



Institute for
Interlaboratory Studies

Results of Proficiency Test Fuel Oil July 2023

Organized by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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1 INTRODUCTION

Since 1994 the Institute for Interlaboratory Studies (iis) organizes a proficiency scheme for the analysis of Fuel Oil based on the latest version of ISO8217 and ASTM D396. Since 2016 this proficiency scheme has been organized twice per year. During the annual proficiency testing program 2022/2023 it was decided to continue the round robin for the analysis of Fuel Oil.

In this interlaboratory study registered for participation:

- 143 laboratories in 54 countries for regular analyzes in Fuel Oil iis23F01
- 101 laboratories in 44 countries on the Metal analyzes in Fuel Oil iis23F01M

In total 150 laboratories in 55 countries registered for participation in one or two proficiency tests, see appendix 3 for the number of participants per country. In this report the results of this Fuel Oil proficiency tests are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organizer of this proficiency test (PT). Sample analyzes for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC17025 accredited laboratory.

In this proficiency test the participants received, depending on the registration, one or two different samples of Fuel Oil, see table below.

Sample ID	PT ID	Quantity	Purpose
#23105	iis23F01	1x 1 L	Regular analyzes
#23106	iis23F01M	1x 100 mL	Metals

Table 1: Fuel Oil samples used in PT iis23F01

Participants were requested to report rounded and unrounded test results. The unrounded test results were preferably used for statistical evaluation.

2.1 ACCREDITATION

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, is accredited in agreement with ISO/IEC17043:2010 (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This PT falls under the accredited scope. This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentiality of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5). This protocol is electronically available through the iis website www.iisnl.com, from the FAQ page.

2.3 CONFIDENTIALITY STATEMENT

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

2.4 SAMPLES

For the preparation of the sample for the regular analyzes in Fuel Oil a batch of approximately 200 liters of Fuel Oil was obtained from a third party. After heating to 60 °C and homogenization 195 amber glass bottles of 1 L were filled and labelled #23105. The homogeneity of the subsamples was checked by determination of Density at 15 °C in accordance with ISO12185 on 8 stratified randomly selected subsamples.

	Density at 15 °C in kg/m ³
sample #23105-1	983.0
sample #23105-2	983.0
sample #23105-3	983.0
sample #23105-4	983.1
sample #23105-5	983.0
sample #23105-6	983.0
sample #23105-7	983.0
sample #23105-8	983.0

Table 2: homogeneity test results of subsamples #23105

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

	Density at 15 °C in kg/m ³
r (observed)	0.1
reference test method	ISO12185:96
0.3 x R (reference test method)	0.5

Table 3: evaluation of the repeatability of subsamples #23105

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

For the preparation of the sample for the analyzes of Metals in Fuel Oil a batch of approximately 25 L of Fuel Oil containing metals was obtained from a third party. After heating to 60 °C and homogenization 135 PE bottles of 0.1 L were filled and labelled #23106. The homogeneity of the subsamples was checked by the determination of Nickel and Iron in accordance with IP501 on 8 stratified randomly selected subsamples.

	Nickel in mg/kg	Iron in mg/kg
sample #23106-1	31.8	15.7
sample #23106-2	33.0	16.1
sample #23106-3	30.1	15.3
sample #23106-4	34.8	15.7
sample #23106-5	32.6	15.5
sample #23106-6	34.2	16.4
sample #23106-7	33.3	16.1
sample #23106-8	31.1	14.9

Table 4: homogeneity test results of subsamples #23106

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

	Nickel in mg/kg	Iron in mg/kg
r (observed)	4.4	1.4
reference test method	IP470:05	IP470:05
0.3 x R (reference test method)	4.8	3.0

Table 5: evaluation of the repeatabilities of subsamples #23106

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

Depending on the registration of the participant the appropriate set of PT samples was sent on June 14, 2023. 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 ANALYZES

The participants were requested to determine on sample #23105: Total Acid Number, API Gravity, Ash Content, Asphaltenes, Calculated Carbon Aromaticity Index, Carbon Residue micro method, Conradson Carbon Residue, Density at 15 °C, Flash Point PMcc, Heat of Combustion (Gross and Net), Hydrogen Sulfide, Kinematic Viscosity (at 50 °C and 100 °C), Kinematic Viscosity Stabinger (at 50 °C and 100 °C), Nitrogen, Pour Point (Lower, Upper and Automated 3 °C interval), Sediment by Extraction, Total Sediment (Existent (TSE), Accelerated (TSA) and Potential (TSP)), Total Sulfur, Water by distillation, Water and Sediment, Vacuum Distillation at 10 mmHg but reported as AET (IBP, 5%, 10%, 20%, 30%, 40%, 50% recovered and FBP), Total Carbon, Total Hydrogen and Total Nitrogen (CHN-analysis).

Also, some extra information was requested about the determination of Total Acid Number. On sample #23106 it was requested to determine: Aluminum as Al, Silicon as Si, Sum Aluminum and Silicon, Iron as Fe, Nickel as Ni, Sodium as Na, Vanadium as V, Calcium as Ca, Phosphorus as P and Zinc as Zn.

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

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

3 RESULTS

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

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

3.1 STATISTICS

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

For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as '<...' or '>...' were not used in the statistical evaluation.

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

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

According to ISO13528 all (original received or corrected) results per determination were submitted to outlier tests. In the iis procedure for proficiency tests, outliers are detected prior to calculation of the mean, standard deviation and reproducibility. For small data sets, Dixon (up to 20 test results) or Grubbs (up to 40 test results) outlier tests can be used. For larger data sets (above 20 test results) Rosner's outlier test can be used. Outliers are marked by D(0.01) for the Dixon's test, by G(0.01) or DG(0.01) for the Grubbs' test and by R(0.01) for the Rosner's test. Stragglers are marked by D(0.05) for the Dixon's test, by G(0.05) or DG(0.05) for the Grubbs' test and by R(0.05) for the Rosner's test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

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

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

3.2 GRAPHICS

In order to visualize the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported test results are plotted. The corresponding laboratory numbers are on the X-axis. The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected reference test method. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle.

Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms. Also, a normal Gauss curve (dotted line) was projected over the Kernel Density Graph (smooth line) for reference. The Gauss curve is calculated from the consensus value and the corresponding standard deviation.

3.3 Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements (derived from e.g. ISO or ASTM test methods), the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the variation in this interlaboratory study.

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

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

The z-scores were calculated according to:

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

The $z_{(\text{target})}$ scores are listed in the test result tables 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 some problems were encountered with the dispatch of the samples. For the regular Fuel Oil PT twenty-two participants reported test results after the final reporting date and nine other participants did not report any test results.

For the PT on metals thirteen participants reported test results after the final reporting date and seventeen other participants did not report any test results.

Not all participants did not report all tests requested.

In total 139 participants reported 2565 numerical test results. Observed were 65 outlying test results, which is 2.5%. In proficiency tests outlier percentages of 3% - 7.5% are quite normal.

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

4.1 EVALUATION PER SAMPLE AND PER TEST

In this section the reported test results are discussed per sample and per test. The test methods which were used by the various laboratories were taken into account for explaining the observed differences when possible and applicable. These test methods are also in the tables together with the original data in appendix 1. The abbreviations, used in these tables, are explained in appendix 4.

In the iis PT reports ASTM test methods are referred to with a number (e.g. D5950) and an added designation for the year that the test method was adopted or revised (e.g. D5950:14). When a method has been reapproved an “R” will be added and the year of approval (e.g. D5950:14R20).

sample #23105

Total Acid Number: This determination may be problematic depending on the test method used. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D664:18e2 test method A for IP 125 mL and BEP 125 mL. However, the calculated reproducibility is in agreement with the requirements of ASTM D664:18e2 test method A for IP 60 mL and BEP 60 mL.

When evaluated separately for the type of end point the calculated reproducibilities did meet the requirements for IP 60 mL and BEP 60 mL, but not for IP125 mL and BEP 125 mL.

API Gravity: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D1298:12bR17e1.

Ash Content: This determination was problematic. Seven statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ISO6245:01 and ASTM D482:19.

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 IP143:04R21. ASTM D6560 is equivalent to IP143.

Calculated Carbon Aromaticity Index: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO8217:17.

Carbon Residue micro method: This determination may be problematic depending on the test method used. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ISO10370:14 but not with ASTM D4530:15R20.

Conradson Carbon Residue: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D189:06R19.

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

Flash Point PMcc: This determination was not problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO2719:16/A1:21.

Heat of Combustion (Gross): This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D240:19.

Heat of Combustion (Net): 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 D240:19.

Hydrogen Sulfide: This determination was not problematic. The reporting participants agreed on a value near or below the application range. Therefore, no z-scores are calculated.

Kinematic Viscosity at 50 °C: 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 ISO3104:20.

Kinematic Viscosity at 100 °C: This determination was not problematic. Five statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO3104:20.

Kin. Viscosity Stabinger at 50 °C: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D7042:21a.

Kin. Viscosity Stabinger at 100 °C: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D7042:21a.

Nitrogen: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of ASTM D5762:18a.

Pour Point Lower: 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 ISO3016:19.

Pour Point Upper: This determination was not problematic. No statistical outliers were observed but one test result was excluded. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of ISO3016:19.

Pour Point Automated: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of ASTM D5950:14R20.

Sediment by Extraction: This determination was not problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D473:22.

Total Sediment Existent (TSE): This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of IP375:11R22.

Total Sediment Accelerated (TSA): This determination was not problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of IP390:11R17. IP390:11R17 is identical to ISO10307-2:09 and technically equivalent to ASTM D4870:22.

Total Sediment Potential (TSP): This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of IP390:11R17. IP390:11R17 is identical to ISO10307-2:09 and technically equivalent to ASTM D4870:22.

Total Sulfur: This determination may be problematic depending on the test method used. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ISO8754:03 but not in agreement with the stricter requirements of ASTM D4294:21.

Water by distillation: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO3733:99 and ASTM D95:13R18.

Water and Sediment: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D1796:22.

Vacuum Distillation at 10 mmHg but reported as AET: This determination may be problematic. In total six statistical outliers were observed over eight distillation parameters and four other test results were excluded. The calculated reproducibilities after rejection of the suspect data are in agreement with the requirements of ASTM D1160:18 for IBP, 5%, 10%, 20% and 30% recovered, but not for the other distillation parameters. It was decided not to calculate z-scores for 50% recovery due to the large difference between the calculated and reference reproducibility.

CHN-Analysis: This determination was not problematic for Total Carbon and Total Hydrogen but was problematic for Total Nitrogen. In total two statistical outliers were observed. The calculated reproducibilities for Carbon and Hydrogen after rejection of the statistical outliers are in agreement with the requirements of ASTM D5291-ABC:21. The calculated reproducibility for Nitrogen is not in agreement with the requirements of ASTM D5291-ABC:21.

sample #23106

Aluminum: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of IP470:05 and IP501:05R19.

Silicon: This determination may be problematic depending on the test method used. 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 IP501:05R19.

Sum Al and Si: This determination was problematic. One statistical outlier was observed and two other test results were excluded. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of IP470:05 neither with the stricter requirements of IP501:05R19.

Iron: This determination may be problematic depending on the test method used. 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 IP501:05R19.

Nickel: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of IP470:05 and IP501:05R19.

Sodium: This determination may be problematic depending on the test method used. 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 IP501:05R19.

Vanadium: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of IP470:05 and IP501:05R19.

Calcium: This determination may be problematic depending on the test method used. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of IP470:05 but not in agreement with the stricter requirements of IP501:05R19.

Phosphorus: This determination was not problematic. The reporting participants agreed on a value near or below the application range. Therefore, no z-scores are calculated.

Zinc: This determination was not problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of IP470:05 and IP501:05R19.

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 reference test method and the reproducibility as found for the group of participating laboratories. The number of significant test results, the average, the calculated reproducibility (2.8 * standard deviation) and the target reproducibility derived from reference methods are presented in the next tables.

Parameter	unit	n	average	2.8 * sd	R(lit)
Total Acid Number	mg KOH/g	70	0.28	0.14	0.06
API Gravity		75	12.35	0.23	0.5
Ash Content	%M/M	88	0.025	0.012	0.005
Asphaltenes	%M/M	52	4.35	1.08	0.87
Calc. Carbon Aromaticity Index		60	845.0	1.2	2.2
Carbon Residue micro method	%M/M	83	11.18	0.99	1.23

Parameter	unit	n	average	2.8 * sd	R(lit)
Conradson Carbon Residue	%M/M	25	11.39	1.57	1.81
Density at 15 °C	kg/m ³	114	983.1	1.5	1.5
Flash Point PMcc	°C	101	117.7	5.9	6
Heat of Combustion (Gross)	MJ/kg	54	43.12	0.35	0.40
Heat of Combustion (Net)	MJ/kg	48	40.79	0.41	0.40
Hydrogen Sulfide	mg/kg	25	<0.6	n.e.	n.e.
Kinematic Viscosity 50 °C	mm ² /s	94	346.8	20.4	29.3
Kinematic Viscosity 100 °C	mm ² /s	68	31.65	0.93	3.82
Kin. Viscosity Stabinger 50 °C	mm ² /s	22	349.1	22.6	35.9
Kin. Viscosity Stabinger 100 °C	mm ² /s	22	31.64	0.86	2.27
Nitrogen	mg/kg	26	2976	1730	968
Pour Point Lower	°C	43	1.3	10.4	9
Pour Point Upper	°C	80	3.1	9.3	9
Pour Point Automated Δ3 °C	°C	23	-1.4	8.1	6.1
Sediment by Extraction	%M/M	59	0.018	0.016	0.038
Total Sediment Existent (TSE)	%M/M	70	0.020	0.014	0.041
Total Sediment Accel. (TSA)	%M/M	63	0.021	0.014	0.042
Total Sediment Potential (TSP)	%M/M	66	0.020	0.014	0.042
Total Sulfur	%M/M	118	1.07	0.11	0.10
Water by distillation	%V/V	70	0.04	0.08	0.2
Water and Sediment	%V/V	33	0.05	0.07	0.11
Initial Boiling Point	°C	14	213.5	16.4	49
5% recovered	°C	15	260.9	18.3	22.5
10% recovered	°C	15	300.0	20.7	20.9
20% recovered	°C	14	368.8	17.1	19.9
30% recovered	°C	15	428.7	19.6	19.0
40% recovered	°C	15	483.8	19.9	10.3
50% recovered	°C	5	526.6	40.4	(7.3)
Final Boiling Point	°C	11	517.2	33.2	27
Total Carbon	%M/M	20	87.4	1.1	2.4
Total Hydrogen	%M/M	21	10.8	0.7	0.8
Total Nitrogen	%M/M	18	0.36	0.23	0.10

Table 6: reproducibilities of tests on sample #23105

For results between brackets no z-scores are calculated.

Element	unit	n	average	2.8 * sd	R(lit)
Aluminum as Al	mg/kg	74	5.1	4.2	2.3
Silicon as Si	mg/kg	69	6.3	4.8	4.8
Sum of Aluminum and Silicon	mg/kg	64	11.0	7.0	5.3
Iron as Fe	mg/kg	75	16.0	5.1	9.9
Nickel as Ni	mg/kg	76	33.5	11.1	16.1
Sodium as Na	mg/kg	76	11.4	5.1	5.6

Element	unit	n	average	2.8 * sd	R(lit)
Vanadium as V	mg/kg	80	96.3	18.2	32.0
Calcium as Ca	mg/kg	76	4.7	3.5	4.1
Phosphorus as P	mg/kg	65	<1	n.e.	n.e.
Zinc as Zn	mg/kg	58	0.92	0.53	0.55

Table 7: reproducibilities of tests on sample #23106

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

4.3 COMPARISON OF THE PROFICIENCY TEST OF JULY 2023 WITH PREVIOUS PTS

	July 2023	December 2022	June 2022	December 2021	June 2021
Number of reporting laboratories	139	152	147	139	159
Number of test results	2565	3163	2488	3146	2744
Number of statistical outliers	65	85	85	63	108
Percentage of statistical outliers	2.5%	2.7%	3.4%	2.0%	3.9%

Table 8: comparison with previous proficiency tests

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

The performance of the determinations of the proficiency tests was compared to the requirements of the reference test methods. The conclusions are given in the following table.

Parameter	July 2023	December 2022	June 2022	December 2021	June 2021
Total Acid Number	--	(--)	(--)	(--)	(--)
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)	+/-	+	+	+/-	+/-
Hydrogen Sulfide	n.e.	n.e.	n.e.	n.e.	n.e.
Kinematic Viscosity 50 °C	+	+/-	+	+	++
Kinematic Viscosity 100 °C	++	++	++	++	++
Kin. Viscosity Stabinger 50 °C	+	+	++	++	++
Kin. Viscosity Stabinger 100 °C	++	++	++	+	++
Nitrogen	-	+/-	-	-	-

Parameter	July 2023	December 2022	June 2022	December 2021	June 2021
Pour Point Lower	-	+	+/-	+	-
Pour Point Upper	+/-	+	-	+	+
Pour Point Automated $\Delta 3$ °C	-	+/-	-	+/-	+/-
Sediment by Extraction	++	++	+	+	++
Total Sediment Existent (TSE)	++	++	++	++	++
Total Sediment Accel. (TSA)	++	++	++	+	++
Total Sediment Potential (TSP)	++	++	++	+	++
Total Sulfur	+/-	+	+	+	+
Water by distillation	++	++	++	++	++
Water and Sediment	+	+	+	++	+
Distillation at 10 mmHg to AET	+/-	-	+	+	+
Total Carbon	++	+	+	++	++
Total Hydrogen	+/-	+	+	+	+
Total Nitrogen	--	-	-	-	-
Aluminum as Al	-	+/-	-	+	-
Silicon as Si	+/-	+	+/-	+	+
Sum Aluminum and Silicon	-	+	-	+/-	-
Iron as Fe	+	++	+	+	+
Nickel as Ni	+	++	+	+	+/-
Sodium as Na	+	+	+	+	+
Vanadium as V	++	++	++	++	+
Calcium as Ca	+	+	+	++	+/-
Phosphorus as P	n.e.	+	+/-	n.e.	n.e.
Zinc as Zn	+/-	+/-	-	n.e.	(-)

Table 9: comparison of determinations to the reference test methods

For results between brackets no z-scores are calculated

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

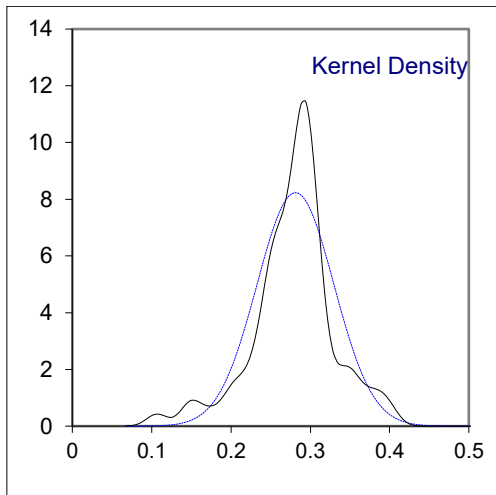
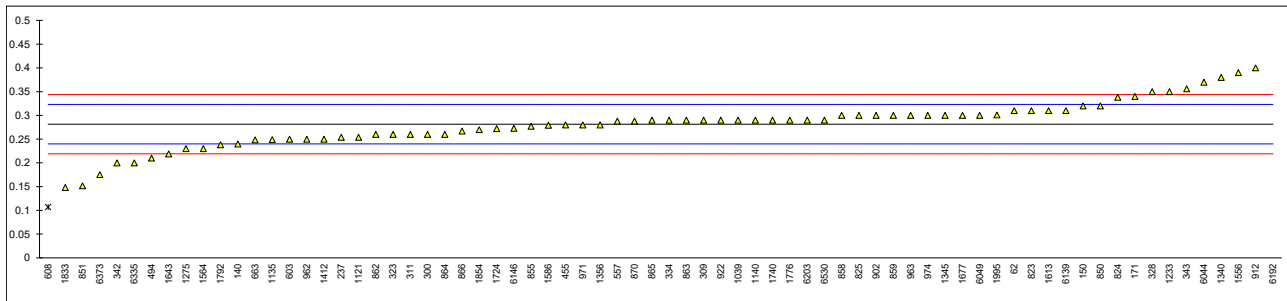
APPENDIX 1**Determination of Total Acid Number on sample #23105; results in mg KOH/g**

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D664-A	0.31	C	1.37	864	D664-A	0.26		-1.03
90		----		----	865	D664-A	0.29		0.41
92		----		----	866	D664-A	0.267		-0.69
120		----		----	870	D664-A	0.288		0.32
140	D664-A	0.24	C	-1.99	875		----		----
150	D664-A	0.32		1.86	886		----		----
154		----		----	902	D664-A	0.30		0.89
158		----		----	912	D664-A	0.40		5.70
159		----		----	922	D664-A	0.29		0.41
169		----		----	962	D664-A	0.25		-1.51
171	D664-A	0.34		2.82	963	D664-A	0.3		0.89
194		----		----	971	D664-A	0.28		-0.07
221		----		----	974	D664-A	0.30		0.89
224		----		----	982		----		----
225		----		----	1039	D664-A	0.29		0.41
237	D664-B	0.254		-1.32	1082		----		----
238		----		----	1121	D664-A	0.254		-1.32
253		----		----	1126		----		----
254		----		----	1135	D664-A	0.249		-1.56
300	D664-A	0.26		-1.03	1140	IP177	0.29		0.41
309	D664-A	0.29	C	0.41	1177		----		----
311	D664-A	0.26		-1.03	1218		----		----
313		----		----	1233	D664-A	0.35		3.30
323	D664-A	0.26		-1.03	1254		----		----
328	D664-A	0.35		3.30	1266		----		----
331		----		----	1275	IP177	0.23		-2.47
333		----		----	1299		----		----
334	D664-A	0.29		0.41	1340	D664-A	0.38		4.74
335		----		----	1345	D664-A	0.30		0.89
339		----		----	1356	D664-A	0.28		-0.07
342	D664-A	0.20		-3.91	1412	D664-A	0.25		-1.51
343	D664-A	0.356		3.58	1459		----		----
349		----		----	1498		----		----
356		----		----	1556	D664-A	0.39		5.22
371		----		----	1558	IP177	Non detected	f-?	----
391		----		----	1564	D664-A	0.23		-2.47
396		----		----	1586	D664-A	0.279		-0.11
398		----		----	1613	D664-A	0.310		1.37
399		----		----	1631		----		----
455	IP177	0.28		-0.07	1643	D664-A	0.219		-3.00
494	D664-A	0.210		-3.43	1677	D664-A	0.30		0.89
495		----		----	1720		----		----
511		----		----	1724	D664-B	0.272		-0.45
557	D664-A	0.28797081		0.32	1728		----		----
562		----		----	1740	D664-A	0.29		0.41
575		----		----	1761		----		----
603	D664-A	0.25		-1.51	1776	D664-A	0.29		0.41
604		----		----	1792	D664-A	0.238		-2.08
608	D664-A	0.107	R(0.05)	-8.38	1796		----		----
631		----		----	1807		----		----
663	D664-A	0.2485		-1.58	1833	D664-A	0.148		-6.41
671		----		----	1849		----		----
750		----		----	1854	D664-A	0.27		-0.55
753		----		----	1906		----		----
759		----		----	1956		----		----
785		----		----	1964		----		----
823	D664-A	0.31		1.37	1995	D664-A	0.301		0.94
824	D664-A	0.3382		2.73	2835		----		----
825	D664-A	0.3		0.89	6039		----		----
850	D664-A	0.32		1.86	6044	D664-A	0.37		4.26
851	D664-A	0.1516		-6.23	6049	D664-A	0.30		0.89
855	D664-A	0.277		-0.21	6075		----		----
858	D664-A	0.30		0.89	6092		----		----
859	D664-A	0.30		0.89	6139	D664	0.31		1.37
862	D664-A	0.26		-1.03	6142		----		----
863	D664-A	0.29		0.41	6146	D664-A	0.273		-0.40

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192	D664-A	1.51	R(0.01)	59.02	6416		----		----
6203	D664-A	0.29		0.41	6447		----		----
6279		----		----	6475		----		----
6335	D664-A	0.20		-3.91	6497	D664-A	<0.10	f-?	----
6346		----		----	6530	D664-A	0.29		0.41
6373	D664-A	0.1751		-5.11					

normality	suspect	IP only	BEP only
n	70	OK	suspect
outliers	2	46	14
mean (n)	0.2814	0.2902	0.2550
st.dev. (n)	0.04848	0.03377	0.05524
R(calc.)	0.1358	0.0945	0.1547
st.dev. (D664-A:18e2 IP 125 mL)	0.02082	0.02150	----
R(D664-A:18e2 IP 125 mL)	0.0583	0.0602	----
Compare			
R(D664-A:18e2 IP 60 mL)	0.1422	0.1459	----
R(D664-A:18e2 BEP 125 mL)	0.0833	----	0.0751
R(D664-A:18e2 BEP 60 mL)	0.1608	----	0.1461

Lab 62 first reported 0.71
 Lab 140 first reported 1.04
 Lab 309 first reported 0.56



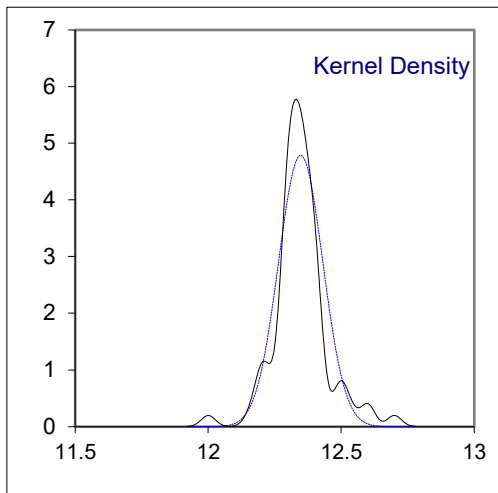
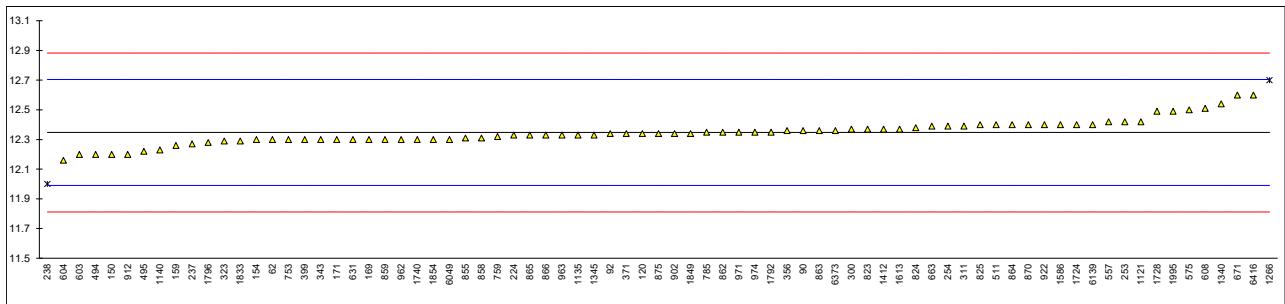
Determination of API Gravity on sample #23105

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4052	12.3		-0.27	864	ISO12185	12.4		0.29
90	D4052	12.36		0.07	865	D1298	12.33		-0.10
92	D4052	12.34		-0.04	866	D1298	12.33		-0.10
120	D4052	12.34		-0.04	870	D1298	12.4		0.29
140		----		----	875	D1298	12.34		-0.04
150	D287	12.2		-0.83	886		----		----
154	D4052	12.3		-0.27	902	ISO12185	12.34		-0.04
158		----		----	912	D1298	12.2		-0.83
159	D4052	12.26		-0.49	922	D1298	12.4		0.29
169	D287	12.3		-0.27	962	D4052	12.3		-0.27
171	D1298	12.3		-0.27	963	D1298	12.33		-0.10
194		----		----	971	D1298	12.35		0.01
221		----		----	974	D1298	12.35		0.01
224	D1298	12.33	C	-0.10	982		----		----
225		----		----	1039		----		----
237	D4052	12.27		-0.43	1082		----		----
238	D1298	12.0	R(0.01)	-1.95	1121	D4052	12.42		0.41
253	D4052	12.42		0.41	1126		----		----
254	D1298	12.39		0.24	1135	D4052	12.33		-0.10
300	ISO12185	12.37		0.13	1140	D287	12.23		-0.66
309		----		----	1177		----		----
311	D4052	12.39		0.24	1218		----		----
313		----		----	1233		----		----
323	D1298	12.29		-0.32	1254		----		----
328		----		----	1266	D1298	12.7	R(0.01)	1.97
331		----		----	1275		----		----
333		----		----	1299		----		----
334		----		----	1340	D1298	12.54		1.08
335		----		----	1345	D1250	12.33		-0.10
339		----		----	1356		----		----
342		----		----	1412	D4052	12.37		0.13
343	D4052	12.3		-0.27	1459		----		----
349		----		----	1498		----		----
356	ISO12185	12.36		0.07	1556		----		----
371	D4052	12.34		-0.04	1558		----		----
391		----		----	1564		----		----
396		----		----	1586	ISO12185	12.40		0.29
398		----		----	1613	D1298	12.37		0.13
399	D1298	12.3		-0.27	1631		----		----
455		----		----	1643		----		----
494	ISO12185	12.2		-0.83	1677		----		----
495	D1298	12.22		-0.71	1720		----		----
511	D1298	12.4		0.29	1724	D1298	12.40		0.29
557	D4052	12.42		0.41	1728	D4052	12.49		0.80
562		----		----	1740	D4052	12.3		-0.27
575	D1298	12.5		0.85	1761		----		----
603	D1298	12.2		-0.83	1776		----		----
604	D4052	12.16		-1.05	1792	ISO12185	12.35		0.01
608	D4052	12.51		0.91	1796	D1250	12.28		-0.38
631	D1298	12.30		-0.27	1807		----		----
663	D4052	12.39		0.24	1833	D4052	12.29		-0.32
671	D1298	12.6		1.41	1849	D1298	12.34		-0.04
750		----		----	1854	D4052	12.3		-0.27
753	D1298	12.3		-0.27	1906		----		----
759	D1298	12.32		-0.15	1956		----		----
785	D1298	12.35		0.01	1964		----		----
823	D4052	12.37		0.13	1995	D4052	12.49		0.80
824	ISO12185	12.38		0.18	2835		----		----
825	ISO12185	12.4		0.29	6039		----		----
850		----		----	6044		----		----
851		----		----	6049	ISO12185	12.30		-0.27
855	D1298	12.31		-0.21	6075		----		----
858	ISO12185	12.31		-0.21	6092		----		----
859	D1298	12.3		-0.27	6139	D1298	12.4		0.29
862	D1298	12.35		0.01	6142		----		----
863	D1298	12.36		0.07	6146		----		----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		----		----	6416	D1298	12.6		1.41
6203		----		----	6447		----		----
6279		----		----	6475		----		----
6335		----		----	6497		----		----
6346		----		----	6530		----		----
6373	ISO12185	12.36		0.07					

normality suspect
 n 75
 outliers 2
 mean (n) 12.348
 st.dev. (n) 0.0833
 R(calc.) 0.233
 st.dev.(D1298:12bR17e1) 0.1786
 R(D1298:12bR17e1) 0.5

Lab 224 first reported 12.06

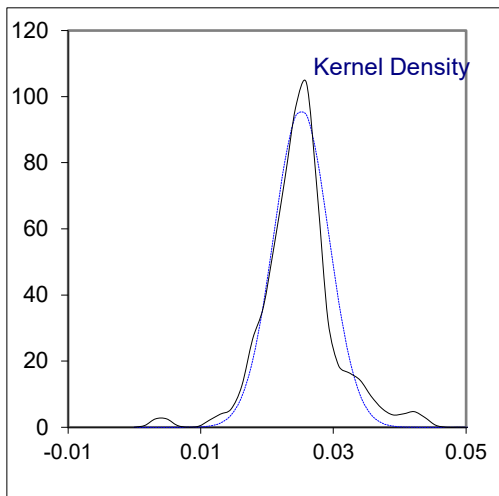
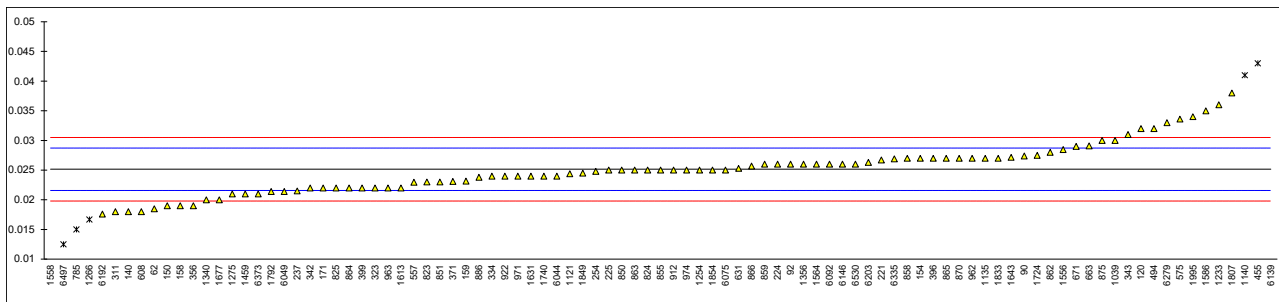


Determination of Ash Content on sample #23105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D482	0.0185		-3.72	864	D482	0.022		-1.76
90	D482	0.0274		1.26	865	D482	0.027		1.04
92	D482	0.026		0.48	866	D482	0.0257		0.31
120	ISO6245	0.0320		3.84	870	D482	0.0270		1.04
140	ISO6245	0.018		-4.00	875	ISO6245	0.030		2.72
150	D482	0.019		-3.44	886	D482	0.0238		-0.76
154	D482	0.027		1.04	902		----		----
158	D482	0.019		-3.44	912	ISO6245	0.025		-0.08
159	D482	0.02315		-1.12	922	D482	0.024		-0.64
169		----		----	962	D482	0.027		1.04
171	ISO6245	0.022		-1.76	963	D482	0.022		-1.76
194		----		----	971	D482	0.024		-0.64
221	D482	0.0267		0.87	974	D482	0.025		-0.08
224	D482	0.026		0.48	982		----		----
225	D482	0.025		-0.08	1039	ISO6245	0.030		2.72
237	D482	0.0215		-2.04	1082		----		----
238		----		----	1121	ISO6245	0.0244		-0.42
253		----		----	1126		----		----
254	D482	0.0248		-0.20	1135	ISO6245	0.027		1.04
300		----		----	1140	IP4	0.041	R(0.05)	8.88
309		----		----	1177		----		----
311	D482	0.018		-4.00	1218		----		----
313		----		----	1233	ISO6245	0.036		6.08
323	ISO6245	0.022		-1.76	1254	ISO6245	0.025		-0.08
328		----		----	1266	ISO6245	0.01667	R(0.05)	-4.75
331		----		----	1275	IP4	0.021		-2.32
333		----		----	1299		----		----
334	ISO6245	0.024		-0.64	1340	ISO6245	0.020	C	-2.88
335		----		----	1345		----		----
339		----		----	1356	ISO6245	0.026		0.48
342	ISO6245	0.022		-1.76	1412		----		----
343	ISO6245	0.031		3.28	1459	ISO6245	0.021		-2.32
349		----		----	1498		----		----
356	ISO6245	0.019		-3.44	1556	ISO6245	0.02845		1.85
371	D482	0.0231		-1.15	1558	IP4	0.004	R(0.01)	-11.84
391		----		----	1564	D482	0.026		0.48
396	D482	0.027		1.04	1586	ISO6245	0.035		5.52
398		----		----	1613	D482	0.022		-1.76
399	ISO6245	0.022		-1.76	1631	ISO6245	0.024		-0.64
455	IP4	0.043	R(0.05)	10.00	1643	D482	0.02716		1.13
494	ISO6245	0.032		3.84	1677	D482	0.020		-2.88
495		----		----	1720		----		----
511		----		----	1724	D482	0.0275		1.32
557	D482	0.02295857		-1.23	1728		----		----
562		----		----	1740	ISO6245	0.024		-0.64
575	D482	0.0336	C	4.73	1761		----		----
603		----		----	1776		----		----
604		----		----	1792	ISO6245	0.0214		-2.10
608	D482	0.018		-4.00	1796		----		----
631	D482	0.0253		0.08	1807	ISO6245	0.038		7.20
663	D482	0.0291		2.21	1833	ISO6245	0.027		1.04
671	D482	0.029		2.16	1849	ISO6245	0.0245		-0.36
750		----		----	1854	ISO6245	0.025		-0.08
753		----		----	1906		----		----
759		----		----	1956		----		----
785	D482	0.015	R(0.05)	-5.68	1964		----		----
823	ISO6245	0.023		-1.20	1995	D482	0.034		4.96
824	ISO6245	0.025		-0.08	2835		----		----
825	D482	0.022		-1.76	6039		----		----
850	ISO6245	0.025		-0.08	6044	ISO6245	0.024		-0.64
851	ISO6245	0.023		-1.20	6049	D482	0.0214		-2.10
855	ISO6245	0.025		-0.08	6075	ISO6245	0.025		-0.08
858	ISO6245	0.027		1.04	6092	ISO6245	0.026		0.48
859	D482	0.026		0.48	6139	ISO6245	0.41	R(0.01)	215.52
862	ISO6245	0.028		1.60	6142		----		----
863	ISO6245	0.025		-0.08	6146	ISO6245	0.026		0.48

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192	ISO6245	0.0176		-4.23	6416		----		----
6203	ISO6245	0.0263		0.64	6447		----		----
6279	ISO6245	0.033		4.40	6475		----		----
6335	D482	0.0269		0.98	6497	D482	0.0125	R(0.05)	-7.08
6346		----		----	6530	D482	0.026		0.48
6373	D482	0.021		-2.32					
	normality	OK							
	n	88							
	outliers	7							
	mean (n)	0.0252							
	st.dev. (n)	0.00415							
	R(calc.)	0.0116							
	st.dev.(ISO6245:01)	0.00179							
	R(ISO6245:01)	0.005							
Compare	R(D482:19)	0.005							

Lab 575 first reported 0.0636
 Lab 1340 first reported 0.04

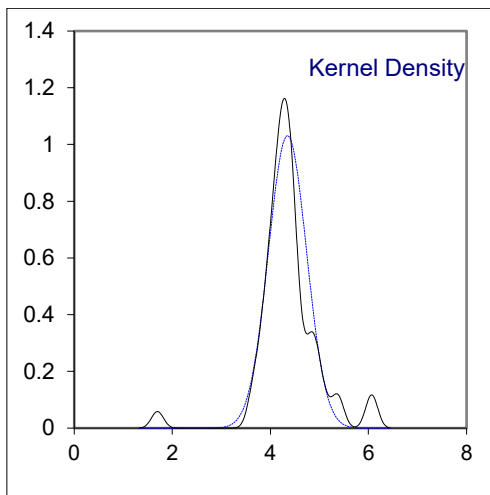
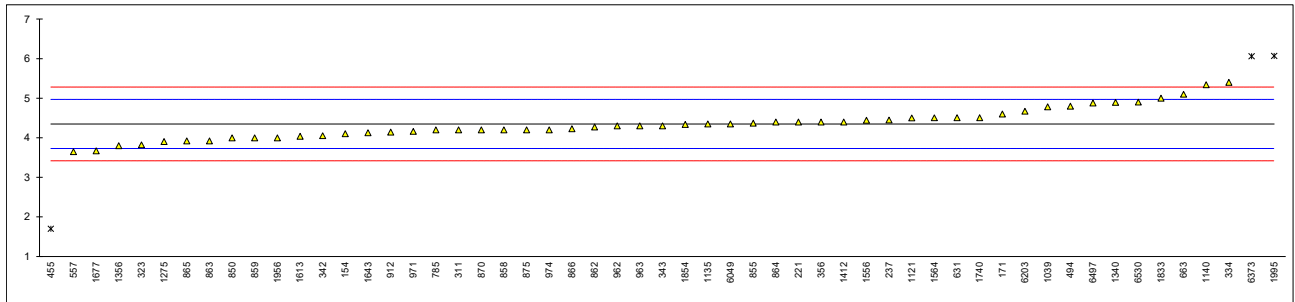


Determination of Asphaltenes on sample #23105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		----		----	864	IP143	4.4		0.16
90		----		----	865	IP143	3.92		-1.38
92		----		----	866	IP143	4.23		-0.39
120		----		----	870	IP143	4.20		-0.48
140		----		----	875	IP143	4.20		-0.48
150		----		----	886		----		----
154	D6560	4.1		-0.80	902		----		----
158		----		----	912	D6560	4.145		-0.66
159		----		----	922		----		----
169		----		----	962	IP143	4.3		-0.16
171	IP143	4.6		0.80	963	IP143	4.3		-0.16
194		----		----	971	IP143	4.16		-0.61
221	D6560	4.4		0.16	974	IP143	4.20		-0.48
224		----		----	982		----		----
225		----		----	1039	D6560	4.78		1.38
237	D6560	4.45		0.32	1082		----		----
238		----		----	1121	IP143	4.502		0.49
253		----		----	1126		----		----
254		----		----	1135	IP143	4.35		0.00
300		----		----	1140	IP143	5.34		3.19
309		----		----	1177		----		----
311	IP143	4.2		-0.48	1218		----		----
313		----		----	1233		----		----
323	IP143	3.82		-1.71	1254		----		----
328		----		----	1266		----		----
331		----		----	1275	IP143	3.902		-1.44
333		----		----	1299		----		----
334	IP143	5.4		3.38	1340	D6560	4.895		1.75
335		----		----	1345		----		----
339		----		----	1356	D6560	3.8		-1.77
342	IP143	4.052		-0.96	1412	D6560	4.40		0.16
343	IP143	4.301		-0.16	1459		----		----
349		----		----	1498		----		----
356	IP143	4.4		0.16	1556	IP143	4.44		0.29
371		----		----	1558		----		----
391		----		----	1564	IP143	4.505		0.50
396		----		----	1586		----		----
398		----		----	1613	IP143	4.039		-1.00
399		----		----	1631		----		----
455	In house	1.7	R(0.01)	-8.53	1643	D6560	4.127		-0.72
494	IP143	4.80		1.45	1677	IP143	3.67		-2.19
495		----		----	1720		----		----
511		----		----	1724		----		----
557	D6560	3.64651506		-2.26	1728		----		----
562		----		----	1740	IP143	4.51		0.52
575		----		----	1761		----		----
603		----		----	1776		----		----
604		----		----	1792		----		----
608		----		----	1796		----		----
631	D6560	4.51		0.52	1807		----		----
663	IP143	5.10		2.41	1833	D6560	5.0		2.09
671		----		----	1849		----		----
750		----		----	1854	IP143	4.34		-0.03
753		----		----	1906		----		----
759		----		----	1956	NF T60-115	4.0		-1.13
785	IP143	4.2		-0.48	1964		----		----
823		----		----	1995	D6560	6.07	R(0.01)	5.54
824		----		----	2835		----		----
825		----		----	6039		----		----
850	IP143	4.0		-1.13	6044		----		----
851		----		----	6049	IP143	4.35		0.00
855	IP143	4.37		0.06	6075		----		----
858	IP143	4.2		-0.48	6092		----		----
859	D6560	4.0		-1.13	6139		----		----
862	IP143	4.27		-0.26	6142		----		----
863	IP143	3.92		-1.38	6146		----		----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		----		----	6416		----		----
6203	IP143	4.67		1.03	6447		----		----
6279		----		----	6475		----		----
6335		----		----	6497	IP143	4.88		1.71
6346		----		----	6530	IP143	4.9	C	1.77
6373	IP143	6.06	R(0.01)	5.50					
normality		OK							
n		52							
outliers		3							
mean (n)		4.350							
st.dev. (n)		0.3872							
R(calc.)		1.084							
st.dev.(IP143:04R21)		0.3107							
R(IP143:04R21)		0.870							

Lab 6530 first reported 6.6



Determination of Calculated Carbon Aromaticity Index on sample #23105

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	ISO8217	845		0.02	864	ISO8217	845.0		0.02
90		----		----	865	ISO8217	845.1		0.15
92		----		----	866	ISO8217	844.8		-0.23
120	ISO8217	845		0.02	870	ISO8217	844.8		-0.23
140	ISO8217	844		-1.25	875	ISO8217	845.4		0.53
150		----		----	886		----		----
154	ISO8217	846		1.29	902	ISO8217	845		0.02
158		----		----	912	ISO8217	846		1.29
159		----		----	922	ISO8217	845		0.02
169		----		----	962	ISO8217	845		0.02
171	ISO8217	845		0.02	963	ISO8217	845		0.02
194		----		----	971	ISO8217	845		0.02
221		----		----	974	ISO8217	845		0.02
224		----		----	982		----		----
225		----		----	1039		----		----
237	ISO8217	845	C	0.02	1082		----		----
238		----		----	1121	ISO8217	844.1	C	-1.13
253		----		----	1126		----		----
254	ISO8217	845		0.02	1135	ISO8217	845		0.02
300	ISO8217	844.8		-0.23	1140	ISO8217	846		1.29
309		----		----	1177		----		----
311		----		----	1218		----		----
313		----		----	1233		----		----
323	ISO8217	845.31		0.41	1254		----		----
328	ISO8217	845		0.02	1266	ISO8217	845.7		0.91
331		----		----	1275		----		----
333		----		----	1299		----		----
334	ISO8217	845		0.02	1340		----		----
335		----		----	1345	ISO8217	845.3		0.40
339		----		----	1356		----		----
342	ISO8217	844		-1.25	1412		----		----
343	ISO8217	845		0.02	1459		----		----
349		----		----	1498		----		----
356	ISO8217	845		0.02	1556	ISO8217	845.0		0.02
371		----		----	1558		----		----
391		----		----	1564	ISO8217	845		0.02
396		----		----	1586	ISO8217	844.7		-0.36
398		----		----	1613	ISO8217	844.8		-0.23
399		----		----	1631		----		----
455	ISO8217	845.0		0.02	1643		----		----
494	ISO8217	845		0.02	1677	ISO8217	844.9924		0.01
495		----		----	1720		----		----
511		----		----	1724	ISO8217	844.8		-0.23
557	ISO8217	844		-1.25	1728		----		----
562		----		----	1740	ISO8217	845		0.02
575		----		----	1761		----		----
603		----		----	1776	ISO8217	845.14		0.20
604		----		----	1792	ISO8217	845		0.02
608		----		----	1796	ISO8217	846		1.29
631	ISO8217	845.32		0.43	1807		----		----
663	ISO8217	844.9		-0.11	1833		----	W	----
671		----		----	1849		----		----
750		----		----	1854	ISO8217	845		0.02
753	ISO8217	845		0.02	1906		----		----
759		----		----	1956		----		----
785		----		----	1964		----		----
823	ISO8217	845.0		0.02	1995	ISO8217	843.9		-1.38
824	ISO8217	845		0.02	2835		----		----
825	ISO8217	845		0.02	6039		----		----
850	ISO8217	845		0.02	6044		----		----
851		----		----	6049	ISO8217	844.8		-0.23
855	ISO8217	845.3		0.40	6075	ISO8217	40.9250	R(0.01),E	-1023.35
858	ISO8217	845.0		0.02	6092		----		----
859	ISO8217	845		0.02	6139	ISO8217	844		-1.25
862	ISO8217	845		0.02	6142		----		----
863	ISO8217	845.1		0.15	6146		----		----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		----		----	6416		----		----
6203		----		----	6447		----		----
6279		----		----	6475		----		----
6335		----		----	6497	ISO8217	821	R(0.01), E	-30.53
6346		----		----	6530		----		----
6373		----		----					

normality not OK
 n 60
 outliers 2
 mean (n) 844.984
 st.dev. (n) 0.4398
 R(calc.) 1.232
 st.dev.(ISO8217:17) 0.7857
 R(ISO8217:17) 2.2

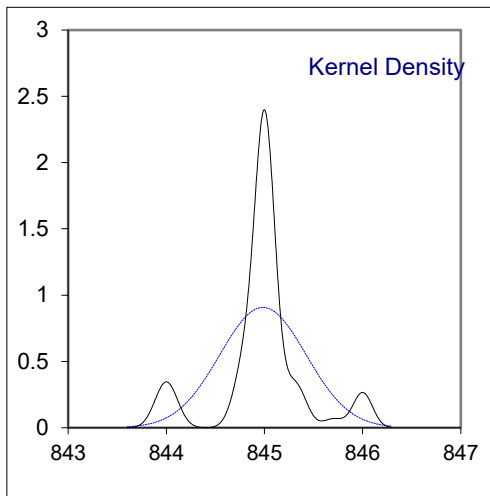
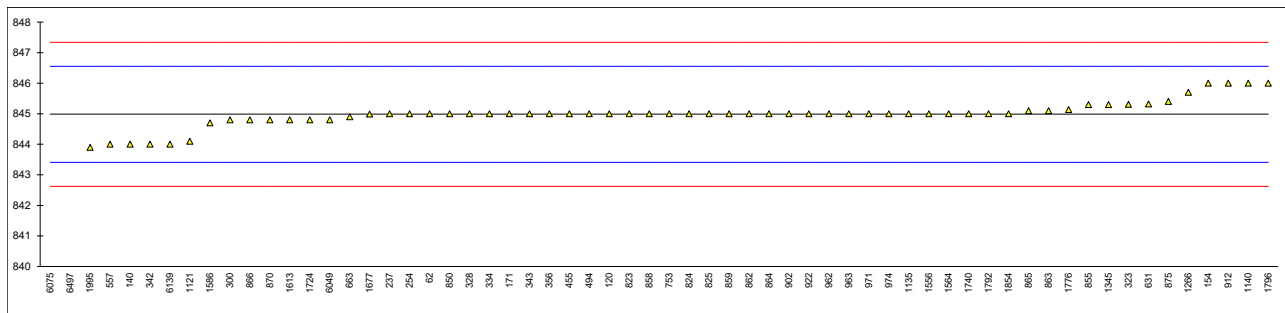
Lab 237 first reported 847

Lab 1121 first reported 843

Lab 1833 test result withdrawn, reported 844.82

Lab 6075 calculation difference between reported test result and result calculated by iis. iis calculated 846.2091

Lab 6497 calculation difference between reported test result and result calculated by iis, iis calculated 845

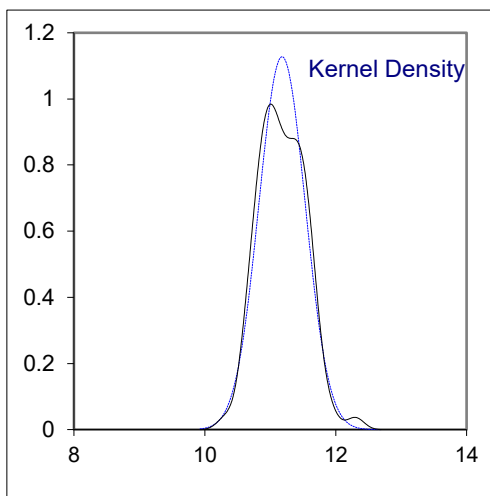
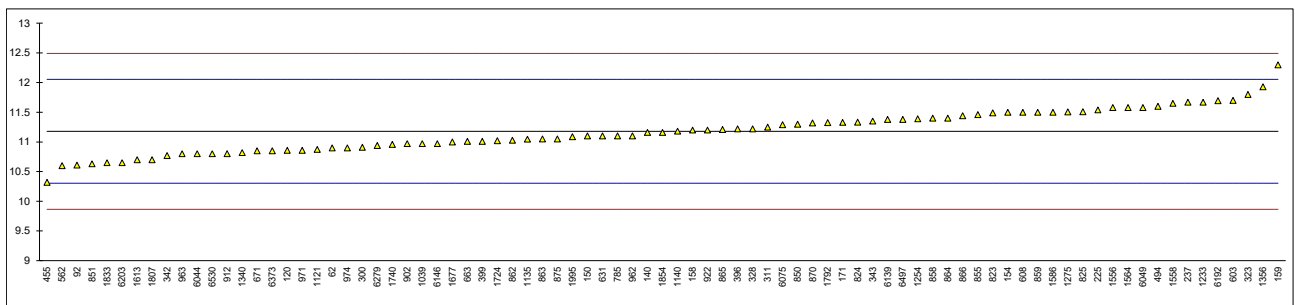


Determination of Carbon Residue micro method on sample #23105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4530	10.9		-0.64	864	D4530	11.4		0.50
90		----		----	865	D4530	11.21		0.07
92	D4530	10.61		-1.30	866	D4530	11.44		0.60
120	ISO10370	10.86		-0.73	870	D4530	11.320		0.32
140	ISO10370	11.16		-0.04	875	D4530	11.05		-0.30
150	D4530	11.1		-0.18	886		----		----
154	D4530	11.5		0.73	902	ISO10370	10.97		-0.48
158	D4530	11.2		0.05	912	D4530	10.804		-0.86
159	D4530	12.3	C	2.56	922	D4530	11.2		0.05
169		----		----	962	D4530	11.1		-0.18
171	ISO10370	11.33		0.34	963	ISO10370	10.8		-0.87
194		----		----	971	D4530	10.86		-0.73
221		----		----	974	D4530	10.9		-0.64
224		----		----	982		----		----
225	D4530	11.54		0.82	1039	ISO10370	10.97		-0.48
237	D4530	11.67		1.12	1082		----		----
238		----		----	1121	ISO10370	10.875		-0.70
253		----		----	1126		----		----
254		----		----	1135	ISO10370	11.0466		-0.30
300	ISO10370	10.91		-0.62	1140	IP398	11.18		0.00
309		----		----	1177		----		----
311	D4530	11.25		0.16	1218		----		----
313		----		----	1233	ISO10370	11.67		1.12
323	ISO10370	11.8		1.42	1254	ISO10370	11.39		0.48
328	ISO10370	11.22		0.09	1266		----		----
331		----		----	1275	IP398	11.5074		0.75
333		----		----	1299		----		----
334		----		----	1340	ISO10370	10.82		-0.82
335		----		----	1345		----		----
339		----		----	1356	ISO10370	11.93		1.72
342	D4530	10.77		-0.94	1412		----		----
343	ISO10370	11.35		0.39	1459		----		----
349		----		----	1498		----		----
356		----		----	1556	ISO10370	11.58		0.92
371		----		----	1558	IP398	11.65		1.08
391		----		----	1564	D4530	11.58		0.92
396	ISO10370	11.22		0.09	1586	ISO10370	11.5		0.73
398		----		----	1613	D4530	10.699		-1.10
399	ISO10370	11.01		-0.39	1631		----		----
455	IP398	10.32		-1.96	1643		----		----
494	ISO10370	11.60		0.96	1677	D4530	11.0		-0.41
495		----		----	1720		----		----
511		----		----	1724	D4530	11.02		-0.36
557		----		----	1728		----		----
562	D4530	10.6		-1.32	1740	ISO10370	10.96		-0.50
575		----		----	1761		----		----
603	D4530	11.7		1.19	1776		----		----
604		----		----	1792	ISO10370	11.325		0.33
608	D4530	11.5		0.73	1796		----		----
631	D4530	11.10		-0.18	1807	ISO10370	10.7		-1.10
663	D4530	11.01		-0.39	1833	ISO10370	10.65		-1.21
671	D4530	10.85		-0.75	1849		----		----
750		----		----	1854	ISO10370	11.16		-0.04
753		----		----	1906		----		----
759		----		----	1956		----		----
785	ISO10370	11.1		-0.18	1964		----		----
823	ISO10370	11.49		0.71	1995	D4530	11.09		-0.20
824	ISO10370	11.335		0.36	2835		----		----
825	ISO10370	11.51		0.76	6039		----		----
850	ISO10370	11.30		0.28	6044	ISO10370	10.8		-0.87
851	ISO10370	10.63		-1.26	6049	ISO10370	11.58		0.92
855	ISO10370	11.46		0.64	6075	ISO10370	11.29		0.25
858	ISO10370	11.4		0.50	6092		----		----
859	D4530	11.5		0.73	6139	ISO10370	11.38		0.46
862	ISO10370	11.03		-0.34	6142		----		----
863	ISO10370	11.05		-0.30	6146	ISO10370	10.97	C	-0.48

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192	ISO10370	11.6966		1.18	6416		----		----
6203	ISO10370	10.65		-1.21	6447		----		----
6279	ISO10370	10.94		-0.55	6475		----		----
6335		----		----	6497	D4530	11.38		0.46
6346		----		----	6530	D4530	10.8		-0.87
6373	ISO10370	10.85		-0.75					
	normality	OK							
	n	83							
	outliers	0							
	mean (n)	11.1793							
	st.dev. (n)	0.35397							
	R(calc.)	0.9911							
	st.dev.(ISO10370:14)	0.43765							
	R(ISO10370:14)	1.2254							
Compare	R(D4530:15R20)	0.6637							

Lab 159 first reported 12.8
 Lab 6146 first reported 6.16

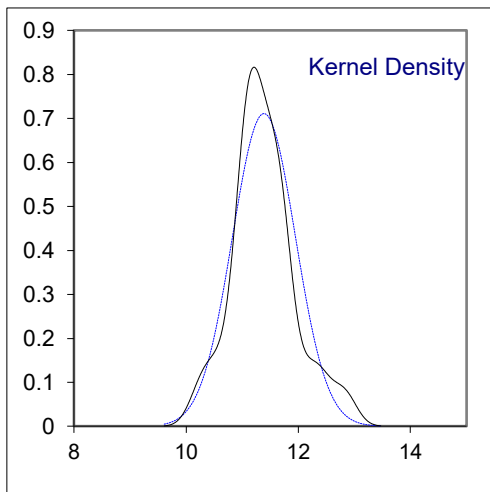
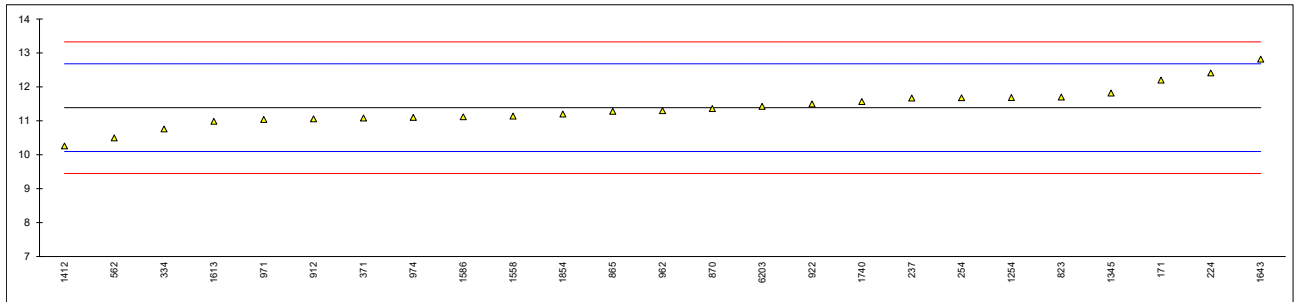


Determination of Conradson Carbon Residue on sample #23105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		----		----	864		----		----
90		----		----	865	D189	11.28		-0.17
92		----		----	866		----		----
120		----		----	870	D189	11.362		-0.04
140		----		----	875		----		----
150		----		----	886		----		----
154		----		----	902		----		----
158		----		----	912	D189	11.059		-0.51
159		----		----	922	D189	11.5		0.17
169		----		----	962	D189	11.3		-0.13
171	D189	12.2		1.26	963		----		----
194		----		----	971	D189	11.04		-0.54
221		----		----	974	D189	11.1		-0.44
224	D189	12.41		1.58	982		----		----
225		----		----	1039		----		----
237	D189	11.67		0.44	1082		----		----
238		----		----	1121		----		----
253		----		----	1126		----		----
254	D189	11.68		0.45	1135		----		----
300		----		----	1140		----		----
309		----		----	1177		----		----
311		----		----	1218		----		----
313		----		----	1233		----		----
323		----		----	1254	D189	11.69		0.47
328		----		----	1266		----		----
331		----		----	1275		----		----
333		----		----	1299		----		----
334	D189	10.76		-0.97	1340		----		----
335		----		----	1345	D189	11.82		0.67
339		----		----	1356		----		----
342		----		----	1412	D189	10.26		-1.74
343		----		----	1459		----		----
349		----		----	1498		----		----
356		----		----	1556		----		----
371	D189	11.08		-0.47	1558	IP13	11.14		-0.38
391		----		----	1564		----		----
396		----		----	1586	ISO6615	11.12		-0.41
398		----		----	1613	D189	10.986		-0.62
399		----		----	1631		----		----
455		----		----	1643	D189	12.82		2.22
494		----		----	1677		----		----
495		----		----	1720		----		----
511		----		----	1724		----		----
557		----		----	1728		----		----
562	D189	10.5		-1.37	1740	D189	11.57		0.28
575		----		----	1761		----		----
603		----		----	1776		----		----
604		----		----	1792		----		----
608		----		----	1796		----		----
631		----		----	1807		----		----
663		----		----	1833		----		----
671		----		----	1849		----		----
750		----		----	1854	D4530	11.20		-0.29
753		----		----	1906		----		----
759		----		----	1956		----		----
785		----		----	1964		----		----
823	D189	11.70		0.48	1995		----		----
824		----		----	2835		----		----
825		----		----	6039		----		----
850		----		----	6044		----		----
851		----		----	6049		----		----
855		----		----	6075		----		----
858		----		----	6092		----		----
859		----		----	6139		----		----
862		----		----	6142		----		----
863		----		----	6146		----		----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		----		----	6416		----		----
6203	D189	11.43		0.07	6447		----		----
6279		----		----	6475		----		----
6335		----		----	6497		----		----
6346		----		----	6530		----		----
6373		----		----					

normality	suspect
n	25
outliers	0
mean (n)	11.3871
st.dev. (n)	0.56105
R(calc.)	1.5709
st.dev.(D189:06R19)	0.64682
R(D189:06R19)	1.8111



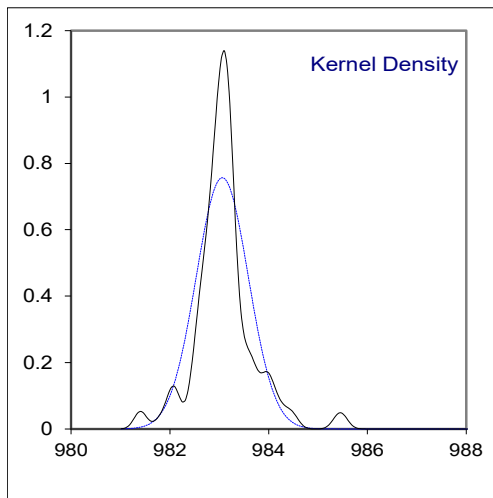
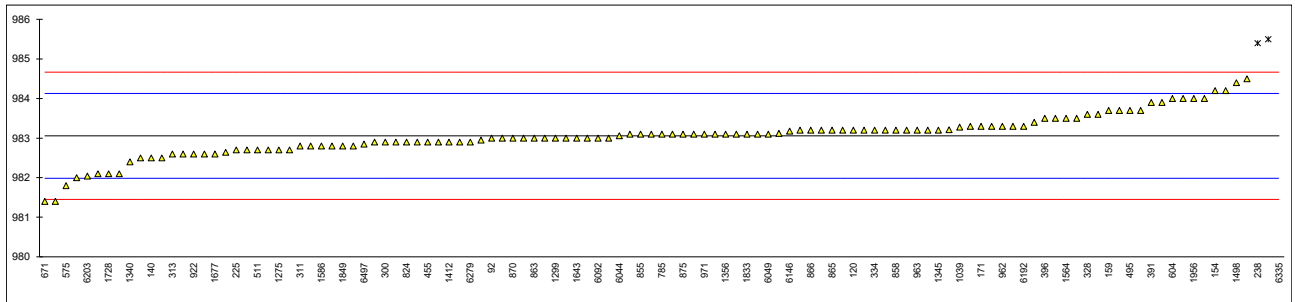
Determination of Density at 15 °C on sample #23105; results in kg/m³

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4052	983.2		0.26	864	ISO12185	983.1		0.08
90	D4052	983.0		-0.11	865	ISO12185	983.2		0.26
92	D4052	983.0		-0.11	866	ISO12185	983.2		0.26
120	D4052	983.2		0.26	870	ISO12185	983.0		-0.11
140	D4052	982.5		-1.04	875	ISO12185	983.1		0.08
150		-----		-----	886	D4052	984.2		2.13
154	D4052	984.2		2.13	902	ISO12185	983.1		0.08
158		-----		-----	912	ISO12185	983.9		1.57
159	D4052	983.7		1.20	922	D1298	982.6		-0.86
169		-----		-----	962	D4052	983.3		0.45
171	ISO12185	983.3	C	0.45	963	ISO12185	983.2		0.26
194		-----		-----	971	IP365	983.1		0.08
221	D4052	982.5		-1.04	974	D1298	983.1		0.08
224	D1298	983.21	C	0.28	982		-----		-----
225	D4052	982.7		-0.67	1039	ISO12185	983.28		0.41
237	D4052	983.2		0.26	1082		-----		-----
238	D1298	985.4	R(0.01)	4.37	1121	ISO12185	982.7		-0.67
253	D4052	982.6		-0.86	1126	ISO12185	983.20		0.26
254	D1298	982.9		-0.30	1135	ISO12185	982.9		-0.30
300	ISO12185	982.9		-0.30	1140	IP365	983.6		1.01
309		-----		-----	1177		-----		-----
311	D4052	982.8		-0.48	1218		-----		-----
313	D4052	982.6		-0.86	1233	ISO12185	983.0		-0.11
323	ISO12185	983.5		0.82	1254	ISO12185	982.95		-0.20
328	ISO12185	983.6		1.01	1266	ISO3675	984.0		1.76
331		-----		-----	1275	IP365	982.7		-0.67
333	D4052	982.1		-1.79	1299	D4052	983.0		-0.11
334	ISO12185	983.2		0.26	1340	ISO3675	982.4		-1.23
335	ISO12185	983.2		0.26	1345	D4052	983.2		0.26
339		-----		-----	1356	ISO12185	983.1		0.08
342	D4052	983.12		0.11	1412	D4052	982.9		-0.30
343	D4052	983.1		0.08	1459	ISO12185	985.50	R(0.01)	4.56
349		-----		-----	1498	D1298	984.4		2.50
356	ISO12185	983.0		-0.11	1556	ISO12185	982.6		-0.86
371	ISO12185	983.1		0.08	1558	ISO3675	983		-0.11
391	ISO12185	983.9		1.57	1564	D4052	983.5		0.82
396	D1298	983.5		0.82	1586	ISO12185	982.8		-0.48
398		-----		-----	1613	D1298	982.9		-0.30
399	D1298	983.3		0.45	1631	ISO12185	983.3		0.45
455	IP365	982.9		-0.30	1643	D4052	983.0		-0.11
494	ISO12185	983.7		1.20	1677	D4052	982.6		-0.86
495	ISO12185	983.7		1.20	1720		-----		-----
511	D1298	982.7		-0.67	1724	D4052	982.7		-0.67
557	D4052	982.64		-0.78	1728	D4052	982.10		-1.79
562		-----		-----	1740	ISO3675	983.0		-0.11
575	D4052	981.8		-2.35	1761		-----		-----
603	D1298	983.7		1.20	1776	ISO12185	982.8		-0.48
604	D4052	984.0		1.76	1792	ISO12185	983.1		0.08
608	D4052	982.0		-1.98	1796	D1298	983.5		0.82
631	D1298	983.398		0.63	1807		-----		-----
663	D4052	982.8		-0.48	1833	D4052	983.1		0.08
671	D1298	981.4		-3.10	1849	ISO3675	982.8		-0.48
750		-----		-----	1854	ISO12185	983.1		0.08
753	D1298	983.2		0.26	1906		-----		-----
759	D1298	983.3		0.45	1956	ISO3675	984.0	C	1.76
785	ISO12185	983.1		0.08	1964		-----		-----
823	ISO12185	982.9		-0.30	1995	D4052	982.1		-1.79
824	ISO12185	982.9		-0.30	2835		-----		-----
825	ISO12185	982.9		-0.30	6039		-----		-----
850	ISO3675	983.2		0.26	6044	ISO12185	983.06		0.00
851	ISO12185	982.5		-1.04	6049	ISO12185	983.1		0.08
855	ISO12185	983.1		0.08	6075	ISO12185	984.5		2.69
858	ISO12185	983.2		0.26	6092	ISO12185	983.0		-0.11
859	ISO12185	983.2		0.26	6139	ISO12185	982.8		-0.48
862	ISO12185	982.7		-0.67	6142		-----		-----
863	ISO12185	983.0		-0.11	6146	ISO12185	983.175		0.22

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192	D1298	983.3		0.45	6416	D1298	981.4		-3.10
6203	D4052	982.04		-1.90	6447		-----		-----
6279	ISO12185	982.9		-0.30	6475		-----		-----
6335	D1298	995	R(0.01)	22.29	6497	D4052	982.85		-0.39
6346		-----		-----	6530	D4052	984.0		1.76
6373	ISO12185	983.0		-0.11					

normality suspect
 n 114
 outliers 3
 mean (n) 983.059
 st.dev. (n) 0.5274
 R(calc.) 1.477
 st.dev.(ISO12185:96) 0.5357
 R(ISO12185:96) 1.5

Lab 171 reported 0.9833 kg/m³
 Lab 224 first reported 985.08
 Lab 1956 first reported 1066.2

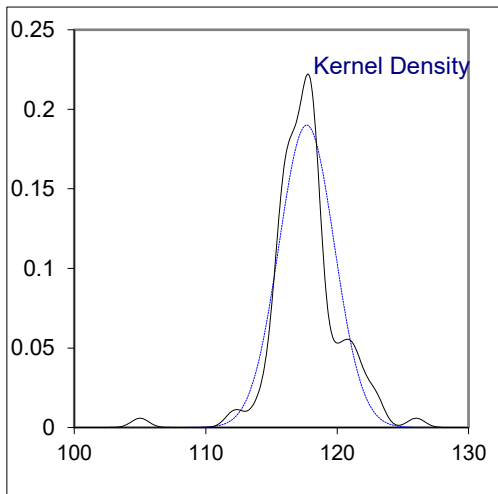
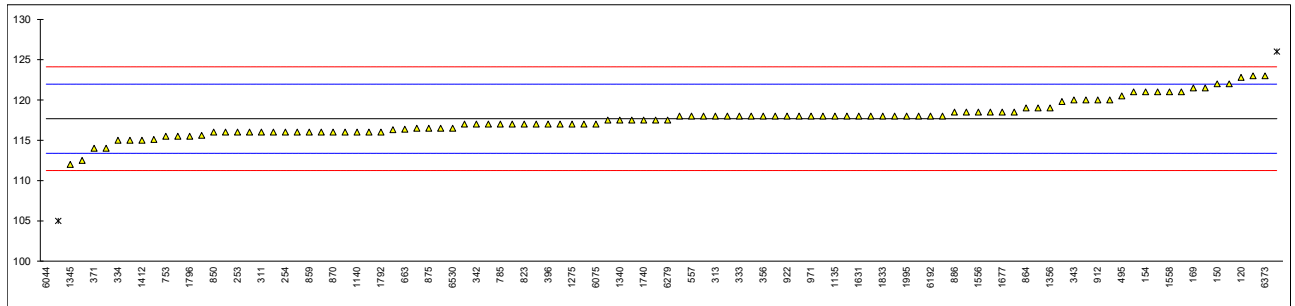


Determination of Flash Point PMcc on sample #23105; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D93-B	119		0.62	864	D93	119.0		0.62
90	D93-B	>110		----	865	D93-B	116		-0.78
92	D93-B	118.0		0.15	866	D93	116.0		-0.78
120	D93-B	122.8		2.39	870	D93-B	116.0		-0.78
140	ISO2719-B	>110		----	875	D93-B	116.5		-0.55
150	D93-B	122		2.02	886	D93-A	118.5		0.38
154	D93-B	121.0		1.55	902	D93-B	115.5		-1.02
158	D93-B	>110		----	912	ISO2719-B	120.0		1.08
159	D93-B	115.6		-0.97	922	D93-B	118.0		0.15
169	D93-B	121.5		1.78	962	D93-B	118		0.15
171	ISO2719-B	>110		----	963	D93-B	122		2.02
194		----		----	971	D93-B	118.0		0.15
221		----		----	974	D93-B	118		0.15
224	D93-A	>110		----	982		----		----
225	D93-B	118.0		0.15	1039	ISO2719-B	>110		----
237	D93-B	116.0		-0.78	1082		----		----
238	D93-B	126.0	R(0.05)	3.88	1121	ISO2719-B	119.8		0.99
253	D93-B	116		-0.78	1126		----		----
254	D93-B	116.0		-0.78	1135	D93-B	118.0		0.15
300	ISO2719-A	116.5		-0.55	1140	IP34-B	116.0		-0.78
309		----		----	1177		----		----
311	D93-B	116.0		-0.78	1218		----		----
313	D93-B	118.0		0.15	1233	ISO2719-B	117		-0.32
323	ISO2719-A	118.0		0.15	1254	ISO2719-B	115.0		-1.25
328	ISO2719-B	121.0		1.55	1266	ISO2719-B	115.1		-1.20
331		----		----	1275	IP34-B	117.0		-0.32
333	D93-B	118		0.15	1299	D93-B	118.5		0.38
334	ISO2719-B	115		-1.25	1340	ISO2719-A	117.5		-0.08
335		----		----	1345	D93-C	112		-2.65
339		----		----	1356	ISO2719-B	119		0.62
342	D93-B	117.0		-0.32	1412	D93-B	115.0		-1.25
343	ISO2719-B	120.0		1.08	1459	ISO2719-B	121.0		1.55
349		----		----	1498	D93-B	117.5		-0.08
356	ISO2719-B	118.0		0.15	1556	ISO2719-B	118.5		0.38
371	D93-B	114.0		-1.72	1558	D93-A	121		1.55
391	D93-B	120		1.08	1564	D93-B	116.0		-0.78
396	ISO2719-B	117		-0.32	1586	ISO2719-B	118.0		0.15
398		----		----	1613	D93-B	118.5		0.38
399		----		----	1631	ISO2719-A	118		0.15
455	D93-B	117.0		-0.32	1643	D93-B	117		-0.32
494	ISO2719-B	123.0		2.48	1677	D93-B	118.5		0.38
495	ISO2719-B	120.5		1.32	1720		----		----
511		----		----	1724	D93-B	121		1.55
557	D93-B	118.0		0.15	1728	D93-B	118		0.15
562		----		----	1740	D93-B	117.5		-0.08
575		----		----	1761		----		----
603	D93-B	117		-0.32	1776	ISO2719-B	>110		----
604	D93-B	116		-0.78	1792	ISO2719-B	116.0		-0.78
608	D93-A	117.0		-0.32	1796	ISO2719-B	115.5	C	-1.02
631	D93-B	112.5		-2.42	1807		----		----
663	D93-B	116.375		-0.61	1833	ISO2719-A	118		0.15
671	D93-B	>110		----	1849	ISO2719-B	118		0.15
750		----		----	1854	D93-B	117.5		-0.08
753	ISO2719-B	115.5		-1.02	1906		----		----
759	ISO2719-B	116.0		-0.78	1956		----		----
785	ISO2719-B	117.0		-0.32	1964		----		----
823	ISO2719-B	117.0		-0.32	1995	D93-B	118		0.15
824	ISO2719-B	118		0.15	2835		----		----
825	ISO2719-B	117.5		-0.08	6039		----		----
850	ISO2719-B	116.0		-0.78	6044	D93-B	97	C,R(0.01)	-9.65
851	ISO2719-B	>100		----	6049	ISO2719-B	120.0		1.08
855	ISO2719	116.0		-0.78	6075	ISO2719-B	117		-0.32
858	ISO2719-B	117		-0.32	6092	D93-B	114		-1.72
859	ISO2719-B	116		-0.78	6139	ISO2719	118.5		0.38
862	ISO2719-B	116.5		-0.55	6142		----		----
863	ISO2719-B	118.0		0.15	6146	ISO2719-B	118.0		0.15

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192	ISO2719-B	118		0.15	6416	D93-B	116.3	C	-0.64
6203	ISO2719-B	121.5		1.78	6447		-----		-----
6279	ISO2719-A	117.5		-0.08	6475		-----		-----
6335	ISO2719-A	105	R(0.01)	-5.92	6497	D93-B	118.0		0.15
6346		-----		-----	6530	D93-B	116.5		-0.55
6373	D93-B	123.0		2.48					
	normality	OK							
	n	101							
	outliers	3							
	mean (n)	117.678							
	st.dev. (n)	2.0982							
	R(calc.)	5.875							
	st.dev.(ISO2719:16/A1:21)	2.1429							
	R(ISO2719:16/A1:21)	6							

Lab 1796 first reported 110
 Lab 6044 first reported 127
 Lab 6416 first reported 67.5



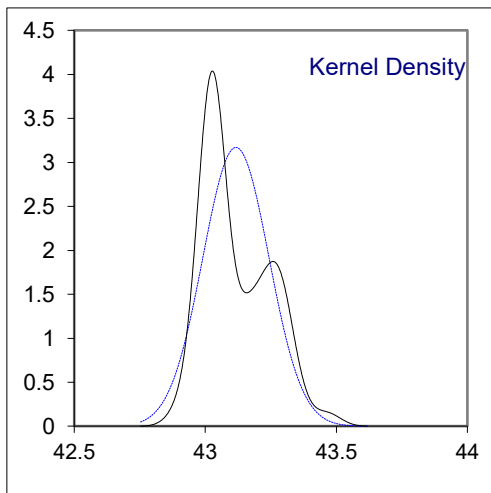
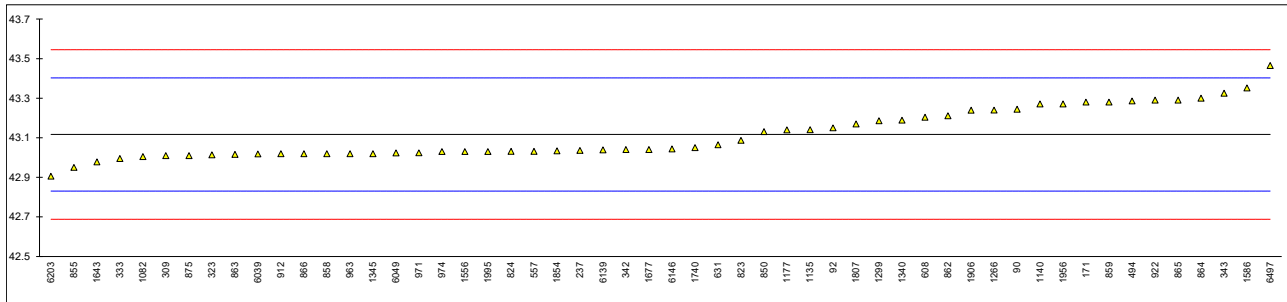
Determination of Heat of Combustion (Gross) on sample #23105; results in MJ/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		----		----	864	ISO8217	43.30		1.28
90		43.244		0.89	865	ISO8217	43.29		1.21
92	D240	43.150		0.23	866	D4868	43.0		-0.68
120		----		----	870		----		----
140		----		----	875	D4868	43.01		-0.75
150		----		----	886		----		----
154		----		----	902		----		----
158		----		----	912	D240	43.02		-0.68
159		----		----	922	D240	43.29		1.21
169		----		----	962		----		----
171	D240	43.280		1.14	963	D240	43.02		-0.68
194		----		----	971	D240	43.024		-0.65
221		----		----	974	D4868	43.03		-0.61
224		----		----	982		----		----
225		----		----	1039		----		----
237	D4868	43.036		-0.56	1082	D240	43.0048		-0.78
238		----		----	1121		----		----
253		----		----	1126		----		----
254		----		----	1135	D240	43.141		0.17
300		----		----	1140	ISO8217	43.271		1.08
309	D240	43.010		-0.75	1177	DIN51900-1/2	43.140		0.16
311		----		----	1218		----		----
313		----		----	1233		----		----
323	D240	43.014		-0.72	1254		----		----
328		----		----	1266		43.24		0.86
331		----		----	1275		----		----
333	D240	42.995		-0.85	1299		43.186		0.49
334		----		----	1340	D240	43.189		0.51
335		----		----	1345	D4868	43.02		-0.68
339		----		----	1356		----		----
342	D4868	43.04		-0.54	1412		----		----
343	D240	43.325		1.46	1459		----		----
349		----		----	1498		----		----
356		----		----	1556	D4868	43.03		-0.61
371		----		----	1558		----		----
391		----		----	1564		----		----
396		----		----	1586	D240	43.352	C	1.65
398		----		----	1613		----		----
399		----		----	1631		----		----
455		----		----	1643	D240	42.9781		-0.97
494	D4868	43.286		1.19	1677	D4868	43.04		-0.54
495		----		----	1720		----		----
511		----		----	1724		----		----
557	D4868	43.0321		-0.59	1728		----		----
562		----		----	1740	D240	43.050		-0.47
575		----		----	1761		----		----
603		----		----	1776		----		----
604		----		----	1792		----		----
608	D240	43.204		0.61	1796		----		----
631	D240	43.065		-0.36	1807	D240	43.170		0.37
663		----		----	1833		----		----
671		----		----	1849		----		----
750		----		----	1854	D240	43.034		-0.58
753		----		----	1906	D4809	43.239		0.86
759		----		----	1956	NF M07-030	43.271		1.08
785		----		----	1964		----		----
823	KS M2057	43.0872		-0.21	1995	D4868	43.03		-0.61
824	KS M2057	43.032		-0.59	2835		----		----
825		----		----	6039		43.018		-0.69
850	GB/T384	43.131		0.10	6044		----		----
851		----		----	6049	D4868	43.023		-0.65
855	GB/T384	42.950		-1.17	6075		----		----
858	D4868	43.02		-0.68	6092		----		----
859	D4868	43.28		1.14	6139	D240	43.039		-0.54
862	D240	43.211		0.66	6142		----		----
863	D240	43.016		-0.70	6146	D240	43.0435		-0.51

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		----		----	6416		----		----
6203		42.906		-1.47	6447		----		----
6279		----		----	6475		----		----
6335		----		----	6497	D240	43.465		2.44
6346		----		----	6530		----		----
6373		----		----					

normality OK
 n 54
 outliers 0
 mean (n) 43.1165
 st.dev. (n) 0.12582
 R(calc.) 0.3523
 st.dev.(D240:19) 0.14286
 R(D240:19) 0.40

Lab 1586 first reported 45.7938



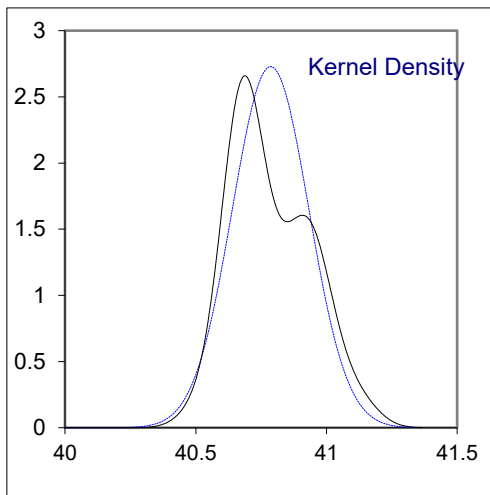
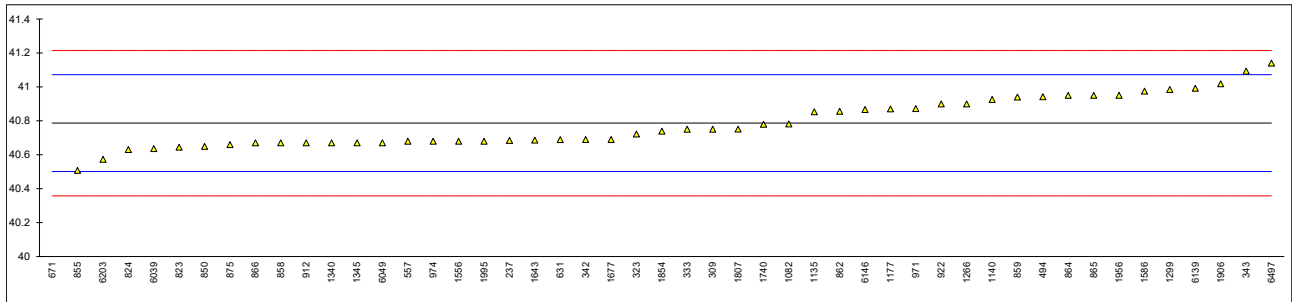
Determination of Heat of Combustion (Net) on sample #23105; results in MJ/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		----		----	864	ISO8217	40.95		1.15
90		----		----	865	ISO8217	40.95		1.15
92		----		----	866	D4868	40.67		-0.81
120		----		----	870		----		----
140		----		----	875	D4868	40.66		-0.88
150		----		----	886		----		----
154		----		----	902		----		----
158		----		----	912	D240	40.67		-0.81
159		----		----	922	D240	40.90		0.80
169		----		----	962		----		----
171		----		----	963		----		----
194		----		----	971	D240	40.872		0.60
221		----		----	974	D4868	40.68		-0.74
224		----		----	982		----		----
225		----		----	1039		----		----
237	D4868	40.684		-0.71	1082	D240	40.781754		-0.03
238		----		----	1121		----		----
253		----		----	1126		----		----
254		----		----	1135	D240	40.853		0.47
300		----		----	1140	ISO8217	40.926		0.98
309	D240	40.750		-0.25	1177	DIN51900-1/2	40.870		0.59
311		----		----	1218		----		----
313		----		----	1233		----		----
323	D240	40.722		-0.45	1254		----		----
328		----		----	1266		40.90		0.80
331		----		----	1275		----		----
333	D240	40.750		-0.25	1299		40.985		1.39
334		----		----	1340	D4868	40.67		-0.81
335		----		----	1345	D4868	40.67		-0.81
339		----		----	1356		----		----
342	D4868	40.69		-0.67	1412		----		----
343	D240	41.093		2.15	1459		----		----
349		----		----	1498		----		----
356		----		----	1556	D4868	40.68		-0.74
371		----		----	1558		----		----
391		----		----	1564		----		----
396		----		----	1586	D240	40.975	C	1.32
398		----		----	1613		----		----
399		----		----	1631		----		----
455		----		----	1643	D240	40.6864		-0.70
494	D4868	40.942		1.09	1677	D4868	40.69		-0.67
495		----		----	1720		----		----
511		----		----	1724		----		----
557	D4868	40.6799		-0.74	1728		----		----
562		----		----	1740	D240	40.780		-0.04
575		----		----	1761		----		----
603		----		----	1776		----		----
604		----		----	1792		----		----
608		----		----	1796		----		----
631	D240	40.689		-0.68	1807	D240	40.751		-0.25
663		----		----	1833		----		----
671	D240	38.17	R(0.01)	-18.31	1849		----		----
750		----		----	1854	D240	40.739		-0.33
753		----		----	1906	D4809	41.019		1.63
759		----		----	1956	NF M07-030	40.951		1.15
785		----		----	1964		----		----
823	KS M2057	40.6446		-0.99	1995	D4868	40.68		-0.74
824	KS M2057	40.630		-1.09	2835		----		----
825		----		----	6039		40.636		-1.05
850	GB/T384	40.649		-0.96	6044		----		----
851		----		----	6049	D4868	40.67		-0.81
855	GB/T384	40.508		-1.95	6075		----		----
858	D4868	40.67		-0.81	6092		----		----
859	D4868	40.94		1.08	6139	D240	40.992		1.44
862	D240	40.856		0.49	6142		----		----
863		----		----	6146	D240	40.8665		0.56

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		----		----	6416		----		----
6203		40.573		-1.49	6447		----		----
6279		----		----	6475		----		----
6335		----		----	6497	D240	41.140		2.48
6346		----		----	6530		----		----
6373		----		----					

normality OK
 n 48
 outliers 1
 mean (n) 40.7861
 st.dev. (n) 0.14621
 R(calc.) 0.4094
 st.dev.(D240:19) 0.14286
 R(D240:19) 0.40

Lab 1586 first reported 43.4384



Determination of Hydrogen Sulfide on sample #23105; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	IP570-A	0.0		----	864		----		----
90		----		----	865	IP570-A	<0.5		----
92		----		----	866		----		----
120		----		----	870		----		----
140		----		----	875		----		----
150		----		----	886		----		----
154		----		----	902	IP570-A	<0,6		----
158		----		----	912		----		----
159		----		----	922		----		----
169		----		----	962	IP570-A	<0.60		----
171	IP570-A	<0.4		----	963		----		----
194		----		----	971	IP570-A	<0.60		----
221		----		----	974		----		----
224		----		----	982		----		----
225		----		----	1039		----		----
237		----		----	1082		----		----
238		----		----	1121		----		----
253		----		----	1126		----		----
254		----		----	1135	IP570-A	<0.60		----
300	IP570-A	<0.6		----	1140	IP570-A	<0.5		----
309		----		----	1177		----		----
311		----		----	1218		----		----
313	IP570-A	<0.60		----	1233		----		----
323	IP570-A	<0.60		----	1254		----		----
328		----		----	1266		----		----
331		----		----	1275		----		----
333		----		----	1299		----		----
334		----		----	1340		----		----
335		----		----	1345		----		----
339		----		----	1356		----		----
342		----		----	1412		----		----
343		----		----	1459		----		----
349		----		----	1498		----		----
356	IP570-B	Below 0.60		----	1556		----		----
371		----		----	1558		----		----
391		----		----	1564		----		----
396		----		----	1586	IP570-A	<0.40		----
398		----		----	1613		----		----
399		----		----	1631		----		----
455		----		----	1643		----		----
494	IP570-A	<0,40		----	1677	IP570-A	< 0.40		----
495		----		----	1720		----		----
511		----		----	1724	IP570-A	0		----
557		----		----	1728		----		----
562		----		----	1740	IP570-A	<0.60		----
575		----		----	1761		----		----
603		----		----	1776		----		----
604		----		----	1792	IP570-A	0.00		----
608		----		----	1796		----		----
631		----		----	1807		----		----
663		----		----	1833	IP570-A	<0,6		----
671		----		----	1849		----		----
750		----		----	1854	IP570-A	<0.6		----
753		----		----	1906		----		----
759		----		----	1956		----		----
785		----		----	1964		----		----
823	IP570-A	<0.60		----	1995		----		----
824		----		----	2835		----		----
825		----		----	6039		----		----
850		----		----	6044		----		----
851		----		----	6049		----		----
855	IP570	<1		----	6075		----		----
858		----		----	6092		----		----
859		----		----	6139	IP570	<0.60		----
862	IP570-A	<0.6		----	6142		----		----
863	IP570-A	<0.6		----	6146	IP570-A	0		----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		----		----	6416		----		----
6203		----		----	6447		----		----
6279		----		----	6475		----		----
6335		----		----	6497		----		----
6346		----		----	6530		----		----
6373		----		----					

n 25
 mean (n) <0.60 Application range IP570-A:15R21 0.60 – 12.5 mg/kg
 Application range IP570-B:15R21 0.40 – 15.3 mg/kg

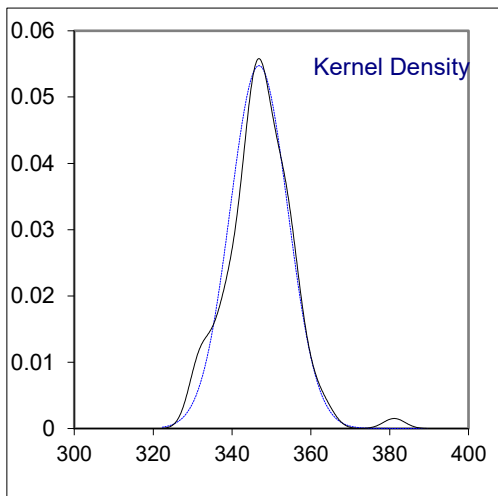
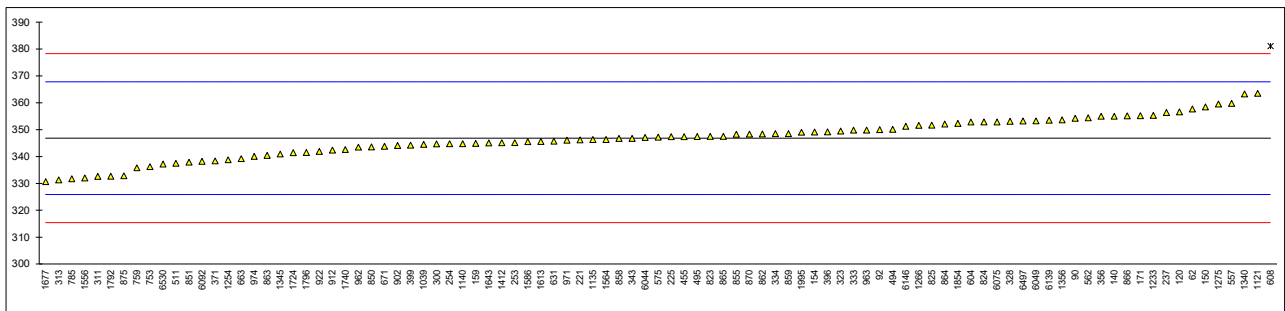
Determination of Kinematic Viscosity at 50 °C on sample #23105; results in mm²/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D445	357.7		1.04	864	D445	352.1		0.50
90	D445	354.27		0.71	865	D445	347.5		0.06
92	D445	350.0		0.30	866	D445	355.11		0.79
120	D445	356.6		0.93	870	ISO3104	348.32		0.14
140	ISO3104	355.0	C	0.78	875	ISO3104	332.8		-1.34
150	D445	358.5		1.11	886		----		----
154	D445	349.1		0.22	902	ISO3104	344.1		-0.26
158		----		----	912	ISO3104	342.4		-0.42
159	D445	344.9		-0.18	922	D445	341.9		-0.47
169		----		----	962	D445	343.5		-0.32
171	ISO3104	355.2		0.80	963	ISO3104	349.8		0.28
194		----		----	971	D445	346.1		-0.07
221	D445	346.2		-0.06	974	D445	340.1		-0.64
224		----		----	982		----		----
225	D445	347.4		0.06	1039	ISO3104	344.50		-0.22
237	D445	356.4		0.91	1082		----		----
238		----		----	1121	ISO3104	363.51	C	1.59
253	D445	345.13		-0.16	1126		----		----
254	D445	344.8		-0.19	1135	ISO3104	346.3		-0.05
300	ISO3104	344.7		-0.20	1140	IP71	344.8		-0.19
309		----		----	1177		----		----
311	D445	332.6		-1.36	1218		----		----
313	D445	331.3		-1.48	1233	ISO3104	355.3		0.81
323	ISO3104	349.5		0.26	1254	ISO3104	338.75		-0.77
328	ISO3104	353.1		0.60	1266	ISO3104	351.6		0.46
331		----		----	1275	IP71	359.5304	C	1.21
333	D445	349.8		0.28	1299		----		----
334	ISO3104	348.5		0.16	1340	ISO3104	363.2975		1.57
335		----		----	1345	D445	340.9	C	-0.57
339		----		----	1356	ISO3104	353.6		0.65
342		----		----	1412	D445	345.1		-0.16
343	ISO3104	346.74		-0.01	1459		----		----
349		----		----	1498		----		----
356	ISO3104	355.0		0.78	1556	ISO3104	332.01		-1.41
371	D445	338.38		-0.81	1558		----		----
391		----		----	1564	D445	346.3		-0.05
396	ISO3104	349.2		0.23	1586	ISO3104	345.5		-0.13
398		----		----	1613	D445	345.6		-0.12
399	ISO3104	344.2		-0.25	1631		----		----
455	IP71	347.4		0.06	1643	D445	345.05		-0.17
494	ISO3104	350.1		0.31	1677	D445	330.6		-1.55
495	ISO3104	347.4398		0.06	1720		----		----
511	D445	337.467	C	-0.89	1724	D445	341.42		-0.52
557	D445	359.79		1.24	1728		----		----
562	D445	354.4		0.72	1740	D445	342.6		-0.40
575	D445	347.179		0.03	1761		----		----
603		----		----	1776		----		----
604	D445	352.83		0.57	1792	ISO3104	332.68		-1.35
608	D445	381.1	R(0.01)	3.27	1796	D445	341.5		-0.51
631	D445	345.74		-0.10	1807		----		----
663	D445	339.18		-0.73	1833		----	W	----
671	D445	343.79		-0.29	1849		----		----
750		----		----	1854	ISO3104	352.3		0.52
753	D445	336.2		-1.01	1906		----		----
759	ISO3104	335.8		-1.05	1956		----		----
785	ISO3104	331.7		-1.44	1964		----		----
823	D445	347.5		0.06	1995	D445	349.03		0.21
824	ISO3104	352.9		0.58	2835		----		----
825	ISO3104	351.7		0.47	6039		----		----
850	ISO3104	343.6		-0.31	6044	ISO3104	347.1		0.03
851	ISO3104	337.9		-0.85	6049	D445	353.24		0.61
855	ISO3104	348.3		0.14	6075	ISO3104	352.9		0.58
858	ISO3104	346.7		-0.01	6092	D445	338.2		-0.82
859	D445	348.5		0.16	6139	ISO3104	353.5		0.64
862	ISO3104	348.4		0.15	6142		----		----
863	ISO3104	340.4		-0.61	6146	ISO3104	351.25		0.42

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		----		----	6416		----		----
6203		----		----	6447		----		----
6279		----		----	6475		----		----
6335		----		----	6497	D445	353.2		0.61
6346		----		----	6530	D445	337.2		-0.92
6373		----		----					

normality OK
 n 94
 outliers 1
 mean (n) 346.8216
 st.dev. (n) 7.28639
 R(calc.) 20.4019
 st.dev.(ISO3104:20) 10.48021
 R(ISO3104:20) 29.3446

Lab 140 first reported 373.3
 Lab 511 first reported 313.443
 Lab 1121 first reported 412.22
 Lab 1275 first reported 6.1132
 Lab 1345 first reported test result as Kinematic Viscosity at 100°C
 Lab 1833 test result withdrawn, reported 352.6



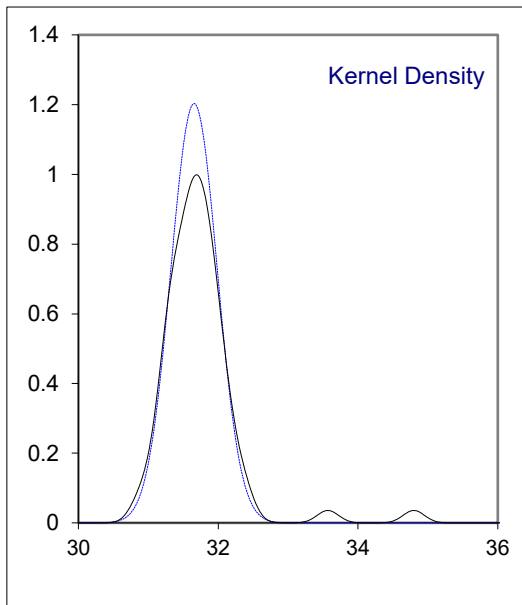
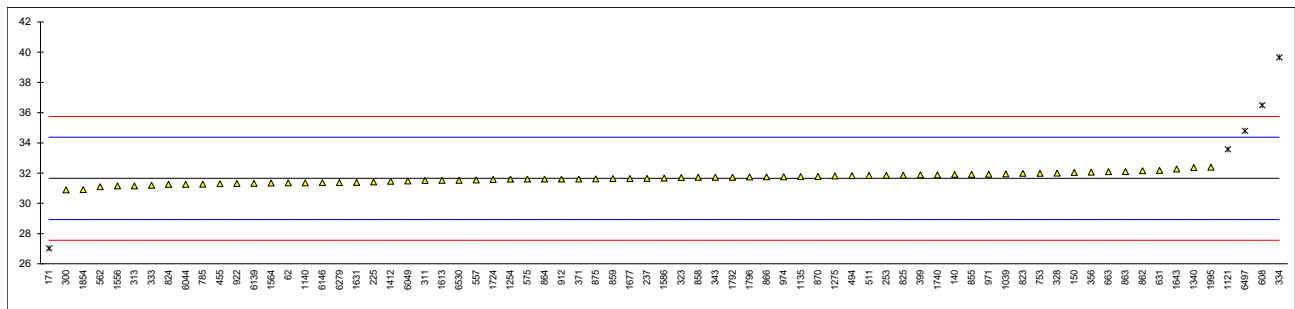
Determination of Kinematic Viscosity at 100 °C on sample #23105; results in mm²/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D445	31.35		-0.22	864	ISO3104	31.60		-0.04
90		----		----	865		----		----
92		----		----	866	D445	31.754		0.07
120		----		----	870	D445	31.782		0.09
140	ISO3104	31.91		0.19	875	ISO3104	31.62		-0.03
150	D445	32.04		0.28	886		----		----
154		----		----	902		----		----
158		----		----	912	ISO3104	31.60		-0.04
159		----		----	922	D445	31.31		-0.25
169		----		----	962		----		----
171	ISO3104	27.02	R(0.01)	-3.40	963		----		----
194		----		----	971	D445	31.93		0.20
221		----		----	974	D445	31.76		0.08
224		----		----	982		----		----
225	D445	31.42		-0.17	1039	ISO3104	31.948		0.22
237	D445	31.65		0.00	1082		----		----
238		----		----	1121	ISO3104	33.57	C,R(0.01)	1.40
253	D445	31.85		0.14	1126		----		----
254		----		----	1135	ISO3104	31.773		0.09
300	ISO3104	30.89	C	-0.56	1140	IP71	31.35		-0.22
309		----		----	1177		----		----
311	D445	31.51		-0.11	1218		----		----
313	D445	31.16		-0.36	1233		----		----
323	ISO3104	31.70		0.03	1254	ISO3104	31.595		-0.04
328	ISO3104	32.00		0.25	1266		----		----
331		----		----	1275	IP71	31.8077	C	0.11
333	D445	31.19		-0.34	1299		----		----
334	ISO3104	39.66	R(0.01)	5.87	1340	ISO3104	32.375		0.53
335		----		----	1345		----	C	----
339		----		----	1356		----		----
342		----		----	1412	D445	31.45		-0.15
343	ISO3104	31.72		0.05	1459		----		----
349		----		----	1498		----		----
356	ISO3104	32.07		0.30	1556	ISO3104	31.154		-0.37
371	D445	31.604		-0.04	1558		----		----
391		----		----	1564	D445	31.34		-0.23
396		----		----	1586	ISO3104	31.67		0.01
398		----		----	1613	D445	31.52		-0.10
399	ISO3104	31.88		0.17	1631	ISO3104	31.393		-0.19
455	IP71	31.3		-0.26	1643	D445	32.27		0.45
494	ISO3104	31.83		0.13	1677	D445	31.64		-0.01
495		----		----	1720		----		----
511	D445	31.847		0.14	1724	D445	31.576		-0.06
557	D445	31.546		-0.08	1728		----		----
562	D445	31.1		-0.41	1740	D445	31.88		0.17
575	D445	31.599		-0.04	1761		----		----
603		----		----	1776		----		----
604		----		----	1792	ISO3104	31.726		0.05
608	D445	36.49	R(0.01)	3.55	1796	D445	31.74		0.06
631	D445	32.1776		0.38	1807		----		----
663	D445	32.0965		0.32	1833		----	W	----
671		----		----	1849		----		----
750		----		----	1854	ISO3104	30.91		-0.55
753	D445	31.98		0.24	1906		----		----
759		----		----	1956		----		----
785	ISO3104	31.27		-0.28	1964		----		----
823	ISO3104	31.98		0.24	1995	D445	32.39		0.54
824	ISO3104	31.26		-0.29	2835		----		----
825	ISO3104	31.86		0.15	6039		----		----
850		----		----	6044	ISO3104	31.26		-0.29
851		----		----	6049	D445	31.481		-0.13
855	ISO3104	31.92		0.19	6075		----		----
858	ISO3104	31.72		0.05	6092		----		----
859	D445	31.64		-0.01	6139	ISO3104	31.32		-0.25
862	ISO3104	32.16		0.37	6142		----		----
863	D445	32.10		0.33	6146	ISO3104	31.373		-0.21

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		----		----	6416		----		----
6203		----		----	6447		----		----
6279	ISO3104	31.38		-0.20	6475		----		----
6335		----		----	6497	D445	34.80	R(0.01)	2.31
6346		----		----	6530	D445	31.52		-0.10
6373		----		----					

normality OK
 n 68
 outliers 5
 mean (n) 31.6548
 st.dev. (n) 0.33141
 R(calc.) 0.9279
 st.dev.(ISO3104:20) 1.36342
 R(ISO3104:20) 3.8176

Lab 300 first reported 32.89
 Lab 1121 first reported 30.23
 Lab 1275 first reported 35.319025
 Lab 1345 reported test result was for Kinematic Viscosity at 50°C
 Lab 1833 test result withdrawn, reported 31.47

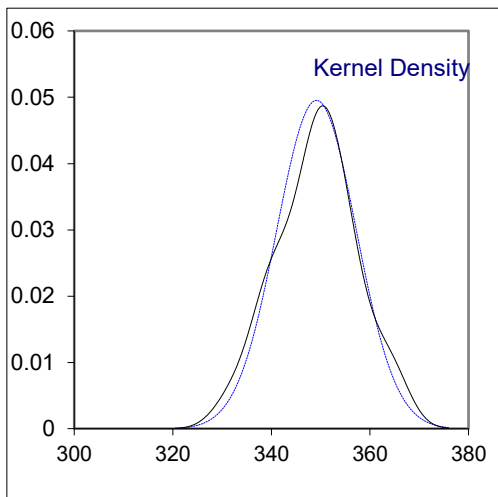
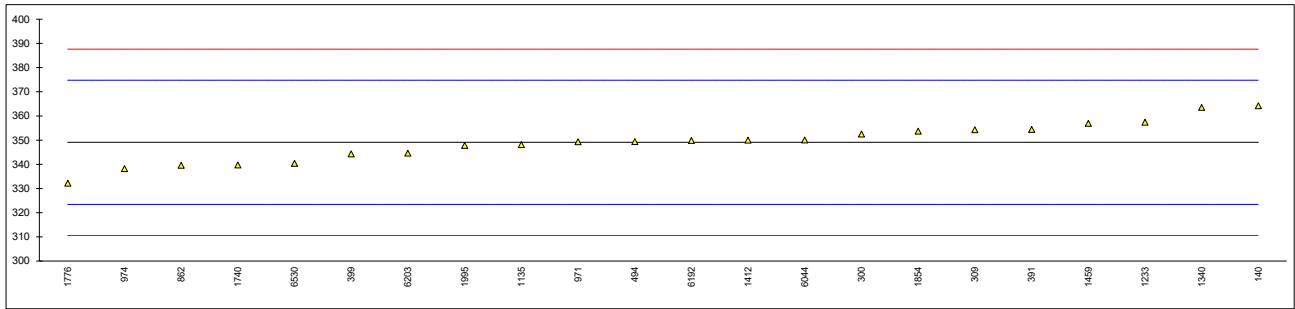


Determination of Kinematic Viscosity Stabinger at 50 °C on sample #23105; results in mm²/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		----		----	864		----		----
90		----		----	865		----		----
92		----		----	866		----		----
120		----		----	870		----		----
140	D7042	364.2		1.18	875		----		----
150		----		----	886		----		----
154		----		----	902		----		----
158		----		----	912		----		----
159		----		----	922		----		----
169		----		----	962		----		----
171		----		----	963		----		----
194		----		----	971	D7042	349.3		0.01
221		----		----	974	D7042	338.2		-0.85
224		----		----	982		----		----
225		----		----	1039		----		----
237		----		----	1082		----		----
238		----		----	1121		----		----
253		----		----	1126		----		----
254		----		----	1135	D7042	348.15		-0.08
300	D7042	352.5		0.26	1140		----		----
309	D7042	354.28		0.40	1177		----		----
311		----		----	1218		----		----
313		----		----	1233	D7042	357.4		0.65
323		----		----	1254		----		----
328		----		----	1266		----		----
331		----		----	1275		----		----
333		----		----	1299		----		----
334		----		----	1340	D7042	363.55		1.12
335		----		----	1345		----		----
339		----		----	1356		----		----
342		----		----	1412	D7042	350.0		0.07
343		----		----	1459	D7042	356.98		0.61
349		----		----	1498		----		----
356		----		----	1556		----		----
371		----		----	1558		----		----
391	D7042	354.4		0.41	1564		----		----
396		----		----	1586		----		----
398		----		----	1613		----		----
399	D7042	344.3		-0.38	1631		----		----
455		----		----	1643		----		----
494	D7042	349.4		0.02	1677		----		----
495		----		----	1720		----		----
511		----		----	1724		----		----
557		----		----	1728		----		----
562		----		----	1740	D7042	339.7		-0.73
575		----		----	1761		----		----
603		----		----	1776	D7042	332.16		-1.32
604		----		----	1792		----		----
608		----		----	1796		----		----
631		----		----	1807		----		----
663		----		----	1833		----		----
671		----		----	1849		----		----
750		----		----	1854	D7042	353.7		0.36
753		----		----	1906		----		----
759		----		----	1956		----		----
785		----		----	1964		----		----
823		----		----	1995	D7042	347.8		-0.10
824		----		----	2835		----		----
825		----		----	6039		----		----
850		----		----	6044	D7042	350.03		0.07
851		----		----	6049		----		----
855		----		----	6075		----		----
858		----		----	6092		----		----
859		----		----	6139		----		----
862	D7042	339.62		-0.74	6142		----		----
863		----		----	6146		----		----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192	D7042	349.9		0.06	6416		----		----
6203	D7042	344.61		-0.35	6447		----		----
6279		----		----	6475		----		----
6335		----		----	6497		----		----
6346		----		----	6530	D7042	340.4		-0.68
6373		----		----					

normality OK
 n 22
 outliers 0
 mean (n) 349.1172
 st.dev. (n) 8.05743
 R(calc.) 22.5608
 st.dev.(D7042:21a) 12.83006
 R(D7042:21a) 35.9242

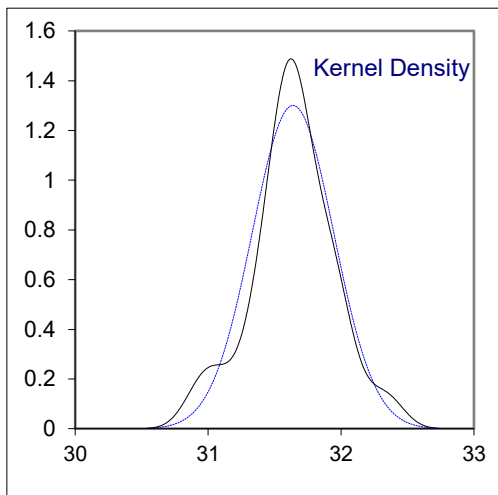
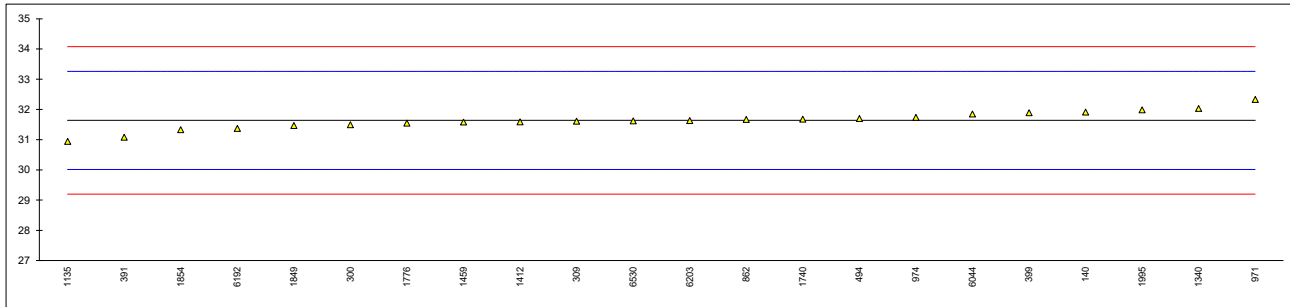


Determination of Kinematic Viscosity Stabinger at 100 °C on sample #23105; results in mm²/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		----		----	864		----		----
90		----		----	865		----		----
92		----		----	866		----		----
120		----		----	870		----		----
140	D7042	31.91		0.33	875		----		----
150		----		----	886		----		----
154		----		----	902		----		----
158		----		----	912		----		----
159		----		----	922		----		----
169		----		----	962		----		----
171		----		----	963		----		----
194		----		----	971	D7042	32.33		0.85
221		----		----	974	D7042	31.74		0.12
224		----		----	982		----		----
225		----		----	1039		----		----
237		----		----	1082		----		----
238		----		----	1121		----		----
253		----		----	1126		----		----
254		----		----	1135	D7042	30.945		-0.85
300	D7042	31.49		-0.18	1140		----		----
309	D7042	31.61		-0.04	1177		----		----
311		----		----	1218		----		----
313		----		----	1233		----		----
323		----		----	1254		----		----
328		----		----	1266		----		----
331		----		----	1275		----		----
333		----		----	1299		----		----
334		----		----	1340	D7042	32.032		0.48
335		----		----	1345		----		----
339		----		----	1356		----		----
342		----		----	1412	D7042	31.59		-0.06
343		----		----	1459	D7042	31.581		-0.07
349		----		----	1498		----		----
356		----		----	1556		----		----
371		----		----	1558		----		----
391	D7042	31.08		-0.69	1564		----		----
396		----		----	1586		----		----
398		----		----	1613		----		----
399	D7042	31.89		0.31	1631		----		----
455		----		----	1643		----		----
494	D7042	31.7		0.08	1677		----		----
495		----		----	1720		----		----
511		----		----	1724		----		----
557		----		----	1728		----		----
562		----		----	1740	D7042	31.68		0.05
575		----		----	1761		----		----
603		----		----	1776	D7042	31.549		-0.11
604		----		----	1792		----		----
608		----		----	1796		----		----
631		----		----	1807		----		----
663		----		----	1833		----		----
671		----		----	1849	ISO3104	31.47		-0.21
750		----		----	1854	D7042	31.33		-0.38
753		----		----	1906		----		----
759		----		----	1956		----		----
785		----		----	1964		----		----
823		----		----	1995	D7042	31.982		0.42
824		----		----	2835		----		----
825		----		----	6039		----		----
850		----		----	6044	D7042	31.85		0.26
851		----		----	6049		----		----
855		----		----	6075		----		----
858		----		----	6092		----		----
859		----		----	6139		----		----
862	D7042	31.668		0.04	6142		----		----
863		----		----	6146		----		----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192	D7042	31.37		-0.33	6416		----		----
6203	D7042	31.632		-0.01	6447		----		----
6279		----		----	6475		----		----
6335		----		----	6497		----		----
6346		----		----	6530	D7042	31.62		-0.02
6373		----		----					

normality OK
 n 22
 outliers 0
 mean (n) 31.6386
 st.dev. (n) 0.30666
 R(calc.) 0.8586
 st.dev.(D7042:21a) 0.81198
 R(D7042:21a) 2.2735



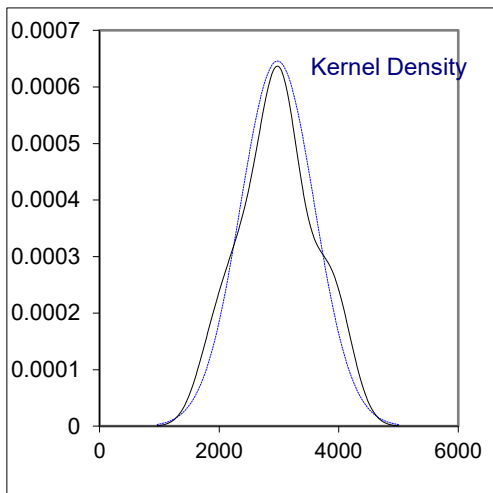
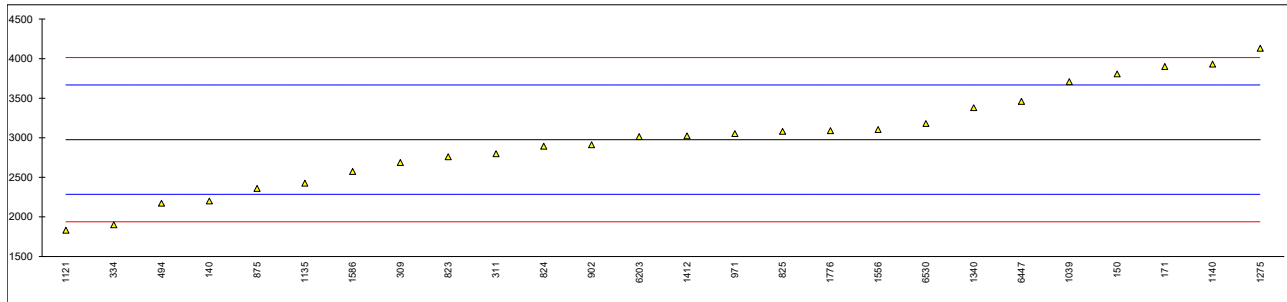
Determination of Nitrogen on sample #23105; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		----		----	864		----		----
90		----		----	865		----		----
92		----		----	866		----		----
120		----		----	870		----		----
140	D5762 Gravimetric	2200		-2.25	875	D5762 Gravimetric	2360		-1.78
150	D5762 Volumetric	3806	C	2.40	886		----		----
154		----		----	902	D5762 Gravimetric	2913		-0.18
158		----		----	912		----		----
159		----		----	922		----		----
169		----		----	962		----		----
171	D5762 Gravimetric	3900		2.67	963		----		----
194		----		----	971	D5762 Gravimetric	3052		0.22
221		----		----	974		----		----
224		----		----	982		----		----
225		----		----	1039	D4629	3710.0		2.12
237		----		----	1082		----		----
238		----		----	1121	D4629	1833		-3.31
253		----		----	1126		----		----
254		----		----	1135	D5762 Volumetric	2425		-1.59
300		----		----	1140	D4629	3931		2.76
309	D5762 Volumetric	2687		-0.84	1177		----		----
311	D5762 Volumetric	2800		-0.51	1218		----		----
313		----		----	1233		----		----
323		----		----	1254		----		----
328		----		----	1266		----		----
331		----		----	1275	IP379	4130		3.34
333		----		----	1299		----		----
334	D4629	1900		-3.11	1340	D5762 Volumetric	3380		1.17
335		----		----	1345		----		----
339		----		----	1356		----		----
342		----		----	1412	D5762 Gravimetric	3025		0.14
343		----		----	1459		----		----
349		----		----	1498		----		----
356		----		----	1556	D5762 Volumetric	3103.2		0.37
371		----		----	1558		----		----
391		----		----	1564		----		----
396		----		----	1586	D5762 Volumetric	2575		-1.16
398		----		----	1613		----		----
399		----		----	1631		----		----
455		----		----	1643		----		----
494	D5762 Gravimetric	2173		-2.32	1677		----		----
495		----		----	1720		----		----
511		----		----	1724		----		----
557		----		----	1728		----		----
562		----		----	1740		----		----
575		----		----	1761		----		----
603		----		----	1776	D5762 Volumetric	3090		0.33
604		----		----	1792		----		----
608		----		----	1796		----		----
631		----		----	1807		----		----
663		----		----	1833		----		----
671		----		----	1849		----		----
750		----		----	1854		----		----
753		----		----	1906		----		----
759		----		----	1956		----		----
785		----		----	1964		----		----
823	D5762 Gravimetric	2760		-0.63	1995		----		----
824	D5762 Gravimetric	2894		-0.24	2835		----		----
825	D5762 Volumetric	3080		0.30	6039		----		----
850		----		----	6044		----		----
851		----		----	6049		----		----
855		----		----	6075		----		----
858		----		----	6092		----		----
859		----		----	6139		----		----
862		----		----	6142		----		----
863		----		----	6146		----		----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		----		----	6416		----		----
6203	D5762 Gravimetric	3015		0.11	6447	D5762	3460.0		1.40
6279		----		----	6475		----		----
6335		----		----	6497		----		----
6346		----		----	6530	D5762 Volumetric	3180		0.59
6373		----		----					

normality OK
 n 26
 outliers 0
 mean (n) 2976.24
 st.dev. (n) 617.766
 R(calc.) 1729.74
 st.dev.(D5762:18a) 345.605
 R(D5762:18a) 967.69

Lab 150 first reported 5100



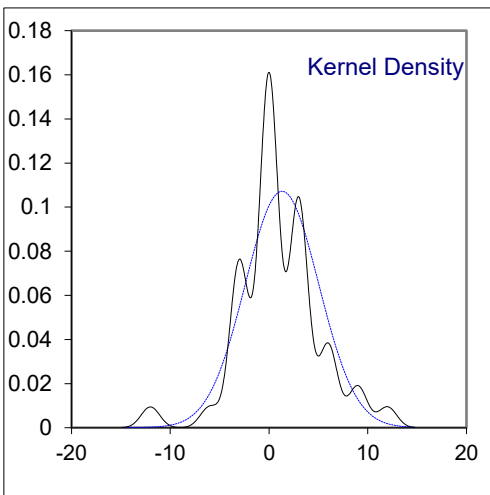
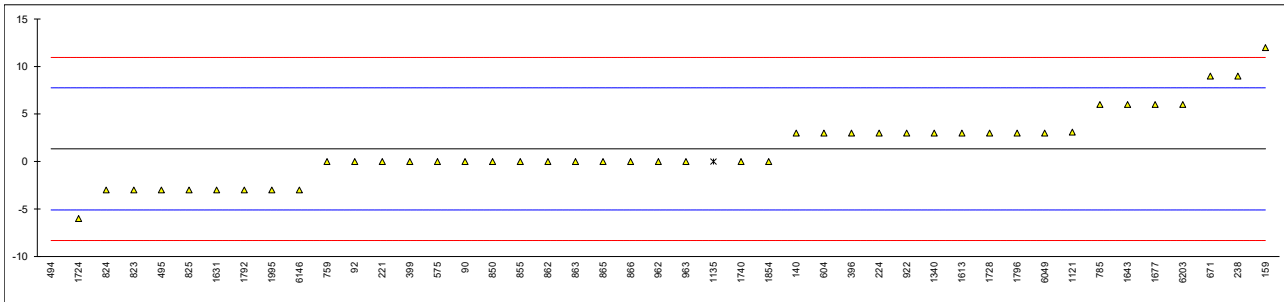
Determination of Pour Point Lower on sample #23105; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		----		----	864		----		----
90	D97	0		-0.41	865	D97	0		-0.41
92	D97	0		-0.41	866	D97	0		-0.41
120		----		----	870		----		----
140	ISO3016	3		0.52	875		----		----
150		----		----	886		----		----
154		----		----	902		----		----
158		----		----	912		----		----
159	D97	12		3.32	922	D97	3		0.52
169		----		----	962	D97	0		-0.41
171		----		----	963	D97	0		-0.41
194		----		----	971		----		----
221	D97	0		-0.41	974		----		----
224	D97	3		0.52	982		----		----
225		----		----	1039		----		----
237		----		----	1082		----		----
238	ISO3016	9		2.39	1121	ISO3016	3.1		0.55
253		----		----	1126		----		----
254		----		----	1135	ISO3016	0	ex	-0.41
300		----		----	1140		----		----
309		----		----	1177		----		----
311		----		----	1218		----		----
313		----		----	1233		----		----
323		----		----	1254		----		----
328		----		----	1266		----		----
331		----		----	1275		----		----
333		----		----	1299		----		----
334		----		----	1340	D97	3		0.52
335		----		----	1345		----		----
339		----		----	1356		----		----
342		----		----	1412		----		----
343		----		----	1459		----		----
349		----		----	1498		----		----
356		----		----	1556		----		----
371		----		----	1558		----		----
391		----		----	1564		----		----
396	ISO3016	3		0.52	1586		----		----
398		----		----	1613	D97	3		0.52
399	D97	0		-0.41	1631	ISO3016	-3		-1.35
455		----		----	1643	D97	6		1.45
494	D97	-12	R(0.05)	-4.15	1677	D97	6		1.45
495	ISO3016	-3		-1.35	1720		----		----
511		----		----	1724	D97	-6		-2.28
557		----		----	1728	D97	3		0.52
562		----		----	1740	ISO3016	0		-0.41
575	D97	0		-0.41	1761		----		----
603		----		----	1776		----		----
604	D97	3		0.52	1792	ISO3016	-3		-1.35
608		----		----	1796	D97	3		0.52
631		----		----	1807		----		----
663		----		----	1833		----		----
671	D97	9		2.39	1849		----		----
750		----		----	1854	ISO3016	0		-0.41
753		----		----	1906		----		----
759	ISO3016	0		-0.41	1956		----		----
785	ISO3016	6.0		1.45	1964		----		----
823	ISO3016	-3		-1.35	1995	D97	-3		-1.35
824	ISO3016	-3		-1.35	2835		----		----
825	ISO3016	-3		-1.35	6039		----		----
850	ISO3016	0		-0.41	6044		----		----
851		----		----	6049	D97	3		0.52
855	ISO3016	0		-0.41	6075		----		----
858		----		----	6092		----		----
859		----		----	6139		----		----
862	ISO3016	0		-0.41	6142		----		----
863	D97	0		-0.41	6146	ISO3016	-3		-1.35

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		----		----	6416		----		----
6203	D97	6		1.45	6447		----		----
6279		----		----	6475		----		----
6335		----		----	6497		----		----
6346		----		----	6530		----		----
6373		----		----					

normality OK
 n 43
 outliers 1+1ex
 mean (n) 1.33
 st.dev. (n) 3.722
 R(calc.) 10.42
 st.dev.(ISO3016:19) 3.214
 R(ISO3016:19) 9

Lab 1135 test result excluded as PP lower > PP upper, which is in principle not possible



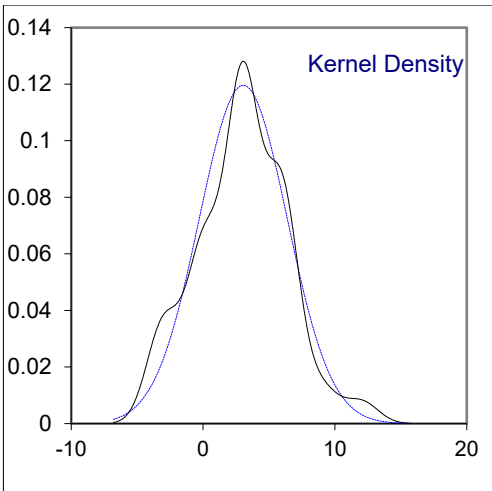
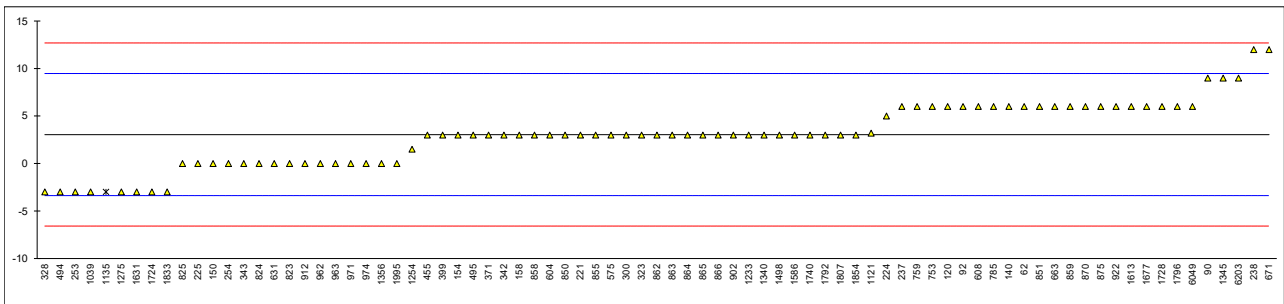
Determination of Pour Point Upper on sample #23105; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D97	6		0.92	864	D97	3		-0.01
90	D97	9		1.85	865	D97	3		-0.01
92	D97	6		0.92	866	D97	3		-0.01
120	D97	6		0.92	870	D97	6		0.92
140	ISO3016	6		0.92	875	D97	6		0.92
150	D97	0		-0.95	886		----		----
154	D97	3		-0.01	902	ISO3016	3		-0.01
158	D97	3		-0.01	912	ISO3016	0		-0.95
159		----		----	922	D97	6		0.92
169		----		----	962	D97	0		-0.95
171		----		----	963	D97	0		-0.95
194		----		----	971	D97	0		-0.95
221	D97	3		-0.01	974	D97	0		-0.95
224	D97	5		0.61	982		----		----
225	D97	0		-0.95	1039	ISO3016	-3.0		-1.88
237	D97	6		0.92	1082		----		----
238	D97	12		2.79	1121	ISO3016	3.2		0.05
253	D97	-3		-1.88	1126		----		----
254	D97	0		-0.95	1135	ISO3016	-3	ex	-1.88
300	ISO3016	3		-0.01	1140		----		----
309		----		----	1177		----		----
311		----		----	1218		----		----
313		----		----	1233	ISO3016	3		-0.01
323	D97	3		-0.01	1254	ISO3016	1.5		-0.48
328	ISO3016	-3		-1.88	1266		----		----
331		----		----	1275	IP15	-3.0		-1.88
333		----		----	1299		----		----
334		----		----	1340	D97	3		-0.01
335		----		----	1345	D97	9.0		1.85
339		----		----	1356	ISO3016	0		-0.95
342	D97	3		-0.01	1412		----		----
343	ISO3016	0		-0.95	1459		----		----
349		----		----	1498	D97	3.0		-0.01
356		----		----	1556		----		----
371	D97	3		-0.01	1558		----		----
391		----		----	1564		----		----
396		----		----	1586	ISO3016	3		-0.01
398		----		----	1613	D97	6		0.92
399	D97	3		-0.01	1631	ISO3016	-3		-1.88
455	D97	3		-0.01	1643		----		----
494	D97	-3		-1.88	1677	D97	6		0.92
495	ISO3016	3		-0.01	1720		----		----
511		----		----	1724	D97	-3		-1.88
557		----		----	1728	D97	6		0.92
562		----		----	1740	ISO3016	3		-0.01
575	D97	3		-0.01	1761		----		----
603		----		----	1776		----		----
604	D97	3		-0.01	1792	ISO3016	3	C	-0.01
608	D97	6		0.92	1796	D97	6		0.92
631	D97	0		-0.95	1807	D97	3		-0.01
663	D97	6		0.92	1833	ISO3016	-3		-1.88
671	D97	12		2.79	1849		----		----
750		----		----	1854	ISO3016	3		-0.01
753	D97	6		0.92	1906		----		----
759	ISO3016	6		0.92	1956		----		----
785	ISO3016	6.0		0.92	1964		----		----
823	ISO3016	0		-0.95	1995	D97	0		-0.95
824	ISO3016	0		-0.95	2835		----		----
825	ISO3016	0		-0.95	6039		----		----
850	ISO3016	3		-0.01	6044		----		----
851	ISO3016	6		0.92	6049	D97	6		0.92
855	ISO3016	3		-0.01	6075		----		----
858	ISO3016	3		-0.01	6092		----		----
859	D97	6		0.92	6139		----		----
862	ISO3016	3		-0.01	6142		----		----
863	ISO3016	3		-0.01	6146		----		----

lab	method	value	mark	z(targ)	Lab	method	value	mark	z(targ)
6192		----		----	6416		----		----
6203	D97	9		1.85	6447		----		----
6279		----		----	6475		----		----
6335		----		----	6497		----		----
6346		----		----	6530		----		----
6373		----		----					

normality OK
 n 80
 outliers 0+1ex
 mean (n) 3.05
 st.dev. (n) 3.336
 R(calc.) 9.34
 st.dev.(ISO3016:19) 3.214
 R(ISO3016:19) 9

Lab 1135 test result excluded as PP lower > PP upper, which is in principle not possible
 Lab 1792 first reported -6

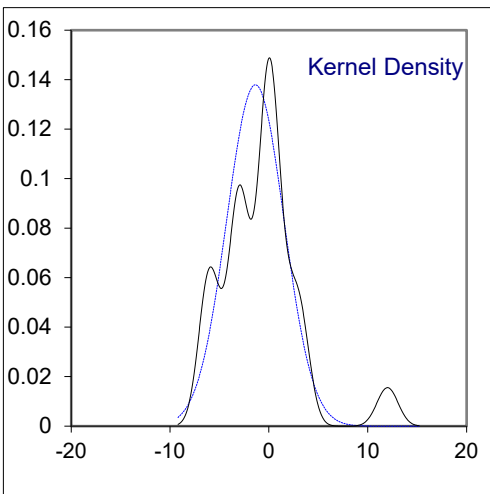
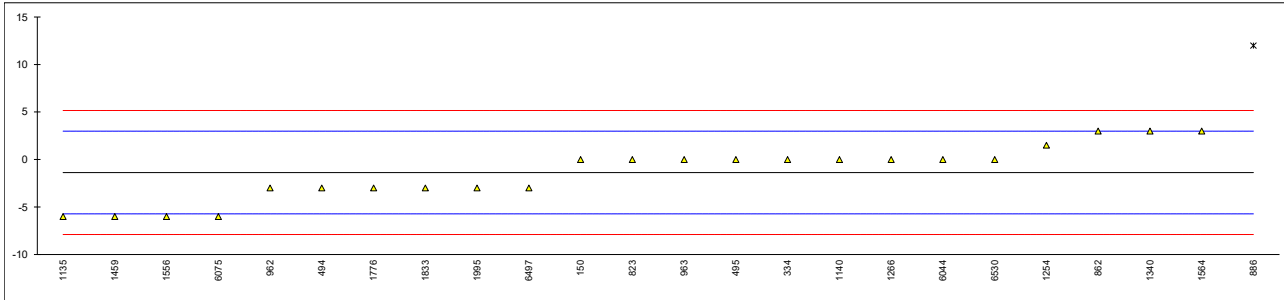


Determination of Pour Point Automated, 3 °C interval on sample #23105; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		----		----	864		----		----
90		----		----	865		----		----
92		----		----	866		----		----
120		----		----	870		----		----
140		----		----	875		----		----
150	D5950	0		0.63	886	D5950	12	R(0.01)	6.14
154		----		----	902		----		----
158		----		----	912		----		----
159		----		----	922		----		----
169		----		----	962	D5950	-3		-0.75
171		----		----	963	D5950	0		0.63
194		----		----	971		----		----
221		----		----	974		----		----
224		----		----	982		----		----
225		----		----	1039		----		----
237		----		----	1082		----		----
238		----		----	1121		----		----
253		----		----	1126		----		----
254		----		----	1135	D5950	-6		-2.13
300		----		----	1140	D5950	0		0.63
309		----		----	1177		----		----
311		----		----	1218		----		----
313		----		----	1233		----		----
323		----		----	1254	D5950	1.5		1.32
328		----		----	1266	D5950	0		0.63
331		----		----	1275		----		----
333		----		----	1299		----		----
334	D5950	0.0		0.63	1340	ISO3016	3		2.01
335		----		----	1345		----		----
339		----		----	1356		----		----
342		----		----	1412		----		----
343		----		----	1459	In house	-6.0		-2.13
349		----		----	1498		----		----
356		----		----	1556	D5950	-6		-2.13
371		----		----	1558		----		----
391		----		----	1564	D5950	3		2.01
396		----		----	1586		----		----
398		----		----	1613		----		----
399		----		----	1631		----		----
455		----		----	1643		----		----
494	D5950	-3		-0.75	1677		----		----
495	D5950	0		0.63	1720		----		----
511		----		----	1724		----		----
557		----		----	1728		----		----
562		----		----	1740		----		----
575		----		----	1761		----		----
603		----		----	1776	D5950	-3		-0.75
604		----		----	1792		----		----
608		----		----	1796		----		----
631		----		----	1807		----		----
663		----		----	1833	D5950	-3		-0.75
671		----		----	1849		----		----
750		----		----	1854		----		----
753		----		----	1906		----		----
759		----		----	1956		----		----
785		----		----	1964		----		----
823	D5950	0		0.63	1995	D5950	-3		-0.75
824		----		----	2835		----		----
825		----		----	6039		----		----
850		----		----	6044	D6892	0		0.63
851		----		----	6049		----		----
855		----		----	6075	NF T60-105	-6		-2.13
858		----		----	6092		----		----
859		----		----	6139		----		----
862	D5950	3		2.01	6142		----		----
863		----		----	6146		----		----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		----		----	6416		----		----
6203		----		----	6447		----		----
6279		----		----	6475		----		----
6335		----		----	6497	D5950	-3		-0.75
6346		----		----	6530	D5950	0		0.63
6373		----		----					

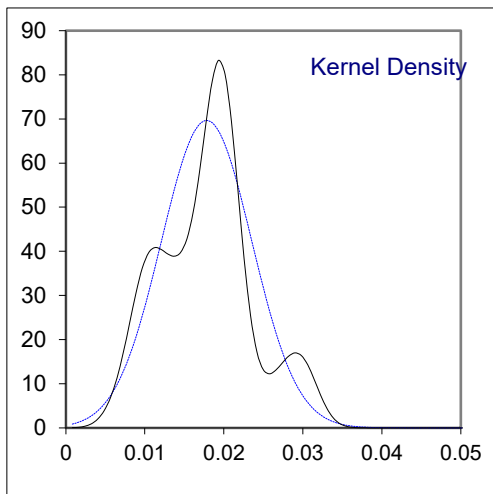
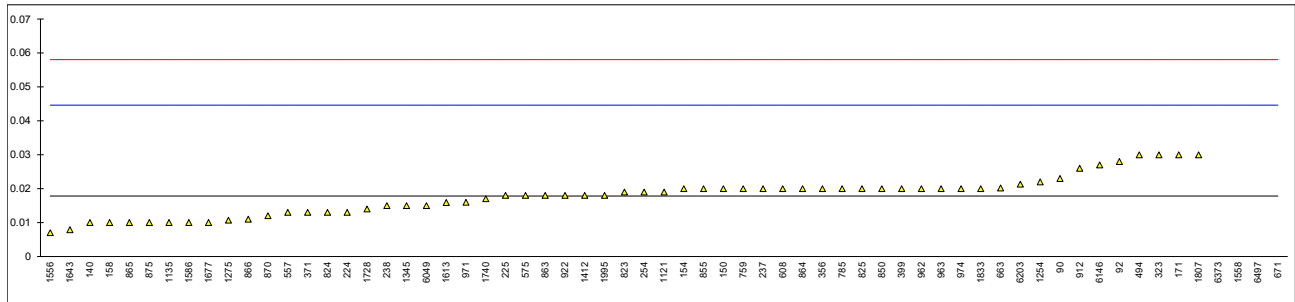
normality OK
 n 23
 outliers 1
 mean (n) -1.37
 st.dev. (n) 2.893
 R(calc.) 8.10
 st.dev.(D5950:14R20) 2.179
 R(D5950:14R20) 6.1



Determination of Sediment by Extraction on sample #23105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		----		----	864	D473	0.02		0.16
90	D473	0.023		0.39	865	D473	0.01		-0.58
92	D473	0.028		0.76	866	D473	0.011		-0.51
120		----		----	870	D473	0.012		-0.43
140	D473	0.01		-0.58	875	D473	0.01		-0.58
150	D473	0.02		0.16	886		----		----
154	D473	0.02		0.16	902		----		----
158	D473	0.01		-0.58	912	D473	0.026		0.61
159		----		----	922	D473	0.018		0.01
169		----		----	962	D473	0.02		0.16
171	D473	0.03		0.91	963	D473	0.02		0.16
194		----		----	971	D473	0.016		-0.14
221		----		----	974	D473	0.02		0.16
224	D473	0.013		-0.36	982		----		----
225	D473	0.018		0.01	1039		----		----
237	D473	0.020		0.16	1082		----		----
238	D473	0.015		-0.21	1121	D473	0.019		0.09
253		----		----	1126		----		----
254	D473	0.019		0.09	1135	D473	0.01		-0.58
300		----		----	1140		----		----
309		----		----	1177		----		----
311	D473	<0.01		----	1218		----		----
313		----		----	1233		----		----
323	D473	0.03		0.91	1254	ISO3735	0.022		0.31
328		----		----	1266		----		----
331		----		----	1275	IP53	0.0107		-0.53
333		----		----	1299		----		----
334		----		----	1340		----		----
335		----		----	1345	D473	0.015		-0.21
339		----		----	1356		----		----
342		----		----	1412	D473	0.018		0.01
343		----		----	1459		----		----
349		----		----	1498		----		----
356	D473	0.02		0.16	1556	ISO3735	0.007		-0.81
371	D473	0.013		-0.36	1558	ISO3735	0.101	R(0.01)	6.20
391		----		----	1564		----		----
396		----		----	1586	ISO3735	0.01		-0.58
398		----		----	1613	D473	0.0159		-0.14
399	D473	0.02		0.16	1631		----		----
455		----		----	1643	D473	0.0079		-0.74
494	ISO3735	0.03		0.91	1677	D473	0.01		-0.58
495		----		----	1720		----		----
511		----		----	1724		----		----
557	D473	0.01299875		-0.36	1728	D473	0.014		-0.28
562		----		----	1740	D473	0.017		-0.06
575	D473	0.018		0.01	1761		----		----
603		----		----	1776		----		----
604		----		----	1792		----		----
608	D473	0.02		0.16	1796		----		----
631	D473	<0.01		----	1807	D473	0.03		0.91
663	D473	0.0202		0.18	1833	D473	0.02		0.16
671	D473	26.0004	R(0.01)	1937.84	1849		----		----
750		----		----	1854		----		----
753		----		----	1906		----		----
759	D473	0.02		0.16	1956		----		----
785	D473	0.02		0.16	1964		----		----
823	D473	0.019		0.09	1995	D473	0.018		0.01
824	D473	0.013		-0.36	2835		----		----
825	D473	0.02		0.16	6039		----		----
850	D473	0.02		0.16	6044		----		----
851		----		----	6049	D473	0.015		-0.21
855	D473	0.02		0.16	6075		----		----
858		----		----	6092		----		----
859		----		----	6139		----		----
862		----		----	6142		----		----
863	D473	0.018		0.01	6146	D473	0.027		0.69

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		----		----	6416		----		----
6203	D473	0.0213		0.26	6447		----		----
6279		----		----	6475		----		----
6335		----		----	6497	D473	0.2	R(0.01)	13.59
6346		----		----	6530		----		----
6373	D473	0.1	R(0.01)	6.13					
normality		OK							
n		59							
outliers		4							
mean (n)		0.0178							
st.dev. (n)		0.00573							
R(calc.)		0.0160							
st.dev.(D473:22)		0.01341							
R(D473:22)		0.0375							

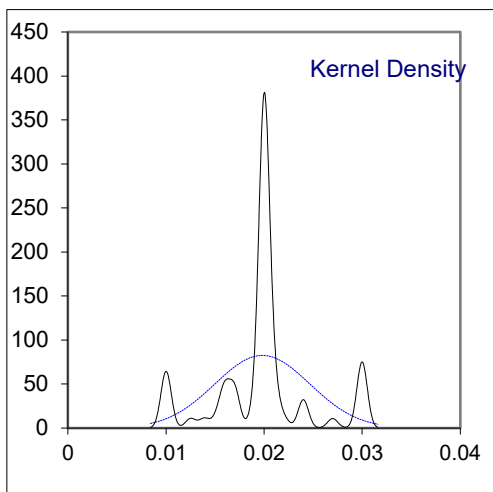
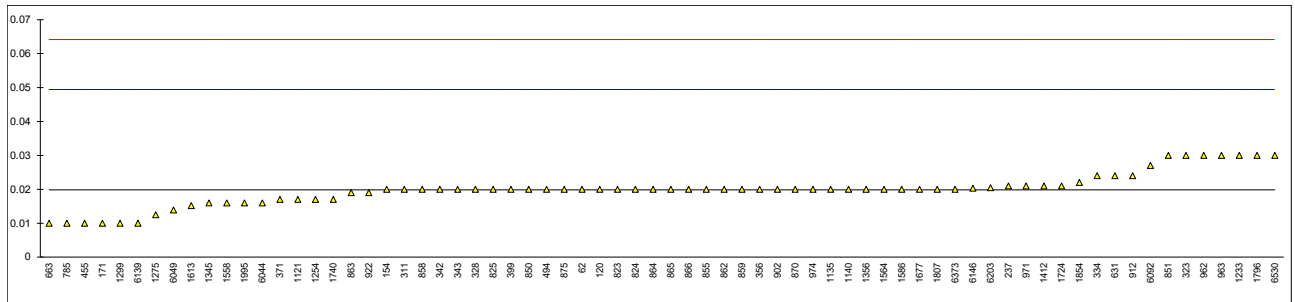


Determination of Total Sediment Existent (TSE) of sample #23105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4870	0.02		0.01	864	IP375	0.02		0.01
90		----		----	865	D4870	0.02		0.01
92		----		----	866	IP375	0.02		0.01
120	D4870	0.02		0.01	870	IP375	0.020		0.01
140		----		----	875	IP375	0.02		0.01
150		----		----	886		----		----
154	D4870	0.02		0.01	902	ISO10307-1	0.02		0.01
158		----		----	912	ISO10307-1	0.024		0.28
159		----		----	922	ISO10307-1	0.019		-0.06
169		----		----	962	D4870	0.03		0.69
171	IP375	0.01		-0.66	963	IP375	0.03		0.69
194		----		----	971	IP375	0.021		0.08
221		----		----	974	IP375	0.02		0.01
224		----		----	982		----		----
225		----		----	1039		----		----
237	D4870	0.021		0.08	1082		----		----
238		----		----	1121	ISO10307-1	0.017		-0.19
253		----		----	1126		----		----
254		----		----	1135	ISO10307-1	0.02		0.01
300		----		----	1140	IP375	0.02		0.01
309		----		----	1177		----		----
311	ISO10307-1	0.02		0.01	1218		----		----
313		----		----	1233	ISO10307-1	0.03		0.69
323	ISO10307-1	0.03		0.69	1254	IP375	0.017		-0.19
328	ISO10307-1	0.02		0.01	1266		----		----
331		----		----	1275	IP375	0.0125		-0.50
333		----		----	1299	ISO10307-1	0.01		-0.66
334	IP375	0.024		0.28	1340		----		----
335		----		----	1345	ISO10307-1	0.016		-0.26
339		----		----	1356	ISO10307-1	0.02		0.01
342	ISO10307-1	0.02		0.01	1412	IP375	0.021		0.08
343	ISO10307-1	0.02		0.01	1459		----		----
349		----		----	1498		----		----
356	IP375	0.02		0.01	1556		----		----
371	ISO10307-1	0.017		-0.19	1558	IP375	0.016		-0.26
391		----		----	1564	ISO10307-1	0.02		0.01
396		----		----	1586	ISO10307-1	0.02		0.01
398		----		----	1613	D4870	0.0152		-0.31
399	ISO10307-1	0.02		0.01	1631		----		----
455	IP375	0.01		-0.66	1643		----		----
494	ISO10307-1	0.02		0.01	1677	IP375	0.02		0.01
495		----		----	1720		----		----
511		----		----	1724	IP375	0.021		0.08
557		----		----	1728		----		----
562		----		----	1740	ISO10307-1	0.017		-0.19
575		----		----	1761		----		----
603		----		----	1776		----		----
604		----		----	1792		----		----
608		----		----	1796	IP375	0.03		0.69
631	D4870	0.024		0.28	1807	D4870	0.02		0.01
663	IP375	0.010		-0.66	1833		----		----
671		----		----	1849		----		----
750		----		----	1854	ISO10307-1	0.022		0.15
753		----		----	1906		----		----
759		----		----	1956		----		----
785	IP375	0.01		-0.66	1964		----		----
823	ISO10307-1	0.02		0.01	1995	D4870	0.016		-0.26
824	ISO10307-1	0.02		0.01	2835		----		----
825	ISO10307-1	0.02		0.01	6039		----		----
850	ISO10307-1	0.02		0.01	6044	ISO10307-1	0.016		-0.26
851	ISO10307-1	0.03		0.69	6049	ISO10307-1	0.0139		-0.40
855	ISO10307-1	0.02		0.01	6075		----		----
858	ISO10307	0.02		0.01	6092	IP375	0.027		0.49
859	ISO10307-1	0.02		0.01	6139	ISO10307	0.01		-0.66
862	IP375	0.02		0.01	6142		----		----
863	IP375	0.019		-0.06	6146	ISO10307-1	0.0203		0.03

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		----		----	6416		----		----
6203	ISO10307-1	0.0205		0.05	6447		----		----
6279		----		----	6475		----		----
6335		----		----	6497		----		----
6346		----		----	6530	IP375	0.03		0.69
6373	ISO10307-1	0.02		0.01					

normality OK
 n 70
 outliers 0
 mean (n) 0.0198
 st.dev. (n) 0.00485
 R(calc.) 0.0136
 st.dev.(IP375:11R22) 0.01478
 R(IP375:11R22) 0.0414

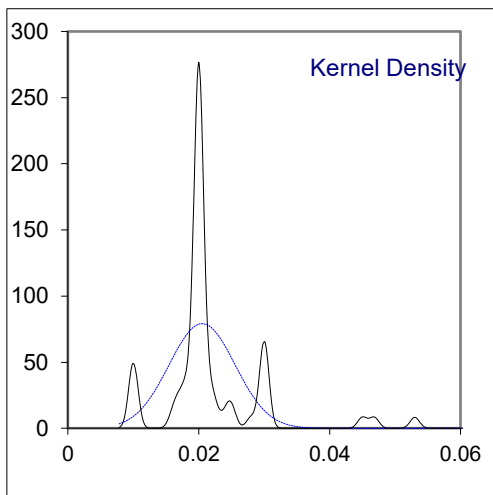
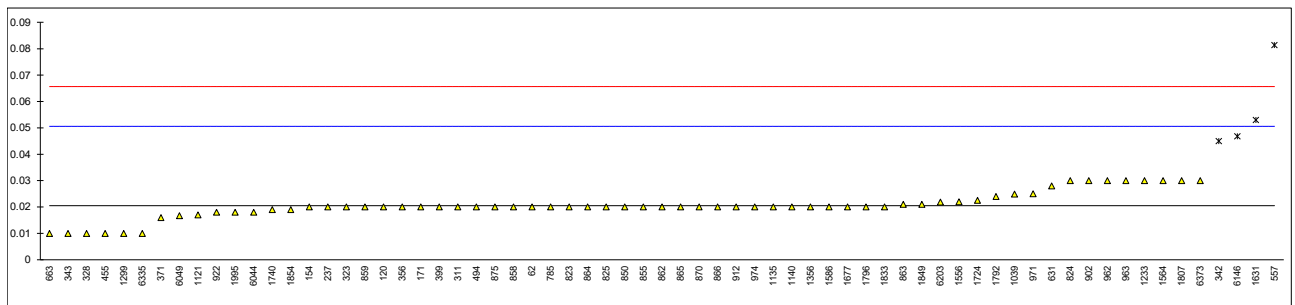


Determination of Total Sediment Accelerated (TSA) of sample #23105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4870	0.02		-0.03	864	D4870	0.02		-0.03
90		----		----	865	D4870	0.02		-0.03
92		----		----	866	IP390	0.02		-0.03
120	D4870	0.02		-0.03	870	IP390	0.020		-0.03
140		----		----	875	IP390	0.02		-0.03
150		----		----	886		----		----
154	D4870	0.02		-0.03	902	ISO10307-2	0.03		0.63
158		----		----	912	ISO10307-2	0.020		-0.03
159		----		----	922	ISO10307-2	0.018		-0.17
169		----		----	962	D4870	0.03		0.63
171	IP390	0.02		-0.03	963	IP390	0.03		0.63
194		----		----	971	IP390	0.025		0.30
221		----		----	974	IP390	0.02		-0.03
224		----		----	982		----		----
225		----		----	1039	ISO10307-2	0.0249		0.29
237	D4870	0.020		-0.03	1082		----		----
238		----		----	1121	ISO10307-2	0.017		-0.23
253		----		----	1126		----		----
254		----		----	1135	ISO10307-2	0.02		-0.03
300		----		----	1140	IP390	0.02		-0.03
309		----		----	1177		----		----
311	ISO10307-2	0.02		-0.03	1218		----		----
313		----		----	1233	ISO10307-2	0.03		0.63
323	ISO10307-2	0.02		-0.03	1254		----		----
328	ISO10307-2	0.01		-0.70	1266		----		----
331		----		----	1275		----		----
333		----		----	1299	ISO10307-2	0.01		-0.70
334	IP390	<0.01		----	1340		----		----
335		----		----	1345		----		----
339		----		----	1356	ISO10307-2	0.02		-0.03
342	ISO10307-2	0.045	R(0.01)	1.63	1412		----		----
343	ISO10307-2	0.01	C	-0.70	1459		----		----
349		----		----	1498		----		----
356	ISO10307-2	0.02		-0.03	1556	ISO10307-2	0.022		0.10
371	ISO10307-2	0.016		-0.30	1558		----		----
391		----		----	1564	ISO10307-2	0.03		0.63
396		----		----	1586	ISO10307-2	0.02		-0.03
398		----		----	1613		----		----
399	ISO10307-2	0.02		-0.03	1631	ISO10307-2	0.053	R(0.01)	2.16
455	IP390	0.01		-0.70	1643		----		----
494	ISO10307-2	0.02		-0.03	1677	IP390	0.02		-0.03
495		----		----	1720		----		----
511		----		----	1724	IP390	0.0225		0.13
557	D4870	0.08134754	R(0.01)	4.05	1728		----		----
562		----		----	1740	ISO10307-2	0.019		-0.10
575		----		----	1761		----		----
603		----		----	1776		----		----
604		----		----	1792	IP390	0.024		0.23
608		----		----	1796	IP390	0.02		-0.03
631	D4870	0.028		0.50	1807	ISO10307-2	0.03		0.63
663	IP390	0.010		-0.70	1833	ISO10307-2	0.02		-0.03
671		----		----	1849	ISO10307-2	0.021		0.03
750		----		----	1854	ISO10307-2	0.019		-0.10
753		----		----	1906		----		----
759		----		----	1956		----		----
785	IP390	0.02		-0.03	1964		----		----
823	ISO10307-2	0.02		-0.03	1995	D4870	0.018		-0.17
824	ISO10307-2	0.03		0.63	2835		----		----
825	ISO10307-2	0.02		-0.03	6039		----		----
850	ISO10307-2	0.02		-0.03	6044	ISO10307-2	0.018		-0.17
851		----		----	6049	ISO10307-2	0.0167		-0.25
855	ISO10307-2	0.02		-0.03	6075		----		----
858	ISO10307	0.02		-0.03	6092		----		----
859	ISO10307-2	0.02		-0.03	6139		----		----
862	IP390	0.02		-0.03	6142		----		----
863	D4870	0.021		0.03	6146	ISO10307-2	0.0468	R(0.01)	1.75

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		----		----	6416		----		----
6203	ISO10307-2	0.0219		0.09	6447		----		----
6279		----		----	6475		----		----
6335	D4870	0.01		-0.70	6497		----		----
6346		----		----	6530		----		----
6373	ISO10307-2	0.03		0.63					
normality		OK							
n		63							
outliers		4							
mean (n)		0.0205							
st.dev. (n)		0.00505							
R(calc.)		0.0141							
st.dev.(IP390:11R17)		0.01504							
R(IP390:11R17)		0.0421							

Lab 343 first reported 0.09

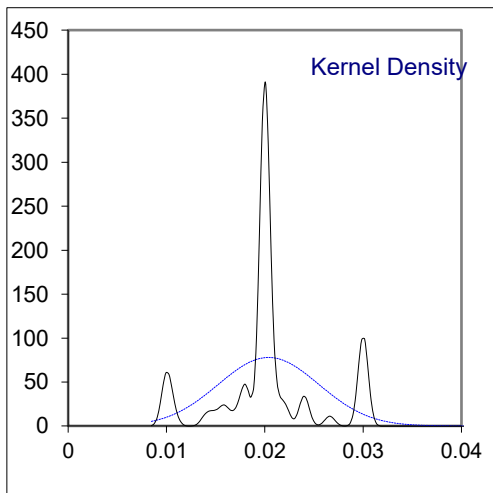
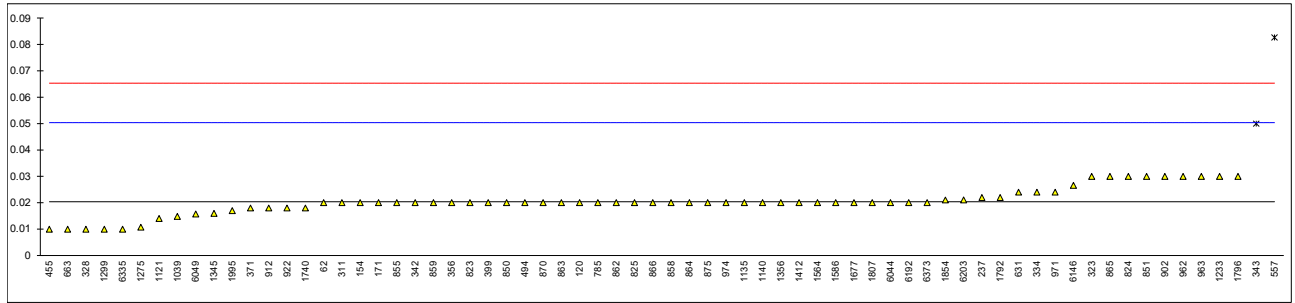


Determination of Total Sediment Potential (TSP) of sample #23105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4870	0.02		-0.03	864	ISO10307	0.02		-0.03
90		----		----	865	D4870	0.03		0.64
92		----		----	866	IP390	0.02		-0.03
120	D4870	0.02		-0.03	870	IP390	0.020		-0.03
140		----		----	875	IP390	0.02		-0.03
150		----		----	886		----		----
154	D4870	0.02		-0.03	902	ISO10307-2	0.03		0.64
158		----		----	912	ISO10307-2	0.018		-0.16
159		----		----	922	ISO10307-2	0.018		-0.16
169		----		----	962	D4870	0.03		0.64
171	IP390	0.02		-0.03	963	IP390	0.03		0.64
194		----		----	971	IP390	0.024		0.24
221		----		----	974	IP390	0.02		-0.03
224		----		----	982		----		----
225		----		----	1039	ISO10307-2	0.0148		-0.37
237	D4870	0.022		0.11	1082		----		----
238		----		----	1121	ISO10307-2	0.014		-0.43
253		----		----	1126		----		----
254		----		----	1135	ISO10307-2	0.02		-0.03
300		----		----	1140	IP390	0.02		-0.03
309		----		----	1177		----		----
311	ISO10307-2	0.02		-0.03	1218		----		----
313		----		----	1233	ISO10307-2	0.03		0.64
323	ISO10307-2	0.03		0.64	1254		----		----
328	ISO10307-2	0.01		-0.69	1266		----		----
331		----		----	1275	IP390	0.0107		-0.65
333		----		----	1299	ISO10307-2	0.01		-0.69
334	IP390	0.024		0.24	1340		----		----
335		----		----	1345	ISO10307-2	0.016		-0.29
339		----		----	1356	ISO10307-2	0.02		-0.03
342	ISO10307-2	0.02		-0.03	1412	IP390	0.020		-0.03
343	ISO10307-2	0.05	R(0.01)	1.98	1459		----		----
349		----		----	1498		----		----
356	ISO10307-2	0.02		-0.03	1556		----		----
371	ISO10307-2	0.018		-0.16	1558		----		----
391		----		----	1564	ISO10307-2	0.02		-0.03
396		----		----	1586	ISO10307-2	0.02		-0.03
398		----		----	1613		----		----
399	ISO10307-2	0.02		-0.03	1631		----		----
455	IP390	0.01		-0.69	1643		----		----
494	ISO10307-2	0.02		-0.03	1677	IP390	0.02		-0.03
495		----		----	1720		----		----
511		----		----	1724		----		----
557	D4870	0.0826602	R(0.01)	4.16	1728		----		----
562		----		----	1740	ISO10307-2	0.018		-0.16
575		----		----	1761		----		----
603		----		----	1776		----		----
604		----		----	1792	IP390	0.022		0.11
608		----		----	1796	IP390	0.03		0.64
631	D4870	0.024		0.24	1807	IP390	0.02		-0.03
663	IP390	0.010		-0.69	1833		----		----
671		----		----	1849		----		----
750		----		----	1854	ISO10307-2	0.021		0.04
753		----		----	1906		----		----
759		----		----	1956		----		----
785	IP390	0.02		-0.03	1964		----		----
823	ISO10307-2	0.02		-0.03	1995	D4870	0.017		-0.23
824	ISO10307-2	0.03		0.64	2835		----		----
825	ISO10307-2	0.02		-0.03	6039		----		----
850	ISO10307-2	0.02		-0.03	6044	ISO10307-2	0.020		-0.03
851	ISO10307-2	0.03		0.64	6049	ISO10307-2	0.0157		-0.31
855	ISO10307-2	0.02		-0.03	6075		----		----
858	ISO10307	0.02		-0.03	6092		----		----
859	ISO10307-2	0.02		-0.03	6139		----		----
862	IP390	0.02		-0.03	6142		----		----
863	ISO10307-2	0.020		-0.03	6146	ISO10307-2	0.0266		0.42

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192	ISO10307-2	0.02		-0.03	6416		----		----
6203	ISO10307-2	0.0211		0.05	6447		----		----
6279		----		----	6475		----		----
6335	D4870	0.01		-0.69	6497		----		----
6346		----		----	6530		----		----
6373	ISO10307-2	0.02		-0.03					

normality OK
 n 66
 outliers 2
 mean (n) 0.0204
 st.dev. (n) 0.00512
 R(calc.) 0.0143
 st.dev.(IP390:11R17) 0.01499
 R(IP390:11R17) 0.0420

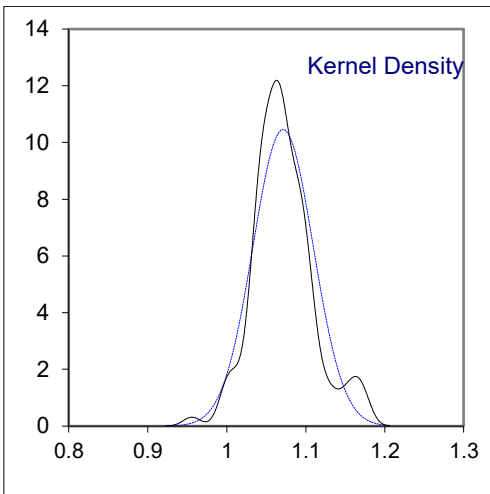
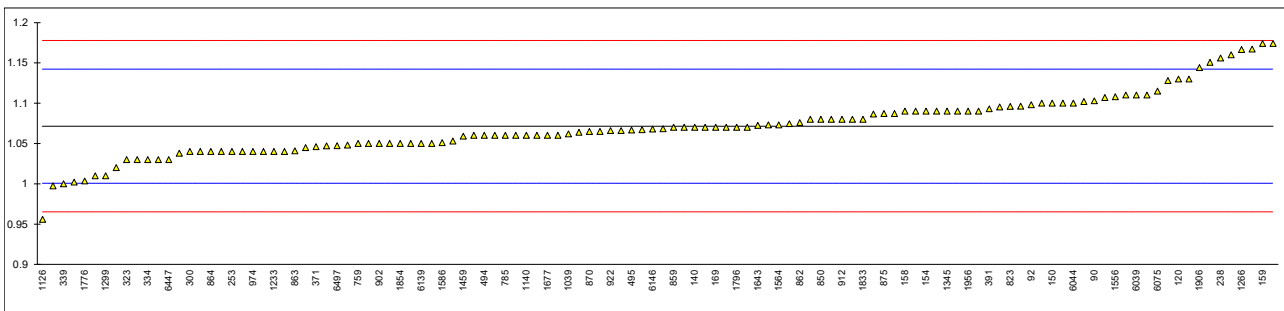


Determination of Total Sulfur on sample #23105; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4294	1.128		1.60	864	D4294	1.04		-0.89
90	D4294	1.103		0.89	865	D4294	1.065		-0.18
92	D4294	1.0981		0.75	866	D4294	1.060		-0.32
120	D4294	1.13		1.65	870	D4294	1.065		-0.18
140	D4294	1.07		-0.04	875	D4294	1.087		0.44
150	D4294	1.10		0.80	886		----		----
154	D4294	1.09		0.52	902	ISO8754	1.05		-0.61
158	D4294	1.09		0.52	912	D4294	1.08		0.24
159	D4294	1.17398		2.89	922	D4294	1.066		-0.15
169	D4294	1.07		-0.04	962	D4294	1.09		0.52
171	ISO8754	1.10		0.80	963	D4294	1.04		-0.89
194		----		----	971	D4294	1.053		-0.52
221		----		----	974	D4294	1.04		-0.89
224	D4294	0.9974	C	-2.09	982		----		----
225		----		----	1039	ISO8754	1.0620		-0.27
237	D4294	1.03		-1.17	1082	ISO8754	1.045		-0.75
238	D4294	1.156		2.39	1121	ISO8754	1.0865		0.42
253	D4294	1.04		-0.89	1126	ISO8754	0.956		-3.26
254		----		----	1135	ISO8754	1.048		-0.66
300	ISO8754	1.04		-0.89	1140	IP336	1.06		-0.32
309	ISO8754	1.064		-0.21	1177	DIN10304-1	1.04		-0.89
311	ISO8754	1.07		-0.04	1218		----		----
313	ISO8754	1.04		-0.89	1233	ISO8754	1.04		-0.89
323	ISO8754	1.03		-1.17	1254	ISO8754	1.0470		-0.69
328		----		----	1266	ISO8754	1.1665		2.68
331		----		----	1275	IP336	1.102		0.86
333	ISO8754	1.01		-1.74	1299	D2622	1.01		-1.74
334	ISO8754	1.030		-1.17	1340	ISO8754	1.16		2.50
335	ISO8754	1.002		-1.96	1345	D4294	1.090		0.52
339	INH-024	1.00		-2.02	1356	ISO8754	1.06		-0.32
342	D4294	1.0963		0.70	1412	D4294	1.087		0.44
343	IP336	1.09		0.52	1459	In house	1.059		-0.35
349		----		----	1498		----		----
356	ISO8754	1.08		0.24	1556	ISO8754	1.108		1.03
371	D4294	1.046		-0.72	1558	D2622	1.1507		2.24
391	ISO8754	1.093		0.61	1564	D4294	1.073		0.04
396	ISO8754	1.02		-1.45	1586	ISO8754	1.051		-0.58
398		----		----	1613	D4294	1.08		0.24
399	D4294	1.08		0.24	1631	ISO8754	1.03		-1.17
455	IP336	1.04		-0.89	1643	D1552	1.0725		0.03
494	ISO8754	1.06		-0.32	1677	D4294	1.06		-0.32
495	ISO8754	1.0667		-0.14	1720		----		----
511		----		----	1724	IP336	1.04		-0.89
557	D4294	1.0953		0.67	1728		----		----
562		----		----	1740	ISO8754	1.07		-0.04
575		----		----	1761	ISO8754	1.066		-0.15
603		----		----	1776	ISO8754	1.0035		-1.92
604		----		----	1792	ISO8754	1.038		-0.95
608	D4294	1.07		-0.04	1796	D4294	1.07		-0.04
631	D4294	1.073		0.04	1807	D4294	1.09		0.52
663		----		----	1833	ISO8754	1.08		0.24
671	D4294	1.13		1.65	1849	ISO8754	1.05		-0.61
750		----		----	1854	ISO8754	1.05		-0.61
753	D4294	1.05		-0.61	1906	D5623	1.144		2.05
759	ISO8754	1.05		-0.61	1956	ISO8754	1.09		0.52
785	ISO8754	1.06		-0.32	1964		----		----
823	ISO8754	1.096		0.69	1995	D4294	1.0746		0.09
824	ISO8754	1.11		1.09	2835	D7039	1.174081		2.90
825	ISO8754	1.10		0.80	6039	ISO8754	1.11		1.09
850	D4294	1.08		0.24	6044	ISO8754	1.10		0.80
851	ISO8754	1.06		-0.32	6049	ISO8754	1.05		-0.61
855	ISO8754	1.06		-0.32	6075	ISO8754	1.1150		1.23
858	ISO8754	1.067		-0.13	6092	D4294	1.09		0.52
859	D4294	1.07		-0.04	6139	ISO8754	1.05		-0.61
862	ISO8754	1.076		0.13	6142		----		----
863	ISO8754	1.041		-0.86	6146	ISO8754	1.068		-0.10

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192	ISO8754	1.05		-0.61	6416		-----		-----
6203	D2622	1.07		-0.04	6447	D5453	1.03		-1.17
6279	ISO8754	1.0683		-0.09	6475	EN15944/IP501	1.107		1.00
6335	D5185	1.167	C	2.70	6497	D2622	1.0472		-0.69
6346		-----		-----	6530	D4294	1.06		-0.32
6373	ISO8754	1.11		1.09					
	normality	suspect							
	n	118							
	outliers	0							
	mean (n)	1.0715							
	st.dev. (n)	0.03814							
	R(calc.)	0.1068							
	st.dev.(ISO8754:03)	0.03542							
	R(ISO8754:03)	0.0992							
Compare									
	R(D4294:21)	0.0760							

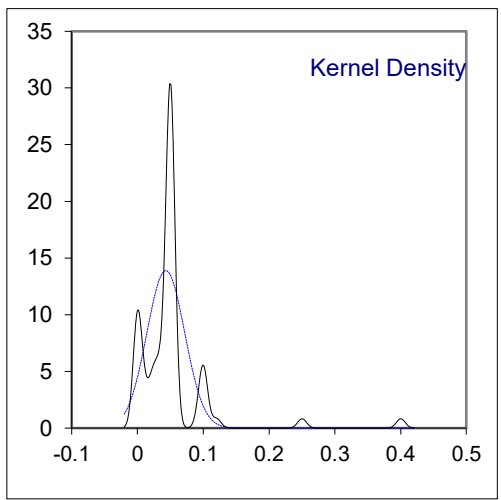
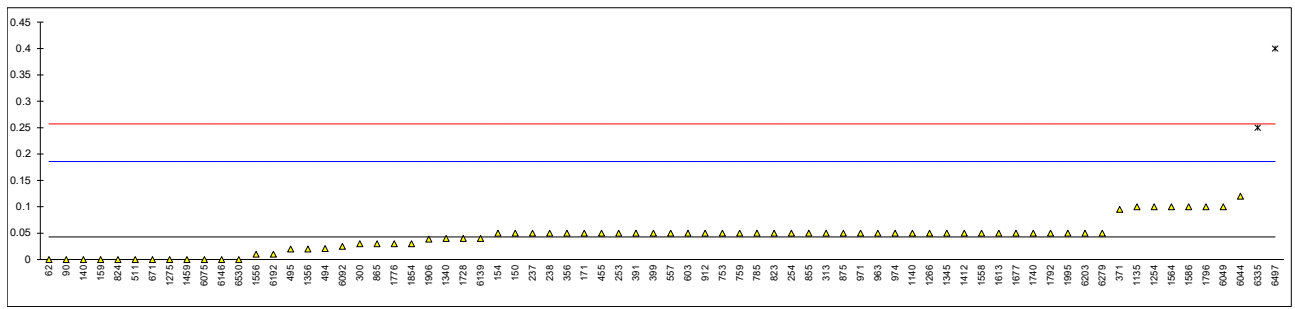
Lab 224 first reported 1.244
 Lab 6335 first reported 1.263



Determination of Water by distillation on sample #23105; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D95	0.0		-0.60	864	D95	<0.05		----
90	D95	0		-0.60	865	D95	0.03		-0.18
92	D95	<0.05		----	866	D95	<0.05		----
120	ISO3733	<0.05		----	870	D95	<0.05		----
140	D95	0.00		-0.60	875	D95	0.05		0.10
150	D95	0.05		0.10	886	D95	<0.05		----
154	D95	0.05		0.10	902				----
158		----		----	912	D95	0.05		0.10
159	D95	0.00		-0.60	922	D95	<0.05		----
169		----		----	962	D95	<0.05		----
171	ISO3733	0.05		0.10	963	ISO3733	0.05		0.10
194		----		----	971	D95	0.05		0.10
221		----		----	974	D95	0.05		0.10
224		----		----	982				----
225		----		----	1039	ISO3733	<0.1		----
237	D95	0.05		0.10	1082				----
238	D95	0.05		0.10	1121	ISO3733	<0.05		----
253	D95	0.05		0.10	1126				----
254	D95	0.05		0.10	1135	ISO3733	0.10		0.80
300	ISO3733	0.03		-0.18	1140	IP74	0.05		0.10
309		----		----	1177				----
311	D95	<0.05		----	1218				----
313	D95	0.05		0.10	1233	ISO3733	<0.1		----
323	ISO3733	<0.10		----	1254	D95	0.10		0.80
328	D95	<0.10		----	1266	D95	0.05		0.10
331		----		----	1275	IP74	0.00		-0.60
333	ISO3733	<0.05		----	1299	D95	<0.1		----
334	D95	<0.1		----	1340	ISO3733	0.04		-0.04
335		----		----	1345	D95	0.05		0.10
339		----		----	1356	D6304-A	0.02		-0.32
342	D95	<0.1		----	1412	D95	0.05		0.10
343	D95	<0.1		----	1459	ISO3733	0.0		-0.60
349	D95	<0.1		----	1498				----
356	ISO3733	0.05		0.10	1556	D6304-B	0.01		-0.46
371	D95	0.095		0.73	1558	ISO3733	0.05		0.10
391	ISO3733	0.05		0.10	1564	D95	0.10		0.80
396	ISO3733	<0.1		----	1586	ISO3733	0.10		0.80
398		----		----	1613	D95	0.05		0.10
399	D95	0.05		0.10	1631				----
455	ISO3733	0.05		0.10	1643	D95	<0,05		----
494	D6304-C	0.021		-0.31	1677	D95	0.05		0.10
495	ISO3733	0.02		-0.32	1720				----
511	D95	0		-0.60	1724	D95	<0,1		----
557	D95	0.05		0.10	1728	D95	0.04		-0.04
562		----		----	1740	ISO3733	0.05		0.10
575	D95	<0.05		----	1761				----
603	D95	0.05		0.10	1776	D6304-A	0.03		-0.18
604		----		----	1792	ISO3733	0.05		0.10
608	D95	<0.15		----	1796	D95	0.10		0.80
631	D95	<0.05		----	1807				----
663	D95	<0.1		----	1833	D95	<0.1		----
671	D95	0		-0.60	1849	EN1428	<0.1		----
750		----		----	1854	ISO3733	0.03		-0.18
753	D95	0.05		0.10	1906	D6304-C	0.0387		-0.06
759	ISO3733	0.05		0.10	1956				----
785f	ISO3733	0.05		0.10	1964				----
823	ISO3733	0.05		0.10	1995	D95	0.05		0.10
824	ISO3733	0.00		-0.60	2835				----
825	ISO3733	L0.05		----	6039				----
850	ISO3733	<0.05		----	6044	D6304-C	0.12		1.08
851	ISO3733	<0.1		----	6049	ISO3733	0.10		0.80
855	ISO3733	0.05		0.10	6075	ISO3733	0.00		-0.60
858	ISO3733	<0.05		----	6092	D95	0.025		-0.25
859	D95	<0.05		----	6139	ISO3733	0.04		-0.04
862	ISO3733	<0.05		----	6142				----
863	ISO3733	<0.05		----	6146	ISO3733	0		-0.60

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192	ISO3733	0.01		-0.46	6416		----		----
6203	D95	0.05		0.10	6447		----		----
6279	ISO3733	0.05		0.10	6475		----		----
6335	D6304-C	0.25	R(0.01)	2.90	6497	D95	0.40	R(0.01)	5.00
6346		----		----	6530	D95	0.00		-0.60
6373	D95	<0.05		----					
normality		OK							
n		70							
outliers		2							
mean (n)		0.0429							
st.dev. (n)		0.02870							
R(calc.)		0.0804							
st.dev.(ISO3733:99)		0.07143							
R(ISO3733:99)		0.2							
Compare									
R(D95:13R18)		0.2							

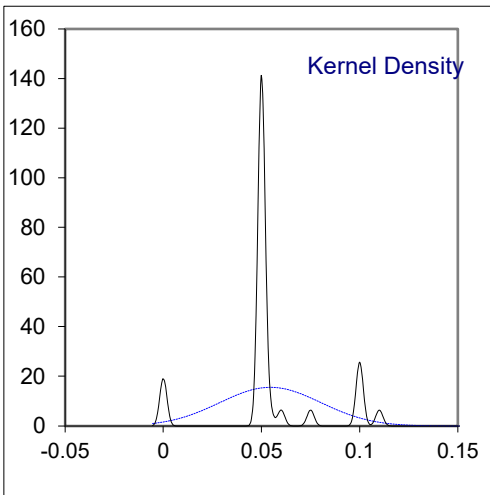
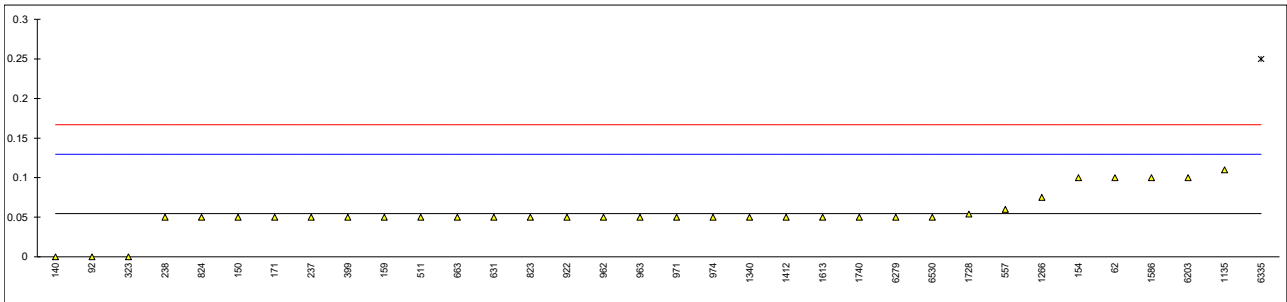


Determination of Water and Sediment on sample #23105; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D1796	0.1		1.21	864		----		----
90		----		----	865		----		----
92	D1796	0		-1.45	866		----		----
120	D1796	<0.05		----	870		----		----
140	D1796	0.00		-1.45	875		----		----
150	D1796	0.05		-0.12	886		----		----
154	D1796	0.10		1.21	902		----		----
158		----		----	912		----		----
159	D1796	0.050		-0.12	922	D1796	0.05		-0.12
169		----		----	962	D1796	0.05		-0.12
171	D1796	0.05		-0.12	963	D1796	0.05		-0.12
194		----		----	971	D1796	0.05		-0.12
221		----		----	974	D1796	0.05		-0.12
224		----		----	982		----		----
225		----		----	1039		----		----
237	D1796	0.05		-0.12	1082		----		----
238	D1796	0.05		-0.12	1121		----		----
253		----		----	1126		----		----
254		----		----	1135	D1796	0.11		1.48
300		----		----	1140		----		----
309		----		----	1177		----		----
311		----		----	1218		----		----
313		----		----	1233		----		----
323	D1796	0.00		-1.45	1254		----		----
328		----		----	1266		0.075		0.55
331		----		----	1275		----		----
333		----		----	1299		----		----
334		----		----	1340	ISO9030	0.05		-0.12
335		----		----	1345		----		----
339		----		----	1356		----		----
342		----		----	1412	D1796	0.05		-0.12
343	D1796	<0.05		----	1459		----		----
349		----		----	1498		----		----
356		----		----	1556		----		----
371		----		----	1558		----		----
391		----		----	1564		----		----
396		----		----	1586	ISO3734	0.10		1.21
398		----		----	1613	D1796	0.05		-0.12
399	D1796	0.05		-0.12	1631		----		----
455		----		----	1643		----		----
494		----		----	1677		----		----
495		----		----	1720		----		----
511	D1796	0.05		-0.12	1724		----		----
557	D1796	0.06		0.15	1728		0.054		-0.01
562		----		----	1740	D1796	0.05		-0.12
575	D1796	<0.05		----	1761		----		----
603		----		----	1776		----		----
604		----		----	1792		----		----
608		----		----	1796		----		----
631	D1796	0.05		-0.12	1807		----		----
663	D1796	0.05		-0.12	1833		----		----
671		<0.05		----	1849		----		----
750		----		----	1854		----		----
753		----		----	1906		----		----
759		----		----	1956		----		----
785		----		----	1964		----		----
823	ISO3734	0.05		-0.12	1995		----		----
824	D1796	0.05		-0.12	2835		----		----
825		----		----	6039		----		----
850		----		----	6044		----		----
851		----		----	6049		----		----
855		----		----	6075		----		----
858		----		----	6092		----		----
859		----		----	6139		----		----
862		----		----	6142		----		----
863		----		----	6146		----		----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6192		----		----	6416		----		----
6203	D1796	0.10		1.21	6447		----		----
6279	ISO3734	0.05		-0.12	6475		----		----
6335	D1796	0.25	R(0.01)	5.21	6497		----		----
6346		----		----	6530	D1796	0.05		-0.12
6373		----		----					

normality	suspect
n	33
outliers	1
mean (n)	0.0545
st.dev. (n)	0.02572
R(calc.)	0.0720
st.dev.(D1796:22)	0.03750
R(D1796:22)	0.1050

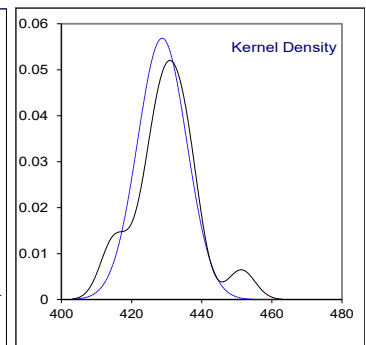
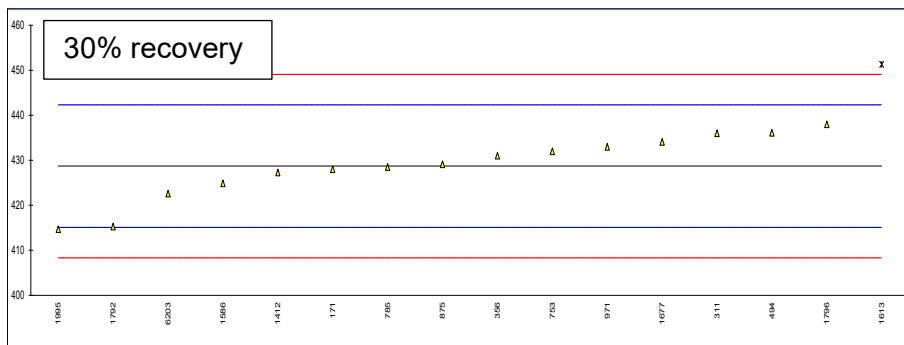
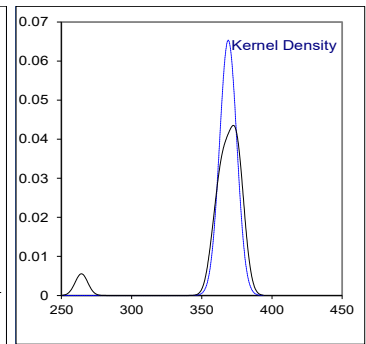
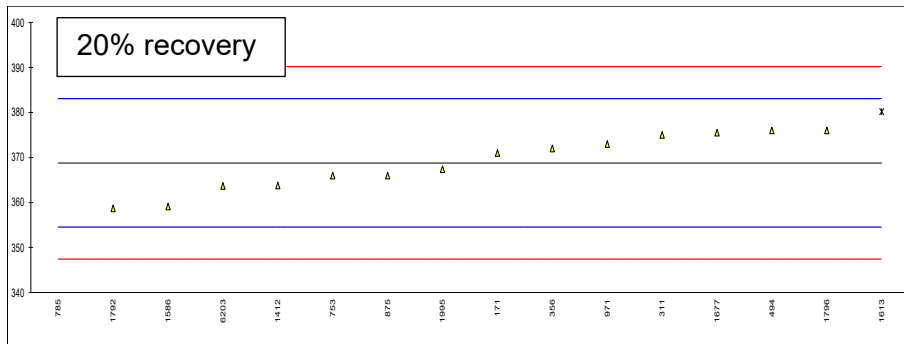
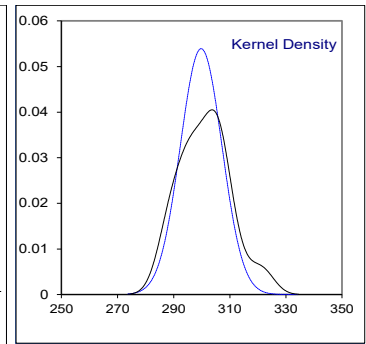
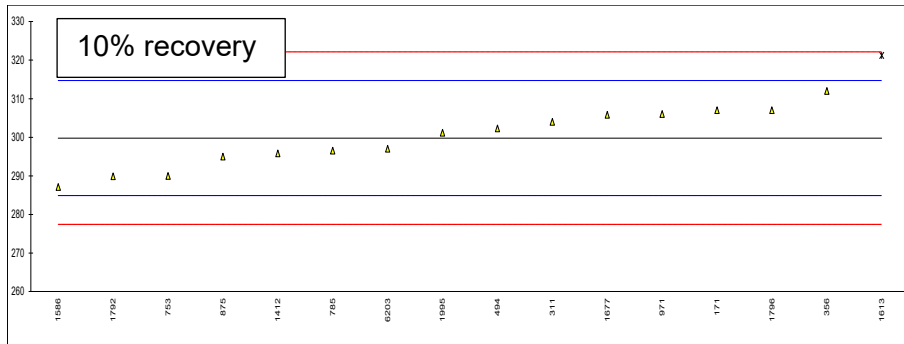
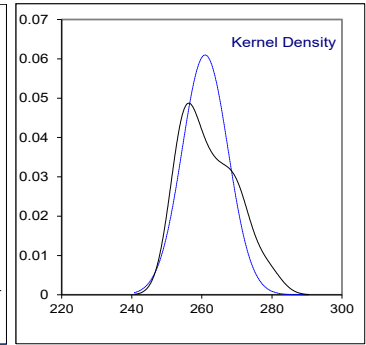
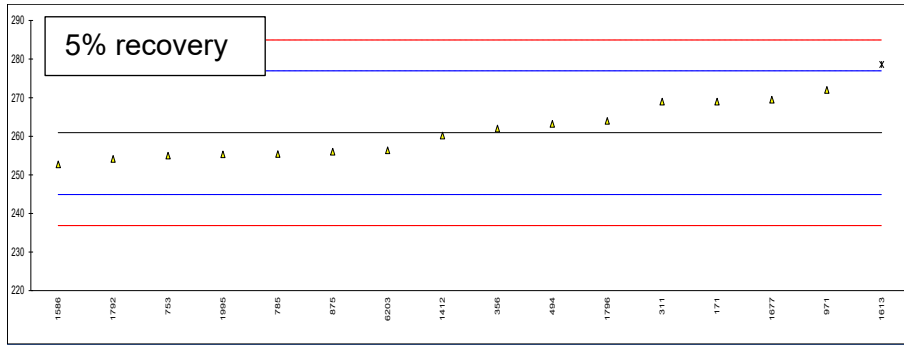
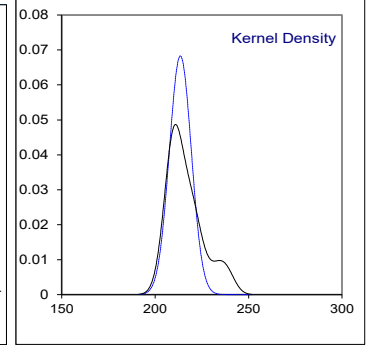
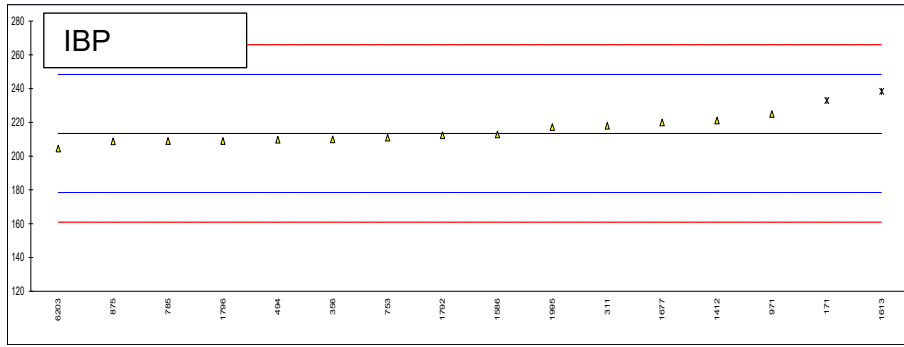


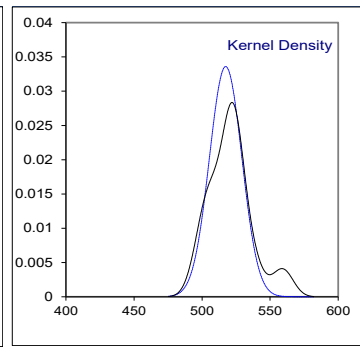
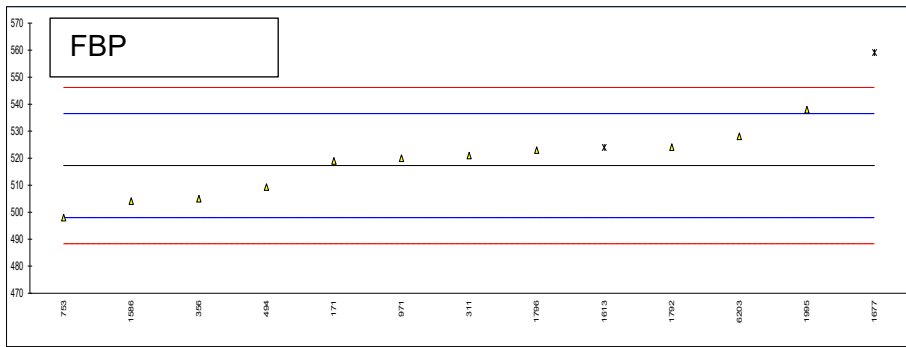
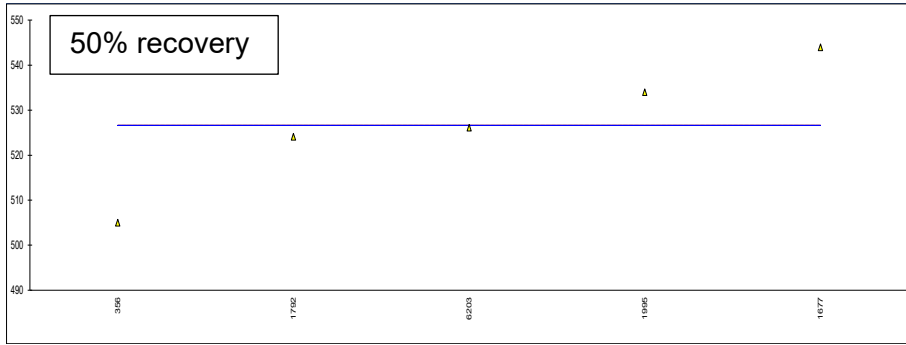
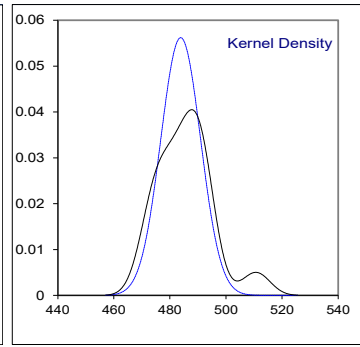
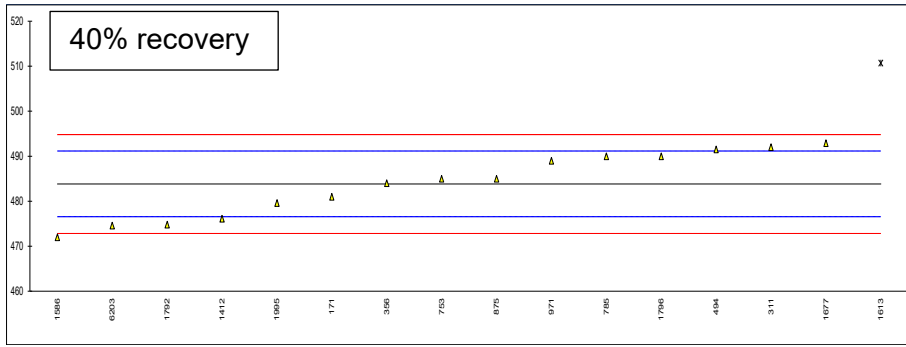
Vacuum Distillation at 10 mmHg but reported as AET on sample #23105, results in °C

lab	method	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
62		----	----	----	----	----	----	----	----
90		----	----	----	----	----	----	----	----
92		----	----	----	----	----	----	----	----
120		----	----	----	----	----	----	----	----
140		----	----	----	----	----	----	----	----
150		----	----	----	----	----	----	----	----
154		----	----	----	----	----	----	----	----
158		----	----	----	----	----	----	----	----
159		----	----	----	----	----	----	----	----
169		----	----	----	----	----	----	----	----
171	D1160	233 DG(5)	269	307	371	428	481	----	519
194		----	----	----	----	----	----	----	----
221		----	----	----	----	----	----	----	----
224		----	----	----	----	----	----	----	----
225		----	----	----	----	----	----	----	----
237		----	----	----	----	----	----	----	----
238		----	----	----	----	----	----	----	----
253		----	----	----	----	----	----	----	----
254		----	----	----	----	----	----	----	----
300		----	----	----	----	----	----	----	----
309		----	----	----	----	----	----	----	----
311	D1160	218	269	304	375	436	492	----	521
313		----	----	----	----	----	----	----	----
323		----	----	----	----	----	----	----	----
328		----	----	----	----	----	----	----	----
331		----	----	----	----	----	----	----	----
333		----	----	----	----	----	----	----	----
334		----	----	----	----	----	----	----	----
335		----	----	----	----	----	----	----	----
339		----	----	----	----	----	----	----	----
342		----	----	----	----	----	----	----	----
343		----	----	----	----	----	----	----	----
349		----	----	----	----	----	----	----	----
356	D1160	210	262	312	372	431	484	505	505
371		----	----	----	----	----	----	----	----
391		----	----	----	----	----	----	----	----
396		----	----	----	----	----	----	----	----
398		----	----	----	----	----	----	----	----
399		----	----	----	----	----	----	----	----
455		----	----	----	----	----	----	----	----
494	D1160	209.8	263.2	302.3	376.0	436.1	491.5	----	509.3
495		----	----	----	----	----	----	----	----
511		----	----	----	----	----	----	----	----
557		----	----	----	----	----	----	----	----
562		----	----	----	----	----	----	----	----
575		----	----	----	----	----	----	----	----
603		----	----	----	----	----	----	----	----
604		----	----	----	----	----	----	----	----
608		----	----	----	----	----	----	----	----
631		----	----	----	----	----	----	----	----
663		----	----	----	----	----	----	----	----
671		----	----	----	----	----	----	----	----
750		----	----	----	----	----	----	----	----
753	D1160	211	255	290	366	432	485	----	498
759		----	----	----	----	----	----	----	----
785	D1160	209.0	255.4	296.5	264.2 G(1)	428.5	490.0	----	----
823		----	----	----	----	----	----	----	----
824		----	----	----	----	----	----	----	----
825		----	----	----	----	----	----	----	----
850		----	----	----	----	----	----	----	----
851		----	----	----	----	----	----	----	----
855		----	----	----	----	----	----	----	----
858		----	----	----	----	----	----	----	----
859		----	----	----	----	----	----	----	----
862		----	----	----	----	----	----	----	----
863		----	----	----	----	----	----	----	----
864		----	----	----	----	----	----	----	----
865		----	----	----	----	----	----	----	----
866		----	----	----	----	----	----	----	----
870		----	----	----	----	----	----	----	----
875	D1160	208.8	256.0	295.0	366.0	429.1	485.0	----	----
886		----	----	----	----	----	----	----	----
902		----	----	----	----	----	----	----	----
912		----	----	----	----	----	----	----	----
922		----	----	----	----	----	----	----	----

lab	method	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
962		----	----	----	----	----	----	----	----
963		----	----	----	----	----	----	----	----
971	D1160	225	272	306	373	433	489	----	520
974		----	----	----	----	----	----	----	----
982		----	----	----	----	----	----	----	----
1039		----	----	----	----	----	----	----	----
1082		----	----	----	----	----	----	----	----
1121		----	----	----	----	----	----	----	----
1126		----	----	----	----	----	----	----	----
1135		----	----	----	----	----	----	----	----
1140		----	----	----	----	----	----	----	----
1177		----	----	----	----	----	----	----	----
1218		----	----	----	----	----	----	----	----
1233		----	----	----	----	----	----	----	----
1254		----	----	----	----	----	----	----	----
1266		----	----	----	----	----	----	----	----
1275		----	----	----	----	----	----	----	----
1299		----	----	----	----	----	----	----	----
1340		----	----	----	----	----	----	----	----
1345		----	----	----	----	----	----	----	----
1356		----	----	----	----	----	----	----	----
1412	D1160	221.1	260.2	295.8	363.8	427.3	476.1	----	----
1459		----	----	----	----	----	----	----	----
1498		----	----	----	----	----	----	----	----
1556		----	----	----	----	----	----	----	----
1558		----	----	----	----	----	----	----	----
1564		----	----	----	----	----	----	----	----
1586	D1160	212.9	252.7	287.1	359.1	424.9	472.0	----	504.1
1613	D1160	238.4 DG(5)	278.6 ex	321.2 ex	380.2 ex	451.3 G(5)	510.7 G(5)	----	524.0 ex
1631		----	----	----	----	----	----	----	----
1643		----	----	----	----	----	----	----	----
1677	D1160	220.0	269.5	305.8	375.5	434.1	492.9	544.0	559.1 G(5)
1720		----	----	----	----	----	----	----	----
1724		----	----	----	----	----	----	----	----
1728		----	----	----	----	----	----	----	----
1740		----	----	----	----	----	----	----	----
1761		----	----	----	----	----	----	----	----
1776		----	----	----	----	----	----	----	----
1792	D1160	212.4	254.1	289.9	358.7	415.3	474.8	524.1	524.1
1796	D1160	209 C	264	307	376	438	490	----	523
1807		----	----	----	----	----	----	----	----
1833		----	----	----	----	----	----	----	----
1849		----	----	----	----	----	----	----	----
1854		----	----	----	----	----	----	----	----
1906		----	----	----	----	----	----	----	----
1956		----	----	----	----	----	----	----	----
1964		----	----	----	----	----	----	----	----
1995	D1160	217.2	255.3	301.2	367.4	414.7	479.6	534.0	538.0
2835		----	----	----	----	----	----	----	----
6039		----	----	----	----	----	----	----	----
6044		----	----	----	----	----	----	----	----
6049		----	----	----	----	----	----	----	----
6075		----	----	----	----	----	----	----	----
6092		----	----	----	----	----	----	----	----
6139		----	----	----	----	----	----	----	----
6142		----	----	----	----	----	----	----	----
6146		----	----	----	----	----	----	----	----
6192		----	----	----	----	----	----	----	----
6203		204.5	256.4	297.0	363.7	422.6	474.6	526.1	528.1
6279		----	----	----	----	----	----	----	----
6335		----	----	----	----	----	----	----	----
6346		----	----	----	----	----	----	----	----
6373		----	----	----	----	----	----	----	----
6416		----	----	----	----	----	----	----	----
6447		----	----	----	----	----	----	----	----
6475		----	----	----	----	----	----	----	----
6497		----	----	----	----	----	----	----	----
6530		----	----	----	----	----	----	----	----
normality		OK	OK	OK	OK	OK	OK	unknown	OK
n		14	15	15	14	15	15	5	11
outliers		2	0+1ex	0+1ex	1+1ex	1	1	0	1+1ex
mean (n)		213.48	260.92	299.77	368.80	428.71	483.83	526.64	517.24
st.dev. (n)		5.841	6.542	7.396	6.105	7.011	7.100	14.410	11.873
R(calc.)		16.36	18.32	20.71	17.09	19.63	19.88	40.35	33.24
st.dev.(D1160:18)		17.500	8.025	7.449	7.123	6.798	3.659	(2.616)	9.643
R(D1160:18)		49	22.47	20.86	19.94	19.04	10.25	(7.32)	27

Lab 1613 test results excluded as statistical outliers in related parameters
Lab 1796 first reported 132





z-scores of Vacuum Distillation at 10 mmHg but reported as AET on sample #22100

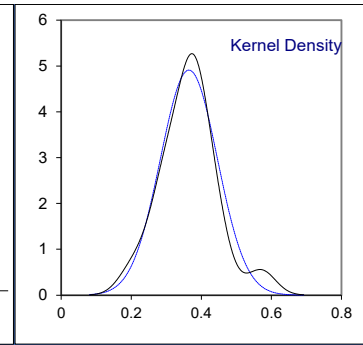
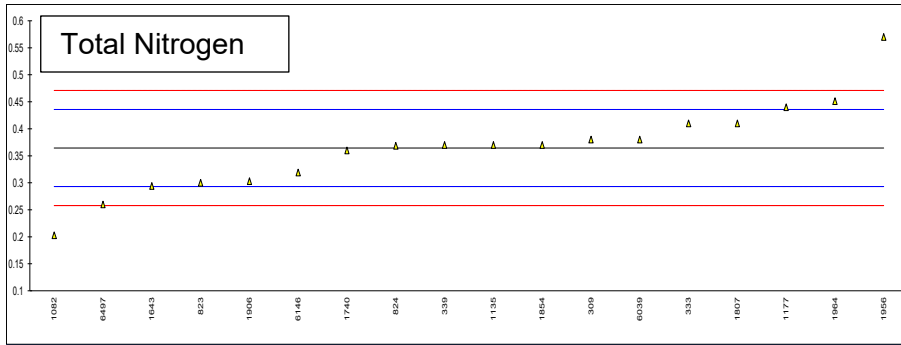
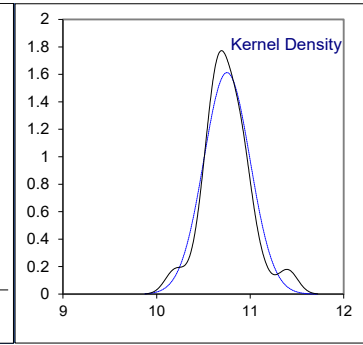
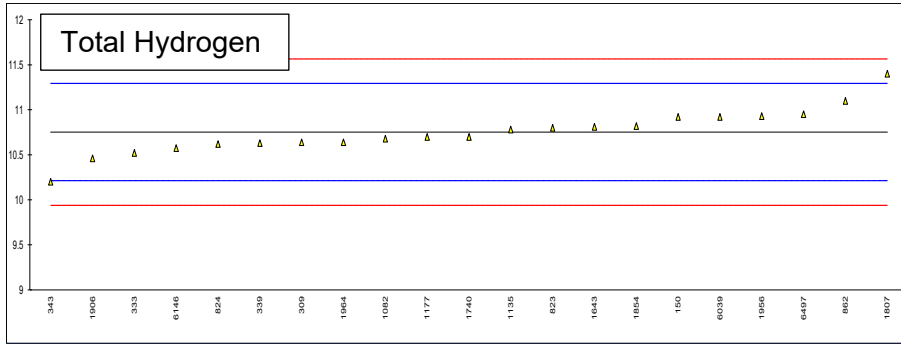
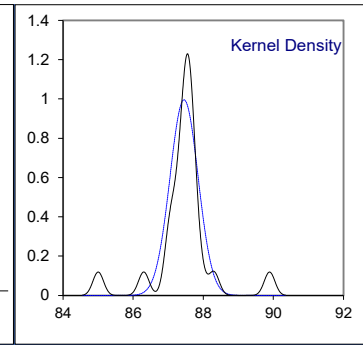
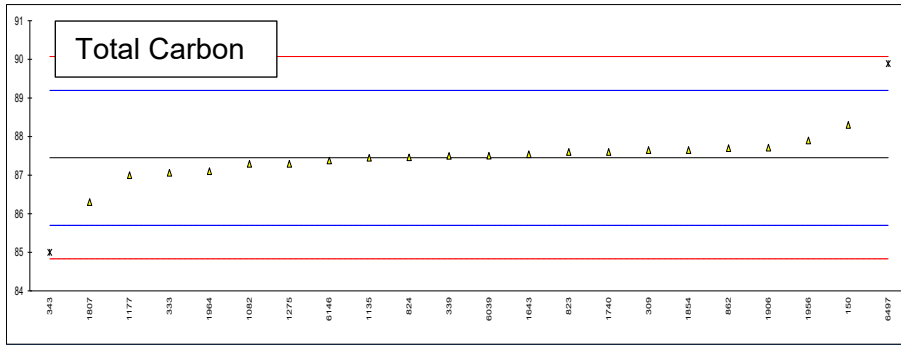
lab	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
62	----	----	----	----	----	----	----	----
90	----	----	----	----	----	----	----	----
92	----	----	----	----	----	----	----	----
120	----	----	----	----	----	----	----	----
140	----	----	----	----	----	----	----	----
150	----	----	----	----	----	----	----	----
154	----	----	----	----	----	----	----	----
158	----	----	----	----	----	----	----	----
159	----	----	----	----	----	----	----	----
169	----	----	----	----	----	----	----	----
171	1.12	1.01	0.97	0.31	-0.10	-0.77	----	0.18
194	----	----	----	----	----	----	----	----
221	----	----	----	----	----	----	----	----
224	----	----	----	----	----	----	----	----
225	----	----	----	----	----	----	----	----
237	----	----	----	----	----	----	----	----
238	----	----	----	----	----	----	----	----
253	----	----	----	----	----	----	----	----
254	----	----	----	----	----	----	----	----
300	----	----	----	----	----	----	----	----
309	----	----	----	----	----	----	----	----
311	0.26	1.01	0.57	0.87	1.07	2.23	----	0.39
313	----	----	----	----	----	----	----	----
323	----	----	----	----	----	----	----	----
328	----	----	----	----	----	----	----	----
331	----	----	----	----	----	----	----	----
333	----	----	----	----	----	----	----	----
334	----	----	----	----	----	----	----	----
335	----	----	----	----	----	----	----	----
339	----	----	----	----	----	----	----	----
342	----	----	----	----	----	----	----	----
343	----	----	----	----	----	----	----	----
349	----	----	----	----	----	----	----	----
356	-0.20	0.13	1.64	0.45	0.34	0.05	----	-1.27
371	----	----	----	----	----	----	----	----
391	----	----	----	----	----	----	----	----
396	----	----	----	----	----	----	----	----
398	----	----	----	----	----	----	----	----
399	----	----	----	----	----	----	----	----
455	----	----	----	----	----	----	----	----
494	-0.21	0.28	0.34	1.01	1.09	2.10	----	-0.82
495	----	----	----	----	----	----	----	----
511	----	----	----	----	----	----	----	----
557	----	----	----	----	----	----	----	----
562	----	----	----	----	----	----	----	----
575	----	----	----	----	----	----	----	----
603	----	----	----	----	----	----	----	----
604	----	----	----	----	----	----	----	----
608	----	----	----	----	----	----	----	----
631	----	----	----	----	----	----	----	----
663	----	----	----	----	----	----	----	----
671	----	----	----	----	----	----	----	----
750	----	----	----	----	----	----	----	----
753	-0.14	-0.74	-1.31	-0.39	0.48	0.32	----	-1.99
759	----	----	----	----	----	----	----	----
785	-0.26	-0.69	-0.44	-14.68	-0.03	1.69	----	----
823	----	----	----	----	----	----	----	----
824	----	----	----	----	----	----	----	----
825	----	----	----	----	----	----	----	----
850	----	----	----	----	----	----	----	----
851	----	----	----	----	----	----	----	----
855	----	----	----	----	----	----	----	----
858	----	----	----	----	----	----	----	----
859	----	----	----	----	----	----	----	----
862	----	----	----	----	----	----	----	----
863	----	----	----	----	----	----	----	----
864	----	----	----	----	----	----	----	----
865	----	----	----	----	----	----	----	----
866	----	----	----	----	----	----	----	----
870	----	----	----	----	----	----	----	----
875	-0.27	-0.61	-0.64	-0.39	0.06	0.32	----	----
886	----	----	----	----	----	----	----	----
902	----	----	----	----	----	----	----	----
912	----	----	----	----	----	----	----	----
922	----	----	----	----	----	----	----	----

lab	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
962	----	----	----	----	----	----	----	----
963	----	----	----	----	----	----	----	----
971	0.66	1.38	0.84	0.59	0.63	1.41	----	0.29
974	----	----	----	----	----	----	----	----
982	----	----	----	----	----	----	----	----
1039	----	----	----	----	----	----	----	----
1082	----	----	----	----	----	----	----	----
1121	----	----	----	----	----	----	----	----
1126	----	----	----	----	----	----	----	----
1135	----	----	----	----	----	----	----	----
1140	----	----	----	----	----	----	----	----
1177	----	----	----	----	----	----	----	----
1218	----	----	----	----	----	----	----	----
1233	----	----	----	----	----	----	----	----
1254	----	----	----	----	----	----	----	----
1266	----	----	----	----	----	----	----	----
1275	----	----	----	----	----	----	----	----
1299	----	----	----	----	----	----	----	----
1340	----	----	----	----	----	----	----	----
1345	----	----	----	----	----	----	----	----
1356	----	----	----	----	----	----	----	----
1412	0.44	-0.09	-0.53	-0.70	-0.21	-2.11	----	----
1459	----	----	----	----	----	----	----	----
1498	----	----	----	----	----	----	----	----
1556	----	----	----	----	----	----	----	----
1558	----	----	----	----	----	----	----	----
1564	----	----	----	----	----	----	----	----
1586	-0.03	-1.02	-1.70	-1.36	-0.56	-3.23	----	-1.36
1613	1.42	2.20	2.88	1.60	3.32	7.34	----	0.70
1631	----	----	----	----	----	----	----	----
1643	----	----	----	----	----	----	----	----
1677	0.37	1.07	0.81	0.94	0.79	2.48	----	4.34
1720	----	----	----	----	----	----	----	----
1724	----	----	----	----	----	----	----	----
1728	----	----	----	----	----	----	----	----
1740	----	----	----	----	----	----	----	----
1761	----	----	----	----	----	----	----	----
1776	----	----	----	----	----	----	----	----
1792	-0.06	-0.85	-1.33	-1.42	-1.97	-2.47	----	0.71
1796	-0.26	0.38	0.97	1.01	1.37	1.69	----	0.60
1807	----	----	----	----	----	----	----	----
1833	----	----	----	----	----	----	----	----
1849	----	----	----	----	----	----	----	----
1854	----	----	----	----	----	----	----	----
1906	----	----	----	----	----	----	----	----
1956	----	----	----	----	----	----	----	----
1964	----	----	----	----	----	----	----	----
1995	0.21	-0.70	0.19	-0.20	-2.06	-1.16	----	2.15
2835	----	----	----	----	----	----	----	----
6039	----	----	----	----	----	----	----	----
6044	----	----	----	----	----	----	----	----
6049	----	----	----	----	----	----	----	----
6075	----	----	----	----	----	----	----	----
6092	----	----	----	----	----	----	----	----
6139	----	----	----	----	----	----	----	----
6142	----	----	----	----	----	----	----	----
6146	----	----	----	----	----	----	----	----
6192	----	----	----	----	----	----	----	----
6203	-0.51	-0.56	-0.37	-0.72	-0.90	-2.52	----	1.13
6279	----	----	----	----	----	----	----	----
6335	----	----	----	----	----	----	----	----
6346	----	----	----	----	----	----	----	----
6373	----	----	----	----	----	----	----	----
6416	----	----	----	----	----	----	----	----
6447	----	----	----	----	----	----	----	----
6475	----	----	----	----	----	----	----	----
6497	----	----	----	----	----	----	----	----
6530	----	----	----	----	----	----	----	----

Determination of Total Carbon, Hydrogen and Nitrogen on sample #23105; 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	88.3		0.97	10.92		0.62	----		----
154		----		----	----		----	----		----
158		----		----	----		----	----		----
159		----		----	----		----	----		----
169		----		----	----		----	----		----
171		----		----	----		----	----		----
194		----		----	----		----	----		----
221		----		----	----		----	----		----
224		----		----	----		----	----		----
225		----		----	----		----	----		----
237		----		----	----		----	----		----
238		----		----	----		----	----		----
253		----		----	----		----	----		----
254		----		----	----		----	----		----
300		----		----	----		----	----		----
309	D5291	87.65		0.23	10.64		-0.41	0.38		0.44
311		----		----	----		----	----		----
313		----		----	----		----	----		----
323		----		----	----		----	----		----
328		----		----	----		----	----		----
331		----		----	----		----	----		----
333	D5291-A	87.06		-0.45	10.52		-0.86	0.41		1.28
334		----		----	----		----	----		----
335		----		----	----		----	----		----
339	D5291-D	87.5		0.06	10.63		-0.45	0.37		0.16
342		----		----	----		----	----		----
343	D5291-A	85	R(0.01)	-2.80	10.2		-2.04	----		----
349		----		----	----		----	----		----
356		----		----	----		----	----		----
371		----		----	----		----	----		----
391		----		----	----		----	----		----
396		----		----	----		----	----		----
398		----		----	----		----	----		----
399		----		----	----		----	----		----
455		----		----	----		----	----		----
494		----		----	----		----	----		----
495		----		----	----		----	----		----
511		----		----	----		----	----		----
557		----		----	----		----	----		----
562		----		----	----		----	----		----
575		----		----	----		----	----		----
603		----		----	----		----	----		----
604		----		----	----		----	----		----
608		----		----	----		----	----		----
631		----		----	----		----	----		----
663		----		----	----		----	----		----
671		----		----	----		----	----		----
750		----		----	----		----	----		----
753		----		----	----		----	----		----
759		----		----	----		----	----		----
785		----		----	----		----	----		----
823	D5291-D	87.6		0.17	10.8		0.18	0.3		-1.81
824	D5291-D	87.4633		0.02	10.6199		-0.49	0.3684		0.11
825		----		----	----		----	----		----
850		----		----	----		----	----		----
851		----		----	----		----	----		----
855		----		----	----		----	----		----
858		----		----	----		----	----		----
859		----		----	----		----	----		----
862	D5291-D	87.7		0.29	11.1		1.28	<0.5		----
863		----		----	----		----	----		----
864		----		----	----		----	----		----
865		----		----	----		----	----		----
866		----		----	----		----	----		----
870		----		----	----		----	----		----
875		----		----	----		----	----		----
886		----		----	----		----	----		----
902		----		----	----		----	----		----
912		----		----	----		----	----		----
922		----		----	----		----	----		----

lab	method	Total C	mark	z(targ)	Total H	mark	z(targ)	Total N	mark	z(targ)
962		----		----	----		----	----		----
963		----		----	----		----	----		----
971		----		----	----		----	----		----
974		----		----	----		----	----		----
982		----		----	----		----	----		----
1039		----		----	----		----	----		----
1082	D5291-D	87.29		-0.18	10.68		-0.27	0.203		-4.53
1121		----		----	----		----	----		----
1126		----		----	----		----	----		----
1135	D5291-C	87.45		0.00	10.78		0.10	0.37		0.16
1140		----		----	----		----	----		----
1177	D5291-D	87.0		-0.51	10.7		-0.19	0.44		2.12
1218		----		----	----		----	----		----
1233		----		----	----		----	----		----
1254		----		----	----		----	----		----
1266		----		----	----		----	----		----
1275	D5291-D	87.29		-0.18	----		----	----		----
1299		----		----	----		----	----		----
1340		----		----	----		----	----		----
1345		----		----	----		----	----		----
1356		----		----	----		----	----		----
1412		----		----	----		----	----		----
1459		----		----	----		----	----		----
1498		----		----	----		----	----		----
1556		----		----	----		----	----		----
1558		----		----	----		----	----		----
1564		----		----	----		----	----		----
1586		----		----	----		----	----		----
1613		----		----	----		----	----		----
1631		----		----	----		----	----		----
1643	D5291-A	87.542		0.11	10.811		0.22	0.29415		-1.97
1677		----		----	----		----	----		----
1720		----		----	----		----	----		----
1724		----		----	----		----	----		----
1728		----		----	----		----	----		----
1740	D5291-C	87.6		0.17	10.7		-0.19	0.36		-0.12
1761		----		----	----		----	----		----
1776		----		----	----		----	----		----
1792		----		----	----		----	----		----
1796		----		----	----		----	----		----
1807		86.3		-1.32	11.4		2.39	0.41		1.28
1833		----		----	----		----	----		----
1849		----		----	----		----	----		----
1854	D5291-D	87.65		0.23	10.82		0.25	0.37		0.16
1906		87.714		0.30	10.460		-1.08	0.303		-1.72
1956	D5291-C	87.9		0.52	10.93		0.66	0.57		5.77
1964	D5291-A	87.10		-0.40	10.64		-0.41	0.451		2.43
1995		----		----	----		----	----		----
2835		----		----	----		----	----		----
6039	D5291-C	87.50281		0.06	10.92		0.62	0.38		0.44
6044		----		----	----		----	----		----
6049		----		----	----		----	----		----
6075		----		----	----		----	----		----
6092		----		----	----		----	----		----
6139		----		----	----		----	----		----
6142		----		----	----		----	----		----
6146	D5291-C	87.378		-0.08	10.573		-0.66	0.319		-1.27
6192		----		----	----		----	----		----
6203		----		----	----		----	----		----
6279		----		----	----		----	----		----
6335		----		----	----		----	----		----
6346		----		----	----		----	----		----
6373		----		----	----		----	----		----
6416		----		----	----		----	----		----
6447		----		----	----		----	----		----
6475		----		----	----		----	----		----
6497	D5291-A	89.89	R(0.01)	2.79	10.95		0.73	0.26		-2.93
6530		----		----	----		----	----		----
normality		not OK			suspect			suspect		
n		20			21			18		
outliers		2			0			0		
mean (n)		87.4495			10.7521			0.3644		
st.dev. (n)		0.40080			0.24732			0.08121		
R(calc.)		1.1222			0.6925			0.2274		
st.dev.(D5291-ABC:21)		0.87383			0.27099			0.03565		
R(D5291-ABC:21)		2.4467			0.7588			0.0998		



Determination of Aluminum as Al, Silicon as Si and Sum Al and Si on sample #23106; results in mg/kg

lab	method	Al	mark	z(targ)	Si	mark	z(targ)	Sum Al+Si	mark	z(targ)
62	IP501	5		-0.08	7		0.42	12		0.51
90	D5184	8.3		3.86	----		----	----		----
92		----		----	----		----	----		----
120	IP501	5.296		0.27	5.249		-0.61	----		----
140	IP501	5		-0.08	5	C	-0.76	10	C	-0.55
150	IP501	7		2.31	<10		----	<15		----
154	IP501	3		-2.48	3		-1.94	6		-2.66
159	IP501	4.2085		-1.03	4.9405		-0.79	9.149		-1.00
171	IP470	6		1.11	6		-0.17	12		0.51
194		----		----	----		----	----		----
221	IP501	4.12		-1.14	4.74		-0.91	8.86		-1.15
225	IP501	4		-1.28	6.02		-0.16	10.02		-0.54
237		----		----	----		----	----		----
254	IP501	5.670		0.72	9.573		1.93	15.243		2.22
300		----		----	----		----	----		----
311	IP501	4		-1.28	6		-0.17	10		-0.55
323	IP501	5		-0.08	7		0.42	<15		----
328	IP501	<5		----	<10		----	<10		----
331		----		----	----		----	----		----
333	IP501	4.71		-0.43	6.27		-0.01	10.98		-0.03
334	IP501	4.9		-0.20	6.3		0.01	11.2		0.09
342	IP501	4.7932		-0.33	5.4259		-0.51	10.2191		-0.43
343		----		----	----		----	----		----
356		----		----	----		----	----		----
371		----		----	----		----	----		----
391		----		----	----		----	----		----
396	IP501	8.0		3.50	6.3		0.01	14.3		1.72
398		----		----	----		----	----		----
399	IP501	5.0		-0.08	6.9		0.36	11.9		0.46
455	IP501	6		1.11	9		1.60	----		----
494	IP501	4.5		-0.68	3.8		-1.46	8.3		-1.44
511		----		----	----		----	----		----
557	IP501	8.771135		4.43	7.644571		0.80	16.415921		2.84
608	IP501	7		2.31	6		-0.17	13		1.04
631	D5184	3.05		-2.42	7.26		0.57	10.31		-0.38
663	IP501	3.45		-1.94	4.45		-1.08	7.90		-1.65
750		----		----	----		----	----		----
785	IP470	4.9		-0.20	4.8		-0.88	9.7		-0.70
823	IP501	3.1		-2.36	5.7		-0.35	8.8		-1.18
824	IP501	4.3		-0.92	5.9		-0.23	10.2		-0.44
825	IP501	5		-0.08	5.782		-0.30	10.505		-0.28
850	IP501	5.0		-0.08	6.2		-0.05	11.2		0.09
851	IP501	3.800484545		-1.52	7.927105242		0.96	11.72758979		0.37
855	IP501	4.7		-0.44	7.0		0.42	11.7		0.35
862	IP501	4.7		-0.44	5.4		-0.52	10.1		-0.49
863	IP501	4.8		-0.32	5.9		-0.23	10.7		-0.18
864	IP501	4.1		-1.16	6.2		-0.05	10.3		-0.39
865	IP501	5.0		-0.08	6.3		0.01	11.3		0.14
875		----		----	5		-0.76	----		----
902	IP501	6		1.11	10		2.18	16		2.62
912	IP501	8		3.50	8		1.01	16		2.62
922	IP470	7.0		2.31	9.0		1.60	16.0		2.62
963	IP501	4		-1.28	9		1.60	13		1.04
971	IP501	4.8		-0.32	4.9		-0.82	9.7		-0.70
974	IP501	5		-0.08	4		-1.35	9		-1.07
1039	IP501	4.8		-0.32	6.8		0.30	11.6		0.30
1121	IP501	4.8		-0.32	5.9		-0.23	10.7		-0.18
1135	IP501	4.76		-0.37	5.45		-0.49	10.21		-0.44
1140	IP501	9.181		4.92	10.22		2.31	19.401	G(1)	4.42
1233	IP501	8		3.50	8		1.01	16		2.62
1275	IP501	1.522		-4.24	5.644		-0.38	7.166		-2.04
1299		----		----	----		----	----		----
1345		----		----	----		----	----		----
1356	ISO10478	5		-0.08	3		-1.94	8		-1.60
1412	IP501	8.1		3.62	----		----	----		----
1556	IP501	3.99		-1.29	5.85		-0.26	9.84		-0.63
1564	IP501	4.37		-0.84	5.62		-0.39	10		-0.55
1586	IP501	7		2.31	5		-0.76	12		0.51
1613	IP501	<5.0	C	----	<10.0		----	10.6		-0.23
1643		----		----	----		----	----		----
1677	IP501	4		-1.28	6		-0.17	10		-0.55
1720		----		----	----		----	----		----
1724	IP470	4.98		-0.11	4.99		-0.76	9.97		-0.56
1740	IP501	4.47		-0.72	7.38		0.64	11.85		0.43
1776		----		----	----		----	----		----

lab	method	Al	mark	z(targ)	Si	mark	z(targ)	Sum Al+Si	mark	z(targ)
1792	IP501	4.3		-0.92	5.4		-0.52	9.7		-0.70
1796		----		----	----		----	----		----
1807	IP501	5.6		0.63	5.3		-0.58	11		-0.02
1813	IP501	6.8376		2.11	12.2726	G(1)	3.52	19.1102	ex	4.26
1833		----	W	----	----	W	----	----		----
1854	IP501	4.8		-0.32	6.0		-0.17	10.8		-0.12
1995	IP501	5.9		0.99	9.3		1.77	15.2		2.20
6044	IP501	3.90		-1.40	5.91		-0.22	9.81		-0.65
6049	IP501	4.9		-0.20	7.3		0.59	12.2		0.62
6075		----		----	----		----	----		----
6080	IP501	4.8		-0.32	6.1		-0.11	10.9		-0.07
6092	IP501	4.7		-0.44	9.1		1.65	----		----
6142		----		----	----		----	----		----
6146	In house	4.80		-0.32	7.31		0.60	12.11		0.57
6192	IP501	6.0		1.11	9.0		1.60	15.0		2.09
6195	IP501	4.89		-0.22	8.05		1.04	12.93		1.00
6203	IP501	<5		----	<10		----	----		----
6204		----		----	----		----	----		----
6335	D5185	3.69		-1.65	----		----	----		----
6373	IP501	7		2.31	8		1.01	15		2.09
6379	D5185	3.963		-1.32	3.353		-1.73	7.316		-1.96
6388	IP501	4.175		-1.07	2.856		-2.02	7.031		-2.11
6396		----		----	----		----	----		----
6475	EN15944/IP501	1.90		-3.79	3.44		-1.68	5.34		-3.01
6497	DIN51399-2	3.4		-2.00	6.8		0.30	10.2		-0.44
6530	IP501	3.7		-1.64	0.0	G(1)	-3.70	3.7	ex	-3.87
	normality	OK			OK			OK		
	n	74			69			64		
	outliers	0			2			1+2ex		
	mean (n)	5.07			6.29			11.03		
	st.dev. (n)	1.498			1.703			2.491		
	R(calc.)	4.19			4.77			6.97		
	st.dev.(IP470:05)	0.836			1.699			1.894		
	R(IP470:05)	2.34			4.76			5.30		
Compare										
	R(IP501:05R19)	1.71			2.09			2.70		

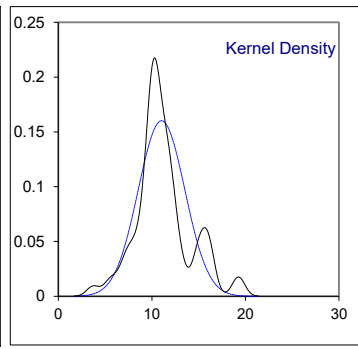
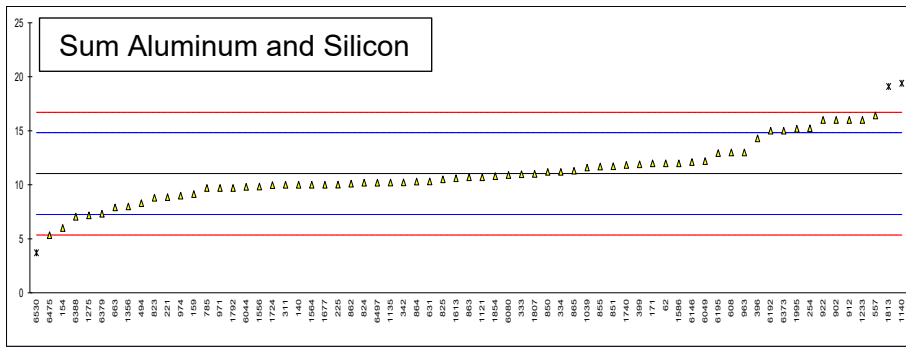
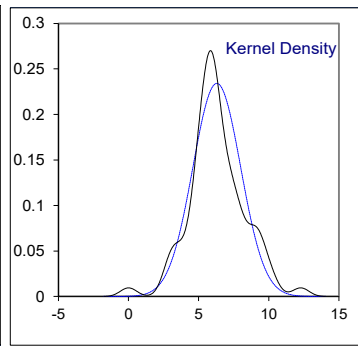
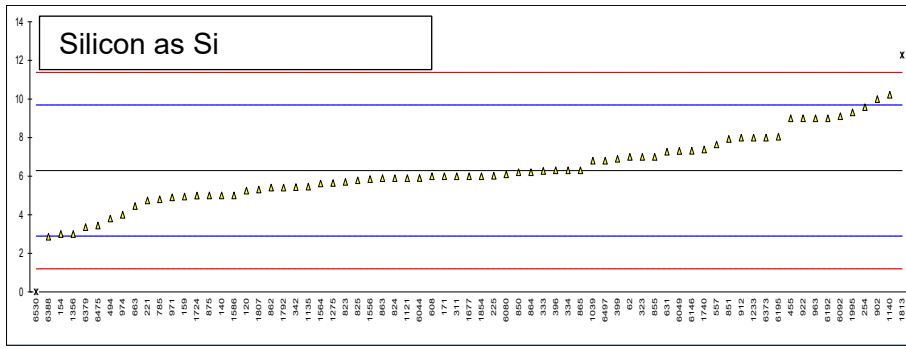
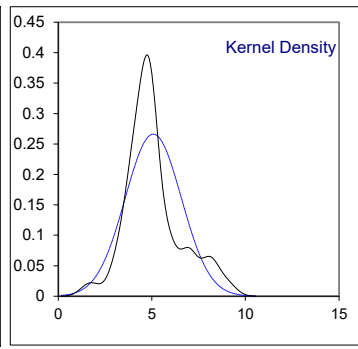
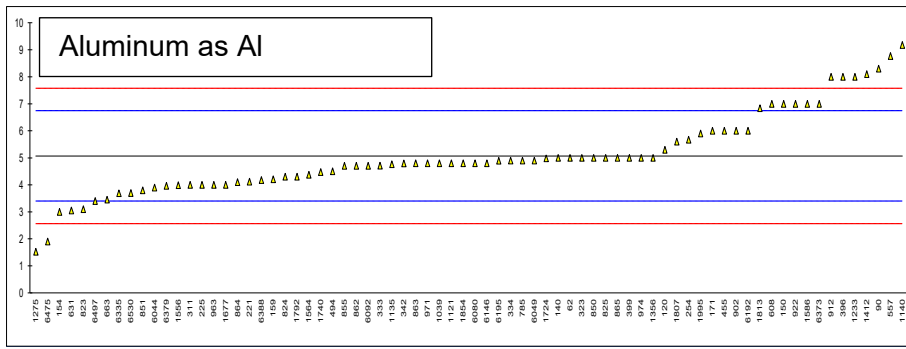
Lab 140 first reported 25 and 30 respectively

Lab 1613 first reported <0.5

Lab 1813 test result sum Al and Si excluded from statistical evaluation because of the statistical outlier in related parameter

Lab 1833 test results withdrawn, reported 3.03 and 4.06 respectively

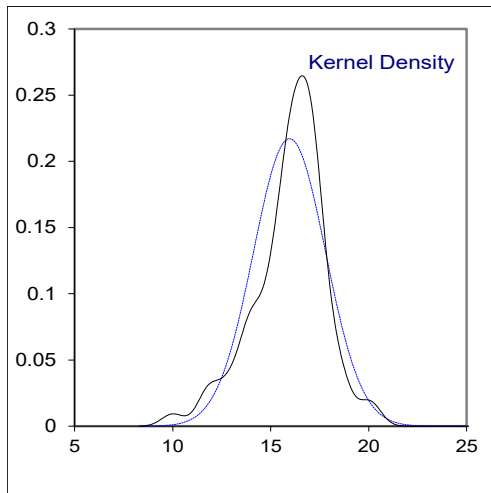
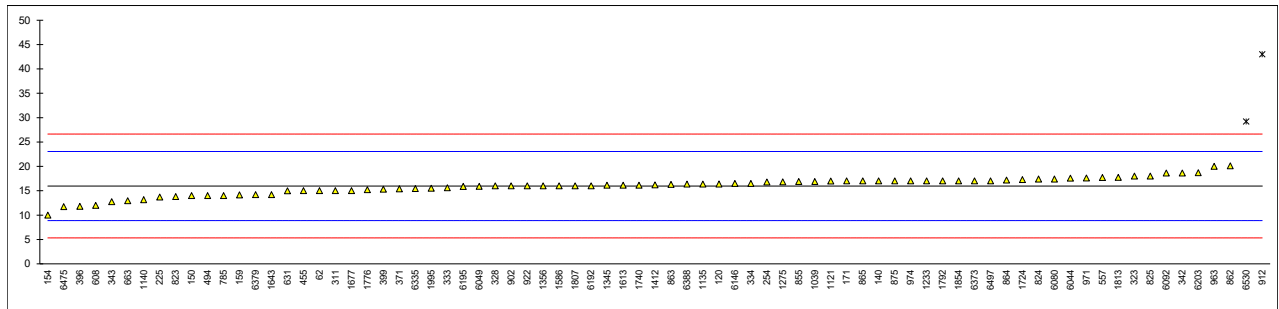
Lab 6530 test result sum Al and Si excluded from statistical evaluation because of the statistical outlier in related parameter



Determination of Iron as Fe on sample #23106; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62	IP501	15		-0.27	
90		----		----	
92		----		----	
120	IP501	16.38		0.12	
140	IP501	17		0.29	
150	IP501	14	C	-0.55	First reported 28
154	IP501	10		-1.68	
159	IP501	14.125		-0.52	
171	IP470	17		0.29	
194		----		----	
221		----		----	
225	IP501	13.71		-0.63	
237		----		----	
254	IP501	16.78		0.23	
300		----		----	
311	IP501	15		-0.27	
323	IP501	18		0.58	
328	IP501	16		0.01	
331		----		----	
333	IP501	15.60		-0.10	
334	IP501	16.5		0.15	
342	IP501	18.6030		0.75	
343	D5708	12.75		-0.90	
356		----		----	
371	IP470	15.4		-0.16	
391		----		----	
396	IP501	11.8		-1.17	
398		----		----	
399	IP501	15.3		-0.19	
455	IP501	15		-0.27	
494	IP501	14.0		-0.55	
511		----		----	
557	IP501	17.7245		0.50	
608	IP501	12		-1.11	
631	IP470	14.97		-0.28	
663	IP501	12.96		-0.84	
750		----		----	
785	IP470	14.0		-0.55	
823	IP501	13.8		-0.61	
824	IP501	17.4		0.41	
825	IP501	18		0.58	
850		----		----	
851		----		----	
855	IP501	16.9		0.27	
862	IP501	20.1		1.17	
863	IP501	16.3		0.10	
864	IP501	17.2		0.35	
865	IP501	17.0		0.29	
875	IP501	17		0.29	
902	IP501	16		0.01	
912	IP501	43	R(0.01)	7.62	
922	IP470	16.0		0.01	
963	IP501	20		1.14	
971	IP501	17.6		0.46	
974	IP501	17		0.29	
1039	IP501	16.9		0.27	
1121	IP501	16.99		0.29	
1135	IP470	16.36		0.11	
1140	IP501	13.14		-0.79	
1233	IP501	17		0.29	
1275	IP501	16.820		0.24	
1299		----		----	
1345	IP470	16.1		0.04	
1356	IP501	16		0.01	
1412	IP501	16.2		0.07	
1556		----		----	
1564		----		----	
1586	IP501	16		0.01	
1613	IP501	16.1		0.04	
1643	D5185	14.21		-0.49	
1677	IP501	15		-0.27	
1720		----		----	
1724	IP501	17.28		0.37	
1740	IP501	16.1		0.04	
1776	IP501	15.2		-0.21	

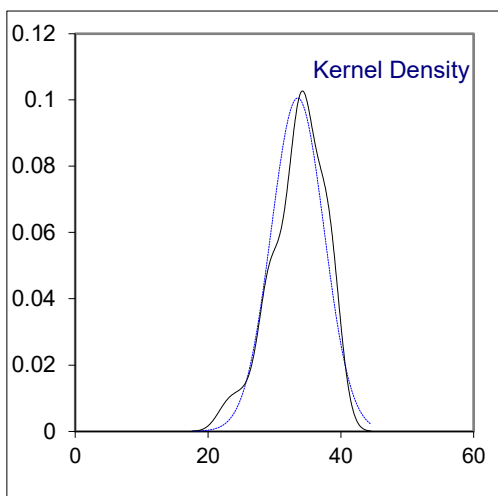
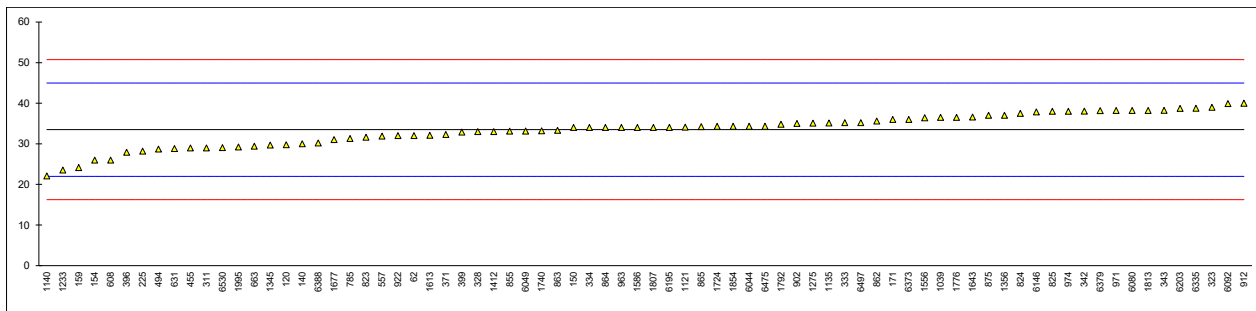
lab	method	value	mark	z(targ)	remarks
1792	IP501	17.0		0.29	
1796		-----		-----	
1807	IP501	16		0.01	
1813	IP501	17.7268		0.50	
1833		-----	W	-----	Test result withdrawn, reported 11.69
1854	IP501	17.0		0.29	
1995	IP501	15.5		-0.13	
6044	IP501	17.57		0.45	
6049	IP501	15.90		-0.02	
6075		-----		-----	
6080	IP501	17.4		0.41	
6092	IP501	18.6		0.74	
6142		-----		-----	
6146	In house	16.49		0.15	
6192	IP501	16.0		0.01	
6195	IP501	15.88		-0.02	
6203	IP501	18.7		0.77	
6204		-----		-----	
6335	D5185	15.45		-0.14	
6373	IP501	17		0.29	
6379	D5185	14.195		-0.50	
6388	IP501	16.34		0.11	
6396		-----		-----	
6475	EN15944/IP501	11.72		-1.19	
6497	DIN51399-2	17.0		0.29	
6530	IP501	29.2	R(0.01)	3.73	
normality		suspect			
n		75			
outliers		2			
mean (n)		15.96			
st.dev. (n)		1.837			
R(calc.)		5.14			
st.dev.(IP470:05)		3.551			
R(IP470:05)		9.94			
Compare					
R(IP501:05R19)		4.30			



Determination of Nickel as Ni on sample #23106; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62	IP501	32		-0.26	
90		----		----	
92		----		----	
120	IP501	29.75		-0.65	
140	IP501	30		-0.61	
150	IP501	34	C	0.09	First reported 21
154	IP501	26	C	-1.30	First reported 20
159	IP501	24.14	C	-1.63	First reported 21.29
171	IP470	36		0.44	
194		----		----	
221		----		----	
225	IP501	28.18		-0.92	
237		----		----	
254		----		----	
300		----		----	
311	IP501	29		-0.78	
323	IP501	39		0.96	
328	IP501	33		-0.08	
331		----		----	
333	IP501	35.17		0.29	
334	IP501	34.0		0.09	
342	IP501	38.0298		0.79	
343	D5708	38.25		0.83	
356		----		----	
371	IP470	32.3		-0.21	
391		----		----	
396	IP501	27.9	C	-0.97	First reported 20.4
398		----		----	
399	IP501	32.9		-0.10	
455	IP501	29		-0.78	
494	IP501	28.7		-0.83	
511		----		----	
557	IP501	31.88325		-0.28	
608	IP501	26		-1.30	
631	IP470	28.8		-0.81	
663	IP501	29.41		-0.71	
750		----		----	
785	IP470	31.3		-0.38	
823	IP501	31.6		-0.33	
824	IP501	37.5		0.70	
825	IP501	38		0.79	
850		----		----	
851		----		----	
855	IP501	33.1		-0.07	
862	IP501	35.6		0.37	
863	IP501	33.3		-0.03	
864	IP501	34		0.09	
865	IP501	34.2		0.12	
875	IP501	37		0.61	
902	IP501	35		0.26	
912	IP501	40		1.13	
922	IP470	32.0		-0.26	
963	IP501	34		0.09	
971	IP501	38.2		0.82	
974	IP501	38		0.79	
1039	IP501	36.5		0.53	
1121	IP501	34.1		0.11	
1135	IP501	35.11		0.28	
1140	IP501	22.10		-1.98	
1233	IP501	23.5		-1.74	
1275	IP501	35.066		0.28	
1299		----		----	
1345	IP470	29.7		-0.66	
1356	IP501	37		0.61	
1412	IP501	33.0		-0.08	
1556	IP501	36.4		0.51	
1564		----		----	
1586	IP501	34		0.09	
1613	IP501	32.1		-0.24	
1643	D5185	36.57		0.54	
1677	IP501	31		-0.43	
1720		----		----	
1724	IP501	34.29		0.14	
1740	IP501	33.2		-0.05	
1776	IP501	36.5		0.53	

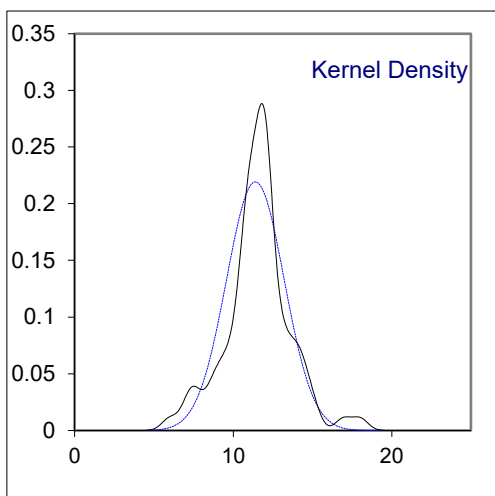
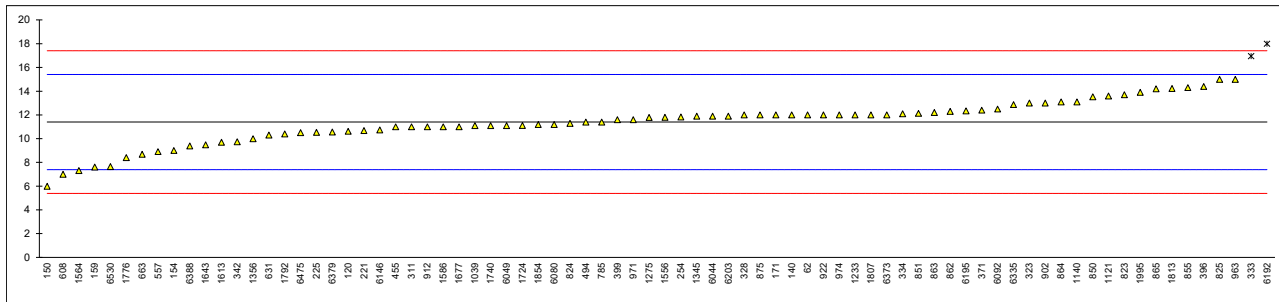
lab	method	value	mark	z(targ)	remarks
1792	IP501	34.8		0.23	
1796		----		----	
1807	IP501	34		0.09	
1813	IP501	38.2001		0.82	
1833		----		----	
1854	IP501	34.3		0.14	
1995	IP501	29.2		-0.75	
6044	IP501	34.33		0.15	
6049	IP501	33.12		-0.06	
6075		----		----	
6080	IP501	38.2		0.82	
6092	IP501	39.9		1.12	
6142		----		----	
6146	In house	37.84		0.76	
6192		----		----	
6195	IP501	34.05		0.10	
6203	IP501	38.7		0.91	
6204		----		----	
6335	D5185	38.74		0.91	
6373	IP501	36		0.44	
6379	D5185	38.14		0.81	
6388	IP501	30.21		-0.57	
6396		----		----	
6475	EN15944/IP501	34.33		0.15	
6497	DIN51399-2	35.2		0.30	
6530	IP501	29.05		-0.77	
normality		OK			
n		76			
outliers		0			
mean (n)		33.48			
st.dev. (n)		3.966			
R(calc.)		11.11			
st.dev.(IP470:05)		5.747			
R(IP470:05)		16.09			
Compare					
R(IP501:05R19)		11.60			



Determination of Sodium as Na on sample #23106; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62	IP501	12		0.30	
90		----		----	
92		----		----	
120	IP501	10.62		-0.39	
140	IP501	12		0.30	
150	IP501	6		-2.69	
154	IP501	9		-1.20	
159	IP501	7.611		-1.89	
171	IP470	12		0.30	
194		----		----	
221	IP501	10.68		-0.36	
225	IP501	10.54		-0.43	
237		----		----	
254	IP501	11.82		0.21	
300		----		----	
311	IP501	11		-0.20	
323	IP501	13		0.80	
328	IP501	12		0.30	
331		----		----	
333	IP501	16.95	DG(0.05)	2.77	
334	IP501	12.1		0.35	
342	IP501	9.7305		-0.83	
343		----		----	
356		----		----	
371	IP470	12.4		0.50	
391		----		----	
396	IP501	14.4	C	1.50	First reported 19.4
398		----		----	
399	IP501	11.6		0.10	
455	IP501	11		-0.20	
494	IP501	11.4		0.00	
511		----		----	
557	IP501	8.91015		-1.24	
608	IP501	7		-2.20	
631	IP470	10.3		-0.55	
663	IP501	8.68		-1.36	
750		----		----	
785	IP470	11.4		0.00	
823	IP501	13.7		1.15	
824	IP501	11.3		-0.05	
825	IP501	15		1.80	
850	IP501	13.52		1.06	
851	IP470	12.13692394		0.37	
855	IP501	14.3		1.45	
862	IP501	12.3		0.45	
863	IP501	12.2		0.40	
864	IP501	13.1		0.85	
865	IP501	14.2		1.40	
875	IP501	12		0.30	
902	IP501	13		0.80	
912	IP501	11		-0.20	
922	IP470	12.0		0.30	
963	IP501	15		1.80	
971	IP501	11.6		0.10	
974	IP501	12		0.30	
1039	IP501	11.1		-0.15	
1121	IP501	13.6		1.10	
1135		----		----	
1140	IP501	13.10		0.85	
1233	IP501	12		0.30	
1275	IP501	11.791		0.20	
1299		----		----	
1345	IP470	11.9		0.25	
1356	IP501	10		-0.70	
1412		----		----	
1556	IP501	11.8		0.20	
1564	D5863-B	7.32		-2.04	
1586	IP501	11		-0.20	
1613	IP501	9.7		-0.85	
1643	D5185	9.484		-0.96	
1677	IP501	11		-0.20	
1720		----		----	
1724	IP501	11.12		-0.14	
1740	IP501	11.1		-0.15	
1776	IP501	8.4		-1.50	

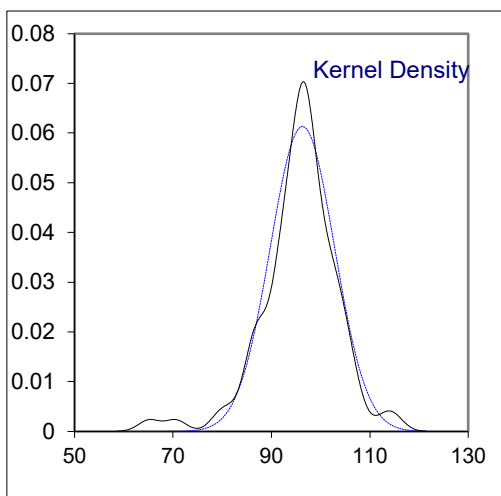
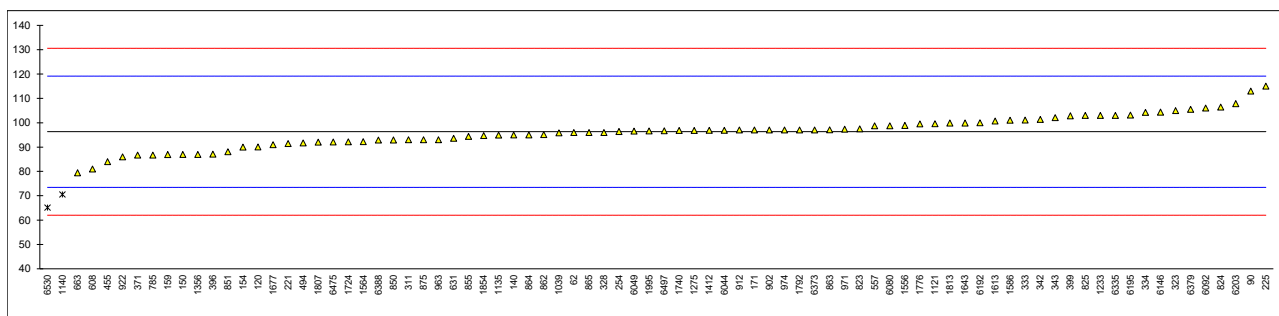
lab	method	value	mark	z(targ)	remarks
1792	IP501	10.4	C	-0.50	First reported 19.4
1796		----			
1807	IP501	12		0.30	
1813	IP501	14.2314		1.41	
1833		----	W	----	Test result withdrawn, reported 12.08
1854	IP501	11.2		-0.10	
1995	IP501	13.9		1.25	
6044	IP501	11.90		0.25	
6049	IP501	11.1		-0.15	
6075		----			
6080	IP501	11.2		-0.10	
6092	IP501	12.5		0.55	
6142		----			
6146	In house	10.74		-0.33	
6192	IP501	18.0	DG(0.05)	3.29	
6195	IP501	12.34		0.47	
6203	IP501	11.9		0.25	
6204		----			
6335	D5185	12.87		0.73	
6373	IP501	12		0.30	
6379	D5185	10.565		-0.42	
6388	IP501	9.397		-1.00	
6396		----			
6475	EN15944/IP501	10.50		-0.45	
6497		----			
6530	IP501	7.65		-1.87	
normality		OK			
n		76			
outliers		2			
mean (n)		11.40			
st.dev. (n)		1.819			
R(calc.)		5.09			
st.dev.(IP470:05)		2.004			
R(IP470:05)		5.61			
Compare					
R(IP501:05R19)		4.07			



Determination of Vanadium as V on sample #23106; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62	IP501	96		-0.03	
90	D5863-B	113		1.46	
92		----		----	
120	IP501	90.06		-0.55	
140	IP501	95		-0.11	
150	IP501	87	C	-0.81	First reported 60
154	IP501	90		-0.55	
159	IP501	86.935		-0.82	
171	IP501	97		0.06	
194		----		----	
221	IP501	91.45		-0.43	
225	IP501	115		1.64	
237		----		----	
254	IP501	96.37		0.01	
300		----		----	
311	IP501	93		-0.29	
323	IP501	105		0.76	
328	IP501	96		-0.03	
331		----		----	
333	IP501	101.09		0.42	
334	IP501	104.2		0.69	
342	IP501	101.3020		0.44	
343	D5708	102.1		0.51	
356		----		----	
371	IP470	86.7		-0.84	
391		----		----	
396	IP501	87.1		-0.81	
398		----		----	
399	IP501	102.8		0.57	
455	IP501	84		-1.08	
494	IP501	91.7		-0.40	
511		----		----	
557	IP501	98.6805		0.21	
608	IP501	81		-1.34	
631	D5863-A	93.6		-0.24	
663	IP501	79.44		-1.48	
750		----		----	
785	IP470	86.7		-0.84	
823	IP501	97.5		0.10	
824	IP501	106.4		0.88	
825	IP501	103		0.59	
850	IP501	92.9		-0.30	
851	IP501	88.056761		-0.72	
855	IP501	94.4		-0.17	
862	IP501	95.1		-0.11	
863	IP501	97.1		0.07	
864	IP501	95		-0.11	
865	IP501	96.0		-0.03	
875	IP501	93		-0.29	
902	IP501	97		0.06	
912	IP501	97		0.06	
922	IP470	86.0		-0.90	
963	IP501	93		-0.29	
971	IP501	97.3		0.09	
974	IP501	97		0.06	
1039	IP501	95.8		-0.04	
1121	IP501	99.6		0.29	
1135	IP501	94.95		-0.12	
1140	IP501	70.55	R(0.05)	-2.25	
1233	IP501	103		0.59	
1275	IP501	96.816		0.04	
1299		----		----	
1345		----		----	
1356	IP501	87		-0.81	
1412	IP501	96.9		0.05	
1556	IP501	98.9		0.23	
1564	D5863-B	92.22		-0.36	
1586	IP501	101		0.41	
1613	IP501	100.7		0.38	
1643	D5185	99.87		0.31	
1677	IP501	91		-0.46	
1720		----		----	
1724	IP501	92.14		-0.36	
1740	IP501	96.8		0.04	
1776	IP501	99.5		0.28	

lab	method	value	mark	z(target)	remarks
1792	IP501	97.0		0.06	
1796		-----			
1807	IP501	92		-0.38	
1813	IP501	99.8694		0.31	
1833		-----	W		Test result withdrawn, reported 72.79
1854	IP501	94.7		-0.14	
1995	IP501	96.6		0.03	
6044	IP501	96.9		0.05	
6049	IP501	96.55		0.02	
6075		-----			
6080	IP501	98.7		0.21	
6092	IP501	106		0.85	
6142		-----			
6146	In house	104.32		0.70	
6192	IP501	100.0		0.32	
6195	IP501	103.09		0.59	
6203	IP501	107.8		1.01	
6204		-----			
6335	D5185	103.00		0.59	
6373	IP501	97		0.06	
6379	D5185	105.5		0.80	
6388	IP501	92.86		-0.30	
6396		-----			
6475	EN15944/IP501	92.07		-0.37	
6497	DIN51399-2	96.7		0.03	
6530	IP501	65.15	R(0.01)	-2.73	
normality		OK			
n		80			
outliers		2			
mean (n)		96.31			
st.dev. (n)		6.510			
R(calc.)		18.23			
st.dev.(IP470:05)		11.426			
R(IP470:05)		31.99			
Compare					
R(IP501:05R19)		26.03			



Determination of Calcium as Ca on sample #23106; results in mg/kg

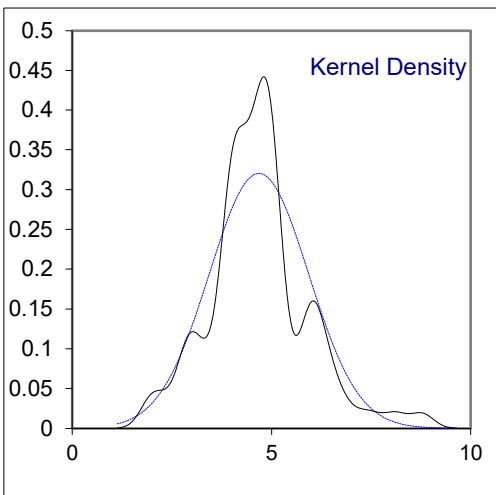
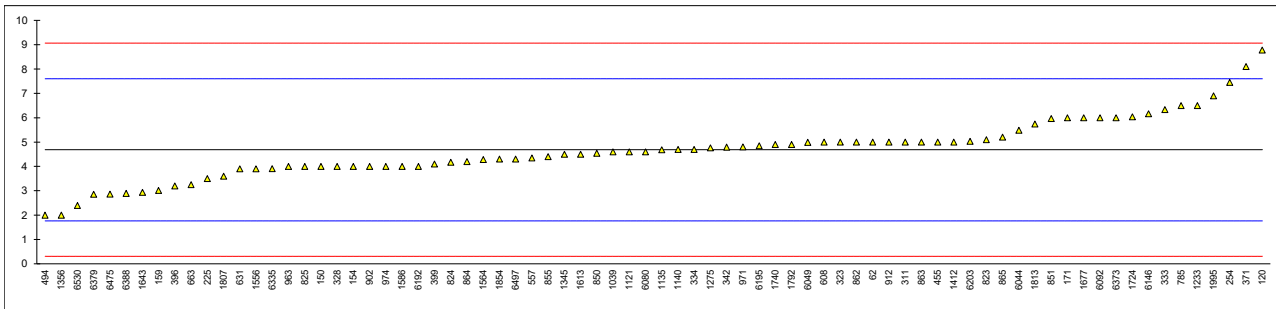
lab	method	value	mark	z(targ)	remarks
62	IP501	5		0.22	
90		----		----	
92		----		----	
120	IP501	8.775		2.80	
140	IP501	<3		----	
150	IP501	4		-0.47	
154	IP501	4.0	C	-0.47	First reported <0.01
159	IP501	3.0115		-1.15	
171	IP501	6		0.90	
194		----		----	
221		----		----	
225	IP501	3.5		-0.81	
237		----		----	
254	IP501	7.451		1.90	
300		----		----	
311	IP501	5		0.22	
323	IP501	5		0.22	
328	IP501	4		-0.47	
331		----		----	
333	IP501	6.33		1.13	
334	IP501	4.7		0.01	
342	IP501	4.7918		0.07	
343		----		----	
356		----		----	
371	IP470	8.1		2.34	
391		----		----	
396	IP501	3.2		-1.02	
398		----		----	
399	IP501	4.1		-0.40	
455	IP501	5		0.22	
494	IP501	2.0		-1.84	
511		----		----	
557	IP501	4.3462		-0.23	
608	IP501	5		0.22	
631	IP470	3.9		-0.54	
663	IP501	3.25		-0.98	
750		----		----	
785	IP470	6.5		1.24	
823	IP501	5.1		0.28	
824	IP501	4.17		-0.35	
825	IP501	4		-0.47	
850	IP501	4.54		-0.10	
851	IP501	5.963632491		0.88	
855	IP501	4.4		-0.19	
862	IP501	5		0.22	
863	IP501	5.0		0.22	
864	IP501	4.2		-0.33	
865	IP501	5.2		0.35	
875		----		----	
902	IP501	4		-0.47	
912	IP501	5		0.22	
922		----		----	
963	IP501	4		-0.47	
971	IP501	4.8		0.08	
974	IP501	4		-0.47	
1039	IP501	4.6		-0.06	
1121	IP501	4.6		-0.06	
1135	IP501	4.68		0.00	
1140	IP501	4.696		0.01	
1233	IP501	6.5		1.24	
1275	IP501	4.763		0.05	
1299		----		----	
1345	IP470	4.5		-0.13	
1356	IP501	2		-1.84	
1412	IP501	5.0		0.22	
1556	IP501	3.9		-0.54	
1564	IP501	4.28		-0.28	
1586	IP501	4		-0.47	
1613	IP501	4.5		-0.13	
1643	D5185	2.934		-1.20	
1677	IP501	6		0.90	
1720		----		----	
1724	IP501	6.04		0.93	
1740	IP501	4.9		0.15	
1776		----		----	

lab	method	value	mark	z(targ)	remarks
1792	IP501	4.9		0.15	
1796		----		----	
1807	IP501	3.6		-0.74	
1813	IP501	5.7425		0.73	
1833		----		----	
1854	IP501	4.3		-0.26	
1995	IP501	6.9		1.52	
6044	IP501	5.48		0.55	
6049	IP501	4.99		0.21	
6075		----		----	
6080	IP501	4.6		-0.06	
6092	IP501	6.0		0.90	
6142		----		----	
6146	In house	6.16		1.01	
6192	IP501	4.0		-0.47	
6195	IP501	4.85		0.11	
6203	IP501	5.03		0.24	
6204		----		----	
6335	D5185	3.91		-0.53	
6373	IP501	6		0.90	
6379	D5185	2.8595		-1.25	
6388	IP501	2.894		-1.23	
6396		----		----	
6475	EN15944/IP501	2.86		-1.25	
6497	DIN51399-2	4.3		-0.26	
6530	IP501	2.4		-1.57	

normality suspect
n 76
outliers 0
mean (n) 4.68
st.dev. (n) 1.244
R(calc.) 3.48
st.dev.(IP470:05) 1.459
R(IP470:05) 4.09

Compare

R(IP501:05R19) 1.76



Determination of Phosphorus as P on sample #23106; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62	IP501	0.3		----	
90		----		----	
92		----		----	
120	IP501	0.436		----	
140	IP501	1		----	
150	IP501	<1.0	C	----	First reported 3
154	IP501	<0.01		----	
159	IP501	0.127		----	
171	IP501	0		----	
194		----		----	
221		----		----	
225	IP501	0.83		----	
237		----		----	
254	IP501	0.630		----	
300		----		----	
311	IP501	<1		----	
323	IP501	<1		----	
328	IP501	<1		----	
331		----		----	
333	IP501	0.29		----	
334	IP501	0.4		----	
342	IP501	0.3566		----	
343		----		----	
356		----		----	
371		----		----	
391		----		----	
396	IP501	<1		----	
398		----		----	
399	IP501	0.3		----	
455	IP501	1		----	
494	IP501	<1		----	
511		----		----	
557	IP501	0.344493		----	
608	IP501	<1		----	
631		----		----	
663	IP501	0.24		----	
750		----		----	
785		----		----	
823	IP501	0.4		----	
824	IP501	0.4		----	
825	IP501	0.462		----	
850	IP501	0.1		----	
851	IP501	0.385373126		----	
855	IP501	0.2		----	
862	IP501	0.6		----	
863	IP501	<1		----	
864	IP501	0.2		----	
865	IP501	<1		----	
875		----		----	
902	IP501	<1		----	
912	IP501	1		----	
922	IP501	<1.0		----	
963	IP501	1		----	
971	IP501	0.6		----	
974	IP501	1		----	
1039	IP501	0.2		----	
1121	IP501	0.35		----	
1135	IP501	0		----	
1140	IP501	1.257		----	
1233	IP501	1		----	
1275	IP501	0.217		----	
1299		----		----	
1345		----		----	
1356	IP501	<1		----	
1412		----		----	
1556		----		----	
1564	IP501	0.25		----	
1586	IP501	<1		----	
1613		----		----	
1643	D5185	1.023		----	
1677	IP501	0.5		----	
1720		----		----	
1724	IP501	<1		----	
1740	IP501	<1		----	
1776		----		----	

lab	method	value	mark	z(targ)	remarks
1792	IP501	0.3		----	
1796		----		----	
1807	IP501	<2.5		----	
1813	IP501	0		----	
1833		<1		----	
1854	IP501	0.4		----	
1995	IP501	1.7		----	
6044	IP501	0		----	
6049	IP501	<1		----	
6075		----		----	
6080	IP501	0.6		----	
6092	IP501	0.5		----	
6142		----		----	
6146	In house	0		----	
6192	IP501	1.0		----	
6195	IP501	0.89		----	
6203	IP501	<1		----	
6204		----		----	
6335	D5185	<10		----	
6373	IP501	8	f+?	----	Possibly a false positive test result?
6379	D5185	0.415		----	
6388	IP501	0.116		----	
6396		----		----	
6475	EN15944/IP501	0		----	
6497	DIN51399-2	<5		----	
6530	IP501	0.0		----	
	n	65			
	mean (n)	<1			Application range IP510:05R19: 1 – 60 mg/kg

Determination of Zinc as Zn on sample #23106; results in mg/kg

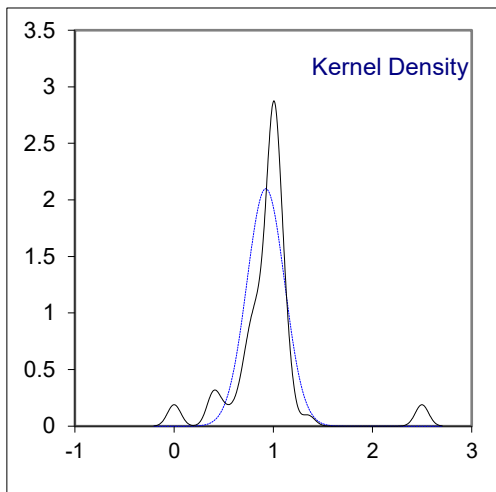
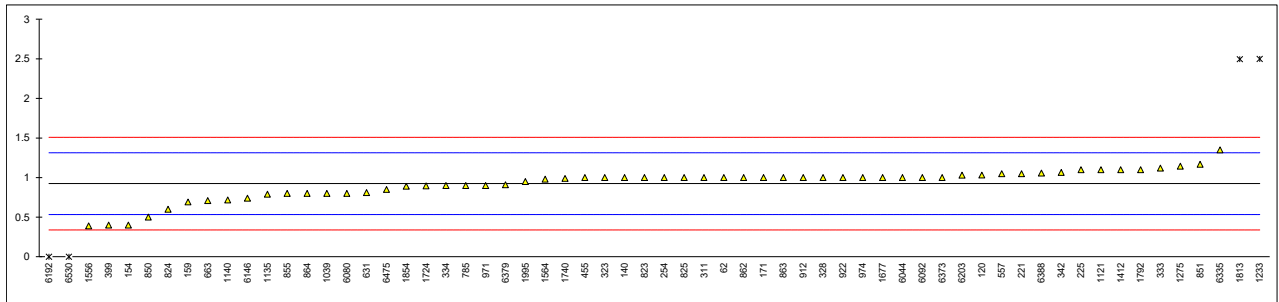
lab	method	value	mark	z(targ)	remarks
62	IP501	1		0.39	
90		----		----	
92		----		----	
120	IP501	1.032		0.55	
140	IP501	1		0.39	
150	IP501	<1.0	C	----	First reported 3
154	IP501	0.4		-2.68	
159	IP501	0.6925		-1.18	
171	IP470	1		0.39	
194		----		----	
221	IP501	1.05		0.65	
225	IP501	1.1		0.90	
237		----		----	
254	IP501	1.000		0.39	
300		----		----	
311	IP501	1		0.39	
323	IP501	1		0.39	
328	IP501	1		0.39	
331		----		----	
333	IP501	1.12		1.01	
334	IP501	0.9		-0.12	
342	IP501	1.0647		0.72	
343		----		----	
356		----		----	
371		----		----	
391		----		----	
396	IP501	<1		----	
398		----		----	
399	IP501	0.4		-2.68	
455	IP501	1		0.39	
494	IP501	<1		----	
511		----		----	
557	IP501	1.0493945		0.64	
608	IP501	<1		----	
631	IP470	0.81		-0.58	
663	IP501	0.71		-1.10	
750		----		----	
785	IP470	0.9		-0.12	
823	IP501	1.0		0.39	
824	IP501	0.6		-1.66	
825	IP501	1		0.39	
850	IP501	0.5		-2.17	
851	IP501	1.167434307		1.25	
855	IP501	0.8		-0.63	
862	IP501	1		0.39	
863	IP501	1		0.39	
864	IP501	0.8		-0.63	
865	IP501	<1		----	
875		----		----	
902	IP501	<1		----	
912	IP501	1		0.39	
922	IP470	1.0		0.39	
963	IP501	<1		----	
971	IP501	0.9		-0.12	
974	IP501	1		0.39	
1039	IP501	0.8		-0.63	
1121	IP501	1.1		0.90	
1135	IP501	0.79		-0.69	
1140	IP501	0.716		-1.06	
1233	IP501	2.5	R(0.01)	8.08	
1275	IP501	1.143		1.12	
1299		----		----	
1345		----		----	
1356	IP501	<1		----	
1412	IP501	1.1		0.90	
1556	IP501	0.39		-2.73	
1564	IP501	0.98		0.29	
1586	IP501	<1		----	
1613	IP501	<1.0		----	
1643		----		----	
1677	IP501	1		0.39	
1720		----		----	
1724	IP501	0.896		-0.14	
1740	IP501	0.99		0.34	
1776		----		----	

lab	method	value	mark	z(target)	remarks
1792	IP501	1.1		0.90	
1796		----		----	
1807	IP501	<2.5		----	
1813	IP501	2.4967	R(0.01)	8.06	
1833		----	W	----	Test result withdrawn, reported <1
1854	IP501	0.89		-0.17	
1995	IP501	0.95		0.13	
6044	IP501	1		0.39	
6049	IP501	<1		----	
6075		----		----	
6080	IP501	0.8		-0.63	
6092	IP501	1.0		0.39	
6142		----		----	
6146	In house	0.74		-0.94	
6192	IP501	0	R(0.01)	-4.73	
6195	IP501	<1		----	
6203	IP501	1.03		0.54	
6204		----		----	
6335	D5185	1.35		2.18	
6373	IP501	1		0.39	
6379	D5185	0.9095		-0.07	
6388	IP501	1.057		0.68	
6396		----		----	
6475	EN15944/IP501	0.85		-0.38	
6497	DIN51399-2	<5		----	
6530	IP501	0.0	R(0.01)	-4.73	

normality suspect
n 58
outliers 4
mean (n) 0.92
st.dev. (n) 0.190
R(calc.) 0.53
st.dev.(IP470:05) 0.195
R(IP470:05) 0.55

Compare

R(IP501:05R19) 0.48



APPENDIX 2 Analytical details of the determination Total Acid Number

lab	End point determination	Volume solvent	lab	End point determination	Volume solvent	lab	End point determination	Volume solvent
62	---	---	864	Inflection Point	125 mL	6192	---	---
90	---	---	865	Inflection Point	125 mL	6203	Inflection Point	125 mL
92	Inflection Point	60 mL	866	Inflection Point	125 mL	6279	---	---
120	---	---	870	Inflection Point	125 mL	6335	BEP pH 11	125 mL
140	BEP pH 11	125 mL	875	---	---	6346	---	---
150	---	---	886	---	---	6373	BEP pH 11	125 mL
154	---	---	902	Inflection Point	125 mL	6416	---	---
158	---	---	912	---	---	6447	---	---
159	---	---	922	Inflection Point	125 mL	6475	---	---
169	---	---	962	Inflection Point	60 mL	6497	BEP pH 10	60 mL
171	Inflection Point	60 mL	963	Inflection Point	60 mL	6530	Inflection Point	125 mL
194	---	---	971	Inflection Point	125 mL			
221	Inflection Point	---	974	Inflection Point	125 mL			
224	---	---	982	---	---			
225	---	---	1039	Inflection Point	125 mL			
237	---	---	1082	---	---			
238	---	---	1121	BEP pH 10	125 mL			
253	---	---	1126	---	---			
254	---	---	1135	Inflection Point	125 mL			
300	Inflection Point	60 mL	1140	Inflection Point	125 mL			
309	BEP pH 10	125 mL	1177	---	---			
311	---	---	1218	---	---			
313	---	---	1233	Inflection Point	60 mL			
323	Inflection Point	125 mL	1254	---	---			
328	---	---	1266	---	---			
331	---	---	1275	Inflection Point	125 mL			
333	---	---	1299	---	---			
334	Inflection Point	125 mL	1340	Inflection Point	125 mL			
335	---	---	1345	---	125 mL			
339	---	60 mL	1356	BEP pH 10	60 mL			
342	BEP pH 10	125 mL	1412	Inflection Point	125 mL			
343	Inflection Point	125 mL	1459	---	---			
349	---	---	1498	---	---			
356	---	---	1556	BEP pH 10	125 mL			
371	---	---	1558	Inflection Point	125 mL			
391	---	---	1564	Inflection Point	60 mL			
396	---	---	1586	Inflection Point	125 mL			
398	---	---	1613	Inflection Point	60 mL			
399	---	---	1631	---	---			
455	Inflection Point	60 mL	1643	BEP pH 10	60 mL			
494	BEP pH 10	125 mL	1677	Inflection Point	125 mL			
495	---	---	1720	---	---			
511	---	---	1724	---	---			
557	Inflection Point	125 mL	1728	---	---			
562	---	---	1740	Inflection Point	60 mL			
575	BEP pH 10	60 mL	1761	---	---			
603	Inflection Point	125 mL	1776	BEP pH 10	125 mL			
604	---	---	1792	Inflection Point	60 mL			
608	Inflection Point	125 mL	1796	---	---			
631	---	---	1807	---	---			
663	BEP pH 10	60 mL	1833	---	---			
671	---	---	1849	---	---			
750	---	---	1854	Inflection Point	125 mL			
753	---	---	1906	---	---			
759	---	---	1956	---	---			
785	---	---	1964	---	---			
823	---	125 mL	1995	Inflection Point	125 mL			
824	Inflection Point	125 mL	2835	---	---			
825	Inflection Point	125 mL	6039	---	---			
850	Inflection Point	125 mL	6044	Inflection Point	60 mL			
851	---	---	6049	BEP pH 10	125 mL			
855	Inflection Point	125 mL	6075	---	---			
858	Inflection Point	125 mL	6092	---	---			
859	Inflection Point	125 mL	6139	Inflection Point	125 mL			
862	Inflection Point	125 mL	6142	---	---			
863	Inflection Point	125 mL	6146	BEP pH 10	60 mL			

APPENDIX 3**Number of participants per country**

1 lab in AUSTRALIA	1 lab in KINGDOM OF BAHRAIN
1 lab in AZERBAIJAN	4 labs in KOREA, Republic of
5 labs in BELGIUM	2 labs in LATVIA
1 lab in BOSNIA and HERZEGOVINA	3 labs in MALAYSIA
1 lab in BRAZIL	2 labs in MALTA
3 labs in CANADA	1 lab in MARTINIQUE
3 labs in CHILE	6 labs in NETHERLANDS
11 labs in CHINA, People's Republic	2 labs in NIGERIA
1 lab in COLOMBIA	1 lab in NORTH MACEDONIA, Republic of
1 lab in COTE D'IVOIRE	1 lab in PAKISTAN
1 lab in CYPRUS	1 lab in PERU
1 lab in DJIBOUTI	1 lab in PHILIPPINES
1 lab in EGYPT	2 labs in ROMANIA
2 labs in ESTONIA	6 labs in RUSSIAN FEDERATION
3 labs in FINLAND	2 labs in SAUDI ARABIA
8 labs in FRANCE	1 lab in SENEGAL
1 lab in GEORGIA	1 lab in SINGAPORE
3 labs in GERMANY	11 labs in SPAIN
6 labs in GREECE	1 lab in SUDAN
1 lab in GUAM	3 labs in SWEDEN
1 lab in GUINEA REPUBLIC	1 lab in TAIWAN
1 lab in HONG KONG	1 lab in TANZANIA
1 lab in INDIA	1 lab in THAILAND
1 lab in IRAN, Islamic Republic of	5 labs in TURKEY
2 labs in IRELAND	5 labs in UNITED ARAB EMIRATES
4 labs in ITALY	7 labs in UNITED KINGDOM
1 lab in JORDAN	11 labs in UNITED STATES OF AMERICA
1 lab in KENYA	

APPENDIX 4

Abbreviations

C	= final test result after checking of first reported suspect test result
D(0.01)/D(1)	= outlier in Dixon's outlier test
D(0.05)/D(5)	= straggler in Dixon's outlier test
G(0.01)/G(1)	= outlier in Grubbs' outlier test
G(0.05)/G5	= straggler in Grubbs' outlier test
DG(0.01)/DG(1)	= outlier in Double Grubbs' outlier test
DG(0.05)/DG(5)	= 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	= calculation difference between reported test result and result calculated by iis
W	= test result withdrawn on request of participant
ex	= test result excluded from statistical evaluation
n.a.	= not applicable
n.e.	= not evaluated
n.d.	= not detected
fr.	= first reported
f+?	= possibly a false positive test result?
f-?	= possibly a false negative test result?
SDS	= Safety Data Sheet

Literature

- 1 iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, June 2018
- 2 ISO5725:86
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- 4 ISO13528:05
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- 7 P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
- 8 J.N. Miller, Analyst, 118, 455, (1993)
- 9 Analytical Methods Committee, Technical Brief, No 4, January 2001
- 10 P.J. Lowthian and M. Thompson, The Royal Society of Chemistry, Analyst, 127, 1359-1364, (2002)
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- 12 Bernard Rosner, Percentage Points for a Generalized ESD Many-Outlier Procedure, Technometrics, 25(2), 165-172, (1983)