

Results of Proficiency Test  
Fuel Oil  
December 2017

Organised by: Institute for Interlaboratory Studies  
Spijkenisse, the Netherlands

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Report: iis17F03

April 2018

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## 1 INTRODUCTION

Since 1994 the Institute for Interlaboratory Studies (iis) organizes a proficiency test for Fuel Oil every year. During the annual proficiency testing program of 2017/2018, it was decided to continue the round robin for the analyses of Fuel Oil twice per year in accordance with the latest applicable version of the specifications ISO 8217 and ASTM D396.

In this round robin 145 laboratories in 60 different countries registered for participation. In the round robin for Metals in Fuel Oil 101 laboratories in 49 different countries registered for participation, for the Bromine and p-Value proficiency study 47 laboratories in 23 different countries registered for participation and for the Compatibility proficiency study 58 laboratories in 32 different countries registered for participation. In total 149 participants registered over the 4 sub rounds. See appendix 2 for the number of participants per country for the main round only. In this report, the test results of the December 2017 interlaboratory study on Fuel Oil are presented and discussed. This report is also electronically available through the iis website [www.iisnl.com](http://www.iisnl.com).

## 2 SET-UP

The Institute for Interlaboratory Studies (iis) in Spijkensisse, the Netherlands, was the organiser of this proficiency test (PT). Sample analyses for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC 17025 accredited laboratory. Depending on the registration it was decided to send one bottle of 1L Fuel Oil (labelled #17265), one bottle of 0.1L Fuel Oil (labelled #17266) specifically prepared for metal determinations, one bottle of 1L Fuel Oil (labelled #17267) specifically obtained for Bromine Number and p-Value determinations and/or one specially prepared filter (labelled #17268) for the determination of Compatibility of residual oils. 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 Spijkensisse, the Netherlands, is accredited in agreement with ISO/IEC 17043:2010 (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 means of 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 March 2017 (iis-protocol, version 3.4). This protocol is electronically available through the iis website [www.iisnl.com](http://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 this proficiency test four different samples were prepared; a regular Fuel Oil, a Fuel Oil positive on metals, a sample for Bromine Number and p-Value and a prepared filter for the determination of the Compatibility of residual oils.

From 200 litre Fuel Oil, obtained from a refinery in Germany, after heating to 60°C and homogenization, 158 amber glass bottles of 1L were filled and labelled #17265. The homogeneity of these subsamples was checked by determination of Density at 15°C in accordance with ISO12185 on 8 stratified randomly selected samples.

	Density at 15°C in kg/m <sup>3</sup>
Sample #17265-1	1008.1
Sample #17265-2	1007.9
Sample #17265-3	1007.8
Sample #17265-4	1007.8
Sample #17265-5	1007.8
Sample #17265-6	1007.8
Sample #17265-7	1007.9
Sample #17265-8	1007.8

Table 1: homogeneity test results of subsamples #17265

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

	Density at 15°C in kg/m <sup>3</sup>
r (observed)	0.30
reference test method	ISO12185:96
0.3 * R (ref. test method)	0.45

Table 2: evaluation of the repeatability of subsamples #17265

The calculated repeatability for Density was in agreement with 0.3 times the corresponding reproducibility of the reference test method. Therefore, homogeneity of the subsamples of #17265 was assumed.

For subsample #17266, 12 litre of a batch of Fuel Oil obtained at a local supplier was spiked with Aluminum (approx. 15 mg/kg) and Silicon (approx. 16 mg/kg). From the batch, after heating to 60°C and homogenization, 118 PE bottles of 0.1L were filled and labelled #17266. The homogeneity of the subsamples was checked by determination of Aluminum in accordance with IP501 and Density at 15°C in accordance with ISO12185 on 8 stratified randomly selected samples.

	Aluminum in mg/kg	Density at 15°C in kg/m <sup>3</sup>
Sample #17266-1	14.0	1004.2
Sample #17266-2	14.0	1004.3
Sample #17266-3	14.0	1004.3
Sample #17266-4	14.0	1004.1
Sample #17266-5	14.0	1004.3
Sample #17266-6	14.0	1004.2
Sample #17266-7	14.0	1004.3
Sample #17266-8	14.0	1004.3

Table 3: homogeneity test results of subsamples #17266

From the test results of table 3, the repeatabilities were calculated and compared with 0.3 times the corresponding reproducibilities of the reference test methods in agreement with the procedure of ISO 13528, Annex B2 in the next table:

	Aluminum in mg/kg	Density at 15°C in kg/m <sup>3</sup>
r (observed)	0	0.21
reference test method	IP501:05	ISO12185:96
0.3 * R (ref. test method)	1.4	0.45

Table 4: evaluation of the repeatabilities of subsamples #17266

The calculated repeatabilities for Aluminum and Density were in agreement with 0.3 times the corresponding reproducibilities of IP501:05 and ISO12185:96. Therefore, homogeneity of the subsamples of #17266 was assumed.

For the subsamples, labelled #17267, 100 litre Fuel Oil was obtained from a refinery in Germany. From the batch, after heating to 60°C and homogenization, 78 amber glass bottles of 1L were filled and labelled #17267. The homogeneity of the subsamples #17267 was checked by determination of Density at 15°C in accordance with ISO12185 on 8 stratified randomly selected samples.

	Density at 15°C in kg/m <sup>3</sup>
Sample #17267-1	1007.7
Sample #17267-2	1007.7
Sample #17267-3	1007.7
Sample #17267-4	1007.7
Sample #17267-5	1007.7
Sample #17267-6	1007.7
Sample #17267-7	1007.7
Sample #17267-8	1007.7

Table 5: homogeneity test results of subsamples #17267

From the test results of table 5, the repeatability was calculated and compared with 0.3 times the corresponding reproducibility of the reference test method in agreement with the procedure of ISO 13528, Annex B2 in the next table:

	Density at 15°C in kg/m <sup>3</sup>
r (observed)	0.00
reference test method	ISO12185:96
0.3 * R (ref. test method)	0.45

Table 6: evaluation of the repeatability of subsamples #17267

The calculated repeatability for Density was in agreement with 0.3 times the corresponding reproducibility of the reference test method. Therefore, homogeneity of the subsamples of #17267 was assumed.

For the preparation of the samples #17268 two incompatible Fuel Oils were mixed according to ASTM D4740 and the mixture was applied to paper filters as per D4740. The paper filters with a spot were kept in a tin box, labelled #17268. The homogeneity was done visually and the homogeneity of the samples #17268 was assumed.

Depending on the registration of the participant; one bottle of 1L, labelled #17265, one bottle of 0.1L, labelled #17266, one bottle of 1L, labelled #17267 and/or a tin box with a paper filter labelled #17268 was sent to each of the participating laboratories on November 29, 2017. An SDS was added to the sample package.

## 2.5 STABILITY OF THE SAMPLES

The stability of Fuel Oil, packed in the amber glass and PE bottles was checked. The material has been found sufficiently stable for the period of the proficiency test.

## 2.6 ANALYSES

The participants were requested to determine the following parameters:

On sample #17265: Acid Number, API Gravity, Ash Content, Asphaltenes, Calculated Carbon Aromaticity Index (CCAI), Carbon Residue – Micro Method, Conradson Carbon Residue, Density at 15°C, Flash Point PMcc, Heat of Combustion (Gross and Net), Kinematic Viscosity (at 50°C and 100°C), Viscosity Stabinger (at 50°C and 100°C), Nitrogen Content, Pour Point (Lower, Upper and Automated), Sediment by Extraction, Total Sediment (by Hot filtration, Accelerated and Potential), Total Sulphur Content, Water by Distillation, Water and Sediment, Distillation (IBP, 5% - 50% recovered and FBP) and Total Carbon, Hydrogen and Nitrogen (CHN-analyzer).

On sample #17266: Aluminium, Silicon, Sum of Aluminium and Silicon, Iron, Nickel, Sodium, Vanadium, Calcium, Phosphorus and Zinc content.

On Sample #17267: Bromine Number on distillate <360°C AET and p-Value.

On Sample #17268: Compatibility rating on residual oils.

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 calculations.

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 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/](http://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](http://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/](http://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 reanalysis). 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 March 2017 (iis-protocol, version 3.4).

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 ISO 5725 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 requirements based on the target reproducibility in accordance with ISO13528. When the uncertainty passed the evaluation, no remarks are made in the report. However, when the uncertainty failed the evaluation it is mentioned in the report and it will have consequences for the evaluation of the test results.

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

### 3.2 GRAPHICS

In order to visualize the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported test results are plotted. The corresponding laboratory numbers are on the X-axis.

The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected reference test method. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle.

Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms. Also, a normal Gauss curve 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, ISO or EN 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 targets 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:

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

The  $z_{(\text{target})}$  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

In this proficiency test several problems were encountered with the dispatch of the samples. A number of laboratories in Russia and Turkey received the samples late or not at all. Five participants did not report any test results for sample #17265 and ten participants reported the test results after the final reporting date. Fourteen participants did not report any test results for sample #17266 and two participants reported the test results after the final reporting date. Eleven participants did not report any test results for sample #17267 and one participant reported the test results after the final reporting date. Four participants did not report any test results for sample #17268 and one participant reported the test results after the final reporting date. Not all laboratories were able to report all analyses requested. Finally, over the four PTs, 143 participants reported in total 3081 numerical test results. Observed were 133 statistically outlying test results, which is 4.3 %. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

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

### 4.1 EVALUATION PER SAMPLE AND PER TEST

In this section, the reported test results are discussed per sample and per test. The test methods, which are used by the various laboratories, were taken into account for explaining the observed differences when possible and applicable. These test methods are also listed in the tables together with the reported test results. The abbreviations, used in these tables, are listed in appendix 3.

In the iis PT reports, ASTM test methods are referred to with a number (e.g. D1298) and an added designation for the year that the test method was adopted or revised (e.g. D1298:12b). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D1298:12b(2017)). In the test results tables of appendix 1 only the test method number and year of adoption or revision (e.g. D1298:12b) are used.

**Sample #17265:**

Acid Number: This determination was not problematic. Five statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of ASTM D664-A:17.

API Gravity: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D1298:12b(2017).

Ash: This determination was very problematic at an ash content of 0.030 %M/M. Eight statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not at all in agreement with requirements of ISO6245:01.

Asphaltenes: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of IP143:04.

Calculated Carbon Aromaticity Index: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ISO8217:17.

Carbon Residue Micro Method: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in good agreement with the requirements of ISO10370:14.

Conradson Carbon Residue: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of ASTM D189:06(2014).

Density at 15°C: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO12185:96.

Flash Point PMcc: This determination was problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ISO2719-B:16.

HOC Gross: This determination of the Gross Heat of Combustion was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of ASTM D240:17.

HOC Net: This determination of the Net Heat of Combustion was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of ASTM D240:17.

Kin. Visc. at 50°C: This determination was not problematic. Four statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO3104:94.

Kin. Visc. at 100°C: This determination was problematic. Seven statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ISO3104:94.

Vis Stab.at 50°C: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D7042:16e3.

Vis Stab.at 100°C: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D7042:16e3.

Nitrogen: This determination was problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D5762:12. When the test results of ASTM D5762 volumetric and gravimetric test methods were evaluated separately, the calculated reproducibility over the gravimetric test results was much smaller than the calculated reproducibility over the volumetric test results. The calculated reproducibility over the gravimetric test results is in agreement with the requirements of ASTM D5762:12. This is different to the June 2017 Fuel Oil PT (iis17F01) findings.

Pour Point Lower: This determination was problematic. No statistical outliers were observed, but two test results were excluded as the reported result for lower PP is higher than the result for upper PP, which is in principle not possible. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of ISO3016:94. Rounding to 3 degrees acc. ISO3016:94 may (partly) explain the large variation.

Pour Point Upper: This determination was problematic. Three statistical outliers were observed and two test results were excluded as the reported result for upper PP is lower than the result for lower PP, which is in principle not possible. The calculated reproducibility after rejection of the suspect data is not in agreement with ISO3016:94. Rounding to 3 degrees acc. ISO3016:94 may (partly) explain the large variation.

Pour Point Automated: This determination was problematic. One statistical outlier was observed and one test result was excluded, the reported test method was a manual method. The calculated reproducibility after rejection of the suspect data is not in agreement with ASTM D5950:14. The large variation may (partly) be explained by possible problems with the detector sensitivity or by not following the test method properly (see Note 8 in ASTM D5950:14).

Sediment by Extraction: This determination was not problematic. Four statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D473:07e1(2017).

Sediment by hot filtration: 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 IP375:11.

Total sediment (Accelerated): This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with IP390:11. IP390:11 is identical to ISO10307-2:09 and technically equivalent to ASTM D4870 (see appendix X1).

Total sediment (Potential): This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with IP390:11. IP390:11 is identical to ISO10307-2:09 and technically equivalent to ASTM D4870 (see appendix X1).

Total Sulphur: This determination may be problematic dependent on the test method used. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ISO 8754:03, but not with the more strict requirements of ASTM D4294:16e1.

Water by distillation: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ISO3733:99 or ASTM D95:13e1.

Water and Sediment: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D1796:11(2016).

Vacuum Distillation: This determination was not problematic. In total twelve statistical outliers were observed and three other test results were excluded as the other reported test results of these laboratories were marked as statistical outliers. However, the calculated reproducibility after rejection of the suspect data is in agreement for IBP, 5%, 10%, 20%, 30%, 40%, 50% recovered and FBP with the requirements of ASTM D1160:15.

CHN-Analyzer: This determination was not problematic for Carbon and Hydrogen and problematic for Nitrogen. In total four statistical outliers were observed. However, the calculated reproducibilities for Carbon and Hydrogen after rejection of the statistical outlier are in agreement with the requirements of ASTM D5291:16. The calculated reproducibility for Nitrogen after rejection of the statistical outliers is not in agreement with the requirements of ASTM D5291:16.

**Sample #17266:**

Aluminum: This determination may be problematic for a number of participants. Nine statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the reproducibility of IP470:05 and IP501:05. The average recovery of Aluminum (theoretical increment of 15 mg Aluminum/kg) may be good: "< 100%" (the actual blank Aluminum content is unknown).

Silicon: This determination may be problematic depending on the test method used. Five statistical outliers were observed and four other test results were excluded. Two tests results because about 50% of the other metal tests results were marked as statistical outliers and the other two because of a statistical outlier in the Al and sum Al+Si determination. However, the calculated reproducibility after rejection of the suspect data is in agreement with the reproducibility of IP470:05 but not in agreement with the more strict requirements of IP501:05. The average recovery of Silicon (theoretical increment of 16 mg Silicon/kg) may be insufficient: "< 61%" (the actual blank Silicon content is unknown).

Total Al/Si: This determination may be problematic depending on the test method used. Seven statistical outliers were observed and three other test results were excluded. One test result because about 50% of the other metal tests results were marked as statistical outliers and the other two because of a statistical outlier in the Si and Al determination. However, the calculated reproducibility after rejection of the suspect data is in agreement with the reproducibility of IP470:05 but not in agreement with the more strict requirements of IP501:05.

Iron: This determination may be problematic for a number of participants. Eight statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the reproducibility of IP470:05 and IP501:05.

Nickel: This determination was not problematic. Four statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the reproducibilities of IP470:05 and IP501:05.

Sodium: This determination may be problematic dependent on the test method used. Three statistical outliers were observed and three other test results were excluded as about 50% of the other metal tests results were marked as statistical outliers. The calculated reproducibility after rejection of the suspect data is in agreement with the reproducibility of IP470:05, but not in agreement with the more strict requirements of IP501:05.

Vanadium: This determination was not problematic. Six statistical outliers were observed and one other test result was excluded as about 50% of the other metal tests results were marked as statistical outliers. However, the calculated reproducibility after rejection of the suspect data is in agreement with the reproducibilities of IP470:05 and IP501:05.

Calcium: This determination may be problematic dependent on the test method used. Two statistical outliers were observed and two test results were excluded as about 50% of the other metal tests results were marked as statistical outliers. The calculated reproducibility after rejection of the suspect data is in full agreement with the requirements of IP470:05, but not in agreement with the more strict requirements of IP501:05.

Zinc: This determination was problematic for a number of participants. Nine statistical outliers were observed and one other test result was excluded as about 50% of the other metal tests results were marked as statistical outliers. However, the calculated reproducibility after rejection of the suspect data is in full agreement with the reproducibilities of IP470:05 or IP501:05.

Phosphorus: This determination was problematic. Five statistical outliers were observed and one other test result was excluded as about 50% of the other metal tests results were marked as statistical outliers. The calculated reproducibility after rejection of the suspect data is not in agreement with the reproducibility of IP500:03 or IP501:05.

Finally, it should be noted that proper attention for homogenization is crucial for a material such as Fuel Oil. Due to the nature of the material it is very susceptible to problems when not handled correctly. Practically most test methods for the determination of metals in Fuel Oil have similar statements regarding homogenization. Recommended is the use of a quality control fuel oil with known amounts of metals like Al, Fe, Si and V. This control standard may be of use to detect deviations in metals with respect to the preparation steps.

**Sample #17267:**

Bromine Number: 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 D1159:07 (2017).

P-Value: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the reproducibility requirements of target test method estimated from the repeatability.

**Sample #17268:**

Compatibility This determination was not problematic. Three statistical outliers were observed. All other test results are within the reproducibility range of 1 as per requirements of ASTM D4740:04 (2014).

## 4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility ( $2.8 * sd$ ) as declared by the relevant reference test methods and the reproducibility (R (lit)) as found for the group of participating laboratories. The average test results of the evaluated parameters, calculated reproducibilities and reproducibilities, derived from reference test methods (in casu ASTM, EN, ISO and IP reference methods) are compared in the next table.

Parameters	unit	n	average	2.8 * sd	R (lit)
Acid Number	mg KOH/g	71	0.10	0.10	0.16
API Gravity		79	8.7	0.2	0.5
Ash Content	%M/M	107	0.030	0.009	0.005
Asphaltenes	%M/M	68	8.10	1.59	1.62
Calc. Carbon Aromaticity Index		68	863.0	1.9	2.4
Carbon Residue, Micro Method	%M/M	95	15.74	1.06	1.54
Conradson Carbon Residue	%M/M	43	15.95	2.14	2.51
Density at 15°C	kg/m <sup>3</sup>	123	1008.2	1.6	1.5
Flash Point PMcc	°C	120	100.1	7.5	6
Heat of Combustion, Gross	MJ/kg	64	41.91	0.39	0.40
Heat of Combustion, Net	MJ/kg	59	39.67	0.40	0.40
Kinematic Viscosity at 50°C	mm <sup>2</sup> /s	108	716.9	41.8	53.1
Kinematic Viscosity at 100°C	mm <sup>2</sup> /s	83	48.3	2.8	2.3
Stabinger Viscosity at 50°C	mm <sup>2</sup> /s	17	717.3	38.4	73.8
Stabinger Viscosity at 100°C	mm <sup>2</sup> /s	17	48.3	1.8	3.5
Nitrogen Content	µg/g	36	3932	1344	1046
Pour Point, Lower	°C	56	4.5	8.0	6.6
Pour Point, Upper	°C	83	7.0	7.7	6.6
Pour Point (automated), Δ3°C	°C	23	1.9	9.7	6.1
Sediment by Extraction	%M/M	85	0.019	0.028	0.038
Total Sediment (Hot Filtration)	%M/M	71	0.017	0.016	0.038
Total Sediment (Accelerated)	%M/M	69	0.019	0.023	0.040
Total Sediment (Potential)	%M/M	62	0.019	0.022	0.040
Total Sulphur Content	%M/M	124	3.40	0.30	0.29
Water by Distillation	%V/V	91	0.05	0.07	0.2
Water and Sediment	%V/V	43	0.05	0.07	0.11
Distillation at 10mmHg calculated to 760 mmHg					
Initial Boiling Point	°C	29	194.7	24.3	49
5% recovered	°C	30	278.2	18.6	26.5
10% recovered	°C	31	323.4	20.3	21.7
20% recovered	°C	30	396.4	19.0	20.1
30% recovered	°C	28	454.2	12.3	17.9
40% recovered	°C	28	494.7	10.8	15.5
50% recovered	°C	20	524.0	11.8	11.0
Final Boiling Point	°C	25	529.7	23.7	26.9
CHN analyser					
Total Carbon	%M/M	21	85.9	1.7	2.4
Total Hydrogen	%M/M	20	10.24	0.49	0.74
Total Nitrogen	%M/M	12	0.42	0.17	0.10

Table 7: summary of test results on Fuel Oil sample #17265

Parameters	unit	n	average	2.8 * sd	R (lit)
Aluminium as Al	mg/kg	73	15.1	4.4	4.9
Silicon as Si	mg/kg	66	9.7	5.5	6.4
Total Aluminium+Silicon	mg/kg	64	24.6	6.8	8.0
Iron as Fe	mg/kg	69	16.0	4.2	10.0
Nickel as Ni	mg/kg	78	33.1	11.8	16.0
Sodium as Na	mg/kg	76	11.1	5.0	5.5
Vanadium as V	mg/kg	76	94.5	17.1	31.7
Calcium as Ca	mg/kg	70	4.6	4.1	4.1
Phosphorus as P	mg/kg	39	0.6	1.2	1.0
Zinc as Zn	mg/kg	54	0.97	0.5	0.6

Table 8: summary of test results on Fuel Oil sample #17266

Parameters	unit	n	average	2.8 * sd	R (lit)
Bromine Number	g Br <sub>2</sub> /100g	31	13.7	3.9	4.5
p-Value		33	1.36	0.43	0.60
Compatibility	rating	51	4.4	1.4	1

Table 9: summary of test results on Fuel Oil sample #17267 and #17268

Without further statistical calculations it can be concluded that for a number tests there is a good compliance of the group of participating laboratories with the relevant reference test method. The problematic tests have been discussed in paragraph 4.1.

#### 4.3 COMPARISON OF THE PROFICIENCY TEST OF DECEMBER 2017 WITH PREVIOUS PTS

	December 2017	June 2017	December 2016	January 2016	January 2015
Number of reporting labs	143	169	83	226	207
Number of results reported	3081	3119	1936	4787	4048
Statistical outliers	133	102	72	115	130
Percentage outliers	4.3%	3.3%	3.7%	2.4%	3.2%

Table 10: comparison with previous proficiency tests

In proficiency tests, outlier percentages of 3% - 7.5% are quite normal.

The performance of the determinations of the proficiency tests was compared against the requirements of the respective reference test methods. The conclusions are given the following table:

Determination	December 2017	June 2017	December 2016	January 2016	January 2015
Acid Number	++	+	++	+	++
API Gravity	++	++	++	++	++
Ash Content	--	--	--	-	--
Asphaltenes	+/-	-	--	+/-	-
Calc. Carbon Aromaticity Index	+	+	+	+	+
Carbon Residue, Micro Method	+	+/-	+	+	++



Determination	December 2017	June 2017	December 2016	January 2016	January 2015
Conradson Carbon Residue	+	+	+/-	+	+
Density at 15 °C	+/-	+/-	+	+/-	+/-
Flash Point PMcc	-	+/-	+/-	-	-
Heat of Combustion Gross	+/-	+	++	-	--
Heat of Combustion Net	+/-	+	++	-	--
Kinematic Viscosity at 50°C	+	+/-	++	+	++
Kinematic Viscosity at 100°C	-	+	-	+/-	-
Stabinger Viscosity at 50°C	++	+	+	n.e.	n.e.
Stabinger Viscosity at 100°C	++	++	++	n.e.	n.e.
Nitrogen	-	-	-	-	--
Pour Point Lower	-	-	-	-	-
Pour Point Upper	-	-	-	-	-
Pour Point (automated), Δ3°C	-	-	--	-	--
Sediments by Extraction	+	+	++	++	++
Total Sediment (Hot Filtration)	++	++	++	++	++
Total Sediment (Accelerated)	++	++	++	++	++
Total Sediment (Potential)	++	++	++	++	++
Total Sulphur	+/-	+	+/-	+	--
Water by Distillation	++	++	++	++	++
Water and Sediment	+	+/-	++	+	+/-
Distillation at 10mmHg to AET	+	+/-	-	+/-	+/-
Total Carbon	+	+	+	+	+
Total Hydrogen	+	+	+	+	++
Total Nitrogen	-	++	+/-	-	--
Aluminium as Al	+	+/-	n.e.	n.e.	+/-
Silicon as Si	+	+	n.e.	n.e.	+
Total Aluminium/Silicon	+	+/-	n.e.	n.e.	+
Iron as Fe	++	+	+	+	++
Nickel as Ni	+	++	+	+	++
Sodium as Na	+	+	+/-	+/-	+
Vanadium as V	++	++	+	+	++
Calcium as Ca	+/-	+	+/-	-	--
Phosphorus as P	-	+	+	+	++
Zinc as Zn	+/-	+	+	-	-
Bromine Number	+	n.e.	+	-	+/-
p-Value	+	n.e.	+/-	++	+/-
Compatibility	(-)	n.e.	+/-	n.e.	n.e.

Table 11: comparison determinations against the reference test method

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

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

**APPENDIX 1**

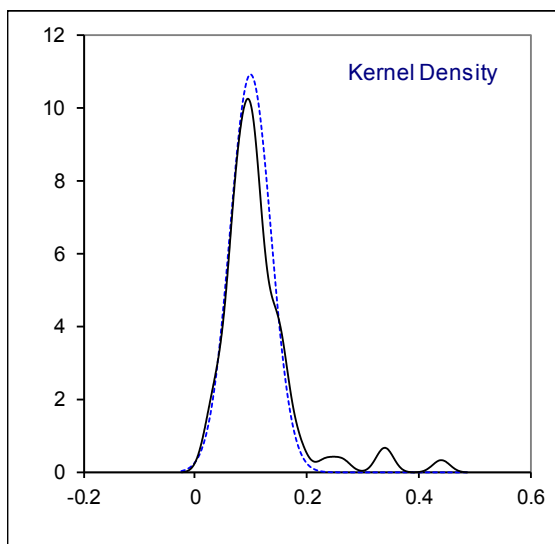
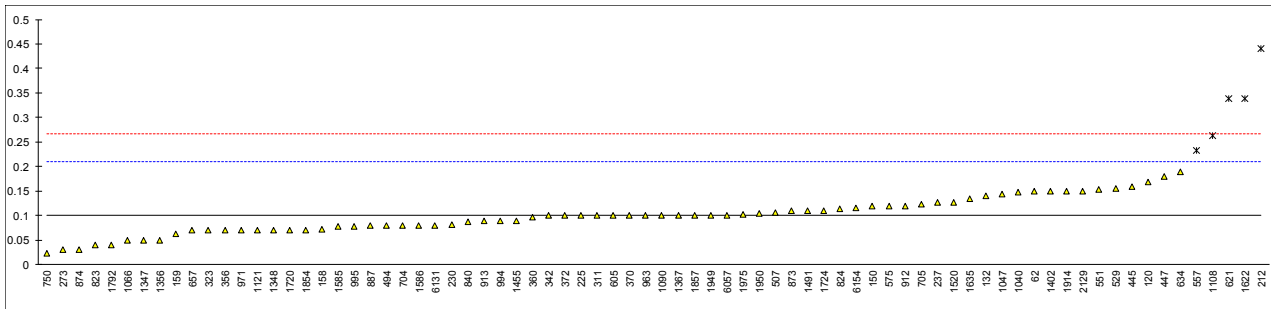
Determination of Acid Number on sample #17265; results in mg KOH/g

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D664-A	<0.1		----	886		----		----
62	D664-A	0.15		0.91	887		0.079		-0.37
120	D664-A	0.169		1.25	912	D664-A	0.120		0.37
131		----		----	913	D664-A	0.09		-0.17
132	D664-A	0.14		0.73	962		----		----
140		----		----	963	D664-A	0.10		0.01
150	D664-A	0.12		0.37	971	D664-A	0.07		-0.54
154		----		----	994	D664-A	0.09		-0.17
158	D664-A	0.072		-0.50	995	D664-A	0.0781		-0.39
159	D664-A	0.063		-0.66	996		----		----
168		----		----	997		----		----
169		----		----	1040	ISO6619	0.148		0.87
171	D664-A	<0.10		----	1047	PN-C-04049	0.144		0.80
175		----		----	1062		----		----
194		----		----	1066	D664-A	0.050		-0.90
212	D664-A	0.44	R(0.01)	6.15	1082		----		----
225	D664-A	0.10		0.01	1090	D664-A	0.10	C	0.01
228		----		----	1107		----		----
230	D664-A	0.081		-0.34	1108	D664-B	0.263	R(0.01)	2.95
237	D664-A	0.126		0.48	1121	D664-A	0.07		-0.54
238		----		----	1134		----		----
256		----		----	1191		----		----
273	D664-A	0.03		-1.26	1205		----		----
311	D664-A	0.10		0.01	1229		----		----
313		----		----	1266		----		----
323	D664-A	0.07		-0.54	1320		----		----
333		----		----	1347	D664-A	0.05		-0.90
336		----		----	1348	D664-A	0.07		-0.54
337		----		----	1356	D664-A	0.05		-0.90
342	D664-A	0.10		0.01	1367	IP177	0.1		0.01
349		----		----	1381		----		----
351		----		----	1385		----		----
356	D664-A	0.07		-0.54	1402	D664-A	0.15		0.91
360	D664-A	0.096		-0.07	1455	D664-A	0.09		-0.17
370	D664-A	0.100		0.01	1491	D664-A	0.11		0.19
372	D664-A	0.1		0.01	1520	D664-A	0.126		0.48
399		----		----	1575		----		----
440		----		----	1585	D664-A	0.077		-0.41
445	D664-A	0.159		1.07	1586	D664-A	0.08		-0.36
447	D664-A	0.18		1.45	1622	D664-A	0.3394	R(0.01)	4.33
463		----		----	1631		----		----
494	D664-A	0.08		-0.36	1633		----		----
507	D664-A	0.106		0.11	1635	D664-A	0.1343		0.63
529	D664-A	0.1545		0.99	1636		----		----
541		----		----	1648		----		----
551	D664-A	0.154		0.98	1681		----		----
557	D664-A	0.233524732	R(0.05)	2.42	1720	D664-A	0.07		-0.54
558		----		----	1724	D664-A	0.11		0.19
575	D664-A	0.12		0.37	1792	D664-A	0.04		-1.08
605	D664-A	0.10		0.01	1810		----		----
621	ISO6619	0.339	R(0.01)	4.32	1811		----		----
631		----		----	1854	D664-A	0.07		-0.54
633		----		----	1857	D664-A	0.10		0.01
634	D664-A	0.19	C	1.63	1906		----		----
657	D664-A	0.07		-0.54	1914	D664-A	0.15		0.91
663		----		----	1948		----		----
671		----		----	1949	D664-A	0.100		0.01
704	D664-A	0.08		-0.36	1950	D664-A	0.105		0.10
705	D664-A	0.124		0.44	1975	D664-A	0.102		0.04
732		----		----	2129	D664-A	0.15		0.91
750	D664-A	0.023		-1.38	6025		----		----
753	D664-A	<0.1		----	6035		----		----
781	D664-A	<0.10		----	6054		----		----
785		----		----	6057	D664-A	0.10		0.01
798		----		----	6075		----		----
823	D664-A	0.04		-1.08	6092		----		----
824	D664-A	0.114		0.26	6109		----		----
825		----		----	6131	D664-A	0.08		-0.36
840	D664-A	0.088		-0.21	6138		----		----
842		----		----	6154	D664-A	0.115		0.28
873	D664-A	0.11		0.19	7012		----		----
874	D664-A	0.03		-1.26	7017		----		----
875		----		----					

normality	OK
n	71
outliers	5
mean (n)	0.0997
st.dev. (n)	0.03649
R(calc.)	0.1022
st.dev.(D664-A:17)	0.05538
R(D664-A:17)	0.1551

Lab 634 first reported: 0.369

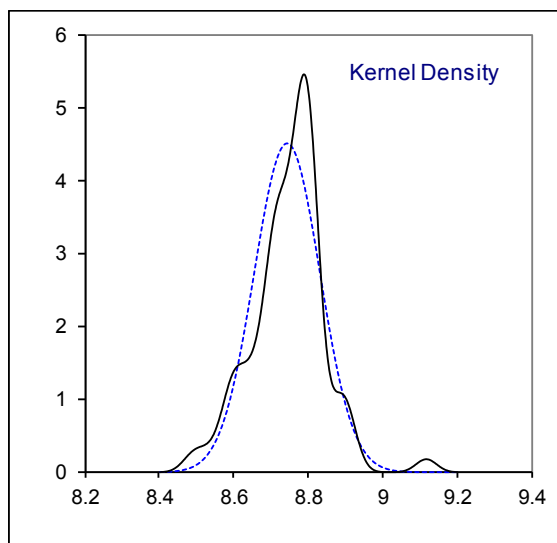
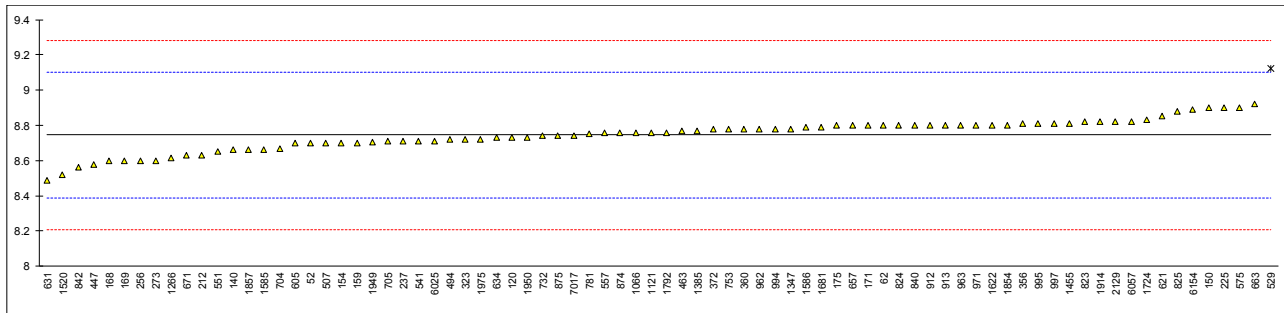
Lab 1090 first reported:1.46



Determination of API Gravity on sample #17265

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4052	8.7		-0.25	886		----		----
62	D4052	8.8		0.31	887		----		----
120	D4052	8.73		-0.09	912	D1298	8.8		0.31
131		----		----	913	D1298	8.80		0.31
132		----		----	962	D1298	8.78		0.19
140	D4052	8.66		-0.48	963	D1298	8.8		0.31
150	D4052	8.9		0.87	971	D1298	8.80		0.31
154	D287	8.7		-0.25	994	D1250	8.78		0.19
158		----		----	995	D1250	8.81		0.36
159	D4052	8.7		-0.25	996		----		----
168	D287	8.6		-0.81	997	D1250	8.81		0.36
169	D1298	8.6		-0.81	1040		----		----
171	D4052	8.8		0.31	1047		----		----
175	D4052	8.8		0.31	1062		----		----
194		----		----	1066	D4052	8.76		0.08
212	ISO12185	8.63		-0.65	1082		----		----
225	D4052	8.9		0.87	1090		----		----
228		----		----	1107		----		----
230		----		----	1108		----		----
237	D4052	8.71		-0.20	1121	D4052	8.76		0.08
238		----		----	1134		----		----
256	D1298	8.6		-0.81	1191		----		----
273	D1298	8.6		-0.81	1205		----		----
311		----		----	1229		----		----
313		----		----	1266	D1298	8.616		-0.72
323	D4052	8.72		-0.14	1320		----		----
333		----		----	1347	D1298	8.78		0.19
336		----		----	1348		----		----
337		----		----	1356		----		----
342		----		----	1367		----		----
349		----		----	1381		----		----
351		----		----	1385	D1298	8.77		0.14
356	D4052	8.81		0.36	1402		----		----
360	D4052	8.78		0.19	1455	ISO12185	8.81		0.36
370		----		----	1491		----		----
372	D1298	8.78		0.19	1520	D4052	8.520		-1.26
399		----		----	1575		----		----
440		----		----	1585	D1298	8.664		-0.46
445		----		----	1586	D1298	8.79		0.25
447	D1250	8.58		-0.93	1622	D4052	8.8		0.31
463	D4052	8.77		0.14	1631		----		----
494	ISO12185	8.72		-0.14	1633		----		----
507	D1298	8.70		-0.25	1635		----		----
529	D1298	9.12	R(0.01)	2.10	1636		----		----
541	D4052	8.71		-0.20	1648		----		----
551	D4052	8.65		-0.53	1681	D1298	8.79		0.25
557	D4052	8.76		0.08	1720		----		----
558		----		----	1724	D4052	8.83		0.47
575	D1298	8.9		0.87	1792	ISO12185	8.76		0.08
605	D4052	8.70		-0.25	1810		----		----
621	ISO12185	8.85		0.59	1811		----		----
631	D1298	8.488		-1.44	1854	ISO12185	8.8		0.31
633		----		----	1857	D1298	8.66		-0.48
634	D1298	8.73		-0.09	1906		----		----
657	D4052	8.80		0.31	1914	D4052	8.82		0.42
663	D4052	8.92		0.98	1948		----		----
671	D1298	8.63		-0.65	1949	D4052	8.706		-0.22
704	D1298	8.67		-0.42	1950	D1298	8.73		-0.09
705	D1298	8.71		-0.20	1975	D4052	8.72		-0.14
732	ISO12185	8.74		-0.03	2129	D4052Conversion	8.820		0.42
750		----		----	6025	D1298	8.71		-0.20
753	ISO12185	8.78		0.19	6035		----		----
781	D4052	8.75		0.03	6054		----		----
785		----		----	6057	D4052	8.82		0.42
798		----		----	6075		----		----
823	D1298	8.82		0.42	6092		----		----
824	D1298	8.8		0.31	6109		----		----
825	D4052	8.88		0.75	6131		----		----
840	D1298	8.80		0.31	6138		----		----
842	ISO12185	8.56		-1.04	6154	D1298	8.89		0.81
873		----		----	7012		----		----
874	D4052	8.76		0.08	7017	D1298	8.74		-0.03
875	D1250	8.74		-0.03					

normality	OK
n	79
outliers	1
mean (n)	8.745
st.dev. (n)	0.0884
R(calc.)	0.248
st.dev.(D1298:12b)	0.1786
R(D1298:12b)	0.5



## Determination of Ash on sample #17265; results in %M/M

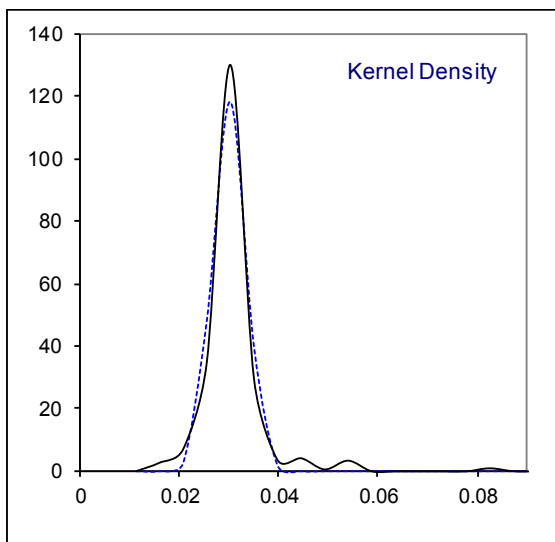
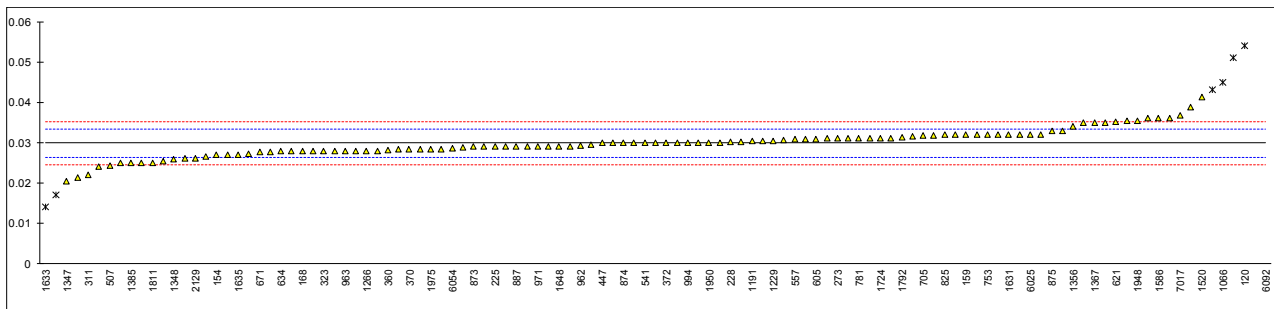
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D482	0.029		-0.49	886		----		----
62		----		----	887	D482	0.029		-0.49
120	D482	0.0539	R(0.01)	13.46	912	D482	0.032		1.19
131		----		----	913	D482	0.024		-3.29
132	ISO6245	0.02828		-0.89	962	ISO6245	0.0293		-0.32
140		----		----	963	ISO6245	0.028		-1.05
150	D482	0.035	C	2.87	971	D482	0.029		-0.49
154	D482	0.027		-1.61	994	D482	0.030		0.07
158		----		----	995	ISO6245	0.032		1.19
159	D482	0.032		1.19	996	D482	0.036		3.43
168	D482	0.028		-1.05	997	D482	0.031		0.63
169	D482	0.026		-2.17	1040	ISO6245	0.0255		-2.45
171	ISO6245	0.030		0.07	1047	ISO6245	0.028		-1.05
175		----		----	1062		----		----
194		----		----	1066	D482	0.045	R(0.05)	8.47
212	ISO6245	0.030		0.07	1082		----		----
225	D482	0.029		-0.49	1090	ISO6245	0.0214		-4.74
228	D482	0.0303		0.24	1107		----		----
230	ISO6245	0.03099		0.63	1108	ISO6245	0.029		-0.49
237	D482	0.025		-2.73	1121	IP4	0.027		-1.61
238		----		----	1134		----		----
256	D482	0.03		0.07	1191	ISO6245	0.0304		0.30
273	D482	0.031		0.63	1205		----		----
311	ISO6245	0.022		-4.41	1229	ISO6245	0.0305		0.35
313		----		----	1266	ISO6245	0.028		-1.05
323	ISO6245	0.028		-1.05	1320	ISO6245	0.033		1.75
333		----		----	1347	D482	0.0205		-5.25
336		----		----	1348	D482	0.0259		-2.22
337		----		----	1356	ISO6245	0.034		2.31
342	D482	0.028		-1.05	1367	IP4	0.035		2.87
349		----		----	1381	ISO6245	0.0315		0.91
351	ISO6245	0.0266		-1.83	1385	D482	0.025		-2.73
356		----		----	1402	ISO6245	0.025		-2.73
360	ISO6245	0.0281		-0.99	1455	D482	0.030		0.07
370	D482	0.0283		-0.88	1491	ISO6245	0.051	R(0.01)	11.83
372	ISO6245	0.030		0.07	1520	ISO6245	0.0412		6.35
399		----		----	1575		----		----
440		----		----	1585	D482	0.0304		0.30
445	ISO6245	0.028		-1.05	1586	ISO6245	0.036		3.43
447	IP4	0.030		0.07	1622	D482	0.035		2.87
463		----		----	1631	ISO6245	0.032		1.19
494	ISO6245	0.017	R(0.05)	-7.21	1633	EN15403	0.0142	R(0.05)	-8.77
507	ISO6245	0.0242		-3.17	1635	ISO6245	0.027		-1.61
529	D482	0.0318		1.08	1636	ISO6245	0.0388		5.00
541	D482	0.0300		0.07	1648	ISO6245	0.029		-0.49
551	D482	0.032		1.19	1681	ISO6245	0.0283		-0.88
557	D482	0.030844787		0.55	1720		----		----
558		----		----	1724	D482	0.031		0.63
575		----		----	1792	ISO6245	0.0313		0.80
605	ISO6245	0.0309		0.58	1810	ISO6245	0.084	R(0.01)	30.31
621	ISO6245	0.0352		2.99	1811	ISO6245	0.025		-2.73
631	D482	0.0309		0.58	1854	ISO6245	0.028		-1.05
633	D482	0.0307		0.47	1857	ISO6245	0.029		-0.49
634	D482	0.02795		-1.07	1906		----		----
657	D482	0.029		-0.49	1914	ISO6245	0.032		1.19
663	D482	0.0296		-0.15	1948	ISO6245	0.0354		3.10
671	D482	0.0277		-1.21	1949	D482	0.0278		-1.16
704	ISO6245	0.0303		0.24	1950	ISO6245	0.030		0.07
705	ISO6245	0.0317		1.03	1975	D482	0.0283		-0.88
732	D482	0.031		0.63	2129	ISO6245	0.026	C	-2.17
750	D482	0.028		-1.05	6025	D482	0.032		1.19
753	D482	0.032		1.19	6035		----		----
781	ISO6245	0.031		0.63	6054	D482	0.0285		-0.77
785	D482	0.030	C	0.07	6057	ISO6245	0.030		0.07
798	D482	0.0353		3.04	6075	ISO6245	0.0310		0.63
823	ISO6245	0.0273		-1.44	6092	ISO6245	0.018	R(0.01)	-6.65
824	ISO6245	0.029		-0.49	6109		----		----
825	D482	0.032		1.19	6131	ISO6245	0.032		1.19
840	D482	0.0284		-0.82	6138		----		----
842	D482	0.0288		-0.60	6154	D482	0.043	R(0.05)	7.35
873	D482	0.029		-0.49	7012	D482	0.036		3.43
874	D482	0.030		0.07	7017	D482	0.0368		3.88
875	D482	0.033		1.75					

		<u>Only ISO6245 results:</u>
normality	suspect	suspect
n	107	52
outliers	8	2
mean (n)	0.0299	0.0293
st.dev. (n)	0.00337	0.00434
R(calc.)	0.0094	0.0121
st.dev.(ISO6245:01)	0.00179	0.00179
R(ISO6245:01)	0.005	0.005

Lab 150 first reported: 0.043

Lab 785 first reported: 0.044

Lab 2129 first reported: 0.043



Determination of Asphaltenes on sample #17265; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	IP143	9.3		2.07	886		----		----
62	D6560	8.9		1.38	887		----		----
120	D6560	7.986		-0.20	912		----		----
131		----		----	913		----		----
132		----		----	962	IP143	8.52		0.72
140		----		----	963	IP143	8.5		0.69
150	IP143	7.7		-0.69	971	IP143	8.60		0.86
154	D6560	7.7		-0.69	994	D6560	7.97		-0.23
158		----		----	995	D6560	7.55		-0.95
159		----		----	996		----		----
168		----		----	997		----		----
169		----		----	1040		----		----
171	IP143	8.1		0.00	1047		----		----
175		----		----	1062		----		----
194		----		----	1066	IP143	7.0		-1.90
212		----		----	1082		----		----
225	D6560	7.3		-1.38	1090	IP143	7.98	C	-0.21
228		----		----	1107	IP143	7.61		-0.85
230	IP143	8.223		0.21	1108		----		----
237		----		----	1121	IP143	8.1		0.00
238		----		----	1134		----		----
256		----		----	1191	DIN51595	7.60		-0.87
273		----		----	1205		----		----
311		----		----	1229		----		----
313		----		----	1266		----		----
323	IP143	9.1		1.73	1320		----		----
333		----		----	1347	IP143	7.859		-0.42
336		----		----	1348	IP143	8.71		1.05
337		----		----	1356	D6560	7.666		-0.75
342	IP143	8.160		0.10	1367		----		----
349		----		----	1381		----		----
351		----		----	1385	D6560	7.7		-0.69
356	IP143	8.1		0.00	1402	IP143	8.0		-0.18
360	D6560	8.50		0.69	1455	IP143	7.9		-0.35
370	IP143	7.98		-0.21	1491	IP143	8.8		1.21
372	IP143	7.7		-0.69	1520	IP143	8.92		1.41
399		----		----	1575		----		----
440		----		----	1585	IP143	7.94		-0.28
445	IP143	7.1		-1.73	1586	IP143	8.5		0.69
447	IP143	9.428		2.29	1622	IP143	8.35		0.43
463	IP143	7.535		-0.98	1631		----		----
494	IP143	7.800		-0.52	1633		----		----
507	IP143	8.54		0.76	1635	IP143	5.21	R(0.01)	-5.00
529	D6560	8.288		0.32	1636		----		----
541	IP143	7.78		-0.56	1648		----		----
551	IP143	7.77		-0.57	1681	IP143	7.22		-1.52
557	IP143	8.07473834		-0.05	1720		----		----
558		----		----	1724		----		----
575		----		----	1792		----		----
605	IP143	7.83		-0.47	1810		----		----
621		----		----	1811		----		----
631	D6560	7.09		-1.75	1854	IP143	7.77		-0.57
633		----		----	1857	IP143	8.6		0.86
634	D6560	9.0	C	1.55	1906		----		----
657	IP143	8.54		0.76	1914	IP143	7.8		-0.52
663		----		----	1948		----		----
671		----		----	1949	IP143	8.41		0.53
704	IP143	7.48		-1.07	1950	IP143	8.3		0.34
705	IP143	8.29		0.33	1975	IP143	8.23		0.22
732		----		----	2129	IP143	7.90		-0.35
750	IP143	7.71		-0.68	6025		----		----
753	IP143	8.02		-0.14	6035		----		----
781	IP143	8.62		0.90	6054	D6560	7.12		-1.70
785	D6560	8.3		0.34	6057		----		----
798		----		----	6075		----		----
823		----		----	6092	IP143	7.8		-0.52
824		----		----	6109		----		----
825		----		----	6131		----		----
840	IP143	9.77		2.88	6138		----		----
842		----		----	6154	IP143	7.5		-1.04
873	IP143	8.35		0.43	7012		----		----
874	IP143	8.4		0.52	7017	IP143	10.900	C,R(0.01)	4.84
875		----		----					

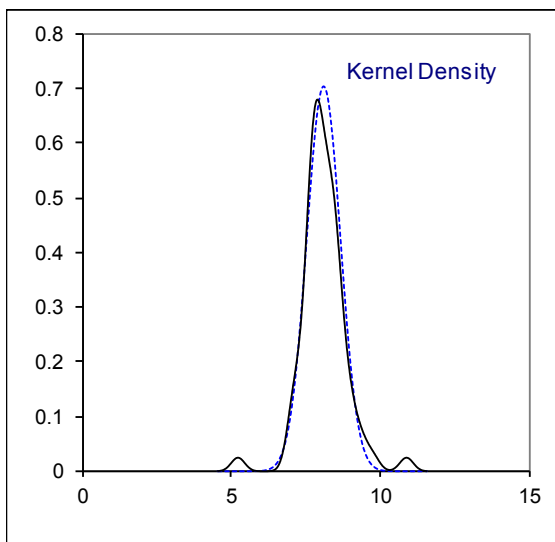
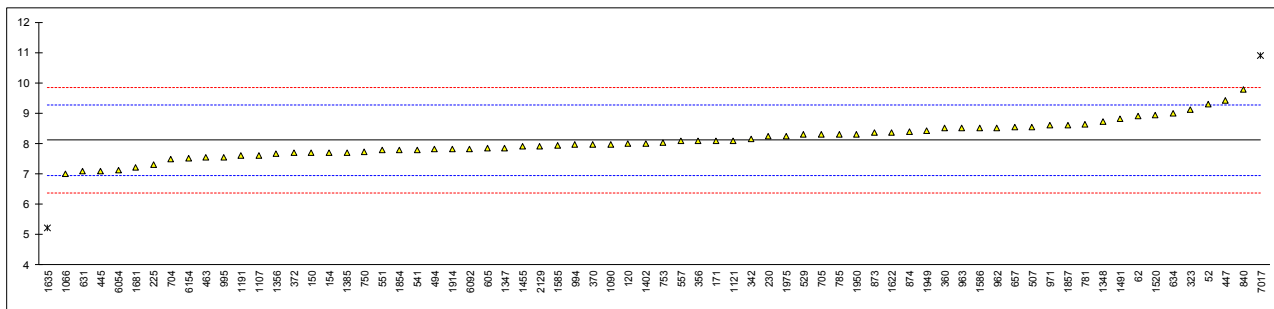


normality	OK
n	68
outliers	2
mean (n)	8.101
st.dev. (n)	0.5682
R(calc.)	1.591
st.dev.(IP143:04)	0.5787
R(IP143:04)	1.620

Lab 634 first reported: 5.2924

Lab 1090 first reported: 4.9464

Lab 7017 first reported: 11.189



Determination of Calculated Carbon Aromaticity Index on sample #17265

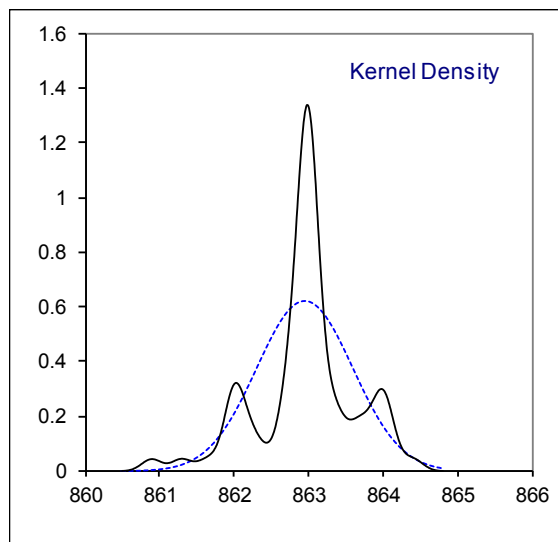
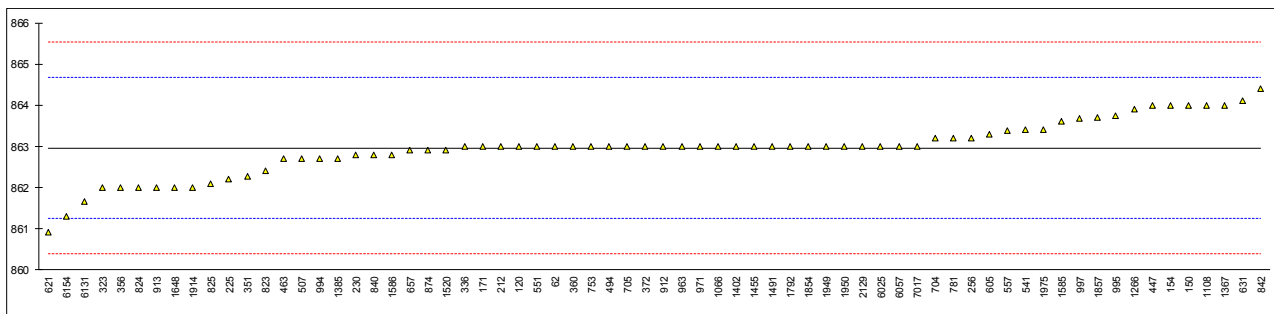
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	886		----		----
62	ISO8217	863		0.06	887		----		----
120	ISO8217	863		0.06	912	ISO8217	863		0.06
131		----		----	913	ISO8217	862		-1.11
132		----		----	962		----		----
140		----		----	963	ISO8217	863		0.06
150	ISO8217	864	C	1.22	971	ISO8217	863		0.06
154	ISO8217	864		1.22	994	ISO8217	862.7		-0.29
158		----		----	995	ISO8217	863.75	E	0.93
159		----		----	996		----		----
168		----		----	997	ISO8217	863.68	E	0.85
169		----		----	1040		----		----
171	ISO8217	863		0.06	1047		----		----
175		----		----	1062		----		----
194		----		----	1066	ISO8217	863		0.06
212	ISO8217	863		0.06	1082		----		----
225	ISO8217	862.2		-0.88	1090		----		----
228		----		----	1107		----		----
230	ISO8217	862.8		-0.18	1108	ISO8217	864		1.22
237		----		----	1121		----		----
238		----		----	1134		----		----
256	ISO8217	863.2		0.29	1191		----		----
273		----		----	1205		----		----
311		----		----	1229		----		----
313		----		----	1266	ISO8217	863.9		1.11
323	ISO8217	862		-1.11	1320		----		----
333		----		----	1347		----		----
336	ISO8217	863		0.06	1348		----		----
337		----		----	1356		----		----
342		----		----	1367	ISO8217	864		1.22
349		----		----	1381		----		----
351	ISO8217	862.27		-0.80	1385	ISO8217	862.71		-0.28
356	ISO8217	862		-1.11	1402		863		0.06
360	ISO8217	863		0.06	1455	ISO8217	863		0.06
370		----		----	1491	ISO8217	863		0.06
372	ISO8217	863		0.06	1520	ISO8217	862.9		-0.06
399		----		----	1575		----		----
440		----		----	1585	ISO8217	863.6		0.76
445		----		----	1586	ISO8217	862.8		-0.18
447	ISO8217	864		1.22	1622		----		----
463	ISO8217	862.7		-0.29	1631		----		----
494	ISO8217	863		0.06	1633		----		----
507	ISO8217	862.7		-0.29	1635		----		----
529		----		----	1636		----		----
541	ISO8217	863.4		0.52	1648	ISO8217	862		-1.11
551	ISO8217	863		0.06	1681		----		----
557	ISO8217	863.391		0.51	1720		----		----
558		----		----	1724		----		----
575		----		----	1792	ISO8217	863		0.06
605	ISO8217	863.3		0.41	1810		----		----
621	ISO8217	860.9		-2.39	1811		----		----
631	ISO8217	864.1		1.34	1854	ISO8217	863		0.06
633		----		----	1857	ISO8217	863.7		0.87
634		----		----	1906		----		----
657	ISO8217	862.9		-0.06	1914	ISO8217	862	C	-1.11
663		----		----	1948		----		----
671		----		----	1949	ISO8217	863		0.06
704	ISO8217	863.2		0.29	1950	ISO8217	863		0.06
705	ISO8217	863		0.06	1975	ISO8217	863.4		0.52
732		----		----	2129	ISO8217	863.0		0.06
750		----		----	6025	ISO8217	863		0.06
753	ISO8217	863		0.06	6035		----		----
781	ISO8217	863.2		0.29	6054		----		----
785		----		----	6057	ISO8217	863		0.06
798		----		----	6075		----		----
823	ISO8217	862.4		-0.64	6092		----		----
824	ISO8217	862		-1.11	6109		----		----
825	ISO8217	862.1		-0.99	6131	ISO8217	861.66	E	-1.51
840	ISO8217	862.8		-0.18	6138		----		----
842	ISO8217	864.4		1.69	6154	ISO8217	861.3		-1.93
873		----		----	7012		----		----
874	ISO8217	862.9		-0.06	7017	ISO8217	863		0.06
875		----		----					

normality	OK
n	68
outliers	0
mean (n)	862.955
st.dev. (n)	0.6618
R(calc.)	1.853
st.dev.(ISO8217:17)	0.8571
R(ISO8217:17)	2.40

Lab 150 first reported: 866

Lab 1914 first reported: 894

Labs 995, 997, 6131: probably a calc. error, iis calculated respectively 862.63; 862.62; 863.03

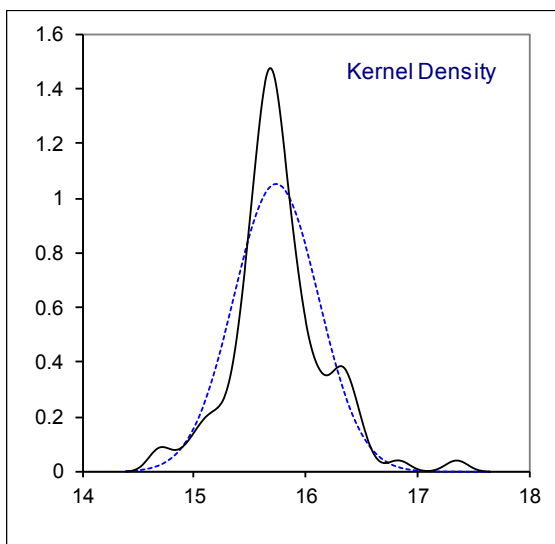
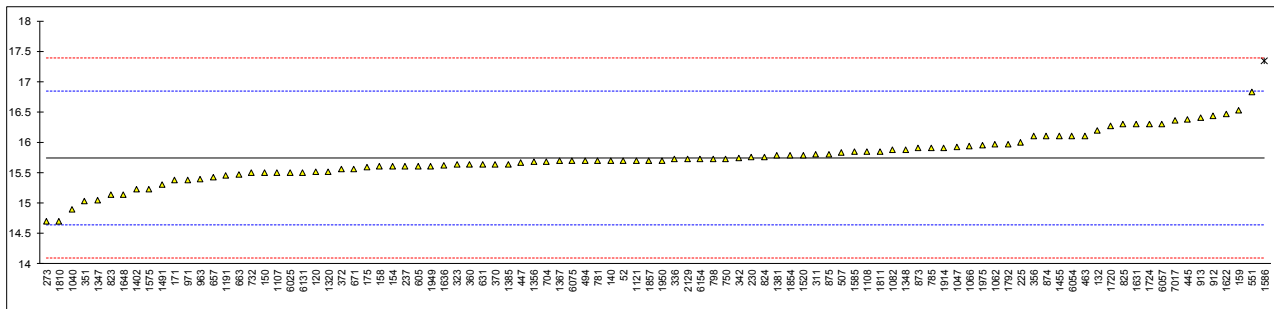


Determination of Carbon Residue Micro method on sample #17265; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4530	15.7		-0.07	886		----		----
62		----		----	887		----		----
120	D4530	15.51		-0.42	912	ISO10370	16.43		1.26
131		----		----	913	ISO10370	16.40		1.20
132	ISO10370	16.195		0.83	962		----		----
140		15.70		-0.07	963	ISO10370	15.40		-0.62
150	D4530	15.5		-0.43	971	D4530	15.38		-0.65
154	D4530	15.6		-0.25	994		----		----
158	D4530	15.6		-0.25	995		----		----
159	D4530	16.53		1.44	996		----		----
168		----		----	997		----		----
169		----		----	1040	ISO10370	14.895		-1.54
171	ISO10370	15.38		-0.65	1047	ISO10370	15.92		0.33
175	D4530	15.59		-0.27	1062	D4530	15.96		0.40
194		----		----	1066	ISO10370	15.94		0.37
212		----		----	1082	ISO10370	15.87		0.24
225	D4530	16.0		0.47	1090		----		----
228		----		----	1107	D4530	15.50		-0.43
230	ISO10370	15.757		0.03	1108	ISO10370	15.85		0.20
237	D4530	15.6		-0.25	1121	IP398	15.70		-0.07
238		----		----	1134		----		----
256		----		----	1191	ISO10370	15.45		-0.53
273	D4530	14.7		-1.89	1205		----		----
311	ISO10370	15.8		0.11	1229		----		----
313		----		----	1266		----		----
323	ISO10370	15.63		-0.20	1320	ISO10370	15.52		-0.40
333		----		----	1347	D4530	15.04		-1.27
336	ISO10370	15.72		-0.03	1348	D4530	15.87		0.24
337		----		----	1356	ISO10370	15.68		-0.11
342	D4530	15.74		0.00	1367	D4530	15.69		-0.09
349		----		----	1381	ISO10370	15.779		0.07
351	ISO10370	15.035		-1.28	1385	D4530	15.63		-0.20
356	ISO10370	16.1		0.66	1402	IP398	15.22		-0.94
360	D4530	15.63		-0.20	1455	ISO10370	16.10		0.66
370	D4530	15.63		-0.20	1491	ISO10370	15.3		-0.80
372	ISO10370	15.56		-0.33	1520	ISO10370	15.79		0.09
399		----		----	1575	D4530	15.23		-0.93
440		----		----	1585	D4530	15.848		0.20
445	ISO10370	16.37		1.15	1586	ISO10370	17.35	R(0.01)	2.93
447	IP398	15.6625		-0.14	1622	D4530	16.46		1.31
463	ISO10370	16.108		0.67	1631	ISO10370	16.3		1.02
494	ISO10370	15.70		-0.07	1633		----		----
507	ISO10370	15.838		0.18	1635		----		----
529		----		----	1636	ISO10370	15.627		-0.20
541		----		----	1648	ISO10370	15.140		-1.09
551	D4530	16.83		1.98	1681		----		----
557		----		----	1720	D4530	16.27		0.97
558		----		----	1724	D4530	16.30		1.02
575		----		----	1792	ISO10370	15.97		0.42
605	ISO10370	15.6		-0.25	1810	ISO10370	14.7		-1.89
621		----		----	1811	ISO10370	15.85		0.20
631	D4530	15.63		-0.20	1854	ISO10370	15.78		0.07
633		----		----	1857	ISO10370	15.7		-0.07
634		----		----	1906		----		----
657	ISO10370	15.43		-0.56	1914	D4530	15.9		0.29
663	D4530	15.47		-0.49	1948		----		----
671	D4530	15.565		-0.32	1949	ISO10370	15.61		-0.23
704	ISO10370	15.685		-0.10	1950	ISO10370	15.7		-0.07
705		----		----	1975	ISO10370	15.957		0.40
732	ISO10370	15.5		-0.43	2129	ISO10370	15.72	C	-0.03
750	ISO10370	15.73		-0.02	6025	D4530	15.50		-0.43
753		----		----	6035		----		----
781	ISO10370	15.7		-0.07	6054	D4530	16.1		0.66
785	D4530	15.9		0.29	6057	ISO10370	16.30		1.02
798	D4530	15.7245		-0.03	6075	ISO10370	15.696		-0.08
823	ISO10370	15.14		-1.09	6092		----		----
824	ISO10370	15.76		0.04	6109		----		----
825	ISO10370	16.30		1.02	6131	ISO10370	15.5		-0.43
840		----		----	6138		----		----
842		----		----	6154	D4530	15.72		-0.03
873	D4530	15.90		0.29	7012		----		----
874	ISO10370	16.1		0.66	7017	D4530	16.355		1.12
875	D4530	15.8		0.11					

normality	OK
n	95
outliers	1
mean (n)	15.7389
st.dev. (n)	0.37870
R(calc.)	1.0604
st.dev.(ISO10370:14)	0.54975
R(ISO10370:14)	1.5393

Lab 2129 first reported: 11.69



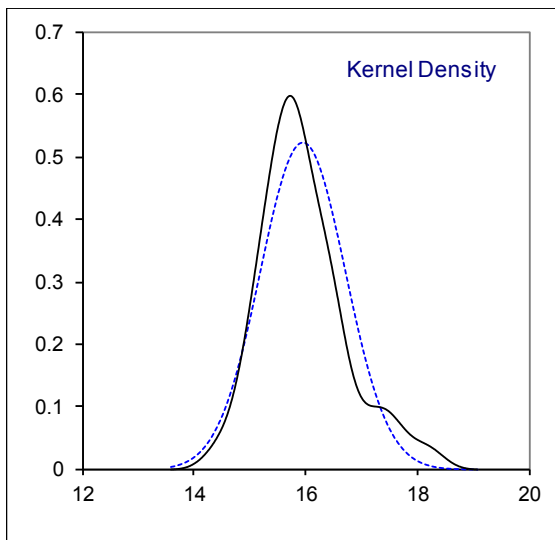
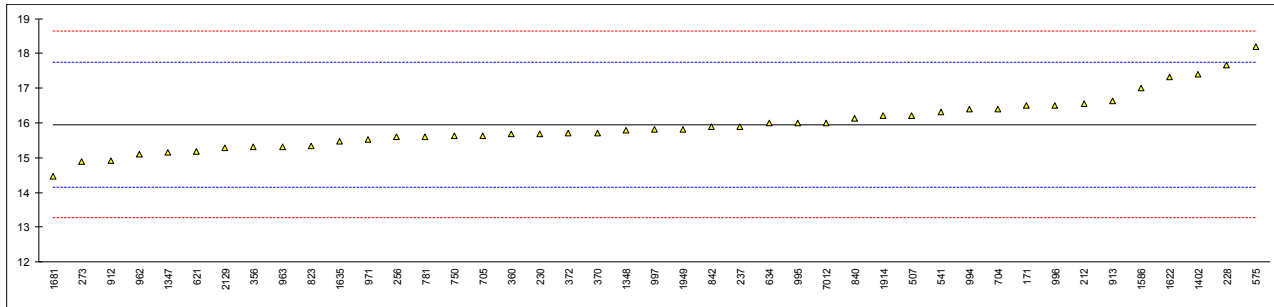
Determination of Conradson Carbon Residue on sample #17265; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	886		----		----
62		----		----	887	D189	----		----
120		----		----	912	D189	14.92		-1.15
131		----		----	913	D189	16.62		0.75
132		----		----	962	D189	15.1		-0.95
140		----		----	963	D189	15.3		-0.72
150		----		----	971	D189	15.53		-0.47
154		----		----	994	D189	16.4		0.50
158		----		----	995	D189	15.99		0.05
159		----		----	996	D189	16.5		0.62
168		----		----	997	D189	15.82		-0.14
169		----		----	1040		----		----
171	D189	16.5		0.62	1047		----		----
175		----		----	1062		----		----
194		----		----	1066		----		----
212		16.56		0.68	1082		----		----
225		----		----	1090		----		----
228	D189	17.671		1.92	1107		----		----
230	D189	15.693		-0.29	1108		----		----
237	D189	15.9		-0.05	1121		----		----
238		----		----	1134		----		----
256	D189	15.6		-0.39	1191		----		----
273	D189	14.9		-1.17	1205		----		----
311		----		----	1229		----		----
313		----		----	1266		----		----
323		----		----	1320		----		----
333		----		----	1347	D189	15.15		-0.89
336		----		----	1348	D189	15.79		-0.18
337		----		----	1356		----		----
342		----		----	1367		----		----
349		----		----	1381		----		----
351		----		----	1385		----		----
356	D189	15.3		-0.72	1402	D189	17.4		1.62
360	ISO6615	15.69		-0.29	1455		----		----
370	D189	15.70		-0.28	1491		----		----
372	D189	15.7		-0.28	1520		----		----
399		----		----	1575		----		----
440		----		----	1585		----		----
445		----		----	1586	D189	17.00		1.17
447		----		----	1622	D189	17.32		1.53
463		----		----	1631		----		----
494		----		----	1633		----		----
507	D189	16.21		0.29	1635	D189	15.47		-0.53
529		----		----	1636		----		----
541	D189	16.32		0.41	1648		----		----
551		----		----	1681	D189	14.46		-1.66
557		----		----	1720		----		----
558		----		----	1724		----		----
575	D189	18.2	C	2.51	1792		----		----
605		----		----	1810		----		----
621	ISO6615	15.171		-0.87	1811		----		----
631		----		----	1854		----		----
633		----		----	1857		----		----
634	D189	15.99		0.05	1906		----		----
657		----		----	1914	D189	16.2		0.28
663		----		----	1948		----		----
671		----		----	1949	D189	15.82		-0.14
704	D189	16.407		0.51	1950		----		----
705	D189	15.64		-0.34	1975		----		----
732		----		----	2129	D189	15.28	C	-0.75
750	D189	15.62		-0.37	6025		----		----
753		----		----	6035		----		----
781	D189	15.6		-0.39	6054		----		----
785		----		----	6057		----		----
798		----		----	6075		----		----
823	D189	15.34		-0.68	6092		----		----
824		----		----	6109		----		----
825		----		----	6131		----		----
840	D189	16.14		0.21	6138		----		----
842	D189	15.880		-0.08	6154		----		----
873		----		----	7012	D189	16.0		0.06
874		----		----	7017		----		----
875		----		----					

normality	suspect
n	43
outliers	0
mean (n)	15.9489
st.dev. (n)	0.76304
R(calc.)	2.1365
st.dev.(D189:06)	0.89576
R(D189:06)	2.5081

Lab 575 first reported: 19.77

Lab 2129 first reported: 12.1



Determination of Density at 15°C on sample #17265; results in kg/m<sup>3</sup>

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4052	1008		-0.39	886	D4052	1009.2		1.85
62	D4052	1008		-0.39	887		-----		-----
120	D4052	1008.7		0.92	912	D1298	1007.9		-0.58
131		-----		-----	913	D1298	1008.0		-0.39
132	ISO12185	1009.1		1.66	962	ISO12185	1008.0		-0.39
140	D4052	1009		1.48	963	ISO12185	1007.9		-0.58
150	D4052	1008.9		1.29	971	IP365	1007.9		-0.58
154		-----		-----	994	ISO12185	1008.0		-0.39
158	D4052	1008	C	-0.39	995	ISO12185	1008.1		-0.20
159	D4052	1009.4		2.22	996	D4052	1008		-0.39
168	D1298	1009.4		2.22	997	ISO12185	1008.1		-0.20
169		-----		-----	1040	ISO12185	1008.5		0.54
171	ISO12185	1008.0	C	-0.39	1047	ISO12185	1007.1		-2.07
175	D4052	1007.9		-0.58	1062	D4052	1008.3		0.17
194		-----		-----	1066	ISO12185	1008.2		-0.02
212	ISO12185	1008.8		1.10	1082		-----		-----
225	D4052	1007.1		-2.07	1090	ISO12185	1007.51		-1.31
228	D1298	1007.5	C	-1.32	1107	D4052	1008.0		-0.39
230	ISO12185	1008.1		-0.20	1108	D1298	1008.8		1.10
237	D4052	1008.2		-0.02	1121	ISO12185	1008.0		-0.39
238		-----		-----	1134		-----		-----
256	D1298	1008.9		1.29	1191	ISO12185	1008.32		0.21
273	D4052	1009.0		1.48	1205		-----		-----
311	ISO12185	1007.6		-1.14	1229	ISO12185	1008.1		-0.20
313	ISO12185	1008.1		-0.20	1266	ISO3675	1009.3		2.04
323	ISO12185	1008.5		0.54	1320	ISO12185	1008.4		0.36
333		-----		-----	1347	D4052	1007.8		-0.76
336	ISO12185	1008.5		0.54	1348	D4052	1008.1		-0.20
337	ISO12185	1008.0		-0.39	1356	ISO12185	1007.8		-0.76
342	D4052	1007.9		-0.58	1367	IP160	1008.00		-0.39
349		-----		-----	1381	ISO12185	1008.08		-0.24
351	ISO3675	1007.60		-1.14	1385	D4052	1008.2		-0.02
356	D4052	1007.9		-0.58	1402	IP365	1008.4		0.36
360	D4052	1007.8		-0.76	1455	ISO12185	1007.7		-0.95
370	ISO12185	1008.5		0.54	1491	ISO12185	1007.9		-0.58
372	ISO12185	1008.1		-0.20	1520	ISO12185	1008.25		0.08
399	ISO12185	1006.9		-2.44	1575		-----		-----
440	D4052	1008.0		-0.39	1585	D1298	1008.9		1.29
445	ISO12185	1008.8		1.10	1586	ISO12185	1008.0		-0.39
447	IP365	1009.5		2.41	1622	D4052	1008.1		-0.20
463	D4052	1007.85		-0.67	1631	ISO12185	1007.9		-0.58
494	ISO12185	1008.5		0.54	1633		-----		-----
507	ISO12185	1007.90		-0.58	1635		-----		-----
529	D1298	1005.8	R(0.01)	-4.50	1636	ISO3675	1007.1		-2.07
541	ISO12185	1008.60		0.73	1648	ISO12185	1007.87		-0.63
551	D4052	1008.6		0.73	1681	ISO12185	1008.0		-0.39
557	ISO12185	1008.29		0.15	1720	D4052	1006.3		-3.56
558	D4052	1008.2		-0.02	1724	D4052	1007.7		-0.95
575		-----		-----	1792	ISO12185	1008.2		-0.02
605	ISO12185	1008.4		0.36	1810	ISO12185	1009.0		1.48
621	ISO12185	1007.6		-1.14	1811	ISO12185	1008.7		0.92
631	D1298	1010.16		3.64	1854	ISO12185	1008.0		-0.39
633	D1298	1008.7		0.92	1857	ISO12185	1008.9		1.29
634	D1298	1008.4		0.36	1906		-----		-----
657	ISO12185	1008.0		-0.39	1914	ISO12185	1007.8		-0.76
663	D4052	1007.70		-0.95	1948	ISO12185	1005.1	C,R(0.01)	-5.80
671	D1298	1009.1		1.66	1949	ISO12185	1008.6		0.73
704	ISO12185	1008.5		0.54	1950	ISO12185	1008.4		0.36
705	D1298	1008.6		0.73	1975	D1298	1008.5		0.54
732	ISO12185	1008.0		-0.39	2129	D4052	1007.8		-0.76
750	D1298	1008.2		-0.02	6025	D1298	1008.6		0.73
753	ISO12185	1008.0		-0.39	6035		-----		-----
781	ISO12185	1008.2		-0.02	6054	D4052	1007.73		-0.90
785	D1298	1009.1		1.66	6057	ISO12185	1007.8		-0.76
798	D1298	1008.5	C	0.54	6075	ISO12185	1003.3	R(0.01)	-9.16
823	ISO12185	1007.8		-0.76	6092	D4052	1007.9		-0.58
824	ISO12185	1008.0		-0.39	6109		-----		-----
825	D4052	1007		-2.26	6131	ISO12185	1008.1		-0.20
840	ISO12185	1007.97		-0.45	6138	EN16986	1008.5		0.54
842	ISO12185	1009.74		2.86	6154	D4052	1007.0	C	-2.26
873		-----		-----	7012	D1298	1008.3	C	0.17
874	ISO12185	1008.2		-0.02	7017	D1298	1008.4		0.36
875	D1298	1008.3		0.17					



normality	suspect
n	123
outliers	3
mean (n)	1008.210
st.dev. (n)	0.5802
R(calc.)	1.624
st.dev.(ISO12185:96)	0.5357
R(ISO12185:96)	1.5

Lab 158 reported: 1.008 kg/L

Lab 171 reported: 1.0080 kg/L

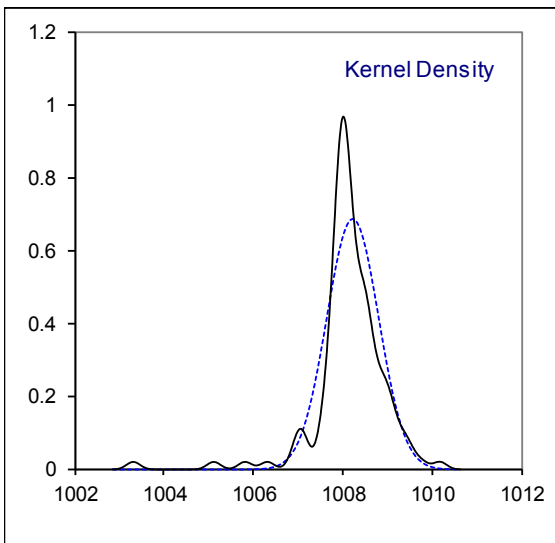
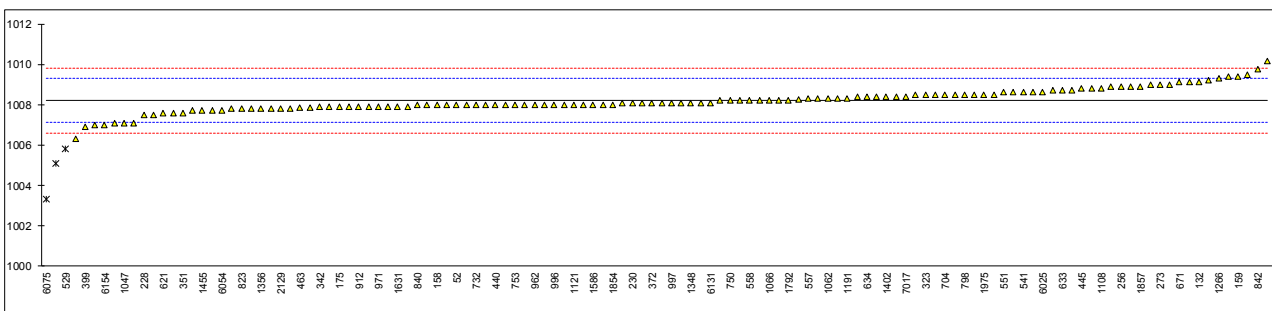
Lab 228 reported: 1.0075 kg/L

Lab 798 first reported: 1.008

Lab 1948 first reported: 1.0050

Lab 6154 first reported: 1.0070

Lab 7012 first reported: 1.0077



Determination of Flash Point PMcc on sample #17265; results in °C

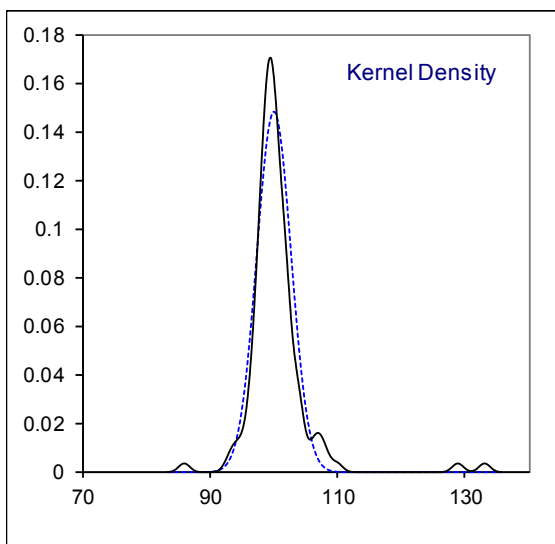
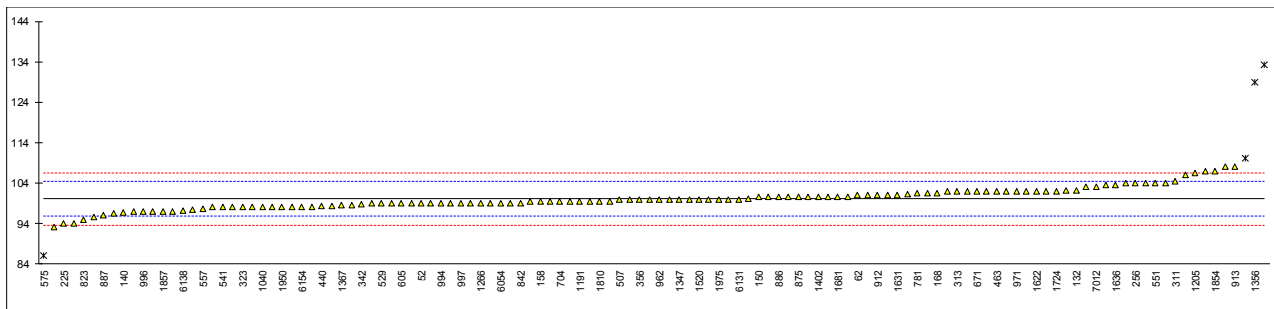
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D93-B	99.0		-0.51	886	D93-A	100.5		0.19
62	D93-B	101		0.42	887	D93-B	96.0		-1.91
120	D93-B	>230	U	----	912	D93-A	101.0		0.42
131	----	----		----	913	D93-B	108		3.69
132	ISO2719-B	102.1		0.93	962	ISO2719-B	100.0		-0.05
140	D93-B	96.67		-1.60	963	ISO2719-B	98.0		-0.98
150	D93-B	100.5		0.19	971	D93-B	102.0		0.89
154	D93-B	103.0		1.35	994	D93-B	99.0		-0.51
158	D93-B	99.5		-0.28	995	D93-B	99.0		-0.51
159	D93-B	100.5		0.19	996	D93-B	97.0		-1.45
168	D93-B	101.5		0.65	997	D93-B	99.0		-0.51
169	D93-B	98.9		-0.56	1040	ISO2719-B	98.0	C	-0.98
171	ISO2719-A	106.0		2.75	1047	ISO2719-A	107		3.22
175	D93-B	99		-0.51	1062	----	----		----
194	----	----		----	1066	D93-B	101.0		0.42
212	ISO2719-B	110	R(0.05)	4.62	1082	ISO2719-A	100.0		-0.05
225	D93-B	94.0		-2.85	1090	----	----		----
228	D93-B	102.0		0.89	1107	D93-B	99.0		-0.51
230	----	----		----	1108	ISO2719-B	97.0		-1.45
237	D93-B	94.0		-2.85	1121	IP34-B	100.5		0.19
238	----	----		----	1134	----	----		----
256	D93-B	104.0		1.82	1191	ISO2719-A	99.5		-0.28
273	D93-B	104		1.82	1205	ISO2719-A	106.5		2.99
311	ISO2719-B	104.5		2.05	1229	ISO2719-A	95.5		-2.15
313	ISO2719-B	102.0		0.89	1266	ISO2719-B	99.0		-0.51
323	ISO2719-B	98.0		-0.98	1320	----	----		----
333	----	----		----	1347	D93-A	100		-0.05
336	ISO2719-B	104.0		1.82	1348	D93-B	102		0.89
337	----	----		----	1356	ISO2719-A	129	R(0.01)	13.49
342	D93-B	98.8		-0.61	1367	IP34-A	98.5		-0.75
349	----	----		----	1381	ISO2719-B	100.00		-0.05
351	ISO2719-B	102.00		0.89	1385	----	----		----
356	ISO2719-B	100.0		-0.05	1402	IP34-B	100.5		0.19
360	----	----		----	1455	D93-B	100.5		0.19
370	D93-B	101.5		0.65	1491	ISO2719-B	99.5		-0.28
372	ISO2719-B	98.0		-0.98	1520	ISO2719-B	100.0		-0.05
399	----	----		----	1575	D93-B	99.4		-0.33
440	IP34-A	98.3		-0.84	1585	D93-B	98.0		-0.98
445	ISO2719-B	100.5		0.19	1586	ISO2719-B	104.0		1.82
447	D93-B	99.5		-0.28	1622	D93-B	102.0		0.89
463	ISO2719-B	102.0		0.89	1631	ISO2719-B	101.0		0.42
494	ISO2719-B	100.0		-0.05	1633	D93-A	133.2	R(0.01)	15.45
507	ISO2719-B	100.0		-0.05	1635	ISO2719-A	93.0		-3.31
529	D93-B	99		-0.51	1636	ISO2719-B	103.5		1.59
541	D93-B	98.00		-0.98	1648	ISO2719-B	102.0		0.89
551	D93-B	104		1.82	1681	ISO2719-B	100.5		0.19
557	D93-B	97.75		-1.10	1720	----	----		----
558	----	----		----	1724	D93-B	102		0.89
575	D93-B	86	C,R(0.01)	-6.58	1792	ISO2719-B	98.5		-0.75
605	ISO2719-B	99.0		-0.51	1810	D93-B	99.5		-0.28
621	ISO2719-B	108.0		3.69	1811	ISO2719-A	99.5		-0.28
631	D93-B	97.025		-1.44	1854	ISO2719-A	107		3.22
633	----	----		----	1857	ISO2719-B	97.0		-1.45
634	D93-B	98.325		-0.83	1906	----	----		----
657	D93-B	103.5		1.59	1914	D93-B	100.5		0.19
663	D93-B	101.25		0.54	1948	ISO2719-A	100		-0.05
671	D93-B	102.0		0.89	1949	D93-B	100.25		0.07
704	D93-B	99.5		-0.28	1950	ISO2719-B	98.0		-0.98
705	ISO2719-B	99.0		-0.51	1975	D93-B	100.0		-0.05
732	ISO2719-B	96.5		-1.68	2129	ISO2719-B	96.93		-1.48
750	ISO2719-B	99.5		-0.28	6025	D93-B	99.0		-0.51
753	D93-B	102.0		0.89	6035	----	----		----
781	ISO2719-B	101.5		0.65	6054	D93-B	99.0		-0.51
785	D93-B	98.2		-0.89	6057	D93-B	100.0		-0.05
798	D93-B	101.0		0.42	6075	ISO2719-B	98.0		-0.98
823	ISO2719-B	95.0		-2.38	6092	D93-B	99		-0.51
824	ISO2719-B	98.0		-0.98	6109	----	----		----
825	D93-B	102.0		0.89	6131	ISO2719-B	100.0		-0.05
840	D93-B	102.1		0.93	6138	ISO2719-B	97.1		-1.40
842	D93-B	99.05		-0.49	6154	D93-B	98		-0.98
873	D93-B	99.0		-0.51	7012	D93-B	103		1.35
874	ISO2719-B	100.0		-0.05	7017	D93-B	97.5		-1.21
875	D93-B	100.5		0.19					

normality	suspect
n	120
outliers	4
mean (n)	100.101
st.dev. (n)	2.6920
R(calc.)	7.538
st.dev.(ISO2719-B:16)	2.1429
R(ISO2719-B:16)	6

Lab 120: reported possibly a unit error? 230F=110°C

Lab 575 first reported: 110

Lab 1040 first reported: 110.25



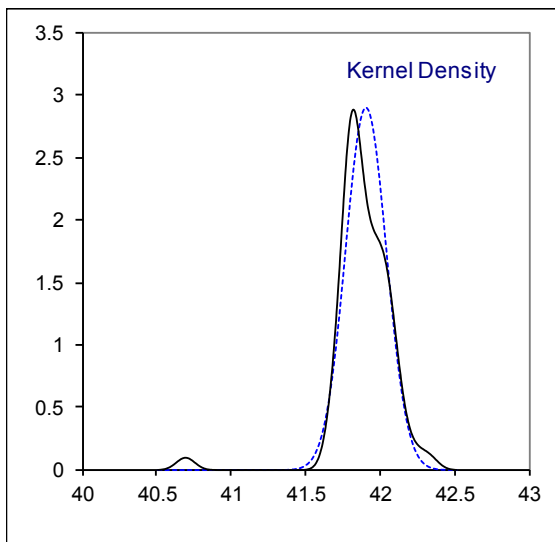
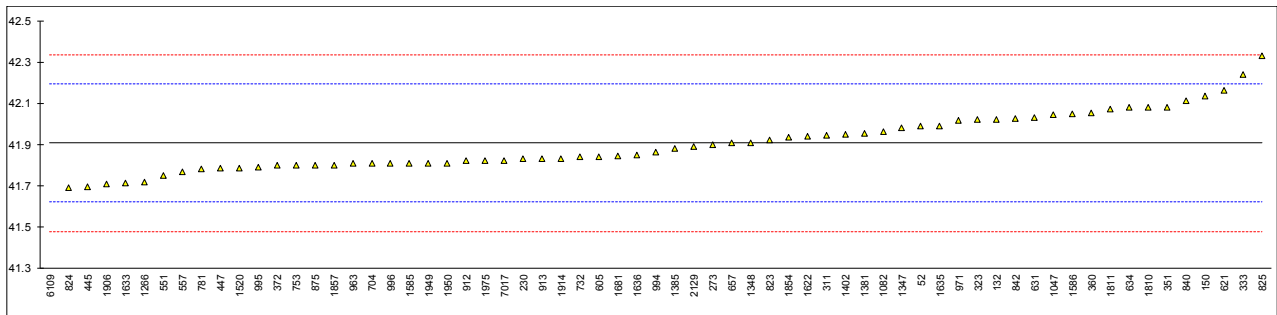
Determination of Heat of Combustion Gross on sample #17265; results in MJ/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		41.990		0.58	886		----		----
62		----		----	887		----		----
120		----		----	912	D4868	41.82		-0.61
131		----		----	913		41.83		-0.54
132	D240	42.0238		0.82	962	D240	----		----
140		----		----	963	D4868	41.81		-0.68
150	D240	42.133		1.58	971	D240	42.017		0.77
154		----		----	994	D4868	41.864		-0.30
158		----		----	995		41.79		-0.82
159	D240	----		----	996		41.81		-0.68
168		----		----	997		----		----
169		----		----	1040		----		----
171	D240	----		----	1047	PN-C-04062	42.045	C	0.97
175		----		----	1062		----		----
194		----		----	1066		----		----
212		----		----	1082		41.9618		0.38
225		----		----	1090		----		----
228		----		----	1107		----		----
230	D4868	41.83		-0.54	1108		----		----
237		----		----	1121		----		----
238		----		----	1134		----		----
256		----		----	1191		----		----
273	D4868	41.90		-0.05	1205		----		----
311	D240	41.945		0.27	1229		----		----
313		----		----	1266	D4868	41.72		-1.31
323	D240	42.022	C	0.81	1320		----		----
333		42.240		2.33	1347	D4868	41.980		0.51
336		----		----	1348	D4868	41.91		0.02
337		----		----	1356		----		----
342		----		----	1367		----		----
349		----		----	1381	D240	41.9557		0.34
351	D240	42.082		1.23	1385	D4868	41.88		-0.19
356		----		----	1402		41.950		0.30
360	D4809	42.0516		1.01	1455		----		----
370		----		----	1491		----		----
372	D4868	41.80		-0.75	1520	D4868	41.787		-0.84
399		----		----	1575		----		----
440		----		----	1585	D4868	41.810		-0.68
445	D240	41.695		-1.48	1586	D240	42.05		1.00
447	D240	41.7869		-0.84	1622	D240	41.94		0.23
463	D4868	----		----	1631		----		----
494		----		----	1633	EN16023	41.712		-1.36
507		----		----	1635	D240	41.990		0.58
529		----		----	1636	D4868	41.848		-0.41
541		----		----	1648		----		----
551	D4868	41.75		-1.10	1681	D4868	41.844		-0.44
557	D4868	41.7697		-0.96	1720		----		----
558		----		----	1724		----		----
575		----		----	1792		----		----
605	D4868	41.84		-0.47	1810	D240	42.08		1.21
621	D240	42.16		1.77	1811	D240	42.07		1.14
631	D4868	42.0288		0.85	1854	D240	41.935		0.20
633		----		----	1857	D4868	41.80		-0.75
634		42.0792		1.21	1906		41.707		-1.40
657	D240	41.9092		0.02	1914	D4868	41.83		-0.54
663		----		----	1948		----		----
671		----		----	1949	D4868	41.810		-0.68
704	D4868	41.81		-0.68	1950	D4868	41.810		-0.68
705		----		----	1975	D4868	41.820		-0.61
732	D4868	41.84		-0.47	2129	D240	41.892		-0.10
750		----		----	6025		----		----
753	D4868	41.80		-0.75	6035		----		----
781	D4868	41.78		-0.89	6054		----		----
785		----		----	6057		----		----
798		----		----	6075		----		----
823	D240	41.923		0.11	6092		----		----
824	D240	41.690		-1.52	6109	D240	40.691	R(0.01)	-8.51
825	D240	42.332		2.98	6131		----		----
840	D240	42.113		1.44	6138		----		----
842	D4868	42.025		0.83	6154		----		----
873		----		----	7012		----		----
874		----		----	7017		41.82		-0.61
875	D4868	41.80		-0.75					

normality	OK
n	64
outliers	1
mean (n)	41.9070
st.dev. (n)	0.13761
R(calc.)	0.3853
st.dev.(D240:17)	0.14286
R(D240:17)	0.40

Lab 323 first reported: 46.622

Lab 1047 first reported: 42.386



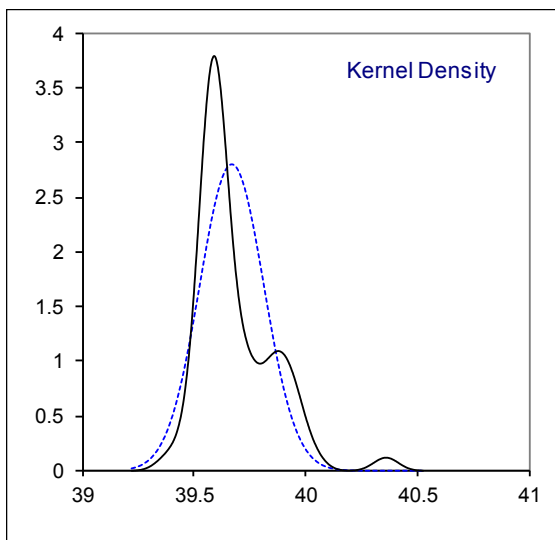
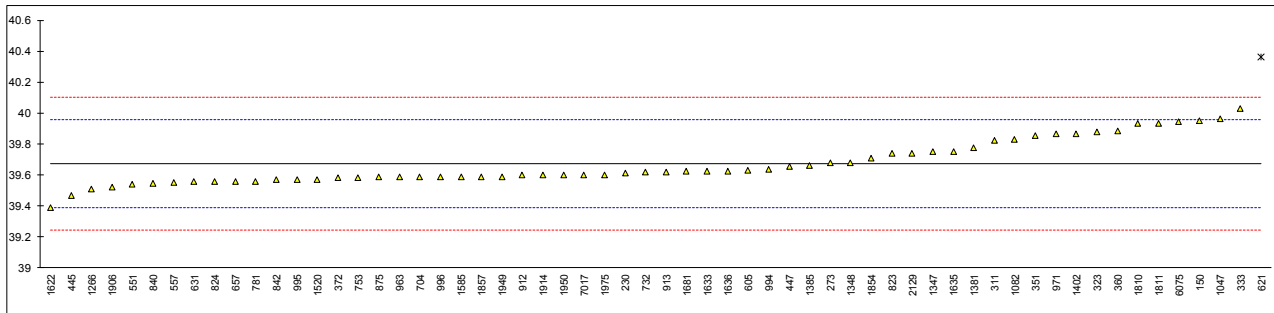
Determination of Heat of Combustion Net on sample #17265; results in MJ/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	886		----		----
62		----		----	887		----		----
120		----		----	912	D4868	39.60		-0.51
131		----		----	913		39.62		-0.37
132	D240	----		----	962	D240	----		----
140		----		----	963	D4868	39.59		-0.58
150	D240	39.948		1.92	971	D240	39.865		1.34
154		----		----	994	D4868	39.633		-0.28
158		----		----	995		39.57		-0.72
159	D240	----		----	996		39.59		-0.58
168		----		----	997		----		----
169		----		----	1040		----		----
171	D240	----		----	1047	PN-C-04062	39.964	C	2.03
175		----		----	1062		----		----
194		----		----	1066		----		----
212		----		----	1082		39.8292		1.09
225		----		----	1090		----		----
228		----		----	1107		----		----
230	D4868	39.61		-0.44	1108		----		----
237		----		----	1121		----		----
238		----		----	1134		----		----
256		----		----	1191		----		----
273	D4868	39.68		0.05	1205		----		----
311	D240	39.825		1.06	1229		----		----
313		----		----	1266	D4868	39.51		-1.14
323	D240	39.879		1.44	1320		----		----
333		40.030		2.50	1347	D4868	39.750		0.54
336		----		----	1348	D4868	39.68		0.05
337		----		----	1356		----		----
342		----		----	1367		----		----
349		----		----	1381	D240	39.7722		0.69
351	D240	39.855		1.27	1385	D4868	39.66		-0.09
356		----		----	1402		39.865		1.34
360	D4809	39.8808		1.45	1455		----		----
370		----		----	1491		----		----
372	D4868	39.58		-0.65	1520	D4868	39.570		-0.72
399		----		----	1575		----		----
440		----		----	1585	D4868	39.590		-0.58
445	D240	39.467		-1.44	1586	D240	----		----
447	D240	39.652		-0.15	1622	D240	39.39		-1.98
463	D4868	----		----	1631		----		----
494		----		----	1633	EN16023	39.625		-0.34
507		----		----	1635	D240	39.750		0.54
529		----		----	1636	D4868	39.626		-0.33
541		----		----	1648		----		----
551	D4868	39.54		-0.93	1681	D4868	39.623		-0.35
557	D4868	39.5539		-0.84	1720		----		----
558		----		----	1724		----		----
575		----		----	1792		----		----
605	D4868	39.63		-0.30	1810	D240	39.93		1.80
621	D240	40.36	R(0.01)	4.81	1811	D240	39.93		1.80
631	D4868	39.5544		-0.83	1854	D240	39.710		0.26
633		----		----	1857	D4868	39.59		-0.58
634		----		----	1906		39.52		-1.07
657	D240	39.5599	E	-0.79	1914	D4868	39.60		-0.51
663		----		----	1948		----		----
671		----		----	1949	D4868	39.590		-0.58
704	D4868	39.59		-0.58	1950	D4868	39.600		-0.51
705		----		----	1975	D4868	39.601		-0.51
732	D4868	39.62		-0.37	2129	D240	39.738		0.45
750		----		----	6025		----		----
753	D4868	39.58		-0.65	6035		----		----
781	D4868	39.56		-0.79	6054		----		----
785		----		----	6057		----		----
798		----		----	6075		39.945		1.90
823	D240	39.737		0.45	6092		----		----
824	D240	39.555		-0.83	6109	D240	----		----
825	D240	----		----	6131		----		----
840	D240	39.545		-0.90	6138		----		----
842	D4868	39.570		-0.72	6154		----		----
873		----		----	7012		----		----
874		----		----	7017		39.60		-0.51
875	D4868	39.59		-0.58					

normality	OK
n	59
outliers	1
mean (n)	39.6715
st.dev. (n)	0.14288
R(calc.)	0.4001
st.dev.(D240:17)	0.14286
R(D240:17)	0.40

Lab 657: probably a calc. error, iis calculated 39.7002

Lab 1047 first reported: 40.221



Determination of Kinematic Viscosity at 50°C on sample #17265; results in mm<sup>2</sup>/s

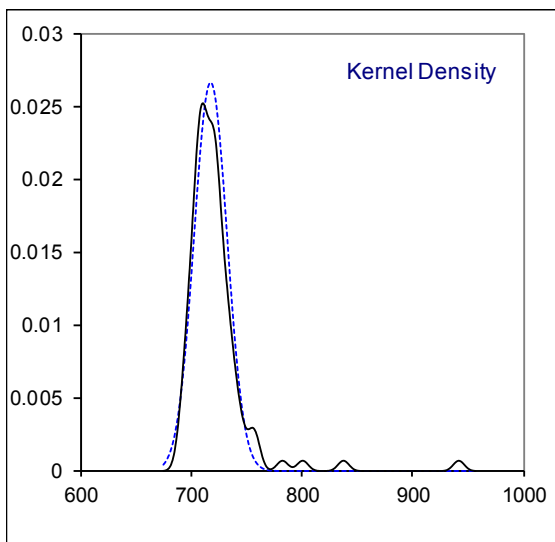
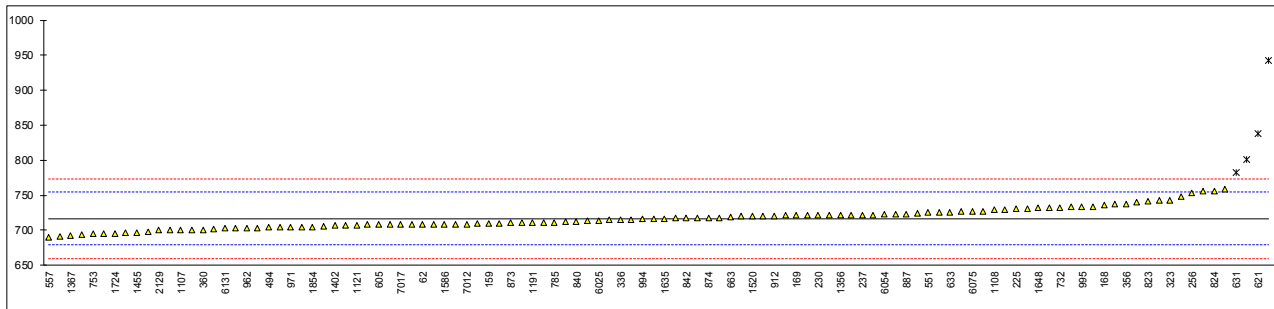
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D445	690.6		-1.39	886		----		----
62	D445	708.8		-0.43	887	D445	722.8		0.31
120	D445	742.945		1.37	912	D445	721.0		0.22
131		----		----	913	D445	740.0		1.22
132	ISO3104	707.14		-0.52	962	ISO3104	702.6		-0.76
140	ISO3104	941.935	R(0.01)	11.88	963	ISO3104	708.2		-0.46
150		----		----	971	D445	704.7		-0.65
154	D445	720.0		0.16	994	D445	716.5		-0.02
158	D445	724.4		0.39	995	D445	733.3		0.86
159	D445	709.6		-0.39	996	D445	729.7		0.67
168	D445	736.2		1.02	997	D445	733.8		0.89
169	D445	721.24		0.23	1040	ISO3104	715.55		-0.07
171	ISO3104	717.3		0.02	1047	ISO3104	727.2		0.54
175	D445	708.7		-0.43	1062		----		----
194		----		----	1066	D445	695.9		-1.11
212	ISO3104	722.2		0.28	1082	ISO3104	721.64		0.25
225	D445	730.8		0.73	1090		----		----
228	D445	758.88		2.21	1107	D445	700.5		-0.87
230	ISO3104	721.42		0.24	1108	ISO3104	729.1		0.64
237	D445	722.0		0.27	1121	IP71	707.6		-0.49
238		----		----	1134		----		----
256	D445	753.9		1.95	1191	ISO3104	710.92		-0.32
273	D445	726.0		0.48	1205		----		----
311	ISO3104	698.4		-0.98	1229	ISO3104	710.8		-0.32
313	ISO3104	703.2		-0.72	1266	ISO3104	726.3		0.49
323	ISO3104	743.1		1.38	1320		----		----
333		----		----	1347	D445	733.13		0.86
336	ISO3104	715.2		-0.09	1348	D445	694.0		-1.21
337		----		----	1356	ISO3104	721.66		0.25
342		----		----	1367	IP71	693.0		-1.26
349		----		----	1381	ISO3104	721.30		0.23
351	ISO3104	721.85		0.26	1385	D445	732		0.80
356	ISO3104	737.6		1.09	1402	ISO3104	706.5		-0.55
360	D445	700.76		-0.85	1455	ISO3104	696.3		-1.09
370	D445	709.38		-0.40	1491		----		----
372	ISO3104	702.6		-0.76	1520	ISO3104	720.13		0.17
399		----		----	1575		----		----
440		----		----	1585	D445	704.9		-0.63
445	ISO3104	800.4	R(0.01)	4.41	1586	ISO3104	708.9		-0.42
447	D445	707.85		-0.48	1622	D445	701.8		-0.80
463	ISO3104	714.65		-0.12	1631		----		----
494	ISO3104	704.00		-0.68	1633		----		----
507	ISO3104	722.80		0.31	1635	ISO3104	716.9		0.00
529		----		----	1636	ISO3104	695.38		-1.14
541	D445	712.33		-0.24	1648	ISO3104	731.9		0.79
551	D445	725.55		0.46	1681	ISO3104	721.07		0.22
557	D445	689.2687588		-1.46	1720		----		----
558		----		----	1724	D445	695.39		-1.14
575	D445	747.975		1.64	1792	ISO3104	713.32		-0.19
605	ISO3104	708.2		-0.46	1810		----		----
621	ISO3104	837.4	R(0.01)	6.36	1811		----		----
631	D445	782.07	R(0.01)	3.44	1854	ISO3104	704.9		-0.63
633	D445	726.11		0.48	1857	ISO3104	709.1		-0.41
634	D445	736.95		1.06	1906		----		----
657	ISO3104	704.4		-0.66	1914	D445	731.5		0.77
663	D445	718.39		0.08	1948		----		----
671		----		----	1949	ISO3104	710.08		-0.36
704	D445	718.07		0.06	1950	ISO3104	711.2		-0.30
705	ISO3104	720.29		0.18	1975	D445	706.00		-0.58
732	D445	732.2		0.81	2129	ISO3104	700.1		-0.89
750	ISO3104	708.9		-0.42	6025	D445	714.0		-0.15
753	D445	694.7	C	-1.17	6035		----		----
781	ISO3104	700.6		-0.86	6054	D445	722.4		0.29
785	D445	711.5		-0.29	6057	ISO3104	716.6		-0.02
798		----		----	6075	ISO3104	726.7		0.52
823	ISO3104	741.4		1.29	6092	D445	700.2		-0.88
824	ISO3104	756.5	C	2.09	6109		----		----
825	ISO3104	718.0		0.06	6131	ISO3104	702.5		-0.76
840	D445	712.54		-0.23	6138		----		----
842	D445	717.34		0.02	6154	D445	756.0		2.06
873	D445	710.8		-0.32	7012	D445	709.1		-0.41
874	D445	718.0		0.06	7017	D445	708.30		-0.46
875		----		----					



normality	OK
n	108
outliers	4
mean (n)	716.9250
st.dev. (n)	14.94095
R(calc.)	41.8347
st.dev.(ISO3104:94)	18.94730
R(ISO3104:94)	53.0525

Lab 753 first reported: 47.86

Lab 824 first reported: 783.6



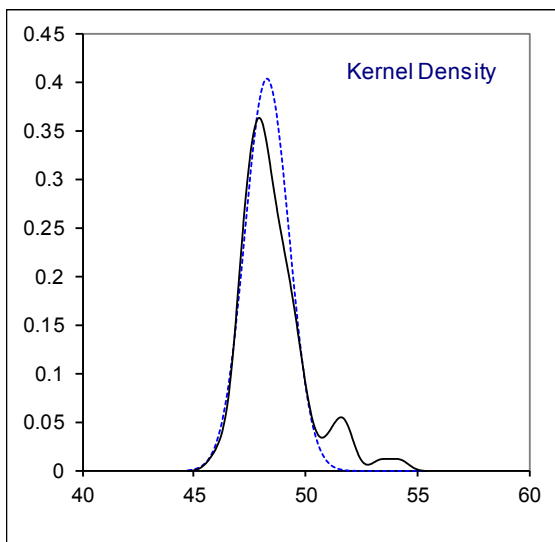
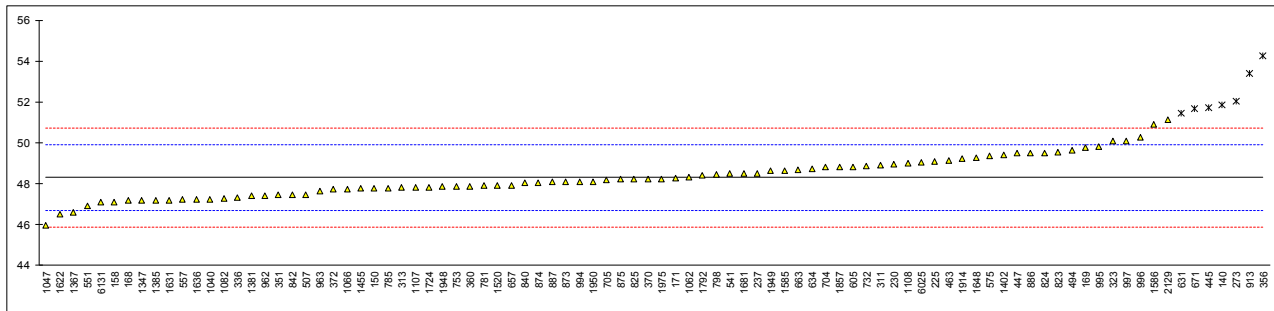
Determination of Kinematic Viscosity at 100°C on sample #17265; results in mm<sup>2</sup>/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	886	D445	49.5		1.49
62		----		----	887	D445	48.07		-0.29
120		----		----	912				----
131		----		----	913	D445	53.40	R(0.05)	6.34
132		----		----	962	ISO3104	47.42		-1.09
140	ISO3104	51.833	R(0.01)	4.39	963	ISO3104	47.63		-0.83
150	D445	47.78		-0.65	971				----
154		----		----	994	D445	48.10		-0.25
158	D445	47.111964		-1.48	995	D445	49.79		1.85
159		----		----	996	D445	50.25		2.42
168	D445	47.17		-1.40	997	D445	50.08		2.21
169	D445	49.754		1.81	1040	ISO3104	47.24		-1.32
171	ISO3104	48.29		-0.01	1047	ISO3104	45.96		-2.91
175		----		----	1062	D445	48.3		0.00
194		----		----	1066	D445	47.74		-0.70
212		----		----	1082	ISO3104	47.261		-1.29
225	D445	49.08		0.97	1090				----
228		----		----	1107	D445	47.82		-0.60
230	ISO3104	48.968		0.83	1108	ISO3104	48.98		0.85
237	D445	48.5		0.25	1121				----
238		----		----	1134				----
256		----		----	1191				----
273	D445	52.02	R(0.01)	4.63	1205				----
311	ISO3104	48.89		0.73	1229				----
313	ISO3104	47.81		-0.61	1266				----
323	ISO3104	50.08		2.21	1320				----
333		----		----	1347	D445	47.20		-1.37
336	ISO3104	47.34		-1.19	1348				----
337		----		----	1356				----
342		----		----	1367	IP71	46.6		-2.11
349		----		----	1381	ISO3104	47.405		-1.11
351	ISO3104	47.450		-1.06	1385	D445	47.2		-1.37
356	ISO3104	54.26	R(0.01)	7.41	1402	ISO3104	49.42		1.39
360	D445	47.874		-0.53	1455	ISO3104	47.75		-0.68
370	D445	48.226		-0.09	1491				----
372	ISO3104	47.74		-0.70	1520	ISO3104	47.890		-0.51
399		----		----	1575				----
440		----		----	1585	D445	48.65		0.44
445	ISO3104	51.70	R(0.01)	4.23	1586	ISO3104	50.90		3.23
447	D445	49.50		1.49	1622	D445	46.48		-2.26
463	ISO3104	49.150		1.06	1631	ISO3104	47.2		-1.37
494	ISO3104	49.638		1.66	1633				----
507	ISO3104	47.469		-1.03	1635				----
529		----		----	1636	ISO3104	47.225		-1.34
541	D445	48.480		0.22	1648	ISO3104	49.25		1.18
551	D445	46.89		-1.75	1681	ISO3104	48.486		0.23
557	D445	47.20647206	C	-1.36	1720				----
558		----		----	1724	D445	47.825		-0.59
575	D445	49.378		1.34	1792	ISO3104	48.395		0.12
605	ISO3104	48.81		0.63	1810				----
621		----		----	1811				----
631	D445	51.464	R(0.01)	3.93	1854				----
633		----		----	1857	ISO3104	48.80		0.62
634	D445	48.71		0.51	1906				----
657	ISO3104	47.91		-0.48	1914	D445	49.22		1.14
663	D445	48.679		0.47	1948	ISO3104	47.84		-0.57
671	D445	51.657	R(0.01)	4.17	1949	ISO3104	48.613		0.39
704	D445	48.799		0.62	1950	ISO3104	48.10		-0.25
705	ISO3104	48.162		-0.17	1975	D445	48.239		-0.08
732	D445	48.84		0.67	2129	ISO3104	51.12		3.51
750		----		----	6025	D445	49.05		0.93
753	D445	47.86	C	-0.55	6035				----
781	ISO3104	47.89		-0.51	6054				----
785	D445	47.79		-0.63	6057				----
798	D445	48.4532		0.19	6075				----
823	ISO3104	49.53		1.53	6092				----
824	ISO3104	49.51		1.50	6109				----
825	ISO3104	48.22		-0.10	6131	ISO3104	47.11		-1.48
840	D445	48.022		-0.35	6138				----
842	D445	47.451		-1.06	6154				----
873	D445	48.10		-0.25	7012				----
874	D445	48.05		-0.31	7017				----
875	D445	48.21		-0.11					----

normality	OK
n	83
outliers	7
mean (n)	48.2998
st.dev. (n)	0.99077
R(calc.)	2.7741
st.dev.(ISO3104:94)	0.80428
R(ISO3104:94)	2.2520

Lab 557 first reported: 42.20647206

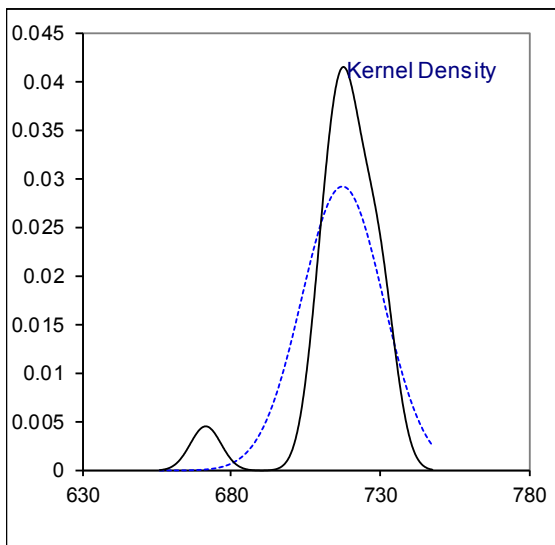
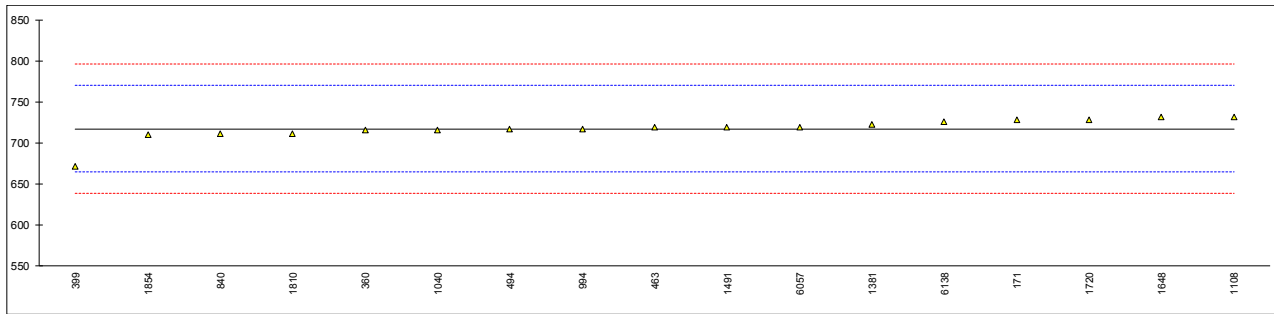
Lab 753 first reported: 694.7



Determination of Viscosity Stabinger at 50°C on sample #17265; results in mm<sup>2</sup>/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	886		----		----
62		----		----	887		----		----
120		----		----	912		----		----
131		----		----	913		----		----
132		----		----	962		----		----
140		----		----	963		----		----
150		----		----	971		----		----
154		----		----	994	D7042	717.1		-0.01
158		----		----	995		----		----
159		----		----	996		----		----
168		----		----	997		----		----
169		----		----	1040	D7042	715.85		-0.06
171	D7042	727.6		0.39	1047		----		----
175		----		----	1062		----		----
194		----		----	1066		----		----
212		----		----	1082		----		----
225		----		----	1090		----		----
228		----		----	1107		----		----
230		----		----	1108	D7042	732.1		0.56
237		----		----	1121		----		----
238		----		----	1134		----		----
256		----		----	1191		----		----
273		----		----	1205		----		----
311		----		----	1229		----		----
313		----		----	1266		----		----
323		----		----	1320		----		----
333		----		----	1347		----		----
336		----		----	1348		----		----
337		----		----	1356		----		----
342		----		----	1367		----		----
349		----		----	1381	D7042	722.65		0.20
351		----		----	1385		----		----
356		----		----	1402		----		----
360	D7042	715.50		-0.07	1455		----		----
370		----		----	1491	D7042	719.3		0.07
372		----		----	1520		----		----
399	D7042	671.4		-1.74	1575		----		----
440		----		----	1585		----		----
445		----		----	1586		----		----
447		----		----	1622		----		----
463	D7042	719.20		0.07	1631		----		----
494	D7042	716.68		-0.02	1633		----		----
507		----		----	1635		----		----
529		----		----	1636		----		----
541		----		----	1648	D7042	731.4		0.53
551		----		----	1681		----		----
557		----		----	1720	D7042	728.22		0.41
558		----		----	1724		----		----
575		----		----	1792		----		----
605		----		----	1810	D7042	711.1		-0.24
621		----		----	1811		----		----
631		----		----	1854	D7042	710.0		-0.28
633		----		----	1857		----		----
634		----		----	1906		----		----
657		----		----	1914		----		----
663		----		----	1948		----		----
671		----		----	1949		----		----
704		----		----	1950		----		----
705		----		----	1975		----		----
732		----		----	2129		----		----
750		----		----	6025		----		----
753		----		----	6035		----		----
781		----		----	6054		----		----
785		----		----	6057	D7042	719.4		0.08
798		----		----	6075		----		----
823		----		----	6092		----		----
824		----		----	6109		----		----
825		----		----	6131		----		----
840	D7042	711.02		-0.24	6138	EN16986	726.080		0.33
842		----		----	6154		----		----
873		----		----	7012		----		----
874		----		----	7017		----		----
875		----		----					

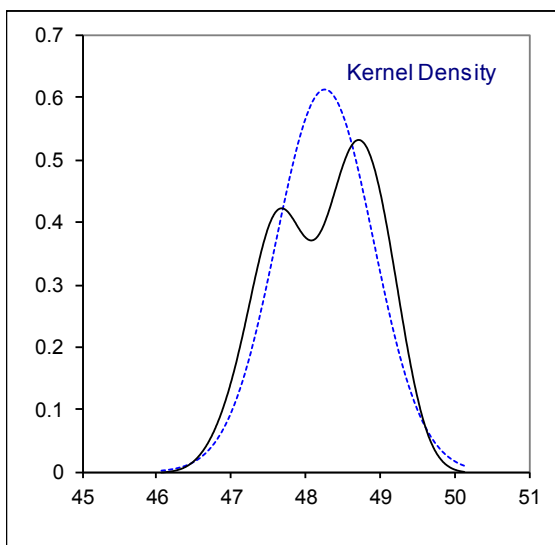
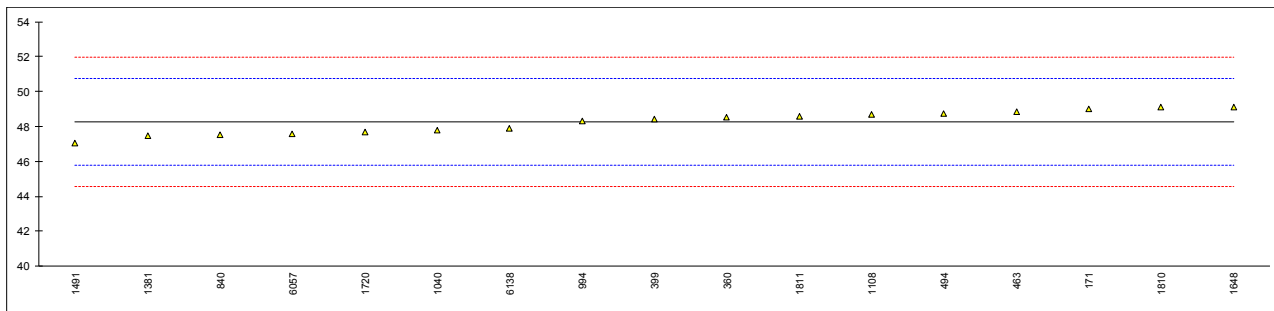
normality	not OK
n	17
outliers	0
mean (n)	717.3294
st.dev. (n)	13.70366
R(calc.)	38.3703
st.dev.(D7042:16e3)	26.36186
R(D7042:16e3)	73.8132



Determination of Viscosity Stabinger at 100°C on sample #17265; results in mm<sup>2</sup>/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	886		----		----
62		----		----	887		----		----
120		----		----	912		----		----
131		----		----	913		----		----
132		----		----	962		----		----
140		----		----	963		----		----
150		----		----	971		----		----
154		----		----	994	D7042	48.29		0.03
158		----		----	995		----		----
159		----		----	996		----		----
168		----		----	997		----		----
169		----		----	1040	D7042	47.76		-0.40
171	D7042	49.02		0.62	1047		----		----
175		----		----	1062		----		----
194		----		----	1066		----		----
212		----		----	1082		----		----
225		----		----	1090		----		----
228		----		----	1107		----		----
230		----		----	1108	D7042	48.67		0.33
237		----		----	1121		----		----
238		----		----	1134		----		----
256		----		----	1191		----		----
273		----		----	1205		----		----
311		----		----	1229		----		----
313		----		----	1266		----		----
323		----		----	1320		----		----
333		----		----	1347		----		----
336		----		----	1348		----		----
337		----		----	1356		----		----
342		----		----	1367		----		----
349		----		----	1381	D7042	47.483		-0.62
351		----		----	1385		----		----
356		----		----	1402		----		----
360	D7042	48.534		0.22	1455		----		----
370		----		----	1491	D7042	47.06		-0.97
372		----		----	1520		----		----
399	D7042	48.44		0.15	1575		----		----
440		----		----	1585		----		----
445		----		----	1586		----		----
447		----		----	1622		----		----
463	D7042	48.865		0.49	1631		----		----
494	D7042	48.744		0.39	1633		----		----
507		----		----	1635		----		----
529		----		----	1636		----		----
541		----		----	1648	D7042	49.13		0.71
551		----		----	1681		----		----
557		----		----	1720	D7042	47.70		-0.45
558		----		----	1724		----		----
575		----		----	1792		----		----
605		----		----	1810	D7042	49.1		0.68
621		----		----	1811	D7042	48.59		0.27
631		----		----	1854		----		----
633		----		----	1857		----		----
634		----		----	1906		----		----
657		----		----	1914		----		----
663		----		----	1948		----		----
671		----		----	1949		----		----
704		----		----	1950		----		----
705		----		----	1975		----		----
732		----		----	2129		----		----
750		----		----	6025		----		----
753		----		----	6035		----		----
781		----		----	6054		----		----
785		----		----	6057	D7042	47.58		-0.55
798		----		----	6075		----		----
823		----		----	6092		----		----
824		----		----	6109		----		----
825		----		----	6131		----		----
840	D7042	47.504		-0.61	6138	EN16986	47.877		-0.31
842		----		----	6154		----		----
873		----		----	7012		----		----
874		----		----	7017		----		----
875		----		----					

normality	OK
n	17
outliers	0
mean (n)	48.2557
st.dev. (n)	0.65256
R(calc.)	1.8272
st.dev.(D7042:16e3)	1.23845
R(D7042:16e3)	3.4677

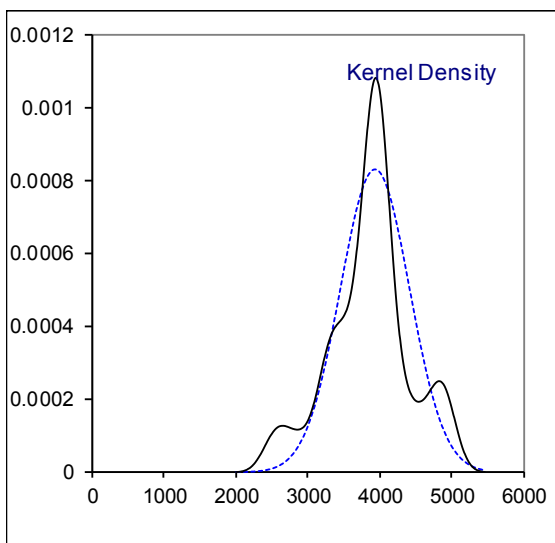
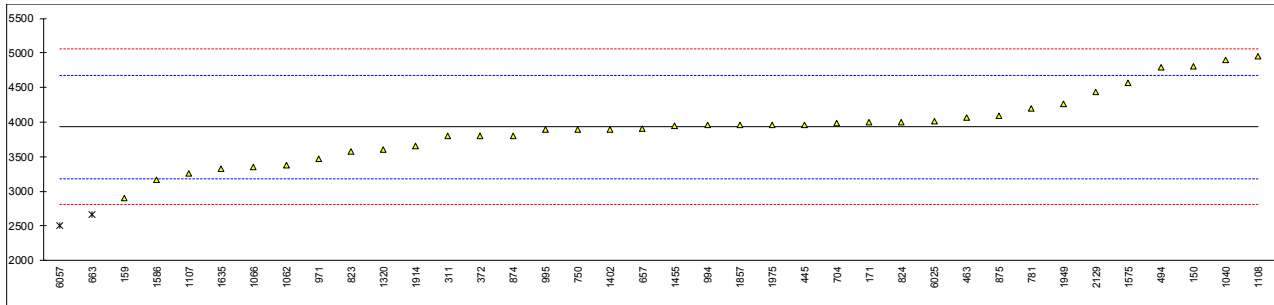


Determination of Nitrogen on sample #17265; results in µg/g

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	886		----		----
62		----		----	887		----		----
120		----		----	912		----		----
131		----		----	913		----		----
132		----		----	962		----		----
140		----		----	963		----		----
150	D5762 Volumetric	4800		2.32	971	D5762 Gravimetric	3475		-1.22
154		----		----	994	D5762 Volumetric	3959		0.07
158		----		----	995	D3228	3897		-0.09
159	D4629	2900		-2.76	996		----		----
168		----		----	997		----		----
169		----		----	1040	D5291-A	4900		2.59
171	D5762 Volumetric	4000		0.18	1047		----		----
175		----		----	1062	D5762 Gravimetric	3376		-1.49
194		----		----	1066	D5762 Gravimetric	3350		-1.56
212		----		----	1082		----		----
225		----		----	1090		----		----
228		----		----	1107	D5762 Volumetric	3253		-1.82
230		----		----	1108	D5762 Volumetric	4957		2.74
237		----		----	1121		----		----
238		----		----	1134		----		----
256		----		----	1191		----		----
273		----		----	1205		----		----
311	D5762 Volumetric	3800		-0.35	1229		----		----
313		----		----	1266		----		----
323		----		----	1320	D5762 Gravimetric	3604		-0.88
333		----		----	1347		----		----
336		----		----	1348		----		----
337		----		----	1356		----		----
342		----		----	1367		----		----
349		----		----	1381		----		----
351		----		----	1385		----		----
356		----		----	1402		3900		-0.09
360		----		----	1455	D5762 Gravimetric	3950		0.05
370		----		----	1491		----		----
372	D5762 Volumetric	3800		-0.35	1520		----		----
399		----		----	1575	D3228	4563		1.69
440		----		----	1585		----		----
445	D5762 Gravimetric	3965		0.09	1586	D5762 Volumetric	3172		-2.03
447		----		----	1622		----		----
463	D5762 Gravimetric	4060		0.34	1631		----		----
494	D5762 Volumetric	4786		2.29	1633		----		----
507		----		----	1635	D5762 Gravimetric	3324		-1.63
529		----		----	1636		----		----
541		----		----	1648		----		----
551		----		----	1681		----		----
557		----		----	1720		----		----
558		----		----	1724		----		----
575		----		----	1792		----		----
605		----		----	1810		----		----
621		----		----	1811		----		----
631		----		----	1854		----		----
633		----		----	1857	D5762 Volumetric	3960		0.08
634		----		----	1906		----		----
657	D5762 Gravimetric	3912		-0.05	1914	D5762 Gravimetric	3660		-0.73
663	D5762 Gravimetric	2663	R(0.01)	-3.40	1948		----		----
671		----		----	1949	D5762 Volumetric	4270		0.90
704	D5762 Volumetric	3985		0.14	1950		----		----
705		----		----	1975	D5762 Gravimetric	3960		0.08
732		----		----	2129	D3228	4441		1.36
750	D5762 Gravimetric	3900		-0.09	6025	D5762 Volumetric	4007		0.20
753		----		----	6035		----		----
781	D5762 Volumetric	4195		0.70	6054		----		----
785		----		----	6057	D5762 Gravimetric	2507	R(0.01)	-3.81
798		----		----	6075		----		----
823	D5762 Gravimetric	3580		-0.94	6092		----		----
824	D5762 Gravimetric	4000		0.18	6109		----		----
825		----		----	6131		----		----
840		----		----	6138		----		----
842		----		----	6154		----		----
873		----		----	7012		----		----
874	D5762 Volumetric	3800		-0.35	7017		----		----
875	D5762 Gravimetric	4090		0.42					



		<u>Volumetric only</u>	<u>Gravimetric only</u>
normality	OK	OK	OK
n	36	15	16
outliers	2	0	2
mean (n)	3931.97	4049.60	3756.63
st.dev. (n)	480.037	508.135	269.612
R(calc.)	1344.10	1422.78	754.91
st.dev.(D5762:12)	373.537	373.537	373.537
R(D5762:12)	1045.90	1077.19	999.26

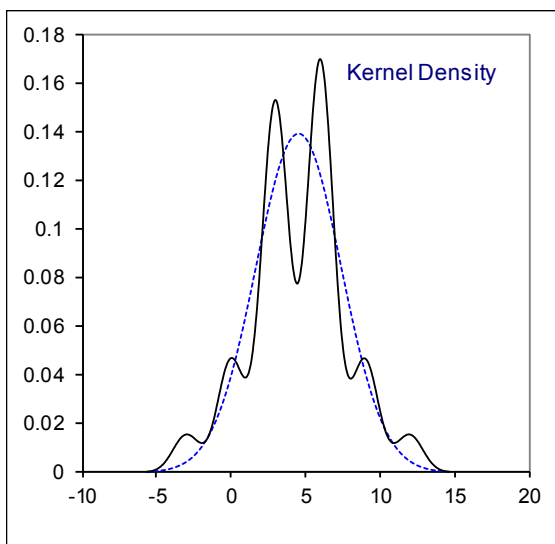
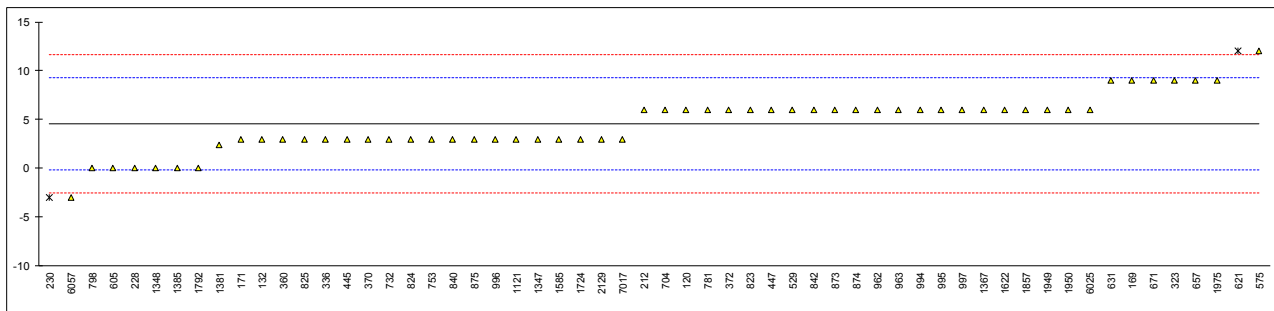


Determination of Pour Point (Lower) on sample #17265; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	886		----		----
62		----		----	887		----		----
120	D97	6		0.62	912		----		----
131		----		----	913		----		----
132	ISO3016	3		-0.66	962	ISO3016	6		0.62
140		----		----	963	ISO3016	6		0.62
150		----		----	971		----		----
154		----		----	994	D97	6		0.62
158		----		----	995	D97	6		0.62
159		----		----	996	D97	3		-0.66
168		----		----	997	D97	6		0.62
169	D97	9		1.89	1040		----		----
171	ISO3016	3		-0.66	1047		----		----
175		----		----	1062		----		----
194		----		----	1066		----		----
212		6		0.62	1082		----		----
225		----		----	1090		----		----
228	D97	0		-1.93	1107		----		----
230	ISO3016	-3.0	ex	-3.20	1108		----		----
237		----		----	1121	ISO3016	3		-0.66
238		----		----	1134		----		----
256		----		----	1191		----		----
273		----		----	1205		----		----
311		----		----	1229		----		----
313		----		----	1266		----		----
323	ISO3016	9		1.89	1320		----		----
333		----		----	1347	D97	3		-0.66
336	D97	3		-0.66	1348	D97	0		-1.93
337		----		----	1356		----		----
342		----		----	1367	ISO3016	6		0.62
349		----		----	1381	ISO3016	2.4		-0.91
351		----		----	1385	D97	0		-1.93
356		----		----	1402		----		----
360	D97	3		-0.66	1455		----		----
370	D97	3		-0.66	1491		----		----
372	ISO3016	6		0.62	1520		----		----
399		----		----	1575		----		----
440		----		----	1585	D97	3		-0.66
445	ISO3016	3		-0.66	1586		----		----
447	D97	6		0.62	1622	D97	6		0.62
463		----		----	1631		----		----
494		----		----	1633		----		----
507		----		----	1635		----		----
529	D97	6		0.62	1636		----		----
541		----		----	1648		----		----
551		----		----	1681		----		----
557		----		----	1720		----		----
558		----		----	1724	D97	3		-0.66
575	D97	12		3.17	1792	ISO3016	0		-1.93
605	ISO3016	0		-1.93	1810		----		----
621	ISO3016	12.0	ex	3.17	1811		----		----
631	D97	9		1.89	1854		----		----
633		----		----	1857	ISO3016	6		0.62
634		----		----	1906		----		----
657	ISO3016	9		1.89	1914		----		----
663		----		----	1948		----		----
671	D97	9		1.89	1949	ISO3016	6		0.62
704	D97	6		0.62	1950	ISO3016	6		0.62
705		----		----	1975	D97	9		1.89
732	D97	3		-0.66	2129	ISO3016	3		-0.66
750		----		----	6025	D97	6		0.62
753	D97	3		-0.66	6035		----		----
781	ISO3016	6		0.62	6054		----		----
785		----		----	6057	ISO3016	-3		-3.20
798	D97	0		-1.93	6075		----		----
823	ISO3016	6		0.62	6092		----		----
824	ISO3016	3		-0.66	6109		----		----
825	ISO3016	3		-0.66	6131		----		----
840	D97	3		-0.66	6138		----		----
842	D97	6		0.62	6154		----		----
873	D97	6		0.62	7012		----		----
874	D97	6		0.62	7017	D97	3		-0.66
875	D97	3		-0.66					

normality	OK
n	56
outliers	0 (+2 ex)
mean (n)	4.54
st.dev. (n)	2.867
R(calc.)	8.03
st.dev.(ISO3016:94)	2.354
R(ISO3016:94)	6.59

ex = excluded, PP lower > PP upper

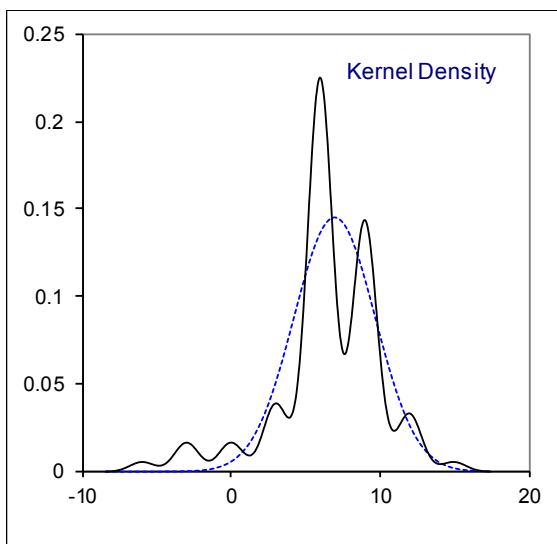
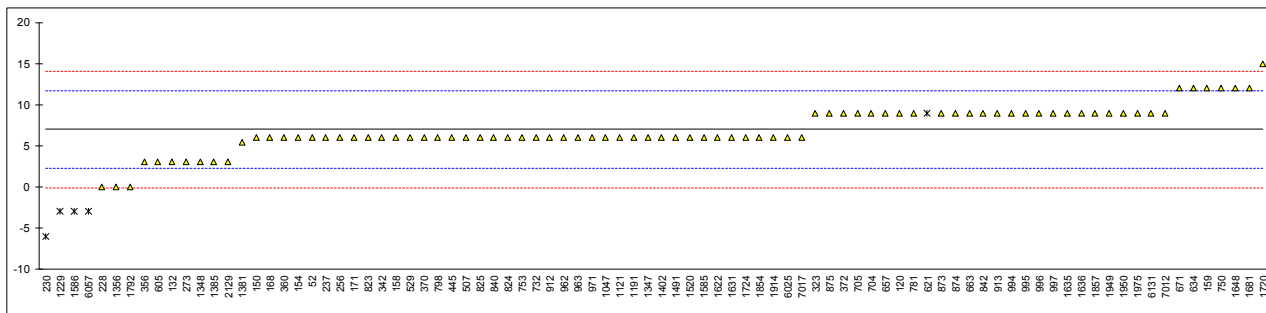


Determination of Pour Point (Upper) on sample #17265; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D97	6		-0.41	886		----		----
62		----		----	887		----		----
120	D97	9		0.86	912	D97	6.0		-0.41
131		----		----	913	D97	9		0.86
132	ISO3016	3		-1.69	962	ISO3016	6		-0.41
140		----		----	963	ISO3016	6		-0.41
150	D97	6		-0.41	971	D97	6		-0.41
154	D97	6		-0.41	994	D97	9		0.86
158	D97	6		-0.41	995	D97	9		0.86
159	D97	12		2.14	996	D97	9		0.86
168	D97	6		-0.41	997	D97	9		0.86
169		----		----	1040		----		----
171	ISO3016	6		-0.41	1047	ISO3016	6		-0.41
175		----		----	1062		----		----
194		----		----	1066		----		----
212		----		----	1082		----		----
225		----		----	1090		----		----
228	D97	0		-2.96	1107		----		----
230	ISO3016	-6.0	ex	-5.51	1108		----		----
237	D97	6		-0.41	1121	ISO3016	6		-0.41
238		----		----	1134		----		----
256	D97	6		-0.41	1191	ISO3016	6		-0.41
273	D97	3		-1.69	1205		----		----
311		----		----	1229	ISO3016	-3	R(0.05)	-4.24
313		----		----	1266		----		----
323	ISO3016	9		0.86	1320		----		----
333		----		----	1347	D97	6		-0.41
336		----		----	1348	D97	3		-1.69
337		----		----	1356	ISO3016	0		-2.96
342	D97	6		-0.41	1367		----		----
349		----		----	1381	ISO3016	5.4		-0.67
351		----		----	1385	D97	3		-1.69
356	ISO3016	3		-1.69	1402	ISO3016	6		-0.41
360	D97	6		-0.41	1455		----		----
370	D97	6		-0.41	1491	D97	6		-0.41
372	ISO3016	9		0.86	1520	ISO3016	6		-0.41
399		----		----	1575		----		----
440		----		----	1585	D97	6		-0.41
445	ISO3016	6		-0.41	1586	D97	-3	R(0.05)	-4.24
447		----		----	1622	D97	6		-0.41
463		----		----	1631	ISO3016	6.0		-0.41
494		----		----	1633		----		----
507	ISO3016	6		-0.41	1635	ISO3016	9		0.86
529	D97	6		-0.41	1636	ISO3016	9		0.86
541		----		----	1648	ISO3016	12		2.14
551		----		----	1681	ISO3016	12		2.14
557		----		----	1720	ISO3016	15		3.41
558		----		----	1724	D97	6		-0.41
575		----		----	1792	ISO3016	0		-2.96
605	ISO3016	3		-1.69	1810		----		----
621	ISO3016	9.0	ex	0.86	1811		----		----
631		----		----	1854	ISO3016	6		-0.41
633		----		----	1857	ISO3016	9		0.86
634	D97	12		2.14	1906		----		----
657	ISO3016	9		0.86	1914	D97	6		-0.41
663	D97	9		0.86	1948		----		----
671	D97	12		2.14	1949	ISO3016	9		0.86
704	D97	9		0.86	1950	ISO3016	9		0.86
705	ISO3016	9		0.86	1975	D97	9		0.86
732	D97	6		-0.41	2129	ISO3016	3		-1.69
750	D97	12		2.14	6025	D97	6		-0.41
753	D97	6		-0.41	6035		----		----
781	ISO3016	9		0.86	6054		----		----
785		----		----	6057	ISO3016	-3	R(0.05)	-4.24
798	D97	6		-0.41	6075		----		----
823	ISO3016	6		-0.41	6092		----		----
824	ISO3016	6		-0.41	6109		----		----
825	ISO3016	6		-0.41	6131	ISO3016	9		0.86
840	D97	6		-0.41	6138		----		----
842	D97	9		0.86	6154		----		----
873	D97	9		0.86	7012	D97	9		0.86
874	D97	9		0.86	7017	D97	6		-0.41
875	D97	9		0.86					

normality	OK
n	83
outliers	3 (+2 ex)
mean (n)	6.97
st.dev. (n)	2.740
R(calc.)	7.67
st.dev.(ISO3016:94)	2.354
R(ISO3016:94)	6.59

ex = excluded, PP lower > PP upper



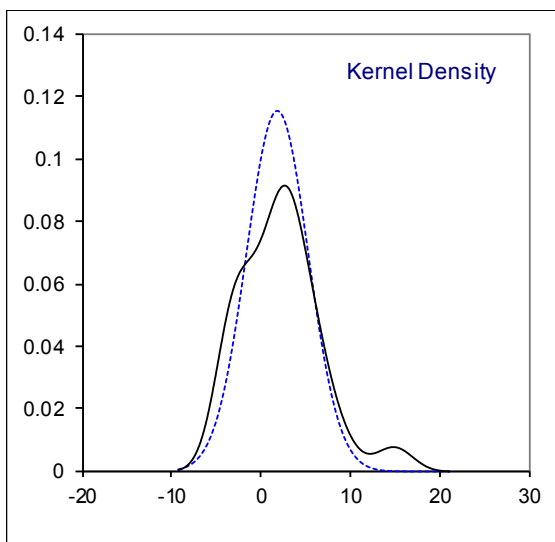
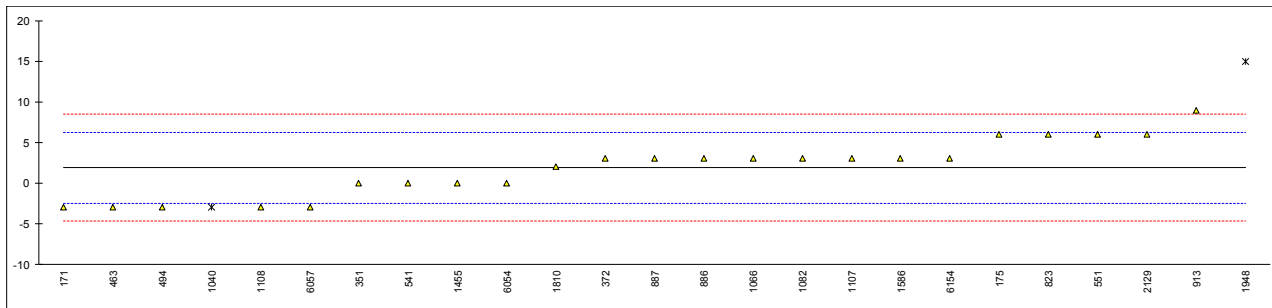
Determination of Pour Point (Automated), 3°C interval on sample #17265; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		----		----	886		3		0.50
62		----		----	887	D6749	3		0.50
120		----		----	912		----		----
131		----		----	913	D5950	9		3.25
132		----		----	962		----		----
140		----		----	963		----		----
150		----		----	971		----		----
154		----		----	994		----		----
158		----		----	995		----		----
159		----		----	996		----		----
168		----		----	997		----		----
169		----		----	1040	ISO3016	-3	ex	-2.26
171	D5950	-3		-2.26	1047		----		----
175	D5950	6		1.88	1062		----		----
194		----		----	1066	D6892	3		0.50
212		----		----	1082	D5950	3		0.50
225		----		----	1090		----		----
228		----		----	1107	D5950	3		0.50
230		----		----	1108	D5950	-3		-2.26
237		----		----	1121		----		----
238		----		----	1134		----		----
256		----		----	1191		----		----
273		----		----	1205		----		----
311		----		----	1229		----		----
313		----		----	1266		----		----
323		----		----	1320		----		----
333		----		----	1347		----		----
336		----		----	1348		----		----
337		----		----	1356		----		----
342		----		----	1367		----		----
349		----		----	1381		----		----
351	D6749	0		-0.88	1385		----		----
356		----		----	1402		----		----
360		----		----	1455	D5950	0		-0.88
370		----		----	1491		----		----
372	D5950	3		0.50	1520		----		----
399		----		----	1575		----		----
440		----		----	1585		----		----
445		----		----	1586	D5950	3		0.50
447		----		----	1622		----		----
463	D6892	-3		-2.26	1631		----		----
494	D6892	-3		-2.26	1633		----		----
507		----		----	1635		----		----
529		----		----	1636		----		----
541	D5950	0.0		-0.88	1648		----		----
551	D5950	6		1.88	1681		----		----
557		----		----	1720		----		----
558		----		----	1724		----		----
575		----		----	1792		----		----
605		----		----	1810	D5950	2		0.04
621		----		----	1811		----		----
631		----		----	1854		----		----
633		----		----	1857		----		----
634		----		----	1906		----		----
657		----		----	1914		----		----
663		----		----	1948		15	C,R(0.05)	6.01
671		----		----	1949		----		----
704		----		----	1950		----		----
705		----		----	1975		----		----
732		----		----	2129	D5950	6		1.88
750		----		----	6025		----		----
753		----		----	6035		----		----
781		----		----	6054	D5950	0		-0.88
785		----		----	6057	D5950	-3		-2.26
798		----		----	6075		----		----
823	D5950	6		1.88	6092		----		----
824		----		----	6109		----		----
825		----		----	6131		----		----
840		----		----	6138		----		----
842		----		----	6154	D5950	3		0.50
873		----		----	7012		----		----
874		----		----	7017		----		----
875		----		----					

normality	OK
n	23
outliers	1 (+1 ex)
mean (n)	1.91
st.dev. (n)	3.450
R(calc.)	9.66
st.dev.(D5950:14)	2.179
R(D5950:14)	6.1

Lab 1948 first reported: 17

ex = excluded, see §4.1 (manual method)



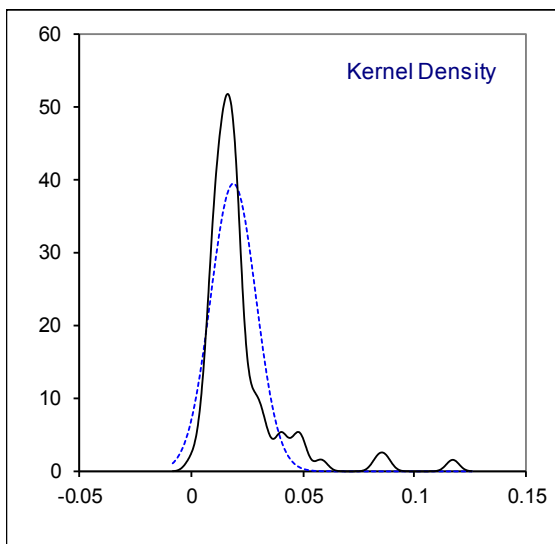
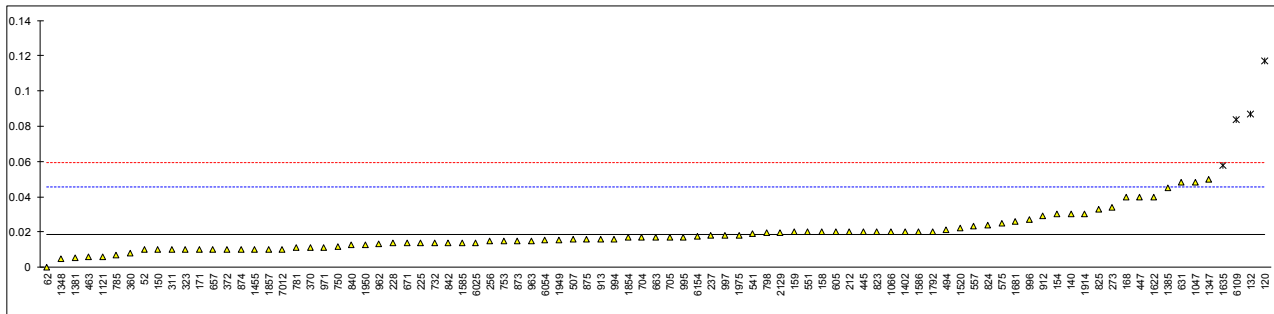
Determination of Sediment by Extraction on sample #17265; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D473	0.01		-0.64	886		----		----
62	D473	0		-1.38	887		----		----
120	D473	0.117	R(0.01)	7.29	912	D473	0.029		0.77
131		----		----	913	D473	0.016		-0.20
132	ISO3735	0.087	R(0.01)	5.07	962	D473	0.0133		-0.40
140	D473	0.03		0.84	963	D473	0.015		-0.27
150	D473	0.01	C	-0.64	971	D473	0.011		-0.57
154	D473	0.03		0.84	994	D473	0.016		-0.20
158	D473	0.02		0.10	995	D473	0.017		-0.12
159	D473	0.02		0.10	996	D473	0.027		0.62
168	D473	0.04		1.58	997	D473	0.018		-0.05
169		----		----	1040		----		----
171	D473	0.01		-0.64	1047	ISO3735	0.048		2.18
175		----		----	1062		----		----
194		----		----	1066	D473	0.02		0.10
212	D473	0.02		0.10	1082		----		----
225	D473	0.014		-0.35	1090		----		----
228	D473	0.0139		-0.35	1107		----		----
230		----		----	1108		----		----
237	D473	0.018		-0.05	1121	D473	0.006		-0.94
238		----		----	1134		----		----
256	D473	0.015		-0.27	1191		----		----
273	D473	0.034		1.14	1205		----		----
311	D473	0.01		-0.64	1229		----		----
313		----		----	1266		----		----
323	D473	0.01		-0.64	1320		----		----
333		----		----	1347	D473	0.050		2.32
336		----		----	1348	D473	0.005		-1.01
337		----		----	1356		----		----
342		----		----	1367		----		----
349		----		----	1381	ISO3735	0.0056		-0.97
351		----		----	1385	D473	0.045		1.95
356		----		----	1402	ISO3735	0.02		0.10
360	ISO3735	0.008		-0.79	1455	D473	0.01		-0.64
370	D473	0.011		-0.57	1491		----		----
372	D473	0.01		-0.64	1520	D473	0.0224		0.28
399		----		----	1575		----		----
440		----		----	1585	D473	0.014		-0.35
445	ISO3735	0.02		0.10	1586	D473	0.02		0.10
447	D473	0.04		1.58	1622	D473	0.04		1.58
463	D473	0.006		-0.94	1631		----		----
494	D473	0.021		0.17	1633		----		----
507	D473	0.016		-0.20	1635	D473	0.058	R(0.05)	2.92
529		----		----	1636		----		----
541	D473	0.019		0.03	1648		----		----
551	D473	0.02		0.10	1681	D473	0.026		0.54
557	D473	0.023357462		0.35	1720		----		----
558		----		----	1724		----		----
575	D473	0.025		0.47	1792	D473	0.020		0.10
605	D473	0.02		0.10	1810		----		----
621		----		----	1811		----		----
631	D473	0.048		2.18	1854	D473	0.0168		-0.14
633		----		----	1857	D473	0.01		-0.64
634		----		----	1906		----		----
657	D473	0.01		-0.64	1914	D473	0.03		0.84
663	D473	0.017		-0.12	1948		----		----
671	D473	0.01393		-0.35	1949	D473	0.0155		-0.23
704	D473	0.017		-0.12	1950	D473	0.013		-0.42
705	D473	0.017		-0.12	1975	D473	0.018		-0.05
732	D473	0.014		-0.35	2129	D473	0.0199		0.09
750	D473	0.012		-0.49	6025	D473	0.0140		-0.35
753	D473	0.015		-0.27	6035		----		----
781	D473	0.011		-0.57	6054	D473	0.01522		-0.25
785	D473	0.007		-0.86	6057	D473	<0,01		----
798	D473	0.0198		0.09	6075		----		----
823	D473	0.02		0.10	6092		----		----
824	D473	0.024		0.40	6109	D473	0.08343	R(0.01)	4.80
825	D473	0.033		1.06	6131		----		----
840	D473	0.013		-0.42	6138		----		----
842	D473	0.014		-0.35	6154	D473	0.0178		-0.06
873	D473	0.015		-0.27	7012	D473	0.01		-0.64
874	D473	0.01		-0.64	7017		----		----
875	D473	0.016		-0.20					



normality	not OK
n	85
outliers	4
mean (n)	0.0187
st.dev. (n)	0.01014
R(calc.)	0.0284
st.dev.(D473:07e1)	0.01348
R(D473:07e1)	0.0378

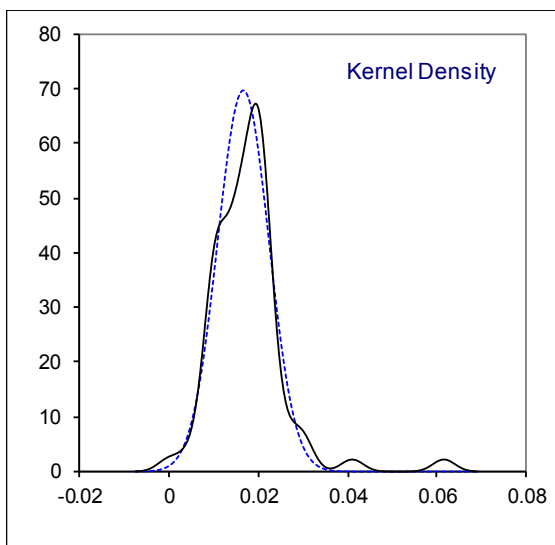
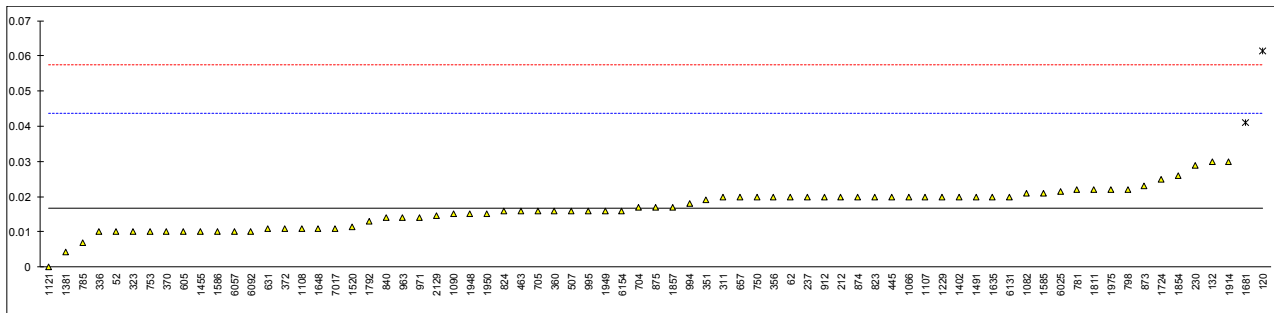
Lab 150 first reported: 0.07



Determination of Total Sediment (Hot filtration) of sample #17265; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4870	0.01		-0.49	886		----		----
62	D4870	0.02		0.25	887		----		----
120	D4870	0.0615	R(0.01)	3.31	912	IP375	0.020		0.25
131		----		----	913		----		----
132	ISO10307-1	0.03		0.98	962		----		----
140		----		----	963	IP375	0.014		-0.20
150		----		----	971	IP375	0.014		-0.20
154		----		----	994	IP375	0.018		0.10
158		----		----	995	IP375	0.016		-0.05
159		----		----	996		----		----
168		----		----	997		----		----
169		----		----	1040	ISO10307-1	<0,01		----
171	IP375	<0.01		----	1047		----		----
175		----		----	1062		----		----
194		----		----	1066	ISO10307-1	0.02		0.25
212		0.02		0.25	1082	ISO10307-1	0.021		0.32
225		----		----	1090	ISO10307-1	0.015		-0.12
228		----		----	1107	IP375	0.02		0.25
230	ISO10307-1	0.029		0.91	1108	ISO10307-1	0.011		-0.42
237	D4870	0.020		0.25	1121	IP375	0.00		-1.23
238		----		----	1134		----		----
256		----		----	1191	ISO10307-1	<0.01		----
273		----		----	1205		----		----
311	IP375	0.02		0.25	1229	ISO10307-1	0.02		0.25
313		----		----	1266		----		----
323	IP375	0.01		-0.49	1320		----		----
333		----		----	1347		----		----
336	IP375	0.01		-0.49	1348		----		----
337		----		----	1356		----		----
342	ISO10307-1	<0.01		----	1367		----		----
349		----		----	1381	ISO10307-1	0.0044		-0.90
351	ISO10307-1	0.019		0.17	1385		----		----
356	IP375	0.02		0.25	1402	IP375	0.02		0.25
360	ISO10307-1	0.016		-0.05	1455	ISO10307-1	0.01		-0.49
370	IP375	0.010		-0.49	1491	ISO10307-1	0.02		0.25
372	IP375	0.011		-0.42	1520	ISO10307-1	0.0115		-0.38
399		----		----	1575		----		----
440		----		----	1585	IP375	0.021		0.32
445	ISO10307-1	0.02		0.25	1586	ISO10307-1	0.01		-0.49
447		----		----	1622		----		----
463	ISO10307-1	0.016		-0.05	1631		----		----
494		----		----	1633		----		----
507	IP375	0.016		-0.05	1635	ISO10307-1	0.02		0.25
529		----		----	1636		----		----
541		----		----	1648	ISO10307-1	0.011		-0.42
551		----		----	1681	ISO10307-1	0.041	R(0.01)	1.80
557		----		----	1720		----		----
558		----		----	1724	IP375	0.025		0.62
575		----		----	1792	IP375	0.013		-0.27
605	ISO10307-1	0.01		-0.49	1810		----		----
621		----		----	1811	IP375	0.022		0.39
631	D4870	0.011		-0.42	1854	ISO10307-1	0.026		0.69
633		----		----	1857	IP375	0.017		0.03
634		----		----	1906		----		----
657	IP375	0.02		0.25	1914	ISO10307-1	0.03		0.98
663		----		----	1948	ISO10307-1	0.015		-0.12
671		----		----	1949	IP375	0.016		-0.05
704	IP375	0.017		0.03	1950	IP375	0.015		-0.12
705	IP375	0.016		-0.05	1975	IP375	0.022		0.39
732		----		----	2129	IP375	0.0145		-0.16
750	IP375	0.02		0.25	6025	IP375	0.0214		0.35
753	IP375	0.01		-0.49	6035		----		----
781	IP375	0.022		0.39	6054		----		----
785	IP375	0.007		-0.71	6057	ISO10307-1	0.01		-0.49
798	IP375	0.0221		0.40	6075		----		----
823	ISO10307-1	0.02		0.25	6092	IP375	0.01		-0.49
824	ISO10307-1	0.016		-0.05	6109		----		----
825		----		----	6131	ISO10307-1	0.02		0.25
840	ISO10307-1	0.014		-0.20	6138		----		----
842		----		----	6154	IP375	0.016		-0.05
873	IP375	0.023		0.47	7012		----		----
874	IP375	0.02		0.25	7017	IP375	0.011		-0.42
875	IP375	0.017		0.03					

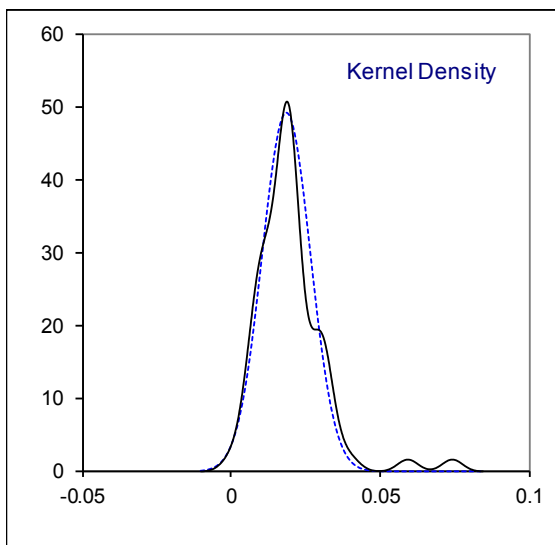
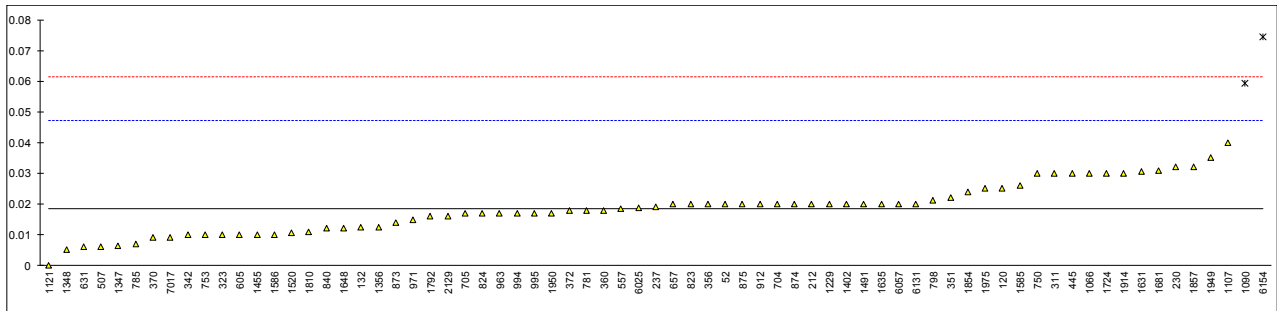
normality	OK
n	71
outliers	2
mean (n)	0.0167
st.dev. (n)	0.00572
R(calc.)	0.0160
st.dev.(IP375:11)	0.01355
R(IP375:11)	0.0379



Determination of Total Sediment (Accelerated) of sample #17265; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4870	0.02		0.11	886		----		----
62		----		----	887		----		----
120	D4870	0.0251		0.46	912	IP390	0.020		0.11
131		----		----	913		----		----
132	ISO10307-2	0.0125		-0.42	962		----		----
140		----		----	963	IP390	0.017		-0.11
150		----		----	971	IP390	0.015		-0.25
154		----		----	994	IP390	0.017		-0.11
158		----		----	995	IP390	0.017		-0.11
159		----		----	996		----		----
168		----		----	997		----		----
169		----		----	1040		----		----
171	IP390	<0.01		----	1047		----		----
175		----		----	1062		----		----
194		----		----	1066	ISO10307-2	0.03		0.81
212		0.02		0.11	1082		----		----
225		----		----	1090	ISO10307-2	0.0594	R(0.01)	2.86
228		----		----	1107	IP390	0.04		1.51
230	ISO10307-2	0.032		0.95	1108		----		----
237	D4870	0.019		0.03	1121	IP390	0.00		-1.30
238		----		----	1134		----		----
256		----		----	1191		----		----
273		----		----	1205		----		----
311	IP390	0.03		0.81	1229	ISO10307-2	0.02		0.11
313		----		----	1266		----		----
323	IP390	0.01		-0.60	1320		----		----
333		----		----	1347	D4870	0.0063		-0.85
336		----		----	1348	D4870	0.0052		-0.93
337		----		----	1356	ISO10307-2	0.0126		-0.41
342	ISO10307-2	0.01		-0.60	1367		----		----
349		----		----	1381		----		----
351	ISO10307-2	0.022		0.25	1385		----		----
356	IP390	0.02		0.11	1402	IP390	0.02		0.11
360	ISO10307-2	0.018		-0.04	1455	ISO10307-2	0.01		-0.60
370	IP390	0.009		-0.67	1491	ISO10307-2	0.02		0.11
372	IP390	0.018		-0.04	1520	ISO10307-2	0.0107		-0.55
399		----		----	1575		----		----
440		----		----	1585	IP390	0.026		0.53
445	ISO10307-2	0.03		0.81	1586	ISO10307-2	0.01		-0.60
447		----		----	1622		----		----
463		----		----	1631	ISO10307-2	0.0305		0.84
494		----		----	1633		----		----
507	IP390	0.006		-0.88	1635	ISO10307-2	0.02		0.11
529		----		----	1636		----		----
541		----		----	1648	ISO10307-2	0.012		-0.46
551		----		----	1681	ISO10307-2	0.031		0.88
557	D4870	0.018622160		0.01	1720		----		----
558		----		----	1724	IP390	0.030		0.81
575		----		----	1792	IP390	0.016		-0.18
605	ISO10307-2	0.01		-0.60	1810	ISO10307-2	0.011		-0.53
621		----		----	1811		----		----
631	D4870	0.006		-0.88	1854	ISO10307-2	0.024		0.39
633		----		----	1857	IP390	0.032		0.95
634		----		----	1906		----		----
657	IP390	0.02		0.11	1914	ISO10307-2	0.03		0.81
663		----		----	1948		----		----
671		----		----	1949	IP390	0.0352		1.17
704	IP390	0.020		0.11	1950	IP390	0.017		-0.11
705	IP390	0.017		-0.11	1975	IP390	0.025		0.46
732		----		----	2129	IP390	0.0160		-0.18
750	IP390	0.03		0.81	6025	IP390	0.0187		0.01
753	IP390	0.01		-0.60	6035		----		----
781	IP390	0.018		-0.04	6054		----		----
785	IP390	0.007		-0.81	6057	ISO10307-2	0.02		0.11
798	IP390	0.0211		0.18	6075		----		----
823	ISO10307-2	0.02		0.11	6092		----		----
824	ISO10307-2	0.017		-0.11	6109		----		----
825		----		----	6131	ISO10307-2	0.02		0.11
840	ISO10307-2	0.012		-0.46	6138		----		----
842		----		----	6154	IP390	0.0744	R(0.01)	3.91
873	IP390	0.014		-0.32	7012		----		----
874	IP390	0.02		0.11	7017	IP390	0.009		-0.67
875	IP390	0.020		0.11					

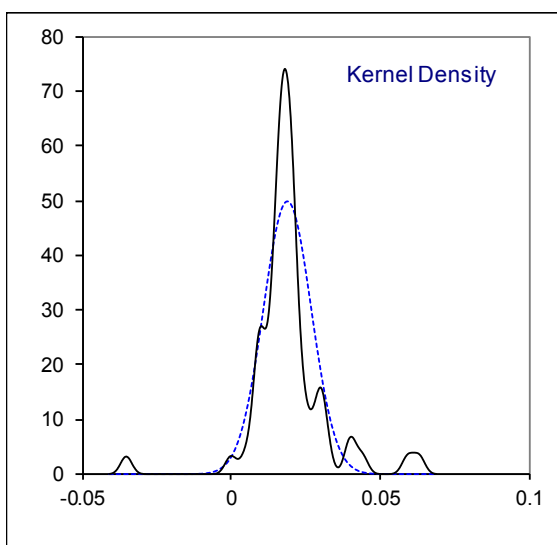
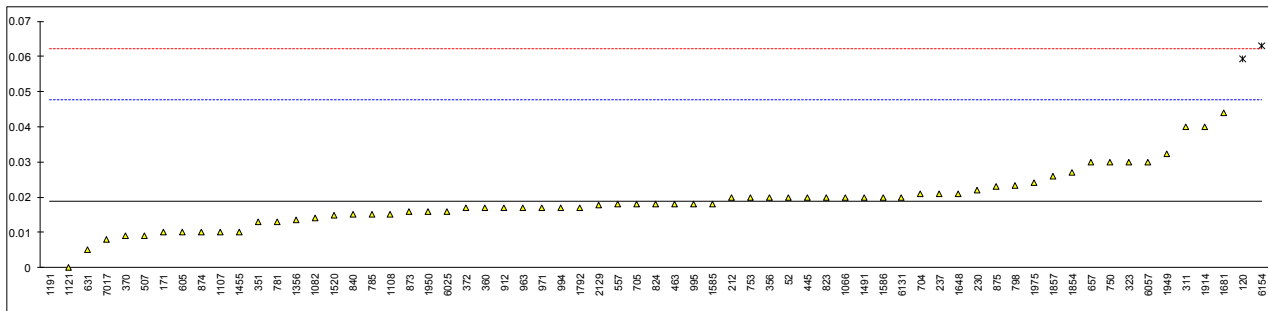
normality	OK
n	69
outliers	2
mean (n)	0.0185
st.dev. (n)	0.00812
R(calc.)	0.0227
st.dev.(IP390:11)	0.01428
R(IP390:11)	0.0400



Determination of Total Sediment (Potential) of sample #17265; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4870	0.02		0.08	886		----		----
62		----		----	887		----		----
120	D4870	0.0592	R(0.01)	2.79	912	IP390	0.017		-0.13
131		----		----	913		----		----
132		----		----	962		----		----
140		----		----	963	IP390	0.017		-0.13
150		----		----	971	IP390	0.017		-0.13
154		----		----	994	IP390	0.017		-0.13
158		----		----	995	IP390	0.018		-0.06
159		----		----	996		----		----
168		----		----	997		----		----
169		----		----	1040	ISO10307-2	<0,01		----
171	IP390	0.01		-0.62	1047		----		----
175		----		----	1062		----		----
194		----		----	1066	ISO10307-2	0.02		0.08
212		0.02		0.08	1082	ISO10307-2	0.014		-0.34
225		----		----	1090		----		----
228		----		----	1107	IP390	0.01		-0.62
230	ISO10307-2	0.022		0.21	1108	ISO10307-2	0.015		-0.27
237	D4870	0.021		0.15	1121	IP390	0.00		-1.31
238		----		----	1134		----		----
256		----		----	1191	ISO10307-2	-0.035	R(0.01)	-3.73
273		----		----	1205		----		----
311	IP390	0.04		1.46	1229		----		----
313		----		----	1266		----		----
323	IP390	0.03		0.77	1320		----		----
333		----		----	1347		----		----
336		----		----	1348		----		----
337		----		----	1356	ISO10307-2	0.0135		-0.37
342	ISO10307-2	<0.01		----	1367		----		----
349		----		----	1381		----		----
351	ISO10307-2	0.013		-0.41	1385		----		----
356	IP390	0.02		0.08	1402	IP390	<0.01		----
360	ISO10307-2	0.017		-0.13	1455	ISO10307-2	0.01		-0.62
370	IP390	0.009		-0.69	1491	ISO10307-2	0.02		0.08
372	IP390	0.017		-0.13	1520	ISO10307-2	0.0149		-0.28
399		----		----	1575		----		----
440		----		----	1585	IP390	0.018		-0.06
445	ISO10307-2	0.02		0.08	1586	ISO10307-2	0.02		0.08
447		----		----	1622		----		----
463	ISO10307-2	0.018		-0.06	1631		----		----
494		----		----	1633		----		----
507	IP390	0.009		-0.69	1635		----		----
529		----		----	1636		----		----
541		----		----	1648	ISO10307-2	0.021		0.15
551		----		----	1681	ISO10307-2	0.044		1.74
557	D4870	0.017945498		-0.07	1720		----		----
558		----		----	1724		----		----
575		----		----	1792	IP390	0.017		-0.13
605	ISO10307-2	0.01		-0.62	1810		----		----
621		----		----	1811		----		----
631	D4870	0.005		-0.96	1854	ISO10307-2	0.027		0.56
633		----		----	1857	IP390	0.026		0.49
634		----		----	1906		----		----
657	IP390	0.03		0.77	1914	ISO10307-2	0.04		1.46
663		----		----	1948		----		----
671		----		----	1949	IP390	0.0322		0.92
704	IP390	0.021		0.15	1950	IP390	0.016		-0.20
705	IP390	0.018		-0.06	1975	IP390	0.024		0.35
732		----		----	2129	IP390	0.0178		-0.08
750	IP390	0.03		0.77	6025	IP390	0.0160		-0.20
753	IP390	0.02		0.08	6035		----		----
781	IP390	0.013		-0.41	6054		----		----
785	IP390	0.0150		-0.27	6057	ISO10307-2	0.03		0.77
798	IP390	0.0234		0.31	6075		----		----
823	ISO10307-2	0.02		0.08	6092		----		----
824	ISO10307-2	0.018		-0.06	6109		----		----
825		----		----	6131	ISO10307-2	0.02		0.08
840	ISO10307-2	0.015		-0.27	6138		----		----
842		----		----	6154	IP390	0.063	R(0.01)	3.06
873	IP390	0.016		-0.20	7012		----		----
874	IP390	0.01		-0.62	7017	IP390	0.008		-0.76
875	IP390	0.023		0.28					

normality	suspect
n	62
outliers	3
mean (n)	0.0189
st.dev. (n)	0.00800
R(calc.)	0.0224
st.dev.(IP390:11)	0.01443
R(IP390:11)	0.0404



## Determination of Total Sulphur on sample #17265; results in %M/M

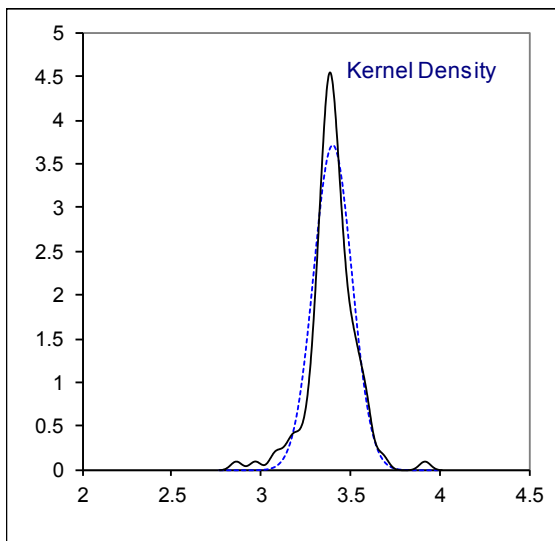
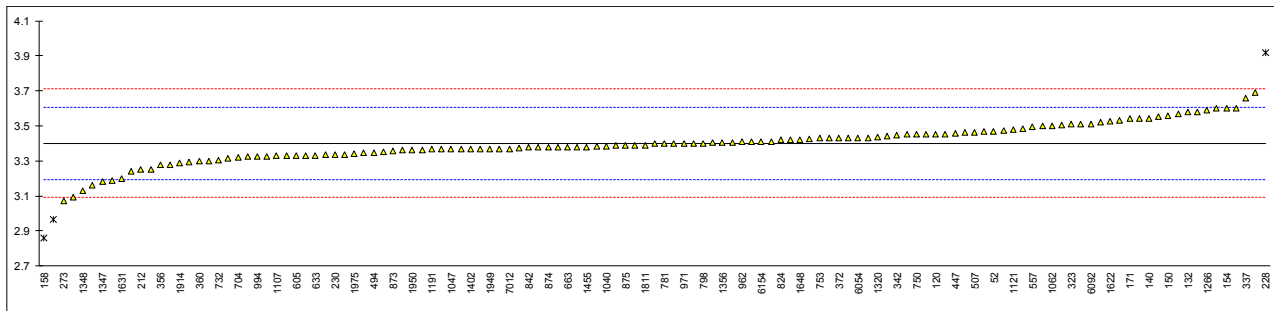
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4294	3.47		0.67	886		-----		-----
62	D4294	3.45		0.47	887		-----		-----
120	D4294	3.451		0.48	912	D4294	3.43		0.28
131		-----		-----	913	D4294	3.38		-0.21
132	ISO8754	3.58		1.74	962	ISO8754	3.41		0.09
140	D4294	3.5402		1.35	963	ISO8754	3.40		-0.01
150	D4294	3.56		1.54	971	D4294	3.40		-0.01
154	D4294	3.60		1.93	994	D4294	3.323		-0.76
158	D4294	2.86	R(0.01)	-5.25	995	D4294	3.451		0.48
159	D4294	3.50		0.96	996	D4294	3.390		-0.11
168		-----		-----	997	D4294	3.461		0.58
169		-----		-----	1040	ISO8754	3.385		-0.16
171	D4294	3.54		1.35	1047	ISO8754	3.37		-0.30
175	D4294	3.58		1.74	1062	ISO8754	3.50		0.96
194		-----		-----	1066	D2622	3.40		-0.01
212		3.25		-1.47	1082	ISO8754	3.432		0.30
225	D4294	3.60		1.93	1090		-----		-----
228	D4294	3.919	R(0.01)	5.03	1107	ISO8754	3.329		-0.70
230	ISO8754	3.336		-0.63	1108	ISO8754	3.57		1.64
237	D4294	3.4712		0.68	1121	ISO8754	3.476		0.73
238		-----		-----	1134		-----		-----
256		-----		-----	1191	ISO8754	3.369		-0.31
273	D4294	3.07		-3.22	1205	ISO14596	3.467		0.64
311	D4294	3.44		0.38	1229	ISO8754	3.37		-0.30
313	D4294	3.39		-0.11	1266	ISO8754	3.59		1.83
323	ISO8754	3.51		1.06	1320	ISO8754	3.437		0.35
333		-----		-----	1347	D4294	3.18		-2.15
336	D4294	3.19		-2.05	1348	D4294	3.132		-2.61
337	D2622	3.66		2.51	1356	ISO8754	3.405		0.04
342	D4294	3.4469		0.44	1367	D4294	3.4200		0.18
349		-----		-----	1381	ISO8754	3.406		0.05
351	ISO8754	3.425		0.23	1385	D4294	3.24		-1.56
356	ISO8754	3.28		-1.18	1402	IP336	3.37		-0.30
360	ISO8754	3.30		-0.98	1455	D2622	3.38		-0.21
370	D4294	3.25		-1.47	1491	ISO8754	3.30		-0.98
372	ISO8754	3.43		0.28	1520	ISO8754	3.430		0.28
399	ISO8754	3.37		-0.30	1575		-----		-----
440		-----		-----	1585	D4294	3.363		-0.37
445	IP336	3.69		2.81	1586	ISO8754	3.36		-0.40
447	IP336	3.46		0.57	1622	D4294	3.525	C	1.20
463	D4294	3.345		-0.54	1631	ISO8754	3.2		-1.95
494	ISO8754	3.346		-0.54	1633	EN15408	2.967	R(0.05)	-4.22
507	ISO8754	3.463		0.60	1635	ISO8754	3.28		-1.18
529	D4294	3.522		1.17	1636	ISO8754	3.377		-0.23
541		-----		-----	1648	ISO8754	3.420		0.18
551	D4294	3.602		1.95	1681	ISO8754	3.292		-1.06
557	D4294	3.49615		0.92	1720	D4294	3.504		1.00
558		-----		-----	1724	IP336	3.313		-0.86
575		-----		-----	1792	ISO8754	3.329		-0.70
605	ISO8754	3.33		-0.69	1810	D4294	3.51		1.06
621	ISO8754	3.4		-0.01	1811	ISO8754	3.39		-0.11
631	D4294	3.411		0.10	1854	ISO8754	3.45		0.47
633	D4294	3.333		-0.66	1857	ISO8754	3.37		-0.30
634	D4294	3.3256		-0.73	1906	D5623	3.532		1.27
657	D4294	3.323		-0.76	1914	ISO8754	3.29		-1.08
663	D4294	3.380		-0.21	1948	ISO8754	3.16		-2.34
671	D4294	3.35335		-0.46	1949	ISO8754	3.370		-0.30
704	ISO8754	3.319		-0.80	1950	ISO8754	3.36		-0.40
705	ISO8754	3.374		-0.26	1975	D4294	3.341		-0.58
732	D4294	3.303		-0.95	2129	ISO8754	3.410		0.09
750	D4294	3.45		0.47	6025	D4294	3.403		0.02
753	D4294	3.43		0.28	6035		-----		-----
781	ISO8754	3.40		-0.01	6054	D4294	3.43		0.28
785	D4294	3.334		-0.65	6057	ISO8754	3.37		-0.30
798	D4294	3.4005		-0.01	6075	ISO8754	3.381		-0.20
823	ISO8754	3.38	C	-0.21	6092	D4294	3.51		1.06
824	ISO8754	3.42		0.18	6109	D1552	3.553		1.47
825	ISO8754	3.482		0.79	6131	ISO8754	3.33		-0.69
840	D4294	3.540		1.35	6138	ISO8754	3.09		-3.02
842	ISO8754	3.376		-0.24	6154	D4294	3.41		0.09
873	D4294	3.357		-0.43	7012	D4294	3.37		-0.30
874	D4294	3.38		-0.21	7017	D4294	3.337		-0.62
875	D4294	3.39		-0.11					



normality	suspect
n	124
outliers	3
mean (n)	3.4011
st.dev. (n)	0.10733
R(calc.)	0.3005
st.dev.(ISO8754:03)	0.10298
R(ISO8754:03)	0.2884
Compare R(D4294:16e1)	0.1599

Lab 823 first reported: 2.380

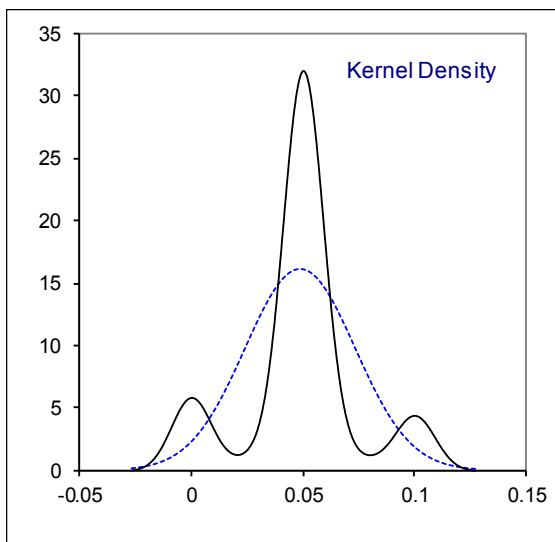
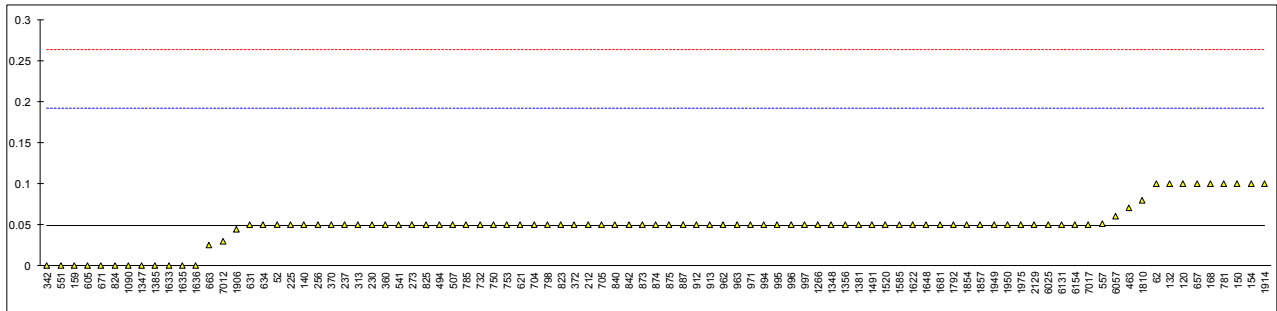
Lab 1622 first reported:3.91



## Determination of Water by distillation on sample #17265; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D95	0.05		0.02	886		----		----
62	D95	0.1		0.72	887	D95	0.05		0.02
120	D95	0.10		0.72	912	ISO3733	0.05		0.02
131		----		----	913	D95	0.05		0.02
132	ISO3733	0.10		0.72	962	ISO3733	0.05		0.02
140	D95	0.05		0.02	963	ISO3733	0.05		0.02
150	D95	0.10		0.72	971	D95	0.05		0.02
154	D95	0.10		0.72	994	D95	0.05		0.02
158		----		----	995	D95	0.05		0.02
159	D95	0.0		-0.68	996	D95	0.05		0.02
168	D95	0.100		0.72	997	D95	0.05		0.02
169		----		----	1040		----		----
171		----		----	1047	PN-C-04523	<0,03		----
175		----		----	1062		----		----
194		----		----	1066		----		----
212		0.05		0.02	1082		----		----
225	D95	0.05		0.02	1090	ISO3733	0		-0.68
228	D95	<0.05		----	1107		----		----
230	ISO3733	0.05		0.02	1108		----		----
237	D95	0.05		0.02	1121	ISO3733	<0.05		----
238		----		----	1134		----		----
256	D95	0.05		0.02	1191		----		----
273	D95	0.05		0.02	1205		----		----
311	D95	<0.05		----	1229		----		----
313	D95	0.05		0.02	1266	D95	0.05		0.02
323		----		----	1320		----		----
333		----		----	1347	D95	0		-0.68
336		----		----	1348	D95	0.05		0.02
337		----		----	1356	D6304-A	0.05		0.02
342	D95	0.0		-0.68	1367	D95	<0.05		----
349	D95	<0,1		----	1381	ISO3733	0.05		0.02
351	ISO3733	<0,05		----	1385	D95	0		-0.68
356	ISO3733	<0.10		----	1402	ISO3733	<0.05		----
360	ISO3733	0.05		0.02	1455	D95	< 0.1		----
370	D95	0.05		0.02	1491	D95	0.05		0.02
372	ISO3733	0.05		0.02	1520	D95	0.05		0.02
399		----		----	1575		----		----
440		----		----	1585	D95	0.05		0.02
445	ISO3733	<0.05		----	1586	ISO3733	<0.10		----
447	D95	<0.05		----	1622	D95	0.05		0.02
463	D95	0.07		0.30	1631		----		----
494	ISO3733	0.05		0.02	1633	D95	0		-0.68
507	ISO3733	0.05		0.02	1635	ISO3733	0.00		-0.68
529		----		----	1636	ISO3733	0.0		-0.68
541	D95	0.050		0.02	1648	ISO3733	0.05		0.02
551	D95	0.0		-0.68	1681	ISO3733	0.05		0.02
557	D95	0.0509164		0.03	1720		----		----
558		----		----	1724	D95	<0,05		----
575	D95	<0.05		----	1792	ISO3733	0.05		0.02
605	ISO3733	0.00		-0.68	1810		0.08		0.44
621	ISO3733	0.05		0.02	1811		----		----
631	D95	0.0498		0.02	1854	D95	0.05		0.02
633		----		----	1857	ISO3733	0.05		0.02
634	D95	0.05		0.02	1906	D6304-C	0.0448		-0.05
657	D95	0.10		0.72	1914	D95	0.1		0.72
663	D95	0.025		-0.33	1948		<0.1		----
671	D95	0		-0.68	1949	ISO3733	0.05		0.02
704	ISO3733	0.05		0.02	1950	ISO3733	0.05		0.02
705	ISO3733	0.05		0.02	1975	D95	0.05		0.02
732	D95	0.05		0.02	2129	ISO3733	0.050		0.02
750	D95	0.05		0.02	6025	D95	0.05		0.02
753	D95	0.05		0.02	6035		----		----
781	ISO3733	0.10		0.72	6054	D95	<0.05		----
785	D95	0.05		0.02	6057	D95	0.06		0.16
798	D95	0.05		0.02	6075		----		----
823	ISO3733	0.05		0.02	6092	D95	<0.05		----
824	ISO3733	0		-0.68	6109		----		----
825	ISO3733	0.05		0.02	6131	ISO3733	0.05		0.02
840	D95	0.05		0.02	6138		----		----
842	D95	0.05		0.02	6154	D95	0.05		0.02
873	D95	0.05		0.02	7012	D95	0.03		-0.26
874	D95	0.05		0.02	7017	D95	0.05		0.02
875	D95	0.05		0.02					

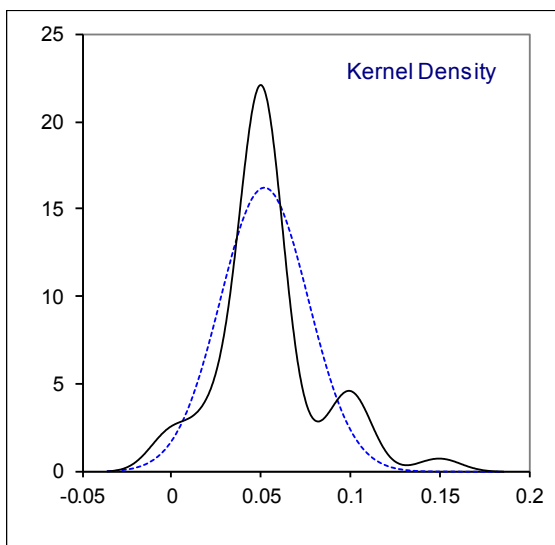
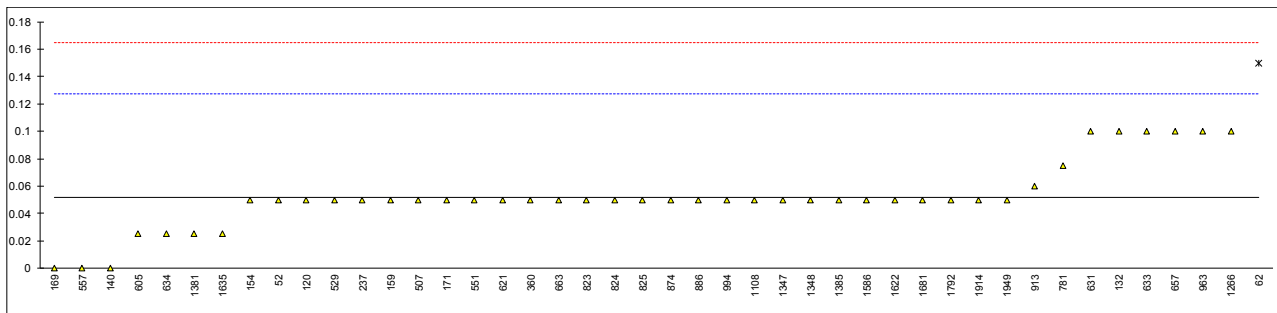
normality	suspect
n	91
outliers	0
mean (n)	0.0485
st.dev. (n)	0.02466
R(calc.)	0.0691
st.dev.(ISO3733:99)	0.07143
R(ISO3733:99)	0.2
Compare R(D95:13e1)	0.2



Determination of Water and Sediment on sample #17265; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D1796	0.05		-0.05	886	D1796	0.05		-0.05
62	D1796	0.15	R(0.05)	2.61	887				
120	D1796	0.05		-0.05	912				
131					913	D1796	0.06		0.21
132	ISO3734	0.10		1.28	962				
140	D1796	0		-1.39	963	D1796	0.10		1.28
150					971				
154	D1796	0.05		-0.05	994	D1796	0.05		-0.05
158					995				
159	D1796	0.05		-0.05	996				
168					997				
169	D1796	0.000		-1.39	1040				
171	D1796	0.05		-0.05	1047				
175					1062				
194					1066				
212					1082				
225					1090				
228					1107				
230					1108	D1796	0.05		-0.05
237	D1796	0.05		-0.05	1121				
238					1134				
256					1191				
273					1205				
311					1229				
313					1266	D1796	0.10		1.28
323					1320				
333					1347	D1796	0.05		-0.05
336					1348	D1796	0.05		-0.05
337					1356				
342					1367				
349					1381	D1796	0.025		-0.72
351					1385	D1796	0.05		-0.05
356					1402				
360	BDS15862	0.050		-0.05	1455				
370					1491				
372					1520				
399					1575				
440					1585				
445	D1796	Nil			1586	D1796	0.05		-0.05
447					1622	D1796	0.05		-0.05
463					1631				
494					1633				
507	D1796	0.050		-0.05	1635	D1796	0.025		-0.72
529	D1796	0.05		-0.05	1636				
541					1648				
551	D1796	0.05		-0.05	1681	D1796	0.05		-0.05
557	D1796	0.0		-1.39	1720				
558					1724				
575					1792	D1796	0.05		-0.05
605	D1796	0.025		-0.72	1810				
621	D1796	0.05		-0.05	1811				
631	D1796	0.10		1.28	1854				
633	D1796	0.10		1.28	1857				
634	D1796	0.025		-0.72	1906				
657	D1796	0.10		1.28	1914	D1796	0.05		-0.05
663	D1796	0.05		-0.05	1948				
671					1949	D1796	0.05		-0.05
704					1950				
705					1975				
732					2129				
750					6025				
753					6035				
781	D1796	0.075		0.61	6054				
785					6057				
798					6075				
823	D1796	0.05		-0.05	6092				
824	D1796	0.05		-0.05	6109				
825	D1796	0.05		-0.05	6131				
840					6138				
842					6154				
873					7012				
874	D1796	0.05		-0.05	7017				
875									

normality	OK
n	43
outliers	1
mean (n)	0.0520
st.dev. (n)	0.02467
R(calc.)	0.0691
st.dev.(D1796:11)	0.03750
R(D1796:11)	0.1050



Vacuum Distillation according to ASTM D1160 (as AET) on sample #17265, results in °C

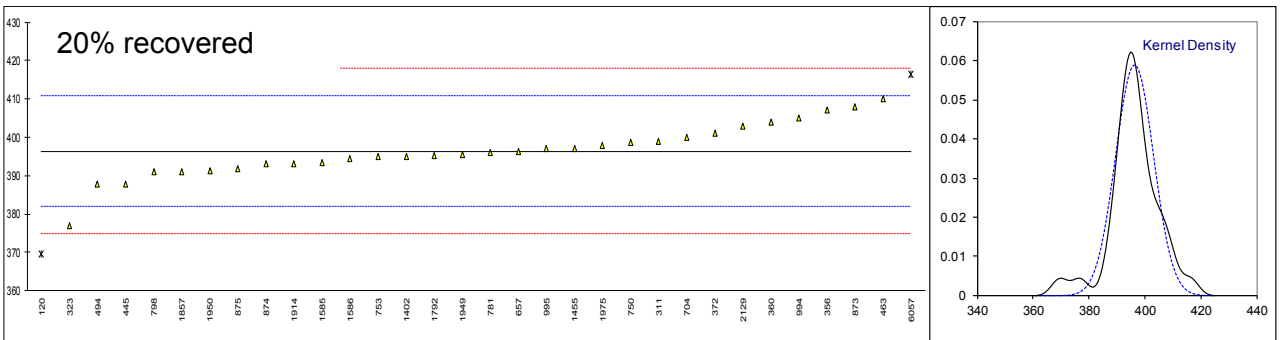
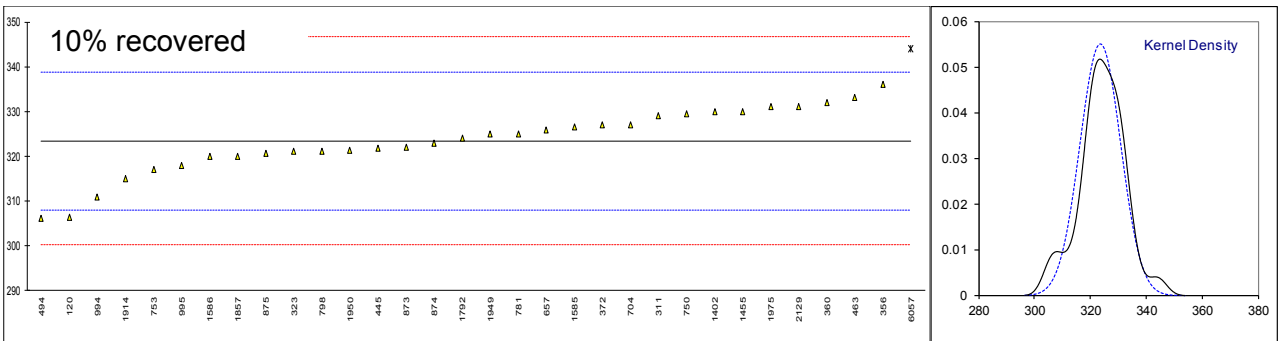
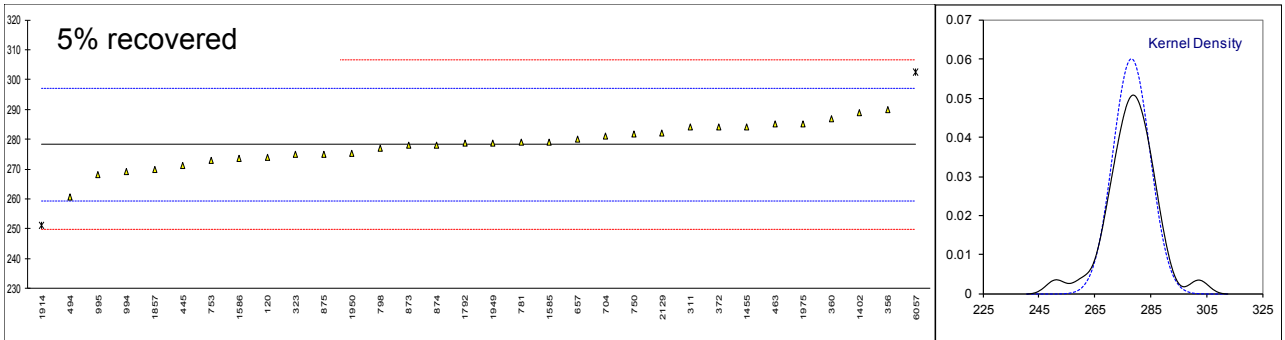
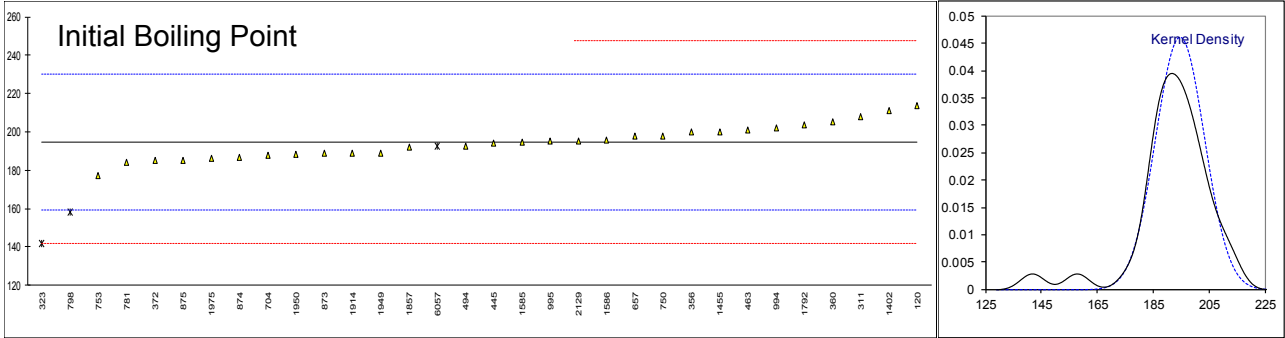
Lab	method	IBP	5% rec	10% rec	20% rec	30% rec	40% rec	50% rec	FBP
52		----	----	----	----	----	----	----	----
62		----	----	----	----	----	----	----	----
120	D1160	213.6	274.0	306.4	<u>369.7</u>	----	----	----	<u>421.6</u>
131		----	----	----	----	----	----	----	----
132		----	----	----	----	----	----	----	----
140		----	----	----	----	----	----	----	----
150		----	----	----	----	----	----	----	----
154		----	----	----	----	----	----	----	----
158		----	----	----	----	----	----	----	----
159		----	----	----	----	----	----	----	----
168		----	----	----	----	----	----	----	----
169		----	----	----	----	----	----	----	----
171		----	----	----	----	----	----	----	----
175		----	----	----	----	----	----	----	----
194		----	----	----	----	----	----	----	----
212		----	----	----	----	----	----	----	----
225		----	----	----	----	----	----	----	----
228		----	----	----	----	----	----	----	----
230		----	----	----	----	----	----	----	----
237		----	----	----	----	----	----	----	----
238		----	----	----	----	----	----	----	----
256		----	----	----	----	----	----	----	----
273		----	----	----	----	----	----	----	----
311		208	284	329	399	455	495	----	525
313		----	----	----	----	----	----	----	----
323	D1160	<u>142</u>	275	321	377	----	----	----	----
333		----	----	----	----	----	----	----	----
336		----	----	----	----	----	----	----	----
337		----	----	----	----	----	----	----	----
342		----	----	----	----	----	----	----	----
349		----	----	----	----	----	----	----	----
351		----	----	----	----	----	----	----	----
356	D1160	200	290	336	407	462	502	529	555
360	D1160	205	287	332	404	461	498	----	520
370		----	----	----	----	----	----	----	----
372		185	284	327	401	453	496	----	531
399		----	----	----	----	----	----	----	----
440		----	----	----	----	----	----	----	----
445	D1160	193.9	271.1	321.7	387.8	448.1	488.6	----	515.5
447		----	----	----	----	----	----	----	----
463	D1160	201	285	333	410	C	----	----	<u>494</u>
494	D1160	192.8	260.7	306.1	387.8	446.0	488.8	519.2	520.9
507		----	----	----	----	----	----	----	----
529		----	----	----	----	----	----	----	----
541		----	----	----	----	----	----	----	----
551		----	----	----	----	----	----	----	----
557		----	----	----	----	----	----	----	----
558		----	----	----	----	----	----	----	----
575		----	----	----	----	----	----	----	----
605		----	----	----	----	----	----	----	----
621		----	----	----	----	----	----	----	----
631		----	----	----	----	----	----	----	----
633		----	----	----	----	----	----	----	----
634		----	----	----	----	----	----	----	----
657	D1160	197.7	280.2	325.8	396.2	454.0	490.7	----	519.5
663		----	----	----	----	----	----	----	----
671		----	----	----	----	----	----	----	----
704	D1160	188.0	281.0	327.0	400.0	456.0	496.0	524.0	531.0
705		----	----	----	----	----	----	----	----
732		----	----	----	----	----	----	----	----
750	D1160	198.1	281.9	329.4	398.6	456.2	499.1	530.8	----
753		177	273	317	395	455	498	522	528
781	D1160	184	279	325	396	454	494	524	528
785		----	----	----	----	----	----	----	----
798	D1160	<u>158</u>	277	321	391	450	487	<u>508</u>	----
823		----	----	----	----	----	----	----	----
824		----	----	----	----	----	----	----	----
825		----	----	----	----	----	----	----	----
840		----	----	----	----	----	----	----	----
842		----	----	----	----	----	----	----	----
873	D1160	189.0	278.0	322.0	408.0	460.0	496.0	525.0	531.5
874	D1160	187	278	323	393	451	494	522	527
875	D1160	185.3	275.0	320.6	391.7	446.0	486.0	513.7	----
886		----	----	----	----	----	----	----	----
887		----	----	----	----	----	----	----	----
912		----	----	----	----	----	----	----	----

Lab method	IBP	5% rec	10% rec	20% rec	30% rec	40% rec	50% rec	FBP
913								
962								
963								
971								
994	D1160	202.0	269.0	311.0	405.0	462.0	495.0	525.0
995	D1160	195.0	268.0	318.0	397.0	457.5	499.0	535.0
996								
997								
1040								
1047								
1062								
1066								
1082								
1090								
1107								
1108								
1121								
1134								
1191								
1205								
1229								
1266								
1320								
1347								
1348								
1356								
1367								
1381								
1385								
1402		211	289	330	395	450	495	525
1455	D1160	200	284	330	397	454	497	536
1491								
1520								
1575								
1585	D1160	194.5	279.0	326.5	393.5	452.5	494.0	526.7
1586	D1160	195.9	273.5	320.0	394.4	452.9	493.7	520.2
1622								
1631								
1633								
1635								
1636								
1648								
1681								
1720								
1724								
1792		203.8	278.6	324.1	395.2	454.9	495.3	540.8
1810								
1811								
1854								
1857		192	270	320	391	452	494	532
1906								
1914	D1160	189	<b>251</b>	315	393	452	495	529
1948								
1949	D1160	189.1	278.8	324.9	395.5	452.9	493.5	532.6
1950	D1160	188.1	275.2	321.4	391.3	451.3	494.2	529.6
1975	D1160	186	285	331	398	457	495	533
2129	D1160	195	282	331	403	461	502	544
6025								
6035								
6054								
6057		<u>192.5</u>	<u>302.4</u>	<u>343.9</u>	<u>416.3</u>	<u>472.3</u>	<u>526.3</u>	<u>596.9</u>
6075								
6092								
6109								
6131								
6138								
6154								
7012								
7017								
normality		OK	OK	OK	suspect	OK	OK	not OK
n		29	30	31	30	28	28	25
outliers		2 (+1 ex)	2	0 (+1 ex)	1 (+1 ex)	1	1	2
mean (n)		194.72	278.20	323.42	396.40	454.19	494.71	529.65
st.dev. (n)		8.664	6.641	7.247	6.769	4.383	3.873	4.473
R(calc.)		24.26	18.59	20.29	18.95	12.27	10.84	23.72
st.dev.(D1160:15)		17.660	9.451	7.733	7.165	6.375	5.542	9.605
R(D1160:15)		49	26.46	21.65	20.06	17.85	15.52	26.89

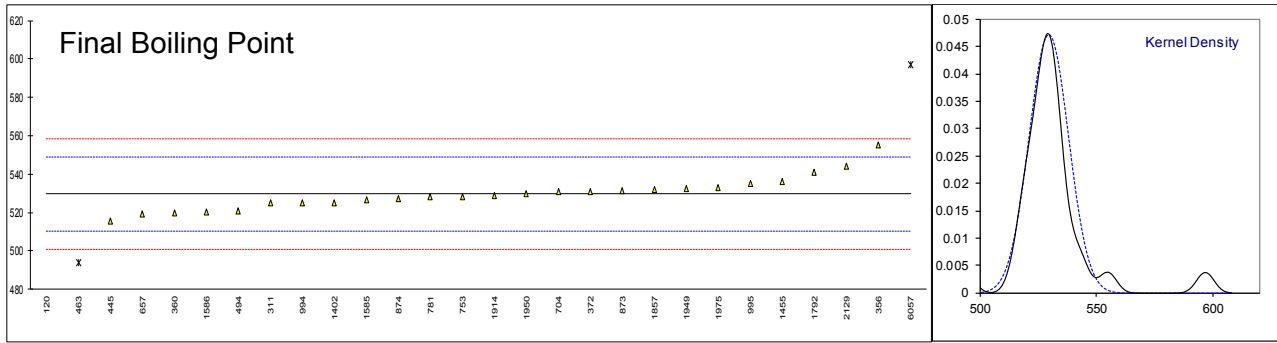
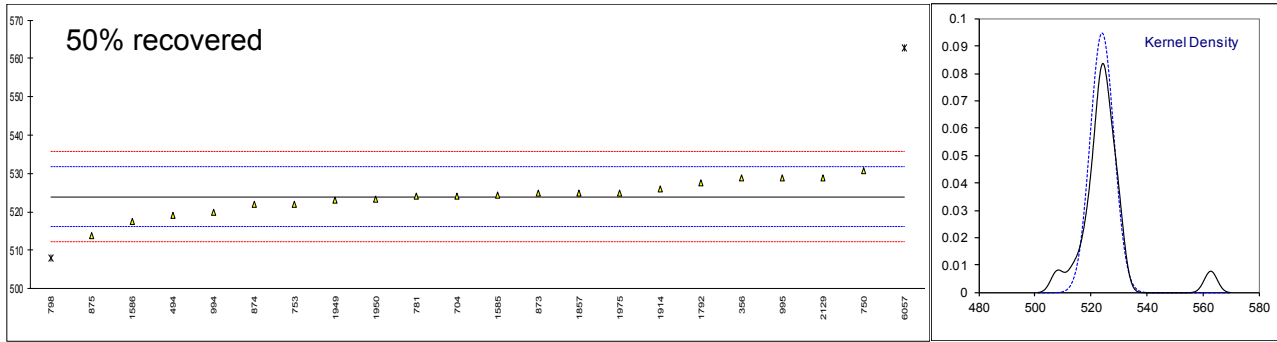
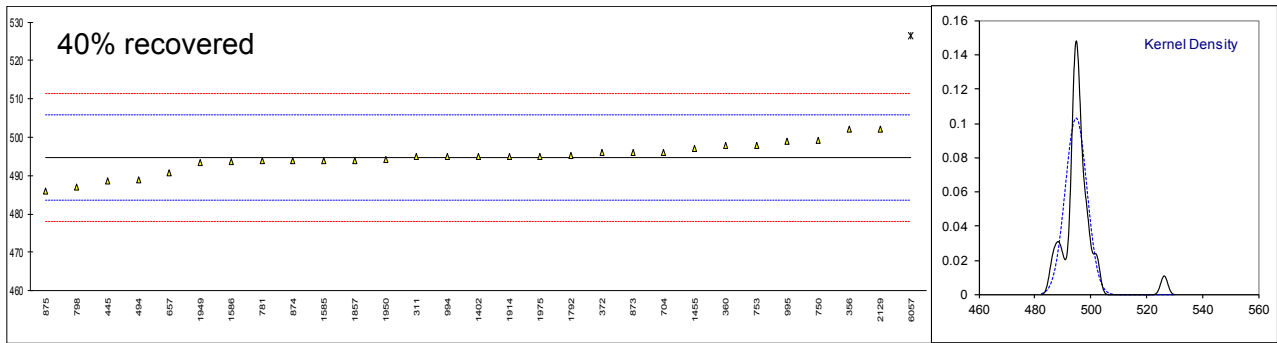
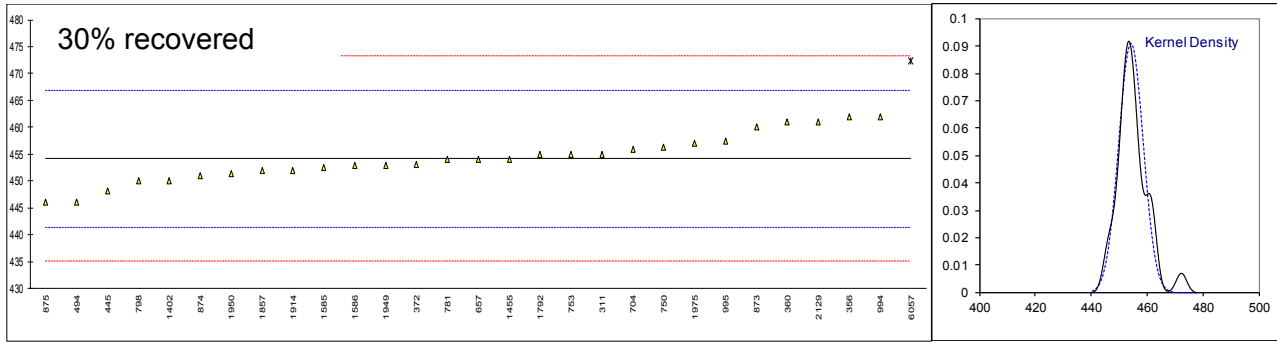
Lab 463 first reported: 467 at 20 % recovered

**The reported results underlined and bold are statistical outliers.**

*The reported results underlined and italic are excluded (see §4.1)*







z-scores of Vacuum Distillation according to ASTM D1160 on sample #17105, results in °C

Lab	method	IBP	5% rec	10% rec	20% rec	30% rec	40% rec	50% rec	FBP
52		----	----	----	----	----	----	----	----
62		----	----	----	----	----	----	----	----
120	D1160	1.07	-0.44	-2.20	-3.73	----	----	----	-11.25
131		----	----	----	----	----	----	----	----
132		----	----	----	----	----	----	----	----
140		----	----	----	----	----	----	----	----
150	D1160	----	----	----	----	----	----	----	----
154		----	----	----	----	----	----	----	----
158		----	----	----	----	----	----	----	----
159		----	----	----	----	----	----	----	----
168		----	----	----	----	----	----	----	----
169		----	----	----	----	----	----	----	----
171		----	----	----	----	----	----	----	----
175		----	----	----	----	----	----	----	----
194		----	----	----	----	----	----	----	----
212		----	----	----	----	----	----	----	----
225		----	----	----	----	----	----	----	----
228		----	----	----	----	----	----	----	----
230		----	----	----	----	----	----	----	----
237		----	----	----	----	----	----	----	----
238		----	----	----	----	----	----	----	----
256		----	----	----	----	----	----	----	----
273		----	----	----	----	----	----	----	----
311		0.75	0.61	0.72	0.36	0.13	0.05	----	-0.48
313		----	----	----	----	----	----	----	----
323	D1160	-2.99	-0.34	-0.31	-2.71	----	----	----	----
333		----	----	----	----	----	----	----	----
336		----	----	----	----	----	----	----	----
337		----	----	----	----	----	----	----	----
342		----	----	----	----	----	----	----	----
349		----	----	----	----	----	----	----	----
351		----	----	----	----	----	----	----	----
356	D1160	0.30	1.25	1.63	1.48	1.23	1.32	1.28	2.64
360	D1160	0.58	0.93	1.11	1.06	1.07	0.59	----	-1.00
370		----	----	----	----	----	----	----	----
372		-0.55	0.61	0.46	0.64	-0.19	0.23	----	0.14
399		----	----	----	----	----	----	----	----
440		----	----	----	----	----	----	----	----
445	D1160	-0.05	-0.75	-0.22	-1.20	-0.96	-1.10	----	-1.47
447		----	----	----	----	----	----	----	----
463	D1160	0.36	0.72	1.24	1.90	----	----	----	-3.71
494	D1160	-0.11	-1.85	-2.24	-1.20	-1.28	-1.07	-1.21	-0.91
507		----	----	----	----	----	----	----	----
529		----	----	----	----	----	----	----	----
541		----	----	----	----	----	----	----	----
551		----	----	----	----	----	----	----	----
557		----	----	----	----	----	----	----	----
558		----	----	----	----	----	----	----	----
575		----	----	----	----	----	----	----	----
605		----	----	----	----	----	----	----	----
621		----	----	----	----	----	----	----	----
631		----	----	----	----	----	----	----	----
633		----	----	----	----	----	----	----	----
634		----	----	----	----	----	----	----	----
657	D1160	0.17	0.21	0.31	-0.03	-0.03	-0.72	----	-1.06
663		----	----	----	----	----	----	----	----
671		----	----	----	----	----	----	----	----
704	D1160	-0.38	0.30	0.46	0.50	0.28	0.23	0.01	0.14
705		----	----	----	----	----	----	----	----
732		----	----	----	----	----	----	----	----
750	D1160	0.19	0.39	0.77	0.31	0.32	0.79	1.73	----
753		-1.00	-0.55	-0.83	-0.20	0.13	0.59	-0.50	-0.17
781	D1160	-0.61	0.08	0.20	-0.06	-0.03	-0.13	0.01	-0.17
785		----	----	----	----	----	----	----	----
798	D1160	-2.08	-0.13	-0.31	-0.75	-0.66	-1.39	-4.06	----
823	D1160	----	----	----	----	----	----	----	----
824		----	----	----	----	----	----	----	----
825		----	----	----	----	----	----	----	----
840		----	----	----	----	----	----	----	----
842		----	----	----	----	----	----	----	----
873	D1160	-0.32	-0.02	-0.18	1.62	0.91	0.23	0.26	0.19
874	D1160	-0.44	-0.02	-0.05	-0.47	-0.50	-0.13	-0.50	-0.28
875	D1160	-0.53	-0.34	-0.36	-0.66	-1.28	-1.57	-2.61	----
886		----	----	----	----	----	----	----	----
887		----	----	----	----	----	----	----	----
912		----	----	----	----	----	----	----	----

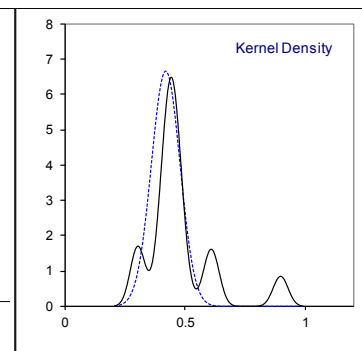
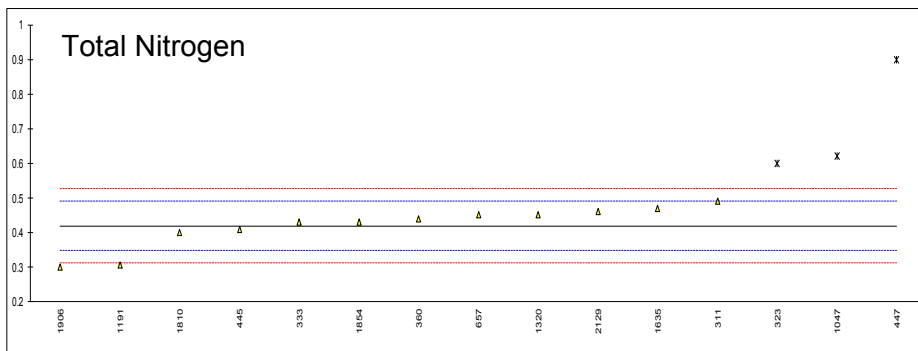
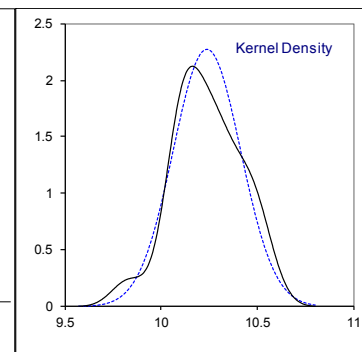
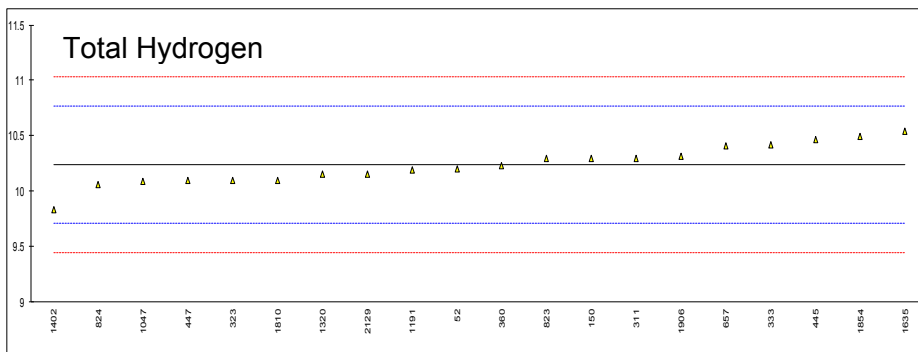
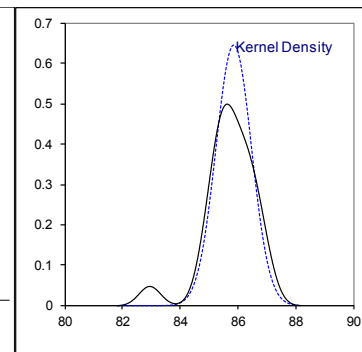
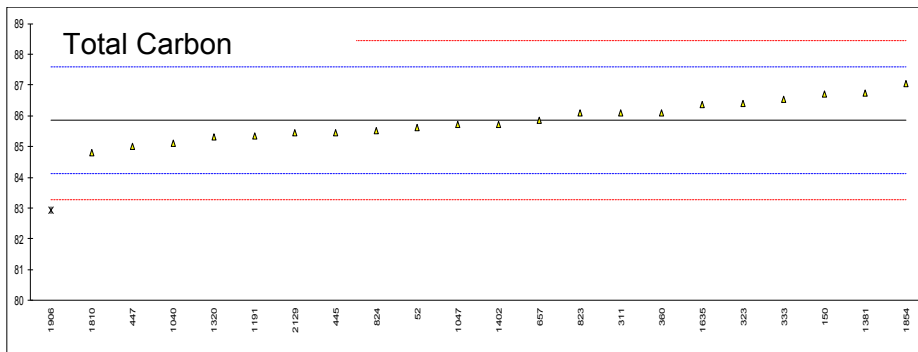
Lab	method	IBP	5% rec	10% rec	20% rec	30% rec	40% rec	50% rec	FBP
913		----	----	----	----	----	----	----	----
962		----	----	----	----	----	----	----	----
963		----	----	----	----	----	----	----	----
971		----	----	----	----	----	----	----	----
994	D1160	0.41	-0.97	-1.61	1.20	1.23	0.05	-1.01	-0.48
995	D1160	0.02	-1.08	-0.70	0.08	0.52	0.77	1.28	0.56
996		----	----	----	----	----	----	----	----
997		----	----	----	----	----	----	----	----
1040		----	----	----	----	----	----	----	----
1047		----	----	----	----	----	----	----	----
1062		----	----	----	----	----	----	----	----
1066		----	----	----	----	----	----	----	----
1082		----	----	----	----	----	----	----	----
1090		----	----	----	----	----	----	----	----
1107		----	----	----	----	----	----	----	----
1108		----	----	----	----	----	----	----	----
1121		----	----	----	----	----	----	----	----
1134		----	----	----	----	----	----	----	----
1191		----	----	----	----	----	----	----	----
1205		----	----	----	----	----	----	----	----
1229		----	----	----	----	----	----	----	----
1266		----	----	----	----	----	----	----	----
1320		----	----	----	----	----	----	----	----
1347		----	----	----	----	----	----	----	----
1348		----	----	----	----	----	----	----	----
1356		----	----	----	----	----	----	----	----
1367		----	----	----	----	----	----	----	----
1381		----	----	----	----	----	----	----	----
1385		----	----	----	----	----	----	----	----
1402		0.92	1.14	0.85	-0.20	-0.66	0.05	----	-0.48
1455	D1160	0.30	0.61	0.85	0.08	-0.03	0.41	----	0.66
1491		----	----	----	----	----	----	----	----
1520		----	----	----	----	----	----	----	----
1575		----	----	----	----	----	----	----	----
1585	D1160	-0.01	0.08	0.40	-0.40	-0.26	-0.13	0.13	-0.31
1586	D1160	0.07	-0.50	-0.44	-0.28	-0.20	-0.18	-1.65	-0.98
1622	D1160	----	----	----	----	----	----	----	----
1631		----	----	----	----	----	----	----	----
1633		----	----	----	----	----	----	----	----
1635		----	----	----	----	----	----	----	----
1636		----	----	----	----	----	----	----	----
1648		----	----	----	----	----	----	----	----
1681		----	----	----	----	----	----	----	----
1720		----	----	----	----	----	----	----	----
1724		----	----	----	----	----	----	----	----
1792		0.51	0.04	0.09	-0.17	0.11	0.11	0.90	1.16
1810		----	----	----	----	----	----	----	----
1811		----	----	----	----	----	----	----	----
1854		----	----	----	----	----	----	----	----
1857		-0.15	-0.87	-0.44	-0.75	-0.34	-0.13	0.26	0.24
1906		----	----	----	----	----	----	----	----
1914	D1160	-0.32	-2.88	-1.09	-0.47	-0.34	0.05	0.51	-0.07
1948		----	----	----	----	----	----	----	----
1949	D1160	-0.32	0.06	0.19	-0.13	-0.20	-0.22	-0.22	0.31
1950	D1160	-0.37	-0.32	-0.26	-0.71	-0.45	-0.09	-0.20	-0.01
1975	D1160	-0.49	0.72	0.98	0.22	0.44	0.05	0.26	0.35
2129	D1160	0.02	0.40	0.98	0.92	1.07	1.32	1.28	1.49
6025		----	----	----	----	----	----	----	----
6035		----	----	----	----	----	----	----	----
6054		----	----	----	----	----	----	----	----
6057		-0.13	2.56	2.65	2.78	2.84	5.70	9.87	7.00
6075		----	----	----	----	----	----	----	----
6092		----	----	----	----	----	----	----	----
6109		----	----	----	----	----	----	----	----
6131		----	----	----	----	----	----	----	----
6138		----	----	----	----	----	----	----	----
6154		----	----	----	----	----	----	----	----
7012		----	----	----	----	----	----	----	----
7017		----	----	----	----	----	----	----	----

Determination of Total Carbon, Hydrogen and Nitrogen on sample #17265; results in %M/M

Lab	method	Total C	mark	z(targ)	Total H	mark	z(targ)	Total N	mark	z(targ)
52	D5291 - B	85.6		-0.30	10.2		-0.14	----		----
62		----		----	----		----	----		----
120		----		----	----		----	----		----
131		----		----	----		----	----		----
132		----		----	----		----	----		----
140		----		----	----		----	----		----
150	D5291 - C	86.7		0.98	10.3		0.24	----		----
154		----		----	----		----	----		----
158		----		----	----		----	----		----
159		----		----	----		----	----		----
168		----		----	----		----	----		----
169		----		----	----		----	----		----
171		----		----	----		----	----		----
175		----		----	----		----	----		----
194		----		----	----		----	----		----
212		----		----	----		----	----		----
225		----		----	----		----	----		----
228		----		----	----		----	----		----
230		----		----	----		----	----		----
237		----		----	----		----	----		----
238		----		----	----		----	----		----
256		----		----	----		----	----		----
273		----		----	----		----	----		----
311		86.1		0.28	10.3		0.24	0.49		1.94
313		----		----	----		----	----		----
323	D5291 - A	86.4		0.63	10.1		-0.52	0.6	D(0.05)	4.98
333		86.52		0.77	10.42		0.69	0.43		0.29
336		----		----	----		----	----		----
337		----		----	----		----	----		----
342		----		----	----		----	----		----
349		----		----	----		----	----		----
351		----		----	----		----	----		----
356		----		----	----		----	----		----
360	D5291 - A	86.10		0.28	10.23		-0.03	0.44		0.56
370		----		----	----		----	----		----
372		----		----	----		----	----		----
399		----		----	----		----	----		----
440		----		----	----		----	----		----
445	D5291 - C	85.45		-0.47	10.47		0.88	0.41		-0.27
447	D5291 - B	85.0		-0.99	10.1		-0.52	0.9	D(0.05)	13.26
463		----		----	----		----	----		----
494		----		----	----		----	----		----
507		----		----	----		----	----		----
529		----		----	----		----	----		----
541		----		----	----		----	----		----
551		----		----	----		----	----		----
557		----		----	----		----	----		----
558		----		----	----		----	----		----
575		----		----	----		----	----		----
605		----		----	----		----	----		----
621		----		----	----		----	----		----
631		----		----	----		----	----		----
633		----		----	----		----	----		----
634		----		----	----		----	----		----
657	D5291 - D	85.87		0.02	10.41		0.65	0.45		0.84
663		----		----	----		----	----		----
671		----		----	----		----	----		----
704		----		----	----		----	----		----
705		----		----	----		----	----		----
732		----		----	----		----	----		----
750		----		----	----		----	----		----
753		----		----	----		----	----		----
781		----		----	----		----	----		----
785		----		----	----		----	----		----
798		----		----	----		----	----		----
823	D5291 - D	86.1		0.28	10.3		0.24	----		----
824	D5291 - D	85.52		-0.39	10.06		-0.67	----		----
825		----		----	----		----	----		----
840		----		----	----		----	----		----
842		----		----	----		----	----		----
873		----		----	----		----	----		----
874		----		----	----		----	----		----
875		----		----	----		----	----		----
886		----		----	----		----	----		----
887		----		----	----		----	----		----
912		----		----	----		----	----		----

Lab	method	Total C	mark	z(targ)	Total H	mark	z(targ)	Total N	mark	z(targ)
913		----		----	----		----	----		----
962		----		----	----		----	----		----
963		----		----	----		----	----		----
971		----		----	----		----	----		----
994		----		----	----		----	----		----
995		----		----	----		----	----		----
996		----		----	----		----	----		----
997		----		----	----		----	----		----
1040	D7662	85.10	C	-0.87	----		----	----		----
1047	INH-02	85.72		-0.16	10.09		-0.56	0.62	D(0.05)	5.53
1062		----		----	----		----	----		----
1066		----		----	----		----	----		----
1082		----		----	----		----	----		----
1090		----		----	----		----	----		----
1107		----		----	----		----	----		----
1108		----		----	----		----	----		----
1121		----		----	----		----	----		----
1134		----		----	----		----	----		----
1191	D5291 - A	85.34		-0.60	10.19		-0.18	0.306		-3.14
1205		----		----	----		----	----		----
1229		----		----	----		----	----		----
1266		----		----	----		----	----		----
1320	D5291 - A	85.31		-0.63	10.15		-0.33	0.45		0.84
1347		----		----	----		----	----		----
1348		----		----	----		----	----		----
1356		----		----	----		----	----		----
1367		----		----	----		----	----		----
1381		86.74		1.03	----		----	----		----
1385		----		----	----		----	----		----
1402		85.73		-0.14	9.83		-1.54	----		----
1455		----		----	----		----	----		----
1491		----		----	----		----	----		----
1520		----		----	----		----	----		----
1575		----		----	----		----	----		----
1585		----		----	----		----	----		----
1586		----		----	----		----	----		----
1622	D5291 - A	----		----	----		----	----		----
1631		----		----	----		----	----		----
1633		----		----	----		----	----		----
1635	D5291 - D	86.37		0.60	10.54		1.15	0.47		1.39
1636		----		----	----		----	----		----
1648		----		----	----		----	----		----
1681		----		----	----		----	----		----
1720		----		----	----		----	----		----
1724		----		----	----		----	----		----
1792		----		----	----		----	----		----
1810		84.8		-1.22	10.1		-0.52	0.4		-0.54
1811		----		----	----		----	----		----
1854		87.05		1.38	10.49		0.96	0.43		0.29
1857		----		----	----		----	----		----
1906	D5291 - D	82.937	R(0.01)	-3.38	10.31		0.28	0.3		-3.30
1914		----		----	----		----	----		----
1948		----		----	----		----	----		----
1949		----		----	----		----	----		----
1950		----		----	----		----	----		----
1975		----		----	----		----	----		----
2129	D5291 - A	85.43		-0.49	10.15		-0.33	0.46		1.11
6025		----		----	----		----	----		----
6035		----		----	----		----	----		----
6054		----		----	----		----	----		----
6057		----		----	----		----	----		----
6075		----		----	----		----	----		----
6092		----		----	----		----	----		----
6109		----		----	----		----	----		----
6131		----		----	----		----	----		----
6138		----		----	----		----	----		----
6154		----		----	----		----	----		----
7012		----		----	----		----	----		----
7017		----		----	----		----	----		----
normality		OK			OK			OK		
n		21			20			12		
outliers		1			0			3		
mean (n)		85.8548			10.2370			0.4197		
st.dev. (n)		0.61815			0.17538			0.05977		
R(calc.)		1.7308			0.4911			0.1674		
st.dev.(D5291:16)		0.86358			0.26442			0.03624		
R(D5291:16)		2.4180			0.7404			0.1015		

Lab 1040 first reported:83.23



## Determination of Aluminum as Al, Silicon as Si and total Al+Si on sample #17266; results in mg/kg

Lab	method	Al	mark	z(targ)	Si	mark	z(targ)	Sum Al+Si	mark	z(targ)
52	IP470	15		-0.03	10		0.12	25		0.13
62	IP470	15		-0.03	9		-0.32	24		-0.22
120	IP501	15.81		0.44	8.06		-0.73	23.87		-0.27
131		----		----			----			----
140		----		----			----			----
150	IP501	17		1.13	8		-0.76	25		0.13
154	D5184	10	C,R(0.01)	-2.91	9	ex	-0.32	16	ex	-3.02
159	IP501	15		-0.03	8		-0.76	23		-0.57
169	D5184	16.9		1.07	12.7		1.31	----		----
171	IP501	19		2.28	10		0.12	29		1.53
194		----		----			----			----
212		5	R(0.01)	-5.80	6	ex	-1.64	11	R(0.01)	-4.76
225	IP501	12		-1.76	----		----	----		----
230	IP501	17.07		1.17	10.1		0.16	27.2		0.90
237	D5184	12.13		-1.68	7.762		-0.86	19.89		-1.66
273	IP470	14		-0.60	14	C	1.88	28	C	1.18
311	IP501	14		-0.60	<10		----	23		-0.57
323	IP501	15		-0.03	<10		----	<25		----
333		----		----			----			----
336		----		----			----			----
342	IP501	15.3		0.15	10.5		0.34	25.8		0.41
351	IP501	14.95		-0.06	9.46		-0.12	24.41		-0.08
356	IP501	20	R(0.01)	2.86	17	ex	3.19	37	R(0.01)	4.32
360	IP501	15.3		0.15	7.8		-0.85	23.1		-0.53
370	IP470	14.8		-0.14	16.7	R(0.05)	3.06	31.5	ex	2.40
372	IP470	15		-0.03	10		0.12	25		0.13
399		----		----			----			----
445	IP501	14.1		-0.55	7.7		-0.89	21.8		-0.99
447		----		----			----			----
463	IP470	14.0		-0.60	9.3		-0.19	23.3		-0.46
494		----		----			----			----
507	IP501	9.9	R(0.01)	-2.97	6.4		-1.46	16.3	ex	-2.91
541	IP470	12.4		-1.53	<10		----	<15	f-?	<-3.37
551	IP501	15.88		0.48	8.22	C	-0.66	24.10	C	-0.19
557	IP501	14.18618		-0.50	9.08962		-0.28	23.2758		-0.47
605	IP501	14		-0.60	9		-0.32	23		-0.57
631		----		----			----			----
634		----		----			----			----
657	IP501	15		-0.03	8		-0.76	23		-0.57
663	IP501	15.0		-0.03	8.9		-0.36	23.9		-0.26
704	IP470	15.0		-0.03	10.0		0.12	25.0		0.13
705	IP470	14.2		-0.49	10.8		0.47	25.0		0.13
750	IP501	15.2		0.09	9.1		-0.28	24.3		-0.12
781	IP501	14.3		-0.43	10.0		0.12	24.3		-0.12
785	IP470	13.07		-1.14	10.24		0.22	23.31		-0.46
798	IP501	14.63		-0.24	11.91		0.96	26.54		0.67
823	IP501	12.5		-1.47	7.5		-0.98	20.0		-1.62
824	IP501	15.5		0.26	11.3		0.69	26.8		0.76
840	IP501	14.8		-0.14	8.7		-0.45	23.5		-0.39
842	IP501	16.0		0.55	9.9		0.08	25.9		0.44
873	IP470	14.4		-0.37	9.3		-0.19	23.7		-0.33
874	IP470	12.2		-1.64	11		0.56	23.2		-0.50
875	IP501	14.6		-0.26	11.4		0.73	26.0		0.48
912	IP501	16.16		0.64	8.69		-0.46	24.85		0.08
913		----		----			----			----
963	IP501	15		-0.03	14		1.88	29		1.53
971	IP501	16		0.55	11		0.56	27		0.83
994	IP501	14.77		-0.16	12.20		1.09	26.97		0.82
995	IP470	13.5		-0.89	11.0		0.56	24.5		-0.05
1040	IP501	2.39	C,R(0.01)	-7.30	3.17	ex,C	-2.88	5.56	C,R(0.01)	-6.67
1066	IP501	16		0.55	9		-0.32	25		0.13
1082	ISO10478	15.35		0.17	9.649		-0.04	24.99		0.13
1090	IP501	16.70		0.95	7.37		-1.04	24.1		-0.19
1107	IP501	16.7		0.95	12.3		1.13	29.0		1.53
1108	IP470	16		0.55	8		-0.76	24		-0.22
1121	IP501	18.1	C	1.76	15.8	C	2.67	33.9	C,R(0.05)	3.24
1134		----		----			----			----
1191	ISO10478	12.7		-1.36	9.8		0.03	22.5		-0.74
1229	ISO10478	18		1.70	10		0.12	28		1.18
1320		----		----			----			----
1347	In house	8.4	R(0.01)	-3.84	----		----	----		----
1348	In house	10	R(0.01)	-2.91	48	R(0.01)	16.81	58	R(0.01)	11.66
1356	IP501	13.66		-0.80	5		-2.08	18.66		-2.09
1367	D5184	15		-0.03	10		0.12	25		0.13
1381	D5184	14.95		-0.06	10.12		0.17	25.07		0.15
1385		----		----			----			----

Lab	method	Al	mark	z(targ)	Si	mark	z(targ)	Sum Al+Si	mark	z(targ)
1402	IP501	15		-0.03	8		-0.76	23		-0.57
1455	IP501	16		0.55	10		0.12	26		0.48
1520		----		----	----		----	----		----
1575		----		----	----		----	----		----
1586	IP501	15		-0.03	4	R(0.05)	-2.52	19		-1.97
1648	IP501	17.4		1.36	12.8		1.35	30.2		1.95
1720	IP501	13.5		-0.89	----		----	----		----
1724	IP501	17.2		1.24	11.42		0.74	28.6		1.39
1792	IP501	15.2		0.09	7.8		-0.85	23.0		-0.57
1810		----		----	----		----	----		----
1854	IP501	14.8		-0.14	8.4		-0.58	23.2		-0.50
1857	IP501	15.1		0.03	8.2		-0.67	23.3		-0.46
1914	IP501	15		-0.03	9		-0.32	24		-0.22
1949	IP501	13.6		-0.84	7.5		-0.98	21.1		-1.23
1950	IP470	14.8		-0.14	9.4		-0.14	24.2		-0.15
1975	IP470	14.2		-0.49	9.3		-0.19	23.5		-0.39
1995	IP501	23.6	R(0.01)	4.93	28.8	R(0.01)	8.38	52.4	R(0.01)	9.71
2129	IP470	16.8		1.01	7.2		-1.11	24.0		-0.22
6025		----		----	----		----	----		----
6054	IP501	5.53417	C,R(0.01)	-5.49	----		----	----		----
6057	IP501	18		1.70	11		0.56	29		1.53
6075		----		----	----		----	----		----
6092	IP501	15		-0.03	14		1.88	----		----
6131	IP501	18.35		1.90	11.04		0.58	29.39		1.66
7017	IP470	10.77		-2.47	3.6	R(0.05)	-2.69	14.4	R(0.05)	-3.58
normality		OK			OK			OK		
n		73			66			64		
outliers		9			5 (+4 ex)			7 (+3 ex)		
mean (n)		15.05	Spike 15 (<100%)		9.73	Spike 16 (rec<61%)		24.63		
st.dev. (n)		1.563			1.953			2.442		
R(calc.)		4.38			5.47			6.84		
st.dev.(IP470:05)		1.733			2.276			2.861		
R(IP470:05)		4.85			6.37			8.01		
Compare R(IP501:05)		5.07			3.23			6.01		

Lab 154 first reported: 7 for Al; test results are excluded as 3 of 5 related test values are outliers

Lab 212 test results are excluded as 5 of 9 related test values are outliers

Lab 273 first reported: 22 for Si and 36 for sum Al+Si

Lab 356 test results are excluded because of the statistical outliers in the Al and sum Al+Si determination

Lab 370 test result are excluded because of a statistical outlier in the Si determination

Lab 507 test result are excluded because of a statistical outlier in the Al determination

Lab 541 possibly a false negative test result?

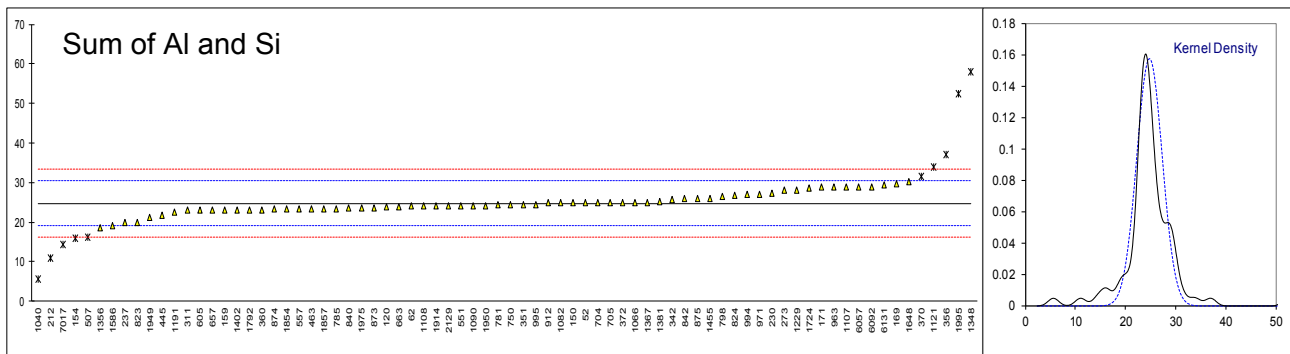
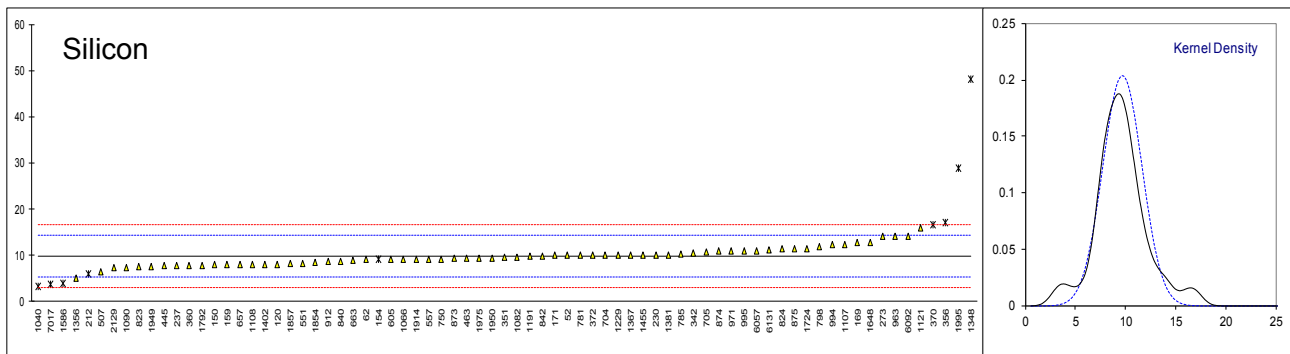
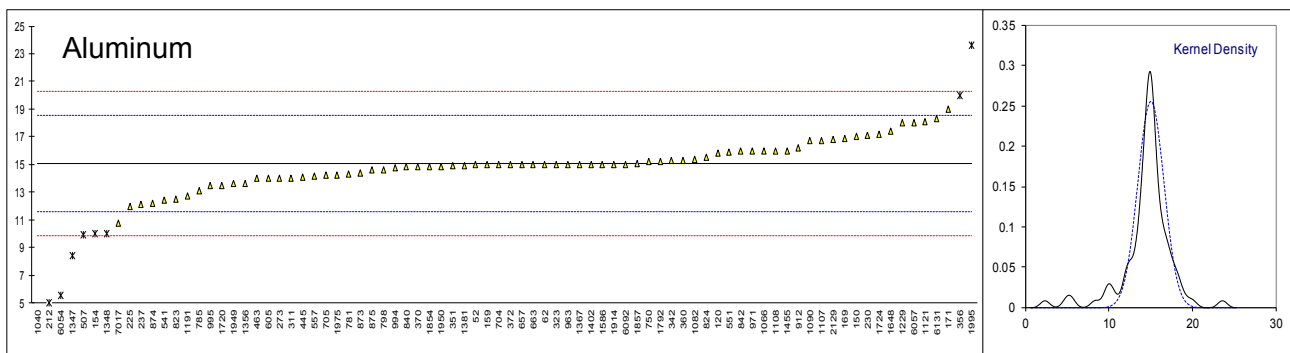
Lab 551 first reported: 29.14 for Si and 45.02 for sum Al+Si

Lab 1040 first reported: 5.78 for Al, 0.96 for Si, sum Al+Si 6.74; test results are excluded because of the statistical outliers in the Al and sum Al+Si determination

Lab 1121 first reported: 26.8 for Al, 24.2 for Si, sum Al+Si 51

Lab 6054 first reported: 3.055545 for Al; test results are excluded as 4 of 7 related test values are outliers





## Determination of Iron as Fe, Nickel as Ni, Sodium as Na on sample #17266; results in mg/kg

Lab	method	Fe	mark	z(targ)	Ni	mark	z(targ)	Na	mark	z(targ)
52	IP470	15		-0.29	30		-0.54	10		-0.58
62	IP470	17		0.27	34		0.16	11		-0.07
120	IP501	12.92		-0.87	31.15		-0.34	14.21		1.56
131		----		----	----		----	----		----
140		----		----	----		----	----		----
150	IP501	16		-0.01	32		-0.19	12		0.44
154		----		----	57	R(0.01)	4.19	12	ex	0.44
159	IP501	10	R(0.05)	-1.69	18	R(0.05)	-2.64	14		1.45
169	D5863-B	6.9	R(0.01)	-2.56	43.8		1.88	7.8		-1.69
171	IP501	19		0.84	38		0.86	12		0.44
194		----		----	----		----	----		----
212		5	R(0.01)	-3.10	5	R(0.01)	-4.92	12	ex	0.44
225		----		----	26		-1.24	11		-0.07
230	IP501	16.1		0.02	32.2		-0.15	11.6		0.23
237	D5185	13.39		-0.74	31.26		-0.32	25.51	R(0.01)	7.27
273		----		----	----		----	----		----
311	IP501	16		-0.01	35		0.34	11		-0.07
323	IP501	16		-0.01	34		0.16	11		-0.07
333		----		----	----		----	----		----
336		----		----	----		----	----		----
342	IP501	16.1		0.02	31.3		-0.31	15.5		2.21
351	IP501	11.97		-1.14	22.54		-1.85	10.92		-0.11
356	IP501	14		-0.57	27		-1.07	13		0.94
360	IP501	17.0		0.27	36.2		0.55	----		----
370	IP470	19.9		1.09	32.1		-0.17	15.0		1.96
372	IP470	16		-0.01	36		0.51	9		-1.08
399		----		----	----		----	----		----
445	IP501	14.8		-0.34	27.2		-1.03	9.0		-1.08
447		----		----	----		----	----		----
463	IP470	18.4		0.67	38.4		0.93	12.6		0.74
494		----		----	----		----	----		----
507	IP501	8.9	R(0.01)	-2.00	22.8		-1.80	6.1		-2.55
541	IP470	16.5		0.13	19.4		-2.40	10.4		-0.37
551	IP501	17.14		0.31	33.12		0.01	12.85		0.87
557	IP501	15.67028		-0.10	40.67074		1.33	12.22558		0.55
605	IP501	14		-0.57	30		-0.54	12		0.44
631		----		----	----		----	----		----
634		----		----	35.7622		0.47	6.41355		-2.39
657	IP501	18		0.55	35		0.34	12		0.44
663	IP501	17.8		0.50	34.6		0.27	11.1		-0.02
704	IP470	15.0		-0.29	35.9		0.49	11.5		0.18
705	IP470	16.4		0.11	35.4		0.41	11.4		0.13
750	IP501	16.4		0.11	36.1		0.53	11.0		-0.07
781	IP501	16.5		0.13	38.1		0.88	11.2		0.03
785	IP470	14.37		-0.46	31.06		-0.35	11.43		0.15
798	IP501	16.34		0.09	35.55		0.43	12.11		0.49
823	IP501	14.4		-0.46	28.3		-0.84	----		----
824	IP501	14.5		-0.43	30.9		-0.38	11.7		0.29
840	IP501	17.3		0.36	31.3		-0.31	11.2		0.03
842	IP501	16.9		0.25	35.6		0.44	11.2		0.03
873	IP470	16.4		0.11	33.4		0.06	11.5		0.18
874	IP470	16		-0.01	34.0		0.16	9.8		-0.68
875	IP501	16.2		0.05	35.3		0.39	10.3		-0.42
912	IP501	14.41		-0.45	28.84		-0.74	11.17		0.02
913		----		----	----		----	----		----
963	IP501	17		0.27	36		0.51	18	R(0.05)	3.47
971	IP501	17		0.27	35		0.34	12		0.44
994	IP501	15.0		-0.29	38.18		0.89	11.3		0.08
995	IP470	14.0		-0.57	33.5		0.07	8.7		-1.23
1040	IP501	8.37	R(0.01)	-2.15	28.60		-0.78	7.31		-1.94
1066	IP501	15		-0.29	34		0.16	12		0.44
1082	In house	18		0.55	38		0.86	11		-0.07
1090	IP501	16.6		0.16	33.8		0.13	11.3		0.08
1107	IP501	17.2		0.33	36.8		0.65	11.4		0.13
1108	D5863-B	6.5	R(0.01)	-2.68	38.6		0.97	9.2		-0.98
1121	IP501	16.0		-0.01	33.0		-0.01	11.8		0.34
1134		----		----	----		----	----		----
1191	In house	12.7		-0.93	29.3		-0.66	11.0		-0.07
1229		16.8		0.22	36.4		0.58	9.8		-0.68
1320	IP501	15.75		-0.08	36.01		0.51	----		----
1347		----		----	----		----	7.8		-1.69
1348		----		----	----		----	14		1.45
1356	IP501	<1	f-?	<-4.22	27.33		-1.01	10.33		-0.41
1367	D5185	17		0.27	34		0.16	13		0.94
1381		----		----	----		----	----		----
1385		----		----	----		----	18	R(0.05)	3.47

Lab	method	Fe	mark	z(targ)	Ni	mark	z(targ)	Na	mark	z(targ)
1402	IP501	16		-0.01	34		0.16	12		0.44
1455	IP501	15		-0.29	34		0.16	11		-0.07
1520	IP470	21.8	R(0.01)	1.62	32.1		-0.17	10.7		-0.22
1575		----		----	----		----	----		----
1586	IP501	18		0.55	34		0.16	12		0.44
1648	IP501	17.4		0.39	36.0		0.51	11.8		0.34
1720	IP501	16.6		0.16	33.7		0.11	11.6		0.23
1724	IP501	13.18		-0.80	27.9		-0.91	12.54		0.71
1792	IP501	15.8		-0.06	34.2		0.20	12.6		0.74
1810		----		----	----		----	----		----
1854	IP501	17.4		0.39	36.3		0.56	12.1		0.49
1857	IP501	16.5		0.13	35.9		0.49	10.6		-0.27
1914	IP501	16		-0.01	34		0.16	11		-0.07
1949	IP470	14.9		-0.32	34.2		0.20	10.4		-0.37
1950	IP470	15.8		-0.06	33.6		0.09	12.1		0.49
1975	IP470	14.6		-0.40	34.5		0.25	10.3		-0.42
1995	IP501	16.64		0.17	30.88		-0.39	5.76		-2.72
2129	IP470	17.6		0.44	36.5		0.60	12.0		0.44
6025	IP470	16.6		0.16	33.9		0.14	11.5		0.18
6054	IP501	6.91542	C,R(0.01)	-2.56	15.3145	C,R(0.05)	-3.11	11.0568	ex	-0.04
6057	IP501	18		0.55	32		-0.19	13		0.94
6075		----		----	----		----	----		----
6092	IP501	17		0.27	35		0.34	11		-0.07
6131	IP501	14.83		-0.34	26.28		-1.19	12.10		0.49
7017		----		----	23.5		-1.68	9.1		-1.03

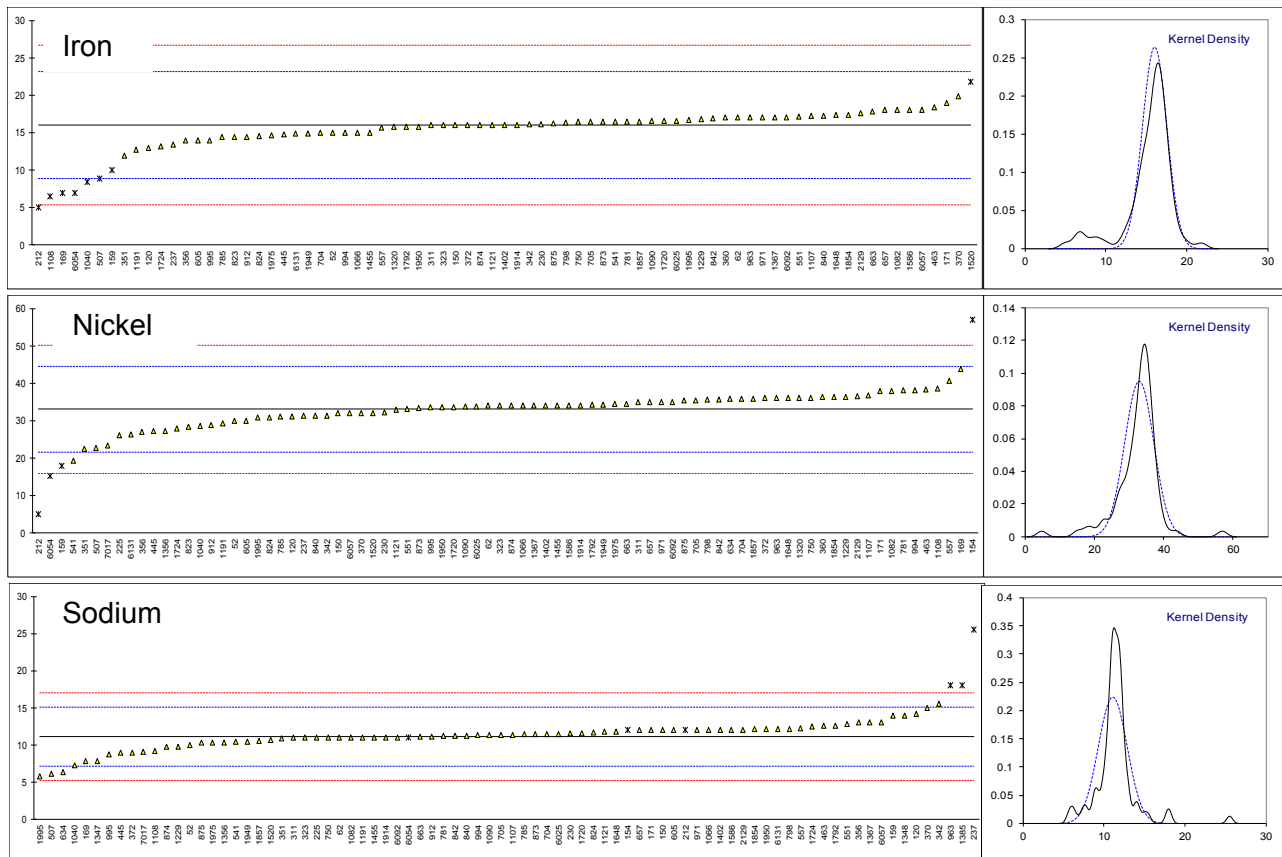
normality	OK	suspect	suspect
n	69	78	76
outliers	8	4	3 (+3 ex)
mean (n)	16.02	33.08	11.14
st.dev. (n)	1.510	4.199	1.783
R(calc.)	4.23	11.76	4.99
st.dev.(IP470:05)	3.560	5.708	1.976
R(IP470:05)	9.97	15.98	5.53
Compare R(IP501:05)	4.31	11.52	4.02

Lab 154 test results are excluded as 3 of 5 related test values are outliers

Lab 212 test results are excluded as 5 of 9 related test values are outliers

Lab 1356 possibly a false negative test result?

Lab 6054 first reported: 2.66530 for Fe and 11.3832 for Ni; test results are excluded as 4 of 7 related test values are outliers



## Determination of Vanadium as V, Calcium as Ca and Zinc as Zn on sample #17266; results in mg/kg

Lab	method	V	mark	z(targ)	Ca	mark	z(targ)	Zn	mark	z(targ)
52	IP470	96		0.13	3		-1.11	1		0.15
62	IP470	88		-0.58	5		0.27	1		0.15
120	IP501	93.30		-0.11	----		----	1.33		1.78
131		----		----	----		----	----		----
140		----		----	----		----	----		----
150	IP501	89		-0.49	5		0.27	1		0.15
154	D5863-B	120	R(0.01)	2.25	----		----	----		----
159	IP501	96		0.13	5		0.27	2	R(0.01)	5.09
169	D5863-B	89.9		-0.41	----		----	----		----
171	IP501	125	R(0.01)	2.69	6		0.95	1		0.15
194		----		----	----		----	----		----
212		80	ex	-1.28	8	ex	2.33	4	R(0.01)	14.98
225	IP501	96		0.13	4		-0.42	1		0.15
230	IP501	94.7		0.01	5.7		0.75	1.5		2.62
237	D5185	89.71		-0.43	6.798		1.50	<1		----
273	IP470	65	R(0.01)	-2.61	----		----	----		----
311	IP501	93		-0.14	5		0.27	<1		----
323	IP501	96		0.13	4		-0.42	<1		----
333		----		----	----		----	----		----
336		----		----	----		----	----		----
342	IP501	94.9		0.03	6.0		0.95	0.9		-0.34
351	IP501	99.68		0.45	8.35		2.57	0.82		-0.74
356	IP501	98		0.31	7		1.64	1		0.15
360	IP501	90.4		-0.37	3.7		-0.63	1.0		0.15
370		----		----	----		----	----		----
372	IP470	94		-0.05	4		-0.42	1		0.15
399		----		----	----		----	----		----
445	IP501	87.3		-0.64	3.80		-0.56	1.0		0.15
447		----		----	----		----	----		----
463	IP470	80.8		-1.21	4.1		-0.35	1.1		0.65
494		----		----	----		----	----		----
507	IP501	63.5	R(0.01)	-2.74	3.9		-0.49	0.1	R(0.01)	-4.30
541	IP470	82.9		-1.03	4.6		-0.01	0.9		-0.34
551	IP501	103.58		0.80	4.11		-0.35	1.24		1.34
557	IP501	100.40988		0.52	4.23076		-0.26	1.04150		0.36
605	IP501	105		0.92	2		-1.79	<1		----
631		----		----	----		----	----		----
634	D5863-B	80.0878		-1.28	----		----	----		----
657	IP501	95		0.04	4		-0.42	<1		----
663	IP501	97.5		0.26	6.0		0.95	0.7		-1.33
704	IP470	99.7		0.46	1.4		-2.21	1.0		0.15
705	IP470	94.6		0.01	5.1		0.33	0.8		-0.84
750	IP501	94.3		-0.02	3.8		-0.56	0.97		0.00
781	IP501	97.8		0.29	4.0		-0.42	<1		----
785	IP470	89.71		-0.43	10.14	R(0.05)	3.80	----		----
798	IP501	96.43		0.17	----		----	----		----
823		----		----	4.8		0.13	1.0		0.15
824	IP501	101.9		0.65	4.2		-0.28	0.8		-0.84
840	IP501	93.2		-0.12	4.4		-0.15	1.1		0.65
842	IP501	95.0		0.04	4.5		-0.08	0.9		-0.34
873	IP470	96.4		0.16	3.5		-0.76	0.87		-0.49
874	IP470	98		0.31	4.2		-0.28	0.82		-0.74
875	IP501	91.1		-0.30	----		----	----		----
912	IP501	75.63		-1.67	5.36		0.51	1.03		0.30
913		----		----	----		----	----		----
963	IP501	99		0.39	7		1.64	2	R(0.01)	5.09
971	IP501	98		0.31	5		0.27	1		0.15
994	IP501	102.2		0.68	3.9		-0.49	<1		----
995	IP470	99.5		0.44	2.9		-1.18	----		----
1040	IP501	96.2		0.15	4.98		0.25	0.18	R(0.01)	-3.90
1066	IP501	96		0.13	4		-0.42	1		0.15
1082	In house	97		0.22	4		-0.42	0.6		-1.83
1090	IP501	96.0		0.13	4.50		-0.08	0.92		-0.24
1107	IP501	97.1		0.23	4.6		-0.01	1.1		0.65
1108	D5863-B	100.7		0.54	9.1	R(0.05)	3.08	8.1	R(0.01)	35.24
1121	IP501	99.8		0.47	4.7	C	0.06	1.3		1.63
1134		----		----	----		----	----		----
1191	In house	83.7		-0.96	4.06		-0.38	----		----
1229		98		0.31	4.3		-0.22	0.77		-0.99
1320	IP501	95.44		0.08	----		----	----		----
1347	In house	98.7		0.37	8.7		2.81	0.7		-1.33
1348	In house	135	R(0.01)	3.57	8		2.33	1		0.15
1356	IP501	86.66		-0.70	<1		----	<1		----
1367	D5185	97		0.22	<1		----	1		0.15
1381		----		----	----		----	----		----
1385	In house	90	C	-0.40	----		----	----		----

Lab	method	V	mark	z(targ)	Ca	mark	z(targ)	Zn	mark	z(targ)
1402	IP501	93		-0.14	4		-0.42	1		0.15
1455	IP501	92		-0.22	9		3.01	1		0.15
1520		----		----	1.2		-2.34	1.2		1.14
1575		----		----	----		----	----		----
1586	IP501	93		-0.14	4		-0.42	2	R(0.01)	5.09
1648	IP501	106.0		1.01	5.6		0.68	<1,0		----
1720	IP501	91.9		-0.23	5.2		0.40	----		----
1724	IP501	97.76		0.29	4.86		0.17	0.52		-2.22
1792	IP501	104.4		0.87	4.7		0.06	1.0		0.15
1810		----		----	----		----	----		----
1854	IP501	92.4		-0.19	4.3		-0.22	0.83		-0.69
1857	IP501	92.8		-0.15	3.9		-0.49	0.92		-0.24
1914	IP501	90		-0.40	5		0.27	1		0.15
1949	IP501	94.2		-0.03	3.9		-0.49	0.9		-0.34
1950	IP470	95.3		0.07	3.6		-0.70	0.8		-0.84
1975	IP470	94.5		0.00	3.7		-0.63	0.85		-0.59
1995	IP501	109.7		1.34	1.82		-1.92	1.92	R(0.01)	4.70
2129	IP470	93.2		-0.12	6.3		1.16	1.4		2.13
6025	IP470	91.1		-0.30	4.1		-0.35	0.9		-0.34
6054	IP501	42.0869	C,R(0.01)	-4.63	3.055545	ex	-1.07	0.340158	ex	-3.11
6057	IP501	100		0.48	5		0.27	2	R(0.01)	5.09
6075		----		----	----		----	----		----
6092	IP501	95		0.04	4		-0.42	1		0.15
6131	IP501	94.43		-0.01	4.47		-0.10	0.985		0.08
7017	IP470	77.9		-1.47	3.1		-1.04	0.83		-0.69

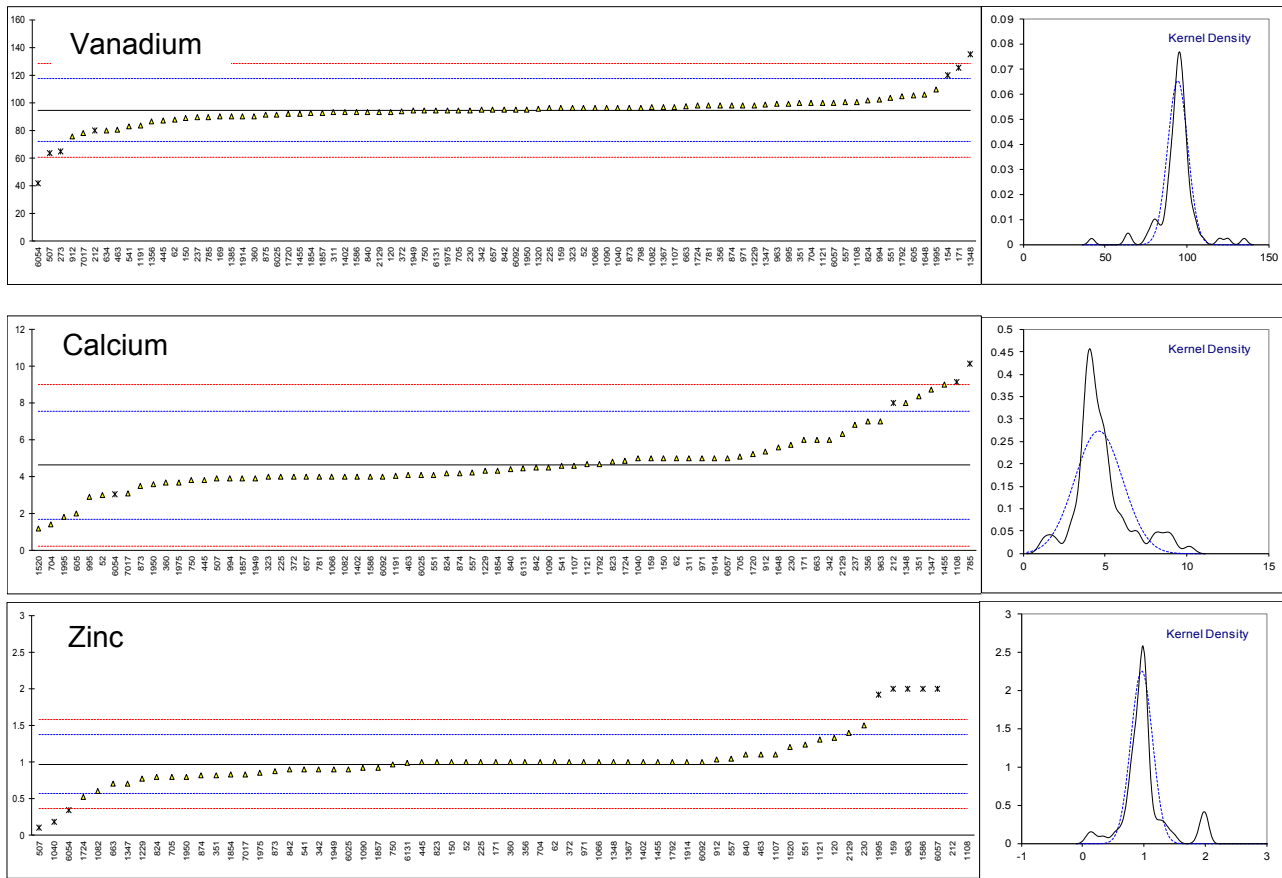
normality	suspect	suspect	suspect
n	76	70	54
outliers	6 (+1 ex)	2 (+2 ex)	9 (+1 ex)
mean (n)	94.53	4.61	0.97
st.dev. (n)	6.094	1.465	0.177
R(calc.)	17.06	4.10	0.50
st.dev.(IP470:05)	11.320	1.456	0.202
R(IP470:05)	31.70	4.08	0.57
Compare R(IP501:05)	25.74	1.74	0.50

Lab 212 test results are excluded as 5 of 9 related test values are outliers

Lab 1121 first reported: 25.5 for Ca

Lab 1385 first reported: 14 for V

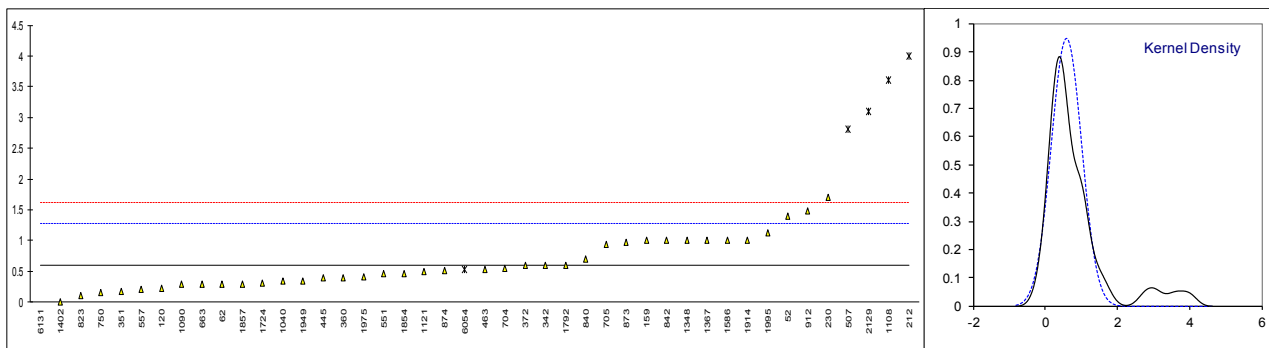
Lab 6054 first reported: 51.6407 for V; test results are excluded as 4 of 7 related test values are outliers



## Determination of Phosphorus as P on sample #17266; results in mg/kg

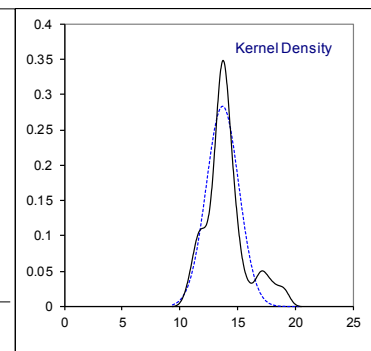
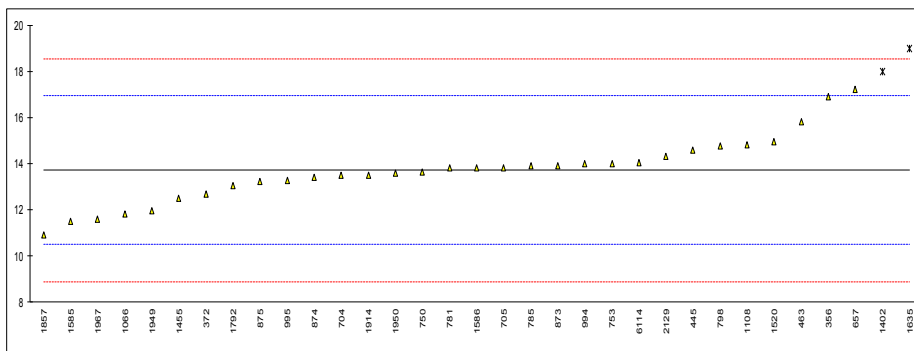
lab	method	value	mark	z(targ)	remarks
52	IP500	1.4		2.34	
62	IP500	0.3		-0.86	
120	IP501	0.22		-1.10	
131		----		----	
140		----		----	
150	IP501	<1		----	
154		----		----	
159	IP501	1		1.18	
169		----		----	
171		----		----	
194		----		----	
212		4	R(0.01)	9.93	
225		----		----	
230	IP501	1.7		3.22	
237	D5185	<1		----	
273		----		----	
311	IP501	<1		----	
323	IP501	<1		----	
333		----		----	
336		----		----	
342	IP501	0.6		0.01	
351	IP501	0.18		-1.21	
356	IP501	<1		----	
360	IP501	0.4		-0.57	
370		----		----	
372	IP500	0.6		0.01	
399		----		----	
445	IP501	0.4		-0.57	
447		----		----	
463	IP500	0.53		-0.19	
494		----		----	
507	IP501	2.8	R(0.01)	6.43	
541	IP501	<1		----	
551	IP501	0.47		-0.37	
557	IP501	0.20056		-1.15	
605	IP501	<1		----	
631		----		----	
634		----		----	
657	IP501	<1		----	
663	IP501	0.3		-0.86	
704	IP500	0.54		-0.16	
705	IP501	0.94		1.00	
750	IP501	0.16		-1.27	
781	IP501	<1		----	
785		----		----	
798		----		----	
823	IP501	0.1		-1.45	
824	IP501	<1		----	
840	IP501	0.7		0.30	
842	IP501	1.0		1.18	
873	IP500	0.98		1.12	
874	IP501	0.51		-0.25	
875		----		----	
912	IP501	1.48		2.58	
913		----		----	
963	IP501	<1		----	
971	IP501	<1		----	
994	IP501	<1		----	
995		----		----	
1040	IP501	0.34		-0.75	
1066	IP501	<1		----	
1082		----		----	
1090	IP501	0.29		-0.89	
1107	IP501	<1		----	
1108	IP500	3.6	R(0.01)	8.76	
1121	IP501	0.50	C	-0.28	first reported: 24.5
1134		----		----	
1191		----		----	
1229		----		----	
1320		----		----	
1347		----		----	
1348	In house	1		1.18	
1356	IP501	<1		----	
1367	D5185	1		1.18	
1381		----		----	
1385		----		----	

lab	method	value	mark	z(targ)	remarks
1402	IP501	0		-1.74	
1455	IP501	<1		----	
1520		----		----	
1575		----		----	
1586	IP501	1		1.18	
1648		----	W	----	first reported: 16
1720		----		----	
1724	IP501	0.315		-0.82	
1792	IP501	0.6		0.01	
1810		----		----	
1854	IP501	0.47		-0.37	
1857	IP501	0.3		-0.86	
1914	IP501	1		1.18	
1949	IP501	0.34		-0.75	
1950		----		----	
1975	IP500	0.41		-0.54	
1995	IP501	1.12		1.53	
2129	IP500	3.1	R(0.01)	7.30	
6025		----		----	
6054	IP501	0.522473	ex	-0.21	test results are excluded as 4 of 7 related test values are outliers
6057	IP501	<1		----	
6075		----		----	
6092	IP501	<1		----	
6131	IP501	-0.152		-2.18	
7017		----		----	
normality		OK			
n		39			
outliers		4 (+1 ex)			
mean (n)		0.60			
st.dev. (n)		0.421			
R(calc.)		1.18			
st.dev.(IP501:05)		0.343			
R(IP501:05)		0.96			
Compare R(IP500:03)		0.98			



Determination of Bromine Number on distillate <360°C AET on sample #17267; results in g Br<sub>2</sub>/100g

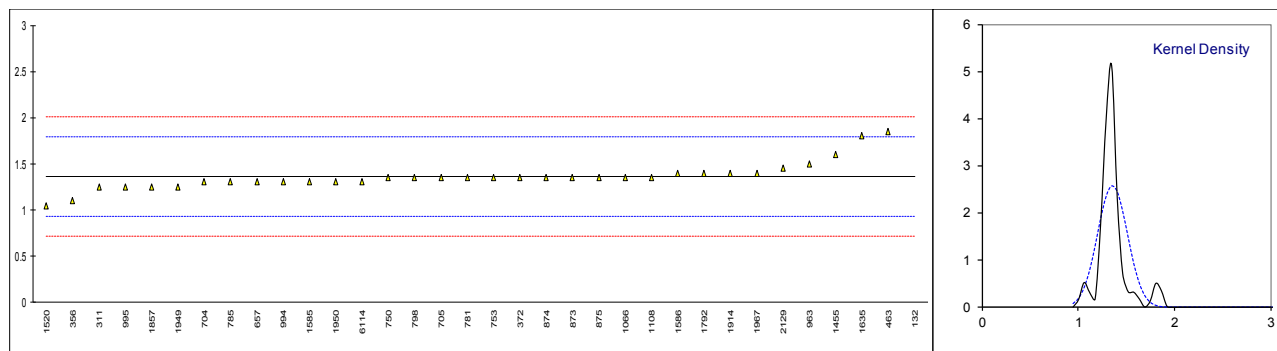
lab	method	value	mark	z(targ)	remarks
132		----		----	
140		----		----	
150		----		----	
171		----		----	
311		----		----	
323		----		----	
356	D1159	16.9		1.99	
372	D1159	12.7		-0.62	
445	D1159	14.6		0.56	
463	D1159	15.810		1.31	
551		----		----	
657	D1159	17.2		2.17	
704	D1159	13.49		-0.13	
705	D1159	13.81		0.07	
750	D1159	13.65		-0.03	
753	D1159	14.01		0.19	
781	D1159	13.8		0.06	
785	D1159	13.9		0.12	
798	D1159	14.78		0.67	
823		----		----	
873	D1159	13.91		0.13	
874	D1159	13.4		-0.19	
875	D1159	13.2		-0.31	
963		----		----	
994	D1159	13.99		0.18	
995	D1159	13.25		-0.28	
1065		----		----	
1066	D1159	11.8		-1.18	
1108	D1159	14.8		0.68	
1134		----		----	
1191		----		----	
1229		----		----	
1402	D1159	18	DG(0.05)	2.67	
1455	D1159	12.5		-0.75	
1520	D1159	14.95		0.78	
1585	D1159	11.5		-1.37	
1586	D1159	13.80		0.06	
1635	D1159	19	DG(0.05)	3.29	
1792	D1159	13.06		-0.40	
1857	D1159	10.9		-1.74	
1914	D1159	13.5		-0.12	
1949	D1159	11.95		-1.09	
1950	D1159	13.6		-0.06	
1967	D1159	11.61		-1.30	
2129	D1159	14.3		0.37	
6057		----		----	
6114	D1159	14.05		0.22	
normality		OK			
n		31			
outliers		2			
mean (n)		13.701			
st.dev. (n)		1.4104			
R(calc.)		3.949			
st.dev.(D1159:07)		1.6090			
R(D1159:07)		4.505			





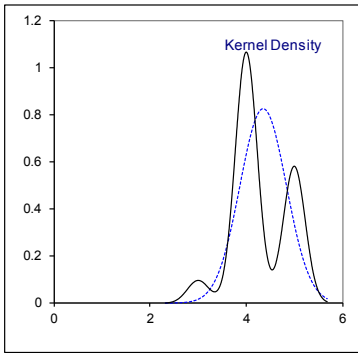
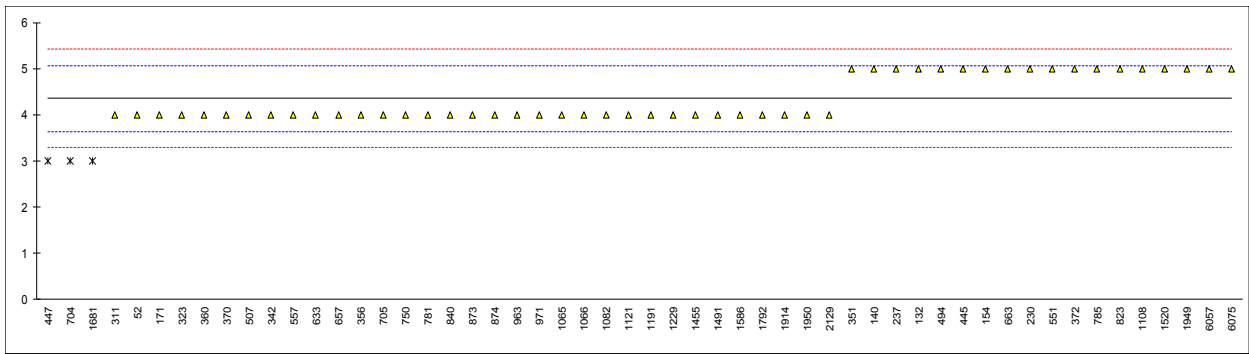
Determination of P-Value on sample #17267;

lab	method	value	mark	z(targ)	remarks
132	IP500	15.48	R(0.01)	65.89	
140		----		----	
150		----		----	
171		----		----	
311	SMS1600	1.25		-0.52	
323		----		----	
356	SMS1600	1.10		-1.22	
372	SMS1600	1.35		-0.05	
445		----		----	
463	In house	1.851		2.29	
551		----		----	
657	SMS1600	1.30		-0.28	
704	SMS1600	1.30		-0.28	
705	SMS1600	1.35		-0.05	
750	SMS1600	1.35		-0.05	
753	SMS1600	1.35		-0.05	
781	SMS1600	1.35		-0.05	
785	SMS1600	1.30		-0.28	
798	SMS1600	1.35		-0.05	
823		----		----	
873	SMS1600	1.35		-0.05	
874	SMS1600	1.35		-0.05	
875	SMS1600	1.35		-0.05	
963	INH-001	1.5		0.65	
994	SMS1600	1.3		-0.28	
995	SMS1600	1.25		-0.52	
1065		----		----	
1066	SMS1600	1.35		-0.05	
1108	SMS1600	1.35		-0.05	
1134		----		----	
1191		----		----	
1229		----		----	
1402		----		----	
1455	SMS1600	1.6		1.12	
1520	SMS1600	1.05		-1.45	
1585	SMS1600	1.30		-0.28	
1586	SMS1600	1.40		0.18	
1635		1.8		2.05	
1792	SMS1600	1.40		0.18	
1857	SMS1600	1.25		-0.52	
1914	SMS1600	1.40		0.18	
1949	SMS1600	1.25		-0.52	
1950	SMS1600	1.30		-0.28	
1967	SMS1600	1.40		0.18	
2129	SMS1600	1.45		0.42	
6057		----		----	
6114	SMS1600	1.3		-0.28	
normality		not OK			
n		33			
outliers		1			
mean (n)		1.361			
st.dev. (n)		0.1546			
R(calc.)		0.433			
st.dev.(target)		0.2143			
R(target)		0.600			



## Determination of Compatibility rating on sample #17268;

lab	method	value	mark	z(targ)	remarks
52	D4740	4		-0.99	
132	D4740	5		1.81	
140	D4740	5		1.81	
154	D4740	5		1.81	
171	D4740	4		-0.99	
225		----		----	
228		----		----	
230	D4740	5		1.81	
237	D4740	5		1.81	
311	D4740	4		-0.99	
323	D4740	4		-0.99	
342	D4740	4		-0.99	
351	D4740	5		1.81	
356	D4740	4		-0.99	
360	D4740	4		-0.99	
370	D4740	4		-0.99	
372	D4740	5		1.81	
445	D4740	5		1.81	
447	D4740	3	R(0.01)	-3.79	
494	D4740	5		1.81	
507	D4740	4		-0.99	
551	D4740	5		1.81	
557	D4740	4		-0.99	
633	D4740	4		-0.99	
657	D4740	4		-0.99	
663	D4740	5		1.81	
704	D4740	3	R(0.01)	-3.79	
705	D4740	4		-0.99	
750	D4740	4		-0.99	
781	D4740	4		-0.99	
785	D4740	5		1.81	
823	D4740	5		1.81	
840	D4740	4		-0.99	
873	D4740	4		-0.99	
874	D4740	4		-0.99	
963	D4740	4		-0.99	
971	D4740	4		-0.99	
1065	D4740	4		-0.99	
1066	D4740	4		-0.99	
1082	D4740	4		-0.99	
1108	D4740	5		1.81	
1121	D4740	4		-0.99	
1134		----		----	
1191	D4740	4		-0.99	
1229	D4740	4		-0.99	
1455	D4740	4		-0.99	
1491	D4740	4		-0.99	
1520	D4740	5		1.81	
1586	D4740	4		-0.99	
1681	D4740	3	R(0.01)	-3.79	
1792	D4740	4		-0.99	
1914	D4740	4		-0.99	
1949	D4740	5		1.81	
1950	D4740	4		-0.99	
1995		----		----	
2129	D4740	4		-0.99	
6057	D4740	5		1.81	
6075	D4740	5		1.81	
	normality	OK			
	n	51			
	outliers	3			
	mean (n)	4.4			
	st.dev. (n)	0.5			
	R(calc.)	1.4			
	st.dev.(D4740:04)	0.4			
	R(D4740:04)	1			



**APPENDIX 2****Number of participants per country****Main round**

1 lab in ARGENTINA	1 lab in MAURITIUS
1 lab in AZERBAIJAN	1 lab in MEXICO
4 labs in BELGIUM	1 lab in MOROCCO
3 labs in BRAZIL	4 labs in NETHERLANDS
1 lab in BULGARIA	2 labs in NIGERIA
2 labs in CANADA	1 lab in NORWAY
1 lab in COLOMBIA	1 lab in PANAMA
1 lab in COSTA RICA	3 labs in PHILIPPINES
2 labs in COTE D'IVOIRE	2 labs in POLAND
1 lab in CROATIA	3 labs in PORTUGAL
2 labs in CZECH REPUBLIC	14 labs in RUSSIAN FEDERATION
3 labs in ESTONIA	2 labs in SAUDI ARABIA
3 labs in FINLAND	1 lab in SINGAPORE
3 labs in FRANCE	1 lab in SLOVAKIA
2 labs in GEORGIA	1 lab in SOUTH AFRICA
3 labs in GERMANY	3 labs in SOUTH KOREA
5 labs in GREECE	6 labs in SPAIN
1 lab in GUAM	1 lab in SUDAN
3 labs in INDIA	1 lab in SWEDEN
2 labs in INDONESIA	2 labs in TAIWAN
2 labs in IRAN, Islamic Republic of	1 lab in TANZANIA
1 lab in ITALY	1 lab in THAILAND
1 lab in KAZAKHSTAN	1 lab in TOGO
1 lab in LATVIA	3 labs in TURKEY
3 labs in LEBANON	1 lab in TURKMENISTAN
2 labs in LITHUANIA	2 labs in UKRAINE
1 lab in MACEDONIA	2 labs in UNITED ARAB EMIRATES
1 lab in MALAYSIA	9 labs in UNITED KINGDOM
2 labs in MALTA	13 labs in UNITED STATES OF AMERICA
1 lab in MARTINIQUE	2 labs in VIETNAM

## APPENDIX 3

### Abbreviations:

C	= final test result after checking of first reported suspect test result
D(0.01)	= outlier in Dixon's outlier test
D(0.05)	= straggler in Dixon's outlier test
G(0.01)	= outlier in Grubbs' outlier test
G(0.05)	= straggler in Grubbs' outlier test
DG(0.01)	= outlier in Double Grubbs' outlier test
DG(0.05)	= straggler in Double Grubbs' outlier test
R(0.01)	= outlier in Rosner's outlier test
R(0.05)	= straggler in Rosner's outlier test
E	= probably an error in calculations
U	= test result probably reported in a different unit
W	= test result withdrawn on request participant
ex	= test result excluded from statistical evaluation
n.a.	= not applicable
n.e	= not evaluated
n.d.	= not detected
fr.	= first reported
SDS	= Safety Data Sheet

### Literature:

- 1 iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, March 2017
- 2 ASTM E178:02
- 3 ASTM E1301:95(2003)
- 4 ISO 5725:86
- 5 ISO 5725, parts 1-6, 1994
- 6 ISO 13528:05
- 7 M. Thompson and R. Wood, J. AOAC Int, 76, 926, (1993)
- 8 W.J. Youden and E.H. Steiner, Statistical Manual of the AOAC, (1975)
- 9 IP 367/84
- 10 DIN 38402 T41/42
- 11 P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
- 12 J.N. Miller, Analyst, 118, 455, (1993)
- 13 Analytical Methods Committee Technical brief, No 4. January 2001
- 14 P.J. Lowthian and M. Thompson, The Royal Society of Chemistry, Analyst, 127, 1359-1364, (2002)
- 15 Bernard Rosner, Percentage Points for a Generalized ESD Many-Outlier Procedure, Technometrics, 25(2), 165-172, (1983)
- 16 Horwitz, W and Albert, R, J. AOAC Int, 79, 3, 589, (1996)