Results of Proficiency Test
Fuel Oil
December 2021

CONTENTS

Appendices:

1   INTRODUCTION

Since 1994 the Institute for Interlaboratory Studies (iis) organizes a proficiency scheme for the analysis of Fuel Oil in accordance with the latest version of ISO8217 and ASTM D396 every year and twice per year since 2016. During the annual proficiency testing program 2021/2022 it was decided to continue the round robin for the analysis of Fuel Oil.

In this interlaboratory study registered for participation:
- 149 laboratories in 57 countries for Fuel Oil iis21F03
- 111 laboratories in 45 countries for Fuel Oil Metals iis21F03M
- 55 laboratories in 27 countries for Fuel Oil Bromine and P-value iis21F03Br
- 66 laboratories in 35 countries for Fuel Oil Compatibility iis21F03C

In total 160 laboratories in 60 different countries registered for participation in one or more proficiency tests. See appendix 3 for the number of participants per country. In this report the results of the 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, from one up to four different samples of Fuel Oil, see table below.

Sample ID	PT ID	Quantity	Purpose
#21275	iis21F03	1x 1L	Regular analyzes
#21276	iis21F03M	1x 100mL	Metal analyzes
#21277	iis21F03Br	1x 1L	Bromine number & P-value
#21278	iis21F03C	1x paper filter	Compatibility rating

Table 1: Fuel Oil samples used in PT iis21F03

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 sample for the regular analyzes in Fuel Oil a batch of approximately 200 liters was obtained from a third party. After homogenization 170 amber glass bottles of 1L were filled and labelled #21275.
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 #21275-1	1006.7 G(0.05)
sample #21275-2	1007.5
sample #21275-3	1007.5
sample #21275-4	1007.3
sample #21275-5	1007.4
sample #21275-6	1007.0
sample #21275-7	1007.3
sample #21275-8	1007.5

Table 2: homogeneity test results of subsamples #21275

Subsample 1 is a Grubbs outlier and therefore excluded for statistical evaluation of the homogeneity

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)	0.5
reference test method	ISO12185:96
0.3 x R (reference test method)	0.5

Table 3: evaluation of the repeatability of subsamples #21275

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 sample for the analyzes of Metals in Fuel Oil a batch of approximately 20 liters of Fuel Oil which contains a number of metals was obtained from a third party. After homogenization 138 PE bottles of 100mL were filled and labelled #21276.
The homogeneity of the subsamples was checked by determination of Nickel and Vanadium in accordance with IP501 on 8 stratified randomly selected subsamples.

	Nickel in mg/kg	Vanadium in mg/kg
sample #21276-1	32	89
sample #21276-2	31	89
sample #21276-3	32	89
sample #21276-4	31	88
sample #21276-5	30	87
sample #21276-6	31	86
sample #21276-7	32	86
sample #21276-8	29	86

Table 4: homogeneity test results of subsamples #21276

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

	Nickel in mg/kg	Vanadium in mg/kg
r (observed)	2.99	3.96
reference test method	IP470:05	IP470:05
0.3 x R (reference test method)	4.63	9.15

Table 5: evaluation of the repeatabilities of subsamples #21276

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.

For the sample for Bromine and P-value determination in Fuel Oil a batch of approximately 200L of Fuel Oil was obtained from a third party. After homogenization 75 amber glass bottles of 1L were filled and labelled #21277.
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 #21277-1	987.1
sample #21277-2	986.9
sample #21277-3	986.9
sample #21277-4	987.0
sample #21277-5	986.9
sample #21277-6	986.9
sample #21277-7	986.9
sample #21277-8	986.9

Table 6: homogeneity test results of subsamples #21277

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)	0.2
reference test method	ISO12185:96
0.3 x R (reference test method)	0.5

Table 7: evaluation of the repeatability of subsamples #21277

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 sample for the Compatibility determination two different batches of Fuel Oil, which were not compatible, were mixed according to ASTM D4740 and the mixture was applied to paper filters as per ASTM D4740. The paper filters with a spot were kept in a tin box and labelled #21278.
The homogeneity was done visually. The homogeneity of the subsamples was assumed.

Depending on the registration of the participant the appropriate set of PT samples was sent on November 24, 2021. 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 #21275: 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), Kinematic Viscosity (at 50°C and 100°C), Kinematic Viscosity Stabinger (at 50°C and 100°C), Nitrogen, Pour Point (Lower, Upper and Automated), Sediment by Extraction, Total Sediment (Existent, Accelerated and Potential), 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 Analyzer). Also, some extra information was requested about the determination of Total Acid Number.
On sample #21276 it was requested to determine Aluminum as Al, Silicon as Si, Sum of 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.
On sample #21277 Bromine Number on distillate <360°C and P-value and on sample #21278 it was requested to report the Compatibility rating.

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 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:

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

The $z_{(target)}$ scores are listed in the test result tables in appendix 1.

Absolute values for z<2 are very common and absolute values for z>3 are very rare. 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

Some problems were encountered with the dispatch of the samples due to COVID-19 pandemic. Therefore, the reporting time on the data entry portal was extended with one week.
In the Fuel Oil regular round thirteen participants reported test results after the extended reporting date and fourteen other participants did not report any test results at all.
In the Metals in Fuel Oil PT seven participants reported test results after the extended reporting date and sixteen other participants did not report any test results at all.

In the Bromine Number and P-value in Fuel Oil PT six participants reported the test results after the extended reporting date and twelve other participants did not report any test results at all.

For the Fuel Oil Compatibility rating PT seven participants reported the test results after the extended reporting date and seven other participants did not report any test results at all.

In total 139 participants reported 3146 numerical test results. Observed were 63 outlying test results, which is 2.0%. In proficiency studies outlier percentages of 3% - 7.5% are quite normal.

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

4.1   EVALUATION PER SAMPLE AND PER TEST

In this section the reported test results are discussed per sample and per test. The test methods which 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. D473) and an added designation for the year that the test method was adopted or revised (e.g. D473:07e1). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D473:07e1(2017)). In the test results tables of appendix 1 only the test method number (sub) and year of adoption or revision (e.g. D473:07e1) will be used.

sample #21275

Total Acid Number: This determination was very problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier was not at all in agreement with the requirements of ASTM D664:18e2 procedure A. Therefore, no z-scores were calculated. When evaluated separately for the type of end point used the calculated reproducibilities after rejection of the statistical outlier were not in agreement with the corresponding requirements of ASTM D664:18e2 procedure A.

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 D1298:12b(2017).

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(2018) or ASTM D482:19.

Asphaltenes: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of IP143:04(2021). ASTM D6560:17 is equivalent to IP143:04(2021).

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

Carbon Residue micro method: This determination 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 is not in agreement with the stricter requirements of ASTM D4530:15(2020).

Conradson Carbon Residue: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D189:06(2019).

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. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ISO2719-B:16.

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

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

Kinematic Viscosity at 50°C: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility 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.

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.

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. However, the calculated reproducibility is not in agreement with the requirements of ASTM D5762:18a.
When the test results of ASTM D5762 Gravimetric and Volumetric were evaluated separately both calculated reproducibilities were not in agreement with the requirements of ASTM D5762:18a.

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

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

Pour Point Automated: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of ASTM D5950:14(2020).

Sediment by Extraction: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D473:07e1(2017).

Total Sediment Existent (TSE): 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 IP375:11(2018).

Total Sediment Accelerated (TSA): 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 IP390:11(2017). IP390:11 is identical to ISO10307-2:09 and technically equivalent to ASTM D4870:18.

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 IP390:11(2017). IP390:11 is identical to ISO10307-2:09 and technically equivalent to ASTM D4870:18.

Total Sulfur: 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 ISO8754:03 but not with the stricter requirements of ASTM D4294:21.

Water by distillation: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ISO3733:99 and ASTM D95:13(2018).

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

Vacuum Distillation at 10 mmHg but reported as AET: This determination was not problematic. In total four statistical outliers were observed over eight parameters. All calculated reproducibilities after rejection of the statistical outliers are in agreement with the requirements of ASTM D1160:18.

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

sample #21276

Aluminum: This determination may be problematic depending on the test method used. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of IP470:05 but not in agreement with the stricter requirements of IP501:05(2019).

Silicon: This determination may be problematic depending on the test method used. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of IP470:05 but not in agreement with the stricter requirements of IP501:05(2019).

Sum Aluminum and Silicon: This determination may be problematic depending on the test method used. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of IP470:05 but not in agreement with the stricter requirements of IP501:05(2019).

Iron: This determination may be problematic depending on the test method used. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of IP470:05 but not in agreement with the stricter requirements of IP501:05(2019).

Nickel: 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 IP501:05(2019).

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 IP501:05(2019).

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 IP501:05(2019).

Calcium: This determination may be problematic depending on the test method used. Five statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of IP470:05 but not in agreement with the stricter requirements of IP501:05(2019).

Phosphorus: This determination was not problematic. Almost all of the reporting participants agreed on a test result near or below the application range of IP501:05(2019). Therefore, no z-scores were calculated.

Zinc: This determination was not problematic. Almost all of the reporting participants agreed on a test result near or below the application range of IP470:05. Therefore, no z-scores were calculated.

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.

sample #21277

Bromine Number: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ASTM D1159:07(2017).

P-value: 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 SMS1600.

sample #21278

Compatibility: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of ASTM D4740-M:20.

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 literature reference test methods (in casu ASTM, ISO and IP test methods) are presented in the next tables.

Parameter	unit	n	average	2.8 * sd	R(lit)
Total Acid Number	mg KOH/g	73	0.10	0.10	(0.02)
API Gravity		77	8.8	0.2	0.5
Ash Content	%M/M	94	0.030	0.006	0.005
Asphaltenes	%M/M	63	8.26	1.73	1.65
Calc. Carbon Aromaticity Index		80	863.0	1.9	2.2
Carbon Residue micro method	%M/M	91	15.77	1.21	1.54
Conradson Carbon Residue	%M/M	31	15.97	1.33	2.51
Density at 15°C	kg/m^3	119	1008.0	1.2	1.5
Flash Point PMcc	°C	116	99.4	5.1	6
Heat of Combustion (Gross)	MJ/kg	60	41.92	0.40	0.40
Heat of Combustion (Net)	MJ/kg	57	39.71	0.39	0.40
Kinematic Viscosity at 50°C	mm^2/s	105	712.9	38.4	60.3
Kinematic Viscosity at 100°C	mm^2/s	85	48.08	1.72	5.80
Viscosity Stabinger at 50°C	mm^2/s	22	714.3	32.0	73.5
Viscosity Stabinger at 100°C	mm^2/s	23	48.13	2.26	3.46
Nitrogen	mg/kg	41	3716	1574	989
Pour Point, Lower	°C	50	4.6	7.2	9
Pour Point, Upper	°C	83	7.9	7.8	9
Pour Point Automated, Δ3°C	°C	25	2.7	6.1	6.1
Sediment by Extraction	%M/M	68	0.019	0.024	0.038
Total Sediment Existent (TSE)	%M/M	75	0.017	0.018	0.038
Total Sediment Accel. (TSA)	%M/M	70	0.017	0.021	0.038
Total Sediment Potential (TSP)	%M/M	68	0.017	0.021	0.039
Total Sulfur	%M/M	121	3.39	0.23	0.29
Water by distillation	%V/V	91	0.05	0.06	0.2
Water and Sediment	%V/V	36	0.05	0.02	0.11

Parameter	unit	n	average	2.8 * sd	R(lit)
Initial Boiling Point	°C	35	200.0	29.0	49
5% recovered	°C	35	281.9	24.6	26.4
10% recovered	°C	35	328.1	13.8	21.5
20% recovered	°C	35	398.5	13.3	19.9
30% recovered	°C	35	456.2	10.7	17.8
40% recovered	°C	35	495.9	9.9	15.4
50% recovered	°C	29	524.6	11.1	14.3
Final Boiling Point	°C	32	527.7	13.5	27
Total Carbon	%M/M	25	85.6	1.2	2.4
Total Hydrogen	%M/M	26	10.1	0.6	0.7
Total Nitrogen	%M/M	18	0.44	0.19	0.10

Table 8: reproducibilities of tests on sample #21275

For results between brackets no z-scores are calculated

Element	unit	n	average	2.8 * sd	R(lit)
Aluminum as Al	mg/kg	87	6.4	2.4	2.7
Silicon as Si	mg/kg	80	7.2	4.1	5.2
Sum of Aluminum and Silicon	mg/kg	76	13.8	5.8	5.9
Iron as Fe	mg/kg	86	17.6	6.0	10.5
Nickel as Ni	mg/kg	90	33.3	13.4	16.0
Sodium as Na	mg/kg	85	15.7	5.4	6.8
Vanadium as V	mg/kg	92	95.1	15.8	31.8
Calcium as Ca	mg/kg	76	4.2	2.0	4.0
Phosphorus as P	mg/kg	74	<1	n.e.	n.e.
Zinc as Zn	mg/kg	73	<1	n.e.	n.e.

Table 9: reproducibilities of tests on sample #21276

Parameter	unit	n	average	2.8 * sd	R(lit)
Bromine Number	g Br$_2$/100g	38	10.7	3.6	3.8
P-value		29	1.49	0.26	0.21
Compatibility		58	4.0	0.9	1

Table 10: reproducibilities of tests on sample #21277 and #21278

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 DECEMBER 2021 WITH PREVIOUS PTS

	December 2021	June 2021	December 2020	June 2020	December 2019
Number of reporting laboratories	139	159	129	153	137
Number of test results	3146	2744	2778	2810	2945
Number of statistical outliers	63	108	81	89	115
Percentage of statistical outliers	2.0%	3.9%	2.9%	3.2%	3.9%

Table 11: comparison with previous proficiency tests

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

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

Parameter	December 2021	June 2021	December 2020	June 2020	December 2019
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)	+/-	+/-	+	+/-	+/-
Kinematic Viscosity at 50°C	+	++	+	+	-
Kinematic Viscosity at 100°C	++	++	++	+	+
Viscosity Stabinger at 50°C	++	++	++	++	+
Viscosity Stabinger at 100°C	+	++	++	++	++
Nitrogen	-	-	-	-	-
Pour Point Lower	+	-	+	-	+
Pour Point Upper	+	+	+/-	+	+
Pour Point Automated, Δ3°C	+/-	+/-	--	+	+/-
Sediment by Extraction	+	++	+	+	+
Total Sediment Existent (TSE)	++	++	++	++	++
Total Sediment Accel. (TSA)	+	++	++	++	++
Total Sediment Potential (TSP)	+	++	++	++	++
Total Sulfur	+	+	+	+	+
Water by distillation	++	++	++	++	++
Water and Sediment	++	+	+	+	+
Distillation at 10 mmHg to AET	+	+	+	-	+/-

Parameter	December 2021	June 2021	December 2020	June 2020	December 2019
Total Carbon	++	++	+	+	+
Total Hydrogen	+	+	+	+	+
Total Nitrogen	-	-	-	--	+
Aluminum as Al	+	-	-	-	+/-
Silicon as Si	+	+	-	-	+
Sum of 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.	(-)	+/-	-	+
Bromine Number	+/-	n.a.	-	n.a.	+
P-value	-	n.a.	++	n.a.	--
Compatibility	+/-	n.a.	--	n.a.	-

Table 12: comparison determinations against the reference test methods

Results between brackets should be used with due care

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 #21275; results in mg KOH/g

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D664-A	0.12		-----	971	D664-A	0.106		-----
120	D664-A	0.028		-----	974	D664-A	0.105		-----
140		0.127	C	-----	994	D664-A	0.11		-----
150		-----		-----	995	D664-A	0.11		-----
154		-----		-----	996		-----		-----
159		-----		-----	997		-----		-----
168		-----		-----	1040		-----		-----
169		-----		-----	1065	D664-A	0.092		-----
170	D664-A	0.063		-----	1108	D664-A	0.0242		-----
171	D664-A	0.03		-----	1109	D664-A	0.0775		-----
175		-----		-----	1121	D664-A	0.086		-----
212	D664-A	0.09		-----	1126		-----		-----
225		-----		-----	1134	D664-A	0.105		-----
235	D664-A	0.04		-----	1140	IP177	0.08		-----
237	D664-A	0.11		-----	1191		-----		-----
238		-----		-----	1205		-----		-----
253		-----		-----	1212	D664-A	0.078		-----
256		-----		-----	1213		-----		-----
273	D664-A	0.11		-----	1218		-----		-----
309	D664-A	0.07		-----	1299		-----		-----
311	D664-A	<0.10		-----	1353		-----		-----
313		-----		-----	1356	D664-A	0.13		-----
323	D664-A	0.05		-----	1381		-----		-----
328		-----		-----	1397		-----		-----
333		-----		-----	1402	IP177	0.067		-----
334	D664-A	<0.1		-----	1431		-----		-----
339		-----		-----	1491	D664-A	0.0874		-----
342	D664-A	0.09		-----	1510		-----		-----
349		-----		-----	1567	D664-A	0.02		-----
351		-----		-----	1569	D664-A	0.07		-----
356		-----		-----	1585	D664-A	0.090		-----
360	D664-A	0.119		-----	1586	D664-A	0.08		-----
372	D664-A	0.10		-----	1631		-----		-----
381		-----		-----	1636		-----		-----
445		-----		-----	1648	D664-A	0.11		-----
447		-----		-----	1669	D664-A	0.19		-----
455	IP177	<0.01	C	-----	1681		-----		-----
467	D664-A	0.155		-----	1710	D664-A	0.166		-----
507	D664-A	0.156		-----	1720		-----		-----
541		-----		-----	1740	D664-A	0.11		-----
551	D664-A	0.087		-----	1741	ISO6619	0.156		-----
575		-----		-----	1776	D664-A	0.16		-----
621		-----		-----	1796	D664-A	0.08		-----
631	D664-A	0.134		-----	1810		-----		-----
634		-----		-----	1811		-----		-----
657	D664-A	0.08		-----	1854		-----		-----
704	D664-A	0.07		-----	1857	D664-A	0.114		-----
710		-----		-----	1906		-----		-----
752	D664-A	0.084		-----	1938		-----		-----
753		-----		-----	1941	ISO6619	0.09		-----
778		-----		-----	1942		-----		-----
781	D664-A	0.1		-----	1949		-----		-----
785		-----		-----	1986	D664-A	0.08		-----
798		-----		-----	1995	D664-A	0.091		-----
823	D664-A	0.1		-----	2129	D664-A	0.127		-----
824	D664-A	0.13		-----	2146		-----		-----
825		-----		-----	6020		-----		-----
840	D664-A	0.19		-----	6021	D664-A	0.098		-----
872		-----		-----	6024		-----		-----
873	D664-A	0.14		-----	6025	D664-A	0.096		-----
874	D664-A	0.14		-----	6026	D664-A	0.10		-----
875	D664-A	0.14		-----	6049	D664-A	0.10		-----
887	D664-A	0.063		-----	6054		-----		-----
902	D664-A	0.11		-----	6057		-----		-----
904	D664-A	0.117		-----	6075		-----		-----
913		-----		-----	6092		-----		-----
962	D664-A	0.14		-----	6112		-----		-----
963	D664-A	0.10		-----	6114	D664-A	0.111		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131	D664-A	0.079		-----	6340		-----		-----
6142	D664-A	5.21	R(0.01)	-----	6373	D664-A	0.1867		-----
6163		-----		-----	6379		-----		-----
6201	D664-A	0.10		-----	6400	D664-A	0.15		-----
6262		-----	W	-----	6404		-----		-----
6266		-----		-----	6406		-----		-----
6298	D664-A	0.079		-----					

			IP only	BEP only
normality	OK		suspect	OK
n	73		46	13
outliers	1		0	0
mean (n)	0.1024		0.0988	0.1051
st.dev. (n)	0.03653		0.03303	0.04295
R(calc.)	0.1023		0.0925	0.1202
st.dev.(D664-A:18e2 IP 125 mL)	(0.00725)		(0.00699)	----
R(D664-A:18e2 IP 125 mL)	(0.0203)		(0.0196)	----
compare				
R(D664-A:18e2 IP 60 mL)	(0.0621)		(0.0579)	----
R(D664-A:18e2 BEP 125 mL)	(0.0288)		----	(0.0296)
R(D664-A:18e2 BEP 60 mL)	(0.0621)		----	(0.0615)

Lab 140: first reported 0.30
Lab 455: first reported 0.01
Lab 6262: test result withdrawn, first reported 0.24
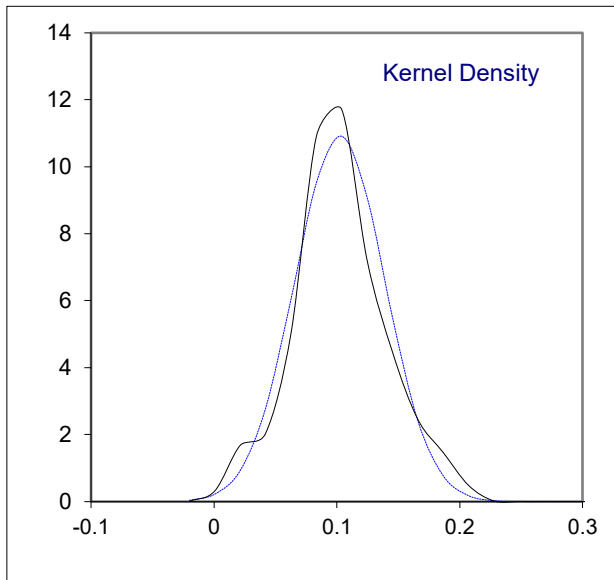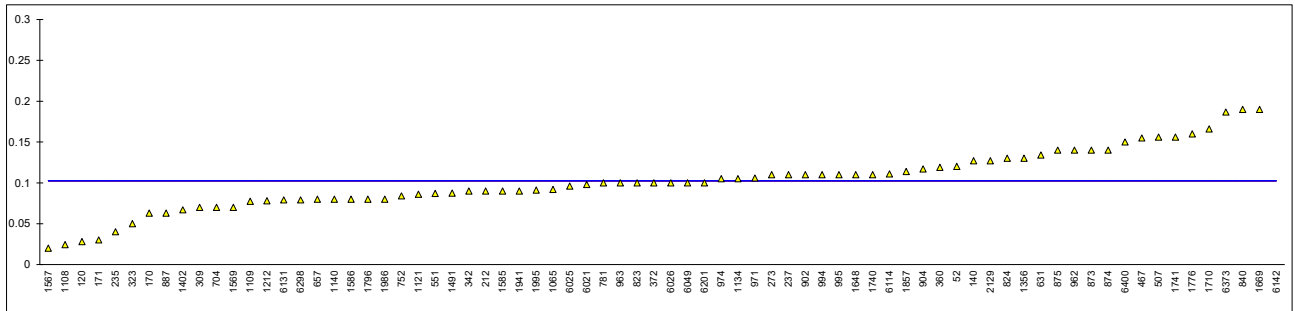
Determination of API Gravity on sample #21275

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4052	8.8		0.10	971	D1298	8.78		-0.01
120	D4052	8.78		-0.01	974	D1298	8.78		-0.01
140	D4052	8.9		0.66	994	D1250	8.8		0.10
150	D287	8.8		0.10	995	D1298	8.8		0.10
154	D4052	8.7		-0.46	996	D1298	8.79		0.04
159	D4052	8.68		-0.57	997	D1298	8.8		0.10
168	D287	9.0		1.22	1040		-----		-----
169	D1298	8.8		0.10	1065		-----		-----
170		-----		-----	1108	ISO12185	8.83		0.27
171	D4052	8.7		-0.46	1109		-----		-----
175		-----		-----	1121	ISO12185	8.83		0.27
212	ISO12185	8.75		-0.18	1126		-----		-----
225	D4052	8.9		0.66	1134	D1298	8.82		0.21
235		-----		-----	1140		-----		-----
237	D4052	8.76		-0.13	1191		-----		-----
238	D1298	8.74		-0.24	1205		-----		-----
253	D4052	8.83		0.27	1212	ISO12185	8.83		0.27
256	D1298	8.7		-0.46	1213		-----		-----
273	D4052	8.5	R(0.01)	-1.58	1218		-----		-----
309		-----		-----	1299		-----		-----
311	D1298	8.82		0.21	1353		-----		-----
313		-----		-----	1356		-----		-----
323	D1298	8.95		0.94	1381		-----		-----
328		-----		-----	1397		-----		-----
333		-----		-----	1402	D4052	8.71		-0.41
334		-----		-----	1431	ISO12185	8.78		-0.01
339		-----		-----	1491		-----		-----
342		-----		-----	1510		-----		-----
349		-----		-----	1567	D4052	8.6		-1.02
351		-----		-----	1569		-----		-----
356	ISO12185	8.82		0.21	1585	D1298	8.76		-0.13
360	D4052	8.75		-0.18	1586	D4052	8.83		0.27
372	D1298	8.79		0.04	1631		-----		-----
381		-----		-----	1636		-----		-----
445		-----		-----	1648		-----		-----
447		-----		-----	1669		-----		-----
455		-----		-----	1681	ISO12185	8.8		0.10
467	D4052	8.80		0.10	1710		-----		-----
507	D4052	9.14	R(0.01)	2.00	1720		-----		-----
541	D4052	8.60		-1.02	1740	D4052	8.9		0.66
551	D4052	8.77		-0.07	1741	D1298	8.8		0.10
575		-----		-----	1776		-----		-----
621		-----		-----	1796	D1250	8.75		-0.18
631	D1298	8.84		0.32	1810		-----		-----
634	D1298	8.69		-0.52	1811		-----		-----
657	ISO12185	8.8		0.10	1854		-----		-----
704	D1298	8.67		-0.63	1857	D1250	8.804		0.12
710	ISO12185	8.79		0.04	1906		-----		-----
752		-----		-----	1938		-----		-----
753	ISO12185	8.75		-0.18	1941		-----		-----
778		-----		-----	1942		8.8		0.10
781	ISO12185	8.77		-0.07	1949		-----		-----
785	D1298	8.79		0.04	1986	D1298	8.72		-0.35
798		-----		-----	1995	D4052	8.80		0.10
823	D4052	8.8		0.10	2129	D1298	8.78		-0.01
824	ISO12185	8.8		0.10	2146		-----		-----
825	ISO12185	8.83		0.27	6020	ISO12185	8.79		0.04
840	ISO12185	8.70		-0.46	6021	D4052	8.79		0.04
872	D1298	8.75		-0.18	6024	D1298	8.68		-0.57
873	D1298	8.78		-0.01	6025	D1298	8.79		0.04
874	D1298	8.79		0.04	6026	D1298	8.75		-0.18
875	D1250	8.78		-0.01	6049	D4052	8.77		-0.07
887		-----		-----	6054		-----		-----
902	ISO12185	8.75		-0.18	6057		-----		-----
904	D1298	8.7		-0.46	6075		-----		-----
913		-----		-----	6092		-----		-----
962	D1298	8.81		0.15	6112		-----		-----
963	D1298	8.81		0.15	6114	ISO12185	8.78		-0.01

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131		-----		-----	6340		-----		-----
6142		-----		-----	6373	D1298	8.86		0.43
6163		-----		-----	6379		-----		-----
6201	D1298	8.80		0.10	6400		-----		-----
6262	D4052	8.81		0.15	6404		-----		-----
6266		-----		-----	6406		-----		-----
6298		-----		-----					

normality	not OK
n	77
outliers	2
mean (n)	8.783
st.dev. (n)	0.0643
R(calc.)	0.180
st.dev.(D1298:12b)	0.1786
R(D1298:12b)	0.5

Kernel Density
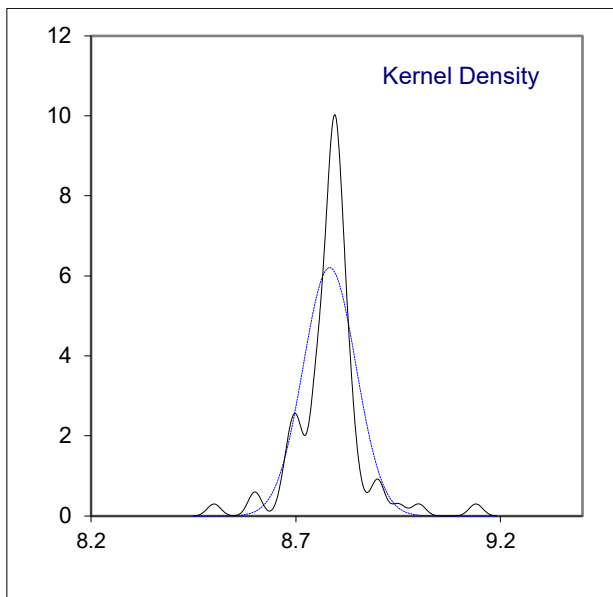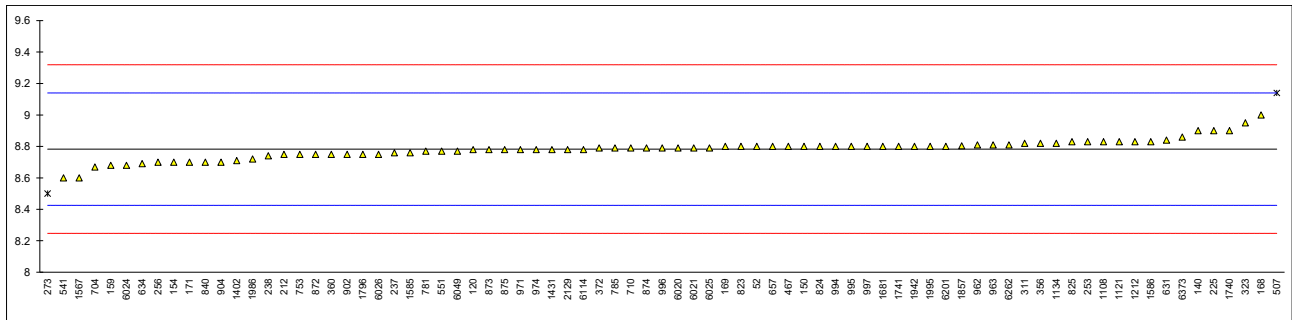
Determination of Ash Content on sample #21275; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D482	0.034		2.11	971	ISO6245	0.0294		-0.46
120	D482	0.033		1.55	974	D482	0.0293		-0.52
140	ISO6245	0.005	C,R(0.01)	-14.13	994	D482	0.03		-0.13
150	D482	0.026		-2.37	995	ISO6245	0.030		-0.13
154	D482	0.034		2.11	996	D482	0.033		1.55
159	D482	0.02	C,R(0.05)	-5.73	997	ISO6245	0.030		-0.13
168	D482	0.018	R(0.01)	-6.85	1040		-----		-----
169	D482	0.027	C	-1.81	1065	D482	0.02892		-0.73
170	D482	0.0299		-0.18	1108		-----	W	-----
171	ISO6245	0.047	R(0.01)	9.39	1109	D482	0.0308		0.32
175		-----		-----	1121	ISO6245	0.0302		-0.01
212	ISO6245	0.033	C	1.55	1126		-----		-----
225	D482	0.030		-0.13	1134	ISO6245	0.029185		-0.58
235	ISO6245	0.028		-1.25	1140	IP4	0.024		-3.49
237	D482	0.0295		-0.41	1191		-----		-----
238		-----		-----	1205		-----		-----
253		-----		-----	1212	ISO6245	0.032		0.99
256	D482	0.03		-0.13	1213	D482	0.033		1.55
273	D482	0.031		0.43	1218		-----		-----
309		-----		-----	1299		-----		-----
311	D482	0.029		-0.69	1353		-----		-----
313		-----		-----	1356	ISO6245	0.033		1.55
323	ISO6245	0.03		-0.13	1381	ISO6245	0.0299		-0.18
328		-----		-----	1397	ISO6245	0.029		-0.69
333		-----		-----	1402	IP4	0.021	R(0.05)	-5.17
334	ISO6245	0.034	C	2.11	1431		-----		-----
339		-----		-----	1491	ISO6245	0.0292		-0.57
342	ISO6245	0.031		0.43	1510		-----		-----
349		-----		-----	1567		-----		-----
351	ISO6245	0.0292		-0.57	1569	ISO6245	0.029		-0.69
356		-----		-----	1585	ISO6245	0.0298		-0.24
360	D482	0.029		-0.69	1586	D482	0.030		-0.13
372	D482	0.0286		-0.91	1631	ISO6245	0.0324	C	1.22
381		-----		-----	1636	D482	0.0311		0.49
445		-----		-----	1648	ISO6245	0.031		0.43
447		-----		-----	1669	D482	0.029		-0.69
455	IP4	0.032		0.99	1681	ISO6245	0.0343		2.28
467	ISO6245	0.0309		0.38	1710	ISO6245	0.027	C	-1.81
507	ISO6245	0.0334		1.78	1720		-----		-----
541	D482	0.0310		0.43	1740	ISO6245	0.030		-0.13
551	D482	0.032		0.99	1741	ISO6245	0.0301		-0.07
575		-----		-----	1776		-----		-----
621		-----		-----	1796	D482	0.028		-1.25
631	D482	0.028	C	-1.25	1810	D482	0.029	C	-0.69
634	D482	0.0385	R(0.05)	4.63	1811	ISO6245	0.030	C	-0.13
657	D482	0.028		-1.25	1854		-----		-----
704	ISO6245	0.028		-1.25	1857	ISO6245	0.0292		-0.57
710	D482	0.031		0.43	1906		-----		-----
752	ISO6245	0.033		1.55	1938		-----		-----
753		-----		-----	1941	ISO6245	0.0301		-0.07
778		-----		-----	1942		0.033		1.55
781	ISO6245	0.027		-1.81	1949		-----		-----
785	D482	0.035		2.67	1986	ISO6245	0.0303		0.04
798		-----		-----	1995	D482	0.022	R(0.05)	-4.61
823	ISO6245	0.032		0.99	2129	IP4	0.028		-1.25
824	ISO6245	0.033		1.55	2146		-----		-----
825	D482	0.030		-0.13	6020	ISO6245	0.0310		0.43
840	D482	0.0349		2.62	6021	ISO6245	0.0309		0.38
872		-----		-----	6024	ISO6245	0.0293		-0.52
873	D482	0.031		0.43	6025	D482	0.0303		0.04
874	ISO6245	0.030		-0.13	6026	ISO6245	0.0292	C	-0.57
875	ISO6245	0.030		-0.13	6049	ISO6245	0.028		-1.25
887		-----		-----	6054	D482	0.028		-1.25
902	D482	0.03		-0.13	6057		-----		-----
904	ISO6245	0.03		-0.13	6075	ISO6245	0.0326		1.33
913		-----		-----	6092	ISO6245	0.027		-1.81
962	D482	0.029		-0.69	6112		-----		-----
963	ISO6245	0.025		-2.93	6114	D482	0.0306		0.21

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131	ISO6245	0.0295		-0.41	6340		-----		-----
6142		-----		-----	6373	D482	0.031		0.43
6163		-----		-----	6379		-----		-----
6201	D482	0.034		2.11	6400	ISO6245	0.027		-1.81
6262	D482	0.030		-0.13	6404		-----		-----
6266		-----		-----	6406		-----		-----
6298	D482	0.030		-0.13					

normality	OK	
n	94	
outliers	7	
mean (n)	0.0302	
st.dev. (n)	0.00213	
R(calc.)	0.0060	
st.dev.(ISO6245:01)	0.00179	
R(ISO6245:01)	0.005	
compare		
R(D482:19)	0.005	

Lab 140: first reported 0.020
Lab 159: first reported 0.002
Lab 169: first reportd 0.039
Lab 212: first reported 0.043
Lab 334: first reported 0.018
Lab 631: first reported 0.0376
Lab 1108: test result withdrawn. first reported 0.0208
Lab 1631: first reported 0.0224
Lab 1710: first reported 0.023
Lab 1810: first reported 0.020
Lab 1811: first reported 0.011
Lab 6026: first reported 0.022

Kernel Density
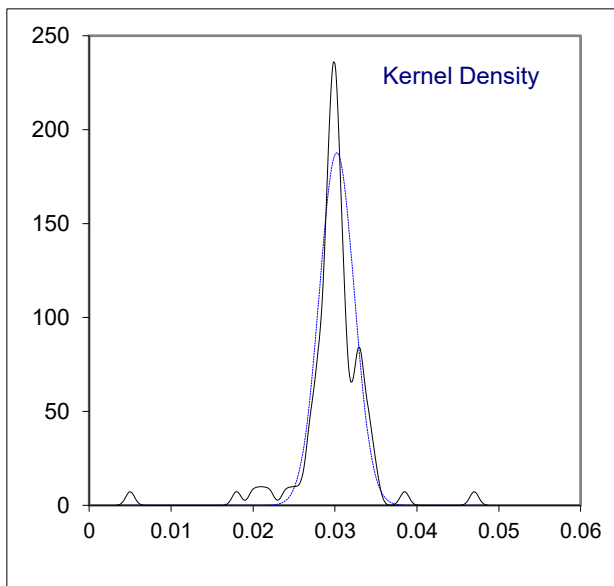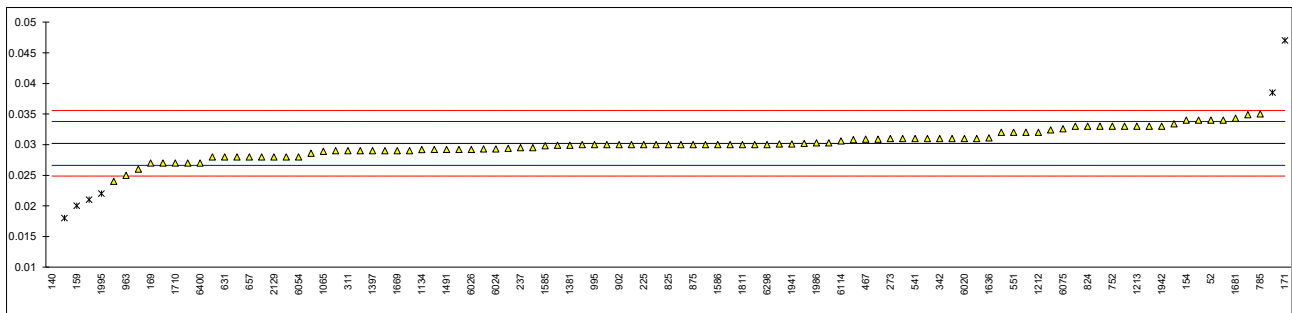
Determination of Asphaltenes on sample #21275; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	IP143	7.84		-0.71	971	IP143	8.16		-0.17
120		-----		-----	974	IP143	8.24		-0.04
140		-----		-----	994	IP143	8.4		0.24
150	IP143	8.4		0.24	995	IP143	8.5		0.41
154	D6560	7.8		-0.78	996		-----		-----
159		-----		-----	997		-----		-----
168		-----		-----	1040		-----		-----
169		-----		-----	1065	D6560	9.6		2.27
170		-----		-----	1108		-----		-----
171	IP143	7.9		-0.61	1109		-----		-----
175		-----		-----	1121	IP143	7.95		-0.53
212		-----		-----	1126		-----		-----
225		-----		-----	1134	IP143	7.643		-1.05
235	IP143	8.318		0.10	1140	IP143	3.60	R(0.01)	-7.90
237	D6560	8.11		-0.26	1191	DIN51595	6.6262		-2.77
238		-----		-----	1205		-----		-----
253		-----		-----	1212	IP143	8.55		0.49
256	IP143	8.17		-0.15	1213		-----		-----
273		-----		-----	1218		-----		-----
309		-----		-----	1299		-----		-----
311	IP143	7.8		-0.78	1353		-----		-----
313		-----		-----	1356	D6560	8.5		0.41
323	IP143	8.1		-0.27	1381		-----		-----
328		-----		-----	1397	D6560	9.6		2.27
333		-----		-----	1402	IP143	8.3		0.07
334	IP143	10.0		2.95	1431	D6560	9.291		1.75
339		-----		-----	1491	IP143	8.37		0.19
342	IP143	8.124		-0.23	1510		-----		-----
349		-----		-----	1567	IP143	7.70		-0.95
351		-----		-----	1569	IP143	8.1		-0.27
356	IP143	7.6		-1.12	1585	IP143	8.41		0.25
360	D6560	8.92		1.12	1586	IP143	7.6		-1.12
372	IP143	7.9		-0.61	1631		-----		-----
381		-----		-----	1636		-----		-----
445		-----		-----	1648		-----		-----
447		-----		-----	1669	IP143	7.8		-0.78
455		-----		-----	1681	IP143	7.21		-1.78
467	IP143	7.85		-0.70	1710	In house	8.19		-0.12
507	D6560	7.243		-1.72	1720		-----		-----
541		-----		-----	1740	IP143	8.28		0.03
551	D6560	8.365		0.18	1741		-----		-----
575		-----		-----	1776		-----		-----
621		-----		-----	1796		-----		-----
631	D6560	8.898		1.08	1810		-----		-----
634	D6560	9.4		1.93	1811		-----		-----
657	IP143	8.1		-0.27	1854		-----		-----
704	IP143	8.32		0.10	1857	IP143	7.98		-0.48
710		-----		-----	1906		-----		-----
752		-----		-----	1938		-----		-----
753		-----		-----	1941		-----		-----
778		-----		-----	1942		-----	W	-----
781	IP143	8.11		-0.26	1949		-----		-----
785		-----		-----	1986	IP143	8.4		0.24
798		-----		-----	1995	D6560	8.11		-0.26
823	IP143	8.2		-0.10	2129	IP143	8.06		-0.34
824		-----		-----	2146		-----		-----
825		-----		-----	6020		-----		-----
840	D6560	8.82		0.95	6021	IP143	8.20		-0.10
872		-----		-----	6024		-----		-----
873	IP143	8.8		0.91	6025		-----		-----
874	IP143	8.7		0.74	6026		-----		-----
875	IP143	7.4		-1.46	6049	IP143	7.41		-1.44
887		-----		-----	6054	D6560	8.07		-0.32
902		-----		-----	6057		-----		-----
904	IP143	8.2		-0.10	6075	NF T60-115	8.59		0.56
913		-----		-----	6092		-----		-----
962	D6560	8.89		1.07	6112		-----		-----
963	IP143	8.461		0.34	6114	IP143	7.648		-1.04

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131		-----		-----	6340		-----		-----
6142		-----		-----	6373	IP143	9.7964		2.60
6163		-----		-----	6379		-----		-----
6201	IP143	8.40		0.24	6400		-----		-----
6262		-----		-----	6404		-----		-----
6266		-----		-----	6406		-----		-----
6298		-----		-----					

normality	suspect
n	63
outliers	1
mean (n)	8.261
st.dev. (n)	0.6190
R(calc.)	1.733
st.dev.(IP143:04)	0.5900
R(IP143:04)	1.652

Lab 1942: test result withdrawn, first reported 5.13
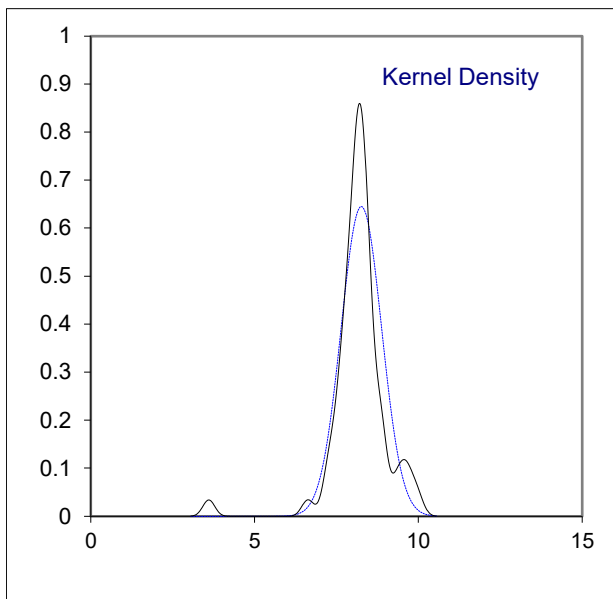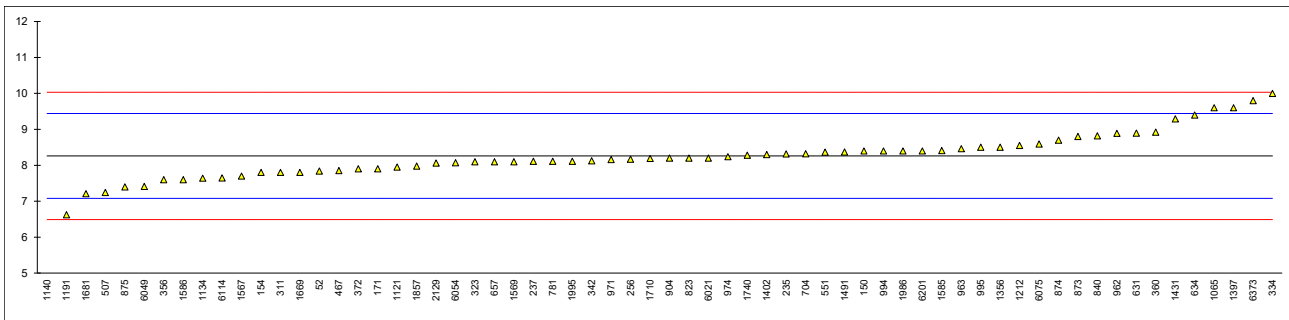
Determination of Calculated Carbon Aromaticity Index on sample #21275

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	ISO8217	863		-0.02	971	ISO8217	863		-0.02
120		-----		-----	974	ISO8217	863		-0.02
140	ISO8217	862		-1.29	994	ISO8217	862.8		-0.27
150	ISO8217	865		2.53	995	ISO8217	863		-0.02
154	ISO8217	863		-0.02	996	ISO8217	862.93		-0.11
159		-----		-----	997		-----		-----
168		-----		-----	1040		-----		-----
169		-----		-----	1065		-----		-----
170		-----		-----	1108	ISO8217	863		-0.02
171	ISO8217	863		-0.02	1109		-----		-----
175		-----		-----	1121	ISO8217	862.3		-0.91
212	ISO8217	864.0		1.26	1126		-----		-----
225	ISO8217	862.748		-0.34	1134	ISO8217	862.6		-0.53
235	ISO8217	863		-0.02	1140	ISO8217	864		1.26
237	ISO8217	865	E	2.53	1191		-----		-----
238		-----		-----	1205		-----		-----
253		-----		-----	1212	ISO8217	862		-1.29
256	ISO8217	863.5		0.62	1213		-----		-----
273	ISO8217	864		1.26	1218		-----		-----
309		-----		-----	1299		-----		-----
311	ISO8217	863		-0.02	1353		-----		-----
313		-----		-----	1356		-----		-----
323	ISO8217	861.59		-1.81	1381		-----		-----
328	ISO8217	863		-0.02	1397		-----		-----
333	ISO8217	863		-0.02	1402	ISO8217	864		1.26
334	ISO8217	863		-0.02	1431	ISO8217	862		-1.29
339		-----		-----	1491	ISO8217	863		-0.02
342	ISO8217	863		-0.02	1510		-----		-----
349		-----		-----	1567	ISO8217	863.3		0.36
351	ISO8217	862.20		-1.04	1569		-----		-----
356	ISO8217	862		-1.29	1585	ISO8217	863		-0.02
360	ISO8217	863		-0.02	1586	ISO8217	862.6		-0.53
372	ISO8217	863		-0.02	1631		-----		-----
381		-----		-----	1636		-----		-----
445		-----		-----	1648	ISO8217	863		-0.02
447		-----		-----	1669		-----		-----
455	ISO8217	863		-0.02	1681	ISO8217	862.66		-0.45
467	ISO8217	862.8		-0.27	1710		-----		-----
507	ISO8217	862	C	-1.29	1720		-----		-----
541	ISO8217	863.8		1.00	1740	ISO8217	863		-0.02
551	ISO8217	863		-0.02	1741	ISO8217	864.5	E	1.89
575		-----		-----	1776	ISO8217	864		1.26
621		-----		-----	1796	ISO8217	863		-0.02
631	ISO8217	863.16		0.19	1810		-----		-----
634		-----		-----	1811		-----		-----
657	ISO8217	863		-0.02	1854		-----		-----
704	ISO8217	863.3		0.36	1857	ISO8217	863		-0.02
710		-----		-----	1906		-----		-----
752	ISO8217	864		1.26	1938		-----		-----
753		-----		-----	1941		-----		-----
778		-----		-----	1942		862		-1.29
781	ISO8217	863		-0.02	1949		-----		-----
785		-----		-----	1986	ISO8217	863.0		-0.02
798		-----		-----	1995		-----		-----
823	ISO8217	863		-0.02	2129	ISO8217	864		1.26
824	ISO8217	862		-1.29	2146		-----		-----
825	ISO8217	862		-1.29	6020	ISO8217	863		-0.02
840	ISO8217	863.3		0.36	6021	ISO8217	862.9		-0.14
872		-----		-----	6024	ISO8217	864		1.26
873	ISO8217	863		-0.02	6025	ISO8217	863		-0.02
874	ISO8217	863		-0.02	6026	ISO8217	863		-0.02
875		-----		-----	6049	ISO8217	862.6		-0.53
887		-----		-----	6054		-----		-----
902	ISO8217	863		-0.02	6057		-----		-----
904	ISO8217	863.2		0.24	6075		-----		-----
913		-----		-----	6092		-----		-----
962	ISO8217	863		-0.02	6112		-----		-----
963	ISO8217	863		-0.02	6114	ISO8217	864		1.26

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131	ISO8217	861.88	E	-1.44	6340		-----		-----
6142	ISO8217	863		-0.02	6373		862.39		-0.79
6163		-----		-----	6379		-----		-----
6201	ISO8217	863	C	-0.02	6400		-----		-----
6262	ISO8217	862		-1.29	6404		-----		-----
6266		-----		-----	6406		-----		-----
6298	ISO8217	863		-0.02					

normality	suspect
n	80
outliers	0
mean (n)	863.013
st.dev. (n)	0.6652
R(calc.)	1.863
st.dev.(ISO8217:17)	0.7857
R(ISO8217:17)	2.2

Lab 237: calculation difference, iis calculated 862
Lab 507: first reported 860
Lab 1741: calculation difference, iis calculated 862.3
Lab 6131: calculation difference, iis calculated 863.25
Lab 6201: first reported 83

Kernel Density
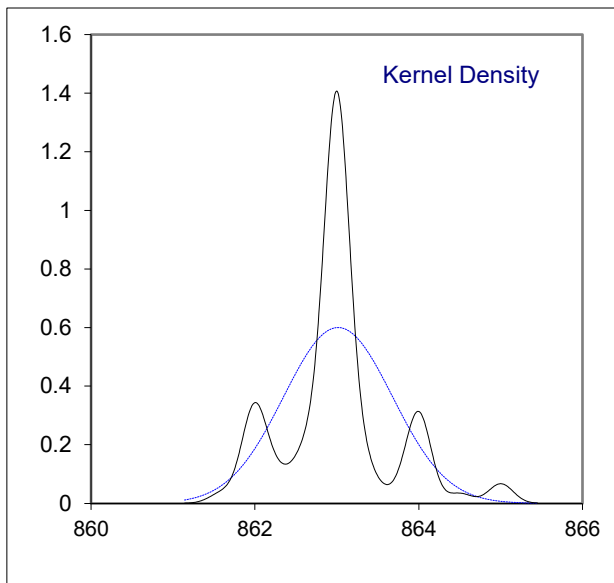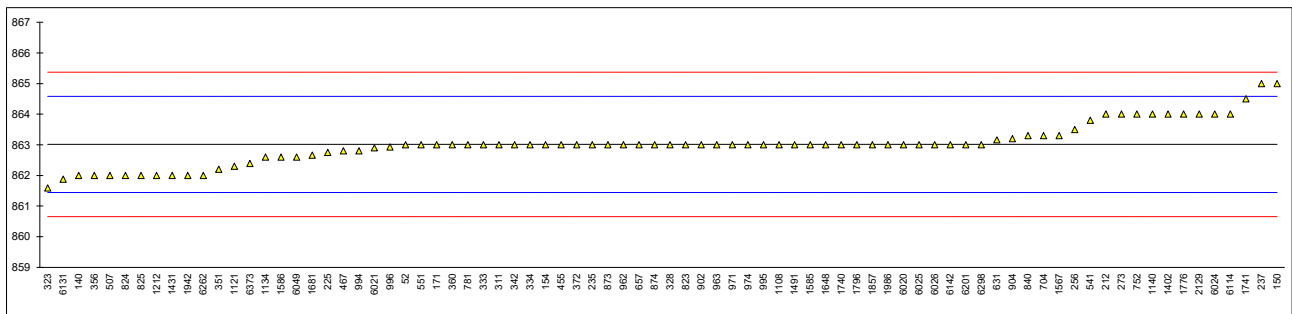
Determination of Carbon Residue micro method on sample #21275; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4530	15.2		-1.04	971	ISO10370	15.66		-0.20
120		-----		-----	974	D4530	15.73		-0.07
140	ISO10370	15.82		0.09	994		-----		-----
150	D4530	15.6		-0.31	995		-----		-----
154	D4530	16.2		0.78	996		-----		-----
159		-----		-----	997		-----		-----
168		-----		-----	1040		-----		-----
169	D4530	14.4		-2.49	1065	D4530	16.26		0.89
170	D4530	15.7737		0.01	1108	ISO10370	15.60		-0.31
171	ISO10370	15.47		-0.55	1109	D4530	15.685		-0.16
175		-----		-----	1121	ISO10370	15.389		-0.69
212	ISO10370	17.285		2.75	1126		-----		-----
225		-----		-----	1134	ISO10370	16.16577		0.72
235	ISO10370	15.55		-0.40	1140	IP398	15.74		-0.06
237	D4530	16.80		1.87	1191	ISO10370	15.5126		-0.47
238		-----		-----	1205		-----		-----
253		-----		-----	1212	ISO10370	15.95		0.33
256		-----		-----	1213	D4530	15.79		0.04
273	D4530	15.81		0.07	1218		-----		-----
309		-----		-----	1299		-----		-----
311	D4530	15.7		-0.13	1353		-----		-----
313		-----		-----	1356	ISO10370	15.77		0.00
323	ISO10370	15.77		0.00	1381	ISO10370	15.750		-0.04
328	ISO10370	16.03		0.47	1397	ISO10370	15.72		-0.09
333	ISO10370	15.8		0.05	1402	IP398	15.90		0.24
334	ISO10370	16.01		0.43	1431	D4530	15.56		-0.38
339		-----		-----	1491	ISO10370	15.73		-0.07
342	ISO10370	15.74		-0.06	1510		-----		-----
349		-----		-----	1567	D4530	16.25		0.87
351	ISO10370	15.58		-0.35	1569	ISO10370	15.97		0.36
356	ISO10370	14.84		-1.69	1585	D4530	15.673		-0.18
360	D4530	15.61		-0.29	1586	D4530	15.73		-0.07
372	ISO10370	15.77		0.00	1631		-----		-----
381		-----		-----	1636	ISO10370	15.782		0.02
445		-----		-----	1648	ISO10370	16.308		0.98
447		-----		-----	1669	D4530	15.7		-0.13
455	IP398	15.13		-1.16	1681		-----		-----
467	ISO10370	16.05		0.51	1710	ISO10370	15.68		-0.16
507	D4530	14.821		-1.72	1720		-----		-----
541	D4530	16.14		0.67	1740	ISO10370	15.85		0.14
551	D4530	16.1		0.60	1741	ISO10370	15.24		-0.96
575		-----		-----	1776		-----		-----
621		-----		-----	1796		-----		-----
631	D4530	15.73		-0.07	1810	D4530	15.73		-0.07
634		-----		-----	1811	ISO10370	16.00		0.42
657	ISO10370	15.7		-0.13	1854		-----		-----
704	ISO10370	15.76		-0.02	1857	ISO10370	15.50		-0.49
710	D4530	15.71		-0.11	1906		-----		-----
752		-----		-----	1938		-----		-----
753		-----		-----	1941	ISO10370	15.726		-0.08
778		-----		-----	1942	D4530	15.24		-0.96
781	ISO10370	16.21		0.80	1949		-----		-----
785	D4530	15.8		0.05	1986	ISO10370	15.58		-0.35
798		-----		-----	1995	D4530	15.65		-0.22
823	ISO10370	16.1		0.60	2129	ISO10370	15.23		-0.98
824	ISO10370	15.77		0.00	2146		-----		-----
825	ISO10370	16.09		0.58	6020		-----		-----
840		-----		-----	6021	ISO10370	15.87		0.18
872		-----		-----	6024		-----		-----
873	D4530	16.12		0.63	6025	D4530	15.48		-0.53
874	ISO10370	16.12		0.63	6026	D4530	15.5		-0.49
875	ISO10370	16.1		0.60	6049	ISO10370	15.7		-0.13
887	D4530	15.94		0.31	6054	D4530	15.862	C	0.17
902	D4530	16.1		0.60	6057		-----		-----
904	ISO10370	15.92		0.27	6075	ISO10370	16.764		1.80
913		-----		-----	6092		-----		-----
962	D4530	15.04		-1.33	6112		-----		-----
963	ISO10370	15.64		-0.24	6114	ISO10370	15.093		-1.23

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131	ISO10370	16.133		0.66	6340		-----		-----
6142	ISO10370	14.45		-2.40	6373		-----		-----
6163		-----		-----	6379		-----		-----
6201	ISO10370	16.39		1.13	6400	ISO10370	15.838		0.12
6262	D4530	16.31		0.98	6404		-----		-----
6266		-----		-----	6406		-----		-----
6298	D4530	16.13		0.65					

normality	not OK
n	91
outliers	0
mean (n)	15.7706
st.dev. (n)	0.43178
R(calc.)	1.2090
st.dev.(ISO10370:14)	0.55049
R(ISO10370:14)	1.5414
compare	
R(D4530:15)	0.8786

Lab 6054: first reported 15862 %M/M

Kernel Density
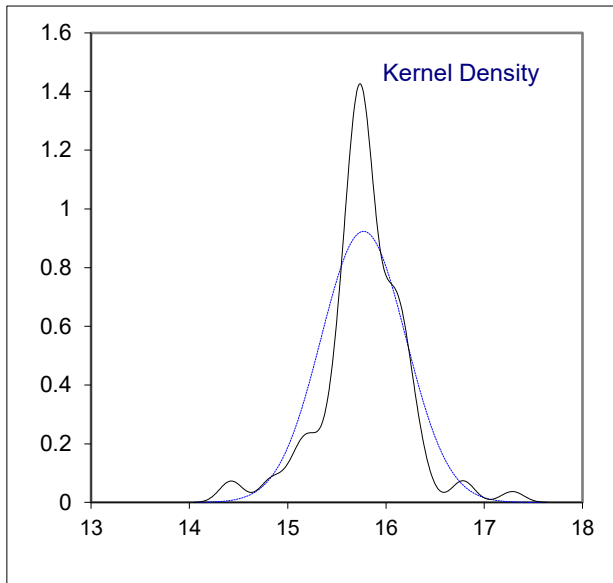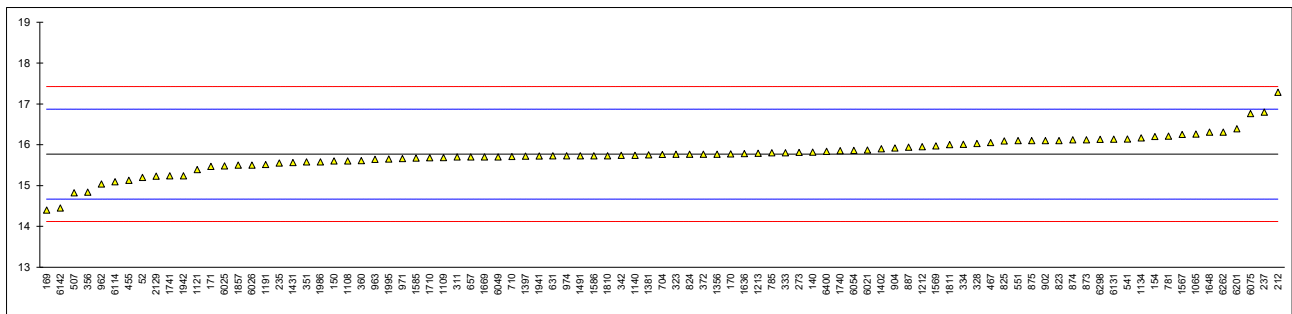
Determination of Conradson Carbon Residue on sample #21275; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	971	D189	15.88		-0.10
120		-----		-----	974	D189	15.91		-0.06
140		-----		-----	994	D189	15.8		-0.18
150		-----		-----	995	D189	16.54		0.64
154		-----		-----	996	D189	15.88		-0.10
159		-----		-----	997	D189	16.45		0.54
168		-----		-----	1040		-----		-----
169		-----		-----	1065		-----		-----
170		-----		-----	1108		-----		-----
171	D189	15.99		0.03	1109	D4530	15.68		-0.32
175		-----		-----	1121		-----		-----
212		-----		-----	1126		-----		-----
225	D4530	15.83		-0.15	1134		-----		-----
235	D189	15.31		-0.73	1140		-----		-----
237	D189	16.90		1.04	1191		-----		-----
238		-----		-----	1205		-----		-----
253		-----		-----	1212		-----		-----
256	D189	15.8		-0.18	1213		-----		-----
273	D189	15.97		0.00	1218		-----		-----
309		-----		-----	1299		-----		-----
311		-----		-----	1353		-----		-----
313		-----		-----	1356		-----		-----
323		-----		-----	1381		-----		-----
328		-----		-----	1397		-----		-----
333		-----		-----	1402	IP13	17.27		1.45
334		-----		-----	1431		-----		-----
339		-----		-----	1491		-----		-----
342		-----		-----	1510		-----		-----
349		-----		-----	1567		-----		-----
351		-----		-----	1569		-----		-----
356		-----		-----	1585		-----		-----
360	D189	15.90		-0.07	1586	D189	16.63		0.74
372	D189	15.86		-0.12	1631		-----		-----
381		-----		-----	1636		-----		-----
445		-----		-----	1648		-----		-----
447		-----		-----	1669		-----		-----
455		-----		-----	1681	ISO6615	15.54		-0.47
467		-----		-----	1710		-----		-----
507	D189	14.902		-1.19	1720		-----		-----
541	D189	16.10		0.15	1740	D189	15.98		0.02
551	D189	16.1		0.15	1741		-----		-----
575		-----		-----	1776		-----		-----
621		-----		-----	1796		-----		-----
631		-----		-----	1810		-----		-----
634	D189	16.6		0.71	1811		-----		-----
657	D189	15.7		-0.30	1854		-----		-----
704	D189	15.84		-0.14	1857		-----		-----
710		-----		-----	1906		-----		-----
752		-----		-----	1938		-----		-----
753		-----		-----	1941		-----		-----
778		-----		-----	1942		-----		-----
781	D189	16.34		0.42	1949		-----		-----
785		-----		-----	1986	D189	15.5		-0.52
798		-----		-----	1995		-----		-----
823		-----		-----	2129	D189	15.54		-0.47
824		-----		-----	2146		-----		-----
825		-----		-----	6020		-----		-----
840	D189	15.60		-0.41	6021		-----		-----
872		-----		-----	6024		-----		-----
873		-----		-----	6025	D189	15.65		-0.35
874		-----		-----	6026		-----		-----
875		-----		-----	6049		-----		-----
887		-----		-----	6054		-----		-----
902		-----		-----	6057		-----		-----
904	D189	15.95		-0.02	6075		-----		-----
913		-----		-----	6092		-----		-----
962		-----		-----	6112		-----		-----
963		-----		-----	6114		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131		-----		-----	6340		-----		-----
6142		-----		-----	6373		-----		-----
6163		-----		-----	6379		-----		-----
6201		-----		-----	6400		-----		-----
6262		-----		-----	6404		-----		-----
6266		-----		-----	6406		-----		-----
6298		-----		-----					

normality	suspect
n	31
outliers	0
mean (n)	15.966
st.dev. (n)	0.4764
R(calc.)	1.334
st.dev.(D189:06)	0.8967
R(D189:06)	2.511

Kernel Density
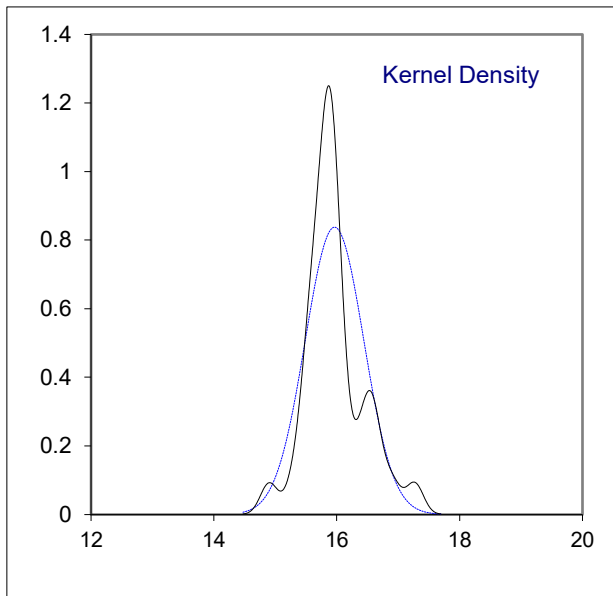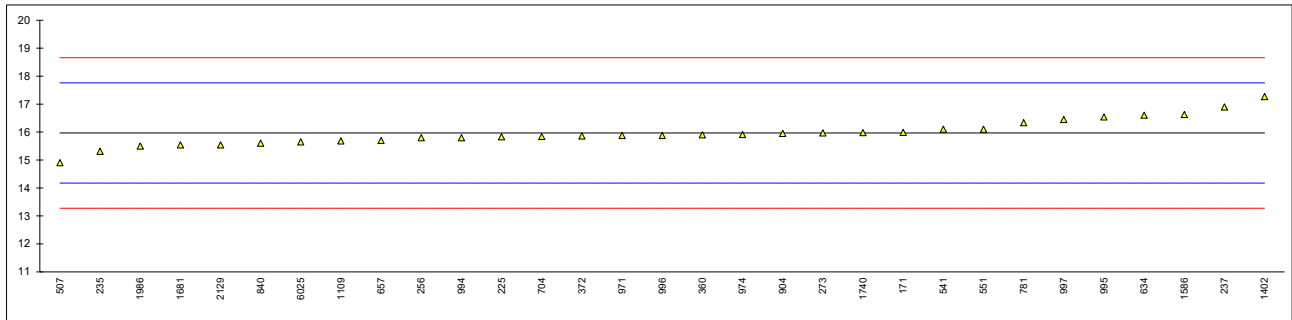
Determination of Density at 15°C on sample #21275; results in kg/m^3

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4052	1008		-0.08	971	ISO12185	1008.1		0.10
120	D4052	1008.0		-0.08	974	D1298	1008.1		0.10
140	D4052	1007.0		-1.95	994	ISO12185	1008.0		-0.08
150		-----		-----	995	ISO12185	1008.1		0.10
154	D4052	1009		1.78	996	D1298	1008.2		0.29
159	D4052	1008.8		1.41	997	ISO12185	1008.1		0.10
168		-----		-----	1040		-----		-----
169	D1298	1007.9		-0.27	1065	D4052	1009.1		1.97
170	D4052	1008.1		0.10	1108	ISO12185	1007.8		-0.46
171	ISO12185	1008.0		-0.08	1109	D4052	1008.4	C	0.66
175		-----		-----	1121	ISO12185	1007.8		-0.46
212	ISO12185	1008.6		1.04	1126	ISO12185	1008.06		0.03
225	D4052	1007.5		-1.02	1134	ISO12185	1007.8	C	-0.46
235	ISO12185	1008.1		0.10	1140	IP365	1008.9		1.60
237	D4052	1007.8		-0.46	1191	ISO12185	1008.085		0.08
238	D1298	1008.4		0.66	1205		-----		-----
253	D4052	1007.7		-0.64	1212	ISO12185	1007.7		-0.64
256	D1298	1008.7		1.22	1213		-----		-----
273	D4052	1009.1		1.97	1218		-----		-----
309	D4052	1007.8		-0.46	1299		-----		-----
311	ISO12185	1007.8		-0.46	1353		-----		-----
313	D1298	1007.5		-1.02	1356	ISO12185	1008.0		-0.08
323	ISO12185	1006.9		-2.14	1381	ISO12185	1008.10		0.10
328	ISO12185	1008.3		0.48	1397	ISO12185	1007.9		-0.27
333	ISO12185	1008.0		-0.08	1402	IP365	1008.6		1.04
334	ISO12185	1008.0		-0.08	1431	ISO12185	1007.51		-1.00
339		-----		-----	1491	ISO12185	1007.79		-0.47
342	ISO12185	1007.8		-0.46	1510		-----		-----
349		-----		-----	1567	D4052	1008.8		1.41
351	ISO12185	1007.60		-0.83	1569	D4052	1008.5		0.85
356	ISO12185	1007.8		-0.46	1585	ISO12185	1008.2		0.29
360	ISO12185	1008.0		-0.08	1586	D4052	1007.7		-0.64
372	ISO12185	1008.0		-0.08	1631	ISO12185	1007.5		-1.02
381	ISO12185	1006.9		-2.14	1636	D4052	1007.6		-0.83
445		-----		-----	1648	ISO12185	1008.0		-0.08
447		-----		-----	1669	ISO12185	1007.5		-1.02
455	IP365	1007.3		-1.39	1681	ISO12185	1007.86		-0.34
467	ISO12185	1007.9		-0.27	1710	ISO12185	1006.1	C,R(0.01)	-3.63
507	D4052	1007.8	C	-0.46	1720		-----		-----
541	ISO12185	1009.10		1.97	1740	ISO3675	1007.8		-0.46
551	D4052	1008.2		0.29	1741	ISO12185	1007.6		-0.83
575		-----		-----	1776	ISO12185	1007.0		-1.95
621		-----		-----	1796	ISO12185	1008.3		0.48
631	D1298	1008.77		1.35	1810	ISO12185	1008.7		1.22
634	D1298	1008.7		1.22	1811	ISO12185	1008.9		1.60
657	ISO12185	1008.2		0.29	1854		-----		-----
704	ISO12185	1008.5		0.85	1857	ISO12185	1007.9		-0.27
710	ISO12185	1008.01		-0.06	1906		-----		-----
752	ISO3675	1008.7		1.22	1938	ISO12185	1007.6		-0.83
753	ISO12185	1007.9		-0.27	1941	ISO3675	1008.0		-0.08
778	D4052	1008.2		0.29	1942	D7042	1007.7		-0.64
781	ISO12185	1008.1		0.10	1949		-----		-----
785	D4052	1008.0		-0.08	1986	ISO12185	1008.5		0.85
798		-----		-----	1995	D4052	1008.0		-0.08
823	ISO12185	1008		-0.08	2129	D4052	1008.1		0.10
824	ISO12185	1007.8		-0.46	2146	ISO12185	1005.2	R(0.01)	-5.31
825	ISO12185	1007.7		-0.64	6020	ISO12185	1008.0	C	-0.08
840	ISO12185	1008.67		1.17	6021	D4052	1008.0		-0.08
872	ISO12185	1008.3		0.48	6024	D1298	1008.8		1.41
873	ISO12185	1008.1		0.10	6025	D1298	1008.0		-0.08
874	ISO12185	1007.9		-0.27	6026	D1298	1008.3		0.48
875	ISO12185	1008.1		0.10	6049	ISO12185	1007.7		-0.64
887		-----		-----	6054	D4052	1008.1		0.10
902	ISO12185	1007.9		-0.27	6057		-----		-----
904	ISO3675	1008.5		0.85	6075	ISO12185	1008.05		0.01
913		-----		-----	6092	ISO12185	1007.8		-0.46
962	D1298	1007.9		-0.27	6112	ISO12185	1007.34		-1.31
963	ISO12185	1008.0		-0.08	6114	ISO12185	1008.1		0.10

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131	ISO12185	1008.4		0.66	6340		-----		-----
6142	ISO12185	1007.9		-0.27	6373	ISO12185	1007.49		-1.03
6163	ISO12185	1004.7	C,R(0.01)	-6.24	6379		-----		-----
6201	ISO12185	1007.9		-0.27	6400	ISO12185	1008.3		0.48
6262	D4052	1007.9		-0.27	6404		-----		-----
6266	D4052	1007.87		-0.33	6406	ISO12185	1007.85		-0.36
6298	D4052	1008.2		0.29					

normality	OK
n	119
outliers	3
mean (n)	1008.044
st.dev. (n)	0.4385
R(calc.)	1.228
st.dev.(ISO12185:96)	0.5357
R(ISO12185:96)	1.5

Lab 507: first reported 1005.51
Lab 1109: first reported 0.9949 kg/L
Lab 1134: reported 1.0078 kg/m^3
Lab 1710: first reported 1011.4
Lab 6020: first reported 1.008 kg/m^3
Lab 6163: first reported 1064.748

Kernel Density
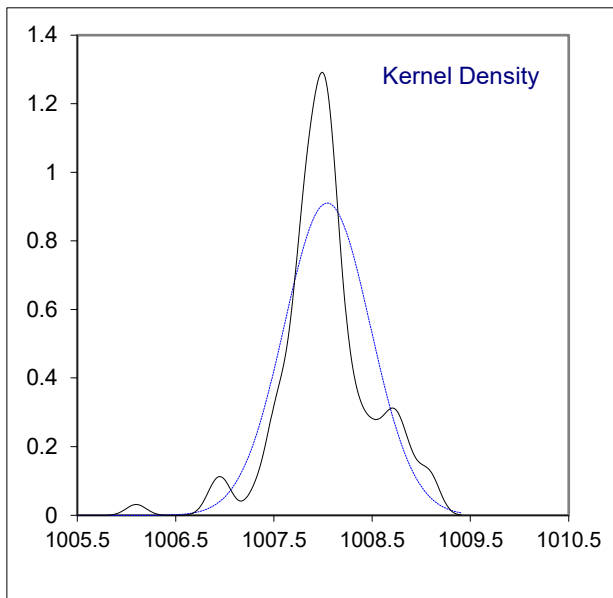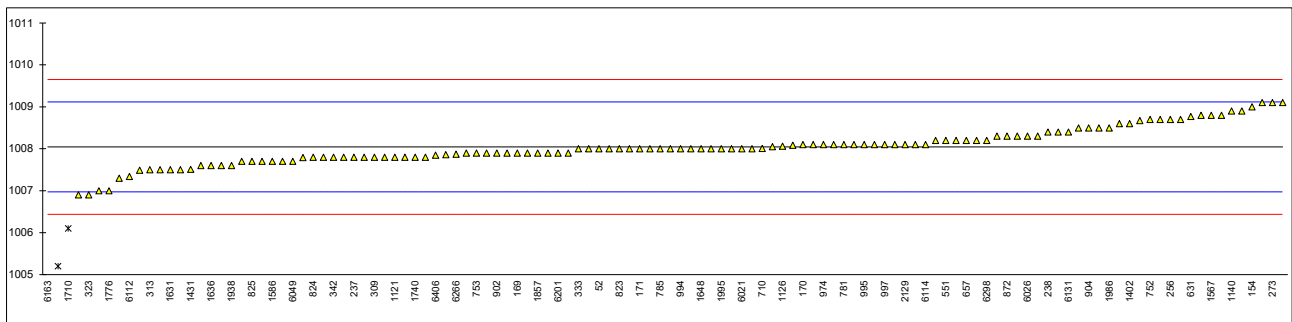
Determination of Flash Point PMcc on sample #21275; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D93-B	98.5		-0.44	971	ISO2719-B	100.0		0.26
120	D93-B	98.3		-0.54	974	D93-B	100.0		0.26
140	D93-B	98.3		-0.54	994	D93-B	98.5		-0.44
150	D93-B	97.0		-1.14	995	ISO2719-B	97.5		-0.91
154	D93-B	100.0		0.26	996	D93-B	100.0		0.26
159	D93-B	98.0		-0.68	997	ISO2719-B	97.5		-0.91
168	D93-B	99.5		0.02	1040		-----		-----
169		-----		-----	1065	D93-B	96		-1.61
170		-----		-----	1108	ISO2719-B	99.5		0.02
171	ISO2719-A	100.0		0.26	1109	D93-B	99.0		-0.21
175	D93-B	98		-0.68	1121	ISO2719-B	96.98		-1.15
212	ISO2719-B	109.5	C,R(0.01)	4.69	1126		-----		-----
225	D93-B	99.0		-0.21	1134	ISO2719-B	98.5		-0.44
235	ISO2719-B	98		-0.68	1140	IP34-B	99.0		-0.21
237	D93-B	97.0		-1.14	1191	ISO2719-A	94.5		-2.31
238	D93-B	100.0		0.26	1205		-----		-----
253	D93-B	100		0.26	1212	ISO2719-B	101.0		0.72
256	D93-B	100.0		0.26	1213	D93-B	102		1.19
273	D93-B	102.0	C	1.19	1218		-----		-----
309		-----		-----	1299		-----		-----
311	D93-B	100.0		0.26	1353		-----		-----
313	D93-B	100.0		0.26	1356	ISO2719-A	101		0.72
323	ISO2719-A	99.0		-0.21	1381	ISO2719-B	98.00		-0.68
328	ISO2719-B	101.0		0.72	1397	ISO2719-B	101.5		0.96
333	ISO2719-B	99.0		-0.21	1402	IP34-B	100.5		0.49
334	ISO2719-A	98.0		-0.68	1431	D93-B	97.5		-0.91
339		-----		-----	1491	ISO2719-B	99.0		-0.21
342	ISO2719-B	99.9		0.21	1510		-----		-----
349		-----		-----	1567	D93-A	98.5		-0.44
351	ISO2719-B	99.0		-0.21	1569	ISO2719-B	99.0		-0.21
356	ISO2719-B	96.0		-1.61	1585	ISO2719-B	99.0		-0.21
360	D93-B	100.0		0.26	1586	D93-B	100.0		0.26
372	D93-B	99.0		-0.21	1631	ISO2719-B	99		-0.21
381		-----		-----	1636	D93-B	103.0		1.66
445		-----		-----	1648	ISO2719-B	100.50		0.49
447		-----		-----	1669	D93-A	103.0		1.66
455	D93-B	102.5		1.42	1681	ISO2719-B	101.0		0.72
467	ISO2719-B	100.5		0.49	1710	ISO2719-A	98.5		-0.44
507	D93-B	98.0		-0.68	1720		-----		-----
541	D93-B	98.00		-0.68	1740	ISO2719-B	100.0		0.26
551	D93-B	94		-2.54	1741	ISO2719-B	98.5		-0.44
575		-----		-----	1776	ISO2719-B	99.5		0.02
621		-----		-----	1796	D93-B	99.5		0.02
631	D93-B	97.0		-1.14	1810	D93-A	99		-0.21
634	D93-B	99.0		-0.21	1811	ISO2719-A	99.0		-0.21
657	D93-B	95.0		-2.08	1854		-----		-----
704	D93-B	98.5		-0.44	1857	ISO2719-B	100.0		0.26
710	D93-B	100.5		0.49	1906		-----		-----
752	ISO2719-B	99.0		-0.21	1938		-----		-----
753	ISO2719-B	101.0		0.72	1941	ISO2719-B	98.5		-0.44
778	D93-B	102		1.19	1942		-----		-----
781	ISO2719-B	98.5		-0.44	1949		-----		-----
785	D93-B	98.5		-0.44	1986	ISO2719-B	99.5		0.02
798		-----		-----	1995	D93-B	100		0.26
823	ISO2719-B	104.0		2.12	2129	D93-B	102.0		1.19
824	ISO2719-B	104		2.12	2146		-----		-----
825	ISO2719-A	103.0		1.66	6020	ISO2719-B	100.00		0.26
840	D93-B	102.0	C	1.19	6021	ISO2719-B	97.0		-1.14
872	ISO2719	98.5		-0.44	6024	ISO2719-A	99.5		0.02
873	D93-B	99.0		-0.21	6025	D93-B	99.0		-0.21
874	D93-B	98.5		-0.44	6026	ISO2719-B	101.0		0.72
875	ISO2719-B	99.9		0.21	6049	D93-B	101.0		0.72
887	D93-B	102.5		1.42	6054	D93-B	99.0		-0.21
902	D93-B	99		-0.21	6057		-----		-----
904	D93-B	100		0.26	6075	ISO2719-B	102.0		1.19
913		-----		-----	6092	D93-B	101.0		0.72
962	D93-B	96.0		-1.61	6112		-----		-----
963	ISO2719-B	98.0		-0.68	6114	D93-B	98.0		-0.68

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131	ISO2719-B	100.0		0.26	6340		-----		-----
6142	ISO2719-B	101.5		0.96	6373	D93-B	102.0		1.19
6163		-----		-----	6379		-----		-----
6201	ISO2719-B	97.5		-0.91	6400	IP34-B	98.5		-0.44
6262	D93-B	100.0		0.26	6404		-----		-----
6266	D93-B	101.5		0.96	6406	ISO2719-B	101.0		0.72
6298	D93-B	101.0		0.72					

normality	OK
n	116
outliers	1
mean (n)	99.447
st.dev. (n)	1.8243
R(calc.)	5.108
st.dev.(ISO2719-B:16)	2.1429
R(ISO2719-B:16)	6

Lab 212: first reported 124.0
Lab 273: first reported 109.5
Lab 840: first reported 108.0

Kernel Density
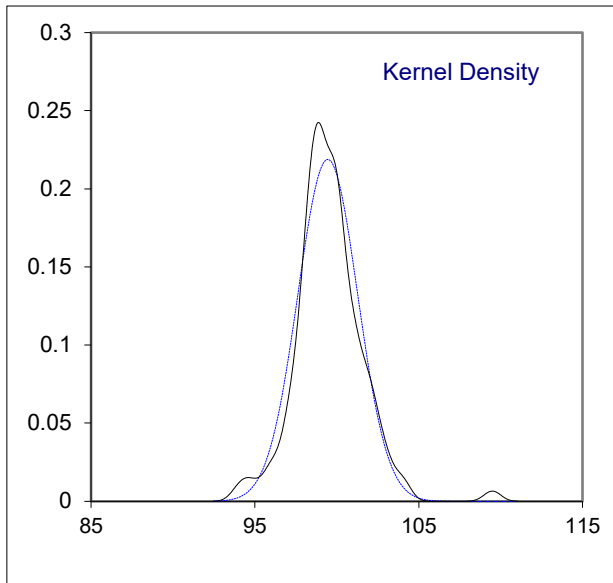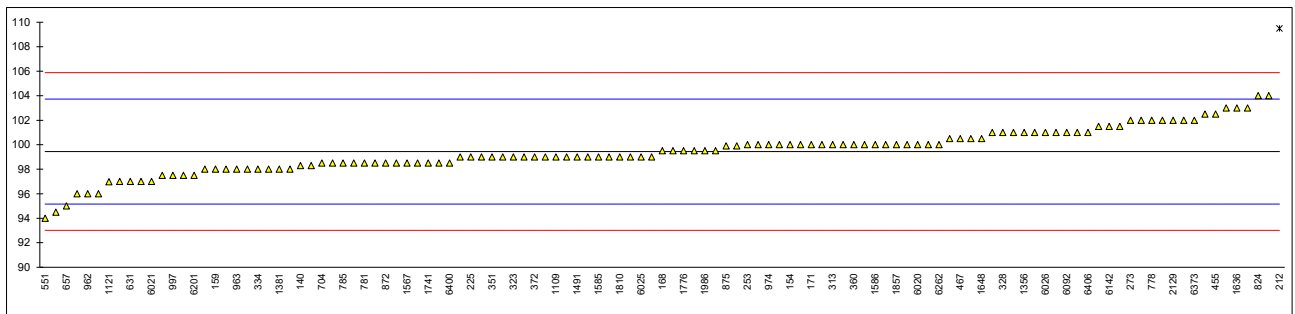
Determination of Heat of Combustion (Gross) on sample #21275; results in MJ/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D240	41.880		-0.31	971	D240	41.92		-0.03
120		-----		-----	974	D4868	41.81		-0.80
140		-----		-----	994	D4868	41.874		-0.36
150		-----		-----	995	D4868	41.84		-0.59
154		-----		-----	996	D4868	41.839		-0.60
159		-----		-----	997		-----		-----
168		-----		-----	1040		-----		-----
169		-----		-----	1065		-----		-----
170		-----		-----	1108		-----		-----
171		-----		-----	1109		-----		-----
175		-----		-----	1121		-----		-----
212		-----		-----	1126		-----		-----
225		-----		-----	1134	D240	42.1094		1.29
235	D4868	41.84		-0.59	1140		-----		-----
237	D4868	41.810		-0.80	1191	D240	42.0115		0.61
238		-----		-----	1205		-----		-----
253		-----		-----	1212	D240	41.916		-0.06
256		-----		-----	1213	D240	42.24		2.21
273	D4868	42.07		1.02	1218		-----		-----
309	D240	41.865		-0.42	1299		-----		-----
311		-----		-----	1353		-----		-----
313		-----		-----	1356		-----		-----
323		-----		-----	1381	D240	41.9624		0.26
328		-----		-----	1397		-----		-----
333		42.205		1.96	1402	IP12	41.90		-0.17
334		-----		-----	1431	D240	42.025		0.70
339		-----		-----	1491	ISO8217	42.12		1.37
342	D4868	41.81		-0.80	1510		-----		-----
349		-----		-----	1567		-----		-----
351	D4868	42.094		1.18	1569	D240	41.753		-1.20
356		-----		-----	1585	D4868	41.826		-0.69
360	D4868	41.831		-0.66	1586	D240	42.305		2.66
372	D240	41.80		-0.87	1631		-----		-----
381		-----		-----	1636	D4868	41.83		-0.66
445		-----		-----	1648		-----		-----
447		-----		-----	1669		-----		-----
455		-----		-----	1681	D4868	41.835		-0.63
467	D4868	41.824		-0.71	1710	In house	42.034		0.76
507		-----		-----	1720		-----		-----
541		-----		-----	1740	D240	41.880		-0.31
551	D4868	41.81		-0.80	1741		-----		-----
575		-----		-----	1776		-----		-----
621		-----		-----	1796		-----		-----
631	D240	42.158		1.63	1810		42.009		0.59
634		-----	C	-----	1811	D240	42.022		0.68
657	DIN51900-1	41.895		-0.21	1854		-----		-----
704	D4868	41.82		-0.73	1857	D4868	41.82		-0.73
710	D4868	41.830		-0.66	1906	D4809	42.075		1.05
752	ISO8217	42.0		0.53	1938		-----		-----
753		-----		-----	1941		-----		-----
778		-----		-----	1942		41.93		0.04
781	D4868	41.84		-0.59	1949		-----		-----
785		-----		-----	1986	D4868	41.95		0.18
798		-----		-----	1995		-----		-----
823	KS M2057	41.802		-0.86	2129	D240	41.956		0.22
824	KS M2057	41.790		-0.94	2146		-----		-----
825		-----		-----	6020	D4868	41.84		-0.59
840	D240	41.877		-0.34	6021		-----		-----
872		-----		-----	6024		-----		-----
873	D4868	41.82		-0.73	6025		-----		-----
874	D4868	41.65		-1.92	6026	D4868	41.80	C	-0.87
875	D4868	41.82		-0.73	6049		-----		-----
887		-----		-----	6054		-----		-----
902	ISO8217	42.06		0.95	6057		-----		-----
904	D4868	41.80		-0.87	6075		-----		-----
913		-----		-----	6092		-----		-----
962		-----		-----	6112		-----		-----
963	D4868	41.93		0.04	6114	D4868	41.81	C	-0.80

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131		-----		-----	6340		-----		-----
6142		-----		-----	6373	D4868	41.83		-0.66
6163		-----		-----	6379		-----		-----
6201		-----		-----	6400		-----		-----
6262	D240	42.2024		1.94	6404	DIN51900-1/2	42.289	C	2.55
6266		-----		-----	6406		-----		-----
6298		-----		-----					

normality	OK
n	60
outliers	0
mean (n)	41.9249
st.dev. (n)	0.14337
R(calc.)	0.4014
st.dev.(D240:19)	0.14286
R(D240:19)	0.40

Lab 634: reported in different unit, 17944.88 Btu/lb
Lab 6026: first reported 47.55
Lab 6114: first reported 50.43
Lab 6404: first reported 42.869

Kernel Density
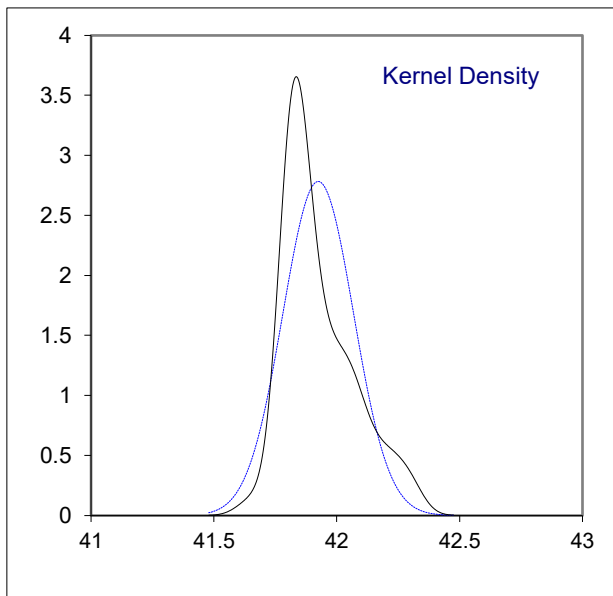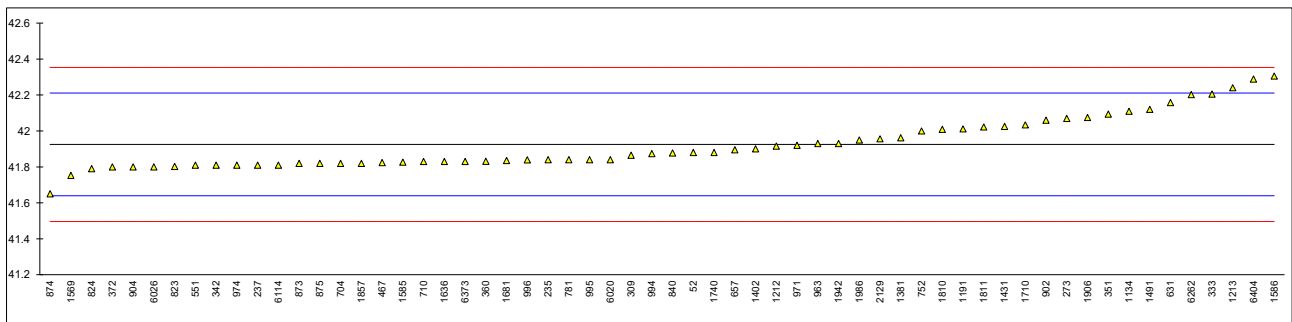
Determination of Heat of Combustion (Net) on sample #21275; results in MJ/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	971	D240	39.76		0.36
120		-----		-----	974	D4868	39.59		-0.83
140		-----		-----	994	D4868	39.651		-0.40
150		-----		-----	995	D4868	39.62		-0.62
154		-----		-----	996	D4868	39.619		-0.62
159		-----		-----	997		-----		-----
168		-----		-----	1040		-----		-----
169		-----		-----	1065		-----		-----
170		-----		-----	1108		-----		-----
171		-----		-----	1109		-----		-----
175		-----		-----	1121		-----		-----
212		-----		-----	1126		-----		-----
225		-----		-----	1134	D240	39.924		1.51
235	D4868	39.62		-0.62	1140		-----		-----
237	D4868	39.591		-0.82	1191	D240	39.8725		1.15
238		-----		-----	1205		-----		-----
253		-----		-----	1212		-----		-----
256		-----		-----	1213		-----		-----
273	D4868	39.84		0.92	1218		-----		-----
309	D240	39.740		0.22	1299		-----		-----
311		-----		-----	1353		-----		-----
313		-----		-----	1356		-----		-----
323		-----		-----	1381	D240	39.7623		0.38
328		-----		-----	1397		-----		-----
333		40.000		2.04	1402	IP12	39.84		0.92
334		-----		-----	1431	D240	39.996		2.02
339		-----		-----	1491	ISO8217	39.90		1.34
342	D4868	39.60		-0.76	1510		-----		-----
349		-----		-----	1567		-----		-----
351	D4868	39.878		1.19	1569	D240	39.650		-0.41
356		-----		-----	1585	D4868	39.606		-0.71
360	D4868	39.611		-0.68	1586	D240	39.779		0.50
372	D240	39.59		-0.83	1631		-----		-----
381		-----		-----	1636	D4868	39.61		-0.69
445		-----		-----	1648		-----		-----
447		-----		-----	1669		-----		-----
455		-----		-----	1681	D4868	39.614		-0.66
467	D4868	39.603		-0.73	1710	In house	39.870		1.13
507		-----		-----	1720		-----		-----
541		-----		-----	1740	D240	39.730		0.15
551	D4868	39.59		-0.83	1741	D4868	39.9328		1.57
575		-----		-----	1776		-----		-----
621		-----		-----	1796		-----		-----
631	D4868	39.608		-0.70	1810		39.783		0.53
634		-----	C	-----	1811	D240	39.858		1.05
657	DIN51900-1	39.810		0.71	1854		-----		-----
704	D4868	39.60		-0.76	1857	D4868	39.60		-0.76
710	D4868	39.610		-0.69	1906	D4809	39.895		1.31
752	ISO8217	39.8		0.64	1938		-----		-----
753		-----		-----	1941	In house	39.91		1.41
778		-----		-----	1942		39.88		1.20
781	D4868	39.62		-0.62	1949		-----		-----
785		-----		-----	1986	D4868	39.70		-0.06
798		-----		-----	1995		-----		-----
823	KS M2057	39.473		-1.64	2129	D240	39.819		0.78
824	KS M2057	39.490		-1.53	2146		-----		-----
825		-----		-----	6020	D4868	39.62		-0.62
840		-----		-----	6021		-----		-----
872		-----		-----	6024		-----		-----
873	D4868	39.60		-0.76	6025		-----		-----
874	D4868	39.42		-2.02	6026	D4868	39.59	C	-0.83
875	D4868	39.6		-0.76	6049		-----		-----
887		-----		-----	6054		-----		-----
902	ISO8217	39.85		0.99	6057		-----		-----
904	D4868	39.59		-0.83	6075		-----		-----
913		-----		-----	6092		-----		-----
962		-----		-----	6112		-----		-----
963	D4868	39.70		-0.06	6114	D4868	39.59	C	-0.83

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131		-----		-----	6340		-----		-----
6142		-----		-----	6373	D4868	39.60		-0.76
6163		-----		-----	6379		-----		-----
6201		-----		-----	6400		-----		-----
6262		-----	W	-----	6404	DIN51900-1/2	39.749		0.29
6266		-----		-----	6406		-----		-----
6298		-----		-----					

normality	OK	
n	57	
outliers	0	
mean (n)	39.7080	
st.dev. (n)	0.13922	
R(calc.)	0.3898	
st.dev.(D240:19)	0.14286	
R(D240:19)	0.40	

Lab 634: reported in different unit, 17236 Btu/lb
Lab 6026: first reported 46.85
Lab 6114: first reported 45.13
Lab 6262: test result withdrawn, first reported 40.3896

Kernel Density
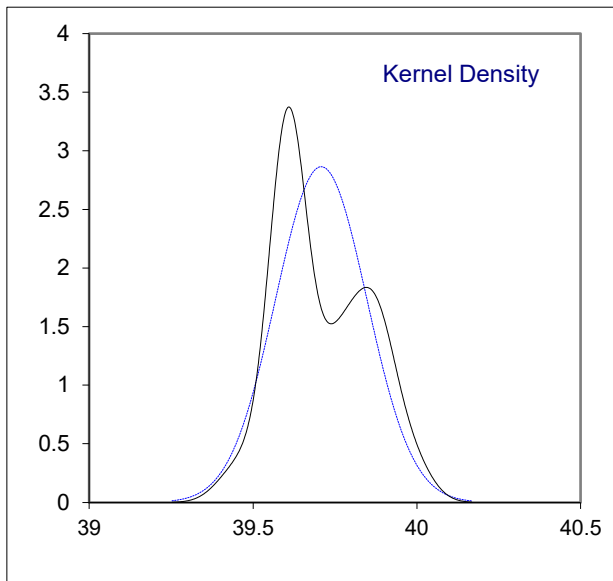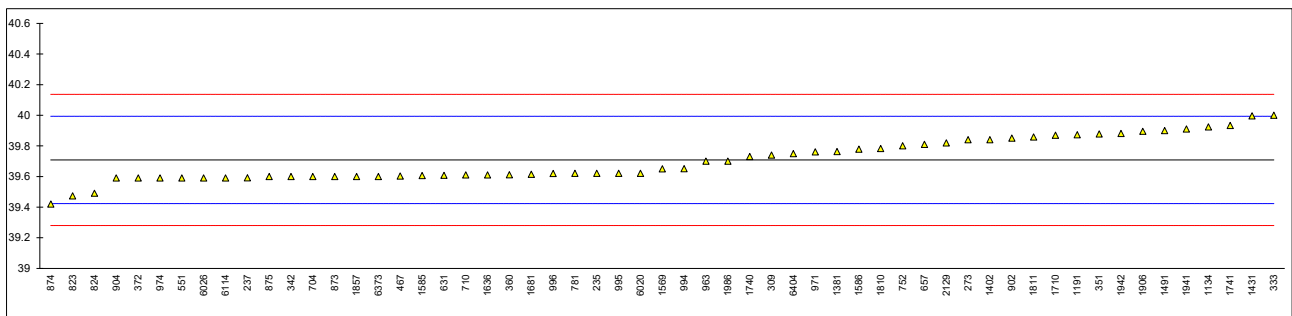
Determination of Kinematic Viscosity at 50°C on sample #21275; results in mm^2/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D445	703.5		-0.43	971	ISO3104	714.6		0.08
120	D445	722.3		0.44	974	D445	715.2		0.11
140		-----		-----	994	D445	714.1		0.06
150	D445	718.5		0.26	995	ISO3104	719.7		0.32
154	D445	731.0		0.84	996	D445	717.3		0.21
159	D445	698.28		-0.68	997		-----		-----
168	D445	690.4		-1.04	1040		-----		-----
169	D445	716.6		0.17	1065	D445	733.56		0.96
170	D445	727.5		0.68	1108	ISO3104	724.7		0.55
171	ISO3104	731.3		0.86	1109	D445	714.28		0.07
175	D445	708.7		-0.19	1121	ISO3104	738.398		1.19
212	ISO3104	681.93		-1.44	1126	ISO3104	721.684		0.41
225	D445	715.4		0.12	1134	ISO3104	714.61		0.08
235	ISO3104	706.4407		-0.30	1140	IP71	674.5		-1.78
237	D445	720.9		0.37	1191	ISO3104	710.34		-0.12
238		-----		-----	1205		-----		-----
253	D445	714.2		0.06	1212		-----		-----
256	D445	712.1		-0.04	1213		-----		-----
273	D445	708.5		-0.20	1218		-----		-----
309		-----		-----	1299		-----		-----
311	ISO3104	702.7		-0.47	1353		-----		-----
313	D445	695.2		-0.82	1356	ISO3104	732.9		0.93
323	ISO3104	730.2		0.80	1381	ISO3104	696.40		-0.76
328	ISO3104	718.3		0.25	1397		-----		-----
333	ISO3104	714.0		0.05	1402	ISO3104	696.7		-0.75
334	ISO3104	715.5		0.12	1431		-----		-----
339		-----		-----	1491		-----		-----
342	ISO3104	716.6		0.17	1510		-----		-----
349		-----		-----	1567		-----		-----
351	ISO3104	727.80		0.69	1569	D445	716.7		0.18
356	ISO3104	726.2		0.62	1585	ISO3104	699.46		-0.62
360	D445	712.40		-0.02	1586	D445	708.1		-0.22
372	D445	710.0		-0.13	1631		-----		-----
381	D445	693.6		-0.89	1636	D445	725.18		0.57
445		-----		-----	1648	ISO3104	716.30		0.16
447		-----		-----	1669	D445	726.9	C	0.65
455	IP71	685.9		-1.25	1681	ISO3104	712.44		-0.02
467	ISO3104	703.53		-0.43	1710		-----		-----
507	D445	724.15		0.52	1720		-----		-----
541	D445	690.395		-1.04	1740	ISO3104	718.6		0.27
551	D445	722.5482		0.45	1741	ISO3104	723.4		0.49
575		-----		-----	1776		-----		-----
621		-----		-----	1796	D445	703.3		-0.44
631	D445	746.39		1.56	1810		-----		-----
634	D445	755.1		1.96	1811		-----		-----
657	ISO3104	712.2		-0.03	1854		-----		-----
704	D445	714.2		0.06	1857	ISO3104	694.44		-0.86
710	D445	712.18		-0.03	1906		-----		-----
752	ISO3104	701.5		-0.53	1938		-----		-----
753	ISO3104	698.6		-0.66	1941		-----		-----
778	D445	708.6		-0.20	1942		-----		-----
781	ISO3104	697.3		-0.72	1949		-----		-----
785	D445	695.2		-0.82	1986	ISO3104	703.1		-0.45
798		-----		-----	1995	D445	721.92		0.42
823	ISO3104	734.8		1.02	2129	ISO3104	699.80		-0.61
824	ISO3104	723.0		0.47	2146		-----		-----
825	ISO3104	726.7681		0.65	6020	D445	701.11		-0.55
840	D445	722.23		0.44	6021	D445	702.56		-0.48
872	ISO3104	708.3		-0.21	6024	ISO3104	698.3		-0.68
873	D445	707.0		-0.27	6025	D445	705.8		-0.33
874	ISO3104	702.9		-0.46	6026	D445	706.2		-0.31
875	D445	707.0		-0.27	6049	ISO3104	710.4		-0.11
887		-----		-----	6054	D445	719.8		0.32
902	ISO3104	715.8		0.14	6057		-----		-----
904	ISO3104	718.8		0.28	6075	ISO3104	745.25		1.50
913		-----		-----	6092	D445	708.2		-0.22
962	D445	712.4		-0.02	6112		-----		-----
963	ISO3104	718.8		0.28	6114	D445	700.62		-0.57

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131	ISO3104	708.6		-0.20	6340		-----		-----
6142	ISO3104	729.5		0.77	6373	D445	704.5		-0.39
6163		-----		-----	6379		-----		-----
6201	D445	703.4		-0.44	6400	ISO3104	694.9		-0.83
6262	D445	731.585		0.87	6404	ISO3104	726.77		0.65
6266		-----	C	-----	6406	ISO3104	700.6		-0.57
6298	D445	707.9		-0.23					

normality	OK
n	105
outliers	0
mean (n)	712.8595
st.dev. (n)	13.72163
R(calc.)	38.4206
st.dev.(ISO3104:20)	21.54109
R(ISO3104:20)	60.3150

Lab 1669: first reported 770.9
Lab 6266: see Kinematic Viscosity Stabinger at 50°C
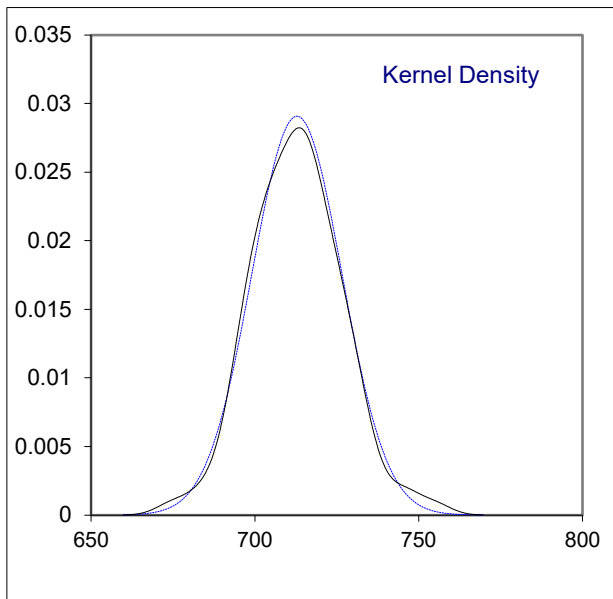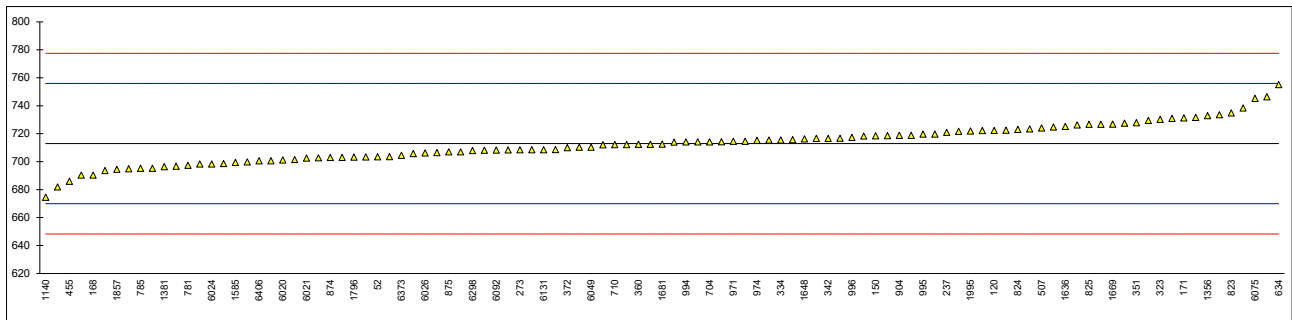
Determination of Kinematic Viscosity at 100°C on sample #21275; results in mm^2/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D445	48.02		-0.03	971	ISO3104	48.46		0.18
120		-----		-----	974	D445	48.42		0.16
140		-----		-----	994	D445	48.01		-0.04
150	D445	47.53		-0.27	995	ISO3104	48.05		-0.02
154		-----		-----	996	D445	48.07		-0.01
159		-----		-----	997		-----		-----
168		-----		-----	1040		-----		-----
169	D445	49.64		0.75	1065	D445	48.56		0.23
170		-----		-----	1108	ISO3104	49.3		0.59
171	ISO3104	51.81	R(0.01)	1.80	1109	D445	49.61		0.74
175		-----		-----	1121	ISO3104	48.082		0.00
212		-----		-----	1126		-----		-----
225	D445	47.95		-0.06	1134	ISO3104	50.68	R(0.05)	1.25
235	ISO3104	48.9358		0.41	1140	IP71	47.88		-0.10
237	D445	46.98		-0.53	1191	ISO3104	48.0765		0.00
238		-----		-----	1205		-----		-----
253	D445	48.50		0.20	1212		-----		-----
256		-----		-----	1213	D445	48.31		0.11
273	D445	47.06		-0.49	1218		-----		-----
309	D445	47.41		-0.32	1299		-----		-----
311	ISO3104	48.18		0.05	1353		-----		-----
313	D445	46.89		-0.58	1356		-----		-----
323	ISO3104	48.02		-0.03	1381	ISO3104	47.285		-0.39
328	ISO3104	47.54		-0.26	1397		-----		-----
333	ISO3104	47.62		-0.22	1402	ISO3104	49.75		0.81
334	ISO3104	48.95		0.42	1431		-----		-----
339		-----		-----	1491		-----		-----
342		-----		-----	1510		-----		-----
349		-----		-----	1567		-----		-----
351	ISO3104	47.185		-0.43	1569	D445	48.23		0.07
356	ISO3104	48.01		-0.04	1585	ISO3104	47.80		-0.14
360	D445	47.467		-0.30	1586	D445	48.21		0.06
372	D445	47.80		-0.14	1631	D445	47.06		-0.49
381	D445	44.98	R(0.01)	-1.50	1636	D445	47.358		-0.35
445		-----		-----	1648	ISO3104	48.37		0.14
447		-----		-----	1669	D445	47.90		-0.09
455	IP71	47.32		-0.37	1681	ISO3104	47.984		-0.05
467	ISO3104	48.374		0.14	1710	ISO3104	48.26		0.09
507	D445	47.863		-0.11	1720		-----		-----
541	D445	48.680		0.29	1740	ISO3104	48.08		0.00
551	D445	47.3265		-0.37	1741	ISO3104	47.56		-0.25
575		-----		-----	1776		-----		-----
621		-----		-----	1796	D445	47.74		-0.17
631	D445	50.307	R(0.05)	1.07	1810		-----		-----
634		-----		-----	1811		-----		-----
657	ISO3104	48.28		0.10	1854		-----		-----
704	D445	48.57		0.24	1857	ISO3104	47.743		-0.16
710	D445	48.710		0.30	1906		-----		-----
752	ISO3104	47.70		-0.18	1938	ISO3104	48.224		0.07
753	ISO3104	47.55		-0.26	1941	ISO3104	47.63		-0.22
778		-----		-----	1942		-----		-----
781	ISO3104	48.02		-0.03	1949		-----		-----
785	D445	48.08		0.00	1986	ISO3104	48.37		0.14
798		-----		-----	1995	D445	48.39		0.15
823	D445	49.35		0.61	2129	ISO3104	49.32		0.60
824	ISO3104	48.74		0.32	2146		-----		-----
825	ISO3104	49.38		0.63	6020	D445	47.894		-0.09
840	D445	47.610		-0.23	6021	D445	48.178		0.05
872	ISO3104	48.06		-0.01	6024	ISO3104	48.82		0.36
873	D445	47.77		-0.15	6025	D445	48.18		0.05
874	ISO3104	48.03		-0.03	6026	D445	47.55		-0.26
875	D445	47.74		-0.17	6049	ISO3104	48.02		-0.03
887		-----		-----	6054		-----		-----
902	ISO3104	48.19		0.05	6057		-----		-----
904	ISO3104	48.24		0.08	6075		-----		-----
913		-----		-----	6092		-----		-----
962		-----		-----	6112		-----		-----
963		-----		-----	6114	D445	47.537		-0.26

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131	ISO3104	48.56		0.23	6340		-----		-----
6142	ISO3104	236.2	R(0.01)	90.83	6373	D445	47.28		-0.39
6163		-----		-----	6379		-----		-----
6201	D445	47.80		-0.14	6400		-----		-----
6262	D445	48.246		0.08	6404	ISO3104	47.589		-0.24
6266		-----	C	-----	6406		-----		-----
6298		-----		-----					

normality	OK
n	85
outliers	5
mean (n)	48.0826
st.dev. (n)	0.61515
R(calc.)	1.7224
st.dev.(ISO3104:20)	2.07099
R(ISO3104:20)	5.7988

Lab 6266: see Kinematic Viscosity Stabinger at 100°C
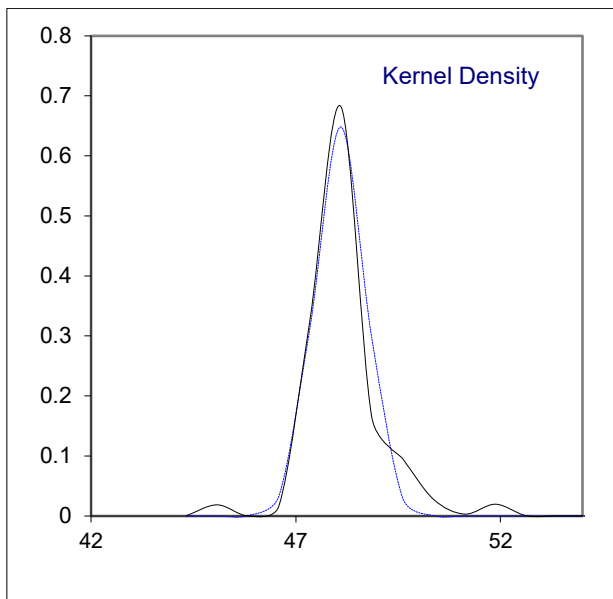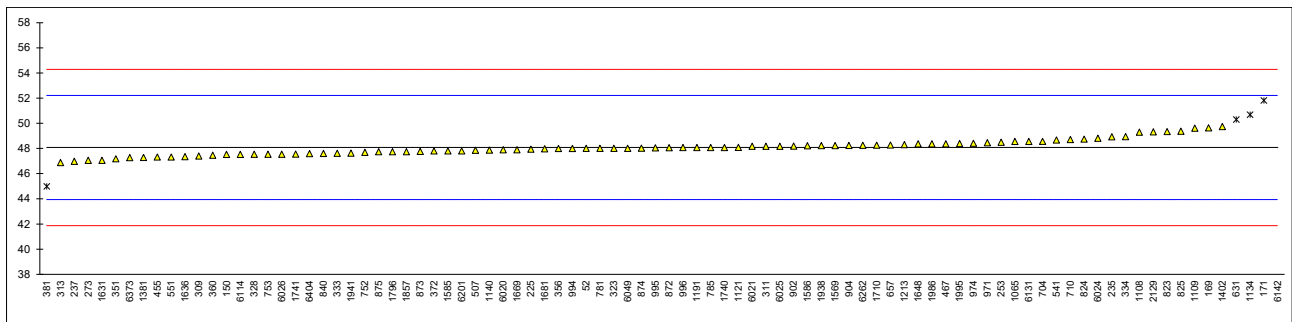
Determination of Kinematic Viscosity Stabinger at 50°C on sample #21275; results in mm²/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	971	D7042	709.8		-0.17
120		-----		-----	974		-----		-----
140		-----		-----	994	D7042	709.3		-0.19
150		-----		-----	995		-----		-----
154		-----		-----	996		-----		-----
159		-----		-----	997		-----		-----
168		-----		-----	1040		-----		-----
169		-----		-----	1065		-----		-----
170		-----		-----	1108	D7042	722.1		0.30
171		-----		-----	1109		-----		-----
175		-----		-----	1121		-----		-----
212		-----		-----	1126		-----		-----
225		-----		-----	1134		-----		-----
235		-----		-----	1140		-----		-----
237		-----		-----	1191		-----		-----
238		-----		-----	1205		-----		-----
253		-----		-----	1212	D7042	732.4		0.69
256		-----		-----	1213		-----		-----
273		-----		-----	1218		-----		-----
309	D7042	717.8		0.13	1299		-----		-----
311		-----		-----	1353		-----		-----
313		-----		-----	1356		-----		-----
323		-----		-----	1381	D7042	724.17		0.38
328		-----		-----	1397	D7042	708.8		-0.21
333		-----		-----	1402		-----		-----
334	D7042	719.9		0.21	1431	D7042	710.18		-0.16
339		-----		-----	1491	D7042	714.41		0.00
342		-----		-----	1510		-----		-----
349		-----		-----	1567	D7042	728.60		0.54
351		-----		-----	1569		-----		-----
356		-----		-----	1585		-----		-----
360	D7042	717.54		0.12	1586	D7042	707.3		-0.27
372	D7042	715.3		0.04	1631		-----		-----
381		-----		-----	1636		-----		-----
445		-----		-----	1648		-----		-----
447		-----		-----	1669		-----		-----
455		-----		-----	1681		-----		-----
467		-----		-----	1710		-----		-----
507		-----		-----	1720		-----		-----
541		-----		-----	1740	D7042	711.8		-0.10
551		-----		-----	1741		-----		-----
575		-----		-----	1776	D7042	699.3		-0.57
621		-----		-----	1796		-----		-----
631		-----		-----	1810		-----		-----
634		-----		-----	1811		-----		-----
657		-----		-----	1854		-----		-----
704		-----		-----	1857		-----		-----
710		-----		-----	1906		-----		-----
752		-----		-----	1938		-----		-----
753		-----		-----	1941		-----		-----
778		-----		-----	1942	D7042	686.68		-1.05
781		-----		-----	1949		-----		-----
785		-----		-----	1986		-----		-----
798		-----		-----	1995	D7042	729.26		0.57
823		-----		-----	2129		-----		-----
824		-----		-----	2146		-----		-----
825		-----		-----	6020		-----		-----
840	D7042	726.50		0.46	6021		-----		-----
872		-----		-----	6024		-----		-----
873		-----		-----	6025		-----		-----
874		-----		-----	6026		-----		-----
875		-----		-----	6049		-----		-----
887		-----		-----	6054		-----		-----
902		-----		-----	6057		-----		-----
904		-----		-----	6075		-----		-----
913		-----		-----	6092		-----		-----
962		-----		-----	6112		-----		-----
963		-----		-----	6114		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131		-----		-----	6340		-----		-----
6142		-----		-----	6373	D7042	703.0		-0.43
6163		-----		-----	6379		-----		-----
6201		-----		-----	6400		-----		-----
6262		-----		-----	6404		-----		-----
6266	D7042	723.4	C	0.35	6406	D7042	697.47		-0.64
6298		-----		-----					

normality	OK
n	22
outliers	0
mean (n)	714.3186
st.dev. (n)	11.43814
R(calc.)	32.0268
st.dev.(D7042:21a)	26.25121
R(D7042:21a)	73.5034

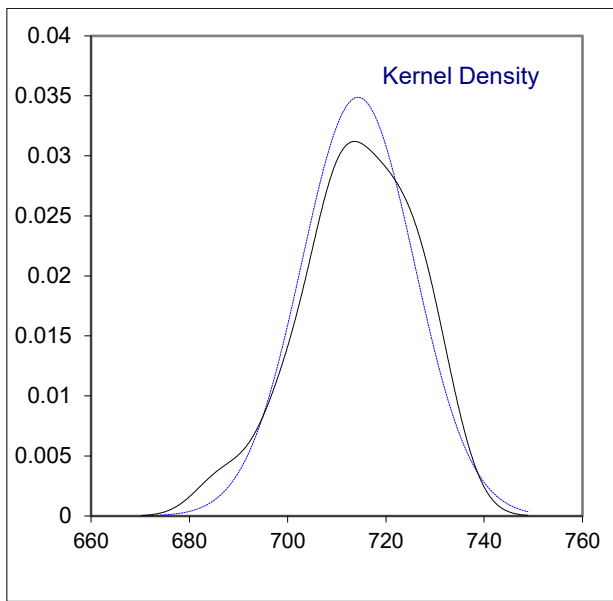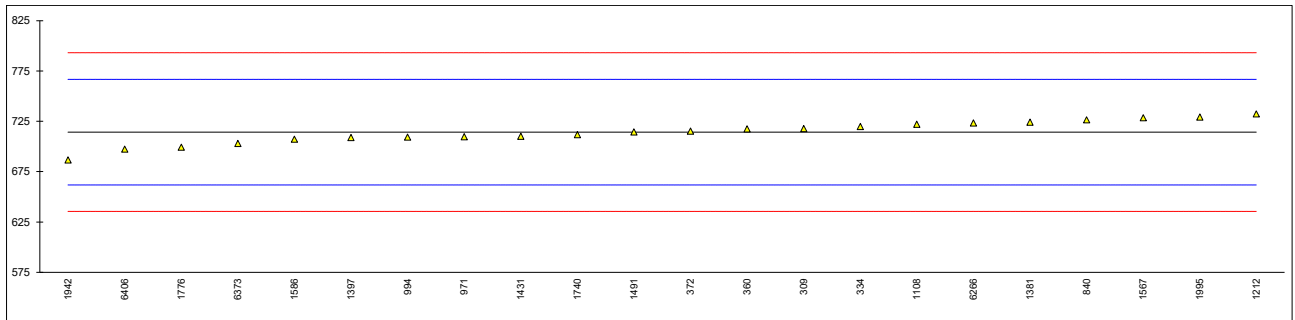Lab 6266: test result reported as Kinematic Viscosity at 50 °C

Determination of Kinematic Viscosity Stabinger at 100°C on sample #21275; results in mm^2/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	971	D7042	47.96		-0.14
120		-----		-----	974		-----		-----
140		-----		-----	994	D7042	47.87		-0.21
150		-----		-----	995		-----		-----
154		-----		-----	996		-----		-----
159		-----		-----	997		-----		-----
168		-----		-----	1040		-----		-----
169		-----		-----	1065		-----		-----
170		-----		-----	1108	D7042	50.02		1.53
171		-----		-----	1109		-----		-----
175		-----		-----	1121		-----		-----
212		-----		-----	1126		-----		-----
225		-----		-----	1134		-----		-----
235		-----		-----	1140		-----		-----
237		-----		-----	1191		-----		-----
238		-----		-----	1205		-----		-----
253		-----		-----	1212	D7042	47.97		-0.13
256		-----		-----	1213		-----		-----
273		-----		-----	1218		-----		-----
309	D7042	47.80		-0.27	1299		-----		-----
311		-----		-----	1353		-----		-----
313		-----		-----	1356		-----		-----
323		-----		-----	1381	D7042	47.390		-0.60
328		-----		-----	1397	D7042	48.45		0.26
333		-----		-----	1402		-----		-----
334	D7042	47.76		-0.30	1431	D7042	47.483		-0.53
339		-----		-----	1491	D7042	49.899		1.43
342		-----		-----	1510		-----		-----
349		-----		-----	1567		-----		-----
351		-----		-----	1569		-----		-----
356		-----		-----	1585		-----		-----
360	D7042	48.108		-0.02	1586	D7042	48.08		-0.04
372	D7042	47.53		-0.49	1631		-----		-----
381		-----		-----	1636		-----		-----
445		-----		-----	1648		-----		-----
447		-----		-----	1669		-----		-----
455		-----		-----	1681		-----		-----
467		-----		-----	1710	D7042	49.56		1.15
507		-----		-----	1720		-----		-----
541		-----		-----	1740	D7042	47.95		-0.15
551		-----		-----	1741		-----		-----
575		-----		-----	1776	D7042	47.40		-0.59
621		-----		-----	1796		-----		-----
631		-----		-----	1810	D7042	48.992		0.69
634		-----		-----	1811	D7042	48.772	C	0.52
657		-----		-----	1854		-----		-----
704		-----		-----	1857		-----		-----
710		-----		-----	1906		-----		-----
752		-----		-----	1938		-----		-----
753		-----		-----	1941		-----		-----
778		-----		-----	1942	D7042	47.31		-0.67
781		-----		-----	1949		-----		-----
785		-----		-----	1986		-----		-----
798		-----		-----	1995	D7042	48.31		0.14
823		-----		-----	2129		-----		-----
824		-----		-----	2146		-----		-----
825		-----		-----	6020		-----		-----
840	D7042	47.275		-0.70	6021		-----		-----
872		-----		-----	6024		-----		-----
873		-----		-----	6025		-----		-----
874		-----		-----	6026		-----		-----
875		-----		-----	6049		-----		-----
887		-----		-----	6054		-----		-----
902		-----		-----	6057		-----		-----
904		-----		-----	6075		-----		-----
913		-----		-----	6092		-----		-----
962		-----		-----	6112		-----		-----
963		-----		-----	6114		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131		-----		-----	6340		-----		-----
6142		-----		-----	6373	D7042	47.49		-0.52
6163		-----		-----	6379		-----		-----
6201		-----		-----	6400		-----		-----
6262		-----		-----	6404		-----		-----
6266	D7042	47.7	C	-0.35	6406		-----		-----
6298		-----		-----					

normality	suspect
n	23
outliers	0
mean (n)	48.1339
st.dev. (n)	0.80612
R(calc.)	2.2571
st.dev.(D7042:21a)	1.23532
R(D7042:21a)	3.4589

Lab 1811: first reported 51.756
Lab 6266: test result reported as Kinematic Viscosity at 100 °C

Kernel Density
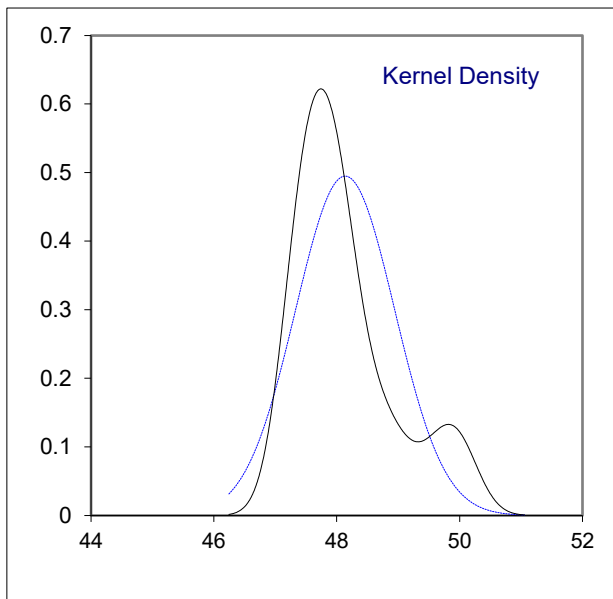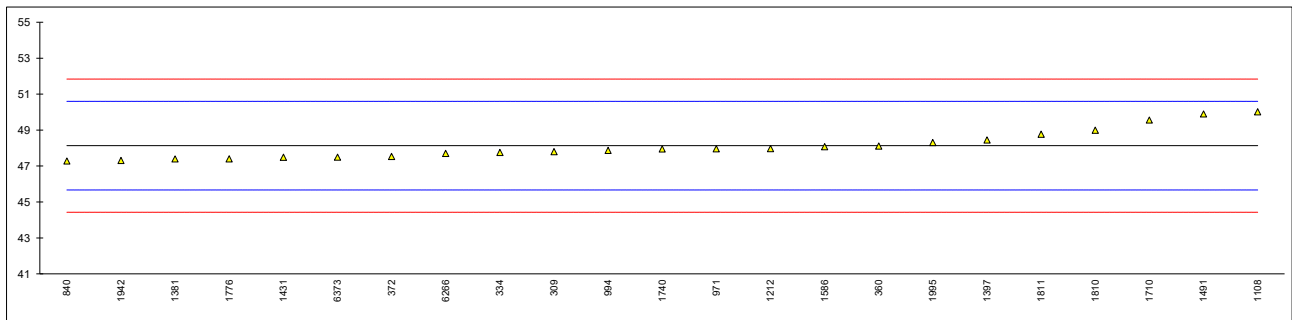
Determination of Nitrogen on sample #21275; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4629	3620		-0.27	971	D5762 Gravimetric	3764		0.13
120	D4629	2655.729		-3.00	974		-----		-----
140	D5762 Gravimetric	2900		-2.31	994	D5762 Volumetric	3965		0.70
150		-----		-----	995	D3228	4016		0.85
154		-----		-----	996		-----		-----
159		-----		-----	997		-----		-----
168		-----		-----	1040		-----		-----
169		-----		-----	1065	D4629	4380		1.88
170		-----		-----	1108	D5762 Gravimetric	4072.1		1.01
171	D5762 Gravimetric	4100		1.09	1109	D4629	3467		-0.71
175		-----		-----	1121		-----		-----
212		-----		-----	1126		-----		-----
225		-----		-----	1134	D5762	4147.017		1.22
235		-----		-----	1140	D4629	4651.65		2.65
237		-----		-----	1191		-----		-----
238		-----		-----	1205		-----		-----
253		-----		-----	1212	D3228	3940		0.63
256		-----		-----	1213		-----		-----
273		-----		-----	1218		-----		-----
309		-----		-----	1299		-----		-----
311	D5762 Volumetric	4062		0.98	1353		-----		-----
313		-----		-----	1356		-----		-----
323		-----		-----	1381		-----		-----
328		-----		-----	1397		-----		-----
333	D5762 Volumetric	3800		0.24	1402	D5762 Volumetric	4077.96		1.02
334		-----		-----	1431		-----		-----
339		-----		-----	1491		-----		-----
342		-----		-----	1510		-----		-----
349		-----		-----	1567	D5762 Volumetric	4070		1.00
351		-----		-----	1569		-----		-----
356		-----		-----	1585		-----		-----
360		-----		-----	1586		-----		-----
372	D5762 Volumetric	3800		0.24	1631		-----		-----
381		-----		-----	1636		-----		-----
445		-----		-----	1648		-----		-----
447		-----		-----	1669		-----		-----
455		-----		-----	1681		-----		-----
467	D5762 Gravimetric	4260		1.54	1710	In house	2530	C	-3.36
507		-----		-----	1720		-----		-----
541		-----		-----	1740		-----		-----
551		-----		-----	1741	D5762 Gravimetric	4692		2.76
575		-----		-----	1776	D5762 Volumetric	2870		-2.40
621		-----		-----	1796		-----		-----
631		-----		-----	1810		-----		-----
634		-----		-----	1811		-----		-----
657	D5762 Gravimetric	3600		-0.33	1854		-----		-----
704	D5762 Volumetric	4100		1.09	1857	D5762 Gravimetric	4000		0.80
710		-----		-----	1906		-----		-----
752		-----		-----	1938		-----		-----
753		-----		-----	1941		-----		-----
778		-----		-----	1942		-----		-----
781	D5762 Gravimetric	4025		0.87	1949		-----		-----
785		-----		-----	1986		-----		-----
798		-----		-----	1995		-----		-----
823	D5762 Gravimetric	3260		-1.29	2129	D3228	4238		1.48
824	D5762 Gravimetric	3140		-1.63	2146		-----		-----
825	D5762 Gravimetric	3330		-1.09	6020		-----		-----
840	D3228	4351		1.80	6021		-----		-----
872		-----		-----	6024		-----		-----
873		-----		-----	6025		-----		-----
874	D5762	3900		0.52	6026	D5762 Gravimetric	3600		-0.33
875	D5762 Volumetric	3809		0.26	6049		-----		-----
887		-----		-----	6054		-----		-----
902		-----		-----	6057		-----		-----
904		-----		-----	6075		-----		-----
913		-----		-----	6092		-----		-----
962		-----		-----	6112	D5762 Volumetric	2500		-3.45
963		-----		-----	6114	D5762 Volumetric	3837		0.34

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131		-----		-----	6340		-----		-----
6142		-----		-----	6373	D4629	3189		-1.49
6163		-----		-----	6379	D5762 Gravimetric	4099.385	*)	1.08
6201	D5762 Gravimetric	3385		-0.94	6400		-----		-----
6262	D5762 Volumetric	3560		-0.44	6404	D5762 Volumetric	2607.3		-3.14
6266		-----		-----	6406		-----		-----
6298		-----		-----					

			D5762 Gravim. only	D5762 Volum. only
normality	OK		OK	OK
n	41		15	13
outliers	0		0	0
mean (n)	3716.37		3748.50	3619.87
st.dev. (n)	562.175		487.222	573.780
R(calc.)	1574.09		1364.22	1606.59
st.dev.(D5762:18a)	353.055		356.107	343.887
R(D5762:18a)	988.55		997.10	962.88

Lab 1710: first reported 2040
Lab 6379: *) Volumetric calibration, the sample was diluted gravimetrically

Kernel Density
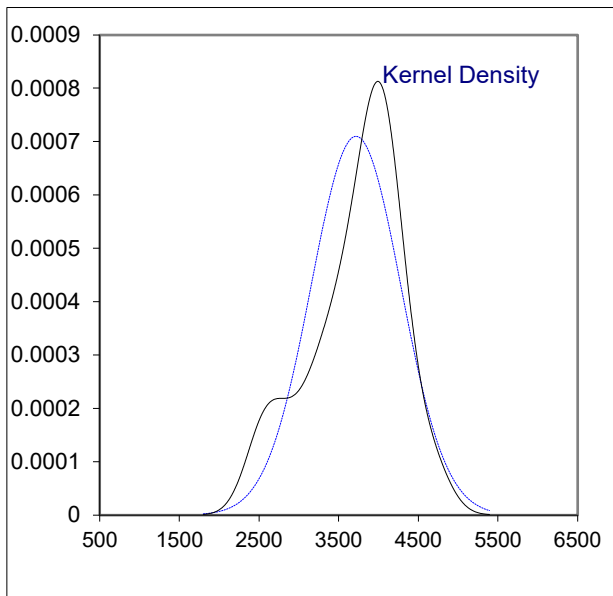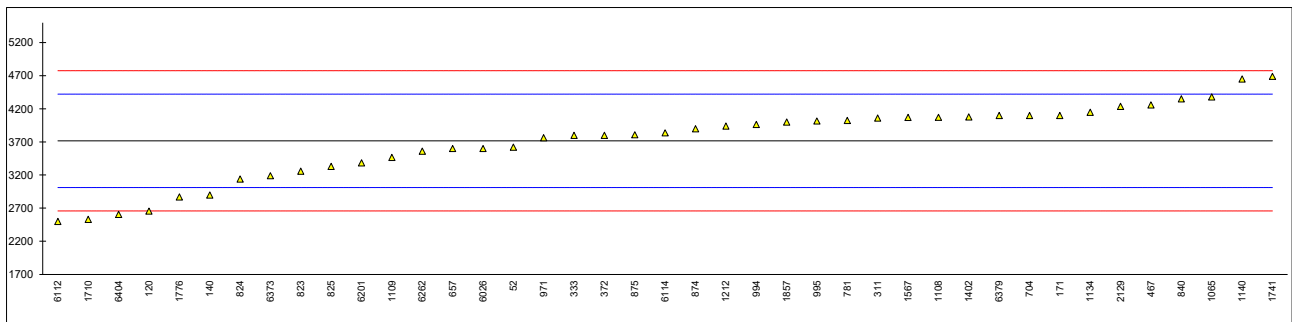
Determination of Pour Point, Lower on sample #21275; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	971		-----		-----
120		-----		-----	974		-----		-----
140		-----		-----	994	D97	6		0.44
150		-----		-----	995	D97	6		0.44
154		-----		-----	996	D97	6		0.44
159		-----		-----	997	ISO3016	6		0.44
168		-----		-----	1040		-----		-----
169	D97	3		-0.50	1065		-----		-----
170		-----		-----	1108		-----		-----
171		-----		-----	1109	D97	12		2.30
175		-----		-----	1121	ISO3016	3		-0.50
212	ISO3016	0		-1.43	1126		-----		-----
225		-----		-----	1134		-----		-----
235	ISO3016	6		0.44	1140		-----		-----
237		-----		-----	1191	ISO3016	9		1.37
238	D97	3		-0.50	1205		-----		-----
253		-----		-----	1212		-----		-----
256		-----		-----	1213		-----		-----
273		-----		-----	1218		-----		-----
309		-----		-----	1299		-----		-----
311		-----		-----	1353		-----		-----
313		-----		-----	1356		-----		-----
323		-----		-----	1381	ISO3016	3.0		-0.50
328		-----		-----	1397		-----		-----
333		-----		-----	1402		-----		-----
334		-----		-----	1431		-----		-----
339		-----		-----	1491		-----		-----
342		-----		-----	1510		-----		-----
349		-----		-----	1567		-----		-----
351		-----		-----	1569		-----		-----
356		-----		-----	1585	ISO3016	6		0.44
360	D97	3		-0.50	1586		-----		-----
372	D97	3		-0.50	1631		-----		-----
381		-----		-----	1636		-----		-----
445		-----		-----	1648		-----		-----
447		-----		-----	1669		-----		-----
455		-----		-----	1681		-----		-----
467		-----		-----	1710		-----		-----
507		-----		-----	1720		-----		-----
541		-----		-----	1740	ISO3016	3		-0.50
551		-----		-----	1741	ISO3016	0		-1.43
575		-----		-----	1776		-----		-----
621		-----		-----	1796	D97	6		0.44
631	D97	6.0		0.44	1810		-----		-----
634		-----		-----	1811		-----		-----
657	ISO3016	6		0.44	1854		-----		-----
704	D97	3		-0.50	1857	ISO3016	6		0.44
710	D97	3		-0.50	1906		-----		-----
752	ISO3016	6		0.44	1938		-----		-----
753	ISO3016	3		-0.50	1941		-----		-----
778		-----		-----	1942	D97	3		-0.50
781	ISO3016	3		-0.50	1949		-----		-----
785	D97	3		-0.50	1986	ISO3016	6		0.44
798		-----		-----	1995	D97	3		-0.50
823	ISO3016	3		-0.50	2129	D97	0		-1.43
824	ISO3016	9	ex	1.37	2146		-----		-----
825	ISO3016	6		0.44	6020	D97	6.0		0.44
840	D97	6		0.44	6021	D97	9		1.37
872		-----		-----	6024	ISO3016	9		1.37
873	D97	3		-0.50	6025	D97	6		0.44
874	ISO3016	3		-0.50	6026	D97	6		0.44
875	D97	3		-0.50	6049	D97	3		-0.50
887		-----		-----	6054		-----		-----
902	D97	6		0.44	6057		-----		-----
904	ISO3016	6		0.44	6075		-----		-----
913		-----		-----	6092		-----		-----
962	D97	9	ex	1.37	6112		-----		-----
963	ISO3016	6		0.44	6114		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131		-----		-----	6340		-----		-----
6142		-----		-----	6373	D97	3		-0.50
6163	ISO3016	-1		-1.74	6379		-----		-----
6201	ISO3016	3		-0.50	6400	ISO3016	9		1.37
6262		-----		-----	6404		-----		-----
6266		-----		-----	6406		-----		-----
6298		-----		-----					

normality	OK
n	50
outliers	0 (+ 2ex)
mean (n)	4.60
st.dev. (n)	2.556
R(calc.)	7.16
st.dev.(ISO3016:19)	3.214
R(ISO3016:19)	9

Lab 824: test result excluded as PP lower > PP upper, which is in principle not possible
Lab 962: test result excluded as PP lower > PP upper, which is in principle not possible
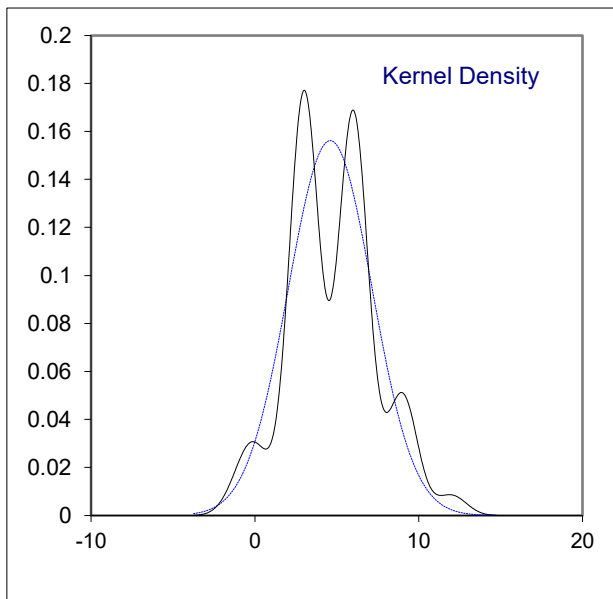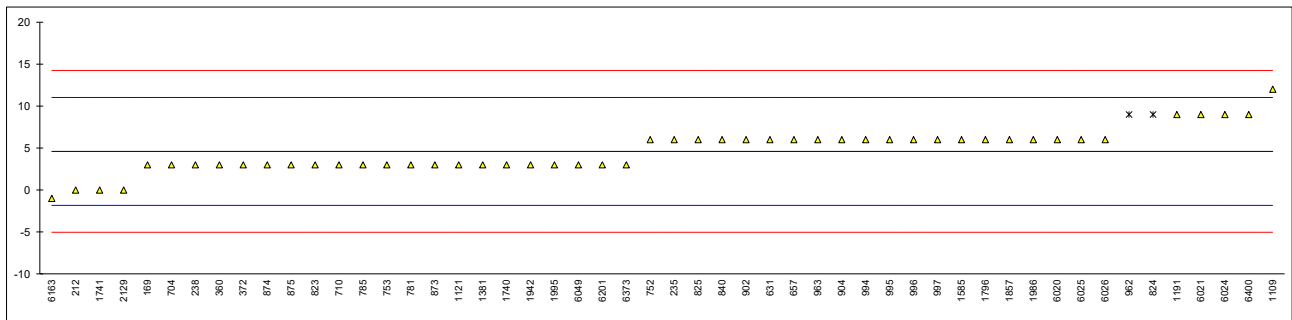
Determination of Pour Point, Upper on sample #21275; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D97	9		0.34	971	ISO3016	9		0.34
120		-----		-----	974	D97	6		-0.60
140		-----		-----	994	D97	9		0.34
150		-----		-----	995	D97	15		2.20
154	D97	9		0.34	996	D97	9		0.34
159	D97	9.0		0.34	997	ISO3016	15		2.20
168	D97	12		1.27	1040		-----		-----
169	D97	6		-0.60	1065	D97	12		1.27
170	D97	12		1.27	1108		-----		-----
171	ISO3016	3		-1.53	1109	D97	12		1.27
175		-----		-----	1121	ISO3016	9		0.34
212		-----		-----	1126		-----		-----
225	D97	6		-0.60	1134	ISO3016	9		0.34
235	ISO3016	9		0.34	1140		-----		-----
237	D97	9		0.34	1191		-----		-----
238	D97	6		-0.60	1205		-----		-----
253	D97	9		0.34	1212	D97	3		-1.53
256	D97	9.0		0.34	1213		-----		-----
273	D97	12	C	1.27	1218		-----		-----
309		-----		-----	1299		-----		-----
311		-----		-----	1353		-----		-----
313		-----		-----	1356	ISO3016	6		-0.60
323		-----		-----	1381	ISO3016	6.0		-0.60
328		-----		-----	1397		-----		-----
333		-----		-----	1402	ISO3016	9		0.34
334		-----		-----	1431	D97	6		-0.60
339		-----		-----	1491	ISO3016	9		0.34
342	ISO3016	6		-0.60	1510		-----		-----
349		-----		-----	1567		-----		-----
351		-----		-----	1569		-----		-----
356	ISO3016	3		-1.53	1585	ISO3016	9		0.34
360	D97	6		-0.60	1586	D97	6		-0.60
372	D97	6		-0.60	1631		-----		-----
381	ISO3016	12		1.27	1636	D97	6		-0.60
445		-----		-----	1648	ISO3016	9		0.34
447		-----		-----	1669		-----		-----
455	D97	6		-0.60	1681	ISO3016	6	C	-0.60
467	ISO3016	6		-0.60	1710		-----		-----
507	D97	6		-0.60	1720		-----		-----
541		-----		-----	1740	ISO3016	6		-0.60
551		-----		-----	1741	ISO3016	6		-0.60
575		-----		-----	1776		-----		-----
621		-----		-----	1796	D97	12		1.27
631	D97	9.0		0.34	1810		-----		-----
634	D97	12		1.27	1811		-----		-----
657	ISO3016	6		-0.60	1854		-----		-----
704	D97	6		-0.60	1857	ISO3016	9		0.34
710	D97	6		-0.60	1906		-----		-----
752		-----		-----	1938		-----		-----
753	ISO3016	6		-0.60	1941	ISO3016	6		-0.60
778	D97	6		-0.60	1942	D97	6		-0.60
781	ISO3016	6		-0.60	1949		-----		-----
785	D97	6		-0.60	1986	ISO3016	9		0.34
798		-----		-----	1995	D97	6		-0.60
823	ISO3016	6		-0.60	2129	D97	3		-1.53
824	ISO3016	6	ex	-0.60	2146		-----		-----
825	ISO3016	9		0.34	6020	D97	9.0		0.34
840	D97	9		0.34	6021	D97	12		1.27
872	ISO3016	6		-0.60	6024	ISO3016	12		1.27
873	D97	6		-0.60	6025	D97	12		1.27
874	ISO3016	6		-0.60	6026	D97	9		0.34
875	D97	6		-0.60	6049	ISO3016	9		0.34
887		-----		-----	6054		-----		-----
902	D97	9		0.34	6057		-----		-----
904	ISO3016	9		0.34	6075		-----		-----
913		-----		-----	6092		-----		-----
962	D97	6	ex	-0.60	6112		-----		-----
963	ISO3016	6		-0.60	6114	ISO3016	3		-1.53

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131	ISO3016	9		0.34	6340		-----		-----
6142		-----		-----	6373	D97	6		-0.60
6163		-----		-----	6379		-----		-----
6201	ISO3016	3		-1.53	6400		-----		-----
6262	D97	15		2.20	6404		-----		-----
6266		-----		-----	6406		-----		-----
6298	D97	9		0.34					

normality	OK	
n	83	
outliers	0 (+ 2ex)	
mean (n)	7.92	
st.dev. (n)	2.795	
R(calc.)	7.82	
st.dev.(ISO3016:19)	3.214	
R(ISO3016:19)	9	

Lab 273: first reported -3
Lab 824: test result excluded as PP lower > PP upper, which is in principle not possible
Lab 962: test result excluded as PP lower > PP upper, which is in principle not possible
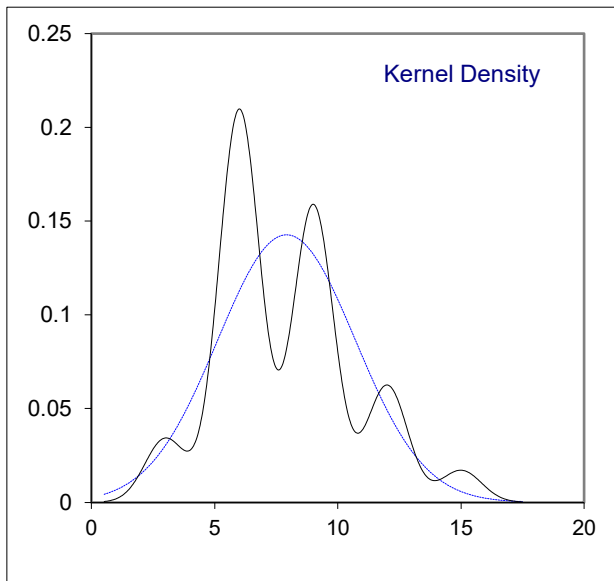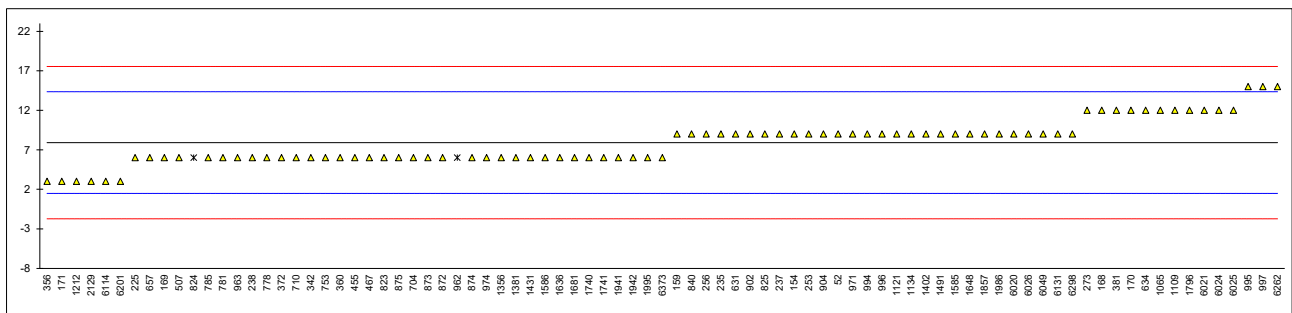Lab 1681: first reported -3

Kernel Density

Determination of Pour Point, Automated, 3°C interval on sample #21275; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	971		-----		-----
120		-----		-----	974		-----		-----
140		-----		-----	994		-----		-----
150		-----		-----	995		-----		-----
154		-----		-----	996		-----		-----
159		-----		-----	997		-----		-----
168		-----		-----	1040		-----		-----
169		-----		-----	1065		-----		-----
170		-----		-----	1108	D5950	6		1.53
171		-----		-----	1109		-----		-----
175		-----		-----	1121		-----		-----
212		-----		-----	1126		-----		-----
225		-----		-----	1134		-----		-----
235		-----		-----	1140	D5950	3.0		0.16
237		-----		-----	1191	D5950	1.5		-0.53
238		-----		-----	1205		-----		-----
253		-----		-----	1212		-----		-----
256		-----		-----	1213		-----		-----
273		-----		-----	1218		-----		-----
309		-----		-----	1299		-----		-----
311		-----		-----	1353		-----		-----
313		-----		-----	1356		-----		-----
323	D5950	3		0.16	1381	D6749	0.0		-1.22
328	D5950	3		0.16	1397		-----		-----
333		-----		-----	1402		-----		-----
334	D5950	3		0.16	1431	D5950	3		0.16
339		-----		-----	1491		-----		-----
342		-----		-----	1510		-----		-----
349		-----		-----	1567		-----		-----
351	D6749	3.0		0.16	1569	D97	-1		-1.68
356		-----		-----	1585		-----		-----
360		-----		-----	1586		-----		-----
372	D5950	3		0.16	1631		-----		-----
381		-----		-----	1636		-----		-----
445		-----		-----	1648		-----		-----
447		-----		-----	1669	D5950	3	C	0.16
455		-----		-----	1681		-----		-----
467	D6892	3		0.16	1710	ISO3016	6		1.53
507		-----		-----	1720		-----		-----
541	D5950	3		0.16	1740		-----		-----
551		-----		-----	1741		-----		-----
575		-----		-----	1776	D5950	3		0.16
621		-----		-----	1796		-----		-----
631		-----		-----	1810		-----		-----
634		-----		-----	1811		-----		-----
657	D5950	3		0.16	1854		-----		-----
704		-----		-----	1857		-----		-----
710		-----		-----	1906		-----		-----
752		-----		-----	1938		-----		-----
753		-----		-----	1941		-----		-----
778		-----		-----	1942		-----		-----
781	D5950	6		1.53	1949		-----		-----
785		-----		-----	1986		-----		-----
798		-----		-----	1995	D5950	3		0.16
823	D5950	3		0.16	2129	D5950	0.0		-1.22
824		-----		-----	2146		-----		-----
825		-----		-----	6020		-----		-----
840		-----		-----	6021		-----		-----
872		-----		-----	6024		-----		-----
873		-----		-----	6025		-----		-----
874		-----		-----	6026		-----		-----
875		-----		-----	6049		-----		-----
887		-----		-----	6054		0.0		-1.22
902		-----		-----	6057		-----		-----
904		-----		-----	6075	NF T60-105	-3		-2.60
913		-----		-----	6092		-----		-----
962		-----		-----	6112		-----		-----
963		-----		-----	6114	D5950	3		0.16

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131		-----		-----	6340		-----		-----
6142	D5950	-6	R(0.05)	-3.98	6373	D6892	6		1.53
6163		-----		-----	6379		-----		-----
6201		-----		-----	6400		-----		-----
6262	D6892	15	C,R(0.01)	5.66	6404		-----		-----
6266		-----		-----	6406		-----		-----
6298		-----		-----					

normality	OK
n	25
outliers	2
mean (n)	2.66
st.dev. (n)	2.183
R(calc.)	6.11
st.dev.(D5950:14)	2.179
R(D5950:14)	6.1

Lab 1669: first reported -12
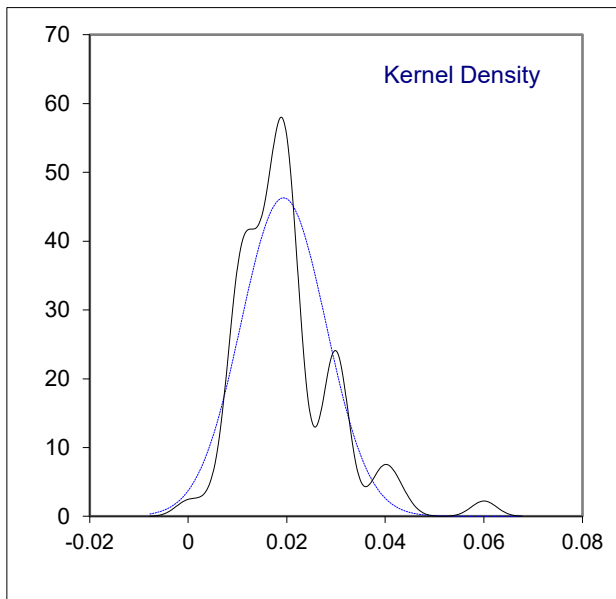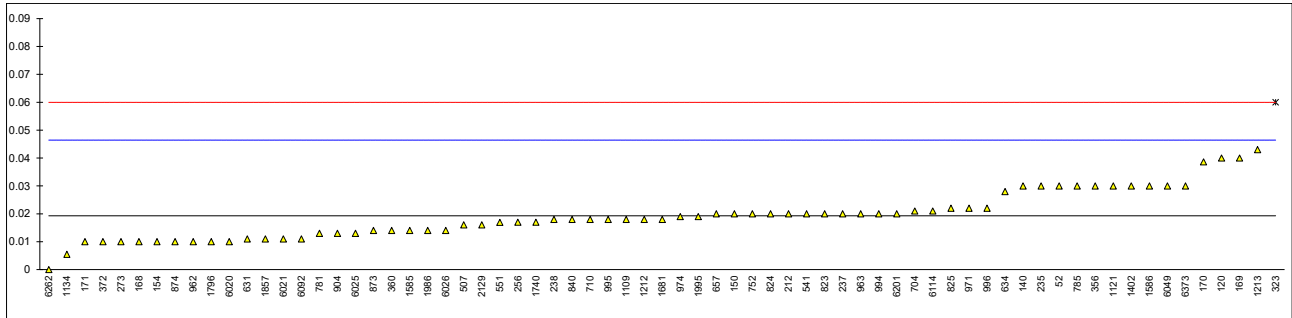Lab 6262: first reported 18

Kernel Density
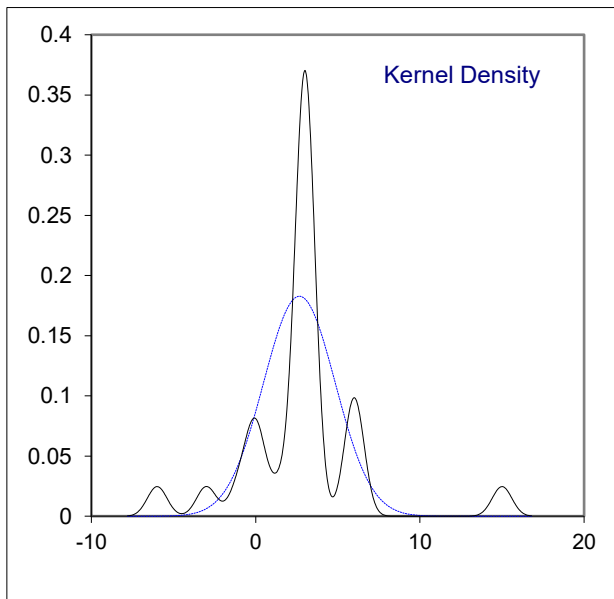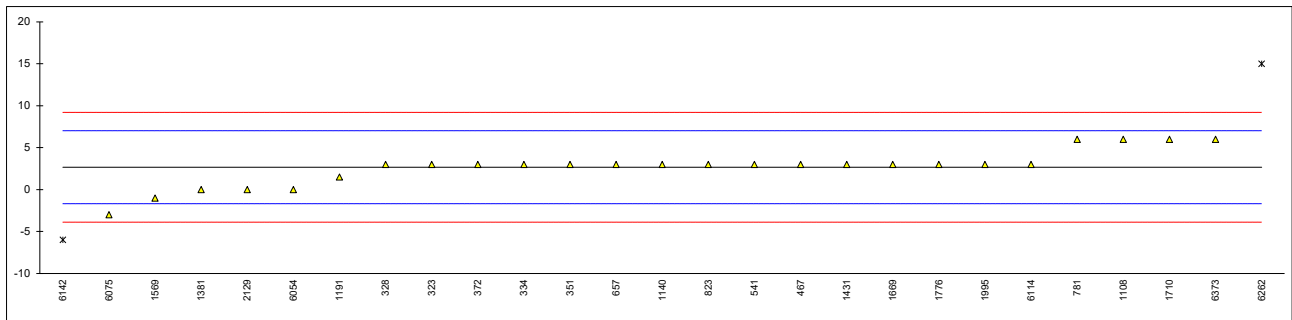
Determination of Sediment by Extraction on sample #21275; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D473	0.03		0.79	971	D473	0.022		0.20
120	D473	0.04		1.53	974	D473	0.019		-0.02
140	D473	0.03		0.79	994	D473	0.02		0.05
150	D473	0.02		0.05	995	D473	0.018		-0.10
154	D473	0.01		-0.69	996	D473	0.022		0.20
159		-----		-----	997		-----		-----
168	D473	0.01		-0.69	1040		-----		-----
169	D473	0.04		1.53	1065		-----		-----
170	D473	0.0386		1.42	1108		-----		-----
171	D473	0.01		-0.69	1109	D473	0.018		-0.10
175		-----		-----	1121	D473	0.030		0.79
212	D473	0.02		0.05	1126		-----		-----
225		-----		-----	1134	D473	0.0055		-1.02
235	D473	0.03		0.79	1140		-----		-----
237	D473	0.02		0.05	1191		-----		-----
238	D473	0.018		-0.10	1205		-----		-----
253		-----		-----	1212	D473	0.018		-0.10
256	D473	0.017		-0.17	1213	D473	0.043		1.75
273	D473	0.01		-0.69	1218		-----		-----
309		-----		-----	1299		-----		-----
311	D473	<0.01		-----	1353		-----		-----
313		-----		-----	1356		-----		-----
323	D473	0.06	R(0.01)	3.00	1381		-----		-----
328		-----		-----	1397		-----		-----
333		-----		-----	1402	IP53	0.03		0.79
334		-----		-----	1431		-----		-----
339		-----		-----	1491		-----		-----
342		-----		-----	1510		-----		-----
349		-----		-----	1567		-----		-----
351		-----		-----	1569		-----		-----
356	D473	0.03		0.79	1585	D473	0.014		-0.39
360	ISO3735	0.014		-0.39	1586	D473	0.03		0.79
372	D473	0.01		-0.69	1631		-----		-----
381		-----		-----	1636		-----		-----
445		-----		-----	1648		-----		-----
447		-----		-----	1669		-----		-----
455		-----		-----	1681	ISO3735	0.018		-0.10
467		-----		-----	1710		-----		-----
507	D473	0.016		-0.24	1720		-----		-----
541	D473	0.020		0.05	1740	ISO3735	0.017		-0.17
551	D473	0.0169		-0.18	1741		-----		-----
575		-----		-----	1776		-----		-----
621		-----		-----	1796	D473	0.01		-0.69
631	D473	0.011		-0.61	1810		-----		-----
634	D473	0.028		0.64	1811		-----		-----
657	D473	0.02		0.05	1854		-----		-----
704	D473	0.021		0.12	1857	D473	0.011		-0.61
710	D473	0.018		-0.10	1906		-----		-----
752	D473	0.02		0.05	1938		-----		-----
753		-----		-----	1941		-----		-----
778		-----		-----	1942		-----		-----
781	D473	0.013		-0.47	1949		-----		-----
785	D473	0.03		0.79	1986	D473	0.014		-0.39
798		-----		-----	1995	D473	0.019		-0.02
823	D473	0.02		0.05	2129	D473	0.016		-0.24
824	D473	0.02		0.05	2146		-----		-----
825	D473	0.022		0.20	6020	D473	0.010		-0.69
840	D473	0.018		-0.10	6021	D473	0.011		-0.61
872		-----		-----	6024		-----		-----
873	D473	0.014		-0.39	6025	D473	0.013		-0.47
874	D473	0.01		-0.69	6026	ISO3735	0.014		-0.39
875		-----		-----	6049	D473	0.03		0.79
887		-----		-----	6054		-----		-----
902		-----		-----	6057		-----		-----
904	ISO3735	0.013		-0.47	6075		-----		-----
913		-----		-----	6092		0.011		-0.61
962	D473	0.01		-0.69	6112		-----		-----
963	D473	0.02		0.05	6114	D473	0.021		0.12

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131		-----		-----	6340		-----		-----
6142		-----		-----	6373	D473	0.030		0.79
6163		-----		-----	6379		-----		-----
6201	D473	0.02		0.05	6400		-----		-----
6262	D473	0		-1.43	6404		-----		-----
6266		-----		-----	6406		-----		-----
6298		-----		-----					

|	
normality	OK
n	68
outliers	1
mean (n)	0.0193
st.dev. (n)	0.00861
R(calc.)	0.0241
st.dev.(D473:07e1)	0.01354
R(D473:07e1)	0.0379

Kernel Density

Determination of Total Sediment Existent (TSE) of sample #21275; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4870	<0.01		-----	971	IP375	0.020		0.24
120	D4870	0.02		0.24	974	IP375	0.02		0.24
140		-----		-----	994	IP375	0.02		0.24
150		-----		-----	995	IP375	0.018		0.09
154	D4870	0.01		-0.50	996	D4870	0.021		0.32
159		-----		-----	997		-----		-----
168		-----		-----	1040		-----		-----
169		-----		-----	1065		-----		-----
170		-----		-----	1108	ISO10307-1	0.014		-0.20
171	IP375	0.01		-0.50	1109		-----		-----
175		-----		-----	1121	ISO10307-1	0.00		-1.23
212	ISO10307-1	0.01		-0.50	1126		-----		-----
225		-----		-----	1134	IP375	0.016		-0.05
235	ISO10307-1	0.02		0.24	1140	IP375	0.02		0.24
237	D4870	0.015		-0.13	1191	ISO10307-1	0.0205		0.28
238		-----		-----	1205		-----		-----
253		-----		-----	1212	IP375	0.010		-0.50
256		-----		-----	1213		-----		-----
273		-----		-----	1218		-----		-----
309		-----		-----	1299		-----		-----
311	ISO10307-1	0.02		0.24	1353		-----		-----
313		-----		-----	1356	ISO10307-1	0.02		0.24
323		-----		-----	1381		-----		-----
328	IP375	0.01		-0.50	1397		-----		-----
333	ISO10307-1	0.01		-0.50	1402	IP375	0.02		0.24
334	IP375	0.032		1.13	1431	D4870	0.01		-0.50
339		-----		-----	1491	ISO10307-1	0.016		-0.05
342	ISO10307-1	0.01		-0.50	1510		-----		-----
349		-----		-----	1567	D4870	<0.05		-----
351	ISO10307-1	0.010		-0.50	1569		-----		-----
356	IP375	0.01		-0.50	1585	ISO10307-1	0.0270		0.76
360	ISO10307-1	0.018		0.09	1586	IP375	0.02		0.24
372	ISO10307-1	0.026		0.68	1631		-----		-----
381		-----		-----	1636		-----		-----
445		-----		-----	1648	ISO10307-1	0.014		-0.20
447		-----		-----	1669	ISO10307-1	0.02		0.24
455	IP375	0.0		-1.23	1681	ISO10307-1	0.019		0.17
467		-----		-----	1710		-----		-----
507	ISO10307-1	0.007		-0.72	1720		-----		-----
541	D4870	0.01		-0.50	1740	ISO10307-1	0.015		-0.13
551		-----		-----	1741	ISO10307-1	0.0172		0.04
575		-----		-----	1776		-----		-----
621		-----		-----	1796	IP375	0.02		0.24
631	D4870	0.011		-0.42	1810		-----		-----
634		-----		-----	1811	IP375	0.025		0.61
657	IP375	0.02		0.24	1854		-----		-----
704	IP375	0.018		0.09	1857	IP375	0.0195		0.20
710	D4870	0.015		-0.13	1906		-----		-----
752	IP375	0.02		0.24	1938		-----		-----
753		-----		-----	1941		-----		-----
778		-----		-----	1942		-----		-----
781	IP375	0.016		-0.05	1949		-----		-----
785	IP375	0.01		-0.50	1986	IP375	0.02		0.24
798		-----		-----	1995	D4870	0.0164		-0.02
823	ISO10307-1	0.03		0.98	2129	IP375	0.031		1.05
824	ISO10307-1	0.05	R(0.01)	2.45	2146		-----		-----
825		-----		-----	6020		-----		-----
840	ISO10307-1	0.014		-0.20	6021	IP375	0.019		0.17
872	IP375	0.02		0.24	6024	IP375	0.0198		0.23
873	IP375	0.018		0.09	6025	IP375	0.021		0.32
874	IP375	0.02		0.24	6026	ISO10307-1	0.0198		0.23
875	IP375	0.01		-0.50	6049	IP375	0.02		0.24
887		-----		-----	6054		-----		-----
902	ISO10307-1	0.015		-0.13	6057		-----		-----
904	ISO10307-1	0.013		-0.27	6075		-----		-----
913		-----		-----	6092		-----		-----
962	D4870	0.01		-0.50	6112		0.02		0.24
963	IP375	0.01		-0.50	6114	ISO10307-1	0.017		0.02

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131	ISO10307-1	0.032		1.13	6340		-----		-----
6142		-----		-----	6373	ISO10307-1	0.02		0.24
6163		-----		-----	6379		-----		-----
6201	IP375	0.01		-0.50	6400	ISO10307-1	<0.01		-----
6262	ISO10307-1	0.02		0.24	6404		-----		-----
6266		-----		-----	6406	ISO10307-1	0.0079		-0.65
6298		-----		-----					

normality	OK
n	75
outliers	1
mean (n)	0.0167
st.dev. (n)	0.00633
R(calc.)	0.0177
st.dev.(IP375:11)	0.01358
R(IP375:11)	0.0380

Kernel Density
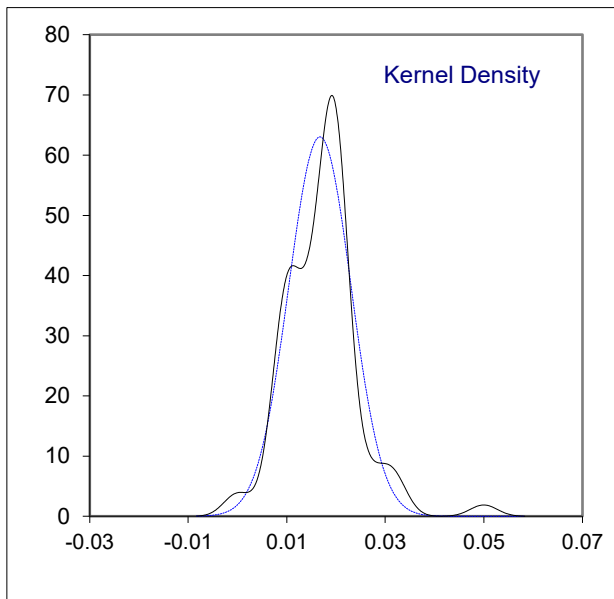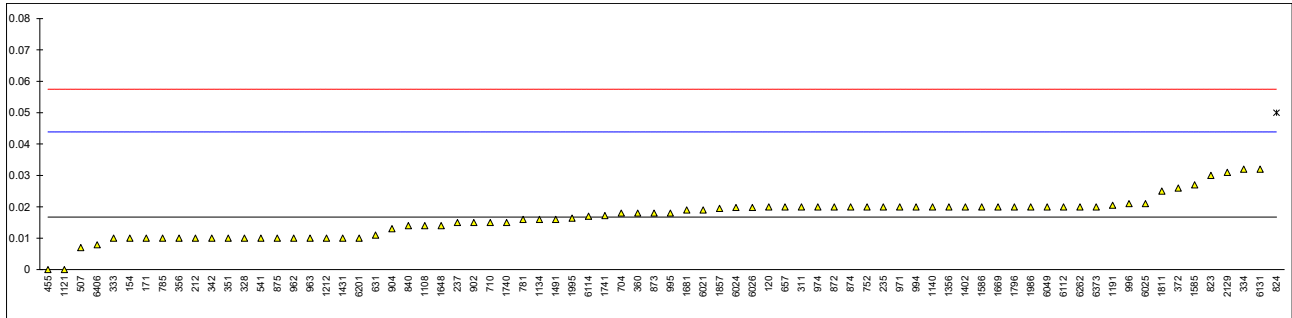
Determination of Total Sediment Accelerated (TSA) of sample #21275; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4870	0.01		-0.51	971	IP390	0.022		0.36
120	D4870	0.01		-0.51	974	IP390	0.022		0.36
140		-----		-----	994	IP390	0.02		0.22
150		-----		-----	995	IP390	0.019		0.14
154	D4870	0.01		-0.51	996	D4870	0.019		0.14
159		-----		-----	997		-----		-----
168		-----		-----	1040		-----		-----
169		-----		-----	1065		-----		-----
170		-----		-----	1108		-----		-----
171	IP390	0.01		-0.51	1109		-----		-----
175		-----		-----	1121	ISO10307-2	0.00		-1.24
212	ISO10307-2	0.02		0.22	1126		-----		-----
225		-----		-----	1134	IP390	0.020		0.22
235	ISO10307-2	0.02		0.22	1140	IP390	0.02		0.22
237	D4870	0.016		-0.08	1191	ISO10307-2	0.0205		0.25
238		-----		-----	1205		-----		-----
253		-----		-----	1212	IP390	0.012		-0.37
256		-----		-----	1213		-----		-----
273		-----		-----	1218		-----		-----
309		-----		-----	1299		-----		-----
311	ISO10307-2	0.01		-0.51	1353		-----		-----
313		-----		-----	1356	ISO10307-2	0.01		-0.51
323		-----		-----	1381		-----		-----
328	IP390	0.01		-0.51	1397		-----		-----
333		-----		-----	1402	IP390	0.01		-0.51
334	IP390	0.01		-0.51	1431		-----		-----
339		-----		-----	1491	ISO10307-2	0.015		-0.15
342	ISO10307-2	0.02		0.22	1510		-----		-----
349		-----		-----	1567	D4870	0.08	R(0.01)	4.59
351	ISO10307-2	0.007		-0.73	1569		-----		-----
356	IP390	0.03		0.94	1585	ISO10307-2	0.0245		0.54
360	ISO10307-2	0.020		0.22	1586	IP390	0.01		-0.51
372	ISO10307-2	0.038		1.53	1631		-----		-----
381		-----		-----	1636		-----		-----
445		-----		-----	1648	ISO10307-2	0.017		0.00
447		-----		-----	1669	ISO10307-2	0.04		1.67
455	IP390	0.0		-1.24	1681	ISO10307-2	0.011		-0.44
467		-----		-----	1710		-----		-----
507	ISO10307-2	0.008		-0.66	1720		-----		-----
541		-----		-----	1740	ISO10307-2	0.017		0.00
551		-----		-----	1741	ISO10307-2	0.008	C	-0.66
575		-----		-----	1776		-----		-----
621		-----		-----	1796	IP390	0.03		0.94
631	D4870	0.018		0.07	1810		-----		-----
634		-----		-----	1811		-----		-----
657	IP390	0.02		0.22	1854		-----		-----
704	IP390	0.021		0.29	1857	IP390	0.0190		0.14
710	D4870	0.017		0.00	1906		-----		-----
752	IP390	0.02		0.22	1938		-----		-----
753		-----		-----	1941		-----		-----
778		-----		-----	1942		-----		-----
781	IP390	0.019		0.14	1949		-----		-----
785	IP390	0.01		-0.51	1986	IP390	0.02		0.22
798		-----		-----	1995	D4870	0.018		0.07
823	ISO10307-2	0.08	R(0.01)	4.59	2129	IP390	0.034		1.24
824	ISO10307-2	0.12	R(0.01)	7.51	2146		-----		-----
825		-----		-----	6020		-----		-----
840	ISO10307-2	0.010		-0.51	6021	ISO10307-2	0.019		0.14
872	IP390	0.02		0.22	6024	IP390	0.0278		0.78
873	IP390	0.019		0.14	6025	IP390	0.022		0.36
874	IP390	0.02		0.22	6026	ISO10307-2	0.0186		0.11
875	IP390	0.01		-0.51	6049	IP390	0.02		0.22
887		-----		-----	6054		-----		-----
902	ISO10307-2	0.015		-0.15	6057		-----		-----
904	ISO10307-2	0.013		-0.30	6075		-----		-----
913		-----		-----	6092		-----		-----
962	D4870-A	0.01		-0.51	6112		-----		-----
963	IP390	0.01		-0.51	6114	ISO10307-2	0.013		-0.30

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131	ISO10307-2	0.024		0.51	6340		-----		-----
6142	ISO10307-2	0.02		0.22	6373	ISO10307-2	0.01		-0.51
6163		-----		-----	6379		-----		-----
6201	IP390	0.02		0.22	6400		-----	W	-----
6262	ISO10307-2	0.03		0.94	6404		-----		-----
6266		-----		-----	6406	ISO10307-2	0.0100		-0.51
6298		-----		-----					

normality	suspect
n	70
outliers	3
mean (n)	0.0170
st.dev. (n)	0.00764
R(calc.)	0.0214
st.dev.(IP390:11)	0.01371
R(IP390:11)	0.0384

Lab 1741; first reported 0.05
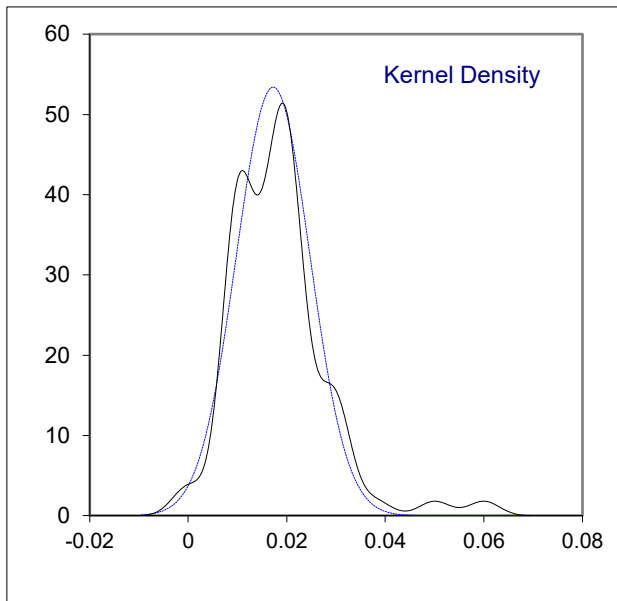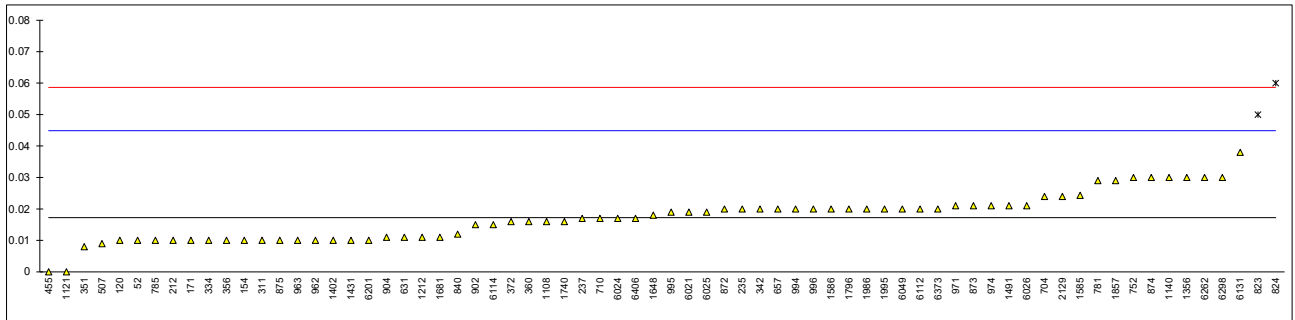Lab 6400: test result withdrawn, first reported 0.05
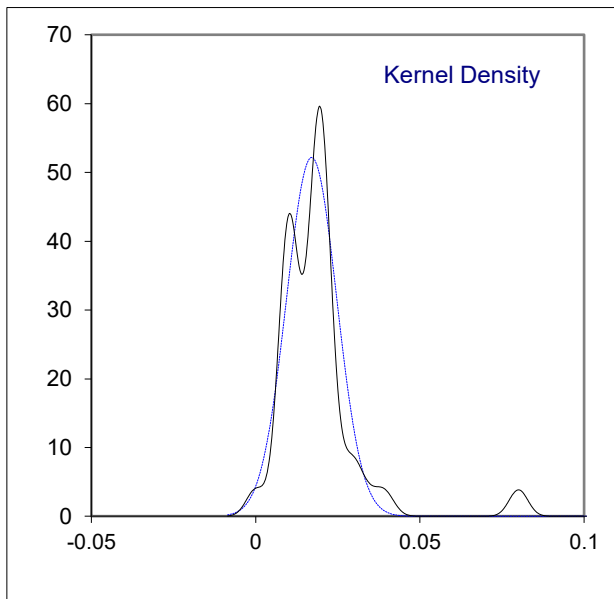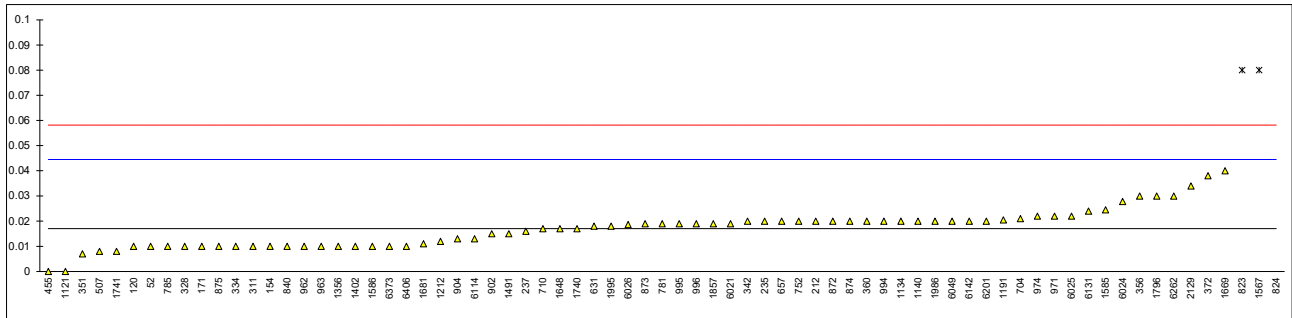
Determination of Total Sediment Potential (TSP) of sample #21275; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4870	0.01		-0.53	971	IP390	0.021		0.27
120	D4870	0.01		-0.53	974	IP390	0.021		0.27
140		-----		-----	994	IP390	0.02		0.20
150		-----		-----	995	IP390	0.019		0.13
154	D4870	0.01		-0.53	996	D4870	0.020		0.20
159		-----		-----	997		-----		-----
168		-----		-----	1040		-----		-----
169		-----		-----	1065		-----		-----
170		-----		-----	1108	ISO10307-2	0.016		-0.09
171	IP390	0.01		-0.53	1109		-----		-----
175		-----		-----	1121	ISO10307-2	0.00		-1.25
212	ISO10307-2	0.01		-0.53	1126		-----		-----
225		-----		-----	1134		-----		-----
235	ISO10307-2	0.02		0.20	1140	IP390	0.03		0.92
237	D4870	0.017		-0.02	1191		-----		-----
238		-----		-----	1205		-----		-----
253		-----		-----	1212	IP390	0.011		-0.45
256		-----		-----	1213		-----		-----
273		-----		-----	1218		-----		-----
309		-----		-----	1299		-----		-----
311	ISO10307-2	0.01		-0.53	1353		-----		-----
313		-----		-----	1356	ISO10307-2	0.03		0.92
323		-----		-----	1381		-----		-----
328		-----		-----	1397		-----		-----
333		-----		-----	1402	IP390	0.01		-0.53
334	IP390	0.01		-0.53	1431	D4870	0.01		-0.53
339		-----		-----	1491	ISO10307-2	0.021		0.27
342	ISO10307-2	0.02		0.20	1510		-----		-----
349		-----		-----	1567		-----		-----
351	ISO10307-2	0.008		-0.67	1569		-----		-----
356	IP390	0.01		-0.53	1585	ISO10307-2	0.0243		0.51
360	ISO10307-2	0.016		-0.09	1586	IP390	0.02		0.20
372	ISO10307-2	0.016		-0.09	1631		-----		-----
381		-----		-----	1636		-----		-----
445		-----		-----	1648	ISO10307-2	0.018		0.05
447		-----		-----	1669		-----		-----
455	IP390	0.0		-1.25	1681	ISO10307-2	0.011		-0.45
467		-----		-----	1710		-----		-----
507	ISO10307-2	0.009		-0.60	1720		-----		-----
541		-----		-----	1740	ISO10307-2	0.016		-0.09
551		-----		-----	1741		-----		-----
575		-----		-----	1776		-----		-----
621		-----		-----	1796	IP390	0.02		0.20
631	D4870	0.011		-0.45	1810		-----		-----
634		-----		-----	1811		-----		-----
657	IP390	0.02		0.20	1854		-----		-----
704	IP390	0.024		0.49	1857	IP390	0.029		0.85
710	D4870	0.017		-0.02	1906		-----		-----
752	IP390	0.03		0.92	1938		-----		-----
753		-----		-----	1941		-----		-----
778		-----		-----	1942		-----		-----
781	IP390	0.029		0.85	1949		-----		-----
785	IP390	0.01		-0.53	1986	IP390	0.02		0.20
798		-----		-----	1995	D4870	0.020		0.20
823	ISO10307-2	0.05	R(0.01)	2.37	2129	IP390	0.024		0.49
824	ISO10307-2	0.06	R(0.01)	3.10	2146		-----		-----
825		-----		-----	6020		-----		-----
840	ISO10307-2	0.012		-0.38	6021	ISO10307-2	0.019		0.13
872	IP390	0.02		0.20	6024	IP390	0.0170		-0.02
873	IP390	0.021		0.27	6025	IP390	0.019		0.13
874	IP390	0.03		0.92	6026	ISO10307-2	0.021		0.27
875	IP390	0.01		-0.53	6049	IP390	0.02		0.20
887		-----		-----	6054		-----		-----
902	ISO10307-2	0.015		-0.16	6057		-----		-----
904	ISO10307-2	0.011		-0.45	6075		-----		-----
913		-----		-----	6092		-----		-----
962	D4870-B	0.01		-0.53	6112		0.02		0.20
963	IP390	0.01		-0.53	6114	ISO10307-2	0.015		-0.16

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131	ISO10307-2	0.038		1.50	6340		-----		-----
6142		-----		-----	6373	IP390	0.02		0.20
6163		-----		-----	6379		-----		-----
6201	IP390	0.01		-0.53	6400	ISO10307-2	<0.01		-----
6262	ISO10307-2	0.03		0.92	6404		-----		-----
6266		-----		-----	6406	ISO10307-2	0.017		-0.02
6298	IP390	0.030		0.92					

normality	OK	
n	68	
outliers	2	
mean (n)	0.0173	
st.dev. (n)	0.00747	
R(calc.)	0.0209	
st.dev.(IP390:11)	0.01379	
R(IP390:11)	0.0386	

Determination of Total Sulfur on sample #21275; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4294	3.47		0.77	971	ISO8754	3.39		-0.01
120	D4294	3.545		1.50	974	D4294	3.38		-0.10
140		-----		-----	994	D4294	3.32		-0.69
150	D4294	3.52		1.26	995	ISO8754	3.31		-0.78
154	D4294	3.60		2.04	996	D4294	3.29		-0.98
159	D4294	3.2724		-1.15	997		-----		-----
168	D4294	3.54		1.46	1040		-----		-----
169	D4294	3.54		1.46	1065	D4294	3.31		-0.78
170	D4294	3.32745		-0.61	1108	ISO8754	3.525		1.31
171	D4294	3.49		0.97	1109	D2622	3.442		0.50
175		-----		-----	1121	ISO8754	3.544		1.49
212	ISO8754	3.500		1.07	1126	In house	3.26		-1.27
225	D4294	3.3987		0.08	1134	ISO8754	3.27883		-1.09
235	D4294	3.312		-0.77	1140	IP336	3.43		0.38
237	D4294	3.40		0.09	1191	ISO8754	3.4		0.09
238	D4294	3.398		0.07	1205	ISO14596	3.429		0.37
253	D4294	3.35		-0.40	1212	ISO8754	3.44		0.48
256		-----		-----	1213	D4294	3.557		1.62
273	D4294	3.48		0.87	1218	ISO8754	3.86717	R(0.01)	4.64
309	ISO8754	3.44		0.48	1299		-----		-----
311	ISO8754	3.43		0.38	1353	ISO8754	3.359		-0.31
313	ISO8754	3.39		-0.01	1356	ISO8754	3.34		-0.49
323		-----		-----	1381	ISO8754	3.344		-0.45
328	D4294	3.38		-0.10	1397	D2622	3.32		-0.69
333	ISO8754	3.20		-1.86	1402	IP336	3.3812		-0.09
334	ISO8754	3.35		-0.40	1431	D4294	3.29		-0.98
339	INH-050	3.55		1.55	1491	ISO8754	3.296		-0.92
342	D4294	3.3860		-0.04	1510		-----		-----
349		-----		-----	1567	D4294	3.310		-0.78
351	ISO8754	3.390		-0.01	1569	ISO8754	3.47		0.77
356	ISO8754	3.31		-0.78	1585	D4294	3.336		-0.53
360	D4294	3.33		-0.59	1586	ISO8754	3.37		-0.20
372	ISO8754	3.41		0.19	1631		-----		-----
381	ISO8754	3.29		-0.98	1636	D4294	3.345		-0.44
445		-----		-----	1648	ISO8754	3.359		-0.31
447		-----		-----	1669	ISO8754	3.32		-0.69
455	IP336	3.32		-0.69	1681	ISO8754	3.320		-0.69
467	ISO8754	3.33		-0.59	1710	ISO8754	3.29		-0.98
507	D4294	3.44		0.48	1720		-----		-----
541		-----		-----	1740	ISO8754	3.35		-0.40
551	D4294	3.329		-0.60	1741	ISO8754	3.37		-0.20
575		-----		-----	1776	ISO8754	3.43		0.38
621		-----		-----	1796	ISO8754	3.38		-0.10
631	D4294	3.358		-0.32	1810	D4294	3.42		0.29
634	D4294	3.375		-0.15	1811	ISO8754	3.36		-0.30
657	D4294	3.34		-0.49	1854		-----		-----
704	ISO8754	3.35		-0.40	1857	ISO8754	3.359		-0.31
710	D4294	3.329		-0.60	1906	D5623	3.558		1.63
752	ISO8754	3.489		0.96	1938	ISO8754	3.450		0.58
753	ISO8754	3.29		-0.98	1941	ISO8754	3.40		0.09
778	D4294	3.51		1.16	1942	D4294	3.59		1.94
781	ISO8754	3.292		-0.96	1949		-----		-----
785	D4294	3.41		0.19	1986	ISO8754	3.35		-0.40
798		-----		-----	1995	D4294	3.55		1.55
823	ISO8754	3.514		1.20	2129	ISO8754	3.401		0.10
824	ISO8754	3.46		0.68	2146	ISO8754	2.823	R(0.01)	-5.53
825	ISO8754	3.4609		0.68	6020	D4294	3.354		-0.36
840	D4294	3.459		0.67	6021	D4294	3.336		-0.53
872	ISO8754	3.30		-0.88	6024	ISO8754	3.343		-0.46
873	D4294	3.37		-0.20	6025	D4294	3.34		-0.49
874	ISO8754	3.31		-0.78	6026	D4294	3.397		0.06
875	D4294	3.37		-0.20	6049	D4294	3.33		-0.59
887		-----		-----	6054	D4294	3.39	C	-0.01
902	ISO8754	3.39		-0.01	6057		-----		-----
904	ISO8754	3.38		-0.10	6075	ISO8754	3.541		1.47
913		-----		-----	6092	D4294	3.49		0.97
962	D4294	3.37		-0.20	6112		-----		-----
963	ISO8754	3.36		-0.30	6114	ISO8754	3.464		0.72

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131	ISO8754	3.36		-0.30	6340		-----		-----
6142	ISO8754	3.3886	C	-0.02	6373	ISO8754	3.37		-0.20
6163	ISO8754	3.341		-0.48	6379		-----		-----
6201	ISO8754	3.36		-0.30	6400	ISO8754	3.29		-0.98
6262	ISO8754	3.46025		0.68	6404	ISO8754	3.35		-0.40
6266		-----		-----	6406	ISO8754	3.355		-0.35
6298	D4294	3.37		-0.20					

normality	OK
n	121
outliers	2
mean (n)	3.3906
st.dev. (n)	0.08051
R(calc.)	0.2254
st.dev.(ISO8754:03)	0.10268
R(ISO8754:03)	0.2875
compare	
R(D4294:21)	0.1596

Lab 6054: first reported 2.82
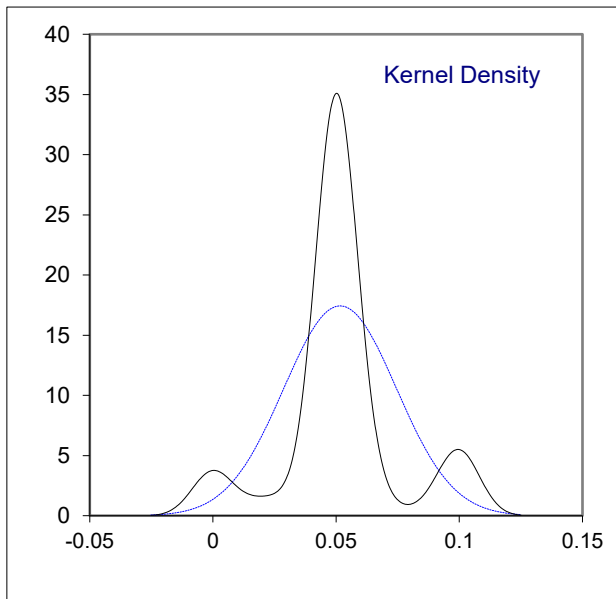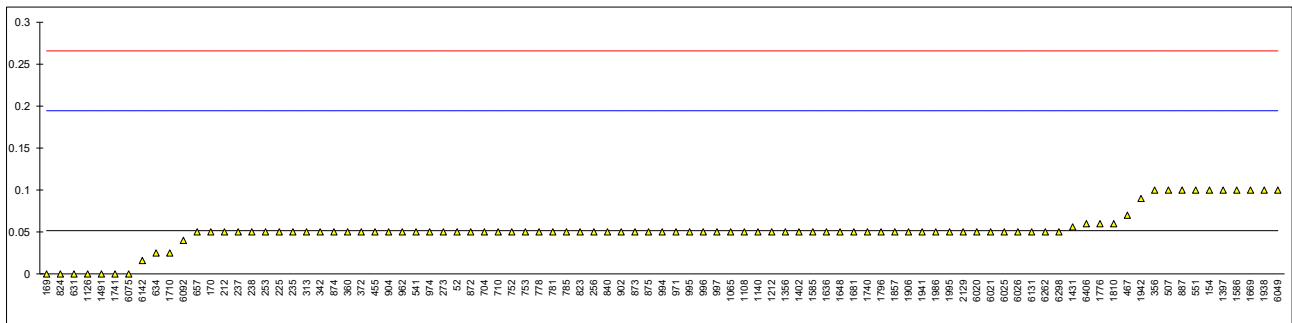Lab 6142: reported 33886 %M/M

Kernel Density
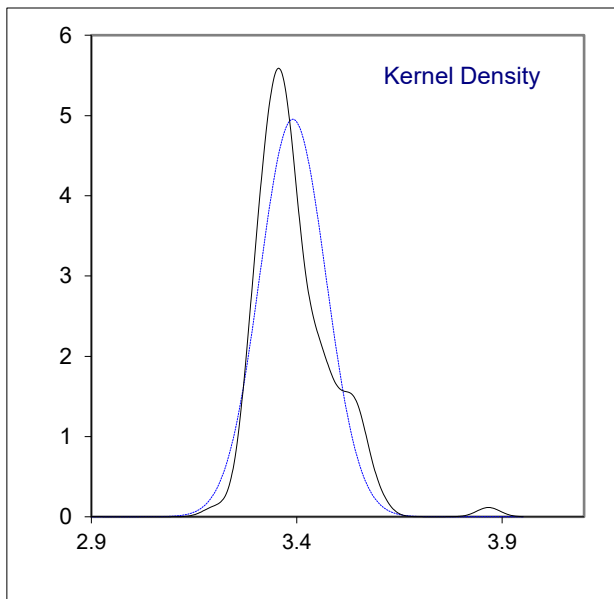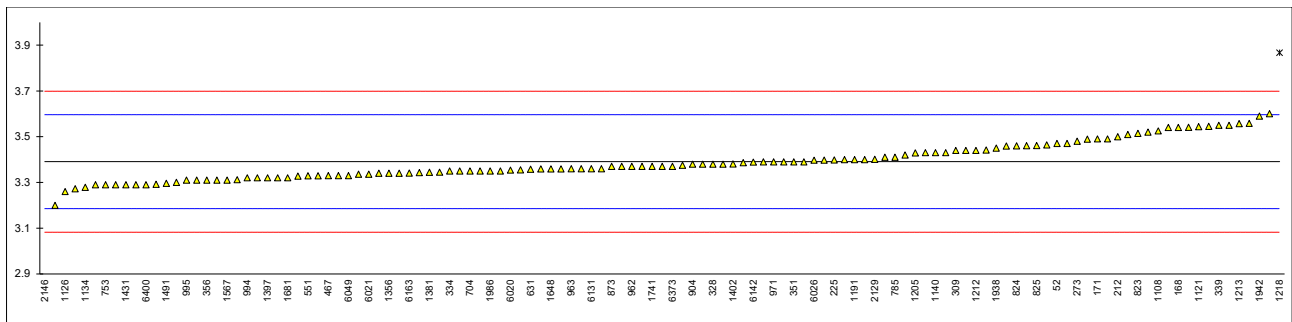
Determination of Water by distillation on sample #21275; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D95	0.05		-0.02	971	ISO3733	0.05		-0.02
120		-----		-----	974	D95	0.05		-0.02
140		-----		-----	994	D95	0.05		-0.02
150		-----		-----	995	ISO3733	0.05		-0.02
154	D95	0.10		0.68	996	D95	0.05		-0.02
159		-----		-----	997	ISO3733	0.05		-0.02
168		-----		-----	1040		-----		-----
169	D95	0.0		-0.72	1065	D6304-B	0.05		-0.02
170	D95	0.05		-0.02	1108	ISO3733	0.05		-0.02
171		-----		-----	1109	D95	<0.05		-----
175		-----		-----	1121	ISO3733	<0.05		-----
212	ISO3733	0.05		-0.02	1126	D95	0.00		-0.72
225	D95	0.05		-0.02	1134	ISO3733	<0.05		-----
235	ISO3733	0.05		-0.02	1140	D95	0.05		-0.02
237	D95	0.05		-0.02	1191		-----		-----
238	D95	0.05		-0.02	1205		-----		-----
253	D95	0.05		-0.02	1212	ISO3733	0.05		-0.02
256	D95	0.05		-0.02	1213	D95	<0.1		-----
273	D95	0.05		-0.02	1218		-----		-----
309		-----		-----	1299		-----		-----
311	D95	<0.05		-----	1353		-----		-----
313	D95	0.05		-0.02	1356	D6304-A	0.05		-0.02
323		-----		-----	1381		-----		-----
328	D95	<0.1		-----	1397	ISO3733	0.1		0.68
333	D95	<0.1		-----	1402	IP74	0.05		-0.02
334	ISO3733	<0.05		-----	1431	D95	0.056		0.06
339		-----		-----	1491	ISO3733	0		-0.72
342	ISO3733	0.05		-0.02	1510		-----		-----
349	D95	<0,1		-----	1567	D95	<0.10		-----
351	ISO3733	<0,05		-----	1569	D95	<0,10		-----
356	ISO3733	0.10		0.68	1585	D95	0.05		-0.02
360	D95	0.05		-0.02	1586	D95	0.10		0.68
372	ISO3733	0.05		-0.02	1631		-----		-----
381		-----		-----	1636	D95	0.05		-0.02
445		-----		-----	1648	ISO3733	0.05		-0.02
447		-----		-----	1669	D95	0.1		0.68
455	D95	0.05		-0.02	1681	ISO3733	0.05		-0.02
467	ISO3733	0.07		0.26	1710	ISO9029	0.025		-0.37
507	D95	0.10		0.68	1720		-----		-----
541	D95	0.05		-0.02	1740	ISO3733	0.05		-0.02
551	D95	0.10		0.68	1741	ISO3733	0.0		-0.72
575		-----		-----	1776	ISO3733	0.06		0.12
621		-----		-----	1796	D95	0.05		-0.02
631	D95	0		-0.72	1810		0.06		0.12
634	D95	0.025		-0.37	1811		-----		-----
657	D95	0.05		-0.02	1854		-----		-----
704	ISO3733	0.05		-0.02	1857	ISO3733	0.05		-0.02
710	D95	0.05		-0.02	1906	D6304-C	0.05		-0.02
752	ISO3733	0.05		-0.02	1938	EN1428	0.1		0.68
753	ISO3733	0.05		-0.02	1941	ISO3733	0.05		-0.02
778	D95	0.05		-0.02	1942		0.09		0.54
781	ISO3733	0.05		-0.02	1949		-----		-----
785	D95	0.05		-0.02	1986	ISO3733	0.05		-0.02
798		-----		-----	1995	D95	0.05		-0.02
823	ISO3733	0.05		-0.02	2129	D95	0.05		-0.02
824	ISO3733	0.00		-0.72	2146		-----		-----
825	ISO3733	L0.05		-----	6020	D95	0.050		-0.02
840	D95	0.05		-0.02	6021	D95	0.05		-0.02
872	ISO3733	0.05		-0.02	6024	ISO3733	<0.05		-----
873	D95	0.05		-0.02	6025	D95	0.05		-0.02
874	D95	0.05		-0.02	6026	D95	0.05		-0.02
875	D95	0.05		-0.02	6049	D95	0.10		0.68
887	D95	0.10		0.68	6054	D95	<0.05		-----
902	ISO3733	0.05		-0.02	6057		-----		-----
904	ISO3733	0.05		-0.02	6075	ISO3733	0.00		-0.72
913		-----		-----	6092	D95	0.04		-0.16
962	D95	0.05		-0.02	6112		-----		-----
963	ISO3733	<0.05		-----	6114	D95	<0.05		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131	ISO3733	0.05		-0.02	6340		-----		-----
6142	ISO3733	0.016		-0.50	6373	D95	<0.05		-----
6163		-----		-----	6379		-----		-----
6201	ISO3733	<0,05		-----	6400	ISO3733	<0.05		-----
6262	D6304-A	0.05		-0.02	6404	ISO3733	<0,1		-----
6266		-----		-----	6406	D6304-B	0.05986		0.11
6298	D95	0.05		-0.02					

|	
normality	suspect
n	91
outliers	0
mean (n)	0.0517
st.dev. (n)	0.02287
R(calc.)	0.0640
st.dev.(ISO3733:99)	0.07143
R(ISO3733:99)	0.2
compare	
R(D95:13)	0.2

Kernel Density

Determination of Water and Sediment on sample #21275; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D1796	0.05		-0.01	971	D1796	0.05		-0.01
120		-----		-----	974	D1796	0.05		-0.01
140		-----		-----	994	D1796	0.05		-0.01
150	D1796	0.00	R(0.01)	-1.34	995		-----		-----
154	D1796	0.075		0.66	996		-----		-----
159		-----		-----	997		-----		-----
168		-----		-----	1040		-----		-----
169	D1796	0.025		-0.67	1065		-----		-----
170	D1796	0.05		-0.01	1108	D1796	0.05		-0.01
171	D1796	0.05		-0.01	1109	D1796	0.05		-0.01
175		-----		-----	1121		-----		-----
212		-----		-----	1126		-----		-----
225		-----		-----	1134		-----		-----
235		-----		-----	1140		-----		-----
237	D1796	0.05		-0.01	1191		-----		-----
238	D1796	0.05		-0.01	1205		-----		-----
253		-----		-----	1212		-----		-----
256		-----		-----	1213		-----		-----
273		-----		-----	1218		-----		-----
309		-----		-----	1299		-----		-----
311		-----		-----	1353		-----		-----
313		-----		-----	1356		-----		-----
323		-----		-----	1381		-----		-----
328		-----		-----	1397	ISO3734	0.1	R(0.01)	1.33
333		-----		-----	1402		-----		-----
334		-----		-----	1431		-----		-----
339		-----		-----	1491		-----		-----
342	D1796	0.05		-0.01	1510		-----		-----
349		-----		-----	1567		-----		-----
351		-----		-----	1569		-----		-----
356		-----		-----	1585		-----		-----
360	D1796	0.050		-0.01	1586	D1796	0.20	R(0.01)	3.99
372		-----		-----	1631		-----		-----
381		-----		-----	1636		-----		-----
445		-----		-----	1648		-----		-----
447		-----		-----	1669		-----		-----
455		-----		-----	1681	ISO3734	0.075		0.66
467		-----		-----	1710		-----		-----
507	D1796	0.10	R(0.01)	1.33	1720		-----		-----
541	D1796	<0.1		-----	1740	ISO3734	0.05		-0.01
551	D1796	0.10	R(0.01)	1.33	1741	ISO3734	0.05		-0.01
575		-----		-----	1776		-----		-----
621		-----		-----	1796		-----		-----
631	D1796	0.05		-0.01	1810		-----		-----
634	D1796	0.05		-0.01	1811		-----		-----
657	D1796	0.05		-0.01	1854		-----		-----
704	D1796	0.05		-0.01	1857		0.056	*)	0.15
710		-----		-----	1906		-----		-----
752		-----		-----	1938		-----		-----
753		-----		-----	1941	ISO3734	0.05		-0.01
778		-----		-----	1942		-----		-----
781	D1796	0.05		-0.01	1949		-----		-----
785		-----		-----	1986	D1796	0.05		-0.01
798		-----		-----	1995	D4007	0.05		-0.01
823	ISO3734	0.05		-0.01	2129	Calculated	0.058	*)	0.21
824	D1796	0.05		-0.01	2146		-----		-----
825	D1796	0.05		-0.01	6020		-----		-----
840	D1796	0.05		-0.01	6021		-----		-----
872		-----		-----	6024		-----		-----
873		-----		-----	6025		-----		-----
874	D1796	0.05		-0.01	6026		-----		-----
875		-----		-----	6049		-----		-----
887		-----		-----	6054		-----		-----
902		-----		-----	6057		-----		-----
904	D1796	0.05		-0.01	6075		-----		-----
913		-----		-----	6092		-----		-----
962	D1796	0.05		-0.01	6112		-----		-----
963	D1796	0.05		-0.01	6114	D1796	0.021		-0.78

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6131		-----		-----	6340		-----		-----
6142		-----		-----	6373		-----		-----
6163		-----		-----	6379		-----		-----
6201		-----		-----	6400		-----		-----
6262		-----		-----	6404		-----		-----
6266		-----		-----	6406		-----		-----
6298		-----		-----					

normality	not OK
n	36
outliers	5
mean (n)	0.0503
st.dev. (n)	0.00897
R(calc.)	0.0251
st.dev.(D1796:11)	0.03750
R(D1796:11)	0.1050

Lab 1857: *) sum of Water by distillation & Sediment by Extraction
Lab 2129: *) calculated from results from ISO3733 & ASTM D473
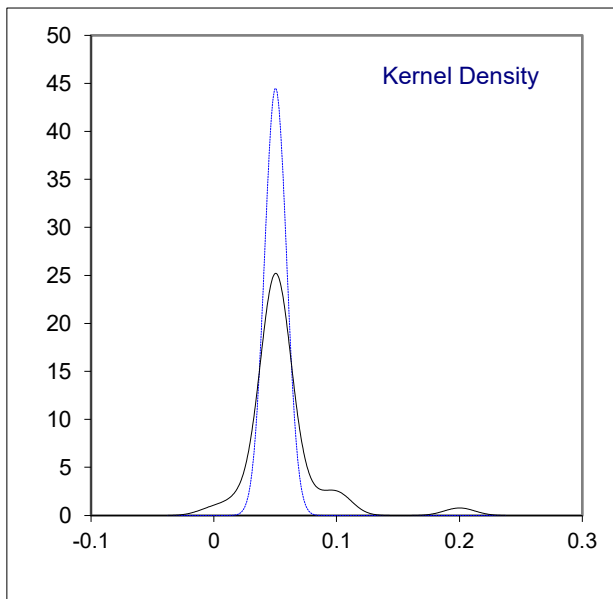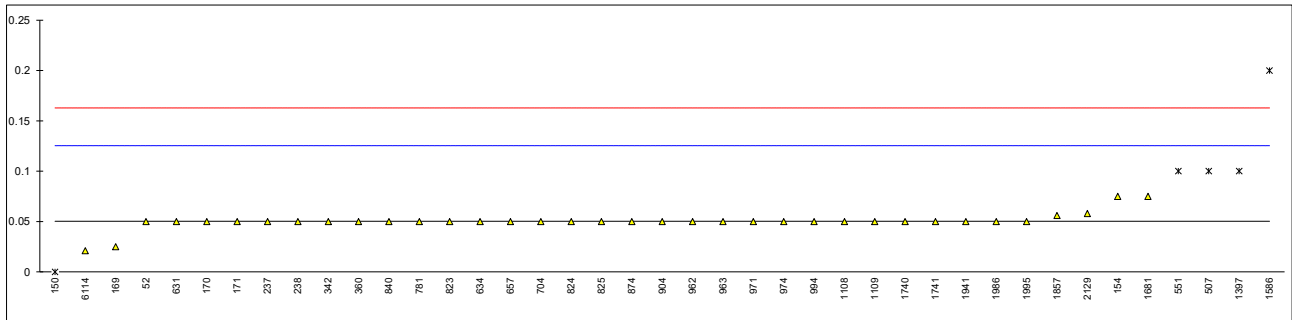
Vacuum Distillation at 10 mmHg but reported as AET on sample #21275, results in °C

lab	method	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
52		-----	-----	-----	-----	-----	-----	-----	-----
120									
140		-----	-----	-----	-----	-----	-----	-----	-----
150	D1160	213	297	337	408	465	505	533 C	539
154		-----	-----	-----	-----	-----	-----	-----	-----
159		-----	-----	-----	-----	-----	-----	-----	-----
168		-----	-----	-----	-----	-----	-----	-----	-----
169		-----	-----	-----	-----	-----	-----	-----	-----
170	D1160	189.7	266.1	320.1	394.0	447.5	492.9	523.8	530.0
171									
175		-----	-----	-----	-----	-----	-----	-----	-----
212		-----	-----	-----	-----	-----	-----	-----	-----
225		-----	-----	-----	-----	-----	-----	-----	-----
235		-----	-----	-----	-----	-----	-----	-----	-----
237		-----	-----	-----	-----	-----	-----	-----	-----
238		-----	-----	-----	-----	-----	-----	-----	-----
253		-----	-----	-----	-----	-----	-----	-----	-----
256		-----	-----	-----	-----	-----	-----	-----	-----
273		-----	-----	-----	-----	-----	-----	-----	-----
309		-----	-----	-----	-----	-----	-----	-----	-----
311	D1160	190	285	330	404	462	502	532	532
313		-----	-----	-----	-----	-----	-----	-----	-----
323		-----	-----	-----	-----	-----	-----	-----	-----
328		-----	-----	-----	-----	-----	-----	-----	-----
333		-----	-----	-----	-----	-----	-----	-----	-----
334		-----	-----	-----	-----	-----	-----	-----	-----
339		-----	-----	-----	-----	-----	-----	-----	-----
342		-----	-----	-----	-----	-----	-----	-----	-----
349		-----	-----	-----	-----	-----	-----	-----	-----
351		-----	-----	-----	-----	-----	-----	-----	-----
356		-----	-----	-----	-----	-----	-----	-----	-----
360	D1160	227	299	340	406	464	503	-----	520
372		193	274	328	397	452	493	524	528
381		-----	-----	-----	-----	-----	-----	-----	-----
445		-----	-----	-----	-----	-----	-----	-----	-----
447		-----	-----	-----	-----	-----	-----	-----	-----
455		-----	-----	-----	-----	-----	-----	-----	-----
467	D1160	209.0	260.0	316.0	390.0	450.0	491.0	-----	513.0
507		-----	-----	-----	-----	-----	-----	-----	-----
541		-----	-----	-----	-----	-----	-----	-----	-----
551		-----	-----	-----	-----	-----	-----	-----	-----
575		-----	-----	-----	-----	-----	-----	-----	-----
621		-----	-----	-----	-----	-----	-----	-----	-----
631		-----	-----	-----	-----	-----	-----	-----	-----
634		-----	-----	-----	-----	-----	-----	-----	-----
657		-----	-----	-----	-----	-----	-----	-----	-----
704	D1160	195.0	277.0	326.0	400.0	455.0	494.0	522.0	526.0
710	D1160	185	270	323	393	450	488	522	525
752		-----	-----	-----	-----	-----	-----	-----	-----
753		-----	-----	-----	-----	-----	-----	-----	-----
778		-----	-----	-----	-----	-----	-----	-----	-----
781	D1160	192	281	324	390	454	495	518	528
785	D1160	178	275	323	396	456	499	-----	520
798		-----	-----	-----	-----	-----	-----	-----	-----
823		-----	-----	-----	-----	-----	-----	-----	-----
824		-----	-----	-----	-----	-----	-----	-----	-----
825		-----	-----	-----	-----	-----	-----	-----	-----
840		-----	-----	-----	-----	-----	-----	-----	-----
872		-----	-----	-----	-----	-----	-----	-----	-----
873	D1160	195	281	326	394	453	494	523	530
874	D1160	197	289	328	396	456	497	524	534
875	D1160	192.0	281.0	324.0	390.0	454.0	495.0	518.0	528.0
887		-----	-----	-----	-----	-----	-----	-----	-----
902		-----	-----	-----	-----	-----	-----	-----	-----
904		-----	-----	-----	-----	-----	-----	-----	-----
913		-----	-----	-----	-----	-----	-----	-----	-----
962		-----	-----	-----	-----	-----	-----	-----	-----
963	D1160	210.5	282.6	329.6	402.8	461.7	499.5	-----	523.7
971	D1160	190.2	280.8	328.2	398.4	455.3	495.1	523.2	525.2
974		-----	-----	-----	-----	-----	-----	-----	-----
994	D1160	210.0	276.0	325.0	399.0	455.0	494.0	525.0	527.0
995		193.0	275.5	326.0	399.0	455.0	493.5	523.5	526.0
996		-----	-----	-----	-----	-----	-----	-----	-----
997		-----	-----	-----	-----	-----	-----	-----	-----
1040		-----	-----	-----	-----	-----	-----	-----	-----

lab	method	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
1065		-----	-----	-----	-----	-----	-----	-----	-----
1108		211.0	286.2	329.8	398.3	454.6	492.7	523.7	532.4
1109		-----	-----	-----	-----	-----	-----	-----	-----
1121		-----	-----	-----	-----	-----	-----	-----	-----
1126		-----	-----	-----	-----	-----	-----	-----	-----
1134	D1160	217	299	339	404	458	500	539 R(5)	576 R(1)
1140		-----	-----	-----	-----	-----	-----	-----	-----
1191		-----	-----	-----	-----	-----	-----	-----	-----
1205		-----	-----	-----	-----	-----	-----	-----	-----
1212	D1160	207.0	291.6	332.8	400.4	456.7	497.4	529.1	529.9
1213		-----	-----	-----	-----	-----	-----	-----	-----
1218		-----	-----	-----	-----	-----	-----	-----	-----
1299		-----	-----	-----	-----	-----	-----	-----	-----
1353		-----	-----	-----	-----	-----	-----	-----	-----
1356		-----	-----	-----	-----	-----	-----	-----	-----
1381		-----	-----	-----	-----	-----	-----	-----	-----
1397		-----	-----	-----	-----	-----	-----	-----	-----
1402		-----	-----	-----	-----	-----	-----	-----	-----
1431		-----	-----	-----	-----	-----	-----	-----	-----
1491		-----	-----	-----	-----	-----	-----	-----	-----
1510		-----	-----	-----	-----	-----	-----	-----	-----
1567		-----	-----	-----	-----	-----	-----	-----	-----
1569		-----	-----	-----	-----	-----	-----	-----	-----
1585		198.2	279.3	324.4	397.2	453.3	493.2	524.0	528.1
1586	D1160	188.3	280.4	327.2	398.4	454.7	492.2	521.0	522.0
1631		-----	-----	-----	-----	-----	-----	-----	-----
1636		-----	-----	-----	-----	-----	-----	-----	-----
1648		-----	-----	-----	-----	-----	-----	-----	-----
1669		-----	-----	-----	-----	-----	-----	-----	-----
1681		-----	-----	-----	-----	-----	-----	-----	-----
1710		-----	-----	-----	-----	-----	-----	-----	-----
1720		-----	-----	-----	-----	-----	-----	-----	-----
1740		-----	-----	-----	-----	-----	-----	-----	-----
1741		198.8 C	283.9 C	329.8 C	395.6 C	455.2 C	494.6 C	524.8 C	529.3 C
1776		-----	-----	-----	-----	-----	-----	-----	-----
1796		-----	-----	-----	-----	-----	-----	-----	-----
1810		-----	-----	-----	-----	-----	-----	-----	-----
1811		-----	-----	-----	-----	-----	-----	-----	-----
1854		-----	-----	-----	-----	-----	-----	-----	-----
1857	D1160	199.4	282.5	327.5	398.5	457.2	495.7	523.8	528.1
1906		-----	-----	-----	-----	-----	-----	-----	-----
1938		-----	-----	-----	-----	-----	-----	-----	-----
1941		-----	-----	-----	-----	-----	-----	-----	-----
1942		-----	-----	-----	-----	-----	-----	-----	-----
1949		-----	-----	-----	-----	-----	-----	-----	-----
1986		196	279	328	397	455	495	520	528
1995	D1160	193.1	285.3	328.1	400.1	457.6	497.8	527.4	529.2
2129	D1160	200	289	333	408	463	498	-----	498 R(1)
2146		-----	-----	-----	-----	-----	-----	-----	-----
6020		197	275	324	395	455	497	524	527
6021		197	277	328	399	458	498	524	529
6024		-----	-----	-----	-----	-----	-----	-----	-----
6025	D1160	199	274	324	397	456	495	525	530
6026	D1160	210	280	329	398	458	495	524	532
6049		-----	-----	-----	-----	-----	-----	-----	-----
6054		-----	-----	-----	-----	-----	-----	-----	-----
6057		-----	-----	-----	-----	-----	-----	-----	-----
6075		-----	-----	-----	-----	-----	-----	-----	-----
6092		-----	-----	-----	-----	-----	-----	-----	-----
6112	D1160	202	287	330	402	456	495	525	526
6114	D1160	213	298	334	408	461	493	529	535
6131		-----	-----	-----	-----	-----	-----	-----	-----
6142		-----	-----	-----	-----	-----	-----	-----	-----
6163		-----	-----	-----	-----	-----	-----	-----	-----
6201	D1160 *)	200.9	281.3	328.5	399.2	456.8	500.8	535.4	550.6 R(1)
6262	D1160	214.3	289.4	332.2	395.4	455.6	493.8	521.7	524.7
6266		-----	-----	-----	-----	-----	-----	-----	-----
6298		-----	-----	-----	-----	-----	-----	-----	-----
6340		-----	-----	-----	-----	-----	-----	-----	-----
6373		-----	-----	-----	-----	-----	-----	-----	-----
6379		-----	-----	-----	-----	-----	-----	-----	-----
6400		-----	-----	-----	-----	-----	-----	-----	-----
6404		-----	-----	-----	-----	-----	-----	-----	-----
6406		-----	-----	-----	-----	-----	-----	-----	-----

	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
normality	OK	OK	suspect	OK	OK	OK	not OK	not OK
n	35	35	35	35	35	35	29	32
outliers	0	0	0	0	0	0	1	3
mean (n)	200.04	281.94	328.09	398.52	456.21	495.86	524.60	527.67
st.dev. (n)	10.357	8.801	4.914	4.749	3.826	3.525	3.978	4.829
R(calc.)	29.00	24.64	13.76	13.30	10.71	9.87	11.14	13.52
st.dev.(D1160:18)	17.500	9.431	7.689	7.105	6.350	5.496	5.119	9.643
R(D1160:18)	49	26.41	21.53	19.89	17.78	15.39	14.33	27

Lab 150: first reported 535
Lab 1741: first reported 238.8, 307.1, 354.5, 427.6, 484.1, 529.0, 573.6, 598.4 respectively
Lab 6201: *) D1160 performed at 5 torr

30% recovered

Kernel Density

40% recovered

Kernel Density

50% recovered

Kernel Density

Final Boiling Point

Kernel Density
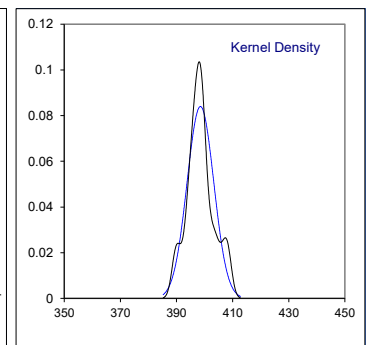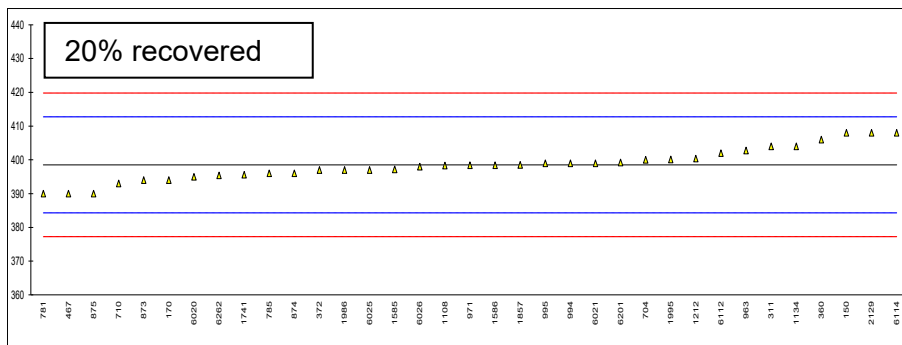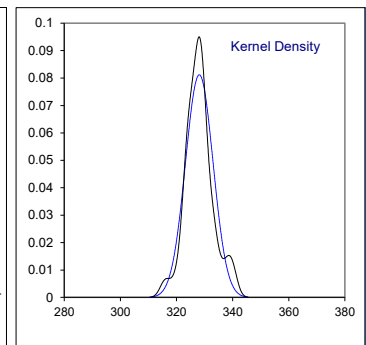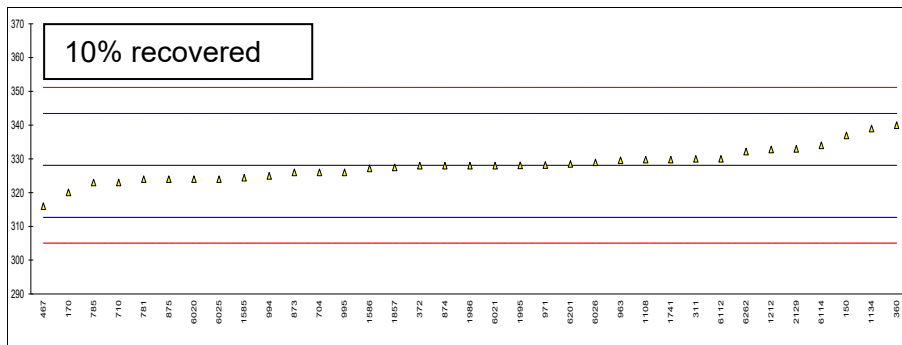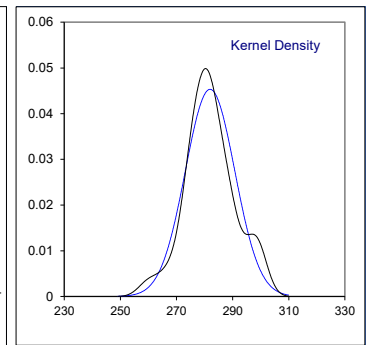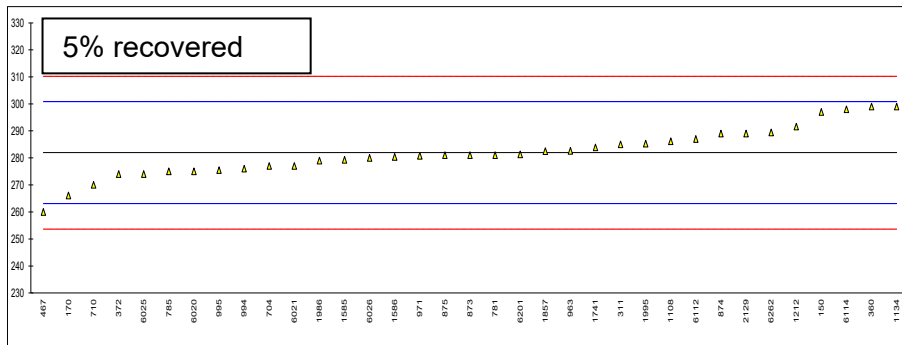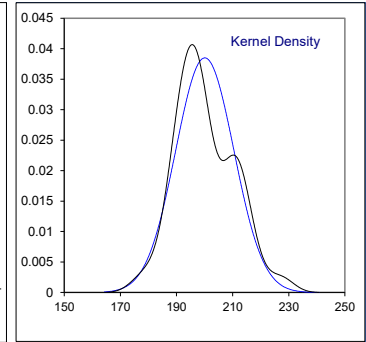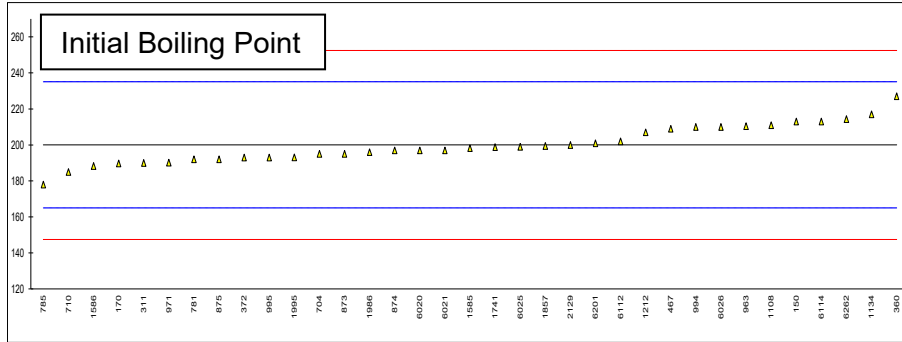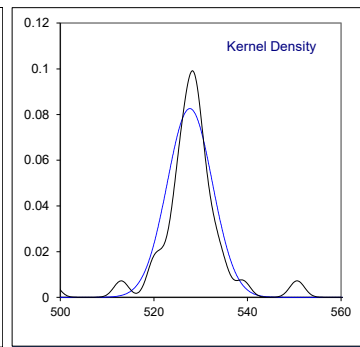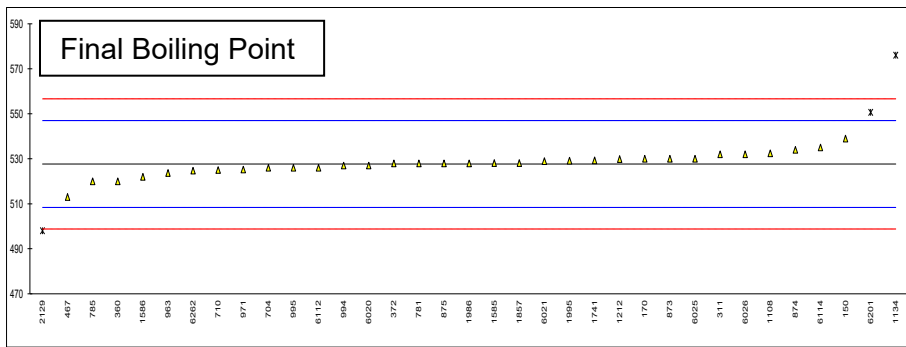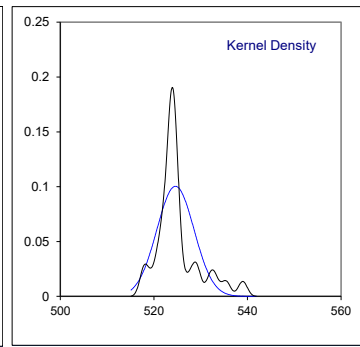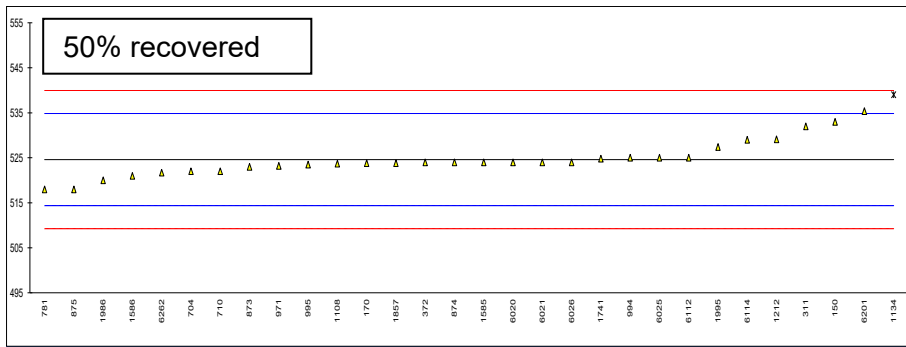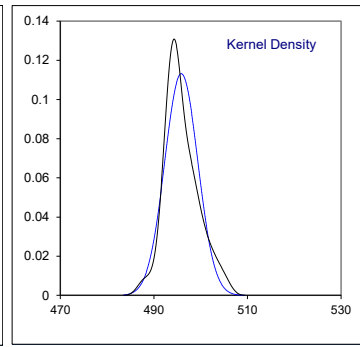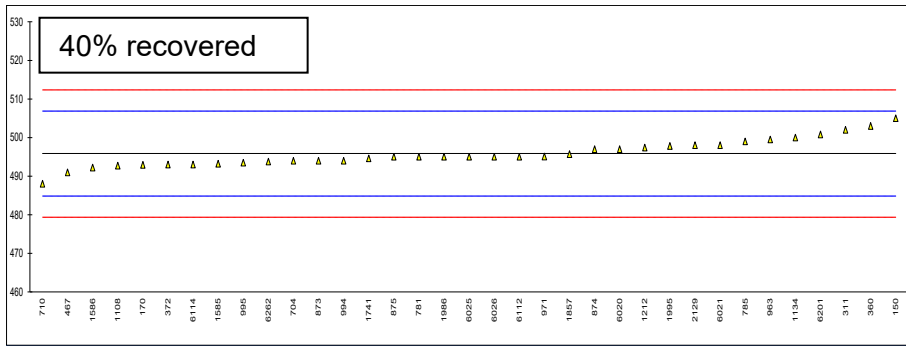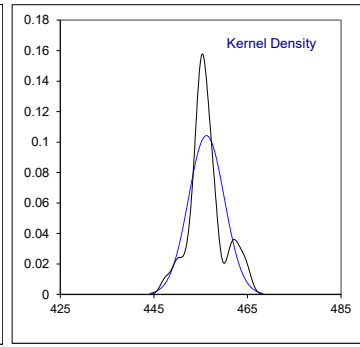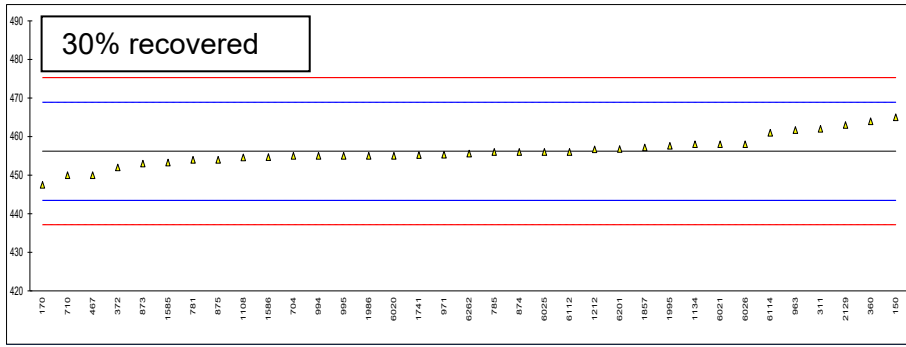
z-scores of Vacuum Distillation at 10 mmHg but reported as AET on sample #21275

lab	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
52	-----	-----	-----	-----	-----	-----	-----	-----
120	-----	-----	-----	-----	-----	-----	-----	-----
140	-----	-----	-----	-----	-----	-----	-----	-----
150	0.74	1.60	1.16	1.33	1.39	1.66	1.64	1.17
154	-----	-----	-----	-----	-----	-----	-----	-----
159	-----	-----	-----	-----	-----	-----	-----	-----
168	-----	-----	-----	-----	-----	-----	-----	-----
169	-----	-----	-----	-----	-----	-----	-----	-----
170	-0.59	-1.68	-1.04	-0.64	-1.37	-0.54	-0.16	0.24
171	-----	-----	-----	-----	-----	-----	-----	-----
175	-----	-----	-----	-----	-----	-----	-----	-----
212	-----	-----	-----	-----	-----	-----	-----	-----
225	-----	-----	-----	-----	-----	-----	-----	-----
235	-----	-----	-----	-----	-----	-----	-----	-----
237	-----	-----	-----	-----	-----	-----	-----	-----
238	-----	-----	-----	-----	-----	-----	-----	-----
253	-----	-----	-----	-----	-----	-----	-----	-----
256	-----	-----	-----	-----	-----	-----	-----	-----
273	-----	-----	-----	-----	-----	-----	-----	-----
309	-----	-----	-----	-----	-----	-----	-----	-----
311	-0.57	0.32	0.25	0.77	0.91	1.12	1.45	0.45
313	-----	-----	-----	-----	-----	-----	-----	-----
323	-----	-----	-----	-----	-----	-----	-----	-----
328	-----	-----	-----	-----	-----	-----	-----	-----
333	-----	-----	-----	-----	-----	-----	-----	-----
334	-----	-----	-----	-----	-----	-----	-----	-----
339	-----	-----	-----	-----	-----	-----	-----	-----
342	-----	-----	-----	-----	-----	-----	-----	-----
349	-----	-----	-----	-----	-----	-----	-----	-----
351	-----	-----	-----	-----	-----	-----	-----	-----
356	-----	-----	-----	-----	-----	-----	-----	-----
360	1.54	1.81	1.55	1.05	1.23	1.30	-----	-0.80
372	-0.40	-0.84	-0.01	-0.21	-0.66	-0.52	-0.12	0.03
381	-----	-----	-----	-----	-----	-----	-----	-----
445	-----	-----	-----	-----	-----	-----	-----	-----
447	-----	-----	-----	-----	-----	-----	-----	-----
455	-----	-----	-----	-----	-----	-----	-----	-----
467	0.51	-2.33	-1.57	-1.20	-0.98	-0.88	-----	-1.52
507	-----	-----	-----	-----	-----	-----	-----	-----
541	-----	-----	-----	-----	-----	-----	-----	-----
551	-----	-----	-----	-----	-----	-----	-----	-----
575	-----	-----	-----	-----	-----	-----	-----	-----
621	-----	-----	-----	-----	-----	-----	-----	-----
631	-----	-----	-----	-----	-----	-----	-----	-----
634	-----	-----	-----	-----	-----	-----	-----	-----
657	-----	-----	-----	-----	-----	-----	-----	-----
704	-0.29	-0.52	-0.27	0.21	-0.19	-0.34	-0.51	-0.17
710	-0.86	-1.27	-0.66	-0.78	-0.98	-1.43	-0.51	-0.28
752	-----	-----	-----	-----	-----	-----	-----	-----
753	-----	-----	-----	-----	-----	-----	-----	-----
778	-----	-----	-----	-----	-----	-----	-----	-----
781	-0.46	-0.10	-0.53	-1.20	-0.35	-0.16	-1.29	0.03
785	-1.26	-0.74	-0.66	-0.36	-0.03	0.57	-----	-0.80
798	-----	-----	-----	-----	-----	-----	-----	-----
823	-----	-----	-----	-----	-----	-----	-----	-----
824	-----	-----	-----	-----	-----	-----	-----	-----
825	-----	-----	-----	-----	-----	-----	-----	-----
840	-----	-----	-----	-----	-----	-----	-----	-----
872	-----	-----	-----	-----	-----	-----	-----	-----
873	-0.29	-0.10	-0.27	-0.64	-0.50	-0.34	-0.31	0.24
874	-0.17	0.75	-0.01	-0.36	-0.03	0.21	-0.12	0.66
875	-0.46	-0.10	-0.53	-1.20	-0.35	-0.16	-1.29	0.03
887	-----	-----	-----	-----	-----	-----	-----	-----
902	-----	-----	-----	-----	-----	-----	-----	-----
904	-----	-----	-----	-----	-----	-----	-----	-----
913	-----	-----	-----	-----	-----	-----	-----	-----
962	-----	-----	-----	-----	-----	-----	-----	-----
963	0.60	0.07	0.20	0.60	0.87	0.66	-----	-0.41
971	-0.56	-0.12	0.01	-0.02	-0.14	-0.14	-0.27	-0.26
974	-----	-----	-----	-----	-----	-----	-----	-----
994	0.57	-0.63	-0.40	0.07	-0.19	-0.34	0.08	-0.07
995	-0.40	-0.68	-0.27	0.07	-0.19	-0.43	-0.21	-0.17
996	-----	-----	-----	-----	-----	-----	-----	-----
997	-----	-----	-----	-----	-----	-----	-----	-----
1040	-----	-----	-----	-----	-----	-----	-----	-----

lab	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
1065	-----	-----	-----	-----	-----	-----	-----	-----
1108	0.63	0.45	0.22	-0.03	-0.25	-0.58	-0.18	0.49
1109	-----	-----	-----	-----	-----	-----	-----	-----
1121	-----	-----	-----	-----	-----	-----	-----	-----
1126	-----	-----	-----	-----	-----	-----	-----	-----
1134	0.97	1.81	1.42	0.77	0.28	0.75	2.81	5.01
1140	-----	-----	-----	-----	-----	-----	-----	-----
1191	-----	-----	-----	-----	-----	-----	-----	-----
1205	-----	-----	-----	-----	-----	-----	-----	-----
1212	0.40	1.02	0.61	0.26	0.08	0.28	0.88	0.23
1213	-----	-----	-----	-----	-----	-----	-----	-----
1218	-----	-----	-----	-----	-----	-----	-----	-----
1299	-----	-----	-----	-----	-----	-----	-----	-----
1353	-----	-----	-----	-----	-----	-----	-----	-----
1356	-----	-----	-----	-----	-----	-----	-----	-----
1381	-----	-----	-----	-----	-----	-----	-----	-----
1397	-----	-----	-----	-----	-----	-----	-----	-----
1402	-----	-----	-----	-----	-----	-----	-----	-----
1431	-----	-----	-----	-----	-----	-----	-----	-----
1491	-----	-----	-----	-----	-----	-----	-----	-----
1510	-----	-----	-----	-----	-----	-----	-----	-----
1567	-----	-----	-----	-----	-----	-----	-----	-----
1569	-----	-----	-----	-----	-----	-----	-----	-----
1585	-0.11	-0.28	-0.48	-0.19	-0.46	-0.48	-0.12	0.04
1586	-0.67	-0.16	-0.12	-0.02	-0.24	-0.67	-0.70	-0.59
1631	-----	-----	-----	-----	-----	-----	-----	-----
1636	-----	-----	-----	-----	-----	-----	-----	-----
1648	-----	-----	-----	-----	-----	-----	-----	-----
1669	-----	-----	-----	-----	-----	-----	-----	-----
1681	-----	-----	-----	-----	-----	-----	-----	-----
1710	-----	-----	-----	-----	-----	-----	-----	-----
1720	-----	-----	-----	-----	-----	-----	-----	-----
1740	-----	-----	-----	-----	-----	-----	-----	-----
1741	-0.07	0.21	0.22	-0.41	-0.16	-0.23	0.04	0.17
1776	-----	-----	-----	-----	-----	-----	-----	-----
1796	-----	-----	-----	-----	-----	-----	-----	-----
1810	-----	-----	-----	-----	-----	-----	-----	-----
1811	-----	-----	-----	-----	-----	-----	-----	-----
1854	-----	-----	-----	-----	-----	-----	-----	-----
1857	-0.04	0.06	-0.08	0.00	0.16	-0.03	-0.16	0.04
1906	-----	-----	-----	-----	-----	-----	-----	-----
1938	-----	-----	-----	-----	-----	-----	-----	-----
1941	-----	-----	-----	-----	-----	-----	-----	-----
1942	-----	-----	-----	-----	-----	-----	-----	-----
1949	-----	-----	-----	-----	-----	-----	-----	-----
1986	-0.23	-0.31	-0.01	-0.21	-0.19	-0.16	-0.90	0.03
1995	-0.40	0.36	0.00	0.22	0.22	0.35	0.55	0.16
2129	0.00	0.75	0.64	1.33	1.07	0.39	-----	-3.08
2146	-----	-----	-----	-----	-----	-----	-----	-----
6020	-0.17	-0.74	-0.53	-0.50	-0.19	0.21	-0.12	-0.07
6021	-0.17	-0.52	-0.01	0.07	0.28	0.39	-0.12	0.14
6024	-----	-----	-----	-----	-----	-----	-----	-----
6025	-0.06	-0.84	-0.53	-0.21	-0.03	-0.16	0.08	0.24
6026	0.57	-0.21	0.12	-0.07	0.28	-0.16	-0.12	0.45
6049	-----	-----	-----	----	-----	-----	-----	-----
6054	-----	-----	-----	-----	-----	-----	-----	-----
6057	-----	-----	-----	-----	-----	-----	-----	-----
6075	-----	-----	-----	-----	-----	-----	-----	-----
6092	-----	-----	-----	-----	-----	-----	-----	-----
6112	0.11	0.54	0.25	0.49	-0.03	-0.16	0.08	-0.17
6114	0.74	1.70	0.77	1.33	0.76	-0.52	0.86	0.76
6131	-----	-----	-----	-----	-----	-----	-----	-----
6142	-----	-----	-----	-----	-----	-----	-----	-----
6163	-----	-----	-----	-----	-----	-----	-----	-----
6201	0.05	-0.07	0.05	0.10	0.09	0.90	2.11	2.38
6262	0.81	0.79	0.53	-0.44	-0.10	-0.38	-0.57	-0.31
6266	-----	-----	-----	-----	-----	-----	-----	-----
6298	-----	-----	-----	-----	-----	-----	-----	-----
6340	-----	-----	-----	-----	-----	-----	-----	-----
6373	-----	-----	-----	-----	-----	-----	-----	-----
6379	-----	-----	-----	-----	-----	-----	-----	-----
6400	-----	-----	-----	-----	-----	-----	-----	-----
6404	-----	-----	-----	-----	-----	-----	-----	-----
6406	-----	-----	-----	-----	-----	-----	-----	-----

Determination of Total Carbon, Hydrogen and Nitrogen on sample #21275; results in %M/M

lab	method	Total C	mark	z(targ)	Total H	mark	z(targ)	Total N	mark	z(targ)
52	D5291-B	85.8		0.19	10.1		0.04	-----		-----
120		-----		-----	-----		-----	-----		-----
140		-----		-----	-----		-----	-----		-----
150		-----		-----	-----		-----	-----		-----
154		-----		-----	-----		-----	-----		-----
159		-----		-----	-----		-----	-----		-----
168		-----		-----	-----		-----	-----		-----
169		-----		-----	-----		-----	-----		-----
170		-----		-----	-----		-----	-----		-----
171		-----		-----	-----		-----	-----		-----
175		-----		-----	-----		-----	-----		-----
212		-----		-----	-----		-----	-----		-----
225		-----		-----	-----		-----	-----		-----
235		-----		-----	-----		-----	-----		-----
237		-----		-----	-----		-----	-----		-----
238		-----		-----	-----		-----	-----		-----
253		-----		-----	-----		-----	-----		-----
256		-----		-----	-----		-----	-----		-----
273		-----		-----	-----		-----	-----		-----
309	D5291	85.60		-0.04	10.01		-0.30	0.47		0.93
311		-----		-----	-----		-----	-----		-----
313		-----		-----	-----		-----	-----		-----
323	D5291-C	86.3		0.77	9.7		-1.49	0.3		-3.74
328		-----		-----	-----		-----	-----		-----
333	D5291-D	86.39		0.87	10.38		1.11	0.47		0.93
334		-----		-----	-----		-----	-----		-----
339	D5291-D	85.8		0.19	10.16		0.27	0.46		0.65
342		-----		-----	-----		-----	-----		-----
349		-----		-----	-----		-----	-----		-----
351		-----		-----	-----		-----	-----		-----
356		-----		-----	-----		-----	-----		-----
360	D5291-A	85.17		-0.54	10.43		1.30	0.40		-1.00
372		-----		-----	-----		-----	-----		-----
381		-----		-----	-----		-----	-----		-----
445		-----		-----	-----		-----	-----		-----
447		-----		-----	-----		-----	-----		-----
455		-----		-----	-----		-----	-----		-----
467		-----		-----	-----		-----	-----		-----
507		-----		-----	-----		-----	-----		-----
541		-----		-----	-----		-----	-----		-----
551		-----		-----	-----		-----	-----		-----
575		-----		-----	-----		-----	-----		-----
621		-----		-----	-----		-----	-----		-----
631		-----		-----	-----		-----	-----		-----
634		-----		-----	-----		-----	-----		-----
657		-----		-----	-----		-----	-----		-----
704		-----		-----	-----		-----	-----		-----
710		-----		-----	-----		-----	-----		-----
752		-----		-----	-----		-----	-----		-----
753		-----		-----	-----		-----	-----		-----
778		-----		-----	-----		-----	-----		-----
781	D5291-A	85.840		0.24	10.141		0.19	0.417		-0.53
785		-----		-----	-----		-----	-----		-----
798		-----		-----	-----		-----	-----		-----
823	D5291-D	85.43		-0.24	10.252		0.62	0.452		0.43
824	D5291-D	85.74		0.12	10.17		0.31	0.58		3.95
825		-----		-----	-----		-----	-----		-----
840		-----		-----	-----		-----	-----		-----
872		-----		-----	-----		-----	-----		-----
873		-----		-----	-----		-----	-----		-----
874		-----		-----	-----		-----	-----		-----
875		-----		-----	-----		-----	-----		-----
887		-----		-----	-----		-----	-----		-----
902		-----		-----	-----		-----	-----		-----
904		-----		-----	-----		-----	-----		-----
913		-----		-----	-----		-----	-----		-----
962		-----		-----	-----		-----	-----		-----
963		-----		-----	-----		-----	-----		-----
971		-----		-----	-----		-----	-----		-----
974		-----		-----	-----		-----	-----		-----
994		-----		-----	-----		-----	-----		-----
995		-----		-----	-----		-----	-----		-----
996		-----		-----	-----		-----	-----		-----
997		-----		-----	-----		-----	-----		-----
1040		-----		-----	-----		-----	-----		-----

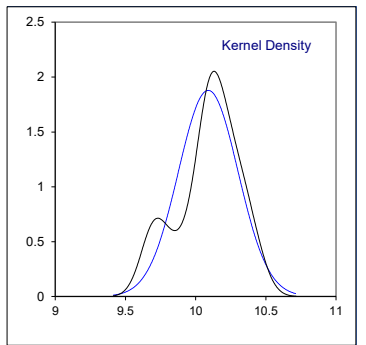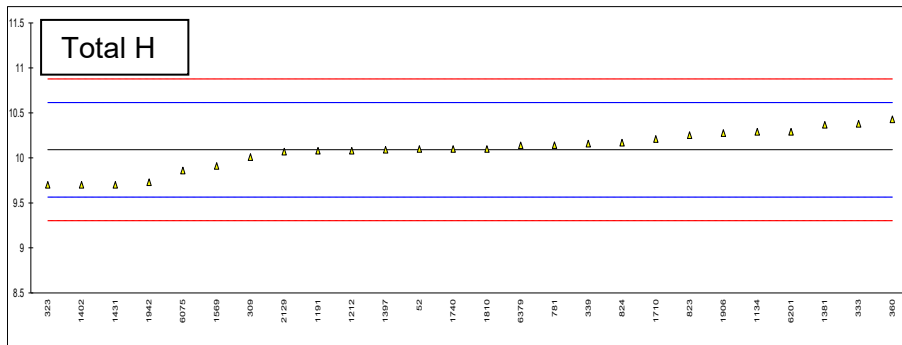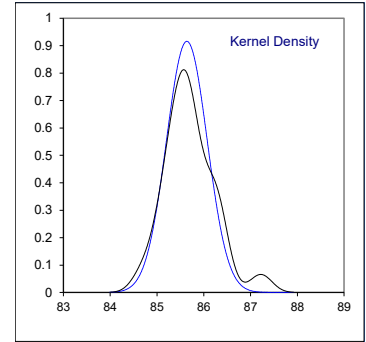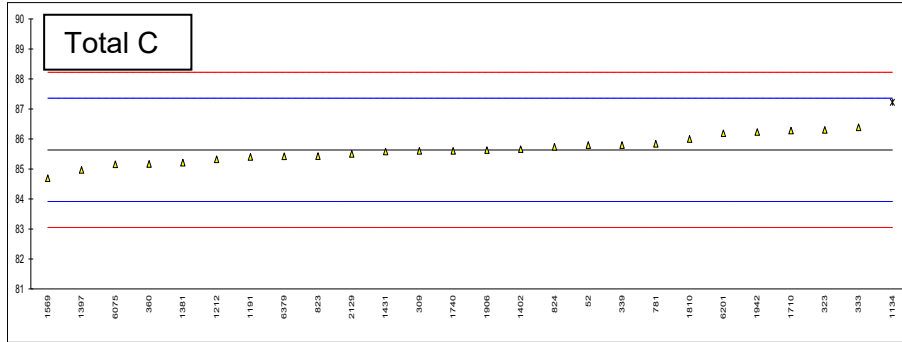| lab	method	Total C	mark	z(targ)	Total H	mark	z(targ)	Total N	mark	z(targ)
1065		-----		-----	-----		-----	-----		-----
1108		-----		-----	-----		-----	-----		-----
1109		-----		-----	-----		-----	-----		-----
1121		-----		-----	-----		-----	-----		-----
1126		-----		-----	-----		-----	-----		-----
1134	D5291	87.22	R(0.05)	1.84	10.29		0.76	2.49	G(0.01)	56.40
1140		-----		-----	-----		-----	-----		-----
1191	D5291-A	85.40		-0.27	10.08		-0.04	0.335		-2.78
1205		-----		-----	-----		-----	-----		-----
1212	D5291-D	85.32		-0.37	10.08		-0.04	0.47		0.93
1213		-----		-----	-----		-----	-----		-----
1218		-----		-----	-----		-----	-----		-----
1299		-----		-----	-----		-----	-----		-----
1353		-----		-----	-----		-----	-----		-----
1356		-----		-----	-----		-----	-----		-----
1381	D5291-A	85.21		-0.49	10.368		1.06	-----		-----
1397	D5291-A	84.97		-0.77	10.09		0.00	0.499		1.72
1402	D5291-C	85.66		0.03	9.70		-1.49	-----		-----
1431	D5291-B	85.58		-0.07	9.70		-1.49	0.38		-1.55
1491		-----		-----	-----		-----	-----		-----
1510		-----		-----	-----		-----	-----		-----
1567		-----		-----	-----		-----	-----		-----
1569	D5291-A	84.69		-1.10	9.91		-0.69	0.42		-0.45
1585		-----		-----	-----		-----	-----		-----
1586		-----		-----	-----		-----	-----		-----
1631		-----		-----	-----		-----	-----		-----
1636		-----		-----	-----		-----	-----		-----
1648		-----		-----	-----		-----	-----		-----
1669		-----		-----	-----		-----	-----		-----
1681		-----		-----	-----		-----	-----		-----
1710	D5291-B	86.28		0.75	10.21		0.46	-----		-----
1720		-----		-----	-----		-----	-----		-----
1740	D5291-A	85.6		-0.04	10.1		0.04	0.41		-0.72
1741		-----		-----	-----		-----	-----		-----
1776		-----		-----	-----		-----	-----		-----
1796		-----		-----	-----		-----	-----		-----
1810	D5291-A	86.0		0.42	10.1		0.04	-----		-----
1811		-----		-----	-----		-----	-----		-----
1854		-----		-----	-----		-----	-----		-----
1857		-----		-----	-----		-----	-----		-----
1906		85.631		-0.01	10.275		0.71	0.410		-0.72
1938		-----		-----	-----		-----	-----		-----
1941		-----		-----	-----		-----	-----		-----
1942	D5291-D	86.23		0.69	9.73		-1.37	0.49		1.48
1949		-----		-----	-----		-----	-----		-----
1986		-----		-----	-----		-----	-----		-----
1995		-----		-----	-----		-----	-----		-----
2129	D5291-A	85.50		-0.16	10.07		-0.08	0.52		2.30
2146		-----		-----	-----		-----	-----		-----
6020		-----		-----	-----		-----	-----		-----
6021		-----		-----	-----		-----	-----		-----
6024		-----		-----	-----		-----	-----		-----
6025		-----		-----	-----		-----	-----		-----
6026		-----		-----	-----		-----	-----		-----
6049		-----		-----	-----		-----	-----		-----
6054		-----		-----	-----		-----	-----		-----
6057		-----		-----	-----		-----	-----		-----
6075	D5291-D	85.16		-0.55	9.86		-0.88	0.69	G(0.05)	6.97
6092		-----		-----	-----		-----	-----		-----
6112		-----		-----	-----		-----	-----		-----
6114		-----		-----	-----		-----	-----		-----
6131		-----		-----	-----		-----	-----		-----
6142		-----		-----	-----		-----	-----		-----
6163		-----		-----	-----		-----	-----		-----
6201	D5291-A	86.190		0.64	10.290		0.76	-----	W	-----
6262		-----		-----	-----		-----	-----		-----
6266		-----		-----	-----		-----	-----		-----
6298		-----		-----	-----		-----	-----		-----
6340		-----		-----	-----		-----	-----		-----
6373		-----		-----	-----		-----	-----		-----
6379	D5291-C Mod.	85.425		-0.25	10.13975		0.19	0.37		-1.82
6400		-----		-----	-----		-----	-----		-----
6404		-----		-----	-----		-----	-----		-----
6406		-----		-----	-----		-----	-----		-----

	Total C	Total H	Total N
normality	OK	OK	OK
n	25	26	18
outliers	1	0	2
mean (n)	85.6366	10.0898	0.4363
st.dev. (n)	0.43559	0.21230	0.06792
R(calc.)	1.2196	0.5944	0.1902
st.dev.(D5291-ABC:21)	0.86218	0.26251	---
R(D5291-ABC:21)	2.4141	0.7350	---
st.dev.(D5291-D:21)	---	---	0.03641
R(D5291-D:21)	---	---	0.1020

Lab 6201: first reported 0.1135
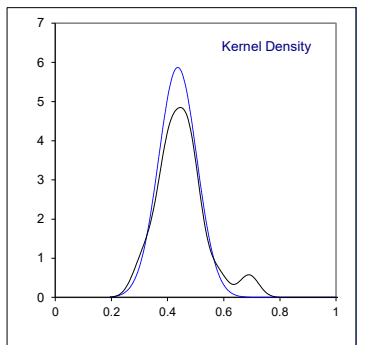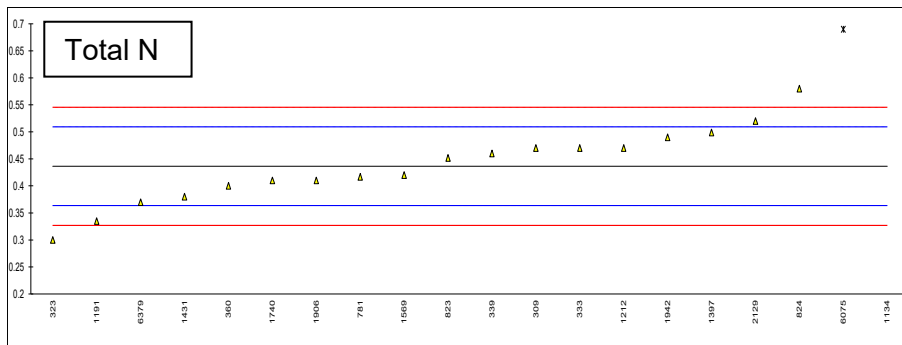
Determination of Aluminum as Al, Silicon as Si and total Al+Si on sample #21276; results in mg/kg

lab	method	Al	mark	z(targ)	Si	mark	z(targ)	Sum Al+Si	mark	z(targ)
52	IP501	6		-0.38	<10		-----	<15		-----
120	IP501	6.7085		0.34	7.645		0.24	-----		-----
140	IP501	5		-1.41	<10		-----	-----		-----
150	IP501	12.5	C,R(0.01)	6.29	8		0.43	18	E	2.02
154		-----		-----	-----		-----	-----		-----
159	IP501	7		0.64	8		0.43	15		0.59
169		-----		-----	-----		-----	-----		-----
170		-----		-----	-----		-----	-----		-----
171	IP501	3	R(0.05)	-3.46	0	ex	-3.87	3	R(0.01)	-5.12
175		-----		-----	-----		-----	-----		-----
212	IP501	7.11		0.76	7.08		-0.07	14.19		0.21
225	IP501	5.80		-0.59	6.77		-0.23	12.57		-0.56
235	IP470	5		-1.41	<10		-----	<15		-----
237	IP501	6		-0.38	7		-0.11	13		-0.36
273	IP501	7.0		0.64	8	C	0.43	15	C	0.59
311	IP501	5.4		-1.00	5.5		-0.92	10.9		-1.36
323	IP470	7		0.64	<10		-----	<17		-----
328	IP501	6		-0.38	7		-0.11	13		-0.36
333	IP501	6		-0.38	7		-0.11	13		-0.36
334	IP501	6		-0.38	<10		-----	15		0.59
342	IP501	7.1086	C	0.75	7.2689	C	0.03	14.3775	C	0.30
351	IP501	8.40		2.08	7.43		0.12	15.83		0.99
356	IP501	7		0.64	6		-0.65	< 15		-----
360	IP501	7.3		0.95	7.4		0.10	14.7		0.45
372	IP470	6.7		0.34	7.1		-0.06	13.8		0.02
381		-----		-----	-----		-----	-----		-----
445		-----		-----	-----		-----	-----		-----
447		-----		-----	-----		-----	-----		-----
455	IP501	6		-0.38	8		0.43	-----		-----
467	IP501	6.67		0.30	<10	C	-----	<15	C	-----
507	IP501	7.06		0.70	5.30		-1.02	12.36		-0.66
541	IP501	6.3		-0.08	<10		-----	<15		-----
551	IP501	6.02		-0.36	-----		-----	-----		-----
631	IP470	7.13		0.78	7.58		0.20	14.7		0.45
634	IP470	9.04		2.74	9.0335		0.98	18.074		2.06
657	IP501	8		1.67	<10		-----	16		1.07
704	IP470	7		0.64	8		0.43	15		0.59
750	IP501	5.95		-0.43	7.30		0.05	13.25		-0.24
781	IP501	6.7		0.34	<10		-----	<15		-----
785	IP470	5.8		-0.59	4.7		-1.35	10.5		-1.55
798		-----		-----	-----		-----	-----		-----
823	IP501	7.1		0.75	7.1		-0.06	14		0.12
824	IP501	6.56		0.19	8.77		0.84	15.3		0.74
825	IP501	6.087		-0.29	7.335		0.07	13.422		-0.16
840	IP501	8.5		2.18	10.4		1.72	18.9		2.45
872		-----		-----	-----		-----	-----		-----
873	IP470	7		0.64	7		-0.11	14		0.12
874	IP501	6		-0.38	6		-0.65	12		-0.83
875	IP501	6.9		0.54	5.4		-0.97	12		-0.83
902	IP501	5.12		-1.29	5.41		-0.96	10.53		-1.53
904	IP501	5		-1.41	5		-1.18	10		-1.78
913		-----		-----	-----		-----	-----		-----
963	IP501	6		-0.38	7		-0.11	13		-0.36
971	IP501	6		-0.38	5		-1.18	11		-1.31
974		-----		-----	-----		-----	-----		-----
994	IP501	5.5		-0.90	6.4		-0.43	-----		-----
995	IP470	5.5		-0.90	7.5		0.16	-----		-----
1065		-----		-----	-----		-----	-----		-----
1091	IP501	7.7		1.36	7.1		-0.06	14.8		0.50
1108	IP470	6.2		-0.18	7.2		0.00	13.4		-0.17
1109	IP470	5.9		-0.49	3.9		-1.78	9.8		-1.88
1121	IP501	6.2		-0.18	7.7		0.27	13.9		0.07
1126		-----		-----	-----		-----	-----		-----
1134	IP501	6		-0.38	6		-0.65	12		-0.83
1140	IP501	4.336		-2.09	6.245		-0.52	10.581		-1.51
1191	ISO10478	6.875		0.51	7.18		-0.01	14.05		0.14
1212	IP501	6.4		0.03	5.7		-0.81	12.1		-0.79
1218		-----		-----	-----		-----	-----		-----
1299		-----		-----	-----		-----	-----		-----
1356	ISO10478	7		0.64	5		-1.18	12		-0.83
1381	ISO10478	5.95		-0.43	7.44		0.13	13.39		-0.17
1402	IP501	8		1.67	10		1.50	18		2.02
1431	IP501	6.01		-0.37	6.00		-0.65	12.01		-0.83
1491		-----		-----	-----		-----	-----		-----

lab	method	Al	mark	z(targ)	Si	mark	z(targ)	Sum Al+Si	mark	z(targ)
1510		-----		-----	-----		-----	-----		-----
1567	IP501	6.74		0.38	7.27		0.03	14.01		0.12
1586	IP470	6		-0.38	6		-0.65	12		-0.83
1648	IP501	6.2		-0.18	6.7		-0.27	12.9		-0.40
1720		-----		-----	-----		-----	-----		-----
1740	IP501	6		-0.38	7		-0.11	13		-0.36
1741	IP501	<10	C	-----	9.80		1.39	19.2		2.59
1796	IP470	7		0.64	7		-0.11	14		0.12
1810		-----		-----	-----		-----	-----		-----
1854	IP501	6.6		0.23	7.2		0.00	13.8		0.02
1857	IP501	6.6		0.23	6.7		-0.27	13.3		-0.21
1862	IP501	6.7		0.34	7.2		0.00	13.9		0.07
1949	IP501	5.5		-0.90	7.4		0.10	13.1		-0.31
1967	IP470	6.8		0.44	7.6		0.21	14.4		0.31
1986	IP470	7		0.64	8		0.43	15		0.59
1995	IP501	10.06	C,R(0.05)	3.78	9		0.96	19.06	C	2.53
2129	IP470	6.5		0.13	9.1		1.02	15.6		0.88
6021	IP501	6.3		-0.08	6.8		-0.22	13.1		-0.31
6024	IP470	6.80		0.44	6.67		-0.29	13.47		-0.13
6026	IP470	7.4		1.05	8.3		0.59	15.7		0.93
6049	IP501	6		-0.38	7		-0.11	13		-0.36
6054	IP501	6.01	C	-0.37	8.93799		0.93	14.95	C	0.57
6057		-----		-----	-----		-----	-----		-----
6075	In house	4.3	C	-2.13	11.8	C	2.47	16.1	C	1.12
6092	IP501	6.2		-0.18	10.9		1.98	-----		-----
6114	IP501	6.5		0.13	6.6		-0.33	13.1		-0.31
6131	IP501	6.12		-0.26	6.29		-0.49	12.41		-0.64
6142	IP501	3.985		-2.45	8.390		0.64	12.375		-0.65
6195	IP501	6.0		-0.38	6.0		-0.65	12.0		-0.83
6201	IP501	6		-0.38	7		-0.11	13		-0.36
6262	IP501	7		0.64	9		0.96	16		1.07
6298	IP501	6.32		-0.05	6.12		-0.58	12.44		-0.62
6340	IP501	5		-1.41	5		-1.18	10		-1.78
6373	IP501	7		0.64	8		0.43	15		0.59
6379	D5185	5.196		-1.21	10.77		1.91	15.966		1.05
6396	IP501	6.68		0.31	7.04		-0.09	13.72		-0.01
6400	IP501	6		-0.38	5		-1.18	11		-1.31
	normality	suspect			suspect			OK		
	n	87			80			76		
	outliers	3			1			1		
	mean (n)	6.37			7.21			13.75		
	st.dev. (n)	0.873			1.468			2.086		
	R(calc.)	2.44			4.11			5.84		
	st.dev.(IP470:05)	0.975			1.862			2.101		
	R(IP470:05)	2.73			5.21			5.88		
	compare									
	R(IP501:05)	2.15			2.39			3.22		

Lab 150: first reported 10, E: calculation difference, iis calculated 20.5
Lab 171: test result excluded, zero is not a real value
Lab 273: first reported 13.1 and 20.1 respectively
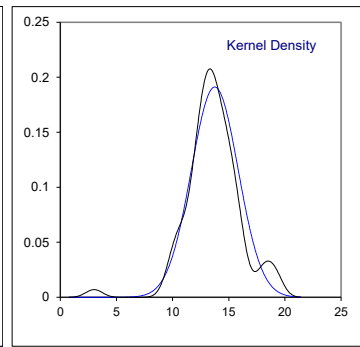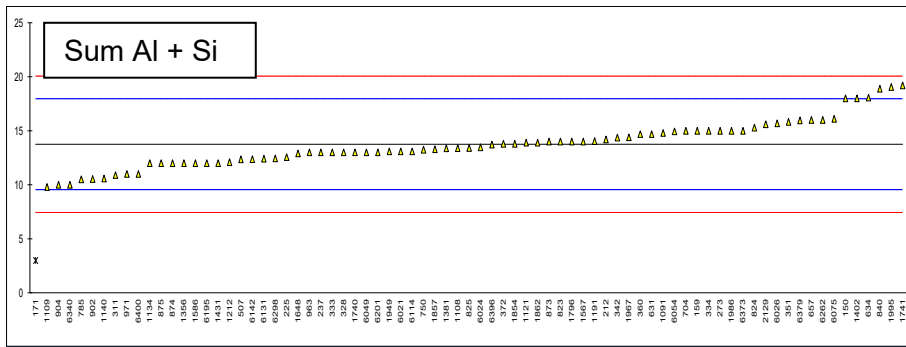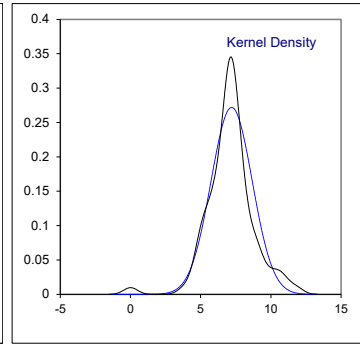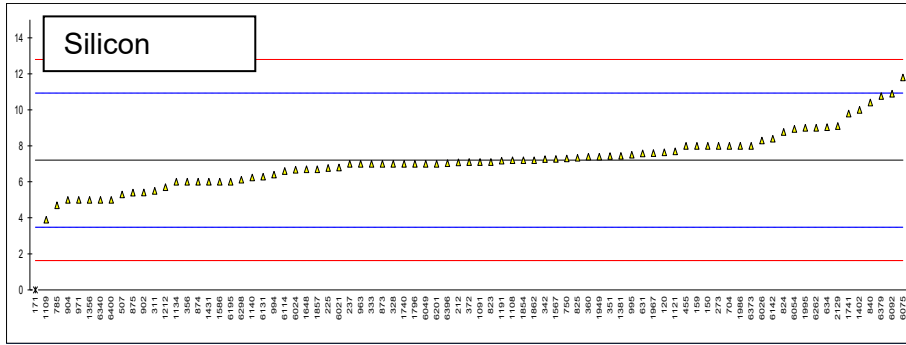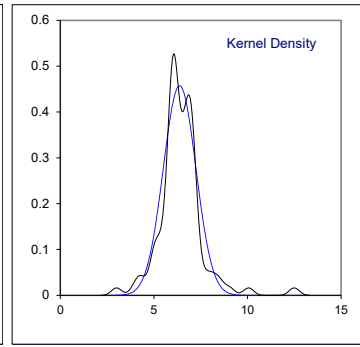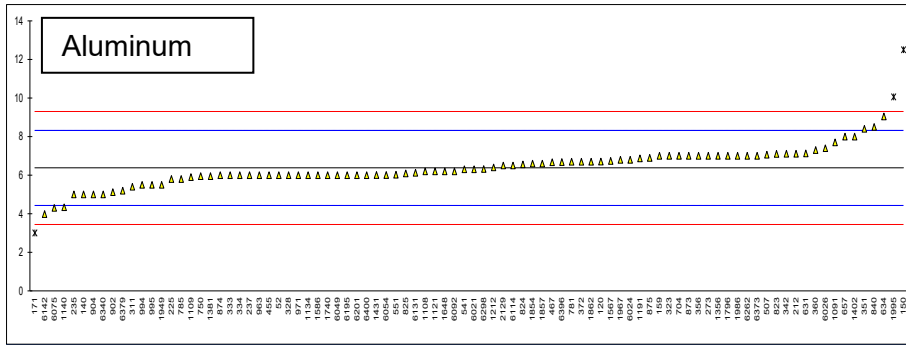Lab 342: first reported 14.3775, 7.1086 and 7.2689 respectively
Lab 467: first reported 8.18 and 14.85 respectively
Lab 1741: first reported 9.4
Lab 1995: first reported 9.1 and 18.1 respectively
Lab 6054: first reported 10.542 and 19.47999 respectively
Lab 6075: first reported 3.70, 21.6 and 25.3 respectively

Aluminum

Silicon

Sum Al + Si

Determination of Iron as Fe, Nickel as Ni, Sodium as Na on sample #21276; results in mg/kg

lab	method	Fe	mark	z(targ)	Ni	mark	z(targ)	Na	mark	z(targ)
52	IP501	18		0.11	35		0.30	16		0.14
120	IP501	-----		-----	27.24		-1.06	-----		-----
140	IP501	17		-0.15	34		0.12	13		-1.10
150	IP501	17		-0.15	31		-0.40	24	C,R(0.01)	3.44
154		-----		-----	-----		-----	-----		-----
159	IP501	16		-0.42	30		-0.58	18		0.97
169		-----		-----	-----		-----	-----		-----
170		-----		-----	-----		-----	-----		-----
171	IP501	15		-0.68	24		-1.62	12		-1.51
175		-----		-----	-----		-----	-----		-----
212	IP501	18.87		0.35	33.28		0.00	17.55		0.78
225	IP501	17.06		-0.14	31.27		-0.35	12.70		-1.22
235	IP470	16	C	-0.42	19		-2.50	19		1.38
237	IP501	17		-0.15	33		-0.05	13		-1.10
273		-----		-----	-----		-----	-----		-----
311	IP501	17		-0.15	33		-0.05	14		-0.68
323	IP470	18		0.11	38		0.82	16		0.14
328	IP501	20		0.65	36		0.47	16		0.14
333	IP501	18		0.11	36		0.47	16		0.14
334	IP501	20		0.65	34		0.12	17		0.55
342	IP501	20.0124		0.65	39.1881		1.03	13.3441		-0.95
351	IP501	13.34		-1.12	24.58		-1.52	16.49		0.34
356	IP501	19		0.38	34		0.12	18		0.97
360	IP501	23.2		1.50	41.3		1.40	17.3		0.68
372	IP470	15.9		-0.44	34.1		0.14	14.4		-0.52
381		-----		-----	-----		-----	-----		-----
445		-----		-----	-----		-----	-----		-----
447		-----		-----	-----		-----	-----		-----
455	IP501	15		-0.68	34		0.12	19		1.38
467	IP501	15.30		-0.60	25.89		-1.29	15.45		-0.09
507	IP501	18.22		0.17	24.19		-1.59	15.83		0.07
541	IP501	21.5		1.04	32.8		-0.09	21.4		2.37
551	IP501	19.48		0.51	28.07		-0.91	12.31		-1.38
631		-----		-----	-----		-----	12.2		-1.43
634	IP470	8.969	R(0.05)	-2.29	37.484		0.73	13.54		-0.87
657	IP501	19		0.38	37		0.65	15		-0.27
704	IP470	19		0.38	38		0.82	14		-0.68
750	IP501	18.31		0.20	34.15		0.15	17.51		0.76
781	IP501	16.7		-0.23	28.8		-0.79	13.7		-0.81
785	IP470	18.5		0.25	36.2		0.51	16.0		0.14
798		-----		-----	-----		-----	-----		-----
823	IP501	17.5		-0.02	36.8		0.61	17		0.55
824	IP501	18.65		0.29	37.29		0.70	17.59		0.80
825	IP501	18.55		0.26	37.23		0.69	17.30		0.68
840	IP501	19.7		0.57	38.6		0.93	-----		-----
872		-----		-----	-----		-----	-----		-----
873	IP470	17		-0.15	34		0.12	15		-0.27
874	IP501	19		0.38	36		0.47	17		0.55
875	IP501	18.8		0.33	38.6		0.93	16.0		0.14
902	IP501	14.07		-0.93	30.84		-0.43	14.5		-0.48
904	IP501	16		-0.42	31		-0.40	13		-1.10
913		-----		-----	-----		-----	-----		-----
963	IP501	18		0.11	30		-0.58	15		-0.27
971	IP501	18		0.11	36		0.47	14		-0.68
974		-----		-----	-----		-----	-----		-----
994	IP501	18.5		0.25	33.3		0.00	14.4		-0.52
995	IP470	18		0.11	34		0.12	15		-0.27
1065	IP470	19		0.38	41		1.34	22		2.62
1091	IP501	18.9		0.35	36.8		0.61	16.0		0.14
1108	IP470	18.4		0.22	37.6		0.75	15.0		-0.27
1109	IP470	16.9		-0.18	30.4		-0.51	15.0		-0.27
1121	IP501	17.4		-0.04	29.6		-0.65	16.4		0.31
1126		-----		-----	-----		-----	-----		-----
1134	IP501	15		-0.68	28		-0.92	17		0.55
1140	IP501	14.08		-0.93	27.99		-0.93	12.30		-1.39
1191	ISO10478Mod.	12.52		-1.34	22.335		-1.91	15.355		-0.12
1212	IP501	18.0		0.11	34.7		0.24	15.0		-0.27
1218		-----		-----	-----		-----	-----		-----
1299		-----		-----	-----		-----	-----		-----
1356	IP501	15		-0.68	21		-2.15	15		-0.27
1381		-----		-----	-----		-----	-----		-----
1402	IP501	22		1.18	33		-0.05	16		0.14
1431	IP501	13.0		-1.21	22.0		-1.97	24.9	R(0.01)	3.81

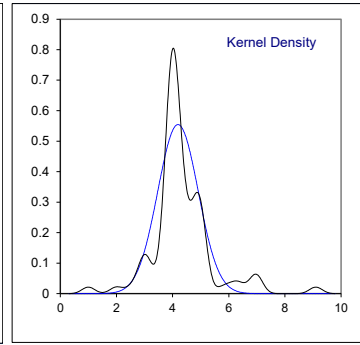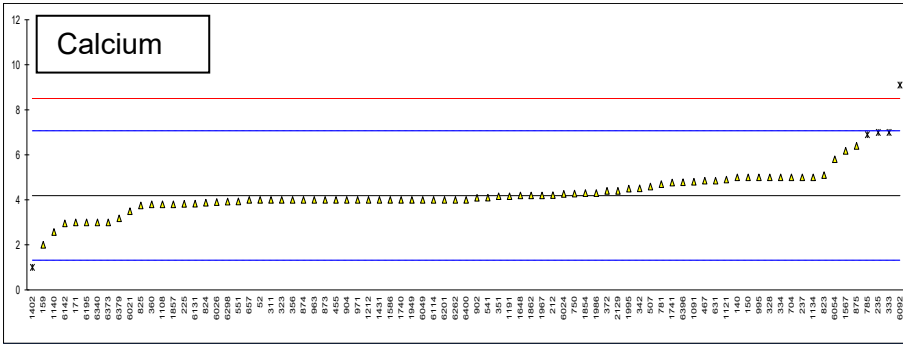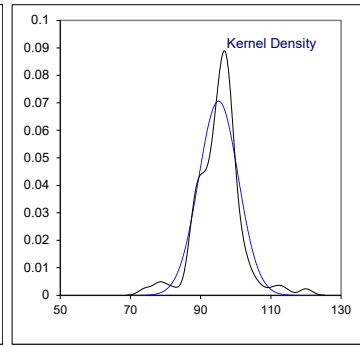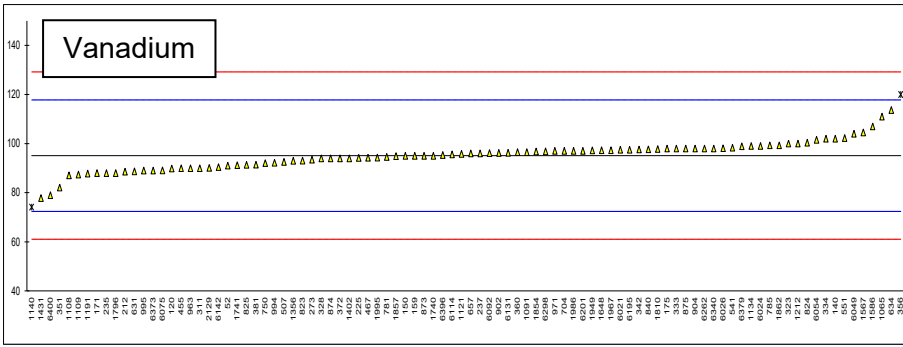| lab	method	Fe	mark	z(targ)	Ni	mark	z(targ)	Na	mark	z(targ)
1491		-----		-----	-----		-----	-----		-----
1510		-----		-----	-----		-----	-----		-----
1567	IP501	20.22		0.70	37.52		0.74	17.17		0.62
1586	IP470	19		0.38	39		1.00	16		0.14
1648	IP501	17.8		0.06	35.7		0.42	14.1		-0.64
1720		-----		-----	-----		-----	-----		-----
1740	IP501	16		-0.42	33		-0.05	16		0.14
1741	IP501	16		-0.42	30		-0.58	18.4		1.13
1796	IP470	-----		-----	36		0.47	-----		-----
1810		15.0		-0.68	36.8		0.61	-----		-----
1854	IP501	18.9		0.35	35.6		0.40	13.2		-1.01
1857	IP501	18.2		0.17	36.3		0.52	15.6		-0.02
1862	IP501	18.3		0.19	37.0		0.65	15.2		-0.19
1949	IP501	18.0		0.11	36.8		0.61	15.5		-0.07
1967	IP470	18.2		0.17	37.2		0.68	14.8		-0.35
1986	IP470	18		0.11	36		0.47	15		-0.27
1995	IP501	19.25		0.45	32.4	C	-0.16	17.36		0.70
2129	IP470	21.2		0.97	36.3		0.52	15.6		-0.02
6021	IP501	18.8		0.33	35.9		0.45	16.3		0.26
6024	IP470	17.11		-0.12	36.29		0.52	15.55		-0.04
6026	IP470	21.1		0.94	37.6		0.75	17.2		0.64
6049	IP501	19		0.38	36		0.47	17	C	0.55
6054	IP501	14.7846		-0.74	31.8665		-0.25	15.1630		-0.20
6057		-----		-----	-----		-----	-----		-----
6075	D5863-B	-----		-----	26.1		-1.26	18.9		1.34
6092	IP501	17.8		0.06	36.2		0.51	16.5		0.35
6114	IP501	19.0		0.38	36.8		0.61	14.2		-0.60
6131	IP501	17.74		0.05	34.59		0.23	16.38		0.30
6142	IP501	11.782		-1.54	29.356		-0.69	11.779		-1.60
6195	IP501	18.5		0.25	38.5		0.91	16.0		0.14
6201	IP501	18		0.11	36		0.47	16		0.14
6262	IP501 + IP470	19		0.38	34		0.12	17		0.55
6298	IP501	17.8		0.06	34.61		0.23	16.51		0.35
6340	IP501	12		-1.48	24		-1.62	16		0.14
6373	IP501	15		-0.68	28		-0.92	13		-1.10
6379	D5185	14.98		-0.69	39.55		1.09	15.86		0.08
6396	IP501	18.06		0.13	35.19		0.33	17.09		0.59
6400	IP501	17		-0.15	28		-0.92	14		-0.68
	normality	OK			OK			suspect		
	n	86			90			85		
	outliers	1			0			2		
	mean (n)	17.57			33.30			15.66		
	st.dev. (n)	2.159			4.781			1.925		
	R(calc.)	6.04			13.39			5.39		
	st.dev.(IP470:05)	3.762			5.729			2.425		
	R(IP470:05)	10.53			16.04			6.79		
	compare									
	R(501:05)	4.54			11.56			4.84		

Lab 150: first reported 22
Lab 235: first reported 33
Lab 1995: first reported 30.28
Lab 6049: first reported 27

Iron

Kernel Density

Nickel

Kernel Density

Sodium

Kernel Density
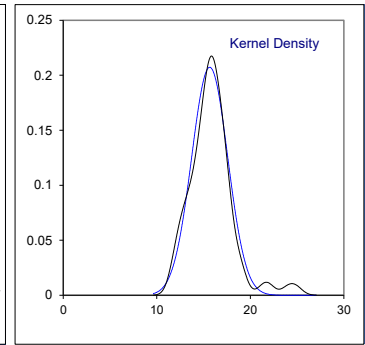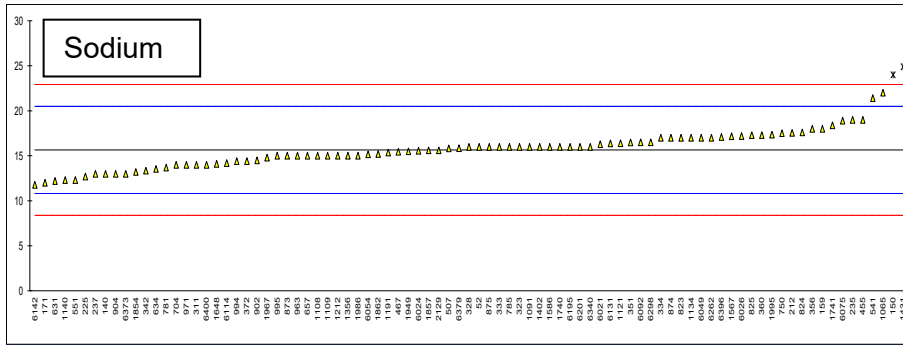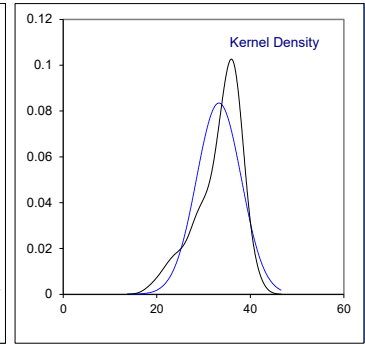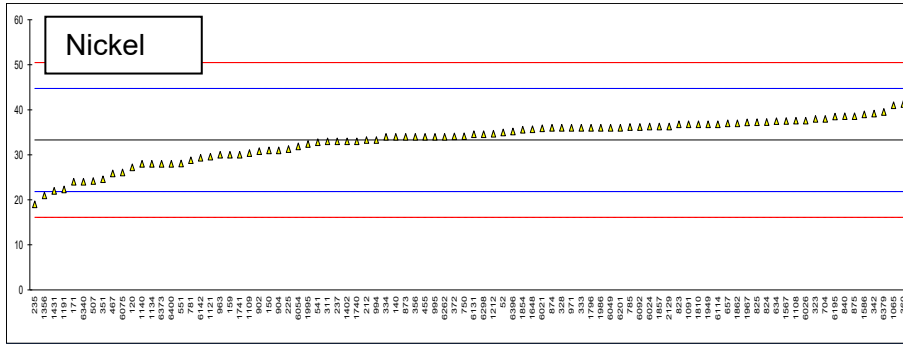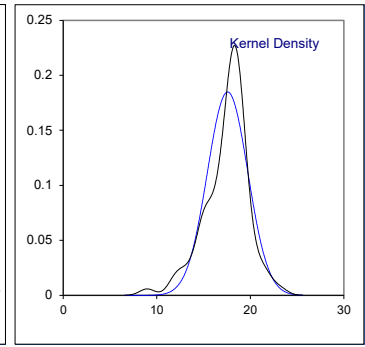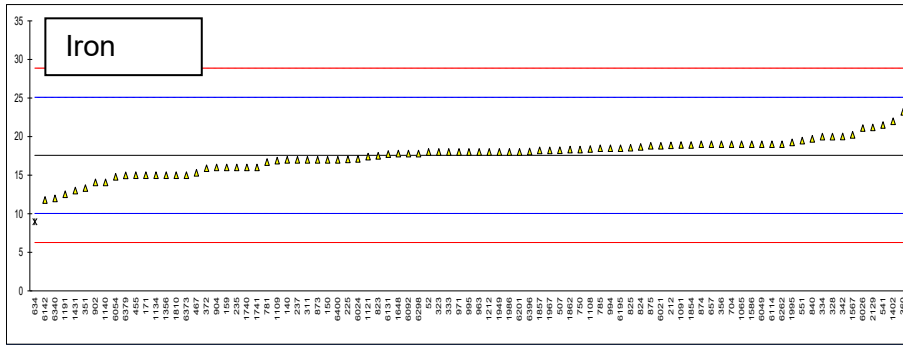
Determination of Vanadium as V and Calcium as Ca on sample #21276; results in mg/kg

lab	method	V	mark	z(targ)	Ca	mark	z(targ)	remarks
52	IP501	91		-0.36	4		-0.13	
120	IP501	89.83		-0.46	-----		-----	
140	IP501	102		0.61	5		0.56	
150	IP501	95		-0.01	5		0.56	
154		-----		-----	-----		-----	
159	IP501	95		-0.01	2		-1.53	
169		-----		-----	-----		-----	
170		-----		-----	-----		-----	
171	IP501	88		-0.63	3		-0.83	
175	D5863-B	98		0.26	-----		-----	
212	IP501	88.56		-0.58	4.21		0.01	
225	IP501	94.16		-0.08	3.82		-0.26	
235	IP470	88		-0.63	7	R(0.05)	1.95	
237	IP501	96		0.08	5		0.56	
273	IP501	93.5		-0.14	-----		-----	
311	IP501	90		-0.45	4		-0.13	
323	IP470	100		0.43	4		-0.13	
328	IP501	94		-0.10	5		0.56	
333	IP501	98		0.26	7	R(0.05)	1.95	
334	IP501	102		0.61	5		0.56	
342	IP501	97.6207		0.22	4.5141		0.22	
351	IP501	82.09		-1.15	4.16		-0.02	
356	IP501	120	R(0.01)	2.19	4		-0.13	
360	IP501	96.5		0.12	3.8		-0.27	
372	IP470	94.0		-0.10	4.4		0.14	
381	IP470	91.4	C	-0.33	-----		-----	first reported 74.4
445		-----		-----	-----		-----	
447		-----		-----	-----		-----	
455	IP501	90		-0.45	4		-0.13	
467	IP501	94.27		-0.07	4.85		0.46	
507	IP501	92.54		-0.23	4.59		0.28	
541	IP501	98.3		0.28	4.1		-0.06	
551	IP501	102.25		0.63	3.93		-0.18	
631	D5863-A + IP470	88.7		-0.56	4.85		0.46	
634	IP470	113.662		1.63	-----		-----	
657	IP501	96		0.08	4		-0.13	
704	IP470	97		0.17	5		0.56	
750	IP501	92.05		-0.27	4.28		0.06	
781	IP501	94.6		-0.04	4.7		0.35	
785	IP470	99.3		0.37	6.9	R(0.05)	1.88	
798		-----		-----	-----		-----	
823	IP501	93.1		-0.18	5.1		0.63	
824	IP501	100.4		0.47	3.87		-0.22	
825	IP501	91.36		-0.33	3.752		-0.31	
840	IP501	97.7		0.23	-----		-----	
872		-----		-----	-----		-----	
873	IP470	95		-0.01	4		-0.13	
874	IP501	94		-0.10	4		-0.13	
875	IP501	98		0.26	6.4		1.54	
902	IP501	96.2		0.10	4.09		-0.07	
904	IP501	98		0.26	4		-0.13	
913		-----		-----	-----		-----	
963	IP501	90		-0.45	4		-0.13	
971	IP501	97		0.17	4		-0.13	
974		-----		-----	-----		-----	
994	IP501	92.2		-0.26	-----		-----	
995	IP470	89		-0.54	5		0.56	
1065	IP470	111		1.40	-----		-----	
1091	IP501	96.5		0.12	4.8		0.42	
1108	D5863-B + IP470	87.1		-0.70	3.8		-0.27	
1109	IP470	87.4		-0.68	-----		-----	
1121	IP501	95.8		0.06	4.9		0.49	
1126		-----		-----	-----		-----	
1134	IP501	99		0.34	5		0.56	
1140	IP501	74.15	R(0.05)	-1.85	2.573		-1.13	
1191	ISO10478Mod./IP501	87.77		-0.65	4.16		-0.02	
1212	IP501	100.0		0.43	4.0		-0.13	
1218		-----		-----	-----		-----	
1299		-----		-----	-----		-----	
1356	IP501	93		-0.19	<1		-----	
1381		-----		-----	-----		-----	
1402	IP501	94		-0.10	1	R(0.05)	-2.22	
1431	IP501	77.8		-1.52	4.0		-0.13	
1491		-----		-----	-----		-----	
1510		-----		-----	-----		-----	

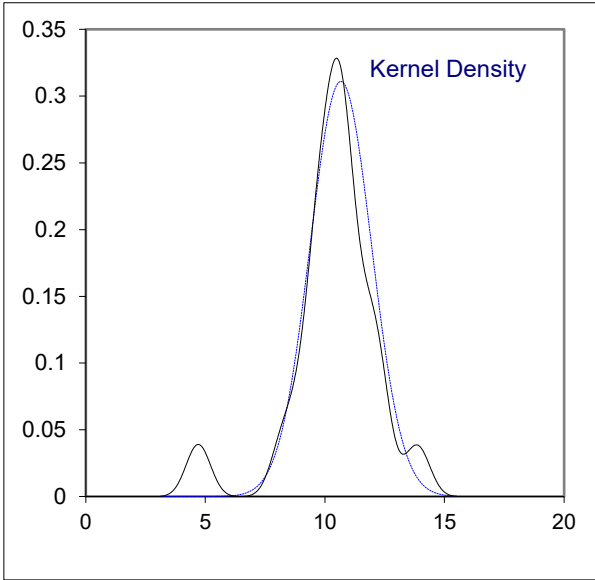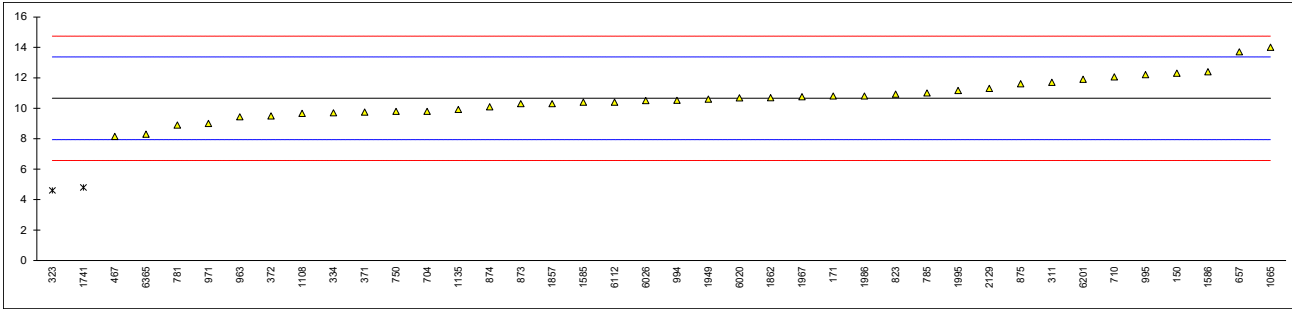| lab	method	V	mark	z(targ)	Ca	mark	z(targ)	remarks
1567	IP501	104.53		0.83	6.18		1.38	
1586	IP470	107		1.05	4		-0.13	
1648	IP501	97.3		0.19	4.2		0.01	
1720		-----		-----	-----		-----	
1740	IP501	95		-0.01	4		-0.13	
1741	IP501	91.2		-0.34	4.77		0.40	
1796	IP470	88		-0.63	-----		-----	
1810		97.8		0.24	-----		-----	
1854	IP501	96.8		0.15	4.3		0.07	
1857	IP501	94.9		-0.02	3.8		-0.27	
1862	IP501	99.3		0.37	4.2		0.01	
1949	IP501	97.2		0.18	4.0		-0.13	
1967	IP470	97.3		0.19	4.2		0.01	
1986	IP470	97		0.17	4.3		0.07	
1995	IP501	94.28		-0.07	4.5		0.21	
2129	IP470	90.1		-0.44	4.4		0.14	
6021	IP501	97.5		0.21	3.5		-0.48	
6024	IP470	99.05		0.35	4.27		0.05	
6026	IP470	98.1		0.26	3.9		-0.20	
6049	IP501	104		0.78	4	C	-0.13	first reported 10
6054	IP501	101.570		0.57	5.80834		1.12	
6057		-----		-----	-----		-----	
6075	D5863-B	89.1		-0.53	-----		-----	
6092	IP501	96.1		0.09	9.1	R(0.01)	3.41	
6114	IP501	95.6		0.04	4.0		-0.13	
6131	IP501	96.22		0.10	3.83		-0.25	
6142	IP501	90.4		-0.41	2.955		-0.86	
6195	IP501	97.5		0.21	3.0		-0.83	
6201	IP501	97		0.17	4		-0.13	
6262	IP501	98		0.26	4		-0.13	
6298	IP501	96.81		0.15	3.92		-0.19	
6340	IP501	98		0.26	3		-0.83	
6373	IP501	89		-0.54	3		-0.83	
6379	D5185	98.93		0.34	3.183		-0.70	
6396	IP501	95.32		0.02	4.78		0.41	
6400	IP501	79		-1.42	4		-0.13	
	normality	not OK			suspect			
	n	92			76			
	outliers	2			5			
	mean (n)	95.10			4.19			
	st.dev. (n)	5.648			0.720			
	R(calc.)	15.82			2.01			
	st.dev.(IP470:05)	11.354			1.437			
	R(IP470:05)	31.79			4.02			
	compare							
	R(IP501:05)	25.83			1.63			

Determination of Phosphorus as P and Zinc as Zn on sample #21276; results in mg/kg

lab	method	P	mark	z(targ)	Zn	mark	z(targ)	remarks
52	IP501	<1		-----	1		-----	
120		-----		-----	-----		-----	
140	IP501	1		-----	1		-----	
150	IP501	<1		-----	<1		-----	
154		-----		-----	-----		-----	
159	IP501	0		-----	1		-----	
169		-----		-----	-----		-----	
170		-----		-----	-----		-----	
171	IP501	0		-----	0		-----	
175		-----		-----	-----		-----	
212	IP501	0		-----	1.30		-----	
225	IP501	0.18		-----	0.94		-----	
235	IP500 + IP470	0.8		-----	1		-----	
237	IP501	<1		-----	1		-----	
273		-----		-----	-----		-----	
311	IP501	<1		-----	<1		-----	
323	IP500 + IP470	<1		-----	<1		-----	
328	IP501	<1		-----	1		-----	
333	IP501	<1		-----	1		-----	
334	IP501	<1		-----	1		-----	
342	IP501	0.7056		-----	1.1421		-----	
351	IP501	1.33		-----	<1	C	-----	first reported 2.3
356	IP501	1		-----	1		-----	
360	IP501	0.2		-----	1.4		-----	
372	IP500 + IP470	1.4		-----	1.0		-----	
381		-----		-----	-----		-----	
445		-----		-----	-----		-----	
447		-----		-----	-----		-----	
455	IP501	0		-----	0		-----	
467	IP501	0.69		-----	0.37		-----	
507	IP501	3.39	C	-----	1.06	C	-----	fr 5.86 and 3.58 respectively
541	IP501	<1		-----	0.8		-----	
551	IP501	<1		-----	1.18		-----	
631	IP470	-----		-----	<1		-----	
634		-----		-----	-----		-----	
657	IP501	<1		-----	<1		-----	
704	IP500 + IP470	0.5		-----	1		-----	
750	IP501	<1		-----	<1		-----	
781	IP501	<1		-----	<1		-----	
785		-----		-----	-----		-----	
798		-----		-----	-----		-----	
823	IP501	0.3		-----	0.9		-----	
824	IP501	0.08		-----	0.63		-----	
825	IP501	0.213		-----	0.802	C	-----	first reported 0.153
840	IP501	<1		-----	0.9		-----	
872		-----		-----	-----		-----	
873	IP500 + IP470	0.4		-----	1		-----	
874	IP501	0.5		-----	1		-----	
875	IP501	< 1		-----	-----		-----	
902	IP501	<1		-----	<1		-----	
904	IP501	<1		-----	<1		-----	
913		-----		-----	-----		-----	
963	IP501	<1		-----	1		-----	
971	IP501	<1		-----	1		-----	
974		-----		-----	-----		-----	
994	IP501	<1		-----	<1		-----	
995	IP470	-----		-----	1		-----	
1065		-----		-----	-----		-----	
1091	IP501	<1		-----	1.0		-----	
1108	IP501 + IP470	0.8		-----	0.9		-----	
1109		-----		-----	-----		-----	
1121	IP501	0.4		-----	1.1		-----	
1126		-----		-----	-----		-----	
1134	IP501	0		-----	1		-----	
1140	IP501	0.374		-----	0.775		-----	
1191	IP501	0.345		-----	0.47		-----	
1212	IP501	0.3		-----	1.1		-----	
1218		-----		-----	-----		-----	
1299		-----		-----	-----		-----	
1356	IP501	<1		-----	1		-----	
1381		-----		-----	-----		-----	
1402	IP501	0		-----	1		-----	
1431	IP501	0.709		-----	0.942		-----	
1491		-----		-----	-----		-----	
1510		-----		-----	-----		-----	

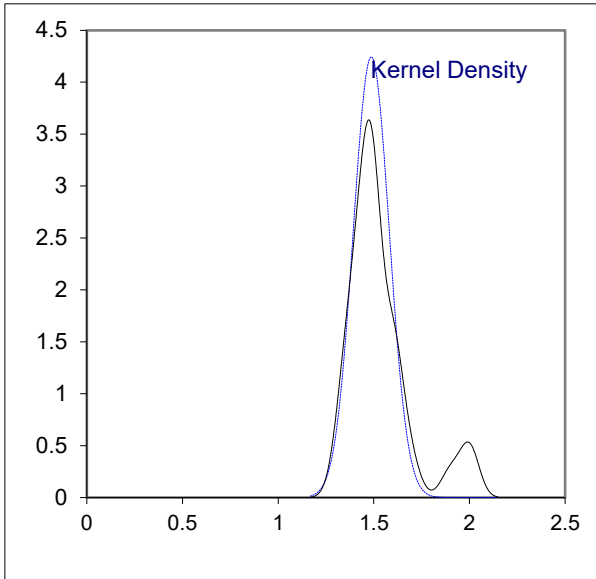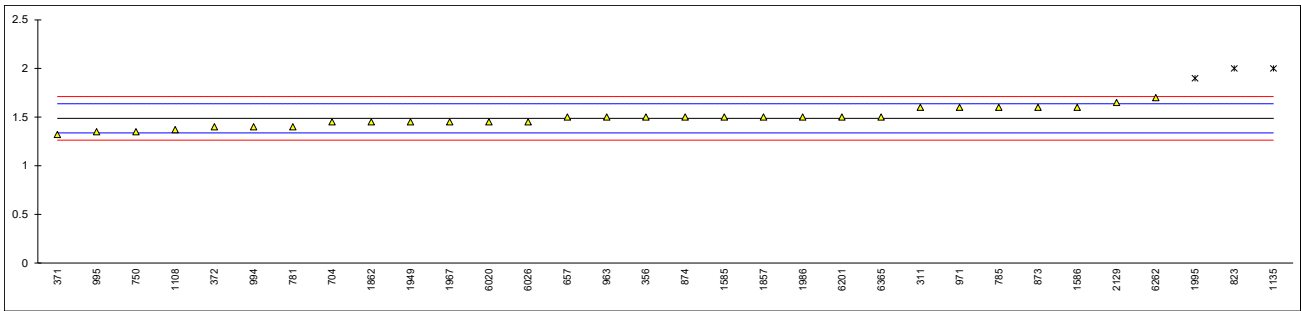| lab	method	P	mark	z(targ)	Zn	mark	z(targ)	remarks
1567	IP501	0.54		-----	1.47		-----	
1586	IP501 + IP470	1		-----	4	f+?	-----	possibly a false positive test result?
1648	IP501	0.38		-----	1.0		-----	
1720		-----		-----	-----		-----	
1740	IP501	<1		-----	1		-----	
1741	IP501	<1		-----	1.20		-----	
1796		-----		-----	-----		-----	
1810		-----		-----	-----		-----	
1854	IP501	0.3		-----	0.8		-----	
1857	IP501	0.4		-----	0.9		-----	
1862	IP501	0.4		-----	0.8		-----	
1949	IP501	0.5		-----	0.8		-----	
1967	IP501 + IP470	0.4		-----	0.97		-----	
1986	IP500 + IP470	0.45		-----	0.8		-----	
1995	IP501	<1		-----	1.2		-----	
2129	IP500 + IP470	0.60		-----	1.0		-----	
6021	IP501	0.9		-----	0.9		-----	
6024		-----		-----	-----		-----	
6026	IP470	-----		-----	1.1		-----	
6049	IP501	1		-----	1	C	-----	first reported 2
6054	IP501	0.2853		-----	1.07743		-----	
6057		-----		-----	-----		-----	
6075		-----		-----	-----		-----	
6092	IP501	0.4		-----	0.9		-----	
6114	IP501	0.3		-----	0.9		-----	
6131	IP501	0.356		-----	0.705		-----	
6142	IP501	2.686		-----	0.874		-----	
6195	IP501	<1.0		-----	<1.0		-----	
6201	IP501	2	C	-----	1		-----	first reported 4
6262	IP501	<1		-----	1		-----	
6298	IP501	0.32		-----	0.65		-----	
6340	IP501	0.2		-----	0.3		-----	
6373	IP501	<1		-----	<1		-----	
6379	D5185	0.2135		-----	0.8725		-----	
6396	IP501	1.04		-----	0.11		-----	
6400	IP501	<1		-----	<1		-----	
	n	74			73			
	mean (n)	<1			<1			application range: IP501:05 for P = 1 - 60 mg/kg IP470:05 for Zn: 1 – 70 mg/kg

Determination of Bromine Number on distillate <360°C AET on sample #21277; results in g Br_2/100g

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140		-----		-----	
150	D1159	12.3		1.21	
170		-----		-----	
171	D1159	10.8		0.10	
311	D1159	11.7		0.77	
323	D1159	4.6	R(0.01)	-4.46	
334	D1159	9.7		-0.71	
356		-----		-----	
371	D1159	9.75		-0.67	
372	D1159	9.5		-0.85	
445		-----		-----	
467	D1159	8.155		-1.84	
551		-----		-----	
657	D1159	13.7		2.24	
704	D1159	9.80		-0.63	
710	D1159	12.06		1.03	
750	D1159	9.8		-0.63	
752		-----		-----	
781	D1159	8.9		-1.29	
785	D1159	11.0		0.25	
798		-----		-----	
823	D1159	10.93		0.20	
872		-----		-----	
873	D1159	10.3		-0.26	
874	D1159	10.1		-0.41	
875	D1159	11.6		0.69	
963	D1159	9.44		-0.90	
971	D1159	9.0		-1.22	
994	D1159	10.52		-0.10	
995	D1159	12.2		1.13	
1065	D1159	14.0		2.46	
1108	D1159	9.66		-0.73	
1135	D1159	9.92		-0.54	
1191		-----		-----	
1299		-----		-----	
1402		-----		-----	
1585	D1159	10.4		-0.19	
1586	D1159	12.4		1.28	
1741	UOP304	4.80	C,R(0.01)	-4.31	first reported 23.63
1857	D1159	10.3		-0.26	
1862	D1159	10.7		0.03	
1949	D1159	10.6		-0.04	
1967	D1159	10.75		0.07	
1986	D1159	10.8		0.10	
1995	D1159	11.17		0.38	
2129	D1159	11.3		0.47	
6020	D1159	10.682		0.02	
6026	D1159	10.5		-0.12	
6075		-----		-----	
6112	D1159	10.4		-0.19	
6201	D1159	11.90		0.91	
6262		-----		-----	
6365	D1159	8.3		-1.73	
6373		-----		-----	

	normality	OK	
	n	38	
	outliers	2	
	mean (n)	10.659	
	st.dev. (n)	1.2832	
	R(calc.)	3.593	
	st.dev.(D1159:07)	1.3599	
	R(D1159:07)	3.808	

Determination of P-value on sample #21277

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140		-----		-----	
150		-----		-----	
170		-----		-----	
171		-----		-----	
311	SMS1600	1.60		1.50	
323		-----		-----	
334		-----		-----	
356	SMS1600	1.5		0.17	
371	SMS1600	1.32		-2.23	
372	SMS1600	1.40		-1.17	
445		-----		-----	
467		-----		-----	
551		-----		-----	
657	SMS1600	1.5		0.17	
704	SMS1600	1.45		-0.50	
710		-----		-----	
750	SMS1600	1.35		-1.83	
752		-----		-----	
781	SMS1600	1.40		-1.17	
785	SMS1600	1.60		1.50	
798		-----		-----	
823	SMS1600	2.0	R(0.01)	6.83	
872		-----		-----	
873	SMS1600	1.6		1.50	
874	SMS1600	1.5		0.17	
875		-----		-----	
963	INH-001	1.5		0.17	
971	SMS1600	1.6		1.50	
994	SMS1600	1.40		-1.17	
995	SMS1600	1.35		-1.83	
1065		-----		-----	
1108	SMS1600	1.37		-1.57	
1135	SMS1600	2.0	R(0.01)	6.83	
1191		-----		-----	
1299		-----		-----	
1402		-----		-----	
1585	SMS1600	1.50		0.17	
1586	SMS1600	1.60		1.50	
1741		-----		-----	
1857	SMS1600	1.50		0.17	
1862	SMS1600	1.45		-0.50	
1949	SMS1600	1.45		-0.50	
1967	SMS1600	1.45		-0.50	
1986	SMS1600	1.5		0.17	
1995	SMS1600	1.9	R(0.01)	5.50	
2129	SMS1600	1.65		2.17	
6020	GOST33297	1.45		-0.50	
6026	SMM001	1.45		-0.50	
6075		-----		-----	
6112		-----		-----	
6201	SMS1600	1.50		0.17	
6262	SMS1600	1.70	C	2.83	first reported 2.0
6365	SMS1600	1.50		0.17	
6373	SMS1600	< 1.10		<-5.17	possibly a false negative test result?

normality	OK	
n	29	
outliers	3	
mean (n)	1.488	
st.dev. (n)	0.0940	
R(calc.)	0.263	
st.dev.(SMS1600)	0.0750	
R(SMS1600)	0.21	

Determination of Compatibility rating on sample #21278;

lab	method	value	mark	z(targ)	spot determination	remarks
52	D4740 Manual	4		0.10	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
120	D4740 Manual	4		0.10	---	
140	D4740 Manual	4		0.10	Original card	
154	D4740 Manual	4		0.10	Original card	
170		-----		-----	---	
171	D4740 Manual	4		0.10	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
212	D4740 Manual	4		0.10	Copy of the original card	
225		-----		-----	---	
228	D4740 Manual	3		-2.70	---	
235		-----		-----	---	
237	D4740 Manual	4		0.10	Copy of the original card	
311	D4740 Manual	4		0.10	Original card	
323	D4740 Automated	4		0.10	---	
342	D4740 Manual	4		0.10	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
351	D4740 Manual	4		0.10	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
356	D4740 Manual	4		0.10	Original card	
360	D4740 Manual	4		0.10	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
372	D4740 Manual	4		0.10	Original card	
445		-----		-----	---	
447	D4740 Manual	4		0.10	Original card	
467	D4740 Manual	4		0.10	---	
507	D4740 Manual	4		0.10	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
541	D4740 Manual	3		-2.70	Original card	
551	D4740 Manual	4		0.10	Original card	
657	D4740 Manual	4		0.10	Original card	
704	D4740 Manual	4		0.10	Original card	
750	D4740	4		0.10	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
752	D4740 Manual	4		0.10	Copy of the original card	
781	D4740 Manual	4		0.10	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
785	D4740 Manual	4		0.10	Copy of the original card	
798		-----		-----	---	
823	D4740 Manual	4		0.10	---	
840	D4740 Manual	4		0.10	---	
872	D4740 Manual	4		0.10	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
873	D4740	4		0.10	Copy of the original card	
874	D4740 Manual	4		0.10	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
875	D4740 Manual	4		0.10	---	
963	D4740 Manual	4		0.10	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
971	D4740 Manual	4		0.10	---	
974	D4740 Manual	4		0.10	Original card	
995	D4740 Manual	4		0.10	---	
1065	D4740 Manual	3		-2.70	---	
1082	D4740 Manual	5		2.90	---	
1121		5		2.90	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
1134	D4740	4		0.10	Original card	
1135	D4740 Manual	4		0.10	---	
1191	D4740 Manual	3		-2.70	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
1213	D4740 Manual	4		0.10	---	
1299		-----		-----	---	
1491	D4740 Manual	4		0.10	Original card	
1586	D4740 Manual	4		0.10	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
1681	D4740 Manual	4		0.10	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
1740	D4740 Manual	4		0.10	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
1741		-----		-----	---	
1796	D4740 Manual	4		0.10	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
1854	D4740 Manual	4		0.10	---	
1857	D4740 Manual	4		0.10	Original card plus according to Reference Spot Description	
1995	D4740 Manual	4		0.10	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
2129	D4740 Manual	2	R(0.01)	-5.50	Original card	
6049	D4740 Manual	4		0.10	---	
6075	D4740 Manual	4		0.10	---	
6112	D4740 Manual	4		0.10	Copy of the original card	
6201	D4740 Manual	4		0.10	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
6262	D4740 Manual	4		0.10	Copy of the original card	
6365	D4740 Manual	4		0.10	Acc. to Reference Spot Description (ASTM D4740 Table 1)	
6373	D4740 Manual	4		0.10	---	

normality	not OK
n	58
outliers	1
mean (n)	3.97
st.dev. (n)	0.323
R(calc.)	0.90
st.dev.(D4740-M:20)	0.357
R(D4740-M:20)	1

Kernel Density
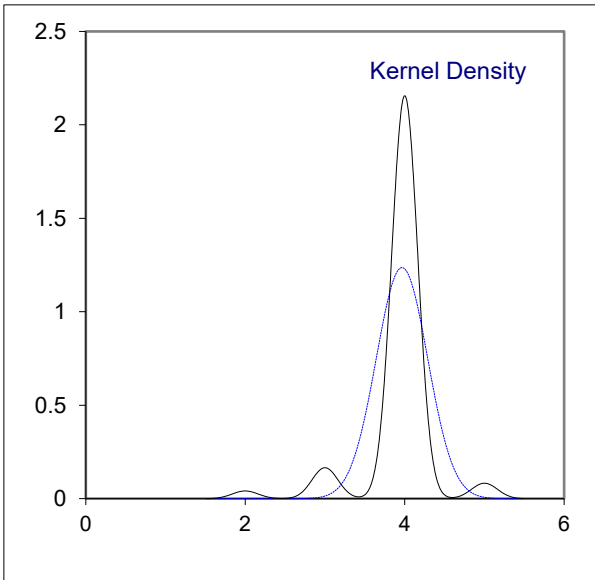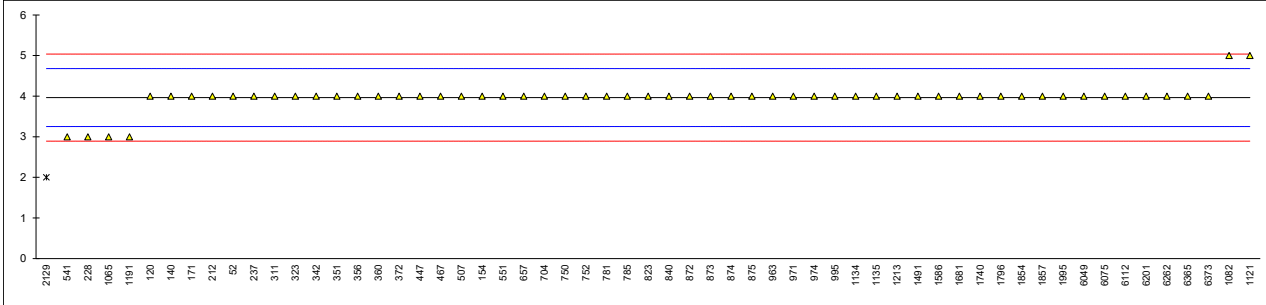
APPENDIX 2 Analytical details of the determination: Total Acid Number

lab	End point determination	Volume solvent	lab	End point determination	Volume solvent
52	125 mL	Buffer End Point pH 10	971	125 mL	Inflection Point
120	60 mL	Buffer End Point pH 10	974	125 mL	Inflection Point
140	---	---	994	60 mL	Inflection Point
150	---	---	995	125 mL	Inflection Point
154	---	---	996	---	---
159	---	---	997	---	---
168	---	---	1040	---	---
169	---	---	1065	---	---
170	60 mL	Inflection Point	1108	125 mL	Inflection Point
171	60 mL	Inflection Point	1109	125 mL	Inflection Point
175	---	---	1121	125 mL	Buffer End Point pH 10
212	125 mL	Inflection Point	1126	---	---
225	---	---	1134	125 mL	Inflection Point
235	---	---	1140	125 mL	Inflection Point
237	125 mL	Inflection Point	1191	---	---
238	---	---	1205	---	---
253	---	---	1212	125 mL	Buffer End Point pH 10
256	---	---	1213	---	---
273	60 mL	Inflection Point	1218	---	---
309	60 mL	Buffer End Point pH 10	1299	---	---
311	---	---	1353	---	---
313	---	---	1356	---	---
323	---	---	1381	---	---
328	---	---	1397	---	---
333	---	---	1402	60 mL	Inflection Point
334	125 mL	Inflection Point	1431	---	---
339	---	---	1491	125 mL	Inflection Point
342	125 mL	Buffer End Point pH 10	1510	---	---
349	---	---	1567	60 mL	Inflection Point
351	---	---	1569	125 mL	Inflection Point
356	---	---	1585	125 mL	Inflection Point
360	60 mL	Inflection Point	1586	125 mL	Inflection Point
372	60 mL	Inflection Point	1631	---	---
381	---	---	1636	---	---
445	---	---	1648	60 mL	Buffer End Point pH 10
447	---	---	1669	---	---
455	---	---	1681	---	---
467	125 mL	Buffer End Point pH 11	1710	125 mL	Inflection Point
507	60 mL	Inflection Point	1720	---	---
541	---	---	1740	60 mL	Inflection Point
551	125 mL	Inflection Point	1741	125 mL	---
575	---	---	1776	---	---
621	---	---	1796	125 mL	Inflection Point
631	60 mL	Inflection Point	1810	---	---
634	---	---	1811	---	---
657	125 mL	Inflection Point	1854	---	---
704	125 mL	Inflection Point	1857	125 mL	Inflection Point
710	---	---	1906	---	---
752	60 mL	Inflection Point	1938	---	---
753	---	---	1941	---	---
778	---	---	1942	---	---
781	125 mL	Inflection Point	1949	---	---
785	---	---	1986	125 mL	Inflection Point
798	---	---	1995	125 mL	Inflection Point
823	125 mL	Inflection Point	2129	125 mL	Inflection Point
824	125 mL	Inflection Point	2146	---	---
825	---	---	6020	---	---
840	125 mL	Inflection Point	6021	---	---
872	---	---	6024	---	---
873	125 mL	Buffer End Point pH 10	6025	125 mL	Inflection Point
874	125 mL	Buffer End Point pH 10	6026	125 mL	Buffer End Point pH 10
875	---	---	6049	---	---
887	125 mL	Buffer End Point pH 11	6054	---	---
902	---	---	6057	---	---
904	125 mL	Inflection Point	6075	---	---
913	---	---	6092	---	---
962	125 mL	Inflection Point	6112	---	---
963	60 mL	Inflection Point	6114	125 mL	Inflection Point

lab	End point determination	Volume solvent	lab	End point determination	Volume solvent
6131	125 mL	---	6340	---	---
6142	---	---	6373	125 mL	Buffer End Point pH 11
6163	---	---	6379	---	---
6201	125 mL	Inflection Point	6400	60 mL	Inflection Point
6262	125 mL	Inflection Point	6404	---	---
6266	---	---	6406	---	---
6298	125 mL	Inflection Point			

APPENDIX 3

Number of participants per country

1 lab in	ARGENTINA	1 lab in	LITHUANIA
1 lab in	AUSTRALIA	1 lab in	MALAYSIA
1 lab in	AUSTRIA	2 labs in	MALTA
1 lab in	AZERBAIJAN	1 lab in	MARTINIQUE
6 labs in	BELGIUM	1 lab in	MAURITIUS
1 lab in	BRAZIL	1 lab in	MOROCCO
1 lab in	BULGARIA	6 labs in	NETHERLANDS
1 lab in	CANADA	2 labs in	NIGERIA
1 lab in	COLOMBIA	1 lab in	NORTH MACEDONIA, Republic of
2 labs in	COTE D'IVOIRE	1 lab in	PANAMA
1 lab in	CROATIA	2 labs in	PHILIPPINES
1 lab in	CYPRUS	3 labs in	PORTUGAL
2 labs in	CZECH REPUBLIC	22 labs in	RUSSIAN FEDERATION
1 lab in	DENMARK	2 labs in	SAUDI ARABIA
1 lab in	DJIBOUTI	3 labs in	SERBIA
1 lab in	EGYPT	1 lab in	SINGAPORE
2 labs in	ESTONIA	1 lab in	SOUTH AFRICA
4 labs in	FINLAND	6 labs in	SPAIN
4 labs in	FRANCE	1 lab in	SUDAN
2 labs in	GEORGIA	3 labs in	SWEDEN
3 labs in	GERMANY	1 lab in	TAIWAN
8 labs in	GREECE	2 labs in	TANZANIA
1 lab in	HUNGARY	1 lab in	TOGO
1 lab in	INDIA	4 labs in	TURKEY
1 lab in	INDONESIA	1 lab in	TURKMENISTAN
2 labs in	IRELAND	2 labs in	UKRAINE
1 lab in	ISRAEL	6 labs in	UNITED ARAB EMIRATES
1 lab in	KAZAKHSTAN	12 labs in	UNITED KINGDOM
3 labs in	KOREA, Republic of	11 labs in	UNITED STATES OF AMERICA
1 lab in	LATVIA	2 labs in	VIETNAM

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), G(5)	= 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), R(1)	= outlier in Rosner's outlier test
R(0.05), R(5)	= 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

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