Results of Proficiency Test
Jet Fuel A1
September 2020

Organized by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

Author: A. Lewinska, MSc.
Correctors: ing. A.S. Noordman-de Neef & ing. G.A. Oosterlaken-Buijs

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1 INTRODUCTION

Since 1995 the Institute for Interlaboratory Studies organizes proficiency tests (PT) for Jet Fuel A1 twice a year. The interlaboratory study on Jet Fuel was extended with separate 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 2020/2021, it was decided to continue the PT on Jet Fuel A1 in accordance with the latest version of the "Aviation Fuel Quality Requirements for Jointly Operated Systems (AFQRJOS)", sometimes referred to as the "Joint Fuelling System Check List for Jet A-1". At the start of this PT the latest version of AFQRJOS was issue 31 from November 2019. At November 2020 issue 32 has been published.

The number of participants per Jet Fuel PT are:
-154 laboratories in 71 countries for the regular round (iis20J02),
- 31 laboratories in 19 countries for BOCLE (iis20J02BOCLE),
- 64 laboratories in 33 countries for Particle Size Distribution (iis20J02PS),
- 73 laboratories in 34 countries for FAME (iis20J02FAME),
- 96 laboratories in 46 countries for JFTOT (iis20J02JF) and
- 47 laboratories in 27 countries for Particulate Contamination (iis20J02CP).

In total 165 laboratories in 71 different countries registered for participation for one or more rounds. 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 organizer of this proficiency test. Sample analyzes for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC17025 accredited laboratory. In this proficiency test, the participants received, dependent on the registration, from one up to seven different samples of Jet Fuel, see table below.

Samples	Type of bottle	Purpose
#20150	2 x 1 L	regular analyzes
#20151	100 mL	BOCLE
#20152	0.5 L	Particle Size Distribution
#20153	100 mL	FAME
#20154	100 mL	FAME
#20155	1 L	JFTOT
#20156	4 x 1 L	Particulate Contamination

Table 1: Jet Fuel samples used in proficiency test iis20J02

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

For the sample for the regular analyzes in Jet Fuel a batch of approximately 400 liters of Jet Fuel A1 was obtained from a local trader. After homogenization 338 amber glass bottles of one liter were filled and labelled #20150.
The homogeneity of the subsamples was checked by the determination of Density in accordance with ASTM D4052 on ten stratified randomly selected subsamples.

	Density at 15°C in kg/m^3
Sample #20150-1	793.45
Sample #20150-2	793.45
Sample #20150-3	793.45
Sample #20150-4	793.45
Sample #20150-5	793.45
Sample #20150-6	793.45
Sample #20150-7	793.45
Sample #20150-8	793.45
Sample #20150-9	793.45
Sample #20150-10	793.45

Table 2: homogeneity test results of subsamples #20150

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)	0.00
reference test method	ASTM D4052:18a
0.3 x R (reference test method)	0.15

Table 3: evaluation of repeatability of subsamples #20150

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

For the sample for the BOCLE determination a batch of approximately 10 liters of Jet Fuel A1 was obtained from a participating laboratory. After homogenization 45 amber glass bottles of 0.1 liter were filled and labelled #20151.
The homogeneity of the subsamples was checked by the determination of Density in accordance with ASTM D4052 on 8 stratified randomly selected subsamples.

	Density at 15°C in kg/m^3
Sample #20151-1	809.82
Sample #20151-2	809.82
Sample #20151-3	809.82
Sample #20151-4	809.82
Sample #20151-5	809.82
Sample #20151-6	809.82
Sample #20151-7	809.82
Sample #20151-8	809.82

Table 4: homogeneity test results of subsamples #20151

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)	0.00
reference test method	D4052:18a
0.3 x R (reference test method)	0.15

Table 5: evaluation of repeatability of subsamples #20151

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

For the sample for the Particle Size Distribution determination a batch of approximately 90 liters of Jet Fuel A1 was obtained from a local trader. A defined volume of freshly prepared and well shaken dust suspension of Arizona Dust material in a Lub oil was added to a 0.5L empty bottle by means of a calibrated pipette. The addition was checked by weighing the bottle before and after the addition. In total 88 bottles were prepared and subsequently filled with Jet Fuel A1. Finally, the subsamples were labelled #20152.

It was decided to prepare two different PT samples for FAME determination in Jet Fuel with low and high level of FAME. A batch of approximately 10 liters of Jet Fuel A1 was spiked with approximately 0.2 grams Biodiesel B100. After homogenization 88 amber glass bottles of 0.1 liter were filled and labelled #20153. Another Jet Fuel batch of approximately 10 liters was spiked with approximately 0.4 grams Biodiesel B100. After homogenization 88 amber glas bottles of 0.1 liter were filled and labelled #20154.
The homogeneity of the subsamples #20153 and #20154 was checked by the determination of FAME in accordance with method IP585 on 8 stratified randomly selected subsamples.

	FAME in mg/kg #20153	FAME in mg/kg #20154
Sample-1	22.2	55.9
Sample-2	23.2	54.4
Sample-3	23.3	53.7
Sample-4	23.4	53.3
Sample-5	23.2	52.5
Sample-6	23.9	55.0
Sample-7	22.6	54.7
Sample-8	23.3	55.4

Table 6: homogeneity test results of subsamples #20153 and #20154

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 #20153	FAME in mg/kg #20154
r (observed)	1.5	3.2
reference test method	IP585:10	IP585:10
0.3 x R (reference test method)	2.0	4.4

Table 7: evaluation of repeatabilities of subsamples #20153 and #20154

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

For the sample for the JFTOT determination a batch of approximately 100 liters of Jet Fuel A1 was obtained from a local trader. After homogenization 115 amber glass bottles of 1 liter were filled with approximately 70% Jet Fuel and labelled #20155. The homogeneity of the subsamples was checked by the determination of Density in accordance with ASTM D4052 on 8 stratified randomly selected subsamples.

	Density at 15°C in kg/m^3
Sample #20155-1	793.31
Sample #20155-2	793.31
Sample #20155-3	793.31
Sample #20155-4	793.31
Sample #20155-5	793.31
Sample #20155-6	793.31
Sample #20155-7	793.31
Sample #20155-8	793.31

Table 8: homogeneity test results of subsamples #20155

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)	0.00
reference test method	ASTM D4052:18a
0.3 x R (reference test method)	0.15

Table 9: evaluation of repeatability of subsamples #20155

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

For the sample for the Particulate Contamination determination a batch of approximately 250 liters of Jet Fuel A1 was obtained from a participating laboratory. After homogenization 230 amber glass bottles of 1 liter were filled and labelled #20156. The homogeneity of the subsamples was checked by the determination of Particle Size Distribution in accordance with IP565 on ten stratified randomly selected subsamples.

	> 4 µm (c) counts/mL	> 6 µm (c) counts/mL	> 14 µm (c) counts/mL
Sample #20156-1	180	31	2
Sample #20156-2	190	45	4
Sample #20156-3	180	31	2
Sample #20156-4	164	35	5
Sample #20156-5	183	32	3

	> 4 µm (c) counts/mL	> 6 µm (c) counts/mL	> 14 µm (c) counts/mL
Sample #20156-6	180	31	2
Sample #20156-7	208	37	2
Sample #20156-8	192	47	9
Sample #20156-9	192	40	7
Sample #20156-10	200	40	4

Table 10: homogeneity test results of subsamples #20156

From the above test results the repeatabillities were calculated and compared with 0.3 times the corresponding repeatability 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)	38	16	7
reference test method	IP565:13	IP565:13	IP565:13
0.3 x R (ref. test method)	65	32	6

Table 11: evaluation of repeatability of subsamples #20156

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

Dependent on the registration of the participant the appropriate set of PT samples was dispatched on August 19, 2020. 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 ANALYZES

The participants were requested to determine on sample #20150: Appearance, Total Acidity, 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 at 760 mmHg (IBP, temperature at 10%, 50%, 90% recovered and FBP), Existent Gum (unwashed), Flash Point, Freezing Point, Kinematic Viscosity at -20°C, Mercaptan Sulfur as S, MSEP, Naphthalenes, Smoke Point, Specific Energy (Net, on Sulfur free basis) and Total Sulfur.
The participants were requested to determine on sample #20151 BOCLE only, on sample #20152 Particle Size Distribution only, on samples #20153 and #20154 FAME only, on #20155 Copper and JFTOT only and on #20156 Particulate Contamination only.

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

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

3 RESULTS

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

Directly after the deadline, a reminder was sent to those laboratories that had not reported test results at that moment. Shortly after the deadline, the available test results were screened for suspect data. A test result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the reported test results (no reanalyzes). Additional or corrected test results are used for data analysis and 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	good
1 < | z | < 2	satisfactory
2 < | z | < 3	questionable
3 < | z |	unsatisfactory

4 EVALUATION

Some problems were encountered with the dispatch of the samples due to COVID-19 pandemic. Therefore, the reporting time on the data entry portal was extended with one week. For the regular analyzes Jet Fuel A1 five participants reported after the final reporting date and thirteen participants did not report any test results.
For the BOCLE round five participants did not report any test results. All other participants reported before the final reporting date.
For the Particle Size Distribution round one participant reported after the final reporting date and seventeen participants did not report any test results.
For the FAME round three participants reported after the final reporting date and eleven participants did not report any test results.
For the JFTOT round three participants reported after the final reporting date and fourteen participants did not report any test results.
For the Particulate Contamination round one participant reported after the final reporting date and eight participants did not report any test results.
Finally, in total 152 participants reported 2992 numerical test results. Observed were 94 outlying test results, which is 3.1% 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 original data. The abbreviations, used in these tables, are explained 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 11, dated: October 2019” and ASTM D1655:19a. One must keep in mind that ISO test methods are not mentioned in the “Checklist”. A new issue has been released at October 2020.

Sample #20150

Appearance: This determination was not problematic. All reporting participants agreed about the appearance, which was Clear and Bright.

Total Acidity: 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.

Aromatics by FIA: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with ASTM D1319:20a.

Mono Aromatics by HPLC: This determination was not problematic. One statistical outlier was observed and one other test result was excluded. The calculated reproducibility after rejection of the suspect data is in agreement with the requirements of ASTM D6379:11(2019).

Di Aromatics by HPLC: This determination was not problematic. No statistical outliers were observed but one test result was excluded. The calculated reproducibility after rejection of the suspect data is in agreement with the requirements of ASTM D65379:11(2019).

Total Aromatics by HPLC: The determination in %M/M was not problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with ASTM D6379:11(2019).
Regretfully, no precision data for the determination in %V/V is mentioned in ASTM D6379:11(2019) and therefore no z-scores are calculated. The determination in %V/V may be problematic. One statistical outlier was observed. The calculated reproducibility was lower than the calculated reproducibility in %V/V of the previous proficiency test iis20J01 but higher than observed in iis19J02.

Color Saybolt: The determination was very problematic for the automatic test method. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D6045:20.
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. All reporting participants agreed on a result of 1 (1a/1b).

Density: This determination was problematic for a number of laboratories. Seven 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 at 760 mmHg: This determination may be problematic dependent on mode used. Nine statistical outliers were observed over five parameters. However, the calculated reproducibilities after rejection of the statistical outliers are all in agreement with the requirements of the automated mode of ASTM D86:20a.
When compared to the manual mode requirements of ASTMD86:20a the calculated reproducibilities for IBP, 90%rec and FBP are not in agreement.

Existent Gum: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with ASTM D381:19.

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

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

Kinematic Viscosity at -20°C: This determination was problematic for a number of laboratories. Nine statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D445:19.
The reproducibility of ASTM D445:19a is too strict and cannot be used. Therefore, we decided to remain to use version 2019 for the evaluation of the test results. It might be a good idea when participants will contact ASTM to ask then to investigate the reproducibility for Jet Fuels in ASTM D445:19a version.
A source of the deviating test results might be condensation of water in the viscosity tube prior or during measurement, especially under humid conditions.

Mercaptan Sulfur: This determination was problematic for a number of laboratories. Six 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 D3948:20.

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

Smoke Point: This determination may be problematic dependent on the mode used. Five statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D1322:19 manual mode but not with the stricter requirements of ASTM D1322:19 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 D1322:19.

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 differences were observed.

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

Sample #20151

BOCLE: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of the ASTM D5001:19e1 semi-automatic but not with the stricter requirements of ASTM D5001:19e1 full-automatic. When the test results from the reported semi-automatic and full-automatic methods were evaluated separately, only the calculated reproducibility of the semi-automatic is in agreement with the requirements of ASTM D5001:19e1.

Sample #20152

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 used 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 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 using IP577 were evaluated in the group of IP565 but excluded in the statistical evaluation.

At the end of September 2020, after the deadline of this PT, the Energy Institute announced that it has suspended test method IP564. For this report, IP564 was still evaluated. However, we see a decline in the number participants with a Parker Hannifin. It might be very well possible that the number of test results from IP564 become too low to use for a good statistical evaluation in future iis PTs.

Three laboratories had three or more outliers for the six different particle sizes in counts/mL. The other test results in counts/mL for these laboratories were excluded, see for more details appendix 1.

IP564: The determination according to IP564 may be problematic. In total three statistical outliers were observed for the six particle size categories.
The calculated reproducibilities after rejection of the suspect data are in agreement with the requirements of IP564:13 for three of the six parameters.
The determination expressed in ISO scale numbers was not problematic. No statistical outliers were observed. The calculated reproducibilities for ≥4 µm (c), ≥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 seventeen 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 was not problematic. Eight statistical outliers were observed and three other test results were excluded. However, the calculated reproducibilities for ≥4 µm (c), ≥6 µm (c) and ≥14 µm (c) are in agreement with the indicative requirements of IP565:13 Annex C.

Samples #20153 and #20154

FAME (#20153): 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 IP585:10(2015), 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 (#20154): 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 IP585:10(2015), 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 #20155

Copper: Only five 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), all the reporting laboratories would rate the sample as a pass.

Sample #20156

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

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the reference test method and the reproducibility as found for the group of laboratories that participated. The number of significant results, the average, 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)
Appearance		97	Cl.&Br.	n.a.	n.a.
Total Acidity	mg KOH/g	83	0.0016	0.0019	0.0016
Aromatics by FIA	%V/V	73	16.4	1.6	2.7
Mono Aromatics by HPLC	%M/M	37	18.4	1.6	1.8
Di Aromatics by HPLC	%M/M	38	0.87	0.32	0.49
Total Aromatics by HPLC	%M/M	39	19.4	1.5	2.0
Total Aromatics by HPLC	%V/V	46	17.1	1.7	n.a.
Color Saybolt (automated)		66	16.1	3.1	1.2

Parameter	unit	n	average	2.8 * sd	R(lit)
Color Saybolt (manual)		75	16.1	3.1	2
Copper Corrosion 2hrs at 100°C		115	1 (1a/1b)	n.a.	n.a.
Density at 15°C	kg/m^3	127	793.4	0.2	0.5
Initial Boiling Point	°C	131	150.2	6.0	8.3
Temp at 10% recovered	°C	128	168.7	2.5	3.7
Temp at 50% recovered	°C	130	195.0	2.5	3.0
Temp at 90% recovered	°C	132	239.0	3.9	3.6
Final Boiling Point	°C	130	268.4	5.2	7.1
Existent Gum (unwashed)	mg/100mL	83	0.77	1.01	3.16
Flash Point	°C	133	42.2	3.0	3.2
Freezing Point	°C	117	-53.8	1.5	2.5
Kinematic Viscosity at -20°C	mm^2/s	88	3.728	0.079	0.071
Mercaptan Sulfur as S	%M/M	82	0.0004	0.0002	0.0003
MSEP		102	88.8	11.3	12.5
Naphthalenes	%V/V	72	0.58	0.06	0.07
Smoke Point	mm	101	25.0	1.6	3.8
Specific Energy (Net)	MJ/kg	75	43.347	0.053	0.046
Total Sulfur	mg/kg	116	639	70	81
BOCLE	mm	26	0.67	0.07	0.06
Particulate Contamination	mg/L	37	0.20	0.31	0.33

Table 12: reproducibilities of tests on samples #20150, #20151 and #20156

Parameter - IP564	unit	n	average	2.8 * sd	R(lit)
Particle Size ≥4 µm (c)	counts/mL	6	18066	3119	3409
Particle Size ≥6 µm (c)	counts/mL	8	6686	3291	2010
Particle Size ≥14 µm (c)	counts/mL	8	168	145	87
Particle Size ≥21 µm (c)	counts/mL	8	25	32	31
Particle Size ≥25 µm (c)	counts/mL	8	9	15	12
Particle Size ≥30 µm (c)	counts/mL	7	2	2	3
Particle Size ≥4 µm (c)	ISO scale	8	21.0	0	1.0
Particle Size ≥6 µm (c)	ISO scale	8	19.9	1.0	1.4
Particle Size ≥14 µm (c)	ISO scale	8	14.6	1.5	2.2

Table 13: reproducibilities of tests on sample #20152 according to IP564

Parameter - IP565	unit	n	average	2.8 * sd	R(lit)
Particle Size ≥4 µm (c)	counts/mL	31	22407	5324	2431
Particle Size ≥6 µm (c)	counts/mL	34	7787	3241	1652
Particle Size ≥14 µm (c)	counts/mL	34	265	220	139
Particle Size ≥21 µm (c)	counts/mL	33	29	45	25
Particle Size ≥25 µm (c)	counts/mL	31	8	13	9

Particle Size ≥30 µm (c)	counts/mL	31	2	5	4
Particle Size ≥4 µm (c)	ISO scale	28	22.0	0	1.0
Particle Size ≥6 µm (c)	ISO scale	30	20.0	0	1.0
Particle Size ≥14 µm (c)	ISO scale	30	15.2	1.1	1.4

Table 14: reproducibilities of tests on sample #20152 according to IP565

Parameter	unit	n	average	2.8 * sd	R(lit)
FAME (#20153)	mg/kg	59	25.5	14.5	7.3
FAME (#20154)	mg/kg	58	59.0	26.4	16.0

Table 15: reproducibilities of tests on sample #20153 and #20154

Parameter	unit	n	average	2.8 * sd	R(lit)
Copper as Cu	µg/kg	4	<10	n.a.	n.a.
VTR (visual)		75	0 – 2	n.a.	n.a.
ITR (interferometric)	Nm	16	8.8 – 37.2	n.a.	n.a.
ETR (elliptometric)	nm	13	2 – 115	n.a.	n.a.
Delta P	mmHg	82	0 – 3.2	n.a.	n.a.
JFTOT Evaluation (Pass/Fail)		75	Pass	n.a.	n.a.

Table 16: reproducibilities of tests on sample #20155

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

4.3 COMPARISON OF THE PROFICIENCY TEST OF SEPTEMBER 2020 WITH PREVIOUS PTS

	September 2020	March 2020	September 2019	March 2019	September 2018
Number of reporting laboratories	152	90	154	93	152
Number of test results	2992	1666	3043	1789	2678
Number of statistical outliers	94	67	78	53	57
Percentage of statistical outliers	3.1%	4.0%	2.6%	3.0%	2.1%

Table 17: 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 reference test methods. The conclusions are given the following table.

Parameter	September 2020	March 2020	September 2019	March 2019	September 2018
Total Acidity	-	-	-	-	-
Aromatics by FIA	+	+	+	+	+
Aromatics by HPLC	+	+/-	+/-	+	+
Color Saybolt (automated)	--	-	-	--	--

Parameter	September 2020	March 2020	September 2019	March 2019	September 2018
Color Saybolt (manual)	-	-	-	-	--
Density at 15°C	++	++	++	+	+
Distillation at 760 mmHg	+	+	+	+	+
Existent Gum	++	++	++	++	++
Flash Point	+/-	+	+	+/-	+/-
Freezing Point	+	+	+	+	+/-
Kinematic Viscosity at -20°C	-	+/-	+	+/-	+/-
Mercaptan Sulfur	+	+	+	+	+
MSEP	+	+/-	+/-	-	+
Naphthalenes	+	+	+	+	+/-
Smoke Point	++	++	+	++	++
Specific Energy (Net)	-	-	-	-	+
Total Sulfur	+	-	+/-	+/-	-
BOCLE	+/-	+/-	--	-	--
Particulate Contamination	+/-	++	+/-	+/-	-
IP564 counts/mL	+/-	--	--	-	--
IP564 ISO scale numbers	+	++	+/-	+/-	+/-
IP565 counts/mL	-	-	--	--	-
IP565 ISO scale numbers	+	+/-	+/-	-	+/-
FAME	-	n.e.	-	n.e.	+/-
JFTOT finding correct Pass/Fail	+	n.e.	+	n.e.	-

Table 18: comparison determinations against the requirements of the reference test methods

The following performance categories were used:

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

APPENDIX 1

Determination of Appearance on sample #20150;

lab	method	value	mark	z(targ)	remarks
52	Visual	C&B		-----	
62	Visual	pass		-----	
120	Visual	C&B		-----	
140		-----		-----	
150		-----		-----	
159		-----		-----	
169	Visual	CBFSM		-----	
171		-----		-----	
175	Visual	clear&bright		-----	
177		-----		-----	
221		-----		-----	
224	Visual	clear & Bright		-----	
225	Visual	Clear & Bright		-----	
228	Visual	Clear & bright		-----	
230	Visual	Pass		-----	
237	Visual	C&B		-----	
238	Visual	Clear & bright		-----	
253	Visual	Clear & Bright		-----	
254	Visual	Clear and Bright		-----	
256		-----		-----	
258	Visual	B&C		-----	
273	Visual	Pass		-----	
311		-----		-----	
317	INH-001	Br/Cl		-----	
323	Visual	Clear & bright		-----	
333		-----		-----	
334	Visual	clear and bright		-----	
335		-----		-----	
336	Visual	C&B		-----	
353	Visual	C+B		-----	
369	Visual	Clear & Bright		-----	
370	Visual	Clear & bright		-----	
372	Visual	C&B		-----	
391	Visual	C&B		-----	
396	Visual	Clear and Bright		-----	
399	Visual	C&B		-----	
440	Visual	Clear and Bright		-----	
445	Visual	C&B		-----	
447	Visual	Clear & Bright		-----	
448	Visual	Clear and Bright		-----	
463	Visual	C & B		-----	
485		-----		-----	
496	Visual	clear&bright		-----	
594		-----		-----	
603	Visual	C&B		-----	
608	Visual	Clear, bright and free from solid matter		-----	
631	Visual	clear & bright		-----	
633		-----		-----	
657	Visual	Bright and Clear		-----	
732	Visual	C&B		-----	
798		-----		-----	
823	Visual	Pass		-----	
824	Visual	Clear & Bright		-----	
851	D4176	C&B		-----	
854	Visual	clear&bright		-----	
862	Visual	clear & bright		-----	
869	Visual	C&B		-----	
904		-----		-----	
914		-----		-----	
962		-----		-----	
963		-----		-----	
970	Visual	Clear & Bright		-----	
974	Visual	C & B		-----	
994	Visual	c@b		-----	
995	Visual	C&B		-----	
996		-----		-----	
997	Visual	1;Clear&Bright		-----	
998	Visual	C&B		-----	
1011		-----		-----	
1016		-----		-----	
1019		-----		-----	
1023	Visual	Clear and bright		-----	
1039	Visual	clear & bright		-----	
1049	Visual	Br & Cl		-----	
1059	Visual	clear & bright		-----	

lab	method	value	mark	z(targ)	remarks
1062		-----		-----	
1064	Visual	C&B		-----	
1065		-----		-----	
1079	Visual	B&C		-----	
1082		-----		-----	
1097	Visual	Clair et limpide		-----	
1105	Visual	C&B		-----	
1109	D4176	Pass		-----	
1121	Visual	Clear & Bright		-----	
1126		-----		-----	
1131		-----		-----	
1135	Visual	Clear&Bright		-----	
1140	Visual	C&B		-----	
1141	Visual	clear&bright		-----	
1150		-----		-----	
1167	Visual	Clear, Bright, without solid and water		-----	
1182		-----		-----	
1191		-----		-----	
1212	Visual	C&B		-----	
1237	Visual	clear and bright		-----	
1275	Visual	see comments		-----	
1277		-----		-----	
1279	Visual	Clear,bright and visually free from solid matter		-----	
1299	Visual	Cl & Br		-----	
1300	Visual	C&B		-----	
1316		-----		-----	
1318	Visual	Clear and bright		-----	
1320		-----		-----	
1357	Visual	Clear & Bright		-----	
1372	Visual	clear&bright		-----	
1397		-----		-----	
1399		-----		-----	
1417		-----		-----	
1433	Visual	clear and bright		-----	
1455	Visual	Clear, bright and visually free from solid matter		-----	
1496	Visual	C&B		-----	
1538	Visual	C&B		-----	
1575	Visual	C&B		-----	
1586	Visual	Clear & Bright		-----	
1587	Visual	Br&CL		-----	
1610	Visual	C&B		-----	
1613	Visual	B&C		-----	
1631		-----		-----	
1635		-----		-----	
1636	Visual	C&B		-----	
1715		-----		-----	
1720		-----		-----	
1724	Visual	clear & Bright		-----	
1730		-----		-----	
1741	Visual	Clear, bright and visually free from solid matter		-----	
1776		-----		-----	
1810		-----		-----	
1811		-----		-----	
1833	Visual	Clear&Bright		-----	
1852	Visual	clear,free from solid matter and water		-----	
1883	Visual	C&B		-----	
1913	Visual	Clear, bright and visually free from solid matter		-----	
1944		-----		-----	
1961		-----		-----	
2129	Visual	C&B		-----	
2130	Visual	C&B		-----	
6041	Visual	pass		-----	
6054		-----		-----	
6075	Visual	Clear & Bright		-----	
6103		-----		-----	
6135		-----		-----	
6139	Visual	Clear and bright		-----	
6142		-----		-----	
6168	Visual	C/B		-----	
6201	Visual	Cl&Br		-----	
6238		-----		-----	
6262	Visual	Bright and clear		-----	
6266		-----		-----	
6312		-----		-----	
6321		-----		-----	
6324	Visual	Clear		-----	
6331		-----		-----	
6332		-----		-----	

lab	method	value	mark	z(targ)	remarks
6344		-----		-----	
	n	97			
	mean (n)	Clear & Bright			

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

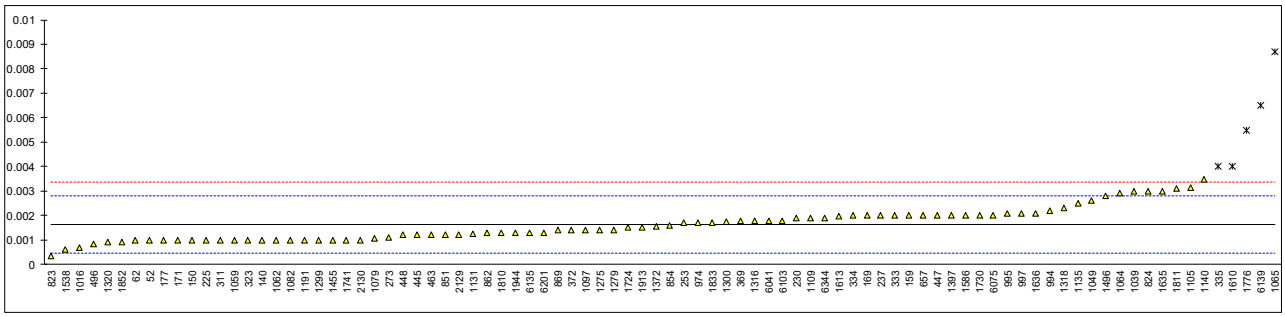
Determination of Total Acidity on sample #20150; results in mg KOH/g

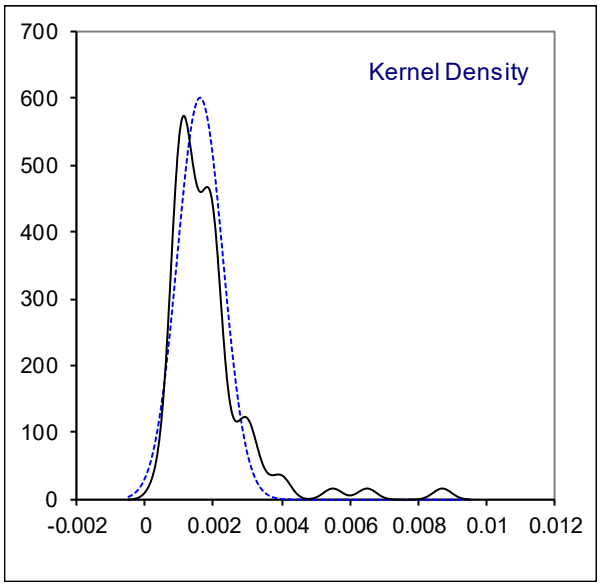
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3242	0.001		-1.06	1062	D3242	0.0010		-1.06
62	D3242	0.001		-1.06	1064	D3242	0.0029		2.19
120	D3242	<0.001		-----	1065	D664-A	0.0087	R(0.01)	12.13
140	D3242	0.001		-1.06	1079	D3242	0.00105		-0.98
150	D3242	0.001		-1.06	1082	D3242	0.001		-1.06
159	D3242	0.002	C	0.65	1097	D3242	0.0014		-0.38
169	D3242	0.002		0.65	1105	D3242	0.00315		2.62
171	D3242	0.001		-1.06	1109	D3242	0.0019		0.48
175		-----		-----	1121		-----		-----
177	D3242	0.001		-1.06	1126		-----		-----
221		-----		-----	1131	D3242	0.00125		-0.63
224		-----		-----	1135	D3242	0.0025		1.51
225	D3242	0.001		-1.06	1140	IP354	0.0035		3.22
228		-----		-----	1141		-----		-----
230	D3242	0.0019		0.48	1150		-----		-----
237	D3242	0.002		0.65	1167		-----		-----
238		-----		-----	1182		-----		-----
253	D3242	0.0017		0.14	1191	D3242	0.001		-1.06
254		-----		-----	1212		-----		-----
256		-----		-----	1237		-----		-----
258		-----		-----	1275	IP354	0.0014		-0.38
273	D3242	0.0011		-0.89	1277		-----		-----
311	D3242	0.001		-1.06	1279	D3242	0.0014		-0.38
317		-----		-----	1299	D3242	0.001		-1.06
323	D3242	0.001		-1.06	1300	D3242	0.00175		0.22
333	D3242	0.002		0.65	1316	D3242	0.0018		0.31
334	D3242	0.002		0.65	1318	D3242	0.0023		1.16
335	D3242	0.004	R(0.01)	4.08	1320	D3242	0.0009		-1.23
336		-----		-----	1357	D3242	n.a		-----
353		-----		-----	1372	D3242	0.00157		-0.09
369	D3242	0.0018		0.31	1397	D3242	0.002		0.65
370		-----		-----	1399		-----		-----
372	D3242	0.0014		-0.38	1417		-----		-----
391		-----		-----	1433		-----		-----
396		-----		-----	1455	D3242	0.001		-1.06
399		-----		-----	1496	D3242	0.0028		2.02
440		-----		-----	1538	D3242	0.0006		-1.75
445	D3242	0.0012		-0.72	1575	D664-A	< 0.1		-----
447	D3242	0.002		0.65	1586	D3242	0.0020		0.65
448	D3242	0.0012		-0.72	1587		-----		-----
463	D3242	0.0012		-0.72	1610	IP354	0.004	R(0.01)	4.08
485		-----		-----	1613	D3242	0.001987		0.63
496	D3242	0.00085		-1.32	1631		-----		-----
594		-----		-----	1635	D3242	0.003		2.36
603		-----		-----	1636	D3242	0.0021		0.82
608		-----		-----	1715		-----		-----
631		-----		-----	1720		-----		-----
633		-----		-----	1724	D3242	0.0015		-0.21
657	D3242	0.002		0.65	1730	D3242	0.002	C	0.65
732		-----		-----	1741	D3242	0.001		-1.06
798		-----		-----	1776	D664-A	0.0055	R(0.01)	6.65
823	D3242	0.00035		-2.18	1810	D3242	0.0013		-0.55
824	D3242	0.003		2.36	1811	D3242	0.00309		2.52
851	D3242	0.0012		-0.72	1833	D3242	0.0017		0.14
854	D3242	0.0016		-0.03	1852	D3242	0.0009		-1.23
862	D3242	0.0013		-0.55	1883		-----		-----
869	D3242	0.0014		-0.38	1913	D3242	0.0015		-0.21
904		-----		-----	1944	D3242	0.0013		-0.55
914		-----		-----	1961		-----		-----
962		-----		-----	2129	D3242	0.0012		-0.72
963		-----		-----	2130	IP354	0.001		-1.06
970		-----		-----	6041	D3242	0.0018		0.31
974	D3242	0.0017		0.14	6054		-----		-----
994	D3242	0.0022		0.99	6075	D3242	0.0020		0.65
995	D3242	0.0021		0.82	6103	D3242	0.0018		0.31
996		-----		-----	6135	D3242	0.0013		-0.55
997	D3242	0.0021		0.82	6139	D3242	0.0065	R(0.01)	8.36
998		-----		-----	6142		-----		-----
1011		-----		-----	6168		-----		-----
1016	D3242	0.0007		-1.58	6201	D3242	0.0013		-0.55
1019		-----		-----	6238		-----		-----
1023		-----		-----	6262		-----	W	-----
1039	D3242	0.003		2.36	6266		-----		-----
1049	D3242	0.00262		1.71	6312		-----		-----
1059	D3242	0.001		-1.06	6321	IP354	<0.001		-----

lab	method	value	mark	z(targ)
6324		-----		-----
6331		-----		-----
6332		-----		-----
6344	D3242	0.0019		0.48

normality	OK
n	83
outliers	5
mean (n)	0.00162
st.dev. (n)	0.000665
R(calc.)	0.00186
st.dev.(D3242:11)	0.000584
R(D3242:11)	0.00163

Lab 159 first reported 0.12
Lab 1730 first reported 0.006
Lab 6262 result withdrawn. First reported 0.0086





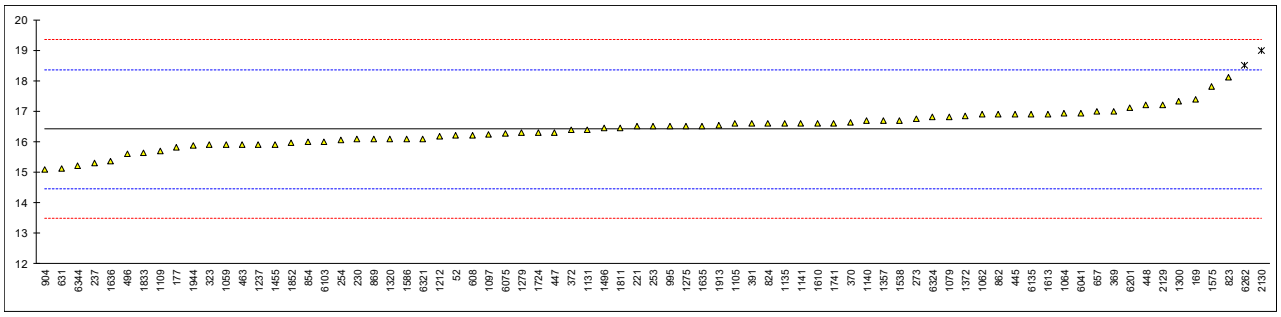
Determination of Aromatics by FIA on sample #20150; results in %V/V

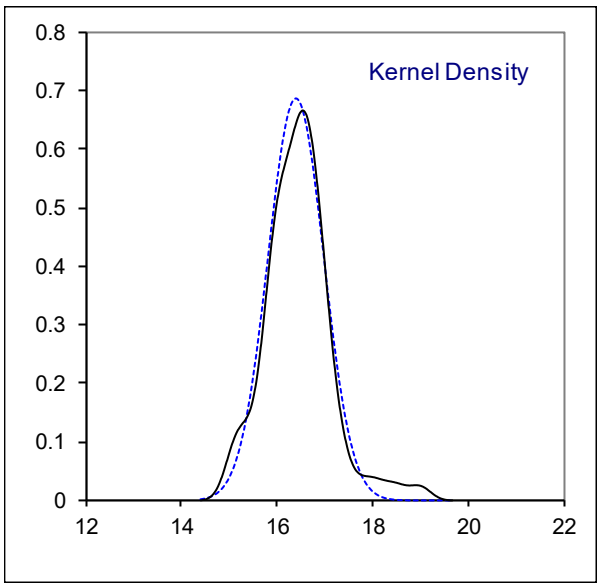
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D1319	16.2		-0.22	1062	D1319	16.9		0.50
62		-----		-----	1064	D1319	16.92		0.52
120		-----		-----	1065		-----		-----
140		-----		-----	1079	D1319	16.81		0.41
150		-----		-----	1082		-----		-----
159		-----		-----	1097	D1319	16.25		-0.17
169	D1319	17.4		1.01	1105	D1319	16.59		0.18
171		-----		-----	1109	D1319	15.69		-0.74
175		-----		-----	1121		-----		-----
177	D1319	15.8		-0.63	1126		-----		-----
221	D1319	16.5		0.09	1131	D1319	16.4		-0.01
224		-----		-----	1135	D1319	16.6		0.19
225		-----		-----	1140	IP156	16.7		0.29
228		-----		-----	1141	EN15553	16.6		0.19
230	D1319	16.073		-0.35	1150		-----		-----
237	D1319	15.3		-1.14	1167		-----		-----
238		-----		-----	1182		-----		-----
253	D1319	16.50		0.09	1191		-----		-----
254	D1319	16.05		-0.37	1212	D1319	16.19		-0.23
256		-----		-----	1237	D1319	15.9		-0.52
258		-----		-----	1275	IP156	16.5		0.09
273	D1319	16.76		0.36	1277		-----		-----
311		-----		-----	1279	D1319	16.3		-0.11
317		-----		-----	1299		-----		-----
323	D1319	15.9		-0.52	1300	D1319	17.34		0.95
333		-----		-----	1316		-----		-----
334		-----		-----	1318		-----		-----
335		-----		-----	1320	D1319	16.1		-0.32
336		-----		-----	1357	D1319	16.7		0.29
353		-----		-----	1372	D1319	16.85		0.45
369	D1319	17.00		0.60	1397		-----		-----
370	D1319	16.64		0.23	1399		-----		-----
372	D1319	16.38		-0.03	1417		-----		-----
391	D1319	16.6		0.19	1433		-----		-----
396		-----		-----	1455	D1319	15.9		-0.52
399		-----		-----	1496	D1319	16.45		0.04
440		-----		-----	1538	D1319	16.7		0.29
445	D1319	16.9		0.50	1575	D1319	17.8		1.42
447	D1319	16.3095		-0.11	1586	D1319	16.1		-0.32
448	D1319	17.2		0.81	1587		-----		-----
463	D1319	15.9		-0.52	1610	IP156	16.6		0.19
485		-----		-----	1613	D1319	16.9163		0.52
496	D1319	15.60		-0.83	1631		-----		-----
594		-----		-----	1635	D1319	16.5		0.09
603		-----		-----	1636	D1319	15.35		-1.09
608	D1319	16.2		-0.22	1715		-----		-----
631	D1319	15.11	C	-1.33	1720		-----		-----
633		-----		-----	1724	D1319	16.3		-0.11
657	D1319	17.0		0.60	1730		-----		-----
732		-----		-----	1741	D1319	16.60		0.19
798		-----		-----	1776		-----		-----
823	D1319	18.1		1.73	1810		-----		-----
824	D1319	16.6		0.19	1811	D1319	16.45		0.04
851		-----		-----	1833	D1319	15.63		-0.80
854	D1319	16.0		-0.42	1852	D1319	15.96		-0.46
862	D1319	16.9		0.50	1883		-----		-----
869	D1319	16.1		-0.32	1913	D1319	16.54		0.13
904	D1319	15.1		-1.34	1944	D1319	15.88		-0.54
914		-----		-----	1961		-----		-----
962		-----		-----	2129	D1319	17.2		0.81
963		-----		-----	2130	D1319	19.0	R(0.01)	2.65
970		-----		-----	6041	D1319	16.94		0.54
974		-----		-----	6054		-----		-----
994		-----		-----	6075	D1319	16.28		-0.14
995	D1319	16.5		0.09	6103	D1319	16.01		-0.41
996		-----		-----	6135	D1319	16.9		0.50
997		-----		-----	6139		-----		-----
998		-----		-----	6142		-----		-----
1011		-----		-----	6168		-----		-----
1016		-----		-----	6201	D1319	17.1		0.70
1019		-----		-----	6238		-----		-----
1023		-----		-----	6262	D1319	18.5	R(0.05)	2.14
1039		-----		-----	6266		-----		-----
1049		-----		-----	6312		-----		-----
1059	D1319	15.9		-0.52	6321	IP156	16.1		-0.32

lab	method	value	mark	z(targ)
6324	D1319	16.8		0.40
6331		-----		-----
6332		-----		-----
6344	D1319	15.22		-1.22

normality	OK
n	73
outliers	2
mean (n)	16.412
st.dev. (n)	0.5814
R(calc.)	1.628
st.dev.(D1319:20a)	0.9769
R(D1319:20a)	2.735

Lab 631 first reported 13.11





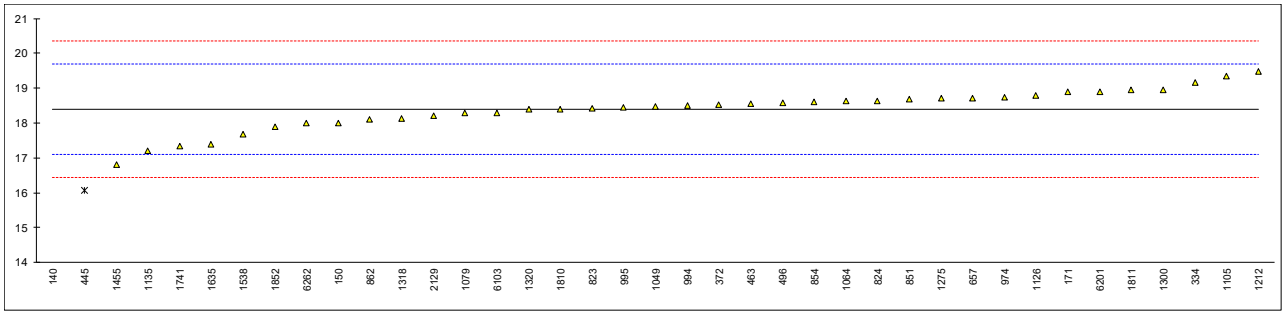
Determination of Mono Aromatics (MAH) by HPLC on sample #20150; results in %M/M

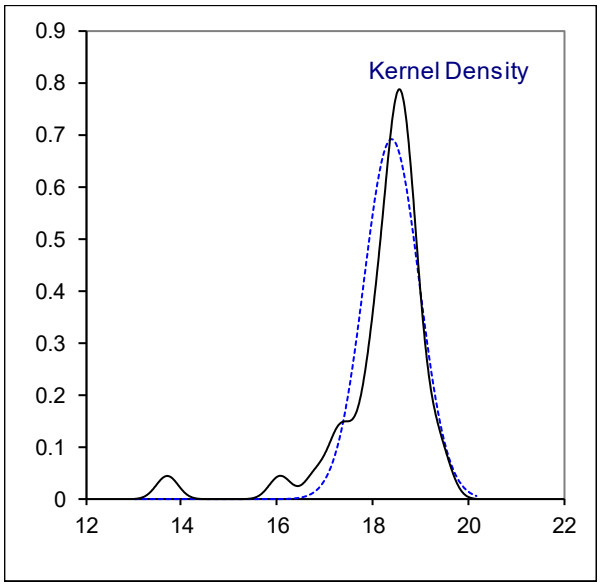
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1062		-----		-----
62		-----		-----	1064	D6379	18.63		0.35
120		-----		-----	1065		-----		-----
140	D6379	13.7	R(0.01)	-7.23	1079	D6379	18.28	C	-0.18
150	D6379	18.0		-0.61	1082		-----		-----
159		-----		-----	1097		-----		-----
169		-----		-----	1105	D6379	19.345		1.45
171	D6379	18.9		0.77	1109		-----		-----
175		-----		-----	1121		-----		-----
177		-----		-----	1126	EN12916	18.8		0.62
221		-----		-----	1131		-----		-----
224		-----		-----	1135	D6379	17.2		-1.84
225		-----		-----	1140		-----		-----
228		-----		-----	1141		-----		-----
230		-----		-----	1150		-----		-----
237		-----		-----	1167		-----		-----
238		-----		-----	1182		-----		-----
253		-----		-----	1191		-----		-----
254		-----		-----	1212	D6379	19.492		1.68
256		-----		-----	1237		-----		-----
258		-----		-----	1275	IP436	18.7042		0.47
273		-----		-----	1277		-----		-----
311		-----		-----	1279		-----		-----
317		-----		-----	1299		-----		-----
323		-----		-----	1300	D6379	18.96		0.86
333		-----		-----	1316		-----		-----
334	D6379	19.15		1.15	1318	D6379	18.12		-0.43
335		-----		-----	1320	D6379	18.4		0.00
336		-----		-----	1357	D6379	n.a		-----
353		-----		-----	1372		-----		-----
369		-----		-----	1397		-----		-----
370		-----		-----	1399		-----		-----
372	D6379	18.52		0.19	1417		-----		-----
391		-----		-----	1433		-----		-----
396		-----		-----	1455	D6379	16.8		-2.46
399		-----		-----	1496		-----		-----
440		-----		-----	1538	D6379	17.68		-1.11
445	IP436	16.068	ex	-3.59	1575		-----		-----
447		-----		-----	1586		-----		-----
448		-----		-----	1587		-----		-----
463	D6379	18.55		0.23	1610		-----		-----
485		-----		-----	1613		-----		-----
496	D6379	18.58		0.28	1631		-----		-----
594		-----		-----	1635	D6379	17.4		-1.54
603		-----		-----	1636		-----		-----
608		-----		-----	1715		-----		-----
631		-----		-----	1720		-----		-----
633		-----		-----	1724		-----		-----
657	IP436	18.71		0.48	1730		-----		-----
732		-----		-----	1741	D6379	17.332		-1.64
798		-----		-----	1776		-----		-----
823	D6379	18.42		0.03	1810	D6379	18.4		0.00
824	D6379	18.64		0.37	1811	D6379	18.95		0.85
851	D6379	18.69		0.45	1833		-----		-----
854	D6379	18.60		0.31	1852	D6379	17.88		-0.80
862	D6379	18.1		-0.46	1883		-----		-----
869		-----		-----	1913		-----		-----
904		-----		-----	1944		-----		-----
914		-----		-----	1961		-----		-----
962		-----		-----	2129	IP391	18.21		-0.29
963		-----		-----	2130		-----		-----
970		-----		-----	6041		-----		-----
974	D6379	18.74		0.52	6054		-----		-----
994	EN12916	18.5		0.15	6075		-----		-----
995	D6379	18.45		0.08	6103	D6379	18.280		-0.18
996		-----		-----	6135		-----		-----
997		-----		-----	6139		-----		-----
998		-----		-----	6142		-----		-----
1011		-----		-----	6168		-----		-----
1016		-----		-----	6201	D6379	18.9		0.77
1019		-----		-----	6238		-----		-----
1023		-----		-----	6262	D6379	17.998		-0.62
1039		-----		-----	6266		-----		-----
1049	D6379	18.472		0.11	6312		-----		-----
1059		-----		-----	6321		-----		-----

lab	method	value	mark	z(targ)
6324		-----		-----
6331		-----		-----
6332		-----		-----
6344		-----		-----

normality	OK
n	37
outliers	1+1ex
mean (n)	18.400
st.dev. (n)	0.5782
R(calc.)	1.619
st.dev.(D6379:11)	0.6503
R(D6379:11)	1.821

Lab 445 excluded; reported in %V/V
Lab 1079 first reported 14.47





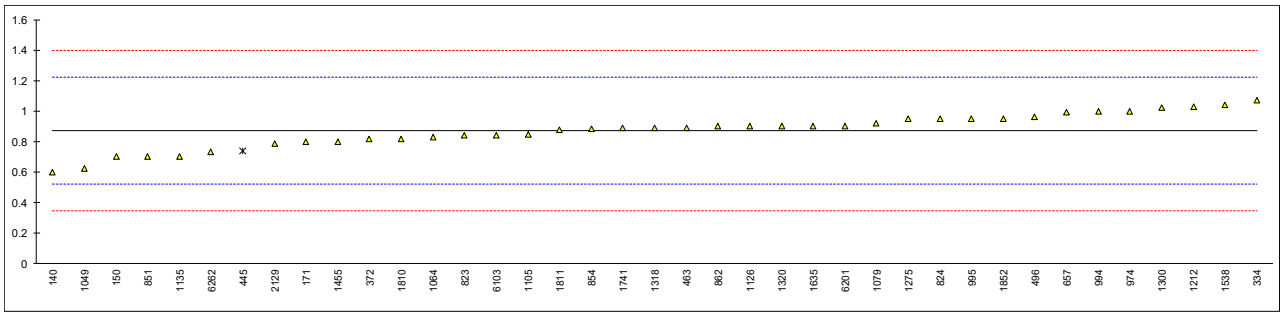
Determination of Di Aromatics (DAH) by HPLC on sample #20150; results in %M/M

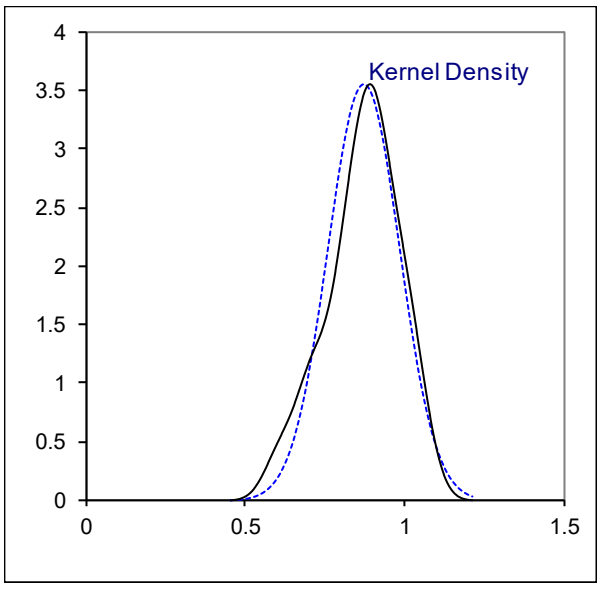
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1062		-----		-----
62		-----		-----	1064	D6379	0.83		-0.25
120		-----		-----	1065		-----		-----
140	D6379	0.6		-1.56	1079	D6379	0.92	C	0.26
150	D6379	0.7		-0.99	1082		-----		-----
159		-----		-----	1097		-----		-----
169		-----		-----	1105	D6379	0.8457		-0.16
171	D6379	0.8		-0.42	1109		-----		-----
175		-----		-----	1121		-----		-----
177		-----		-----	1126	EN12916	0.9		0.15
221		-----		-----	1131		-----		-----
224		-----		-----	1135	D6379	0.7		-0.99
225		-----		-----	1140		-----		-----
228		-----		-----	1141		-----		-----
230		-----		-----	1150		-----		-----
237		-----		-----	1167		-----		-----
238		-----		-----	1182		-----		-----
253		-----		-----	1191		-----		-----
254		-----		-----	1212	D6379	1.027		0.87
256		-----		-----	1237		-----		-----
258		-----		-----	1275	IP436	0.9485		0.43
273		-----		-----	1277		-----		-----
311		-----		-----	1279		-----		-----
317		-----		-----	1299		-----		-----
323		-----		-----	1300	D6379	1.02		0.83
333		-----		-----	1316		-----		-----
334	D6379	1.07		1.12	1318	D6379	0.889		0.09
335		-----		-----	1320	D6379	0.9		0.15
336		-----		-----	1357	D6379	n.a		-----
353		-----		-----	1372		-----		-----
369		-----		-----	1397		-----		-----
370		-----		-----	1399		-----		-----
372	D6379	0.82		-0.31	1417		-----		-----
391		-----		-----	1433		-----		-----
396		-----		-----	1455	D6379	0.8		-0.42
399		-----		-----	1496		-----		-----
440		-----		-----	1538	D6379	1.04		0.95
445	IP436	0.739	ex	-0.77	1575		-----		-----
447		-----		-----	1586		-----		-----
448		-----		-----	1587		-----		-----
463	D6379	0.89		0.09	1610		-----		-----
485		-----		-----	1613		-----		-----
496	D6379	0.96		0.49	1631		-----		-----
594		-----		-----	1635	D6379	0.9		0.15
603		-----		-----	1636		-----		-----
608		-----		-----	1715		-----		-----
631		-----		-----	1720		-----		-----
633		-----		-----	1724		-----		-----
657	IP436	0.99		0.66	1730		-----		-----
732		-----		-----	1741	D6379	0.887		0.08
798		-----		-----	1776		-----		-----
823	D6379	0.84		-0.19	1810	D6379	0.82		-0.31
824	D6379	0.95		0.43	1811	D6379	0.88		0.04
851	D6379	0.70		-0.99	1833		-----		-----
854	D6379	0.885		0.06	1852	D6379	0.95		0.43
862	D6379	0.9		0.15	1883		-----		-----
869		-----		-----	1913		-----		-----
904		-----		-----	1944		-----		-----
914		-----		-----	1961		-----		-----
962		-----		-----	2129	IP391	0.79		-0.48
963		-----		-----	2130		-----		-----
970		-----		-----	6041		-----		-----
974	D6379	1.00		0.72	6054		-----		-----
994	EN12916	1.0		0.72	6075		-----		-----
995	D6379	0.95		0.43	6103	D6379	0.844		-0.17
996		-----		-----	6135		-----		-----
997		-----		-----	6139		-----		-----
998		-----		-----	6142		-----		-----
1011		-----		-----	6168		-----		-----
1016		-----		-----	6201	D6379	0.9		0.15
1019		-----		-----	6238		-----		-----
1023		-----		-----	6262	D6379	0.732		-0.81
1039		-----		-----	6266		-----		-----
1049	D6379	0.626		-1.41	6312		-----		-----
1059		-----		-----	6321		-----		-----

lab	method	value	mark	z(targ)
6324		-----		-----
6331		-----		-----
6332		-----		-----
6344		-----		-----

normality	OK
n	38
outliers	0+1ex
mean (n)	0.874
st.dev. (n)	0.1125
R(calc.)	0.315
st.dev.(D6379:11)	0.1755
R(D6379:11)	0.491

Lab 445 excluded; reported in %V/V
Lab 1079 first reported 0.80





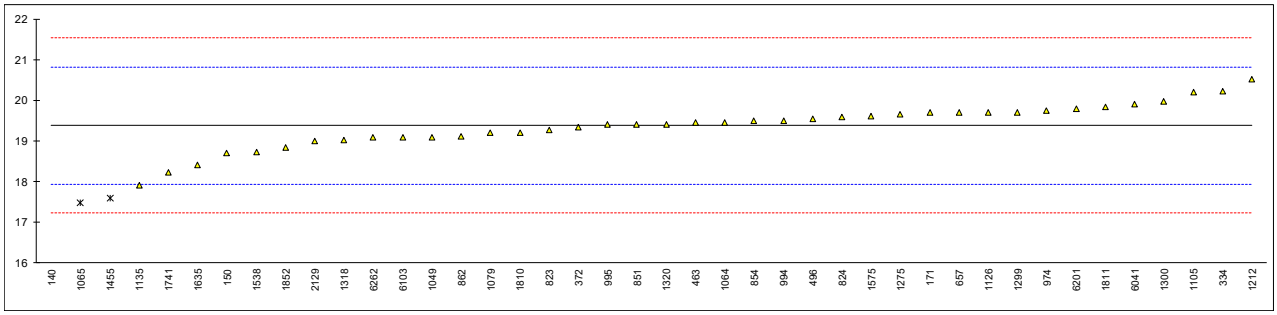
Determination of Total Aromatics by HPLC on sample #20150; results in %M/M

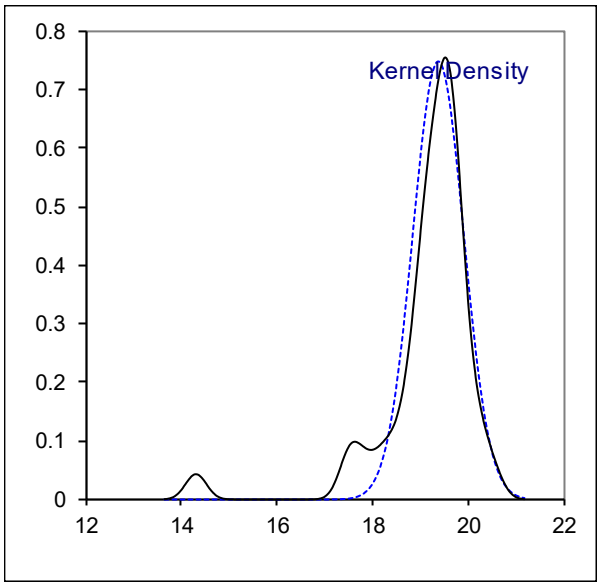
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1062		-----		-----
62		-----		-----	1064	D6379	19.46		0.12
120		-----		-----	1065	IP391	17.48	DG(0.05)	-2.64
140	D6379	14.3	G(0.01)	-7.08	1079	D6379	19.20	C	-0.24
150	D6379	18.7		-0.94	1082		-----		-----
159		-----		-----	1097		-----		-----
169		-----		-----	1105	D6379	20.190		1.14
171	D6379	19.7		0.45	1109		-----		-----
175		-----		-----	1121		-----		-----
177		-----		-----	1126	EN12916	19.7		0.45
221		-----		-----	1131		-----		-----
224		-----		-----	1135	D6379	17.9		-2.06
225		-----		-----	1140		-----		-----
228		-----		-----	1141		-----		-----
230		-----		-----	1150		-----		-----
237		-----		-----	1167		-----		-----
238		-----		-----	1182		-----		-----
253		-----		-----	1191		-----	C	-----
254		-----		-----	1212	D6379	20.519		1.60
256		-----		-----	1237		-----		-----
258		-----		-----	1275	IP436	19.6527		0.39
273		-----		-----	1277		-----		-----
311		-----		-----	1279		-----		-----
317		-----		-----	1299	IP436	19.7		0.45
323		-----		-----	1300	D6379	19.97		0.83
333		-----		-----	1316		-----		-----
334	D6379	20.22		1.18	1318	D6379	19.01		-0.51
335		-----		-----	1320	D6379	19.4		0.04
336		-----		-----	1357	D6379	n.a		-----
353		-----		-----	1372		-----		-----
369		-----		-----	1397		-----		-----
370		-----		-----	1399		-----		-----
372	D6379	19.34		-0.05	1417		-----		-----
391		-----		-----	1433		-----		-----
396		-----		-----	1455	D6379	17.6	DG(0.05)	-2.47
399		-----		-----	1496		-----		-----
440		-----		-----	1538	D6379	18.72		-0.91
445		-----		-----	1575	D6379	19.6		0.32
447		-----		-----	1586		-----		-----
448		-----		-----	1587		-----		-----
463	D6379	19.44		0.09	1610		-----		-----
485		-----		-----	1613		-----		-----
496	D6379	19.54		0.23	1631		-----		-----
594		-----		-----	1635	D6379	18.4		-1.36
603		-----		-----	1636		-----		-----
608		-----		-----	1715		-----		-----
631		-----		-----	1720		-----		-----
633		-----		-----	1724		-----	C	-----
657	IP436	19.70		0.45	1730		-----		-----
732		-----		-----	1741	D6379	18.219		-1.61
798		-----		-----	1776		-----		-----
823	D6379	19.26		-0.16	1810	D6379	19.2		-0.24
824	D6379	19.59		0.30	1811	D6379	19.83		0.64
851	D6379	19.40		0.04	1833		-----		-----
854	D6379	19.49		0.16	1852	D6379	18.83		-0.76
862	D6379	19.1		-0.38	1883		-----		-----
869		-----		-----	1913		-----		-----
904		-----		-----	1944		-----		-----
914		-----		-----	1961		-----		-----
962		-----		-----	2129	IP391	19.00		-0.52
963		-----		-----	2130		-----		-----
970		-----		-----	6041	D6379	19.9		0.73
974	D6379	19.74		0.51	6054		-----		-----
994	EN12916	19.5		0.18	6075		-----		-----
995	D6379	19.4		0.04	6103	D6379	19.088		-0.40
996		-----		-----	6135		-----		-----
997		-----		-----	6139		-----		-----
998		-----		-----	6142		-----		-----
1011		-----		-----	6168		-----		-----
1016		-----		-----	6201	D6379	19.8		0.59
1019		-----		-----	6238		-----		-----
1023		-----		-----	6262	D6379	19.079		-0.41
1039		-----		-----	6266		-----		-----
1049	D6379	19.098		-0.38	6312		-----		-----
1059		-----		-----	6321		-----		-----

lab	method	value	mark	z(targ)
6324		-----		-----
6331		-----		-----
6332		-----		-----
6344		-----		-----

normality	OK
n	39
outliers	3
mean (n)	19.374
st.dev. (n)	0.5336
R(calc.)	1.494
st.dev.(D6379:11)	0.7169
R(D6379:11)	2.007

Lab 1079 first reported 15.27
Lab 1191 first reported 16.814 %V/V in table of %M/M test results
Lab 1724 first reported 17.1 both as %V/V and %M/M





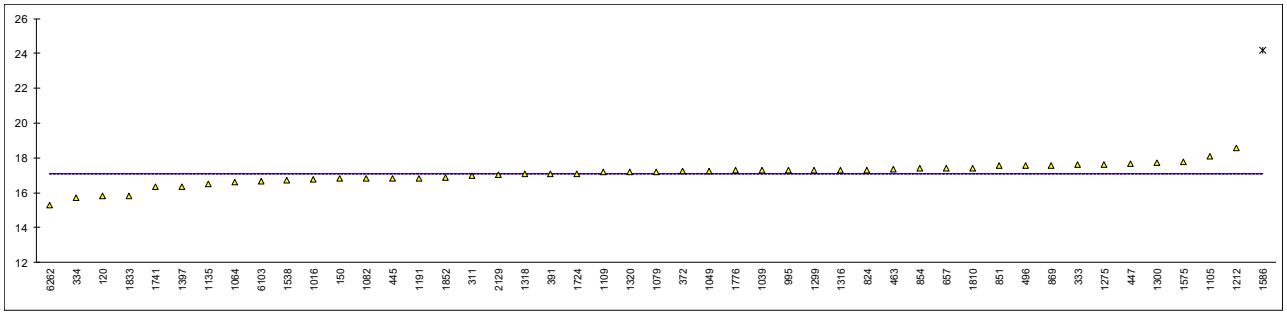
Determination of Total Aromatics by HPLC on sample #20150; results in %V/V

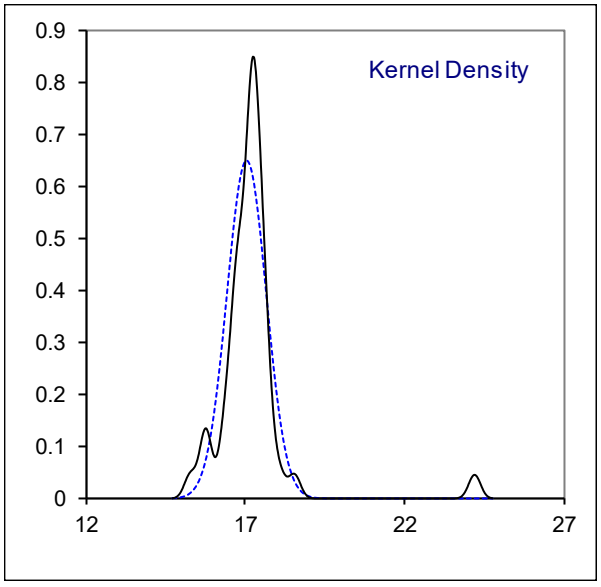
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1062		-----		-----
62		-----		-----	1064	D6379	16.60		-----
120	D6379	15.81		-----	1065		-----		-----
140		-----		-----	1079	D6379	17.22		-----
150	D6379	16.8		-----	1082	D6379	16.8		-----
159		-----		-----	1097		-----		-----
169		-----		-----	1105	D6379	18.099		-----
171		-----		-----	1109	D6379	17.18		-----
175		-----		-----	1121		-----		-----
177		-----		-----	1126		-----		-----
221		-----		-----	1131		-----		-----
224		-----		-----	1135	D6379	16.5		-----
225		-----		-----	1140		-----		-----
228		-----		-----	1141		-----		-----
230		-----		-----	1150		-----		-----
237		-----		-----	1167		-----		-----
238		-----		-----	1182		-----		-----
253		-----		-----	1191	D6379	16.814	C	-----
254		-----		-----	1212	D6379	18.568		-----
256		-----		-----	1237		-----		-----
258		-----		-----	1275	IP436	17.6153		-----
273		-----		-----	1277		-----		-----
311	IP436	17.0		-----	1279		-----		-----
317		-----		-----	1299	IP436	17.3		-----
323		-----		-----	1300	D6379	17.73		-----
333	D6379	17.6		-----	1316	D6379	17.3		-----
334	D6379	15.73		-----	1318	D6379	17.07		-----
335		-----		-----	1320	D6379	17.2		-----
336		-----		-----	1357	D6379	n.a		-----
353		-----		-----	1372		-----		-----
369		-----		-----	1397	D6379	16.37		-----
370		-----		-----	1399		-----		-----
372	D6379	17.23		-----	1417		-----		-----
391	D6379	17.1		-----	1433		-----		-----
396		-----		-----	1455		-----		-----
399		-----		-----	1496		-----		-----
440		-----		-----	1538	D6379	16.73		-----
445	IP436	16.807		-----	1575	D6379	17.8		-----
447	IP436	17.648		-----	1586	D6379	24.2	R(0.01)	-----
448		-----		-----	1587		-----		-----
463	D6379	17.35		-----	1610		-----		-----
485		-----		-----	1613		-----		-----
496	D6379	17.55		-----	1631		-----		-----
594		-----		-----	1635		-----		-----
603		-----		-----	1636		-----		-----
608		-----		-----	1715		-----		-----
631		-----		-----	1720		-----		-----
633		-----		-----	1724	D6379	17.1	C	-----
657	IP436	17.39		-----	1730		-----		-----
732		-----		-----	1741	D6379	16.34		-----
798		-----		-----	1776	D6379	17.277		-----
823		-----		-----	1810	D6379	17.4		-----
824	D6379	17.31		-----	1811		-----		-----
851	D6379	17.54		-----	1833	D6379	15.84		-----
854	D6379	17.38		-----	1852	D6379	16.89		-----
862		-----		-----	1883		-----		-----
869	D6379	17.57		-----	1913		-----		-----
904		-----		-----	1944		-----		-----
914		-----		-----	1961		-----		-----
962		-----		-----	2129	IP391	17.06		-----
963		-----		-----	2130		-----		-----
970		-----		-----	6041		-----		-----
974		-----		-----	6054		-----		-----
994		-----		-----	6075		-----		-----
995	D6379	17.3		-----	6103	D6379	16.661		-----
996		-----		-----	6135		-----		-----
997		-----		-----	6139		-----		-----
998		-----		-----	6142		-----		-----
1011		-----		-----	6168		-----		-----
1016	IP436	16.764		-----	6201		-----		-----
1019		-----		-----	6238		-----		-----
1023		-----		-----	6262	D6379	15.31	C	-----
1039	D6379	17.3		-----	6266		-----		-----
1049	D6379	17.26362		-----	6312		-----		-----
1059		-----		-----	6321		-----		-----

lab	method	value	mark	z(targ)
6324		-----		-----
6331		-----		-----
6332		-----		-----
6344		-----		-----

	normality	suspect
	n	46
	outliers	1
	mean (n)	17.070
	st.dev. (n)	0.6138
	R(calc.)	1.719
	st.dev.(lit)	unknown
	R(lit)	unknown
Compare		
	R(iis20J01)	1.947
	R(iis19J02)	1.563

Lab 1191 first reported as Total Aromatics in %M/M
Lab 1724 first reported 17.1 also as Total Aromatics in %M/M
Lab 6262 first reported 24.047





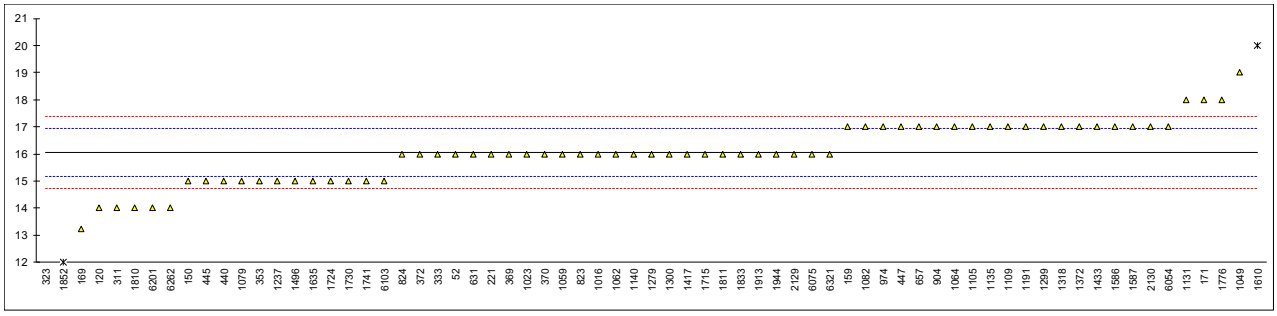
Determination of Color Saybolt (automated) on sample #20150;

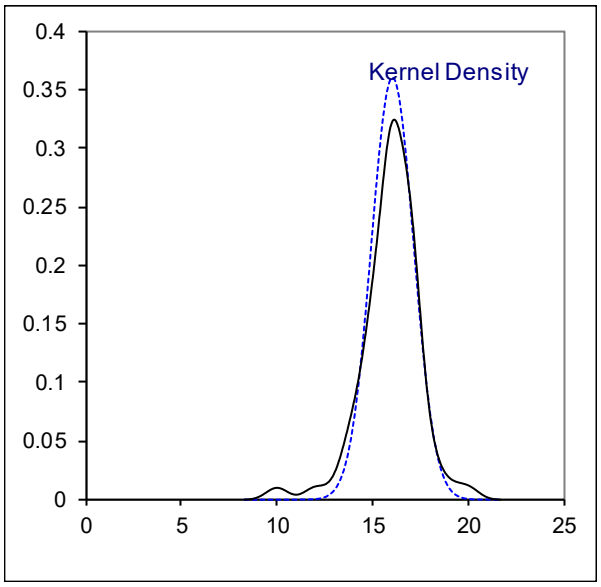
lab	method	cell (mm)	value	mark	z(targ)	lab	method	cell (mm)	value	mark	z(targ)
52	D6045	100	16		-0.11	1062	D6045	50	16		-0.11
62			-----		-----	1064	D6045	50	17		2.15
120	D6045	50	14		-4.63	1065			-----		-----
140			-----		-----	1079	D6045	100	15		-2.37
150	D6045	100	15	C	-2.37	1082	D6045		17		2.15
159	D6045		17.0	C	2.15	1097			-----		-----
169	D6045	50	13.22		-6.39	1105	D6045	50	17		2.15
171	D6045	33	18		4.41	1109	D6045	100	17		2.15
175			-----		-----	1121			-----		-----
177			-----		-----	1126			-----		-----
221	D6045	50	16		-0.11	1131	D156	50	18		4.41
224			-----		-----	1135	D6045	100	17		2.15
225			-----		-----	1140	D6045	50	16		-0.11
228			-----		-----	1141			-----		-----
230			-----		-----	1150			-----		-----
237			-----		-----	1167			-----		-----
238			-----		-----	1182			-----		-----
253			-----		-----	1191	D6045		17		2.15
254			-----		-----	1212			-----		-----
256			-----		-----	1237	D6045	50	15		-2.37
258			-----		-----	1275			-----		-----
273			-----		-----	1277			-----		-----
311	D6045	50	14		-4.63	1279	D6045		16		-0.11
317			-----		-----	1299	D6045	100	17		2.15
323	D6045	50	10	C,R(0.01)	-13.66	1300	D6045	100	16		-0.11
333	D6045		16		-0.11	1316			-----		-----
334			-----		-----	1318	D6045	100	17		2.15
335		50	-----		-----	1320			-----		-----
336			-----		-----	1357	D6045	50	n.a		-----
353	D6045		15		-2.37	1372	D6045	100	17		2.15
369	D6045	50	16		-0.11	1397			-----		-----
370	D6045	50	16		-0.11	1399			-----		-----
372	D6045	50	16		-0.11	1417	D6045		16		-0.11
391			-----		-----	1433	D6045		17		2.15
396			-----		-----	1455			-----		-----
399			-----		-----	1496	D6045	100	15		-2.37
440	D6045	100	15		-2.37	1538			-----		-----
445	D6045	50	15		-2.37	1575			-----		-----
447	D6045	100	17		2.15	1586	D6045	33	17		2.15
448			-----		-----	1587	D6045	50	17.0		2.15
463			-----		-----	1610	D6045	50	20	R(0.05)	8.92
485			-----		-----	1613			-----		-----
496			-----		-----	1631			-----		-----
594			-----		-----	1635	D6045	33	15		-2.37
603			-----		-----	1636			-----		-----
608			-----		-----	1715	D6045	100	16		-0.11
631	D6045	100	16		-0.11	1720			-----		-----
633			-----		-----	1724	D6045		15		-2.37
657	D6045	100	17		2.15	1730	D6045		15		-2.37
732			-----		-----	1741	D6045	100	15		-2.37
798			-----		-----	1776	D6045	50	18.0		4.41
823	D6045		16		-0.11	1810	D6045		14		-4.63
824	D6045	50	16		-0.11	1811	D6045		16		-0.11
851			-----		-----	1833	D6045		16		-0.11
854			-----		-----	1852	D6045	50	12	R(0.05)	-9.14
862			-----		-----	1883			-----		-----
869			-----		-----	1913	D6045	50	16.0		-0.11
904	D6045	50	17		2.15	1944	D6045	50	16		-0.11
914			-----		-----	1961			-----		-----
962			-----		-----	2129	D6045	50	16		-0.11
963			-----		-----	2130	D6045	50	17		2.15
970			-----		-----	6041			-----		-----
974	D6045	100	17		2.15	6054	D6045		17		2.15
994			-----		-----	6075	D6045	50	16		-0.11
995			-----		-----	6103	D6045	100	15		-2.37
996			-----		-----	6135			-----		-----
997			-----		-----	6139			-----		-----
998			-----		-----	6142			-----		-----
1011			-----		-----	6168			-----		-----
1016	D6045		16		-0.11	6201	D6045	100	14		-4.63
1019			-----		-----	6238			-----		-----
1023	D6045		16		-0.11	6262	D6045	50	14		-4.63
1039		100	-----		-----	6266			-----		-----
1049	D6045	50	19		6.66	6312			-----		-----
1059	D6045		16		-0.11	6321	D6045	50	16		-0.11

lab	method	cell (mm)	value	mark	z(targ)
6324			-----		-----
6331			-----		-----
6332			-----		-----
6344			-----		-----

		50 mm cell only:	100 mm cell only:
normality	OK	OK	OK
n	66	27	19
outliers	3	3	0
mean (n)	16.05	16.05	16.00
st.dev. (n)	1.106	1.296	1.000
R(calc.)	3.10	3.63	2.80
st.dev.(D6045:20)	0.443	0.443	0.443
R(D6045:20)	1.24	1.24	1.24

Lab 150 first reported 23
Lab 159 first reported <0.5
Lab 323 first reported 11





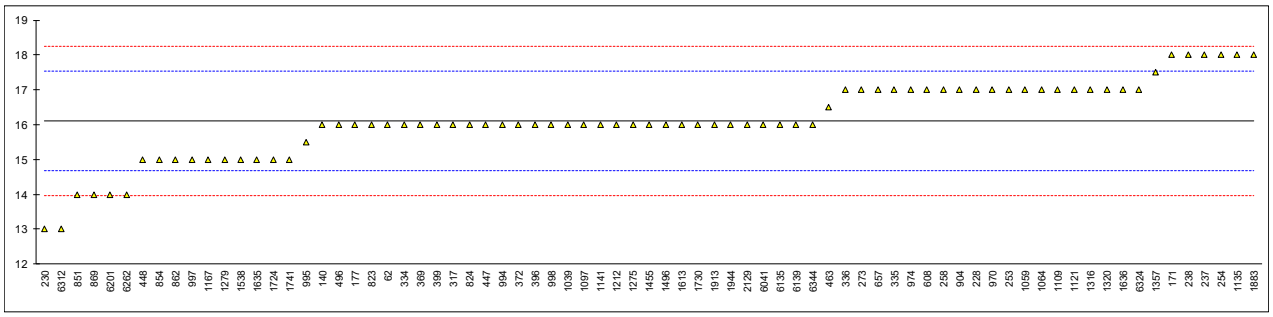
Determination of Color Saybolt (manual) on sample #20150;

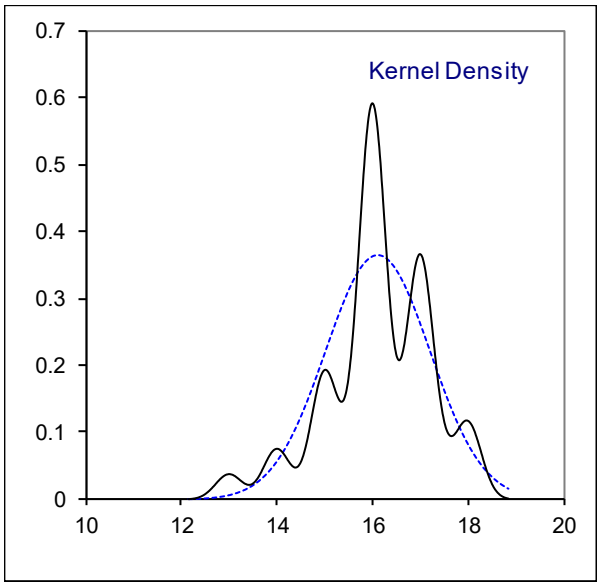
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	1062		-----		-----
62	D156	16		-0.16	1064	D156	17		1.24
120		-----		-----	1065		-----		-----
140	D156	16		-0.16	1079		-----		-----
150		-----		-----	1082		-----		-----
159		-----		-----	1097	NF M07-003	16		-0.16
169		-----		-----	1105		-----		-----
171	D156	18		2.64	1109	D156	17		1.24
175		-----		-----	1121	D156	17		1.24
177	D156	16		-0.16	1126		-----		-----
221		-----		-----	1131		-----		-----
224		-----		-----	1135	D156	18		2.64
225		-----		-----	1140		-----		-----
228	D156	17		1.24	1141	D156	16		-0.16
230	D156	13		-4.36	1150		-----		-----
237	D156	18		2.64	1167	D156	15		-1.56
238	D156	18.0		2.64	1182		-----		-----
253	D156	17		1.24	1191		-----		-----
254	D156	18		2.64	1212	D156	16		-0.16
256		-----		-----	1237		-----		-----
258	D156	17		1.24	1275	D156	16		-0.16
273	D156	17		1.24	1277		-----		-----
311		-----		-----	1279	D156	15		-1.56
317	D156	16		-0.16	1299		-----		-----
323		-----		-----	1300		-----		-----
333		-----		-----	1316	D156	17		1.24
334	D156	16		-0.16	1318		-----		-----
335	D156	17		1.24	1320	D156	17		1.24
336	D156	17		1.24	1357	D156	17.5		1.94
353		-----		-----	1372		-----		-----
369	D156	16		-0.16	1397		-----		-----
370		-----		-----	1399		-----		-----
372	D156	16		-0.16	1417		-----		-----
391		-----		-----	1433		-----		-----
396	D156	16		-0.16	1455	D156	16		-0.16
399	D156	16		-0.16	1496	D156	16		-0.16
440		-----		-----	1538	D156	15		-1.56
445		-----		-----	1575		-----		-----
447	D156	16		-0.16	1586		-----		-----
448	D156	15		-1.56	1587		-----		-----
463	D156	16.5		0.54	1610		-----		-----
485		-----		-----	1613	D156	16		-0.16
496	D156	16		-0.16	1631		-----		-----
594		-----		-----	1635	D156	15		-1.56
603		-----		-----	1636	D156	17		1.24
608	D156	17		1.24	1715		-----		-----
631		-----		-----	1720		-----		-----
633		-----		-----	1724	D156	15		-1.56
657	D156	17		1.24	1730	D156	16		-0.16
732		-----		-----	1741	D156	15		-1.56
798		-----		-----	1776		-----		-----
823	D156	16		-0.16	1810		-----		-----
824	D156	16		-0.16	1811		-----		-----
851	D156	14		-2.96	1833		-----		-----
854	D156	15		-1.56	1852		-----		-----
862	D156	15		-1.56	1883	D156	18		2.64
869	D156	14		-2.96	1913	D156	16		-0.16
904	D156	17		1.24	1944	D156	16		-0.16
914		-----		-----	1961		-----		-----
962		-----		-----	2129	D156	16		-0.16
963		-----		-----	2130		-----		-----
970	D156	17		1.24	6041	D156	16		-0.16
974	D156	17		1.24	6054		-----		-----
994	D156	16		-0.16	6075		-----		-----
995	D156	15.5		-0.86	6103		-----		-----
996		-----		-----	6135	D156	16		-0.16
997	D156	15		-1.56	6139	D156	16		-0.16
998	D156	16		-0.16	6142		-----		-----
1011		-----		-----	6168		-----		-----
1016		-----		-----	6201	D156	14		-2.96
1019		-----		-----	6238		-----		-----
1023		-----		-----	6262	D156	14		-2.96
1039	D156	16		-0.16	6266		-----		-----
1049		-----		-----	6312	D156	13		-4.36
1059	D156	17		1.24	6321		-----		-----

lab	method	value	mark	z(targ)
6324	D156	17		1.24
6331		-----		-----
6332		-----		-----
6344	D156	16	C	-0.16

normality	OK
n	75
outliers	0
mean (n)	16.11
st.dev. (n)	1.095
R(calc.)	3.07
st.dev.(D156:15)	0.714
R(D156:15)	2

Lab 6344 first reported 25





Determination of Copper Corrosion 2 hrs at 100°C on sample #20150;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D130	1a		-----	1062		-----		-----
62	D130	1a		-----	1064	D130	1b		-----
120	D130	1A		-----	1065		-----		-----
140	D130	1a		-----	1079	D130	1B		-----
150	D130	1a		-----	1082		-----		-----
159	D130	1a		-----	1097	ISO2160	1a		-----
169	D130	1a		-----	1105	D130	1a		-----
171	D130	1a		-----	1109	D130	1a		-----
175		-----		-----	1121	IP154	1		-----
177	D130	1b		-----	1126		-----		-----
221	D130	1 A		-----	1131	D130	1a		-----
224	D130	1a		-----	1135	D130	1A		-----
225	D130	1a		-----	1140		-----		-----
228	D130	1a		-----	1141	D130	class 1		-----
230	D130	1a		-----	1150		-----		-----
237	D130	1A		-----	1167		-----		-----
238	D130	1a		-----	1182		-----		-----
253	D130	1A		-----	1191		-----		-----
254	D130	1A		-----	1212	D130	1A		-----
256		-----		-----	1237	ISO2160	1a		-----
258	D130	1a		-----	1275	IP154	1A		-----
273	D130	1a		-----	1277		-----		-----
311	D130	1a		-----	1279	D130	1a		-----
317	D130	1A		-----	1299	D130	1A		-----
323	D130	1B		-----	1300	D130	1A		-----
333	D130	1a		-----	1316	D130	1a		-----
334	D130	1A		-----	1318	D130	1a		-----
335		-----		-----	1320	D130	1a		-----
336		-----		-----	1357	D130	1a		-----
353	IP154	1a		-----	1372	D130	1a		-----
369	D130	1A		-----	1397	D130	1		-----
370	D130	1A		-----	1399		-----		-----
372	D130	1a		-----	1417	D130	1B		-----
391	D130	1A		-----	1433	D130	1a		-----
396	D130	1A		-----	1455	D130	1A		-----
399	D130	1A		-----	1496	D130	1a		-----
440	IP154	1b		-----	1538	D130	1A		-----
445	IP154	1a		-----	1575	D130	1a		-----
447	IP154	1a		-----	1586	D130	1A		-----
448	D130	1a		-----	1587	D130	1a		-----
463	D130	1A		-----	1610	D130	1A		-----
485		-----		-----	1613	D130	1a		-----
496	D130	1a		-----	1631		-----		-----
594	GOST6321	1A		-----	1635		-----		-----
603	D130	1a		-----	1636	D130	1a		-----
608	D130	1a		-----	1715		-----		-----
631	D130	1a		-----	1720		-----		-----
633		-----		-----	1724	D130	1a		-----
657	D130	1A		-----	1730	D130	1A		-----
732		-----		-----	1741	D130	Class 1a		-----
798		-----		-----	1776		-----		-----
823	D130	1a		-----	1810		-----		-----
824	D130	1a		-----	1811		-----		-----
851	D130	1B		-----	1833	D130	1		-----
854	D130	1a		-----	1852	D130	1b		-----
862	D130	1a		-----	1883	D130	1		-----
869	D130	1a		-----	1913	D130	1a		-----
904	D130	1a		-----	1944	D130	1a		-----
914		-----		-----	1961	D130	1a		-----
962		-----		-----	2129	D130	1A		-----
963		-----		-----	2130	D130	1a		-----
970	D130	1a		-----	6041	D130	1b		-----
974	D130	1a		-----	6054		-----		-----
994	D130	1a		-----	6075	D130	1a		-----
995	D130	1a		-----	6103	D130	1a		-----
996		-----		-----	6135	D130	1b		-----
997		-----		-----	6139	D130	1a		-----
998	D130	1A		-----	6142		-----		-----
1011		-----		-----	6168	D130	1a		-----
1016		-----		-----	6201	D130	1a		-----
1019		-----		-----	6238		-----		-----
1023	D130	1a		-----	6262	D130	1A		-----
1039	ISO2160	1A		-----	6266	D130	1a		-----
1049	D130	1A		-----	6312	IP154	1a		-----
1059	D130	1a		-----	6321	IP154	1A		-----

lab	method	value	mark	z(targ)
6324	D130	1a		-----
6331		-----		-----
6332		-----		-----
6344	D130	1a		-----
	n	115		
	mean (n)	1 (1a / 1b)		

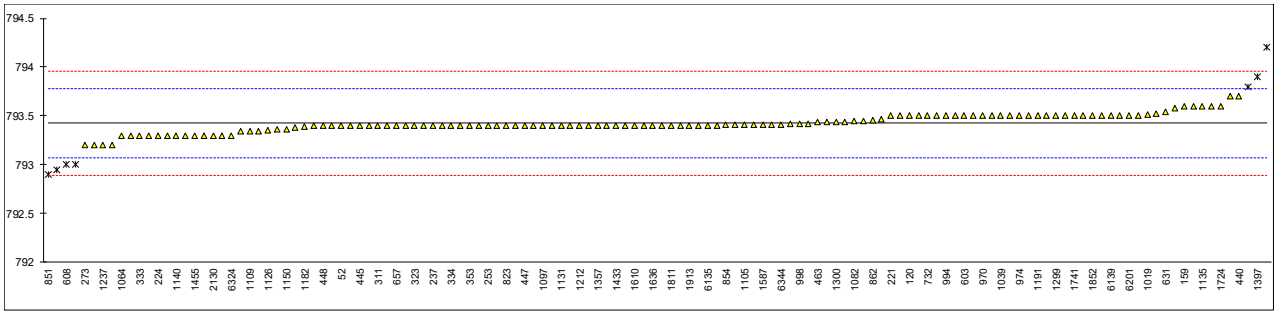
Determination of Density at 15°C on sample #20150; results in kg/m^3

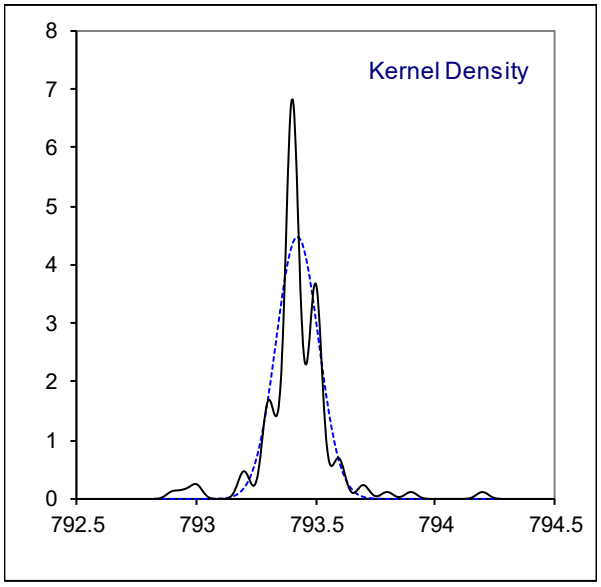
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4052	793.4		-0.13	1062	D4052	793.4		-0.13
62	D4052	793.4		-0.13	1064	D4052	793.3		-0.69
120	D4052	793.5		0.43	1065	D4052	794.2	R(0.01)	4.35
140	D4052	793.4		-0.13	1079	D4052	793.44		0.09
150		-----		-----	1082	D4052	793.45		0.15
159	D4052	793.6		0.99	1097	ISO12185	793.4		-0.13
169	D4052	793.5		0.43	1105	D4052	793.41		-0.08
171	D4052	793.5		0.43	1109	D4052	793.34		-0.47
175	D4052	793.58		0.87	1121	D4052	793.4		-0.13
177	D4052	793.7		1.55	1126	D4052	793.35		-0.41
221	D4052	793.5		0.43	1131	D4052	793.4		-0.13
224	D1298	793.3		-0.69	1135	D4052	793.6		0.99
225	D1298	793.4		-0.13	1140	IP365	793.3		-0.69
228	D4052	793.5		0.43	1141	D4052	793.5		0.43
230	D4052	793.42		-0.02	1150	ISO12185	793.36		-0.36
237	D4052	793.4		-0.13	1167	ISO12185	793.4		-0.13
238	D4052	793.41		-0.08	1182	ISO12185	793.393		-0.17
253	D4052	793.4		-0.13	1191	ISO12185	793.5		0.43
254	D4052	793.4		-0.13	1212	D4052	793.4		-0.13
256		-----		-----	1237	ISO12185	793.2		-1.25
258	D4052	793.5		0.43	1275	IP365	793.4		-0.13
273	D4052	793.2		-1.25	1277		-----		-----
311	D4052	793.4		-0.13	1279	D4052	793.5		0.43
317	D4052	793.4		-0.13	1299	D4052	793.5		0.43
323	D4052	793.4	C	-0.13	1300	D4052	793.44		0.09
333	D4052	793.3		-0.69	1316	D4052	793.3		-0.69
334	D4052	793.4		-0.13	1318	D4052	793.41		-0.08
335	D4052	793.4		-0.13	1320	ISO12185	793.38		-0.25
336	D4052	793.3		-0.69	1357	D4052	793.4		-0.13
353	IP365	793.4		-0.13	1372	D4052	793.42		-0.02
369	D4052	793.4		-0.13	1397	D4052	793.9	R(0.01)	2.67
370	D4052	793.4		-0.13	1399		-----		-----
372	D4052	793.4		-0.13	1417	IP365	793.4		-0.13
391	D4052	793.2		-1.25	1433	D4052	793.4		-0.13
396	D4052	793.5		0.43	1455	D4052	793.3		-0.69
399	D4052	793.4		-0.13	1496	D1298	793.5		0.43
440	D4052	793.7		1.55	1538	D4052	793.6		0.99
445	IP365	793.4		-0.13	1575		-----		-----
447	D4052	793.4		-0.13	1586	D4052	793.4		-0.13
448	D4052	793.4		-0.13	1587	D4052	793.41		-0.08
463	ISO12185	793.44		0.09	1610	IP365	793.4		-0.13
485	D4052	793.3		-0.69	1613	D4052	793.41		-0.08
496	D4052	793.36		-0.36	1631	D4052	793.4		-0.13
594	GOST3900	793.0	R(0.01)	-2.37	1635		-----		-----
603	D4052	793.5		0.43	1636	D4052	793.4		-0.13
608	D4052	793.0	R(0.01)	-2.37	1715	ISO12185	793.8	R(0.01)	2.11
631	D4052	793.545		0.68	1720		-----		-----
633		-----		-----	1724	D4052	793.6		0.99
657	D4052	793.4		-0.13	1730	D4052	793.34		-0.47
732	D4052	793.50		0.43	1741	D4052	793.5		0.43
798		-----		-----	1776	ISO12185	793.47		0.26
823	D4052	793.4		-0.13	1810	D4052	793.4		-0.13
824	D4052	793.4		-0.13	1811	D4052	793.4		-0.13
851	D4052	792.9	R(0.01)	-2.93	1833	D4052	793.5		0.43
854	D4052	793.41		-0.08	1852	IP365	793.5		0.43
862	D4052	793.46		0.20	1883	D1298	793.4		-0.13
869	D4052	793.3		-0.69	1913	D4052	793.40		-0.13
904	D4052	793.6		0.99	1944	D4052	793.40		-0.13
914		-----		-----	1961		-----		-----
962		-----		-----	2129	D4052	793.3		-0.69
963		-----		-----	2130	D4052	793.3		-0.69
970	D4052	793.5		0.43	6041	D4052	793.5		0.43
974	D1298	793.5		0.43	6054		-----		-----
994	D4052	793.5		0.43	6075	D4052	793.44		0.09
995	D4052	793.5		0.43	6103	ISO12185	793.45		0.15
996		-----		-----	6135	D4052	793.4		-0.13
997	D4052	793.52		0.54	6139	D4052	793.5		0.43
998	D4052	793.42		-0.02	6142	ISO12185	793.5		0.43
1011		-----		-----	6168	D4052	793.2		-1.25
1016		-----		-----	6201	D4052	793.5		0.43
1019	D4052	793.51		0.48	6238		-----		-----
1023	D4052	793.5		0.43	6262	D4052	793.4	C	-0.13
1039	ISO12185	793.5		0.43	6266	D4052	792.95	R(0.01)	-2.65
1049	D4052	793.34		-0.47	6312	IP365	793.5		0.43
1059	D4052	793.4		-0.13	6321	IP365	793.3		-0.69

lab	method	value	mark	z(targ)
6324	D4052	793.3		-0.69
6331		-----		-----
6332		-----		-----
6344	D4052	793.41		-0.08

normality	suspect
n	127
outliers	7
mean (n)	793.424
st.dev. (n)	0.0889
R(calc.)	0.249
st.dev.(D4052:18a)	0.1786
R(D4052:18a)	0.5

Lab 323 first reported 793.4 kg/L
Lab 6262 first reported 0.7934 without a unit





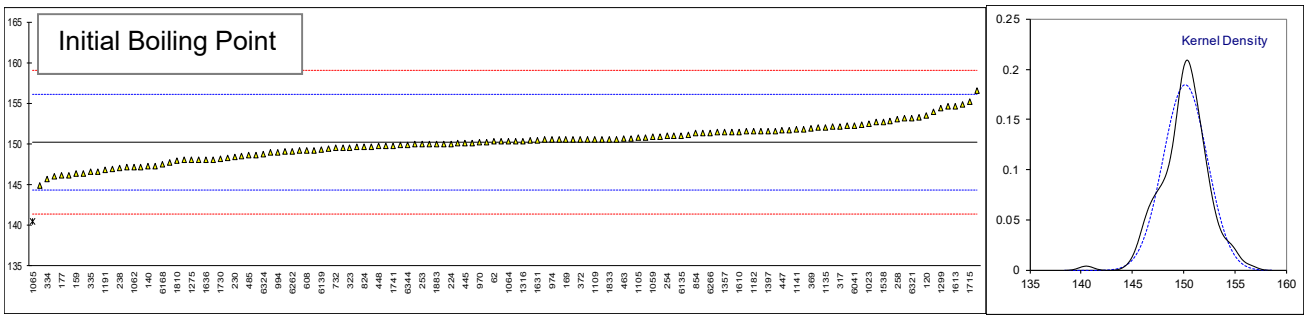
Determination of Distillation at 760 mmHg on sample #20150; results in °C

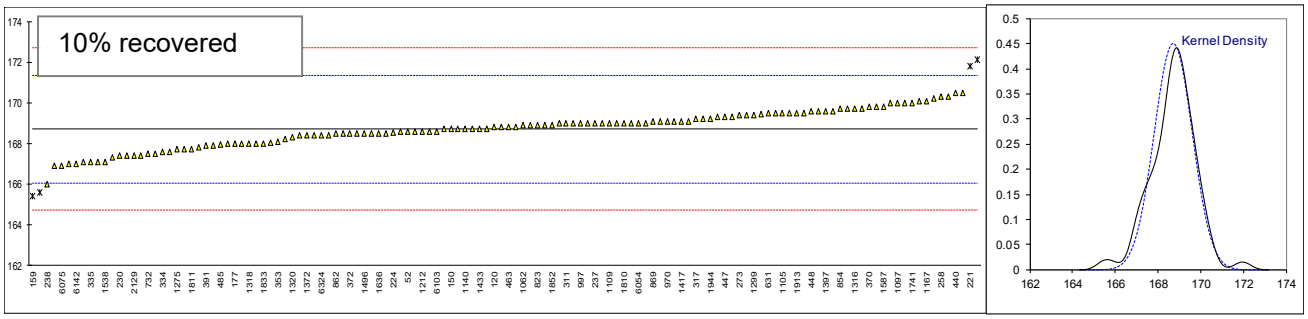
lab	method	IBP	mark	10% rec	mark	50% rec	mark	90% rec	mark	FBP	mark	residue	loss
52	D86-automated	150.5		168.6		194.5		238.2		269.0		1.1	0.7
62	D86-automated	150.3		169.3		195.0		240.7		268.9		1.0	0.7
120	D86-automated	153.5		168.8		195.3		238.6		270.1		1.1	0.6
140	D86-automated	147.3		168.8		195.5		238.0		269.0		1.2	0.5
150	D86-automated	149.1		168.7		195.0		238.9		268.2		0.9	0.6
159		146.3		165.4	DG(5)	193.8		236.3		266.4		1.3	0.3
169	D86-automated	150.5		168.6		194.8		238.6		268.1		1.2	0.5
171	D86-automated	151.1		167.1		193.4		238.5		268.0		1.1	1.7
175		149.0		168.0		194.4		240.6		267.6		1.0	0.8
177	D86-automated	146.1		168.0		195.0		237.4		267.5		1.0	0.4
221	D86-automated	149.4		171.8	DG(5)	196.6		239.3		263.6		1.2	0.6
224	D86-manual	150.02		168.52		194.02		236.03		266.02		1.5	0.5
225	D86-manual	150.0		170.0		195.0		238.0		266.0		1.6	0.4
228		-----		-----		-----		-----		-----		-----	-----
230		148.4		167.4		194.2		238.8		267.1		1.2	0.8
237	D86-manual	151.0		169.0		196.0		239.0		270.0		1.0	0.5
238	D86-manual	147.0		166.0		192.0		235.0		265.0		1.5	0.5
253	D86-manual	150.0		169.0		196.0		239.0		268.0		1.0	0.7
254	D86-manual	151		169		196		239		270		-----	-----
256		-----		-----		-----		-----		-----		-----	-----
258	D86-automated	153.0		170.3		196.7		241.2		268.7		1.1	-----
273	D86-automated	151.7		169.4		194.5		238.5		268.3		1.0	-----
311	D86-automated	150.1		169.0		195.0		238.3		268.8		1.2	0.2
317	D86-automated	152.1		169.2		195.6		239.7		270.1		1.4	0.4
323	D86-automated	149.5		169.1		195.7		240.6		268.9		1.2	0.8
333	D86-automated	144.9		168.7		194.5		236.8		268.9		-----	-----
334	D86-automated	145.7		167.6		194.4		237.6		264.1		1.2	0.5
335	D86-automated	146.6		167.1		194.9		238.6		265.2		1.3	0.4
336		-----		-----		-----		-----		-----		-----	-----
353	IP123-automated	147.7		168.1		194.8		240.2		267.8		1.5	1.0
369	D86-automated	151.9		167.1		195.3		239.0		268.4		1.2	0.5
370	D86-automated	150.3		169.8		195.2		239.4		269.2		1.0	0.5
372	D86-automated	150.5		168.5		195.1		238.4		270.2		1.2	0.3
391	D86-automated	146.9		167.9		193.7		237.4		266.2		1.0	0.6
396		-----		-----		-----		-----		-----		-----	-----
399	D86	149.2		167.4		193.4		235.3		259.2	R1	0.9	1.0
440	D86-automated	150.3		170.5		195.5		240.7		267.6		1.3	0.3
445	D86-automated	150.1		168.8		194.3		238.0		266.6		1.5	0.2
447	D86-automated	151.7		169.3		195.4		240.6		269.5		1.2	1.1
448	D86-automated	149.7		169.6		195.4		240.8		268.7		1.2	1.2
463	D86-automated	150.7		168.8		195.2		239.7		268.1		1.3	0.9
485		148.6		167.95		193.8		236.45		264.75		1.0	0.3
496	D86-automated	149.2		167.6		194.6		239.2		266.5		1.0	0.9
594	GOST2177	154.0		169.5		196.0		241.2		270.7		1.0	0.9
603		-----		-----		-----		-----		-----		-----	-----
608	D86-automated	149.2		168.7		195.1		239.6		270.0		1.2	0.8
631	D86-manual	156.5		169.5		194.0		238.0		267.0		1.0	1.0
633		-----		-----		-----		-----		-----		-----	-----
657	D86-automated	149.6		168.4		194.7		238.7		268.3		0.9	0.6
732		149.5		167.5		194.0		236.5		271.0		0.5	0.5
798		-----		-----		-----		-----		-----		-----	-----
823	D86-automated	150.0		168.9		195.1		239.1		269.5		1.2	0.2
824	D86-automated	149.6		169.0		195.3		239.7		268.8		1.2	0.9
851	D86-automated	150.1		168.5		195.0		238.0		267.6		1.2	0.2
854	D86-automated	151.3		169.7		195.4		240.1		268.7		1.2	0.8
862	D86-automated	150.5		168.5		194.9		238.7		267.5		1.2	0.3
869	D86-automated	150.5		169.1		195.5		240.0		267.5		1.2	0.6
904	D86-automated	151.5		166.9		192.7		235.8		266.7		1.2	1.0
914		-----		-----		-----		-----		-----		-----	-----
962		-----		-----		-----		-----		-----		-----	-----
963		-----		-----		-----		-----		-----		-----	-----
970	D86-automated	150.2		169.1		196.1		239.9		269.0		1.3	0.7
974	D86-automated	150.5		170.5		197.1		240.3		268.7		1.2	0.9
994	D86-manual	149.0		167.0		193.0		237.0		272.0		0.6	0.5
995	D86-manual	149.5		168.0		194.5		237.5		271.0		0.6	0.4
996		-----		-----		-----		-----		-----		-----	-----
997		148.0		169.0		195.0		238.5		271.0		1.5	0.5
998	D86-manual	150.5		167.5		194.5		238.0		272.5		1.0	0.5
1011		-----		-----		-----		-----		-----		-----	-----
1016		-----		-----		-----		-----		-----		-----	-----
1019		-----		-----		-----		-----		-----		-----	-----
1023	D86-automated	152.5		170.1		194.6		237.8		266.7		0.5	0.1
1039	ISO3405-automated	152.0		169.8		195.9		239.3		269.0		1.3	0.3
1049	D86-automated	151.4		169.0		195.4		240.0		269.5		1.1	0.7
1059	D86-automated	150.9		169.1		194.9		238.5		267.7		1.2	0.5

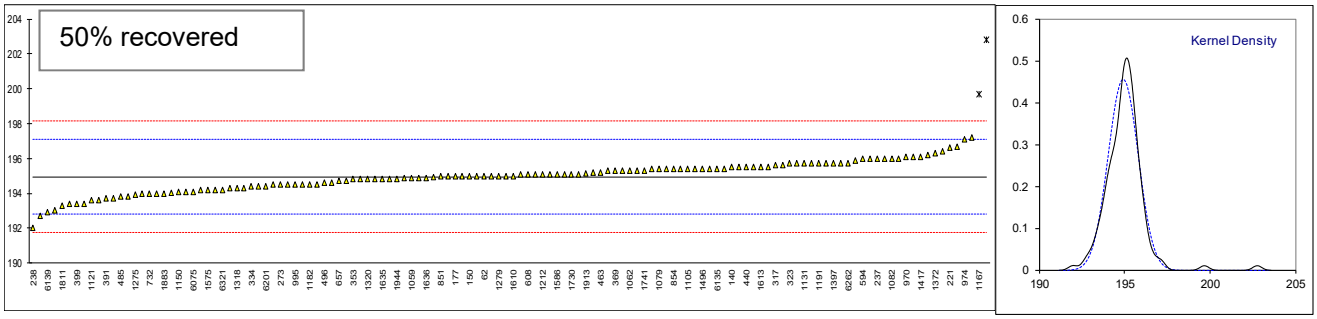
lab	method	IBP	mark	10% rec	mark	50% rec	mark	90% rec	mark	FBP	mark	residue	loss
1062	D86-automated	147.2		168.9		195.3		238.6		267.2		1.2	0.5
1064	D86-automated	150.3		168.9		196.1		240.7		269.3		1.5	0.6
1065	D86-automated	140.5	R1	165.6	DG(5)	195.0		239.5		278.2	R1	-----	-----
1079	D86-automated	152.7		168.6		195.4		240.2		269.8		1.2	0.6
1082		152.1		169.7		196.0		240.4		269.2		1.5 C	1.5
1097	ISO3405-automated	153.2		170.0		195.7		241.0		269.3		1.3	0.9
1105		150.8		169.5		195.4		239.7		267.7		1.1	0.7
1109	D86-automated	150.5		169.0		195.6		239.9		269.6		1.3	0.5
1121	D86-automated	152.3	C	167.9		193.6		237.6		270.0		1.1	0.0
1126		-----		-----		-----		-----		-----		-----	-----
1131	D86-automated	150.6		169.4		195.7		239.6		267.9		1.2	0.9
1135	D86-automated	152.0		168.9		195.5		238.9		269.5		1.0	0.3
1140	IP123-automated	147.2		168.7		195.4		240.0		269.6		1.2	0.8
1141	D86-automated	151.8		169.0		195.7		240.8		268.4		1.2	1.3
1150	ISO3405-automated	151.58		168.02		194.10		239.48		265.74		1.06	1.22
1167	ISO3405-automated	152.8		170.1		199.7	R1	242.9		271.6		0.9	0.4
1182	D86-automated	151.6		168.7		194.5		239.1		268.8		1.2	0.7
1191	ISO3405-automated	146.8		170.0		195.7		239.7		269.2		1.5 C	1.5
1212	D86-automated	149.7		168.6		195.1		239.4		269.1		1.2	0.9
1237	ISO3405-automated	151.6		168.5		195.1		238.1		268.4		1.2	0.6
1275	IP123-automated	148.0		167.7		193.9		238.6		266.4		1.2	0.7
1277		-----		-----		-----		-----		-----		-----	-----
1279	D86-automated	152.4		169.2		195.0		237.8		266.6		1.2	0.4
1299	D86-automated	154.4		169.4		196.0		240.8		270.8		1.2	0.6
1300	D86-automated	154.6		169.6		193.4		239.9		271.5		1.1	0.6
1316	D86-automated	150.3		169.7		195.3		239.4		269.2		1.2	0.7
1318	D86-automated	148.0		168.0		194.3		238.5		267.9		1.2	0.6
1320		148.5		168.3		194.8		238.8		267.2		1.0	1.0
1357	D86-automated	151.4		169.3		195.7		240.0		268.4		1.2	0.4
1372	D86-automated	153.3		168.4		196.3		239.2		270.4		0.5	1.5
1397	D86-automated	151.6		169.6		195.7		238.9		270.3		1.2	0.6
1399		-----		-----		-----		-----		-----		-----	-----
1417	IP123-automated	151.3		169.1		196.1		242.8		270.3		1.2	1.2
1433	D86-automated	150.2		168.7		195.0		239.1		267.6		1.2	1.0
1455	D86-automated	150.5		169.5		195.7		239.6		268.8		1.2	0.4
1496	D86-automated	149.6		168.5		195.4		239.6		270.4		1.3	0.5
1538	D86-automated	152.7		167.1		193.6		237.8		264.8		1.2	0.9
1575	D86-automated	148.6		167.3		194.2		238.6		267.1		1.1	0.9
1586	D86-automated	151.6		169.1		195.1		239.8		269.2		1.2	0.6
1587	D86-automated	150.4		169.8		195.1		238.4		265.9		1.2	0.6
1610	IP123-automated	151.5		168.6		195.0		240.0		269.6		1.2	0.6
1613	D86-automated	154.6		170.3		195.5		239.4		268.7		1.2	0.6
1631	D86-automated	150.4		168.5		194.8		238.2		269.8		1.2	0.8
1635	D86-automated	150.9		167.7		194.8		240.3		269.7		-----	1.7
1636	D86-automated	148.0		168.5		194.9		238.7		266.6		1.2	0.8
1715	D86-automated	155.2		170.2		196.4		241.4		272.2		1	1
1720		-----		-----		-----		-----		-----		-----	-----
1724	D86-automated	147.1		168.0		194.0		237.7		266.8		1.2	0.3
1730	D86-automated	148.2		168.4		195.1		238.8		272.0		1.2	0.4
1741	D86-automated	149.7		170.0		195.3		238.5		269.5		1.1	0.5
1776	ISO3405-automated	148.1		167.8		194.8		239.8		267.4		1.2	1.5
1810	D86-automated	147.9		169.0		194.5		237.4		265.8		1.2 C	0.3 C
1811		146.3		167.7		193.3		237.1		266.6		1.2	0.6
1833	D86-automated	150.5		168.0		194.2		237.8		267.8		1.2	0.6
1852	D86-automated	150.8		168.9		195.4		238.6		270.9		1.3	0.7
1883	D86-manual	150		169		194		238		264		1	1
1913	D86-automated	150.70		169.50		195.15		240.10		267.25		1.2	1.1
1944	D86-automated	149.9		169.2		194.8		239.4		269.9		1.4	0.4
1961		-----		-----		-----		-----		-----		-----	-----
2129	D86-automated	147.3		167.4		194.1		237.7		266.9		1.0	0
2130	D86-automated	148.3		168.2		195.5		240.1		268.4		1.2	1.0
6041	D86-automated	152.3		169.7		197.2		240.7	C	271.3		1.2	0.8
6054		146.1		169.0		194.7		237.4		266.4		1.4	0.3
6075	D86-automated	150.0		166.9		194.1		237.6		268.9		1.0	0.1
6103	D86-automated	151.8		168.6		195.1		239.8		267.4		1.2	0.9
6135	D86-automated	151.0		169.5		195.4		240.5		270.2		1.2	0.5
6139	D86-automated	149.3		167.4		192.9		236.0		263.4		1.2	0.6
6142	ISO3405-automated	146.0		167.0		193.7		237.8		266.5		-----	0.9
6168	D86-automated	147.5		172.1	DG(5)	202.8	R1	238.3		267.5		1.2	0.3
6201	D86-automated	146.6		168.5		194.4		237.6		266.7		1.2	0.2
6238		-----		-----		-----		-----		-----		-----	-----
6262	D86-automated	149.1		169.6		195.7		239.5		269.5		1.4	0.6
6266	D86	151.36		169.46		194.91		237.70		268.75		1.4	0.322
6312	D86-automated	154.9		169.0		196.2		241.6		271.4		1.0	1.0
6321	IP123-automated	153.2		168.7		194.2		238.5		268.4		-----	-----

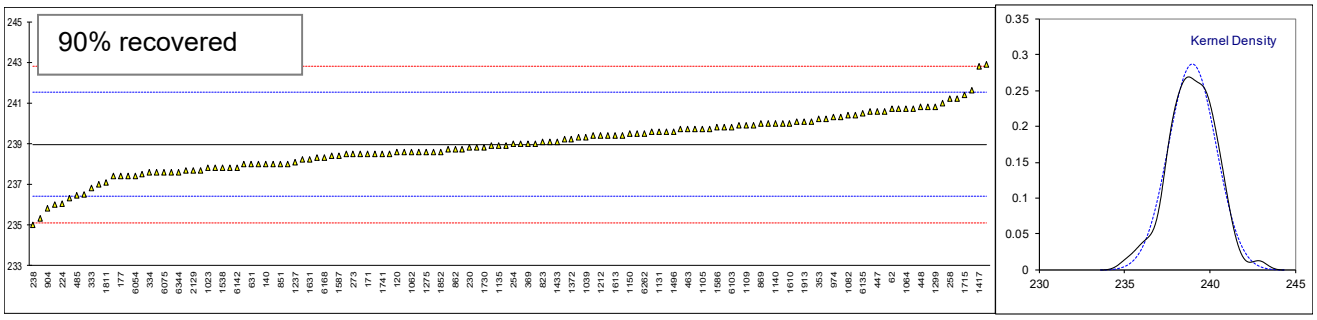
lab	method	IBP	mark	10% rec	mark	50% rec	mark	90% rec	mark	FBP	mark	residue	loss
6324	D86-manual	148.7		168.4		195.4		240.4		272.4		1.4	0.2
6331		-----		-----		-----		-----		-----		-----	-----
6332		-----		-----		-----		-----		-----		-----	-----
6344		149.9		168.4		194.3		237.6		267.1		1.2	0.3
	normality	OK		OK		OK		OK		OK			
	n	131		128		130		132		130			
	outliers	1		4		2		0		2			
	mean (n)	150.18		168.72		194.95		238.95		268.42			
	st.dev. (n)	2.156		0.887		0.875		1.394		1.872			
	R(calc.)	6.04		2.48		2.45		3.90		5.24			
	st.dev.(D86-A:20a)	2.950		1.326		1.071		1.280		2.536			
	R(D86-A:20a)	8.26		3.71		3.00		3.58		7.10			
Compare													
	R(D86-M:20a)	4.52		2.99		2.97		3.75		4.34			

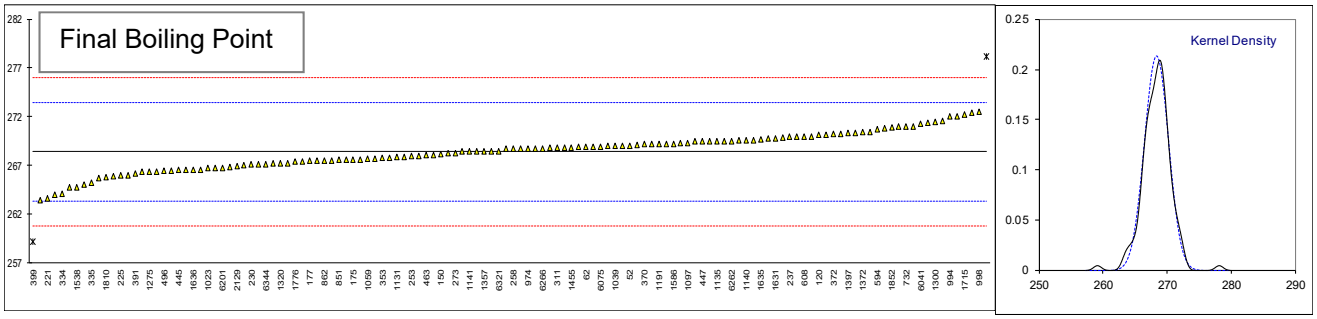
Lab 1082 first reported 98.1 for Distillation Residue
Lab 1121 first reported 67.3 for IBP
Lab 1191 first reported 98.4 for Distillation Residue
Lab 1810 first reported 90.5 and 1.2 for Distillation Residue and Loss respectively
Lab 6041 first reported 243.7 for 90% recovered


Initial Boiling Point
Kernel Density


10% recovered
Kernel Density


50% recovered
Kernel Density


90% recovered
Kernel Density


Final Boiling Point
Kernel Density

z-scores of the distillation determination

lab	IBP	10% rec	50% rec	90% rec	FBP	lab	IBP	10% rec	50% rec	90% rec	FBP
52	0.11	-0.09	-0.42	-0.59	0.23	1062	-1.01	0.14	0.33	-0.28	-0.48
62	0.04	0.44	0.05	1.36	0.19	1064	0.04	0.14	1.07	1.36	0.35
120	1.13	0.06	0.33	-0.28	0.66	1065	-3.28	-2.35	0.05	0.43	3.86
140	-0.97	0.06	0.51	-0.74	0.23	1079	0.86	-0.09	0.42	0.97	0.55
150	-0.36	-0.01	0.05	-0.04	-0.09	1082	0.65	0.74	0.98	1.13	0.31
159	-1.31	-2.50	-1.07	-2.07	-0.80	1097	1.03	0.97	0.70	1.60	0.35
169	0.11	-0.09	-0.14	-0.28	-0.13	1105	0.21	0.59	0.42	0.58	-0.28
171	0.31	-1.22	-1.45	-0.35	-0.16	1109	0.11	0.21	0.61	0.74	0.47
175	-0.40	-0.54	-0.51	1.29	-0.32	1121	0.72	-0.62	-1.26	-1.06	0.62
177	-1.38	-0.54	0.05	-1.21	-0.36	1126	-----	-----	-----	-----	-----
221	-0.26	2.33	1.54	0.27	-1.90	1131	0.14	0.52	0.70	0.51	-0.20
224	-0.05	-0.15	-0.87	-2.28	-0.95	1135	0.62	0.14	0.51	-0.04	0.43
225	-0.06	0.97	0.05	-0.74	-0.95	1140	-1.01	-0.01	0.42	0.82	0.47
228	-----	-----	-----	-----	-----	1141	0.55	0.21	0.70	1.44	-0.01
230	-0.60	-0.99	-0.70	-0.12	-0.52	1150	0.48	-0.53	-0.79	0.41	-1.06
237	0.28	0.21	0.98	0.04	0.62	1167	0.89	1.04	4.43	3.08	1.25
238	-1.08	-2.05	-2.75	-3.09	-1.35	1182	0.48	-0.01	-0.42	0.12	0.15
253	-0.06	0.21	0.98	0.04	-0.16	1191	-1.14	0.97	0.70	0.58	0.31
254	0.28	0.21	0.98	0.04	0.62	1212	-0.16	-0.09	0.14	0.35	0.27
256	-----	-----	-----	-----	-----	1237	0.48	-0.16	0.14	-0.67	-0.01
258	0.96	1.19	1.63	1.76	0.11	1275	-0.74	-0.77	-0.98	-0.28	-0.80
273	0.52	0.52	-0.42	-0.35	-0.05	1277	-----	-----	-----	-----	-----
311	-0.03	0.21	0.05	-0.51	0.15	1279	0.75	0.36	0.05	-0.90	-0.72
317	0.65	0.36	0.61	0.58	0.66	1299	1.43	0.52	0.98	1.44	0.94
323	-0.23	0.29	0.70	1.29	0.19	1300	1.50	0.67	-1.45	0.74	1.22
333	-1.79	-0.01	-0.42	-1.68	0.19	1316	0.04	0.74	0.33	0.35	0.31
334	-1.52	-0.84	-0.51	-1.06	-1.70	1318	-0.74	-0.54	-0.61	-0.35	-0.20
335	-1.21	-1.22	-0.05	-0.28	-1.27	1320	-0.57	-0.31	-0.14	-0.12	-0.48
336	-----	-----	-----	-----	-----	1357	0.41	0.44	0.70	0.82	-0.01
353	-0.84	-0.46	-0.14	0.97	-0.24	1372	1.06	-0.24	1.26	0.19	0.78
369	0.58	-1.22	0.33	0.04	-0.01	1397	0.48	0.67	0.70	-0.04	0.74
370	0.04	0.82	0.23	0.35	0.31	1399	-----	-----	-----	-----	-----
372	0.11	-0.16	0.14	-0.43	0.70	1417	0.38	0.29	1.07	3.01	0.74
391	-1.11	-0.62	-1.17	-1.21	-0.87	1433	0.01	-0.01	0.05	0.12	-0.32
396	-----	-----	-----	-----	-----	1455	0.11	0.59	0.70	0.51	0.15
399	-0.33	-0.99	-1.45	-2.85	-3.64	1496	-0.20	-0.16	0.42	0.51	0.78
440	0.04	1.35	0.51	1.36	-0.32	1538	0.86	-1.22	-1.26	-0.90	-1.43
445	-0.03	0.06	-0.61	-0.74	-0.72	1575	-0.53	-1.07	-0.70	-0.28	-0.52
447	0.52	0.44	0.42	1.29	0.43	1586	0.48	0.29	0.14	0.66	0.31
448	-0.16	0.67	0.42	1.44	0.11	1587	0.08	0.82	0.14	-0.43	-0.99
463	0.18	0.06	0.23	0.58	-0.13	1610	0.45	-0.09	0.05	0.82	0.47
485	-0.53	-0.58	-1.07	-1.96	-1.45	1613	1.50	1.19	0.51	0.35	0.11
496	-0.33	-0.84	-0.33	0.19	-0.76	1631	0.08	-0.16	-0.14	-0.59	0.55
594	1.30	0.59	0.98	1.76	0.90	1635	0.25	-0.77	-0.14	1.05	0.51
603	-----	-----	-----	-----	-----	1636	-0.74	-0.16	-0.05	-0.20	-0.72
608	-0.33	-0.01	0.14	0.51	0.62	1715	1.70	1.12	1.35	1.91	1.49
631	2.14	0.59	-0.89	-0.74	-0.56	1720	-----	-----	-----	-----	-----
633	-----	-----	-----	-----	-----	1724	-1.04	-0.54	-0.89	-0.98	-0.64
657	-0.20	-0.24	-0.23	-0.20	-0.05	1730	-0.67	-0.24	0.14	-0.12	1.41
732	-0.23	-0.92	-0.89	-1.92	1.02	1741	-0.16	0.97	0.33	-0.35	0.43
798	-----	-----	-----	-----	-----	1776	-0.70	-0.69	-0.14	0.66	-0.40
823	-0.06	0.14	0.14	0.12	0.43	1810	-0.77	0.21	-0.42	-1.21	-1.03
824	-0.20	0.21	0.33	0.58	0.15	1811	-1.31	-0.77	-1.54	-1.45	-0.72
851	-0.03	-0.16	0.05	-0.74	-0.32	1833	0.11	-0.54	-0.70	-0.90	-0.24
854	0.38	0.74	0.42	0.90	0.11	1852	0.21	0.14	0.42	-0.28	0.98
862	0.11	-0.16	-0.05	-0.20	-0.36	1883	-0.06	0.21	-0.89	-0.74	-1.74
869	0.11	0.29	0.51	0.82	-0.36	1913	0.18	0.59	0.19	0.90	-0.46
904	0.45	-1.37	-2.10	-2.46	-0.68	1944	-0.09	0.36	-0.14	0.35	0.58
914	-----	-----	-----	-----	-----	1961	-----	-----	-----	-----	-----
962	-----	-----	-----	-----	-----	2129	-0.97	-0.99	-0.79	-0.98	-0.60
963	-----	-----	-----	-----	-----	2130	-0.64	-0.39	0.51	0.90	-0.01
970	0.01	0.29	1.07	0.74	0.23	6041	0.72	0.74	2.10	1.36	1.14
974	0.11	1.35	2.01	1.05	0.11	6054	-1.38	0.21	-0.23	-1.21	-0.80
994	-0.40	-1.29	-1.82	-1.53	1.41	6075	-0.06	-1.37	-0.79	-1.06	0.19
995	-0.23	-0.54	-0.42	-1.13	1.02	6103	0.55	-0.09	0.14	0.66	-0.40
996	-----	-----	-----	-----	-----	6135	0.28	0.59	0.42	1.21	0.70
997	-0.74	0.21	0.05	-0.35	1.02	6139	-0.30	-0.99	-1.91	-2.31	-1.98
998	0.11	-0.92	-0.42	-0.74	1.61	6142	-1.42	-1.29	-1.17	-0.90	-0.76
1011	-----	-----	-----	-----	-----	6168	-0.91	2.55	7.33	-0.51	-0.36
1016	-----	-----	-----	-----	-----	6201	-1.21	-0.16	-0.51	-1.06	-0.68
1019	-----	-----	-----	-----	-----	6238	-----	-----	-----	-----	-----
1023	0.79	1.04	-0.33	-0.90	-0.68	6262	-0.36	0.67	0.70	0.43	0.43
1039	0.62	0.82	0.89	0.27	0.23	6266	0.40	0.56	-0.04	-0.98	0.13
1049	0.41	0.21	0.42	0.82	0.43	6312	1.60	0.21	1.17	2.07	1.18
1059	0.25	0.29	-0.05	-0.35	-0.28	6321	1.03	-0.01	-0.70	-0.35	-0.01

lab	IBP	10% rec	50% rec	90% rec	FBP
6324	-0.50	-0.24	0.42	1.13	1.57
6331	-----	-----	-----	-----	-----
6332	-----	-----	-----	-----	-----
6344	-0.09	-0.24	-0.61	-1.06	-0.52

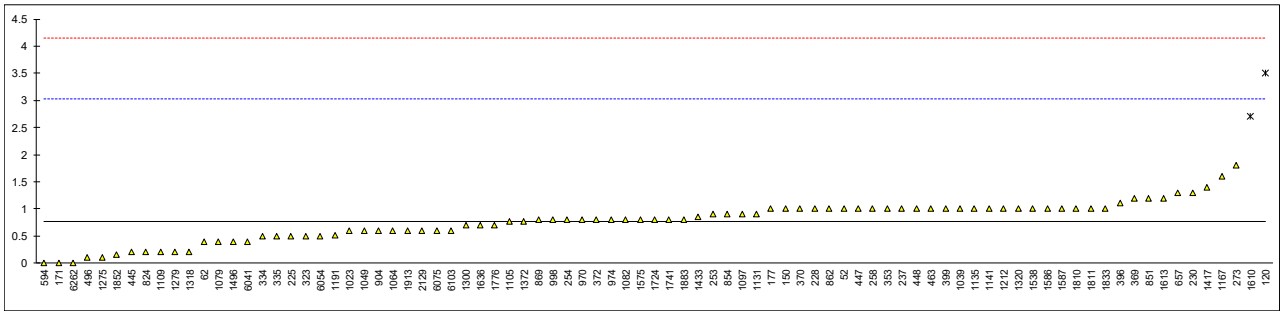
Determination of Existent Gum (unwashed) on sample #20150; results in mg/100mL

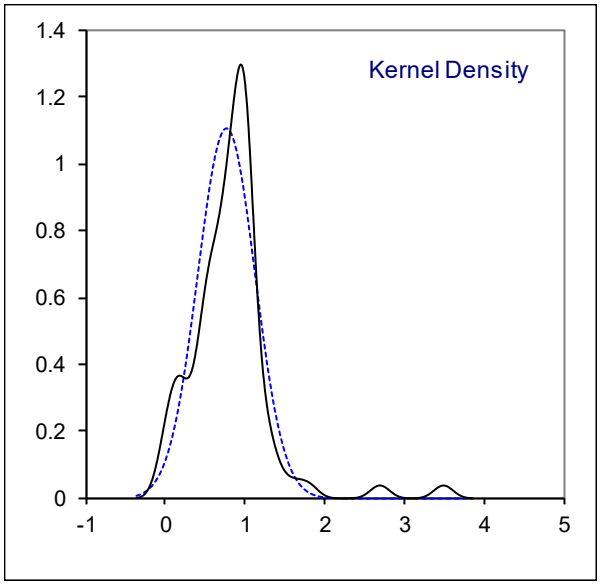
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	IP540	1		0.21	1062	D381	<1		-----
62	IP540	0.4	C	-0.33	1064	D381	0.6		-0.15
120	IP540	3.5	R(0.01)	2.42	1065		-----		-----
140	D381	<1		-----	1079	D381	0.4		-0.33
150	D381	1		0.21	1082	IP540	0.8		0.03
159		-----		-----	1097	IP540	0.9		0.12
169	D381	<1		-----	1105	D381	0.76		-0.01
171	D381	0.0		-0.68	1109	IP540	0.2		-0.50
175		-----		-----	1121		-----		-----
177	D381	1		0.21	1126		-----		-----
221		-----		-----	1131	IP540	0.9		0.12
224		-----		-----	1135	IP540	1		0.21
225	D381	0.5		-0.24	1140	IP540	<1		-----
228	D381	1		0.21	1141	D381	1.0		0.21
230	D381	1.3		0.47	1150		-----		-----
237	D381	1.0		0.21	1167	ISO6246	1.6		0.74
238		-----		-----	1182		-----		-----
253	IP540	0.9		0.12	1191	IP540	0.52		-0.22
254	D381	0.8		0.03	1212	D381	1.0		0.21
256		-----		-----	1237		-----		-----
258	D381	1		0.21	1275	IP540	0.1		-0.59
273	D381	1.8		0.92	1277		-----		-----
311	IP540	<1		-----	1279	D381	0.20		-0.50
317	D381	<1		-----	1299	IP540	<1		-----
323	D381	0.5		-0.24	1300	IP540	0.7		-0.06
333		-----		-----	1316	D381	<1		-----
334	D381	0.5		-0.24	1318	D381	0.20		-0.50
335	IP540	0.5		-0.24	1320	D381	1		0.21
336		-----		-----	1357	IP540	<1		-----
353	IP540	1.0		0.21	1372	IP540	0.77		0.00
369	IP540	1.2		0.38	1397		-----		-----
370	IP540	1		0.21	1399		-----		-----
372	IP540	0.8		0.03	1417	IP540	1.4		0.56
391		-----		-----	1433	ISO6246	0.8467		0.07
396	D381	1.1		0.29	1455	D381	< 1		-----
399	D381	1.0		0.21	1496	D381	0.4		-0.33
440		-----		-----	1538	D381	1.0		0.21
445	D381	0.2		-0.50	1575	D381	0.8		0.03
447	D381	1		0.21	1586	D381	1.0		0.21
448	IP540	1		0.21	1587	IP540	1.0		0.21
463	IP540	1.00		0.21	1610	IP540	2.7	R(0.01)	1.71
485		-----		-----	1613	D381	1.2		0.38
496	D381	0.1		-0.59	1631		-----		-----
594	GOST1567	0		-0.68	1635		-----		-----
603	IP540	<1.0		-----	1636	IP540	0.7		-0.06
608		-----		-----	1715		-----		-----
631	D381	<1		-----	1720		-----		-----
633		-----		-----	1724	IP540	0.8		0.03
657	IP540	1.3		0.47	1730	D381	<1		-----
732		-----		-----	1741	D381	0.8		0.03
798		-----		-----	1776	IP540	0.7		-0.06
823		-----		-----	1810	D381	1		0.21
824	D381	0.2		-0.50	1811	D381	1.0		0.21
851	IP540	1.2		0.38	1833	D381	1.0		0.21
854	IP540	0.9		0.12	1852	IP540	0.15		-0.55
862	D381	1.0		0.21	1883	D381	0.8		0.03
869	IP540	0.8		0.03	1913	D381	0.60		-0.15
904	D381	0.6		-0.15	1944		-----		-----
914		-----		-----	1961		-----		-----
962		-----		-----	2129	D381	0.6		-0.15
963		-----		-----	2130	IP540	<1		-----
970	D381	0.80		0.03	6041	D381	0.4		-0.33
974	IP540	0.80		0.03	6054	IP540	0.5		-0.24
994		-----		-----	6075	D381	0.6		-0.15
995		-----		-----	6103	D381	0.6		-0.15
996		-----		-----	6135		-----		-----
997		-----		-----	6139		-----		-----
998	D381	0.8		0.03	6142		-----		-----
1011		-----		-----	6168		-----		-----
1016		-----		-----	6201	D381	<1		-----
1019		-----		-----	6238		-----		-----
1023	IP540	0.6		-0.15	6262	D381	0		-0.68
1039	ISO6246	1		0.21	6266		-----		-----
1049	D381	0.6		-0.15	6312		-----		-----
1059	D381	<1		-----	6321	IP540	<1		-----

lab	method	value	mark	z(targ)
6324	D381	<1		-----
6331		-----		-----
6332		-----		-----
6344		-----		-----

normality	OK
n	83
outliers	2
mean (n)	0.768
st.dev. (n)	0.3601
R(calc.)	1.008
st.dev.(D381:19)	1.1270
R(D381:19)	3.156

Lab 62 first reported 14





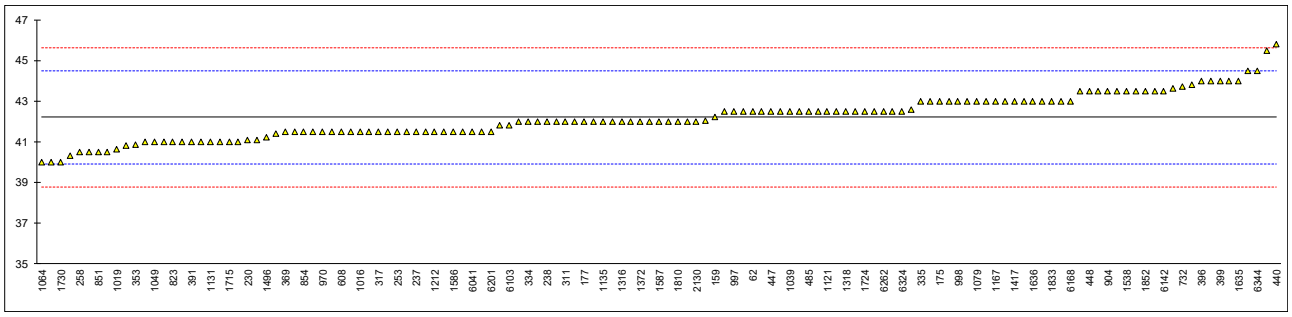
Determination of Flash Point on sample #20150; results in °C

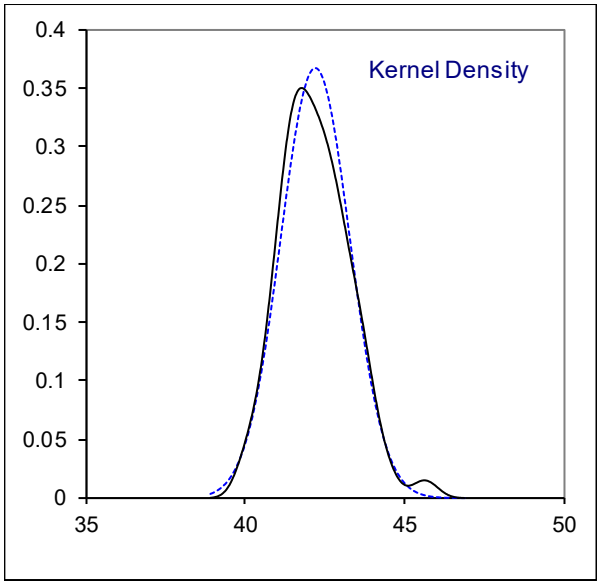
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D56	42.5		0.26	1062	IP170	41.5		-0.61
62	D56	42.5		0.26	1064	IP170	40.0		-1.93
120	D56	41.1		-0.96	1065	IP170	41.5		-0.61
140		-----		-----	1079	IP170	43.0		0.70
150	D56	41.0		-1.05	1082	IP170	42.5		0.26
159	D56	42.2		0.00	1097	ISO13736	41.4		-0.70
169	D56	43.5		1.14	1105	IP170	40.3		-1.66
171	D56	40.5		-1.49	1109	IP170	41.0		-1.05
175	D56	43		0.70	1121	IP170	42.5		0.26
177	D56	42.0	C	-0.18	1126		-----		-----
221	IP170	45.5		2.89	1131	D56	41.0		-1.05
224	IP170	42.03		-0.15	1135	IP170	42.0		-0.18
225	IP170	42.0		-0.18	1140	IP170	41.5		-0.61
228	IP170	44.0		1.57	1141	IP170	43.0		0.70
230	IP170	41.1		-0.96	1150	ISO2719	43.5		1.14
237	IP170	41.5		-0.61	1167	ISO2719	43.0		0.70
238	IP170	42.0		-0.18	1182		-----	W	-----
253	IP170	41.5		-0.61	1191	ISO13736	44.0		1.57
254	IP170	41.5		-0.61	1212	IP170	41.5		-0.61
256		-----		-----	1237	D56	42.5		0.26
258	IP170	40.5		-1.49	1275	IP170	40.5		-1.49
273	IP170	42		-0.18	1277		-----		-----
311	IP170	42.0		-0.18	1279	IP170	42.0		-0.18
317	IP170	41.5		-0.61	1299	IP170	43.0		0.70
323	IP170	42.5		0.26	1300	IP170	41.0		-1.05
333	IP170	42.0		-0.18	1316	IP170	42.0		-0.18
334	IP170	42.0		-0.18	1318	IP170	42.5		0.26
335	IP170	43.0		0.70	1320	D56	41.5		-0.61
336		-----		-----	1357	IP170	42.0	C	-0.18
353	IP170	40.875		-1.16	1372	IP170	42		-0.18
369	IP170	41.5		-0.61	1397	D56	42.0		-0.18
370	IP170	41.5		-0.61	1399		-----		-----
372	IP170	42.5		0.26	1417	IP170	43.0		0.70
391	IP170	41.0		-1.05	1433	D93	43.8		1.40
396	IP170	44.0		1.57	1455	IP170	43.0		0.70
399	IP170	44.0		1.57	1496	IP170	41.2		-0.88
440	IP170	45.8		3.15	1538	D56	43.5		1.14
445	IP170	42.0		-0.18	1575	D56	41.8		-0.35
447	IP170	42.5		0.26	1586	IP170	41.5		-0.61
448	IP170	43.5		1.14	1587	IP170	42.0		-0.18
463	IP170	41.5		-0.61	1610	IP170	43.5		1.14
485	D56	42.5		0.26	1613	D56	42.5		0.26
496	IP170	43.0		0.70	1631		-----		-----
594		-----		-----	1635	D56	44		1.57
603	IP170	42.5		0.26	1636	IP170	43.0		0.70
608	IP170	41.5		-0.61	1715	D56	41		-1.05
631	D56	40.0	C	-1.93	1720		-----		-----
633		-----		-----	1724	IP170	42.5		0.26
657	IP170	41.0		-1.05	1730	D56	40.0		-1.93
732	ISO2719	43.7		1.31	1741	IP170	43		0.70
798		-----		-----	1776	IP170	42.0		-0.18
823	IP170	41.0		-1.05	1810	D56	42.0		-0.18
824	IP170	42.0		-0.18	1811	D56	42.5		0.26
851	IP170	40.5		-1.49	1833	IP170	43.0		0.70
854	IP170	41.5		-0.61	1852	IP170	43.5		1.14
862	IP170	41.0		-1.05	1883	D3828	43		0.70
869	IP170	41.5		-0.61	1913	IP170	42.0		-0.18
904	D56	43.5		1.14	1944	ISO13736	41.5		-0.61
914		-----		-----	1961		-----		-----
962		-----		-----	2129	IP170	41.0		-1.05
963		-----		-----	2130	IP170	42.0		-0.18
970	IP170	41.5		-0.61	6041	IP170	41.5		-0.61
974	IP170	41.5		-0.61	6054	IP170	41.5		-0.61
994	D56	43.5		1.14	6075	IP170	42.6		0.35
995	IP170	42.5		0.26	6103	ISO13736	41.8		-0.35
996		-----		-----	6135	D93	44.5		2.01
997	IP170	42.5		0.26	6139	D93	43.5		1.14
998	IP170	43.0		0.70	6142	ISO2719	43.5		1.14
1011		-----		-----	6168	D56	43.0		0.70
1016	IP170	41.5		-0.61	6201	IP170	41.5		-0.61
1019	ISO3679	40.63		-1.37	6238		-----		-----
1023	ISO13736	43.0		0.70	6262	IP170	42.5		0.26
1039	IP170	42.5		0.26	6266	IP170	43.6		1.22
1049	ISO13736	41.0		-1.05	6312	IP170	40.8		-1.23
1059	IP170	43.0		0.70	6321	IP170	42.5		0.26

lab	method	value	mark	z(targ)
6324	IP170	42.5		0.26
6331		-----		-----
6332		-----		-----
6344	D93	44.5		2.01

normality	OK
n	133
outliers	0
mean (n)	42.20
st.dev. (n)	1.085
R(calc.)	3.04
st.dev.(IP170:14)	1.143
R(IP170:14)	3.2

Lab 177 first reported 46.5
Lab 631 first reported 38.5
Lab 1182 test result withdrawn. First reported 46
Lab 1357 first reported 42.8





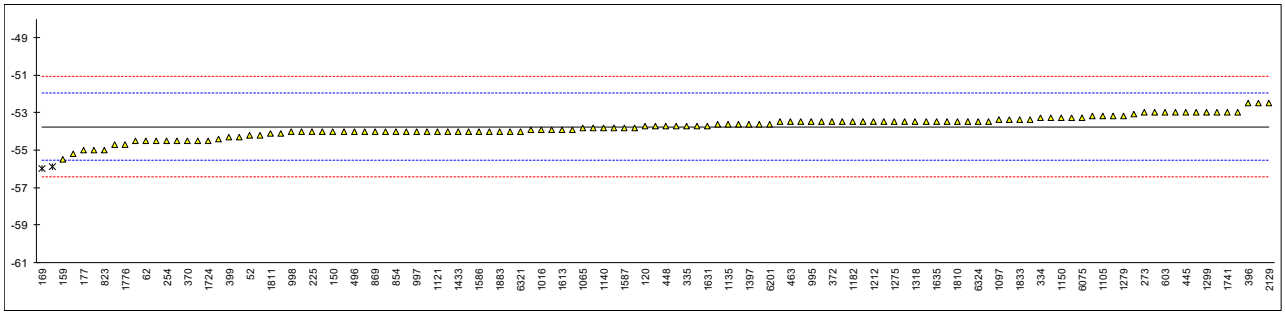
Determination of Freezing Point on sample #20150; results in °C

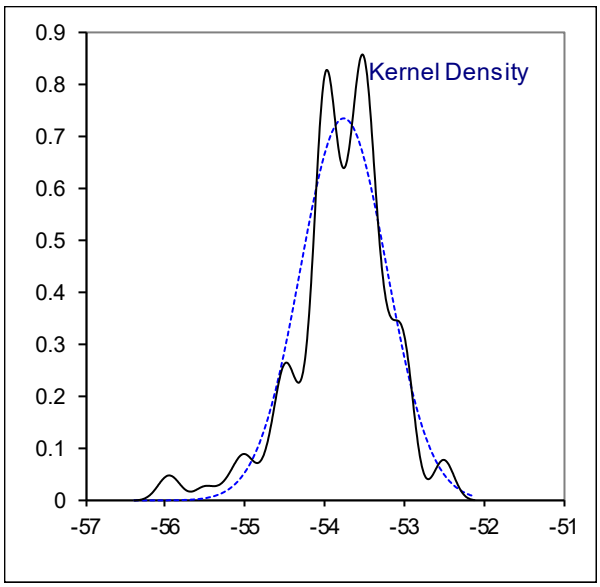
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D5972	-54.2		-0.50	1062	D2386	-53.9		-0.16
62	D5972	-54.5		-0.83	1064	D7153	-53.6		0.18
120	D5972	-53.7		0.06	1065	D7153	-53.8		-0.05
140	D5972	-55.9	R(0.05)	-2.40	1079	D5972	-54.7		-1.06
150	D7153	-54.0		-0.27	1082	IP529	-53.7		0.06
159	D2386	-55.5		-1.95	1097	IP529	-53.4		0.40
169	D2386	-56.0	R(0.05)	-2.51	1105	D7153	-53.2		0.62
171	D2386	-54.0		-0.27	1109	D5972	-54.0		-0.27
175		-----		-----	1121	IP16	-54		-0.27
177	D2386	-55.0		-1.39	1126		-----		-----
221	D2386	-54		-0.27	1131	D7153	-53.7		0.06
224		-----		-----	1135	D7153	-53.6		0.18
225	D2386	-54.0		-0.27	1140	D7153	-53.8		-0.05
228		-----		-----	1141	D7153	-53.2		0.62
230	D2386	-55.2		-1.62	1150	D2386	-53.3		0.51
237	D2386	-53.0		0.85	1167		-----		-----
238		-----		-----	1182	D5972	-53.5		0.29
253	D7153	-53.2		0.62	1191	IP529	-53.5		0.29
254	D2386	-54.5	C	-0.83	1212	D2386	-53.5		0.29
256		-----		-----	1237	D2386	-53.5		0.29
258	D2386	-55	C	-1.39	1275	IP529	-53.5		0.29
273	D2386	-53		0.85	1277		-----		-----
311	D2386	-54.0		-0.27	1279	D7153	-53.2		0.62
317	D5972	-54.2		-0.50	1299	D2386	-53.0		0.85
323	D2386	-53.5		0.29	1300	D2386	-53.5		0.29
333		-----		-----	1316	D7153	-54.0		-0.27
334	IP529	-53.3		0.51	1318	D7153	-53.5		0.29
335	IP529	-53.7		0.06	1320	D2386	-53.6		0.18
336		-----		-----	1357	D2386	-53.4		0.40
353	IP16	-54.5		-0.83	1372	D7153	-53.5		0.29
369	D2386	-54.5		-0.83	1397	D7153	-53.6		0.18
370	D2386	-54.5		-0.83	1399		-----		-----
372	D2386	-53.5		0.29	1417		-----		-----
391	D2386	-54.5		-0.83	1433	D7153	-54.0		-0.27
396	D2386	-52.5		1.41	1455	D2386	-54.0		-0.27
399	D7153	-54.3		-0.61	1496	D2386	-53.0		0.85
440		-----		-----	1538	D2386	-53.8		-0.05
445	D2386	-53.0		0.85	1575		-----		-----
447	D2386	-54.0		-0.27	1586	D2386	-54.0		-0.27
448	IP529	-53.7		0.06	1587	IP529	-53.8		-0.05
463	D2386	-53.5		0.29	1610	IP435	-54.4		-0.72
485		-----		-----	1613	D7153	-53.9		-0.16
496	D2386	-54		-0.27	1631	D7153	-53.7		0.06
594		-----		-----	1635	D7153	-53.5		0.29
603	D2386	-53.0		0.85	1636	D2386	-53.5		0.29
608	D2386	-52.5		1.41	1715	D5972	-53.6		0.18
631	D5972	-53.7		0.06	1720		-----		-----
633		-----		-----	1724	D2386	-54.5		-0.83
657	D7153	-54.0		-0.27	1730	D2386	-54.0		-0.27
732		-----		-----	1741	D2386	-53		0.85
798		-----		-----	1776	IP529	-54.7		-1.06
823	D2386	-55.0		-1.39	1810	D2386	-53.5		0.29
824	D2386	-54.5		-0.83	1811	D2386	-54.1		-0.38
851	D7153	-53.3		0.51	1833	IP435	-53.4		0.40
854	D2386	-54.0		-0.27	1852	D7153	-53.4		0.40
862	D2386	-53.5		0.29	1883	D2386	-54		-0.27
869	D2386	-54.0		-0.27	1913	D2386	-53.0		0.85
904		-----		-----	1944		-----		-----
914		-----		-----	1961		-----		-----
962		-----		-----	2129	D2386	-52.5		1.41
963		-----		-----	2130	D7153	-53.3		0.51
970	D2386	-53.0		0.85	6041	D7153	-53.8		-0.05
974	D2386	-53.5		0.29	6054	D7153	-54.3		-0.61
994	D2386	-54		-0.27	6075	IP529	-53.3		0.51
995	D2386	-53.5		0.29	6103	D7153	-54.1		-0.38
996		-----		-----	6135	D2386	-54.0		-0.27
997	D2386	-54.0		-0.27	6139	D7153	-53.1		0.74
998	D2386	-54.0		-0.27	6142		-----		-----
1011		-----		-----	6168	D7153	-53.9		-0.16
1016	D5972	-53.9		-0.16	6201	D2386	-53.6		0.18
1019		-----		-----	6238		-----		-----
1023	IP529	-53.8		-0.05	6262		-----		-----
1039	IP529	-53.5		0.29	6266		-----		-----
1049	D7153	-53.9		-0.16	6312	D7153	-53.5		0.29
1059	D2386	-53.0		0.85	6321	D5972	-54.0		-0.27

lab	method	value	mark	z(targ)
6324	D2386	-53.5		0.29
6331		-----		-----
6332		-----		-----
6344	D2386	-53.5		0.29

normality	OK
n	117
outliers	2
mean (n)	-53.76
st.dev. (n)	0.544
R(calc.)	1.52
st.dev.(D2386:19)	0.893
R(D2386:19)	2.5

Lab 254 first reported -57.0
Lab 258 first reported -57



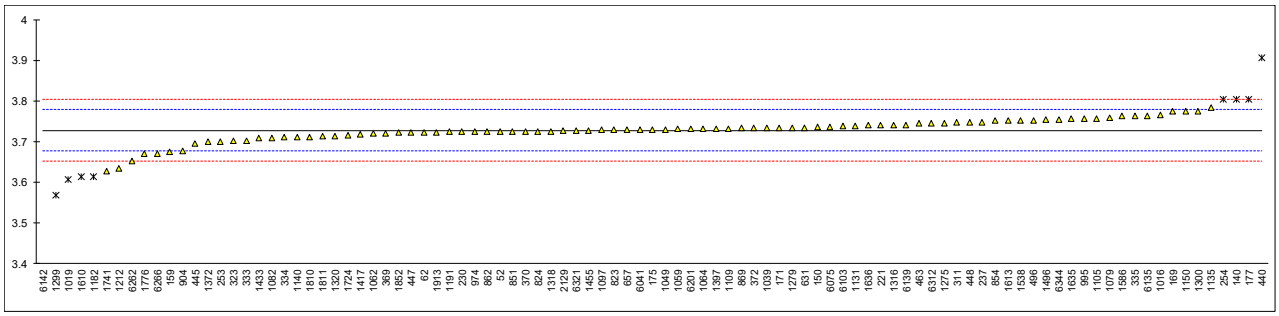


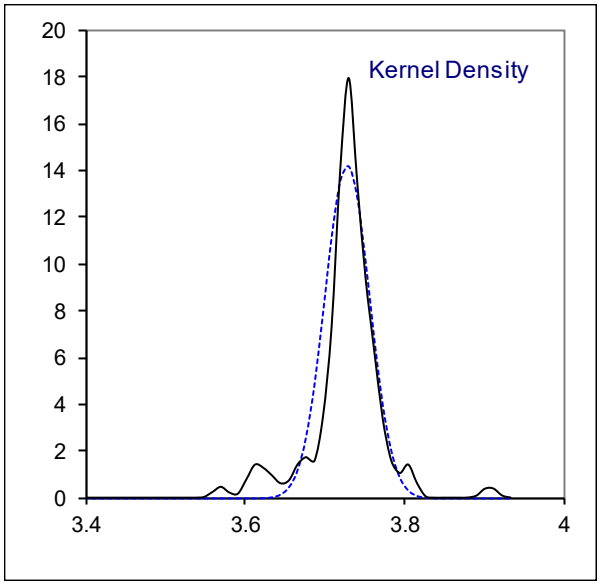
Determination of Kinematic Viscosity at -20°C on sample #20150; results in mm²/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D445	3.724		-0.16	1062	D445	3.720		-0.32
62	D445	3.723		-0.20	1064	D445	3.732		0.16
120		-----		-----	1065		-----		-----
140	D445	3.804	R(0.05)	3.01	1079	D445	3.7587		1.21
150	D445	3.735		0.28	1082	D445	3.70920775		-0.74
159	D445	3.675		-2.09	1097	ISO3104	3.728		0.00
169	D445	3.7735	C	1.80	1105	D445	3.7570		1.15
171	D445	3.733		0.20	1109	D445	3.7324		0.18
175	D445	3.7299		0.08	1121		-----		-----
177	D445	3.805	R(0.05)	3.04	1126		-----		-----
221	D445	3.740		0.48	1131	D445	3.7384		0.41
224		-----		-----	1135	D445	3.783		2.18
225		-----		-----	1140	IP71	3.712		-0.63
228		-----		-----	1141		-----		-----
230	D445	3.724	C	-0.16	1150	ISO3104	3.77428		1.83
237	D445	3.747		0.75	1167		-----		-----
238		-----		-----	1182	D7042	3.6143	C,R(0.05)	-4.49
253	D445	3.70		-1.11	1191	ISO3104	3.72372		-0.17
254	D445	3.8036	R(0.05)	2.99	1212	D7042	3.6330		-3.75
256		-----		-----	1237		-----		-----
258		-----		-----	1275	IP71	3.7450		0.67
273		-----		-----	1277		-----		-----
311	D445	3.747		0.75	1279	D445	3.733		0.20
317		-----		-----	1299	D445	3.569	R(0.01)	-6.28
323	D445	3.701		-1.07	1300	D7042	3.7751		1.86
333	D445	3.703		-0.99	1316	D445	3.740		0.48
334	D445	3.711		-0.67	1318	D7042	3.725		-0.12
335	D445	3.763		1.38	1320	D445	3.713		-0.59
336		-----		-----	1357	D445	n.a		-----
353		-----		-----	1372	D445	3.6989	C	-1.15
369	D445	3.720		-0.32	1397	D7042	3.732		0.16
370	D445	3.725		-0.12	1399		-----		-----
372	D445	3.733		0.20	1417	D445	3.718		-0.39
391		-----		-----	1433	D445	3.708801		-0.76
396		-----		-----	1455	D7042	3.727		-0.04
399		-----		-----	1496	D445	3.7537		1.02
440	D445	3.9062	R(0.01)	7.05	1538	D445	3.752		0.95
445	D7042	3.6947		-1.32	1575		-----		-----
447	D445	3.723		-0.20	1586	D445	3.7625		1.36
448	D445	3.747		0.75	1587		-----		-----
463	D7042	3.7440		0.63	1610	D7042	3.6132	R(0.05)	-4.54
485		-----		-----	1613	D445	3.7513		0.92
496	D445	3.7529		0.99	1631		-----		-----
594		-----		-----	1635	D445	3.756		1.11
603		-----		-----	1636	D445	3.7396		0.46
608		-----		-----	1715		-----		-----
631	D445	3.7338		0.23	1720		-----		-----
633		-----		-----	1724	D445	3.715		-0.51
657	D445	3.729		0.04	1730		-----		-----
732		-----		-----	1741	D445	3.627		-3.99
798		-----		-----	1776	D445	3.6698		-2.30
823	D445	3.729		0.04	1810	D445	3.712		-0.63
824	D445	3.725		-0.12	1811	D445	3.7124		-0.62
851	D445	3.725		-0.12	1833		-----		-----
854	D445	3.7510		0.91	1852	D445	3.7223		-0.22
862	D445	3.724		-0.16	1883		-----		-----
869	D445	3.733		0.20	1913	D445	3.723		-0.20
904	D445	3.678		-1.98	1944		-----		-----
914		-----		-----	1961		-----		-----
962		-----		-----	2129	D445	3.726		-0.08
963		-----		-----	2130		-----		-----
970		-----		-----	6041	D445	3.729		0.04
974	D445	3.724		-0.16	6054		-----		-----
994		-----		-----	6075	D445	3.735		0.28
995	D445	3.757		1.15	6103	ISO3104	3.738		0.40
996		-----		-----	6135	D445	3.764		1.42
997		-----		-----	6139	D445	3.740		0.48
998		-----		-----	6142	ISO3104	1.234	R(0.01)	-98.59
1011		-----		-----	6168		-----		-----
1016	D445	3.7647		1.45	6201	D445	3.7311		0.12
1019	EN16896	3.6056	R(0.05)	-4.84	6238		-----		-----
1023		-----		-----	6262	D445	3.652		-3.00
1039	ISO3104	3.733		0.20	6266	D7042	3.6698		-2.30
1049	D445	3.730		0.08	6312	IP71	3.74489625		0.67
1059	D445	3.731		0.12	6321	IP71	3.726		-0.08

lab	method	value	mark	z(targ)
6324		-----		-----
6331		-----		-----
6332		-----		-----
6344	D445	3.755		1.07
	normality	not OK		
	n	88		
	outliers	9		
	mean (n)	3.7280		
	st.dev. (n)	0.02804		
	R(calc.)	0.0785		
	st.dev.(D445:19)	0.02530		
	R(D445:19)	0.0708		
Compare				
	R(D445:19a)	0.0183		

Lab 169 first reported 3.438
Lab 230 first reported 3.455
Lab 1182 first reported 3.5478
Lab 1372 first reported 3.5474





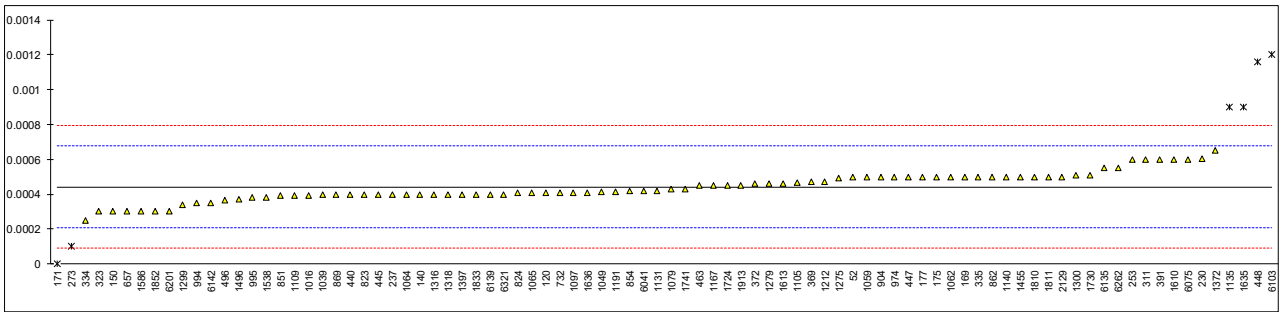
Determination of Mercaptan Sulfur as S on sample #20150; converted results to %M/M

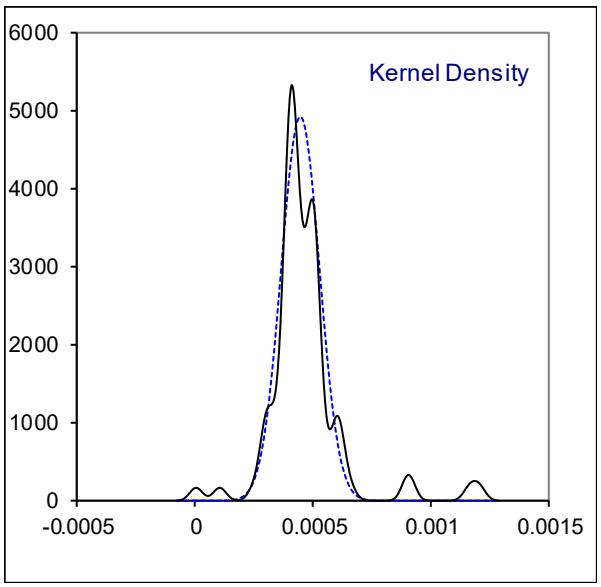
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3227	0.0005		0.50	1062	D3227	0.0005		0.50
62		-----		-----	1064	D3227	0.00040		-0.35
120	D3227	0.00041		-0.27	1065	D3227	0.00041		-0.27
140	D3227	0.0004		-0.35	1079	D3227	0.00043		-0.10
150	D3227	0.0003		-1.21	1082		-----		-----
159		-----		-----	1097	ISO3012	0.00041		-0.27
169	D3227	0.0005		0.50	1105	D3227	0.000465		0.20
171	D3227	0.0000	R(0.01)	-3.76	1109	D3227	0.00039		-0.44
175	D3227	0.0005		0.50	1121		-----		-----
177	D3227	0.0005		0.50	1126		-----		-----
221		-----		-----	1131	D3227	0.000421		-0.18
224		-----		-----	1135	D3227	0.0009	R(0.01)	3.91
225		-----		-----	1140	IP342	0.0005		0.50
228		-----		-----	1141		-----		-----
230	D3227	0.0006048		1.39	1150		-----		-----
237	D3227	0.0004		-0.35	1167	ISO3012	0.00045		0.07
238		-----		-----	1182		-----		-----
253	D3227	0.0006		1.35	1191	ISO3012	0.000414		-0.24
254		-----		-----	1212	D3227	0.00047		0.24
256		-----		-----	1237		-----		-----
258		-----		-----	1275	IP342	0.0004909		0.42
273	D3227	0.0001	R(0.01)	-2.91	1277		-----		-----
311	D3227	0.0006		1.35	1279	D3227	0.00046		0.16
317		-----		-----	1299	D3227	0.00034		-0.87
323	D3227	0.0003		-1.21	1300	D3227	0.00051		0.58
333		-----		-----	1316	D3227	0.0004	C	-0.35
334	D3227	0.00025		-1.63	1318	D3227	0.0004		-0.35
335	D3227	0.0005		0.50	1320		-----		-----
336		-----		-----	1357	D3227	n.a		-----
353		-----		-----	1372	D3227	0.00065		1.78
369	D3227	0.00047		0.24	1397	D3227	0.0004		-0.35
370		-----		-----	1399		-----		-----
372	D3227	0.00046		0.16	1417		-----		-----
391	D3227	0.0006		1.35	1433		-----		-----
396		-----		-----	1455	D3227	0.0005		0.50
399		-----		-----	1496	D3227	0.00037		-0.61
440	D3227	0.0004		-0.35	1538	D3227	0.00038		-0.53
445	D3227	0.0004		-0.35	1575		-----		-----
447	D3227	0.0005		0.50	1586	D3227	0.0003		-1.21
448	D3227	0.00116	R(0.01)	6.12	1587		-----		-----
463	D3227	0.00045		0.07	1610	IP342	0.0006	C	1.35
485		-----		-----	1613	D3227	0.00046		0.16
496	D3227	0.000365		-0.65	1631		-----		-----
594		-----		-----	1635	D3227	0.0009	R(0.01)	3.91
603		-----		-----	1636	D3227	0.00041		-0.27
608		-----		-----	1715		-----		-----
631		-----		-----	1720		-----		-----
633		-----		-----	1724	D3227	0.00045		0.07
657	D3227	0.0003		-1.21	1730	D3227	0.00051		0.58
732	D3227	0.00041		-0.27	1741	D3227	0.00043		-0.10
798		-----		-----	1776		-----		-----
823	D3227	0.0004		-0.35	1810	D3227	0.0005		0.50
824	D3227	0.00041		-0.27	1811	D3227	0.00050		0.50
851	D3227	0.00039		-0.44	1833	D3227	0.0004		-0.35
854	D3227	0.00042		-0.18	1852	D3227	0.0003		-1.21
862	D3227	0.0005		0.50	1883		-----		-----
869	D3227	0.0004		-0.35	1913	D3227	0.00045		0.07
904	D3227	0.0005		0.50	1944		-----		-----
914		-----		-----	1961		-----		-----
962		-----		-----	2129	D3227	0.0005		0.50
963		-----		-----	2130		-----		-----
970		-----		-----	6041	D3227	0.00042		-0.18
974	D3227	0.0005		0.50	6054		-----		-----
994	D3227	0.00035		-0.78	6075	D3227	0.0006		1.35
995	D3227	0.00038		-0.53	6103	D3227	0.0012	R(0.01)	6.46
996		-----		-----	6135	D3227	0.00055		0.92
997		-----		-----	6139	D3227	0.0004		-0.35
998		-----		-----	6142	IP342	0.00035		-0.78
1011		-----		-----	6168		-----		-----
1016	D3227	0.000393		-0.41	6201	D3227	0.0003	C	-1.21
1019		-----		-----	6238		-----		-----
1023		-----		-----	6262	D3227	0.00055	C	0.92
1039	UOP163	0.0004		-0.35	6266		-----		-----
1049	D3227	0.000411		-0.26	6312		-----		-----
1059	D3227	0.0005		0.50	6321	IP342	0.0004		-0.35

lab	method	value	mark	z(targ)
6324		-----		-----
6331		-----		-----
6332		-----		-----
6344		-----		-----

normality	OK
n	82
outliers	6
mean (n)	0.000442
st.dev. (n)	0.0000811
R(calc.)	0.000227
st.dev.(D3227:16)	0.0001173
R(D3227:16)	0.000329

Lab 1316 first reported 0.0004 mg/kg
Lab 1610 first reported 0.0006 mg/kg
Lab 6201 first reported 3 without a unit
Lab 6262 first reported 5.5 without a unit





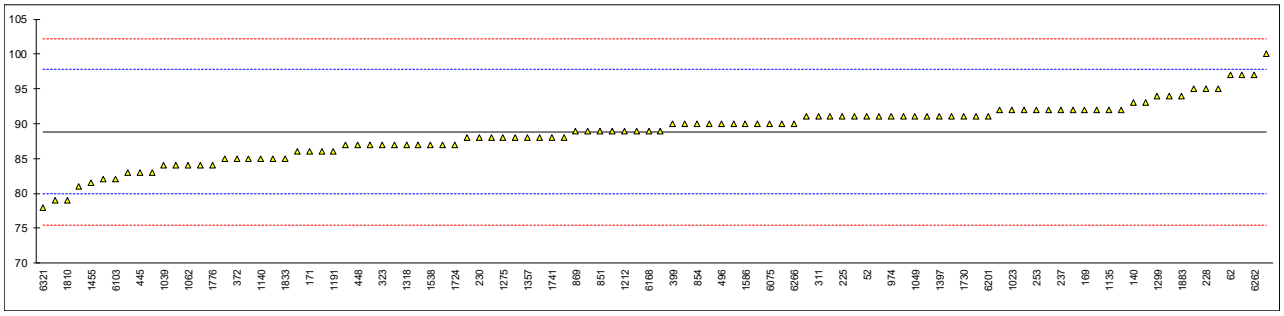
Determination of MSEP on sample #20150;

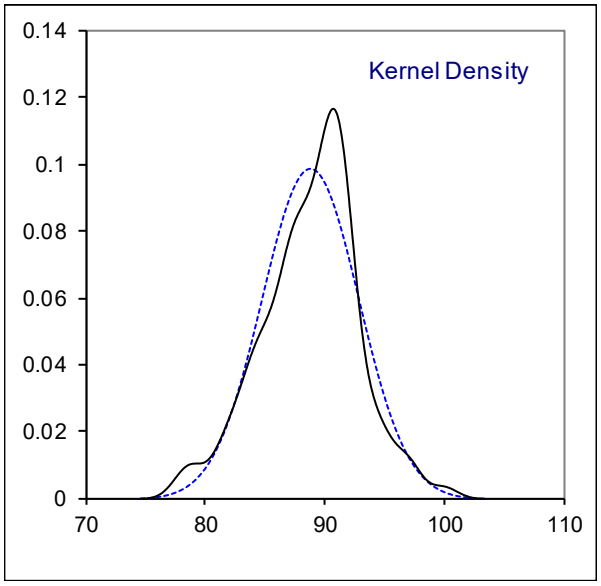
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3948	91		0.48	1062	D3948	84		-1.08
62	D3948	97		1.83	1064	D7224	87		-0.41
120		-----		-----	1065		-----		-----
140	D3948	93		0.93	1079	D3948	90		0.26
150	D3948	86		-0.64	1082	D3948	92		0.71
159		-----		-----	1097	D7224	88		-0.19
169	D3948	92		0.71	1105	D7224	92		0.71
171	D3948	86		-0.64	1109	D3948	86		-0.64
175		-----		-----	1121	D3948	85		-0.86
177	D3948	91		0.48	1126		-----		-----
221	D3948	87		-0.41	1131	D3948	88		-0.19
224		-----		-----	1135	D7224	92		0.71
225	D3948	91		0.48	1140	D3948	85		-0.86
228	D3948	95		1.38	1141	D3948	89		0.04
230	D7224	88		-0.19	1150		-----		-----
237	D3948	92		0.71	1167		-----		-----
238		-----		-----	1182		-----		-----
253	D3948	92		0.71	1191	D3948	86		-0.64
254	D3948	92		0.71	1212	D7224	89		0.04
256		-----		-----	1237		-----		-----
258	D3948	100		2.50	1275	D3948	88		-0.19
273		-----		-----	1277		-----		-----
311	D7224	91		0.48	1279	D7224	92		0.71
317	D7224	91		0.48	1299	D3948	94		1.16
323	D3948	87		-0.41	1300	D3948	93		0.93
333	D7224	90		0.26	1316	D3948	79		-2.21
334	D7224	91		0.48	1318	D3948	87		-0.41
335	D7224	92		0.71	1320	D3948	88		-0.19
336		-----		-----	1357	D3948	88		-0.19
353	D7224	90		0.26	1372	D3948	95		1.38
369	D7224	91		0.48	1397	D7224	91		0.48
370		-----		-----	1399		-----		-----
372	D3948	85		-0.86	1417		-----		-----
391		-----		-----	1433	D3948	88		-0.19
396	D3948	84		-1.08	1455	D3948	81.5		-1.65
399	D3948	90		0.26	1496	D3948	87		-0.41
440	D7224	91		0.48	1538	D3948	87		-0.41
445	D3948	83		-1.31	1575		-----		-----
447	D3948	87		-0.41	1586	D3948	90		0.26
448	D3948	87		-0.41	1587	D7224	87		-0.41
463	D3948	81.0		-1.76	1610	D7224	91		0.48
485		-----		-----	1613	D3948	94		1.16
496	D3948	90		0.26	1631	D3948	84		-1.08
594		-----		-----	1635	D3948	89		0.04
603		-----		-----	1636		-----		-----
608		-----		-----	1715		-----		-----
631	D7224	89		0.04	1720		-----		-----
633		-----		-----	1724	D3948	87		-0.41
657	D3948	95		1.38	1730	D3948	91		0.48
732		-----		-----	1741	D3948	88		-0.19
798		-----		-----	1776	D3948	84		-1.08
823	D3948	82	C	-1.53	1810	D3948	79		-2.21
824	D3948	83		-1.31	1811	D3948	85		-0.86
851	D7224	89		0.04	1833	D3948	85		-0.86
854	D3948	90		0.26	1852	D3948	91		0.48
862	D3948	91		0.48	1883	D3948	94		1.16
869	D3948	89		0.04	1913	D3948	90		0.26
904		-----		-----	1944		-----		-----
914		-----		-----	1961	D3948	88		-0.19
962		-----		-----	2129		-----		-----
963		-----		-----	2130		-----		-----
970	D3948	92		0.71	6041	D3948	83		-1.31
974	D7224	91		0.48	6054	D3948	97		1.83
994		-----		-----	6075	D3948	90		0.26
995		-----		-----	6103	D7224	82		-1.53
996		-----		-----	6135		-----		-----
997		-----		-----	6139	D7224	90		0.26
998		-----		-----	6142		-----		-----
1011		-----		-----	6168	D3948	89		0.04
1016		-----		-----	6201	D3948	91		0.48
1019		-----		-----	6238		-----		-----
1023	D3948	92		0.71	6262	D3948	97		1.83
1039	D3948	84		-1.08	6266	D3948	90		0.26
1049	D7224	91		0.48	6312		-----		-----
1059	D3948	85		-0.86	6321	D3948	78		-2.43

lab	method	value	mark	z(targ)
6324	D3948	89		0.04
6331		-----		-----
6332		-----		-----
6344		-----		-----

normality	OK
n	102
outliers	0
mean (n)	88.84
st.dev. (n)	4.045
R(calc.)	11.33
st.dev.(D3948:20)	4.459
R(D3948:20)	12.49

Lab 823 first reported 70





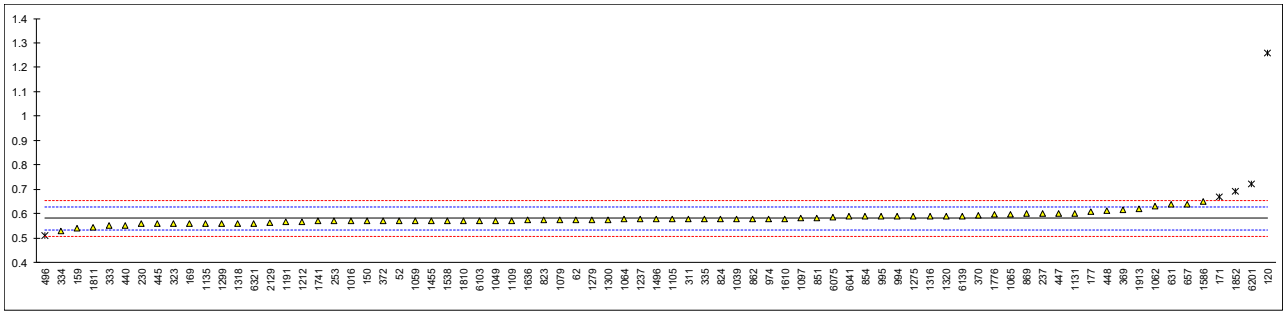
Determination of Naphthalenes on sample #20150; results in %V/V

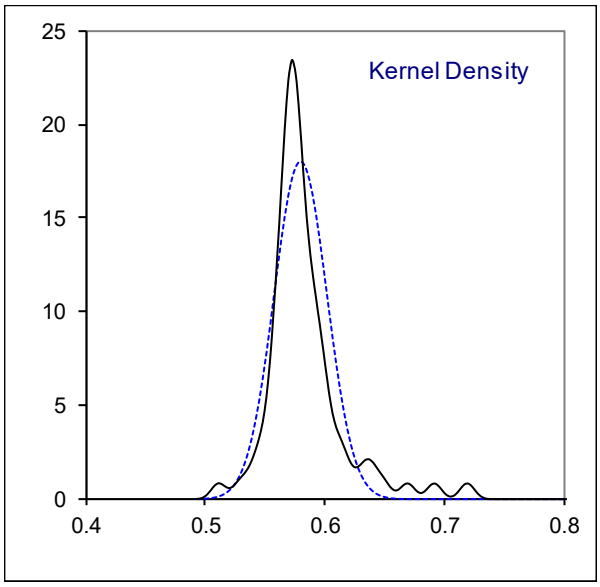
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D1840-B	0.57		-0.44	1062	D1840-A	0.63		2.04
62	D1840-A	0.575		-0.23	1064	D1840-A	0.577		-0.15
120	D1840-B	1.260	R(0.01)	28.05	1065	D1840-A	0.599		0.76
140		-----		-----	1079	D1840-A	0.574	C	-0.27
150	D1840-B	0.57		-0.44	1082		-----		-----
159	D1840-B	0.54	C	-1.67	1097	D1840-A	0.581		0.02
169	D1840-B	0.56		-0.85	1105	D1840-A	0.5786	C	-0.08
171	D1840-B	0.67	C,R(0.05)	3.69	1109	D1840-B	0.572		-0.35
175		-----		-----	1121		-----		-----
177	D1840-B	0.61		1.22	1126		-----		-----
221		-----		-----	1131	D1840-B	0.602		0.89
224		-----		-----	1135	D1840-B	0.56		-0.85
225		-----		-----	1140		-----		-----
228		-----		-----	1141		-----		-----
230	D1840-B	0.5594		-0.87	1150		-----		-----
237	D1840-B	0.60		0.80	1167		-----		-----
238		-----		-----	1182		-----		-----
253	D1840-B	0.57		-0.44	1191	D1840-A	0.5673		-0.55
254		-----		-----	1212	D1840-B	0.568		-0.52
256		-----		-----	1237	D1840-B	0.577		-0.15
258		-----		-----	1275	D1840-A	0.59		0.39
273		-----		-----	1277		-----		-----
311	D1840-B	0.58		-0.02	1279	D1840-B	0.575		-0.23
317		-----		-----	1299	D1840-A	0.56		-0.85
323	D1840-A	0.56		-0.85	1300	D1840-B	0.5759		-0.19
333	D1840-B	0.55		-1.26	1316	D1840-B	0.59		0.39
334	D1840-A	0.53		-2.09	1318	D1840-A	0.56		-0.85
335	D1840-B	0.58		-0.02	1320	D1840-B	0.59		0.39
336		-----		-----	1357	D1840-A	n.a		-----
353		-----		-----	1372		-----		-----
369	D1840-B	0.615		1.42	1397		-----		-----
370	D1840-B	0.594		0.56	1399		-----		-----
372	D1840-B	0.57		-0.44	1417		-----		-----
391		-----		-----	1433		-----		-----
396		-----		-----	1455	D1840-B	0.57	C	-0.44
399		-----		-----	1496	D1840-B	0.5785		-0.08
440	D1840-B	0.55		-1.26	1538	D1840-B	0.57		-0.44
445	D1840-A	0.56		-0.85	1575		-----		-----
447	D1840-B	0.60		0.80	1586	D1840-B	0.65		2.87
448	D1840-A	0.6117		1.29	1587		-----		-----
463		-----		-----	1610	D1840-B	0.58		-0.02
485		-----		-----	1613		-----		-----
496	D1840-B	0.512	R(0.05)	-2.83	1631		-----		-----
594		-----		-----	1635		-----		-----
603		-----		-----	1636	D1840-B	0.573		-0.31
608		-----		-----	1715		-----		-----
631	D1840-A	0.637		2.33	1720		-----		-----
633		-----		-----	1724		-----		-----
657	D1840-A	0.64		2.45	1730		-----		-----
732		-----		-----	1741	D1840-A	0.569		-0.48
798		-----		-----	1776	D1840-A	0.5984		0.74
823	D1840-A	0.574		-0.27	1810	D1840-A	0.57		-0.44
824	D1840-B	0.58		-0.02	1811	D1840-A	0.5455		-1.45
851	D1840-A	0.5821		0.06	1833		-----		-----
854	D1840-A	0.59		0.39	1852	D1840-A	0.6924	C,R(0.01)	4.62
862	D1840-B	0.58		-0.02	1883		-----		-----
869	D1840-A	0.60		0.80	1913	D1840-B	0.620		1.63
904		-----		-----	1944		-----		-----
914		-----		-----	1961		-----		-----
962		-----		-----	2129	D1840-B	0.5647		-0.65
963		-----		-----	2130		-----		-----
970		-----		-----	6041	D1840-B	0.589		0.35
974	D1840-A	0.58		-0.02	6054		-----		-----
994	D1840-A	0.59		0.39	6075	D1840-B	0.584		0.14
995	D1840-B	0.59		0.39	6103	D1840-B	0.57		-0.44
996		-----		-----	6135		-----		-----
997		-----		-----	6139	D1840-B	0.59		0.39
998		-----		-----	6142		-----		-----
1011		-----		-----	6168		-----		-----
1016	D1840-B	0.57		-0.44	6201	D1840-A	0.72	C,R(0.01)	5.76
1019		-----		-----	6238		-----		-----
1023		-----		-----	6262		-----		-----
1039	D1840-A	0.58		-0.02	6266		-----		-----
1049	D1840-A	0.572		-0.35	6312		-----		-----
1059	D1840-B	0.57		-0.44	6321	D1840-B	0.56		-0.85

lab	method	value	mark	z(targ)
6324		-----		-----
6331		-----		-----
6332		-----		-----
6344		-----		-----

	normality	suspect
	n	72
	outliers	5
	mean (n)	0.5805
	st.dev. (n)	0.02209
	R(calc.)	0.0619
	st.dev.(D1840-B:07)	0.02423
	R(D1840-B:07)	0.0678
Compare		
	R(D1840-A:07)	0.0473

Lab 159 first reported 0.48
Lab 171 first reported 0.05
Lab 1079 first reported 0.488
Lab 1105 first reported 0.7293
Lab 1455 first reported 0.67
Lab 1852 first reported 0.6788
Lab 6201 first reported 0.655





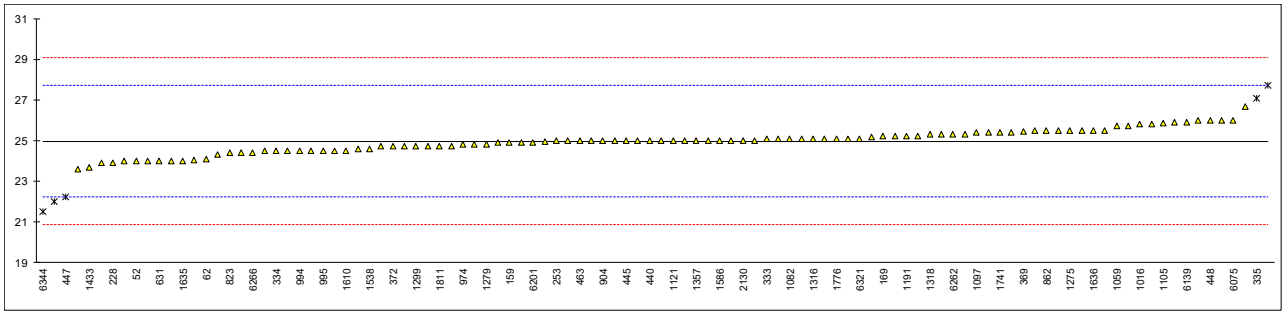
Determination of Smoke Point on sample #20150; results in mm

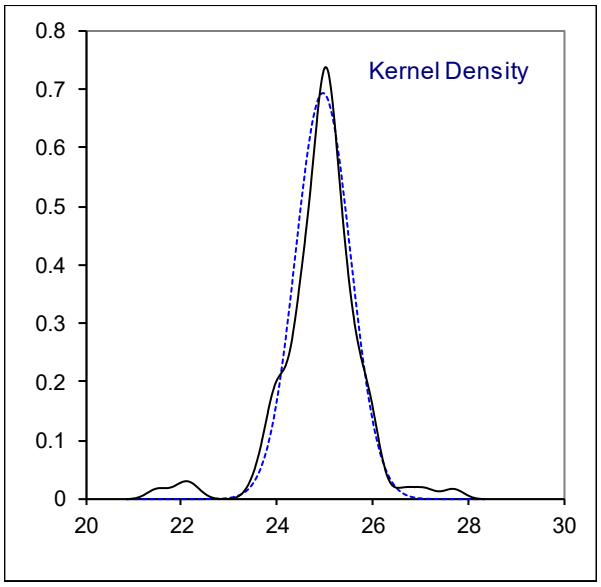
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D1322-manual	24.0		-0.71	1062	D1322-manual	24.0		-0.71
62	D1322-manual	24.1	C	-0.63	1064	D1322-automated	24.9		-0.05
120	D1322-automated	26.0		0.75	1065	IP598-automated	25.2		0.17
140	D1322-automated	24.6		-0.27	1079	D1322-automated	24.7		-0.20
150	D1322-automated	25.1		0.10	1082	D1322-automated	25.1		0.10
159	D1322-automated	24.9		-0.05	1097	D1322-automated	25.4		0.32
169	D1322-automated	25.2		0.17	1105	D1322-automated	25.85		0.64
171	D1322-automated	24.5		-0.34	1109	D1322-manual	25.4		0.32
175		-----		-----	1121	IP57-manual	25.0		0.02
177	D1322-manual	24.5		-0.34	1126		-----		-----
221		-----		-----	1131	D1322-automated	25.1		0.10
224		-----		-----	1135	D1322-manual	24		-0.71
225		-----		-----	1140	D1322-manual	25.0		0.02
228	D1322-automated	23.9		-0.78	1141		-----		-----
230	D1322-manual	25.9		0.68	1150		-----		-----
237	D1322-automated	24.5		-0.34	1167		-----		-----
238		-----		-----	1182		-----		-----
253	D1322-manual	25		0.02	1191	D1322-automated	25.2		0.17
254	D1322-manual	24.0		-0.71	1212	D1322-manual	26		0.75
256		-----		-----	1237		-----		-----
258	D1322-manual	23.8966		-0.78	1275	IP598-automated	25.5		0.39
273		-----		-----	1277		-----		-----
311	D1322-manual	25.5		0.39	1279	D1322-automated	24.8		-0.12
317		-----		-----	1299	D1322-automated	24.7		-0.20
323	D1322-automated	25.0		0.02	1300	D1322-manual	25.17		0.15
333	D1322-automated	25.1		0.10	1316	D1322-automated	25.1		0.10
334	D1322-automated	24.5		-0.34	1318	D1322-automated	25.3		0.24
335	D1322-manual	27.1	R(0.05)	1.56	1320	D1322-manual	24.4		-0.41
336		-----		-----	1357	D1322-manual	25		0.02
353	IP57-manual	25.42		0.33	1372	D1322-automated	25.1		0.10
369	D1322-manual	25.43		0.34	1397	D1322-manual	25		0.02
370		-----		-----	1399		-----		-----
372	D1322-automated	24.7		-0.20	1417		-----		-----
391	D1322-manual	22.0	R(0.01)	-2.17	1433	D1322-manual	23.667		-0.95
396		-----		-----	1455	D1322-manual	24.7		-0.20
399		-----		-----	1496	D1322-automated	24.9		-0.05
440	D1322-manual	25		0.02	1538	D1322-automated	24.6		-0.27
445	D1322-manual	25.0		0.02	1575	D1322-manual	24.05		-0.67
447	D1322-manual	22.22	R(0.01)	-2.01	1586	D1322-manual	25		0.02
448	D1322-manual	26		0.75	1587	D1322-automated	25.2		0.17
463	D1322-manual	25.0		0.02	1610	IP598-manual	24.5		-0.34
485		-----		-----	1613	D1322-automated	25.5		0.39
496	D1322-manual	23.60		-1.00	1631		-----		-----
594		-----		-----	1635	D1322-manual	24		-0.71
603		-----		-----	1636	D1322-automated	25.5		0.39
608		-----		-----	1715	D1322-manual	26.66		1.24
631	D1322-automated	24.0		-0.71	1720		-----		-----
633		-----		-----	1724	D1322-manual	25		0.02
657	D1322-automated	24.5		-0.34	1730	D1322-automated	25.5		0.39
732		-----		-----	1741	D1322-automated	25.4		0.32
798		-----		-----	1776	D1322-automated	25.1		0.10
823	D1322-automated	24.4		-0.41	1810	D1322-automated	25.1		0.10
824	D1322-automated	24.7		-0.20	1811	D1322-automated	24.7		-0.20
851	D1322-manual	25.0		0.02	1833	D1322-automated	25.8		0.61
854	D1322-manual	25.0		0.02	1852	D1322-automated	24.3		-0.49
862	D1322-manual	25.5		0.39	1883		-----		-----
869	D1322-manual	25.5		0.39	1913	D1322-automated	24.95		-0.01
904	D1322-manual	25		0.02	1944	D1322-manual	25.7		0.53
914		-----		-----	1961		-----		-----
962		-----		-----	2129	D1322-manual	27.7	R(0.01)	1.99
963		-----		-----	2130	D1322-automated	25.0		0.02
970	D1322-manual	25.0		0.02	6041	D1322-automated	24.7		-0.20
974	D1322-automated	24.8		-0.12	6054		-----		-----
994	D1322-manual	24.5		-0.34	6075	D1322-automated	26.0		0.75
995	D1322-manual	24.5		-0.34	6103	D1322-automated	25.3		0.24
996		-----		-----	6135		-----		-----
997		-----		-----	6139	D1322-manual	25.9		0.68
998		-----		-----	6142		-----		-----
1011		-----		-----	6168		-----		-----
1016	IP598-automated	25.8		0.61	6201	D1322-automated	24.9		-0.05
1019		-----		-----	6238		-----		-----
1023		-----		-----	6262	D1322-automated	25.3		0.24
1039	D1322-automated	24.8		-0.12	6266	D1322	24.4		-0.41
1049	D1322-automated	25.0		0.02	6312		-----		-----
1059	D1322-manual	25.7		0.53	6321	D1322-automated	25.1		0.10

lab	method	value	mark	z(targ)
6324	D1322-manual	25		0.02
6331	D1322-automated	25.3		0.24
6332		-----		-----
6344	D1322-manual	21.5	R(0.01)	-2.53

			only Manual	only Automated
	normality	OK	OK	OK
	n	101	45	55
	outliers	5	0	5
	mean (n)	24.97	24.92	25.02
	st.dev. (n)	0.575	0.698	0.451
	R(calc.)	1.61	1.96	1.26
	st.dev.(D1322-M:19)	1.370	1.370	---
	R(D1322-M:19)	3.84	3.83	---
Compare				
	R(D1322-A:19)	0.91	---	0.91

Lab 62 first reported 21.4





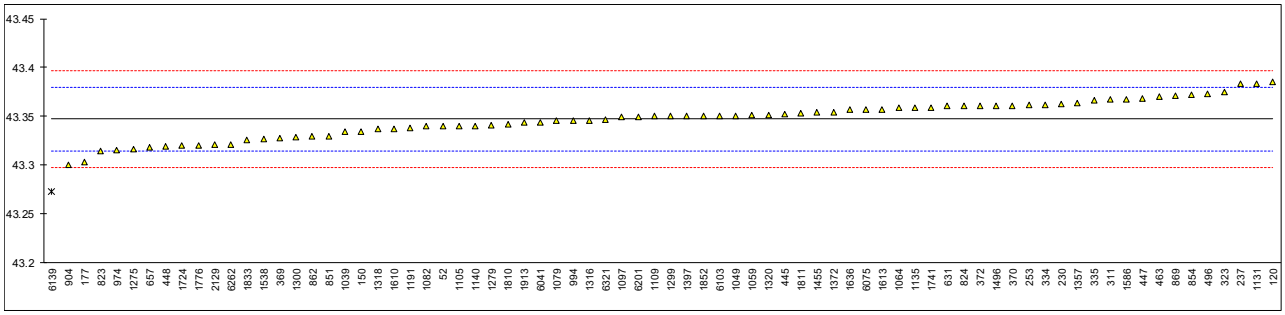
Determination of Specific Energy (Net, on Sulfur free basis) on sample #20150; results in MJ/kg

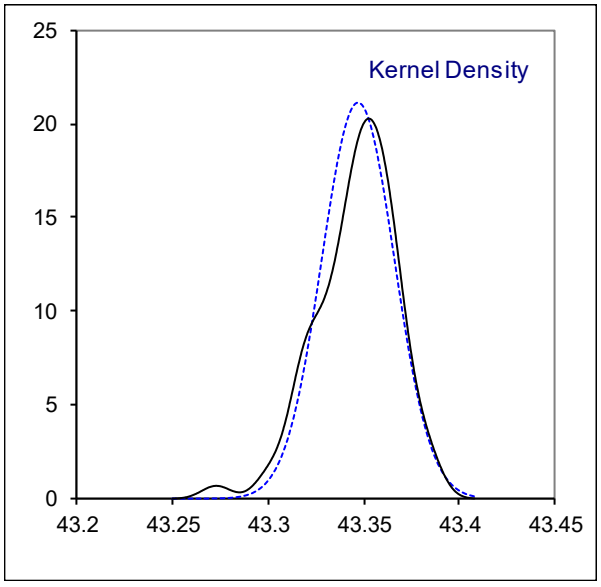
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D3338	43.340		-0.43	1062		-----		-----
62		-----		-----	1064	D3338	43.359		0.73
120	D3338	43.385		2.31	1065		-----		-----
140		-----		-----	1079	D3338	43.346		-0.07
150	D3338	43.334		-0.80	1082	D3338	43.33970		-0.45
159		-----		-----	1097	D3338	43.349		0.12
169		-----		-----	1105	D3338	43.34		-0.43
171		-----		-----	1109	D3338	43.35		0.18
175		-----		-----	1121		-----		-----
177	D3338	43.303		-2.68	1126		-----		-----
221		-----		-----	1131	D4529	43.383		2.19
224		-----		-----	1135	D3338	43.359		0.73
225		-----		-----	1140	D3338	43.3402		-0.42
228		-----		-----	1141		-----		-----
230	D3338	43.363		0.97	1150		-----		-----
237	D3338	43.383		2.19	1167		-----		-----
238		-----		-----	1182		-----		-----
253	D3338	43.3619		0.90	1191	D3338	43.3385		-0.52
254		-----		-----	1212		-----		-----
256		-----		-----	1237		-----		-----
258		-----		-----	1275	D3338	43.316		-1.89
273		-----		-----	1277		-----		-----
311	D3338	43.367		1.21	1279	D3338	43.341		-0.37
317		-----		-----	1299	D3338	43.35		0.18
323	D3338	43.375		1.70	1300	D3338	43.3289		-1.11
333		-----		-----	1316	D3338	43.346		-0.07
334	D3338	43.362		0.91	1318	D3338	43.337		-0.61
335	D3338	43.366		1.15	1320	D3338	43.351		0.24
336		-----		-----	1357	D3338	43.364		1.03
353		-----		-----	1372	D3338	43.3546		0.46
369	D3338	43.328		-1.16	1397	D3338	43.35		0.18
370	D3338	43.3612		0.86	1399		-----		-----
372	D3338	43.361		0.85	1417		-----		-----
391		-----		-----	1433		-----		-----
396		-----		-----	1455	D3338	43.354		0.42
399		-----		-----	1496	D3338	43.361		0.85
440		-----		-----	1538	D3338	43.327		-1.22
445	D3338	43.352		0.30	1575		-----		-----
447	D3338	43.368		1.27	1586	D3338	43.3672		1.22
448	D3338	43.319		-1.71	1587		-----		-----
463	D3338	43.37		1.39	1610	D3338	43.337		-0.61
485		-----		-----	1613	D3338	43.35721		0.62
496	D3338	43.373		1.58	1631		-----		-----
594		-----		-----	1635		-----		-----
603		-----		-----	1636	D3338	43.357		0.60
608		-----		-----	1715		-----		-----
631	D3338	43.3604	C	0.81	1720		-----		-----
633		-----		-----	1724	D3338	43.32		-1.65
657	D3338	43.318		-1.77	1730		-----		-----
732		-----		-----	1741	D3338	43.359		0.73
798		-----		-----	1776	D3338	43.32		-1.65
823	D3338	43.314		-2.01	1810	D3338	43.342		-0.31
824	D3338	43.361		0.85	1811	D3338	43.3531		0.37
851	D3338	43.330		-1.04	1833	D3338	43.326		-1.28
854	D3338	43.372		1.52	1852	D3338	43.35		0.18
862	D3338	43.330		-1.04	1883		-----		-----
869	D3338	43.3710		1.46	1913	D3338	43.344		-0.19
904	D3338	43.3		-2.87	1944		-----		-----
914		-----		-----	1961		-----		-----
962		-----		-----	2129	D3338	43.321		-1.59
963		-----		-----	2130		-----		-----
970		-----		-----	6041	D3338	43.344		-0.19
974	D3338	43.315		-1.95	6054		-----		-----
994	D3338	43.346		-0.07	6075	D3338	43.357		0.60
995		-----		-----	6103	D3338	43.350		0.18
996		-----		-----	6135		-----		-----
997		-----		-----	6139		43.273	R(0.05)	-4.51
998		-----		-----	6142		-----		-----
1011		-----		-----	6168		-----		-----
1016		-----		-----	6201	D3338	43.349	C	0.12
1019		-----		-----	6238		-----		-----
1023		-----		-----	6262	D3338	43.321		-1.59
1039	D3338	43.334		-0.80	6266		-----		-----
1049	D3338	43.35079		0.23	6312		-----		-----
1059	D3338	43.351		0.24	6321	D3338	43.347		-0.01

lab	method	value	mark	z(targ)
6324		-----		-----
6331		-----		-----
6332		-----		-----
6344		-----		-----

normality	OK
n	75
outliers	1
mean (n)	43.3471
st.dev. (n)	0.01891
R(calc.)	0.0529
st.dev.(D3338:09e2)	0.01643
R(D3338:09e2)	0.0460

Lab 631 first reported 43.4139
Lab 6201 first reported 42.801





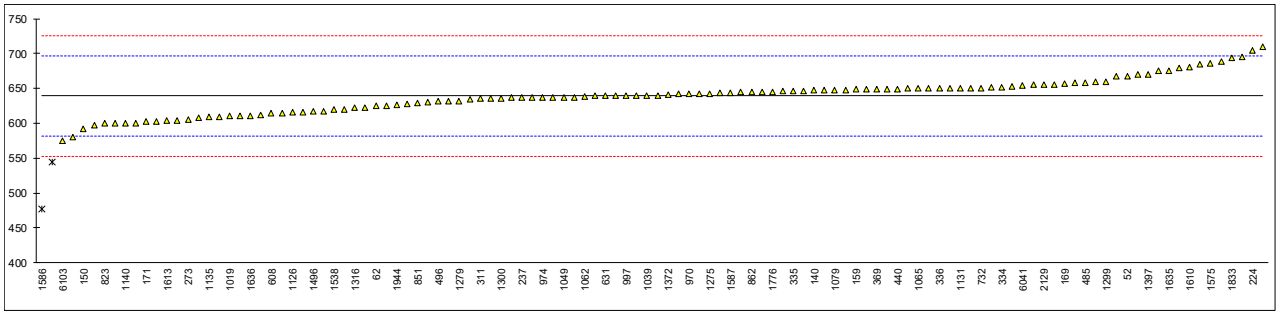
Determination of Total Sulfur on sample #20150; results in mg/kg

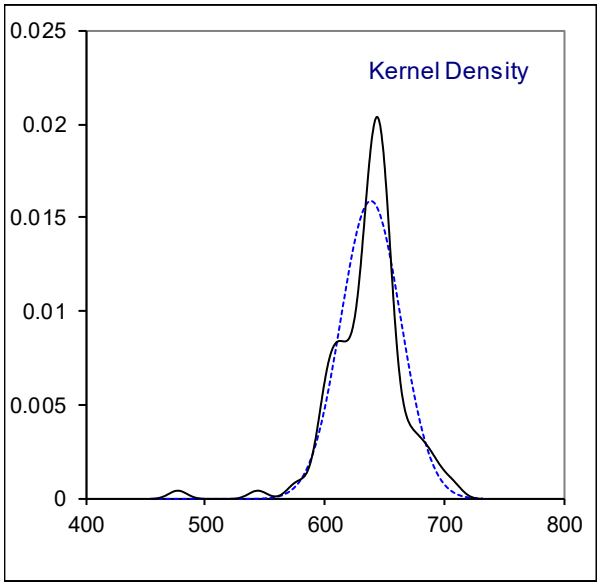
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D5453	668		1.00	1062	D5453	638		-0.04
62	D5453	625		-0.49	1064	D5453	610.2		-1.00
120	D4294	612.4	C	-0.93	1065	D4294	650		0.37
140	D2622	647		0.27	1079	D2622	648		0.30
150	D4294	592		-1.63	1082	ISO8754	637		-0.08
159	D4294	648.3		0.31	1097	D5453	646.51		0.25
169	D4294	657.0		0.62	1105	D4294	615.92		-0.80
171	D5453	602		-1.29	1109	D2622	684.03		1.55
175		-----		-----	1121	IP336	679.8		1.40
177	D4294	620.4	C	-0.65	1126	ISO20846	615.5		-0.82
221		-----		-----	1131	D4294	650		0.37
224	D4294	703.97		2.24	1135	D5453	609		-1.04
225	D4294	627.3		-0.41	1140	IP336	600		-1.36
228	D2622	689		1.72	1141	D5453	603		-1.25
230	D4294	645.8		0.23	1150		-----		-----
237	D4294	637.0		-0.08	1167	ISO20846	608	C	-1.08
238		-----		-----	1182		-----		-----
253	D4294	640		0.03	1191	ISO8754	648.7		0.33
254		-----		-----	1212	D5453	640		0.03
256		-----		-----	1237	ISO8754	670		1.06
258		-----		-----	1275	D4294	642.82		0.13
273	D5453	605	C	-1.18	1277		-----		-----
311	D2622	635		-0.15	1279	D4294	632.2		-0.24
317		-----		-----	1299	ISO8754	660		0.72
323	D5453	597		-1.46	1300	D5453	635.0		-0.15
333	D4294	637		-0.08	1316	D4294	622		-0.59
334	D5453	651		0.41	1318	D5453	637.3	C	-0.07
335	D4294	646	C	0.23	1320	ISO20884	625		-0.49
336	ISO8754	650	C	0.37	1357	D5453	615.0	C	-0.84
353		-----		-----	1372	D4294	640.7		0.05
369	IP336	649		0.34	1397	D2622	670		1.06
370	D4294	660		0.72	1399		-----		-----
372	D5453	639		-0.01	1417	IP336	710		2.45
391	D4294	600		-1.36	1433	ISO20846	644.667		0.19
396		-----		-----	1455	D5453	642	C	0.10
399	D4294	667		0.96	1496	D4294	616.8		-0.77
440	D5453	649.5		0.36	1538	D4294	620		-0.66
445	D5453	636.9		-0.08	1575	D4294	686		1.62
447	IP336	650		0.37	1586	D5453	477	R(0.01)	-5.61
448	IP336	658	C	0.65	1587	D4294	643.6		0.15
463	D4294	675		1.24	1610	IP336	680	C	1.41
485	D4294	658.1		0.65	1613	D4294	603.5		-1.23
496	D2622	631.6		-0.26	1631		-----		-----
594		-----		-----	1635	D4294	675		1.24
603		-----		-----	1636	D4294	611	C	-0.98
608	D4294	614		-0.87	1715		-----		-----
631	D4294	639.25		0.00	1720		-----		-----
633		-----		-----	1724	IP336	650		0.37
657	D5453	609.7		-1.02	1730	IP336	655		0.55
732	D4294	650.1		0.38	1741	D5453	617.6		-0.75
798		-----		-----	1776	ISO8754	645.3		0.21
823	D5453	600		-1.36	1810	D4294	648		0.30
824	D4294	634		-0.18	1811	D5453	653		0.48
851	D4294	628.51		-0.37	1833	ISO8754	694		1.89
854	D4294	647		0.27	1852	D5453	604		-1.22
862	D2622	645		0.20	1883		-----		-----
869	D4294	650		0.37	1913	D4294	655.2		0.55
904	D4294	695		1.93	1944	D5453	626.4		-0.44
914		-----		-----	1961		-----		-----
962		-----		-----	2129	D5453	655	C	0.55
963		-----		-----	2130		-----		-----
970	D4294	642		0.10	6041	D5453	654.2	C	0.52
974	D4294	637		-0.08	6054	D4294	630		-0.32
994	D5453	651		0.41	6075	D5453	623		-0.56
995	D5453	635		-0.15	6103	D4294	574.65		-2.23
996		-----		-----	6135		-----		-----
997	D4294	640.0		0.03	6139	D4294	645		0.20
998	D4294	640		0.03	6142	ISO20846	544.19	R(0.05)	-3.28
1011		-----		-----	6168		-----		-----
1016		-----		-----	6201	D5453	632		-0.25
1019	D1552	610		-1.01	6238		-----		-----
1023	ISO14596	650		0.37	6262	D5453	649		0.34
1039	D2622	640		0.03	6266		-----		-----
1049	D5453	637.3		-0.07	6312	IP336	641.8		0.09
1059	ISO14596	580		-2.05	6321	IP336	600	C	-1.36

lab	method	value	mark	z(targ)
6324	D4294	643		0.13
6331		-----		-----
6332		-----		-----
6344		-----		-----

normality	OK
n	116
outliers	2
mean (n)	639.20
st.dev. (n)	25.139
R(calc.)	70.39
st.dev.(D5453:19a)	28.924
R(D5453:19a)	80.99

Lab 120 first reported 0.06124 mg/kg
Lab 177 first reported 740.3
Lab 273 first reported 520
Lab 335 first reported 0.0646 mg/kg
Lab 336 first reported 0.065 mg/kg
Lab 448 first reported 0.0658 mg/kg
Lab 1167 first reported 0.061 mg/kg
Lab 1318 first reported 783.5
Lab 1357 first reported 561.0
Lab 1455 first reported 0.0642 mg/kg
Lab 1610 first reported 0.068 mg/kg
Lab 1636 first reported 0.0611 mg/kg
Lab 2129 first reported 0.0655 mg/kg
Lab 6041 first reported 0.0654 mg/kg
Lab 6321 first reported 60 mg/kg

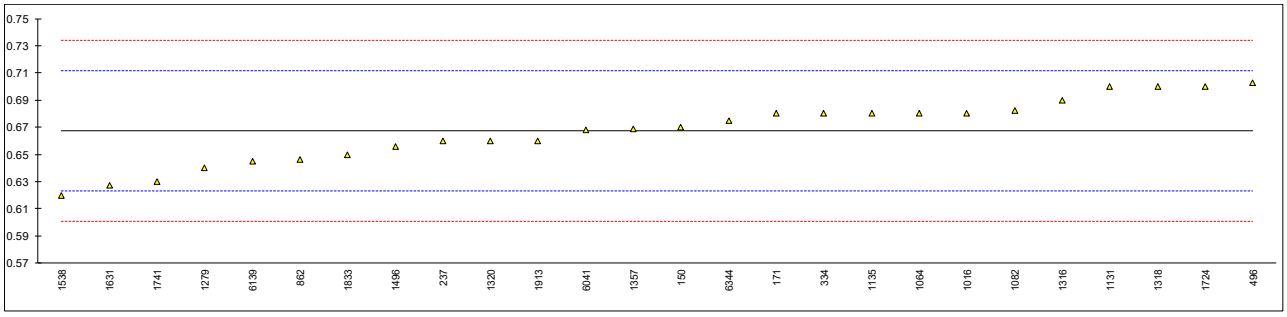


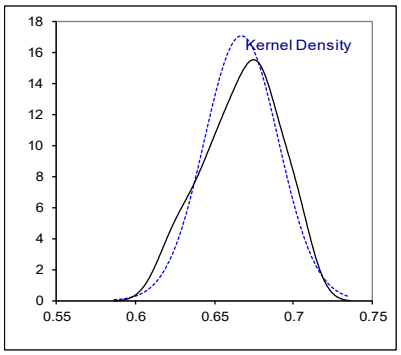


Determination of BOCLE on sample #20151; results in mm

lab	method	value	mark	z(targ)	remarks
150	D5001-semi-automated	0.67		0.12	
171	D5001-semi-automated	0.68		0.57	
237	D5001-semi-automated	0.66		-0.33	
323		-----		-----	
334	D5001-semi-automated	0.680		0.57	
496	D5001-full-automated	0.7030		1.61	
862	D5001-semi-automated	0.646		-0.96	
963		-----		-----	
1016	D5001-semi-automated	0.6805		0.59	
1064	D5001-full-automated	0.680		0.57	
1082	D5001-semi-automated	0.682		0.66	
1131	D5001-full-automated	0.70		1.47	
1135	D5001-full-automated	0.68		0.57	
1279	D5001-semi-automated	0.64		-1.23	
1316	D5001-semi-automated	0.69		1.02	
1318	D5001-full-automated	0.70		1.47	
1320	D5001-semi-automated	0.66		-0.33	
1357	D5001-full-automated	0.669		0.07	
1399		-----		-----	
1496	D5001-full-automated	0.656		-0.51	
1538	D5001-full-automated	0.620		-2.14	
1631	D5001-full-automated	0.627		-1.82	
1724	D5001-full-automated	0.70		1.47	
1741	D5001-full-automated	0.630		-1.68	
1833	D5001-full-automated	0.65		-0.78	
1913	D5001-full-automated	0.660		-0.33	
6041	D5001-full-automated	0.668		0.03	
6103		-----		-----	
6139	D5001-semi-automated	0.645		-1.01	
6201		-----		-----	
6344	D5001-full-automated	0.675		0.34	

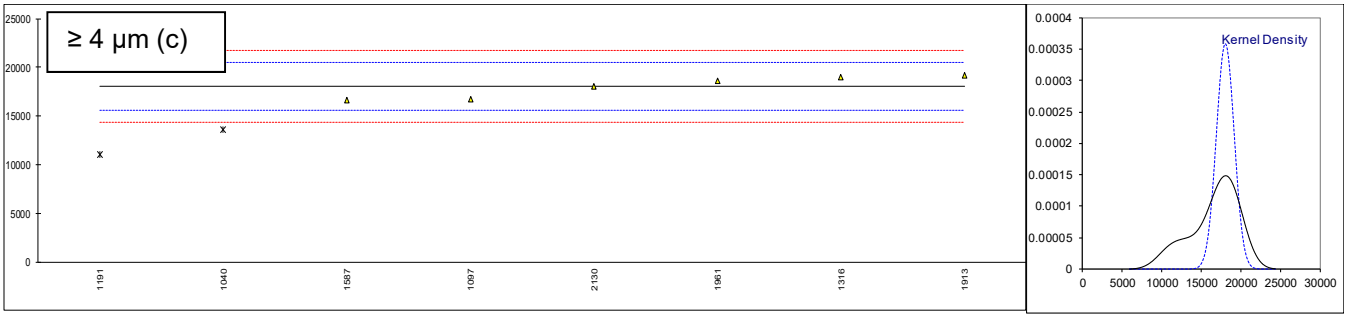
			Only Semi-automated	Only full-automated
	normality	OK	OK	OK
	n	26	11	15
	outliers	0	0	0
	mean (n)	0.6674	0.6667	0.6679
	st.dev. (n)	0.02336	0.01742	0.02751
	R(calc.)	0.0654	0.0488	0.0770
	st.dev.(D5001:19e1 (semi-automatic))	0.02218	0.02218	---
	R(D5001:19e1 (semi-automatic))	0.0621	0.0620	---
Compare				
	R(D5001:19e1 (full-automatic))	0.0357	---	0.0358

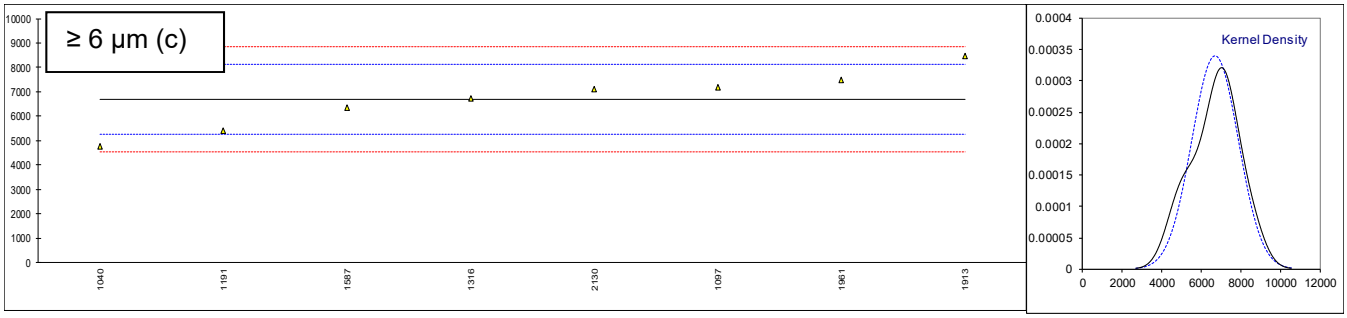


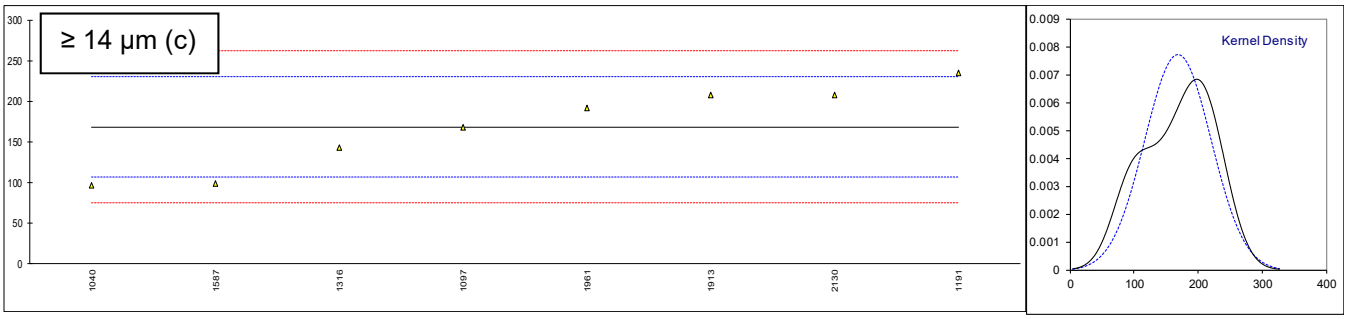


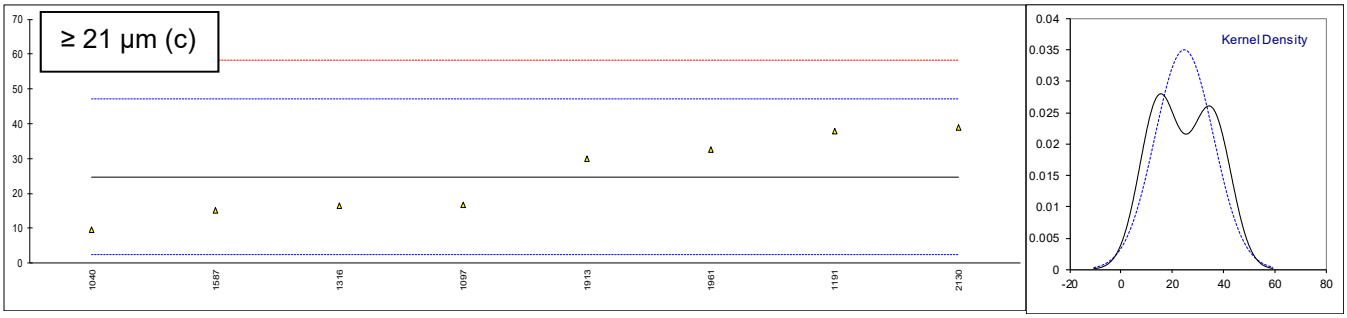
Determination of Particle Size Distribution on sample #20152 acc. to IP564, results in counts/mL

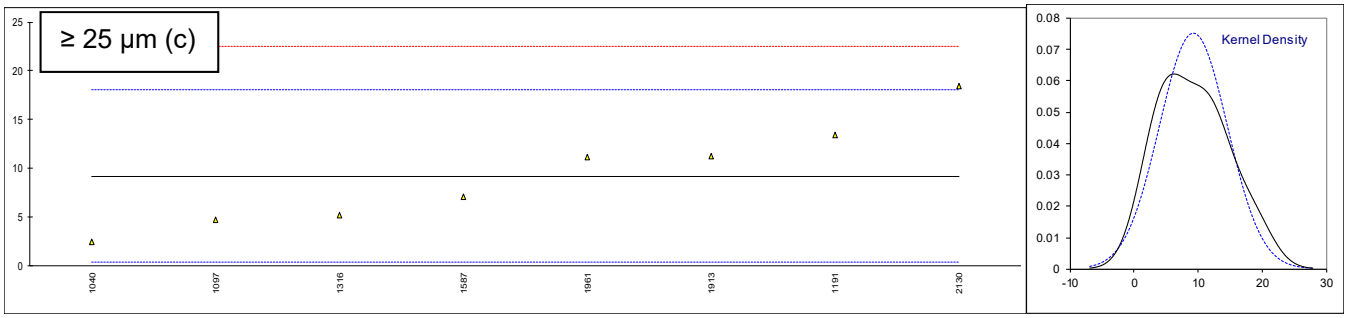
lab	method	≥4 µm (c)	m	≥6 µm (c)	m	≥14 µm (c)	m	≥21 µm (c)	m	≥25 µm (c)	m	≥30 µm (c)	m
140		-----		-----		-----		-----		-----		-----	
150		-----		-----		-----		-----		-----		-----	
171		-----		-----		-----		-----		-----		-----	
225		-----		-----		-----		-----		-----		-----	
237		-----		-----		-----		-----		-----		-----	
311		-----		-----		-----		-----		-----		-----	
323		-----		-----		-----		-----		-----		-----	
333		-----		-----		-----		-----		-----		-----	
334		-----		-----		-----		-----		-----		-----	
335		-----		-----		-----		-----		-----		-----	
372		-----		-----		-----		-----		-----		-----	
447		-----		-----		-----		-----		-----		-----	
496		-----		-----		-----		-----		-----		-----	
657		-----		-----		-----		-----		-----		-----	
823		-----		-----		-----		-----		-----		-----	
824		-----		-----		-----		-----		-----		-----	
862		-----		-----		-----		-----		-----		-----	
963		-----		-----		-----		-----		-----		-----	
974		-----		-----		-----		-----		-----		-----	
1011		-----		-----		-----		-----		-----		-----	
1016		-----		-----		-----		-----		-----		-----	
1039		-----		-----		-----		-----		-----		-----	
1040	IP564	13593	DG5	4766		96		9.7		2.5		0.6	
1059		-----		-----		-----		-----		-----		-----	
1062		-----		-----		-----		-----		-----		-----	
1064		-----		-----		-----		-----		-----		-----	
1065		-----		-----		-----		-----		-----		-----	
1079		-----		-----		-----		-----		-----		-----	
1095		-----		-----		-----		-----		-----		-----	
1097	IP564	16782.1		7171.8		167.7		16.8		4.7		0.8	
1109		-----		-----		-----		-----		-----		-----	
1131		-----		-----		-----		-----		-----		-----	
1135		-----		-----		-----		-----		-----		-----	
1191	IP564	11093	DG5	5399		235		37.8		13.4		2.3	
1279		-----		-----		-----		-----		-----		-----	
1316	In house	19039.83		6730.50		142.96		16.54		5.17		0.92	
1318		-----		-----		-----		-----		-----		-----	
1320		-----		-----		-----		-----		-----		-----	
1357		-----		-----		-----		-----		-----		-----	
1397		-----		-----		-----		-----		-----		-----	
1402		-----		-----		-----		-----		-----		-----	
1455		-----		-----		-----		-----		-----		-----	
1496		-----		-----		-----		-----		-----		-----	
1538		-----		-----		-----		-----		-----		-----	
1587	IP564	16674.1		6344.5		99.0		15.0		7.1		1.8	
1610		-----		-----		-----		-----		-----		-----	
1613		-----		-----		-----		-----		-----		-----	
1631		-----		-----		-----		-----		-----		-----	
1724		-----		-----		-----		-----		-----		-----	
1741		-----		-----		-----		-----		-----		-----	
1833		-----		-----		-----		-----		-----		-----	
1852		-----		-----		-----		-----		-----		-----	
1913	IP564	19229.05		8452.55		207.20		30.05		11.30		2.05	
1961	IP564	18630.4		7502.0		192.3		32.6		11.2		2.4	
2130	IP564	18039.0		7121.0		207.4		38.9		18.4		5.0	G5
6075		-----		-----		-----		-----		-----		-----	
6103		-----		-----		-----		-----		-----		-----	
6139		-----		-----		-----		-----		-----		-----	
6168		-----		-----		-----		-----		-----		-----	
6201		-----		-----		-----		-----		-----		-----	
6238		-----		-----		-----		-----		-----		-----	
6262		-----		-----		-----		-----		-----		-----	
6315		-----		-----		-----		-----		-----		-----	
6321		-----		-----		-----		-----		-----		-----	
normality		unknown		unknown		unknown		unknown		unknown		unknown	
n		6		8		8		8		8		7	
outliers		2		0		0		0		0		1	
mean (n)		18066		6686		168		25		9		2	
st.dev. (n)		1114.1		1175.5		51.7		11.4		5.3		0.8	
R(calc.)		3119		3291		145		32		15		2	
st.dev.(IP564:13)		1217.5		717.8		31.1		11.2		4.4		0.9	
R(IP564:13)		3409		2010		87		31		12		3	

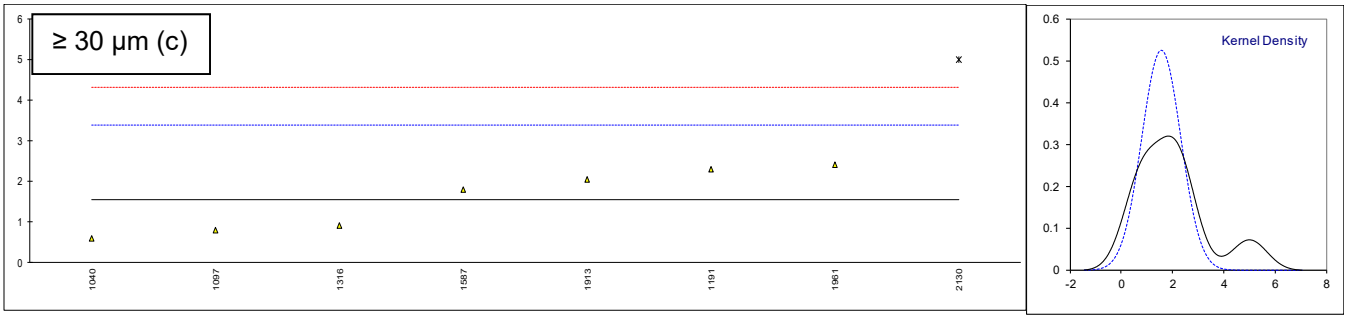

≥ 4 µm (c)
Kernel Density


≥ 6 µm (c)
Kernel Density


≥ 14 µm (c)
Kernel Density

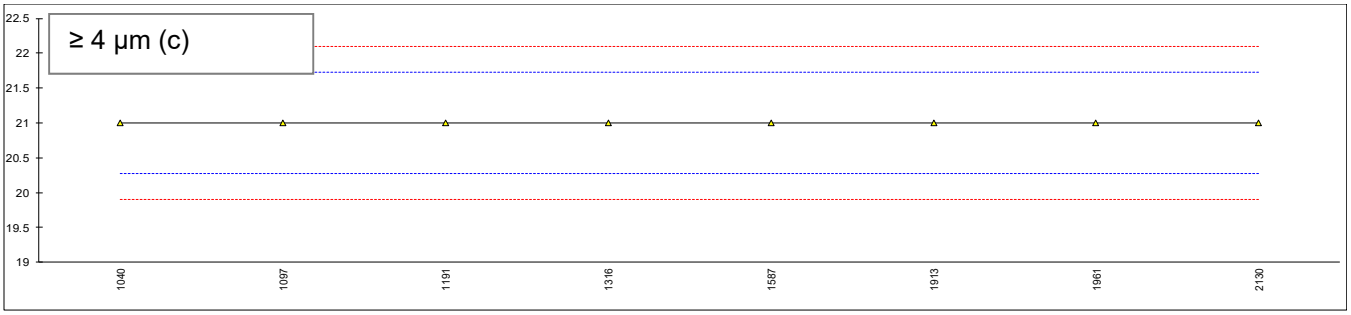

≥ 21 µm (c)
Kernel Density

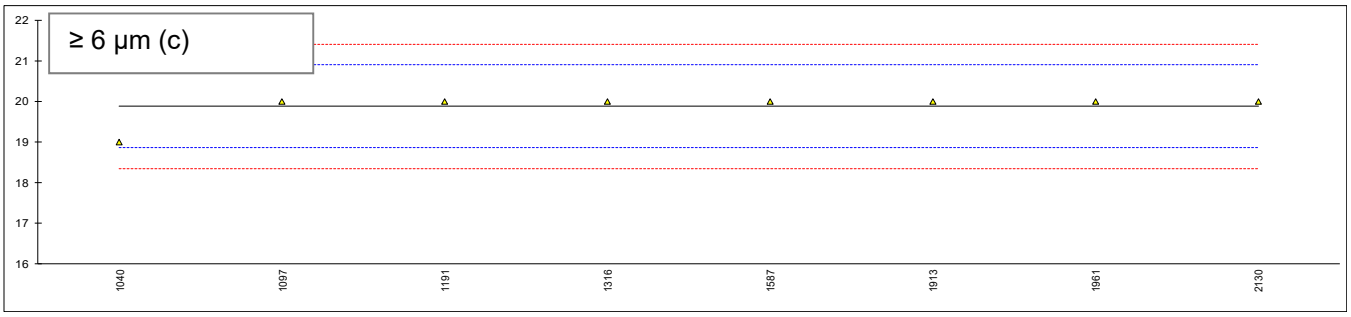

≥ 25 µm (c)
Kernel Density

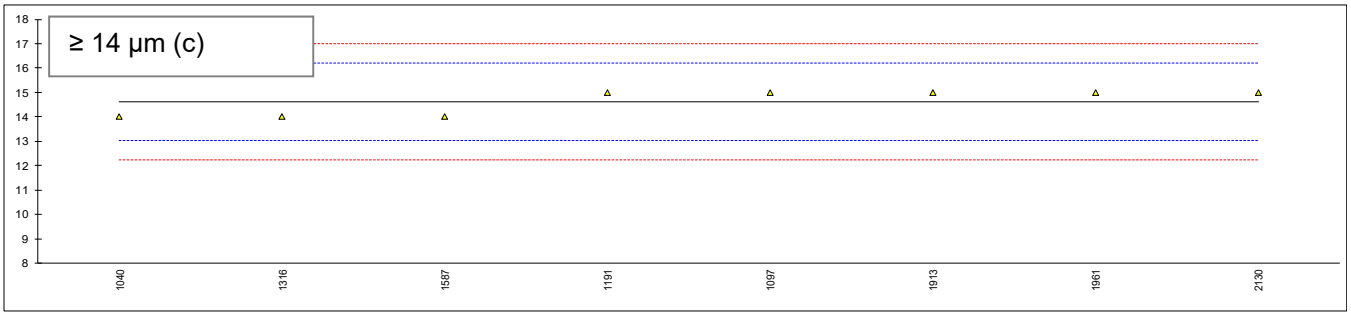

≥ 30 µm (c)
Kernel Density

Determination of Particle Size Distribution on sample #20152 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		-----		-----	-----		-----	-----		-----
237		-----		-----	-----		-----	-----		-----
311		-----		-----	-----		-----	-----		-----
323		-----		-----	-----		-----	-----		-----
333		-----		-----	-----		-----	-----		-----
334		-----		-----	-----		-----	-----		-----
335		-----		-----	-----		-----	-----		-----
372		-----		-----	-----		-----	-----		-----
447		-----		-----	-----		-----	-----		-----
496		-----		-----	-----		-----	-----		-----
657		-----		-----	-----		-----	-----		-----
823		-----		-----	-----		-----	-----		-----
824		-----		-----	-----		-----	-----		-----
862		-----		-----	-----		-----	-----		-----
963		-----		-----	-----		-----	-----		-----
974		-----		-----	-----		-----	-----		-----
1011		-----		-----	-----		-----	-----		-----
1016		-----		-----	-----		-----	-----		-----
1039		-----		-----	-----		-----	-----		-----
1040		21		0.00	19		-1.71	14		-0.79
1059		-----		-----	-----		-----	-----		-----
1062		-----		-----	-----		-----	-----		-----
1064		-----		-----	-----		-----	-----		-----
1065		-----		-----	-----		-----	-----		-----
1079		-----		-----	-----		-----	-----		-----
1095		-----		-----	-----		-----	-----		-----
1097	ISO4406 acc. to IP577	21		0.00	20		0.24	15		0.47
1109		-----		-----	-----		-----	-----		-----
1131		-----		-----	-----		-----	-----		-----
1135		-----		-----	-----		-----	-----		-----
1191	ISO4406 acc. to IP564	21		0.00	20		0.24	15		0.47
1279		-----		-----	-----		-----	-----		-----
1316	ISO4406	21		0.00	20		0.24	14		-0.79
1318		-----		-----	-----		-----	-----		-----
1320		-----		-----	-----		-----	-----		-----
1357		-----		-----	-----		-----	-----		-----
1397		-----		-----	-----		-----	-----		-----
1402		-----		-----	-----		-----	-----		-----
1455		-----		-----	-----		-----	-----		-----
1496		-----		-----	-----		-----	-----		-----
1538		-----		-----	-----		-----	-----		-----
1587	ISO4406 acc. to IP564	21		0.00	20		0.24	14		-0.79
1610		-----		-----	-----		-----	-----		-----
1613		-----		-----	-----		-----	-----		-----
1631		-----		-----	-----		-----	-----		-----
1724		-----		-----	-----		-----	-----		-----
1741		-----		-----	-----		-----	-----		-----
1833		-----		-----	-----		-----	-----		-----
1852		-----		-----	-----		-----	-----		-----
1913	ISO4406 acc. to IP564	21		0.00	20		0.24	15		0.47
1961	ISO4406 acc. to IP564	21		0.00	20		0.24	15		0.47
2130	ISO4406 acc. to IP564	21		0.00	20		0.24	15		0.47
6075		-----		-----	-----		-----	-----		-----
6103		-----		-----	-----		-----	-----		-----
6139		-----		-----	-----		-----	-----		-----
6168		-----		-----	-----		-----	-----		-----
6201		-----		-----	-----		-----	-----		-----
6238		-----		-----	-----		-----	-----		-----
6262		-----		-----	-----		-----	-----		-----
6315		-----		-----	-----		-----	-----		-----
6321		-----		-----	-----		-----	-----		-----
	normality	unknown			unknown			unknown		
	n	8			8			8		
	outliers	0			0			0		
	mean (n)	21.00			19.88			14.63		
	st.dev. (n)	0.000			0.354			0.518		
	R(calc.)	0.00			0.99			1.45		
	st.dev.(IP564:13)	0.365			0.510			0.794		
	R(IP564:13)	1.02			1.43			2.22		


≥ 4 µm (c)
22.5
22
21.5
21
20.5
20
19.5
19
1040
1097
1191
1316
1587
1913
1961
2130

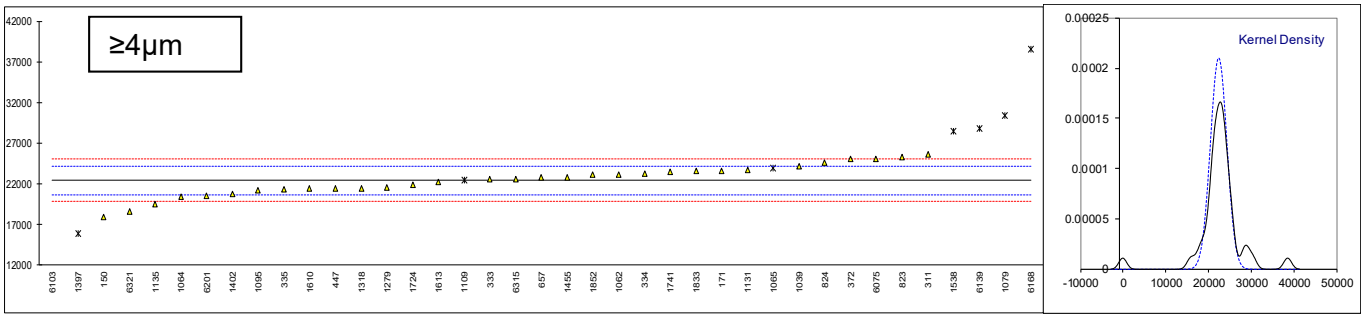

≥ 6 µm (c)
22
21
20
19
18
17
16
1040
1097
1191
1316
1587
1913
1961
2130

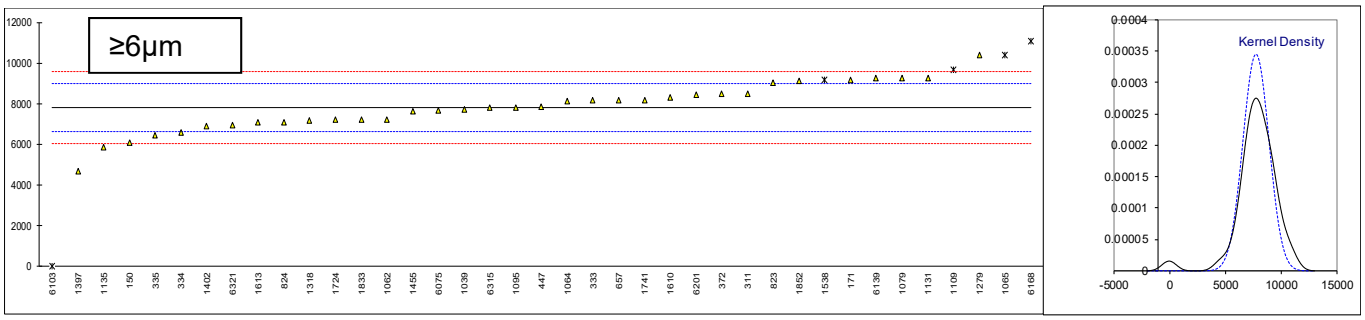

≥ 14 µm (c)
18
17
16
15
14
13
12
11
10
9
8
1040
1316
1587
1191
1097
1913
1961
2130

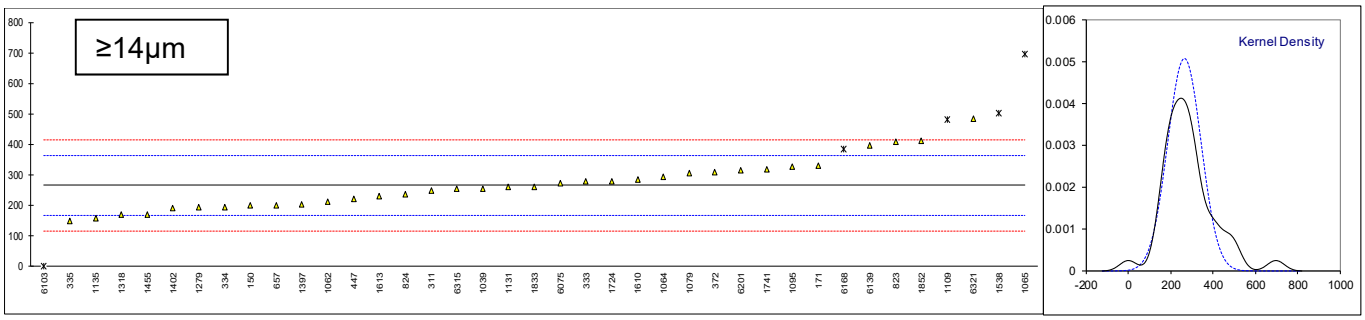
Determination of Particle Size Distribution on sample #20152 acc. to IP565, results in counts/mL

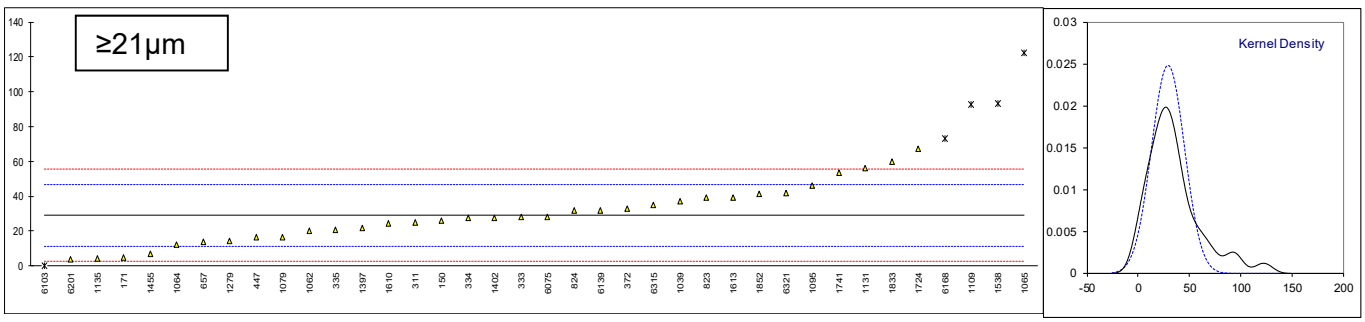
lab	method	≥4 µm (c)	m	≥6 µm (c)	m	≥14µm(c)	m	≥21µm(c)	m	≥25µm(c)	m	≥30µm(c)	m
140		-----		-----		-----		-----		-----		-----	
150	IP565	17871		6080		199		26		7		2	
171	IP565	23629	C	9189	C	329	C	5		2		1	
225		-----		-----		-----		-----		-----		-----	
237		-----		-----		-----		-----		-----		-----	
311	IP565	25632	C	8507	C	249	C	25	C	6	C	1	C
323		-----		-----		-----		-----		-----		-----	
333	IP565	22534		8155		278		28		7		1	
334	IP565	23231.5		6590.2		193.2		27.6		8.5		3.2	
335	IP565	21321.6		6456.7		148.9		20.7		9.6		5.0	
372	IP565	25024.2		8479.9		308.4		32.9		8.2		2.28	
447	IP565	21447.9		7830.5		221.2		16.4		3.9		1.4	
496		-----		-----		-----		-----		-----		-----	
657	IP565	22789.9		8162.9		199.6		13.8		2.8		0.7	
823	IP565	25325		9038		409		39	C	15	C	6	C
824	IP565	24560		7096		237		31.6		9.2		2.6	
862		-----		-----		-----		-----		-----		-----	
963		-----		-----		-----		-----		-----		-----	
974		-----		-----		-----		-----		-----		-----	
1011		-----		-----		-----		-----		-----		-----	
1016		-----		-----		-----		-----		-----		-----	
1039	IP565	24192		7724		255		37		12		3	
1040		-----		-----		-----		-----		-----		-----	
1059		-----		-----		-----		-----		-----		-----	
1062		23130.6		7235.8		211.2		20.1		5.6		1.1	
1064	IP565	20449.2		8136.7		293.8		12.5		1.2		0.2	
1065	IP565	23927.2	exC	10386.7	exC	697.0	CR1	122.3	CR5	74.2	CR1	38.1	CR1
1079	IP565	30360.2	R5	9260.9		304.8		16.4		4.9		1.1	
1095	IP565	21256		7794		326		46		15		2	
1097		-----		-----		-----		-----		-----		-----	
1109	IP565	22487.8	ex	9668.0	ex	480.4	ex	92.7	R5	34.7	R1	13.3	R1
1131	IP565	23735		9271		260		56		16		4	
1135	IP565	19471.6		5843.7		156.7		4.2		1.2		0.7	
1191		-----		-----		-----		-----		-----		-----	
1279	IP565	21532.1	C	10368.0		192.9		14.5		5.6		1.2	
1316		-----		-----		-----		-----		-----		-----	
1318	D7647	21454.6		7164.6		169.6		-----		-----		0.5	
1320		-----		-----		-----		-----		-----		-----	
1357		-----		-----		-----		-----		-----		-----	
1397	IP565	15917.8	R5	4669.1		203.5		22		6.5		1.2	
1402	IP565	20748.0		6909.1		191.5		27.6		13.1		6.4	
1455	IP565	22802		7616		171		7		2		< 1	
1496		-----		-----		-----		-----		-----		-----	
1538	IP565	28422.9	exC	9165.2	exC	502.2	exC	93.4	CR5	46.6	CR1	21.8	CR1
1587		-----		-----		-----		-----		-----		-----	
1610	IP565	21429.3		8289.0		283.8		24.3		7.0		1.9	
1613	IP565	22262.2		7065.3		229.4		39.3		16.2		5.5	
1631		-----		-----		-----		-----		-----		-----	
1724	IP565	21846.8		7212.4		280		67.2		-----	W	-----	W
1741	IP565	23460.3		8185.7		316.6		53.5		13.5		2.8	
1833	IP565	23616.8		7232.6		260.0		60.0		25.0	R5	-----	W
1852	IP565	23102.7		9117.7		412.2		41.5		9.0		1.7	
1913		-----		-----		-----		-----		-----		-----	
1961		-----		-----		-----		-----		-----		-----	
2130		-----		-----		-----		-----		-----		-----	
6075	IP565	25051		7679		272		28		6		2	
6103	IP565	17.4	R1	0.8	R1	0.3	ex	0.0	ex	0.0	ex	0.0	ex
6139	IP565	28772.5	R5	9260.7		396.8		31.7		11.0		3.6	
6168	ISO4406	38503.30	ex	11080.65	ex	383.95	ex	73.15	ex	-----		0.70	ex
6201	IP565	20499	C	8428	C	316	C	4	C	0.6	C	0.2	C
6238		-----		-----		-----		-----		-----		-----	
6262		-----		-----		-----		-----		-----		-----	
6315	IP565	22587.9	C	7788.8		254.9		34.9		12.3		5.0	
6321	IP565	18635.8		6937.6		483.4		41.7		13.7		3.1	
normality		OK		OK		OK		OK		OK		OK	
n		31		34		34		33		31		31	
outliers		4+4ex		1+4ex		1+4ex		3+2ex		4+1ex		3+2ex	
mean (n)		22407		7787		265		29		8		2	
st.dev. (n)		1901.5		1157.4		78.7		16.1		4.7		1.7	
R(calc.)		5324		3241		220		45		13		5	
st.dev.(IP565:13)		868.1		589.9		49.8		8.8		3.3		1.3	
R(IP565:13)		2431		1652		139		25		9		4	

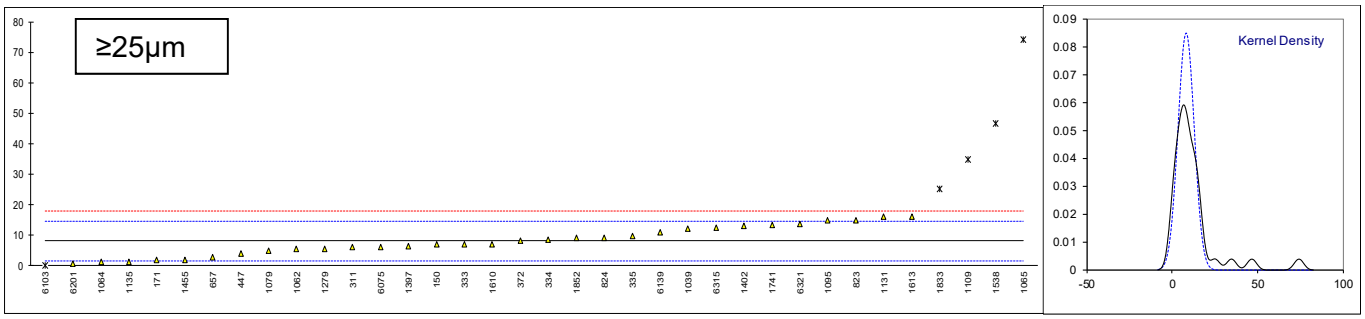
Lab 171 first reported 2363, 919 and 35
Lab 311 first reported 26460, 7600, 70, 1, <1 and <1
Lab 823 first reported 92, 43 and 19
Lab 1065 first reported 1325, 685.9, 58.7, 12.2, 7.4 and 4; test results excluded, there were four outliers out of six test results
Lab 1109 test results excluded, there were three outliers out of six test results
Lab 1279 first reported 31532.1
Lab 1538 first reported 28648.25, 9007.70, 494.65, 98.60, 49.25 and 23.55; test results excluded, there were three outliers out of six test results
Lab 1724 test results withdrawn, first reported 31.2 and 11.4
Lab 1833 test result withdrawn, first reported 9.1
Lab 6103 test results excluded. Sample possibly not stirred?
Lab 6168 test result excluded, use different test method IP577
Lab 6201 first reported as IP564
Lab 6315 first reported 2287.9

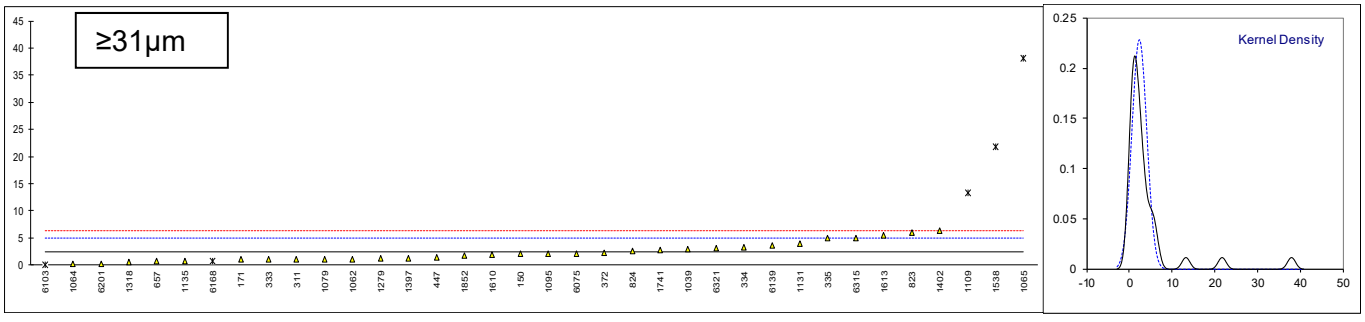

≥4µm
Kernel Density


≥6µm
Kernel Density


≥14µm
Kernel Density


≥21µm
Kernel Density

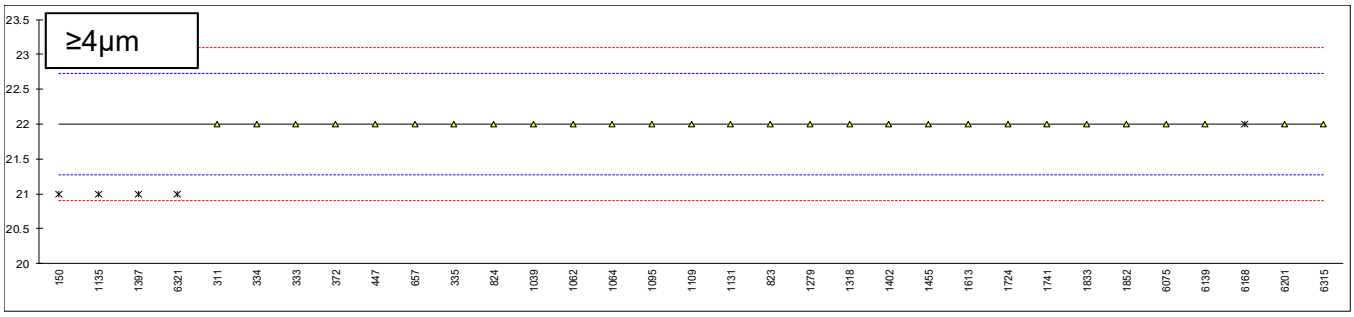

≥25µm
Kernel Density

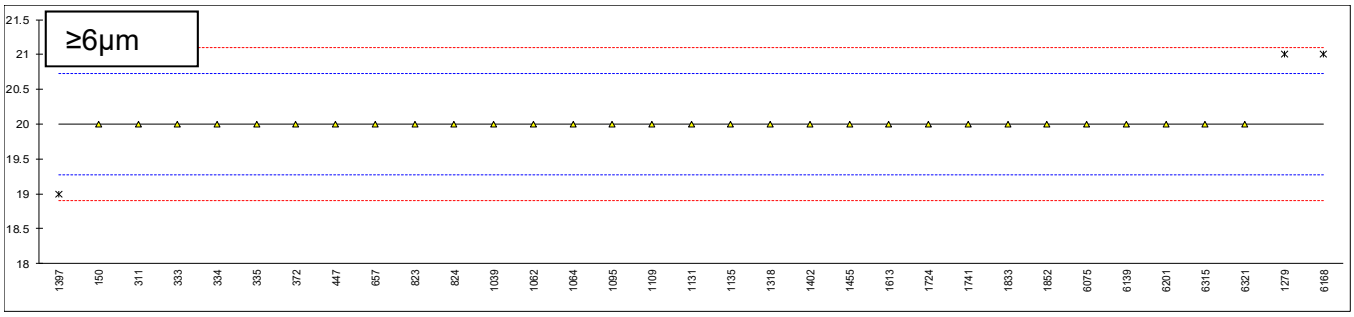

≥31µm
Kernel Density

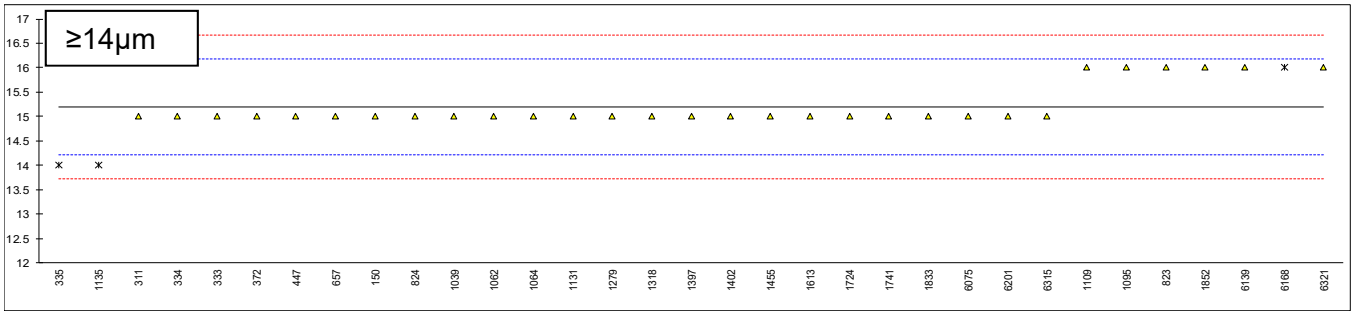
Determination of Particle Size Distribution on sample #20152 acc. to IP565, in ISO scale numbers

lab	method	≥4 µm	mark	z(targ)	≥6 µm	mark	z(targ)	≥14 µm	mark	z(targ)
140		-----		-----	-----		-----	-----		-----
150	ISO4406 acc. to IP565	21	R(0.01)	-2.72	20		0.00	15		-0.41
171		-----		-----	-----		-----	-----		-----
225		-----		-----	-----		-----	-----		-----
237		-----		-----	-----		-----	-----		-----
311	ISO4406 acc. to IP565	22		0.00	20		0.00	15	C	-0.41
323		-----		-----	-----		-----	-----		-----
333	ISO4406 acc. to IP565	22		0.00	20		0.00	15		-0.41
334	ISO4406 acc. to IP565	22		0.00	20		0.00	15		-0.41
335	ISO4406 acc. to IP565	22		0.00	20		0.00	14	R(0.01)	-2.45
372	ISO4406 acc. to IP565	22		0.00	20		0.00	15		-0.41
447	ISO4406 acc. to IP565	22		0.00	20		0.00	15		-0.41
496		-----		-----	-----		-----	-----		-----
657	ISO4406	22		0.00	20		0.00	15		-0.41
823		22		0.00	20		0.00	16		1.63
824	ISO4406 acc. to IP565	22		0.00	20		0.00	15		-0.41
862		-----		-----	-----		-----	-----		-----
963		-----		-----	-----		-----	-----		-----
974		-----		-----	-----		-----	-----		-----
1011		-----		-----	-----		-----	-----		-----
1016		-----		-----	-----		-----	-----		-----
1039	ISO4406 acc. to IP565	22		0.00	20		0.00	15		-0.41
1040		-----		-----	-----		-----	-----		-----
1059		-----		-----	-----		-----	-----		-----
1062		22		0.00	20		0.00	15		-0.41
1064	ISO4406 acc. to IP565	22		0.00	20		0.00	15		-0.41
1065		-----		-----	-----		-----	-----		-----
1079		-----		-----	-----		-----	-----		-----
1095		22		0.00	20		0.00	16		1.63
1097		-----		-----	-----		-----	-----		-----
1109	ISO4406 acc. to IP565	22		0.00	20		0.00	16		1.63
1131	ISO4406 acc. to IP565	22		0.00	20		0.00	15		-0.41
1135	ISO4406 acc. to IP565	21	R(0.01)	-2.72	20		0.00	14	R(0.01)	-2.45
1191		-----		-----	-----		-----	-----		-----
1279	ISO4406 acc. to IP565	22		0.00	21	R(0.01)	2.72	15		-0.41
1316		-----		-----	-----		-----	-----		-----
1318	ISO4406	22		0.00	20		0.00	15		-0.41
1320		-----		-----	-----		-----	-----		-----
1357		-----		-----	-----		-----	-----		-----
1397	ISO4406 acc. to IP565	21	R(0.01)	-2.72	19	R(0.01)	-2.72	15		-0.41
1402	ISO4406 acc. to IP565	22		0.00	20		0.00	15		-0.41
1455	ISO4406 acc. to IP565	22		0.00	20		0.00	15		-0.41
1496		-----		-----	-----		-----	-----		-----
1538		-----		-----	-----		-----	-----		-----
1587		-----		-----	-----		-----	-----		-----
1610		-----		-----	-----		-----	-----		-----
1613	ISO4406 acc. to IP565	22		0.00	20		0.00	15		-0.41
1631		-----		-----	-----		-----	-----		-----
1724	ISO4406 acc. to IP565	22		0.00	20		0.00	15		-0.41
1741	ISO4406	22		0.00	20		0.00	15		-0.41
1833	ISO4406 acc. to IP565	22		0.00	20		0.00	15		-0.41
1852	ISO4406 acc. to IP565	22		0.00	20		0.00	16	C	1.63
1913		-----		-----	-----		-----	-----		-----
1961		-----		-----	-----		-----	-----		-----
2130		-----		-----	-----		-----	-----		-----
6075	ISO4406 acc. to IP565	22		0.00	20		0.00	15		-0.41
6103		-----		-----	-----		-----	-----		-----
6139	ISO4406	22		0.00	20		0.00	16		1.63
6168	ISO4406	22	ex	0.00	21	ex	2.72	16	ex	1.63
6201	ISO4406 acc. to IP565	22	C	0.00	20	C	0.00	15	C	-0.41
6238		-----		-----	-----		-----	-----		-----
6262		-----		-----	-----		-----	-----		-----
6315	ISO4406 acc. to IP565	22		0.00	20		0.00	15		-0.41
6321	ISO4406 acc. to IP565	21	R(0.01)	-2.72	20		0.00	16		1.63
	normality	unknown			unknown			suspect		
	n	28			30			30		
	outliers	4+1ex			2+1ex			2+1ex		
	mean (n)	22.00			20.00			15.20		
	st.dev. (n)	0.000			0.000			0.407		
	R(calc.)	0.00			0.00			1.14		
	st.dev.(IP565:13)	0.366			0.366			0.490		
	R(IP565:13)	1.03			1.03			1.37		

Lab 311 first reported 13
Lab 1852 first reported 18
Lab 6168 test result excluded, use different test method IP577
Lab 6201 first reported as IP564



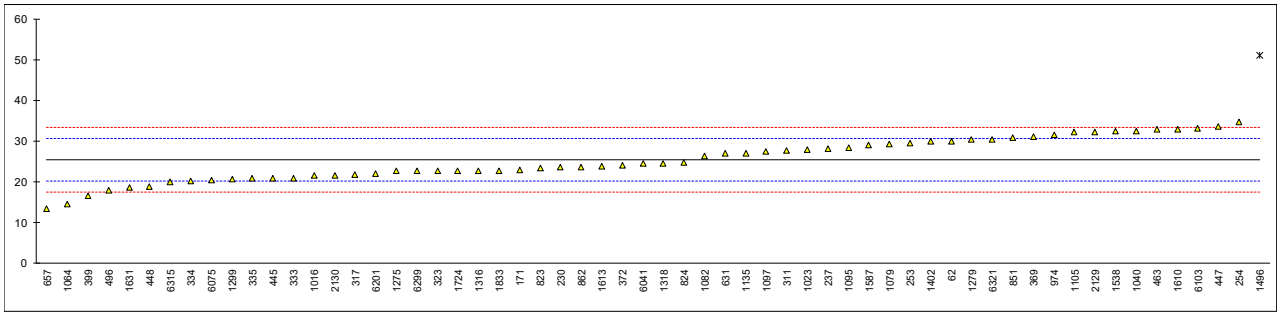


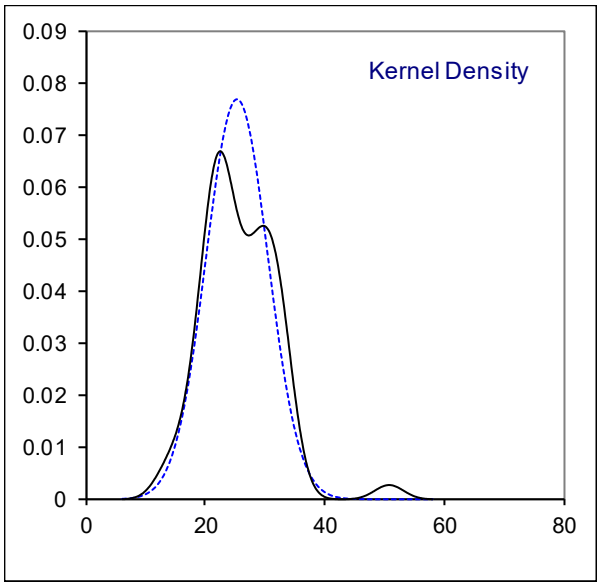


Determination of FAME on sample #20153; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62	IP585	30		1.74	
140		-----		-----	
171	IP585	22.98		-0.94	
228		-----		-----	
230	IP585	23.67		-0.68	
237	D7797	28.12		1.02	
253	IP583	29.48		1.54	
254	D7797	34.82		3.57	
311	IP585	27.8		0.90	
317	IP585	21.9		-1.36	
323	IP585	22.7		-1.05	
333	IP585	20.9		-1.74	
334	IP585	20.3		-1.97	
335	IP585	20.8		-1.78	
336		-----		-----	
369	IP583	31.11		2.16	
372	IP590	24.1		-0.52	
399	IP585	16.5		-3.42	
445	IP585	20.8		-1.78	
447	IP583	33.55		3.09	
448	IP583	18.95		-2.48	
463	IP583	32.86		2.83	
496	IP585	17.94		-2.87	
631	D7797	26.95		0.57	
657	IP585	13.5		-4.56	
823	IP585	23.5	C	-0.74	first reported 55.2
824	IP585	24.74		-0.27	
851	D7797	30.77		2.03	
862	IP585	23.7		-0.67	
974	IP585	31.50		2.31	
1011		-----		-----	
1016	IP585	21.56		-1.49	
1023	D7797	27.83		0.91	
1040	IP599	32.45		2.67	
1062		-----		-----	
1064	IP585	14.6	C	-4.14	first reported 44.9
1065		-----		-----	
1079	IP583	29.20		1.43	
1082	IP585	26.389		0.36	
1095	IP585	28.3		1.09	
1097	IP583	27.45		0.76	
1105	D7797	32.30		2.61	
1135	IP585	27.0		0.59	
1212		-----		-----	
1275	IP585	22.6		-1.09	
1279	D7797	30.45		1.91	
1299	IP585	20.7		-1.81	
1316	IP585	22.8		-1.01	
1318	IP585	24.6		-0.33	
1357	IP585	n.a		-----	
1402	IP583	29.92		1.70	
1455		-----		-----	
1496	IP585	50.96	R(0.01)	9.73	
1538	D7797	32.4		2.65	
1587	IP583	29.02		1.36	
1610	IP583	32.9	C	2.84	first reported 43.5
1613	IP599	23.812		-0.63	
1631	IP590	18.65		-2.60	
1724	IP590	22.79		-1.02	
1833	IP590	22.80		-1.01	
2129	IP590	32.32		2.62	
2130	IP590	21.69		-1.44	
6041	IP590	24.49		-0.37	
6075	IP590	20.44		-1.91	
6103	D7797	33.12		2.93	
6139		-----		-----	
6201	IP585	22.1		-1.28	
6238		-----		-----	
6262		-----	W	-----	test result withdrawn. first reported 0
6299	IP585	22.6		-1.09	
6315	IP585	19.93		-2.11	
6321	IP583	30.53		1.94	

		Only IP585	Only IP583/D7797	Only IP590
normality	OK	OK	not OK	not OK
n	59	29	20	8
outliers	1	1	0	0
mean (n)	25.452	22.635	30.086	23.410
st.dev. (n)	5.1803	4.1061	3.4289	4.0747
R(calc.)	14.505	11.497	9.601	11.409
st.dev.(IP585:10)	2.6207	2.6207	---	---
R(IP585:10)	7.338	6.611	---	---
Compare				
R(IP583:15)	6.231	---	6.461	---
R(IP590:10)	5.955	---	---	5.542

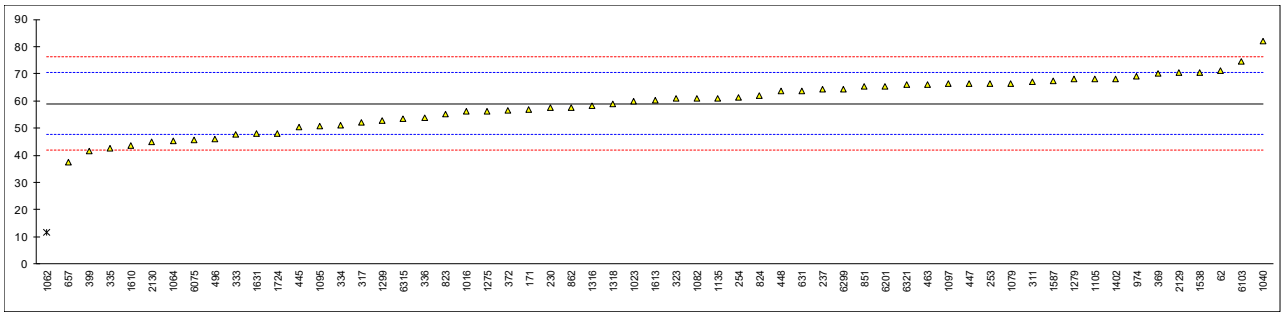


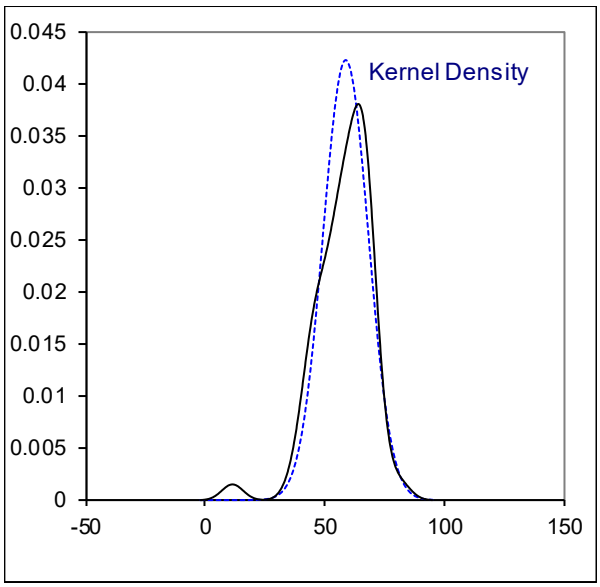


Determination of FAME on sample #20154; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62	IP585	71		2.10	
140		-----		-----	
171	IP585	56.89		-0.37	
228		-----		-----	
230	IP585	57.38		-0.29	
237	D7797	64.35		0.93	
253	IP583	66.42		1.29	
254	D7797	61.13		0.37	
311	IP585	67.1		1.41	
317	IP585	52.1		-1.21	
323	IP585	60.8		0.31	
333	IP585	47.8		-1.97	
334	IP585	51.0		-1.41	
335	IP585	42.5		-2.89	
336	IP585	53.9		-0.90	
369	IP583	69.98		1.92	
372	IP590	56.4		-0.46	
399	IP585	41.6		-3.05	
445	IP585	50.5		-1.49	
447	IP583	66.41		1.29	
448	IP583	63.56		0.79	
463	IP583	65.94		1.21	
496	IP585	45.92		-2.29	
631	D7797	63.79		0.83	
657	IP585	37.5		-3.77	
823	IP585	55.2	C	-0.67	first reported 23.5
824	IP585	61.9		0.50	
851	D7797	65.30		1.10	
862	IP585	57.5		-0.27	
974	IP585	69.23		1.79	
1011		-----		-----	
1016	IP585	56.10		-0.51	
1023	D7797	59.83		0.14	
1040	IP599	81.90		4.00	
1062	IP585	11.73	R(0.01)	-8.28	
1064	IP585	45.2	C	-2.42	first reported 45.2
1065		-----		-----	
1079	IP583	66.48		1.30	
1082	IP585	60.8317		0.32	
1095	IP585	50.6		-1.48	
1097	IP583	66.30		1.27	
1105	D7797	68.0		1.57	
1135	IP585	60.9		0.33	
1212		-----		-----	
1275	IP585	56.2		-0.50	
1279	D7797	67.94		1.56	
1299	IP585	52.9		-1.07	
1316	IP585	58.2		-0.15	
1318	IP585	58.9		-0.02	
1357		-----		-----	
1402	IP583	68.09		1.59	
1455		-----		-----	
1496		-----		-----	
1538	D7797	70.5		2.01	
1587	IP583	67.41		1.47	
1610	IP583	43.5	C	-2.72	first reported as sample #20153
1613	IP599	60.1059		0.19	
1631	IP590	47.85		-1.96	
1724	IP590	47.95		-1.94	
1833		-----		-----	
2129	IP590	70.32		1.98	
2130	IP590	44.95		-2.46	
6041		-----		-----	
6075	IP590	45.74		-2.33	
6103	D7797	74.66		2.74	
6139		-----		-----	
6201	IP585	65.4		1.11	
6238		-----		-----	
6262		-----		-----	
6299	IP585	64.4		0.94	
6315	IP585	53.59		-0.95	
6321	IP583	65.87		1.20	

		Only IP585	Only IP583/D7797	Only IP590
normality	OK	OK	not OK	not OK
n	58	29	20	6
outliers	1	1	0	0
mean (n)	59.030	55.788	65.273	52.202
st.dev. (n)	9.4399	8.0735	6.0585	9.7699
R(calc.)	26.432	22.606	16.964	27.356
st.dev.(IP585:10)	5.7134	5.7134	---	---
R(IP585:10)	15.997	15.161	---	---
Compare				
R(IP583:15)	7.899	---	8.209	---
R(IP590:10)	12.745	---	---	11.364





Determination of Copper as Cu on sample #20155; results in µg/kg

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
120		-----		-----	
140		-----		-----	
150		-----		-----	
159		-----		-----	
171		-----		-----	
175		-----		-----	
177		-----		-----	
225		-----		-----	
230		-----		-----	
237		-----		-----	
253		-----		-----	
254		-----		-----	
256		-----		-----	
311		-----		-----	
323		-----		-----	
334		-----		-----	
335		-----		-----	
372		-----		-----	
391		-----		-----	
398		-----		-----	
399		-----		-----	
440		-----		-----	
445		-----		-----	
447		-----		-----	
463		-----		-----	
496		-----		-----	
631		-----		-----	
657		-----		-----	
823		-----		-----	
824		-----		-----	
851		-----		-----	
862		-----		-----	
869		-----		-----	
922		-----		-----	
962		-----		-----	
963		-----		-----	
974		-----		-----	
994		-----		-----	
1011		-----		-----	
1016		-----		-----	
1040		-----		-----	
1064		-----		-----	
1079		-----		-----	
1082		-----		-----	
1097		-----		-----	
1109		-----		-----	
1135	D6732	5.1		-----	
1146		114		-----	possible a false positive test result?
1191		-----		-----	
1212		-----		-----	
1237		-----		-----	
1275		-----		-----	
1279		-----		-----	
1299		-----		-----	
1316	In house	8.2		-----	
1318	D6732	6.2		-----	
1320		-----		-----	
1357	D5185	n.a		-----	
1399		-----		-----	
1417		-----		-----	
1433		-----		-----	
1496		-----		-----	
1538		-----		-----	
1586		-----		-----	
1587		-----		-----	
1610		-----		-----	
1613		-----		-----	
1631		-----		-----	
1635		-----		-----	
1720		-----		-----	
1724		-----		-----	
1730		-----		-----	
1741		-----		-----	
1833		-----		-----	

1852		-----	-----
1854		-----	-----
1913		-----	-----
1961		-----	-----
2129	In house	<5	-----
2130		-----	-----
6035		-----	-----
6041		-----	-----
6054		-----	-----
6075		-----	-----
6103		-----	-----
6139		-----	-----
6168		-----	-----
6201		-----	-----
6238		-----	-----
6262		-----	-----
6315		-----	-----
6321		-----	-----
6324		-----	-----
6331		-----	-----
6344		-----	-----
	n	4	
	mean (n)	<10	

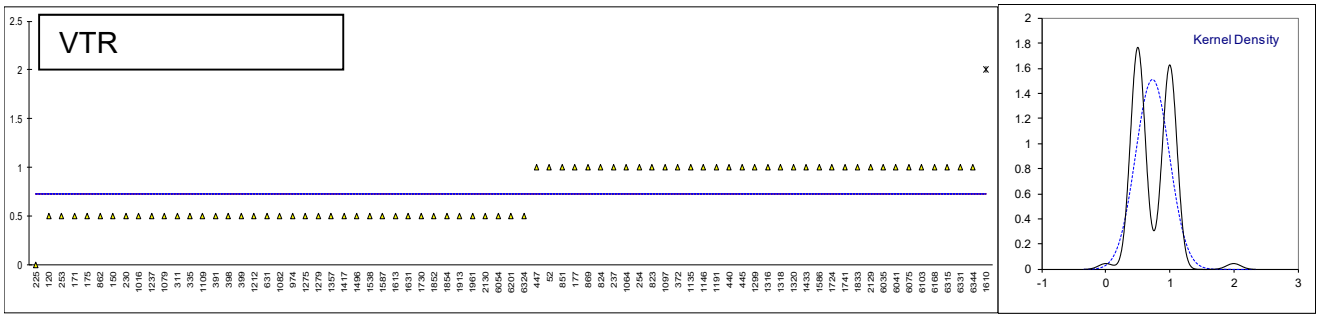
Determination of JFTOT at 260 °C on sample #20155; Visual tube rating (VTR), Interferometric tube rating (ITR) in nm and Ellipsometric tube rating (ETR) in nm, Delta P in mmHg, Evaluation Pass/Fail

lab	method	VTR	ITR	ETR	Delta P	Time to 25 mmHg (min)	Pumped Vol. (mL)	Heater Temp. (°C)	Pass/Fail
52	D3241-A1	1	-----	-----	0	-----	460	260	Pass
120	D3241-A1	<1	10.1	-----	0.0	10.1	500	275	PASS
140		-----	-----	-----	-----	-----	-----	-----	-----
150	D3241-A1	<1	23	-----	0	150	450	260	Pass
159		-----	-----	-----	-----	-----	-----	-----	-----
171	D3241-A1	<1	-----	-----	0	-----	600	-----	Pass
175	D3241-A1	<1	-----	-----	0	-----	440	260	Pass
177	D3241-A1	1	17.7	-----	1	150	450	260	Pass
225	D3241-A1	0	-----	-----	0.0	-----	-----	-----	-----
230	D3241-A1	<1	-----	-----	<1	-----	500	260	Pass
237	D3241-A1	1	32.2	-----	0	0	460.0	260	PASS
253	D3241-A1	< 1	-----	-----	0	-----	450	260	Pass
254	D3241-A1	1	-----	-----	0	-----	450	260	Pass
256		-----	-----	-----	-----	-----	-----	-----	-----
311	D3241-A1	<1	-----	-----	<1	-----	460	260	Pass
323		-----	-----	-----	-----	-----	-----	-----	-----
334		-----	14.4	-----	0.4	0	510	260	Pass
335	D3241-A1	< 1	9	-----	0	0	>495	260	Pass
372	D3241-A1	1	-----	-----	0	-----	450	260	pass
391	D3241-A1	<1	-----	-----	0	-----	450	260	Pass
398	D3241-A1	<1	-----	-----	0.1	0	439	260	Pass
399	D3241-A1	<1	-----	48.17	0.1	0	500	260	PASS
440	D3241-A1	1	-----	-----	1	N/A	455	260	Pass
445	IP323-B	1	-----	-----	<1	-----	480	260	Pass
447	D3241-A1	1	-----	-----	<1	-----	450	260	-----
463		-----	-----	27.21	0.0	not reached	460	260.0	pass
496		-----	-----	-----	-----	-----	-----	-----	-----
631	D3241-A1	<1	-----	-----	0.3	-----	500	260	Pass
657		-----	-----	13.02	<1	0	453	260.2	Pass
823	D3241-A1	1	-----	-----	0.0	0.0	450	260	Pass
824	D3241-A1	1	-----	-----	0	0	510	260	pass
851	D3241-A1	1	9.7	-----	0.1	150	450	260	Pass
862	D3241-A1	<1	-----	-----	0	-----	-----	260	pass
869	D3241-A1	1	-----	17.96	0.1	0	447	260	Pass
922		-----	8.8	-----	0.2	-----	450	260	Pass
962		-----	-----	-----	-----	-----	-----	-----	-----
963		-----	-----	-----	-----	-----	-----	-----	-----
974	D3241-A1	<1 NP/ NA	-----	-----	1	-----	450	260	Pass
994		-----	-----	-----	-----	-----	-----	-----	-----
1011		-----	-----	-----	-----	-----	-----	-----	-----
1016	D3241-A1	<1	-----	-----	<1	-----	456	260	Pass
1040		-----	-----	14.5	0.1	-----	-----	-----	-----
1064	D3241-A1	1	-----	-----	1.1	-----	455.8	260	Pass
1079	D3241-A1	<1	-----	-----	3.2	-----	430	260	-----
1082	D3241-A1	<1	14.7	-----	0	-----	510	260	Pass
1097	D3241-A1	1	-----	-----	0.0	-----	455	260	Pass
1109	D3241	<1	-----	-----	0	-----	450	260	Pass
1135	D3241-A1	1	-----	-----	<1	-----	507	260	Pass
1146	D3241-A1	1	37.2	-----	1	0	465	260	pass
1191	D3241-A1	1	24.3	-----	0	-----	498	260	Pass
1212	D3241-A1	<1	-----	-----	0.9	-----	430	260	Pass
1237	D3241-A1	<1	-----	-----	0.0	-----	450	260	pass
1275	IP323-B	<1	-----	-----	0.0	-----	460	265	Pass
1279	D3241-A1	<1	-----	25.28	0.3	0.00	459	260	pass
1299	D3241-A1	1	-----	-----	0	-----	450	260	Pass
1316	D3241-A1	1	-----	115	0	-----	450	260	-----
1318	D3241-A1	1	-----	-----	0.1	0	450	260	Pass
1320	D3241-A1	1	-----	-----	0	0	441	260	pass
1357	D3241-A1	<1	n.a	n.a	0	n.a	460	260	Pass
1399		-----	-----	-----	-----	-----	-----	-----	-----
1417	IP323-B	<1	-----	-----	0	-----	455	260	Pass
1433	D3241-A1	1	-----	7.75	0	0	-----	-----	Pass
1496	D3241-A1	<1	-----	13.11	0	-----	449	260	Pass
1538	D3241-A1	<1	-----	-----	<1	-----	450	260.0	pass
1586	D3241-A1	1	-----	-----	0.9	-----	510	260	-----
1587	D3241-A1	< 1	-----	-----	0.0	-----	445	260	pass
1610	IP323-B	2	-----	-----	<1	7	450	260	PASS
1613	D3241-A1	<1	-----	-----	0.0	0.0	450	260	pass
1631	D3241-A1	<1.0	-----	-----	0.0	-----	-----	-----	Pass
1635		-----	-----	-----	-----	-----	-----	-----	-----
1720		-----	-----	-----	-----	-----	-----	-----	-----
1724	D3241-A1	1	-----	-----	0	-----	-----	260	pass

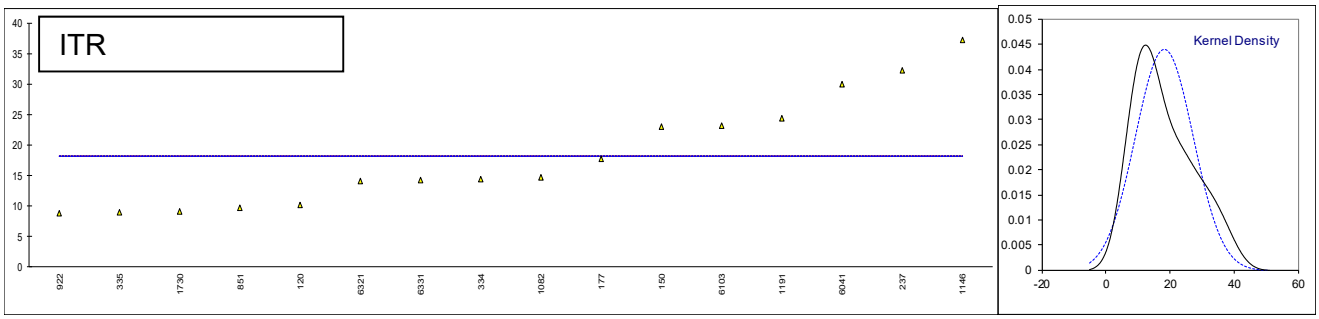
lab	method	VTR	ITR	ETR	Delta P	Time to 25 mmHg (min)	Pumped Vol. (mL)	Heater Temp. (°C)	Pass/Fail
1730	D3241-A1	L1.0	9.1	-----	1.8	-----	450	260	PASS
1741	D3241-A1	1	-----	-----	0	0	466	260	pass
1833	D3241-A1	1	-----	-----	0.0	-----	-----	260	pass
1852	D3241-A1	<1	-----	13.88	0	0	460.2	260	pass
1854	D3241-A1	LT1	-----	-----	2	-----	460	260	Pass
1913	D3241-A1	<1	-----	-----	0.0	-----	450	260	Pass
1961	D3241-A1	<1	-----	-----	0.0	-----	460	260	Pass
2129	D3241-A1	1	-----	-----	0	-----	450	260	Pass
2130	D3241-A1	<1	-----	-----	0.2	-----	-----	260	Pass
6035	D3241-A1	1	-----	12.93	0	-----	450	260	Pass
6041	D3241-A1	1 C	29.9	16.42	0.1	0.00	476	260	pass
6054	D3241-A1	< 1	-----	-----	0.0	0.0	510	260	Pass
6075	D3241-A1	1	-----	-----	0	-----	450	260.0	pass
6103	D3241	1	23.2	-----	0.0	150	460	260	Pass
6139		-----	-----	-----	0.6	0.0	459	260	Pass
6168	D3241-A1	1	-----	-----	0.4	0	550	260	Pass
6201	D3241-A1	<1	-----	-----	<1	<1	441	260	pass
6238		-----	-----	-----	-----	-----	-----	-----	-----
6262		-----	-----	-----	-----	-----	-----	-----	-----
6315	D3241-A1	1	-----	2	0.0	150	500	260	pass
6321		-----	14.1	-----	<1	-----	455	260	Pass
6324	D3241	<1	-----	-----	0	-----	460	260	Pass
6331	D3241-A1	1	14.2	-----	0	-----	450	260	Pass
6344	D3241-A1	1	-----	-----	1	-----	450	260	-----
	n	75	16	13	82				75 (Pass)
Range of results									
	Min.	0	8.8	2	0				
	Max.	2	37.2	115	3.2				

Lab 6041 first reported 2

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.



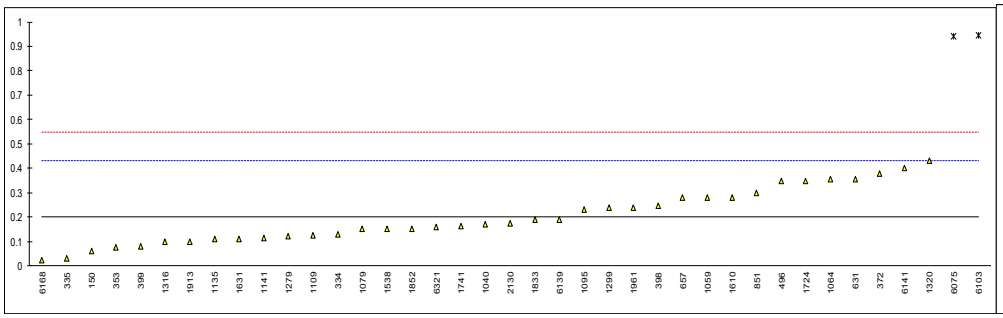
For the graphical display the alfanumeric values were calculated as follows: visual tube rating:< x as (x-0.5) and > x as (x+0.5)

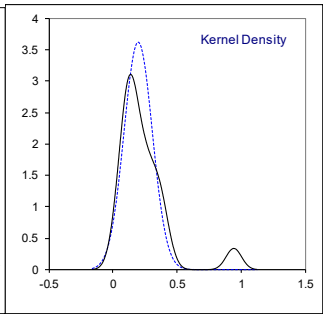


Determination of Particulate Contamination on sample #20156; Particulate matter in mg/L, Filtration time in minutes and Volume of fuel filtered in mL

lab	method	Part. matter	mark	z(targ)	filtr.time	vol. filtered	remarks
140		-----		-----	-----	-----	
150	D5452	0.06		-1.21	-----	3600	
169		-----		-----	-----	-----	
334	D5452	0.13		-0.60	2	3800	
335	D5452	0.03		-1.47	-----	3.62	
353	IP423	0.075		-1.08	6	4000	
372	D5452	0.38		1.55	7	4000	
398	D5452	0.246		0.40	-----	3650	
399	D5452	0.08		-1.03	11	3800	
440		-----		-----	-----	-----	
496	D5452	0.35		1.30	15	3640	
631	D5452	0.357		1.36	581.24	3640	
657	D5452	0.2785		0.68	5.00	3593.2	
851	D5452	0.300		0.86	4:45.16	4000	
962		-----		-----	-----	-----	
963		-----		-----	-----	-----	
1011		-----		-----	-----	-----	
1040	D5452	0.17		-0.26	7.39	3605	
1059	D5452	0.28		0.69	55	3670	
1064	D5452	0.356		1.35	3.23	3650	
1079	D5452	0.15		-0.43	-----	4000	
1095	D5452	0.23		0.26	-----	4000	
1109	D5452	0.126		-0.64	-----	3650	
1135	D5452	0.11		-0.77	5.2	1798	
1141	D5452	0.113		-0.75	3	3800	
1279	D5452	0.12		-0.69	15	4000	
1299	D5452	0.24		0.35	5	3660	
1316	D5452	0.10		-0.86	10	4000	
1320	D5452	0.43		1.99	-----	3700	
1357		-----		-----	-----	-----	
1538	D5452	0.15		-0.43	-----	3630	
1610	In house	0.28		0.69	8.5	3.55	
1631	D5452	0.11		-0.77	7	3.785	
1724	IP423	0.35		1.30	-----	4000	
1741	D5452	0.164		-0.31	5	3670	
1833	IP423	0.19		-0.08	-----	-----	
1852	D5452	0.15		-0.43	-----	4000	
1913	D5452	0.10		-0.86	13	4000	
1961	D5452	0.24		0.35	-----	3670	
2130	D5452	0.175		-0.21	8.53	4000	
6075	D5452	0.943	R(0.01)	6.41	10	3636.5	
6103	D5452	0.947	R(0.01)	6.45	30.0	3800	
6139	D2276	0.19		-0.08	-----	3650	
6141	D6217	0.4		1.73	195	1000	
6168	D5452	0.0225		-1.53	9	4000	
6238		-----		-----	-----	-----	
6321	IP423	0.16		-0.34	-----	4000	

normality	OK
n	37
outliers	2
mean (n)	0.200
st.dev. (n)	0.1102
R(calc.)	0.309
st.dev.(D5452:12)	0.1159
R(D5452:12)	0.325





APPENDIX 2 Equipment used in Particle Size distribution

lab	Equipment	Test Method based on equipment	Test Method reported	Calibration method reported	Remark
140					
150	Stanhope-Seta	IP565	IP565	ISO11171	
171	Stanhope-Seta	IP565	IP565	ISO11171	
225					
237					
311	Stanhope-Seta	IP565	IP565	ISO11171	
323					
333	Stanhope-Seta	IP565	IP565	ISO11171	
334	Stanhope-Seta	IP565	IP565	ISO11171	
335	Stanhope-Seta	IP565	IP565	ISO11171	
372	Stanhope-Seta	IP565	IP565	ISO11171	
447	Stanhope-Seta	IP565	IP565	ISO11171	
496				ISO11171	
657	Stanhope-Seta	IP565	IP565	ISO11171	
823	Stanhope-Seta	IP565	IP565	ISO11171	
824	Stanhope-Seta	IP565	IP565	ISO11171	
862					
963					
974					
1011					
1016					
1039	Stanhope-Seta	IP565	IP565	ISO11171	
1040	Parker Hannifin	IP564	IP564	ISO11171	
1059					
1062	Stanhope-Seta	IP565		ISO11171	
1064	Stanhope-Seta	IP565	IP565	ISO11171	
1065			IP565		
1079	Stanhope-Seta	IP565	IP565		
1095	Stanhope-Seta	IP565	IP565	ISO11171	
1097	Parker Hannifin	IP564	IP564	ISO11171	
1109	Stanhope-Seta	IP565	IP565	ISO11171	
1131	SETA Ana;ytics	IP565	IP565	ISO11171	
1135	Stanhope-Seta	IP565	IP565	ISO11171	
1191	Parker Hannifin	IP564	IP564	ISO11171	
1279	Stanhope-Seta	IP565	IP565	ISO11171	
1316	Pamas	IP577	In house	ISO11171	
1318	Stanhope-Seta	IP565	D7647	ISO11171	
1320					
1357	Stanhope-Seta	IP565	IP565	Vendor Calibration in UK	
1397	Stanhope-Seta	IP565	IP565	ISO11171	
1402	Stanhope-Seta	IP565	IP565	ISO11171	
1455	Stanhope-Seta	IP565	IP565	ISO11171	
1496	Stanhope-Seta	IP565	IP565	ISO11171	
1538	Stanhope-Seta	IP565	IP565	ISO11171	
1587	Parker Hannifin	IP564	IP564	ISO11171	
1610	Stanhope-Seta	IP565	IP565	ISO11171	
1613	Stanhope-Seta	IP565	IP565	ISO11171	
1631					
1724	Stanhope-Seta	IP565	IP565	ISO11171	
1741	Stanhope-Seta	IP565	IP565		
1833	Stanhope-Seta	IP565	IP565		
1852	Stanhope-Seta	IP565	IP565		
1913	Parker Hannifin	IP564	IP564	ISO11171	
1961	Parker Hannifin	IP564	IP564	ISO11171	
2130	ACM20 by Parker	IP564	IP564	Calibrated by Zematra, Hull United Kingdom	
6075	Stanhope-Seta	IP565	IP565	ISO11171	
6103	Stanhope-Seta	IP565	IP565	ISO11171	
6139	Stanhope-Seta	IP565	IP565	ISO11171	
6168	Pamas	IP577	ISO4406	ISO11171	

lab	Equipment	Test Method based on equipment	Test Method reported	Calibration method reported	Remark
6201	Seta AVcount	IP565	IP565	ISO11171	
6238					
6262					
6315	Stanhope-Seta	IP565	IP565	ISO11171	
6321	Stanhope-Seta	IP565	IP565	ISO11171	

APPENDIX 3 z-scores of Particle Size Distribution

z-scores on sample #20152 acc. to IP564, in counts/mL

Lab	≥4 µm	≥6 µm	≥14 µm	≥21 µm	≥25 µm	≥30 µm
140	-----	-----	-----	-----	-----	-----
150	-----	-----	-----	-----	-----	-----
171	-----	-----	-----	-----	-----	-----
225	-----	-----	-----	-----	-----	-----
237	-----	-----	-----	-----	-----	-----
311	-----	-----	-----	-----	-----	-----
323	-----	-----	-----	-----	-----	-----
333	-----	-----	-----	-----	-----	-----
334	-----	-----	-----	-----	-----	-----
335	-----	-----	-----	-----	-----	-----
372	-----	-----	-----	-----	-----	-----
447	-----	-----	-----	-----	-----	-----
496	-----	-----	-----	-----	-----	-----
657	-----	-----	-----	-----	-----	-----
823	-----	-----	-----	-----	-----	-----
824	-----	-----	-----	-----	-----	-----
862	-----	-----	-----	-----	-----	-----
963	-----	-----	-----	-----	-----	-----
974	-----	-----	-----	-----	-----	-----
1011	-----	-----	-----	-----	-----	-----
1016	-----	-----	-----	-----	-----	-----
1039	-----	-----	-----	-----	-----	-----
1040	-3.67	-2.67	-2.33	-1.34	-1.52	-1.04
1059	-----	-----	-----	-----	-----	-----
1062	-----	-----	-----	-----	-----	-----
1064	-----	-----	-----	-----	-----	-----
1065	-----	-----	-----	-----	-----	-----
1079	-----	-----	-----	-----	-----	-----
1095	-----	-----	-----	-----	-----	-----
1097	-1.05	0.68	-0.02	-0.70	-1.03	-0.82
1109	-----	-----	-----	-----	-----	-----
1131	-----	-----	-----	-----	-----	-----
1135	-----	-----	-----	-----	-----	-----
1191	-5.73	-1.79	2.14	1.17	0.95	0.81
1279	-----	-----	-----	-----	-----	-----
1316	0.80	0.06	-0.82	-0.73	-0.92	-0.69
1318	-----	-----	-----	-----	-----	-----
1320	-----	-----	-----	-----	-----	-----
1357	-----	-----	-----	-----	-----	-----
1397	-----	-----	-----	-----	-----	-----
1402	-----	-----	-----	-----	-----	-----
1455	-----	-----	-----	-----	-----	-----
1496	-----	-----	-----	-----	-----	-----
1538	-----	-----	-----	-----	-----	-----
1587	-1.14	-0.48	-2.23	-0.87	-0.48	0.27
1610	-----	-----	-----	-----	-----	-----
1613	-----	-----	-----	-----	-----	-----
1631	-----	-----	-----	-----	-----	-----
1724	-----	-----	-----	-----	-----	-----
1741	-----	-----	-----	-----	-----	-----
1833	-----	-----	-----	-----	-----	-----
1852	-----	-----	-----	-----	-----	-----
1913	0.96	2.46	1.25	0.48	0.47	0.54
1961	0.46	1.14	0.77	0.71	0.45	0.92
2130	-0.02	0.61	1.25	1.27	2.08	3.76
6075	-----	-----	-----	-----	-----	-----
6103	-----	-----	-----	-----	-----	-----
6139	-----	-----	-----	-----	-----	-----
6168	-----	-----	-----	-----	-----	-----
6201	-----	-----	-----	-----	-----	-----
6238	-----	-----	-----	-----	-----	-----
6262	-----	-----	-----	-----	-----	-----
6315	-----	-----	-----	-----	-----	-----
6321	-----	-----	-----	-----	-----	-----

z-scores on sample #20152 acc. to IP565, in counts/mL

Lab	≥4 µm	≥6 µm	≥14 µm	≥21 µm	≥25 µm	≥30 µm
140	-----	-----	-----	-----	-----	-----
150	-5.23	-2.89	-1.33	-0.33	-0.34	-0.28
171	1.41	2.38	1.28	-2.72	-1.86	-1.04
225	-----	-----	-----	-----	-----	-----
237	-----	-----	-----	-----	-----	-----
311	3.71	1.22	-0.32	-0.45	-0.64	-1.04
323	-----	-----	-----	-----	-----	-----
333	0.15	0.62	0.26	-0.11	-0.34	-1.04
334	0.95	-2.03	-1.44	-0.15	0.12	0.64
335	-1.25	-2.26	-2.34	-0.94	0.45	2.01
372	3.01	1.17	0.87	0.45	0.03	-0.07
447	-1.11	0.07	-0.88	-1.42	-1.28	-0.74
496	-----	-----	-----	-----	-----	-----
657	0.44	0.64	-1.32	-1.72	-1.62	-1.27
823	3.36	2.12	2.89	1.14	2.09	2.78
824	2.48	-1.17	-0.56	0.30	0.33	0.18
862	-----	-----	-----	-----	-----	-----
963	-----	-----	-----	-----	-----	-----
974	-----	-----	-----	-----	-----	-----
1011	-----	-----	-----	-----	-----	-----
1016	-----	-----	-----	-----	-----	-----
1039	2.06	-0.11	-0.20	0.91	1.18	0.48
1040	-----	-----	-----	-----	-----	-----
1059	-----	-----	-----	-----	-----	-----
1062	0.83	-0.94	-1.08	-1.00	-0.77	-0.97
1064	-2.26	0.59	0.58	-1.87	-2.10	-1.66
1065	1.75	4.41	8.68	10.59	20.11	27.30
1079	9.16	2.50	0.80	-1.42	-0.98	-0.97
1095	-1.33	0.01	1.22	1.93	2.09	-0.28
1097	-----	-----	-----	-----	-----	-----
1109	0.09	3.19	4.33	7.23	8.09	8.35
1131	1.53	2.51	-0.10	3.07	2.40	1.25
1135	-3.38	-3.30	-2.18	-2.81	-2.10	-1.27
1191	-----	-----	-----	-----	-----	-----
1279	-1.01	4.37	-1.45	-1.64	-0.77	-0.89
1316	-----	-----	-----	-----	-----	-----
1318	-1.10	-1.06	-1.92	-----	-----	-1.43
1320	-----	-----	-----	-----	-----	-----
1357	-----	-----	-----	-----	-----	-----
1397	-7.48	-5.29	-1.24	-0.79	-0.49	-0.89
1402	-1.91	-1.49	-1.48	-0.15	1.52	3.08
1455	0.45	-0.29	-1.89	-2.49	-1.86	-----
1496	-----	-----	-----	-----	-----	-----
1538	6.93	2.34	4.76	7.31	11.71	14.85
1587	-----	-----	-----	-----	-----	-----
1610	-1.13	0.85	0.38	-0.53	-0.34	-0.36
1613	-0.17	-1.22	-0.72	1.17	2.46	2.39
1631	-----	-----	-----	-----	-----	-----
1724	-0.65	-0.97	0.30	4.34	-----	-----
1741	1.21	0.68	1.03	2.78	1.64	0.33
1833	1.39	-0.94	-0.10	3.52	5.14	-----
1852	0.80	2.25	2.96	1.42	0.27	-0.51
1913	-----	-----	-----	-----	-----	-----
1961	-----	-----	-----	-----	-----	-----
2130	-----	-----	-----	-----	-----	-----
6075	3.05	-0.18	0.14	-0.11	-0.64	-0.28
6103	-25.79	-13.20	-5.32	-3.28	-2.47	-1.81
6139	7.33	2.50	2.65	0.31	0.88	0.94
6168	18.54	5.58	2.39	5.01	-----	-1.27
6201	-2.20	1.09	1.02	-2.83	-2.29	-1.66
6238	-----	-----	-----	-----	-----	-----
6262	-----	-----	-----	-----	-----	-----
6315	0.21	0.00	-0.20	0.67	1.27	2.01
6321	-4.34	-1.44	4.39	1.45	1.70	0.56

APPENDIX 4

Number of participants per country

1 lab in AFGHANISTAN
1 lab in AUSTRALIA
1 lab in AZERBAIJAN
6 labs in BELGIUM
1 lab in BULGARIA
2 labs in CANADA
9 labs in CHINA, People's Republic
1 lab in CONGO Brazzaville
1 lab in COSTA RICA
2 labs in COTE D'IVOIRE
2 labs in CROATIA
2 labs in CZECH REPUBLIC
1 lab in DJIBOUTI
1 lab in EGYPT
2 labs in ESTONIA
2 labs in FINLAND
7 labs in FRANCE
1 lab in FRENCH GUIANA
2 labs in GEORGIA
5 labs in GERMANY
3 labs in GREECE
1 lab in GUINEA REPUBLIC
1 lab in HONG KONG
1 lab in HUNGARY
1 lab in INDIA
2 labs in IRELAND
1 lab in ISRAEL
4 labs in ITALY
1 lab in JORDAN
1 lab in KAZAKHSTAN
2 labs in KENYA
1 lab in LATVIA
1 lab in LEBANON
2 labs in LITHUANIA
2 labs in MALAYSIA
1 lab in MALTA
1 lab in MARTINIQUE
1 lab in MAURITIUS
1 lab in MOROCCO
1 lab in MOZAMBIQUE
9 labs in NETHERLANDS
2 labs in NIGERIA
1 lab in NORTH MACEDONIA, Republic of
2 labs in NORWAY
2 labs in OMAN
2 labs in PAKISTAN
1 lab in PERU
2 labs in PHILIPPINES
4 labs in POLAND
2 labs in PORTUGAL
1 lab in ROMANIA
1 lab in RUSSIAN FEDERATION
3 labs in SAUDI ARABIA
1 lab in SENEGAL
2 labs in SERBIA
1 lab in SINGAPORE
2 labs in SLOVAKIA
2 labs in SLOVENIA
2 labs in SOUTH AFRICA
2 labs in SOUTH KOREA
1 lab in SPAIN
1 lab in SUDAN
6 labs in SWEDEN
2 labs in TANZANIA
1 lab in TOGO
5 labs in TURKEY
1 lab in TURKMENISTAN
2 labs in UNITED ARAB EMIRATES
14 labs in UNITED KINGDOM
8 labs in UNITED STATES OF AMERICA
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), DG5	= straggler in Double Grubbs' outlier test
R(0.01), R1	= outlier in Rosner's outlier test
R(0.05), R5	= 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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