Results of Proficiency Test
Fuel Oil
June 2019

Organized by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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Report: iis19F01

August 2019

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1 INTRODUCTION

Since 1994 the Institute for Interlaboratory Studies (iis) organizes a proficiency test for Fuel Oil every year and twice per year since 2016. During the annual proficiency testing program of 2018/2019, it was decided to continue twice per year with the round robin for the analyses of Fuel Oil in accordance with the latest applicable version of the specifications ISO8217 and ASTM D396. In the main round robin with regular Fuel Oil 156 laboratories in 63 different countries registered for participation. In the round robin for Metals in Fuel Oil 103 laboratories in 48 different countries registered for participation. In total 161 laboratories registered for these two rounds. See appendix 3 for the number of participants per country for both rounds.
In this report, the test results of the June 2019 interlaboratory study on Fuel Oil are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

2 SET-UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organizer of this proficiency test (PT). Sample analyses for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC17025 accredited laboratory. Depending on the registration it was decided to send one bottle of 1L Fuel Oil labelled #19105 and/or one bottle of 0.1L Fuel Oil labelled #19106 specifically prepared for metal determinations.
Participants were requested to report rounded and unrounded test results. The unrounded test results were preferably used for statistical evaluation.

2.1 ACCREDITATION

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, is accredited in agreement with ISO/IEC17043:2010 (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This PTs 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 these proficiency tests was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5). This protocol is electronically available through the iis website site 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

Approximately 200 litre Fuel Oil was obtained from a supplier in Germany. After heating to 60°C and homogenisation of this batch 179 amber glass bottles of 1L were filled and labelled #19105. 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^3
Sample #19105-1	1007.8
Sample #19105-2	1007.9
Sample #19105-3	1008.0
Sample #19105-4	1008.0
Sample #19105-5	1008.0
Sample #19105-6	1008.0
Sample #19105-7	1008.0
Sample #19105-8	1008.0

Table 1: homogeneity test results of subsamples #19105

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 ISO13528, Annex B2 in the next table.

	Density at 15°C in kg/m^3
r (observed)	0.21
reference test method	ISO12185:96
0.3 * R (ref. test method)	0.45

Table 2: evaluation of the repeatability of subsamples #19105

The calculated repeatability of sample #19105 was in agreement with 0.3 times the corresponding reproducibility of the reference test method. Therefore, homogeneity of the subsamples was assumed.

For sample #19106 another batch of Fuel Oil obtained from a local supplier was used and spiked with Aluminum, Vanadium and Silicon Conostan standards especially for the metals determination. After homogenisation 165 plastic PE bottles of 0.1L were filled and labelled #19106.The homogeneity of the subsamples was checked by determination of Nickel and Vanadium in accordance with IP501 on 8 stratified randomly selected samples.

	Nickel in mg/kg	Vanadium in mg/kg
Sample #19106-1	19	50
Sample #19106-2	19	50
Sample #19106-3	21	52
Sample #19106-4	19	50
Sample #19106-5	18	48
Sample #19106-6	18	46
Sample #19106-7	21	53
Sample #19106-8	19	47

Table 3: homogeneity test results of subsamples #19106

From above test results the repeatabilities were calculated and compared with 0.3 times the corresponding reproducibilities of the reference test methods in agreement with the procedure of ISO13528, Annex B2 in the next table.

	Nickel in mg/kg	Vanadium in mg/kg
r (observed)	3.3	6.7
reference test method	IP470:05	IP470:05
0.3 * R (ref. test method)	3.6	6.9

Table 4: evaluation of the repeatabilities of subsamples #19106

The calculated repeatabilities for Nickel and Vanadium were in agreement with 0.3 times the reproducibilities of the reference test methods. Therefore, homogeneity of the subsamples of #19106 was assumed.

Depending on the registration of the participant; one bottle of 1L Fuel Oil labelled #19105 and/or one bottle of 0.1L Fuel Oil labelled #19106 were sent to the participating laboratories on May 29, 2019. 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 was found to be sufficiently stable for the period of the proficiency test.

2.6 ANALYSES

The participants were requested to determine the following parameters:
On sample #19105: Acid Number (Total), 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, Pour Point (Lower, Upper and Automated), Sediment by Extraction, Total Sediment (Existent (Hot filtration), Accelerated and Potential), Total Sulfur, Water by Distillation, Water and Sediment, Distillation (IBP, 5% - 50% recovered and FBP) and Total Carbon, Hydrogen and Nitrogen (CHN-analyzer).
Also some extra information was requested about the determination of Acid Number.

On sample #19106: Aluminum, Silicon, Sum of Aluminum and Silicon, Iron, Nickel, Sodium, Vanadium, Calcium, Zinc and Phosphorus content.

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

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

3 RESULTS

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

Directly after the deadline, a reminder was sent to those laboratories that had not reported test results at that moment. Shortly after the deadline, the available test results were screened for suspect data. A test result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the reported test results (no 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 Organization, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5).
For the statistical evaluation, the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as '<…' or '>…' were not used in the statistical evaluation.
First, the normality of the distribution of the various data sets per determination was checked by means of the Lilliefors-test a variant of the Kolmogorov-Smirnov test and by the calculation of skewness and kurtosis. Evaluation of the three normality indicators in combination with the visual evaluation of the graphic Kernel density plot, lead to judgement of the normality being either 'unknown', 'OK', 'suspect' or 'not OK'. After removal of outliers, this check was repeated. If a data set does not have a normal distribution, the results of the statistical evaluation should be used with due care.
According to ISO5725 the original test results per determination were submitted to Dixon's, Grubbs' and/or Rosner's outlier tests. Outliers are marked by D(0.01) for the Dixon's test, by G(0.01) or DG(0.01) for the Grubbs' test and by R(0.01) for the Rosner's test. Stragglers are marked by D(0.05) for the Dixon's test, by G(0.05) or DG(0.05) for the Grubbs' test and by R(0.05) for the Rosner's test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

For each assigned value, the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirement based on the target reproducibility in accordance with ISO13528. In this PT, the criterion of ISO13528, paragraph 9.2.1 was met for all evaluated tests, therefore, the uncertainty of all assigned values may be negligible and need not be included in the PT report.

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

3.2 GRAPHICS

In order to 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 or IP 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(target) = (test result - average of PT) / target standard deviation

The z(target) scores are listed in the result tables of appendix 1.

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

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

4 EVALUATION

In this proficiency test several problems were encountered with the dispatch of the samples. Fourteen participants did not report any test results for sample #19105 and six participants reported the test results after the final reporting date. Seventeen participants did not report any test results for sample #19106 and two participants reported the test results after the final reporting date. Not all laboratories were able to report all analyses requested.
Finally, 147 participants reported in total 2713 numerical test results. Observed were 86 statistically outlying test results, which is 3.2 %. 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 4.

In the iis PT reports, ASTM test methods are referred to with a number (e.g. D473) and an added designation for the year that the test method was adopted or revised (e.g. D473:07e1). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D473:07e1(2017)). In the test results tables of appendix 1 only the test method number and year of adoption or revision (e.g. D473:07e1) are used.

Sample #19105

Acid Number: This determination was problematic. Three statistical outliers were observed. About 50% of the participants reported to used Inflection Point (34 participants) and 125 mL (40 participants). About 14 participants reported to use BEP of which 6 pH10 and 8 pH11 as end point. Unfortunately, 15 participants did not mention which determination pathway (IP/BEP and Volume) was used.
The consensus value for the Acid Number determination was below the application range of ASTM D664-A:18e2. Therefore, no z-scores were calculated.
ASTM D664 was updated in 2018. One of the major changes is the buffer used for in the end point detection (pH11 is changed into pH10). The solubility of Fuel Oil in either solvent mentioned in ASTM D664 can be poor. Regular cleaning of the electrodes as described in the method is recommended to obtain reliable and consistent results.

API Gravity: 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 D1298:12b(2017).

Ash Content: This determination was very problematic at an ash content of 0.03 %M/M. Five statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not at all in agreement with the requirements of ISO6245:01 and ASTM D482:13.
When evaluated separately over method ISO6245:01 and ASTM D482:13 the calculated reproducibility after rejection of the statistical outliers was still not in agreement for both methods.
In most cases, deviations are the result of wrong sample size and/or moffle temperature.

Asphaltenes: This determination was problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of IP143:04.
ASTM D6560 in equivalent to IP143.

Calculated Carbon Aromaticity Index: 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 ISO8217:17.

Carbon Residue Micro Method: This determination was not problematic. Five statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in 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 agreement with the requirements of ASTM D189:06(2014).

Density at 15°C: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of ISO12185:96.

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

HOC Gross: 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 D240:17.

HOC Net: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D240:17.

Kin. Visc. at 50°C: 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 ISO3104:94.

Kin. Visc. at 100°C: This determination was not problematic. Seven statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full 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 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 D5762:18a.

Pour Point Lower: This determination was problematic. Three statistical outliers were observed and one other test result was excluded. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of ISO3016:94.
Sample preparation is key, failing to follow procedure will lead to erroneous results.

Pour Point Upper: This determination was problematic. One statistical outlier was observed and one other test result was excluded. 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.
Sample preparation is key, failing to follow procedure will lead to erroneous results.

Pour Point Automated: This determination was problematic. No statistical outliers were observed but one test result was excluded. However, the calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of ASTM D5950:14.
The large variation may (partly) be explained by possible problems with the detector sensitivity or by not following the test method to the letter (see Note 8 in ASTM D5950:14).

Sediment by Extraction: 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 D473:07e1(2017).

Total Sediment Existent (Hot Filtration) TSE: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of IP375:11.

Total Sediment Accelerated (TSA): This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of IP390:11. IP390:11 is identical to ISO10307-2:09 and technically equivalent to ASTM D4870.

Total Sediment Potential (TSP): 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 IP390:11. IP390:11 is identical to ISO10307-2:09 and technically equivalent to ASTM D4870.

Total Sulfur: This determination may be problematic dependent on test method. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO8754:03 but not with the stricter requirements of ASTM D4294:16e1. When evaluated separately over the test results obtained by test methods ASTM D4294 or ISO8754 the calculated reproducibility after rejection of the statistical outliers was in agreement with the requirements for ISO8754 but not with the requirements of ASTM D4292. Remarkably, the variation in the ASTM D4292 test results is larger.

Water by distillation: 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 ISO3733:99 or ASTM D95:13.

Water and Sediment: 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 D1796:11(2016).

Vacuum Distillation at 10 mmHg calculated to 760 mmHg: This determination was problematic for 5%, 10%, 20%, 30%, 40%, 50% recovered and FBP. In total three statistical outliers were observed. However, the calculated reproducibility is in agreement for IBP with the requirements of ASTM D1160:18. The calculated reproducibilities for 5%, 10%, 20%, 30%, 40%, 50% recovered and FBP after rejection of the statistical outliers are not in agreement with the requirements of ASTM D1160:18.

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

Sample #19106

Aluminum: 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 IP470:05 and IP501:05.

Silicon: This determination was problematic dependent on test method. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of IP470:05 but not in agreement with the stricter requirements of IP501:05.
Deviations in silicon results may be attributed to the fusion process, which is primarily intended to convert silicon to a soluble form.

Total Al/Si: This determination was problematic dependent on test method. Two statistical outliers were observed and two other test results were excluded. However, the calculated reproducibility after rejection of the suspect data is in agreement with the requirements of IP470:05 and with the stricter requirements of IP501:05.

Iron: This determination was problematic dependent on test method. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of IP470:05 but not in agreement with the stricter requirements of IP501:05.

Nickel: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the reqirements of IP470:05 and IP501:05.

Sodium: This determination was problematic dependent on test method. Four statistical outliers were observed and one other test result was excluded. The calculated reproducibility after rejection of the suspect data is in agreement with the requirements of IP470:05 but not in agreement with the stricter requirements of IP501:05.

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

Calcium: 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 IP470:05 and IP501:05.

Zinc: This determination was problematic dependent of test method. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of IP470:05 but not in agreement with the stricter requirements of IP501:05.

Phosphorus: This determination was problematic. Five statistical outliers were observed and one other test result was excluded. However, the calculated reproducibility after rejection of the suspect data is in agreement with the requirements of 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 every test method for the determination of metals in Fuel Oil has similar statements regarding homogenization. It is recommended to use 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.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

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

Parameters	unit	n	average	2.8 * sd	R (lit)
Acid Number (Total)	mg KOH/g	63	0.09	0.09	(0.02)
API Gravity		80	8.8	0.3	0.5
Ash Content	%M/M	98	0.030	0.010	0.005
Asphaltenes	%M/M	60	8.11	1.87	1.62
Calc. Carbon Aromaticity Index		55	862.8	1.4	2.2
Carbon Residue, Micro Method	%M/M	90	15.72	1.03	1.54
Conradson Carbon Residue	%M/M	27	16.01	2.77	2.52
Density at 15°C	kg/m^3	125	1008.0	1.7	1.5
Flash Point PMcc	°C	125	100.1	5.6	6
Heat of Combustion Gross	MJ/kg	58	41.92	0.35	0.40
Heat of Combustion Net	MJ/kg	49	39.70	0.36	0.40
Kinematic Viscosity at 50°C	mm^2/s	107	722.2	44.1	53.4
Kinematic Viscosity at 100°C	mm^2/s	82	48.4	2.4	2.3
Viscosity Stabinger at 50°C	mm^2/s	16	718.0	35.7	73.9
Viscosity Stabinger at 100°C	mm^2/s	15	48.4	1.6	3.5
Nitrogen	mg/kg	26	3878	1081	1032
Pour Point Lower	°C	50	4.3	7.8	6.6
Pour Point Upper	°C	82	6.1	8.6	6.6
Pour Point Automated, Δ3°C	°C	27	2.8	7.6	6.1
Sediment by Extraction	%M/M	70	0.020	0.028	0.038
Total Sediment Existent (TSE)	%M/M	54	0.014	0.016	0.035
Total Sediment Accel. (TSA)	%M/M	52	0.018	0.020	0.040
Total Sediment Potential (TSP)	%M/M	45	0.016	0.019	0.037

Parameters	unit	n	average	2.8 * sd	R (lit)
Total Sulfur	%M/M	118	3.41	0.25	0.29
Water by distillation	%V/V	83	0.05	0.10	0.2
Water and Sediment	%V/V	38	0.05	0.05	0.1
Distillation at 10mmHg calculated to 760 mmHg					
Initial Boiling Point	°C	20	205.2	43.8	49
5% recovered	°C	21	281.5	41.4	26.0
10% recovered	°C	20	328.5	33.3	21.4
20% recovered	°C	21	396.7	28.0	19.7
30% recovered	°C	21	454.2	26.9	17.9
40% recovered	°C	21	495.5	23.8	15.6
50% recovered	°C	18	525.2	25.7	14.5
Final Boiling Point	°C	17	529.3	34.7	27
CHN analyser					
Total Carbon	%M/M	23	85.5	1.3	2.4
Total Hydrogen	%M/M	22	10.2	0.4	0.7
Total Nitrogen	%M/M	19	0.43	0.17	0.10

Table 5: comparison of the observed and target reproducibilities of the sample #19105

Elements	unit	n	average	2.8 * sd	R (lit)
Aluminum as Al	mg/kg	78	17.3	5.6	5.3
Silicon as Si	mg/kg	76	14.7	6.8	8.4
Total Aluminum + Silicon	mg/kg	69	32.0	9.3	10.0
Iron as Fe	mg/kg	65	20.5	6.3	11.5
Nickel as Ni	mg/kg	71	18.2	4.5	11.5
Sodium as Na	mg/kg	72	10.0	4.5	5.2
Vanadium as V	mg/kg	77	49.9	12.7	23.0
Calcium as Ca	mg/kg	68	19.4	7.0	5.9
Zinc as Zn	mg/kg	69	18.2	4.9	5.1
Phosphorus as P	mg/kg	57	16.3	5.8	5.9

Table 6: comparison of the observed and target reproducibilities of the sample #19106

Without further statistical calculations it can be concluded that for a number of 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 JUNE 2019 WITH PREVIOUS PTS

	June 2019	December 2018	June 2018	December 2017	June 2017
Number of reporting labs	147	134	149	143	169
Number of test results	2713	2948	2631	3081	3119
Number of statistical outliers	86	92	88	133	102
Percentage outliers	3.2%	3.1%	3.3%	4.3%	3.3%

Table 7: 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 in the following table.

Determination	June 2019	December 2018	June 2018	December 2017	June 2017
Acid Number (Total)	(--)	+	-	++	+
API Gravity	+	++	+	++	++
Ash Content	--	-	-	--	--
Asphaltenes	-	-	-	+/-	-
Calc. Carbon Aromaticity Index	+	+	++	+	+
Carbon Residue, Micro Method	+	+	+	+	+/-
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	+/-	+	+	-	+
Viscosity Stabinger at 50°C	++	+	++	++	+
Viscosity Stabinger at 100°C	++	+	++	++	++
Nitrogen	+/-	-	-	-	-
Pour Point Lower	-	-	+/-	-	-
Pour Point Upper	-	-	-	-	-
Pour Point Automated, Δ3°C	-	-	-	-	-
Sediment by Extraction	+	++	+	+	+
Total Sediment Existent (TSE)	++	++	++	++	++
Total Sediment Accel. (TSA)	++	++	++	++	++
Total Sediment Potential (TSP)	++	++	++	++	++
Total Sulfur	+	+/-	+/-	+/-	+
Water by distillation	++	++	++	++	++
Water and Sediment	++	+	+	+	+/-

Determination	June 2019	December 2018	June 2018	December 2017	June 2017
Distillation at 10mmHg to AET	-	+	+/-	+	+/-
Total Carbon	+	+	+	+	+
Total Hydrogen	+	+	+	+	+
Total Nitrogen	-	-	++	-	++
Aluminum as Al	+/-	+/-	-	+	+/-
Silicon as Si	+	+/-	-	+	+
Total Aluminum + Silicon	+/-	+/-	-	+	+/-
Iron as Fe	+	++	+/-	++	+
Nickel as Ni	++	++	-	+	++
Sodium as Na	+	+	-	+	+
Vanadium as V	+	+	+	++	++
Calcium as Ca	-	+/-	-	+/-	+
Zinc as Zn	+/-	+	-	+/-	+
Phosphorus as P	+/-	+	+/-	-	+

Table 8: comparison determinations against the reference test methods

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

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

APPENDIX 1

Determination of Acid Number (Total) on sample #19105; results in mg KOH/g

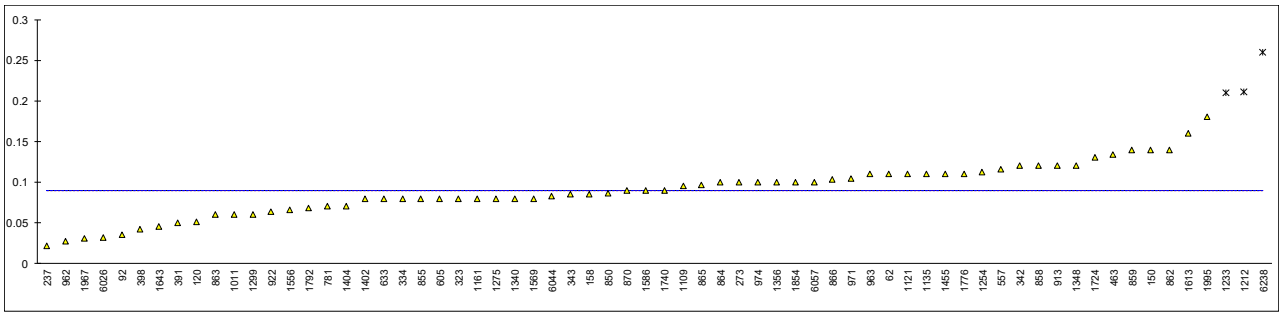
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D664-A	0.11		-----	875		-----		-----
90		-----		-----	886		-----		-----
92	D664-A	0.0354		-----	912		-----		-----
120	D664-A	0.051		-----	913	D664-A	0.12	C	-----
140		-----		-----	922	D664-A	0.064		-----
150	D664-A	0.14		-----	962	D664-A	0.0273		-----
154		-----		-----	963	D664-A	0.11		-----
158	D664-A	0.085		-----	971	D664-A	0.105		-----
159		-----		-----	974	D664-A	0.10		-----
168		-----		-----	982		-----		-----
169		-----		-----	1006		-----		-----
171	D664-A	<0.10		-----	1011	D664-A	0.06		-----
175		-----		-----	1019		-----		-----
194		-----		-----	1059		-----		-----
221		-----		-----	1082		-----		-----
224		-----		-----	1109	D664-A	0.095		-----
225		-----		-----	1121	D664-A	0.11		-----
228		-----		-----	1126		-----		-----
237	D664-A	0.022		-----	1135	D664-A	0.11		-----
238		-----		-----	1161	D664-A	0.08		-----
253		-----		-----	1167		-----		-----
254		-----		-----	1177		-----		-----
273	D664-A	0.1		-----	1212	D664-A	0.211	R(0.05)	-----
309		-----		-----	1233	D664-A	0.21	R(0.05)	-----
311	D664-A	<0.10		-----	1254	D664-A	0.112	C	-----
313		-----		-----	1266		-----		-----
323	D664-A	0.08		-----	1269		-----		-----
331		-----		-----	1275	IP177	0.08		-----
333		-----		-----	1299	D664-A	0.06		-----
334	D664-A	0.08		-----	1340	D664-A	0.08		-----
335		-----		-----	1347		-----		-----
336		-----		-----	1348	D664-A	0.12		-----
337		-----		-----	1356	D664-A	0.10		-----
339		-----		-----	1385		-----		-----
342	D664-A	0.12		-----	1402	IP177	0.079		-----
343	D664-A	0.085		-----	1404	D664-A	0.07		-----
349		-----		-----	1412		-----		-----
371		-----		-----	1428		-----		-----
391	D664-A	0.050		-----	1455	D664-A	0.11		-----
398	D664-A	0.042		-----	1459		-----		-----
399		-----		-----	1483		-----		-----
440		-----		-----	1510		-----		-----
444		-----		-----	1539		-----		-----
463	D664-A	0.134		-----	1556	D664-A	0.066		-----
511		-----		-----	1569	D664-A	0.08		-----
529		-----		-----	1575		-----		-----
541		-----		-----	1586	D664-B	0.09	C	-----
557	D664-A	0.116		-----	1613	D664-A	0.16		-----
562		-----		-----	1622		-----		-----
575		-----		-----	1631		-----		-----
603		-----		-----	1643	D664-A	0.046	C	-----
604		-----		-----	1720		-----		-----
605	D664-A	0.08		-----	1724	D664-A	0.131		-----
608		-----		-----	1728		-----		-----
631		-----		-----	1740	D664-A	0.09		-----
633	D664-A	0.08		-----	1776	D664-A	0.11		-----
663		-----		-----	1792	D664-A	0.068		-----
671		-----		-----	1807		-----		-----
750		-----		-----	1833		-----	W	-----
751		-----		-----	1849		-----		-----
753		-----		-----	1854	D664-A	0.10		-----
759		-----		-----	1906		-----		-----
781	D664-A	0.07		-----	1956		-----		-----
785		-----		-----	1964		-----		-----
825		-----		-----	1967	D664-A	0.0310		-----
850	D664-A	0.086		-----	1995	D664-A	0.18		-----
851		-----		-----	6016		-----		-----
855	D664-A	0.08		-----	6026	D664-A	0.032		-----
858	D664-A	0.12		-----	6028		-----		-----
859	D664-A	0.14		-----	6039		-----		-----
862	D664-A	0.14		-----	6044	D664-A	0.083		-----
863	D664-A	0.06		-----	6057	D664-A	0.10		-----
864	D664-A	0.10		-----	6075		-----		-----
865	D664-A	0.096		-----	6092		-----		-----
866	D664-A	0.103		-----	6142		-----		-----
870	D664-A	0.09		-----	6143		-----		-----

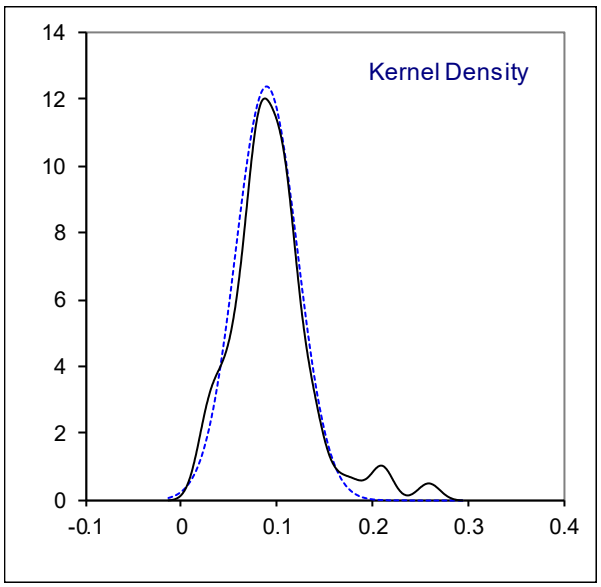
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		-----		-----					
6201		-----		-----					
6238	D664-A	0.26	R(0.01)	-----					
6252		-----		-----					

		IP (60+125 mL)	BEP (60+125 mL)
normality	OK	OK	OK
n	63	33	13
outliers	3	1	0
mean (n)	0.0898	0.0927	0.0899
st.dev. (n)	0.03224	0.02882	0.04246
R(calc.)	0.0903	0.0807	0.1189
st.dev.(D664-A:18e2 IP 125 mL)	(0.00632)	---	---
R(D664-A:18e2 IP 125 mL)	(0.0177)	(0.0183)	
Compare			
R(D664-A:18e2 IP 60 mL)	(0.0196)	(0.0201)	
R(D664-A:18e2 BEP 125 mL)	(0.0251)		(0.0251)
R(D664-A:18e2 BEP 60 mL)	(0.0527)		(0.0528)

Application range: 0.1 – 150 mg KOH/g

Lab 913 first reported 0.21
Lab 1254 first reported 0.225
Lab 1586 first reported 0.19
Lab 1643 first reported 0.221
Lab 1833 test result withdrawn, first reported 0.18





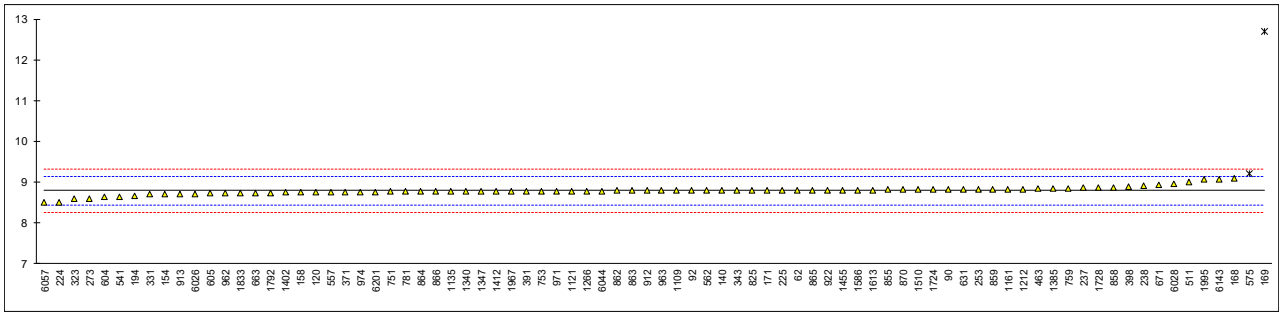
Determination of API Gravity on sample #19105

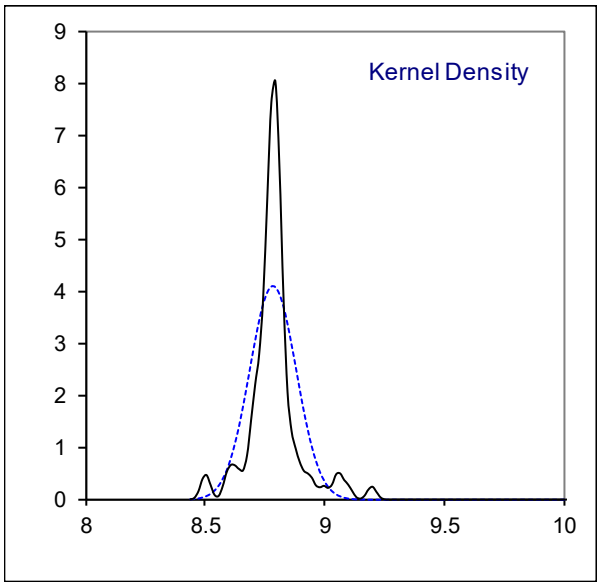
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4052	8.8		0.07	875		-----		-----
90	D4052	8.82		0.18	886		-----		-----
92	D1298	8.8		0.07	912	D1298	8.79		0.02
120	D4052	8.75		-0.21	913	D1298	8.7	C	-0.49
140	D4052	8.8		0.07	922	D1298	8.8		0.07
150		-----		-----	962	D1298	8.72		-0.38
154	D4052	8.7		-0.49	963	D4052	8.79		0.02
158	D4052	8.75		-0.21	971	ISO12185	8.78		-0.04
159		-----		-----	974	D1298	8.76		-0.15
168	D287	9.1		1.75	982		-----		-----
169	D1298	12.7	G(0.01)	21.91	1006		-----		-----
171	D1298	8.8		0.07	1011		-----		-----
175		-----		-----	1019		-----		-----
194	D4052	8.67		-0.66	1059		-----		-----
221		-----		-----	1082		-----		-----
224	D1298	8.51		-1.55	1109	D287	8.79		0.02
225	D4052	8.8		0.07	1121	D4052	8.78		-0.04
228		-----		-----	1126		-----		-----
237	D4052	8.86		0.41	1135	D4052	8.77		-0.10
238	D4052	8.9		0.63	1161	D287	8.82	C	0.18
253	D4052	8.82		0.18	1167		-----		-----
254		-----		-----	1177		-----		-----
273	D4052	8.6		-1.05	1212	D4052	8.82		0.18
309		-----		-----	1233		-----		-----
311		-----		-----	1254		-----		-----
313		-----		-----	1266	D1298	8.78		-0.04
323	D4052	8.60		-1.05	1269		-----		-----
331	ISO12185	8.70		-0.49	1275		-----		-----
333		-----		-----	1299		-----		-----
334		-----		-----	1340	D1298	8.77	C	-0.10
335		-----		-----	1347	D4052	8.77		-0.10
336		-----		-----	1348		-----		-----
337		-----		-----	1356		-----		-----
339		-----		-----	1385	D1298	8.835		0.27
342		-----		-----	1402	D4052	8.74		-0.26
343	D4052	8.8		0.07	1404		-----		-----
349		-----		-----	1412	D4052	8.77		-0.10
371	D4052	8.750		-0.21	1428		-----		-----
391	D1298	8.78		-0.04	1455	ISO12185	8.80		0.07
398	D1298	8.89		0.58	1459		-----		-----
399		-----		-----	1483		-----		-----
440		-----		-----	1510	D4052	8.81		0.13
444		-----		-----	1539		-----		-----
463	ISO12185	8.83		0.24	1556		-----		-----
511	D1298	9.0		1.19	1569		-----		-----
529		-----		-----	1575		-----		-----
541	D4052	8.64		-0.82	1586	D1298	8.8		0.07
557	D4052/1250	8.75		-0.21	1613	D4052	8.800		0.07
562	D1298	8.8		0.07	1622		-----		-----
575	D1298	9.2	G(0.01)	2.31	1631		-----		-----
603		-----		-----	1643		-----		-----
604	D4052	8.63		-0.88	1720		-----		-----
605	D4052	8.72		-0.38	1724	ISO12185	8.818		0.17
608		-----		-----	1728	D287	8.863		0.43
631	D1298	8.82		0.18	1740		-----		-----
633		-----		-----	1776		-----		-----
663	D4052	8.73		-0.32	1792	ISO12185	8.73		-0.32
671	D1298	8.93		0.80	1807		-----		-----
750		-----		-----	1833	ISO12185	8.72		-0.38
751	Calc	8.77		-0.10	1849		-----		-----
753	ISO12185	8.78		-0.04	1854		-----		-----
759	D1298	8.846		0.33	1906		-----		-----
781	D4052	8.77		-0.10	1956		-----		-----
785		-----		-----	1964		-----		-----
825	D1298	8.8		0.07	1967	D1298	8.776		-0.06
850		-----		-----	1995		9.058		1.52
851		-----		-----	6016		-----		-----
855	ISO12185	8.81		0.13	6026	D1298	8.71		-0.43
858	D1298	8.87		0.46	6028	D1298	8.95		0.91
859	D1298	8.82		0.18	6039		-----		-----
862	D287	8.79		0.02	6044	D1298	8.78		-0.04
863	ISO12185	8.79		0.02	6057	D4052	8.50		-1.61
864	ISO12185	8.77		-0.10	6075		-----		-----
865	D1298	8.80		0.07	6092		-----		-----
866	ISO12185	8.77		-0.10	6142		-----		-----
870	D1298	8.81		0.13	6143	D1298	9.058		1.52

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		-----		-----					
6201	D4052	8.76		-0.15					
6238		-----		-----					
6252		-----		-----					

normality	not OK
n	80
outliers	2
mean (n)	8.787
st.dev. (n)	0.0972
R(calc.)	0.272
st.dev.(D1298:12b)	0.1786
R(D1298:12b)	0.5

Lab 913 first reported 1.0062 kg/L
Lab 1161 first reported 9.3
Lab 1340 first reported 13.124





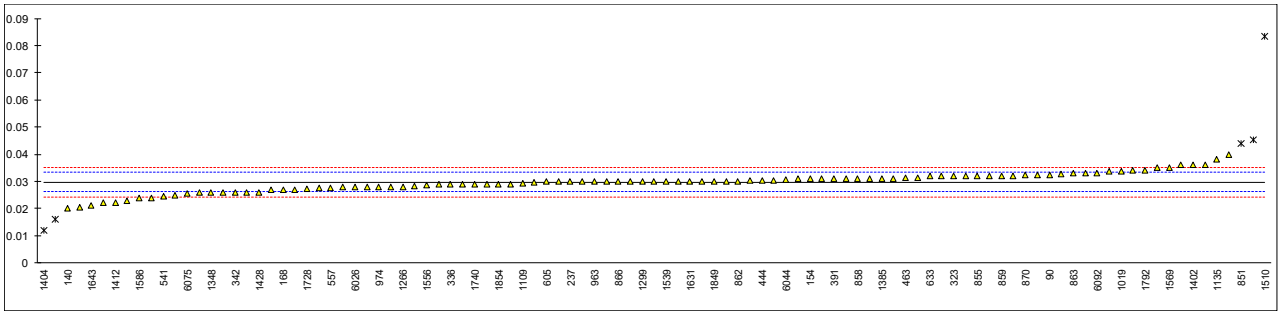
Determination of Ash Content on sample #19105; results in %M/M

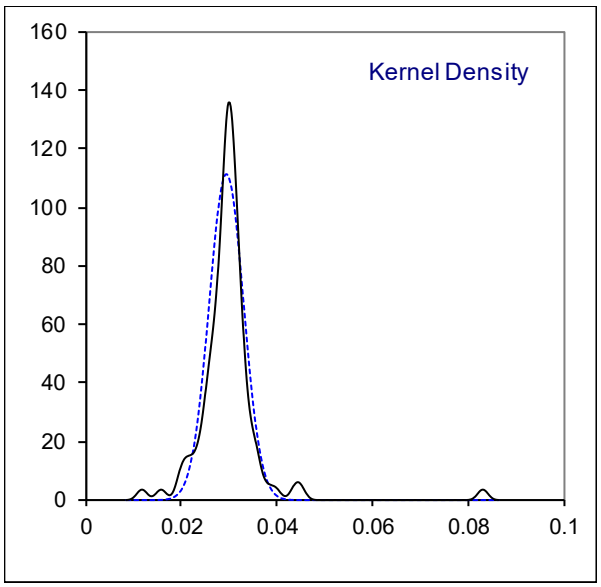
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	875		-----		-----
90	D482	0.0324		1.54	886		-----		-----
92	D482	0.0303		0.36	912	D482	0.0314		0.98
120		-----		-----	913	D482	0.03	C	0.19
140	ISO6245	0.020		-5.41	922	D482	0.031		0.75
150	D482	0.028		-0.93	962		-----		-----
154	D482	0.031		0.75	963	ISO6245	0.030		0.19
158	D482	0.027		-1.49	971	ISO6245	0.030		0.19
159		-----		-----	974	D482	0.028		-0.93
168	D482	0.027		-1.49	982		-----		-----
169	D482	0.022		-4.29	1006		-----		-----
171	ISO6245	0.026		-2.05	1011	ISO6245	0.026		-2.05
175		-----		-----	1019	ISO6245	0.0338		2.32
194	D482	0.030		0.19	1059		-----		-----
221	D482	0.0328		1.76	1082		-----		-----
224	D482	0.023		-3.73	1109	D482	0.0292		-0.26
225	D482	0.036		3.55	1121	ISO6245	0.028		-0.93
228	D482	0.0259		-2.10	1126		-----		-----
237	D482	0.03		0.19	1135	ISO6245	0.03812		4.74
238		-----		-----	1161	ISO6245	0.0203	C	-5.24
253		-----		-----	1167	ISO6245	0.03092		0.71
254		-----		-----	1177		-----		-----
273	D482	0.03		0.19	1212		-----		-----
309		-----		-----	1233	ISO6245	0.04		5.79
311	ISO6245	0.032		1.31	1254	ISO6245	0.0289		-0.42
313		-----		-----	1266	ISO6245	0.028		-0.93
323	ISO6245	0.032		1.31	1269		-----		-----
331		-----		-----	1275	IP4	0.02696		-1.51
333		-----		-----	1299	D482	0.03		0.19
334	ISO6245	0.031		0.75	1340	ISO6245	0.030	C	0.19
335		-----		-----	1347	D482	0.0336		2.21
336	ISO6245	0.029		-0.37	1348	D482	0.0259		-2.10
337		-----		-----	1356	ISO6245	0.033		1.87
339		-----		-----	1385	D482	0.031		0.75
342	ISO6245	0.026		-2.05	1402	IP4	0.036		3.55
343		-----		-----	1404	ISO6245	0.012	R(0.01)	-9.89
349		-----		-----	1412	D482	0.022		-4.29
371	D482	0.0301		0.25	1428	ISO6245	0.026		-2.05
391	D482	0.031		0.75	1455		-----		-----
398	ISO6245	0.032		1.31	1459		-----		-----
399		-----		-----	1483	ISO6245	0.029		-0.37
440		-----		-----	1510	IP4	0.0833	R(0.01)	30.04
444	D482	0.0303		0.36	1539	ISO6245	0.030		0.19
463	ISO6245	0.0314		0.98	1556	ISO6245	0.02878		-0.49
511	D482	0.0275		-1.21	1569	ISO6245	0.035		2.99
529		-----		-----	1575	D482	0.030		0.19
541	D482	0.0244		-2.94	1586	D482	0.024		-3.17
557	D482	0.0277		-1.09	1613	D482	0.031		0.75
562	D482	0.034		2.43	1622		-----		-----
575		-----		-----	1631	ISO6245	0.030		0.19
603		-----		-----	1643	D482	0.021		-4.85
604		-----		-----	1720		-----		-----
605	D482	0.030		0.19	1724	ISO6245	0.0452	R(0.05)	8.70
608		-----		-----	1728	D482	0.0271		-1.43
631	D482	0.0284		-0.70	1740	ISO6245	0.029		-0.37
633	D482	0.0319		1.26	1776		-----		-----
663	D482	0.0295		-0.09	1792	D482	0.034		2.43
671	D482	0.035		2.99	1807	ISO6245	0.0290		-0.37
750		-----		-----	1833	D482	0.030		0.19
751		-----		-----	1849	ISO6245	0.030		0.19
753		-----		-----	1854	ISO6245	0.029		-0.37
759		-----		-----	1906		-----		-----
781	ISO6245	0.025		-2.61	1956	ISO6245	0.024		-3.17
785		-----		-----	1964		-----		-----
825	D482	0.032		1.31	1967	D482	0.0279		-0.98
850	ISO6245	0.0302		0.30	1995	D482	0.036		3.55
851	ISO6245	0.044	C,R(0.05)	8.03	6016		-----		-----
855	ISO6245	0.032		1.31	6026	D482	0.0279		-0.98
858	D482	0.031		0.75	6028		-----		-----
859	D482	0.032		1.31	6039		-----		-----
862	ISO6245	0.0301		0.25	6044	ISO6245	0.0307		0.58
863	D482	0.033		1.87	6057	ISO6245	0.029		-0.37
864	D482	0.032		1.31	6075	ISO6245	0.0257		-2.22
865	ISO6245	0.031		0.75	6092	ISO6245	0.033		1.87
866	D482	0.030		0.19	6142		-----		-----
870	D482	0.0322		1.42	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value
6192		-----		-----			
6201	ISO6245	0.03225		1.45			
6238	D482	0.016	C,R(0.05)	-7.65			
6252		-----		-----			

		Only ISO6245 results:	Only D482 results:
normality	OK	suspect	OK
n	98	43	53
outliers	5	3	1
mean (n)	0.0297	0.0297	0.0296
st.dev. (n)	0.00359	0.00378	0.00340
R(calc.)	0.0100	0.0106	0.0095
st.dev.(ISO6245:01)	0.00179	0.00179	0.00179
R(ISO6245:01)	0.005	0.005	0.005
Compare			
R(D482:13)	0.005		

Lab 851 first reported 0.0044
Lab 913 first reported 0.05
Lab 1161 first reported 0.0077
Lab 1340 first reported 0.049
Lab 6238 first reported 0.0165



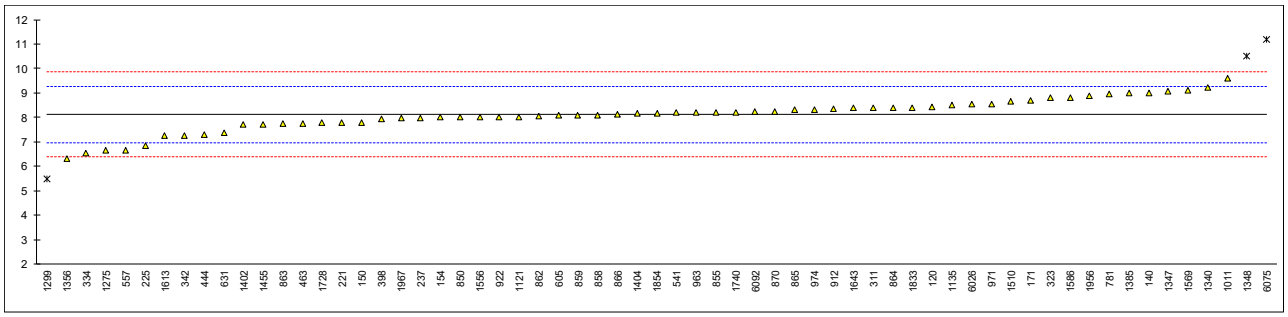


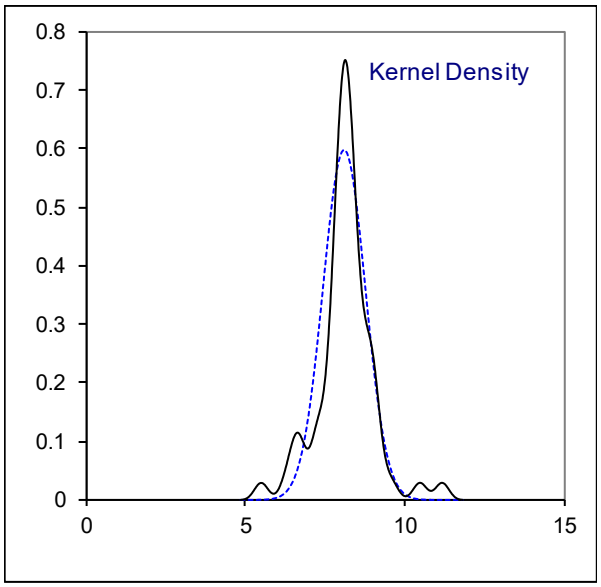
Determination of Asphaltenes on sample #19105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	875		-----		-----
90		-----		-----	886		-----		-----
92		-----		-----	912	D6560	8.37		0.44
120	D6560	8.42		0.53	913		-----		-----
140	IP143	9.0		1.53	922	D6560	8.02		-0.16
150	IP143	7.8		-0.54	962		-----		-----
154	D6560	8.0		-0.20	963	IP143	8.19		0.13
158		-----		-----	971	IP143	8.54		0.74
159		-----		-----	974	IP143	8.30		0.32
168		-----		-----	982		-----		-----
169		-----		-----	1006		-----		-----
171	IP143	8.7		1.01	1011	IP143 Automatic	9.6		2.57
175		-----		-----	1019		-----		-----
194		-----		-----	1059		-----		-----
221	D6560	7.8		-0.54	1082		-----		-----
224		-----		-----	1109		-----		-----
225	D6560	6.83		-2.21	1121	IP143	8.03		-0.14
228		-----		-----	1126		-----		-----
237	D6560	7.98		-0.23	1135	IP143	8.5		0.67
238		-----		-----	1161		-----		-----
253		-----		-----	1167		-----		-----
254		-----		-----	1177		-----		-----
273		-----		-----	1212		-----		-----
309		-----		-----	1233		-----		-----
311	IP143	8.4		0.50	1254		-----		-----
313		-----		-----	1266		-----		-----
323	IP143	8.8		1.19	1269		-----		-----
331		-----		-----	1275	IP143	6.64		-2.54
333		-----		-----	1299	IP143	5.5	R(0.05)	-4.51
334	IP143	6.55		-2.70	1340	D6560	9.211		1.89
335		-----		-----	1347	IP143	9.07		1.65
336		-----		-----	1348	IP143	10.5	R(0.05)	4.12
337		-----		-----	1356	D6560	6.3		-3.13
339		-----		-----	1385	IP143	8.98		1.50
342	IP143	7.256		-1.48	1402	IP143	7.7		-0.71
343		-----		-----	1404	IP143	8.15		0.06
349		-----		-----	1412		-----		-----
371		-----		-----	1428		-----		-----
391		-----		-----	1455	IP143	7.7		-0.71
398	IP143	7.95		-0.28	1459		-----		-----
399		-----		-----	1483		-----		-----
440		-----		-----	1510	IP143	8.64		0.91
444	IP143	7.30		-1.40	1539		-----		-----
463	IP143	7.75		-0.63	1556	IP143	8.0		-0.20
511		-----		-----	1569	IP143	9.1		1.70
529		-----		-----	1575		-----		-----
541	IP143	8.19		0.13	1586	IP143	8.8		1.19
557	D6560	6.67		-2.49	1613	D6560	7.25		-1.49
562		-----		-----	1622		-----		-----
575		-----		-----	1631		-----		-----
603		-----		-----	1643	D6560	8.38		0.46
604		-----		-----	1720		-----		-----
605	IP143	8.1		-0.02	1724		-----		-----
608		-----		-----	1728	D6560	7.787		-0.56
631	IP143	7.38		-1.26	1740	IP143	8.2		0.15
633		-----		-----	1776		-----		-----
663		-----		-----	1792		-----		-----
671		-----		-----	1807		-----		-----
750		-----		-----	1833	D6560	8.4		0.50
751		-----		-----	1849		-----		-----
753		-----		-----	1854	IP143	8.18		0.12
759		-----		-----	1906		-----		-----
781	IP143	8.96		1.46	1956		8.9		1.36
785		-----		-----	1964		-----		-----
825		-----		-----	1967	IP143	7.96		-0.26
850	IP143	8.00		-0.20	1995		-----		-----
851		-----		-----	6016		-----		-----
855	IP143	8.2		0.15	6026	IP143	8.5359		0.73
858	IP143	8.1		-0.02	6028		-----		-----
859	D6560	8.1		-0.02	6039		-----		-----
862	IP143	8.05		-0.11	6044		-----		-----
863	IP143	7.75		-0.63	6057		-----		-----
864	IP143	8.4		0.50	6075	NFT 60-115	11.20	R(0.05)	5.33
865	IP143	8.30		0.32	6092	IP143	8.23		0.20
866	IP143	8.14		0.05	6142		-----		-----
870	IP143	8.24		0.22	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		-----		-----					
6201		-----		-----					
6238		-----		-----					
6252		-----		-----					

normality	OK
n	60
outliers	3
mean (n)	8.113
st.dev. (n)	0.6665
R(calc.)	1.866
st.dev.(IP143:04)	0.5795
R(IP143:04)	1.623





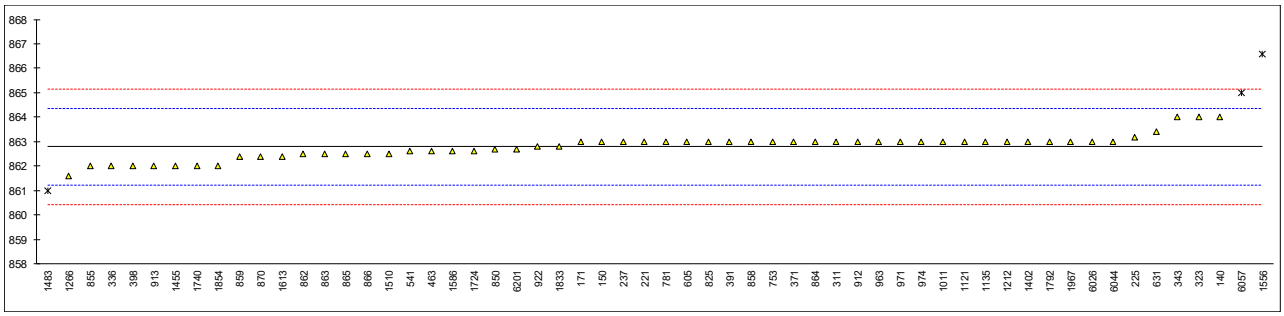
Determination of Calculated Carbon Aromaticity Index on sample #19105

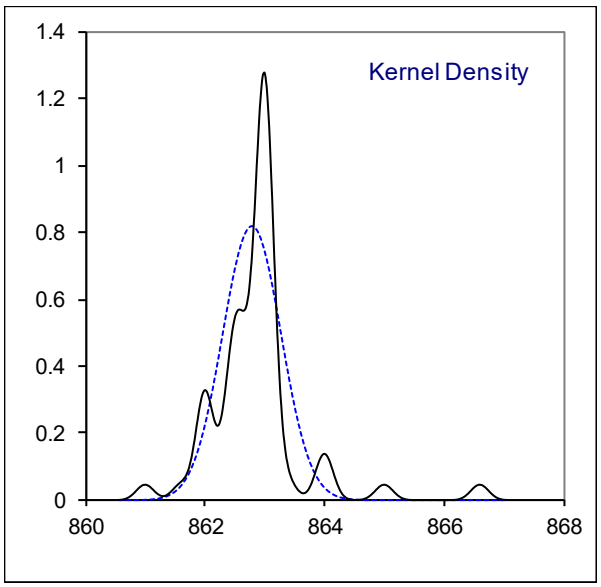
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	875		-----		-----
90		-----		-----	886		-----		-----
92		-----		-----	912	ISO8217	863		0.27
120		-----		-----	913	ISO8217	862	C	-1.00
140	ISO8217	864	E	1.54	922	ISO8217	862.8		0.02
150	ISO8217	863		0.27	962		-----		-----
154		-----		-----	963	ISO8217	863		0.27
158		-----		-----	971	ISO8217	863		0.27
159		-----		-----	974	ISO8217	863		0.27
168		-----		-----	982		-----		-----
169		-----		-----	1006		-----		-----
171	ISO8217	863		0.27	1011	ISO8217	863		0.27
175		-----		-----	1019		-----		-----
194		-----		-----	1059		-----		-----
221	ISO8217	863		0.27	1082		-----		-----
224		-----		-----	1109		-----		-----
225	ISO8217	863.1840		0.51	1121	ISO8217	863		0.27
228		-----		-----	1126		-----		-----
237	ISO8217	863		0.27	1135	ISO8217	863		0.27
238		-----		-----	1161		-----		-----
253		-----		-----	1167		-----		-----
254		-----		-----	1177		-----		-----
273		-----		-----	1212	ISO8217	863		0.27
309		-----		-----	1233		-----		-----
311	ISO8217	863		0.27	1254		-----		-----
313		-----		-----	1266	ISO8217	861.6		-1.51
323	ISO8217	864		1.54	1269		-----		-----
331		-----		-----	1275		-----		-----
333		-----		-----	1299		-----		-----
334		-----		-----	1340		-----		-----
335		-----		-----	1347		-----		-----
336	ISO8217	862		-1.00	1348		-----		-----
337		-----		-----	1356		-----		-----
339		-----		-----	1385		-----		-----
342		-----		-----	1402	ISO8217	863		0.27
343	ISO8217	864		1.54	1404		-----		-----
349		-----		-----	1412		-----		-----
371	ISO8217	863		0.27	1428		-----		-----
391	ISO8217	863.0		0.27	1455	ISO8217	862		-1.00
398	ISO8217	862		-1.00	1459		-----		-----
399		-----		-----	1483	ISO8217	861	R(0.05)	-2.27
440		-----		-----	1510	ISO8217	862.5		-0.37
444		-----		-----	1539		-----		-----
463	ISO8217	862.6		-0.24	1556	ISO8217	866.6	R(0.01)	4.85
511		-----		-----	1569		-----		-----
529		-----		-----	1575		-----		-----
541	ISO8217	862.6		-0.24	1586	ISO8217	862.6		-0.24
557		-----		-----	1613	ISO8217	862.4		-0.49
562		-----		-----	1622		-----		-----
575		-----		-----	1631		-----		-----
603		-----		-----	1643		-----		-----
604		-----		-----	1720		-----		-----
605	ISO8217	863		0.27	1724	ISO8217	862.6		-0.24
608		-----		-----	1728		-----		-----
631	ISO8217	863.40		0.78	1740	ISO8217	862		-1.00
633		-----		-----	1776		-----		-----
663		-----		-----	1792	ISO8217	863		0.27
671		-----		-----	1807		-----		-----
750		-----		-----	1833	ISO8217	862.8		0.02
751		-----		-----	1849		-----		-----
753	ISO8217	863		0.27	1854	ISO8217	862		-1.00
759		-----		-----	1906		-----		-----
781	ISO8217	863		0.27	1956		-----		-----
785		-----		-----	1964		-----		-----
825	ISO8217	863		0.27	1967	ISO8217	863		0.27
850	ISO8217	862.7		-0.11	1995		-----		-----
851		-----		-----	6016		-----		-----
855	ISO8217	862		-1.00	6026	ISO8217	863		0.27
858	ISO8217	863		0.27	6028		-----		-----
859	ISO8217	862.4		-0.49	6039		-----		-----
862	ISO8217	862.5		-0.37	6044	ISO8217	863		0.27
863	ISO8217	862.5		-0.37	6057	ISO8217	865	R(0.01)	2.82
864	ISO8217	863		0.27	6075		-----		-----
865	ISO8217	862.5		-0.37	6092		-----		-----
866	ISO8217	862.5		-0.37	6142		-----		-----
870	ISO8217	862.4		-0.49	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		-----		-----					
6201	ISO8217	862.7		-0.11					
6238		-----		-----					
6252		-----		-----					

normality	suspect
n	55
outliers	3
mean (n)	862.787
st.dev. (n)	0.4885
R(calc.)	1.368
st.dev.(ISO8217:17)	0.7857
R(ISO8217:17)	2.20

Lab 140 probably a calc. error, iis calculated 861
Lab 913 first reported 860





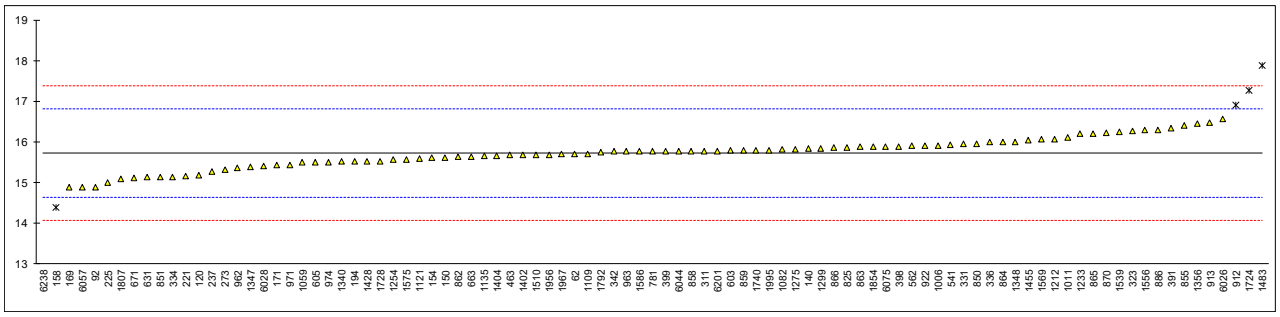
Determination of Carbon Residue - Micro Method on sample #19105; results in %M/M

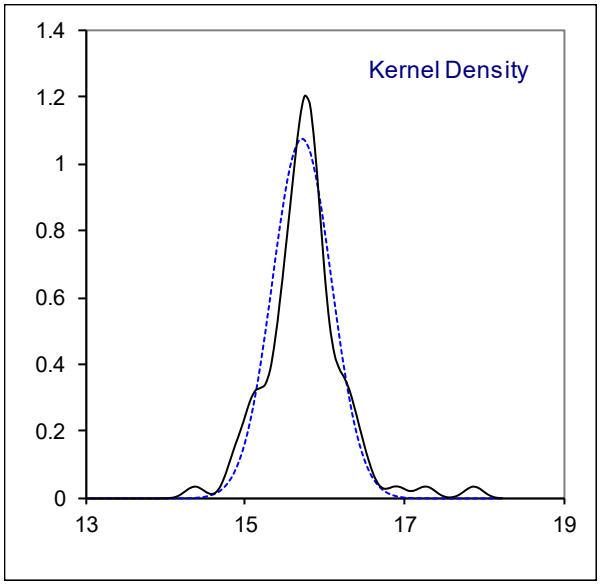
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4530	15.7		-0.04	875		-----		-----
90		-----		-----	886	D4530	16.3		1.05
92	D4530	14.89		-1.52	912	ISO10370	16.91	R(0.05)	2.16
120	D4530	15.17		-1.01	913	D4530	16.47		1.36
140	ISO10370	15.83		0.19	922	D4530	15.9		0.32
150	D4530	15.6		-0.23	962	ISO10370	15.36		-0.66
154	D4530	15.6		-0.23	963	ISO10370	15.76		0.06
158	D4530	14.38	R(0.05)	-2.45	971	ISO10370	15.42		-0.55
159		-----		-----	974	D4530	15.5		-0.41
168		-----		-----	982		-----		-----
169	D4530	14.8765		-1.54	1006	D4530	15.9		0.32
171	ISO10370	15.42		-0.55	1011	ISO10370	16.11		0.70
175		-----		-----	1019		-----		-----
194	D4530	15.52		-0.37	1059	ISO10370	15.49		-0.43
221	D4530	15.16		-1.03	1082	ISO10370	15.806		0.15
224		-----		-----	1109	D4530	15.71		-0.03
225	D4530	15.0		-1.32	1121	ISO10370	15.58		-0.26
228		-----		-----	1126		-----		-----
237	D4530	15.28		-0.81	1135	ISO10370	15.65		-0.14
238		-----		-----	1161		-----		-----
253		-----		-----	1167		-----		-----
254		-----		-----	1177		-----		-----
273	D4530	15.31		-0.75	1212	ISO10370	16.062		0.61
309		-----		-----	1233	ISO10370	16.19		0.85
311	D4530	15.78		0.10	1254	ISO10370	15.565		-0.29
313		-----		-----	1266		-----		-----
323	ISO10370	16.26		0.97	1269		-----		-----
331	ISO10370	15.95		0.41	1275	IP398	15.821		0.18
333		-----		-----	1299	D4530	15.83		0.19
334	ISO10370	15.14		-1.06	1340	ISO10370	15.51		-0.39
335		-----		-----	1347	D4530	15.394		-0.60
336	ISO10370	15.99		0.48	1348	D4530	16		0.50
337		-----		-----	1356	ISO10370	16.44		1.30
339		-----		-----	1385		-----		-----
342	ISO10370	15.76		0.06	1402	IP398	15.69		-0.06
343		-----		-----	1404	ISO10370	15.65		-0.14
349		-----		-----	1412		-----		-----
371		-----		-----	1428	ISO10370	15.52		-0.37
391	ISO10370	16.33		1.10	1455	ISO10370	16.04		0.57
398	ISO10370	15.892		0.30	1459		-----		-----
399	D4530	15.77		0.08	1483	ISO10370	17.88	R(0.01)	3.92
440		-----		-----	1510	IP398	15.69		-0.06
444		-----		-----	1539	ISO10370	16.24		0.94
463	ISO10370	15.681		-0.08	1556	ISO10370	16.29		1.03
511		-----		-----	1569	ISO10370	16.06		0.61
529		-----		-----	1575	D4530	15.57		-0.28
541	D4530	15.92		0.36	1586	D4530	15.76		0.06
557		-----		-----	1613		-----	W	-----
562	D4530	15.9		0.32	1622		-----		-----
575		-----		-----	1631		-----		-----
603	D4530	15.8		0.14	1643		-----		-----
604		-----		-----	1720		-----		-----
605	D4530	15.5		-0.41	1724	ISO10370	17.277	R(0.05)	2.83
608		-----		-----	1728	D4530	15.53		-0.35
631	D4530	15.13		-1.08	1740	ISO10370	15.8		0.14
633		-----		-----	1776		-----		-----
663	D4530	15.638		-0.16	1792	ISO10370	15.74		0.03
671	D4530	15.11		-1.12	1807	ISO10370	15.1		-1.14
750		-----		-----	1833		-----	W	-----
751		-----		-----	1849		-----		-----
753		-----		-----	1854	ISO10370	15.89		0.30
759		-----		-----	1906		-----		-----
781	ISO10370	15.77		0.08	1956	ISO10370	15.69		-0.06
785		-----		-----	1964		-----		-----
825	ISO10370	15.87		0.26	1967	D4530	15.6962		-0.05
850	ISO10370	15.952		0.41	1995	D4530	15.8		0.14
851	ISO10370	15.13		-1.08	6016		-----		-----
855	D4530	16.40		1.23	6026	D4530	16.5643		1.53
858	D4530	15.78		0.10	6028	ISO10370	15.4		-0.59
859	D4530	15.8		0.14	6039		-----		-----
862	ISO10370	15.63		-0.17	6044	ISO10370	15.775		0.09
863	D4530	15.88		0.28	6057	ISO10370	14.88		-1.54
864	ISO10370	16.0		0.50	6075	ISO10370	15.890		0.30
865	ISO10370	16.21		0.88	6092		-----		-----
866	D4530	15.85		0.23	6142		-----		-----
870	D4530	16.22		0.90	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		-----		-----					
6201	ISO10370	15.78		0.10					
6238	D4530	2.78	R(0.01)	-23.56					
6252		-----		-----					

normality	OK
n	90
outliers	5
mean (n)	15.7246
st.dev. (n)	0.36886
R(calc.)	1.0328
st.dev.(ISO10370:14)	0.54942
R(ISO10370:14)	1.5384

Lab 1613 test result withdrawn, first reported 14.614
Lab 1833 test result withdrawn, first reported 14.22





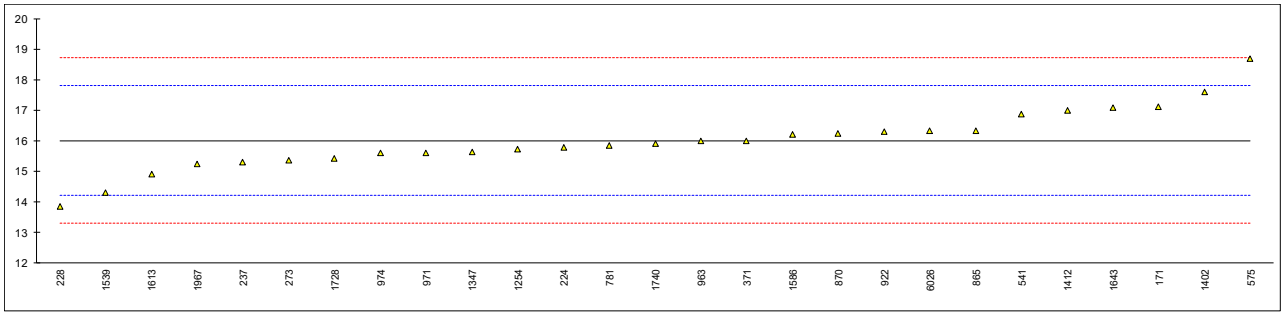
Determination of Conradson Carbon Residue on sample #19105; results in %M/M

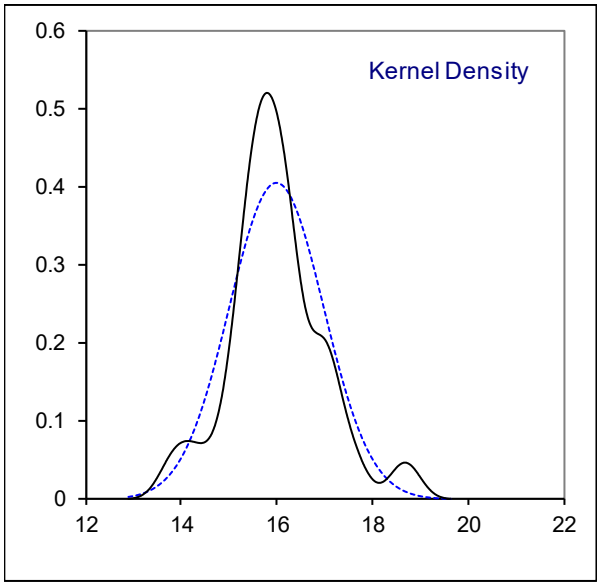
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	875		-----		-----
90		-----		-----	886		-----		-----
92		-----		-----	912		-----		-----
120		-----		-----	913		-----		-----
140		-----		-----	922	D189	16.3		0.33
150		-----		-----	962		-----		-----
154		-----		-----	963	D189	15.99		-0.02
158		-----		-----	971	D4530	15.61		-0.44
159		-----		-----	974	D189	15.6		-0.45
168		-----		-----	982		-----		-----
169		-----		-----	1006		-----		-----
171	D189	17.1		1.22	1011		-----		-----
175		-----		-----	1019		-----		-----
194		-----		-----	1059		-----		-----
221		-----		-----	1082		-----		-----
224	D189	15.785		-0.25	1109		-----		-----
225		-----		-----	1121		-----		-----
228	D189	13.856		-2.39	1126		-----		-----
237	D189	15.3068		-0.78	1135		-----		-----
238		-----		-----	1161		-----		-----
253		-----		-----	1167		-----		-----
254		-----		-----	1177		-----		-----
273	D189	15.36		-0.72	1212		-----		-----
309		-----		-----	1233		-----		-----
311		-----		-----	1254	D189	15.71		-0.33
313		-----		-----	1266		-----		-----
323		-----		-----	1269		-----		-----
331		-----		-----	1275		-----		-----
333		-----		-----	1299		-----		-----
334		-----		-----	1340		-----		-----
335		-----		-----	1347	D189	15.646		-0.40
336		-----		-----	1348		-----		-----
337		-----		-----	1356		-----		-----
339		-----		-----	1385		-----		-----
342		-----		-----	1402	IP13	17.6		1.77
343		-----		-----	1404		-----		-----
349		-----		-----	1412	D189	17.0		1.10
371	D189	16.010		0.00	1428		-----		-----
391		-----		-----	1455		-----		-----
398		-----		-----	1459		-----		-----
399		-----		-----	1483		-----		-----
440		-----		-----	1510		-----		-----
444		-----		-----	1539	ISO6615	14.31		-1.89
463		-----		-----	1556		-----		-----
511		-----		-----	1569		-----		-----
529		-----		-----	1575		-----		-----
541	D189	16.86		0.95	1586	D189	16.20		0.21
557		-----		-----	1613	D189	14.900		-1.23
562		-----		-----	1622		-----		-----
575	D189	18.7	C	3.00	1631		-----		-----
603		-----		-----	1643	D189	17.07		1.18
604		-----		-----	1720		-----		-----
605		-----		-----	1724		-----		-----
608		-----		-----	1728	D189	15.42		-0.65
631		-----		-----	1740	D189	15.9		-0.12
633		-----		-----	1776		-----		-----
663		-----		-----	1792		-----		-----
671		-----		-----	1807		-----		-----
750		-----		-----	1833		-----		-----
751		-----		-----	1849		-----		-----
753		-----		-----	1854		-----		-----
759		-----		-----	1906		-----		-----
781	D189	15.84		-0.19	1956		-----		-----
785		-----		-----	1964		-----		-----
825		-----		-----	1967	D189	15.2439		-0.85
850		-----		-----	1995		-----		-----
851		-----		-----	6016		-----		-----
855		-----		-----	6026	D189	16.3148		0.34
858		-----		-----	6028		-----		-----
859		-----		-----	6039		-----		-----
862		-----		-----	6044		-----		-----
863		-----		-----	6057		-----		-----
864		-----		-----	6075		-----		-----
865	D189	16.33		0.36	6092		-----		-----
866		-----		-----	6142		-----		-----
870	D189	16.24		0.26	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		-----		-----					
6201		-----		-----					
6238		-----		-----					
6252		-----		-----					

normality	suspect
n	27
outliers	0
mean (n)	16.0075
st.dev. (n)	0.98846
R(calc.)	2.7677
st.dev.(D189:06)	0.89899
R(D189:06)	2.5172

Lab 575 first reported 19.4





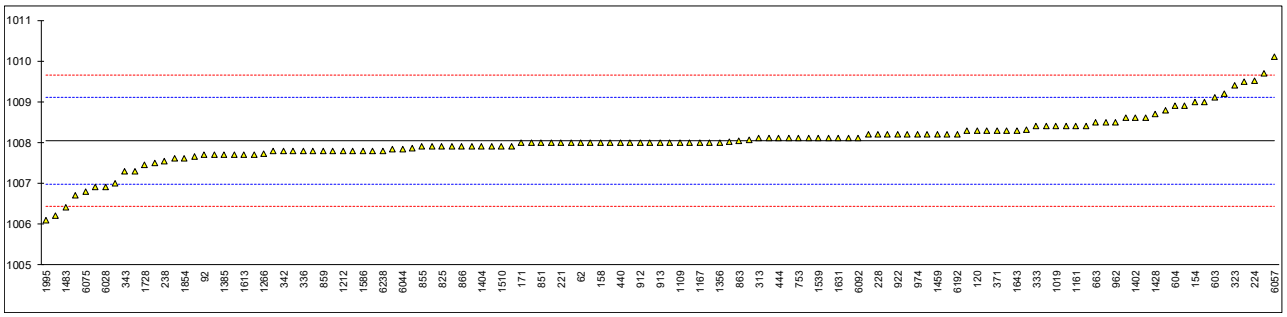
Determination of Density at 15°C on sample #19105; results in kg/m^3

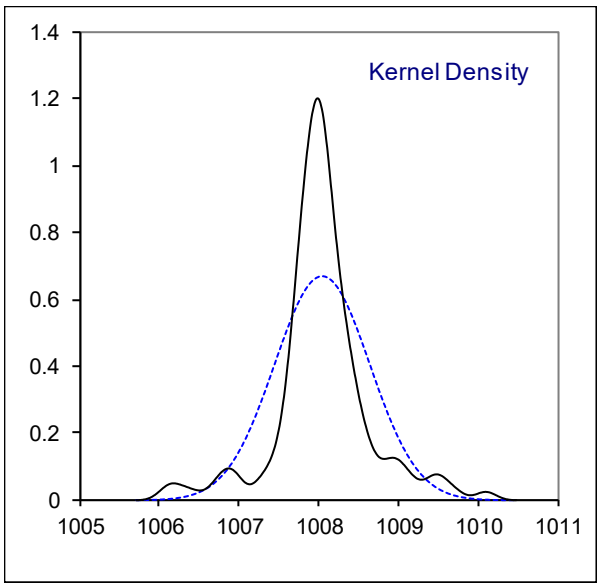
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4052	1008		-0.09	875		-----		-----
90	D4052	1008.0		-0.09	886		-----		-----
92	D4052	1007.7		-0.65	912	ISO3675	1008		-0.09
120	D4052	1008.3		0.47	913	D1298	1008.0	C	-0.09
140	D4052	1007.9		-0.27	922	D1298	1008.2		0.29
150		-----		-----	962	D1298	1008.5		0.85
154	D4052	1009		1.78	963	ISO12185	1008.0		-0.09
158	D4052	1008.0		-0.09	971	ISO12185	1008.2		0.29
159		-----		-----	974	D1298	1008.2		0.29
168		-----		-----	982		-----		-----
169		-----		-----	1006	D1298	1007.8	C	-0.46
171	ISO12185	1008.0	C	-0.09	1011	ISO12185	1008.6		1.03
175		-----		-----	1019	ISO3838	1008.4		0.66
194	D4052	1009		1.78	1059		-----		-----
221	D4052	1008.0		-0.09	1082	ISO12185	1008.4		0.66
224	D1298	1009.51		2.73	1109	D4052	1008.0		-0.09
225	D4052	1008		-0.09	1121	ISO12185	1008.0		-0.09
228	D1298	1008.2	C	0.29	1126		-----		-----
237	D4052	1008.4		0.66	1135	ISO12185	1008.2		0.29
238	D4052	1007.54		-0.95	1161	ISO3675	1008.4	C	0.66
253	D4052	1007.8		-0.46	1167	ISO12185	1008.0		-0.09
254		-----		-----	1177		-----		-----
273	D4052	1009.2		2.15	1212	ISO12185	1007.8		-0.46
309		-----		-----	1233	ISO12185	1007.5		-1.02
311	ISO12185	1007.8		-0.46	1254	ISO12185	1008.06		0.02
313	ISO12185	1008.1		0.10	1266	ISO3675	1007.73		-0.59
323	ISO12185	1009.4		2.53	1269		-----		-----
331	ISO12185	1008.3		0.47	1275	IP365	1008.3		0.47
333	ISO12185	1008.4		0.66	1299	D4052	1008	C	-0.09
334	ISO12185	1008.3		0.47	1340	ISO3675	1008.8		1.41
335	ISO12185	1008.0		-0.09	1347	D4052	1007.8		-0.46
336	ISO12185	1007.8		-0.46	1348	D4052	1008.1		0.10
337		-----		-----	1356	ISO12185	1008.0		-0.09
339		-----		-----	1385	D4052	1007.7		-0.65
342	D4052	1007.8		-0.46	1402	D4052	1008.6		1.03
343	D4052	1007.3		-1.39	1404	ISO12185	1007.9		-0.27
349		-----		-----	1412	D4052	1007.7		-0.65
371	ISO12185	1008.3		0.47	1428	ISO12185	1008.7		1.22
391	ISO12185	1007.8		-0.46	1455	ISO12185	1007.9		-0.27
398	ISO12185	1007.3		-1.39	1459	ISO12185	1008.2		0.29
399	D1298	1006.9		-2.14	1483	ISO3675	1006.4		-3.07
440	D4052	1008.0		-0.09	1510	IP365	1007.9		-0.27
444	D4052	1008.1		0.10	1539	ISO12185	1008.1		0.10
463	ISO12185	1007.7		-0.65	1556	ISO12185	1009.7		3.09
511	D1298	1006.2	C	-3.45	1569	D4052	1008.1	C	0.10
529		-----		-----	1575		-----		-----
541	ISO12185	1008.00		-0.09	1586	D4052	1007.8		-0.46
557	D4052	1008.32		0.51	1613	D4052	1007.7		-0.65
562	D1298	1008.5		0.85	1622		-----		-----
575		-----		-----	1631	ISO12185	1008.1		0.10
603	D1298	1009.1		1.97	1643	D4052	1008.3		0.47
604	D4052	1008.9		1.59	1720		-----		-----
605	D4052	1008.2	C	0.29	1724	ISO12185	1007.8		-0.46
608		-----		-----	1728	D4052	1007.45		-1.11
631	D1298	1007.84		-0.39	1740	D1298	1007.7		-0.65
633	D1298	1008.9	C	1.59	1776	ISO12185	1007.65		-0.74
663	D4052	1008.5		0.85	1792	ISO12185	1008.4		0.66
671	D1298	1007	C	-1.95	1807	ISO12185	1007.9		-0.27
750		-----		-----	1833	D4052	1008.2		0.29
751	ISO3675	1008.1		0.10	1849	ISO12185	1008.03		-0.03
753	ISO12185	1008.1		0.10	1854	ISO12185	1007.6		-0.83
759	D1298	1007.6		-0.83	1906		-----		-----
781	ISO12185	1008.1		0.10	1956	ISO3675	1009.5		2.71
785		-----		-----	1964		-----		-----
825	ISO12185	1007.9		-0.27	1967	D1298	1008.1		0.10
850	ISO3675	1008.0		-0.09	1995	D4052	1006.1		-3.63
851	ISO12185	1008.0		-0.09	6016		-----		-----
855	D1298	1007.9		-0.27	6026	D1298	1008.6		1.03
858	ISO12185	1008.0		-0.09	6028	ISO3675	1006.9		-2.14
859	ISO12185	1007.8		-0.46	6039		-----		-----
862	ISO12185	1008.0		-0.09	6044	ISO12185	1007.84	C	-0.39
863	ISO12185	1008.04		-0.01	6057	ISO12185	1010.1		3.83
864	ISO12185	1008.2		0.29	6075	ISO12185	1006.8		-2.33
865	ISO12185	1007.9		-0.27	6092	ISO12185	1008.1		0.10
866	ISO12185	1007.9		-0.27	6142		-----		-----
870	D1298	1007.9	C	-0.27	6143	D1298	1006.7		-2.51

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192	D1298	1008.2		0.29					
6201	ISO12185	1007.85	C	-0.37					
6238	ISO12185	1007.8		-0.46					
6252		-----		-----					

normality	not OK
n	125
outliers	0
mean (n)	1008.047
st.dev. (n)	0.5976
R(calc.)	1.673
st.dev.(ISO12185:96)	0.5357
R(ISO12185:96)	1.5

Lab 171 reported 1.0080
Lab 228 first reported 108.2
Lab 511 first reported 1005.5
Lab 605 first reported 1008.2 kg/L
Lab 633 reported 1008.9 kg/L
Lab 671 first reported 983.4
Lab 870 first reported 1007.9 kg/L
Lab 913 first reported 1006.2
Lab 1006 first reported 1.0078 kg/m^3
Lab 1161 first reported 1005
Lab 1299 reported 1.008
Lab 1569 first reported 1001.5
Lab 6044 reported 1007.84 kg/L
Lab 6201 first reported 1.00785





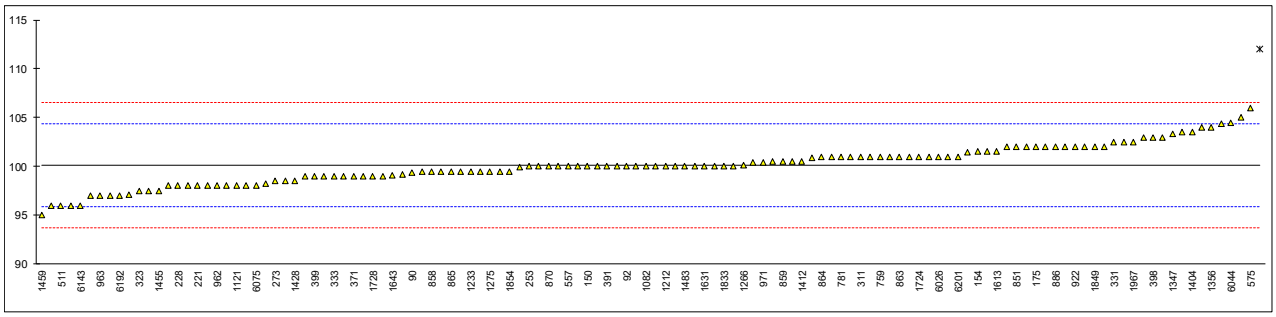
Determination of Flash Point PMcc on sample #19105; results in °C

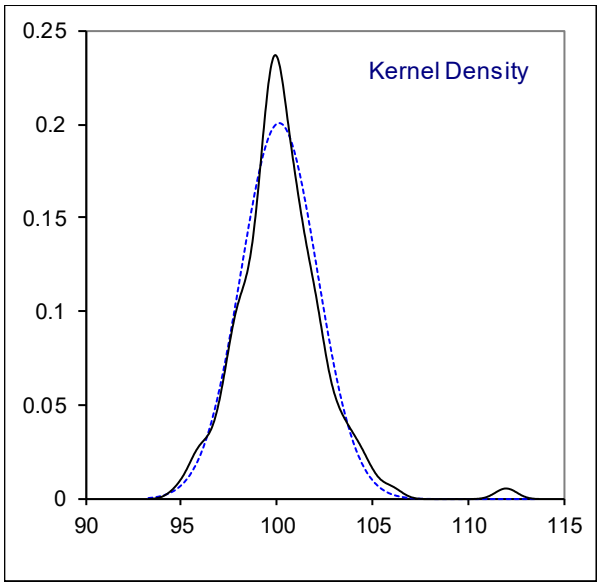
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D93-B	98		-0.99	875		-----		-----
90	D93-B	99.4		-0.34	886	D93-B	102.0		0.88
92	D93-B	100.0		-0.06	912		-----		-----
120	D93-B	100.0		-0.06	913	D93-B	102		0.88
140	D93-B	101.0		0.41	922	D93-B	102.0		0.88
150	D93-B	100.0		-0.06	962	ISO2719-B	98.0		-0.99
154	D93-B	101.5		0.64	963	D93-B	97.0		-1.46
158	D93-B	98.0		-0.99	971	ISO2719-B	100.4		0.13
159		-----		-----	974	D93-B	101.0		0.41
168	D93-B	100.4	C	0.13	982		-----		-----
169	D93-B	104.4		2.00	1006	D93-B	99.0		-0.52
171	D93-A	103.5		1.58	1011	ISO2719-B	102.5		1.11
175	D93-B	102		0.88	1019		-----		-----
194	D93-B	99.5		-0.29	1059	ISO2719-B	98.0		-0.99
221	D93-B	98		-0.99	1082	ISO2719-A	100.0		-0.06
224	D93-A	102	C	0.88	1109	D93-B	97.5		-1.22
225	D93-B	105.0		2.28	1121	ISO2719-B	98.0		-0.99
228	D93-B	98.0		-0.99	1126	ISO2719-B	101.5		0.64
237	D93-B	101.0		0.41	1135	ISO2719-B	100.0		-0.06
238	D93-B	96.0		-1.92	1161		-----		-----
253	D93-B	100		-0.06	1167	ISO2719-B	99.5		-0.29
254		-----		-----	1177		-----		-----
273	D93-B	98.5		-0.76	1212	ISO2719-B	100.0		-0.06
309		-----		-----	1233	ISO2719-B	99.5		-0.29
311	D93-B	101.0		0.41	1254	D93-B	97.1		-1.41
313	D93-B	97.0		-1.46	1266	ISO2719-B	100.1		-0.01
323	ISO2719-B	97.5		-1.22	1269	D93-B	99.5		-0.29
331	D93-B	102.5		1.11	1275	IP34-B	99.5		-0.29
333	ISO2719-B	99.0		-0.52	1299	D93-B	98.5		-0.76
334	ISO2719-B	100.0		-0.06	1340	ISO2719-A	104	C	1.81
335		-----		-----	1347	D93-B	103.33		1.50
336	ISO2719-B	100.0		-0.06	1348	D93-B	100		-0.06
337		-----		-----	1356	ISO2719-B	104		1.81
339		-----		-----	1385	D93-B	102		0.88
342	ISO2719-B	101.4		0.60	1402	IP34-B	103.0		1.34
343		-----		-----	1404	ISO2719-B	103.5		1.58
349		-----		-----	1412	D93-B	100.5		0.18
371	D93-B	99.0		-0.52	1428	ISO2719-B	98.5		-0.76
391	ISO2719-B	100		-0.06	1455		97.5		-1.22
398	ISO2719-B	103.0		1.34	1459	ISO2719-A	95.0	C	-2.39
399	D93-B	99		-0.52	1483	ISO2719-B	100.0		-0.06
440	IP34-B	98.2		-0.90	1510	IP34-B	100.9		0.36
444	D93-B	99.0		-0.52	1539		-----		-----
463	D93-B	102.0		0.88	1556	ISO2719-B	100.0		-0.06
511	D93-B	96.0		-1.92	1569	ISO2719-A	99.5		-0.29
529		-----		-----	1575		-----		-----
541	D93-B	98.00		-0.99	1586	D93-B	98.0		-0.99
557	D93	100		-0.06	1613	D93-B	101.5	C	0.64
562	D93-B	101		0.41	1622		-----		-----
575	D93-B	106	C	2.74	1631	ISO2719-A	100		-0.06
603	D93-B	99.0		-0.52	1643	D93-B	99.075		-0.49
604	D93-B	100		-0.06	1720		-----		-----
605		-----		-----	1724	ISO2719-B	101.0		0.41
608		-----		-----	1728	D93-B	99		-0.52
631	D93-B	99.5		-0.29	1740	ISO2719-B	101.0		0.41
633	D93-B	99.2		-0.43	1776	ISO2719-B	99.0		-0.52
663	D93-B	99.9		-0.10	1792	ISO2719-B	100.0		-0.06
671	D93-B	99.0		-0.52	1807	ISO2719-B	96		-1.92
750		-----		-----	1833	D93-B	100		-0.06
751	ISO2719-B	102.0		0.88	1849	ISO2719-B	102.0		0.88
753	ISO2719-B	103.0		1.34	1854	D93-A	99.5		-0.29
759	ISO2719-B	101.0		0.41	1906		-----		-----
781	ISO2719-B	101.0		0.41	1956		-----		-----
785		-----		-----	1964		-----		-----
825	ISO2719-B	101.0		0.41	1967	D93-B	102.5	C	1.11
850	ISO2719-B	100.5		0.18	1995	D93-B	100		-0.06
851	ISO2719-B	102.0		0.88	6016		-----		-----
855	ISO2719-B	100		-0.06	6026	D93-B	101.0		0.41
858	D93-B	99.5		-0.29	6028	ISO2719-A	102	C	0.88
859	ISO2719-B	100.5		0.18	6039		-----		-----
862	D93-B	100.0		-0.06	6044	D93-B	104.5		2.04
863	D93-B	101.0		0.41	6057	ISO2719-B	101.0		0.41
864	D93-B	101.0		0.41	6075	ISO2719-B	98.0		-0.99
865	ISO2719-B	99.5		-0.29	6092	D93-B	97.0		-1.46
866	D93-B	100.5		0.18	6142		-----		-----
870	D93-B	100.0		-0.06	6143	D93-A	96		-1.92

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192	D93-B	97		-1.46					
6201	ISO2719-B	101.0		0.41					
6238	D93-A	112	C,R(0.01)	5.54					
6252		-----		-----					

normality	OK
n	125
outliers	1
mean (n)	100.122
st.dev. (n)	2.0029
R(calc.)	5.608
st.dev.(ISO2719-B:16)	2.1429
R(ISO2719-B:16)	6

Lab 168 first reported 92.2
Lab 224 first reported 94
Lab 575 first reported 114
Lab 1340 first reported 114
Lab 1459 first reported 94.0
Lab 1613 first reported 91
Lab 1967 first reported 112.5
Lab 6028 first reported 113
Lab 6238 first reported 112.2





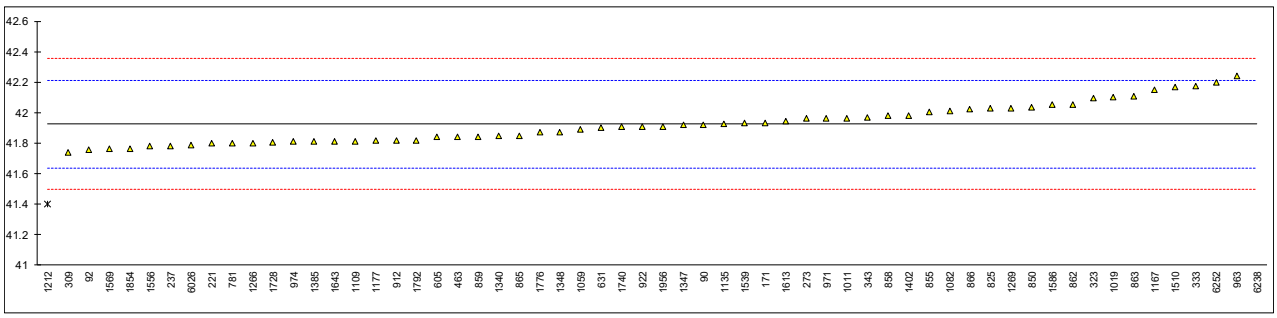
Determination of Heat of Combustion Gross on sample #19105; results in MJ/kg

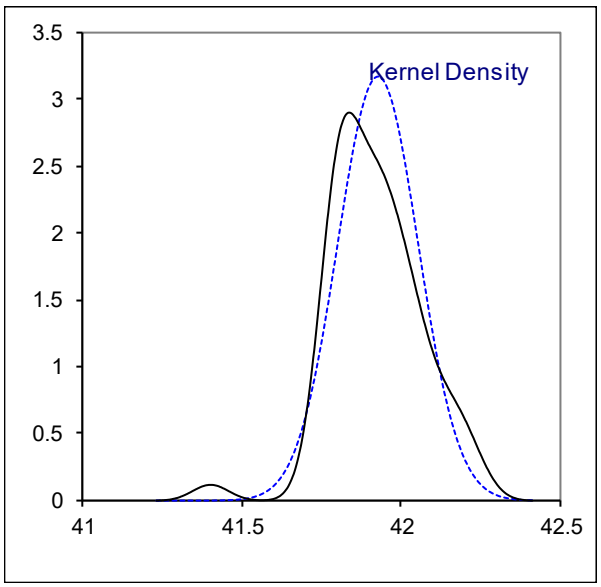
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	875		-----		-----
90	D240	41.922		-0.02	886		-----		-----
92	D240	41.759		-1.16	912	D4868	41.82		-0.73
120		-----		-----	913		-----		-----
140		-----		-----	922	D240	41.908		-0.11
150		-----		-----	962		-----		-----
154		-----		-----	963	D240	42.2384		2.20
158		-----		-----	971	D240	41.961		0.26
159		-----		-----	974	D4868	41.81		-0.80
168		-----		-----	982		-----		-----
169		-----		-----	1006		-----		-----
171	D240	41.935		0.08	1011	D240	41.965		0.29
175		-----		-----	1019		42.100		1.23
194		-----		-----	1059	D240	41.890		-0.24
221	D4868	41.80		-0.87	1082	D240	42.0083		0.59
224		-----		-----	1109	D4868	41.811		-0.79
225		-----		-----	1121		-----		-----
228		-----		-----	1126		-----		-----
237	D4868	41.781		-1.00	1135	D240	41.927		0.02
238		-----		-----	1161		-----		-----
253		-----		-----	1167	DIN51900-2	42.148		1.57
254		-----		-----	1177	DIN51900 1/2	41.818		-0.74
273	D4868	41.96		0.25	1212	D240	41.400	R(0.01)	-3.67
309		41.740		-1.29	1233		-----		-----
311		-----		-----	1254		-----		-----
313		-----		-----	1266		41.80		-0.87
323	D240	42.095		1.20	1269		42.0315		0.75
331		-----		-----	1275		-----		-----
333	D240	42.175		1.76	1299		-----		-----
334		-----		-----	1340	D240	41.846		-0.55
335		-----		-----	1347	D4868	41.919		-0.04
336		-----		-----	1348	D4868	41.872		-0.37
337		-----		-----	1356		-----		-----
339		-----		-----	1385	D4868	41.81		-0.80
342		-----		-----	1402	D240	41.98		0.39
343		41.97		0.32	1404		-----		-----
349		-----		-----	1412		-----		-----
371		-----		-----	1428		-----		-----
391		-----		-----	1455		-----		-----
398		-----		-----	1459		-----		-----
399		-----		-----	1483		-----		-----
440		-----		-----	1510	D240	42.169		1.71
444		-----		-----	1539		41.930		0.04
463	D4868	41.84		-0.59	1556	D4868	41.78		-1.01
511		-----		-----	1569		41.76		-1.15
529		-----		-----	1575		-----	W	-----
541		-----		-----	1586	D240	42.050		0.88
557		-----		-----	1613	D240	41.942		0.12
562		-----		-----	1622		-----		-----
575		-----		-----	1631		-----		-----
603		-----		-----	1643		41.81		-0.80
604		-----		-----	1720		-----		-----
605	D4868	41.84		-0.59	1724		-----		-----
608		-----		-----	1728	D4868	41.807		-0.82
631	D240	41.90		-0.17	1740		41.905		-0.13
633		-----		-----	1776	D4868	41.87		-0.38
663		-----		-----	1792	D4868	41.82		-0.73
671		-----		-----	1807		-----		-----
750		-----		-----	1833		-----		-----
751		-----		-----	1849		-----		-----
753		-----		-----	1854	D240	41.76		-1.15
759		-----		-----	1906		-----		-----
781	D4868	41.80		-0.87	1956		41.91		-0.10
785		-----		-----	1964		-----		-----
825	D240	42.030		0.74	1967		-----		-----
850	GB/T 384	42.035		0.78	1995		-----		-----
851		-----		-----	6016		-----		-----
855	GB/T/384	42.005		0.57	6026	D4868	41.79		-0.94
858	D4868	41.98		0.39	6028		-----		-----
859	D4868	41.84		-0.59	6039		-----		-----
862	D240	42.055		0.92	6044		-----		-----
863		42.105		1.27	6057		-----		-----
864		-----		-----	6075		-----		-----
865	D4868	41.85		-0.52	6092		-----		-----
866	D240	42.02		0.67	6142		-----		-----
870		-----		-----	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		-----		-----					
6201		-----		-----					
6238		10258.57	R(0.01)	>100					
6252	ASTM D240-87 mod.	42.2		1.93					

normality	OK
n	58
outliers	2
mean (n)	41.9242
st.dev. (n)	0.12599
R(calc.)	0.3528
st.dev.(D240:17)	0.14286
R(D240:17)	0.40

Lab 1575 test result withdrawn, first reported 42.434





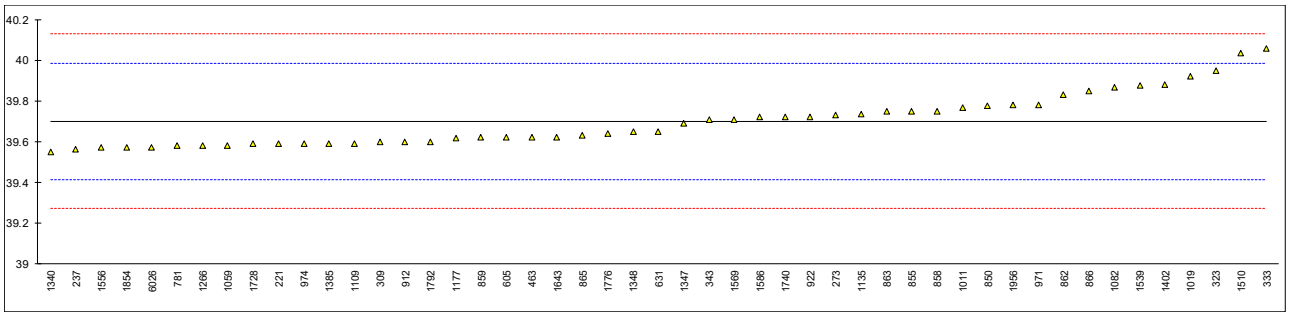
Determination of Heat of Combustion Net on sample #19105; results in MJ/kg

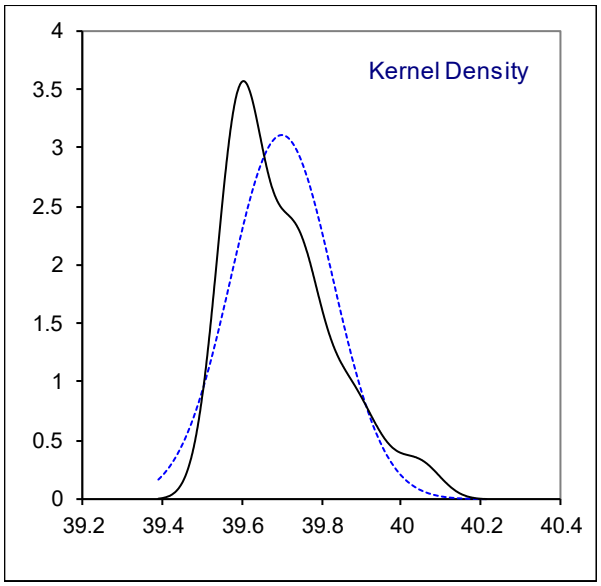
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	875		-----		-----
90		-----		-----	886		-----		-----
92		-----		-----	912	D4868	39.60		-0.71
120		-----		-----	913		-----		-----
140		-----		-----	922	D240	39.722		0.15
150		-----		-----	962		-----		-----
154		-----		-----	963		-----		-----
158		-----		-----	971	D240	39.782		0.57
159		-----		-----	974	D4868	39.59		-0.78
168		-----		-----	982		-----		-----
169		-----		-----	1006		-----		-----
171		-----		-----	1011	D240	39.765		0.45
175		-----		-----	1019		39.922		1.55
194		-----		-----	1059	D240	39.582		-0.83
221	D4868	39.59		-0.78	1082	D240	39.8682		1.17
224		-----		-----	1109	D4868	39.592		-0.76
225		-----		-----	1121		-----		-----
228		-----		-----	1126		-----		-----
237	D4868	39.564		-0.96	1135	D240	39.735		0.24
238		-----		-----	1161		-----		-----
253		-----		-----	1167		-----		-----
254		-----		-----	1177	DIN51900 1/2	39.617		-0.59
273	D4868	39.73		0.20	1212		-----		-----
309		39.600		-0.71	1233		-----		-----
311		-----		-----	1254		-----		-----
313		-----		-----	1266		39.58		-0.85
323	D240	39.95	C	1.74	1269		-----		-----
331		-----		-----	1275		-----		-----
333	D240	40.055		2.48	1299		-----		-----
334		-----		-----	1340	D240	39.55	C	-1.06
335		-----		-----	1347	D4868	39.692		-0.06
336		-----		-----	1348	D4868	39.647		-0.38
337		-----		-----	1356		-----		-----
339		-----		-----	1385	D4868	39.59		-0.78
342		-----		-----	1402	D240	39.88		1.25
343		39.71		0.06	1404		-----		-----
349		-----		-----	1412		-----		-----
371		-----		-----	1428		-----		-----
391		-----		-----	1455		-----		-----
398		-----		-----	1459		-----		-----
399		-----		-----	1483		-----		-----
440		-----		-----	1510	D240	40.036		2.35
444		-----		-----	1539		39.877		1.23
463	D4868	39.62		-0.57	1556	D4868	39.57		-0.92
511		-----		-----	1569		39.71		0.06
529		-----		-----	1575		-----		-----
541		-----		-----	1586	D240	39.720		0.13
557		-----		-----	1613		-----		-----
562		-----		-----	1622		-----		-----
575		-----		-----	1631		-----		-----
603		-----		-----	1643		39.62		-0.57
604		-----		-----	1720		-----		-----
605	D4868	39.62		-0.57	1724		-----		-----
608		-----		-----	1728	D4868	39.588		-0.79
631	D240	39.65		-0.36	1740		39.720		0.13
633		-----		-----	1776	D4868	39.64		-0.43
663		-----		-----	1792	D4868	39.60		-0.71
671		-----		-----	1807		-----		-----
750		-----		-----	1833		-----		-----
751		-----		-----	1849		-----		-----
753		-----		-----	1854	D240	39.57		-0.92
759		-----		-----	1906		-----		-----
781	D4868	39.58		-0.85	1956		39.78		0.55
785		-----		-----	1964		-----		-----
825		-----		-----	1967		-----		-----
850	GB/T 384	39.775		0.52	1995		-----		-----
851		-----		-----	6016		-----		-----
855	GB/T/384	39.749		0.34	6026	D4868	39.57		-0.92
858	D4868	39.75		0.34	6028		-----		-----
859	D4868	39.62		-0.57	6039		-----		-----
862	D240	39.830		0.90	6044		-----		-----
863		39.748		0.33	6057		-----		-----
864		-----		-----	6075		-----		-----
865	ISO 8217	39.63		-0.50	6092		-----		-----
866	ISO 8217	39.85		1.04	6142		-----		-----
870		-----		-----	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		-----		-----					
6201		-----		-----					
6238		-----		-----					
6252		-----		-----					

normality	suspect
n	49
outliers	0
mean (n)	39.7007
st.dev. (n)	0.12806
R(calc.)	0.3586
st.dev.(D240:17)	0.14286
R(D240:17)	0.40

lab 323 first reported 40.15
lab 1340 first reported 39.33





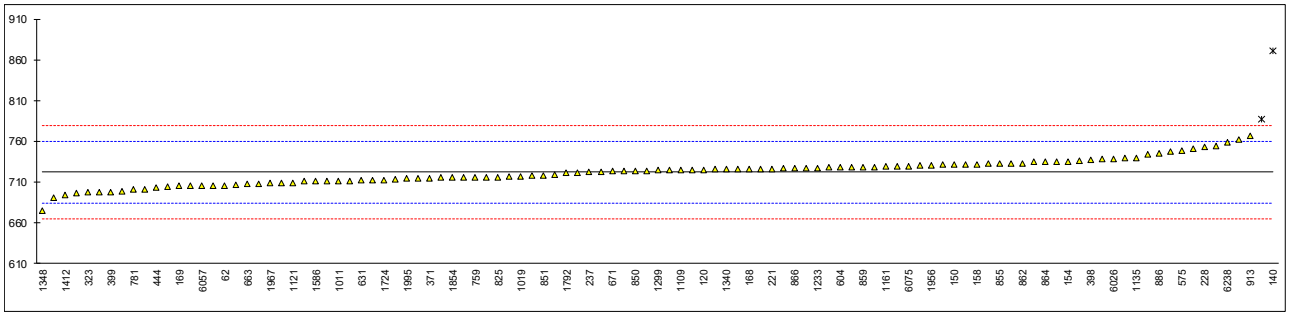
Determination of Kinematic Viscosity at 50°C on sample #19105; results in mm²/s

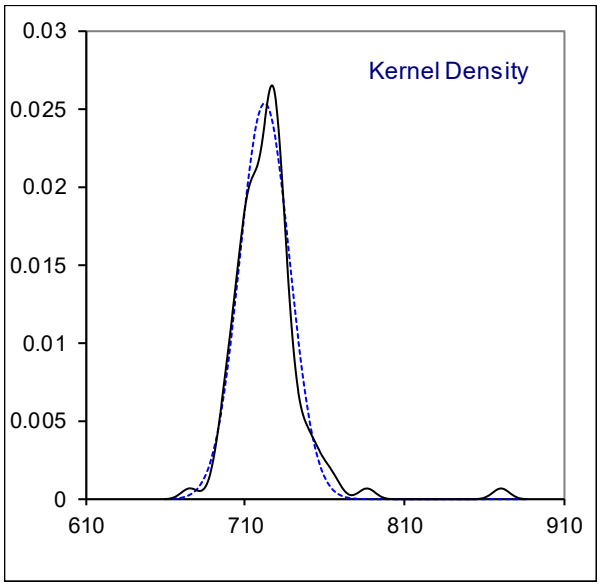
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D445	705.9		-0.85	875		-----		-----
90	D445	712.62		-0.50	886	D445	745.1		1.20
92	D445	725.786		0.19	912	ISO3104	746.9		1.29
120	D445	725.05		0.15	913	D445	766.7		2.33
140	ISO3104	871.16	R(0.01)	7.80	922	D445	728.0		0.30
150	D445	731.2		0.47	962		-----		-----
154	D445	735.0		0.67	963	ISO3104	723.9		0.09
158	D445	731.95		0.51	971	ISO3104	715.1		-0.37
159		-----		-----	974	D445	716.5		-0.30
168	D445	726.2		0.21	982		-----		-----
169	D445	704.9216		-0.90	1006	D445	730.1		0.41
171	ISO3104	732.9		0.56	1011	ISO3104	711.1		-0.58
175		-----		-----	1019	ISO3104	717.2		-0.26
194	D445	715.4		-0.36	1059		-----		-----
221	D445	726.3		0.22	1082	ISO3104	731.08		0.47
224		-----		-----	1109	D445	724.55		0.12
225		-----		-----	1121	ISO3104	709.2		-0.68
228	D445	753.20		1.62	1126		-----		-----
237	D445	722.0		-0.01	1135	ISO3104	739.9		0.93
238		-----		-----	1161	ISO3104	728.84		0.35
253	D445	715.6		-0.35	1167		-----		-----
254		-----		-----	1177		-----		-----
273		-----		-----	1212		-----		-----
309		-----		-----	1233	ISO3104	727.5		0.28
311	D445	711.5		-0.56	1254	ISO3104	723.42		0.06
313	D445	699.1		-1.21	1266	ISO3104	786.6	R(0.01)	3.37
323	ISO3104	697.8	C	-1.28	1269		-----		-----
331	D445 mod.	725.37		0.17	1275	IP71	734.90		0.67
333	ISO3104	714.8		-0.39	1299	D445	724.2		0.11
334	ISO3104	713.7		-0.44	1340	ISO3104	725.505		0.17
335		-----		-----	1347	D445	762.484		2.11
336	ISO3104	722.3		0.01	1348	D445	675		-2.47
337		-----		-----	1356	ISO3104	729.1		0.36
339		-----		-----	1385	D445	739.16		0.89
342		-----		-----	1402	IP71	737.9		0.82
343		-----		-----	1404	ISO3104	720.95		-0.07
349		-----		-----	1412	D445	694.6		-1.45
371	D445	714.83		-0.39	1428	ISO3104	726.8		0.24
391	ISO3104	708.1		-0.74	1455	ISO3104	696.9		-1.33
398	ISO3104	737.4		0.80	1459		-----		-----
399	D445	698.0		-1.27	1483	ISO3104	736.1		0.73
440		-----		-----	1510	IP71	727.15		0.26
444	D445	703.36		-0.99	1539	ISO3104	734.6		0.65
463	ISO3104	705.13		-0.89	1556	ISO3104	700.54		-1.13
511	D445	743.621		1.12	1569		-----		-----
529		-----		-----	1575		-----	W	-----
541	D445	727.74		0.29	1586	D445	711.0		-0.59
557		-----		-----	1613	D445	717.515		-0.24
562		-----		-----	1622		-----		-----
575	D445	748.7	C	1.39	1631		-----		-----
603	D445	724.8		0.14	1643	D445	709.0		-0.69
604	D445	727.88		0.30	1720		-----		-----
605	D445	711.1		-0.58	1724	ISO3104	712.77		-0.49
608		-----		-----	1728	D445	691.1		-1.63
631	D445	712.0		-0.53	1740	ISO3104	719.3		-0.15
633		-----		-----	1776		-----		-----
663	D445	707.58		-0.77	1792	ISO3104	720.92		-0.07
671	D445	723.15		0.05	1807		-----		-----
750		-----		-----	1833	D445	724.2		0.11
751	ISO3104	705.65		-0.87	1849		-----		-----
753	ISO3104	698.00		-1.27	1854	ISO3104	715.3		-0.36
759	ISO3104	715.5		-0.35	1906		-----		-----
781	ISO3104	700.5		-1.14	1956	ISO3104	730.3		0.42
785		-----		-----	1964		-----		-----
825	ISO3104	715.9		-0.33	1967	D445	708.6352		-0.71
850	ISO3104	723.59		0.07	1995	D7042	714.5		-0.40
851	ISO3104	717.6		-0.24	6016		-----		-----
855	ISO3104	732.3		0.53	6026	D445	738.03		0.83
858	D445	726.2		0.21	6028	ISO3104	754.0		1.67
859	D445	728.1		0.31	6039		-----		-----
862	D445	733.06		0.57	6044	ISO3104	710.82		-0.60
863	D445	732.25		0.53	6057	ISO3104	705.4		-0.88
864	D445	734.9		0.67	6075	ISO3104	729.20		0.37
865	ISO3104	728.5		0.33	6092	D445	703.8		-0.96
866	D445	726.92		0.25	6142		-----		-----
870	D445	731.22		0.47	6143	D445	750.5		1.48

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		-----		-----					
6201	D445	706.37		-0.83					
6238	ISO3104	758.603		1.91					
6252		-----		-----					

normality	OK
n	107
outliers	2
mean (n)	722.1908
st.dev. (n)	15.73482
R(calc.)	44.0575
st.dev.(ISO3104:94)	19.08647
R(ISO3104:94)	53.4421

Lab 323 first reported 988.6
Lab 575 first reported 790.2
Lab 1575 test result withdrawn, first reported 775.15





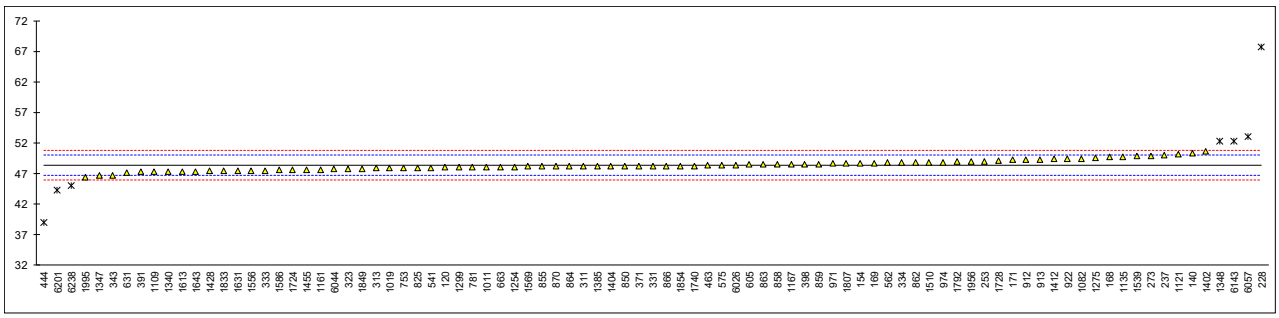
Determination of Kinematic Viscosity at 100°C on sample #19105; results in mm^2/s

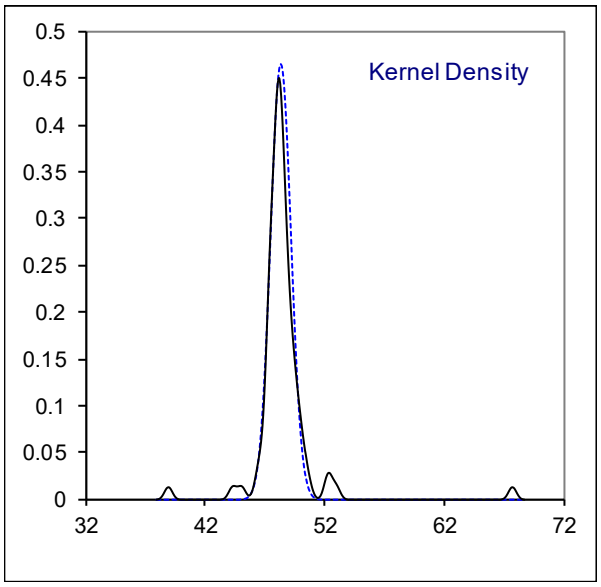
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	875		-----		-----
90		-----		-----	886		-----		-----
92		-----		-----	912	ISO3104	49.27		1.14
120	D445	48.00		-0.44	913	D445	49.30	C	1.17
140	ISO3104	50.34		2.47	922	D445	49.36		1.25
150		-----		-----	962		-----		-----
154	D445	48.68		0.40	963		-----		-----
158		-----		-----	971	ISO3104	48.58		0.28
159		-----		-----	974	D445	48.86		0.63
168	D445	49.68		1.65	982		-----		-----
169	D445	48.7262		0.46	1006		-----		-----
171	ISO3104	49.19		1.04	1011	ISO3104	48.06		-0.37
175		-----		-----	1019	ISO3104	47.84		-0.64
194		-----		-----	1059		-----		-----
221		-----		-----	1082	ISO3104	49.372		1.26
224		-----		-----	1109	D445	47.292		-1.32
225		-----		-----	1121	ISO3104	50.2		2.29
228	D445	67.754	C,R(0.01)	24.10	1126		-----		-----
237	D445	50.0468		2.10	1135	ISO3104	49.75		1.73
238		-----		-----	1161	ISO3104	47.66		-0.86
253	D445	48.97	C	0.76	1167	ISO3104	48.51		0.19
254		-----		-----	1177		-----		-----
273	D445	49.83		1.83	1212		-----		-----
309		-----		-----	1233		-----		-----
311	D445	48.19		-0.20	1254	ISO3104	48.107		-0.31
313	IP71	47.84		-0.64	1266		-----		-----
323	ISO3104	47.71		-0.80	1269		-----		-----
331	D445 mod.	48.25		-0.13	1275	IP71	49.486		1.41
333	ISO3104	47.50		-1.06	1299	D445	48.01		-0.43
334	ISO3104	48.76		0.50	1340	ISO3104	47.340		-1.26
335		-----		-----	1347	D445	46.633		-2.14
336		-----		-----	1348	D445	52.3	R(0.01)	4.90
337		-----		-----	1356		-----		-----
339		-----		-----	1385	D445	48.2		-0.19
342		-----		-----	1402	IP71	50.69		2.90
343	D445	46.71		-2.04	1404	ISO3104	48.20		-0.19
349		-----		-----	1412	D445	49.35		1.24
371	D445	48.225		-0.16	1428	ISO3104	47.39		-1.20
391	ISO3104	47.27		-1.35	1455	ISO3104	47.65		-0.88
398	ISO3104	48.53		0.22	1459		-----		-----
399		-----		-----	1483		-----		-----
440		-----		-----	1510	IP71	48.847		0.61
444	D445	38.937	R(0.01)	-11.70	1539	ISO3104	49.82		1.82
463	ISO3104	48.325		-0.04	1556	ISO3104	47.449		-1.13
511		-----		-----	1569	D445	48.14		-0.27
529		-----		-----	1575		-----		-----
541	D445	47.967		-0.48	1586	D445	47.57		-0.97
557		-----		-----	1613	D445	47.348		-1.25
562	D445	48.76		0.50	1622		-----		-----
575	D445	48.35	C	-0.01	1631	ISO3104	47.41		-1.17
603		-----		-----	1643	D445	47.36		-1.24
604		-----		-----	1720		-----		-----
605	D445	48.48		0.16	1724	ISO3104	47.595		-0.94
608		-----		-----	1728	D445	49.059		0.87
631	D445	47.10	C	-1.56	1740	ISO3104	48.26		-0.12
633		-----		-----	1776		-----		-----
663	D445	48.098		-0.32	1792	ISO3104	48.919		0.70
671		-----		-----	1807	ISO3104	48.64		0.35
750		-----		-----	1833	D445	47.39		-1.20
751		-----		-----	1849	ISO3104	47.82		-0.66
753	ISO3104	47.864		-0.61	1854	ISO3104	48.25		-0.13
759		-----		-----	1906		-----		-----
781	ISO3104	48.06		-0.37	1956	ISO3104	48.94		0.73
785		-----		-----	1964		-----		-----
825	ISO3104	47.90		-0.56	1967		-----		-----
850	ISO3104	48.202		-0.19	1995	D7042	46.378		-2.46
851		-----		-----	6016		-----		-----
855	ISO3104	48.15		-0.25	6026	D445	48.4256		0.09
858	D445	48.49		0.17	6028		-----		-----
859	D445	48.56		0.25	6039		-----		-----
862	D445	48.826		0.59	6044	ISO3104	47.70		-0.81
863	D445	48.49		0.17	6057	ISO3104	53.00	R(0.01)	5.77
864	D445	48.18		-0.22	6075		-----		-----
865		-----		-----	6092		-----		-----
866	D445	48.250		-0.13	6142		-----		-----
870	D445	48.156		-0.25	6143	D445	52.35	R(0.01)	4.96

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		-----		-----					
6201	D445	44.32	R(0.01)	-5.01					
6238	ISO3104	45.075	R(0.05)	-4.07					
6252		-----		-----					

normality	OK
n	82
outliers	7
mean (n)	48.3547
st.dev. (n)	0.85804
R(calc.)	2.4025
st.dev.(ISO3104:94)	0.80507
R(ISO3104:94)	2.2542

Lab 228 first reported 51.38
Lab 253 first reported 52.82
Lab 575 first reported 51.56
Lab 631 first reported 51.33
Lab 913 first reported 52.47



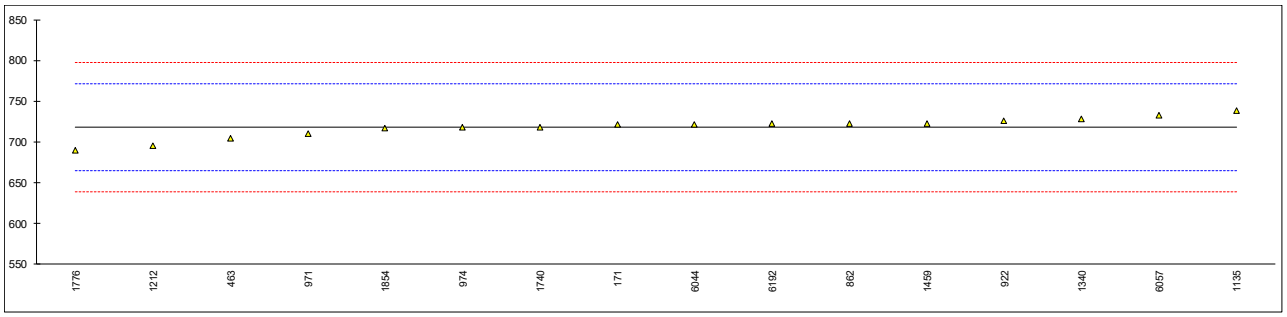


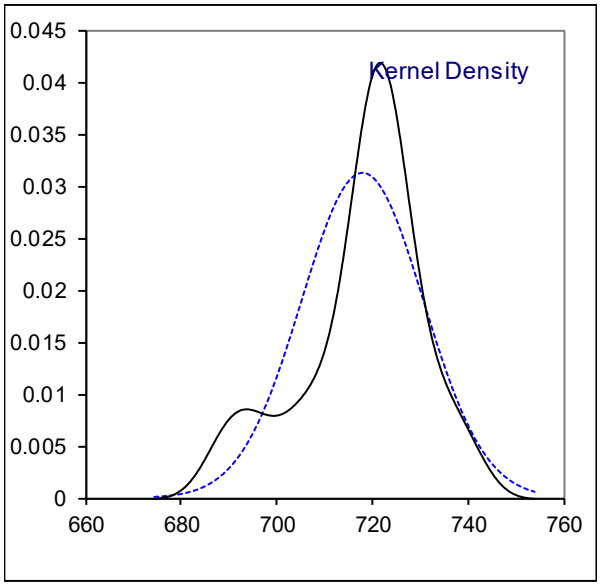
Determination of Viscosity Stabinger at 50°C on sample #19105; results in mm^2/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	875		-----		-----
90		-----		-----	886		-----		-----
92		-----		-----	912		-----		-----
120		-----		-----	913		-----		-----
140		-----		-----	922	D7042	725.5		0.28
150		-----		-----	962		-----		-----
154		-----		-----	963		-----		-----
158		-----		-----	971	D7042	710.1		-0.30
159		-----		-----	974	D7042	717.4		-0.02
168		-----		-----	982		-----		-----
169		-----		-----	1006		-----		-----
171	D7042	721.5		0.13	1011		-----		-----
175		-----		-----	1019		-----		-----
194		-----		-----	1059		-----		-----
221		-----		-----	1082		-----		-----
224		-----		-----	1109		-----		-----
225		-----		-----	1121		-----		-----
228		-----		-----	1126		-----		-----
237		-----		-----	1135	D7042	738.9		0.79
238		-----		-----	1161		-----		-----
253		-----		-----	1167		-----		-----
254		-----		-----	1177		-----		-----
273		-----		-----	1212	D7042	695.7		-0.85
309		-----		-----	1233		-----		-----
311		-----		-----	1254		-----		-----
313		-----		-----	1266		-----		-----
323		-----		-----	1269		-----		-----
331		-----		-----	1275		-----		-----
333		-----		-----	1299		-----		-----
334		-----		-----	1340	D7042	727.70		0.37
335		-----		-----	1347		-----		-----
336		-----		-----	1348		-----		-----
337		-----		-----	1356		-----		-----
339		-----		-----	1385		-----		-----
342		-----		-----	1402		-----		-----
343		-----		-----	1404		-----		-----
349		-----		-----	1412		-----		-----
371		-----		-----	1428		-----		-----
391		-----		-----	1455		-----		-----
398		-----		-----	1459	D7042	722.91		0.19
399		-----		-----	1483		-----		-----
440		-----		-----	1510		-----		-----
444		-----		-----	1539		-----		-----
463	D7042	704.52		-0.51	1556		-----		-----
511		-----		-----	1569		-----		-----
529		-----		-----	1575		-----		-----
541		-----		-----	1586		-----		-----
557		-----		-----	1613		-----		-----
562		-----		-----	1622		-----		-----
575		-----		-----	1631		-----		-----
603		-----		-----	1643		-----		-----
604		-----		-----	1720		-----		-----
605		-----		-----	1724		-----		-----
608		-----		-----	1728		-----		-----
631		-----		-----	1740	D7042	718.1		0.00
633		-----		-----	1776	D7042	689.59		-1.08
663		-----		-----	1792		-----		-----
671		-----		-----	1807		-----		-----
750		-----		-----	1833		-----		-----
751		-----		-----	1849		-----		-----
753		-----		-----	1854	D7042	716.9		-0.04
759		-----		-----	1906		-----		-----
781		-----		-----	1956		-----		-----
785		-----		-----	1964		-----		-----
825		-----		-----	1967		-----		-----
850		-----		-----	1995		-----		-----
851		-----		-----	6016		-----		-----
855		-----		-----	6026		-----		-----
858		-----		-----	6028		-----		-----
859		-----		-----	6039		-----		-----
862	D7042	722.83		0.18	6044	D7042	721.75		0.14
863		-----		-----	6057	D7042	732.5		0.55
864		-----		-----	6075		-----		-----
865		-----		-----	6092		-----		-----
866		-----		-----	6142		-----		-----
870		-----		-----	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192	D7042	722.5		0.17					
6201		-----		-----					
6238		-----		-----					
6252		-----		-----					

normality	OK
n	16
outliers	0
mean (n)	718.0250
st.dev. (n)	12.75802
R(calc.)	35.7225
st.dev.(D7042:16e3)	26.38742
R(D7042:16e3)	73.8848



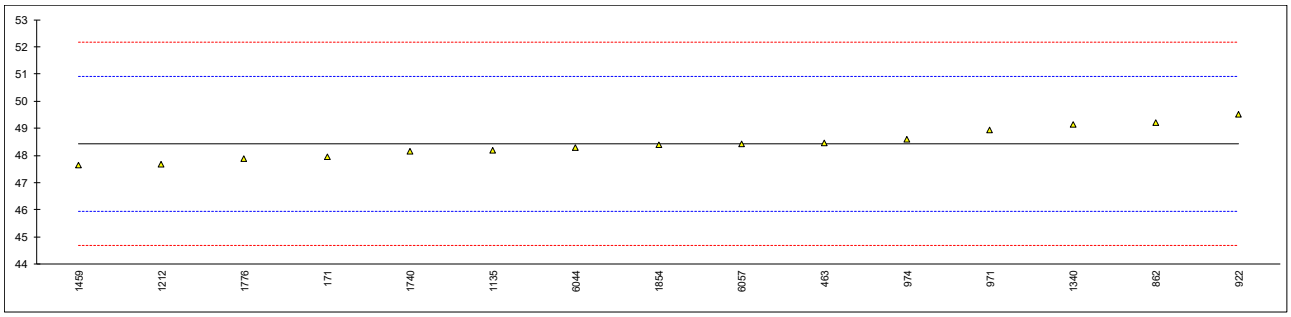


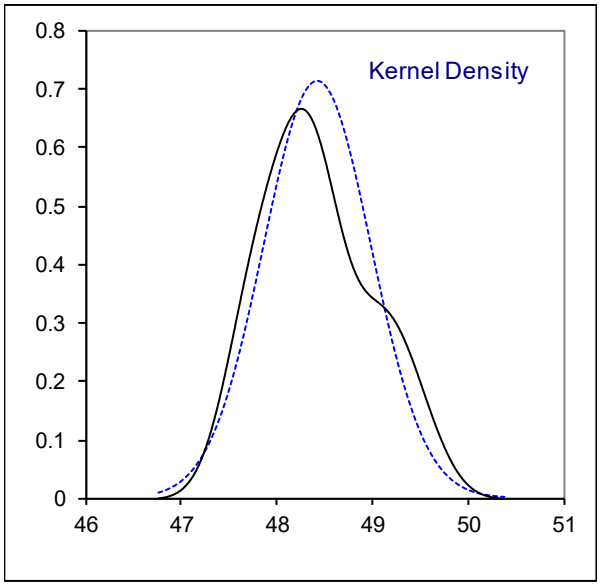
Determination of Viscosity Stabinger at 100°C on sample #19105; results in mm²/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	875		-----		-----
90		-----		-----	886		-----		-----
92		-----		-----	912		-----		-----
120		-----		-----	913		-----		-----
140		-----		-----	922	D7042	49.50		0.86
150		-----		-----	962		-----		-----
154		-----		-----	963		-----		-----
158		-----		-----	971	D7042	48.94		0.41
159		-----		-----	974	D7042	48.58		0.12
168		-----		-----	982		-----		-----
169		-----		-----	1006		-----		-----
171	D7042	47.96		-0.38	1011		-----		-----
175		-----		-----	1019		-----		-----
194		-----		-----	1059		-----		-----
221		-----		-----	1082		-----		-----
224		-----		-----	1109		-----		-----
225		-----		-----	1121		-----		-----
228		-----		-----	1126		-----		-----
237		-----		-----	1135	D7042	48.180		-0.20
238		-----		-----	1161		-----		-----
253		-----		-----	1167		-----		-----
254		-----		-----	1177		-----		-----
273		-----		-----	1212	D7042	47.69		-0.59
309		-----		-----	1233		-----		-----
311		-----		-----	1254		-----		-----
313		-----		-----	1266		-----		-----
323		-----		-----	1269		-----		-----
331		-----		-----	1275		-----		-----
333		-----		-----	1299		-----		-----
334		-----		-----	1340	D7042	49.135		0.57
335		-----		-----	1347		-----		-----
336		-----		-----	1348		-----		-----
337		-----		-----	1356		-----		-----
339		-----		-----	1385		-----		-----
342		-----		-----	1402		-----		-----
343		-----		-----	1404		-----		-----
349		-----		-----	1412		-----		-----
371		-----		-----	1428		-----		-----
391		-----		-----	1455		-----		-----
398		-----		-----	1459	D7042	47.65		-0.63
399		-----		-----	1483		-----		-----
440		-----		-----	1510		-----		-----
444		-----		-----	1539		-----		-----
463	D7042	48.465		0.03	1556		-----		-----
511		-----		-----	1569		-----		-----
529		-----		-----	1575		-----		-----
541		-----		-----	1586		-----		-----
557		-----		-----	1613		-----		-----
562		-----		-----	1622		-----		-----
575		-----		-----	1631		-----		-----
603		-----		-----	1643		-----		-----
604		-----		-----	1720		-----		-----
605		-----		-----	1724		-----		-----
608		-----		-----	1728		-----		-----
631		-----		-----	1740	D7042	48.14		-0.23
633		-----		-----	1776	D7042	47.872		-0.45
663		-----		-----	1792		-----		-----
671		-----		-----	1807		-----		-----
750		-----		-----	1833		-----		-----
751		-----		-----	1849		-----		-----
753		-----		-----	1854	D7042	48.38		-0.04
759		-----		-----	1906		-----		-----
781		-----		-----	1956		-----		-----
785		-----		-----	1964		-----		-----
825		-----		-----	1967		-----		-----
850		-----		-----	1995		-----		-----
851		-----		-----	6016		-----		-----
855		-----		-----	6026		-----		-----
858		-----		-----	6028		-----		-----
859		-----		-----	6039		-----		-----
862	D7042	49.196		0.62	6044	D7042	48.30		-0.10
863		-----		-----	6057	D7042	48.42		-0.01
864		-----		-----	6075		-----		-----
865		-----		-----	6092		-----		-----
866		-----		-----	6142		-----		-----
870		-----		-----	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		-----		-----					
6201		-----		-----					
6238		-----		-----					
6252		-----		-----					

normality	OK
n	15
outliers	0
mean (n)	48.4272
st.dev. (n)	0.55849
R(calc.)	1.5638
st.dev.(D7042:16e3)	1.24285
R(D7042:16e3)	3.4800





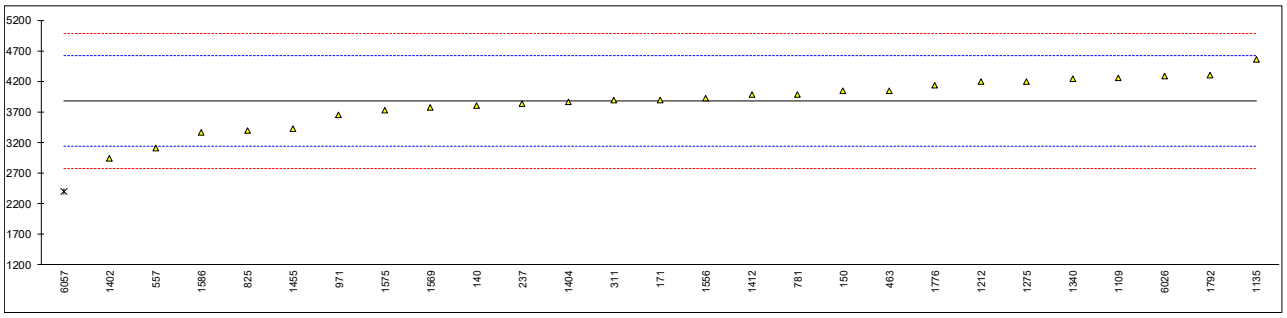
Determination of Nitrogen on sample #19105; results in mg/kg

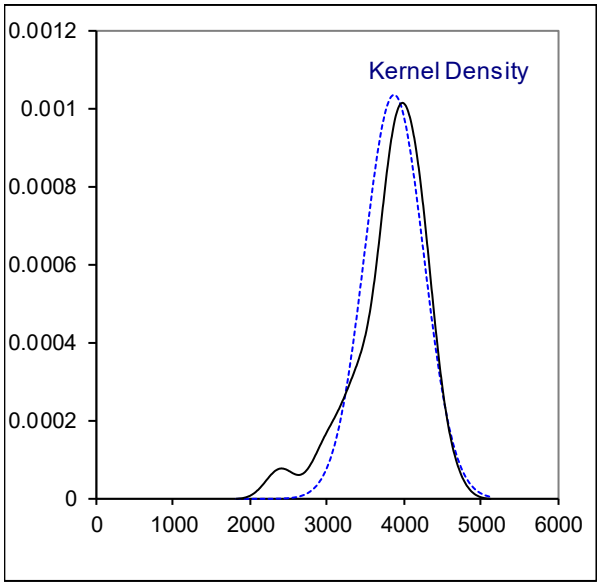
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	875		-----		-----
90		-----		-----	886		-----		-----
92		-----		-----	912		-----		-----
120		-----		-----	913		-----		-----
140	D5762 Gravimetric	3800		-0.21	922		-----		-----
150	D5762 Volumetric	4045		0.45	962		-----		-----
154		-----		-----	963		-----		-----
158		-----		-----	971	D5762 Gravimetric	3646		-0.63
159		-----		-----	974		-----		-----
168		-----		-----	982		-----		-----
169		-----		-----	1006		-----		-----
171	D5762 Gravimetric	3900		0.06	1011		-----		-----
175		-----		-----	1019		-----		-----
194		-----		-----	1059		-----		-----
221		-----		-----	1082		-----		-----
224		-----		-----	1109	D4629	4248		1.00
225		-----		-----	1121		-----		-----
228		-----		-----	1126		-----		-----
237	D4629	3838		-0.11	1135	D5762 Volumetric	4557.7		1.84
238		-----		-----	1161		-----		-----
253		-----		-----	1167		-----		-----
254		-----		-----	1177		-----		-----
273		-----		-----	1212	D5762 Gravimetric	4198.5		0.87
309		-----		-----	1233		-----		-----
311	D5762 Volumetric	3900		0.06	1254		-----		-----
313		-----		-----	1266		-----		-----
323		-----		-----	1269		-----		-----
331		-----		-----	1275	IP379	4199.11		0.87
333		-----		-----	1299		-----		-----
334		-----		-----	1340	D5762 Gravimetric	4241.0		0.98
335		-----		-----	1347		-----		-----
336		-----		-----	1348		-----		-----
337		-----		-----	1356		-----		-----
339		-----		-----	1385		-----		-----
342		-----		-----	1402	D5762 Volumetric	2941.30		-2.54
343		-----		-----	1404	D5762 Gravimetric	3862		-0.04
349		-----		-----	1412	D5762 Gravimetric	3988		0.30
371		-----		-----	1428		-----		-----
391		-----		-----	1455	D5762 Gravimetric	3417		-1.25
398		-----		-----	1459		-----		-----
399		-----		-----	1483		-----		-----
440		-----		-----	1510		-----		-----
444		-----		-----	1539		-----		-----
463	D5762 Gravimetric	4050		0.47	1556	D5762 Volumetric	3926.9		0.13
511		-----		-----	1569	D4629	3766		-0.30
529		-----		-----	1575	D3228	3729		-0.40
541		-----		-----	1586	D5762 Gravimetric	3357		-1.41
557	D3228 Volumetric	3101.30		-2.11	1613		-----		-----
562		-----		-----	1622		-----		-----
575		-----		-----	1631		-----		-----
603		-----		-----	1643		-----		-----
604		-----		-----	1720		-----		-----
605		-----		-----	1724		-----		-----
608		-----		-----	1728		-----		-----
631		-----		-----	1740		-----		-----
633		-----		-----	1776	D5762 Gravimetric	4142		0.72
663		-----		-----	1792	D3228	4305		1.16
671		-----		-----	1807		-----		-----
750		-----		-----	1833		-----		-----
751		-----		-----	1849		-----		-----
753		-----		-----	1854		-----		-----
759		-----		-----	1906		-----		-----
781	D3228	3991		0.31	1956		-----		-----
785		-----		-----	1964		-----		-----
825	D5762 Gravimetric	3400	C	-1.30	1967		-----		-----
850		-----		-----	1995		-----		-----
851		-----		-----	6016		-----		-----
855		-----		-----	6026	D5762 Gravimetric	4281.49		1.09
858		-----		-----	6028		-----		-----
859		-----		-----	6039		-----		-----
862		-----		-----	6044		-----		-----
863		-----		-----	6057	D5762 Gravimetric	2400	R(0.05)	-4.01
864		-----		-----	6075		-----		-----
865		-----		-----	6092		-----		-----
866		-----		-----	6142		-----		-----
870		-----		-----	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		-----		-----					
6201		-----		-----					
6238		-----		-----					
6252		-----		-----					

normality	OK
n	26
outliers	1
mean (n)	3878.13
st.dev. (n)	386.091
R(calc.)	1081.05
st.dev.(D5762:18a)	368.422
R(D5762:18a)	1031.58

Lab 825 first reported 0.34 µg/kg





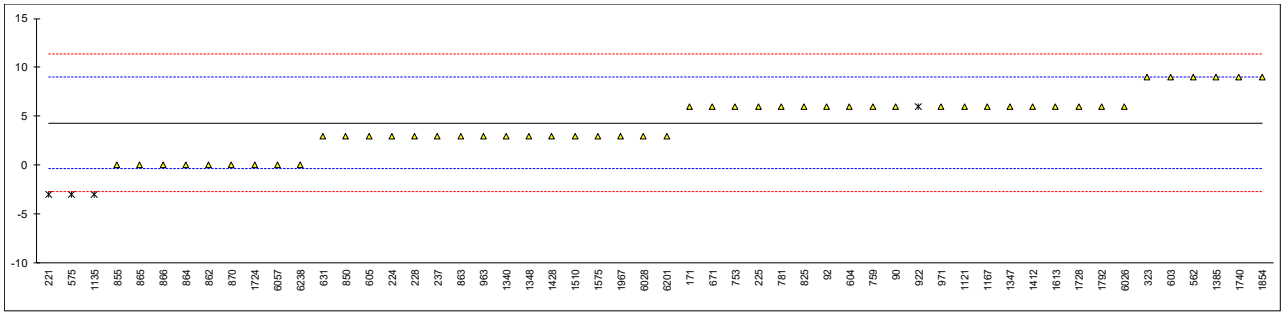
Determination of Pour Point Lower on sample #19105; results in °C

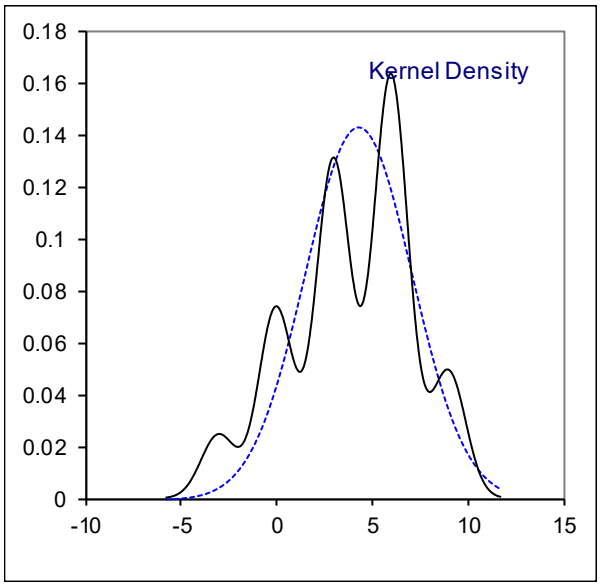
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	875		-----		-----
90	D97	6		0.71	886		-----		-----
92	D97	6		0.71	912		-----		-----
120		-----		-----	913		-----		-----
140		-----		-----	922	D97	6	ex	0.71
150		-----		-----	962		-----		-----
154		-----		-----	963	ISO3016	3		-0.56
158		-----		-----	971	ISO3016	6		0.71
159		-----		-----	974		-----		-----
168		-----		-----	982		-----		-----
169		-----		-----	1006		-----		-----
171	ISO3016	6		0.71	1011		-----		-----
175		-----		-----	1019		-----		-----
194		-----		-----	1059		-----		-----
221	D97	-3	R(0.01)	-3.11	1082		-----		-----
224	D97	3.0		-0.56	1109		-----		-----
225	D97	6		0.71	1121	ISO3016	6		0.71
228	D97	3		-0.56	1126		-----		-----
237	D97	3		-0.56	1135	ISO3016	-3	R(0.01)	-3.11
238		-----		-----	1161		-----		-----
253		-----		-----	1167	ISO3016	6		0.71
254		-----		-----	1177		-----		-----
273		-----		-----	1212		-----		-----
309		-----		-----	1233		-----		-----
311		-----		-----	1254		-----		-----
313		-----		-----	1266		-----		-----
323	ISO3016	9		1.99	1269		-----		-----
331		-----		-----	1275		-----		-----
333		-----		-----	1299		-----		-----
334		-----		-----	1340	D97	3		-0.56
335		-----		-----	1347	D97	6		0.71
336		-----		-----	1348	D97	3		-0.56
337		-----		-----	1356		-----		-----
339		-----		-----	1385	D97	9		1.99
342		-----		-----	1402		-----		-----
343		-----		-----	1404		-----		-----
349		-----		-----	1412	D97	6		0.71
371		-----		-----	1428	ISO3016	3		-0.56
391		-----		-----	1455		-----		-----
398		-----		-----	1459		-----		-----
399		-----		-----	1483		-----		-----
440		-----		-----	1510	D97	3		-0.56
444		-----		-----	1539		-----		-----
463		-----		-----	1556		-----		-----
511		-----		-----	1569		-----		-----
529		-----		-----	1575	D97	3		-0.56
541		-----		-----	1586		-----		-----
557		-----		-----	1613	D97	6		0.71
562	D97	9		1.99	1622		-----		-----
575	D97	-3	R(0.01)	-3.11	1631		-----		-----
603	D97	9		1.99	1643		-----		-----
604	D97	6		0.71	1720		-----		-----
605	D97	3		-0.56	1724	ISO3016	0		-1.84
608		-----		-----	1728	D97	6		0.71
631	D97	3		-0.56	1740	ISO3016	9		1.99
633		-----		-----	1776		-----		-----
663		-----		-----	1792	ISO3016	6		0.71
671	D97	6.0		0.71	1807		-----		-----
750		-----		-----	1833		-----		-----
751		-----		-----	1849		-----		-----
753	ISO3016	6		0.71	1854		9		1.99
759	ISO3016	6		0.71	1906		-----		-----
781	ISO3016	6		0.71	1956		-----		-----
785		-----		-----	1964		-----		-----
825	ISO3016	6		0.71	1967	D97	3		-0.56
850	ISO3016	3		-0.56	1995		-----		-----
851		-----		-----	6016		-----		-----
855	ISO3016	0		-1.84	6026	D97	6		0.71
858		-----		-----	6028	D97	3		-0.56
859		-----		-----	6039		-----		-----
862	ISO3016	0		-1.84	6044		-----		-----
863	D97	3		-0.56	6057	ISO3016	0		-1.84
864	D97	0		-1.84	6075		-----		-----
865	ISO3016	0		-1.84	6092		-----		-----
866	D97	0		-1.84	6142		-----		-----
870	D97	0		-1.84	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		-----		-----					
6201	ISO3016	3		-0.56					
6238	ISO3016	0		-1.84					
6252		-----		-----					

normality	OK
n	50
outliers	3+1ex
mean (n)	4.32
st.dev. (n)	2.788
R(calc.)	7.81
st.dev.(ISO3016:94)	2.354
R(ISO3016:94)	6.59

Lab 922 test result excluded, PP lower > PP upper which is in principle not possible





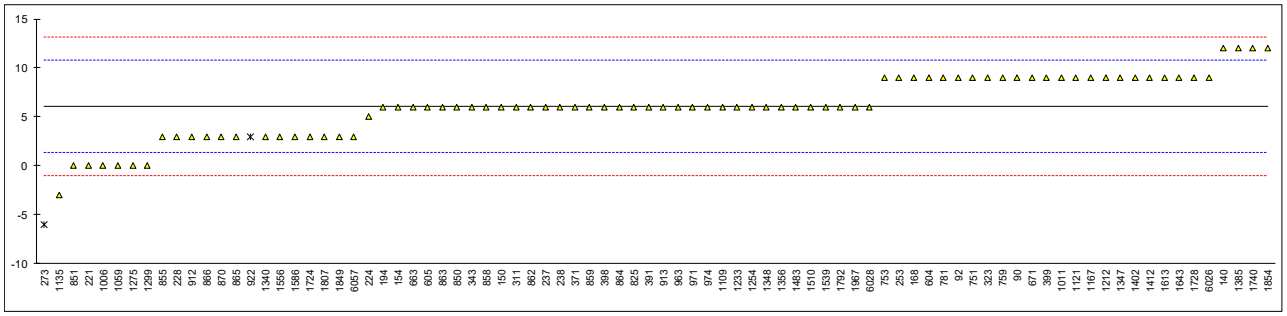
Determination of Pour Point Upper on sample #19105; results in °C

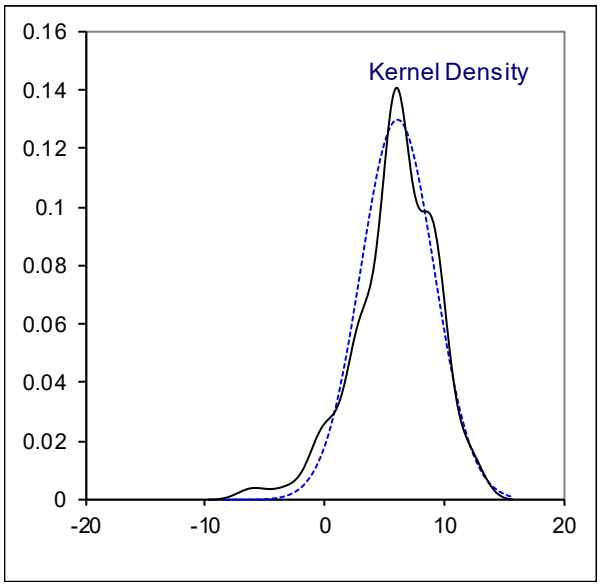
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	875		-----		-----
90	D97	9		1.23	886		-----		-----
92	D97	9		1.23	912	D97	3		-1.32
120		-----		-----	913	D97	6		-0.04
140	ISO3016	12		2.51	922	D97	3	ex	-1.32
150	D97	6		-0.04	962		-----		-----
154	D97	6.0		-0.04	963	ISO3016	6		-0.04
158		-----		-----	971	ISO3016	6		-0.04
159		-----		-----	974	D97	6		-0.04
168	D97	9	C	1.23	982		-----		-----
169		-----		-----	1006	D97	0		-2.59
171		-----		-----	1011	D97	9		1.23
175		-----		-----	1019		-----		-----
194	D97	6		-0.04	1059	ISO3016	0		-2.59
221	D97	0		-2.59	1082		-----		-----
224	D97	5.0		-0.47	1109	D97	6		-0.04
225		-----		-----	1121	ISO3016	9		1.23
228	D97	3		-1.32	1126		-----		-----
237	D97	6		-0.04	1135	ISO3016	-3		-3.87
238	D97	6		-0.04	1161		-----		-----
253	D97	9		1.23	1167	ISO3016	9		1.23
254		-----		-----	1177		-----		-----
273	D97	-6	R(0.05)	-5.14	1212	ISO3016	9		1.23
309		-----		-----	1233	ISO3016	6		-0.04
311	ISO3016	6		-0.04	1254	ISO3016	6		-0.04
313		-----		-----	1266		-----		-----
323	ISO3016	9		1.23	1269		-----		-----
331		-----		-----	1275	IP15	0		-2.59
333		-----		-----	1299	D97	0		-2.59
334		-----		-----	1340	D97	3		-1.32
335		-----		-----	1347	D97	9		1.23
336		-----		-----	1348	D97	6		-0.04
337		-----		-----	1356	ISO3016	6		-0.04
339		-----		-----	1385	D97	12		2.51
342		-----		-----	1402	D97	9		1.23
343	ISO3016	6		-0.04	1404		-----		-----
349		-----		-----	1412	D97	9		1.23
371	D97	6		-0.04	1428		-----		-----
391	ISO3016	6		-0.04	1455		-----		-----
398	ISO3016	6		-0.04	1459		-----		-----
399	D97	9		1.23	1483	ISO3016:94	6		-0.04
440		-----		-----	1510	D97	6		-0.04
444		-----		-----	1539	ISO3016	6		-0.04
463		-----		-----	1556	ISO3016	3.0		-1.32
511		-----		-----	1569		-----		-----
529		-----		-----	1575		-----		-----
541		-----		-----	1586	D97	3		-1.32
557		-----		-----	1613	D97	9		1.23
562		-----		-----	1622		-----		-----
575		-----		-----	1631		-----		-----
603		-----		-----	1643	D97	9		1.23
604	D97	9		1.23	1720		-----		-----
605	D97	6		-0.04	1724	ISO3016	3		-1.32
608		-----		-----	1728	D97	9		1.23
631		-----		-----	1740	ISO3016	12		2.51
633		-----		-----	1776		-----		-----
663	D97	6		-0.04	1792	ISO3016	6		-0.04
671	D97	9.0		1.23	1807	D97	3		-1.32
750		-----		-----	1833		-----		-----
751	ISO3016	9		1.23	1849	ISO3016	3		-1.32
753	ISO3016	9		1.23	1854	ISO3016	12		2.51
759	ISO3016	9		1.23	1906		-----		-----
781	ISO3016	9		1.23	1956		-----		-----
785		-----		-----	1964		-----		-----
825	ISO3016	6		-0.04	1967	D97	6		-0.04
850	ISO3016	6		-0.04	1995		-----		-----
851	ISO3016	0		-2.59	6016		-----		-----
855	D97	3		-1.32	6026	D97	9		1.23
858	D97	6		-0.04	6028	D97	6		-0.04
859	D97	6		-0.04	6039		-----		-----
862	ISO3016	6		-0.04	6044		-----		-----
863	D97	6		-0.04	6057	ISO3016	3		-1.32
864	D97	6		-0.04	6075		-----		-----
865	ISO3016	3		-1.32	6092		-----		-----
866	D97	3		-1.32	6142		-----		-----
870	D97	3		-1.32	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		-----		-----					
6201		-----		-----					
6238		-----		-----					
6252		-----		-----					

normality	OK
n	82
outliers	1+1ex
mean (n)	6.10
st.dev. (n)	3.074
R(calc.)	8.61
st.dev.(ISO3016:94)	2.354
R(ISO3016:94)	6.59

Lab 168 first reported 18
Lab 922 test result excluded, PP lower > PP upper which is in principle not possible





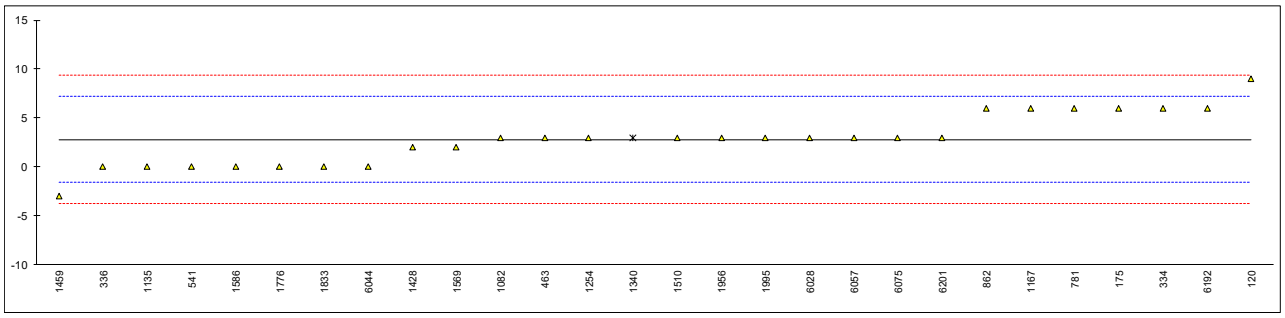
Determination of Pour Point Automated, 3°C interval on sample #19105; results in °C

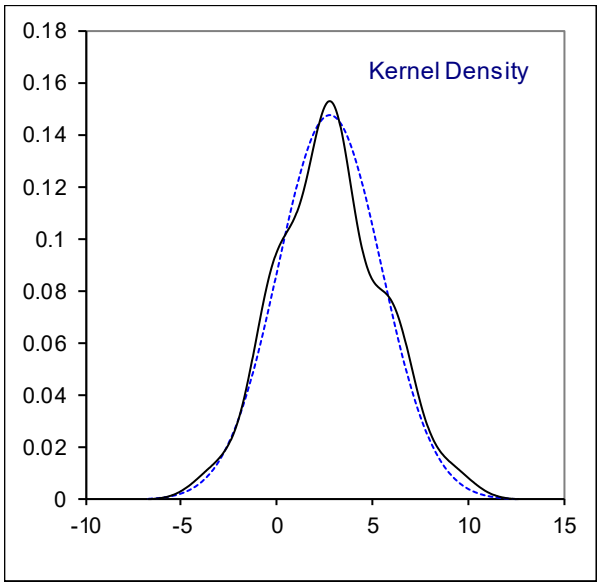
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	875		-----		-----
90		-----		-----	886		-----		-----
92		-----		-----	912		-----		-----
120	D5950	9		2.84	913		-----		-----
140		-----		-----	922		-----		-----
150		-----		-----	962		-----		-----
154		-----		-----	963		-----		-----
158		-----		-----	971		-----		-----
159		-----		-----	974		-----		-----
168		-----		-----	982		-----		-----
169		-----		-----	1006		-----		-----
171		-----		-----	1011		-----		-----
175	D5950	6		1.46	1019		-----		-----
194		-----		-----	1059		-----		-----
221		-----		-----	1082	D5950	3.0		0.09
224		-----		-----	1109		-----		-----
225		-----		-----	1121		-----		-----
228		-----		-----	1126		-----		-----
237		-----		-----	1135	D5950	0		-1.29
238		-----		-----	1161		-----		-----
253		-----		-----	1167	D6749	6		1.46
254		-----		-----	1177		-----		-----
273		-----		-----	1212		-----		-----
309		-----		-----	1233		-----		-----
311		-----		-----	1254	D5950	3		0.09
313		-----		-----	1266		-----		-----
323		-----		-----	1269		-----		-----
331		-----		-----	1275		-----		-----
333		-----		-----	1299		-----		-----
334	D5950	6		1.46	1340	ISO3016	3	ex	0.09
335		-----		-----	1347		-----		-----
336	D5950	0		-1.29	1348		-----		-----
337		-----		-----	1356		-----		-----
339		-----		-----	1385		-----		-----
342		-----		-----	1402		-----		-----
343		-----		-----	1404		-----		-----
349		-----		-----	1412		-----		-----
371		-----		-----	1428	D6749	2		-0.37
391		-----		-----	1455		-----		-----
398		-----		-----	1459	in house	-3.0		-2.67
399		-----		-----	1483		-----		-----
440		-----		-----	1510	D5950	3		0.09
444		-----		-----	1539		-----		-----
463	D6892	3		0.09	1556		-----		-----
511		-----		-----	1569	D5950	2		-0.37
529		-----		-----	1575		-----		-----
541	D5950	0		-1.29	1586	D5950	0		-1.29
557		-----		-----	1613		-----		-----
562		-----		-----	1622		-----		-----
575		-----		-----	1631		-----		-----
603		-----		-----	1643		-----		-----
604		-----		-----	1720		-----		-----
605		-----		-----	1724		-----		-----
608		-----		-----	1728		-----		-----
631		-----		-----	1740		-----		-----
633		-----		-----	1776	D5950	0		-1.29
663		-----		-----	1792		-----		-----
671		-----		-----	1807		-----		-----
750		-----		-----	1833	D5950	0		-1.29
751		-----		-----	1849		-----		-----
753		-----		-----	1854		-----		-----
759		-----		-----	1906		-----		-----
781	D5950	6		1.46	1956		3		0.09
785		-----		-----	1964		-----		-----
825		-----		-----	1967		-----		-----
850		-----		-----	1995	D5950	3		0.09
851		-----		-----	6016		-----		-----
855		-----		-----	6026		-----		-----
858		-----		-----	6028	D5950	3		0.09
859		-----		-----	6039		-----		-----
862	D5950	6		1.46	6044	D6749	0		-1.29
863		-----		-----	6057	D5950	3		0.09
864		-----		-----	6075		3		0.09
865		-----		-----	6092		-----		-----
866		-----		-----	6142		-----		-----
870		-----		-----	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192	D5950	6		1.46					
6201	D5950	3		0.09					
6238		-----		-----					
6252		-----		-----					

normality	OK
n	27
outliers	0+1ex
mean (n)	2.81
st.dev. (n)	2.704
R(calc.)	7.57
st.dev.(D5950:14)	2.179
R(D5950:14)	6.1

Lab 1340 test results excluded, manual method



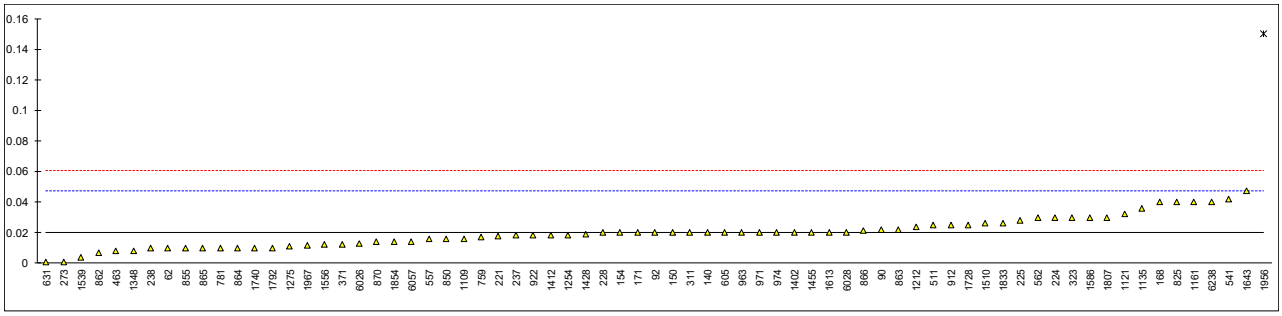


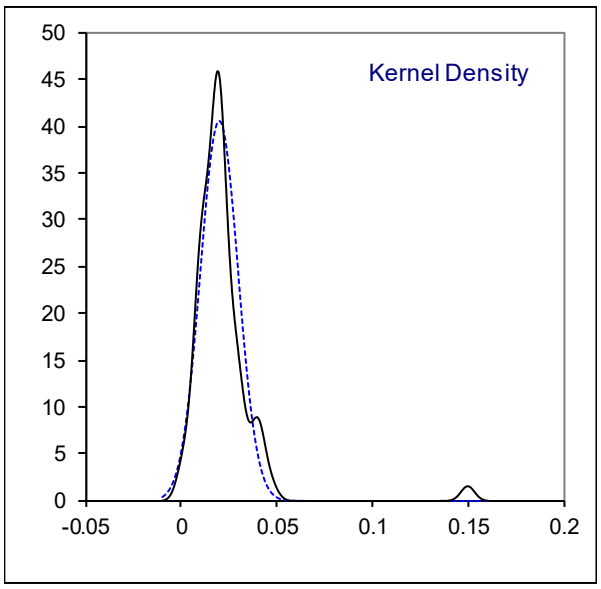
Determination of Sediment by Extraction on sample #19105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D473	0.01		-0.73	875		-----		-----
90	D473	0.022		0.15	886		-----		-----
92	D473	0.020		0.00	912	D473	0.025		0.37
120		-----		-----	913		-----		-----
140	D473	0.02		0.00	922	D473	0.018		-0.14
150	D473	0.02		0.00	962		-----		-----
154	D473	0.02		0.00	963	D473	0.02		0.00
158		-----		-----	971	D473	0.020		0.00
159		-----		-----	974	D473	0.02		0.00
168	D473	0.04		1.48	982		-----		-----
169		-----		-----	1006		-----		-----
171	D473	0.02		0.00	1011		-----		-----
175		-----		-----	1019		-----		-----
194		-----		-----	1059		-----		-----
221	D473	0.0178		-0.16	1082		-----		-----
224		0.030		0.74	1109	D473	0.016		-0.29
225	D473	0.028		0.59	1121	D473	0.032		0.89
228	D473	0.0199		0.00	1126		-----		-----
237	D473	0.01799		-0.14	1135	ISO3735	0.0358		1.17
238	D473	0.0099		-0.74	1161	ISO3735	0.04		1.48
253		-----		-----	1167		-----		-----
254		-----		-----	1177		-----		-----
273	D473	0.001		-1.39	1212	D473	0.0237		0.28
309		-----		-----	1233		-----		-----
311	D473	0.02		0.00	1254	D473	0.0181		-0.14
313		-----		-----	1266		-----		-----
323	D473	0.03		0.74	1269		-----		-----
331		-----		-----	1275	ISO3735	0.011		-0.66
333		-----		-----	1299		-----		-----
334		-----		-----	1340		-----		-----
335		-----		-----	1347		-----		-----
336		-----		-----	1348	D473	0.00815		-0.87
337		-----		-----	1356		-----		-----
339		-----		-----	1385		-----		-----
342		-----		-----	1402	IP53	0.02		0.00
343		-----		-----	1404		-----		-----
349		-----		-----	1412	D473	0.018		-0.14
371	D473	0.0124		-0.55	1428		0.019		-0.07
391		-----		-----	1455	D473	0.02		0.00
398		-----		-----	1459		-----		-----
399		-----		-----	1483		-----		-----
440		-----		-----	1510	D473	0.026		0.45
444		-----		-----	1539	ISO3735	0.004		-1.17
463	D473	0.008		-0.88	1556	ISO3735	0.012		-0.58
511	D473	0.025		0.37	1569		-----		-----
529		-----		-----	1575		-----		-----
541	D473	0.042		1.62	1586	D473	0.03		0.74
557	D473	0.0159		-0.30	1613	D473	0.020		0.00
562	D473	0.03		0.74	1622		-----		-----
575		-----		-----	1631		-----		-----
603		-----		-----	1643	D473	0.0471		2.00
604		-----		-----	1720		-----		-----
605	D473	0.02		0.00	1724		-----		-----
608		-----		-----	1728	D473	0.025		0.37
631	D473	0.001		-1.39	1740	D473	0.010		-0.73
633		-----		-----	1776		-----		-----
663		-----		-----	1792	D473	0.01		-0.73
671		-----		-----	1807	D473	0.03		0.74
750		-----		-----	1833	D473	0.026		0.45
751		-----		-----	1849		-----		-----
753		-----		-----	1854	D473	0.014		-0.44
759	D473	0.017		-0.22	1906		-----		-----
781	D473	0.01		-0.73	1956	ISO3735	0.15	R(0.01)	9.56
785		-----		-----	1964		-----		-----
825	D473	0.04		1.48	1967	D473	0.0118		-0.60
850	D473	0.016		-0.29	1995		-----		-----
851		-----		-----	6016		-----		-----
855	D473	0.01		-0.73	6026	D473	0.013		-0.51
858		-----		-----	6028	D473	0.02		0.00
859		-----		-----	6039		-----		-----
862	D473	0.007		-0.95	6044		-----		-----
863	D473	0.022		0.15	6057	D473	0.014		-0.44
864	D473	0.01		-0.73	6075		-----		-----
865	D473	0.01		-0.73	6092		-----		-----
866	ISO3735	0.021		0.08	6142		-----		-----
870	D473	0.014		-0.44	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		-----		-----					
6201		-----		-----					
6238	ISO3735	0.04		1.48					
6252		-----		-----					

normality	OK
n	70
outliers	1
mean (n)	0.0199
st.dev. (n)	0.00984
R(calc.)	0.0276
st.dev.(D473:07)	0.01360
R(D473:07)	0.0381



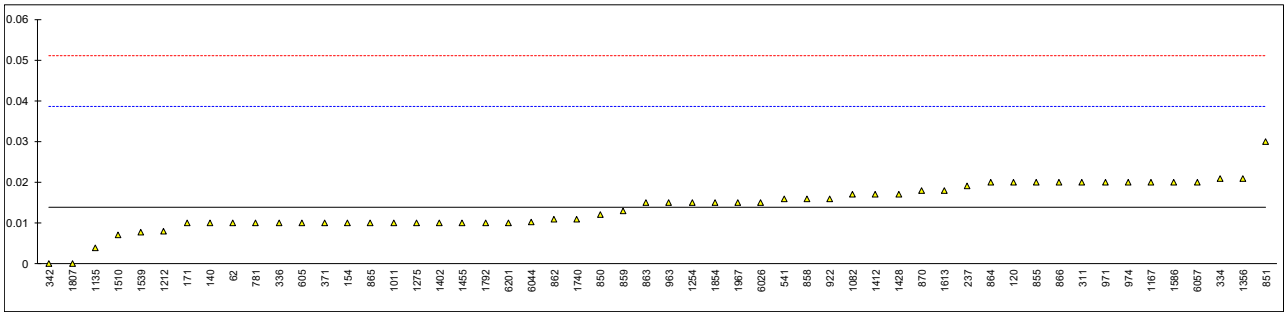


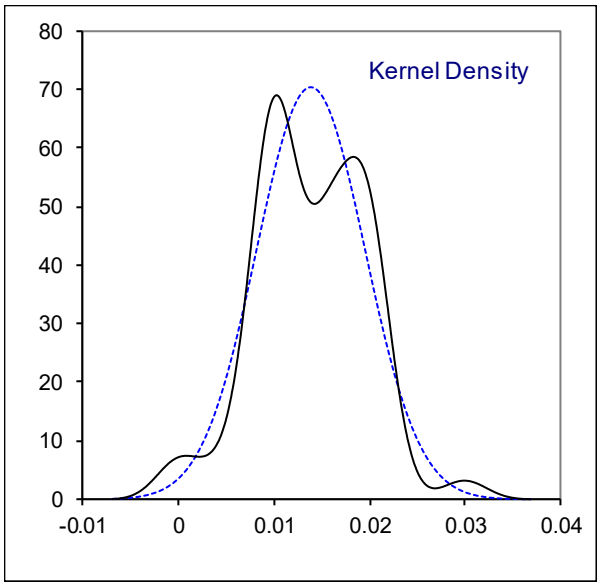
Determination of Total Sediment Existent (TSE) of sample #19105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4870	0.01		-0.31	875		-----		-----
90		-----		-----	886		-----		-----
92		-----		-----	912		-----		-----
120	D4870	0.02		0.49	913		-----		-----
140	IP375	0.01		-0.31	922	ISO10307-1	0.016		0.17
150		-----		-----	962		-----		-----
154	D4870	0.01		-0.31	963	IP375	0.015		0.09
158		-----		-----	971	ISO10307-1	0.020		0.49
159		-----		-----	974	IP375	0.02		0.49
168		-----		-----	982		-----		-----
169		-----		-----	1006		-----		-----
171	IP375	0.01		-0.31	1011	ISO10307-1	0.01		-0.31
175		-----		-----	1019		-----		-----
194		-----		-----	1059		-----		-----
221		-----		-----	1082	ISO10307-1	0.017		0.25
224		-----		-----	1109		-----		-----
225		-----		-----	1121	ISO10307-1	<0.01		-----
228		-----		-----	1126		-----		-----
237	D4870	0.019		0.41	1135	ISO10307-1	0.00395		-0.80
238		-----		-----	1161		-----		-----
253		-----		-----	1167	ISO10307-1	0.02		0.49
254		-----		-----	1177		-----		-----
273		-----		-----	1212	IP375	0.008		-0.48
309		-----		-----	1233	ISO10307-1	<0.01		-----
311	IP375	0.02		0.49	1254	ISO10307-1	0.015		0.09
313		-----		-----	1266		-----		-----
323	IP375	< 0.01		-----	1269		-----		-----
331		-----		-----	1275	IP375	0.01		-0.31
333		-----		-----	1299	ISO10307-1	<0.01		-----
334	ISO10307-1	0.021		0.57	1340		-----		-----
335		-----		-----	1347		-----		-----
336	IP375	0.01		-0.31	1348		-----		-----
337		-----		-----	1356	ISO10307-1	0.021		0.57
339		-----		-----	1385		-----		-----
342	ISO10307-1	0		-1.12	1402	IP375	0.01		-0.31
343	ISO10307-1	<0.01		-----	1404		-----		-----
349		-----		-----	1412	IP375	0.017		0.25
371	ISO10307-1	0.010		-0.31	1428	ISO10307-1	0.017		0.25
391		-----		-----	1455	ISO10307-1	0.01		-0.31
398		-----		-----	1459		-----		-----
399		-----		-----	1483		-----		-----
440		-----		-----	1510	IP375	0.007		-0.56
444		-----		-----	1539	ISO10307-1	0.0078		-0.49
463		-----		-----	1556		-----		-----
511		-----		-----	1569		-----		-----
529		-----		-----	1575		-----		-----
541	D4870	0.016		0.17	1586	IP375	0.02		0.49
557		-----		-----	1613	IP375	0.018		0.33
562		-----		-----	1622		-----		-----
575		-----		-----	1631		-----		-----
603		-----		-----	1643		-----		-----
604		-----		-----	1720		-----		-----
605	IP375	0.01		-0.31	1724		-----		-----
608		-----		-----	1728		-----		-----
631		-----		-----	1740	D4870	0.011		-0.23
633		-----		-----	1776		-----		-----
663		-----		-----	1792	IP375	0.01		-0.31
671		-----		-----	1807	D4870	0		-1.12
750		-----		-----	1833		-----		-----
751		-----		-----	1849		-----		-----
753		-----		-----	1854	ISO10307-1	0.015		0.09
759		-----		-----	1906		-----		-----
781	IP375	0.01		-0.31	1956		-----		-----
785		-----		-----	1964		-----		-----
825		-----		-----	1967	IP375	0.0150		0.09
850	ISO10307-1	0.012		-0.15	1995		-----		-----
851	ISO10307-1	0.03		1.30	6016		-----		-----
855	ISO10307-1	0.02		0.49	6026	IP375	0.0151		0.10
858	D4870	0.016		0.17	6028		-----		-----
859	ISO10307-1	0.013		-0.07	6039		-----		-----
862	IP375	0.011		-0.23	6044	ISO10307-1	0.0103		-0.29
863	D4870	0.015		0.09	6057	ISO10307-1	0.02		0.49
864	D4870	0.02		0.49	6075		-----		-----
865	IP375	0.01		-0.31	6092		-----		-----
866	D4870	0.020		0.49	6142		-----		-----
870	IP375	0.018		0.33	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		-----		-----					
6201	IP375	0.01		-0.31					
6238		-----		-----					
6252		-----		-----					

normality	OK
n	54
outliers	0
mean (n)	0.0139
st.dev. (n)	0.00568
R(calc.)	0.0159
st.dev.(IP375:11)	0.01238
R(IP375:11)	0.0347





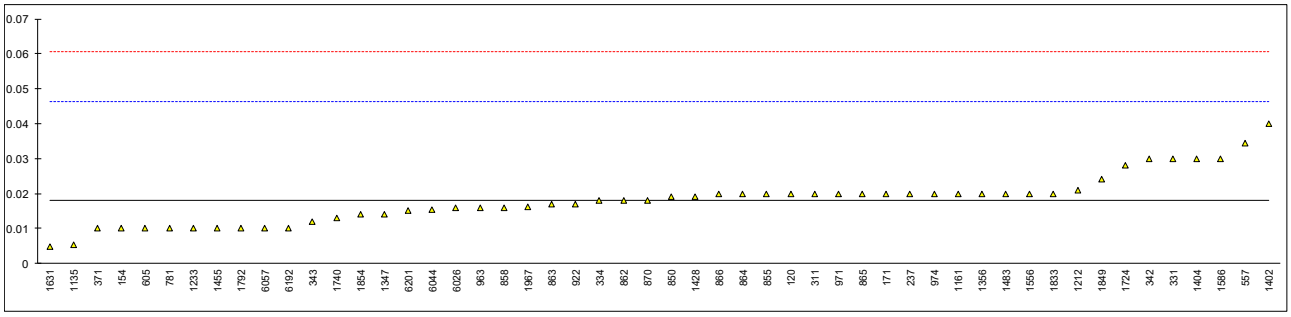
Determination of Total Sediment Accelerated (TSA) of sample #19105; results in %M/M

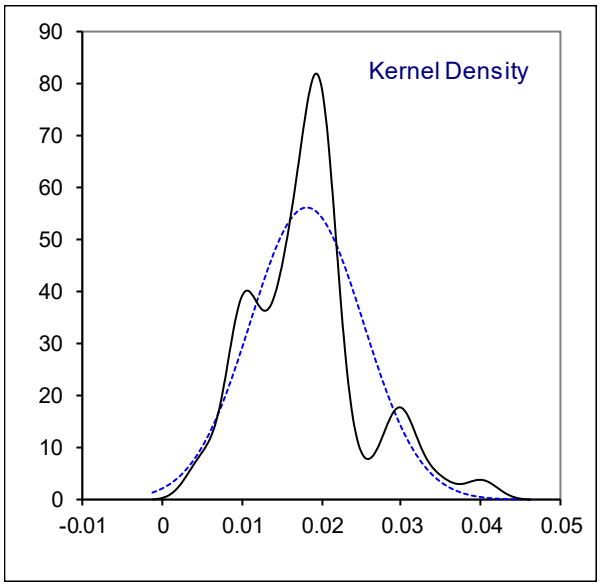
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	875		-----		-----
90		-----		-----	886		-----		-----
92		-----		-----	912		-----		-----
120	D4870	0.02		0.13	913		-----		-----
140		-----		-----	922	ISO10307-2	0.017		-0.08
150		-----		-----	962		-----		-----
154	D4870	0.01		-0.57	963	IP390	0.016		-0.15
158		-----		-----	971	ISO10307-2	0.020		0.13
159		-----		-----	974	IP390	0.02		0.13
168		-----		-----	982		-----		-----
169		-----		-----	1006		-----		-----
171	IP390	0.02		0.13	1011		-----		-----
175		-----		-----	1019		-----		-----
194		-----		-----	1059		-----		-----
221		-----		-----	1082		-----		-----
224		-----		-----	1109		-----		-----
225		-----		-----	1121	ISO10307-2	<0.01		-----
228		-----		-----	1126		-----		-----
237	D4870	0.020		0.13	1135	ISO10307-2	0.00526		-0.91
238		-----		-----	1161	ISO10307-2	0.02	C	0.13
253		-----		-----	1167		-----		-----
254		-----		-----	1177		-----		-----
273		-----		-----	1212	IP390	0.021		0.21
309		-----		-----	1233	ISO10307-2	0.01		-0.57
311	ISO10307-2	0.02		0.13	1254		-----		-----
313		-----		-----	1266		-----		-----
323	IP390	< 0.01		-----	1269		-----		-----
331	ISO10307-2	0.03		0.84	1275		-----		-----
333		-----		-----	1299	ISO10307-2	<0.01		-----
334	ISO10307-2	0.018		-0.01	1340		-----		-----
335		-----		-----	1347	D4870	0.0141		-0.28
336		-----		-----	1348		-----		-----
337		-----		-----	1356	ISO10307-2	0.020		0.13
339		-----		-----	1385		-----		-----
342	ISO10307-2	0.03		0.84	1402	IP390	0.04		1.55
343	ISO10307-2	0.012		-0.43	1404	ISO10307-2	0.03		0.84
349		-----		-----	1412		-----		-----
371	ISO10307-2	0.010		-0.57	1428	ISO10307-2	0.019		0.06
391		-----		-----	1455	ISO10307-2	0.01		-0.57
398		-----		-----	1459		-----		-----
399		-----		-----	1483	ISO10307-2	0.02		0.13
440		-----		-----	1510	IP390	<0.01		-----
444		-----		-----	1539		-----		-----
463		-----		-----	1556	ISO10307-2	0.02		0.13
511		-----		-----	1569		-----		-----
529		-----		-----	1575		-----		-----
541		-----		-----	1586	IP390	0.03		0.84
557	D4870	0.034		1.16	1613		-----		-----
562		-----		-----	1622		-----		-----
575		-----		-----	1631	ISO10307-2	0.0049		-0.93
603		-----		-----	1643		-----		-----
604		-----		-----	1720		-----		-----
605	IP390	0.01		-0.57	1724	IP390	0.028		0.70
608		-----		-----	1728		-----		-----
631		-----		-----	1740	D4870	0.013		-0.36
633		-----		-----	1776		-----		-----
663		-----		-----	1792	IP390	0.01		-0.57
671		-----		-----	1807		-----		-----
750		-----		-----	1833	ISO10307-2	0.02		0.13
751		-----		-----	1849	ISO10307-2	0.024		0.42
753		-----		-----	1854	ISO10307-2	0.014		-0.29
759		-----		-----	1906		-----		-----
781	IP390(B)	0.01		-0.57	1956		-----		-----
785		-----		-----	1964		-----		-----
825		-----		-----	1967	IP390	0.0163		-0.13
850	ISO10307-2	0.019		0.06	1995		-----		-----
851		-----		-----	6016		-----		-----
855	ISO10307-2	0.02		0.13	6026	IP390	0.0159		-0.16
858	D4870	0.016		-0.15	6028		-----		-----
859		-----		-----	6039		-----		-----
862	ISO10307-2	0.018		-0.01	6044	ISO10307-2	0.0154		-0.19
863	D4870	0.017		-0.08	6057	ISO10307-2	0.01		-0.57
864	D4870	0.02		0.13	6075		-----		-----
865	IP390	0.02		0.13	6092		-----		-----
866	D4870	0.020		0.13	6142		-----		-----
870	IP390	0.018		-0.01	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192	ISO10307-2	0.01		-0.57					
6201	IP390	0.015		-0.22					
6238		-----		-----					
6252		-----		-----					

normality	suspect
n	52
outliers	0
mean (n)	0.0181
st.dev. (n)	0.00710
R(calc.)	0.0199
st.dev.(IP390:11)	0.01413
R(IP390:11)	0.0396

Lab 1161 first reported 0.04





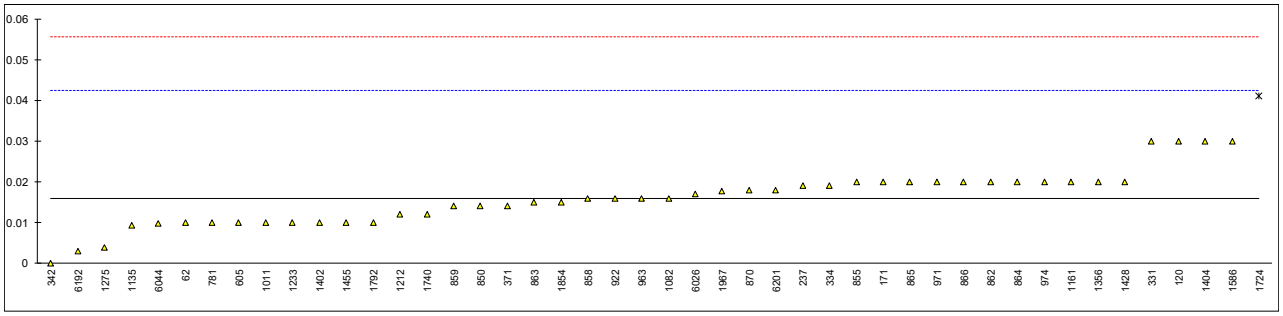
Determination of Total Sediment Potential (TSP) of sample #19105; results in %M/M

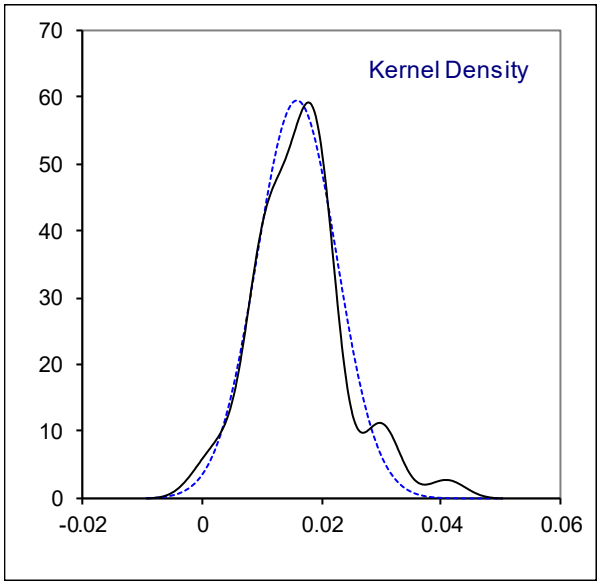
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4870	0.01		-0.44	875		-----		-----
90		-----		-----	886		-----		-----
92		-----		-----	912		-----		-----
120	D4870	0.03		1.07	913		-----		-----
140		-----		-----	922	ISO10307-2	0.016		0.01
150		-----		-----	962		-----		-----
154		-----		-----	963	IP390	0.016		0.01
158		-----		-----	971	ISO10307-2	0.020		0.31
159		-----		-----	974	IP390	0.02		0.31
168		-----		-----	982		-----		-----
169		-----		-----	1006		-----		-----
171	IP390	0.02		0.31	1011	ISO10307-2	0.01		-0.44
175		-----		-----	1019		-----		-----
194		-----		-----	1059		-----		-----
221		-----		-----	1082	ISO10307-2	0.016		0.01
224		-----		-----	1109		-----		-----
225		-----		-----	1121	ISO10307-2	<0.01		-----
228		-----		-----	1126		-----		-----
237	D4870	0.019		0.24	1135	ISO10307-2	0.00931		-0.50
238		-----		-----	1161	ISO10307-2	0.02	C	0.31
253		-----		-----	1167		-----		-----
254		-----		-----	1177		-----		-----
273		-----		-----	1212	IP390	0.012		-0.29
309		-----		-----	1233	ISO10307-2	0.01		-0.44
311	ISO10307-2	<0.01		-----	1254		-----		-----
313		-----		-----	1266		-----		-----
323	IP390	< 0.01		-----	1269		-----		-----
331	ISO10307-2	0.03		1.07	1275	IP390	0.004		-0.90
333		-----		-----	1299	ISO10307-2	<0.01		-----
334	ISO10307-2	0.019		0.24	1340		-----		-----
335		-----		-----	1347		-----		-----
336		-----		-----	1348		-----		-----
337		-----		-----	1356	ISO10307-2	0.020		0.31
339		-----		-----	1385		-----		-----
342	ISO10307-2	0		-1.20	1402	IP390	0.01		-0.44
343		-----		-----	1404	ISO10307-2	0.03		1.07
349		-----		-----	1412		-----		-----
371	ISO10307-2	0.014		-0.14	1428	ISO10307-2	0.020		0.31
391		-----		-----	1455	ISO10307-2	0.01		-0.44
398		-----		-----	1459		-----		-----
399		-----		-----	1483		-----		-----
440		-----		-----	1510	IP390	<0.01		-----
444		-----		-----	1539		-----		-----
463		-----		-----	1556		-----		-----
511		-----		-----	1569		-----		-----
529		-----		-----	1575		-----		-----
541		-----		-----	1586	IP390	0.03		1.07
557		-----		-----	1613		-----		-----
562		-----		-----	1622		-----		-----
575		-----		-----	1631		-----		-----
603		-----		-----	1643		-----		-----
604		-----		-----	1720		-----		-----
605	IP390	0.01		-0.44	1724	IP390	0.041	R(0.05)	1.90
608		-----		-----	1728		-----		-----
631		-----		-----	1740	D4870	0.012		-0.29
633		-----		-----	1776		-----		-----
663		-----		-----	1792	IP390	0.01		-0.44
671		-----		-----	1807		-----		-----
750		-----		-----	1833		-----		-----
751		-----		-----	1849		-----		-----
753		-----		-----	1854	ISO10307-2	0.015		-0.07
759		-----		-----	1906		-----		-----
781	IP390(A)	0.01		-0.44	1956		-----		-----
785		-----		-----	1964		-----		-----
825		-----		-----	1967	IP390	0.0178		0.14
850	ISO10307-2	0.014		-0.14	1995		-----		-----
851		-----		-----	6016		-----		-----
855	ISO10307-2	0.02		0.31	6026	IP390	0.0170		0.08
858	D4870	0.016		0.01	6028		-----		-----
859	ISO10307-2	0.014		-0.14	6039		-----		-----
862	ISO10307-2	0.020		0.31	6044	ISO10307-2	0.0098		-0.46
863	D4870	0.015		-0.07	6057	ISO10307-2	<0,01		-----
864	D4870	0.02		0.31	6075		-----		-----
865	IP390	0.02		0.31	6092		-----		-----
866	D4870	0.020		0.31	6142		-----		-----
870	IP390	0.018		0.16	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192	ISO10307-2	0.003		-0.97					
6201	IP390	0.018		0.16					
6238		-----		-----					
6252		-----		-----					

normality	OK
n	45
outliers	1
mean (n)	0.0159
st.dev. (n)	0.00670
R(calc.)	0.0188
st.dev.(IP390:11)	0.01323
R(IP390:11)	0.0371

Lab 1161 first reported 0.04





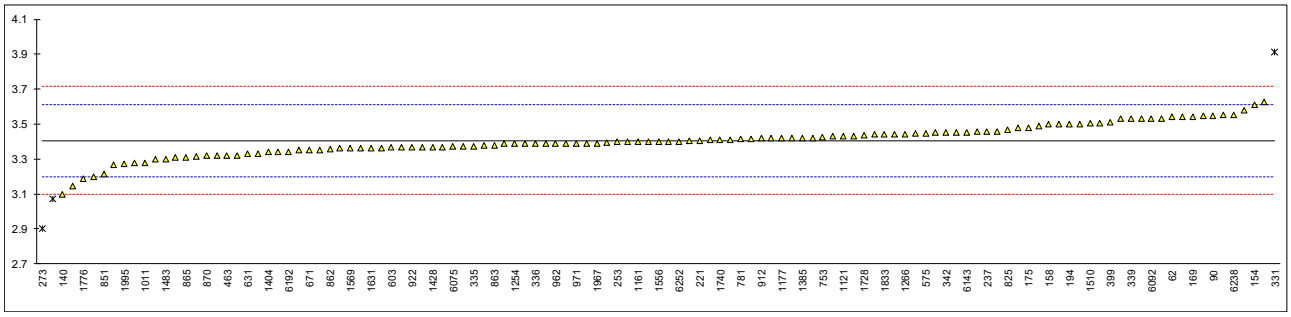
Determination of Total Sulfur on sample #19105; results in %M/M

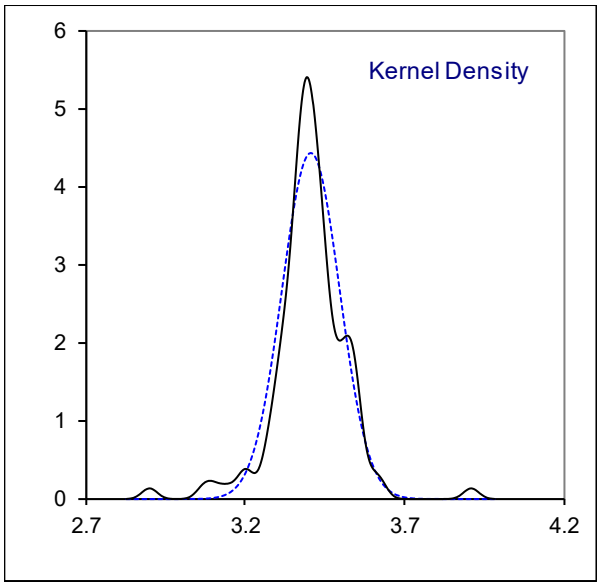
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4294	3.54	C	1.30	875		-----		-----
90	D4294	3.547		1.36	886	D4294	3.54		1.30
92	D4294	3.5804		1.69	912	D4294	3.42		0.13
120	D4294	3.38669		-0.19	913		-----		-----
140	D4294	3.10		-2.97	922	D4294	3.37		-0.35
150	D4294	3.55		1.39	962	ISO8754	3.39		-0.16
154	D4294	3.61		1.98	963	ISO8754	3.38		-0.25
158	D4294	3.5		0.91	971	ISO8754	3.39		-0.16
159		-----		-----	974	D4294	3.39		-0.16
168	D4294	3.53		1.20	982		-----		-----
169	D4294	3.54233		1.32	1006		-----		-----
171	D4294	3.50		0.91	1011	ISO8754	3.28		-1.22
175	D4294	3.48		0.71	1019	D1552	3.545	C	1.35
194	D4294	3.50		0.91	1059		-----		-----
221	D4294	3.4047		-0.02	1082	ISO8754	3.453		0.45
224		-----		-----	1109	D4294	3.42		0.13
225		-----		-----	1121	ISO8754	3.43		0.23
228	D4294	3.625	C	2.12	1126	own method	3.20		-2.00
237	D4294	3.459		0.51	1135	ISO8754	3.27764		-1.25
238		-----		-----	1161	ISO8754	3.40		-0.06
253	D4294	3.40		-0.06	1167		-----		-----
254		-----		-----	1177	DIN 10304-1	3.42		0.13
273	D4294	2.9	R(0.01)	-4.91	1212	ISO8754	3.451		0.43
309		-----		-----	1233	ISO8754	3.40		-0.06
311	ISO8754	3.43		0.23	1254	ISO8754	3.387		-0.19
313	ISO8754	3.44		0.33	1266	ISO8754	3.443		0.36
323	ISO8754	3.40		-0.06	1269	in-house	3.42		0.13
331	ISO8754	3.91	R(0.01)	4.88	1275	IP336	3.307		-0.96
333		-----		-----	1299	ISO8754	3.455		0.47
334	D4294	3.5327		1.23	1340	ISO8754	3.402		-0.04
335	D4294	3.375		-0.30	1347	D4294	3.07	R(0.05)	-3.26
336	D4294	3.39		-0.16	1348	D4294	3.143		-2.55
337		-----		-----	1356	ISO8754	3.39		-0.16
339	in-house	3.53		1.20	1385	D4294	3.42		0.13
342	ISO8754	3.452		0.44	1402	IP336	3.3642		-0.41
343	IP336	3.46		0.52	1404	ISO8754	3.34		-0.64
349		-----		-----	1412		-----		-----
371	D4294	3.396		-0.10	1428	ISO8754	3.37		-0.35
391	ISO8754	3.368		-0.37	1455	ISO8754	3.30		-1.03
398	ISO8754	3.417		0.10	1459	ISO8754	3.5		0.91
399	D4294	3.51		1.01	1483	ISO8754	3.30		-1.03
440		-----		-----	1510	IP336	3.505		0.96
444	D2622	3.48		0.71	1539	ISO8754	3.266		-1.36
463	ISO8754	3.32		-0.84	1556	ISO8754	3.400		-0.06
511		-----		-----	1569	ISO8754	3.36		-0.45
529		-----		-----	1575	D4294	3.36		-0.45
541		-----		-----	1586	D4294	3.34		-0.64
557		-----		-----	1613	D4294	3.507		0.98
562		-----		-----	1622		-----		-----
575	D4294	3.4489		0.41	1631	ISO8754	3.36		-0.45
603	D4294	3.366		-0.39	1643	D1552	3.4466		0.39
604		-----		-----	1720		-----		-----
605		-----		-----	1724	ISO8754	3.312		-0.91
608		-----		-----	1728	D4294	3.435		0.28
631	D4294	3.33		-0.74	1740	D4294	3.41		0.04
633		-----		-----	1776	ISO8754	3.19		-2.10
663		-----		-----	1792	ISO8754	3.330		-0.74
671	D4294	3.3509		-0.54	1807	ISO8754	3.49		0.81
750		-----		-----	1833	ISO8754	3.44		0.33
751	ISO8754	3.349		-0.56	1849	ISO8754	3.4		-0.06
753	ISO8754	3.428		0.21	1854	ISO8754	3.41		0.04
759	ISO8754	3.353		-0.52	1906		-----		-----
781	ISO8754	3.415		0.08	1956	ISO8754	3.53		1.20
785		-----		-----	1964		-----		-----
825	ISO8754	3.47		0.62	1967	D4294	3.39		-0.16
850	D4294	3.410		0.04	1995	D4294	3.2712		-1.31
851	ISO8754	3.216		-1.85	6016		-----		-----
855	ISO8754	3.32		-0.84	6026	D4294	3.421		0.14
858	D4294	3.390		-0.16	6028	ISO8754	3.37		-0.35
859	D4294	3.370		-0.35	6039	ISO8754	3.44		0.33
862	D2622	3.358		-0.47	6044	D4294	3.372		-0.33
863	D4294	3.38		-0.25	6057	ISO8754	3.43		0.23
864	D4294	3.32		-0.84	6075	ISO8754	3.371		-0.34
865	ISO8754	3.31		-0.93	6092	D4294	3.53		1.20
866	D4294	3.39		-0.16	6142		-----		-----
870	D4294	3.318		-0.86	6143	D2622	3.4530		0.45

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192	ISO8754	3.34		-0.64					
6201	ISO8754	3.3596		-0.45					
6238	ISO8754	3.5552		1.44					
6252	SS-EN ISO 10304-1	3.4		-0.06					

		Only D4294 results	Only ISO8754 results
normality	suspect	suspect	OK
n	118	50	54
outliers	3	2	1
mean (n)	3.4063	3.4254	3.3848
st.dev. (n)	0.09024	0.10327	0.07185
R(calc.)	0.2527	0.2891	0.2012
st.dev.(ISO8754:03)	0.10313	--	0.10251
R(ISO8754:03)	0.2888	--	0.2870
Compare			
R(D4294:16e1)	0.1601	0.1607	

Lab 62 first reported 3.68
Lab 228 first reported 3.9825
Lab 1019 first reported 3.834





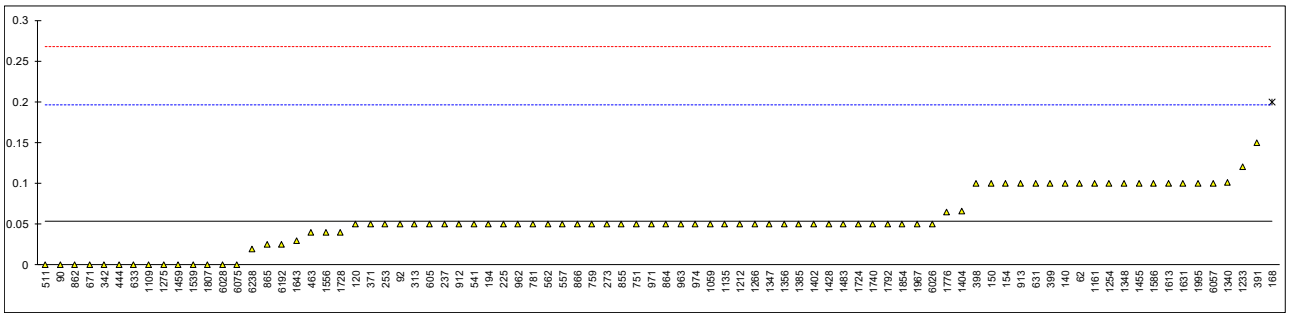
Determination of Water by distillation on sample #19105; results in %V/V

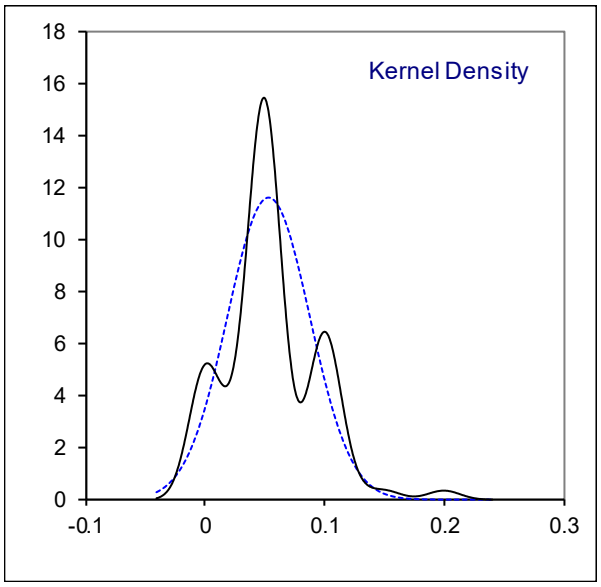
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D95	0.1		0.65	875		-----		-----
90	D95	0.00		-0.75	886		-----		-----
92	D95	0.05		-0.05	912	D95	0.05		-0.05
120	D95	0.05		-0.05	913	D95	0.1		0.65
140	D95	0.10		0.65	922	D95	<0.05		-----
150	D95	0.10		0.65	962	ISO3733	0.05		-0.05
154	D95	0.10		0.65	963	ISO3733	0.05		-0.05
158		-----		-----	971	ISO3733	0.05		-0.05
159		-----		-----	974	D95	0.05		-0.05
168	D95	0.2	C,R(0.01)	2.05	982		-----		-----
169		-----		-----	1006	D95	<0.025		-----
171		-----		-----	1011	ISO3733	<0.10		-----
175		-----		-----	1019	ISO3733	<0.1		-----
194	D95	0.05		-0.05	1059	ISO3733	0.05		-0.05
221	D95	<0.1		-----	1082		-----		-----
224		-----		-----	1109	D95	0.00		-0.75
225	D95	0.05		-0.05	1121	ISO3733	<0.05		-----
228	D95	<0.05		-----	1126		-----		-----
237	D95	0.05		-0.05	1135	ISO3733	0.05		-0.05
238		-----		-----	1161	EN1428	0.1		0.65
253	D95	0.05		-0.05	1167	EN1428	<0.1		-----
254		-----		-----	1177		-----		-----
273	D95	0.05		-0.05	1212	ISO3733	0.05		-0.05
309		-----		-----	1233	ISO3733	0.12		0.93
311	D95	<0.05		-----	1254	D95	0.10		0.65
313	D95	0.05		-0.05	1266	D95	0.05		-0.05
323	ISO3733	< 0.05		-----	1269		-----		-----
331	ISO3733	<0.05		-----	1275	IP74	0.00		-0.75
333		-----		-----	1299	D95	<0.1		-----
334		-----		-----	1340	ISO3733	0.101		0.67
335		-----		-----	1347	D95	0.05		-0.05
336		-----		-----	1348	D95	0.1		0.65
337		-----		-----	1356	D6304-A	0.05		-0.05
339		-----		-----	1385	D95	0.05		-0.05
342	ISO3733	0		-0.75	1402	IP74	0.05		-0.05
343	D95	<0,1		-----	1404	ISO6296	0.066		0.18
349	D95	<0,1		-----	1412		-----		-----
371	ISO3733	0.05		-0.05	1428	ISO3733	0.05		-0.05
391	ISO3733	0.15		1.35	1455	D95	0.1		0.65
398	ISO3733	0.10		0.65	1459	in house	0.0		-0.75
399	D95	0.10		0.65	1483	ISO3733	0.05		-0.05
440		-----		-----	1510	D95	<0.05		-----
444	D95	0.0		-0.75	1539	ISO3733	0.00		-0.75
463	ISO3733	0.04		-0.19	1556	D6304-C	0.04		-0.19
511	D95	0		-0.75	1569	D95	<0.1		-----
529		-----		-----	1575		-----		-----
541	D95	0.05		-0.05	1586	D95	0.10		0.65
557	D95	0.05		-0.05	1613	D95	0.1		0.65
562	D95	0.05		-0.05	1622		-----		-----
575	D95	<0.05		-----	1631	D95	0.1		0.65
603	D95	<1.0		-----	1643	D95	0.03		-0.33
604		-----		-----	1720		-----		-----
605	D95	0.05		-0.05	1724	ISO3733	0.05		-0.05
608		-----		-----	1728	D95	0.04		-0.19
631	D95	0.10		0.65	1740	ISO3733	0.05		-0.05
633	D95	0		-0.75	1776	D6304-A	0.0652		0.17
663		-----		-----	1792	ISO3733	0.05		-0.05
671	D95	0		-0.75	1807	ISO3733	0		-0.75
750		-----		-----	1833	D95	<0.1		-----
751	ISO3733	0.05		-0.05	1849	EN1428	<0,1		-----
753		-----		-----	1854	D6304-C	0.05		-0.05
759	ISO3733	0.05		-0.05	1906		-----		-----
781	ISO3733	0.05		-0.05	1956		-----		-----
785		-----		-----	1964		-----		-----
825	ISO3733	<0.05		-----	1967	D95	0.05		-0.05
850	ISO3733	<0.05		-----	1995	D95	0.1		0.65
851	ISO3733	<0.05		-----	6016		-----		-----
855	ISO3733	0.05		-0.05	6026	D95	0.05		-0.05
858	D95	<0.05		-----	6028	D95	0.0		-0.75
859	D95	<0.05		-----	6039		-----		-----
862	ISO3733	0.00		-0.75	6044		-----		-----
863	D95	<0.05		-----	6057	ISO3733	0.10		0.65
864	D95	0.05		-0.05	6075	ISO3733	0.0		-0.75
865	ISO3733	0.025		-0.40	6092	D95	<0.05		-----
866	D95	0.05		-0.05	6142		-----		-----
870	D95	<0.05		-----	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192	ISO3733	0.025		-0.40					
6201		-----		-----					
6238	ISO3733	0.020		-0.47					
6252		-----		-----					

normality	OK
n	83
outliers	1
mean (n)	0.0533
st.dev. (n)	0.03447
R(calc.)	0.0965
st.dev.(ISO3733:99)	0.07143
R(ISO3733:99)	0.2
Compare	
R(D95:13)	0.2

Lab 168 first reported 0.3



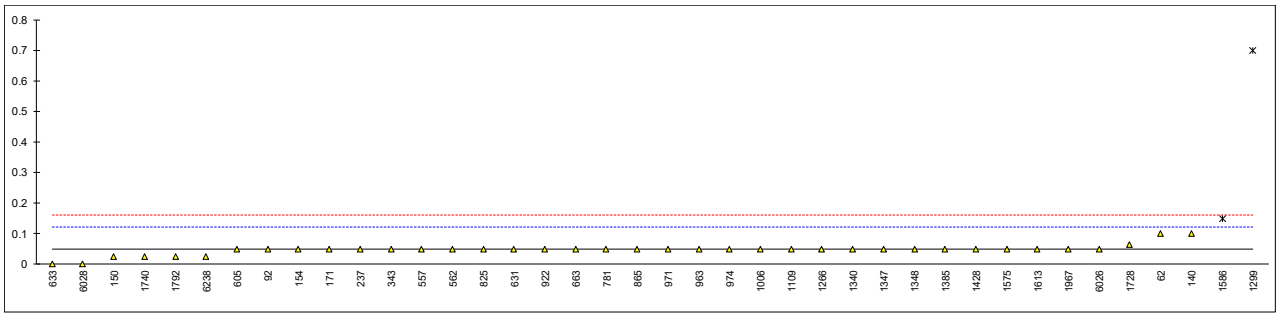


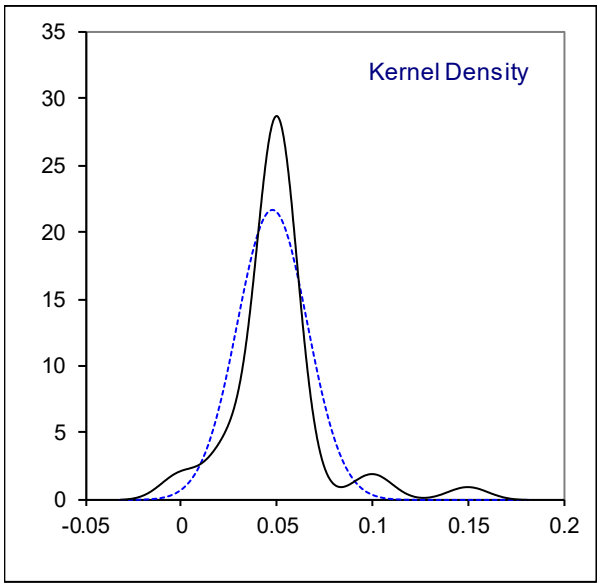
Determination of Water and Sediment on sample #19105; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D1796	0.1		1.39	875		-----		-----
90		-----		-----	886		-----		-----
92	D1796	0.05		0.06	912		-----		-----
120		-----		-----	913		-----		-----
140	D1796	0.10		1.39	922	D1796	0.05		0.06
150	D1796	0.025		-0.61	962		-----		-----
154	D1796	0.05		0.06	963	D1796	0.05		0.06
158		-----		-----	971	ISO3734	0.05		0.06
159		-----		-----	974	D1796	0.05		0.06
168		-----		-----	982		-----		-----
169		-----		-----	1006	D1796	0.05		0.06
171	D1796	0.05		0.06	1011		-----		-----
175		-----		-----	1019		-----		-----
194		-----		-----	1059	ISO3734	<0,05		-----
221		-----		-----	1082		-----		-----
224		-----		-----	1109	D1796	0.05		0.06
225		-----		-----	1121		-----		-----
228		-----		-----	1126		-----		-----
237	D1796	0.05		0.06	1135		-----		-----
238		-----		-----	1161		-----		-----
253		-----		-----	1167		-----		-----
254		-----		-----	1177		-----		-----
273		-----		-----	1212		-----		-----
309		-----		-----	1233		-----		-----
311		-----		-----	1254		-----		-----
313		-----		-----	1266		0.05		0.06
323		-----		-----	1269		-----		-----
331		-----		-----	1275		-----		-----
333		-----		-----	1299	D1796	0.7	R(0.01)	17.39
334		-----		-----	1340	ISO9030	0.05		0.06
335		-----		-----	1347	D1796	0.05		0.06
336		-----		-----	1348	D1796	0.05		0.06
337		-----		-----	1356		-----		-----
339		-----		-----	1385	D1796	0.05		0.06
342		-----		-----	1402		-----		-----
343	D1796	0.05		0.06	1404		-----		-----
349		-----		-----	1412		-----		-----
371		-----		-----	1428	D1796	0.05		0.06
391		-----		-----	1455		-----		-----
398		-----		-----	1459		-----		-----
399		-----		-----	1483		-----		-----
440		-----		-----	1510		-----		-----
444		-----		-----	1539		-----		-----
463		-----		-----	1556		-----		-----
511		-----		-----	1569		-----		-----
529		-----		-----	1575	D1796	0.05		0.06
541	D1796	<0.1		-----	1586	D1796	0.15	R(0.01)	2.73
557	D1796	0.05		0.06	1613	D1796	0.05		0.06
562	D1796	0.05		0.06	1622		-----		-----
575		-----		-----	1631		-----		-----
603		-----		-----	1643		-----		-----
604		-----		-----	1720		-----		-----
605	D1796	0.05		0.06	1724		-----		-----
608		-----		-----	1728	D1796	0.065		0.46
631	D1796	0.05		0.06	1740	ISO3734	0.025		-0.61
633	D1796	0		-1.27	1776		-----		-----
663	D1796	0.05		0.06	1792	D1796	0.025		-0.61
671		-----		-----	1807		-----		-----
750		-----		-----	1833		-----		-----
751		-----		-----	1849		-----		-----
753		-----		-----	1854		-----		-----
759		-----		-----	1906		-----		-----
781	D1796	0.05		0.06	1956		-----		-----
785		-----		-----	1964		-----		-----
825	D1796	0.05		0.06	1967	D1796	0.05		0.06
850		-----		-----	1995		-----		-----
851		-----		-----	6016		-----		-----
855		-----		-----	6026	D1796	0.05		0.06
858		-----		-----	6028	D4007	0.0		-1.27
859		-----		-----	6039		-----		-----
862		-----		-----	6044		-----		-----
863		-----		-----	6057		-----		-----
864		-----		-----	6075		-----		-----
865	D1796	0.05		0.06	6092		-----		-----
866		-----		-----	6142		-----		-----
870		-----		-----	6143		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		-----		-----					
6201		-----		-----					
6238	D1796	0.025		-0.61					
6252		-----		-----					

normality	not OK
n	38
outliers	2
mean (n)	0.0478
st.dev. (n)	0.01841
R(calc.)	0.0515
st.dev.(D1796:11)	0.03750
R(D1796:11)	0.1050





Vacuum Distillation according to ASTM D1160 (as AET) on sample #19105, results in °C

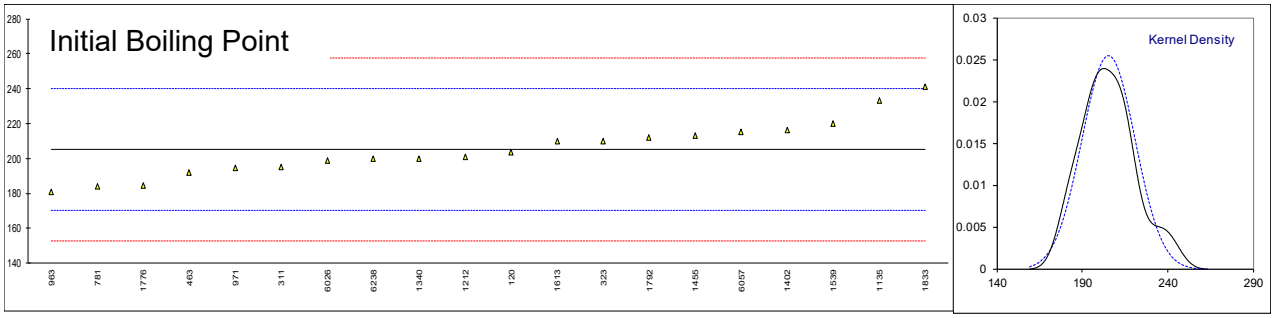
lab	method	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
62		-----	-----	-----	-----	-----	-----	-----	-----
90		-----	-----	-----	-----	-----	-----	-----	-----
92		-----	-----	-----	-----	-----	-----	-----	-----
120	D1160	203.7	271.3	315.1	402.7	463.7	505.4	536.4	539.7
140		-----	-----	-----	-----	-----	-----	-----	-----
150		-----	-----	-----	-----	-----	-----	-----	-----
154		-----	-----	-----	-----	-----	-----	-----	-----
158		-----	-----	-----	-----	-----	-----	-----	-----
159		-----	-----	-----	-----	-----	-----	-----	-----
168		-----	-----	-----	-----	-----	-----	-----	-----
169		-----	-----	-----	-----	-----	-----	-----	-----
171		-----	-----	-----	-----	-----	-----	-----	-----
175		-----	-----	-----	-----	-----	-----	-----	-----
194		-----	-----	-----	-----	-----	-----	-----	-----
221		-----	-----	-----	-----	-----	-----	-----	-----
224		-----	-----	-----	-----	-----	-----	-----	-----
225		-----	-----	-----	-----	-----	-----	-----	-----
228		-----	-----	-----	-----	-----	-----	-----	-----
237		-----	-----	-----	-----	-----	-----	-----	-----
238		-----	-----	-----	-----	-----	-----	-----	-----
253		-----	-----	-----	-----	-----	-----	-----	-----
254		-----	-----	-----	-----	-----	-----	-----	-----
273		-----	-----	-----	-----	-----	-----	-----	-----
309		-----	-----	-----	-----	-----	-----	-----	-----
311	D1160	195	286	331	403	460	499	528	529
313		-----	-----	-----	-----	-----	-----	-----	-----
323	D1160	210	283	321	381	435	490	527	533
331		-----	-----	-----	-----	-----	-----	-----	-----
333		-----	-----	-----	-----	-----	-----	-----	-----
334		-----	-----	-----	-----	-----	-----	-----	-----
335		-----	-----	-----	-----	-----	-----	-----	-----
336		-----	-----	-----	-----	-----	-----	-----	-----
337		-----	-----	-----	-----	-----	-----	-----	-----
339		-----	-----	-----	-----	-----	-----	-----	-----
342		-----	-----	-----	-----	-----	-----	-----	-----
343		-----	-----	-----	-----	-----	-----	-----	-----
349		-----	-----	-----	-----	-----	-----	-----	-----
371		-----	-----	-----	-----	-----	-----	-----	-----
391		-----	-----	-----	-----	-----	-----	-----	-----
398		-----	-----	-----	-----	-----	-----	-----	-----
399		-----	-----	-----	-----	-----	-----	-----	-----
440		-----	-----	-----	-----	-----	-----	-----	-----
444		-----	-----	-----	-----	-----	-----	-----	-----
463	D1160	192	273	319	393	452	493	525	526
511		-----	-----	-----	-----	-----	-----	-----	-----
529		-----	-----	-----	-----	-----	-----	-----	-----
541		-----	-----	-----	-----	-----	-----	-----	-----
557		-----	-----	-----	-----	-----	-----	-----	-----
562		-----	-----	-----	-----	-----	-----	-----	-----
575		-----	-----	-----	-----	-----	-----	-----	-----
603		-----	-----	-----	-----	-----	-----	-----	-----
604		-----	-----	-----	-----	-----	-----	-----	-----
605		-----	-----	-----	-----	-----	-----	-----	-----
608		-----	-----	-----	-----	-----	-----	-----	-----
631		-----	-----	-----	-----	-----	-----	-----	-----
633		-----	-----	-----	-----	-----	-----	-----	-----
663		-----	-----	-----	-----	-----	-----	-----	-----
671		-----	-----	-----	-----	-----	-----	-----	-----
750		-----	-----	-----	-----	-----	-----	-----	-----
751		-----	-----	-----	-----	-----	-----	-----	-----
753		-----	-----	-----	-----	-----	-----	-----	-----
759		-----	-----	-----	-----	-----	-----	-----	-----
781	D1160	184	255	311	383	455	487	510	512
785		-----	-----	-----	-----	-----	-----	-----	-----
825		-----	-----	-----	-----	-----	-----	-----	-----
850		-----	-----	-----	-----	-----	-----	-----	-----
851		-----	-----	-----	-----	-----	-----	-----	-----
855		-----	-----	-----	-----	-----	-----	-----	-----
858		-----	-----	-----	-----	-----	-----	-----	-----
859		-----	-----	-----	-----	-----	-----	-----	-----
862		-----	-----	-----	-----	-----	-----	-----	-----
863		-----	-----	-----	-----	-----	-----	-----	-----
864		-----	-----	-----	-----	-----	-----	-----	-----
865		-----	283.7	329.3	395.1	449.9	491.6	515.3	-----
866		-----	-----	-----	-----	-----	-----	-----	-----
870		-----	-----	-----	-----	-----	-----	-----	-----
875		-----	-----	-----	-----	-----	-----	-----	-----

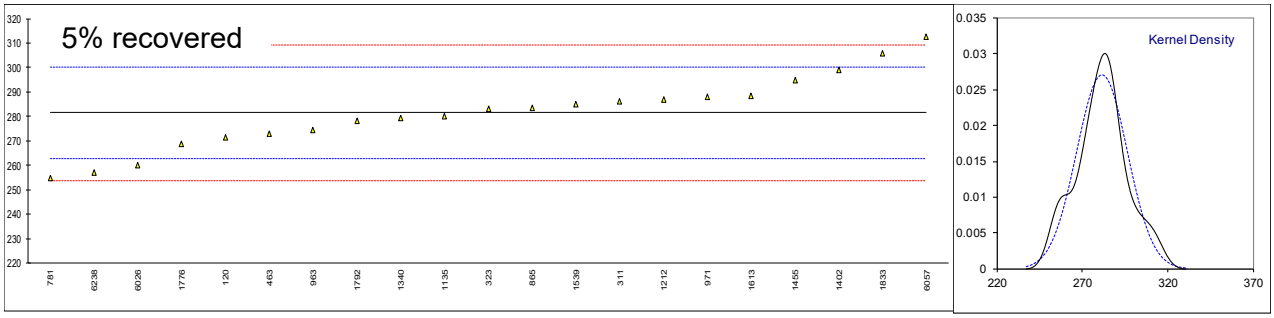
lab	method	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
886		-----	-----	-----	-----	-----	-----	-----	-----
912		-----	-----	-----	-----	-----	-----	-----	-----
913		-----	-----	-----	-----	-----	-----	-----	-----
922		-----	-----	-----	-----	-----	-----	-----	-----
962		-----	-----	-----	-----	-----	-----	-----	-----
963	D1160	180.8	274.6	322.2	392.4	446.2	484.2	523.7	524.7
971	D1160	194.7	288.2	330.1	402.0	456.6	497.1	526.2	527.0
974		-----	-----	-----	-----	-----	-----	-----	-----
982		-----	-----	-----	-----	-----	-----	-----	-----
1006		-----	-----	-----	-----	-----	-----	-----	-----
1011		-----	-----	-----	-----	-----	-----	-----	-----
1019		-----	-----	-----	-----	-----	-----	-----	-----
1059		-----	-----	-----	-----	-----	-----	-----	-----
1082		-----	-----	-----	-----	-----	-----	-----	-----
1109		-----	-----	-----	-----	-----	-----	-----	-----
1121		-----	-----	-----	-----	-----	-----	-----	-----
1126		-----	-----	-----	-----	-----	-----	-----	-----
1135	D1160	233	280	323	389	448	489	530	552
1161		-----	-----	-----	-----	-----	-----	-----	-----
1167		-----	-----	-----	-----	-----	-----	-----	-----
1177		-----	-----	-----	-----	-----	-----	-----	-----
1212	D1160	200.9	286.9	329.5	397.9	456.7	497.0	524.5	525.6
1233		-----	-----	-----	-----	-----	-----	-----	-----
1254		-----	-----	-----	-----	-----	-----	-----	-----
1266		-----	-----	-----	-----	-----	-----	-----	-----
1269		-----	-----	-----	-----	-----	-----	-----	-----
1275		-----	-----	-----	-----	-----	-----	-----	-----
1299		-----	-----	-----	-----	-----	-----	-----	-----
1340	D1160	200.1	279.2	333.1	399.0	458.0	498.4	-----	511.0
1347		-----	-----	-----	-----	-----	-----	-----	-----
1348		-----	-----	-----	-----	-----	-----	-----	-----
1356		-----	-----	-----	-----	-----	-----	-----	-----
1385		-----	-----	-----	-----	-----	-----	-----	-----
1402	D1160	216.2	298.9	338.8	397.0	452.9	496.0	532.8	544.0
1404		-----	-----	-----	-----	-----	-----	-----	-----
1412		-----	-----	-----	-----	-----	-----	-----	-----
1428		-----	-----	-----	-----	-----	-----	-----	-----
1455	D1160	213.2	294.7	339.7	407.3	462.3	500.7	527.5	534.5
1459		-----	-----	-----	-----	-----	-----	-----	-----
1483		-----	-----	-----	-----	-----	-----	-----	-----
1510		-----	-----	-----	-----	-----	-----	-----	-----
1539	D1160	220	285	331	400	458	502	-----	526
1556		-----	-----	-----	-----	-----	-----	-----	-----
1569		-----	-----	-----	-----	-----	-----	-----	-----
1575		-----	-----	-----	-----	-----	-----	-----	-----
1586		-----	-----	-----	-----	-----	-----	-----	-----
1613	D1160	209.9	288.6	334.4	401.7	459.2	499.7	533.9	534.9
1622		-----	-----	-----	-----	-----	-----	-----	-----
1631		-----	-----	-----	-----	-----	-----	-----	-----
1643		-----	-----	-----	-----	-----	-----	-----	-----
1720		-----	-----	-----	-----	-----	-----	-----	-----
1724		-----	-----	-----	-----	-----	-----	-----	-----
1728		-----	-----	-----	-----	-----	-----	-----	-----
1740		-----	-----	-----	-----	-----	-----	-----	-----
1776		184.4	268.9	316.4	380.6	433.0	477.0	514.8	>750
1792	D1160	211.9	278.4	335.6	405.7	458.4	503.1	533.1	547.4
1807		-----	-----	-----	-----	-----	-----	-----	-----
1833		241.3	305.7	348.3	408.9	461.0	501.2	538.6	-----
1849		-----	-----	-----	-----	-----	-----	-----	-----
1854		-----	-----	-----	-----	-----	-----	-----	-----
1906		-----	-----	-----	-----	-----	-----	-----	-----
1956		-----	-----	-----	-----	-----	-----	-----	-----
1964		-----	-----	-----	-----	-----	-----	-----	-----
1967		-----	-----	-----	-----	-----	-----	-----	-----
1995		-----	-----	-----	-----	-----	-----	-----	-----
6016		-----	-----	-----	-----	-----	-----	-----	-----
6026	D1160	199	260	308	387	448	487	504	507
6028		-----	-----	-----	-----	-----	-----	-----	-----
6039		-----	-----	-----	-----	-----	-----	-----	-----
6044		-----	-----	-----	-----	-----	-----	-----	-----
6057	D1160	215.1	312.7	354.3	418.6	476.5	516.0	**559.0**	**600.0**
6075		-----	-----	-----	-----	-----	-----	-----	-----
6092		-----	-----	-----	-----	-----	-----	-----	-----
6142		-----	-----	-----	-----	-----	-----	-----	-----
6143		-----	-----	-----	-----	-----	-----	-----	-----
6192		-----	-----	-----	-----	-----	-----	-----	-----
6201		-----	-----	-----	-----	-----	-----	-----	-----
6238		199.7	257.0	**289** C	384.7	447.8	491.6	523.3	524.8
6252		-----	-----	-----	-----	-----	-----	-----	-----

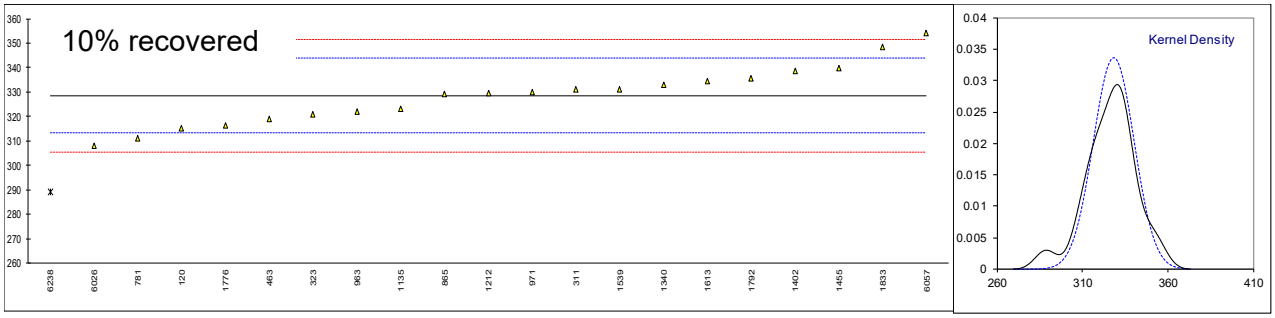
lab	method	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
	normality	OK	OK	OK	OK	suspect	OK	OK	OK
	n	20	21	20	21	21	21	18	17
	outliers	0	0	1	0	0	0	1	1
	mean (n)	205.24	281.47	328.54	396.65	454.20	495.52	525.23	529.33
	st.dev. (n)	15.643	14.773	11.879	9.984	9.597	8.499	9.185	12.382
	R(calc.)	43.80	41.36	33.26	27.96	26.87	23.80	25.72	34.67
	st.dev.(D1160:18)	17.500	9.286	7.651	7.049	6.390	5.582	5.188	9.643
	R(D1160:18)	49	26.0	21.4	19.7	17.9	15.6	14.5	27

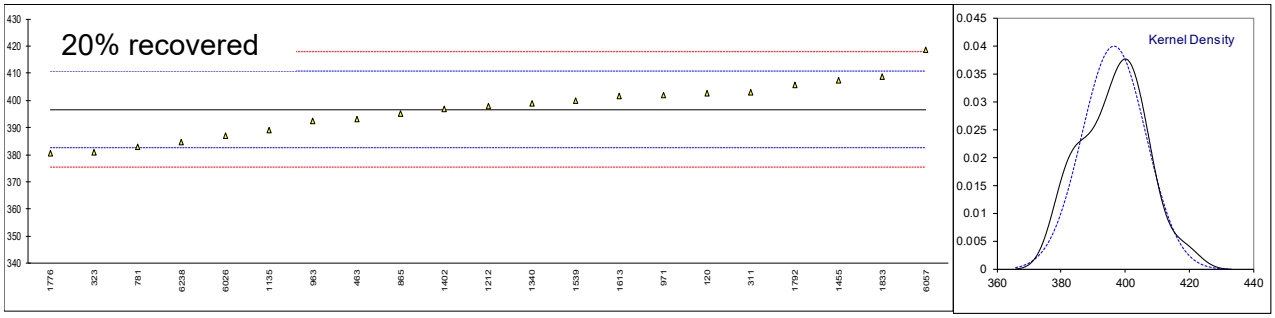
Lab 6238 first reported 288.8

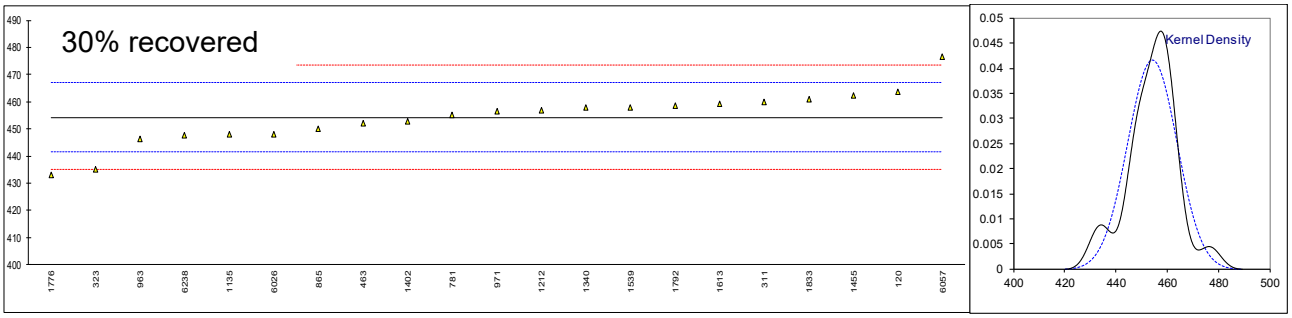
The reported results underlined and bold are statistical outliers

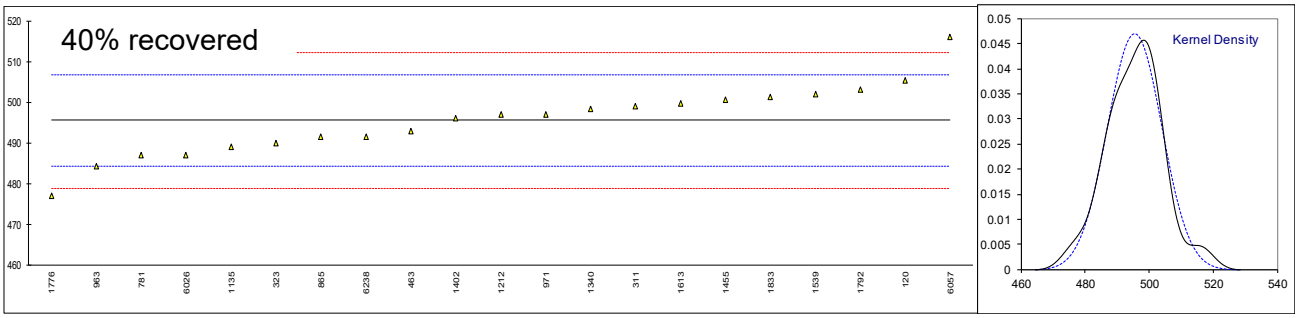


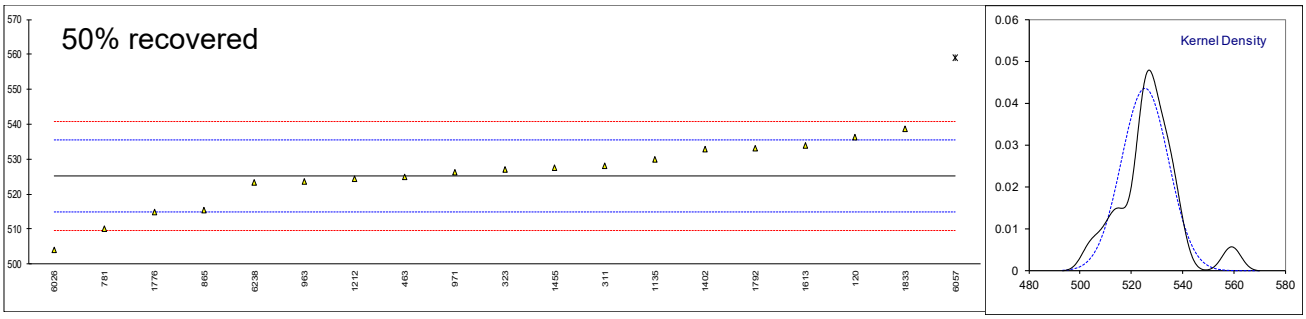


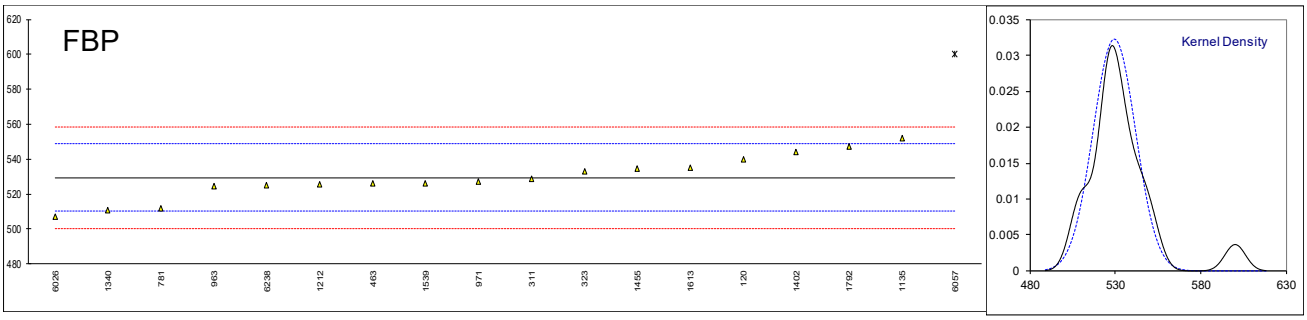





30% recovered
Kernel Density


40% recovered
Kernel Density


50% recovered
Kernel Density


FBP
Kernel Density

z-scores of Vacuum Distillation according to ASTM D1160 on sample #19105

lab	method	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
62		-----	-----	-----	-----	-----	-----	-----	-----
90		-----	-----	-----	-----	-----	-----	-----	-----
92		-----	-----	-----	-----	-----	-----	-----	-----
120	D1160	-0.09	-1.09	-1.76	0.86	1.49	1.77	2.15	1.08
140		-----	-----	-----	-----	-----	-----	-----	-----
150		-----	-----	-----	-----	-----	-----	-----	-----
154		-----	-----	-----	-----	-----	-----	-----	-----
158		-----	-----	-----	-----	-----	-----	-----	-----
159		-----	-----	-----	-----	-----	-----	-----	-----
168		-----	-----	-----	-----	-----	-----	-----	-----
169		-----	-----	-----	-----	-----	-----	-----	-----
171		-----	-----	-----	-----	-----	-----	-----	-----
175		-----	-----	-----	-----	-----	-----	-----	-----
194		-----	-----	-----	-----	-----	-----	-----	-----
221		-----	-----	-----	-----	-----	-----	-----	-----
224		-----	-----	-----	-----	-----	-----	-----	-----
225		-----	-----	-----	-----	-----	-----	-----	-----
228		-----	-----	-----	-----	-----	-----	-----	-----
237		-----	-----	-----	-----	-----	-----	-----	-----
238		-----	-----	-----	-----	-----	-----	-----	-----
253		-----	-----	-----	-----	-----	-----	-----	-----
254		-----	-----	-----	-----	-----	-----	-----	-----
273		-----	-----	-----	-----	-----	-----	-----	-----
309		-----	-----	-----	-----	-----	-----	-----	-----
311	D1160	-0.59	0.49	0.32	0.90	0.91	0.62	0.53	-0.03
313		-----	-----	-----	-----	-----	-----	-----	-----
323	D1160	0.27	0.17	-0.99	-2.22	-3.00	-0.99	0.34	0.38
331		-----	-----	-----	-----	-----	-----	-----	-----
333		-----	-----	-----	-----	-----	-----	-----	-----
334		-----	-----	-----	-----	-----	-----	-----	-----
335		-----	-----	-----	-----	-----	-----	-----	-----
336		-----	-----	-----	-----	-----	-----	-----	-----
337		-----	-----	-----	-----	-----	-----	-----	-----
339		-----	-----	-----	-----	-----	-----	-----	-----
342		-----	-----	-----	-----	-----	-----	-----	-----
343		-----	-----	-----	-----	-----	-----	-----	-----
349		-----	-----	-----	-----	-----	-----	-----	-----
371		-----	-----	-----	-----	-----	-----	-----	-----
391		-----	-----	-----	-----	-----	-----	-----	-----
398		-----	-----	-----	-----	-----	-----	-----	-----
399		-----	-----	-----	-----	-----	-----	-----	-----
440		-----	-----	-----	-----	-----	-----	-----	-----
444		-----	-----	-----	-----	-----	-----	-----	-----
463	D1160	-0.76	-0.91	-1.25	-0.52	-0.34	-0.45	-0.04	-0.35
511		-----	-----	-----	-----	-----	-----	-----	-----
529		-----	-----	-----	-----	-----	-----	-----	-----
541		-----	-----	-----	-----	-----	-----	-----	-----
557		-----	-----	-----	-----	-----	-----	-----	-----
562		-----	-----	-----	-----	-----	-----	-----	-----
575		-----	-----	-----	-----	-----	-----	-----	-----
603		-----	-----	-----	-----	-----	-----	-----	-----
604		-----	-----	-----	-----	-----	-----	-----	-----
605		-----	-----	-----	-----	-----	-----	-----	-----
608		-----	-----	-----	-----	-----	-----	-----	-----
631		-----	-----	-----	-----	-----	-----	-----	-----
633		-----	-----	-----	-----	-----	-----	-----	-----
663		-----	-----	-----	-----	-----	-----	-----	-----
671		-----	-----	-----	-----	-----	-----	-----	-----
750		-----	-----	-----	-----	-----	-----	-----	-----
751		-----	-----	-----	-----	-----	-----	-----	-----
753		-----	-----	-----	-----	-----	-----	-----	-----
759		-----	-----	-----	-----	-----	-----	-----	-----
781	D1160	-1.21	-2.85	-2.29	-1.94	0.13	-1.53	-2.93	-1.80
785		-----	-----	-----	-----	-----	-----	-----	-----
825		-----	-----	-----	-----	-----	-----	-----	-----
850		-----	-----	-----	-----	-----	-----	-----	-----
851		-----	-----	-----	-----	-----	-----	-----	-----
855		-----	-----	-----	-----	-----	-----	-----	-----
858		-----	-----	-----	-----	-----	-----	-----	-----
859		-----	-----	-----	-----	-----	-----	-----	-----
862		-----	-----	-----	-----	-----	-----	-----	-----
863		-----	-----	-----	-----	-----	-----	-----	-----
864		-----	-----	-----	-----	-----	-----	-----	-----
865		-----	0.24	0.10	-0.22	-0.67	-0.70	-1.91	-----
866		-----	-----	-----	-----	-----	-----	-----	-----
870		-----	-----	-----	-----	-----	-----	-----	-----
875		-----	-----	-----	-----	-----	-----	-----	-----
886		-----	-----	-----	-----	-----	-----	-----	-----

lab	method	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
912		-----	-----	-----	-----	-----	-----	-----	-----
913		-----	-----	-----	-----	-----	-----	-----	-----
922		-----	-----	-----	-----	-----	-----	-----	-----
962		-----	-----	-----	-----	-----	-----	-----	-----
963	D1160	-1.40	-0.74	-0.83	-0.60	-1.25	-2.03	-0.29	-0.48
971	D1160	-0.60	0.73	0.20	0.76	0.38	0.28	0.19	-0.24
974		-----	-----	-----	-----	-----	-----	-----	-----
982		-----	-----	-----	-----	-----	-----	-----	-----
1006		-----	-----	-----	-----	-----	-----	-----	-----
1011		-----	-----	-----	-----	-----	-----	-----	-----
1019		-----	-----	-----	-----	-----	-----	-----	-----
1059		-----	-----	-----	-----	-----	-----	-----	-----
1082		-----	-----	-----	-----	-----	-----	-----	-----
1109		-----	-----	-----	-----	-----	-----	-----	-----
1121		-----	-----	-----	-----	-----	-----	-----	-----
1126		-----	-----	-----	-----	-----	-----	-----	-----
1135	D1160	1.59	-0.16	-0.72	-1.08	-0.97	-1.17	0.92	2.35
1161		-----	-----	-----	-----	-----	-----	-----	-----
1167		-----	-----	-----	-----	-----	-----	-----	-----
1177		-----	-----	-----	-----	-----	-----	-----	-----
1212	D1160	-0.25	0.59	0.13	0.18	0.39	0.26	-0.14	-0.39
1233		-----	-----	-----	-----	-----	-----	-----	-----
1254		-----	-----	-----	-----	-----	-----	-----	-----
1266		-----	-----	-----	-----	-----	-----	-----	-----
1269		-----	-----	-----	-----	-----	-----	-----	-----
1275		-----	-----	-----	-----	-----	-----	-----	-----
1299		-----	-----	-----	-----	-----	-----	-----	-----
1340	D1160	-0.29	-0.24	0.60	0.33	0.59	0.52	-----	-1.90
1347		-----	-----	-----	-----	-----	-----	-----	-----
1348		-----	-----	-----	-----	-----	-----	-----	-----
1356		-----	-----	-----	-----	-----	-----	-----	-----
1385		-----	-----	-----	-----	-----	-----	-----	-----
1402	D1160	0.63	1.88	1.34	0.05	-0.20	0.09	1.46	1.52
1404		-----	-----	-----	-----	-----	-----	-----	-----
1412		-----	-----	-----	-----	-----	-----	-----	-----
1428		-----	-----	-----	-----	-----	-----	-----	-----
1455	D1160	0.45	1.43	1.46	1.51	1.27	0.93	0.44	0.54
1459		-----	-----	-----	-----	-----	-----	-----	-----
1483		-----	-----	-----	-----	-----	-----	-----	-----
1510		-----	-----	-----	-----	-----	-----	-----	-----
1539	D1160	0.84	0.38	0.32	0.48	0.59	1.16	-----	-0.35
1556		-----	-----	-----	-----	-----	-----	-----	-----
1569		-----	-----	-----	-----	-----	-----	-----	-----
1575		-----	-----	-----	-----	-----	-----	-----	-----
1586		-----	-----	-----	-----	-----	-----	-----	-----
1613	D1160	0.27	0.77	0.77	0.72	0.78	0.75	1.67	0.58
1622		-----	-----	-----	-----	-----	-----	-----	-----
1631		-----	-----	-----	-----	-----	-----	-----	-----
1643		-----	-----	-----	-----	-----	-----	-----	-----
1720		-----	-----	-----	-----	-----	-----	-----	-----
1724		-----	-----	-----	-----	-----	-----	-----	-----
1728		-----	-----	-----	-----	-----	-----	-----	-----
1740		-----	-----	-----	-----	-----	-----	-----	-----
1776		-1.19	-1.35	-1.59	-2.28	-3.32	-3.32	-2.01	-----
1792	D1160	0.38	-0.33	0.92	1.28	0.66	1.36	1.52	1.87
1807		-----	-----	-----	-----	-----	-----	-----	-----
1833		2.06	2.61	2.58	1.74	1.06	1.02	2.58	-----
1849		-----	-----	-----	-----	-----	-----	-----	-----
1854		-----	-----	-----	-----	-----	-----	-----	-----
1906		-----	-----	-----	-----	-----	-----	-----	-----
1956		-----	-----	-----	-----	-----	-----	-----	-----
1964		-----	-----	-----	-----	-----	-----	-----	-----
1967		-----	-----	-----	-----	-----	-----	-----	-----
1995		-----	-----	-----	-----	-----	-----	-----	-----
6016		-----	-----	-----	-----	-----	-----	-----	-----
6026	D1160	-0.36	-2.31	-2.68	-1.37	-0.97	-1.53	-4.09	-2.32
6028		-----	-----	-----	-----	-----	-----	-----	-----
6039		-----	-----	-----	-----	-----	-----	-----	-----
6044		-----	-----	-----	-----	-----	-----	-----	-----
6057	D1160	0.56	3.36	3.37	3.11	3.49	3.67	6.51	7.33
6075		-----	-----	-----	-----	-----	-----	-----	-----
6092		-----	-----	-----	-----	-----	-----	-----	-----
6142		-----	-----	-----	-----	-----	-----	-----	-----
6143		-----	-----	-----	-----	-----	-----	-----	-----
6192		-----	-----	-----	-----	-----	-----	-----	-----
6201		-----	-----	-----	-----	-----	-----	-----	-----
6238		-0.32	-2.63	-5.17	-1.70	-1.00	-0.70	-0.37	-0.47
6252		-----	-----	-----	-----	-----	-----	-----	-----

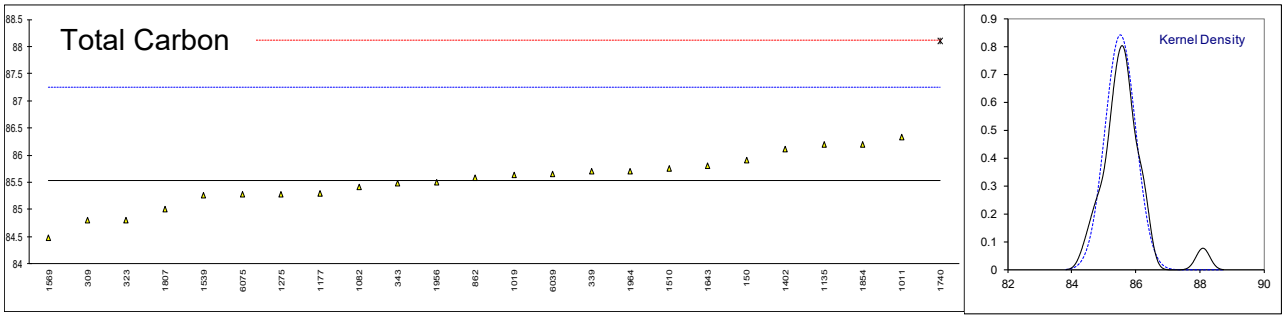
Determination of Total Carbon, Hydrogen and Nitrogen on sample #19105; results in %M/M

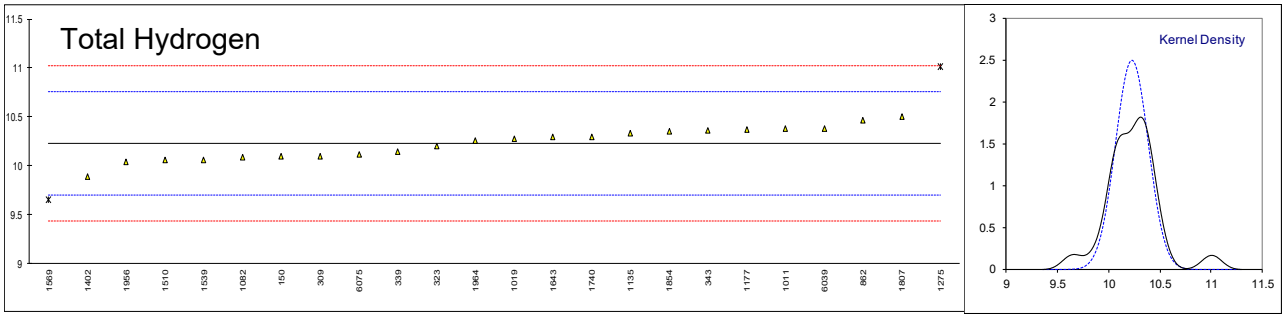
lab	method	Total C	mark	z(targ)	Total H	mark	z(targ)	Total N	mark	z(targ)
62		-----		-----	-----		-----	-----		-----
90		-----		-----	-----		-----	-----		-----
92		-----		-----	-----		-----	-----		-----
120		-----		-----	-----		-----	-----		-----
140		-----		-----	-----		-----	-----		-----
150	D5291-C	85.9		0.43	10.1		-0.49	<0.75		-----
154		-----		-----	-----		-----	-----		-----
158		-----		-----	-----		-----	-----		-----
159		-----		-----	-----		-----	-----		-----
168		-----		-----	-----		-----	-----		-----
169		-----		-----	-----		-----	-----		-----
171		-----		-----	-----		-----	-----		-----
175		-----		-----	-----		-----	-----		-----
194		-----		-----	-----		-----	-----		-----
221		-----		-----	-----		-----	-----		-----
224		-----		-----	-----		-----	-----		-----
225		-----		-----	-----		-----	-----		-----
228		-----		-----	-----		-----	-----		-----
237		-----		-----	-----		-----	-----		-----
238		-----		-----	-----		-----	-----		-----
253		-----		-----	-----		-----	-----		-----
254		-----		-----	-----		-----	-----		-----
273		-----		-----	-----		-----	-----		-----
309	D5291-D	84.8		-0.85	10.1		-0.49	0.46		0.80
311		-----		-----	-----		-----	-----		-----
313		-----		-----	-----		-----	-----		-----
323		84.8		-0.85	10.2		-0.12	0.5	C	1.90
331		-----		-----	-----		-----	-----		-----
333		-----		-----	-----		-----	-----		-----
334		-----		-----	-----		-----	-----		-----
335		-----		-----	-----		-----	-----		-----
336		-----		-----	-----		-----	-----		-----
337		-----		-----	-----		-----	-----		-----
339		85.7		0.20	10.14		-0.34	0.47		1.07
342		-----		-----	-----		-----	-----		-----
343	D5291-A	85.48		-0.06	10.36		0.49	<0.6		-----
349		-----		-----	-----		-----	-----		-----
371		-----		-----	-----		-----	-----		-----
391		-----		-----	-----		-----	-----		-----
398		-----		-----	-----		-----	-----		-----
399		-----		-----	-----		-----	-----		-----
440		-----		-----	-----		-----	-----		-----
444		-----		-----	-----		-----	-----		-----
463		-----		-----	-----		-----	-----		-----
511		-----		-----	-----		-----	-----		-----
529		-----		-----	-----		-----	-----		-----
541		-----		-----	-----		-----	-----		-----
557		-----		-----	-----		-----	-----		-----
562		-----		-----	-----		-----	-----		-----
575		-----		-----	-----		-----	-----		-----
603		-----		-----	-----		-----	-----		-----
604		-----		-----	-----		-----	-----		-----
605		-----		-----	-----		-----	-----		-----
608		-----		-----	-----		-----	-----		-----
631		-----		-----	-----		-----	-----		-----
633		-----		-----	-----		-----	-----		-----
663		-----		-----	-----		-----	-----		-----
671		-----		-----	-----		-----	-----		-----
750		-----		-----	-----		-----	-----		-----
751		-----		-----	-----		-----	-----		-----
753		-----		-----	-----		-----	-----		-----
759		-----		-----	-----		-----	-----		-----
781		-----		-----	-----		-----	-----		-----
785		-----		-----	-----		-----	-----		-----
825		-----		-----	-----		-----	-----		-----
850		-----		-----	-----		-----	-----		-----
851		-----		-----	-----		-----	-----		-----
855		-----		-----	-----		-----	-----		-----
858		-----		-----	-----		-----	-----		-----
859		-----		-----	-----		-----	-----		-----
862	D5291-D	85.59		0.07	10.47		0.91	0.41		-0.58
863		-----		-----	-----		-----	-----		-----
864		-----		-----	-----		-----	-----		-----
865		-----		-----	-----		-----	-----		-----
866		-----		-----	-----		-----	-----		-----
870		-----		-----	-----		-----	-----		-----
875		-----		-----	-----		-----	-----		-----
886		-----		-----	-----		-----	-----		-----

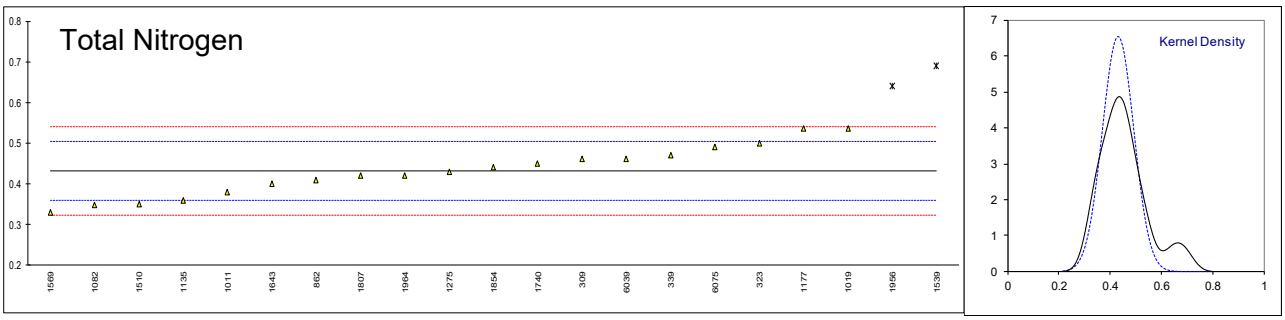
lab	method	Total C	mark	z(targ)	Total H	mark	z(targ)	Total N	mark	z(targ)
912		-----		-----	-----		-----	-----		-----
913		-----		-----	-----		-----	-----		-----
922		-----		-----	-----		-----	-----		-----
962		-----		-----	-----		-----	-----		-----
963		-----		-----	-----		-----	-----		-----
971		-----		-----	-----		-----	-----		-----
974		-----		-----	-----		-----	-----		-----
982		-----		-----	-----		-----	-----		-----
1006		-----		-----	-----		-----	-----		-----
1011	D5291-A	86.33		0.93	10.38		0.56	0.38		-1.40
1019	D5291-A	85.64		0.13	10.28		0.19	0.537	C	2.91
1059		-----		-----	-----		-----	-----		-----
1082	D5291-A	85.42		-0.13	10.09		-0.53	0.347		-2.31
1109		-----		-----	-----		-----	-----		-----
1121		-----		-----	-----		-----	-----		-----
1126		-----		-----	-----		-----	-----		-----
1135	D5291-A	86.2		0.78	10.33		0.38	0.36		-1.95
1161		-----		-----	-----		-----	-----		-----
1167		-----		-----	-----		-----	-----		-----
1177	D5291-D	85.29		-0.28	10.37		0.53	0.535		2.86
1212		-----		-----	-----		-----	-----		-----
1233		-----		-----	-----		-----	-----		-----
1254		-----		-----	-----		-----	-----		-----
1266		-----		-----	-----		-----	-----		-----
1269		-----		-----	-----		-----	-----		-----
1275	D5291-D	85.28		-0.29	11.01	R(5)	2.95	0.43		-0.03
1299		-----		-----	-----		-----	-----		-----
1340		-----		-----	-----		-----	-----		-----
1347		-----		-----	-----		-----	-----		-----
1348		-----		-----	-----		-----	-----		-----
1356		-----		-----	-----		-----	-----		-----
1385		-----		-----	-----		-----	-----		-----
1402	D5291-C	86.11		0.67	9.89		-1.29	-----		-----
1404		-----		-----	-----		-----	-----		-----
1412		-----		-----	-----		-----	-----		-----
1428		-----		-----	-----		-----	-----		-----
1455		-----		-----	-----		-----	-----		-----
1459		-----		-----	-----		-----	-----		-----
1483		-----		-----	-----		-----	-----		-----
1510	D5291-B	85.76		0.27	10.06		-0.65	0.35		-2.23
1539	D5291-D	85.26		-0.31	10.06		-0.65	0.69	DG(5)	7.12
1556		-----		-----	-----		-----	-----		-----
1569	D5291-A	84.48		-1.22	9.65	R(5)	-2.20	0.33		-2.78
1575		-----		-----	-----		-----	-----		-----
1586		-----		-----	-----		-----	-----		-----
1613		-----		-----	-----		-----	-----		-----
1622		-----		-----	-----		-----	-----		-----
1631		-----		-----	-----		-----	-----		-----
1643	D5291-A	85.8		0.31	10.3		0.26	0.4		-0.85
1720		-----		-----	-----		-----	-----		-----
1724		-----		-----	-----		-----	-----		-----
1728		-----		-----	-----		-----	-----		-----
1740		88.1	C,R(1)	2.98	10.3		0.26	0.45		0.52
1776		-----		-----	-----		-----	-----		-----
1792		-----		-----	-----		-----	-----		-----
1807	D5291-A	85		-0.61	10.5		1.02	0.42		-0.30
1833		-----		-----	-----		-----	-----		-----
1849		-----		-----	-----		-----	-----		-----
1854	D5291-D	86.20		0.78	10.35		0.45	0.44		0.25
1906		-----		-----	-----		-----	-----		-----
1956		85.5		-0.03	10.04		-0.72	0.64	DG(5)	5.75
1964	D5291-A	85.70667		0.21	10.25625		0.10	0.42075		-0.28
1967		-----		-----	-----		-----	-----		-----
1995		-----		-----	-----		-----	-----		-----
6016		-----		-----	-----		-----	-----		-----
6026		-----		-----	-----		-----	-----		-----
6028		-----		-----	-----		-----	-----		-----
6039	D5291-C	85.66		0.15	10.38		0.56	0.46		0.80
6044		-----		-----	-----		-----	-----		-----
6057		-----		-----	-----		-----	-----		-----
6075	D5291-D	85.27		-0.30	10.12		-0.42	0.49		1.62
6092		-----		-----	-----		-----	-----		-----
6142		-----		-----	-----		-----	-----		-----
6143		-----		-----	-----		-----	-----		-----
6192		-----		-----	-----		-----	-----		-----
6201		-----		-----	-----		-----	-----		-----
6238		-----		-----	-----		-----	-----		-----
6252		-----		-----	-----		-----	-----		-----

lab method	Total C	mark	z(targ)	Total H	mark	z(targ)	Total N	mark	z(targ)
normality	OK			OK			OK		
n	23			22			19		
outliers	1			2			2		
mean (n)	85.5294			10.2307			0.4310		
st.dev. (n)	0.47458			0.15937			0.06102		
R(calc.)	1.3288			0.4462			0.1709		
st.dev.(D5291-ABC:16)	0.86149			0.26434			0.03636		
R(D5291-ABC:16)	2.4122			0.7401			0.1018		

Lab 323 first reported 0.8
Lab 1019 first reported 0.595
Lab 1740 first reported 87.4







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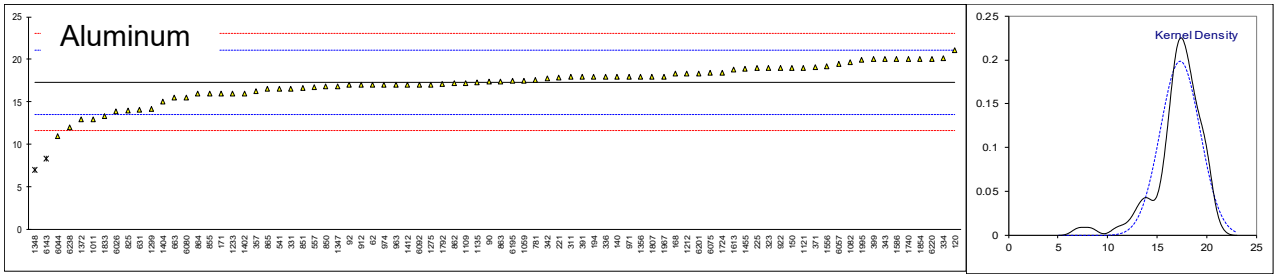
Determination of Aluminum as Al, Silicon as Si and total Al+Si on sample #19106; results in mg/kg

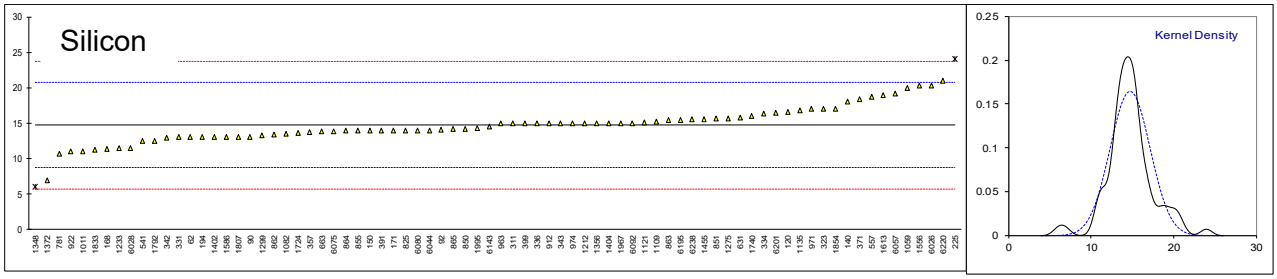
lab	method	Al	mark	z(targ)	Si	mark	z(targ)	Sum Al+Si	mark	z(targ)
62	IP470	17		-0.16	13		-0.58	30		-0.57
90	D5184	17.4		0.05	13.1		-0.55	30.5		-0.43
92	D5184	16.99		-0.17	14.08		-0.22	-----		-----
120	IP501	21.07	C	1.98	16.60		0.62	38.51		1.82
140	IP501	18		0.36	18		1.08	36		1.12
150	IP501	19		0.89	14		-0.25	33		0.28
154		-----		-----	-----		-----	-----		-----
159		-----		-----	-----		-----	-----		-----
168	D5184	18.3		0.52	11.4	C	-1.11	-----		-----
171	IP501	16		-0.69	14		-0.25	30		-0.57
175		-----		-----	-----		-----	-----		-----
194	IP501	18		0.36	13		-0.58	31		-0.29
221	IP470	17.87		0.29	-----		-----	-----		-----
225	IP501	19		0.89	24	R(0.05)	3.08	43	ex	3.09
237		-----		-----	-----		-----	-----		-----
254		-----		-----	-----		-----	-----		-----
273		-----		-----	-----		-----	-----		-----
311	IP501	18		0.36	15		0.09	33		0.28
323	IP501	19		0.89	17		0.75	36		1.12
331	IP501 mod	16.5		-0.43	13.0		-0.58	29.5		-0.71
333		-----		-----	-----		-----	-----		-----
334	IP501	20.12		1.48	16.38		0.54	36.50		1.26
336	IP501	18		0.36	15		0.09	33		0.28
342	IP501	17.7444		0.23	12.9608		-0.59	30.7052		-0.37
343	IP501	20		1.41	15		0.09	34		0.56
357	IP501	16.3		-0.53	13.7		-0.35	30.0		-0.57
371	IP470	19.07		0.93	18.34		1.20	37.41	C	1.51
391	IP501	18		0.36	14		-0.25	32		-0.01
398		-----		-----	-----		-----	-----		-----
399	IP470	20		1.41	15		0.09	35		0.84
444		-----		-----	-----		-----	-----		-----
463		-----		-----	-----		-----	-----		-----
511		-----		-----	-----		-----	-----		-----
529		-----		-----	-----		-----	-----		-----
541	IP501	16.5		-0.43	12.5		-0.75	29.0		-0.85
557	IP501	16.755		-0.29	18.754		1.33	35.509		0.98
605		-----		-----	-----		-----	-----		-----
608		-----		-----	-----		-----	-----		-----
631	IP470	14.05		-1.71	15.74		0.33	30		-0.57
663	IP501	15.5		-0.95	13.9		-0.28	29.4		-0.74
750		-----		-----	-----		-----	-----		-----
781	IP470	17.6		0.15	10.7		-1.34	28.3		-1.05
785		-----		-----	-----		-----	-----		-----
825	IP501	14		-1.74	14		-0.25	28		-1.13
850	IP501	16.8		-0.27	14.2		-0.18	31.0		-0.29
851	IP501	16.64		-0.35	15.65		0.30	32.29		0.08
855	IP501	16		-0.69	14		-0.25	30		-0.57
862	IP501	17.2		-0.06	13.4		-0.45	30.6		-0.40
863	IP501	17.4		0.05	15.4		0.22	32.8		0.22
864	IP501	16		-0.69	14		-0.25	30		-0.57
865	IP501	16.5		-0.43	14.2		-0.18	30.7		-0.37
875		-----		-----	-----		-----	-----		-----
912	IP501	17		-0.16	15		0.09	32		-0.01
913		-----		-----	-----		-----	-----		-----
922	IP501	19		0.89	11		-1.24	30		-0.57
963	IP501	17		-0.16	15		0.09	32		-0.01
971	IP501	18		0.36	17		0.75	35		0.84
974	IP501	17		-0.16	15		0.09	32		-0.01
1011	ISO10478	13		-2.26	11		-1.24	24		-2.25
1059	in house	17.5	C	0.10	20		1.75	-----		-----
1082	ISO10478	19.67		1.24	13.47		-0.42	33.14		0.31
1109	IP470	17.2		-0.06	15.2		0.15	32.4		0.11
1121	IP501	19.01		0.89	15.13		0.13	34.14		0.60
1135	IP501	17.320		0.01	16.797		0.68	34		0.56
1212	IP501	18.3		0.52	15.0		0.09	33.3		0.36
1233	IP501	16.0		-0.69	11.5		-1.08	27.5		-1.27
1275	IP501	17.06		-0.13	15.71		0.32	32.77		0.21
1299	IP501	14.2		-1.63	13.3		-0.48	27.5		-1.27
1347	in house	16.84		-0.25	-----		-----	-----		-----
1348	in house	7	R(0.01)	-5.42	6	R(0.05)	-2.91	13	R(0.01)	-5.34
1356	IP501	18		0.36	15		0.09	33		0.28
1372	IP470	12.98		-2.27	6.89		-2.61	19.87	R(0.05)	-3.41
1385		-----		-----	-----		-----	-----		-----
1402	IP501	16		-0.69	13		-0.58	29		-0.85
1404	IP470	15		-1.21	15		0.09	30		-0.57
1412	IP501	17	C	-0.16	-----		-----	-----		-----

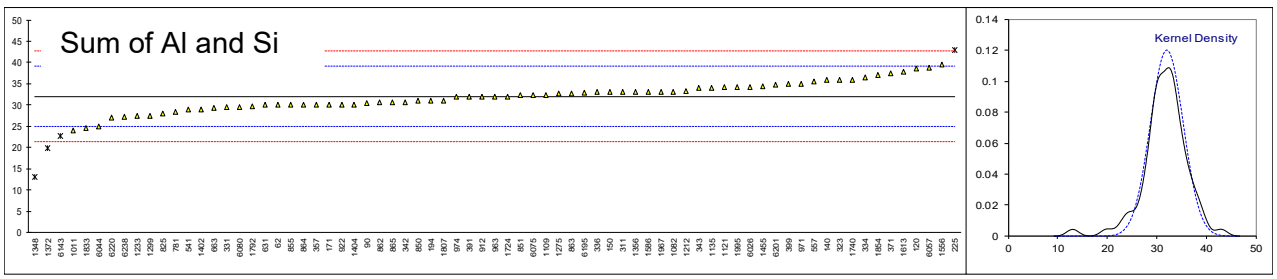
lab	method	Al	mark	z(targ)	Si	mark	z(targ)	Sum Al+Si	mark	z(targ)
1455	IP501	18.9		0.84	15.6		0.29	34.5		0.70
1556	IP501	19.2		0.99	20.3		1.85	39.5		2.10
1586	IP501	20		1.41	13		-0.58	33		0.28
1613	IP470	18.8	C	0.78	19	C	1.42	37.8	C	1.62
1643		-----		-----	-----		-----	-----		-----
1720		-----		-----	-----		-----	-----		-----
1724	IP501	18.41		0.58	13.64		-0.37	32.05		0.01
1740	IP501	20		1.41	16		0.42	36		1.12
1792	IP501	17.1		-0.11	12.5		-0.75	29.6		-0.68
1807	D5184	18		0.36	13		-0.58	31		-0.29
1833	IP501	13.30		-2.11	11.26		-1.16	24.56		-2.10
1854	IP501	20		1.41	17		0.75	37		1.40
1967	IP470	18		0.36	15		0.09	33		0.28
1995	IP501	19.93		1.38	14.27		-0.16	34.2		0.61
6016		-----		-----	-----		-----	-----		-----
6026	IP470	13.9280		-1.78	20.3552		1.87	34.2832		0.64
6028		-----		-----	11.5		-1.08	-----		-----
6044	IP501	10.928		-3.35	14.0055		-0.25	24.9335		-1.99
6057	IP501	19.5		1.15	19.2		1.48	38.7		1.88
6075	In house	18.4		0.57	13.9		-0.28	32.3		0.08
6080	IP501	15.5		-0.95	14.0		-0.25	29.5		-0.71
6092	IP501	17		-0.16	15		0.09	-----		-----
6143	D6728	8.293	R(0.01)	-4.74	14.5		-0.08	22.793	ex	-2.59
6195	IP501	17.451		0.07	15.402		0.22	32.853		0.23
6201	IP501	18.38		0.56	16.45		0.57	34.83		0.79
6220	IP470	20		1.41	21		2.08	27	C	-1.41
6238	D5184	12	C	-2.79	15.576		0.28	27.277		-1.33
normality		OK			suspect			OK		
n		78			76			69		
outliers		2			2			2+2ex		
mean (n)		17.31			14.74			32.02		
st.dev. (n)		2.005			2.429			3.322		
R(calc.)		5.61			6.80			9.30		
st.dev.(IP470:05)		1.904			3.007			3.559		
R(IP470:05)		5.33			8.42			9.97		
Compare										
R(IP501:05)		5.83			4.89			7.61		

Lab 120 first reported 21.91
Lab 168 first reported 23.2
Lab 371 first reported 18.5
Lab 1059 first reported 24
Lab 1412 first reported 25

Lab 6143 test result is excluded because of a statistical outlier in the Al determination
Lab 6220 first reported 41 but did not change the individual test values for Al and Si
Lab 225 test result is excluded because of a statistical outlier in the Si determination
Lab 6238 first reported 11.701
Lab 1613 first reported 2, 2.2 and 4.2





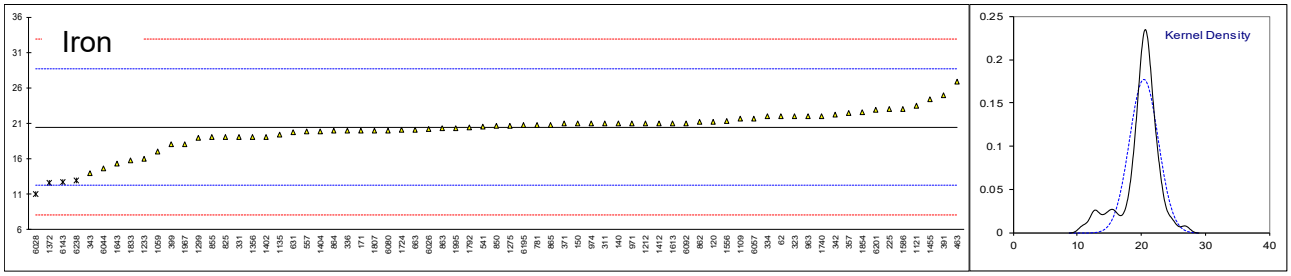


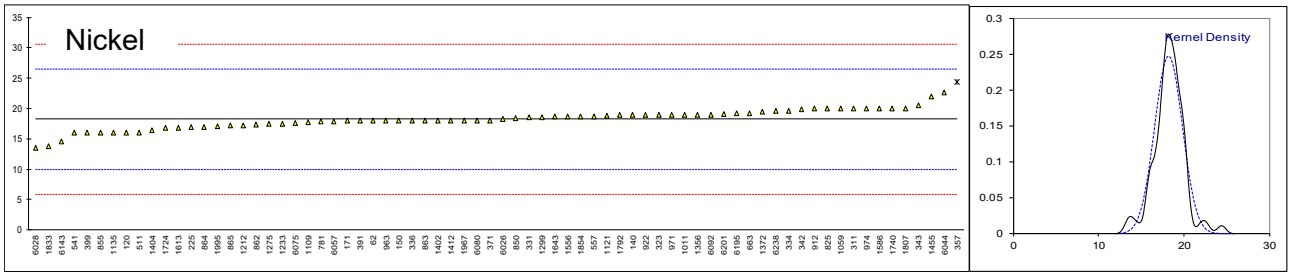
Determination of Iron as Fe, Nickel as Ni, Sodium as Na on sample #19106; results in mg/kg

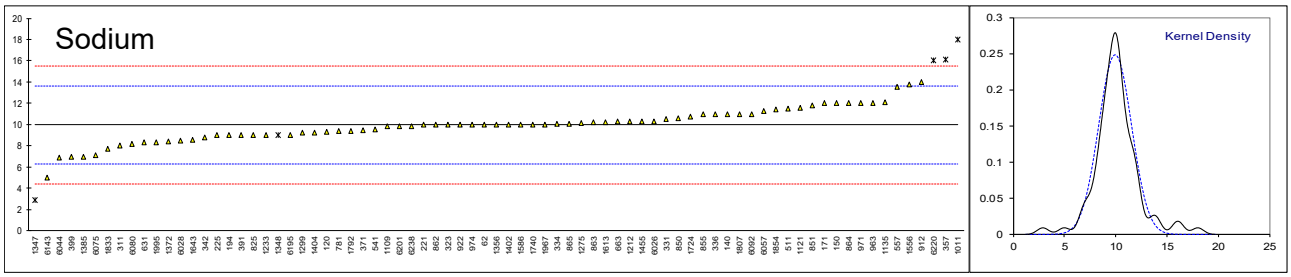
lab	method	Fe	mark	z(targ)	Ni	mark	z(targ)	Na	mark	z(targ)
62	IP470	22		0.37	18		-0.05	10		0.03
90		-----		-----	-----		-----	-----		-----
92		-----		-----	-----		-----	-----		-----
120	IP501	21.26		0.19	16.01		-0.54	9.31	C	-0.35
140	IP501	21		0.13	19		0.19	11		0.57
150	IP501	21		0.13	18		-0.05	12		1.11
154		-----		-----	-----		-----	-----		-----
159		-----		-----	-----		-----	-----		-----
168		-----		-----	-----		-----	-----		-----
171	IP501	20		-0.11	18		-0.05	12		1.11
175		-----		-----	-----		-----	-----		-----
194		-----		-----	-----		-----	9		-0.52
221		-----		-----	-----		-----	9.99		0.02
225	IP501	23		0.62	17		-0.30	9		-0.52
237		-----		-----	-----		-----	-----		-----
254		-----		-----	-----		-----	-----		-----
273		-----		-----	-----		-----	-----		-----
311	IP501	21		0.13	20		0.43	8		-1.06
323	IP501	22		0.37	19		0.19	10		0.03
331	IP501 mod	19.0		-0.35	18.5		0.07	10.5		0.30
333		-----		-----	-----		-----	-----		-----
334	IP501	21.95		0.36	19.66		0.35	10.05		0.05
336	IP501	20		-0.11	18		-0.05	11		0.57
342	IP501	22.1844		0.42	19.8612		0.40	8.8092		-0.62
343	D5708	14		-1.57	20.5		0.56	-----		-----
357	IP501	22.5		0.49	24.4	R(0.05)	1.50	16.1	R(0.05)	3.33
371	IP470	21.00		0.13	18.07		-0.04	9.48		-0.26
391	IP501	25		1.10	18		-0.05	9		-0.52
398		-----		-----	-----		-----	-----		-----
399	IP470	18		-0.60	16		-0.54	7		-1.60
444		-----		-----	-----		-----	-----		-----
463	IP470	26.9		1.56	-----		-----	-----		-----
511		-----		-----	16.012		-0.54	11.465		0.82
529		-----		-----	-----		-----	-----		-----
541	IP501	20.5		0.01	16.0		-0.54	9.5		-0.24
557	IP501	19.889		-0.14	18.705		0.12	13.563		1.95
605		-----		-----	-----		-----	-----		-----
608		-----		-----	-----		-----	-----		-----
631	IP470	19.7		-0.18	-----		-----	8.34		-0.87
663	IP501	20.1		-0.09	19.2		0.24	10.3		0.19
750		-----		-----	-----		-----	-----		-----
781	IP470	20.8		0.08	17.9		-0.08	9.4		-0.30
785		-----		-----	-----		-----	-----		-----
825	IP501	19		-0.35	20		0.43	9		-0.52
850	IP501	20.6		0.03	18.4		0.04	10.6		0.35
851		-----		-----	-----		-----	11.83		1.02
855	IP501	19		-0.35	16		-0.54	11		0.57
862	IP501	21.2		0.18	17.4		-0.20	10.0		0.03
863	IP501	20.3		-0.04	18.0		-0.05	10.2		0.13
864	IP501	20		-0.11	17		-0.30	12		1.11
865	IP501	20.8		0.08	17.2		-0.25	10.1		0.08
875		-----		-----	-----		-----	-----		-----
912		-----		-----	20		0.43	14		2.19
913		-----		-----	-----		-----	-----		-----
922		-----		-----	19		0.19	10		0.03
963	IP501	22		0.37	18		-0.05	12		1.11
971	IP501	21		0.13	19		0.19	12		1.11
974	IP501	21		0.13	20		0.43	10		0.03
1011		-----		-----	19		0.19	18	R(0.05)	4.36
1059	in house	17		-0.84	20		0.43	-----		-----
1082		-----		-----	-----		-----	-----		-----
1109	IP470	21.7		0.30	17.8		-0.10	9.8		-0.08
1121	IP501	23.45		0.73	18.74		0.13	11.58		0.88
1135	IP501	19.432		-0.25	16.002		-0.54	12.081		1.15
1212	IP501	21.0		0.13	17.2		-0.25	10.3		0.19
1233	IP501	16.0		-1.08	17.5		-0.17	9.0		-0.52
1275	IP501	20.61		0.04	17.47		-0.18	10.12		0.09
1299	IP501	18.9		-0.38	18.5		0.07	9.2		-0.41
1347		-----		-----	-----		-----	2.92	R(0.05)	-3.81
1348		-----		-----	-----		-----	9	ex	-0.52
1356	IP501	19		-0.35	19		0.19	10		0.03
1372	D5708	12.64	DG(5)	-1.90	19.48		0.31	8.37		-0.86
1385		-----		-----	-----		-----	7		-1.60
1402	IP501	19		-0.35	18		-0.05	10		0.03
1404	IP470	19.9		-0.14	16.4		-0.44	9.2		-0.41
1412	IP501	21		0.13	18		-0.05	-----		-----

lab	method	Fe	mark	z(targ)	Ni	mark	z(targ)	Na	mark	z(targ)
1455	IP501	24.4		0.96	22.0		0.92	10.3		0.19
1556	IP501	21.3		0.20	18.7		0.12	13.8		2.08
1586	IP501	23		0.62	20		0.43	10		0.03
1613	IP470	21.0		0.13	16.8	C	-0.34	10.2		0.13
1643	D5185	15.29		-1.25	18.64		0.10	8.551		-0.76
1720		-----		-----	-----		-----	-----		-----
1724	IP501	20.02		-0.11	16.79		-0.35	10.77		0.44
1740	IP501	22		0.37	20		0.43	10		0.03
1792	IP501	20.4		-0.01	18.9		0.17	9.4		-0.30
1807	IP501	20		-0.11	20		0.43	11		0.57
1833	IP501	15.72		-1.15	13.79		-1.08	7.74		-1.20
1854	IP501	22.6		0.52	18.7		0.12	11.4		0.78
1967	IP470	18		-0.60	18		-0.05	10		0.03
1995	IP501	20.35		-0.03	17.10		-0.27	8.36		-0.86
6016		-----		-----	-----		-----	-----		-----
6026	IP470	20.1703		-0.07	18.2865		0.02	10.3092		0.19
6028	D5185	11.0	DG(5)	-2.29	13.5		-1.15	8.5		-0.79
6044	IP501	14.624		-1.42	22.6175		1.07	6.874		-1.67
6057	IP501	21.7		0.30	17.9		-0.08	11.3		0.73
6075		-----		-----	17.6		-0.15	7.08		-1.55
6080	IP501	20.0		-0.11	18.0		-0.05	8.2		-0.95
6092	IP501	21		0.13	19		0.19	11		0.57
6143	D6728	12.715	DG(5)	-1.88	14.551		-0.89	4.995		-2.68
6195	IP501	20.794		0.08	19.182		0.24	9.000		-0.52
6201	IP501	22.90		0.59	19.08		0.21	9.83		-0.07
6220		-----		-----	-----		-----	16	C,R(0.05)	3.27
6238	D5708	12.908	DG(5)	-1.83	19.644		0.35	9.870		-0.04
normality		suspect			suspect			suspect		
n		65			71			72		
outliers		4			1			4+1ex		
mean (n)		20.46			18.22			9.95		
st.dev. (n)		2.246			1.616			1.602		
R(calc.)		6.29			4.53			4.49		
st.dev.(IP470:05)		4.123			4.111			1.847		
R(IP470:05)		11.54			11.51			5.17		
Compare										
R(IP501:05)		4.93			8.30			3.77		

Lab 120 first reported 16.69
Lab 1348 test result is excluded as related values are outliers
Lab 1613 first reported 30.4
Lab 6220 first reported 30





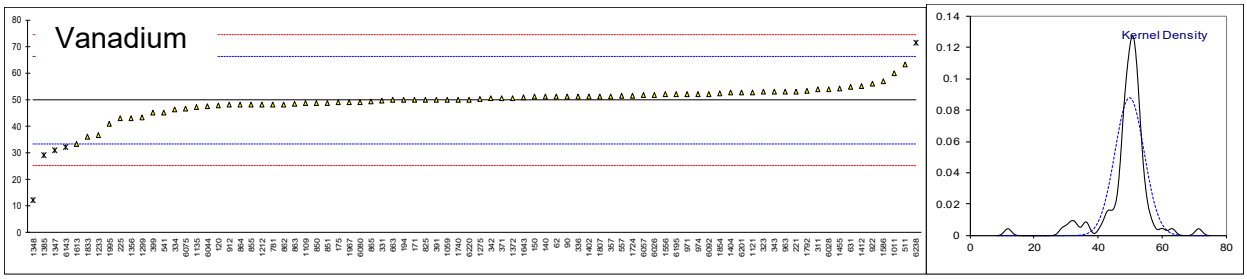


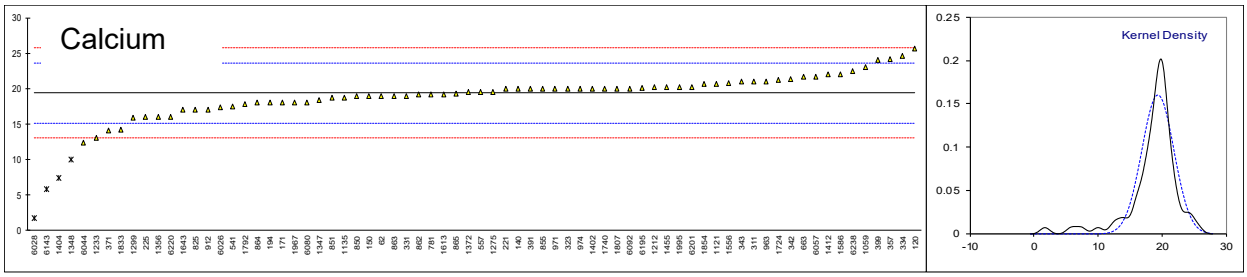
Determination of Vanadium as V, Calcium as Ca and Zinc as Zn on sample #19106; results in mg/kg

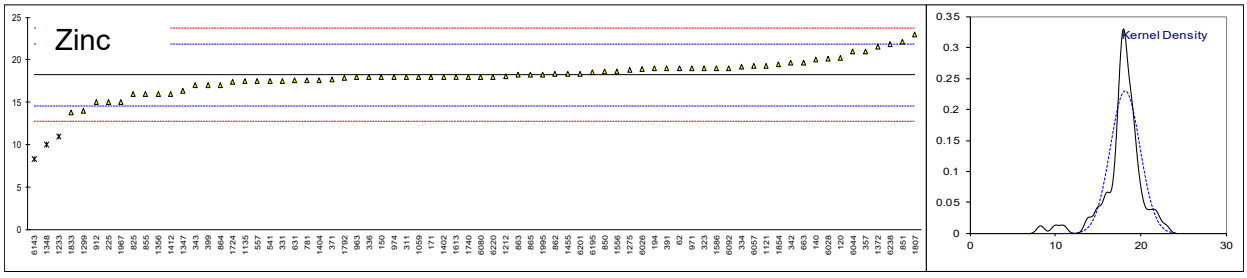
lab	method	V	mark	z(targ)	Ca	mark	z(targ)	Zn	mark	z(targ)
62	IP470	51		0.14	19		-0.17	19		0.42
90	D5863-B	51		0.14	-----		-----	-----		-----
92		-----		-----	-----		-----	-----		-----
120	IP501	47.87		-0.24	25.65		2.97	20.23		1.10
140	IP501	51		0.14	20		0.30	20		0.97
150	IP501	51		0.14	19		-0.17	18		-0.12
154		-----		-----	-----		-----	-----		-----
159		-----		-----	-----		-----	-----		-----
168		-----		-----	-----		-----	-----		-----
171	IP501	50		0.01	18		-0.65	18		-0.12
175	D5863-B	49		-0.11	-----		-----	-----		-----
194	IP501	50		0.01	18		-0.65	19		0.42
221	IP470	53.01		0.38	19.92		0.26	-----		-----
225	IP501	43		-0.84	16		-1.59	15		-1.77
237		-----		-----	-----		-----	-----		-----
254		-----		-----	-----		-----	-----		-----
273		-----		-----	-----		-----	-----		-----
311	IP501	54		0.50	21		0.77	18		-0.12
323	IP501	53		0.38	20		0.30	19		0.42
331	IP501 mod	49.5		-0.05	19.0		-0.17	17.5		-0.40
333		-----		-----	-----		-----	-----		-----
334	IP501	46.28		-0.44	24.59		2.47	19.19		0.53
336	IP501	51		0.14	-----		-----	18		-0.12
342	IP501	50.4548		0.07	21.3445		0.93	19.6590		0.78
343	D5708	53		0.38	21		0.77	17		-0.67
357	IP501	51.2		0.16	24.2		2.28	21.0		1.52
371	IP470	50.47		0.07	14.02	C	-2.53	17.71		-0.28
391	IP501	50		0.01	20		0.30	19		0.42
398		-----		-----	-----		-----	-----		-----
399	IP470	45		-0.59	24		2.19	17		-0.67
444		-----		-----	-----		-----	-----		-----
463		-----		-----	-----		-----	-----		-----
511	D5863-B	63.105		1.61	-----		-----	-----		-----
529		-----		-----	-----		-----	-----		-----
541	IP501	45.0		-0.59	17.5		-0.88	17.5		-0.40
557	IP501	51.540		0.20	19.485		0.06	17.464965		-0.42
605		-----		-----	-----		-----	-----		-----
608		-----		-----	-----		-----	-----		-----
631	D5863-A	54.7		0.59	-----		-----	17.6		-0.34
663	IP501	49.9		0.00	21.7		1.10	19.7		0.81
750		-----		-----	-----		-----	-----		-----
781	IP470	48.1		-0.22	19.2		-0.08	17.6		-0.34
785		-----		-----	-----		-----	-----		-----
825	IP501	50		0.01	17		-1.12	16		-1.22
850	IP501	48.7		-0.14	18.9		-0.22	18.6		0.20
851	IP501	48.79		-0.13	18.70		-0.32	22.11		2.13
855	IP501	48		-0.23	20		0.30	16		-1.22
862	IP501	48.2		-0.20	19.2		-0.08	18.3		0.04
863	IP501	48.5		-0.17	19.0		-0.17	18.2		-0.01
864	IP501	48		-0.23	18		-0.65	17		-0.67
865	IP501	49.3		-0.07	19.3		-0.03	18.2		-0.01
875		-----		-----	-----		-----	-----		-----
912	IP501	48		-0.23	17		-1.12	15		-1.77
913		-----		-----	-----		-----	-----		-----
922	IP501	56		0.74	-----		-----	-----		-----
963	IP501	53		0.38	21		0.77	18		-0.12
971	IP501	52		0.26	20		0.30	19		0.42
974	IP501	52		0.26	20		0.30	18		-0.12
1011	D5863-B	60		1.23	-----		-----	-----		-----
1059	in house	50		0.01	23		1.72	18		-0.12
1082		-----		-----	-----		-----	-----		-----
1109	IP470	48.6		-0.16	-----		-----	-----		-----
1121	IP501	52.62		0.33	20.66		0.61	19.32		0.60
1135	IP501	47.200		-0.33	18.706		-0.31	17.445		-0.43
1212	IP501	48.0		-0.23	20.2		0.39	18.1		-0.07
1233	IP501	36.5		-1.63	13.0		-3.01	11.0	R(0.01)	-3.95
1275	IP501	50.15		0.03	19.53		0.08	18.83		0.33
1299	IP501	43.2		-0.81	15.9		-1.64	14.0		-2.31
1347	in house	31.02	R(5)	-2.29	18.41		-0.45	16.34		-1.03
1348	in house	12	R(1)	-4.61	10	R(0.05)	-4.43	10	R(0.01)	-4.50
1356	IP501	43		-0.84	16		-1.59	16		-1.22
1372	D5708	50.50		0.08	19.47		0.05	21.57		1.83
1385	in house	29	C,R(5)	-2.54	-----		-----	-----		-----
1402	IP501	51		0.14	20		0.30	18		-0.12
1404	IP470	52.5		0.32	7.4	R(0.01)	-5.66	17.6		-0.34
1412	IP501	55		0.62	22		1.24	16		-1.22

lab	method	V	mark	z(targ)	Ca	mark	z(targ)	Zn	mark	z(targ)
1455	IP501	54.2		0.53	20.2		0.39	18.3		0.04
1556	IP501	51.9		0.25	20.8		0.68	18.6		0.20
1586	IP501	57		0.87	22		1.24	19		0.42
1613	D5863-A	33.3	C	-2.02	19.2		-0.08	18.0		-0.12
1643	D5185	50.97		0.13	16.97		-1.13	-----		-----
1720		-----		-----	-----		-----	-----		-----
1724	IP501	51.59		0.21	21.27		0.90	17.37		-0.47
1740	IP501	50		0.01	20		0.30	18		-0.12
1792	IP501	53.2		0.40	17.8		-0.74	17.9		-0.18
1807	IP501	51		0.14	20		0.30	23		2.61
1833	IP501	36.13		-1.67	14.23		-2.43	13.79		-2.43
1854	IP501	52.3		0.29	20.6		0.58	19.5		0.70
1967	IP470	49		-0.11	18		-0.65	15		-1.77
1995	IP501	40.98		-1.08	20.23		0.41	18.29		0.04
6016		-----		-----	-----		-----	-----		-----
6026	IP470	51.8507		0.24	17.3177	C	-0.97	18.9153		0.38
6028	D5185	54.0		0.50	1.7	C,R(0.01)	-8.36	20.1		1.03
6044	IP501	47.6005		-0.28	12.332		-3.33	20.967		1.50
6057	IP501	51.7		0.22	21.7		1.10	19.3		0.59
6075	D5863-B	46.5		-0.41	-----		-----	-----		-----
6080	IP501	49.0		-0.11	18.0		-0.65	18.0		-0.12
6092	IP501	52		0.26	20		0.30	19		0.42
6143	D6728	32.205	R(5)	-2.15	5.831	R(0.01)	-6.40	8.316	R(0.01)	-5.42
6195	IP501	51.909		0.25	20.126		0.36	18.573		0.19
6201	IP501	52.55		0.33	20.23		0.41	18.35		0.07
6220	IP470	50		0.01	16		-1.59	18		-0.12
6238	D5708	71.393	R(5)	2.62	22.441		1.45	21.843		1.98
normality		not OK			suspect			suspect		
n		77			68			69		
outliers		5			4			3		
mean (n)		49.88			19.37			18.23		
st.dev. (n)		4.547			2.497			1.734		
R(calc.)		12.73			6.99			4.85		
st.dev.(IP470:05)		8.223			2.115			1.827		
R(IP470:05)		23.02			5.92			5.12		
Compare										
R(IP501:05)		17.54			4.42			3.88		

Lab 371 first reported 11.22
Lab 1385 first reported 19
Lab 1613 first reported 114
Lab 6026 first reported 27.3177
Lab 6028 first reported 7.1





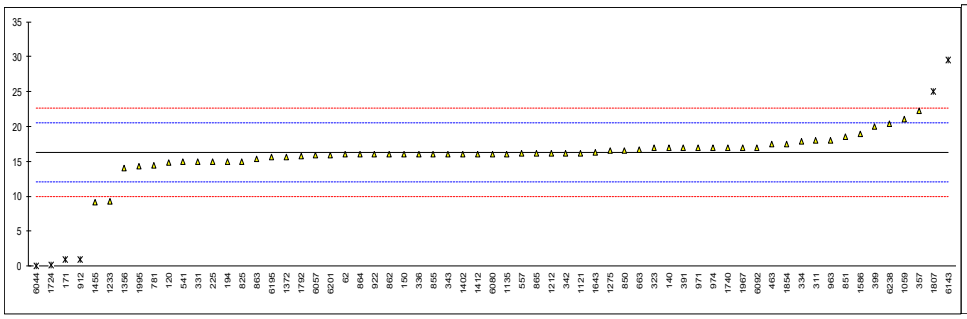


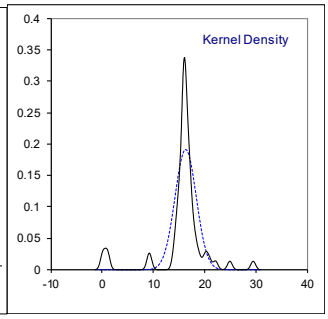
Determination of Phosphorus as P on sample #19106; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62	IP500	16		-0.15	
90		-----		-----	
92		-----		-----	
120	IP501	14.83		-0.71	
140	IP501	17		0.32	
150	IP501	16		-0.15	
154		-----		-----	
159		-----		-----	
168		-----		-----	
171	IP501	1	R(0.01)	-7.24	
175		-----		-----	
194	IP501	15		-0.63	
221		-----		-----	
225	IP501	15		-0.63	
237		-----		-----	
254		-----		-----	
273		-----		-----	
311	IP501	18		0.79	
323	IP501	17		0.32	
331	IP501 mod	15.0		-0.63	
333		-----		-----	
334	IP501	17.89		0.74	
336	IP501	16		-0.15	
342	IP501	16.2199		-0.05	
343	IP501	16		-0.15	
357	IP501	22.2		2.77	
371		-----		-----	
391	IP501	17		0.32	
398		-----		-----	
399	IP501	20		1.73	
444		-----		-----	
463	IP500	17.45		0.53	
511		-----		-----	
529		-----		-----	
541	IP501	15.0		-0.63	
557	IP501	16.158		-0.08	
605		-----		-----	
608		-----		-----	
631		-----		-----	
663	IP501	16.7		0.18	
750		-----		-----	
781	IP501	14.4		-0.91	
785		-----		-----	
825	IP501	15		-0.63	
850	IP501	16.6		0.13	
851	IP501	18.59		1.07	
855	IP501	16		-0.15	
862	IP501	16.0		-0.15	
863	IP501	15.4		-0.44	
864	IP501	16		-0.15	
865	IP501	16.2		-0.06	
875		-----		-----	
912	IP501	1	R(0.01)	-7.24	
913		-----		-----	
922	IP501	16		-0.15	
963	IP501	18		0.79	
971	IP501	17		0.32	
974	IP501	17		0.32	
1011		-----		-----	
1059	in house	21		2.21	
1082		-----		-----	
1109		-----		-----	
1121	IP501	16.22		-0.05	
1135	IP501	16.090		-0.11	
1212	IP501	16.2		-0.06	
1233	IP501	9.30		-3.32	
1275	IP501	16.57		0.11	
1299		-----		-----	
1347		-----		-----	
1348		-----		-----	
1356	IP501	14		-1.10	
1372	D5185	15.67		-0.31	
1385		-----		-----	
1402	IP501	16		-0.15	
1404		-----		-----	
1412	IP501	16		-0.15	

lab	method	value	mark	z(targ)	remarks
1455	IP501	9.1		-3.41	
1556		-----		-----	
1586	IP501	19		1.26	
1613		-----		-----	
1643	D5185	16.32		0.00	
1720		-----		-----	
1724	IP501	0.21	R(0.01)	-7.61	
1740	IP501	17		0.32	
1792	IP501	15.8		-0.25	
1807	IP501	25	R(0.01)	4.09	
1833		-----	W	-----	test result withdrawn, first reported 10.69
1854	IP501	17.5		0.55	
1967	IP501	17		0.32	
1995	IP501	14.36		-0.93	
6016		-----		-----	
6026		-----		-----	
6028		-----		-----	
6044	D5185	0	ex	-7.71	excluded as 0 is not a real test result
6057	IP501	15.9		-0.20	
6075		-----		-----	
6080	IP501	16.0		-0.15	
6092	IP501	17		0.32	
6143	D6728	29.575	R(0.01)	6.25	
6195	IP501	15.651		-0.32	
6201	IP501	15.92		-0.19	
6220		-----		-----	
6238	D5185	20.408		1.93	

normality	not OK
n	57
outliers	5+1ex
mean (n)	16.33
st.dev. (n)	2.082
R(calc.)	5.83
st.dev.(IP501:05)	2.118
R(IP501:05)	5.93





APPENDIX 2 Analytical details of the determination: Acid Number

lab	End point determination	Volume solvent	lab	End point determination	Volume solvent	lab	End point determination	Volume solvent
62	Inflection Point	125 mL	855	Inflection Point	125 mL	1833	---	---
90	---	---	858	Inflection Point	125 mL	1849	---	---
92	BEP (pH 10)	125 mL	859	Inflection Point	125 mL	1854	---	---
120	Inflection Point	125 mL	862	Inflection Point	---	1906	---	---
140	---	---	863	---	---	1956	---	---
150	---	---	864	Inflection Point	125 mL	1964	---	---
154	---	---	865	Inflection Point	125 mL	1967	---	---
158	Inflection Point	60 mL	866	Inflection Point	125 mL	1995	BEP (pH 11)	125 mL
159	---	---	870	---	---	6016	---	---
168	---	---	875	---	---	6026	Inflection Point	125 mL
169	---	---	886	---	---	6028	---	---
171	BEP (pH 10)	60 mL	912	---	---	6039	---	---
175	---	---	913	---	---	6044	---	---
194	---	---	922	Inflection Point	125 mL	6057	Inflection Point	60 mL
221	---	---	962	---	---	6075	---	---
224	---	---	963	Inflection Point	60 mL	6092	---	---
225	---	---	971	Inflection Point	125 mL	6142	---	---
228	---	---	974	Inflection Point	125 mL	6143	---	---
237	Inflection Point	125 mL	982	---	---	6192	---	---
238	---	---	1006	---	---	6201	---	---
253	---	---	1011	---	---	6238	---	---
254	---	---	1019	---	---	6252	---	---
273	---	---	1059	---	---			
309	---	---	1082	---	---			
311	Inflection Point	125 mL	1109	Inflection Point	125 mL			
313	---	---	1121	BEP (pH 11)	125 mL			
323	Inflection Point	125 mL	1126	---	---			
331	---	---	1135	---	---			
333	---	---	1161	---	---			
334	Inflection Point	125 mL	1167	---	---			
335	---	---	1177	---	---			
336	---	---	1212	Inflection Point	125 mL			
337	---	---	1233	---	---			
339	---	---	1254	Inflection Point	125 mL			
342	BEP (pH 11)	125 mL	1266	---	---			
343	---	---	1269	---	---			
349	---	---	1275	Inflection Point	125 mL			
371	---	---	1299	BEP (pH 10)	60 mL			
391	---	---	1340	Inflection Point	125 mL			
398	BEP (pH 11)	125 mL	1347	---	---			
399	---	---	1348	---	---			
440	---	---	1356	Inflection Point	60 mL			
444	---	---	1385	---	---			
463	BEP (pH 11)	125 mL	1402	BEP (pH 11)	60 mL			
511	---	---	1404	BEP (pH 11)	125 mL			
529	---	---	1412	---	---			
541	---	---	1428	---	---			
557	BEP (pH 10)	125 mL	1455	Inflection Point	125 mL			
562	---	---	1459	---	---			
575	---	---	1483	---	---			
603	---	---	1510	---	---			
604	---	---	1539	---	---			
605	---	---	1556	BEP (pH 10)	125 mL			
608	---	---	1569	Inflection Point	125 mL			
631	---	---	1575	---	---			
633	Inflection Point	125 mL	1586	---	---			
663	---	---	1613	Inflection Point	125 mL			
671	---	---	1622	---	---			
750	---	---	1631	---	---			
751	---	---	1643	BEP (pH 11)	60 mL			
753	---	---	1720	---	---			
759	---	---	1724	Inflection Point	125 mL			
781	Inflection Point	125mL	1728	---	---			
785	---	---	1740	Inflection Point	60 mL			
825	---	---	1776	BEP (pH 10)	125 mL			
850	Inflection Point	125 mL	1792	Inflection Point	60 mL			
851	---	---	1807	---	---			

APPENDIX 3

Number of participants per country

1 lab in ARGENTINA
1 lab in AUSTRALIA
1 lab in AZERBAIJAN
4 labs in BELGIUM
1 lab in BOSNIA and HERZEGOVINA
1 lab in BRAZIL
3 labs in CANADA
1 lab in CHILE
10 labs in CHINA, People's Republic
1 lab in COLOMBIA
1 lab in CONGO Brazzaville
1 lab in COSTA RICA
1 lab in COTE D'IVOIRE
1 lab in DJIBOUTI
3 labs in EGYPT
2 labs in FINLAND
10 labs in FRANCE
2 labs in GERMANY
5 labs in GREECE
1 lab in GUAM
1 lab in GUINEA REPUBLIC
1 lab in HONG KONG
2 labs in INDIA
1 lab in INDONESIA
1 lab in IRAN, Islamic Republic of
1 lab in IRAQ
1 lab in IRELAND
3 labs in ITALY
1 lab in JORDAN
1 lab in KAZAKHSTAN
1 lab in KENYA
2 labs in LATVIA
3 labs in LEBANON
4 labs in MALAYSIA
1 lab in MALTA
1 lab in MARTINIQUE
1 lab in MAURITIUS
1 lab in MEXICO
6 labs in NETHERLANDS
2 labs in NIGERIA
1 lab in PAKISTAN
1 lab in PERU
2 labs in PHILIPPINES
1 lab in POLAND
1 lab in PORTUGAL
1 lab in ROMANIA
9 labs in RUSSIAN FEDERATION
2 labs in SAUDI ARABIA
1 lab in SENEGAL
2 labs in SLOVENIA
1 lab in SOUTH AFRICA
1 lab in SOUTH KOREA
9 labs in SPAIN
1 lab in SUDAN
7 labs in SWEDEN
2 labs in TAIWAN
1 lab in THAILAND
1 lab in TOGO
1 lab in TUNISIA
7 labs in TURKEY
4 labs in UNITED ARAB EMIRATES
8 labs in UNITED KINGDOM
11 labs in UNITED STATES OF AMERICA

APPENDIX 4

Abbreviations:

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

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