0006		0.82	1191		-----		-----
238		-----		-----	1203	D3227	0.0006		0.82
253	D3227	0.0005		-0.03	1212	D3227	0.00048		-0.20
254		-----		-----	1237		-----		-----
256		-----		-----	1275	IP342	0.0006	C	0.82
258		-----		-----	1277	D3227	0.0017	R(0.01)	10.12
273		-----		-----	1279		-----		-----
311	D3227	0.00069		1.58	1299	D3227	0.00043		-0.62
317		-----		-----	1316	D3227	0.0005		-0.03
323	D3227	0.0004		-0.88	1318		-----		-----
333	D3227	0.0005		-0.03	1347	IP342	0.00046		-0.37
334	D3227	0.0004		-0.88	1348	IP342	0.0006		0.82
335	D3227	0.0009	R(0.05)	3.35	1357	D3227	0.0004		-0.88
336		-----		-----	1372		-----		-----
353		-----		-----	1373		-----		-----
369	D3227	0.0005		-0.03	1399		-----		-----
370		-----		-----	1412	UOP163	0.0006		0.82
372	D3227	0.00056		0.48	1417		-----		-----
391		-----		-----	1496	D3227	0.00050		-0.03
399		-----		-----	1528	D3227	0.00045		-0.45
440	D3227	0.0005		-0.03	1538		-----		-----
445	D3227	0.0004		-0.88	1575		-----		-----
447	D3227	0.0005		-0.03	1586	D3227	0.0004		-0.88
448	D3227	0.0007		1.66	1587		-----		-----
453	IP342	0.0004		-0.88	1610	IP342	0.0006		0.82
463	D3227	0.00045		-0.45	1613	D3227	0.00066		1.32
468		-----		-----	1616	D3227	0.000568		0.55
485		-----		-----	1631		-----		-----
496	D3227	0.00048		-0.20	1634	D3227	0.00048		-0.20
603		-----		-----	1650	D3227	0.0006		0.82
608		-----		-----	1715		-----		-----
631	D3227	0.00048		-0.20	1720		-----		-----
633		-----		-----	1724	D3227	0.00050		-0.03
657	D3227	0.0007		1.66	1730	D3227	0.0004		-0.88
704	D3227	0.00051	C	0.06	1755		-----		-----
732	D3227	0.0005		-0.03	1776		-----		-----
798		-----		-----	1810	D3227	0.00053		0.22
823	D3227	0.0008		2.51	1811	D3227	0.00051		0.06
824	D3227	0.00045		-0.45	1833	D3227	0.0005		-0.03
851	D3227	0.00034		-1.38	1852	D3227	0.0004		-0.88
854	D3227	0.00047		-0.28	1883		-----		-----
862	D3227	0.00043		-0.62	1913	D3227	0.00070		1.66
869	D3227	0.00048		-0.20	1961		-----		-----
873		-----		-----	2129	D3227	0.00050		-0.03
904	D3227	0.0003		-1.72	2130	D3227	0.00059		0.73
962	D3227	<0.0003	C	-----	6035		-----		-----
963	D3227	0.0003		-1.72	6041	D3227	0.00041		-0.79
970		-----		-----	6054		-----		-----
974	D3227	0.0004		-0.88	6075	D3227	0.00202	R(0.01)	12.82
994	D3227	0.0005		-0.03	6103	D3227	0.0005		-0.03
995	D3227	0.00042		-0.71	6135		-----		-----
996		-----		-----	6142		-----		-----
997		-----		-----	6147		-----		-----
998		-----		-----	6201	UOP163	0.00064		1.15
1011	D3227	0.0004		-0.88	6203	D3227	0.00075	C	2.08
1012		-----		-----	6238		-----		-----
1016	D3227	0.0004		-0.88	6240	D3227	0.0005		-0.03
1039	IP342	0.0005		-0.03	6241		-----		-----

lab	method	value	mark	z(targ)	
6244		-----		-----	
6262		-----		-----	
6266		-----		-----	
6274	D3227	0.00054		0.31	
9014		-----		-----	
9128		-----		-----	

|	
normality	OK
n	87
outliers	3
mean (n)	0.00050
st.dev. (n)	0.000098
R(calc.)	0.00027
st.dev.(D3227:16)	0.000118
R(D3227:16)	0.00033

Lab 704: first reported 0.00051 mg/kg
Lab 962: reported <3 %M/M, possibly a unit error?
Lab 1275: first reported 0.0009
Lab 6203: first reported 0.00095
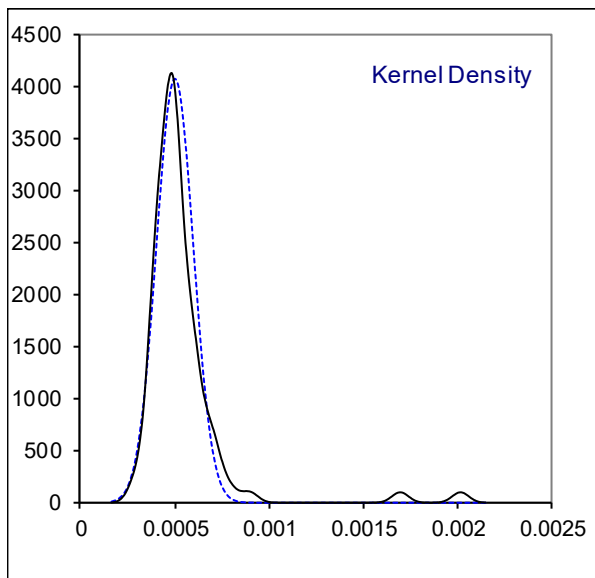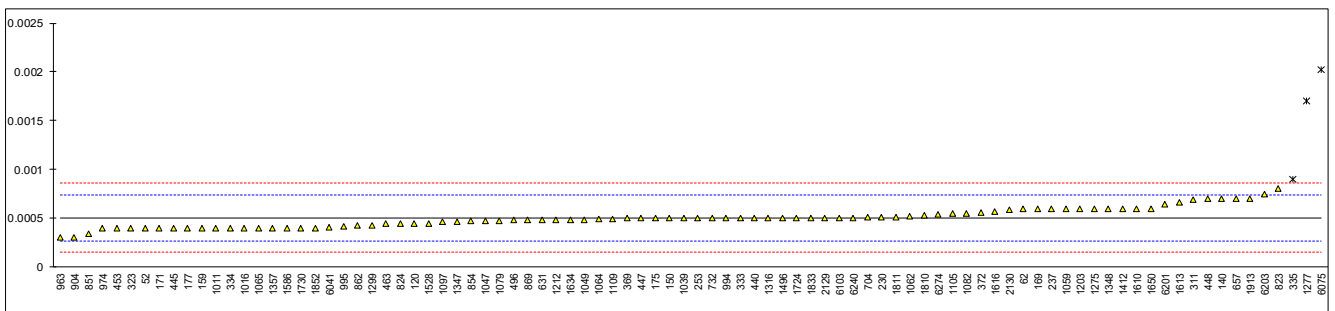
Determination of MSEP on sample #19150;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3948	96		1.16	1047	D3948	88		-0.92
62	D3948	94		0.64	1049	D3948	92		0.12
120	D3948	85		-1.70	1059	D3948	86		-1.44
140	D3948	96		1.16	1062	D3948	94		0.64
150	D3948	86		-1.44	1064	D7224	92		0.12
159	D3948	93		0.38	1065		-----		-----
169	D3948	92		0.12	1079	D3948	92		0.12
171	D3948	95		0.90	1080		-----		-----
175		-----		-----	1082	D3948	94		0.64
177	D3948	95		0.90	1097	D3948	79		-3.26
194		-----		-----	1105	D3948	91		-0.14
221		-----		-----	1109	D3948	83		-2.22
224		-----		-----	1121	D3948	96		1.16
225	D3948	90		-0.40	1126		-----		-----
228	D3948	95		0.90	1146		-----		-----
230	D3948	89		-0.66	1150	D3948	95		0.90
237	D3948	99		1.94	1191	D3948	88		-0.92
238		-----		-----	1203		-----		-----
253	D3948	95		0.90	1212	D3948	92		0.12
254	D3948	97		1.42	1237		-----		-----
256	D3948	94		0.64	1275	D3948	94		0.64
258	D3948	96		1.16	1277	D3948	89		-0.66
273		-----		-----	1279		-----		-----
311	D3948	89		-0.66	1299	D3948	96		1.16
317	D3948	88		-0.92	1316	D3948	85		-1.70
323	D3948	89		-0.66	1318	D3948	91		-0.14
333	D7224	90		-0.40	1347	D3948	97		1.42
334	D7224	90		-0.40	1348	D3948	87		-1.18
335	D7224	84		-1.96	1357	D3948	93		0.38
336		-----		-----	1372		-----		-----
353	D3948	90		-0.40	1373		-----		-----
369		-----		-----	1399		-----		-----
370		-----		-----	1412		-----		-----
372	D3948	95		0.90	1417		-----		-----
391		-----		-----	1496	D3948	94		0.64
399	D3948	88		-0.92	1528	D3948	91		-0.14
440	D3948	83		-2.22	1538	D7224	91		-0.14
445	D3948	94		0.64	1575		-----		-----
447	D3948	93		0.38	1586	D7224	94		0.64
448	D3948	87		-1.18	1587	D3948	88		-0.92
453	D3948	95		0.90	1610	D3948	93		0.38
463	D3948	84		-1.96	1613	D3948	95		0.90
468		-----		-----	1616	D3948	95		0.90
485		-----		-----	1631		-----		-----
496		-----		-----	1634	D3948	96		1.16
603	D3948	92		0.12	1650	D3948	95		0.90
608		-----		-----	1715		-----		-----
631	D3948	91		-0.14	1720	D3948	97		1.42
633	D3948	91		-0.14	1724	D3948	94		0.64
657	D3948	93		0.38	1730	D3948	95		0.90
704		-----		-----	1755	D3948	94		0.64
732		-----		-----	1776	D3948	89		-0.66
798		-----		-----	1810	D3948	88		-0.92
823	D3948	93		0.38	1811	D3948	89		-0.66
824	D3948	91		-0.14	1833	D7224	88		-0.92
851	D3948	92		0.12	1852	D3948	97		1.42
854	D3948	94		0.64	1883	D3948	96		1.16
862	D3948	91		-0.14	1913	D3948	81		-2.74
869	D3948	95		0.90	1961	D3948	91		-0.14
873		-----		-----	2129	D3948	98		1.68
904		-----		-----	2130	D3948	90		-0.40
962	D3948	88		-0.92	6035		-----		-----
963	D3948	88		-0.92	6041	D3948	95		0.90
970	D3948	93		0.38	6054		-----		-----
974	D3948	92		0.12	6075	D3948	93.0		0.38
994		-----		-----	6103	D7224	94		0.64
995		-----		-----	6135	D3948	94		0.64
996		-----		-----	6142		-----		-----
997		-----		-----	6147	D3948	96		1.16
998		-----		-----	6201	D3948	83		-2.22
1011	D3948	80		-3.00	6203	D3948	94		0.64
1012		-----		-----	6238		-----		-----
1016		-----		-----	6240	D3948	95		0.90
1039	D3948	95		0.90	6241	D3948	92		0.12

lab	method	value	mark	z(targ)	
6244		-----		-----	
6262		-----		-----	
6266		-----		-----	
6274	D3948	86		-1.44	
9014		-----		-----	
9128		-----		-----	

|	
normality	OK
n	104
outliers	0
mean (n)	91.54
st.dev. (n)	4.155
R(calc.)	11.63
st.dev.(D3948:14)	3.850
R(D3948:14)	10.78

Kernel Density
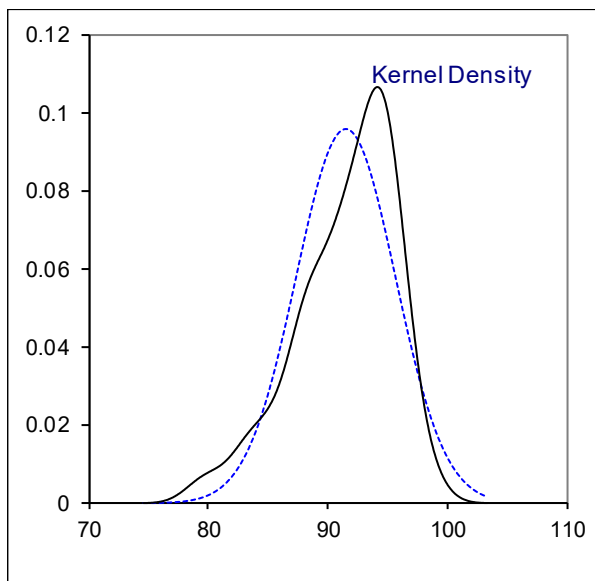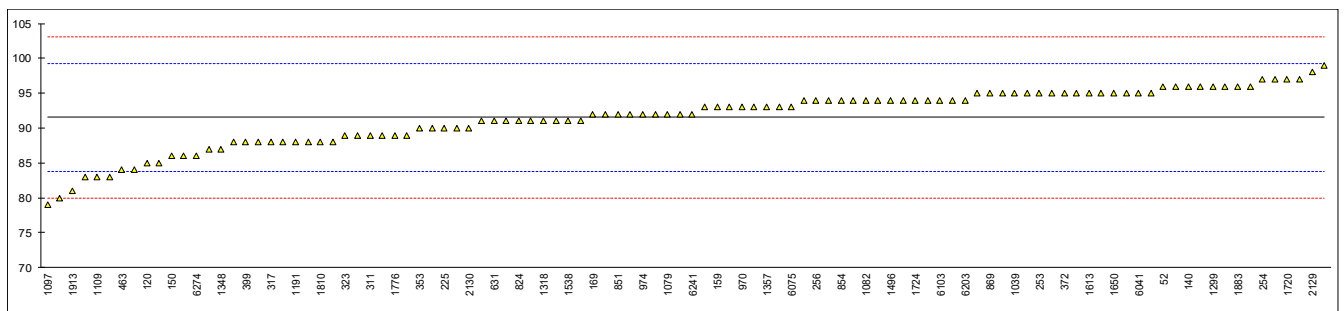
Determination of Naphthalenes on sample #19150; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D1840-B	0.63		-0.60	1047	D1840-A	0.65		0.17
62	D1840-A	0.65		0.17	1049	D1840-A	0.656		0.40
120	D1840-B	0.625		-0.80	1059	D1840-B	0.64		-0.21
140	D1840-A	0.65	C	0.17	1062	D1840-A	0.66		0.56
150	D1840-B	0.65		0.17	1064	D1840-A	0.637		-0.33
159	D1840-B	0.64		-0.21	1065	D1840-A	0.67		0.95
169	D1840-B	0.63		-0.60	1079	D1840-A	0.641		-0.18
171	D1840-B	0.63		-0.60	1080		-----		-----
175		-----		-----	1082	D1840-B	0.635		-0.41
177	D1840-B	0.64		-0.21	1097	D1840-A	0.638		-0.29
194		-----		-----	1105	D1840-B	0.649	C	0.13
221		-----		-----	1109	D1840-B	0.62		-0.99
224		-----		-----	1121		-----		-----
225		-----		-----	1126		-----		-----
228		-----		-----	1146		-----		-----
230	D1840-B	0.638		-0.29	1150		-----		-----
237	D1840-B	0.65		0.17	1191	D1840-B	0.631		-0.56
238		-----		-----	1203	D1840-A	0.99	C,R(0.01)	13.34
253	D1840-B	0.63		-0.60	1212	D1840-B	0.651		0.21
254		-----		-----	1237	D1840-B	0.637		-0.33
256		-----		-----	1275	D1840-A	0.626		-0.76
258		-----		-----	1277		-----		-----
273		-----		-----	1279		-----		-----
311	D1840-B	0.64		-0.21	1299	D1840-B	0.64		-0.21
317		-----		-----	1316	D1840-B	0.65		0.17
323	D1840-A	0.66		0.56	1318	D1840-A	0.63		-0.60
333	D1840-B	0.65		0.17	1347	D1840-B	0.645	C	-0.02
334	D1840-B	0.69		1.72	1348	D1840-B	0.65		0.17
335	D1840-B	0.68		1.33	1357	D1840-A	NA		-----
336		-----		-----	1372		-----		-----
353		-----		-----	1373		-----		-----
369	D1840-B	0.66		0.56	1399		-----		-----
370	D1840-B	0.648		0.10	1412		-----		-----
372	D1840-B	0.641		-0.18	1417		-----		-----
391		-----		-----	1496	D1840-B	0.6448		-0.03
399		-----		-----	1528	D1840-B	0.67		0.95
440	D1840-B	0.68		1.33	1538		-----		-----
445	D1840-A	0.68		1.33	1575		-----		-----
447	D1840-B	0.61		-1.38	1586	D1840-A	0.56	C,R(0.01)	-3.31
448		-----		-----	1587		-----		-----
453	D1840-B	0.59		-2.15	1610		-----		-----
463	D1840-A	0.660		0.56	1613		-----		-----
468		-----		-----	1616	D1840-B	0.651		0.21
485		-----		-----	1631		-----		-----
496	D1840-B	0.569	R(0.01)	-2.96	1634	D1840-B	0.64		-0.21
603		-----		-----	1650		-----		-----
608		-----		-----	1715		-----		-----
631	D1840-A	0.682		1.41	1720	D1840-B	0.65		0.17
633		-----		-----	1724		-----		-----
657	D1840-A	0.62		-0.99	1730		-----		-----
704	D1840-A	0.648		0.10	1755		-----		-----
732		-----		-----	1776	D1840-B	0.66		0.56
798		-----		-----	1810	D1840-A	0.61		-1.38
823	D1840-A	0.66		0.56	1811	D1840-A	0.6356		-0.39
824	D1840-B	0.64		-0.21	1833		-----		-----
851	D1840-A	0.651		0.21	1852		-----		-----
854	D1840-A	0.65		0.17	1883		-----		-----
862	D1840-B	0.65		0.17	1913	D1840-B	0.676		1.18
869	D1840-A	0.66		0.56	1961	D1840-B	0.63		-0.60
873		-----		-----	2129	D1840-B	0.648		0.10
904		-----		-----	2130	D1840-B	0.63		-0.60
962	D1840-A	0.62		-0.99	6035		-----		-----
963	D1840-B	0.637		-0.33	6041	D1840-B	0.652		0.25
970		-----		-----	6054		-----		-----
974	D1840-A	0.63		-0.60	6075	D1840-B	0.646		0.02
994	D1840-B	0.647		0.06	6103	D1840-B	0.65	C	0.17
995	D1840-B	0.71	R(0.05)	2.50	6135	D1840-B	0.6611		0.60
996		-----		-----	6142		-----		-----
997		-----		-----	6147		-----		-----
998		-----		-----	6201	D1840-B	0.64		-0.21
1011	D1840-B	0.67		0.95	6203	D1840-B	0.565	C,R(0.01)	-3.12
1012		-----		-----	6238		-----		-----
1016	D1840-A	0.64		-0.21	6240	D1840-A	0.64		-0.21
1039	D1840-A	0.65		0.17	6241		-----		-----

lab	method	value	mark	z(targ)	
6244		-----		-----	
6262		-----		-----	
6266		-----		-----	
6274	D1840-B	0.6460		0.02	
9014		-----		-----	
9128		-----		-----	

			Only D1840-A	Only D1840-B
normality	suspect		OK	not OK
n	80		28	52
outliers	5		2	3
mean (n)	0.6455		0.6466	0.6450
st.dev. (n)	0.01715		0.01734	0.01719
R(calc.)	0.0480		0.0485	0.0481
st.dev.(D1840-B:07)	0.02582		-----	0.02580
R(D1840-B:07)	0.0723		-----	0.0723
Compare				
R(D1840-A:07)	0.0492		0.0492	-----

Lab 140: first reported 1.88
Lab 1105: first reported 1.065
Lab 1203: first reported 1.17
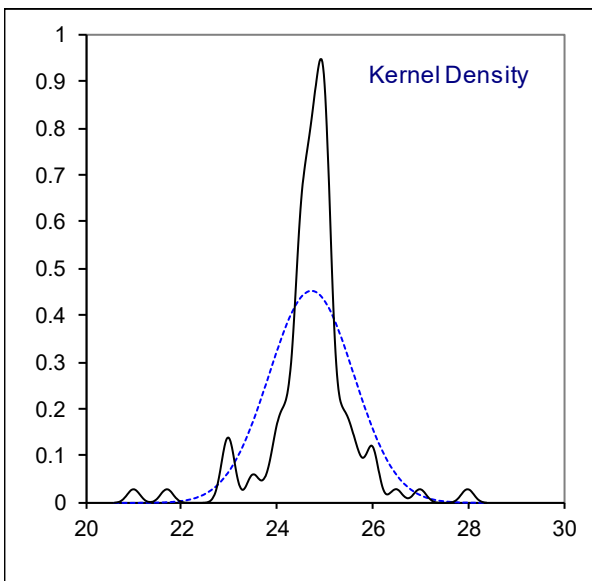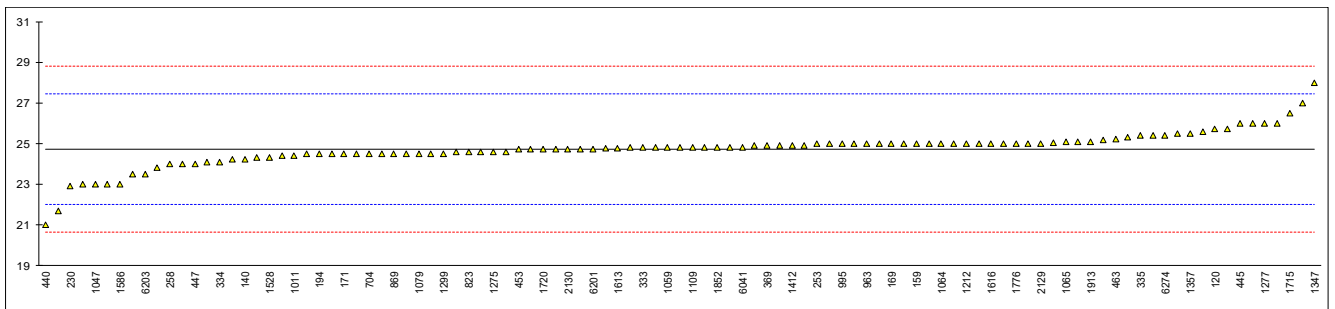Lab 1347: first reported 0.45
Lab 1586: first reported 1.56

Lab 6103: first reported 0.78
Lab 6203: first reported 0.785

Kernel Density
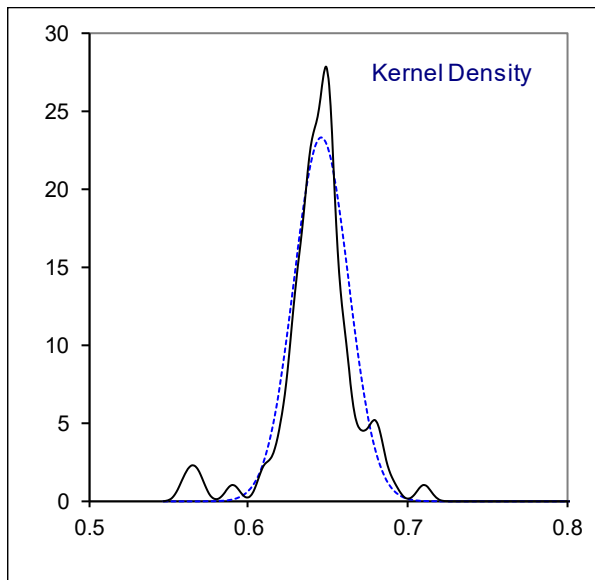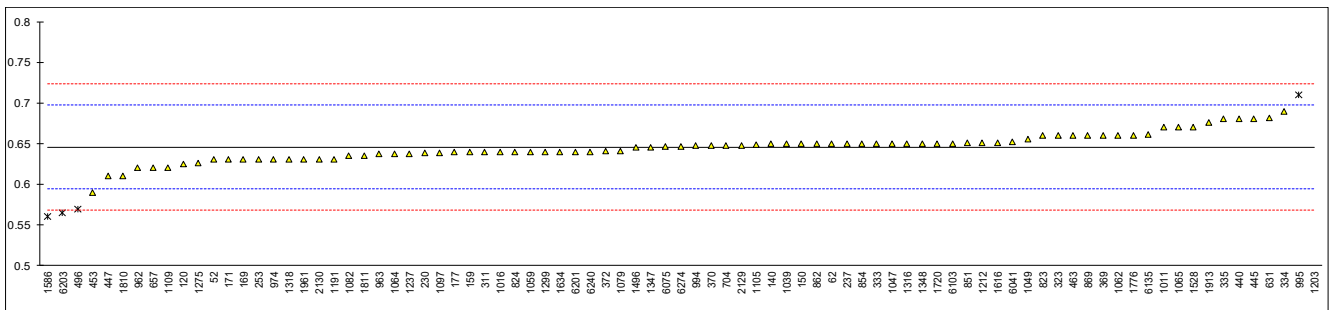
Determination of Smoke Point on sample #19150; results in mm

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D1322-manual	24.5		-0.17	1047	D1322-manual	23		-1.27
62	D1322-manual	21.7		-2.22	1049	D1322-automated	24.9		0.13
120	D1322-automated	25.7		0.71	1059	D1322-manual	24.8		0.05
140	D1322-automated	24.2		-0.39	1062	D1322-manual	24.5		-0.17
150	D1322-automated	24.8		0.05	1064	D1322-automated	25.0		0.20
159	D1322-automated	25.0		0.20	1065	D1322-automated	25.1		0.27
169	D1322-automated	25.0		0.20	1079	D1322-automated	24.5		-0.17
171	D1322-automated	24.5		-0.17	1080		-----		-----
175		-----		-----	1082	D1322-automated	24.8		0.05
177	D1322-automated	24.4		-0.24	1097	D1322-automated	25.0		0.20
194	D1322-manual	24.5		-0.17	1105	D1322-automated	25.6		0.64
221		-----		-----	1109	D1322-automated	24.8		0.05
224		-----		-----	1121	D1322-manual	26		0.93
225		-----		-----	1126		-----		-----
228	D1322-manual	24.2		-0.39	1146		-----		-----
230	D1322-manual	22.9		-1.34	1150		-----		-----
237	D1322-automated	24.7		-0.02	1191	D1322-automated	24.5		-0.17
238		-----		-----	1203	D1322-manual	25.06		0.24
253	D1322-manual	25.0		0.20	1212	D1322-manual	25.0		0.20
254	D1322-manual	23.5		-0.90	1237		-----		-----
256	D1322-manual	24.75		0.02	1275	IP598-automated	24.6		-0.09
258	D1322-manual	24.0		-0.54	1277	D1322-automated	26.0		0.93
273		-----		-----	1279		-----		-----
311	D1322-manual	23.0		-1.27	1299	D1322-automated	24.5		-0.17
317		-----		-----	1316	D1322-automated	25.0		0.20
323	D1322-automated	24.5		-0.17	1318	D1322-automated	25.5		0.57
333	D1322-automated	24.8		0.05	1347	D1322-manual	28		2.40
334	D1322-automated	24.1		-0.46	1348	D1322-manual	27		1.67
335	D1322-manual	25.4		0.49	1357	D1322-manual	25.5		0.57
336		-----		-----	1372		-----		-----
353	IP57-manual	25.18		0.33	1373		-----		-----
369	D1322-manual	24.9		0.13	1399		-----		-----
370	D1322-manual	23.8		-0.68	1412	D1322-manual	24.9		0.13
372	D1322-automated	24.6		-0.09	1417		-----		-----
391	D1322-manual	23.0		-1.27	1496	D1322-automated	25.1		0.27
399		-----		-----	1528	D1322-manual	24.3		-0.31
440	D1322-manual	21.0		-2.74	1538		-----		-----
445	D1322-manual	26.0		0.93	1575	D1322-manual	25.4		0.49
447	D1322-manual	24		-0.54	1586	D1322-manual	23.0		-1.27
448	D1322-manual	25		0.20	1587	D1322-automated	25.7		0.71
453	D1322-automated	24.7		-0.02	1610		-----		-----
463	D1322-manual	25.22		0.36	1613	D1322-automated	24.766		0.03
468		-----		-----	1616	D1322-automated	25.0		0.20
485		-----		-----	1631		-----		-----
496	D1322-manual	24.1		-0.46	1634	D1322-automated	24.8		0.05
603		-----		-----	1650	D1322-manual	26.0		0.93
608		-----		-----	1715	D1322-manual	26.5		1.30
631	D1322-automated	24.3		-0.31	1720	D1322-automated	24.7		-0.02
633		-----		-----	1724	D1322-manual	25		0.20
657	D1322-manual	24.5		-0.17	1730		-----		-----
704	D1322-manual	24.5		-0.17	1755		-----		-----
732		-----		-----	1776	D1322-automated	25.0		0.20
798		-----		-----	1810	D1322-automated	25		0.20
823	D1322-manual	24.6		-0.09	1811	D1322-manual	24.7		-0.02
824	D1322-automated	24.6		-0.09	1833	D1322-automated	25.3		0.42
851	D1322-manual	25		0.20	1852	D1322-automated	24.8		0.05
854	D1322	24.5		-0.17	1883		-----		-----
862	D1322-manual	25.0		0.20	1913	D1322-automated	25.1		0.27
869	D1322-manual	24.5		-0.17	1961		-----		-----
873		-----		-----	2129	D1322-manual	25.00		0.20
904	D1322-manual	25		0.20	2130	D1322-automated	24.7		-0.02
962	D1322-manual	24		-0.54	6035	D1322-automated	24.8		0.05
963	D1322-manual	25.0		0.20	6041	D1322-automated	24.8		0.05
970		-----		-----	6054		-----		-----
974	D1322-automated	24.9		0.13	6075	D1322-automated	24.7		-0.02
994	D1322-manual	25.0		0.20	6103	D1322-automated	24.9		0.13
995	D1322-manual	25.0		0.20	6135	D1322-manual	24.6		-0.09
996		-----		-----	6142		-----		-----
997		-----		-----	6147		-----		-----
998		-----		-----	6201	D1322-automated	24.7		-0.02
1011	D1322-automated	24.4		-0.24	6203	D1322-manual	23.5		-0.90
1012		-----		-----	6238		-----		-----
1016		-----		-----	6240		-----		-----
1039	D1322-automated	24.8		0.05	6241		-----		-----

lab	method	value	mark	z(targ)			
6244		-----		-----			
6262		-----		-----			
6266		-----		-----			
6274	D1322-automated	25.4		0.49			
9014		-----		-----			
9128		-----		-----			

|			Only Manual	Only Automated
normality	not OK		not OK	suspect
n	103		53	52
outliers	0		0	0
mean (n)	24.73		24.63	24.85
st.dev. (n)	0.886		1.185	0.382
R(calc.)	2.48		3.32	1.07
st.dev.(D1322-M:18)	1.362		1.359	----
R(D1322-M:18)	3.81		3.80	----
Compare				
R(D1322-A:18)	0.90			0.91

Kernel Density

Determination of Specific Energy (Net, on Sulfur free basis) on sample #19150; results in MJ/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3338	43.316		-1.20	1047	D3338	43.359		1.42
62	D3338	43.376		2.45	1049	D3338	43.34152		0.36
120		-----		-----	1059	D3338	43.344		0.51
140		-----		-----	1062		-----		-----
150	D3338	43.365		1.78	1064	D3338	43.358		1.36
159		-----		-----	1065		-----		-----
169		-----		-----	1079	D3338	43.333		-0.16
171	D3338	43.347		0.69	1080		-----		-----
175		-----		-----	1082	D3338	43.324		-0.71
177	D3338	43.314		-1.32	1097	D3338	43.339		0.20
194		-----		-----	1105	D3338	43.30		-2.17
221		-----		-----	1109	D3338	43.33		-0.35
224		-----		-----	1121		-----		-----
225		-----		-----	1126		-----		-----
228		-----		-----	1146		-----		-----
230	D3338	43.310		-1.56	1150		-----		-----
237	D3338	43.331		-0.28	1191		-----		-----
238		-----		-----	1203	D3338	43.3625	C	1.63
253	D3338	43.3475		0.72	1212	D3338	43.36		1.48
254		-----		-----	1237		-----		-----
256		-----		-----	1275	D3338	43.3		-2.17
258		-----		-----	1277	D3338	43.1	R(0.01)	-14.35
273		-----		-----	1279		-----		-----
311		-----		-----	1299	D3338	43.33		-0.35
317		-----		-----	1316	D3338	43.314		-1.32
323	D3338	43.366		1.85	1318	D3338	43.334		-0.10
333		-----		-----	1347	D3338	43.323		-0.77
334	D3338	43.345		0.57	1348	D3338	43.30		-2.17
335	D3338	43.331		-0.28	1357	D3338	43.371		2.15
336		-----		-----	1372		-----		-----
353		-----		-----	1373		-----		-----
369		-----		-----	1399		-----		-----
370		-----		-----	1412		-----		-----
372	D3338	43.357		1.30	1417		-----		-----
391	D3338	43.35		0.87	1496	D3338	43.350		0.87
399		-----		-----	1528	D3338	43.30637		-1.78
440		-----		-----	1538		-----		-----
445	D3338	43.333		-0.16	1575		-----		-----
447	D3338	43.356		1.24	1586		-----		-----
448	D3338	43.357	C	1.30	1587		-----		-----
453	D3338	43.325		-0.65	1610	D3338	43.345		0.57
463	D3338	43.37		2.09	1613	D3338	43.3396		0.24
468		-----		-----	1616	D3338	43.354		1.12
485		-----		-----	1631		-----		-----
496	D3338	43.358		1.36	1634	D3338	43.320		-0.95
603		-----		-----	1650	D3338	43.362		1.60
608		-----		-----	1715		-----		-----
631	D3338	43.359		1.42	1720	D3338	43.354		1.12
633		-----		-----	1724	D3338	43.317837		-1.09
657	D3338	43.359		1.42	1730		-----		-----
704	D3338	43.3303		-0.33	1755		-----		-----
732		-----		-----	1776	D3338	43.32		-0.95
798		-----		-----	1810	D3338	43.282	C	-3.27
823	D3338	43.327		-0.53	1811	D3338	43.3597		1.46
824	D3338	43.328		-0.47	1833	D3338	43.324		-0.71
851	D3338	43.328		-0.47	1852	D3338	43.32		-0.95
854	D3338	43.3804		2.72	1883		-----		-----
862	D3338	43.31		-1.56	1913	D3338	43.323		-0.77
869	D3338	43.3698		2.08	1961		-----		-----
873		-----		-----	2129	D3338	43.329		-0.41
904		-----		-----	2130	D3338	43.333		-0.16
962		-----		-----	6035	D3338	43.308		-1.68
963		-----		-----	6041	D4809	43.33		-0.35
970		-----		-----	6054		-----		-----
974	D3338	43.358		1.36	6075	D3338	43.3807		2.74
994		-----		-----	6103	D3338	43.329		-0.41
995		-----		-----	6135	D3338	43.332		-0.22
996		-----		-----	6142		-----		-----
997		-----		-----	6147		-----		-----
998		-----		-----	6201	D3338	43.301		-2.11
1011	D3338	43.319		-1.02	6203	D3338	43.3060		-1.81
1012		-----		-----	6238		-----		-----
1016		-----		-----	6240	D3338	43.271		-3.94
1039		-----		-----	6241		-----		-----

lab	method	value	mark	z(targ)	
6244		-----		-----	
6262		-----		-----	
6266		-----		-----	
6274	D3338	43.29723		-2.34	
9014		-----		-----	
9128		-----		-----	

normality	OK	
n	74	
outliers	1	
mean (n)	43.3357	
st.dev. (n)	0.02369	
R(calc.)	0.0663	
st.dev.(D3338:09e2)	0.01643	
R(D3338:09e2)	0.046	

Lab 448: first reported 43.656
Lab 1203: first reported 42.85
Lab 1810: first reported 43.233
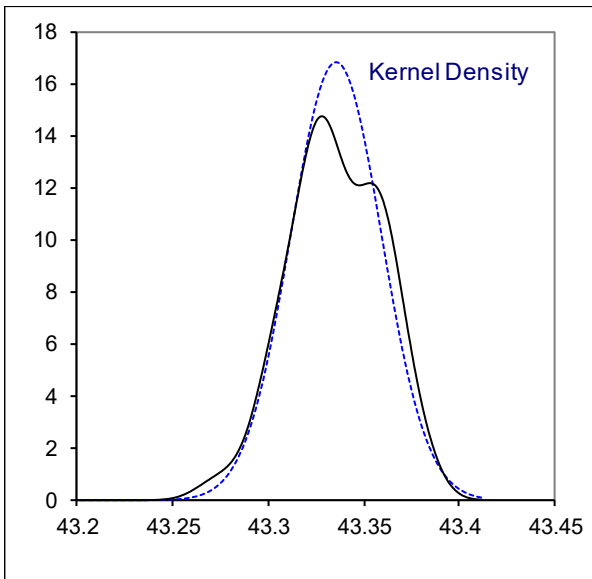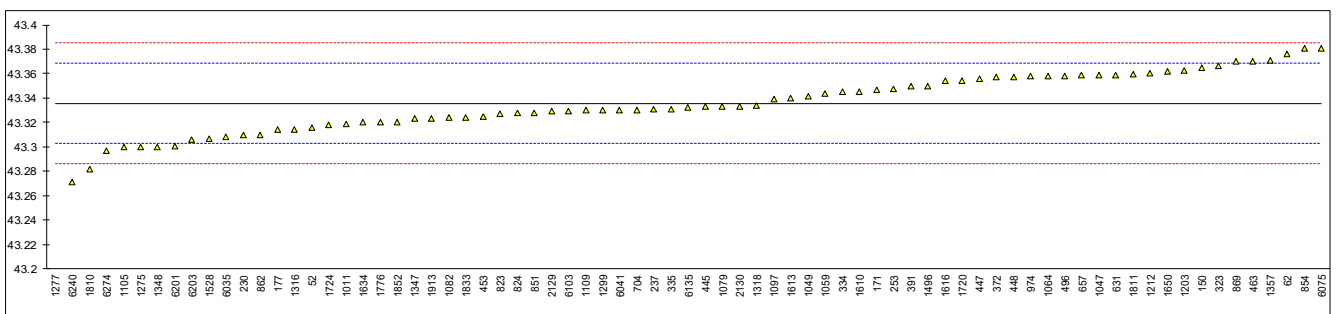
Determination of Sulfur, Total on sample #19150; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D5453	890		-0.33	1047	ISO8754	954	C	1.55
62	D5453	895		-0.18	1049	D5453	962.0		1.78
120	D4294	867.8		-0.98	1059	ISO1459	860		-1.21
140	D2622	870		-0.92	1062	D5453	882		-0.57
150	D5453	874.8		-0.78	1064	D5453	938.445		1.09
159	D4294	970	C	2.02	1065	D5453	910		0.26
169	D5453	938		1.08	1079	D2622	919		0.52
171	D5453	903		0.05	1080	D5453	874		-0.80
175		-----		-----	1082	D4294	899		-0.07
177	D4294	883	C	-0.54	1097	D5453	863.43		-1.11
194	D4294	874		-0.80	1105	D4294	881.2		-0.59
221		-----		-----	1109	D2622	908.11		0.20
224		-----		-----	1121	IP336	974.8		2.16
225		-----		-----	1126		-----		-----
228	D4294	<20	C, f-?	<-25.88	1146		-----		-----
230	D4294	907	C	0.17	1150	ISO20884	925.72		0.72
237	D5453	894.4		-0.20	1191	D4294	886		-0.45
238	D4294	869		-0.95	1203	ISO14596	912.75		0.34
253	D4294	885		-0.48	1212	ISO8754	899.9		-0.04
254	D4294	873		-0.83	1237	ISO8754	950		1.43
256		-----		-----	1275	D4294	890.03		-0.33
258	D5453	466	R(0.01)	-12.78	1277	D5453	292	C,R(0.01)	-17.89
273		-----		-----	1279		-----		-----
311		-----		-----	1299	ISO8754	910		0.26
317		-----		-----	1316	D4294	880		-0.62
323	D5453	880		-0.62	1318	D5453	945		1.28
333	D4294	874		-0.80	1347	D4294	950	C	1.43
334	ISO20846	944		1.25	1348	D4294	869		-0.95
335	D4294	909		0.23	1357	D5453	875		-0.77
336		-----		-----	1372		-----		-----
353		-----		-----	1373		-----		-----
369	IP336	911		0.29	1399		-----		-----
370		-----		-----	1412	D5453	912		0.31
372	D5453	902		0.02	1417	IP336	900		-0.04
391	ISO8754	837		-1.89	1496	D4294	902.9		0.05
399	D4294	950		1.43	1528	D2622	918.9		0.52
440	D5453	929.7		0.83	1538	D5453	905		0.11
445	D5453	950.3		1.44	1575		-----	W	-----
447	IP336	930		0.84	1586	D5453	935		0.99
448	D5453	916		0.43	1587		-----		-----
453	IP336	900		-0.04	1610		915		0.40
463	D4294	931		0.87	1613	D4294	882.5		-0.55
468		-----		-----	1616	D4294	865		-1.07
485	D4294	919.65		0.54	1631	IP336	954		1.55
496	D2622	876.9		-0.72	1634	D5453	830		-2.09
603		-----		-----	1650	D5453	896		-0.16
608		-----		-----	1715		-----		-----
631	D4294	888		-0.39	1720	D5453	912.5		0.33
633		-----		-----	1724	IP336	890	C	-0.33
657	D5453	980		2.31	1730	D4294	922		0.61
704	D4294	891.6		-0.28	1755	D2622	929.19		0.82
732	D4294	908		0.20	1776	D5453	902.4		0.03
798		-----		-----	1810	D4294	929		0.81
823	D5453	916.3		0.44	1811	D5453	893.9		-0.22
824	D4294	851	C	-1.48	1833	D5453	940		1.14
851	D4294	880		-0.62	1852	D5453	835		-1.95
854	D5453	917		0.46	1883		-----		-----
862	D5453	893		-0.24	1913	D4294	832.4	C	-2.02
869	D4294	905		0.11	1961		-----		-----
873		-----		-----	2129	IP496	920.1		0.55
904		-----		-----	2130	D4294	870	C	-0.92
962		-----		-----	6035	ISO20846	577	C,R(0.01)	-9.52
963	D4294	900		-0.04	6041	D4294	857	C	-1.30
970	D4294	890		-0.33	6054		-----		-----
974	D4294	889		-0.36	6075	D4294	894		-0.21
994	D5453	880.0		-0.62	6103	D4294	873.8		-0.81
995	D4294	912		0.31	6135		-----		-----
996		-----		-----	6142	D5453	692	R(0.01)	-6.15
997	D4294	918		0.49	6147	D5453	822.04		-2.33
998	D4294	905		0.11	6201	D5453	863.95		-1.10
1011	D4294	946		1.31	6203	D2622	875		-0.77
1012		-----		-----	6238		-----		-----
1016		-----		-----	6240	ISO20846	880		-0.62
1039	D2622	945	C	1.28	6241		-----		-----

lab	method	value	mark	z(targ)	
6244		-----		-----	
6262		-----		-----	
6266		-----		-----	
6274	D4294	890		-0.33	
9014		-----		-----	
9128		-----		-----	

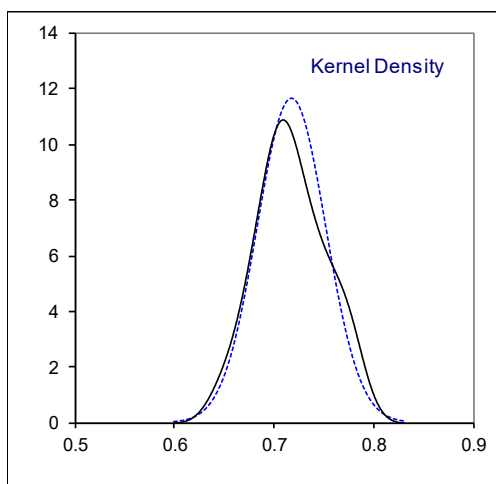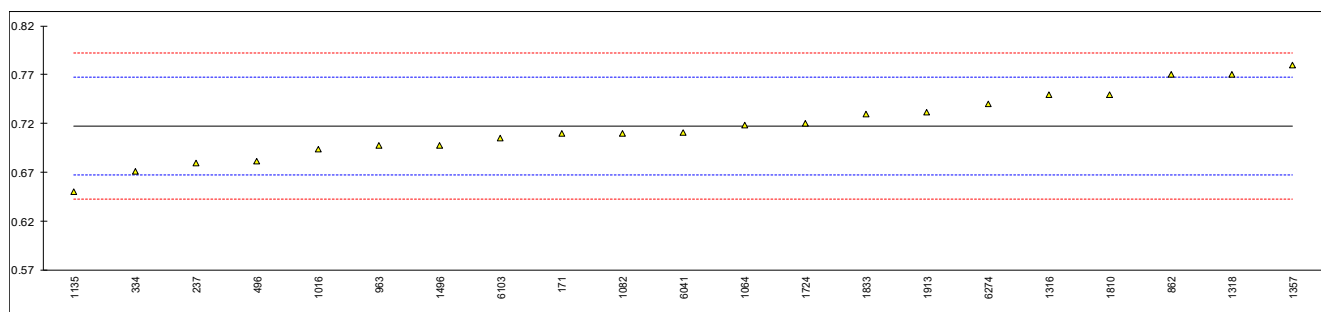|	
normality	OK
n	107
outliers	4
mean (n)	901.28
st.dev. (n)	32.039
R(calc.)	89.71
st.dev.(D5453:19a)	34.056
R(D5453:19a)	95.36

Lab 159: first reported 0.0970 mg/kg
Lab 177: first reported 0.0975 mg/kg
Lab 228: first reported <0.002 mg/kg
Lab 230: first reported 1045
Lab 824: first reported 0.0851 mg/kg
Lab 1039: first reported 0.0945 mg/kg
Lab 1047: first reported 0.0954 mg/kg
Lab 1277: first reported 0.0292 mg/kg

Lab 1347: first reported 0.095 mg/kg
Lab 1575: test result withdrawn, reported 520
Lab 1724: first reported 0.089 mg/kg
Lab 1913: first reported 0.08324 mg/kg
Lab 2130: first reported 0.087 mg/kg
Lab 6035: first reported 590
Lab 6041: reported 0.0857 mg/kg
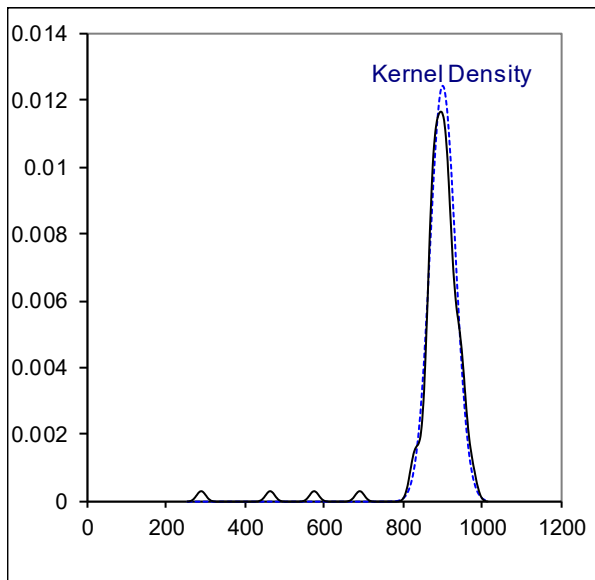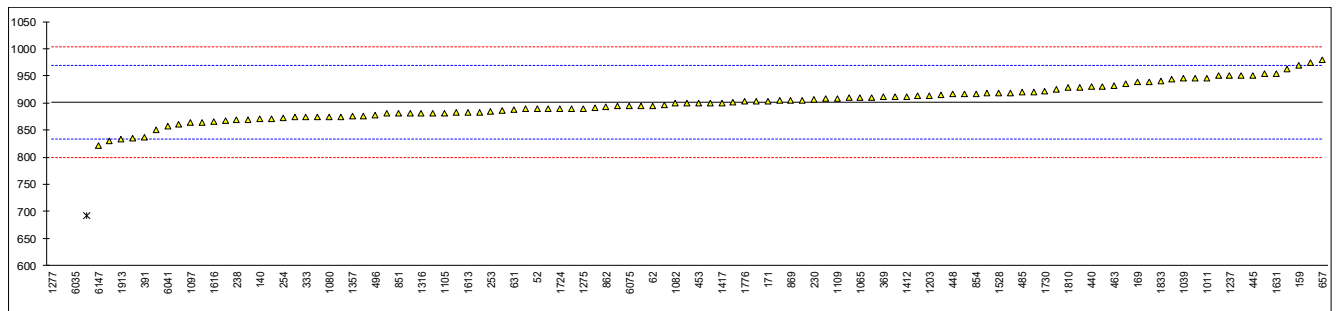
Determination of BOCLE on sample #19151; results in mm

lab	method	value	mark	z(targ)	remarks
150		-----		-----	
171	D5001-semi-automated	0.71		-0.30	
237	D5001-semi-automated	0.6800	C	-1.51	First reported 0.6027
323		-----		-----	
334	D5001-semi-automated	0.671		-1.87	
496	D5001-full-automated	0.6815		-1.45	
862	D5001-semi-automated	0.77		2.11	
963	D5001-full-automated	0.698		-0.79	
1016	D5001-semi-automated	0.694		-0.95	
1064	D5001-full-automated	0.718		0.02	
1065		-----		-----	
1082	D5001-semi-automated	0.71		-0.30	
1135	D5001-full-automated	0.65		-2.72	
1279		-----		-----	
1299		-----		-----	
1316	D5001-semi-automated	0.75		1.30	
1318	D5001-full-automated	0.77		2.11	
1357	D5001-full-automated	0.78		2.51	
1399		-----		-----	
1496	D5001-semi-automated	0.698		-0.79	
1631		-----		-----	
1724	D5001-full-automated	0.72		0.10	
1810	D5001-full-automated	0.75	C	1.30	First reported 751 mm
1811		-----		-----	
1833	D5001-full-automated	0.73		0.50	
1913	D5001-full-automated	0.732		0.58	
6041	D5001-semi-automated	0.7105		-0.28	
6103	D5001-full-automated	0.7057		-0.48	
6238		-----		-----	
6274	D5001-full-automated	0.74		0.90	

|				Only Semi-automated	Only full-automated
	normality	OK		OK	OK
	n	21		9	12
	outliers	0		0	0
	mean (n)	0.7176		0.7104	0.7229
	st.dev. (n)	0.03424		0.03166	0.03645
	R(calc.)	0.0959		0.0887	0.1021
	st.dev.(D5001:10 (semi-automatic))	0.02488		0.02488	----
	R(D5001:10 (semi-automatic))	0.0697		0.0686	----
Compare					
	R(D5001:10 (full-automatic))	0.0429		----	0.0437

Determination of Particulate Contamination on sample #19156; 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	D5452	1.20		0.33	-----	4000	
150	D5452	1.00		-0.40	1	1000	
169		-----		-----	-----	-----	
334	D5452	1.12		0.04	3	3920	
335	D5452	1.00		-0.40	-----	3955	
353	IP423	1.15		0.15	-----	4000	
372	D5452	1.00		-0.40	-----	4000	
398	D5452	1.15		0.15	31	3800	
399	D5452	1.29		0.66	32	3800	
440	D5452	1.27		0.59	-----	4000	
453	IP423	1.15		0.15	-----	4000	
496	D5452	1.270		0.59	65.0	3950	
631	D5452	1.175		0.24	43	4000	
657	D5452	1.11		0.00	22	3955	
851	D5452	1.125		0.06	21.5	4000	
962	D5452	1.00		-0.40	14	4000	
963	D5452	1.00		-0.40	15	4000	
1039	D5452	>1.3		-----	>30	3000	
1047	D5452	1.25		0.51	-----	2000	
1059	D5452	1.27		0.59	80	3940	
1064	D5452	0.909		-0.73	4.15	3960	
1079	D5452	0.85		-0.95	-----	4000	
1109	D5452	1.37		0.95	11	3900	
1212	D5452	0.740		-1.35	-----	3800	
1279		-----		-----	-----	-----	
1399		-----		-----	-----	-----	
1528	D5452	1.42		1.13	9	4000	
1538	D5452	0.887		-0.81	-----	4000	
1634	D5452	1.37		0.95	-----	4000	
1650	D5452	1.316		0.75	11	3800	
1852	D5452	1.05		-0.22	-----	4000	
1913	D5452	1.125		0.06	16	4000	
2130	D5452	1.05		-0.22	-----	4000	
6103	D5452	0.87		-0.88	11 mn 29 s	3790	
6147	D5452	1	C	-0.40	5	4000	Reported 0.001, possibly a unit error?
6203	D5452	1.03		-0.29	30	3800	

|		
normality	OK	
n	32	
outliers	0	
mean (n)	1.110	
st.dev. (n)	0.1664	
R(calc.)	0.466	
st.dev.(D5452:12)	0.2736	
R(D5452:12)	0.766	Application range precision: 0 – 0.6 mg/L
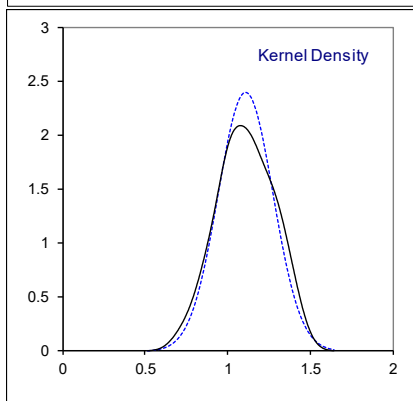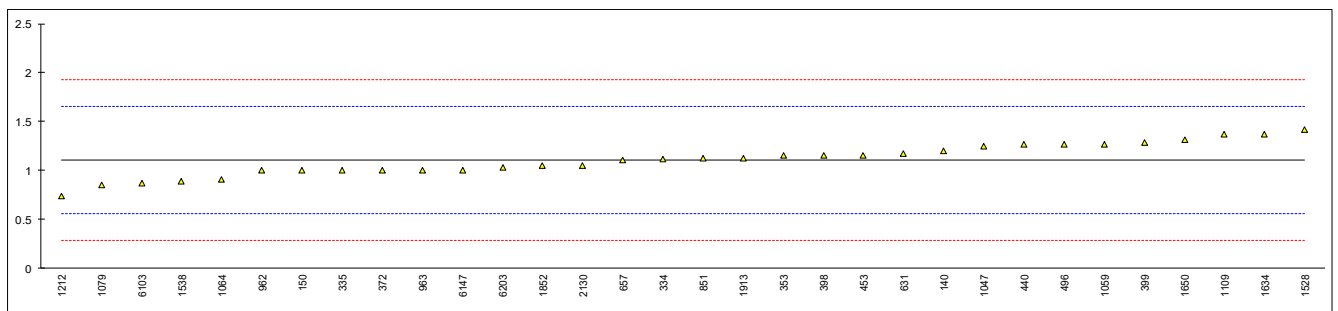
Kernel Density

Determination of Particle Size Distribution on sample #19152 acc. to IP564, in (cumulative) counts/ml

lab	method	≥4 µm	m	≥6 µm	m	≥14 µm	m	≥21 µm	m	≥25 µm	m	≥30 µm	m
140		-----		-----		-----		-----		-----		-----	
150		-----		-----		-----		-----		-----		-----	
171		-----		-----		-----		-----		-----		-----	
225		-----		-----		-----		-----		-----		-----	
230		-----		-----		-----		-----		-----		-----	
237		-----		-----		-----		-----		-----		-----	
311		-----		-----		-----		-----		-----		-----	
323		-----		-----		-----		-----		-----		-----	
333		-----		-----		-----		-----		-----		-----	
334		-----		-----		-----		-----		-----		-----	
335		-----		-----		-----		-----		-----		-----	
372	IP564	19324		6332		179		40		19	G5	6	
447		-----		-----		-----		-----		-----		-----	
453	IP564	20815.5	ex	8298.4	ex	208.6	ex	63.9	G5	44.8	G1	36.8	G1
496	IP564	16335.6		5024.7		66.9		10.3		5.2		1.4	
657		-----		-----		-----		-----		-----		-----	
823		-----		-----		-----		-----		-----		-----	
824		-----		-----		-----		-----		-----		-----	
862		-----		-----		-----		-----		-----		-----	
963		-----		-----		-----		-----		-----		-----	
970		-----		-----		-----		-----		-----		-----	
974		-----		-----		-----		-----		-----		-----	
1011		-----		-----		-----		-----		-----		-----	
1016		-----		-----		-----		-----		-----		-----	
1026		-----		-----		-----		-----		-----		-----	
1039		-----		-----		-----		-----		-----		-----	
1049		-----		-----		-----		-----		-----		-----	
1059	IP564	21335		8881		255		-----		-----		-----	
1062		-----		-----		-----		-----		-----		-----	
1064	IP564	26492.9		7896.6		128.9		10.9		2.4		0.4	
1065	IP564	25541.9		7949.5		98.8		4.5		1.2		0.4	
1079		-----		-----		-----		-----		-----		-----	
1095		-----		-----		-----		-----		-----		-----	
1097	IP564	24805.8		10687.4		213.9		18.3		4.1		0.6	
1109		-----		-----		-----		-----		-----		-----	
1191	IP564	25690.0		9996.5		213.2		29.5		9.8		1.4	
1212		-----		-----		-----		-----		-----		-----	
1277		-----		-----		-----		-----		-----		-----	
1279		-----		-----		-----		-----		-----		-----	
1299		-----		-----		-----		-----		-----		-----	
1316		-----		-----		-----		-----		-----		-----	
1357		-----		-----		-----		-----		-----		-----	
1397		-----		-----		-----		-----		-----		-----	
1399		-----		-----		-----		-----		-----		-----	
1402		-----		-----		-----		-----		-----		-----	
1496		-----		-----		-----		-----		-----		-----	
1528		-----		-----		-----		-----		-----		-----	
1587	IP564	3873.1	DG1	1411.8	DG5	52.9	ex	7.5	ex	2.9	ex	0.9	ex
1610		-----		-----		-----		-----		-----		-----	
1613		-----		-----		-----		-----		-----		-----	
1616	IP564	24726.9		9153.6		96.4		6.5		3.2		2.4	
1631		-----		-----		-----		-----		-----		-----	
1634		-----		-----		-----		-----		-----		-----	
1724		-----		-----		-----		-----		-----		-----	
1810		-----		-----		-----		-----		-----		-----	
1811		-----		-----		-----		-----		-----		-----	
1833		-----		-----		-----		-----		-----		-----	
1852		-----		-----		-----		-----		-----		-----	
1913		-----	W	-----	W	-----	W	-----	W	-----	W	-----	W
1961	IP564	28097.7		10549.9		167.0		22.6		8.6		1.3	
2130	IP564	29.2	DG1	11.0	DG5	1.4	ex	0.6	ex	0.4	ex	0.3	ex
6041		-----		-----		-----		-----		-----		-----	
6075		-----		-----		-----		-----		-----		-----	
6103		-----		-----		-----		-----		-----		-----	
6201		-----		-----		-----		-----		-----		-----	
6203		-----		-----		-----		-----		-----		-----	
6238		-----		-----		-----		-----		-----		-----	
6240		-----		-----		-----		-----		-----		-----	
6274		-----		-----		-----		-----		-----		-----	

Lab 453: test results excluded, there were three or more outliers in both counts/ml and ISO scale numbers
Lab 1587: test results excluded, there were three or more outliers in both counts/ml and ISO scale numbers
Lab 1913: test results withdrawn, reported 28900.8, 12341.2, 368.4, 70.6, 29.2, 5.4 respectively
Lab 2130: test results excluded, there were three or more outliers in both counts/ml and ISO scale numbers

|	≥4 µm	≥6 µm	≥14 µm	≥21 µm	≥25 µm	≥30 µm
normality	OK	OK	OK	OK	OK	not OK
n	9	9	9	8	7	8
outliers	2 (+1ex)	2 (+1ex)	0 (+3ex)	1 (+2ex)	2 (+2ex)	1 (+2ex)
mean (n)	23594	8496.8	157.68	17.83	4.93	1.74
st.dev. (n)	3802.1	1911.93	63.784	12.314	3.195	1.848
R(calc.)	10646	5353.4	178.60	34.48	8.95	5.17
st.dev.(IP564:13)	1570.5	903.87	29.392	8.072	2.357	1.027
R(IP564:13)	4397	2530.8	82.30	22.60	6.60	2.88
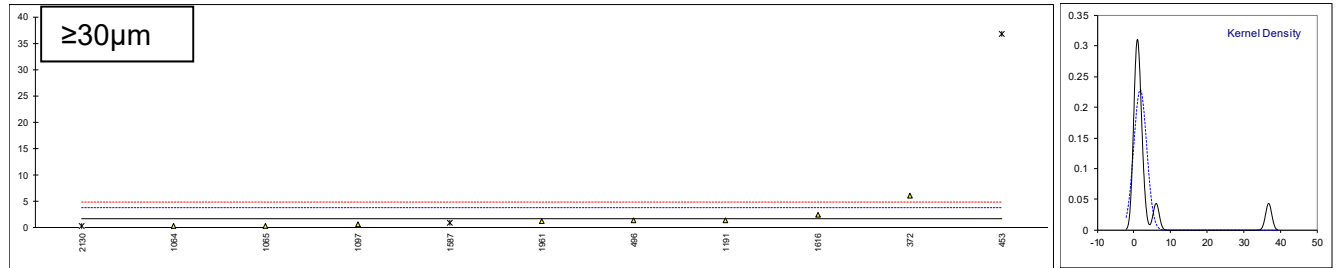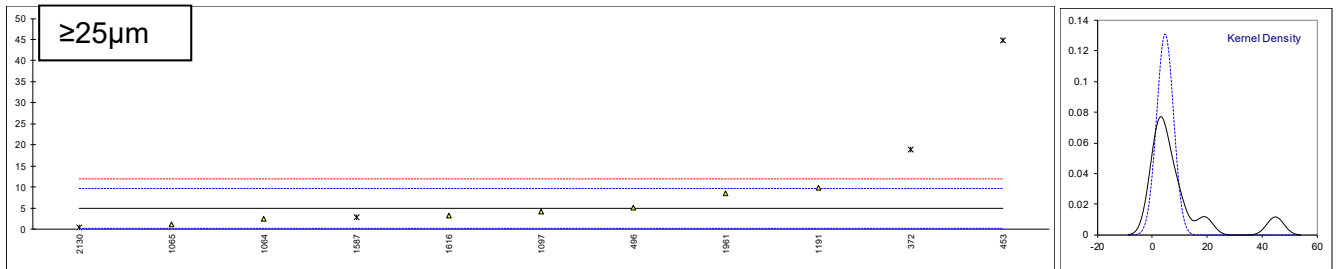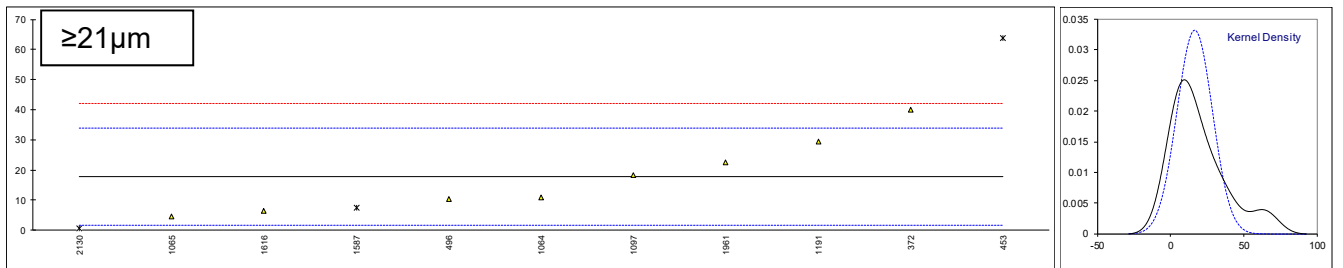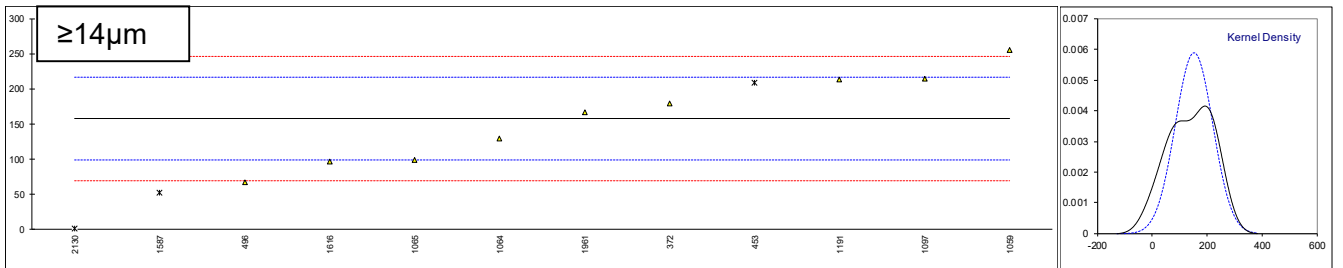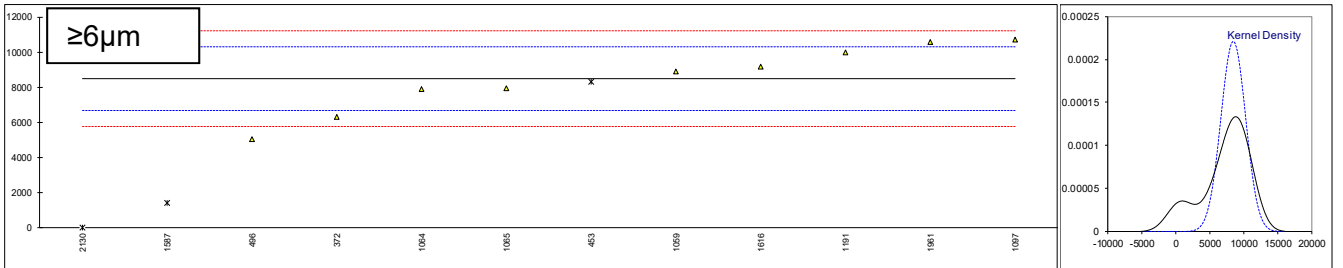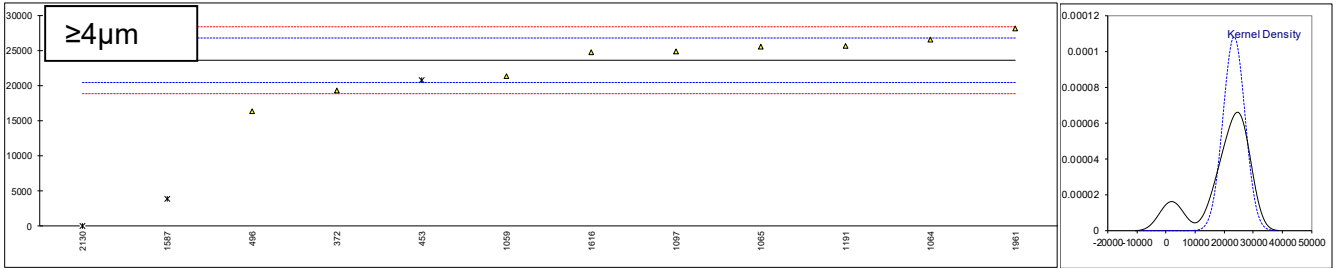
Determination of Particle Size Distribution on sample #19152 acc. to IP564, in ISO scale numbers

lab	method	≥4 µm	mark	z(targ)	≥6 µm	mark	z(targ)	≥14 µm	mark	z(targ)
140		-----		-----	-----		-----	-----		-----
150		-----		-----	-----		-----	-----		-----
171		-----		-----	-----		-----	-----		-----
225		-----		-----	-----		-----	-----		-----
230		-----		-----	-----		-----	-----		-----
237		-----		-----	-----		-----	-----		-----
311		-----		-----	-----		-----	-----		-----
323		-----		-----	-----		-----	-----		-----
333		-----		-----	-----		-----	-----		-----
334		-----		-----	-----		-----	-----		-----
335		-----		-----	-----		-----	-----		-----
372	ISO4406 acc. to IP564	21		-2.19	20		-0.59	15		0.38
447		-----		-----	-----		-----	-----		-----
453	ISO4406 acc. to IP564	22		0.55	20		-0.59	15		0.38
496	ISO4406 acc. to IP564	21		-2.19	20		-0.59	13		-2.14
657		-----		-----	-----		-----	-----		-----
823		-----		-----	-----		-----	-----		-----
824		-----		-----	-----		-----	-----		-----
862		-----		-----	-----		-----	-----		-----
963		-----		-----	-----		-----	-----		-----
970		-----		-----	-----		-----	-----		-----
974		-----		-----	-----		-----	-----		-----
1011		-----		-----	-----		-----	-----		-----
1016		-----		-----	-----		-----	-----		-----
1026		-----		-----	-----		-----	-----		-----
1039		-----		-----	-----		-----	-----		-----
1049		-----		-----	-----		-----	-----		-----
1059	ISO4406 acc. to IP564	22		0.55	20		-0.59	15		0.38
1062		-----		-----	-----		-----	-----		-----
1064	ISO4406 acc. to IP564	22		0.55	20		-0.59	14		-0.88
1065		-----		-----	-----		-----	-----		-----
1079		-----		-----	-----		-----	-----		-----
1095		-----		-----	-----		-----	-----		-----
1097	ISO4406 acc. to IP564	22		0.55	21		1.37	15		0.38
1109		-----		-----	-----		-----	-----		-----
1191	ISO4406 acc. to IP564	22		0.55	20		-0.59	15		0.38
1212		-----		-----	-----		-----	-----		-----
1277		-----		-----	-----		-----	-----		-----
1279		-----		-----	-----		-----	-----		-----
1299		-----		-----	-----		-----	-----		-----
1316		-----		-----	-----		-----	-----		-----
1357		-----		-----	-----		-----	-----		-----
1397		-----		-----	-----		-----	-----		-----
1399		-----		-----	-----		-----	-----		-----
1402		-----		-----	-----		-----	-----		-----
1496		-----		-----	-----		-----	-----		-----
1528		-----		-----	-----		-----	-----		-----
1587	ISO4406 acc. to IP564	19	G(0.01)	-7.68	18	G(0.05)	-4.51	13	ex	-2.14
1610		-----		-----	-----		-----	-----		-----
1613		-----		-----	-----		-----	-----		-----
1616	ISO4406 acc. to IP564	22		0.55	20		-0.59	14		-0.88
1631		-----		-----	-----		-----	-----		-----
1634		-----		-----	-----		-----	-----		-----
1724		-----		-----	-----		-----	-----		-----
1810		-----		-----	-----		-----	-----		-----
1811		-----		-----	-----		-----	-----		-----
1833		-----		-----	-----		-----	-----		-----
1852		-----		-----	-----		-----	-----		-----
1913	ISO4406	22		0.55	21		1.37	16		1.64
1961	ISO4406 acc. to IP564	22		0.55	21		1.37	15		0.38
2130	ISO4406 acc. to IP564	12	G(0.01)	-26.87	11	G(0.01)	-18.22	8	G(0.01)	-8.44
6041		-----		-----	-----		-----	-----		-----
6075		-----		-----	-----		-----	-----		-----
6103		-----		-----	-----		-----	-----		-----
6201		-----		-----	-----		-----	-----		-----
6203		-----		-----	-----		-----	-----		-----
6238		-----		-----	-----		-----	-----		-----
6240		-----		-----	-----		-----	-----		-----
6274		-----		-----	-----		-----	-----		-----

	≥4 µm	≥6 µm	≥14 µm
normality	suspect	suspect	suspect
n	10	10	10
outliers	2	2	1 (+1ex)
mean (n)	21.80	20.30	14.70
st.dev. (n)	0.422	0.483	0.823
R(calc.)	1.18	1.35	2.31
st.dev.(IP564:13)	0.365	0.510	0.794
R(IP564:13)	1.02	1.43	2.22
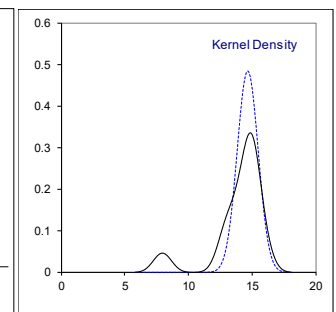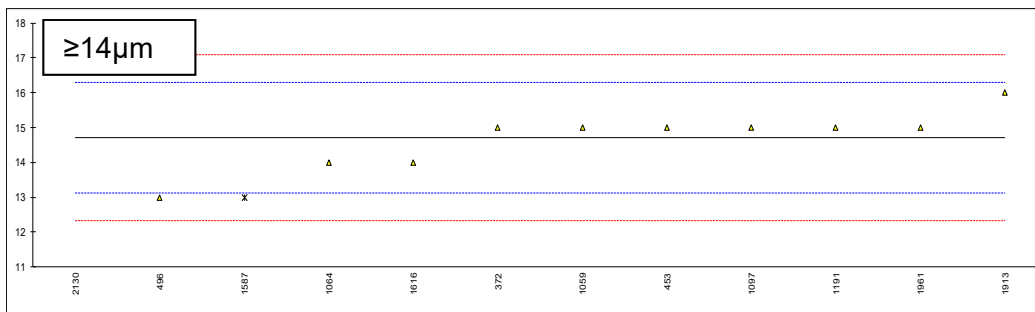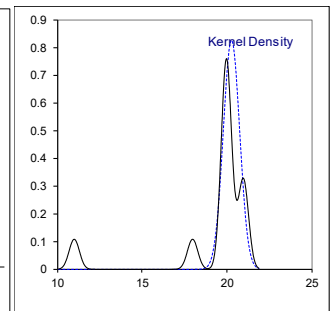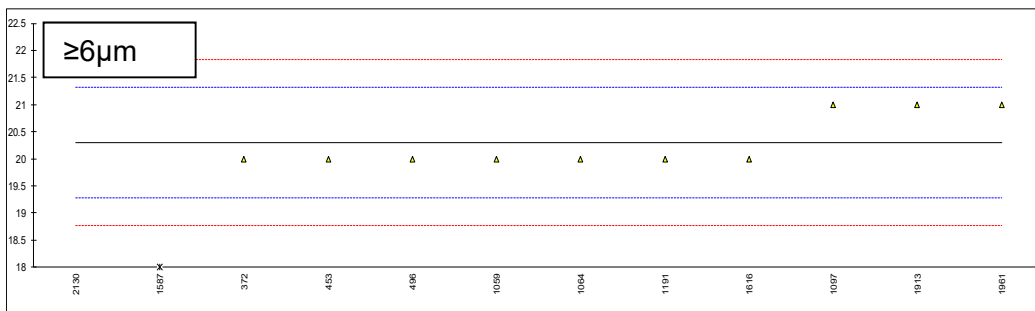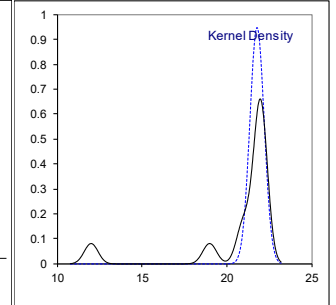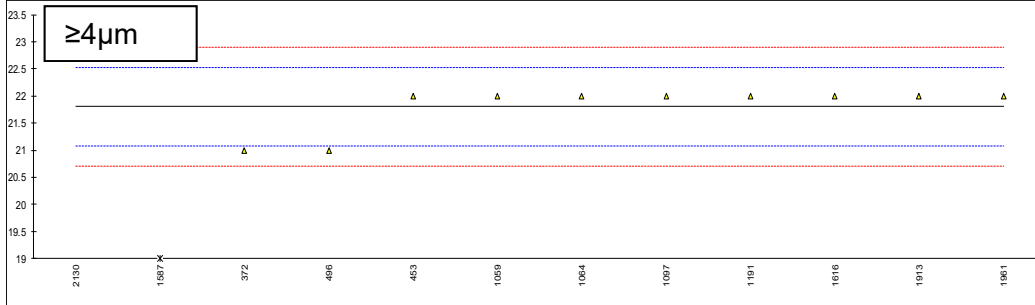
≥4µm

Kernel Density

≥6µm

Kernel Density

≥14µm

Kernel Density

Determination of Particle Size Distribution on sample #19152 acc. to IP565, in (cumulative) counts/ml

lab	method	≥4 µm	m	≥6 µm	m	≥14 µm	m	≥21 µm	m	≥25 µm	m	≥30 µm	m
140	IP565	36204.2		11730.3		469.7		76.9		21.3		3.7	
150		-----		-----		-----		-----		-----		-----	
171	IP565	38565		12813		447		56		12		4	
225		-----		-----		-----		-----		-----		-----	
230		-----		-----		-----		-----		-----		-----	
237	IP565	35943.5		11453.8		184.0		9.4		2.9		0.9	
311	IP565	38856		12401		279		16		4		1	
323		-----		-----		-----		-----		-----		-----	
333	IP565	35541		11165		257		14		2		1	
334	IP565	36416.1		11571.4		411.1		60.9		19.3		5.8	
335	IP565	37862.1		11267.2		292.1		24.1		5.1		1.0	
372		-----		-----		-----		-----		-----		-----	
447	IP565	35860.0		12359.7		472.7		58.7		13.6		3.7	
453		-----		-----		-----		-----		-----		-----	
496		-----		-----		-----		-----		-----		-----	
657	IP565	52544.7	C,R5	19955.3	C,R5	537.8	ex,C	51.3	ex,C	12.6	ex,C	2.3	ex,C
823	IP565	40883		14874		693		152		26.5	C	8.9	C
824	IP565	38938		12934		544		92		32		10	
862		-----		-----		-----		-----		-----		-----	
963		-----		-----		-----		-----		-----		-----	
970		-----		-----		-----		-----		-----		-----	
974	IP565	35962	C	11980	C	455	C	64	C	19	C	5	C
1011	IP565	1094	R1	267	R1	11	ex	2	ex	1	ex	0	ex
1016	IP565	36997.0		13409.2		454.0		40.6		8.3		2.5	
1026		-----		-----		-----		-----		-----		-----	
1039	IP565	42034		16108		584		100		38		11	
1049		-----		-----		-----		-----		-----		-----	
1059		-----		-----		-----		-----		-----		-----	
1062	IP565	34415.3		10877.1		168.0		3.4		0.7		0.1	
1064		-----		-----		-----		-----		-----		-----	
1065		-----		-----		-----		-----		-----		-----	
1079	IP565	33406.3		10394.1		239.9		13.6		5.2		1.5	
1095	IP565	36733		12152		465		69		20		4	
1097		-----		-----		-----		-----		-----		-----	
1109	IP565	35234.6		12288.8		412.2		48.5		12.1		3.0	
1191		-----		-----		-----		-----		-----		-----	
1212	IP565	42639.0		14402.9		763.7		89.0		37.9		13.6	
1277	IP565	70.6	R1	28.6	R1	2.2	ex	0.3	ex	0.2	ex	0.2	ex
1279		-----		-----		-----		-----		-----		-----	
1299		26824.3	R5	9742.6	ex	523.7	ex	163.9	ex	90.5	R1	28.7	R1
1316	In house	25916	R5	8796		291		54		23		3.9	
1357	IP565	NA		NA		NA		NA		NA		NA	
1397	IP565	31471.6		11237		471.6		84.2		26.1		7.5	
1399		-----		-----		-----		-----		-----		-----	
1402	IP565	35935.5		12577.2		518.5		102.5		45.1		15.2	
1496	IP565	34440.4		11073.0		239.4		13.4		2.4		0.7	
1528	IP565	36347.05	ex	12981.1	ex	639.4	ex	141.7	ex	64.35	R5	27	R1
1587		-----		-----		-----		-----		-----		-----	
1610	IP565	35312.7		12509.7		487.0		57.1		20.0		5.2	
1613	IP565	33653.3		12150.5		453.3		83.4		30.8		10.6	
1616		-----		-----		-----		-----		-----		-----	
1631	IP565	34095.5		11146.5		300.6		20.4		4.4		0.7	
1634	IP565	34998		12110		481		75		22		6	
1724	IP565	38165.0		12828.2		543.5		110.7		46.1		14.1	
1810	IP565	42332		14836		511		56		20		6	
1811	IP565	38400		13463		463.7		65.2		20.3		4.9	
1833	IP565	35643.6		11405.2		355.4		60.0		24.4		5.9	
1852	IP565	38072.1		12704.2		375.4		45.2		13.3		3.9	
1913		-----		-----		-----		-----		-----		-----	
1961		-----		-----		-----		-----		-----		-----	
2130		-----		-----		-----		-----		-----		-----	
6041	IP565	33935.7		11581.3		390.1		28.7		8.53		1.4	
6075	IP565	37221.9		9986.1		252.6		17.6		2.7		0.6	
6103	IP565	51669.9	R1	17864.25		503.75		39.0		18.9		9.1	
6201	IP565	17068.4	R5	5424.0	R5	503.4	ex	100.8	ex	52.9	ex	32.0	R1
6203	IP565	33531.35		11009.45		429.25		45.5		12.05		3.25	
6238		-----		-----		-----		-----		-----		-----	
6240	IP577	36008.8	ex	12791.8	ex	618.8	ex	171.67	ex	81.57	ex	28.5	ex
6274	IP565	41497.0	C	10768.1	C	78.7		16.5		6.3		2.7	

Lab 657: first reported 1625.5, 415.1, 13.7, 1.3, 0.4, 0.1.
Lab 823; first reported 64, 23
Lab 974: first reported as IP564, then corrected first reported result for ≥14 µm 482, for for ≥21 µm 68, for ≥25 µm 20 and for ≥30 µm 7
Lab 6274: first reported 2230, 877.9
Lab 657, 1011, 1277, 1299, 1528 and 6201: test results excluded, there were two or more outliers out of six test results
Lab 6240: test results were excluded, see paragraph 4.1

	≥4 µm	≥6 µm	≥14 µm	≥21 µm	≥25 µm	≥30 µm
normality	OK	not OK	OK	OK	OK	OK
n	34	36	36	36	36	36
outliers	7 (+2ex)	4 (+3ex)	0 (+7ex)	0 (+7ex)	2 (+5ex)	3 (+4ex)
mean (n)	36800	12284	409.4	54.51	17.40	5.07
st.dev. (n)	2762.3	1719.2	143.94	33.855	12.373	4.111
R(calc.)	7734	4814	403.0	94.79	34.65	11.51
st.dev.(IP564:13)	1380.0	910.0	73.29	15.457	6.301	2.540
R(IP564:13)	3864	2548	205.2	43.28	17.64	7.11
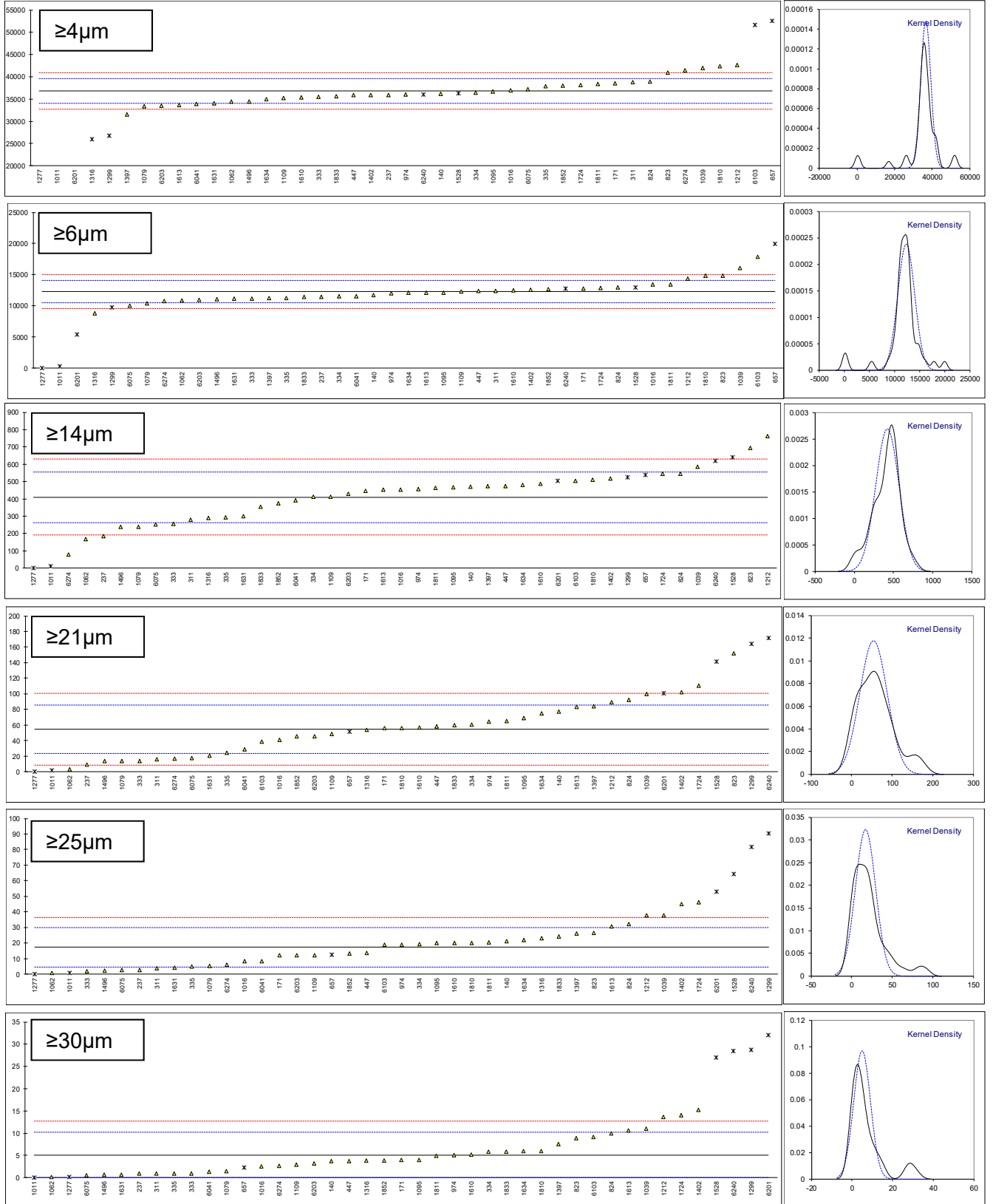
Determination of Particle Size Distribution on sample #19152 acc. to IP565, in ISO scale numbers

lab	method	≥4 µm	mark	z(targ)	≥6 µm	mark	z(targ)	≥14 µm	mark	z(targ)
140	ISO4406 acc. to IP565	22		-0.27	21		0.18	16		0.31
150		-----		-----	-----		-----	-----		-----
171		-----		-----	-----		-----	-----		-----
225		-----		-----	-----		-----	-----		-----
230		-----		-----	-----		-----	-----		-----
237	ISO4406 acc. to IP565	22		-0.27	21		0.18	15		-1.73
311	ISO4406 acc. to IP565	22		-0.27	21		0.18	15		-1.73
323		-----		-----	-----		-----	-----		-----
333	ISO4406 acc. to IP565	22		-0.27	21		0.18	15		-1.73
334	ISO4406 acc. to IP565	22		-0.27	21		0.18	16		0.31
335	ISO4406 acc. to IP565	22		-0.27	21		0.18	15		-1.73
372		-----		-----	-----		-----	-----		-----
447	ISO4406 acc. to IP565	22		-0.27	21		0.18	16		0.31
453		-----		-----	-----		-----	-----		-----
496		-----		-----	-----		-----	-----		-----
657	ISO4406	23	ex,C	2.46	21	ex,C	0.18	16	C	0.31
823	ISO4406	23		2.46	21		0.18	17		2.35
824	ISO4406 acc. to IP565	22		-0.27	21		0.18	16		0.31
862		-----		-----	-----		-----	-----		-----
963		-----		-----	-----		-----	-----		-----
970		-----		-----	-----		-----	-----		-----
974	ISO4406 acc. to IP565	22	C	-0.27	21	C	0.18	16	C	0.31
1011		-----		-----	-----		-----	-----		-----
1016		-----		-----	-----		-----	-----		-----
1026		-----		-----	-----		-----	-----		-----
1039	ISO4406 acc. to IP565	23		2.46	21		0.18	16		0.31
1049		-----		-----	-----		-----	-----		-----
1059		-----		-----	-----		-----	-----		-----
1062	ISO4406 acc. to IP565	22		-0.27	21		0.18	15		-1.73
1064		-----		-----	-----		-----	-----		-----
1065		-----		-----	-----		-----	-----		-----
1079		-----		-----	-----		-----	-----		-----
1095	ISO4406 acc. to IP565	22		-0.27	21		0.18	16		0.31
1097		-----		-----	-----		-----	-----		-----
1109	ISO4406 acc. to IP565	22		-0.27	21		0.18	16		0.31
1191		-----		-----	-----		-----	-----		-----
1212	ISO4406 acc. to IP565	23		2.46	21		0.18	17		2.35
1277		-----		-----	-----		-----	-----		-----
1279		-----		-----	-----		-----	-----		-----
1299	ISO4406 acc. to IP577	22	ex	-0.27	20		-2.56	16		0.31
1316		-----		-----	-----		-----	-----		-----
1357	ISO4406 acc. to IP565	NA		-----	NA		-----	NA		-----
1397	ISO4406 acc. to IP565	22		-0.27	21		0.18	16		0.31
1399		-----		-----	-----		-----	-----		-----
1402	ISO4406 acc. to IP565	22		-0.27	21		0.18	16		0.31
1496	ISO4406 acc. to IP565	22		-0.27	21		0.18	15		-1.73
1528	ISO4406 acc. to IP565	22		-0.27	21		0.18	17		2.35
1587		-----		-----	-----		-----	-----		-----
1610	ISO4406 acc. to IP565	22		-0.27	21		0.18	16		0.31
1613	ISO4406 acc. to IP565	22		-0.27	21		0.18	16		0.31
1616		-----		-----	-----		-----	-----		-----
1631	ISO4406 acc. to IP565	22		-0.27	21		0.18	15		-1.73
1634	ISO4406 acc. to IP565	22		-0.27	21		0.18	16		0.31
1724	ISO4406 acc. to IP565	22		-0.27	21		0.18	16		0.31
1810		-----		-----	-----		-----	-----		-----
1811		-----		-----	-----		-----	-----		-----
1833	ISO4406 acc. to IP565	22		-0.27	21		0.18	16		0.31
1852	ISO4406 acc. to IP565	22		-0.27	21		0.18	16		0.31
1913		-----		-----	-----		-----	-----		-----
1961		-----		-----	-----		-----	-----		-----
2130		-----		-----	-----		-----	-----		-----
6041	ISO4406 acc. to IP565	22		-0.27	21		0.18	16		0.31
6075		22		-0.27	20		-2.56	15		-1.73
6103		-----		-----	-----		-----	-----		-----
6201	ISO4406 acc. to IP565	21	ex	-3.00	20	ex	-2.56	16		0.31
6203	ISO4406 acc. to IP565	22		-0.27	21		0.18	16		0.31
6238		-----		-----	-----		-----	-----		-----
6240	ISO4406	22		-0.27	21		0.18	16		0.31
6274		-----		-----	-----		-----	-----		-----

Lab 657: first reported 18, 16 and 11
Lab 974: first reported as IP564
Lab 657, 1299 and 6201: test results excluded, for being an outlier in counts/mL

	≥4 µm	≥6 µm	≥14 µm
normality	not OK	not OK	OK
n	30	31	33
outliers	0 (+3ex)	0 (+2ex)	0
mean (n)	22.10	20.94	15.85
st.dev. (n)	0.305	0.250	0.566
R(calc.)	0.85	0.67	1.58
st.dev.(IP565:13)	0.366	0.366	0.490
R(IP565:13)	1.03	1.03	1.37
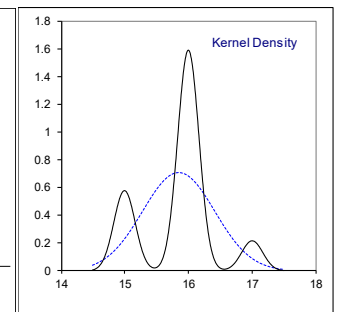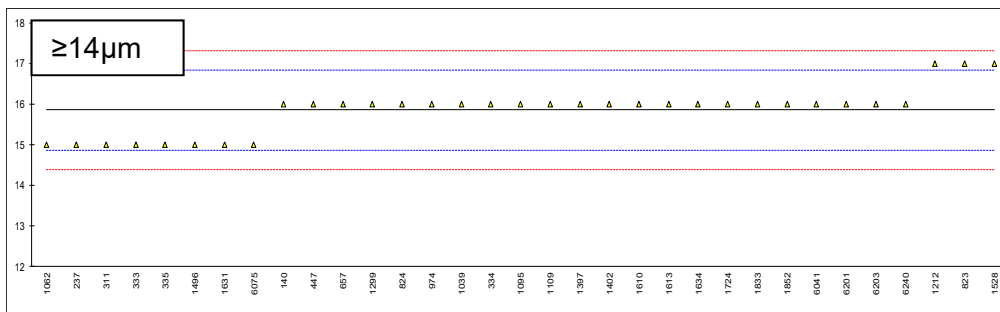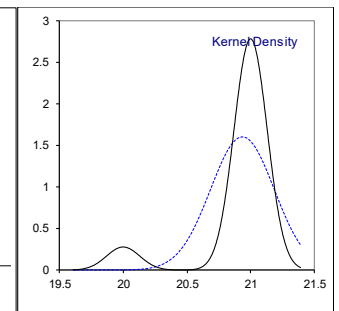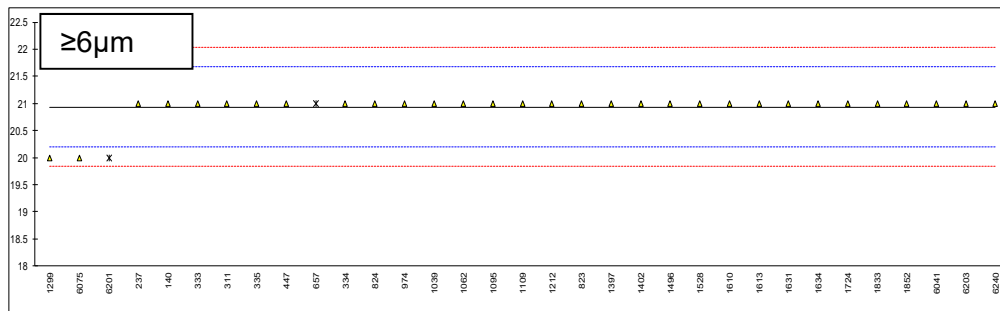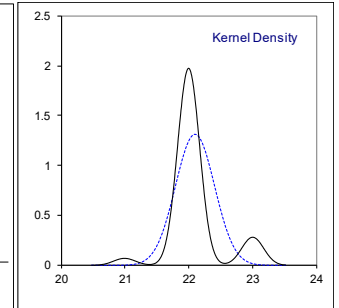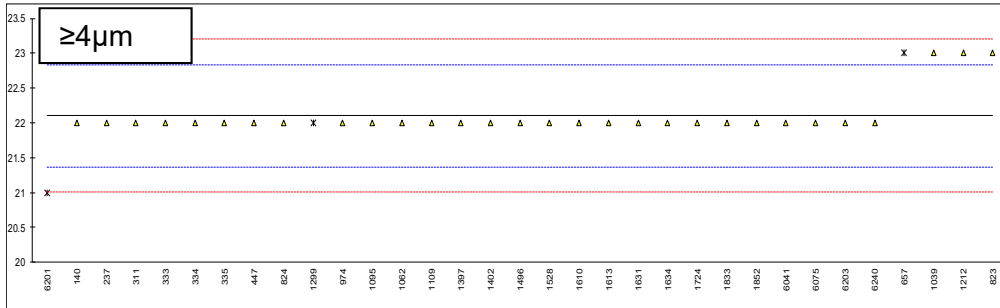
Determination of FAME on sample #19153; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62		-----		-----	
140		-----		-----	
171	IP585	56.8		0.02	
194		-----		-----	
228	IP583	61.04	C	0.79	First reported 99999.99
230	IP585	46.64		-1.83	
237		-----		-----	
253	IP583	61.00		0.79	
254	D7797	61.97		0.96	
311	IP585	54.8		-0.34	
317	IP585	50.2		-1.18	
323	IP585	56.5		-0.03	
333	IP585	57.1		0.08	
334	IP585	68.34		2.12	
335	IP585	60.1		0.62	
336	IP585	57.7		0.19	
369	IP583	62.79		1.11	
372	IP590	59.3		0.48	
445	IP583	50.66		-1.09	
447	IP583	60.76		0.74	
448	IP585	56.27		-0.07	
453	IP583	62.45		1.05	
463	IP583	61.05		0.80	
496	IP585	46.34		-1.88	
631	D7797	60.23		0.65	
657	IP585	52.9		-0.69	
823	IP585	52.8		-0.70	
824	IP585	49.8		-1.25	
851	IP583	59.97		0.60	
862	IP585	54.3		-0.43	
974	IP583	62		0.97	
1011		-----		-----	
1023	D7797	55.65		-0.19	
1026	IP590	37.2		-3.54	
1047		58.7		0.37	
1049	IP583	66.31		1.75	
1062	D7797	60.1		0.62	
1064	IP585	44.4	C	-2.23	First reported 24.8
1065	D7797	61.6		0.90	
1079	IP583	62.74		1.10	
1080	In house	14.65	R(0.01)	-7.65	
1082	IP585	67.48		1.97	
1095		-----		-----	
1097	IP583	58.01		0.24	
1105	IP585	52.9		-0.69	
1212		-----		-----	
1275	IP585	57.2		0.10	
1279		-----		-----	
1299	IP585	45.4		-2.05	
1316	IP585	57.05		0.07	
1318	IP585	60.23		0.65	
1347	IP583	66.39		1.77	
1348	D7797	64.25		1.38	
1357	IP585	NA		-----	
1399		-----		-----	
1402	IP590	66.8		1.84	
1587	IP583	59.02		0.43	
1610	IP585	62.87		1.13	
1613		-----	W	-----	Test result withdrawn, reported 5.85912
1631		-----		-----	
1634	IP585	20.35	R(0.01)	-6.61	
1724	IP590	15.15	C,R(0.01)	-7.55	First reported 1.825
1833		-----		-----	
2129	IP590	64.06		1.34	
2130	IP590	43.462	C	-2.40	First reported 8.201
6041	IP590	53.2347		-0.63	
6064	IP585	53.49		-0.58	
6065	IP585	52.25		-0.80	
6066	IP583	52.00		-0.85	
6075	IP590	37.64		-3.46	
6103	D7797	63.63		1.27	
6201	IP585	40.4		-2.96	
6238		-----		-----	
6262		-----		-----	
6274	IP585	61.97	C	0.96	First reported 226.85

		Only IP585	Only IP583/D7797	Only IP590
normality	OK	OK	suspect	OK
n	57	27	22	8
outliers	3	1	0	1
mean (n)	56.671	54.675	60.619	52.550
st.dev. (n)	7.3432	6.6773	3.8674	11.7103
R(calc.)	20.561	18.697	10.829	32.789
st.dev.(IP585:10)	5.4961	5.3123	-----	-----
R(IP585:10)	15.389	14.874	-----	-----
Compare				
R(IP583:15)	7.782	-----	7.978	-----
R(IP590:10)	12.268	-----	-----	11.434
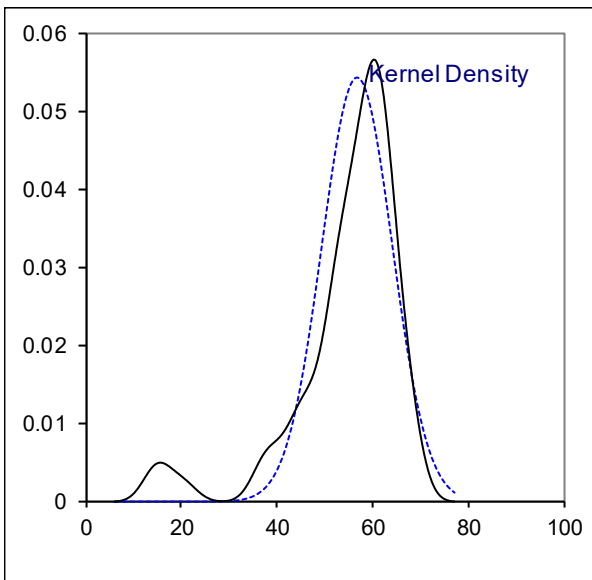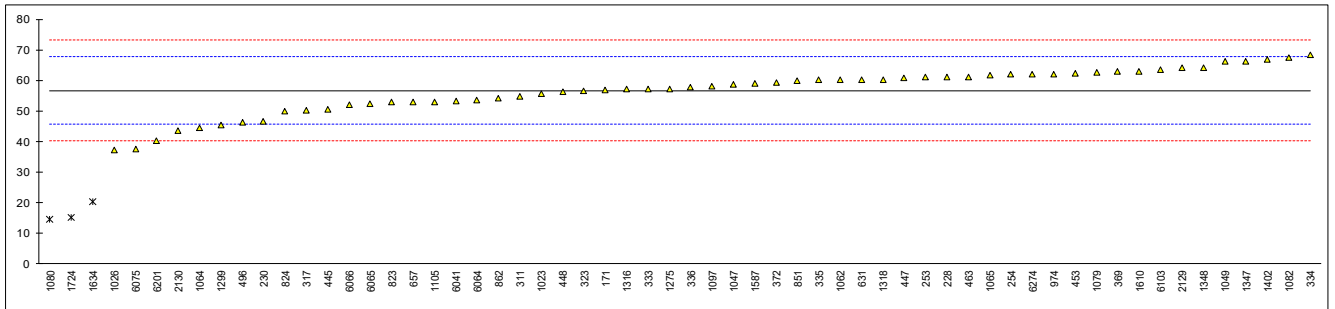
Determination of FAME on sample #19154; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62	D7797	31	C	1.95	First reported for #19153
140		-----		-----	
171	IP585	23.8		-0.76	
194		-----		-----	
228	IP583	28.24		0.91	
230	IP585	21.67		-1.57	
237		-----		-----	
253	IP583	28.00		0.82	
254	D7797	32.79		2.62	
311	IP585	23.5		-0.88	
317	IP585	21.6		-1.59	
323	IP585	24.2		-0.61	
333	IP585	24.0		-0.69	
334	IP585	26.45		0.24	
335	IP585	29.2		1.27	
336	IP585	28.2		0.89	
369	IP583	29.25		1.29	
372	IP590	26.3		0.18	
445	IP585	25.63		-0.07	
447	IP583	28.57		1.03	
448	IP585	24.6		-0.46	
453	IP583	30.76		1.86	
463	IP583	29.19		1.27	
496	IP585	18.59		-2.73	
631	D7797	30.22		1.66	
657	IP585	22.4		-1.29	
823	IP585	25.3		-0.20	
824	IP585	18.2		-2.87	
851	IP583	32.51		2.52	
862	IP585	24.8		-0.39	
974	IP583	30		1.57	
1011		-----		-----	
1023	D7797	25.38		-0.17	
1026	IP590	10.2	R(0.05)	-5.89	
1047		24.6		-0.46	
1049	IP583	32.70		2.59	
1062	D7797	28.7		1.08	
1064	IP585	17.5		-3.14	
1065	D7797	28.4		0.97	
1079	IP583	28.57		1.03	
1080		-----		-----	
1082	IP585	31.65		2.19	
1095	IP585	18.5		-2.76	
1097	IP583	27.55		0.65	
1105	IP585	22.6		-1.21	
1212		-----		-----	
1275	IP585	26.3		0.18	
1279		-----		-----	
1299	IP585	20.7		-1.93	
1316	IP585	22.91		-1.10	
1318	IP585	24.38		-0.54	
1347	IP583	29.87		1.52	
1348	D7797	28.80		1.12	
1357		-----		-----	
1399		-----		-----	
1402	IP590	27.8		0.74	
1587	IP583	28.42		0.98	
1610	IP585	<10.0	C	<-5.96	First reported 9.33
1613		-----	W	-----	Test result withdrawn, reported 5.621
1631		-----		-----	
1634	IP585	39.48	R(0.05)	5.14	
1724	IP590	8.91	R(0.05)	-6.37	
1833	IP590	24.1		-0.65	
2129	IP590	30.46		1.75	
2130	IP590	24.767	C	-0.40	First reported 5.747
6041		-----		-----	
6064	IP585	22.99		-1.07	
6065	IP585	22.82		-1.13	
6066	IP585	22.10		-1.40	
6075	IP590	17.68		-3.07	
6103	D7797	29.93		1.55	
6201	IP585	17.1		-3.29	
6238		-----		-----	
6262		-----		-----	
6274	IP585	39.47	R(0.05)	5.14	

		Only IP585	Only IP583/D7797	Only IP590
normality	OK	OK	OK	suspect
n	56	28	21	6
outliers	4	2	0	1
mean (n)	25.826	23.275	29.164	25.184
st.dev. (n)	4.1472	3.4556	2.0549	4.3263
R(calc.)	11.612	9.676	5.754	12.114
st.dev.(IP585:10)	2.6551	2.4201	-----	-----
R(IP585:10)	7.434	6.776	-----	-----
Compare				
R(IP583:15)	6.250	-----	6.416	
R(IP590:10)	6.031	-----	-----	5.901

Kernel Density
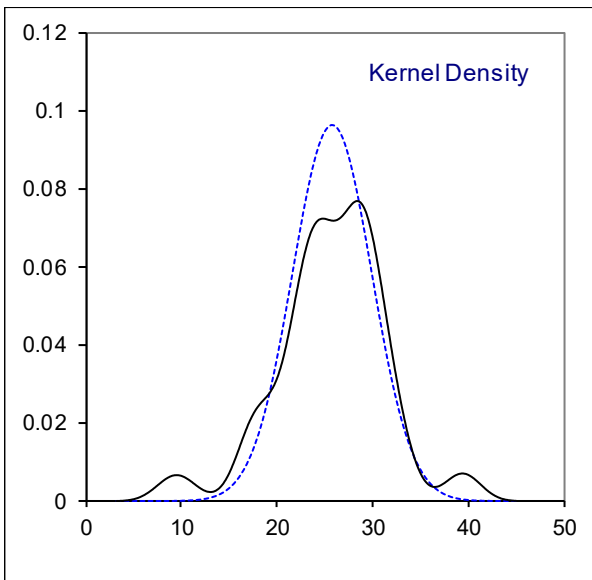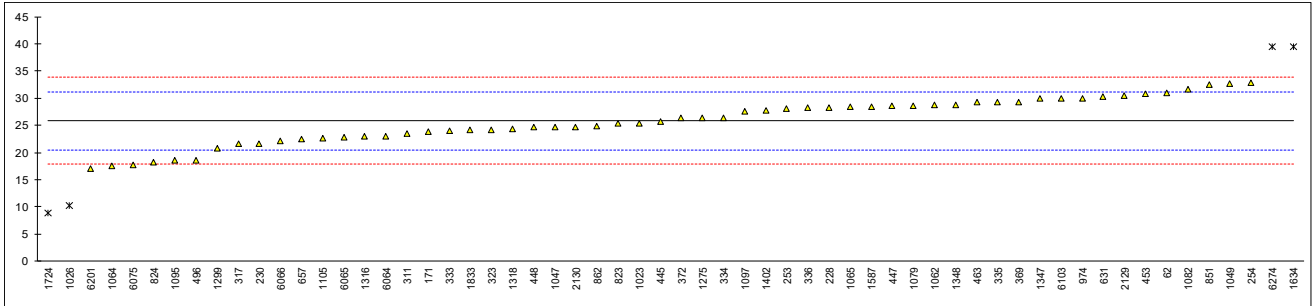
Determination of Copper as Cu on sample #19155; results in µg/kg

lab	method	value	mark	z(targ)
1316	In house	5		-----
1318	D6732	3.5		-----
1357	D5185	NA		-----

	n	2	
	mean (n)	<10	

Determination of JFTOT at 260 °C on sample #19155; 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	-----	-----	1	-----	440	260	Pass
120	D3241-A1	1	30.2	-----	1.9	-----	-----	260	Pass
140	D3241-A1	<1	-----	-----	0	0	450	260	pass
150	D3241-A1	1	-----	-----	2	-----	450	260	Pass
159	D3241	-----	19.7	-----	0.1	0	504	260	Pass
171	D3241-A1	<1	-----	-----	1	150	450	260	Pass
175	D3241-A1	<1	-----	-----	0	-----	440	260	Pass
177	D3241-A1	1	15.1	-----	1	150	450	260	pass
194	D3241-A1	<1	-----	-----	2	-----	-----	-----	Pass
225	D3241-A1	<3	-----	-----	2.2	0.0	-----	260	-----
230	D3241-A1	<1	-----	-----	1	150	400	260	Pass
237	D3241-A1	<1	21.8	-----	0	-----	450	260	PASS
253	D3241-A1	<1	-----	-----	0	-----	450	260	Pass
254	D3241-A1	1	-----	-----	1	-----	450	260	Pass
256	D3241-A1	<2	-----	-----	0	-----	448	260	Pass
311	D3241-A1	<1	-----	-----	1	-----	460	260	Pass
323	D3241-A1	<1	-----	-----	5.7	0	424	260	FAIL f+?
334	D3241-A1	<1	18.4	-----	4	-----	510	260	Pass
335	D3241-A1	<1	18.6	-----	0.8	0	510	260	Pass
372	D3241-A1	2	-----	-----	2	-----	450	260	pass
391		-----	-----	-----	-----	-----	-----	-----	-----
398	D3241	<1 C	-----	-----	0.6	0	438	260	-----
399	D3241-A1	<3	-----	46 C	0.8	150	510	260	Pass C
440	D3241-A1	1	-----	-----	1	N/A	450	260	Pass
445	IP323-B	1	-----	-----	1.5	-----	450	260	-----
447	D3241-A1	2	-----	-----	1.5	-----	450	260	Pass
453	IP323-B	1	11.0	-----	<1	-----	455	260	Pass
496	D3241-A1	1	-----	-----	0.60	0.0	510.0	260.0	pass
631	D3241-A1	<1	-----	-----	6.1	-----	460	260	Pass
657	D3241-A1	1	-----	-----	1	-----	450	260	pass
823	D3241-A1	1	N/A	N/A	0	none	450	260	Pass
824	D3241-A1	1	-----	-----	0.8	0	510	260	pass
851	D3241-A1	1	25.3	-----	0.1	-----	510	260	Pass
862	D3241-A1	1	-----	-----	0	-----	-----	260	Pass
869	D3241-A1	1	-----	-----	1.7	0	464	260	Pass
922	D3241	-----	8	-----	0	-----	450	260	Pass
962	D3241-A1	1	-----	-----	2.3	0.00	440	260	Pass
963	D3241-A1	<1	-----	-----	-----	0.0	450	260	Pass
974	D3241-A1	1 NP/NA	-----	-----	2	-----	450	260	Pass
994		-----	-----	-----	-----	-----	-----	-----	-----
1011	D3241-A1	<1	-----	-----	1	-----	510	260	-----
1016	D3241-A1	<1	-----	-----	0.5	-----	510	260	-----
1026	D3241-A1	<1	-----	-----	<1.0	0	510	260	Pass
1047	D3241-A1	0	-----	-----	3	-----	450	260	-----
1064	D3241-A1	<3 C	-----	-----	2.3	-----	447	260	Pass C
1079	D3241-A1	1	-----	-----	10.7	-----	450	260	-----
1082		-----	18.6	-----	0	-----	-----	-----	pass
1097	D3241-A1	1	-----	-----	0.1	-----	455	260	Pass
1109	D3241-A1	<1	-----	-----	0.4	-----	450	260	Pass
1191		-----	-----	-----	-----	-----	-----	-----	-----
1212	D3241-A1	<1	-----	-----	1.2	-----	440	260	Pass
1237	D3241-A1	<1	-----	-----	0.0	-----	450	260	Pass
1275	IP323-B	1	-----	-----	0	-----	450	265	Pass
1277		-----	-----	-----	-----	-----	-----	-----	-----
1279		-----	-----	-----	-----	-----	-----	-----	-----
1299	D3241-A1	<2	-----	-----	0	-----	450	260	-----
1316	D3241-A1	1	-----	49	0.0	-----	462	260	Pass
1318	D3241-A1	1	-----	-----	0.0	0.0	450	260	Pass
1347	D3241-A1	1	-----	-----	0	-----	420	260	pass
1348	D3241-A1	1	-----	-----	1	-----	-----	260	Pass

| lab	method	VTR	ITR	ETR	Delta P	Time to 25 mmHg (min)	Pumped Vol. (mL)	Heater Temp. (°C)	Pass/Fail
1357	D3241-A1	1	NA	NA	1	NA	460	260	PASS
1399		-----	-----	-----	-----	-----	-----	-----	-----
1412	D3241-A1	<2	-----	-----	0.0	-----	462	260	pass
1417	IP323-B	<1	-----	-----	0	-----	450	260	-----
1496	D3241-A1	<1	-----	12.73	0.4	-----	450	260	Pass
1528	D3241-A1	1	-----	-----	0	-----	450	260	Pass
1586	D3241-A1	1	-----	-----	0.9	-----	510	260	-----
1587	D3241-A1	< 1	-----	-----	2.3	-----	450	260	pass
1610	IP323-B	< 3	-----	-----	23.6	150	451	260	pass
1613	D3241-A1	<1	-----	-----	6.5	0.0	450	260	Pass
1616	D3241-A1	2	-----	-----	2.0	0	452.1	260	Pass
1631		-----	-----	-----	-----	-----	-----	-----	-----
1634	D3241-A1	2	-----	-----	0.0	-----	500	260	-----
1650	D3241-A1	1	-----	-----	0	-----	510	-----	pass
1720	D3241-A1	0.0	-----	-----	0.0	-----	510	260	pass
1724	D3241-A1	1	-----	-----	0	-----	510	260	pass
1730	D3241-A1	1	3	-----	2	-----	450	260	PASS
1810	D3241-A1	2	-----	-----	1.9	-----	-----	260	Pass
1811	D3241-A1	1	-----	-----	0	-----	510	260	-----
1833	D3241-A1	1	-----	-----	0.9	-----	-----	260	pass
1852	D3241-A1	< 4A	-----	178.74	39.1	143:43	468.2	260	Fail f+?
1854	D3241-A1	<1	-----	-----	1	-----	450	260	Pass
1913	D3241-A1	<3	-----	-----	3.1	-----	450	260	Pass
1961	D3241-A1	<1	-----	-----	0.7	-----	460	260	Pass
2129	D3241-A1	1 C	-----	-----	0	-----	450	260	Pass C
2130	D3241-A1	<1	-----	-----	0.4	-----	510	260	Pass
6041		4p	-----	145.96	2.6	0.00	450	260	Fail f+?
6054		-----	-----	-----	-----	-----	-----	-----	-----
6075	D3241-A1	0	60.0	-----	0.6	-----	450	260	Pass
6103	D3241-A1	1	20.5	-----	0.0	150	470	260.0	Pass
6147	D3241-A1	1	-----	-----	25	600	600	260	pass
6201		-----	-----	-----	-----	-----	-----	-----	-----
6203		-----	-----	-----	-----	-----	-----	-----	-----
6238		-----	-----	-----	-----	-----	-----	-----	-----
6262		-----	-----	-----	-----	-----	-----	-----	-----
6266		-----	-----	-----	-----	-----	-----	-----	-----
6274	D3241-A1	1	-----	-----	0	-----	-----	260	-----
	n	73	12	5	81	23	75	81	74 (Pass)
	Range of results								
	Min.	0	3	12.73	0	0	400	260	
	Max.	>4	60	178.74	39.1	600	600	260	

Lab 398: first reported <3
Lab 399: first reported for ETR 240 and for Pass/Fail reported Fail
Lab 1064: first reported for VTR 3A and for Pass/Fail reported Fail
Lab 2129: first reported for VTR A and for Pass/Fail reported Fail

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.
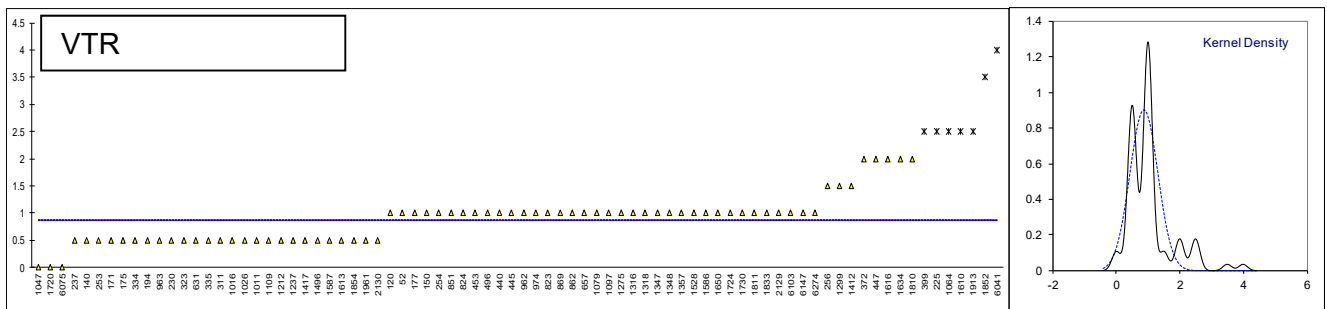
For the graphical display non-numeric values were calculated as follows: visual tube rating:< x as (x-0.5) and > x as (x+0.5)
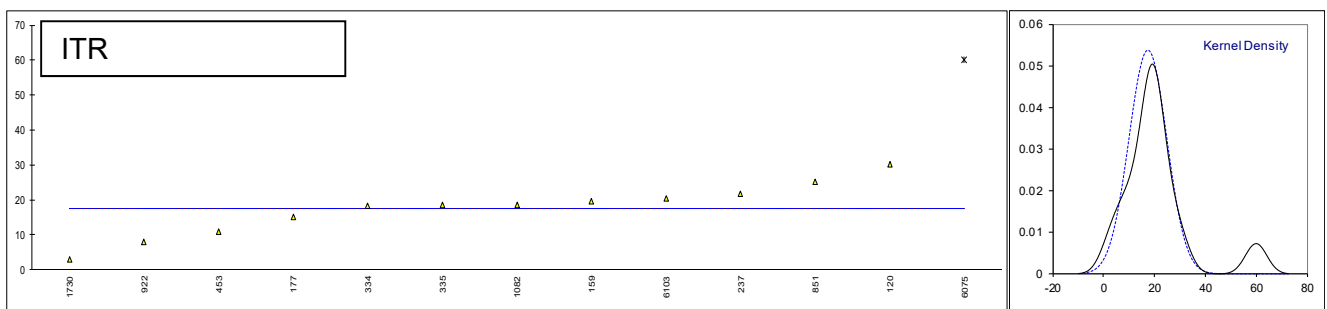
APPENDIX 2: Lotnumber of Dye used for FIA ASTM D1319

lab	lotnumber	lab	lotnumber	lab	lotnumber
52	3000000964	1047	-----	6244	-----
62	-----	1049	-----	6262	-----
120	-----	1059	#3000000933	6266	-----
140	-----	1062	3000000957	6274	-----
150	-----	1064	3000000962	9014	-----
159	-----	1065	-----	9128	-----
169	-----	1079	3000000961		
171	-----	1080	-----		
175	-----	1082	-----		
177	-----	1097	300000 943		
194	-----	1105	63231-67-4		
221	-----	1109	300000941		
224	-----	1121	-----		
225	-----	1126	-----		
228	-----	1146	-----		
230	-----	1150	-----		
237	3000000962	1191	-----		
238	-----	1203	Lot. No. 68.		
253	3000000821	1212	N1117		
254	-----	1237	3000000918		
256	-----	1275	-----		
258	-----	1277	-----		
273	-----	1279	-----		
311	-----	1299	-----		
317	-----	1316	-----		
323	30000000974	1318	-----		
333	-----	1347	-----		
334	-----	1348	-----		
335	3000000943	1357	3000000906		
336	-----	1372	-----		
353	-----	1373	-----		
369	-----	1399	-----		
370	3000000957	1412	-----		
372	3000000800	1417	-----		
391	3000000938	1496	3000000866		
399	-----	1528	3000000936		
440	-----	1538	-----		
445	3000000969	1575	-----		
447	N1103	1586	-----		
448	-----	1587	-----		
453	-----	1610	UOP3000000930		
463	3000000870	1613	--		
468	-----	1616	3000000935		
485	-----	1631	-----		
496	30000090	1634	-----		
603	-----	1650	-----		
608	-----	1715	-----		
631	3000000846	1720	-----		
633	-----	1724	-----		
657	3000000917	1730	-----		
704	-----	1755	-----		
732	-----	1776	-----		
798	-----	1810	-----		
823	3000000966	1811	-----		
824	batch D1098	1833	-----		
851	-----	1852	-----		
854	-----	1883	-----		
862	-----	1913	3000000964		
869	-----	1961	-----		
873	-----	2129	3000000881		
904	-----	2130	311L746755		
962	N1007	6035	-----		
963	-----	6041	-----		
970	-----	6054	-----		
974	3000000848	6075	3000000955		
994	-----	6103	3000000959		
995	3000000955	6135	-----		
996	-----	6142	-----		
997	-----	6147	-----		
998	-----	6201	-----		
1011	-----	6203	3000000910		
1012	-----	6238	-----		
1016	-----	6240	-----		
1039	-----	6241	-----		

APPENDIX 3: z-scores of Particle Size Distribution

z-scores on sample #19152 acc. to IP564, in (cumulative) counts/ml

lab	≥4 µm	≥6 µm	≥14 µm	≥21 µm	≥25 µm	≥30 µm
140	-----	-----	-----	-----	-----	-----
150	-----	-----	-----	-----	-----	-----
171	-----	-----	-----	-----	-----	-----
225	-----	-----	-----	-----	-----	-----
230	-----	-----	-----	-----	-----	-----
237	-----	-----	-----	-----	-----	-----
311	-----	-----	-----	-----	-----	-----
323	-----	-----	-----	-----	-----	-----
333	-----	-----	-----	-----	-----	-----
334	-----	-----	-----	-----	-----	-----
335	-----	-----	-----	-----	-----	-----
372	-2.72	-2.40	0.73	2.75	5.97	4.15
447	-----	-----	-----	-----	-----	-----
453	-1.77	-0.22	1.73	5.71	16.92	34.14
496	-4.62	-3.84	-3.09	-0.93	0.12	-0.33
657	-----	-----	-----	-----	-----	-----
823	-----	-----	-----	-----	-----	-----
824	-----	-----	-----	-----	-----	-----
862	-----	-----	-----	-----	-----	-----
963	-----	-----	-----	-----	-----	-----
970	-----	-----	-----	-----	-----	-----
974	-----	-----	-----	-----	-----	-----
1011	-----	-----	-----	-----	-----	-----
1016	-----	-----	-----	-----	-----	-----
1026	-----	-----	-----	-----	-----	-----
1039	-----	-----	-----	-----	-----	-----
1049	-----	-----	-----	-----	-----	-----
1059	-1.44	0.43	3.31	-----	-----	-----
1062	-----	-----	-----	-----	-----	-----
1064	1.85	-0.66	-0.98	-0.86	-1.07	-1.30
1065	1.24	-0.61	-2.00	-1.65	-1.58	-1.30
1079	-----	-----	-----	-----	-----	-----
1095	-----	-----	-----	-----	-----	-----
1097	0.77	2.42	1.91	0.06	-0.35	-1.11
1109	-----	-----	-----	-----	-----	-----
1191	1.33	1.66	1.89	1.45	2.07	-0.33
1212	-----	-----	-----	-----	-----	-----
1277	-----	-----	-----	-----	-----	-----
1279	-----	-----	-----	-----	-----	-----
1299	-----	-----	-----	-----	-----	-----
1316	-----	-----	-----	-----	-----	-----
1357	-----	-----	-----	-----	-----	-----
1397	-----	-----	-----	-----	-----	-----
1399	-----	-----	-----	-----	-----	-----
1402	-----	-----	-----	-----	-----	-----
1496	-----	-----	-----	-----	-----	-----
1528	-----	-----	-----	-----	-----	-----
1587	-12.56	-7.84	-3.56	-1.28	-0.86	-0.82
1610	-----	-----	-----	-----	-----	-----
1613	-----	-----	-----	-----	-----	-----
1616	0.72	0.73	-2.08	-1.40	-0.73	0.65
1631	-----	-----	-----	-----	-----	-----
1634	-----	-----	-----	-----	-----	-----
1724	-----	-----	-----	-----	-----	-----
1810	-----	-----	-----	-----	-----	-----
1811	-----	-----	-----	-----	-----	-----
1833	-----	-----	-----	-----	-----	-----
1852	-----	-----	-----	-----	-----	-----
1913	-----	-----	-----	-----	-----	-----
1961	2.87	2.27	0.32	0.59	1.56	-0.43
2130	-15.00	-9.39	-5.32	-2.13	-1.92	-1.40
6041	-----	-----	-----	-----	-----	-----
6075	-----	-----	-----	-----	-----	-----
6103	-----	-----	-----	-----	-----	-----
6201	-----	-----	-----	-----	-----	-----
6203	-----	-----	-----	-----	-----	-----
6238	-----	-----	-----	-----	-----	-----
6240	-----	-----	-----	-----	-----	-----
6274	-----	-----	-----	-----	-----	-----

z-scores on sample #19152 acc. to IP565, in (cumulative) counts/ml

lab	≥4 µm	≥6 µm	≥14 µm	≥21 µm	≥25 µm	≥30 µm
140	-0.43	-0.61	0.82	1.45	0.62	-0.54
150	-----	-----	-----	-----	-----	-----
171	1.28	0.58	0.51	0.10	-0.86	-0.42
225	-----	-----	-----	-----	-----	-----
230	-----	-----	-----	-----	-----	-----
237	-0.62	-0.91	-3.07	-2.92	-2.30	-1.64
311	1.49	0.13	-1.78	-2.49	-2.13	-1.60
323	-----	-----	-----	-----	-----	-----
333	-0.91	-1.23	-2.08	-2.62	-2.44	-1.60
334	-0.28	-0.78	0.02	0.41	0.30	0.29
335	0.77	-1.12	-1.60	-1.97	-1.95	-1.60
372	-----	-----	-----	-----	-----	-----
447	-0.68	0.08	0.86	0.27	-0.60	-0.54
453	-----	-----	-----	-----	-----	-----
496	-----	-----	-----	-----	-----	-----
657	11.41	8.43	1.75	-0.21	-0.76	-1.09
823	2.96	2.85	3.87	6.31	1.44	1.51
824	1.55	0.71	1.84	2.43	2.32	1.94
862	-----	-----	-----	-----	-----	-----
963	-----	-----	-----	-----	-----	-----
970	-----	-----	-----	-----	-----	-----
974	-0.61	-0.33	0.62	0.61	0.25	-0.03
1011	-25.87	-13.21	-5.44	-3.40	-2.60	-1.99
1016	0.14	1.24	0.61	-0.90	-1.44	-1.01
1026	-----	-----	-----	-----	-----	-----
1039	3.79	4.20	2.38	2.94	3.27	2.34
1049	-----	-----	-----	-----	-----	-----
1059	-----	-----	-----	-----	-----	-----
1062	-1.73	-1.55	-3.29	-3.31	-2.65	-1.95
1064	-----	-----	-----	-----	-----	-----
1065	-----	-----	-----	-----	-----	-----
1079	-2.46	-2.08	-2.31	-2.65	-1.94	-1.40
1095	-0.05	-0.15	0.76	0.94	0.41	-0.42
1097	-----	-----	-----	-----	-----	-----
1109	-1.13	0.01	0.04	-0.39	-0.84	-0.81
1191	-----	-----	-----	-----	-----	-----
1212	4.23	2.33	4.83	2.23	3.25	3.36
1277	-26.61	-13.47	-5.56	-3.51	-2.73	-1.92
1279	-----	-----	-----	-----	-----	-----
1299	-7.23	-2.79	1.56	7.08	11.60	9.30
1316	-7.89	-3.83	-1.61	-0.03	0.89	-0.46
1357	-----	-----	-----	-----	-----	-----
1397	-3.86	-1.15	0.85	1.92	1.38	0.96
1399	-----	-----	-----	-----	-----	-----
1402	-0.63	0.32	1.49	3.10	4.40	3.99
1496	-1.71	-1.33	-2.32	-2.66	-2.38	-1.72
1528	-0.33	0.77	3.14	5.64	7.45	8.63
1587	-----	-----	-----	-----	-----	-----
1610	-1.08	0.25	1.06	0.17	0.41	0.05
1613	-2.28	-0.15	0.60	1.87	2.13	2.18
1616	-----	-----	-----	-----	-----	-----
1631	-1.96	-1.25	-1.48	-2.21	-2.06	-1.72
1634	-1.31	-0.19	0.98	1.33	0.73	0.37
1724	0.99	0.60	1.83	3.64	4.56	3.56
1810	4.01	2.80	1.39	0.10	0.41	0.37
1811	1.16	1.30	0.74	0.69	0.46	-0.07
1833	-0.84	-0.97	-0.74	0.35	1.11	0.33
1852	0.92	0.46	-0.46	-0.60	-0.65	-0.46
1913	-----	-----	-----	-----	-----	-----
1961	-----	-----	-----	-----	-----	-----
2130	-----	-----	-----	-----	-----	-----
6041	-2.08	-0.77	-0.26	-1.67	-1.41	-1.44
6075	0.31	-2.53	-2.14	-2.39	-2.33	-1.76
6103	10.78	6.13	1.29	-1.00	0.24	1.59
6201	-14.30	-7.54	1.28	2.99	5.63	10.60
6203	-2.37	-1.40	0.27	-0.58	-0.85	-0.71
6238	-----	-----	-----	-----	-----	-----
6240	-0.57	0.56	2.86	7.58	10.18	9.22
6274	3.40	-1.67	-4.51	-2.46	-1.76	-0.93

APPENDIX 4

Number of participants per country

1 lab in AFGHANISTAN	2 labs in MALAYSIA
1 lab in AUSTRALIA	1 lab in MALTA
2 labs in AZERBAIJAN	1 lab in MARTINIQUE
6 labs in BELGIUM	1 lab in MAURITIUS
1 lab in BRUNEI DARUSSALAM	1 lab in MOROCCO
2 labs in BULGARIA	1 lab in MOZAMBIQUE
2 labs in CANADA	9 labs in NETHERLANDS
8 labs in CHINA, People's Republic	3 labs in NIGERIA
3 labs in COLOMBIA	2 labs in NORWAY
1 lab in CONGO Brazzaville	2 labs in OMAN
1 lab in COSTA RICA	1 lab in PAKISTAN
2 labs in COTE D'IVOIRE	2 labs in PHILIPPINES
1 lab in CROATIA	4 labs in POLAND
2 labs in CZECH REPUBLIC	4 labs in PORTUGAL
1 lab in DJIBOUTI	1 lab in QATAR
2 labs in EGYPT	2 labs in ROMANIA
1 lab in ESTONIA	2 labs in RUSSIAN FEDERATION
2 labs in FINLAND	2 labs in SAUDI ARABIA
6 labs in FRANCE	1 lab in SENEGAL
3 labs in GEORGIA	1 lab in SINGAPORE
3 labs in GERMANY	2 labs in SLOVENIA
2 labs in GREECE	2 labs in SOUTH AFRICA
1 lab in GUINEA REPUBLIC	2 labs in SOUTH KOREA
1 lab in HONG KONG	2 labs in SPAIN
3 labs in HUNGARY	1 lab in SUDAN
2 labs in IRELAND	6 labs in SWEDEN
1 lab in ISRAEL	2 labs in TANZANIA
3 labs in ITALY	1 lab in TOGO
1 lab in JORDAN	6 labs in TURKEY
1 lab in KAZAKHSTAN	1 lab in TURKMENISTAN
1 lab in KENYA	1 lab in UKRAINE
1 lab in LATVIA	2 labs in UNITED ARAB EMIRATES
3 labs in LEBANON	12 labs in UNITED KINGDOM
1 lab in LITHUANIA	9 labs in UNITED STATES OF AMERICA
1 lab in MACEDONIA	1 lab in ZAMBIA

APPENDIX 5

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)	= outlier in Rosner's outlier test
R(0.05)	= straggler in Rosner's outlier test
E	= possibly an error in calculations
W	= test result withdrawn on request of participant
ex	= test result excluded from statistical evaluation
fr.	= first reported
n.a.	= not applicable
n.e.	= not evaluated
n.d.	= not detected
SDS	= Safety Data Sheet

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