Institute for
Interlaboratory Studies

Results of Proficiency Test
Fuel Oil
June 2022

Organized by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

Author: ing. A. Ouwerkerk
Correctors: ing. R.J. Starink & ing. M. Meijer
Approved by: ing. A.S. Noordman-de Neef

Report: iis22F01

October 2022

CONTENTS

1 INTRODUCTION

Since 1994 the Institute for Interlaboratory Studies (iis) organizes a proficiency scheme for the analysis of Fuel Oil based on the latest version of ISO8217 and ASTM D396 every year and twice a 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:
- 159 laboratories in 62 countries for regular analyzes in Fuel Oil iis22F01
- 107 laboratories in 47 countries on the Metal analyzes iis22F01M

In total 165 laboratories in 62 countries registered for participation in one or both proficiency tests, see appendix 3 for the number of participants per country. In this report the results of this Fuel Oil proficiency tests are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organizer of this proficiency test (PT). Sample analyzes for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC17025 accredited laboratory.
In this proficiency test the participants received, depending on the registration, one or two different samples of Fuel Oil, see table below.

Sample ID	PT ID	Quantity	Purpose
#22100	iis22F01	1x 1 L	Regular analyzes
#22101	iis22F01M	1x 100 mL	Metals

Table 1: Fuel Oil samples used in PT iis22F01

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

2.1 ACCREDITATION

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

2.2 PROTOCOL

The protocol followed in the 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 site www.iisnl.com, from the FAQ page.

2.3 CONFIDENTIALITY STATEMENT

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

2.4 SAMPLES

For the preparation of the sample for the regular analyzes in Fuel Oil a batch of approximately 200 liters of Fuel Oil was obtained from a local supplier. After heating to 60 °C and homogenization 185 amber glass bottles of 1 L were filled and labelled #22100.
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 #22100-1	1007.9
sample #22100-2	1007.8
sample #22100-3	1007.9
sample #22100-4	1007.9
sample #22100-5	1007.8
sample #22100-6	1007.9
sample #22100-7	1007.9
sample #22100-8	1007.9

Table 2: homogeneity test results of subsamples #22100

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

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

Table 3: evaluation of the repeatability of subsamples #22100

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

For the preparation of the sample for the analyzes of Metals in Fuel Oil a batch of approximately 25 L of Fuel Oil containing metals was obtained from a local supplier. After heating to 60 °C and homogenization 125 PE bottles of 0.1 L were filled and labelled #22101. The homogeneity of the subsamples was checked by the determination of Nickel in accordance with IP501 on 8 stratified randomly selected subsamples.

	Nickel in mg/kg
sample #22101-1	20
sample #22101-2	18
sample #22101-3	18
sample #22101-4	17
sample #22101-5	18
sample #22101-6	18
sample #22101-7	17
sample #22101-8	17

Table 4: homogeneity test results of subsamples #22101

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.

	Nickel in mg/kg
r (observed)	3
reference test method	IP470:05
0.3 x R (reference test method)	3

Table 5: evaluation of the repeatability of subsamples #22101

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

Depending on the registration of the participant the appropriate set of PT samples was sent on May 18, 2022. 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 #22100: 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 3 °C interval), Sediment by Extraction, Total Sediment (Existent (TSE), Accelerated (TSA) and Potential (TSP)), Total Sulfur, Water by distillation, Water and Sediment, Vacuum Distillation at 10 mmHg but reported as AET (IBP, 5%,10%, 20%, 30%, 40%, 50% recovered and FBP), Total Carbon, Total Hydrogen and Total Nitrogen (CHN-analysis).
Also, some extra information was requested about the determination of Total Acid Number.
On sample #22101 it was requested to determine: Aluminum as Al, Silicon as Si, Sum Aluminum and Silicon, Iron as Fe, Nickel as Ni, Sodium as Na, Vanadium as V, Calcium as Ca, Phosphorus as P and Zinc as Zn.

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

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

3 RESULTS

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

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

3.1 STATISTICS

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5).
For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as '<…' or '>…' were not used in the statistical evaluation.

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

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.

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

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

The z-scores were calculated according to:

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

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

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

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

4 EVALUATION

In this proficiency test some problems were encountered with the dispatch of the samples due to COVID-19 pandemic. For the regular Fuel Oil PT fourteen participants reported test results after the final reporting date and seventeen other participants did not report any test results.
For the PT on metals five participants reported test results after the final reporting date and twenty-nine other participants did not report any test results.
Not all participants were able to report all tests requested.
In total 147 participants reported 2488 numerical test results. Observed were 85 outlying test results, which is 3.4%. In proficiency tests outlier percentages of 3% - 7.5% are quite normal.

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

4.1 EVALUATION PER SAMPLE AND PER TEST

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

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

sample #22100

Total Acid Number: This determination was very problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not or not at all in agreement with the requirements of ASTM D664:18e2 test method A for IP 60 mL, IP 125 mL, BEP 125 mL and BEP 60 mL. It was decided not to calculate z-scores due to the large variation in the reported test results.
When evaluated separately for the type of end point the calculated reproducibilities also did not meet the requirements for IP and BEP.

API Gravity: This determination was not problematic. Eight statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D1298:12bR17.

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

Asphaltenes: 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 IP143:04R21. ASTM D6560:19 is equivalent to IP143.

Calculated Carbon Aromaticity Index: 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 ISO8217:17.

Carbon Residue micro method: 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 ISO10370:14.

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

Density at 15 °C: This determination was problematic for a number of participants. Seven statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ISO12185:96.

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

Heat of Combustion (Gross): This determination was not problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D240:19.

Heat of Combustion (Net): This determination was not problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D240:19.

Kinematic Viscosity at 50 °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 ISO3104:20.

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

Kin. Viscosity Stabinger at 50 °C: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D7042:21a.

Kin. Viscosity Stabinger at 100 °C: 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 D7042:21a.

Nitrogen: This determination was problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D5762:18a.

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 full agreement with the requirements of ISO3016:19.

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

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

Sediment by Extraction: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D473:22.

Total Sediment Existent (TSE): 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 IP375:11R22.

Total Sediment Accelerated (TSA): This determination was not problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of IP390:11R17. IP390:11R17 is identical to ISO10307-2:09 and technically equivalent to ASTM D4870:18.

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 IP390:11R17. IP390:11R17 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. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO8754:03 and not in agreement with the stricter requirements of ASTM D4294:21.

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

Water and Sediment: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D1796:11R16.

Vacuum Distillation at 10 mmHg but reported as AET: This determination was only problematic for the parameters 40% and 50% recovered. In total two statistical outliers were observed over eight parameters. The calculated reproducibilities of 40% and 50% recovered are not in agreement with the

requirements of ASTM D1160:18. The calculated reproducibilities for the other parameters after rejection of the statistical outliers are in agreement with the requirements of ASTM D1160:18.

CHN-Analysis: This determination was not problematic for Total Carbon and Total Hydrogen but problematic for Total Nitrogen. No statistical outliers were observed. The calculated reproducibilities for Carbon and Hydrogen are in agreement with the requirements of ASTM D5291-ABC:16. The calculated reproducibility for Nitrogen is not in agreement with the requirements of ASTM D5291-ABC:16.

sample #22101

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

Silicon: This determination was problematic depending on the procedure. 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 IP501:05R19.

Sum Al and Si: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of IP470:05 and is not at all in agreement with the stricter requirements of IP501:05R19.

Iron: This determination was problematic depending on the procedure used. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of IP470:05 but not in agreement with the stricter requirements of IP501:05R19.

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

Sodium: This determination was problematic depending on the procedure used. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of IP470:05 but not in agreement with the stricter requirements of IP501:05R19.

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

Calcium: This determination was problematic depending on the procedure 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 IP501:05R19.

Phosphorus: 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 IP501:05R19 and IP500:03.

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

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

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

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

Parameter	unit	n	average	2.8 * sd	R(lit)
Total Acid Number	mg KOH/g	58	0.10	0.12	(0.02)
API Gravity		71	8.77	0.15	0.5
Ash Content	%M/M	87	0.030	0.011	0.005
Asphaltenes	%M/M	47	8.13	1.46	1.63
Calc. Carbon Aromaticity Index		42	862.8	1.5	2.2
Carbon Residue micro method	%M/M	78	15.70	1.01	1.54
Conradson Carbon Residue	%M/M	26	15.75	1.96	2.48
Density at 15 °C	kg/m^3	114	1008.1	1.5	1.5
Flash Point PMcc	°C	109	100.3	5.4	6
Heat of Combustion (Gross)	MJ/kg	48	41.90	0.27	0.40
Heat of Combustion (Net)	MJ/kg	41	39.67	0.33	0.40
Kinematic Viscosity at 50 °C	mm^2/s	96	720.2	38.0	60.9
Kinematic Viscosity at 100 °C	mm^2/s	70	48.23	1.72	5.82
Kin. Viscosity Stabinger at 50 °C	mm^2/s	22	715.1	27.8	73.6
Kin. Viscosity Stabinger at 100 °C	mm^2/s	22	48.12	1.21	3.46

Parameter	unit	n	average	2.8 * sd	R(lit)
Nitrogen	mg/kg	22	3638	1212	968
Pour Point Lower	°C	45	5.7	8.8	9
Pour Point Upper	°C	78	8.1	10.5	9
Pour Point Automated Δ3 °C	°C	21	1.7	7.8	6.1
Sediment by Extraction	%M/M	62	0.017	0.016	0.037
Total Sediment Existent (TSE)	%M/M	50	0.014	0.012	0.035
Total Sediment Accel. (TSA)	%M/M	47	0.017	0.016	0.039
Total Sediment Potential (TSP)	%M/M	50	0.017	0.014	0.038
Total Sulfur	%M/M	118	3.40	0.22	0.29
Water by distillation	%V/V	73	0.05	0.08	0.2
Water and Sediment	%V/V	35	0.05	0.09	0.11
Initial Boiling Point	°C	16	196.8	28.8	49
5% recovered	°C	16	277.7	24.5	26.5
10% recovered	°C	16	326.2	17.2	21.9
20% recovered	°C	16	398.8	21.0	20.0
30% recovered	°C	16	455.5	19.4	17.7
40% recovered	°C	16	495.3	18.5	9.4
50% recovered	°C	13	525.6	17.1	(7.2)
Final Boiling Point	°C	15	527.5	24.2	27
Total Carbon	%M/M	26	85.7	1.3	2.4
Total Hydrogen	%M/M	26	10.2	0.5	0.7
Total Nitrogen	%M/M	24	0.44	0.17	0.10

Table 6: reproducibilities of tests on sample #22100

Element	unit	n	average	2.8 * sd	R(lit)
Aluminum as Al	mg/kg	70	13.0	7.7	4.4
Silicon as Si	mg/kg	68	13.6	8.1	8.0
Sum of Aluminum and Silicon	mg/kg	64	26.1	14.8	9.1
Iron as Fe	mg/kg	69	20.6	8.7	11.6
Nickel as Ni	mg/kg	68	17.5	6.0	11.3
Sodium as Na	mg/kg	70	10.5	4.5	5.4
Vanadium as V	mg/kg	73	39.7	8.3	20.5
Calcium as Ca	mg/kg	67	7.8	3.9	4.5
Phosphorus as P	mg/kg	53	1.9	1.7	1.8
Zinc as Zn	mg/kg	65	1.8	1.3	0.9

Table 7: reproducibilities of tests on sample #22101

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 JUNE 2022 WITH PREVIOUS PTS

	June 2022	December 2021	June 2021	December 2020	June 2020
Number of reporting laboratories	147	139	159	129	153
Number of test results	2488	3146	2744	2778	2810
Number of statistical outliers	85	63	108	81	89
Percentage of statistical outliers	3.4%	2.0%	3.9%	2.9%	3.2%

Table 8: comparison with previous proficiency tests

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

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

Parameter	June 2022	December 2021	June 2021	December 2020	June 2020
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	++	++	++	++	+
Kin. Viscosity Stabinger at 50 °C	++	++	++	++	++
Kin. 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	June 2022	December 2021	June 2021	December 2020	June 2020
Total Carbon	+	++	++	+	+
Total Hydrogen	+	+	+	+	+
Total Nitrogen	-	-	-	-	--
Aluminum as Al	-	+	-	-	-
Silicon as Si	+/-	+	+	-	-
Total Aluminum and Silicon	-	+/-	-	+/-	-
Iron as Fe	+	+	+	+	+
Nickel as Ni	+	+	+/-	+	+
Sodium as Na	+	+	+	+/-	+/-
Vanadium as V	++	++	+	+	+
Calcium as Ca	+	++	+/-	+	-
Phosphorus as P	+/-	n.e.	n.e.	n.e.	+
Zinc as Zn	-	n.e.	(-)	+/-	-

Table 9: comparison of determinations to the reference test methods

For results between brackets no z-scores are calculated

The following performance categories were used:

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

APPENDIX 1

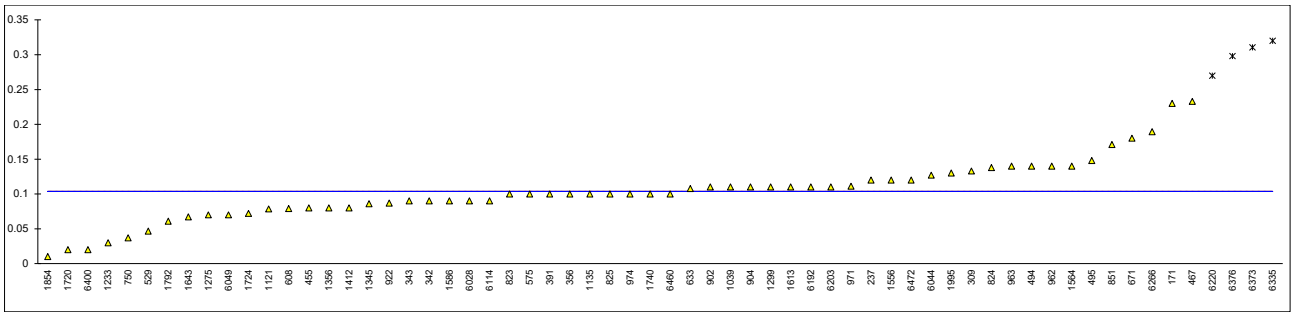
Determination of Total Acid Number on sample #22100; results in mg KOH/g

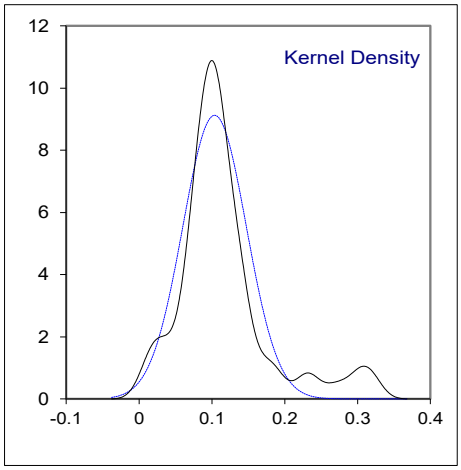
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D664-A	<0.1		-----	863		-----		-----
90		-----		-----	864		-----		-----
92		-----		-----	865		-----		-----
120		-----		-----	866		-----		-----
140		-----		-----	870		-----		-----
150		-----		-----	875	D664-A	<0.1		-----
154		-----		-----	886		-----		-----
158		-----		-----	902	D664-A	0.11		-----
159		-----		-----	904	D664-A	0.11		-----
168		-----		-----	912		-----		-----
169		-----		-----	922	D664-A	0.087		-----
171	D664-A	0.23		-----	962	D664-A	0.14		-----
175		-----		-----	963	D664-A	0.14		-----
221		-----		-----	971	D664-A	0.111		-----
224		-----		-----	974	D664-A	0.10		-----
225		-----		-----	982		-----		-----
237	D664-A	0.12		-----	1019		-----		-----
238		-----		-----	1039	D664-A	0.11		-----
253		-----		-----	1059		-----		-----
254		-----		-----	1082		-----		-----
309	D664-A	0.133		-----	1095	D664-A	<0.100		-----
311	D664-B	<010		-----	1109		-----		-----
313		-----		-----	1121	D664-A	0.0785		-----
323		-----		-----	1126		-----		-----
328	D664-A	<0.1		-----	1135	D664-A	0.10		-----
331	D664Mod.	<0.05		-----	1177		-----		-----
333		-----		-----	1218		-----		-----
334		-----		-----	1233	D664-A	0.03		-----
335		-----		-----	1266		-----		-----
339		-----		-----	1275	IP177	0.07		-----
342	D664-A	0.09		-----	1299	D664-A	0.110		-----
343	D664-A	0.09		-----	1320		-----		-----
349		-----		-----	1345	D664-A	0.086		-----
356	D664-A	0.10		-----	1356	D664-A	0.08		-----
371		-----		-----	1412	D664-A	0.08		-----
391	D664-A	0.10		-----	1438		-----		-----
398		-----		-----	1459		-----		-----
399		-----		-----	1498		-----		-----
444		-----		-----	1539		-----		-----
455	IP177	0.08		-----	1556	D664-A	0.12		-----
467	D664-A	0.233		-----	1564	D664-A	0.14		-----
494	D664-A	0.14		-----	1586	D664-A	0.09		-----
495	D664-A	0.148		-----	1613	D664-A	0.11		-----
511		-----		-----	1643	D664-A	0.067		-----
529	D664-A	0.0467		-----	1688		-----		-----
557		-----		-----	1720	D664-A	0.02		-----
562		-----		-----	1724	D664-A	0.072		-----
575	D664-A	0.10		-----	1728		-----		-----
603		-----		-----	1740	D664-A	0.10		-----
604		-----		-----	1761		-----		-----
608	D664-A	0.079		-----	1776	D664-A	<0.1		-----
631		-----		-----	1792	D664-A	0.061		-----
633	D664-A	0.1077		-----	1807		-----		-----
663	D664-A	<0.10		-----	1810		-----		-----
671	D664-A	0.18	C	-----	1811		-----		-----
750	D664-A	0.037		-----	1849		-----		-----
753		-----		-----	1854	D664-B	0.010		-----
759		-----		-----	1906		-----		-----
785		-----		-----	1956		-----		-----
823	D664-A	0.10		-----	1964		-----		-----
824	D664-A	0.138		-----	1971		-----		-----
825	D664-A	0.1		-----	1995	D664-A	0.13		-----
850		-----		-----	6028	D664-A	0.09		-----
851	D664-A	0.1711		-----	6039		-----		-----
855		-----		-----	6044	D664-A	0.127		-----
858		-----		-----	6049	D664-A	0.07		-----
859		-----		-----	6075		-----		-----
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	D664-A	0.09		-----	6346		-----		-----
6142		-----		-----	6364		-----		-----
6143		-----		-----	6373	D664-A	0.3106	C,R(0.05)	-----
6192		0.11		-----	6376	D664-A	0.298	R(0.05)	-----
6203	D664-A	0.11		-----	6400	D664-A	0.02		-----
6220	D664-A	0.27	R(0.05)	-----	6406		-----		-----
6257		-----		-----	6416		-----		-----
6266	D664-A	0.1894		-----	6444		-----		-----
6279		-----		-----	6447		-----		-----
6332		-----		-----	6460	D664-A	0.10		-----
6335	D664-A	0.32	R(0.05)	-----	6472	D664-A	0.12		-----
					6475		-----		-----

			Only IP	Only BEP
	normality	suspect	suspect	not OK
	n	58	45	12
	outliers	4	3	1
	mean (n)	0.1037	0.1032	0.1116
	st.dev. (n)	0.04373	0.04226	0.04534
	R(calc.)	0.1224	0.1183	0.1269
	st.dev.(D664-A:18e2 IP 125 mL)	(0.00735)	(0.00731)	-----
	R(D664-A:18e2 IP 125 mL)	(0.0206)	(0.0205)	-----
Compare				
	R(D664-A:18e2 IP 60 mL)	(0.0627)	(0.0625)	-----
	R(D664-A:18e2 BEP 125 mL)	(0.0292)	-----	(0.0292)
	R(D664-A:18e2 BEP 60 mL)	(0.0607)	-----	(0.0607)

Lab 671 first reported 0.28
Lab 6373 first reported 0.3489



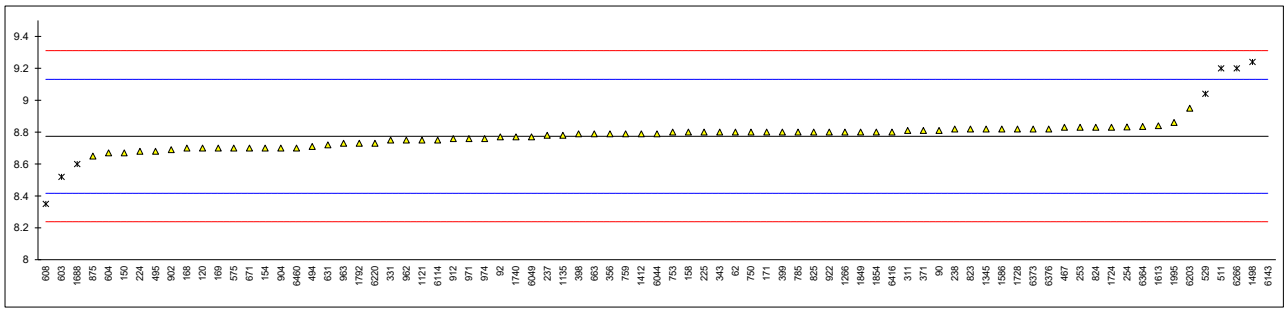


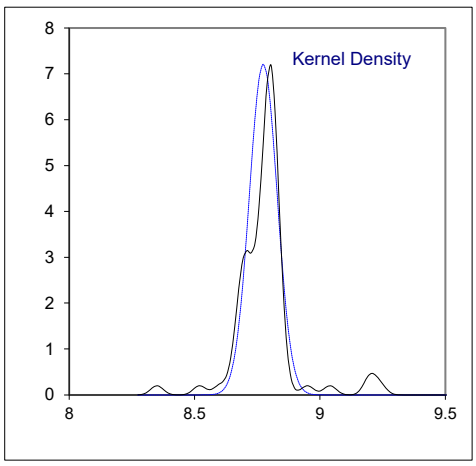
Determination of API Gravity on sample #22100

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4052	8.8		0.15	863		-----		-----
90	D4052	8.81		0.20	864		-----		-----
92	D4052	8.77		-0.02	865		-----		-----
120	D4052	8.7		-0.41	866		-----		-----
140		-----		-----	870		-----		-----
150	D287	8.67		-0.58	875	D1298	8.65		-0.69
154	D4052	8.7		-0.41	886		-----		-----
158	D4052	8.8		0.15	902	D1298	8.69		-0.47
159		-----		-----	904	D1298	8.7		-0.41
168	D287	8.7		-0.41	912	D1298	8.76		-0.08
169	D4052	8.7		-0.41	922	D1298	8.8		0.15
171	D4052	8.8		0.15	962	D4052	8.75		-0.13
175		-----		-----	963	D1298	8.73		-0.25
221		-----		-----	971	ISO12185	8.76		-0.08
224	D1298	8.68		-0.53	974	D1298	8.76		-0.08
225	D4052	8.8		0.15	982		-----		-----
237	D4052	8.78		0.03	1019		-----		-----
238	D1298	8.82		0.26	1039		-----		-----
253	D4052	8.83		0.31	1059		-----		-----
254	D1298	8.832		0.32	1082		-----		-----
309		-----		-----	1095		-----		-----
311	D4052	8.81		0.20	1109		-----		-----
313		-----		-----	1121	D4052	8.75		-0.13
323		-----		-----	1126		-----		-----
328		-----		-----	1135	D4052	8.78		0.03
331	ISO12185	8.75		-0.13	1177		-----		-----
333		-----		-----	1218		-----		-----
334		-----		-----	1233		-----		-----
335		-----		-----	1266	D1298	8.80		0.15
339		-----		-----	1275		-----		-----
342		-----		-----	1299		-----		-----
343	D4052	8.8		0.15	1320		-----		-----
349		-----		-----	1345	D1250	8.82		0.26
356	ISO12185	8.79		0.09	1356		-----		-----
371	D4052	8.81		0.20	1412	D4052	8.79		0.09
391		-----		-----	1438		-----		-----
398	D1298	8.79		0.09	1459		-----		-----
399	ISO12185	8.8		0.15	1498	D1298	9.24	R(0.01)	2.61
444		-----		-----	1539		-----		-----
455		-----		-----	1556		-----		-----
467	D4052	8.83		0.31	1564		-----		-----
494	D4052	8.71		-0.36	1586	D1298	8.82		0.26
495	D1298	8.68		-0.53	1613	D1298	8.84		0.37
511	D1298	9.2	R(0.01)	2.39	1643		-----		-----
529	D287	9.04	R(0.01)	1.49	1688	D4052	8.60	R(0.01)	-0.97
557		-----		-----	1720		-----		-----
562		-----		-----	1724	D4052	8.83		0.31
575	D1298	8.7		-0.41	1728	D287	8.82		0.26
603	D1298	8.52	R(0.01)	-1.42	1740	D1298	8.77		-0.02
604	D4052	8.67		-0.58	1761		-----		-----
608	D4052	8.35	R(0.01)	-2.37	1776		-----		-----
631	D1298	8.72		-0.30	1792	D4052	8.73		-0.25
633		-----		-----	1807		-----		-----
663	D4052	8.79		0.09	1810		-----		-----
671	D1298	8.7		-0.41	1811		-----		-----
750	D1298	8.8		0.15	1849	D1298	8.80		0.15
753	D1298	8.8		0.15	1854	D4052	8.8		0.15
759	D1298	8.79		0.09	1906		-----		-----
785	D1298	8.8		0.15	1956		-----		-----
823	D4052	8.82		0.26	1964		-----		-----
824	ISO12185	8.83		0.31	1971		-----		-----
825	ISO12185	8.8		0.15	1995	D4052	8.86		0.48
850		-----		-----	6028		-----		-----
851		-----		-----	6039		-----		-----
855		-----		-----	6044	D1298	8.79		0.09
858		-----		-----	6049	D1298	8.77		-0.02
859		-----		-----	6075		-----		-----
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	D1298	8.75		-0.13	6346		-----		-----
6142		-----		-----	6364	D1298	8.8352		0.34
6143	D1298	12.30	R(0.01)	19.75	6373		8.82		0.26
6192		-----		-----	6376	ISO12185	8.82		0.26
6203	ISO12185	8.95		0.99	6400		-----		-----
6220	D4052	8.73		-0.25	6406		-----		-----
6257		-----		-----	6416	D1298	8.8		0.15
6266	D4052	9.2	R(0.01)	2.39	6444		-----		-----
6279		-----		-----	6447		-----		-----
6332		-----		-----	6460	D1298	8.7		-0.41
6335		-----		-----	6472		-----		-----
					6475		-----		-----

normality	OK
n	71
outliers	8
mean (n)	8.774
st.dev. (n)	0.0553
R(calc.)	0.155
st.dev.(D1298:12bR17)	0.1786
R(D1298:12bR17)	0.5





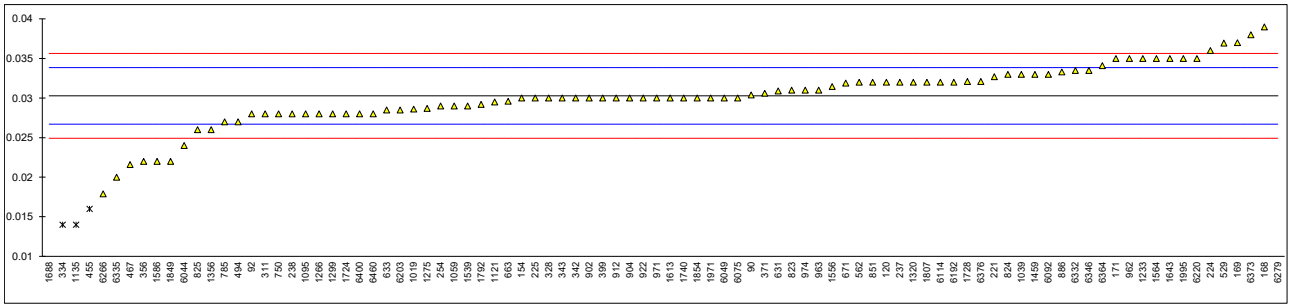
Determination of Ash Content on sample #22100; results in %M/M

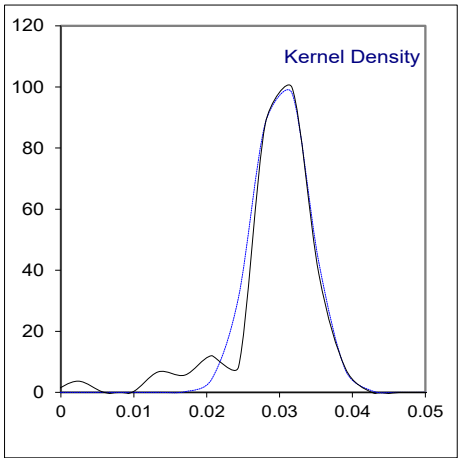
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D482	<0.01	C, f-	<-11.35	863		-----		-----
90	D482	0.0304		0.07	864		-----		-----
92	D482	0.028		-1.28	865		-----		-----
120	D482	0.032		0.96	866		-----		-----
140		-----		-----	870		-----		-----
150	D482	<0.005	f-	<-14.15	875		-----		-----
154	D482	0.030		-0.16	886	D482	0.0333		1.69
158		-----		-----	902	ISO6245	0.030		-0.16
159		-----		-----	904	D482	0.030		-0.16
168	D482	0.039		4.88	912	ISO6245	0.03		-0.16
169	D482	0.037		3.76	922	D482	0.030		-0.16
171	ISO6245	0.035		2.64	962	D482	0.035		2.64
175		-----		-----	963	D482	0.031		0.40
221	D482	0.0327	C	1.35	971	D482	0.030		-0.16
224	D482	0.036	C	3.20	974	D482	0.031		0.40
225	D482	0.030		-0.16	982		-----		-----
237	D482	0.032		0.96	1019	ISO6245	0.0286		-0.94
238	D482	0.028		-1.28	1039	ISO6245	0.033		1.52
253		-----		-----	1059	ISO6245	0.029		-0.72
254	D482	0.029		-0.72	1082		-----		-----
309		-----		-----	1095	ISO6245	0.028		-1.28
311	D482	0.028		-1.28	1109		-----		-----
313		-----		-----	1121	ISO6245	0.0295		-0.44
323		-----		-----	1126		-----		-----
328	ISO6245	0.030		-0.16	1135	ISO6245	0.014	R(0.05)	-9.12
331		-----		-----	1177		-----		-----
333		-----		-----	1218		-----		-----
334	ISO6245	0.014	R(0.05)	-9.12	1233	ISO6245	0.035		2.64
335		-----		-----	1266	ISO6245	0.028		-1.28
339		-----		-----	1275	IP4	0.0287		-0.89
342	ISO6245	0.030		-0.16	1299	D482	0.028		-1.28
343	ISO6245	0.03		-0.16	1320	ISO6245	0.032		0.96
349		-----		-----	1345		-----		-----
356	ISO6245	0.022		-4.64	1356	ISO6245	0.026		-2.40
371	D482	0.0306		0.18	1412		-----		-----
391		-----		-----	1438		-----		-----
398		-----		-----	1459	ISO6245	0.033		1.52
399	ISO6245	0.030		-0.16	1498		-----		-----
444		-----		-----	1539	ISO6245	0.029		-0.72
455	IP4	0.016	R(0.05)	-8.00	1556	ISO6245	0.03145		0.65
467	ISO6245	0.0216		-4.86	1564	D482	0.035		2.64
494	ISO6245	0.027		-1.84	1586	ISO6245	0.022		-4.64
495		-----		-----	1613	D482	0.030		-0.16
511		-----		-----	1643	D482	0.035		2.64
529	D482	0.03695		3.73	1688	D482	0.002	G(0.01)	-15.84
557		-----		-----	1720		-----		-----
562	D482	0.032		0.96	1724	D482	0.028		-1.28
575		-----		-----	1728	D482	0.0321		1.02
603		-----		-----	1740	ISO6245	0.030		-0.16
604		-----		-----	1761		-----		-----
608		-----		-----	1776		-----		-----
631	D482	0.0309		0.35	1792	ISO6245	0.0292		-0.61
633	D482	0.0285		-1.00	1807	ISO6245	0.032		0.96
663	D482	0.0296		-0.38	1810		-----		-----
671	D482	0.0319		0.91	1811		-----		-----
750	D482	0.028		-1.28	1849	ISO6245	0.022		-4.64
753		-----		-----	1854	ISO6245	0.030		-0.16
759		-----		-----	1906		-----		-----
785	ISO6245	0.027		-1.84	1956		-----		-----
823	ISO6245	0.031		0.40	1964		-----		-----
824	ISO6245	0.033		1.52	1971	ISO6245	0.03		-0.16
825	D482	0.026		-2.40	1995	D482	0.035		2.64
850		-----		-----	6028		-----		-----
851	ISO6245	0.032		0.96	6039		-----		-----
855		-----		-----	6044	ISO6245	0.024		-3.52
858		-----		-----	6049	ISO6245	0.03		-0.16
859		-----		-----	6075	ISO6245	0.0300		-0.16
862		-----		-----	6092	ISO6245	0.033		1.52

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	ISO6245	0.0320		0.96	6346	D482	0.0335		1.80
6142		-----		-----	6364	D482	0.0341		2.14
6143		-----		-----	6373	ISO6245	0.038		4.32
6192		0.032		0.96	6376	ISO6245	0.0321		1.02
6203	ISO6245	0.0285		-1.00	6400	ISO6245	0.028	C	-1.28
6220	D482	0.035		2.64	6406		-----		-----
6257		-----		-----	6416		-----		-----
6266	D482	0.0179		-6.93	6444		-----		-----
6279	D482	0.9318	C,G(0.01)	504.85	6447		-----		-----
6332	D482	0.0335		1.80	6460	D482	0.028	C	-1.28
6335	D482	0.020		-5.76	6472		-----		-----
					6475		-----		-----

normality	suspect
n	87
outliers	5
mean (n)	0.0303
st.dev. (n)	0.00380
R(calc.)	0.0106
st.dev.(ISO6245:01)	0.00179
R(ISO6245:01)	0.005
Compare	
R(D482:19)	0.005

Lab 62 first reported 0.015
Lab 221 first reported 0.0404
Lab 224 first reported 0.011
Lab 6279 first reported 9.318
Lab 6400 first reported 0.015
Lab 6460 first reported 0.053





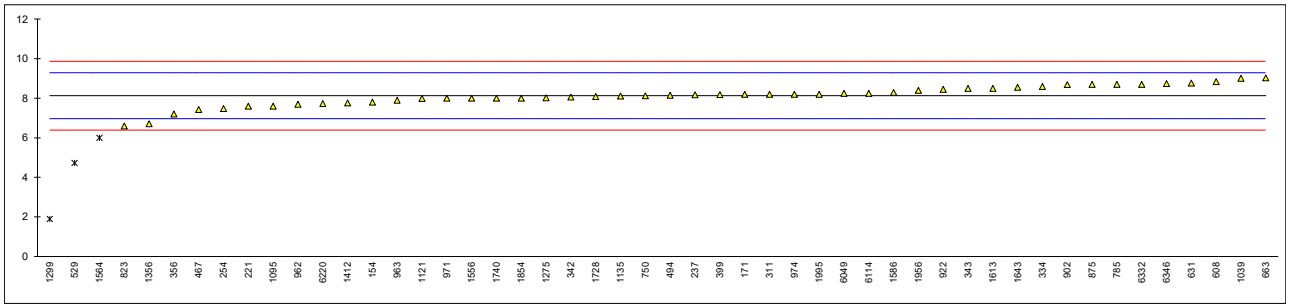
Determination of Asphaltenes on sample #22100; results in %M/M

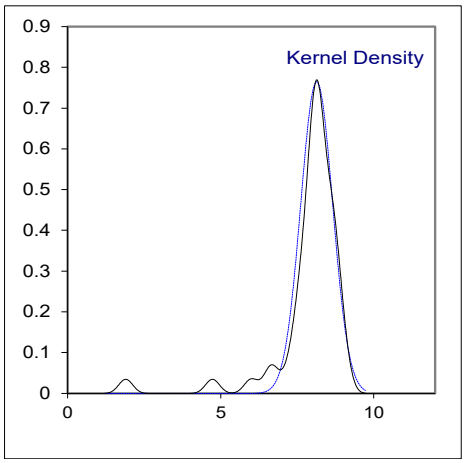
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	863		-----		-----
90		-----		-----	864		-----		-----
92		-----		-----	865		-----		-----
120		-----		-----	866		-----		-----
140		-----		-----	870		-----		-----
150		-----		-----	875	IP143	8.7		0.98
154	D6560	7.8		-0.57	886		-----		-----
158		-----		-----	902	IP143	8.69		0.96
159		-----		-----	904		-----		-----
168		-----		-----	912		-----		-----
169		-----		-----	922	D6560	8.45		0.55
171	IP143	8.2		0.12	962	D6560	7.7	C	-0.74
175		-----		-----	963	IP143	7.9	C	-0.40
221	D6560	7.6		-0.92	971	IP143	8.0		-0.23
224		-----		-----	974	IP143	8.20		0.12
225		-----		-----	982		-----		-----
237	D6560	8.17		0.07	1019		-----		-----
238		-----		-----	1039	D6560	9.01		1.51
253		-----		-----	1059		-----		-----
254	IP143	7.48		-1.12	1082		-----		-----
309		-----		-----	1095	IP143	7.6		-0.92
311	IP143	8.2		0.12	1109		-----		-----
313		-----		-----	1121	IP143	7.99		-0.24
323		-----		-----	1126		-----		-----
328		-----		-----	1135	IP143	8.11		-0.04
331		-----		-----	1177		-----		-----
333		-----		-----	1218		-----		-----
334	IP143	8.6		0.81	1233		-----		-----
335		-----		-----	1266		-----		-----
339		-----		-----	1275	IP143	8.0255		-0.18
342	IP143	8.061		-0.12	1299	IP143	1.90	R(0.01)	-10.73
343	IP143	8.5		0.63	1320		-----		-----
349		-----		-----	1345		-----		-----
356	IP143	7.2		-1.60	1356	D6560	6.71		-2.45
371		-----		-----	1412	D6560	7.76		-0.64
391		-----		-----	1438		-----		-----
398		-----		-----	1459		-----		-----
399	IP143	8.185		0.09	1498		-----		-----
444		-----		-----	1539		-----		-----
455		-----		-----	1556	IP143	8.0		-0.23
467	IP143	7.43		-1.21	1564	IP143	5.994	R(0.01)	-3.68
494	IP143	8.147		0.03	1586	IP143	8.29		0.27
495		-----		-----	1613	IP143	8.50		0.63
511		-----		-----	1643	D6560	8.557		0.73
529	D6560	4.73	C,R(0.01)	-5.86	1688		-----		-----
557		-----		-----	1720		-----		-----
562		-----		-----	1724		-----		-----
575		-----		-----	1728	D6560	8.09		-0.07
603		-----		-----	1740	IP143	8.00		-0.23
604		-----		-----	1761		-----		-----
608	D6560	8.84		1.22	1776		-----		-----
631	D6560	8.769		1.10	1792		-----		-----
633		-----		-----	1807		-----		-----
663	IP143	9.03		1.55	1810		-----		-----
671		-----		-----	1811		-----		-----
750	IP143	8.121		-0.02	1849		-----		-----
753		-----		-----	1854	IP143	8.0		-0.23
759		-----		-----	1906		-----		-----
785	IP143	8.7		0.98	1956	NF T60-115	8.4		0.46
823	IP143	6.6		-2.64	1964		-----		-----
824		-----		-----	1971		-----		-----
825		-----		-----	1995	D6560	8.2		0.12
850		-----		-----	6028		-----		-----
851		-----		-----	6039		-----		-----
855		-----		-----	6044		-----		-----
858		-----		-----	6049	IP143	8.25		0.20
859		-----		-----	6075		-----		-----
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	IP143	8.25		0.20	6346	D6560	8.74		1.05
6142		-----		-----	6364		-----		-----
6143		-----		-----	6373		-----		-----
6192		-----		-----	6376		-----		-----
6203		-----		-----	6400		-----		-----
6220	IP143	7.73		-0.69	6406		-----		-----
6257		-----		-----	6416		-----		-----
6266		-----		-----	6444		-----		-----
6279		-----		-----	6447		-----		-----
6332	D6560	8.7		0.98	6460		-----		-----
6335		-----		-----	6472		-----		-----
					6475		-----		-----

normality	suspect
n	47
outliers	3
mean (n)	8.132
st.dev. (n)	0.5220
R(calc.)	1.462
st.dev.(IP143:04R21)	0.5808
R(IP143:04R21)	1.626

Lab 529 first reported 3.73
Lab 962 first reported 11.3
Lab 963 first reported 11.06





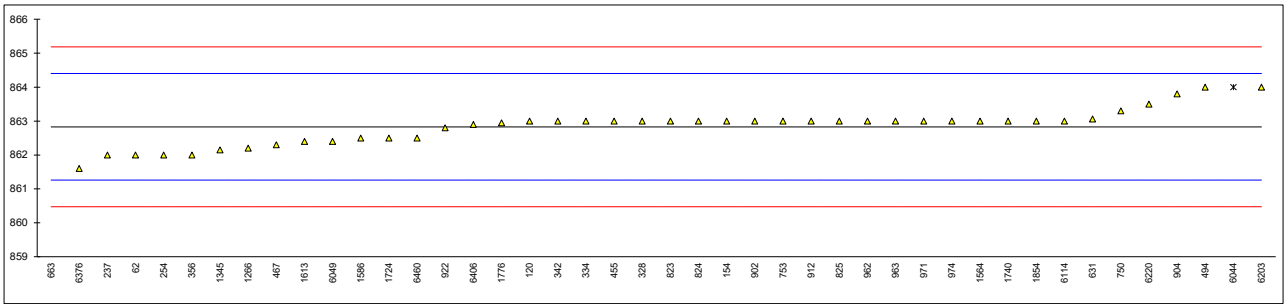
Determination of Calculated Carbon Aromaticity Index on sample #22100

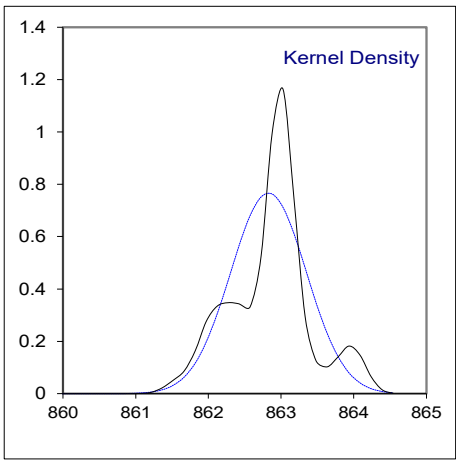
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	ISO8217	862		-1.06	863		-----		-----
90		-----		-----	864		-----		-----
92		-----		-----	865		-----		-----
120	ISO8217	863		0.22	866		-----		-----
140		-----		-----	870		-----		-----
150		-----		-----	875		-----		-----
154	ISO8217	863		0.22	886		-----		-----
158		-----		-----	902	ISO8217	863		0.22
159		-----		-----	904	ISO8217	863.8		1.23
168		-----		-----	912	ISO8217	863		0.22
169		-----		-----	922	ISO8217	862.8		-0.04
171		-----		-----	962	ISO8217	863		0.22
175		-----		-----	963	ISO8217	863		0.22
221		-----		-----	971	ISO8217	863		0.22
224		-----		-----	974	ISO8217	863		0.22
225		-----		-----	982		-----		-----
237	ISO8217	862		-1.06	1019		-----		-----
238		-----		-----	1039		-----		-----
253		-----		-----	1059		-----		-----
254	ISO8217	862		-1.06	1082		-----		-----
309		-----		-----	1095		-----		-----
311		-----		-----	1109		-----		-----
313		-----		-----	1121		-----		-----
323		-----		-----	1126		-----		-----
328	ISO8217	863		0.22	1135		-----		-----
331		-----		-----	1177		-----		-----
333		-----		-----	1218		-----		-----
334	ISO8217	863		0.22	1233		-----		-----
335		-----		-----	1266	ISO8217	862.2		-0.80
339		-----		-----	1275		-----		-----
342	ISO8217	863		0.22	1299		-----		-----
343		-----		-----	1320		-----		-----
349		-----		-----	1345	ISO8217	862.15		-0.87
356	ISO8217	862		-1.06	1356		-----		-----
371		-----		-----	1412		-----		-----
391		-----		-----	1438		-----		-----
398		-----		-----	1459		-----		-----
399		-----		-----	1498		-----		-----
444		-----		-----	1539		-----		-----
455	ISO8217	863.0		0.22	1556		-----		-----
467	ISO8217	862.3		-0.67	1564	ISO8217	863		0.22
494	ISO8217	864		1.49	1586	ISO8217	862.5		-0.42
495		-----		-----	1613	ISO8217	862.4		-0.55
511		-----		-----	1643		-----		-----
529		-----		-----	1688		-----		-----
557		-----		-----	1720		-----		-----
562		-----		-----	1724	ISO8217	862.5		-0.42
575		-----		-----	1728		-----		-----
603		-----		-----	1740	ISO8217	863		0.22
604		-----		-----	1761		-----		-----
608		-----		-----	1776	ISO8217	862.95		0.15
631	ISO8217	863.06		0.29	1792		-----		-----
633		-----		-----	1807		-----		-----
663	ISO8217	826.5	ex	-46.24	1810		-----		-----
671		-----		-----	1811		-----		-----
750	ISO8217	863.3		0.60	1849		-----		-----
753	ISO8217	863		0.22	1854	ISO8217	863		0.22
759		-----		-----	1906		-----		-----
785		-----		-----	1956		-----		-----
823	ISO8217	863		0.22	1964		-----		-----
824	ISO8217	863		0.22	1971		-----		-----
825	ISO8217	863		0.22	1995		-----		-----
850		-----		-----	6028		-----		-----
851		-----		-----	6039		-----		-----
855		-----		-----	6044	ISO8217	864	ex,C	1.49
858		-----		-----	6049	ISO8217	862.4		-0.55
859		-----		-----	6075		-----		-----
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	ISO8217	863		0.22	6346		-----		-----
6142		-----		-----	6364		-----		-----
6143		-----		-----	6373		-----		-----
6192		-----		-----	6376	ISO8217	861.6		-1.57
6203	ISO8217	864		1.49	6400		-----		-----
6220	ISO8217	863.5		0.85	6406	ISO8217	862.9		0.09
6257		-----		-----	6416		-----		-----
6266		-----		-----	6444		-----		-----
6279		-----		-----	6447		-----		-----
6332		-----		-----	6460	ISO8217	862.5		-0.42
6335		-----		-----	6472		-----		-----
					6475		-----		-----

normality	OK
n	42
outliers	0 (+2ex)
mean (n)	862.830
st.dev. (n)	0.5204
R(calc.)	1.457
st.dev.(ISO8217:17)	0.7857
R(ISO8217:17)	2.2

Lab 663 test result excluded for statistical calculations because of calculation difference between reported test result and result calculated by iis. iis calculated 862.5
Lab 6044 test result excluded for statistical calculations because of calculation difference between reported test result and result calculated by iis. iis calculated 862.5; first reported 857





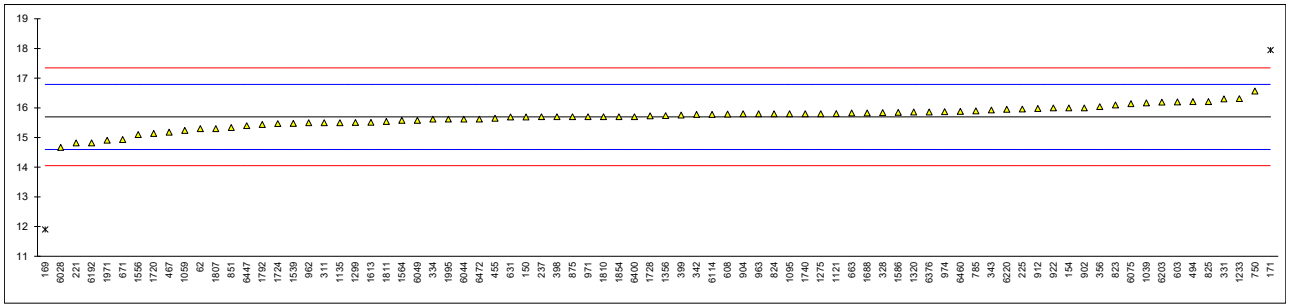
Determination of Carbon Residue micro method on sample #22100; results in %M/M

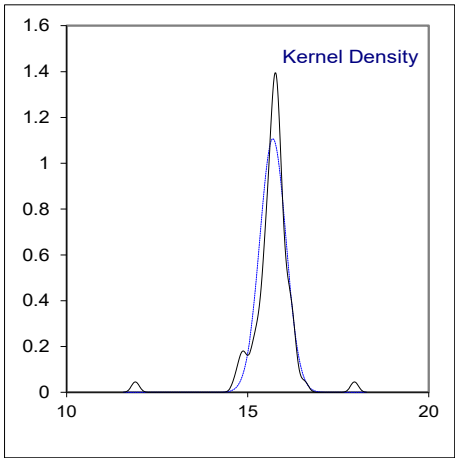
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4530	15.3		-0.72	863		-----		-----
90		-----		-----	864		-----		-----
92		-----		-----	865		-----		-----
120		-----		-----	866		-----		-----
140		-----		-----	870		-----		-----
150	D4530	15.69		-0.01	875	ISO10370	15.7		0.01
154	D4530	16.0		0.55	886		-----		-----
158		-----		-----	902	ISO10370	16.0		0.55
159		-----		-----	904	D4530	15.8		0.19
168		-----		-----	912	ISO10370	15.98		0.52
169	D4530	11.9	C,R(0.01)	-6.92	922	D4530	16.00		0.55
171	ISO10370	17.95	R(0.01)	4.11	962	D4530	15.5		-0.36
175		-----		-----	963	ISO10370	15.8		0.19
221	D4530	14.82	C	-1.60	971	D4530	15.7		0.01
224		-----		-----	974	D4530	15.87		0.32
225	D4530	15.96		0.48	982		-----		-----
237	D4530	15.70		0.01	1019		-----		-----
238		-----		-----	1039	ISO10370	16.17		0.86
253		-----		-----	1059	ISO10370	15.24		-0.83
254		-----		-----	1082		-----		-----
309		-----		-----	1095	ISO10370	15.80		0.19
311	D4530	15.5		-0.36	1109		-----		-----
313		-----		-----	1121	ISO10370	15.807		0.20
323		-----		-----	1126		-----		-----
328	ISO10370	15.84	C	0.26	1135	ISO10370	15.50		-0.36
331	ISO10370	16.3		1.10	1177		-----		-----
333		-----		-----	1218		-----		-----
334	ISO10370	15.62		-0.14	1233	ISO10370	16.3125		1.12
335		-----		-----	1266		-----		-----
339		-----		-----	1275	IP398	15.8031		0.19
342	ISO10370	15.78		0.15	1299	D4530	15.51		-0.34
343	ISO10370	15.93		0.43	1320	ISO10370	15.86		0.30
349		-----		-----	1345		-----		-----
356	ISO10370	16.04		0.63	1356	ISO10370	15.74		0.08
371		-----		-----	1412		-----		-----
391		-----		-----	1438		-----		-----
398	ISO10370	15.7		0.01	1459		-----		-----
399	ISO10370	15.76		0.12	1498		-----		-----
444		-----		-----	1539	ISO10370	15.48		-0.39
455	IP398	15.65		-0.09	1556	ISO10370	15.1		-1.09
467	ISO10370	15.182		-0.94	1564	D4530	15.58		-0.21
494	ISO10370	16.21		0.94	1586	ISO10370	15.85		0.28
495		-----		-----	1613	D4530	15.511		-0.34
511		-----		-----	1643		-----		-----
529		-----		-----	1688	D4530	15.83		0.24
557		-----		-----	1720	D4530	15.14		-1.01
562		-----		-----	1724	D4530	15.47		-0.41
575		-----		-----	1728	D4530	15.73		0.06
603	D4530	16.2		0.92	1740	ISO10370	15.80		0.19
604		-----		-----	1761		-----		-----
608	D4530	15.79		0.17	1776		-----		-----
631	D4530	15.69		-0.01	1792	ISO10370	15.44		-0.47
633		-----		-----	1807	ISO10370	15.3		-0.72
663	D4530	15.83		0.24	1810	D4530	15.7		0.01
671	D4530	14.93		-1.40	1811	ISO10370	15.54		-0.29
750	ISO10370	16.5679		1.59	1849		-----		-----
753		-----		-----	1854	ISO10370	15.70		0.01
759		-----		-----	1906		-----		-----
785	ISO10370	15.9		0.37	1956		-----		-----
823	ISO10370	16.1		0.73	1964		-----		-----
824	ISO10370	15.80		0.19	1971	ISO10370	14.91		-1.43
825	ISO10370	16.21		0.94	1995	D4530	15.62		-0.14
850		-----		-----	6028	ISO10370	14.67		-1.87
851	ISO10370	15.34		-0.65	6039		-----		-----
855		-----		-----	6044	ISO10370	15.62		-0.14
858		-----		-----	6049	ISO10370	15.58		-0.21
859		-----		-----	6075	ISO10370	16.14		0.81
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	ISO10370	15.78		0.15	6346		-----		-----
6142		-----		-----	6364		-----		-----
6143		-----		-----	6373		-----		-----
6192		14.82		-1.60	6376	ISO10370	15.86		0.30
6203	ISO10370	16.191		0.90	6400	ISO10370	15.70		0.01
6220	D4530	15.95		0.46	6406		-----		-----
6257		-----		-----	6416		-----		-----
6266		-----		-----	6444		-----		-----
6279		-----		-----	6447	D4530	15.4		-0.54
6332		-----		-----	6460	D4530	15.88		0.33
6335		-----		-----	6472	D4530	15.62		-0.14
					6475		-----		-----

normality	OK
n	78
outliers	2
mean (n)	15.6967
st.dev. (n)	0.36057
R(calc.)	1.0096
st.dev.(ISO10370:14)	0.54877
R(ISO10370:14)	1.5366

Lab 169 first reported 14.5
Lab 221 first reported 14.52
Lab 328 first reported 18.54



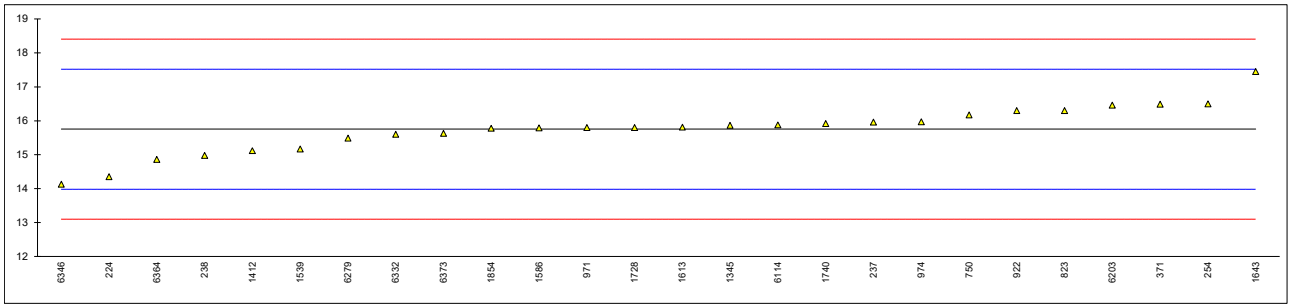


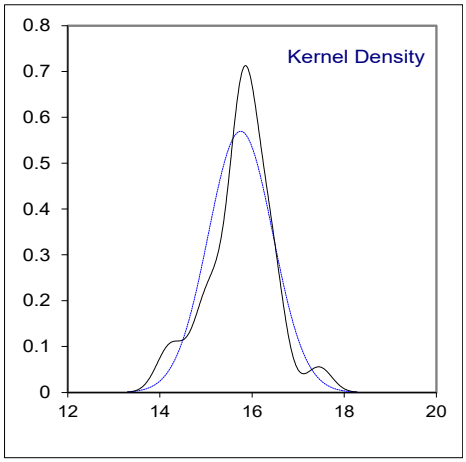
Determination of Conradson Carbon Residue on sample #22100; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	863		-----		-----
90		-----		-----	864		-----		-----
92		-----		-----	865		-----		-----
120		-----		-----	866		-----		-----
140		-----		-----	870		-----		-----
150		-----		-----	875		-----		-----
154		-----		-----	886		-----		-----
158		-----		-----	902		-----		-----
159		-----		-----	904		-----		-----
168		-----		-----	912		-----		-----
169		-----		-----	922	D189	16.30		0.62
171		-----		-----	962		-----		-----
175		-----		-----	963		-----		-----
221		-----		-----	971	D189	15.8		0.05
224	D189	14.35		-1.59	974	D189	15.97		0.24
225		-----		-----	982		-----		-----
237	D189	15.96		0.23	1019		-----		-----
238	D189	14.98		-0.87	1039		-----		-----
253		-----		-----	1059		-----		-----
254	D189	16.5		0.84	1082		-----		-----
309		-----		-----	1095		-----		-----
311		-----		-----	1109		-----		-----
313		-----		-----	1121		-----		-----
323		-----		-----	1126		-----		-----
328		-----		-----	1135		-----		-----
331		-----		-----	1177		-----		-----
333		-----		-----	1218		-----		-----
334		-----		-----	1233		-----		-----
335		-----		-----	1266		-----		-----
339		-----		-----	1275		-----		-----
342		-----		-----	1299		-----		-----
343		-----		-----	1320		-----		-----
349		-----		-----	1345	D189	15.867		0.13
356		-----		-----	1356		-----		-----
371	D189	16.49		0.83	1412	D189	15.12		-0.72
391		-----		-----	1438		-----		-----
398		-----		-----	1459		-----		-----
399		-----		-----	1498		-----		-----
444		-----		-----	1539	ISO6615	15.17		-0.66
455		-----		-----	1556		-----		-----
467		-----		-----	1564		-----		-----
494		-----		-----	1586	D189	15.79		0.04
495		-----		-----	1613	D189	15.811		0.07
511		-----		-----	1643	D189	17.454		1.92
529		-----		-----	1688		-----		-----
557		-----		-----	1720		-----		-----
562		-----		-----	1724		-----		-----
575		-----		-----	1728	D189	15.8		0.05
603		-----		-----	1740	D189	15.92		0.19
604		-----		-----	1761		-----		-----
608		-----		-----	1776		-----		-----
631		-----		-----	1792		-----		-----
633		-----		-----	1807		-----		-----
663		-----		-----	1810		-----		-----
671		-----		-----	1811		-----		-----
750	D189	16.1714		0.47	1849		-----		-----
753		-----		-----	1854	D4530	15.78		0.03
759		-----		-----	1906		-----		-----
785		-----		-----	1956		-----		-----
823	D189	16.3		0.62	1964		-----		-----
824		-----		-----	1971		-----		-----
825		-----		-----	1995		-----		-----
850		-----		-----	6028		-----		-----
851		-----		-----	6039		-----		-----
855		-----		-----	6044		-----		-----
858		-----		-----	6049		-----		-----
859		-----		-----	6075		-----		-----
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	D189	15.88		0.14	6346	D189	14.13		-1.83
6142		-----		-----	6364	D189	14.862		-1.01
6143		-----		-----	6373	D189	15.63		-0.14
6192		-----		-----	6376		-----		-----
6203	D189	16.46		0.80	6400		-----		-----
6220		-----		-----	6406		-----		-----
6257		-----		-----	6416		-----		-----
6266		-----		-----	6444		-----		-----
6279	ISO6615	15.49		-0.30	6447		-----		-----
6332	D189	15.6		-0.17	6460		-----		-----
6335		-----		-----	6472		-----		-----
					6475		-----		-----

normality	suspect
n	26
outliers	0
mean (n)	15.7533
st.dev. (n)	0.70048
R(calc.)	1.9614
st.dev.(D189:06R19)	0.88497
R(D189:06R19)	2.4779





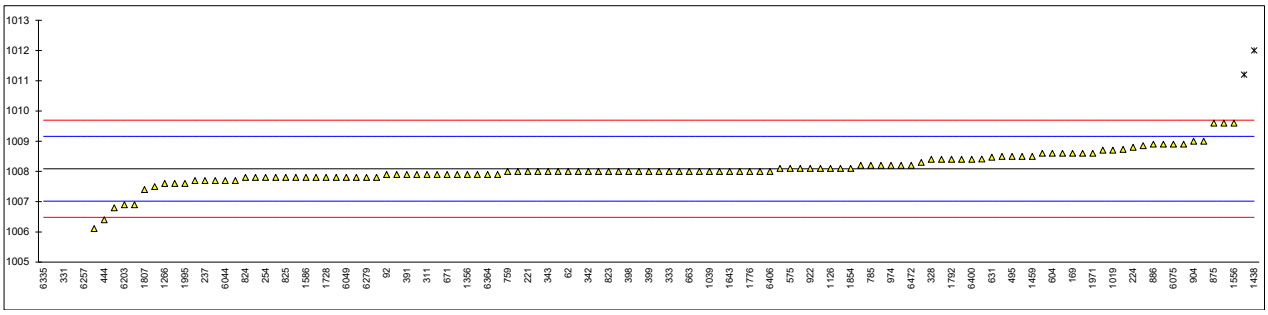
Determination of Density at 15 °C on sample #22100; results in kg/m^3

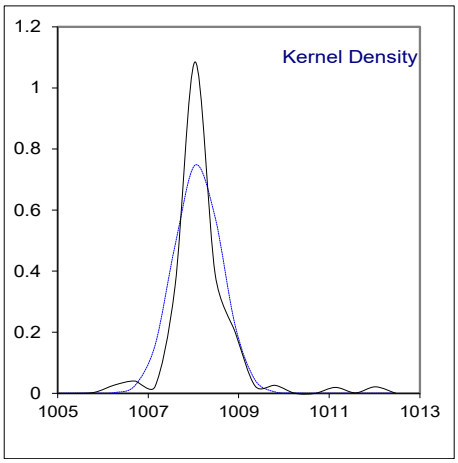
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4052	1008		-0.17	863		-----		-----
90	D4052	1008.0		-0.17	864		-----		-----
92	D4052	1007.9	C	-0.36	865		-----		-----
120	D4052	1008.7		1.14	866		-----		-----
140		-----		-----	870		-----		-----
150	D4052	1008.9		1.51	875	ISO12185	1009.6		2.82
154	D4052	1008		-0.17	886	D4052	1008.9		1.51
158	D4052	1008.1		0.02	902	ISO12185	1008.6		0.95
159		-----		-----	904	D1298	1009.0		1.70
168		-----		-----	912	D1298	1008.2		0.20
169	D4052	1008.6		0.95	922	D1298	1008.1		0.02
171	ISO12185	1008.0		-0.17	962	D4052	1008.0		-0.17
175		-----		-----	963	ISO12185	1008.1		0.02
221	D4052	1008.0	C	-0.17	971	IP365	1008.2		0.20
224	D1298	1008.8		1.32	974	D1298	1008.2		0.20
225	D4052	1008.0		-0.17	982		-----		-----
237	D4052	1007.7		-0.73	1019	ISO3838	1008.7		1.14
238	D1298	1007.8		-0.54	1039	ISO12185	1008.0		-0.17
253	D4052	1007.8		-0.54	1059	ISO12185	1007.7	C	-0.73
254	D1298	1007.8		-0.54	1082		-----		-----
309	D4052	1008.73		1.19	1095	ISO12185	1008.1		0.02
311	ISO12185	1007.9		-0.36	1109		-----		-----
313	D1298	1007.9		-0.36	1121	ISO12185	1007.9		-0.36
323		-----		-----	1126	ISO12185	1008.10		0.02
328	ISO12185	1008.4		0.58	1135	ISO12185	1008.1		0.02
331	ISO12185	984.3	R(0.01)	-44.41	1177		-----		-----
333	D4052	1008		-0.17	1218		-----		-----
334	ISO12185	1008.0		-0.17	1233	ISO12185	1008.0		-0.17
335	ISO12185	1008		-0.17	1266	ISO3675	1007.6		-0.92
339		-----		-----	1275	IP365	1008.5		0.76
342	ISO12185	1008.0		-0.17	1299	ISO12185	1000.8	R(0.01)	-13.61
343	D4052	1008		-0.17	1320		-----		-----
349		-----		-----	1345	D4052	1007.5		-1.10
356	ISO12185	1008.0		-0.17	1356	ISO12185	1007.9		-0.36
371	ISO12185	1007.9		-0.36	1412	D4052	1007.8		-0.54
391	ISO12185	1007.9		-0.36	1438	D1298	1012	R(0.01)	7.30
398	ISO12185	1008.0		-0.17	1459	ISO12185	1008.5		0.76
399	ISO12185	1008.0		-0.17	1498		-----	W	-----
444	D4052	1006.4	C	-3.16	1539	ISO12185	1007.9		-0.36
455	IP365	1007.9		-0.36	1556	ISO12185	1009.6		2.82
467	ISO12185	1007.70		-0.73	1564	D4052	1008.4		0.58
494	ISO12185	1008.6		0.95	1586	ISO12185	1007.8		-0.54
495	ISO12185	1008.5		0.76	1613	D4052	1007.6		-0.92
511		-----		-----	1643	D4052	1008.0		-0.17
529	D5002	1006.11		-3.70	1688	D4052	1009.0		1.70
557		-----		-----	1720		-----		-----
562		-----		-----	1724	D4052	1007.8		-0.54
575	D4052	1008.1		0.02	1728	D4052	1007.8		-0.54
603	D1298	1009.6		2.82	1740	ISO12185	1008.0	C	-0.17
604	D4052	1008.6		0.95	1761		-----		-----
608	D4052	1011.2	R(0.01)	5.80	1776	ISO12185	1008.0		-0.17
631	D1298	1008.47		0.71	1792	ISO12185	1008.4		0.58
633		-----		-----	1807	ISO3675	1007.4	C	-1.29
663	D4052	1008.0		-0.17	1810	ISO12185	1008.6		0.95
671	D1298	1007.9	C	-0.36	1811	ISO12185	1008.2		0.20
750	GOST R51069	1008.5		0.76	1849	ISO3675	1007.8		-0.54
753	ISO12185	1008.0		-0.17	1854	ISO12185	1008.1		0.02
759	D1298	1008.0		-0.17	1906		-----		-----
785	ISO12185	1008.2		0.20	1956	ISO3675	1008.4		0.58
823	ISO12185	1008		-0.17	1964		-----		-----
824	ISO12185	1007.8		-0.54	1971	ISO12185	1008.6		0.95
825	ISO12185	1007.8		-0.54	1995	D4052	1007.6		-0.92
850		-----		-----	6028	ISO12185	1006.8		-2.41
851	ISO12185	1008.0		-0.17	6039		-----		-----
855		-----		-----	6044	D4052	1007.7	C	-0.73
858		-----		-----	6049	ISO12185	1007.8		-0.54
859		-----		-----	6075	ISO12185	1008.9		1.51
862		-----		-----	6092	ISO12185	1007.8		-0.54

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	ISO12185	1008.3		0.39	6346		-----	W	-----
6142		-----		-----	6364	D1298	1007.9		-0.36
6143	D1298	984	R(0.01)	-44.97	6373	ISO12185	1007.8		-0.54
6192	D1298	1007.7		-0.73	6376	ISO12185	1006.9		-2.22
6203	ISO12185	1006.9		-2.22	6400	ISO12185	1008.4		0.58
6220	D4052	1008.41	C	0.60	6406	ISO12185	1008.00		-0.17
6257	ISO12185	1001.80	C,R(0.01)	-11.74	6416	D1298	1007.9		-0.36
6266	D4052	1008.85		1.42	6444		-----		-----
6279	ISO12185	1007.8		-0.54	6447		-----		-----
6332	D1298	1008.0		-0.17	6460	D1298	1008.9		1.51
6335	D1298	900	C,R(0.01)	-201.77	6472	D4052	1008.2		0.20
					6475		-----		-----

normality	not OK
n	114
outliers	7
mean (n)	1008.090
st.dev. (n)	0.5308
R(calc.)	1.486
st.dev.(ISO12185:96)	0.5357
R(ISO12185:96)	1.5

Lab 92 first reported 1006.8
Lab 221 first reported 1.0080 kg/m^3
Lab 444 reported test result as API Gravity
Lab 671 first reported 1.0079 kg/m^3
Lab 1059 first reported 984.1
Lab 1498 test result withdrawn, reported 1.0054 kg/m^3
Lab 1740 first reported 1.0080 kg/m^3
Lab 1807 first reported 1006.3
Lab 6044 first reported 1.0077
Lab 6220 reported 1.00841 kg/m^3
Lab 6257 first reported 1009.69
Lab 6335 reported 0.900 kg/m^3
Lab 6346 test result withdrawn, reported 1.0066 kg/L





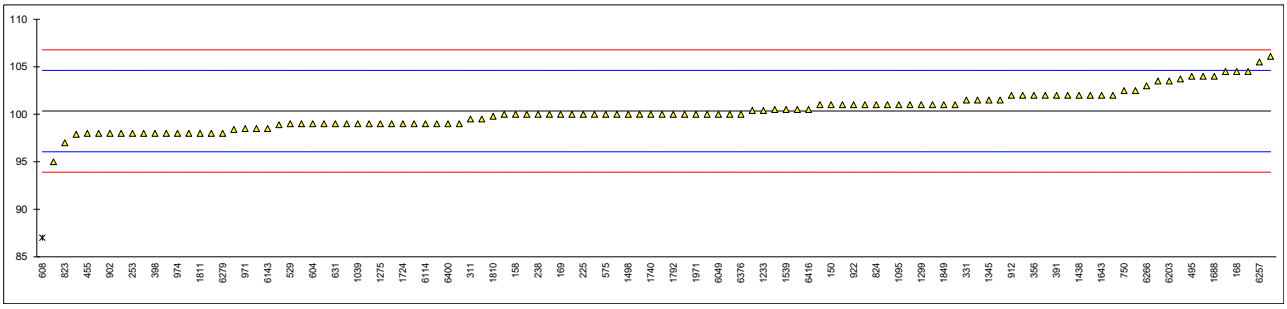
Determination of Flash Point PMcc on sample #22100; results in °C

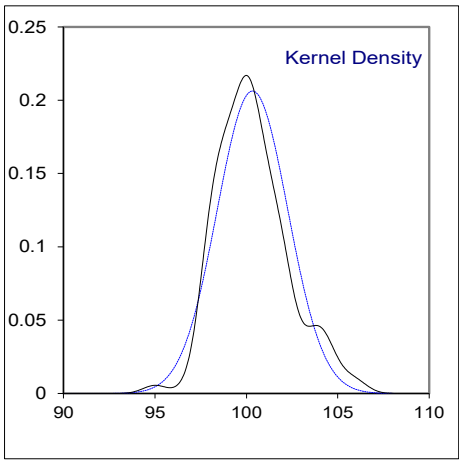
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D93-B	100		-0.16	863		-----		-----
90	D93-B	97.9		-1.14	864		-----		-----
92	D93-B	98.5		-0.86	865		-----		-----
120	D93-B	98.9		-0.67	866		-----		-----
140		-----		-----	870		-----		-----
150	D93-B	101		0.31	875	ISO2719-B	101.0		0.31
154	D93-B	100.0		-0.16	886		-----		-----
158	D93-B	100.0		-0.16	902	ISO2719-B	98		-1.09
159		-----		-----	904	D93-B	98.0		-1.09
168	D93-B	104.5		1.94	912	ISO2719-A	102		0.77
169	D93-B	100.0		-0.16	922	D93-B	101		0.31
171		-----		-----	962	D93-B	103.5		1.47
175	D93-B	98		-1.09	963	D93-B	102.0		0.77
221		-----		-----	971	D93-B	98.5		-0.86
224	D93-A	>110	C,f+?	>4.51	974	D93-B	98.0		-1.09
225	D93-B	100.0		-0.16	982		-----		-----
237	D93-B	101.0		0.31	1019		-----		-----
238	D93-B	100		-0.16	1039	ISO2719-B	99.0		-0.63
253	D93-B	98		-1.09	1059	ISO2719-B	99.0		-0.63
254	D93-B	99.0		-0.63	1082		-----		-----
309		-----		-----	1095	D93-B	101.0		0.31
311	D93-B	99.5		-0.39	1109		-----		-----
313	D93-B	100.5		0.07	1121	ISO2719-B	103.72		1.58
323		-----		-----	1126		-----		-----
328	ISO2719-B	100.0	C	-0.16	1135	ISO2719-B	101.0		0.31
331	D93-B	101.5		0.54	1177		-----		-----
333	D93-B	98.0		-1.09	1218		-----		-----
334	ISO2719	100.0		-0.16	1233	ISO2719-B	100.4		0.03
335		-----		-----	1266	ISO2719-B	99.5		-0.39
339		-----		-----	1275	IP34-B	99.0		-0.63
342	ISO2719-B	100		-0.16	1299	D93-B	101.0		0.31
343		-----		-----	1320		-----		-----
349		-----		-----	1345	D93-B	101.5		0.54
356	ISO2719-B	102.0		0.77	1356	ISO2719-B	102		0.77
371	D93-B	98.0		-1.09	1412	D93-B	101.0		0.31
391	ISO2719-A	102.0		0.77	1438	D93-B	102.0		0.77
398	ISO2719	98		-1.09	1459		-----	W	-----
399	ISO2719-B	100.0		-0.16	1498	D93-B	100.0		-0.16
444		-----		-----	1539	ISO2719-B	100.5		0.07
455	D93-B	98		-1.09	1556	ISO2719-B	102.0		0.77
467	ISO2719-A	101.50		0.54	1564	D93-B	98.0		-1.09
494	ISO2719-B	104.0		1.71	1586	ISO2719-B	99.0		-0.63
495	ISO2719-B	104.0		1.71	1613	D93-B	100.5		0.07
511		-----		-----	1643	D93-B	102		0.77
529	D93-B	99.0		-0.63	1688	D93-A	104		1.71
557		-----		-----	1720	D92	106.1		2.69
562	D93-B	98.4		-0.91	1724	D93-B	99		-0.63
575	D93-B	100.0		-0.16	1728	D93-B	100		-0.16
603	D93-B	99.0		-0.63	1740	D93-B	100.0		-0.16
604	D93-B	99.0		-0.63	1761		-----		-----
608	D93-A	87.0	R(0.01)	-6.23	1776	ISO2719-B	100.0		-0.16
631	D93-A	99.0		-0.63	1792	ISO2719-B	100.0		-0.16
633	D93-B	101.0		0.31	1807		-----		-----
663	D93-B	100.4		0.03	1810	D93-A	99.8		-0.25
671	D93-B	99.0		-0.63	1811	ISO2719-A	98.0		-1.09
750	D93-B	102.5		1.01	1849	ISO2719-B	101		0.31
753	D93-B	101.0		0.31	1854	D93-B	100		-0.16
759	ISO2719-B	102.0		0.77	1906		-----		-----
785	D93-B	104.5		1.94	1956		-----		-----
823	ISO2719-B	97.0		-1.56	1964		-----		-----
824	ISO2719-B	101.0		0.31	1971	ISO2719-B	100.0		-0.16
825		-----		-----	1995	D93-B	101		0.31
850		-----		-----	6028	ISO2719	99.0		-0.63
851	ISO2719-B	>100		-----	6039		-----		-----
855		-----		-----	6044	D93-B	100	C	-0.16
858		-----		-----	6049	ISO2719-B	100.0		-0.16
859		-----		-----	6075	ISO2719-B	100.0		-0.16
862		-----		-----	6092	D93-B	95		-2.49

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	ISO2719-B	99.0		-0.63	6346	D93-B	102.5		1.01
6142		-----		-----	6364	D93-B	102.0		0.77
6143	D93-B	98.50		-0.86	6373		-----		-----
6192		99		-0.63	6376	ISO2719-B	100.0		-0.16
6203	ISO2719-B	103.5		1.47	6400	ISO2719-B	99		-0.63
6220	D93-B	98		-1.09	6406	ISO2719-B	104.5	C	1.94
6257	ISO2719-B	105.5		2.41	6416	D93-B	100.5		0.07
6266	D93-B	103		1.24	6444		-----		-----
6279	ISO2719-A	98.0		-1.09	6447		-----		-----
6332	D93-B	101.5		0.54	6460		-----		-----
6335	ISO2719-A	>100		-----	6472	D93-B	99.0		-0.63
					6475		-----		-----

normality	OK
n	109
outliers	1
mean (n)	100.341
st.dev. (n)	1.9346
R(calc.)	5.417
st.dev.(ISO2719:16/A1:21)	2.1429
R(ISO2719:16/A1:21)	6

Lab 224 first reported 109
Lab 328 first reported 113.0
Lab 1459 test result withdrawn, reported 106.0
Lab 6044 first reported 106
Lab 6406 first reported 105





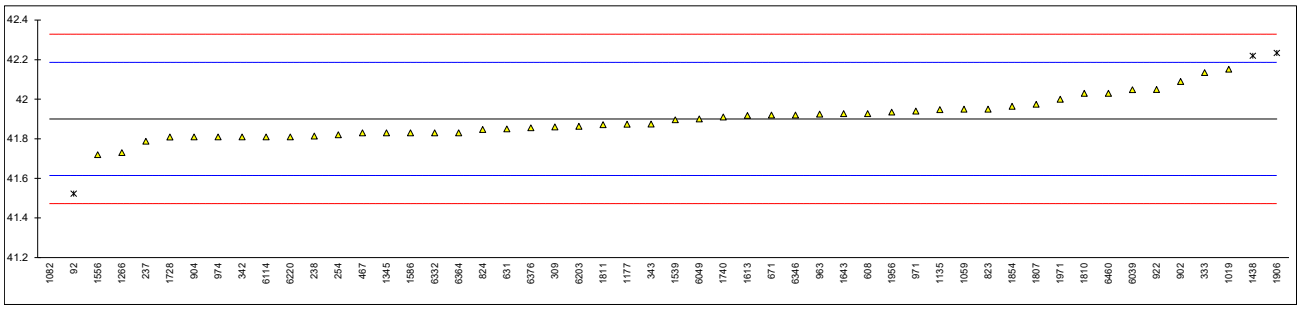
Determination of Heat of Combustion (Gross) on sample #22100; results in MJ/kg

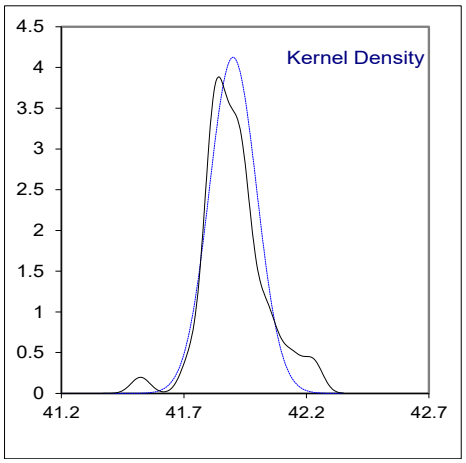
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	863		-----		-----
90		-----		-----	864		-----		-----
92	D240	41.523	R(0.05)	-2.64	865		-----		-----
120		-----		-----	866		-----		-----
140		-----		-----	870		-----		-----
150		-----		-----	875		-----		-----
154		-----		-----	886		-----		-----
158		-----		-----	902	D4868	42.09		1.33
159		-----		-----	904	D4868	41.81		-0.63
168		-----		-----	912		-----		-----
169		-----		-----	922	D240	42.05		1.05
171		-----		-----	962		-----		-----
175		-----		-----	963	D240	41.925		0.17
221		-----		-----	971	D240	41.94		0.28
224		-----		-----	974	D4868	41.81		-0.63
225		-----		-----	982		-----		-----
237	D4868	41.788		-0.79	1019		42.152		1.76
238	D4868	41.814		-0.60	1039		-----		-----
253		-----		-----	1059	D4868	41.95	C	0.35
254	D4868	41.82		-0.56	1082	D240	39.88083	R(0.01)	-14.14
309	D240	41.860		-0.28	1095		-----		-----
311		-----		-----	1109		-----		-----
313		-----		-----	1121		-----		-----
323		-----		-----	1126		-----		-----
328		-----		-----	1135	D240	41.948		0.33
331		-----		-----	1177	DIN51900-1/2	41.874		-0.18
333	D240	42.135		1.64	1218		-----		-----
334		-----		-----	1233		-----		-----
335		-----		-----	1266	D4868	41.73		-1.19
339		-----		-----	1275		-----		-----
342	D4868	41.81		-0.63	1299		-----		-----
343	D240	41.875		-0.18	1320		-----		-----
349		-----		-----	1345	D4868	41.83		-0.49
356		-----		-----	1356		-----		-----
371		-----		-----	1412		-----		-----
391		-----		-----	1438		42.22	R(0.05)	2.24
398		-----		-----	1459		-----		-----
399		-----		-----	1498		-----		-----
444		-----		-----	1539	PN C04062	41.896		-0.03
455		-----		-----	1556		41.72		-1.26
467	D4868	41.83		-0.49	1564		-----		-----
494		-----		-----	1586	D240	41.83		-0.49
495		-----		-----	1613	D240	41.918		0.12
511		-----		-----	1643	D240	41.9271		0.19
529		-----		-----	1688		-----		-----
557		-----		-----	1720		-----		-----
562		-----		-----	1724		-----		-----
575		-----		-----	1728	D4868	41.809		-0.64
603		-----		-----	1740	D240	41.91		0.07
604		-----		-----	1761		-----		-----
608	D240	41.9275		0.19	1776		-----		-----
631	D240	41.8497		-0.35	1792		-----		-----
633		-----		-----	1807		41.975	C	0.52
663		-----		-----	1810		42.030		0.91
671	D240	41.92		0.14	1811		41.871		-0.21
750		-----		-----	1849		-----		-----
753		-----		-----	1854	D240	41.965		0.45
759		-----		-----	1906	D4809	42.234	R(0.05)	2.34
785		-----		-----	1956		41.935		0.24
823	KS M2057	41.950		0.35	1964		-----		-----
824	KS M2057	41.847		-0.37	1971	PN C04062	42.0		0.70
825		-----		-----	1995		-----		-----
850		-----		-----	6028		-----		-----
851		-----		-----	6039		42.048		1.03
855		-----		-----	6044		-----		-----
858		-----		-----	6049	D4868	41.9		0.00
859		-----		-----	6075		-----		-----
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	D4868	41.81		-0.63	6346	D4868	41.92		0.14
6142		-----		-----	6364	D4868	41.83		-0.49
6143		-----		-----	6373		-----		-----
6192		-----		-----	6376	D4868	41.856		-0.31
6203	D240	41.8638		-0.26	6400		-----		-----
6220	D4868	41.81		-0.63	6406		-----		-----
6257		-----		-----	6416		-----		-----
6266		-----		-----	6444		-----		-----
6279		-----		-----	6447		-----		-----
6332		41.83		-0.49	6460	D4868	42.03		0.91
6335		-----		-----	6472		-----		-----
					6475		-----		-----

normality	OK
n	48
outliers	4
mean (n)	41.9004
st.dev. (n)	0.09671
R(calc.)	0.2708
st.dev.(D240:19)	0.14286
R(D240:19)	0.40

Lab 1059 first reported 42.35
Lab 1807 first reported 42.290





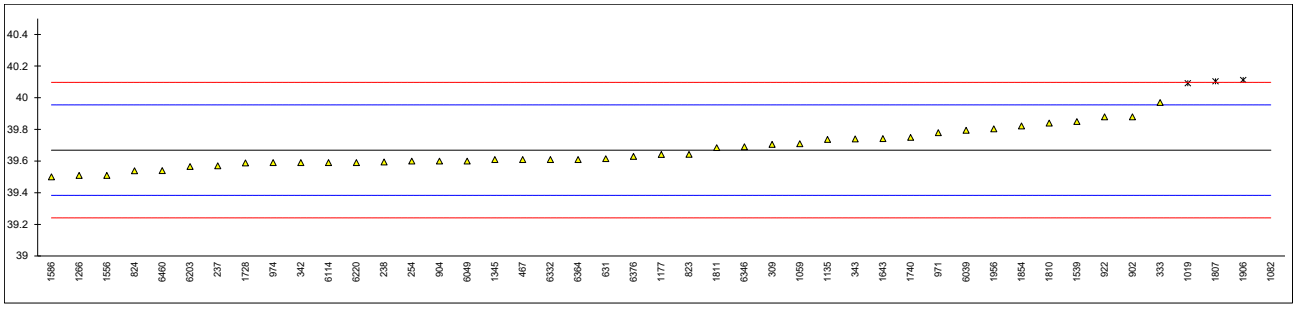
Determination of Heat of Combustion (Net) on sample #22100; results in MJ/kg

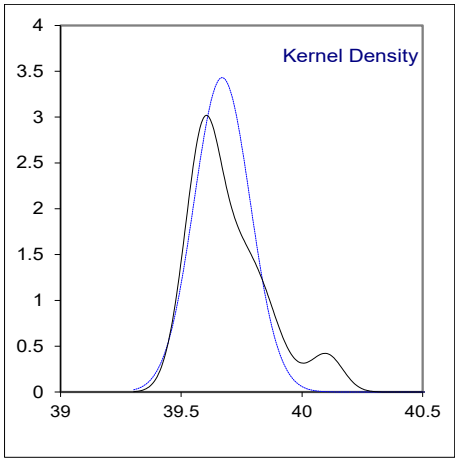
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	863		-----		-----
90		-----		-----	864		-----		-----
92		-----		-----	865		-----		-----
120		-----		-----	866		-----		-----
140		-----		-----	870		-----		-----
150		-----		-----	875		-----		-----
154		-----		-----	886		-----		-----
158		-----		-----	902	D4868	39.88		1.48
159		-----		-----	904	D4868	39.60		-0.48
168		-----		-----	912		-----		-----
169		-----		-----	922	D240	39.88		1.48
171		-----		-----	962		-----		-----
175		-----		-----	963		-----		-----
221		-----		-----	971	D240	39.78		0.78
224		-----		-----	974	D4868	39.59		-0.55
225		-----		-----	982		-----		-----
237	D4868	39.570		-0.69	1019		40.092	R(0.05)	2.96
238	D4868	39.595		-0.52	1039		-----		-----
253		-----		-----	1059	D4868	39.71	C	0.29
254	D4868	39.60		-0.48	1082	D240	42.02405	R(0.01)	16.49
309	D240	39.705		0.25	1095		-----		-----
311		-----		-----	1109		-----		-----
313		-----		-----	1121		-----		-----
323		-----		-----	1126		-----		-----
328		-----		-----	1135	D240	39.737		0.48
331		-----		-----	1177	DIN51900-1/2	39.642		-0.19
333	D240	39.970		2.11	1218		-----		-----
334		-----		-----	1233		-----		-----
335		-----		-----	1266	D4868	39.51		-1.11
339		-----		-----	1275		-----		-----
342	D4868	39.59		-0.55	1299		-----		-----
343	D240	39.740		0.50	1320		-----		-----
349		-----		-----	1345	D4868	39.61		-0.41
356		-----		-----	1356		-----		-----
371		-----		-----	1412		-----		-----
391		-----		-----	1438		-----		-----
398		-----		-----	1459		-----		-----
399		-----		-----	1498		-----		-----
444		-----		-----	1539	PN C04062	39.850		1.27
455		-----		-----	1556		39.51		-1.11
467	D4868	39.61		-0.41	1564		-----		-----
494		-----		-----	1586	D240	39.50		-1.18
495		-----		-----	1613	D240	--		-----
511		-----		-----	1643	D240	39.7415		0.51
529		-----		-----	1688		-----		-----
557		-----		-----	1720		-----		-----
562		-----		-----	1724		-----		-----
575		-----		-----	1728	D4868	39.589		-0.56
603		-----		-----	1740	D240	39.75		0.57
604		-----		-----	1761		-----		-----
608		-----		-----	1776		-----		-----
631	D240	39.615		-0.38	1792		-----		-----
633		-----		-----	1807		40.104	R(0.05)	3.05
663		-----		-----	1810		39.840		1.20
671		-----		-----	1811		39.685		0.11
750		-----		-----	1849		-----		-----
753		-----		-----	1854	D240	39.822		1.07
759		-----		-----	1906	D4809	40.113	R(0.05)	3.11
785		-----		-----	1956		39.804		0.95
823	KS M2057	39.643		-0.18	1964		-----		-----
824	KS M2057	39.539		-0.91	1971		-----		-----
825		-----		-----	1995		-----		-----
850		-----		-----	6028		-----		-----
851		-----		-----	6039		39.795		0.88
855		-----		-----	6044		-----		-----
858		-----		-----	6049	D4868	39.6		-0.48
859		-----		-----	6075		-----		-----
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	D4868	39.59		-0.55	6346	D4868	39.69		0.15
6142		-----		-----	6364	D4868	39.61		-0.41
6143		-----		-----	6373		-----		-----
6192		-----		-----	6376	D4868	39.630		-0.27
6203	D240	39.5652		-0.73	6400		-----		-----
6220	D4868	39.59		-0.55	6406		-----		-----
6257		-----		-----	6416		-----		-----
6266		-----		-----	6444		-----		-----
6279		-----		-----	6447		-----		-----
6332		39.61		-0.41	6460	D4868	39.54		-0.90
6335		-----		-----	6472		-----		-----
					6475		-----		-----

normality	OK
n	41
outliers	4
mean (n)	39.6690
st.dev. (n)	0.11627
R(calc.)	0.3256
st.dev.(D240:19)	0.14286
R(D240:19)	0.40

Lab 1059 first reported 40.04





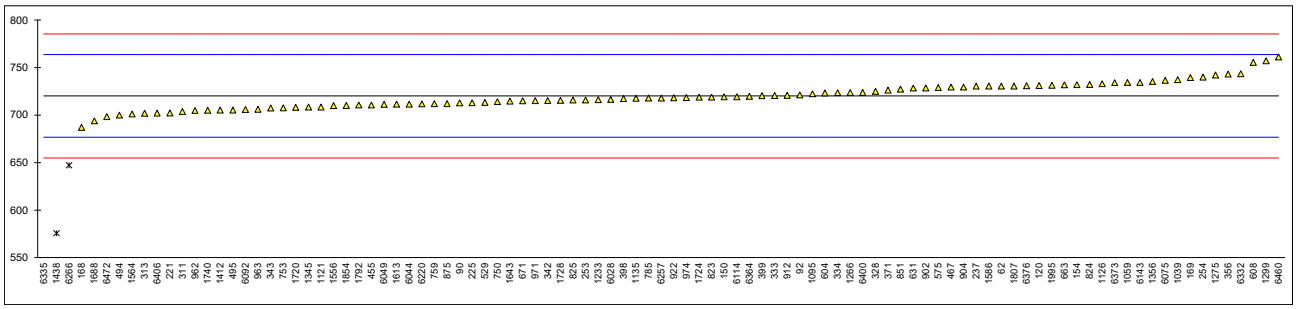
Determination of Kinematic Viscosity at 50 °C on sample #22100; results in mm^2/s

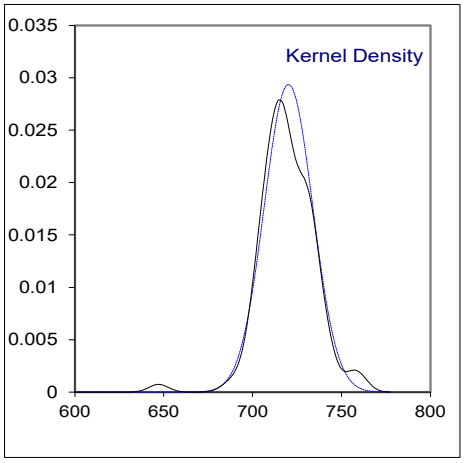
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D445	730.6		0.48	863		-----		-----
90	D445	712.81		-0.34	864		-----		-----
92	D445	721.25		0.05	865		-----		-----
120	D445	731.2		0.50	866		-----		-----
140		-----		-----	870		-----		-----
150	D445	719.29		-0.04	875	ISO3104	712.2		-0.37
154	D445	732.0		0.54	886		-----		-----
158		-----		-----	902	ISO3104	728.6		0.39
159		-----		-----	904	D445	729.5		0.43
168	D445	687.2		-1.52	912	ISO3104	720.9		0.03
169	D445	739.5		0.89	922	D445	718.3		-0.09
171		-----		-----	962	D445	704.9		-0.70
175		-----		-----	963	D445	706.2		-0.64
221	D445	702.2		-0.83	971	D445	715.2		-0.23
224		-----		-----	974	D445	718.4		-0.08
225	D445	713.0		-0.33	982		-----		-----
237	D445	730.5		0.47	1019		-----		-----
238		-----		-----	1039	ISO3104	737.4		0.79
253	D445	715.93		-0.20	1059	ISO3104	734.4		0.65
254	D445	740.04		0.91	1082		-----		-----
309		-----		-----	1095	ISO3104	722.4		0.10
311	D445	703.8		-0.75	1109		-----		-----
313	D445	702.0		-0.84	1121	ISO3104	708.65		-0.53
323		-----		-----	1126	ISO3104	733.075		0.59
328	ISO3104	725.1		0.22	1135	ISO3104	717.8		-0.11
331		-----		-----	1177		-----		-----
333	D445	720.7		0.02	1218		-----		-----
334	ISO3104	723.6		0.16	1233	ISO3104	716.3		-0.18
335		-----		-----	1266	ISO3104	723.8		0.16
339		-----		-----	1275	IP71	742.26		1.01
342	ISO3104	715.4		-0.22	1299	D445	757.3		1.70
343	ISO3104	707.6		-0.58	1320		-----		-----
349		-----		-----	1345	D445	708.59		-0.53
356	ISO3104	743.2		1.06	1356	ISO3104	735.4		0.70
371	D445	726.49		0.29	1412	D445	705.3		-0.69
391		-----		-----	1438	D445	575.7	R(0.01)	-6.64
398	ISO3104	717.5		-0.12	1459		-----		-----
399	ISO3104	720.5		0.01	1498		-----		-----
444		-----		-----	1539		-----		-----
455	IP71	710.7		-0.44	1556	ISO3104	710.0		-0.47
467	ISO3104	729.50		0.43	1564	D445	701.200		-0.87
494	ISO3104	700.10		-0.92	1586	ISO3104	730.5		0.47
495	ISO3104	705.312		-0.68	1613	D445	711.5		-0.40
511		-----		-----	1643	D445	714.77		-0.25
529	D445	713.417		-0.31	1688	D445	694		-1.20
557		-----		-----	1720	D445	708.1		-0.56
562		-----		-----	1724	D445	718.86		-0.06
575	D445	729.1		0.41	1728	D445	715.5		-0.22
603		-----		-----	1740	D445	705.2		-0.69
604	D445	723.41		0.15	1761		-----		-----
608	D445	755.57		1.62	1776		-----		-----
631	D445	728.55		0.38	1792	ISO3104	710.6		-0.44
633		-----		-----	1807	ISO3104	730.6		0.48
663	D445	731.96		0.54	1810		-----		-----
671	D445	715.06		-0.24	1811		-----		-----
750	D445	714.228		-0.27	1849		-----		-----
753	ISO3104	707.7		-0.57	1854	ISO3104	710.2		-0.46
759	ISO3104	712.2		-0.37	1906		-----		-----
785	ISO3104	718.0		-0.10	1956		-----		-----
823	D445	718.9		-0.06	1964		-----		-----
824	ISO3104	732.4		0.56	1971		-----		-----
825	ISO3104	715.9		-0.20	1995	D445	731.5		0.52
850		-----		-----	6028	ISO3104	716.5		-0.17
851	ISO3104	727.5		0.33	6039		-----		-----
855		-----		-----	6044	D445	711.6		-0.40
858		-----		-----	6049	ISO3104	711.4		-0.40
859		-----		-----	6075	ISO3104	736.6		0.75
862		-----		-----	6092	D445	705.9		-0.66

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	ISO3104	719.35		-0.04	6346		-----		-----
6142		-----		-----	6364	D445	719.87		-0.02
6143	D445	734.40		0.65	6373	D445	734.2		0.64
6192		-----		-----	6376	ISO3104	731.08		0.50
6203		-----		-----	6400	ISO3104	724.0		0.17
6220	D445	711.8		-0.39	6406	ISO3104	702.164		-0.83
6257	ISO3104	718.03	C	-0.10	6416		-----		-----
6266	D7042	647.180	R(0.01)	-3.36	6444		-----		-----
6279		-----		-----	6447		-----		-----
6332	D445	743.5		1.07	6460	D445	761.2	C	1.88
6335	D445	150.60	R(0.01)	-26.17	6472	D445	698.4		-1.00
					6475		-----		-----

normality	OK
n	96
outliers	3
mean (n)	720.2117
st.dev. (n)	13.57467
R(calc.)	38.0091
st.dev.(ISO3104:20)	21.76325
R(ISO3104:20)	60.9371

Lab 6257 first reported 49.50
Lab 6460 first reported 807.5





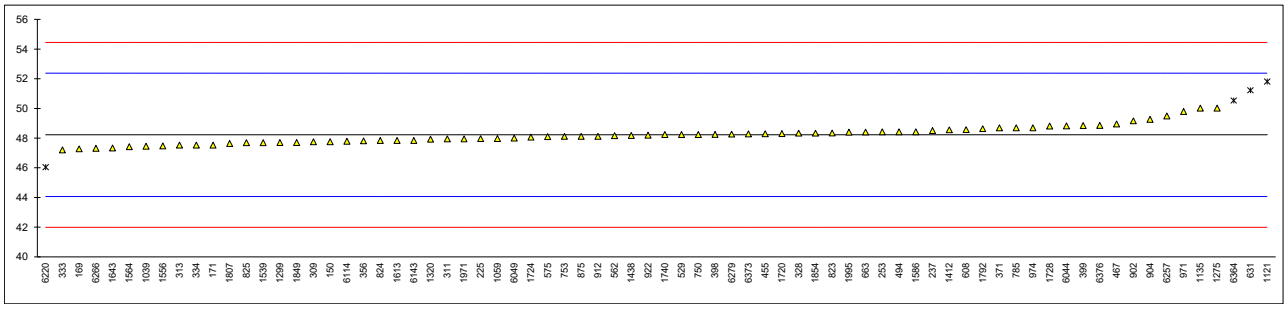
Determination of Kinematic Viscosity at 100 °C on sample #22100; results in mm^2/s

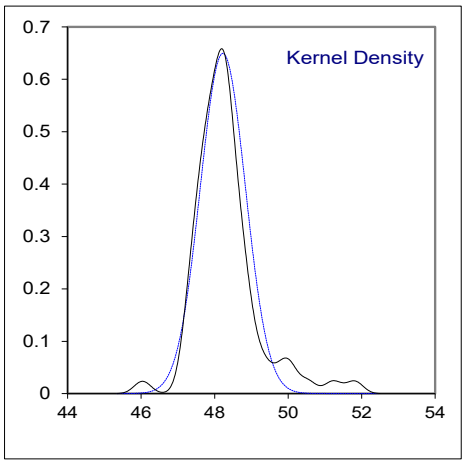
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	863		-----		-----
90		-----		-----	864		-----		-----
92		-----		-----	865		-----		-----
120		-----		-----	866		-----		-----
140		-----		-----	870		-----		-----
150	D445	47.761		-0.22	875	ISO3104	48.12		-0.05
154		-----		-----	886		-----		-----
158		-----		-----	902	ISO3104	49.17		0.45
159		-----		-----	904	D445	49.27		0.50
168		-----		-----	912	ISO3104	48.12		-0.05
169	D445	47.28		-0.46	922	D445	48.20		-0.01
171	ISO3104	47.53		-0.34	962		-----		-----
175		-----		-----	963		-----		-----
221		-----		-----	971	D445	49.80		0.76
224		-----		-----	974	D445	48.70		0.23
225	D445	47.97		-0.12	982		-----		-----
237	D445	48.52		0.14	1019		-----		-----
238		-----		-----	1039	ISO3104	47.46		-0.37
253	D445	48.43		0.10	1059	ISO3104	47.98		-0.12
254		-----		-----	1082		-----		-----
309	D445	47.76		-0.22	1095		-----		-----
311	D445	47.95		-0.13	1109		-----		-----
313	D445	47.53		-0.34	1121	ISO3104	51.812	R(0.01)	1.73
323		-----		-----	1126		-----		-----
328	ISO3104	48.34		0.05	1135	ISO3104	50.03		0.87
331		-----		-----	1177		-----		-----
333	D445	47.21		-0.49	1218		-----		-----
334	ISO3104	47.53		-0.34	1233		-----		-----
335		-----		-----	1266		-----		-----
339		-----		-----	1275	IP71	50.03		0.87
342		-----		-----	1299	D445	47.7		-0.25
343		-----		-----	1320	ISO3104	47.93		-0.14
349		-----		-----	1345		-----		-----
356	ISO3104	47.82		-0.20	1356		-----		-----
371	D445	48.695		0.23	1412	D445	48.56		0.16
391		-----		-----	1438	D445	48.18		-0.02
398	ISO3104	48.25		0.01	1459		-----		-----
399	ISO3104	48.85		0.30	1498		-----		-----
444		-----		-----	1539	ISO3104	47.69		-0.26
455	IP71	48.30		0.04	1556	ISO3104	47.48		-0.36
467	ISO3104	48.963		0.35	1564	D445	47.420		-0.39
494	ISO3104	48.43		0.10	1586	ISO3104	48.43		0.10
495		-----		-----	1613	D445	47.85		-0.18
511		-----		-----	1643	D445	47.333		-0.43
529	D445	48.242		0.01	1688		-----		-----
557		-----		-----	1720	D445	48.31		0.04
562	D445	48.1696		-0.03	1724	D445	48.07		-0.08
575	D445	48.1		-0.06	1728	D445	48.818		0.28
603		-----		-----	1740	D445	48.24		0.01
604		-----		-----	1761		-----		-----
608	D445	48.57		0.17	1776		-----		-----
631	D445	51.2246	C,R(0.01)	1.44	1792	ISO3104	48.64		0.20
633		-----		-----	1807	ISO3104	47.64		-0.28
663	D445	48.415		0.09	1810		-----		-----
671		-----		-----	1811		-----		-----
750	D445	48.2421		0.01	1849	ISO3104	47.7		-0.25
753	ISO3104	48.12		-0.05	1854	ISO3104	48.34		0.05
759		-----		-----	1906		-----		-----
785	ISO3104	48.70		0.23	1956		-----		-----
823	ISO3104	48.35		0.06	1964		-----		-----
824	ISO3104	47.85		-0.18	1971	ISO3104	47.95	C	-0.13
825	ISO3104	47.69		-0.26	1995	D445	48.4		0.08
850		-----		-----	6028		-----		-----
851		-----		-----	6039		-----		-----
855		-----		-----	6044	D445	48.83		0.29
858		-----		-----	6049	ISO3104	48.01		-0.10
859		-----		-----	6075		-----		-----
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	ISO3104	47.788		-0.21	6346		-----		-----
6142		-----		-----	6364	D445	50.53728	C,R(0.05)	1.11
6143	D445	47.85		-0.18	6373	D445	48.29		0.03
6192		-----		-----	6376	ISO3104	48.860		0.31
6203		-----		-----	6400		-----		-----
6220	D445	46.04	R(0.05)	-1.05	6406		-----		-----
6257	ISO3104	49.50	C	0.61	6416		-----		-----
6266	D7042	47.320		-0.44	6444		-----		-----
6279	ISO3104	48.268		0.02	6447		-----		-----
6332		-----		-----	6460		-----		-----
6335		-----		-----	6472		-----		-----
					6475		-----		-----

normality	suspect
n	70
outliers	4
mean (n)	48.2264
st.dev. (n)	0.61407
R(calc.)	1.7194
st.dev.(ISO3104:20)	2.07718
R(ISO3104:20)	5.8161

Lab 631 first reported 39.615
Lab 1971 first reported 30.44
Lab 6257 first reported 718.03
Lab 6364 first reported 51.1689



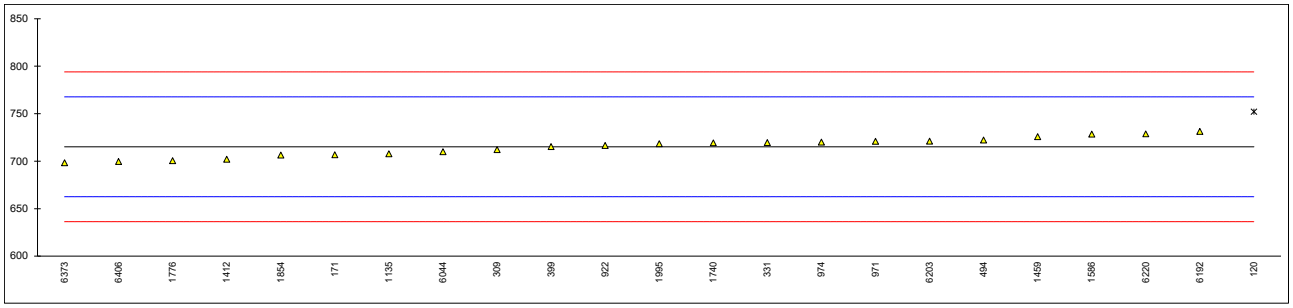


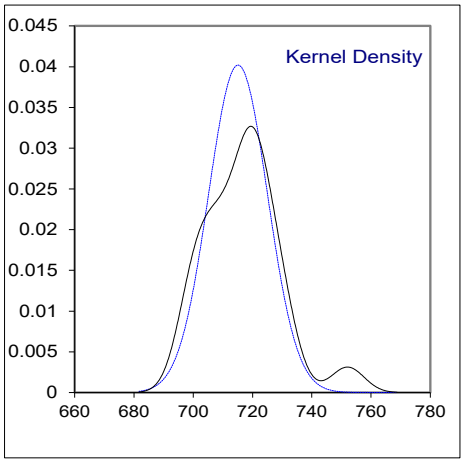
Determination of Kinematic Viscosity Stabinger at 50 °C on sample #22100; results in mm^2/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	863		-----		-----
90		-----		-----	864		-----		-----
92		-----		-----	865		-----		-----
120	D7042	752.05	R(0.05)	1.41	866		-----		-----
140		-----		-----	870		-----		-----
150		-----		-----	875		-----		-----
154		-----		-----	886		-----		-----
158		-----		-----	902		-----		-----
159		-----		-----	904		-----		-----
168		-----		-----	912		-----		-----
169		-----		-----	922	D7042	716.5		0.05
171	D7042	706.8		-0.32	962		-----		-----
175		-----		-----	963		-----		-----
221		-----		-----	971	D7042	720.9		0.22
224		-----		-----	974	D7042	720.1		0.19
225		-----		-----	982		-----		-----
237		-----		-----	1019		-----		-----
238		-----		-----	1039		-----		-----
253		-----		-----	1059		-----		-----
254		-----		-----	1082		-----		-----
309	D7042	712.30		-0.11	1095		-----		-----
311		-----		-----	1109		-----		-----
313		-----		-----	1121		-----		-----
323		-----		-----	1126		-----		-----
328		-----		-----	1135	D7042	707.8		-0.28
331	D445Mod.	719.7		0.17	1177		-----		-----
333		-----		-----	1218		-----		-----
334		-----		-----	1233		-----		-----
335		-----		-----	1266		-----		-----
339		-----		-----	1275		-----		-----
342		-----		-----	1299		-----		-----
343		-----		-----	1320		-----		-----
349		-----		-----	1345		-----		-----
356		-----		-----	1356		-----		-----
371		-----		-----	1412	D7042	702.1		-0.50
391		-----		-----	1438		-----		-----
398		-----		-----	1459	D7042	725.77		0.41
399	D7042	715.3		0.01	1498		-----		-----
444		-----		-----	1539		-----		-----
455		-----		-----	1556		-----		-----
467		-----		-----	1564		-----		-----
494	D7042	722.3		0.27	1586	D7042	728.5		0.51
495		-----		-----	1613		-----		-----
511		-----		-----	1643		-----		-----
529		-----		-----	1688		-----		-----
557		-----		-----	1720		-----		-----
562		-----		-----	1724		-----		-----
575		-----		-----	1728		-----		-----
603		-----		-----	1740	D7042	719.3		0.16
604		-----		-----	1761		-----		-----
608		-----		-----	1776	D7042	700.55		-0.55
631		-----		-----	1792		-----		-----
633		-----		-----	1807		-----		-----
663		-----		-----	1810		-----		-----
671		-----		-----	1811		-----		-----
750		-----		-----	1849		-----		-----
753		-----		-----	1854	D7042	706.5		-0.33
759		-----		-----	1906		-----		-----
785		-----		-----	1956		-----		-----
823		-----		-----	1964		-----		-----
824		-----		-----	1971		-----		-----
825		-----		-----	1995	D7042	718.39		0.12
850		-----		-----	6028		-----		-----
851		-----		-----	6039		-----		-----
855		-----		-----	6044	D7042	710.08		-0.19
858		-----		-----	6049		-----		-----
859		-----		-----	6075		-----		-----
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114		-----		-----	6346		-----		-----
6142		-----		-----	6364		-----		-----
6143		-----		-----	6373	D7042	698.4		-0.64
6192		731.5		0.62	6376		-----		-----
6203	D7042	721.13		0.23	6400		-----		-----
6220	D7042	728.72		0.52	6406	D7042	699.78		-0.58
6257		-----		-----	6416		-----		-----
6266		-----		-----	6444		-----		-----
6279		-----		-----	6447		-----		-----
6332		-----		-----	6460		-----		-----
6335		-----		-----	6472		-----		-----
					6475		-----		-----

normality	OK
n	22
outliers	1
mean (n)	715.1099
st.dev. (n)	9.92786
R(calc.)	27.7980
st.dev.(D7042:21a)	26.28029
R(D7042:21a)	73.5848





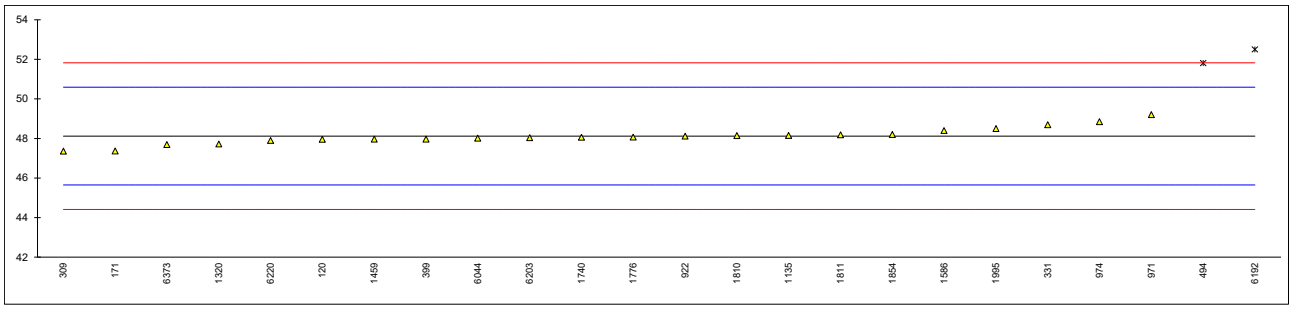
Determination of Kinematic Viscosity Stabinger at 100 °C on sample #22100; results in mm^2/s

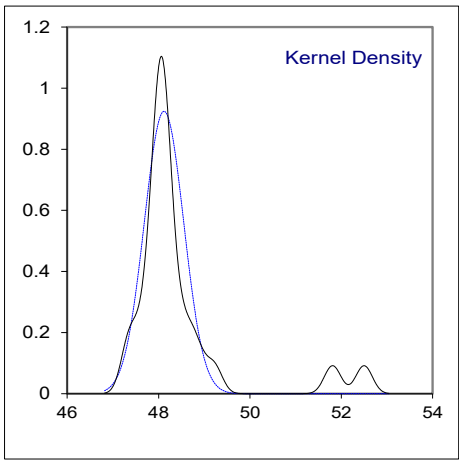
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	863		-----		-----
90		-----		-----	864		-----		-----
92		-----		-----	865		-----		-----
120	D7042	47.964		-0.12	866		-----		-----
140		-----		-----	870		-----		-----
150		-----		-----	875		-----		-----
154		-----		-----	886		-----		-----
158		-----		-----	902		-----		-----
159		-----		-----	904		-----		-----
168		-----		-----	912		-----		-----
169		-----		-----	922	D7042	48.12		0.00
171	D7042	47.37		-0.61	962		-----		-----
175		-----		-----	963		-----		-----
221		-----		-----	971	D7042	49.21		0.88
224		-----		-----	974	D7042	48.85		0.59
225		-----		-----	982		-----		-----
237		-----		-----	1019		-----		-----
238		-----		-----	1039		-----		-----
253		-----		-----	1059		-----		-----
254		-----		-----	1082		-----		-----
309	D7042	47.362		-0.61	1095		-----		-----
311		-----		-----	1109		-----		-----
313		-----		-----	1121		-----		-----
323		-----		-----	1126		-----		-----
328		-----		-----	1135	D7042	48.15		0.03
331	D445Mod.	48.7		0.47	1177		-----		-----
333		-----		-----	1218		-----		-----
334		-----		-----	1233		-----		-----
335		-----		-----	1266		-----		-----
339		-----		-----	1275		-----		-----
342		-----		-----	1299		-----		-----
343		-----		-----	1320	D7042	47.72		-0.32
349		-----		-----	1345		-----		-----
356		-----		-----	1356		-----		-----
371		-----		-----	1412		-----		-----
391		-----		-----	1438		-----		-----
398		-----		-----	1459	D7042	47.968		-0.12
399	D7042	47.97		-0.12	1498		-----		-----
444		-----		-----	1539		-----		-----
455		-----		-----	1556		-----		-----
467		-----		-----	1564		-----		-----
494	D7042	51.81	C,R(0.01)	2.99	1586	D7042	48.40		0.23
495		-----		-----	1613		-----		-----
511		-----		-----	1643		-----		-----
529		-----		-----	1688		-----		-----
557		-----		-----	1720		-----		-----
562		-----		-----	1724		-----		-----
575		-----		-----	1728		-----		-----
603		-----		-----	1740	D7042	48.06		-0.05
604		-----		-----	1761		-----		-----
608		-----		-----	1776	D7042	48.071		-0.04
631		-----		-----	1792		-----		-----
633		-----		-----	1807		-----		-----
663		-----		-----	1810	D7042	48.148		0.02
671		-----		-----	1811	D7042	48.187		0.06
750		-----		-----	1849		-----		-----
753		-----		-----	1854	D7042	48.20		0.07
759		-----		-----	1906		-----		-----
785		-----		-----	1956		-----		-----
823		-----		-----	1964		-----		-----
824		-----		-----	1971		-----		-----
825		-----		-----	1995	D7042	48.5		0.31
850		-----		-----	6028		-----		-----
851		-----		-----	6039		-----		-----
855		-----		-----	6044	D7042	48.02		-0.08
858		-----		-----	6049		-----		-----
859		-----		-----	6075		-----		-----
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114		-----		-----	6346		-----		-----
6142		-----		-----	6364		-----		-----
6143		-----		-----	6373	D7042	47.69		-0.35
6192		52.50	R(0.01)	3.55	6376		-----		-----
6203	D7042	48.042		-0.06	6400		-----		-----
6220	D7042	47.9		-0.18	6406		-----		-----
6257		-----		-----	6416		-----		-----
6266		-----		-----	6444		-----		-----
6279		-----		-----	6447		-----		-----
6332		-----		-----	6460		-----		-----
6335		-----		-----	6472		-----		-----
					6475		-----		-----

normality	suspect
n	22
outliers	2
mean (n)	48.1183
st.dev. (n)	0.43178
R(calc.)	1.2090
st.dev.(D7042:21a)	1.23492
R(D7042:21a)	3.4578

Lab 494 first reported 50.52





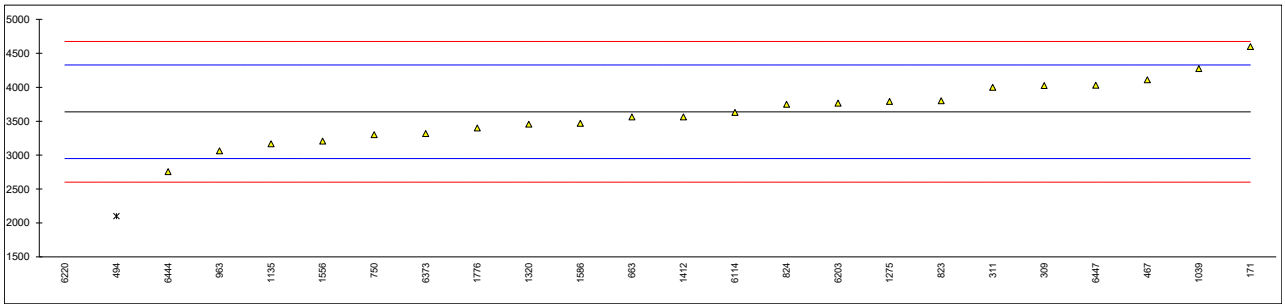
Determination of Nitrogen on sample #22100; results in mg/kg

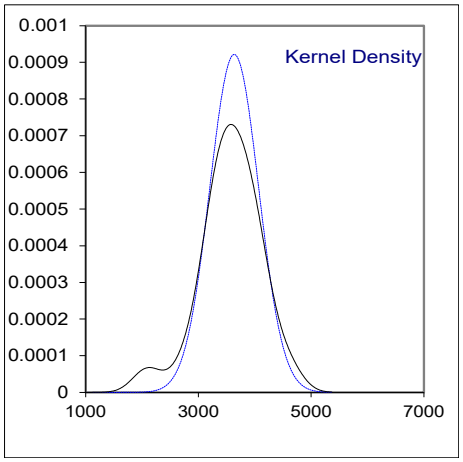
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	863		-----		-----
90		-----		-----	864		-----		-----
92		-----		-----	865		-----		-----
120		-----		-----	866		-----		-----
140		-----		-----	870		-----		-----
150		-----		-----	875		-----		-----
154		-----		-----	886		-----		-----
158		-----		-----	902		-----		-----
159		-----		-----	904		-----		-----
168		-----		-----	912		-----		-----
169		-----		-----	922		-----		-----
171	D5762 Gravimetric	4600		2.78	962		-----		-----
175		-----		-----	963	D4629	3063	C	-1.66
221		-----		-----	971		-----		-----
224		-----		-----	974		-----		-----
225		-----		-----	982		-----		-----
237		-----		-----	1019		-----		-----
238		-----		-----	1039	D4629	4275.5		1.84
253		-----		-----	1059		-----		-----
254		-----		-----	1082		-----		-----
309	D5762	4025		1.12	1095		-----		-----
311	D5762 Volumetric	4000		1.05	1109		-----		-----
313		-----		-----	1121		-----		-----
323		-----		-----	1126		-----		-----
328		-----		-----	1135	D5762 Volumetric	3167		-1.36
331		-----		-----	1177		-----		-----
333		-----		-----	1218		-----		-----
334		-----		-----	1233		-----		-----
335		-----		-----	1266		-----		-----
339		-----		-----	1275	IP379	3792.57		0.45
342		-----		-----	1299		-----		-----
343		-----		-----	1320	D5762 Gravimetric	3456		-0.53
349		-----		-----	1345		-----		-----
356		-----		-----	1356		-----		-----
371		-----		-----	1412	D5762 Gravimetric	3563		-0.22
391		-----		-----	1438		-----		-----
398		-----		-----	1459		-----		-----
399		-----		-----	1498		-----		-----
444		-----		-----	1539		-----		-----
455		-----		-----	1556	D5762 Volumetric	3205.66		-1.25
467	D5762 Gravimetric	4110		1.37	1564		-----		-----
494	D5762 Gravimetric	2100	CR(0.05)	-4.45	1586	D5762 Gravimetric	3468		-0.49
495		-----		-----	1613		-----		-----
511		-----		-----	1643		-----		-----
529		-----		-----	1688		-----		-----
557		-----		-----	1720		-----		-----
562		-----		-----	1724		-----		-----
575		-----		-----	1728		-----		-----
603		-----		-----	1740		-----		-----
604		-----		-----	1761		-----		-----
608		-----		-----	1776	D5762 Volumetric	3400		-0.69
631		-----		-----	1792		-----		-----
633		-----		-----	1807		-----		-----
663	D5762 Gravimetric	3563		-0.22	1810		-----		-----
671		-----		-----	1811		-----		-----
750	D5762	3300		-0.98	1849		-----		-----
753		-----		-----	1854		-----		-----
759		-----		-----	1906		-----		-----
785		-----		-----	1956		-----		-----
823	D5762 Volumetric	3800		0.47	1964		-----		-----
824	D5762 Volumetric	3749		0.32	1971		-----		-----
825		-----		-----	1995		-----		-----
850		-----		-----	6028		-----		-----
851		-----		-----	6039		-----		-----
855		-----		-----	6044		-----		-----
858		-----		-----	6049		-----		-----
859		-----		-----	6075		-----		-----
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	D5762 Volumetric	3630		-0.02	6346		-----		-----
6142		-----		-----	6364		-----		-----
6143		-----		-----	6373	D4629	3317		-0.93
6192		-----		-----	6376		-----		-----
6203	D5762 Gravimetric	3765		0.37	6400		-----		-----
6220	D5762	0.25	R(0.01)	-10.53	6406		-----		-----
6257		-----		-----	6416		-----		-----
6266		-----		-----	6444	D5762 Volumetric	2755.13		-2.55
6279		-----		-----	6447	D5762 Volumetric	4030		1.13
6332		-----		-----	6460		-----		-----
6335		-----		-----	6472		-----		-----
					6475		-----		-----

normality	OK
n	22
outliers	2
mean (n)	3637.95
st.dev. (n)	432.810
R(calc.)	1211.87
st.dev.(D5762:18a)	345.605
R(D5762:18a)	967.69

Lab 494 first reported 1876
Lab 963 first reported 2063





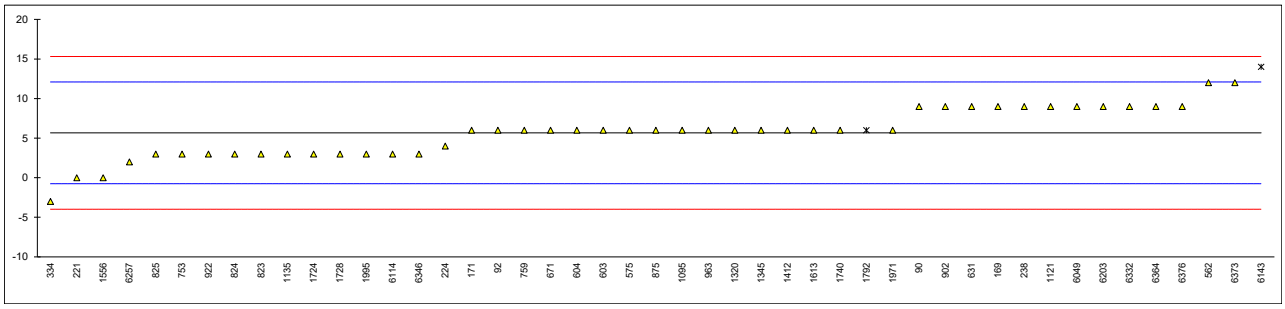
Determination of Pour Point Lower on sample #22100; results in °C

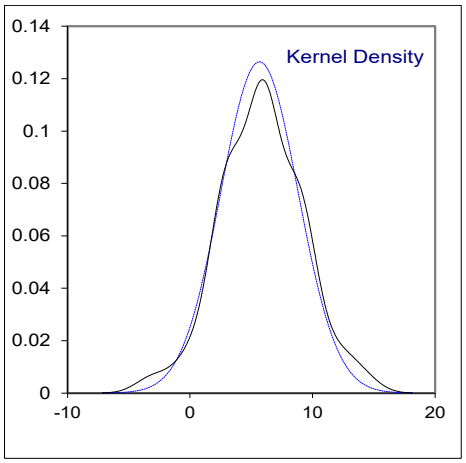
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	863		-----		-----
90	D97	9		1.04	864		-----		-----
92	D97	6		0.10	865		-----		-----
120		-----		-----	866		-----		-----
140		-----		-----	870		-----		-----
150		-----		-----	875	ISO3016	6		0.10
154		-----		-----	886		-----		-----
158		-----		-----	902	ISO3016	9		1.04
159		-----		-----	904		-----		-----
168		-----		-----	912		-----		-----
169	D97	9		1.04	922	D97	3		-0.83
171	ISO3016	6		0.10	962		-----		-----
175		-----		-----	963	D97	6		0.10
221	D97	0	C	-1.76	971		-----		-----
224	D97	4		-0.52	974		-----		-----
225		-----		-----	982		-----		-----
237		-----		-----	1019		-----		-----
238	D97	9		1.04	1039		-----		-----
253		-----		-----	1059		-----		-----
254		-----		-----	1082		-----		-----
309		-----		-----	1095	ISO3016	6		0.10
311		-----		-----	1109		-----		-----
313		-----		-----	1121	ISO3016	9.0		1.04
323		-----		-----	1126		-----		-----
328		-----		-----	1135	ISO3016	3		-0.83
331		-----		-----	1177		-----		-----
333		-----		-----	1218		-----		-----
334	ISO3016	-3		-2.70	1233		-----		-----
335		-----		-----	1266		-----		-----
339		-----		-----	1275		-----		-----
342		-----		-----	1299		-----		-----
343		-----		-----	1320	ISO3016	6		0.10
349		-----		-----	1345	D97	6.0		0.10
356		-----		-----	1356		-----		-----
371		-----		-----	1412	D97	6		0.10
391		-----		-----	1438		-----		-----
398		-----		-----	1459		-----		-----
399		-----		-----	1498		-----		-----
444		-----		-----	1539		-----		-----
455		-----		-----	1556	ISO3016	0		-1.76
467		-----		-----	1564		-----		-----
494		-----		-----	1586		-----		-----
495		-----		-----	1613	D97	6		0.10
511		-----		-----	1643		-----		-----
529		-----		-----	1688		-----		-----
557		-----		-----	1720		-----		-----
562	D97	12		1.97	1724	D97	3		-0.83
575	D97	6		0.10	1728	D97	3		-0.83
603	D97	6		0.10	1740	ISO3016	6		0.10
604	D97	6		0.10	1761		-----		-----
608		-----		-----	1776		-----		-----
631	D97	9		1.04	1792	ISO3016	6	ex	0.10
633		-----		-----	1807		-----		-----
663		-----		-----	1810		-----		-----
671	D97	6		0.10	1811		-----		-----
750		-----		-----	1849		-----		-----
753	ISO3016	3		-0.83	1854		-----		-----
759	ISO3016	6		0.10	1906		-----		-----
785		-----		-----	1956		-----		-----
823	ISO3016	3		-0.83	1964		-----		-----
824	ISO3016	3		-0.83	1971	ISO3016	6	C	0.10
825	ISO3016	3		-0.83	1995	D97	3		-0.83
850		-----		-----	6028		-----		-----
851		-----		-----	6039		-----		-----
855		-----		-----	6044		-----		-----
858		-----		-----	6049	ISO3016	9		1.04
859		-----		-----	6075		-----		-----
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	ISO3016	3		-0.83	6346	D97	3		-0.83
6142		-----		-----	6364	D97	9		1.04
6143	D97	14	C,ex	2.59	6373	D97	12	C	1.97
6192		-----		-----	6376	ISO3016	9		1.04
6203	D97	9		1.04	6400		-----		-----
6220		-----		-----	6406		-----		-----
6257	ISO3016	2	C	-1.14	6416		-----		-----
6266		-----		-----	6444		-----		-----
6279		-----		-----	6447		-----		-----
6332	D97	9		1.04	6460		-----		-----
6335		-----		-----	6472		-----		-----
					6475		-----		-----

normality	OK
n	45
outliers	0 (+2ex)
mean (n)	5.67
st.dev. (n)	3.155
R(calc.)	8.83
st.dev.(ISO3016:19)	3.214
R(ISO3016:19)	9

Lab 221 first reported -3
Lab 1792 test result excluded as PP lower > PP upper, which is in principle not possible
Lab 1971 first reported -3
Lab 6143 first reported 11, test result excluded as PP lower > PP upper, which is in principle not possible
Lab 6257 first reported -1
Lab 6373 first reported 18





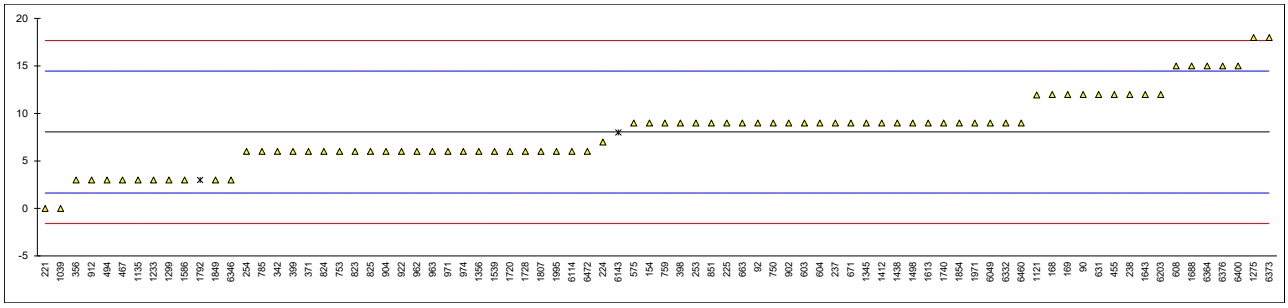
Determination of Pour Point Upper on sample #22100; results in °C

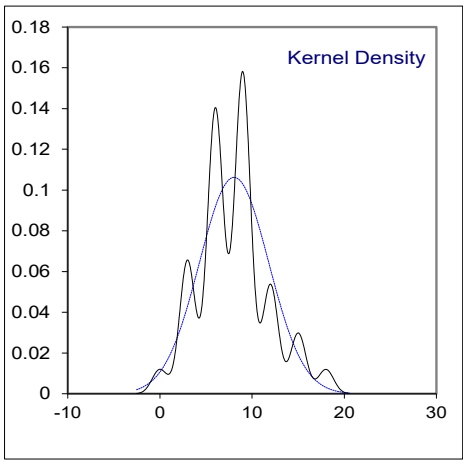
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	863		-----		-----
90	D97	12		1.23	864		-----		-----
92	D97	9		0.30	865		-----		-----
120		-----		-----	866		-----		-----
140		-----		-----	870		-----		-----
150		-----		-----	875		-----		-----
154	D97	9		0.30	886		-----		-----
158		-----		-----	902	ISO3016	9		0.30
159		-----		-----	904	ISO3016	6		-0.64
168	D97	12		1.23	912	D97	3		-1.57
169	D97	12		1.23	922	D97	6		-0.64
171		-----		-----	962	D97	6		-0.64
175		-----		-----	963	D97	6		-0.64
221	D97	0		-2.50	971	D97	6		-0.64
224	D97	7		-0.33	974	D97	6		-0.64
225	D97	9		0.30	982		-----		-----
237	D97	9		0.30	1019		-----		-----
238	D97	12		1.23	1039	ISO3016	0		-2.50
253	D97	9		0.30	1059		-----		-----
254	D97	6		-0.64	1082		-----		-----
309		-----		-----	1095		-----		-----
311		-----		-----	1109		-----		-----
313		-----		-----	1121	ISO3016	11.95		1.21
323		-----		-----	1126		-----		-----
328		-----		-----	1135	ISO3016	3		-1.57
331		-----		-----	1177		-----		-----
333		-----		-----	1218		-----		-----
334		-----		-----	1233	ISO3016	3		-1.57
335		-----		-----	1266		-----		-----
339		-----		-----	1275	IP15	18		3.10
342	ISO3016	6		-0.64	1299	D97	3		-1.57
343		-----		-----	1320		-----		-----
349		-----		-----	1345	D97	9.0		0.30
356	ISO3016	3		-1.57	1356	ISO3016	6		-0.64
371	D97	6		-0.64	1412	D97	9		0.30
391		-----		-----	1438	D97	9		0.30
398	ISO3016	9		0.30	1459		-----		-----
399	ISO3016	6		-0.64	1498	D97	9		0.30
444		-----		-----	1539	ISO3016	6		-0.64
455	D97	12		1.23	1556		-----		-----
467	ISO3016	3		-1.57	1564		-----		-----
494	ISO3016	3		-1.57	1586	ISO3016	3.0		-1.57
495		-----		-----	1613	D97	9		0.30
511		-----		-----	1643	D97	12		1.23
529		-----		-----	1688	D97	15		2.16
557		-----		-----	1720	D5853	6.0		-0.64
562		-----		-----	1724		-----		-----
575	D97	9		0.30	1728	D97	6		-0.64
603	D97	9		0.30	1740	ISO3016	9		0.30
604	D97	9		0.30	1761		-----		-----
608	D97	15		2.16	1776		-----		-----
631	D97	12		1.23	1792	ISO3016	3	ex	-1.57
633		-----		-----	1807	D97	6		-0.64
663	D97	9		0.30	1810		-----		-----
671		9		0.30	1811		-----		-----
750	ISO3016	9		0.30	1849	ISO3016	3		-1.57
753	ISO3016	6		-0.64	1854	ISO3016	9		0.30
759	ISO3016	9		0.30	1906		-----		-----
785	ISO3016	6.0		-0.64	1956		-----		-----
823	ISO3016	6		-0.64	1964		-----		-----
824	ISO3016	6		-0.64	1971	ISO3016	9	C	0.30
825	ISO3016	6		-0.64	1995	D97	6		-0.64
850		-----		-----	6028		-----		-----
851	ISO3016	9		0.30	6039		-----		-----
855		-----		-----	6044		-----		-----
858		-----		-----	6049	ISO3016	9		0.30
859		-----		-----	6075		-----		-----
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	ISO3016	6		-0.64	6346	D97	3		-1.57
6142		-----		-----	6364	D97	15		2.16
6143	D97	8	ex	-0.02	6373	D97	18		3.10
6192		-----		-----	6376	ISO3016	15		2.16
6203	D97	12		1.23	6400	ISO3016	15		2.16
6220		-----		-----	6406		-----		-----
6257		-----		-----	6416		-----		-----
6266		-----		-----	6444		-----		-----
6279		-----		-----	6447		-----		-----
6332	D97	9		0.30	6460	D97	9		0.30
6335		-----		-----	6472	D97	6		-0.64
					6475		-----		-----

normality	OK
n	78
outliers	0 (+2ex)
mean (n)	8.05
st.dev. (n)	3.754
R(calc.)	10.51
st.dev.(ISO3016:19)	3.214
R(ISO3016:19)	9

Lab 1792 test result excluded as PP lower > PP upper, which is in principle not possible
Lab 1971 first reported 0
Lab 6143 test result excluded as PP lower > PP upper, which is in principle not possible



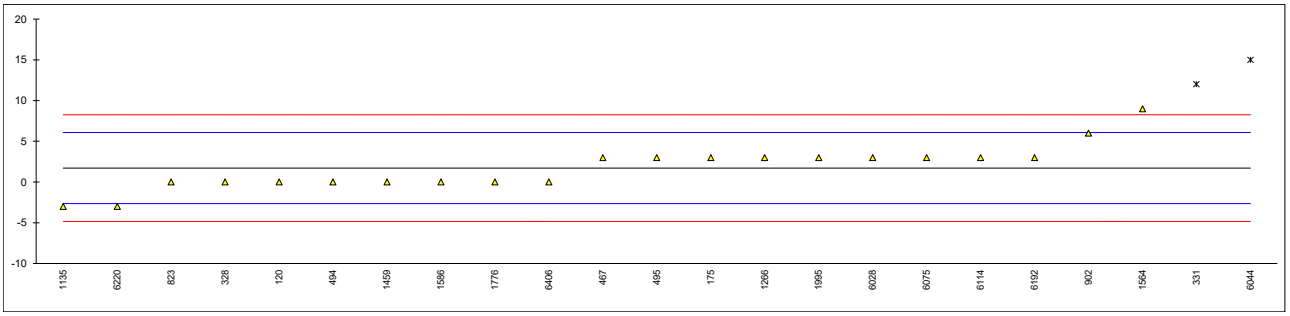


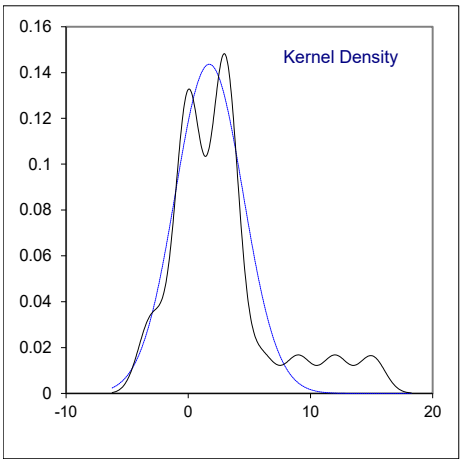
Determination of Pour Point Automated, 3 °C interval on sample #22100; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	863		-----		-----
90		-----		-----	864		-----		-----
92		-----		-----	865		-----		-----
120	D5949	0		-0.79	866		-----		-----
140		-----		-----	870		-----		-----
150		-----		-----	875		-----		-----
154		-----		-----	886		-----		-----
158		-----		-----	902		6		1.97
159		-----		-----	904		-----		-----
168		-----		-----	912		-----		-----
169		-----		-----	922		-----		-----
171		-----		-----	962		-----		-----
175	D5950	3		0.59	963		-----		-----
221		-----		-----	971		-----		-----
224		-----		-----	974		-----		-----
225		-----		-----	982		-----		-----
237		-----		-----	1019		-----		-----
238		-----		-----	1039		-----		-----
253		-----		-----	1059		-----		-----
254		-----		-----	1082		-----		-----
309		-----		-----	1095		-----		-----
311		-----		-----	1109		-----		-----
313		-----		-----	1121		-----		-----
323		-----		-----	1126		-----		-----
328	D5950	0		-0.79	1135	D5950	-3		-2.16
331	D5950	12	R(0.05)	4.72	1177		-----		-----
333		-----		-----	1218		-----		-----
334		-----		-----	1233		-----		-----
335		-----		-----	1266	D5950	3.0		0.59
339		-----		-----	1275		-----		-----
342		-----		-----	1299		-----		-----
343		-----		-----	1320		-----		-----
349		-----		-----	1345		-----		-----
356		-----		-----	1356		-----		-----
371		-----		-----	1412		-----		-----
391		-----		-----	1438		-----		-----
398		-----		-----	1459	In house	0.0		-0.79
399		-----		-----	1498		-----		-----
444		-----		-----	1539		-----		-----
455		-----		-----	1556		-----		-----
467	D6892	3		0.59	1564	D5950	9		3.34
494	D5950	0		-0.79	1586	D5950	0.0		-0.79
495	D6892	3		0.59	1613		-----		-----
511		-----		-----	1643		-----		-----
529		-----		-----	1688		-----		-----
557		-----		-----	1720		-----		-----
562		-----		-----	1724		-----		-----
575		-----		-----	1728		-----		-----
603		-----		-----	1740		-----		-----
604		-----		-----	1761		-----		-----
608		-----		-----	1776	D5950	0		-0.79
631		-----		-----	1792		-----		-----
633		-----		-----	1807		-----		-----
663		-----		-----	1810		-----		-----
671		-----		-----	1811		-----		-----
750		-----		-----	1849		-----		-----
753		-----		-----	1854		-----		-----
759		-----		-----	1906		-----		-----
785		-----		-----	1956		-----		-----
823	D5950	0		-0.79	1964		-----		-----
824		-----		-----	1971		-----		-----
825		-----		-----	1995	D5950	3		0.59
850		-----		-----	6028	D5950	3		0.59
851		-----		-----	6039		-----		-----
855		-----		-----	6044	D6892	15	R(0.05)	6.10
858		-----		-----	6049		-----		-----
859		-----		-----	6075	NF EN60-105	3		0.59
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	D5950	3		0.59	6346		-----		-----
6142		-----		-----	6364		-----		-----
6143		-----		-----	6373		-----		-----
6192		3		0.59	6376		-----		-----
6203		-----		-----	6400		-----		-----
6220	D5853	-3		-2.16	6406	D5950	0		-0.79
6257		-----		-----	6416		-----		-----
6266		-----		-----	6444		-----		-----
6279		-----		-----	6447		-----		-----
6332		-----		-----	6460		-----		-----
6335		-----		-----	6472		-----		-----
					6475		-----		-----

normality	suspect
n	21
outliers	2
mean (n)	1.71
st.dev. (n)	2.777
R(calc.)	7.78
st.dev.(D5950:14R20)	2.179
R(D5950:14R20)	6.1





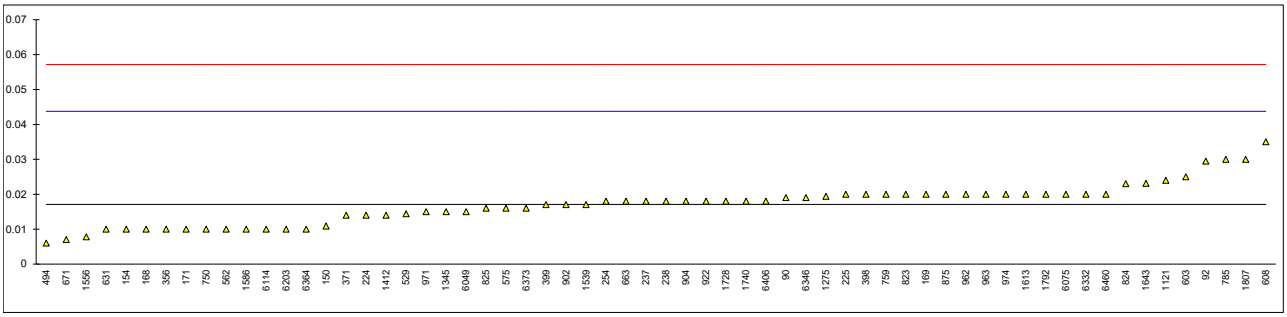
Determination of Sediment by Extraction on sample #22100; results in %M/M

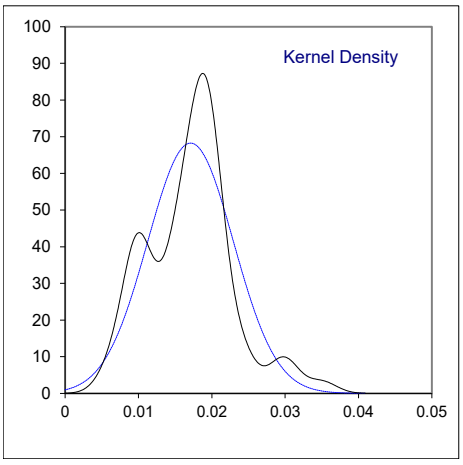
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D473	<0.01		-----	863		-----		-----
90	D473	0.019		0.14	864		-----		-----
92	D473	0.0295		0.93	865		-----		-----
120		-----		-----	866		-----		-----
140		-----		-----	870		-----		-----
150	D473	0.0109		-0.47	875	D473	0.02		0.22
154	D473	0.01		-0.53	886		-----		-----
158		-----		-----	902	D473	0.017		-0.01
159		-----		-----	904	D473	0.018		0.07
168	D473	0.01		-0.53	912		-----		-----
169	D473	0.02	C	0.22	922	D473	0.018		0.07
171	D473	0.01		-0.53	962	D473	0.02		0.22
175		-----		-----	963	D473	0.02		0.22
221		-----		-----	971	D473	0.015		-0.16
224	D473	0.014		-0.23	974	D473	0.02		0.22
225	D473	0.02		0.22	982		-----		-----
237	D473	0.018		0.07	1019		-----		-----
238	D473	0.018		0.07	1039		-----		-----
253		-----		-----	1059		-----		-----
254	D473	0.018		0.07	1082		-----		-----
309		-----		-----	1095		-----		-----
311		-----		-----	1109		-----		-----
313		-----		-----	1121	D473	0.024		0.52
323		-----		-----	1126		-----		-----
328		-----		-----	1135	ISO3735	<0.01		-----
331		-----		-----	1177		-----		-----
333		-----		-----	1218		-----		-----
334		-----		-----	1233		-----		-----
335		-----		-----	1266		-----		-----
339		-----		-----	1275	IP53	0.01941465		0.17
342		-----		-----	1299		-----		-----
343		-----		-----	1320		-----		-----
349		-----		-----	1345	D473	0.015		-0.16
356	D473	0.01		-0.53	1356		-----		-----
371	D473	0.014		-0.23	1412	D473	0.014		-0.23
391		-----		-----	1438		-----		-----
398	D473	0.02		0.22	1459		-----		-----
399	D473	0.017		-0.01	1498		-----		-----
444		-----		-----	1539	ISO3735	0.017		-0.01
455		-----		-----	1556	ISO3735	0.0078		-0.70
467		-----		-----	1564		-----		-----
494	D473	0.006		-0.83	1586	D473	0.01		-0.53
495		-----		-----	1613	D473	0.020		0.22
511		-----		-----	1643	D473	0.0231		0.45
529	D473	0.0144		-0.20	1688	D473	<0.05		-----
557		-----		-----	1720		-----		-----
562	D473	0.01		-0.53	1724		-----		-----
575	D473	0.016		-0.08	1728	D473	0.018		0.07
603	D473	0.025		0.59	1740	D473	0.018		0.07
604		-----		-----	1761		-----		-----
608	D473	0.035		1.34	1776		-----		-----
631	D473	0.01		-0.53	1792	D473	0.020		0.22
633		-----		-----	1807	D473	0.03		0.97
663	D473	0.018		0.07	1810		-----		-----
671	D473	0.007		-0.76	1811		-----		-----
750	D473	0.01		-0.53	1849		-----		-----
753		-----		-----	1854		-----		-----
759	D473	0.02		0.22	1906		-----		-----
785	D473	0.03		0.97	1956		-----		-----
823	D473	0.02		0.22	1964		-----		-----
824	D473	0.023		0.44	1971		-----		-----
825	D473	0.016		-0.08	1995		-----		-----
850		-----		-----	6028		-----		-----
851		-----		-----	6039		-----		-----
855		-----		-----	6044		-----		-----
858		-----		-----	6049	D473	0.015		-0.16
859		-----		-----	6075	ISO3735	0.020		0.22
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	D473	0.01		-0.53	6346	D473	0.019		0.14
6142		-----		-----	6364	D473	0.01		-0.53
6143		-----		-----	6373	ISO3735	0.016	C	-0.08
6192		-----		-----	6376		-----		-----
6203	D473	0.010		-0.53	6400		-----		-----
6220		-----		-----	6406	D473	0.018		0.07
6257		-----		-----	6416		-----		-----
6266		-----		-----	6444		-----		-----
6279		-----		-----	6447		-----		-----
6332	D473	0.02		0.22	6460	D473	0.02		0.22
6335		-----		-----	6472		-----		-----
					6475		-----		-----

normality	OK
n	62
outliers	0
mean (n)	0.0171
st.dev. (n)	0.00584
R(calc.)	0.0164
st.dev.(D473:22)	0.01334
R(D473:22)	0.0374

Lab 169 first reported 0.21
Lab 6373 first reported 0.056





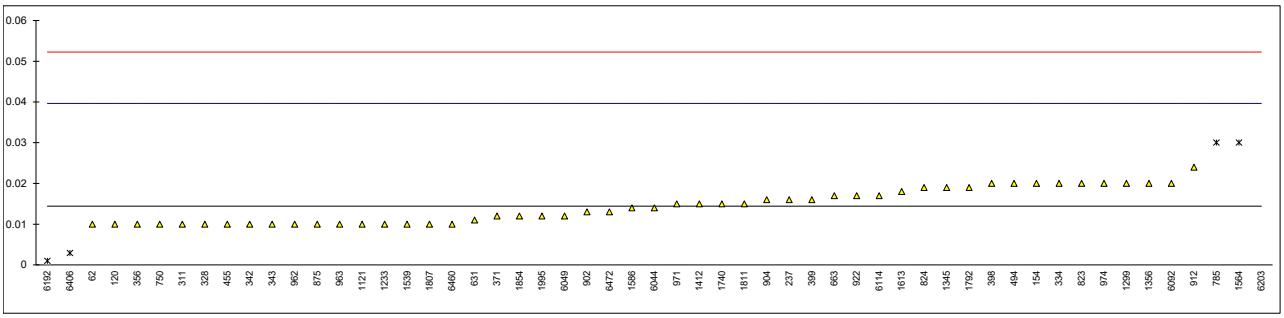
Determination of Total Sediment Existent (TSE) of sample #22100; results in %M/M

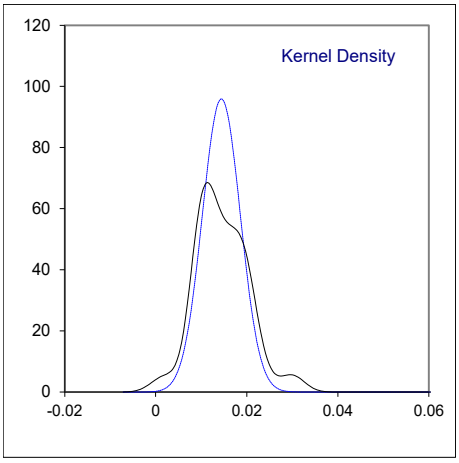
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4870	0.01		-0.35	863		-----		-----
90		-----		-----	864		-----		-----
92		-----		-----	865		-----		-----
120	D4870	0.01		-0.35	866		-----		-----
140		-----		-----	870		-----		-----
150		-----		-----	875	IP375	0.01		-0.35
154	D4870	0.02		0.44	886		-----		-----
158		-----		-----	902	IP375	0.013		-0.11
159		-----		-----	904	ISO10307-1	0.016		0.13
168		-----		-----	912	IP375	0.024		0.76
169		-----		-----	922	ISO10307-1	0.017		0.20
171		-----		-----	962	IP375	0.01		-0.35
175		-----		-----	963	IP375	0.01		-0.35
221		-----		-----	971	IP375	0.015		0.05
224		-----		-----	974	IP375	0.02		0.44
225		-----		-----	982		-----		-----
237	D4870	0.016		0.13	1019		-----		-----
238		-----		-----	1039		-----		-----
253		-----		-----	1059		-----		-----
254		-----		-----	1082		-----		-----
309		-----		-----	1095		-----		-----
311	ISO10307-1	0.01		-0.35	1109		-----		-----
313		-----		-----	1121	ISO10307-1	0.010		-0.35
323		-----		-----	1126		-----		-----
328	IP375	0.01		-0.35	1135	ISO10307-1	<0.01		-----
331		-----		-----	1177		-----		-----
333		-----		-----	1218		-----		-----
334	IP375	0.02		0.44	1233	ISO10307-1	0.01		-0.35
335		-----		-----	1266		-----		-----
339		-----		-----	1275		-----		-----
342	ISO10307-1	0.01		-0.35	1299	ISO10307-1	0.02		0.44
343	ISO10307-1	0.01		-0.35	1320		-----		-----
349		-----		-----	1345	ISO10307-1	0.019		0.36
356	IP375	0.01		-0.35	1356	ISO10307-1	0.02		0.44
371	ISO10307-1	0.012		-0.19	1412	IP375	0.015		0.05
391		-----		-----	1438		-----		-----
398	IP375	0.02		0.44	1459		-----		-----
399	ISO10307-1	0.016		0.13	1498		-----		-----
444		-----		-----	1539	ISO10307-1	0.01		-0.35
455	IP375	0.01		-0.35	1556		-----		-----
467		-----		-----	1564	ISO10307-1	0.03	R(0.05)	1.24
494	ISO10307-1	0.02		0.44	1586	IP375	0.014		-0.03
495		-----		-----	1613	D4870	0.018		0.28
511		-----		-----	1643		-----		-----
529		-----		-----	1688		-----		-----
557		-----		-----	1720		-----		-----
562		-----		-----	1724		-----	W	-----
575		-----		-----	1728		-----		-----
603		-----		-----	1740	ISO10307-1	0.015		0.05
604		-----		-----	1761		-----		-----
608		-----		-----	1776		-----		-----
631	D4870	0.011		-0.27	1792	IP375	0.019		0.36
633		-----		-----	1807	D4870	0.01		-0.35
663	IP375	0.017		0.20	1810		-----		-----
671		-----		-----	1811	IP375	0.015		0.05
750	ISO10307-1	0.01		-0.35	1849		-----		-----
753		-----		-----	1854	ISO10307-1	0.012		-0.19
759		-----		-----	1906		-----		-----
785	IP375	0.03	R(0.05)	1.24	1956		-----		-----
823	ISO10307-1	0.02		0.44	1964		-----		-----
824	ISO10307-1	0.019		0.36	1971		-----		-----
825		-----		-----	1995	D4870	0.012		-0.19
850		-----		-----	6028		-----		-----
851		-----		-----	6039		-----		-----
855		-----		-----	6044	ISO10307-1	0.014		-0.03
858		-----		-----	6049	IP375	0.012		-0.19
859		-----		-----	6075		-----		-----
862		-----		-----	6092	IP375	0.02		0.44

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	IP375	0.017		0.20	6346		-----		-----
6142		-----		-----	6364		-----		-----
6143		-----		-----	6373	ISO10307-1	<0.01		-----
6192		0.001	R(0.05)	-1.06	6376		-----		-----
6203	ISO10307-1	0.1957	R(0.01)	14.38	6400	ISO10307-1	<0.01		-----
6220		-----		-----	6406	ISO10307-1	0.0029	R(0.05)	-0.91
6257		-----		-----	6416		-----		-----
6266		-----		-----	6444		-----		-----
6279		-----		-----	6447		-----		-----
6332		-----		-----	6460	IP375	0.01		-0.35
6335		-----		-----	6472	IP375	0.013		-0.11
					6475		-----		-----

normality	OK
n	50
outliers	5
mean (n)	0.0144
st.dev. (n)	0.00416
R(calc.)	0.0116
st.dev.(IP375:11R22)	0.01261
R(IP375:11R22)	0.0353

Lab 1724 test result withdrawn, reported 0.059





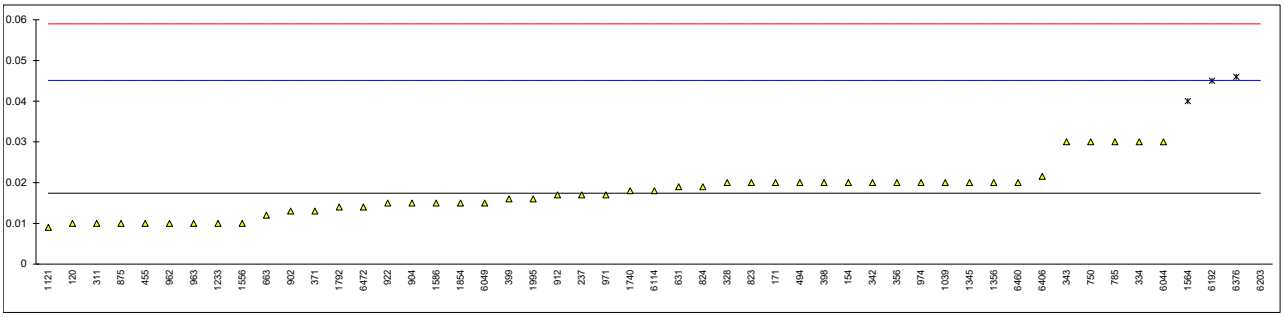
Determination of Total Sediment Accelerated (TSA) of sample #22100; results in %M/M

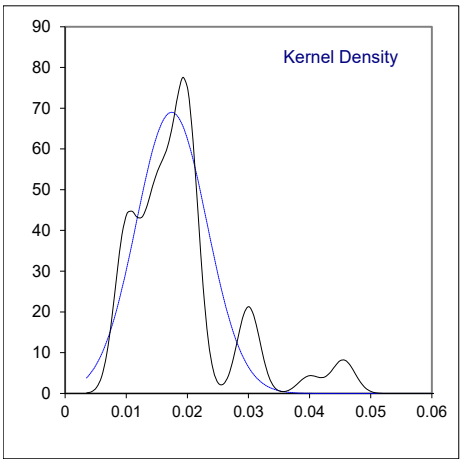
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	863		-----		-----
90		-----		-----	864		-----		-----
92		-----		-----	865		-----		-----
120	D4870	0.01		-0.54	866		-----		-----
140		-----		-----	870		-----		-----
150		-----		-----	875	IP390	0.01		-0.54
154	D4870	0.02		0.19	886		-----		-----
158		-----		-----	902	IP390	0.013		-0.32
159		-----		-----	904	ISO10307-2	0.015		-0.17
168		-----		-----	912	IP390	0.017		-0.03
169		-----		-----	922	ISO10307-2	0.015		-0.17
171	IP390	0.02		0.19	962	IP390	0.01		-0.54
175		-----		-----	963	IP390	0.01		-0.54
221		-----		-----	971	IP390	0.017		-0.03
224		-----		-----	974	IP390	0.02		0.19
225		-----		-----	982		-----		-----
237	D4870	0.017		-0.03	1019		-----		-----
238		-----		-----	1039	ISO10307-2	0.02		0.19
253		-----		-----	1059		-----		-----
254		-----		-----	1082		-----		-----
309		-----		-----	1095		-----		-----
311	ISO10307-2	0.01		-0.54	1109		-----		-----
313		-----		-----	1121	ISO10307-2	0.009		-0.61
323		-----		-----	1126		-----		-----
328	IP390	0.02		0.19	1135	ISO10307-2	<0.01		-----
331		-----		-----	1177		-----		-----
333		-----		-----	1218		-----		-----
334	IP390	0.03		0.91	1233	ISO10307-2	0.01		-0.54
335		-----		-----	1266		-----		-----
339		-----		-----	1275		-----		-----
342	ISO10307-2	0.02		0.19	1299		-----		-----
343	ISO10307-2	0.03		0.91	1320		-----		-----
349		-----		-----	1345	ISO10307-2	0.020		0.19
356	IP390	0.02		0.19	1356	ISO10307-2	0.02		0.19
371	ISO10307-2	0.013		-0.32	1412		-----		-----
391		-----		-----	1438		-----		-----
398	IP390	0.02		0.19	1459		-----		-----
399	ISO10307-2	0.016		-0.10	1498		-----		-----
444		-----		-----	1539		-----		-----
455	IP390	0.01		-0.54	1556	ISO10307-2	0.01		-0.54
467		-----		-----	1564	ISO10307-2	0.04	R(0.05)	1.63
494	ISO10307-2	0.02		0.19	1586	IP390	0.015		-0.17
495		-----		-----	1613		-----		-----
511		-----		-----	1643		-----		-----
529		-----		-----	1688		-----		-----
557		-----		-----	1720		-----		-----
562		-----		-----	1724		-----	W	-----
575		-----		-----	1728		-----		-----
603		-----		-----	1740	ISO10307-2	0.018		0.04
604		-----		-----	1761		-----		-----
608		-----		-----	1776		-----		-----
631	D4870	0.019		0.11	1792	IP390	0.014		-0.25
633		-----		-----	1807		-----		-----
663	IP390	0.012		-0.39	1810		-----		-----
671		-----		-----	1811		-----		-----
750	ISO10307-2	0.03		0.91	1849		-----	W	-----
753		-----		-----	1854	ISO10307-2	0.015		-0.17
759		-----		-----	1906		-----		-----
785	IP390	0.03		0.91	1956		-----		-----
823	ISO10307-2	0.02		0.19	1964		-----		-----
824	ISO10307-2	0.019		0.11	1971		-----		-----
825		-----		-----	1995	D4870	0.016		-0.10
850		-----		-----	6028		-----		-----
851		-----		-----	6039		-----		-----
855		-----		-----	6044	ISO10307-2	0.030	C	0.91
858		-----		-----	6049	IP390	0.015		-0.17
859		-----		-----	6075		-----		-----
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	IP390	0.018		0.04	6346		-----		-----
6142		-----		-----	6364		-----		-----
6143		-----		-----	6373	ISO10307-2	<0.01		-----
6192		0.045	R(0.01)	1.99	6376	ISO10307-2	0.046	R(0.01)	2.06
6203	ISO10307-2	0.2095	R(0.01)	13.86	6400		-----		-----
6220		-----		-----	6406	ISO10307-2	0.02153		0.30
6257		-----		-----	6416		-----		-----
6266		-----		-----	6444		-----		-----
6279		-----		-----	6447		-----		-----
6332		-----		-----	6460	IP390	0.02		0.19
6335	D4870	<0.05		-----	6472	IP390	0.014		-0.25
					6475		-----		-----

normality	OK
n	47
outliers	4
mean (n)	0.0174
st.dev. (n)	0.00578
R(calc.)	0.0162
st.dev.(IP390:11R17)	0.01386
R(IP390:11R17)	0.0388

Lab 1724 test result withdrawn, reported 0.053
Lab 1849 test result withdrawn, reported 0.06
Lab 6044 first reported 0.0415



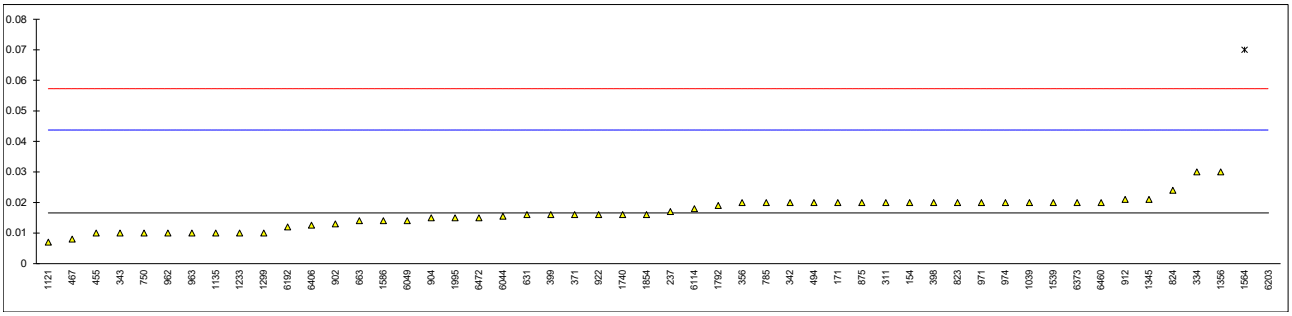


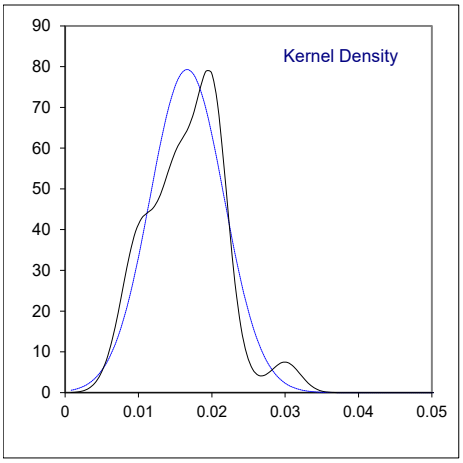
Determination of Total Sediment Potential (TSP) of sample #22100; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62		-----		-----	863		-----		-----
90		-----		-----	864		-----		-----
92		-----		-----	865		-----		-----
120		-----		-----	866		-----		-----
140		-----		-----	870		-----		-----
150		-----		-----	875	IP390	0.02		0.25
154	D4870	0.02		0.25	886		-----		-----
158		-----		-----	902	IP390	0.013		-0.27
159		-----		-----	904	ISO10307-2	0.015		-0.12
168		-----		-----	912	IP390	0.021		0.32
169		-----		-----	922	ISO10307-2	0.016		-0.05
171	IP390	0.02		0.25	962	IP390	0.01		-0.49
175		-----		-----	963	IP390	0.01		-0.49
221		-----		-----	971	IP390	0.02		0.25
224		-----		-----	974	IP390	0.02		0.25
225		-----		-----	982		-----		-----
237	D4870	0.017		0.03	1019		-----		-----
238		-----		-----	1039	ISO10307-2	0.02		0.25
253		-----		-----	1059		-----		-----
254		-----		-----	1082		-----		-----
309		-----		-----	1095		-----		-----
311	ISO10307-2	0.02		0.25	1109		-----		-----
313		-----		-----	1121	ISO10307-2	0.007		-0.71
323		-----		-----	1126		-----		-----
328		-----		-----	1135	ISO10307-2	0.01		-0.49
331		-----		-----	1177		-----		-----
333		-----		-----	1218		-----		-----
334	IP390	0.03		0.99	1233	ISO10307-2	0.01		-0.49
335		-----		-----	1266		-----		-----
339		-----		-----	1275		-----		-----
342	ISO10307-2	0.02		0.25	1299	ISO10307-2	0.01		-0.49
343	ISO10307-2	0.01		-0.49	1320		-----		-----
349		-----		-----	1345	ISO10307-2	0.021		0.32
356	IP390	0.02		0.25	1356	ISO10307-2	0.03		0.99
371	ISO10307-2	0.016		-0.05	1412		-----		-----
391		-----		-----	1438		-----		-----
398	IP390	0.02		0.25	1459		-----		-----
399	ISO10307-2	0.016		-0.05	1498		-----		-----
444		-----		-----	1539	ISO10307-2	0.02		0.25
455	IP390	0.01		-0.49	1556		-----		-----
467	ISO10307-2	0.008		-0.64	1564	ISO10307-2	0.07	R(0.01)	3.94
494	ISO10307-2	0.02		0.25	1586	IP390	0.014		-0.19
495		-----		-----	1613		-----		-----
511		-----		-----	1643		-----		-----
529		-----		-----	1688		-----		-----
557		-----		-----	1720		-----		-----
562		-----		-----	1724		-----		-----
575		-----		-----	1728		-----		-----
603		-----		-----	1740	ISO10307-2	0.016		-0.05
604		-----		-----	1761		-----		-----
608		-----		-----	1776		-----		-----
631	D4870	0.016		-0.05	1792	IP390	0.019		0.18
633		-----		-----	1807		-----		-----
663	IP390	0.014		-0.19	1810		-----		-----
671		-----		-----	1811		-----		-----
750	ISO10307-2	0.01		-0.49	1849		-----		-----
753		-----		-----	1854	ISO10307-2	0.016		-0.05
759		-----		-----	1906		-----		-----
785	IP390	0.02		0.25	1956		-----		-----
823	ISO10307-2	0.02		0.25	1964		-----		-----
824	ISO10307-2	0.024		0.54	1971		-----		-----
825		-----		-----	1995	D4870	0.015		-0.12
850		-----		-----	6028		-----		-----
851		-----		-----	6039		-----		-----
855		-----		-----	6044	ISO10307-2	0.0155		-0.08
858		-----		-----	6049	IP390	0.014		-0.19
859		-----		-----	6075		-----		-----
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	IP390	0.018		0.10	6346		-----		-----
6142		-----		-----	6364		-----		-----
6143		-----		-----	6373	ISO10307-2	0.02		0.25
6192		0.012		-0.34	6376		-----		-----
6203	ISO10307-2	0.1980	R(0.01)	13.40	6400	ISO10307-2	<0.01		-----
6220		-----		-----	6406	ISO10307-2	0.01261		-0.30
6257		-----		-----	6416		-----		-----
6266		-----		-----	6444		-----		-----
6279		-----		-----	6447		-----		-----
6332		-----		-----	6460	IP390	0.02		0.25
6335	D4870	<0.05		-----	6472	IP390	0.015		-0.12
					6475		-----		-----

normality	OK
n	50
outliers	2
mean (n)	0.0166
st.dev. (n)	0.00503
R(calc.)	0.0141
st.dev.(IP390:11R17)	0.01354
R(IP390:11R17)	0.0379





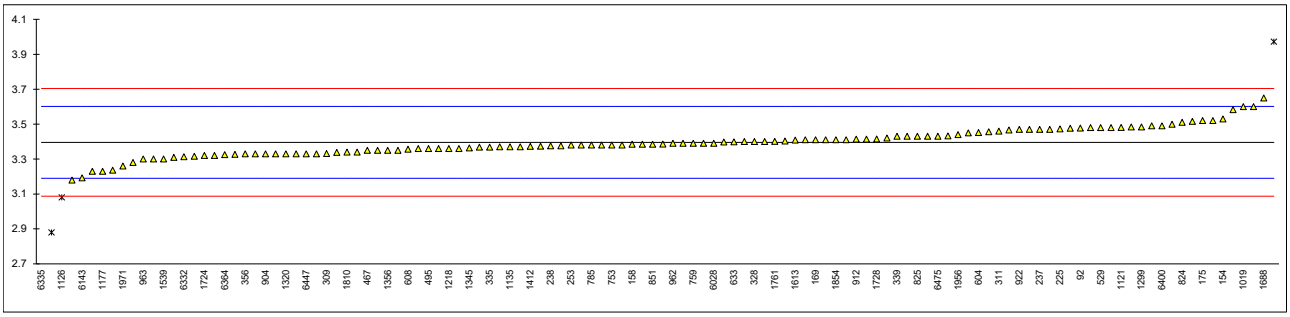
Determination of Total Sulfur on sample #22100; results in %M/M

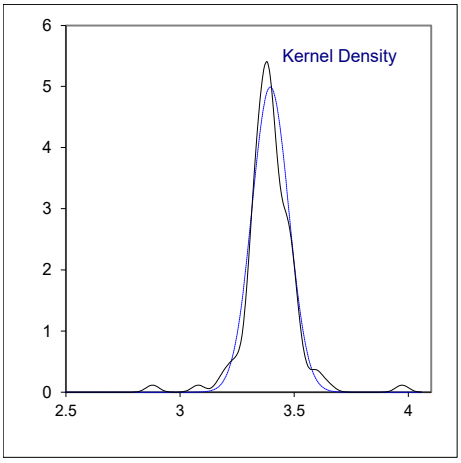
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D4294	3.583		1.82	863		-----		-----
90	D4294	3.470		0.72	864		-----		-----
92	D4294	3.477		0.79	865		-----		-----
120	D4294	3.47		0.72	866		-----		-----
140		-----		-----	870		-----		-----
150	D4294	3.48		0.82	875	D4294	3.36		-0.35
154	D4294	3.53		1.31	886		-----		-----
158	D4294	3.385		-0.10	902	ISO8754	3.28		-1.13
159		-----		-----	904	ISO8754	3.33		-0.64
168	D4294	3.38		-0.15	912	ISO8754	3.414		0.18
169	D4294	3.41		0.14	922	D4294	3.47		0.72
171	D4294	3.50		1.01	962	ISO8754	3.39		-0.06
175	D4294	3.52		1.21	963	D4294	3.30		-0.93
221		-----		-----	971	D4294	3.38		-0.15
224		-----		-----	974	D4294	3.38		-0.15
225	D4294	3.4723		0.74	982		-----		-----
237	D4294	3.470		0.72	1019	D1552	3.600		1.99
238	D4294	3.375		-0.20	1039	ISO8754	>2.00		-----
253	D4294	3.38		-0.15	1059		-----		-----
254	D4294	3.368		-0.27	1082	ISO8754	3.456		0.59
309	D2622	3.3313		-0.63	1095	ISO8754	3.33		-0.64
311	ISO8754	3.46		0.63	1109		-----		-----
313	ISO8754	3.43		0.33	1121	ISO8754	3.481		0.83
323		-----		-----	1126	ISO8754	3.08	R(0.05)	-3.07
328	D4294	3.40		0.04	1135	ISO8754	3.37		-0.25
331	ISO8754	3.23	C	-1.61	1177	DIN10304-1	3.23		-1.61
333	ISO8754	3.18		-2.10	1218	In house	3.36		-0.35
334	ISO8754	3.30		-0.93	1233	ISO8754	3.35		-0.44
335	ISO8754	3.368		-0.27	1266	ISO8754	3.516	C	1.17
339	INH-024	3.43		0.33	1275	IP336	3.385		-0.10
342	ISO8754	3.3970		0.01	1299	ISO8754	3.484		0.86
343	IP336	3.45		0.53	1320	ISO8754	3.33		-0.64
349		-----		-----	1345	D4294	3.364		-0.31
356	ISO8754	3.33		-0.64	1356	ISO8754	3.35		-0.44
371	D4294	3.403		0.07	1412	D4294	3.373		-0.22
391	ISO8754	3.40		0.04	1438	D4294	3.43		0.33
398	ISO8754	3.40		0.04	1459	In house	3.33		-0.64
399	D4294	3.39		-0.06	1498		-----		-----
444		-----		-----	1539	ISO8754	3.30		-0.93
455	IP336	3.33		-0.64	1556	ISO8754	3.60		1.99
467	ISO8754	3.35		-0.44	1564	D4294	3.37		-0.25
494	ISO8754	3.37		-0.25	1586	ISO8754	3.41		0.14
495	ISO8754	3.36		-0.35	1613	D4294	3.4082		0.12
511		-----		-----	1643	D1552	3.4834		0.85
529	D4294	3.48		0.82	1688	D4294	3.65		2.47
557		-----		-----	1720	D4294	3.973	R(0.01)	5.61
562		-----		-----	1724	IP336	3.32		-0.74
575		-----		-----	1728	D4294	3.415		0.19
603	D4294	2.88	R(0.01)	-5.02	1740	ISO8754	3.32		-0.74
604	D4294	3.451		0.54	1761	ISO8754	3.40083		0.05
608	D4294	3.3562		-0.38	1776	ISO8754	3.375	C	-0.20
631	D4294	3.36		-0.35	1792	ISO8754	3.327		-0.67
633	D4294	3.3984		0.03	1807		-----		-----
663		-----		-----	1810	D4294	3.34		-0.54
671	D4294	3.41		0.14	1811	ISO8754	3.34		-0.54
750		-----		-----	1849		-----		-----
753	ISO8754	3.38		-0.15	1854	ISO8754	3.41		0.14
759	ISO8754	3.39		-0.06	1906	D5623	3.467		0.69
785	ISO8754	3.38		-0.15	1956	ISO8754	3.44		0.43
823	ISO8754	3.39		-0.06	1964		-----		-----
824	ISO8754	3.51		1.11	1971	ISO8754	3.26		-1.32
825	ISO8754	3.43		0.33	1995	D4294	3.386		-0.09
850		-----		-----	6028	ISO8754	3.39		-0.06
851	ISO8754	3.3853	C	-0.10	6039	ISO8754	3.49		0.92
855		-----		-----	6044	D4294	3.433		0.36
858		-----		-----	6049	ISO8754	3.31		-0.83
859		-----		-----	6075	ISO8754	3.476		0.78
862		-----		-----	6092	D4294	3.48		0.82

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	ISO8754	3.374		-0.21	6346	D4294	3.338	C	-0.56
6142		-----		-----	6364	D4294	3.325		-0.69
6143	D2622	3.1916	C	-1.98	6373		-----		-----
6192		3.360		-0.35	6376	ISO8754	3.236		-1.55
6203	D2622	3.414		0.18	6400	IP336	3.49		0.92
6220	D4294	3.41		0.14	6406	ISO8754	3.316		-0.78
6257	ISO8754	3.520		1.21	6416		-----		-----
6266		-----		-----	6444		-----		-----
6279	ISO8754	3.4204		0.24	6447	D2622	3.33		-0.64
6332	D4294	3.3134		-0.80	6460	D4294	3.35		-0.44
6335	D5185	0.95	R(0.01)	-23.79	6472	D4294	3.33		-0.64
					6475	EN15944/IP501	3.43		0.33

	normality	OK
	n	118
	outliers	4
	mean (n)	3.3957
	st.dev. (n)	0.07990
	R(calc.)	0.2237
	st.dev.(ISO8754:03)	0.10283
	R(ISO8754:03)	0.2879
Compare		
	R(D4294:21)	0.1598

Lab 331 first reported 2.97
Lab 851 first reported 2.9666
Lab 1266 first reported 3.660
Lab 1776 first reported 3.14
Lab 6143 first reported 3.0579
Lab 6346 first reported 3.128



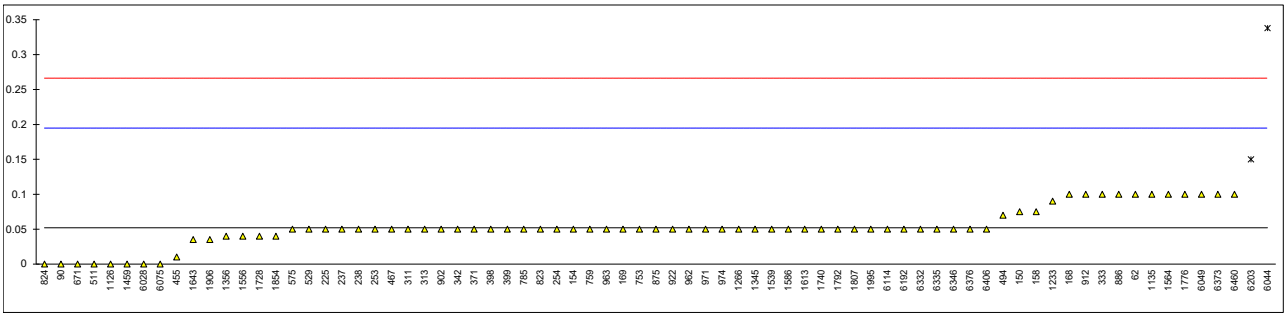


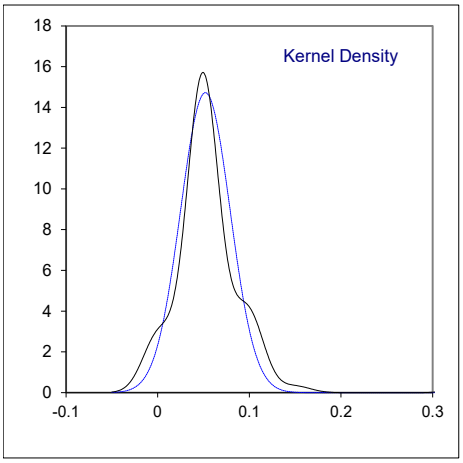
Determination of Water by distillation on sample #22100; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D95	0.1		0.67	863		-----		-----
90	D95	0		-0.73	864		-----		-----
92	D95	<0.05		-----	865		-----		-----
120	D95	<0.05		-----	866		-----		-----
140		-----		-----	870		-----		-----
150	D95	0.075		0.32	875	ISO3733	0.05		-0.03
154	D95	0.05		-0.03	886	D95	0.1		0.67
158	D95	0.075		0.32	902	ISO3733	0.05		-0.03
159		-----		-----	904	D95	<0.05		-----
168	D95	0.1		0.67	912	ISO3733	0.10		0.67
169	D95	0.05		-0.03	922	D95	0.05		-0.03
171		-----		-----	962	D95	0.05		-0.03
175		-----		-----	963	ISO3733	0.05		-0.03
221		-----		-----	971	D95	0.05		-0.03
224		-----		-----	974	D95	0.05		-0.03
225	D95	0.05		-0.03	982		-----		-----
237	D95	0.05		-0.03	1019	ISO3733	<0.1		-----
238	D95	0.05		-0.03	1039	ISO3733	<0.1		-----
253	D95	0.05		-0.03	1059	ISO3733	<0.05		-----
254	D95	0.05		-0.03	1082		-----		-----
309		-----		-----	1095	D95	< 0.10		-----
311	D95	0.05		-0.03	1109		-----		-----
313	D95	0.05		-0.03	1121	ISO3733	<0.05		-----
323		-----		-----	1126	ISO3733	0		-0.73
328	ISO3733	<0.1		-----	1135	ISO3733	0.10		0.67
331	ISO3733	<0.05		-----	1177		-----		-----
333	ISO3733	0.10		0.67	1218		-----		-----
334	D95	<0.1		-----	1233	D95	0.09		0.53
335		-----		-----	1266	D95	0.05		-0.03
339		-----		-----	1275	IP74	<0.05		-----
342	ISO3733	0.05		-0.03	1299	D95	<0.1		-----
343	D95	<0.5		-----	1320		-----		-----
349	D95	<0.1		-----	1345	D95	0.05		-0.03
356	ISO3733	<0.05		-----	1356	D6304-A	0.04		-0.17
371	D95	0.05		-0.03	1412		-----		-----
391		-----		-----	1438		-----		-----
398	ISO3733	0.05		-0.03	1459	ISO3733	0.0		-0.73
399	D95	0.05		-0.03	1498		-----		-----
444		-----		-----	1539	ISO3733	0.05		-0.03
455	D95	0.01		-0.59	1556	D6304-B	0.04		-0.17
467	ISO3733	0.05		-0.03	1564	D95	0.10		0.67
494	ISO3733	0.07		0.25	1586	ISO3733	0.05		-0.03
495		-----		-----	1613	D95	0.05		-0.03
511	D95	0		-0.73	1643	D95	0.035		-0.24
529	D95	0.05		-0.03	1688	D95	<0.05		-----
557		-----		-----	1720		-----		-----
562		-----		-----	1724	D95	<0,1		-----
575	D95	0.05		-0.03	1728	D95	0.04		-0.17
603		-----		-----	1740	ISO3733	0.05		-0.03
604		-----		-----	1761		-----		-----
608	D95	<0.15		-----	1776	ISO3733	0.1		0.67
631	D95	<0.05		-----	1792	ISO3733	0.05		-0.03
633	D95	<0.1		-----	1807	D95	0.05		-0.03
663		-----		-----	1810		-----		-----
671	D95	0		-0.73	1811		-----		-----
750		-----		-----	1849	EN1428	<0.1		-----
753	ISO3733	0.05		-0.03	1854	D95	0.04		-0.17
759	ISO3733	0.05		-0.03	1906	D6304-C	0.035		-0.24
785	D95	0.05		-0.03	1956		-----		-----
823	ISO3733	0.05		-0.03	1964		-----		-----
824	ISO3733	0		-0.73	1971		-----		-----
825	ISO3733	<0.05		-----	1995	D95	0.05		-0.03
850		-----		-----	6028	D95	0		-0.73
851	ISO3733	<0.1		-----	6039		-----		-----
855		-----		-----	6044	D6304-C	0.338	R(0.01)	4.00
858		-----		-----	6049	ISO3733	0.10		0.67
859		-----		-----	6075	ISO3733	0.00		-0.73
862		-----		-----	6092	D95	<0.05		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114	ISO3733	0.05		-0.03	6346	D95	0.05		-0.03
6142		-----		-----	6364	D95	<0.05		-----
6143		-----		-----	6373	D95	0.10		0.67
6192		0.05		-0.03	6376	ISO3733	0.05		-0.03
6203	D95	0.15	R(0.05)	1.37	6400	ISO3733	<0.05		-----
6220	D95	<0.5		-----	6406	ISO3733	0.05		-0.03
6257		-----		-----	6416		-----		-----
6266		-----		-----	6444		-----		-----
6279		-----		-----	6447		-----		-----
6332	D95	0.05		-0.03	6460	D95	0.10		0.67
6335	D95	0.05		-0.03	6472		-----		-----
					6475		-----		-----

	normality	OK
	n	73
	outliers	2
	mean (n)	0.0521
	st.dev. (n)	0.02710
	R(calc.)	0.0759
	st.dev.(ISO3733:99)	0.07143
	R(ISO3733:99)	0.2
Compare		
	R(D95:13R18)	0.2



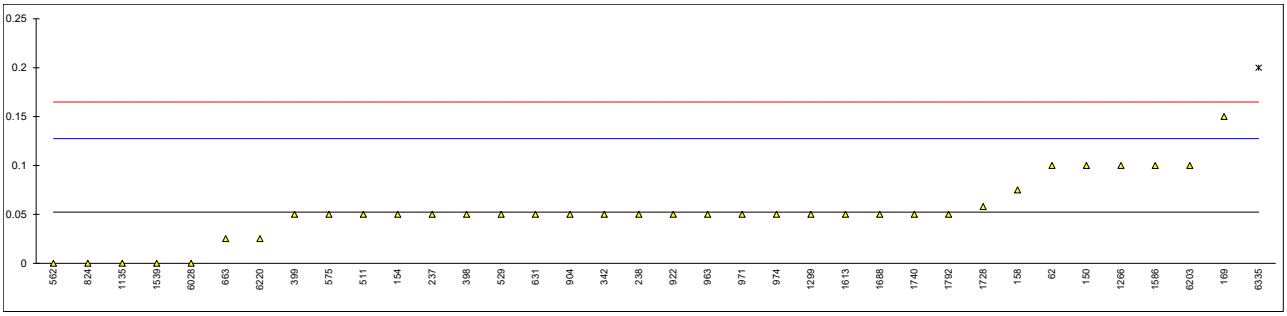


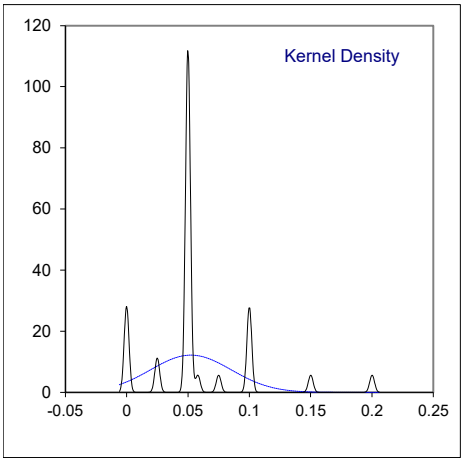
Determination of Water and Sediment on sample #22100; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
62	D1796	0.1		1.27	863		-----		-----
90		-----		-----	864		-----		-----
92		-----		-----	865		-----		-----
120		-----		-----	866		-----		-----
140		-----		-----	870		-----		-----
150	D1796	0.10		1.27	875		-----		-----
154	D1796	0.05		-0.06	886		-----		-----
158	D1796	0.075		0.60	902		-----		-----
159		-----		-----	904	D1796	0.05		-0.06
168		-----		-----	912		-----		-----
169	D1796	0.15		2.60	922	D1796	0.05		-0.06
171		-----		-----	962		-----		-----
175		-----		-----	963	D1796	0.05		-0.06
221		-----		-----	971	D1796	0.05		-0.06
224		-----		-----	974	D1796	0.05		-0.06
225		-----		-----	982		-----		-----
237	D1796	0.05		-0.06	1019		-----		-----
238	D1796	0.05		-0.06	1039		-----		-----
253		-----		-----	1059	ISO3734	<0.05		-----
254		-----		-----	1082		-----		-----
309		-----		-----	1095		-----		-----
311		-----		-----	1109		-----		-----
313		-----		-----	1121		-----		-----
323		-----		-----	1126		-----		-----
328		-----		-----	1135	D1796	0		-1.40
331		-----		-----	1177		-----		-----
333		-----		-----	1218		-----		-----
334		-----		-----	1233		-----		-----
335		-----		-----	1266	UNE51082	0.10		1.27
339		-----		-----	1275		-----		-----
342	D1796	0.05		-0.06	1299	D1796	0.05		-0.06
343		-----		-----	1320		-----		-----
349		-----		-----	1345		-----		-----
356		-----		-----	1356		-----		-----
371		-----		-----	1412		-----		-----
391		-----		-----	1438		-----		-----
398	D1796	0.05		-0.06	1459		-----		-----
399	D1796	0.05		-0.06	1498		-----		-----
444		-----		-----	1539	ISO3734	0.0		-1.40
455		-----		-----	1556		-----		-----
467		-----		-----	1564		-----		-----
494		-----		-----	1586	D1796	0.10		1.27
495		-----		-----	1613	D1796	0.05		-0.06
511	D1796	0.05		-0.06	1643		-----		-----
529	D1796	0.05		-0.06	1688	D1796	0.05		-0.06
557		-----		-----	1720		-----		-----
562	D1796	0.00		-1.40	1724		-----		-----
575	D1796	0.05		-0.06	1728		0.058		0.15
603		-----		-----	1740	D1796	0.05		-0.06
604		-----		-----	1761		-----		-----
608		-----		-----	1776		-----		-----
631	D1796	0.05		-0.06	1792	D1796	0.050		-0.06
633	D1796	<0.10		-----	1807		-----		-----
663	D1796	0.025		-0.73	1810		-----		-----
671	D1796	<0.05		-----	1811		-----		-----
750		-----		-----	1849		-----		-----
753		-----		-----	1854		-----		-----
759		-----		-----	1906		-----		-----
785		-----		-----	1956		-----		-----
823		-----		-----	1964		-----		-----
824	D1796	0		-1.40	1971		-----		-----
825	D1796	<0.05		-----	1995		-----		-----
850		-----		-----	6028	D4007	0		-1.40
851		-----		-----	6039		-----		-----
855		-----		-----	6044		-----		-----
858		-----		-----	6049		-----		-----
859		-----		-----	6075		-----		-----
862		-----		-----	6092		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
6114		-----		-----	6346		-----		-----
6142		-----		-----	6364		-----		-----
6143		-----		-----	6373		-----		-----
6192		-----		-----	6376		-----		-----
6203	D1796	0.10		1.27	6400		-----		-----
6220	D1796	0.025		-0.73	6406		-----		-----
6257		-----		-----	6416		-----		-----
6266		-----		-----	6444		-----		-----
6279		-----		-----	6447		-----		-----
6332		-----		-----	6460		-----		-----
6335	D1796	0.20	R(0.01)	3.94	6472		-----		-----
					6475		-----		-----

normality	suspect
n	35
outliers	1
mean (n)	0.0524
st.dev. (n)	0.03287
R(calc.)	0.0920
st.dev.(D1796:11R16)	0.03750
R(D1796:11R16)	0.1050





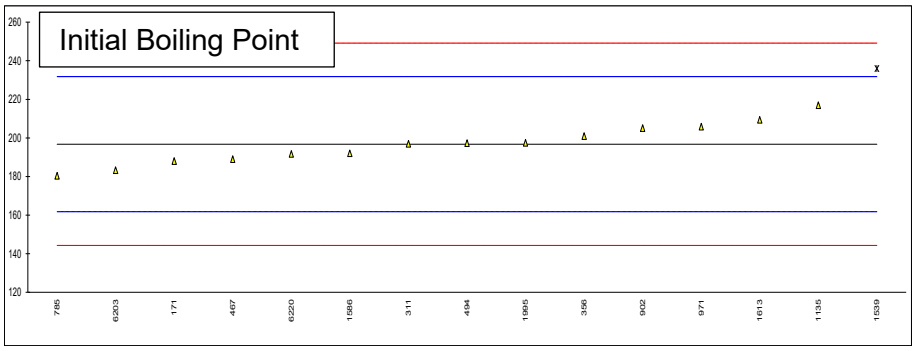
Vacuum Distillation at 10 mmHg but reported as AET on sample #22100, results in °C

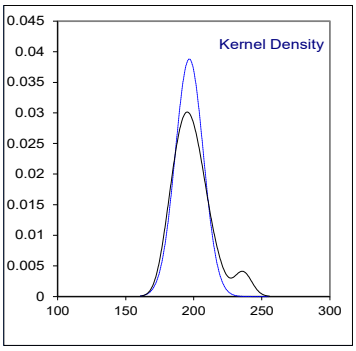
lab	method	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
62		-----	-----	-----	-----	-----	-----	-----	-----
90		-----	-----	-----	-----	-----	-----	-----	-----
92		-----	-----	-----	-----	-----	-----	-----	-----
120		-----	-----	-----	-----	-----	-----	-----	-----
140		-----	-----	-----	-----	-----	-----	-----	-----
150		-----	-----	-----	-----	-----	-----	-----	-----
154		-----	-----	-----	-----	-----	-----	-----	-----
158		-----	-----	-----	-----	-----	-----	-----	-----
159		-----	-----	-----	-----	-----	-----	-----	-----
168		-----	-----	-----	-----	-----	-----	-----	-----
169		-----	-----	-----	-----	-----	-----	-----	-----
171	D1160	188	272	329	403	459	496	522	525
175		-----	-----	-----	-----	-----	-----	-----	-----
221		-----	-----	-----	-----	-----	-----	-----	-----
224		-----	-----	-----	-----	-----	-----	-----	-----
225		-----	-----	-----	-----	-----	-----	-----	-----
237		-----	-----	-----	-----	-----	-----	-----	-----
238		-----	-----	-----	-----	-----	-----	-----	-----
253		-----	-----	-----	-----	-----	-----	-----	-----
254		-----	-----	-----	-----	-----	-----	-----	-----
309		-----	-----	-----	-----	-----	-----	-----	-----
311	D1160	197	280	327	402	461	501	531	537
313		-----	-----	-----	-----	-----	-----	-----	-----
323		-----	-----	-----	-----	-----	-----	-----	-----
328		-----	-----	-----	-----	-----	-----	-----	-----
331		-----	-----	-----	-----	-----	-----	-----	-----
333		-----	-----	-----	-----	-----	-----	-----	-----
334		-----	-----	-----	-----	-----	-----	-----	-----
335		-----	-----	-----	-----	-----	-----	-----	-----
339		-----	-----	-----	-----	-----	-----	-----	-----
342		-----	-----	-----	-----	-----	-----	-----	-----
343		-----	-----	-----	-----	-----	-----	-----	-----
349		-----	-----	-----	-----	-----	-----	-----	-----
356	D1160	201	274	326	401	458	497	524	527
371		-----	-----	-----	-----	-----	-----	-----	-----
391		-----	-----	-----	-----	-----	-----	-----	-----
398		-----	-----	-----	-----	-----	-----	-----	-----
399		-----	-----	-----	-----	-----	-----	-----	-----
444		-----	-----	-----	-----	-----	-----	-----	-----
455		-----	-----	-----	-----	-----	-----	-----	-----
467	D1160	189	259	313	394	452	493	-----	516
494	D1160	197.3 C	292.6 C	338.7 C	410.9 C	466.5 C	506.2 C	531.8 C	532.0 C
495		-----	-----	-----	-----	-----	-----	-----	-----
511		-----	-----	-----	-----	-----	-----	-----	-----
529		-----	-----	-----	-----	-----	-----	-----	-----
557		-----	-----	-----	-----	-----	-----	-----	-----
562		-----	-----	-----	-----	-----	-----	-----	-----
575		-----	-----	-----	-----	-----	-----	-----	-----
603		-----	-----	-----	-----	-----	-----	-----	-----
604		-----	-----	-----	-----	-----	-----	-----	-----
608		-----	-----	-----	-----	-----	-----	-----	-----
631		-----	-----	-----	-----	-----	-----	-----	-----
633		-----	-----	-----	-----	-----	-----	-----	-----
663		-----	-----	-----	-----	-----	-----	-----	-----
671		-----	-----	-----	-----	-----	-----	-----	-----
750		-----	-----	-----	-----	-----	-----	-----	-----
753		-----	-----	-----	-----	-----	-----	-----	-----
759		-----	-----	-----	-----	-----	-----	-----	-----
785	D1160	180.4	275.6	325.3	391.3	455.9	493.4	-----	516.2
823		-----	273	324	398	456	498	530	530
824		-----	-----	-----	-----	-----	-----	-----	-----
825		-----	-----	-----	-----	-----	-----	-----	-----
850		-----	-----	-----	-----	-----	-----	-----	-----
851		-----	-----	-----	-----	-----	-----	-----	-----
855		-----	-----	-----	-----	-----	-----	-----	-----
858		-----	-----	-----	-----	-----	-----	-----	-----
859		-----	-----	-----	-----	-----	-----	-----	-----
862		-----	-----	-----	-----	-----	-----	-----	-----
863		-----	-----	-----	-----	-----	-----	-----	-----
864		-----	-----	-----	-----	-----	-----	-----	-----
865		-----	-----	-----	-----	-----	-----	-----	-----
866		-----	-----	-----	-----	-----	-----	-----	-----
870		-----	-----	-----	-----	-----	-----	-----	-----
875		-----	-----	-----	-----	-----	-----	-----	-----
886		-----	-----	-----	-----	-----	-----	-----	-----

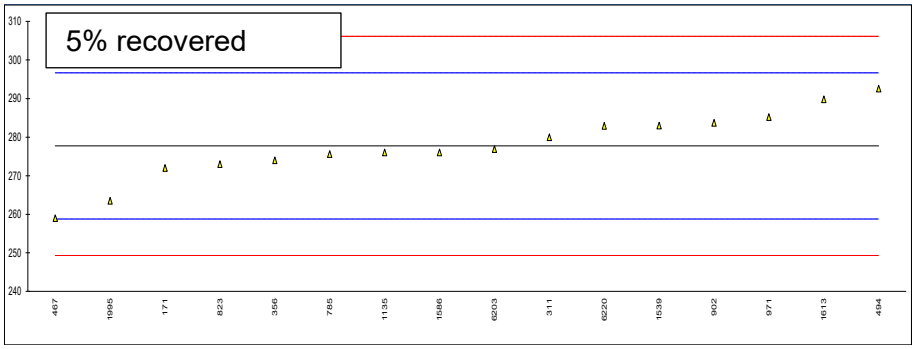
lab	method	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
902	D1160	205.1	283.7	329.2	396.9	450.6	492.7	521.1	527.2
904		-----	-----	-----	-----	-----	-----	-----	-----
912		-----	-----	-----	-----	-----	-----	-----	-----
922		-----	-----	-----	-----	-----	-----	-----	-----
962		-----	-----	-----	-----	-----	-----	-----	-----
963		-----	-----	-----	-----	-----	-----	-----	-----
971	D1160	205.8	285.2	328.5	398.2	450.8	493.4	523.4	526.4
974		-----	-----	-----	-----	-----	-----	-----	-----
982		-----	-----	-----	-----	-----	-----	-----	-----
1019		-----	-----	-----	-----	-----	-----	-----	-----
1039		-----	-----	-----	-----	-----	-----	-----	-----
1059		-----	-----	-----	-----	-----	-----	-----	-----
1082		-----	-----	-----	-----	-----	-----	-----	-----
1095		-----	-----	-----	-----	-----	-----	-----	-----
1109		-----	-----	-----	-----	-----	-----	-----	-----
1121		-----	-----	-----	-----	-----	-----	-----	-----
1126		-----	-----	-----	-----	-----	-----	-----	-----
1135	D1160	217	276	332	400	454	491	534	565 G5
1177		-----	-----	-----	-----	-----	-----	-----	-----
1218		-----	-----	-----	-----	-----	-----	-----	-----
1233		-----	-----	-----	-----	-----	-----	-----	-----
1266		-----	-----	-----	-----	-----	-----	-----	-----
1275		-----	-----	-----	-----	-----	-----	-----	-----
1299		-----	-----	-----	-----	-----	-----	-----	-----
1320		-----	-----	-----	-----	-----	-----	-----	-----
1345		-----	-----	-----	-----	-----	-----	-----	-----
1356		-----	-----	-----	-----	-----	-----	-----	-----
1412		-----	-----	-----	-----	-----	-----	-----	-----
1438		-----	-----	-----	-----	-----	-----	-----	-----
1459		-----	-----	-----	-----	-----	-----	-----	-----
1498		-----	-----	-----	-----	-----	-----	-----	-----
1539	D1160	236 G5	283 C	329 C	412	466	503	-----	524
1556		-----	-----	-----	-----	-----	-----	-----	-----
1564		-----	-----	-----	-----	-----	-----	-----	-----
1586	D1160	192	276	318	390	444	481	512	515
1613	D1160	209.4	289.8	330.8	405.1	462.3	503.8	528.7	530.7
1643		-----	-----	-----	-----	-----	-----	-----	-----
1688		-----	-----	-----	-----	-----	-----	-----	-----
1720		-----	-----	-----	-----	-----	-----	-----	-----
1724		-----	-----	-----	-----	-----	-----	-----	-----
1728		-----	-----	-----	-----	-----	-----	-----	-----
1740		-----	-----	-----	-----	-----	-----	-----	-----
1761		-----	-----	-----	-----	-----	-----	-----	-----
1776		-----	-----	-----	-----	-----	-----	-----	-----
1792		-----	-----	-----	-----	-----	-----	-----	-----
1807		-----	-----	-----	-----	-----	-----	-----	-----
1810		-----	-----	-----	-----	-----	-----	-----	-----
1811		-----	-----	-----	-----	-----	-----	-----	-----
1849		-----	-----	-----	-----	-----	-----	-----	-----
1854		-----	-----	-----	-----	-----	-----	-----	-----
1906		-----	-----	-----	-----	-----	-----	-----	-----
1956		-----	-----	-----	-----	-----	-----	-----	-----
1964		-----	-----	-----	-----	-----	-----	-----	-----
1971		-----	-----	-----	-----	-----	-----	-----	-----
1995	D1160	197.5	263.5	318 C	383.8	443.3	487.2	521.0	529.7
6028		-----	-----	-----	-----	-----	-----	-----	-----
6039		-----	-----	-----	-----	-----	-----	-----	-----
6044		-----	-----	-----	-----	-----	-----	-----	-----
6049		-----	-----	-----	-----	-----	-----	-----	-----
6075		-----	-----	-----	-----	-----	-----	-----	-----
6092		-----	-----	-----	-----	-----	-----	-----	-----
6114		-----	-----	-----	-----	-----	-----	-----	-----
6142		-----	-----	-----	-----	-----	-----	-----	-----
6143		-----	-----	-----	-----	-----	-----	-----	-----
6192		-----	-----	-----	-----	-----	-----	-----	-----
6203	D1160	183.3	276.9	323.3	391.7	449.6	488.8	523.0	526.9
6220	D1160	191.7	282.9	328.1	402.6	459.1	498.5	530.6	549.4
6257		-----	-----	-----	-----	-----	-----	-----	-----
6266		-----	-----	-----	-----	-----	-----	-----	-----
6279		-----	-----	-----	-----	-----	-----	-----	-----
6332		-----	-----	-----	-----	-----	-----	-----	-----
6335		-----	-----	-----	-----	-----	-----	-----	-----
6346		-----	-----	-----	-----	-----	-----	-----	-----
6364		-----	-----	-----	-----	-----	-----	-----	-----
6373		-----	-----	-----	-----	-----	-----	-----	-----
6376		-----	-----	-----	-----	-----	-----	-----	-----
6400		-----	-----	-----	-----	-----	-----	-----	-----
6406		-----	-----	-----	-----	-----	-----	-----	-----

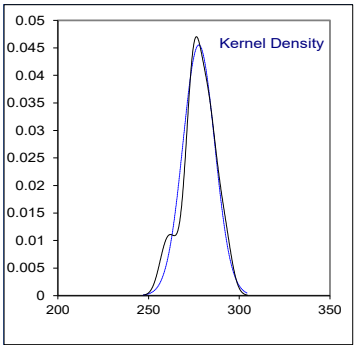
lab method	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
6416	-----	-----	-----	-----	-----	-----	-----	-----
6444	-----	-----	-----	-----	-----	-----	-----	-----
6447	-----	-----	-----	-----	-----	-----	-----	-----
6460	-----	-----	-----	-----	-----	-----	-----	-----
6472	-----	-----	-----	-----	-----	-----	-----	-----
6475	-----	-----	-----	-----	-----	-----	-----	-----
normality	OK	OK	OK	OK	OK	OK	OK	not OK
n	16	16	16	16	16	16	13	15
outliers	1	0	0	0	0	0	0	1
mean (n)	196.75	277.70	326.24	398.78	455.51	495.25	525.58	527.50
st.dev. (n)	10.279	8.762	6.154	7.509	6.909	6.602	6.094	8.652
R(calc.)	28.78	24.53	17.23	21.02	19.35	18.49	17.06	24.23
st.dev.(D1160:18)	17.500	9.475	7.809	7.131	6.326	3.362	(2.579)	9.643
R(D1160:18)	49	26.53	21.87	19.97	17.71	9.41	(7.22)	27

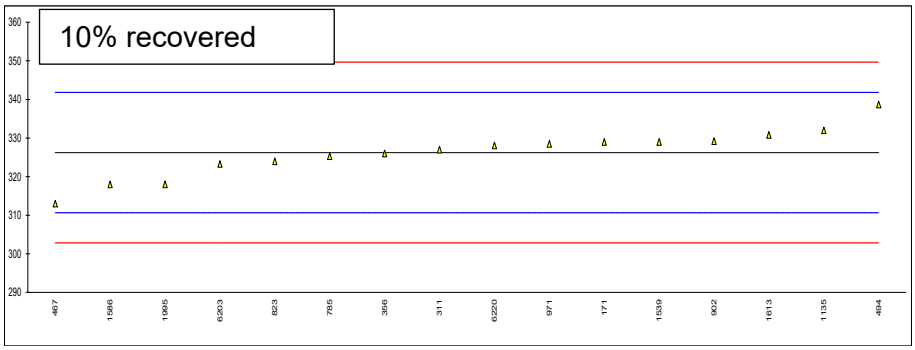
Lab 494 first reported 90.8, 321.8, 357.4, 429.2, 478.0, 519.0, 562.1, 590.5
Lab 1539 first reported 307, 347
Lab 1995 first reported 305.7

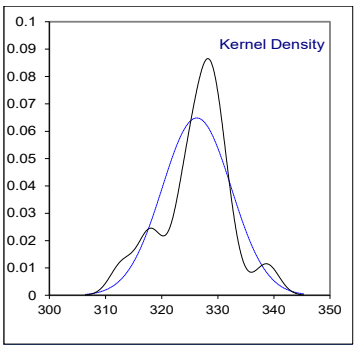


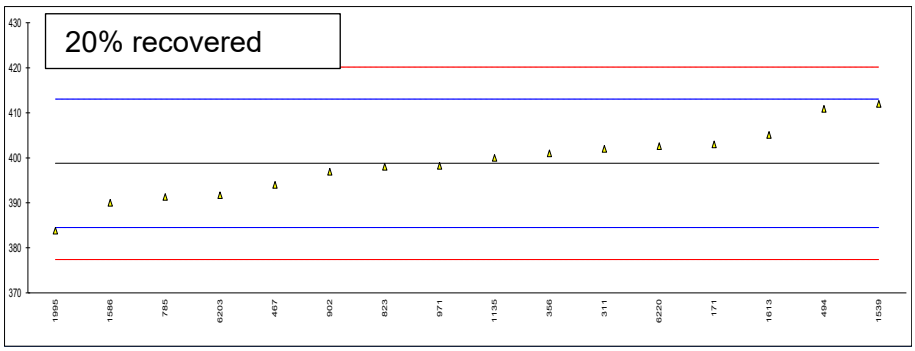


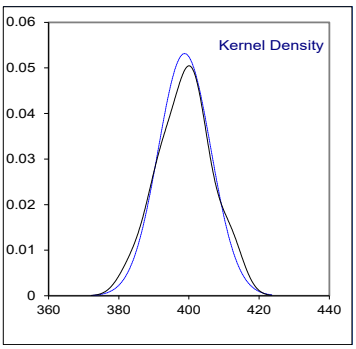


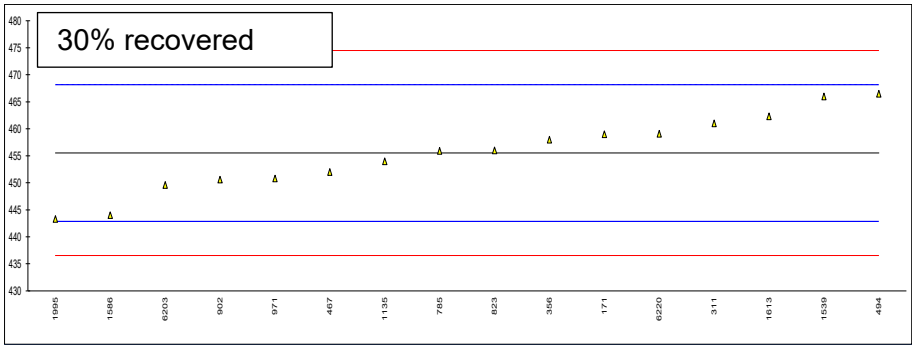


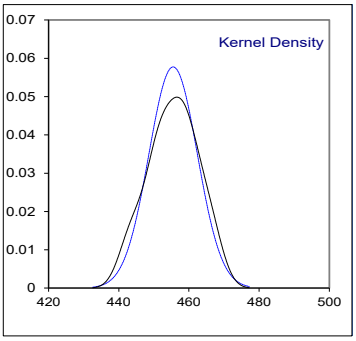


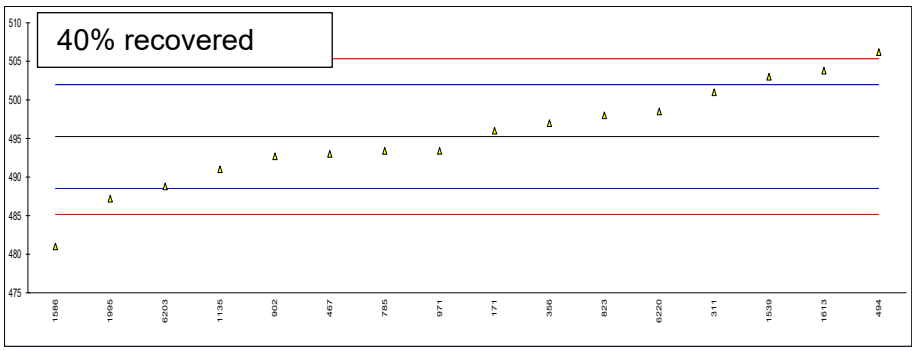


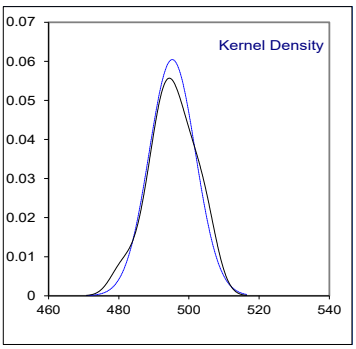

20% recovered
1995 1586 785 6203 467 902 823 971 1135 356 311 6220 171 1613 494 1539

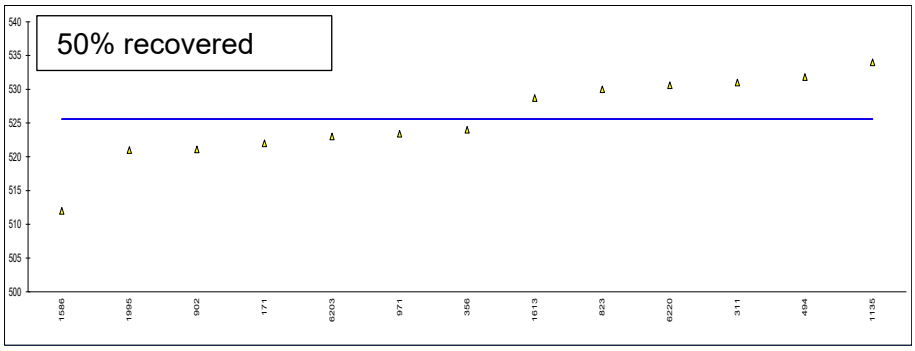

Kernel Density

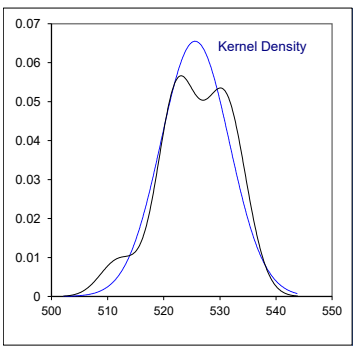

30% recovered
1995 1586 6203 902 971 467 1135 785 823 356 171 6220 311 1613 1539 494

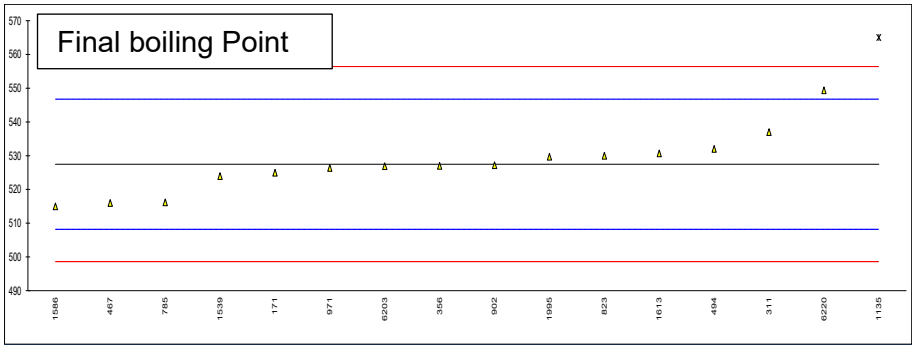

Kernel Density

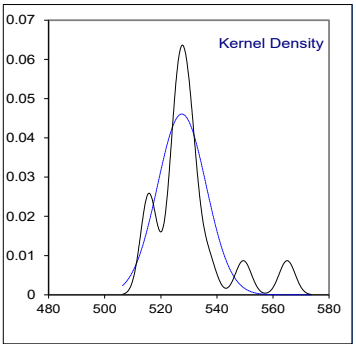

40% recovered
1586 1995 6203 1135 902 467 785 971 171 356 823 6220 311 1539 1613 494


Kernel Density


50% recovered
1586 1995 902 171 6203 971 356 1613 823 6220 311 494 1135


Kernel Density


Final boiling Point
1586 467 785 1539 171 971 6203 356 902 1995 823 1613 494 311 6220 1135


Kernel Density

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

lab	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
62	-----	-----	-----	-----	-----	-----	-----	-----
90	-----	-----	-----	-----	-----	-----	-----	-----
92	-----	-----	-----	-----	-----	-----	-----	-----
120	-----	-----	-----	-----	-----	-----	-----	-----
140	-----	-----	-----	-----	-----	-----	-----	-----
150	-----	-----	-----	-----	-----	-----	-----	-----
154	-----	-----	-----	-----	-----	-----	-----	-----
158	-----	-----	-----	-----	-----	-----	-----	-----
159	-----	-----	-----	-----	-----	-----	-----	-----
168	-----	-----	-----	-----	-----	-----	-----	-----
169	-----	-----	-----	-----	-----	-----	-----	-----
171	-0.50	-0.60	0.35	0.59	0.55	0.22	-----	-0.26
175	-----	-----	-----	-----	-----	-----	-----	-----
221	-----	-----	-----	-----	-----	-----	-----	-----
224	-----	-----	-----	-----	-----	-----	-----	-----
225	-----	-----	-----	-----	-----	-----	-----	-----
237	-----	-----	-----	-----	-----	-----	-----	-----
238	-----	-----	-----	-----	-----	-----	-----	-----
253	-----	-----	-----	-----	-----	-----	-----	-----
254	-----	-----	-----	-----	-----	-----	-----	-----
309	-----	-----	-----	-----	-----	-----	-----	-----
311	0.01	0.24	0.10	0.45	0.87	1.71	-----	0.99
313	-----	-----	-----	-----	-----	-----	-----	-----
323	-----	-----	-----	-----	-----	-----	-----	-----
328	-----	-----	-----	-----	-----	-----	-----	-----
331	-----	-----	-----	-----	-----	-----	-----	-----
333	-----	-----	-----	-----	-----	-----	-----	-----
334	-----	-----	-----	-----	-----	-----	-----	-----
335	-----	-----	-----	-----	-----	-----	-----	-----
339	-----	-----	-----	-----	-----	-----	-----	-----
342	-----	-----	-----	-----	-----	-----	-----	-----
343	-----	-----	-----	-----	-----	-----	-----	-----
349	-----	-----	-----	-----	-----	-----	-----	-----
356	0.24	-0.39	-0.03	0.31	0.39	0.52	-----	-0.05
371	-----	-----	-----	-----	-----	-----	-----	-----
391	-----	-----	-----	-----	-----	-----	-----	-----
398	-----	-----	-----	-----	-----	-----	-----	-----
399	-----	-----	-----	-----	-----	-----	-----	-----
444	-----	-----	-----	-----	-----	-----	-----	-----
455	-----	-----	-----	-----	-----	-----	-----	-----
467	-0.44	-1.97	-1.70	-0.67	-0.55	-0.67	-----	-1.19
494	0.03	1.57	1.60	1.70	1.74	3.26	-----	0.47
495	-----	-----	-----	-----	-----	-----	-----	-----
511	-----	-----	-----	-----	-----	-----	-----	-----
529	-----	-----	-----	-----	-----	-----	-----	-----
557	-----	-----	-----	-----	-----	-----	-----	-----
562	-----	-----	-----	-----	-----	-----	-----	-----
575	-----	-----	-----	-----	-----	-----	-----	-----
603	-----	-----	-----	-----	-----	-----	-----	-----
604	-----	-----	-----	-----	-----	-----	-----	-----
608	-----	-----	-----	-----	-----	-----	-----	-----
631	-----	-----	-----	-----	-----	-----	-----	-----
633	-----	-----	-----	-----	-----	-----	-----	-----
663	-----	-----	-----	-----	-----	-----	-----	-----
671	-----	-----	-----	-----	-----	-----	-----	-----
750	-----	-----	-----	-----	-----	-----	-----	-----
753	-----	-----	-----	-----	-----	-----	-----	-----
759	-----	-----	-----	-----	-----	-----	-----	-----
785	-0.93	-0.22	-0.12	-1.05	0.06	-0.55	-----	-1.17
823	-----	-0.50	-0.29	-0.11	0.08	0.82	-----	0.26
824	-----	-----	-----	-----	-----	-----	-----	-----
825	-----	-----	-----	-----	-----	-----	-----	-----
850	-----	-----	-----	-----	-----	-----	-----	-----
851	-----	-----	-----	-----	-----	-----	-----	-----
855	-----	-----	-----	-----	-----	-----	-----	-----
858	-----	-----	-----	-----	-----	-----	-----	-----
859	-----	-----	-----	-----	-----	-----	-----	-----
862	-----	-----	-----	-----	-----	-----	-----	-----
863	-----	-----	-----	-----	-----	-----	-----	-----
864	-----	-----	-----	-----	-----	-----	-----	-----
865	-----	-----	-----	-----	-----	-----	-----	-----
866	-----	-----	-----	-----	-----	-----	-----	-----
870	-----	-----	-----	-----	-----	-----	-----	-----
875	-----	-----	-----	-----	-----	-----	-----	-----
886	-----	-----	-----	-----	-----	-----	-----	-----

lab	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
902	0.48	0.63	0.38	-0.26	-0.78	-0.76	-----	-0.03
904	-----	-----	-----	-----	-----	-----	-----	-----
912	-----	-----	-----	-----	-----	-----	-----	-----
922	-----	-----	-----	-----	-----	-----	-----	-----
962	-----	-----	-----	-----	-----	-----	-----	-----
963	-----	-----	-----	-----	-----	-----	-----	-----
971	0.52	0.79	0.29	-0.08	-0.74	-0.55	-----	-0.11
974	-----	-----	-----	-----	-----	-----	-----	-----
982	-----	-----	-----	-----	-----	-----	-----	-----
1019	-----	-----	-----	-----	-----	-----	-----	-----
1039	-----	-----	-----	-----	-----	-----	-----	-----
1059	-----	-----	-----	-----	-----	-----	-----	-----
1082	-----	-----	-----	-----	-----	-----	-----	-----
1095	-----	-----	-----	-----	-----	-----	-----	-----
1109	-----	-----	-----	-----	-----	-----	-----	-----
1121	-----	-----	-----	-----	-----	-----	-----	-----
1126	-----	-----	-----	-----	-----	-----	-----	-----
1135	1.16	-0.18	0.74	0.17	-0.24	-1.26	-----	3.89
1177	-----	-----	-----	-----	-----	-----	-----	-----
1218	-----	-----	-----	-----	-----	-----	-----	-----
1233	-----	-----	-----	-----	-----	-----	-----	-----
1266	-----	-----	-----	-----	-----	-----	-----	-----
1275	-----	-----	-----	-----	-----	-----	-----	-----
1299	-----	-----	-----	-----	-----	-----	-----	-----
1320	-----	-----	-----	-----	-----	-----	-----	-----
1345	-----	-----	-----	-----	-----	-----	-----	-----
1356	-----	-----	-----	-----	-----	-----	-----	-----
1412	-----	-----	-----	-----	-----	-----	-----	-----
1438	-----	-----	-----	-----	-----	-----	-----	-----
1459	-----	-----	-----	-----	-----	-----	-----	-----
1498	-----	-----	-----	-----	-----	-----	-----	-----
1539	2.24	0.56	0.35	1.85	1.66	2.30	-----	-0.36
1556	-----	-----	-----	-----	-----	-----	-----	-----
1564	-----	-----	-----	-----	-----	-----	-----	-----
1586	-0.27	-0.18	-1.06	-1.23	-1.82	-4.24	-----	-1.30
1613	0.72	1.28	0.58	0.89	1.07	2.54	-----	0.33
1643	-----	-----	-----	-----	-----	-----	-----	-----
1688	-----	-----	-----	-----	-----	-----	-----	-----
1720	-----	-----	-----	-----	-----	-----	-----	-----
1724	-----	-----	-----	-----	-----	-----	-----	-----
1728	-----	-----	-----	-----	-----	-----	-----	-----
1740	-----	-----	-----	-----	-----	-----	-----	-----
1761	-----	-----	-----	-----	-----	-----	-----	-----
1776	-----	-----	-----	-----	-----	-----	-----	-----
1792	-----	-----	-----	-----	-----	-----	-----	-----
1807	-----	-----	-----	-----	-----	-----	-----	-----
1810	-----	-----	-----	-----	-----	-----	-----	-----
1811	-----	-----	-----	-----	-----	-----	-----	-----
1849	-----	-----	-----	-----	-----	-----	-----	-----
1854	-----	-----	-----	-----	-----	-----	-----	-----
1906	-----	-----	-----	-----	-----	-----	-----	-----
1956	-----	-----	-----	-----	-----	-----	-----	-----
1964	-----	-----	-----	-----	-----	-----	-----	-----
1971	-----	-----	-----	-----	-----	-----	-----	-----
1995	0.04	-1.50	-1.06	-2.10	-1.93	-2.39	-----	0.23
6028	-----	-----	-----	-----	-----	-----	-----	-----
6039	-----	-----	-----	-----	-----	-----	-----	-----
6044	-----	-----	-----	-----	-----	-----	-----	-----
6049	-----	-----	-----	-----	-----	-----	-----	-----
6075	-----	-----	-----	-----	-----	-----	-----	-----
6092	-----	-----	-----	-----	-----	-----	-----	-----
6114	-----	-----	-----	-----	-----	-----	-----	-----
6142	-----	-----	-----	-----	-----	-----	-----	-----
6143	-----	-----	-----	-----	-----	-----	-----	-----
6192	-----	-----	-----	-----	-----	-----	-----	-----
6203	-0.77	-0.08	-0.38	-0.99	-0.93	-1.92	-----	-0.06
6220	-0.29	0.55	0.24	0.54	0.57	0.97	-----	2.27
6257	-----	-----	-----	-----	-----	-----	-----	-----
6266	-----	-----	-----	-----	-----	-----	-----	-----
6279	-----	-----	-----	-----	-----	-----	-----	-----
6332	-----	-----	-----	-----	-----	-----	-----	-----
6335	-----	-----	-----	-----	-----	-----	-----	-----
6346	-----	-----	-----	-----	-----	-----	-----	-----
6364	-----	-----	-----	-----	-----	-----	-----	-----
6373	-----	-----	-----	-----	-----	-----	-----	-----
6376	-----	-----	-----	-----	-----	-----	-----	-----
6400	-----	-----	-----	-----	-----	-----	-----	-----
6406	-----	-----	-----	-----	-----	-----	-----	-----

lab	IBP	5%rec	10%rec	20%rec	30%rec	40%rec	50%rec	FBP
6416	-----	-----	-----	-----	-----	-----	-----	-----
6444	-----	-----	-----	-----	-----	-----	-----	-----
6447	-----	-----	-----	-----	-----	-----	-----	-----
6460	-----	-----	-----	-----	-----	-----	-----	-----
6472	-----	-----	-----	-----	-----	-----	-----	-----
6475	-----	-----	-----	-----	-----	-----	-----	-----

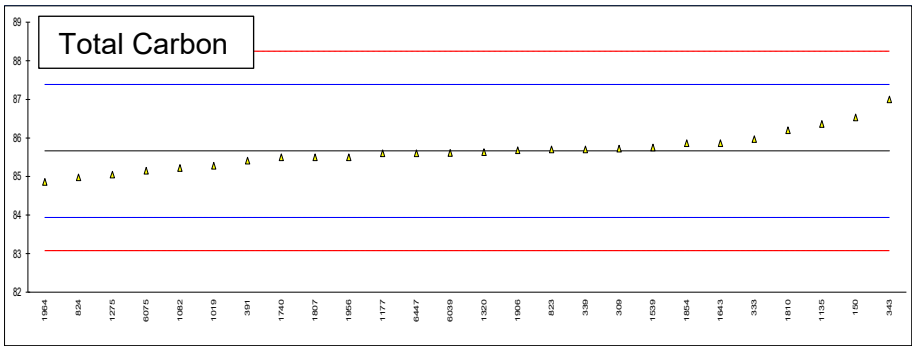
Determination of Total Carbon, Hydrogen and Nitrogen on sample #22100; results in %M/M

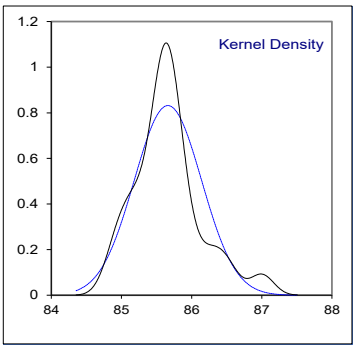
lab	method	Total C	mark	z(targ)	Total H	mark	z(targ)	Total N	mark	z(targ)
62		-----		-----	-----		-----	-----		-----
90		-----		-----	-----		-----	-----		-----
92		-----		-----	-----		-----	-----		-----
120		-----		-----	-----		-----	-----		-----
140		-----		-----	-----		-----	-----		-----
150	D5291-C	86.53		1.01	10.286		0.46	0.51		2.05
154		-----		-----	-----		-----	-----		-----
158		-----		-----	-----		-----	-----		-----
159		-----		-----	-----		-----	-----		-----
168		-----		-----	-----		-----	-----		-----
169		-----		-----	-----		-----	-----		-----
171		-----		-----	-----		-----	-----		-----
175		-----		-----	-----		-----	-----		-----
221		-----		-----	-----		-----	-----		-----
224		-----		-----	-----		-----	-----		-----
225		-----		-----	-----		-----	-----		-----
237		-----		-----	-----		-----	-----		-----
238		-----		-----	-----		-----	-----		-----
253		-----		-----	-----		-----	-----		-----
254		-----		-----	-----		-----	-----		-----
309	D5291	85.72		0.07	10.17		0.02	0.46		0.67
311		-----		-----	-----		-----	-----		-----
313		-----		-----	-----		-----	-----		-----
323		-----		-----	-----		-----	-----		-----
328		-----		-----	-----		-----	-----		-----
331		-----		-----	-----		-----	-----		-----
333	D5291-A	85.97		0.36	10.19		0.10	0.48		1.22
334		-----		-----	-----		-----	-----		-----
335		-----		-----	-----		-----	-----		-----
339	D5291	85.7		0.04	10.17		0.02	0.44		0.12
342		-----		-----	-----		-----	-----		-----
343	D5291-A	87		1.55	10		-0.62	0.4		-0.98
349		-----		-----	-----		-----	-----		-----
356		-----		-----	-----		-----	-----		-----
371		-----		-----	-----		-----	-----		-----
391	D5291-A	85.41		-0.29	10.26		0.36	0.43		-0.15
398		-----		-----	-----		-----	-----		-----
399		-----		-----	-----		-----	-----		-----
444		-----		-----	-----		-----	-----		-----
455		-----		-----	-----		-----	-----		-----
467		-----		-----	-----		-----	-----		-----
494		-----		-----	-----		-----	-----		-----
495		-----		-----	-----		-----	-----		-----
511		-----		-----	-----		-----	-----		-----
529		-----		-----	-----		-----	-----		-----
557		-----		-----	-----		-----	-----		-----
562		-----		-----	-----		-----	-----		-----
575		-----		-----	-----		-----	-----		-----
603		-----		-----	-----		-----	-----		-----
604		-----		-----	-----		-----	-----		-----
608		-----		-----	-----		-----	-----		-----
631		-----		-----	-----		-----	-----		-----
633		-----		-----	-----		-----	-----		-----
663		-----		-----	-----		-----	-----		-----
671		-----		-----	-----		-----	-----		-----
750		-----		-----	-----		-----	-----		-----
753		-----		-----	-----		-----	-----		-----
759		-----		-----	-----		-----	-----		-----
785		-----		-----	-----		-----	-----		-----
823	D5291-D	85.7		0.04	10.2		0.13	0.4		-0.98
824	D5291-D	84.98		-0.79	10.10		-0.24	0.41		-0.70
825		-----		-----	-----		-----	-----		-----
850		-----		-----	-----		-----	-----		-----
851		-----		-----	-----		-----	-----		-----
855		-----		-----	-----		-----	-----		-----
858		-----		-----	-----		-----	-----		-----
859		-----		-----	-----		-----	-----		-----
862		-----		-----	-----		-----	-----		-----
863		-----		-----	-----		-----	-----		-----
864		-----		-----	-----		-----	-----		-----
865		-----		-----	-----		-----	-----		-----
866		-----		-----	-----		-----	-----		-----
870		-----		-----	-----		-----	-----		-----
875		-----		-----	-----		-----	-----		-----
886		-----		-----	-----		-----	-----		-----

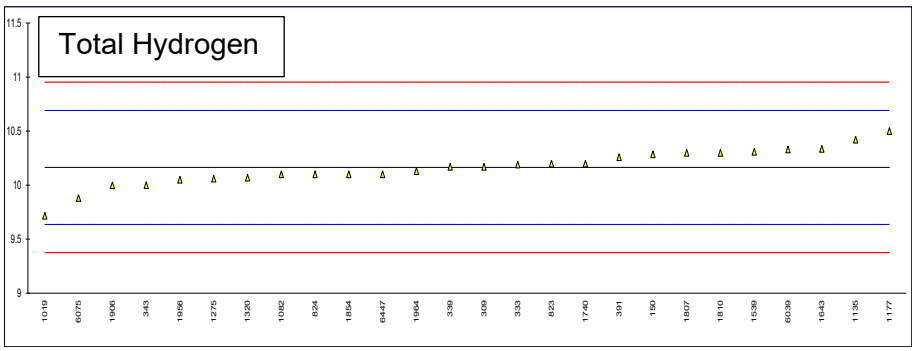
lab	method	Total C	mark	z(targ)	Total H	mark	z(targ)	Total N	mark	z(targ)
902		-----		-----	-----		-----	-----		-----
904		-----		-----	-----		-----	-----		-----
912		-----		-----	-----		-----	-----		-----
922		-----		-----	-----		-----	-----		-----
962		-----		-----	-----		-----	-----		-----
963		-----		-----	-----		-----	-----		-----
971		-----		-----	-----		-----	-----		-----
974		-----		-----	-----		-----	-----		-----
982		-----		-----	-----		-----	-----		-----
1019		85.28		-0.44	9.717		-1.70	0.453		0.48
1039		-----		-----	-----		-----	-----		-----
1059		-----		-----	-----		-----	-----		-----
1082	D5291-D	85.22		-0.51	10.10		-0.24	0.338		-2.68
1095		-----		-----	-----		-----	-----		-----
1109		-----		-----	-----		-----	-----		-----
1121		-----		-----	-----		-----	-----		-----
1126		-----		-----	-----		-----	-----		-----
1135	D5291-C	86.36		0.81	10.42		0.97	0.34		-2.62
1177	D5291-D	85.6		-0.07	10.5		1.27	0.59		4.24
1218		-----		-----	-----		-----	-----		-----
1233		-----		-----	-----		-----	-----		-----
1266		-----		-----	-----		-----	-----		-----
1275	D5291-D	85.05		-0.71	10.06		-0.40	0.45		0.40
1299		-----		-----	-----		-----	-----		-----
1320	D5291-A	85.63		-0.04	10.07		-0.36	0.36		-2.07
1345		-----		-----	-----		-----	-----		-----
1356		-----		-----	-----		-----	-----		-----
1412		-----		-----	-----		-----	-----		-----
1438		-----		-----	-----		-----	-----		-----
1459		-----		-----	-----		-----	-----		-----
1498		-----		-----	-----		-----	-----		-----
1539	D5291-D	85.75		0.10	10.31		0.55	0.5202		2.33
1556		-----		-----	-----		-----	-----		-----
1564		-----		-----	-----		-----	-----		-----
1586		-----		-----	-----		-----	-----		-----
1613		-----		-----	-----		-----	-----		-----
1643	D5291-A	85.861		0.23	10.336		0.65	0.38699		-1.33
1688		-----		-----	-----		-----	-----		-----
1720		-----		-----	-----		-----	-----		-----
1724		-----		-----	-----		-----	-----		-----
1728		-----		-----	-----		-----	-----		-----
1740	D5291-A	85.5		-0.19	10.2		0.13	0.42		-0.43
1761		-----		-----	-----		-----	-----		-----
1776		-----		-----	-----		-----	-----		-----
1792		-----		-----	-----		-----	-----		-----
1807	D5291-A	85.5		-0.19	10.3		0.51	0.34		-2.62
1810		86.2		0.62	10.3		0.51	-----		-----
1811		-----		-----	-----		-----	-----		-----
1849		-----		-----	-----		-----	-----		-----
1854	D5291-C	85.86		0.23	10.10		-0.24	0.435		-0.01
1906		85.680		0.02	9.998		-0.63	0.410		-0.70
1956		85.5		-0.19	10.05		-0.43	0.42		-0.43
1964	D5291-A	84.86		-0.93	10.13		-0.13	0.469		0.92
1971		-----		-----	-----		-----	-----		-----
1995		-----		-----	-----		-----	-----		-----
6028		-----		-----	-----		-----	-----		-----
6039	D5291-C	85.61209		-0.06	10.33		0.63	0.48		1.22
6044		-----		-----	-----		-----	-----		-----
6049		-----		-----	-----		-----	-----		-----
6075	D5291-D	85.15		-0.59	9.88		-1.08	0.51		2.05
6092		-----		-----	-----		-----	-----		-----
6114		-----		-----	-----		-----	-----		-----
6142		-----		-----	-----		-----	-----		-----
6143		-----		-----	-----		-----	-----		-----
6192		-----		-----	-----		-----	-----		-----
6203		-----		-----	-----		-----	-----		-----
6220		-----		-----	-----		-----	-----		-----
6257		-----		-----	-----		-----	-----		-----
6266		-----		-----	-----		-----	-----		-----
6279		-----		-----	-----		-----	-----		-----
6332		-----		-----	-----		-----	-----		-----
6335		-----		-----	-----		-----	-----		-----
6346		-----		-----	-----		-----	-----		-----
6364		-----		-----	-----		-----	-----		-----
6373		-----		-----	-----		-----	-----		-----
6376		-----		-----	-----		-----	-----		-----
6400		-----		-----	-----		-----	-----		-----
6406		-----		-----	-----		-----	-----		-----

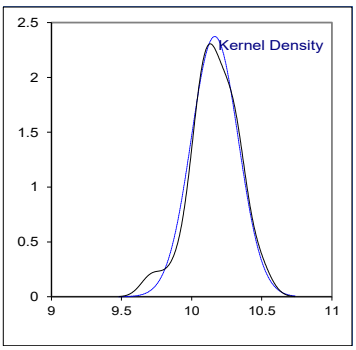
lab	method	Total C	mark	z(targ)	Total H	mark	z(targ)	Total N	mark	z(targ)
6416		-----		-----	-----		-----	-----		-----
6444		-----		-----	-----		-----	-----		-----
6447		85.6		-0.07	10.1		-0.24	-----		-----
6460		-----		-----	-----		-----	-----		-----
6472		-----		-----	-----		-----	-----		-----
6475		-----		-----	-----		-----	-----		-----

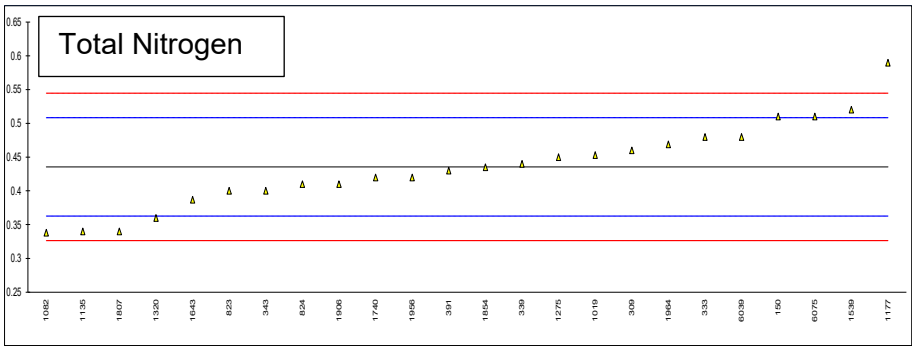
normality	suspect	OK	OK
n	26	26	24
outliers	0	0	0
mean (n)	85.6624	10.1645	0.4355
st.dev. (n)	0.47950	0.16810	0.06203
R(calc.)	1.3426	0.4707	0.1737
st.dev.(D5291-ABC:16)	0.86234	0.26348	0.03640
R(D5291-ABC:16)	2.4146	0.7377	0.1019

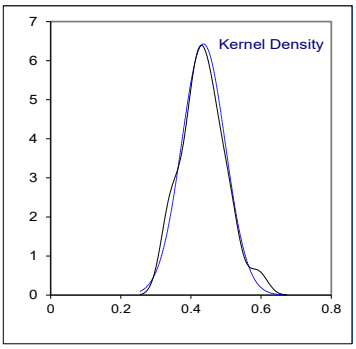












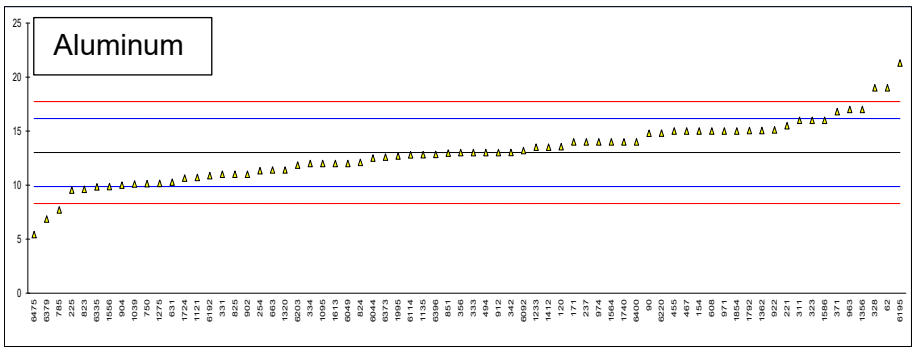
Determination of Aluminum as Al, Silicon as Si and Sum Al and Si on sample #22101; results in mg/kg

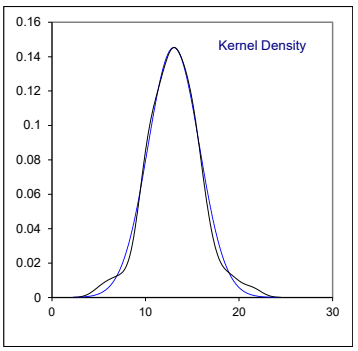
lab	method	Al	mark	z(targ)	Si	mark	z(targ)	Sum Al+Si	mark	z(targ)
62	IP501	19		3.81	17		1.21	36		3.05
90	D5184	14.8		1.13	15.3		0.61	30.1		1.24
92		-----		-----	-----		-----	-----		-----
120	IP501	13.54	C	0.33	16.26	C	0.95	29.8	C	1.14
140		-----		-----	-----		-----	-----		-----
150		-----		-----	-----		-----	-----		-----
154	IP501	15		1.26	14		0.15	29		0.90
159		-----		-----	-----		-----	-----		-----
168		-----		-----	-----		-----	-----		-----
171	IP470	14		0.63	13		-0.20	-----		-----
175		-----		-----	-----		-----	-----		-----
221	IP501	15.5		1.58	14.4		0.29	29.9		1.17
225	IP501	9.53		-2.22	9.58		-1.40	19.11		-2.14
237	IP501	14		0.63	13		-0.20	27		0.28
254	IP501	11.330		-1.07	5.500		-2.84	16.830		-2.85
311	IP501	16		1.90	16		0.85	32		1.82
323	IP501	16		1.90	17		1.21	33		2.13
328	IP501	19		3.81	19		1.91	38		3.67
331	IP501Mod.	11		-1.28	12		-0.55	23		-0.95
333	IP501	13		-0.01	13		-0.20	26		-0.03
334	IP501	12		-0.65	13		-0.20	25		-0.33
342	IP501	13.0082		0.00	13.1089		-0.16	26.1171		0.01
343		-----		-----	-----		-----	-----		-----
356	IP501	13		-0.01	13		-0.20	26		-0.03
371	IP470	16.79		2.40	16.30		0.96	33.09		2.16
391		-----		-----	-----		-----	-----		-----
398		-----		-----	-----		-----	-----		-----
399		-----		-----	-----		-----	-----		-----
444		-----		-----	-----		-----	-----		-----
455	IP501	15		1.26	16		0.85	-----		-----
467	IP501	15.0		1.26	17.7		1.45	32.7		2.04
494	IP501	13		-0.01	17		1.21	30		1.21
511		-----		-----	-----		-----	-----		-----
557		-----		-----	-----		-----	-----		-----
608	IP501	15		1.26	14		0.15	28	E	0.59
631	IP470	10.27		-1.75	14.03		0.16	24.3		-0.55
663	IP501	11.4		-1.03	11.2		-0.83	22.6		-1.07
750	IP501	10.13		-1.84	12.55		-0.36	22.68		-1.05
785	IP470	7.7		-3.38	13.2		-0.13	20.9		-1.59
823	IP501	9.6		-2.17	12.0		-0.55	21.6		-1.38
824	IP501	12.1		-0.58	12.8		-0.27	24.9		-0.36
825	IP501	11		-1.28	12		-0.55	23		-0.95
850		-----		-----	-----		-----	-----		-----
851	IP501	12.96	C	-0.04	8.962	C	-1.62	21.922	C	-1.28
855		-----		-----	-----		-----	-----		-----
862		-----		-----	-----		-----	-----		-----
863		-----		-----	-----		-----	-----		-----
864		-----		-----	-----		-----	-----		-----
865		-----		-----	-----		-----	-----		-----
875		-----		-----	-----		-----	-----		-----
902	IP501	11		-1.28	14		0.15	25		-0.33
904	IP470	10		-1.92	13		-0.20	23		-0.95
912	IP501	13		-0.01	16		0.85	29		0.90
922	IP470	15.1		1.33	16.3		0.96	31.4		1.64
963	IP470	17		2.53	12		-0.55	29		0.90
971	IP501	15		1.26	14		0.15	29		0.90
974	IP501	14		0.63	14		0.15	28		0.59
1039	IP501	10.1		-1.85	12.1		-0.52	22.2		-1.19
1059		-----		-----	-----		-----	-----		-----
1095	IP501	12		-0.65	13		-0.20	25		-0.33
1109		-----		-----	-----		-----	-----		-----
1121	IP501	10.7		-1.47	10.9		-0.94	21.6		-1.38
1135	IP501	12.812		-0.13	15.566		0.70	18.378	E	-2.37
1218		-----		-----	-----		-----	-----		-----
1233	IP501	13.5		0.31	14		0.15	27.5		0.44
1275	IP501	10.159		-1.82	14.001		0.15	24.160		-0.59
1299		-----		-----	-----		-----	-----		-----
1320	IP501	11.4		-1.03	11.2		-0.83	22.6		-1.07
1345		-----		-----	-----		-----	-----		-----
1356	ISO10478	17		2.53	15		0.50	32		1.82
1362	IP470	15.05		1.29	21.74		2.87	36.79		3.29
1372		-----		-----	-----		-----	-----		-----
1412	IP501	13.5		0.31	-----		-----	-----		-----
1556	IP501	9.87		-2.00	11.3		-0.80	21.17		-1.51

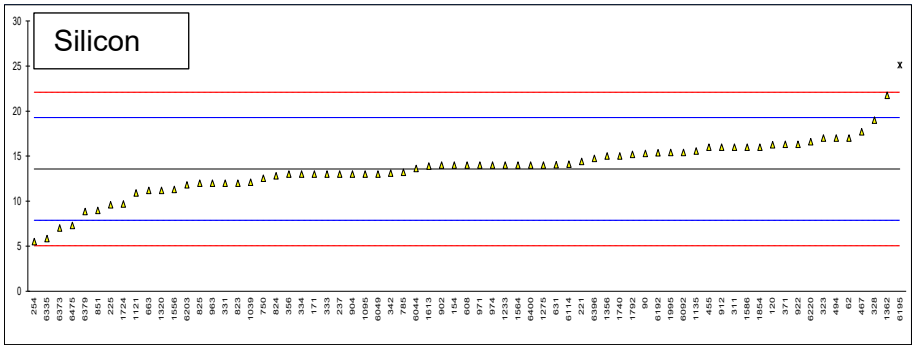
lab	method	Al	mark	z(targ)	Si	mark	z(targ)	Sum Al+Si	mark	z(targ)
1564	IP501	14		0.63	14		0.15	28		0.59
1586	IP501	16		1.90	16		0.85	32		1.82
1613	IP501	12.0		-0.65	13.9		0.12	25.9		-0.06
1643		-----		-----	-----		-----	-----		-----
1724	IP501	10.64		-1.51	9.68		-1.37	20.32		-1.77
1740	IP501	14		0.63	15		0.50	19		-2.18
1776		-----		-----	-----		-----	-----		-----
1792	IP501	15.04		1.29	15.20		0.57	30.24		1.28
1807		-----		-----	-----		-----	-----		-----
1810		-----		-----	-----		-----	-----		-----
1811		-----		-----	-----		-----	-----		-----
1854	IP501	15		1.26	16		0.85	31		1.51
1971		-----		-----	-----		-----	-----		-----
1995	IP501	12.7		-0.20	15.4		0.64	28.1		0.62
6044	IP501	12.495		-0.33	13.619		0.02	26.114		0.01
6049	IP501	12		-0.65	13		-0.20	25		-0.33
6075		-----		-----	-----		-----	-----		-----
6092	IP501	13.2		0.12	15.4		0.64	-----		-----
6114	IP501	12.8		-0.14	14.1		0.19	26.9		0.25
6142		-----		-----	-----		-----	-----		-----
6192	IP501	10.88		-1.36	15.38		0.64	26.26		0.05
6195	IP501	21.3		5.27	25.1	R(0.05)	4.05	46.4	R(0.05)	6.25
6203	IP501	11.85		-0.74	11.80		-0.62	23.65		-0.75
6204		-----		-----	-----		-----	-----		-----
6220	IP501	14.82		1.15	16.6		1.06	31.42		1.64
6335	D5185	9.83		-2.03	5.85		-2.71	15.68		-3.20
6373	IP501	12.6	C	-0.26	7		-2.31	13	E	-4.02
6379	D5183	6.843		-3.93	8.837		-1.66	-----		-----
6396	IP501	12.84		-0.11	14.745		0.41	27.585		0.46
6400	IP501	14		0.63	14		0.15	28		0.59
6406		-----		-----	-----		-----	-----		-----
6472		-----		-----	-----		-----	-----		-----
6475	EN15944/IP501	5.42		-4.83	7.30		-2.20	12.72		-4.11

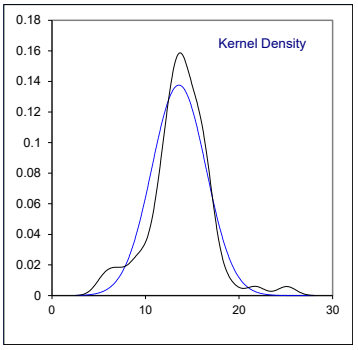
	normality	suspect	suspect	OK
	n	70	68	64
	outliers	0	1	1
	mean (n)	13.02	13.57	26.08
	st.dev. (n)	2.747	2.898	5.284
	R(calc.)	7.69	8.11	14.80
	st.dev.(IP470:05)	1.573	2.845	3.251
	R(IP470:05)	4.40	7.97	9.10
Compare				
	R(IP501:05R19)	4.39	4.51	6.29

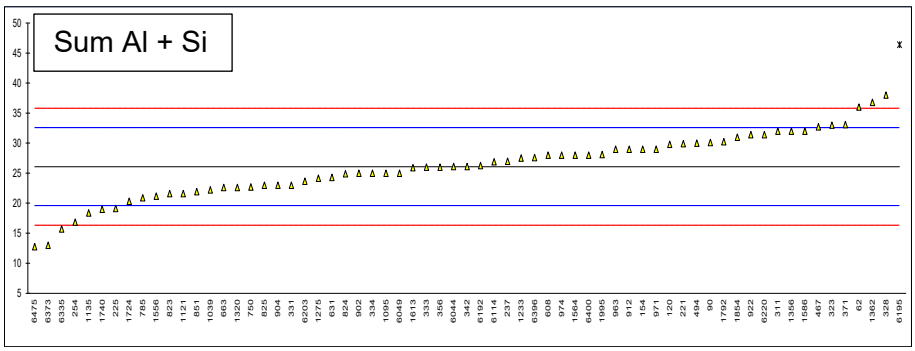
Lab 120 first reported 4.858, 6.213, 11
Lab 608 calculation difference, iis calculated 29
Lab 851 first reported 5.50, 8.54, 14.04
Lab 1135 calculation difference, iis calculated 28.378
Lab 6373 first reported 6, calculation difference, iis calculated 19.6

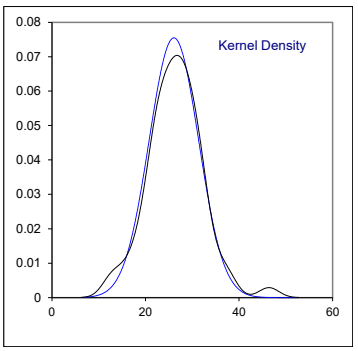

Aluminum


Kernel Density


Silicon


Kernel Density


Sum Al + Si

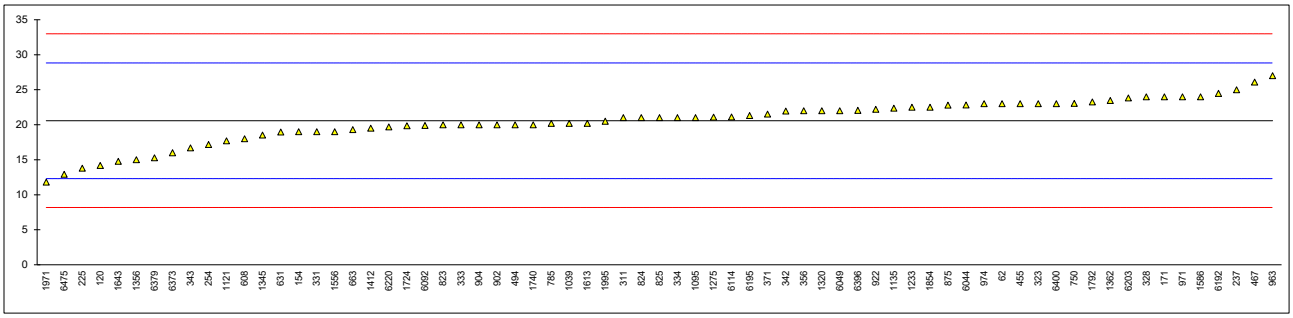

Kernel Density

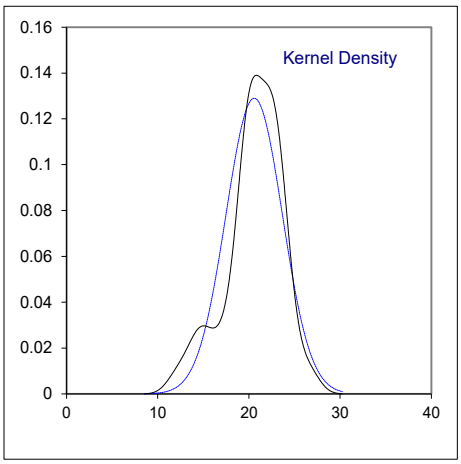
Determination of Iron as Fe on sample #22101; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62	IP501	23		0.59	
90		-----		-----	
92		-----		-----	
120	IP501	14.17		-1.55	
140		-----		-----	
150		-----		-----	
154	IP501	19		-0.38	
159		-----		-----	
168		-----		-----	
171	IP470	24		0.83	
175		-----		-----	
221		-----		-----	
225	IP501	13.80		-1.64	
237	IP501	25		1.07	
254	IP501	17.170		-0.82	
311	IP501	21		0.10	
323	IP501	23		0.59	
328	IP501	24		0.83	
331	IP501Mod.	19		-0.38	
333	IP501	20		-0.14	
334	IP501	21		0.10	
342	IP501	21.9532		0.33	
343	D5708	16.7		-0.94	
356	IP501	22		0.35	
371	IP470	21.51		0.23	
391		-----		-----	
398		-----		-----	
399		-----		-----	
444		-----		-----	
455	IP501	23		0.59	
467	IP501	26.1		1.34	
494	IP501	20		-0.14	
511		-----		-----	
557		-----		-----	
608	IP501	18		-0.62	
631	IP470	18.97		-0.39	
663	IP501	19.3		-0.31	
750	IP501	23.05		0.60	
785	IP470	20.2		-0.09	
823	IP501	20.0		-0.14	
824	IP501	21.0		0.10	
825	IP501	21		0.10	
850		-----		-----	
851		-----		-----	
855		-----		-----	
862		-----		-----	
863		-----		-----	
864		-----		-----	
865		-----		-----	
875	IP501	22.8		0.54	
902	IP501	20		-0.14	
904	IP470	20		-0.14	
912		-----		-----	
922	IP470	22.2		0.39	
963	IP470	27		1.55	
971	IP501	24		0.83	
974	IP501	23		0.59	
1039	IP501	20.2		-0.09	
1059		-----		-----	
1095	IP501	21		0.10	
1109		-----		-----	
1121	IP501	17.7		-0.69	
1135	IP501	22.362		0.43	
1218		-----		-----	
1233	IP501	22.5		0.47	
1275	IP501	21.078		0.12	
1299		-----		-----	
1320	IP501	22.0		0.35	
1345	IP470	18.51		-0.50	
1356	IP501	15	C	-1.35	first reported 4
1362	IP470	23.47		0.70	
1372		-----		-----	
1412	IP501	19.5		-0.26	
1556	IP501	19.0		-0.38	

lab	method	value	mark	z(targ)	remarks
1564		-----		-----	
1586	IP501	24		0.83	
1613	IP501	20.2		-0.09	
1643	D5185	14.77		-1.40	
1724	IP501	19.85		-0.17	
1740	IP501	20		-0.14	
1776		-----		-----	
1792	IP501	23.24	C	0.64	first reported 10.78
1807		-----		-----	
1810		-----	W	-----	test result withdrawn, reported 14.4
1811		-----		-----	
1854	IP470	22.5		0.47	
1971	D5708	11.8		-2.12	
1995	IP501	20.5		-0.02	
6044	IP501	22.824		0.54	
6049	IP501	22		0.35	
6075		-----		-----	
6092	IP501	19.9		-0.16	
6114	IP501	21.1		0.13	
6142		-----		-----	
6192	IP501	24.49		0.95	
6195	IP501	21.3		0.18	
6203	IP501	23.84		0.79	
6204		-----		-----	
6220	IP501	19.7		-0.21	
6335		-----		-----	
6373	IP501	16		-1.11	
6379	D5185	15.26		-1.28	
6396	IP501	22.06		0.36	
6400	IP501	23		0.59	
6406		-----		-----	
6472		-----		-----	
6475	EN15944/IP501	12.92		-1.85	

	normality	OK
	n	69
	outliers	0
	mean (n)	20.57
	st.dev. (n)	3.094
	R(calc.)	8.66
	st.dev.(IP470:05)	4.136
	R(IP470:05)	11.58
Compare		
	R(IP501:05R19)	4.95



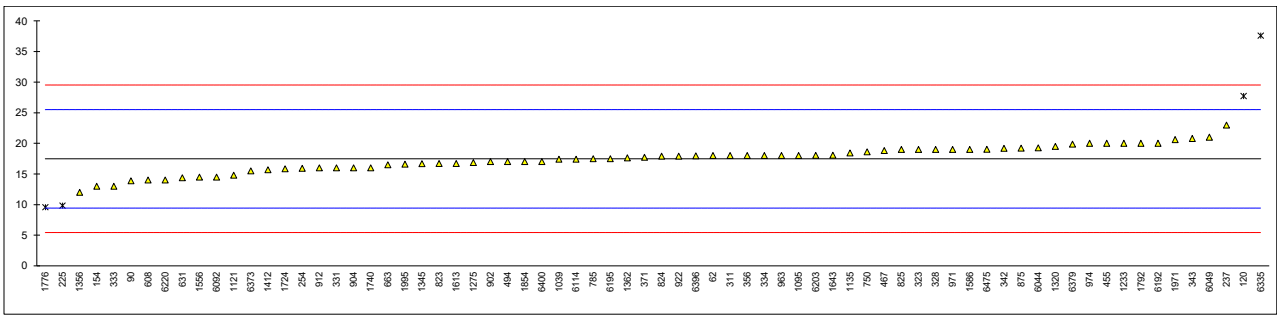


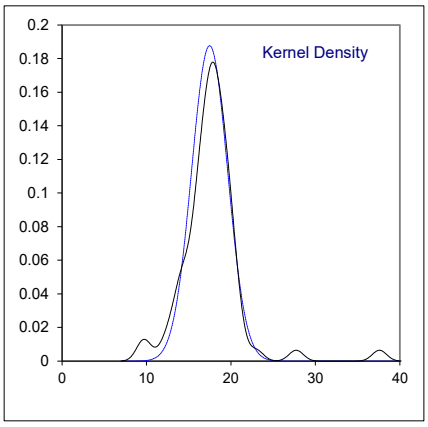
Determination of Nickel as Ni on sample #22101; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62	IP501	18		0.13	
90	D5863-A	13.9		-0.89	
92		-----		-----	
120	IP501	27.73	R(0.01)	2.55	
140		-----		-----	
150		-----		-----	
154	IP501	13		-1.11	
159		-----		-----	
168		-----		-----	
171		-----		-----	
175		-----		-----	
221		-----		-----	
225	IP501	9.83	R(0.05)	-1.90	
237	IP501	23		1.37	
254	IP501	15.930		-0.38	
311	IP501	18		0.13	
323	IP501	19		0.38	
328	IP501	19		0.38	
331	IP501Mod.	16		-0.37	
333	IP501	13		-1.11	
334	IP501	18		0.13	
342	IP501	19.1782		0.42	
343	D5708	20.8		0.83	
356	IP501	18		0.13	
371	IP470	17.72		0.06	
391		-----		-----	
398		-----		-----	
399		-----		-----	
444		-----		-----	
455	IP501	20		0.63	
467	IP501	18.8		0.33	
494	IP501	17		-0.12	
511		-----		-----	
557		-----		-----	
608	IP501	14		-0.87	
631	IP470	14.38		-0.77	
663	IP501	16.5		-0.24	
750	IP501	18.61		0.28	
785	IP470	17.5		0.01	
823	IP501	16.7		-0.19	
824	IP501	17.9		0.11	
825	IP501	19		0.38	
850		-----		-----	
851		-----		-----	
855		-----		-----	
862		-----		-----	
863		-----		-----	
864		-----		-----	
865		-----		-----	
875	IP501	19.2		0.43	
902	IP501	17		-0.12	
904	IP PM CW	16		-0.37	
912	IP501	16		-0.37	
922	IP470	17.9		0.11	
963	IP470	18		0.13	
971	IP501	19		0.38	
974	IP501	20		0.63	
1039	IP501	17.4		-0.02	
1059		-----		-----	
1095	IP501	18		0.13	
1109		-----		-----	
1121	IP501	14.8		-0.67	
1135	IP501	18.411		0.23	
1218		-----		-----	
1233	IP501	20		0.63	
1275	IP501	16.879		-0.15	
1299		-----		-----	
1320	IP501	19.5		0.50	
1345	IP470	16.68		-0.20	
1356	IP501	12		-1.36	
1362	IP470	17.64		0.04	
1372		-----		-----	
1412	IP501	15.7		-0.44	
1556	IP501	14.5		-0.74	

lab	method	value	mark	z(targ)	remarks
1564		-----		-----	
1586	IP501	19		0.38	
1613	IP501	16.7		-0.19	
1643	D5185	18.08		0.15	
1724	IP501	15.82		-0.41	
1740	IP501	16		-0.37	
1776	IP470	9.57	R(0.05)	-1.97	
1792	IP501	20.00	C	0.63	first reported 9.26
1807		-----		-----	
1810		-----	W	-----	test result withdrawn, reported 37.3
1811		-----		-----	
1854	IP501	17		-0.12	
1971	D5708	20.6		0.78	
1995	IP501	16.6		-0.22	
6044	IP501	19.267		0.45	
6049	IP501	21		0.88	
6075		-----		-----	
6092	IP501	14.5		-0.74	
6114	IP501	17.4		-0.02	
6142		-----		-----	
6192	IP501	20.0		0.63	
6195	IP501	17.5		0.01	
6203	IP501	18.04		0.14	
6204		-----		-----	
6220	IP470	14		-0.87	
6335	D5185	37.59	R(0.01)	5.00	
6373	IP501	15.5	C	-0.49	first reported 31
6379	D5185	19.87		0.60	
6396	IP501	17.945		0.12	
6400	IP501	17		-0.12	
6406		-----		-----	
6472		-----		-----	
6475	EN15944/IP501	19.04		0.39	

	normality	OK
	n	68
	outliers	4
	mean (n)	17.48
	st.dev. (n)	2.125
	R(calc.)	5.95
	st.dev.(IP470:05)	4.019
	R(IP470:05)	11.25
Compare		
	R(IP501:05R19)	8.11



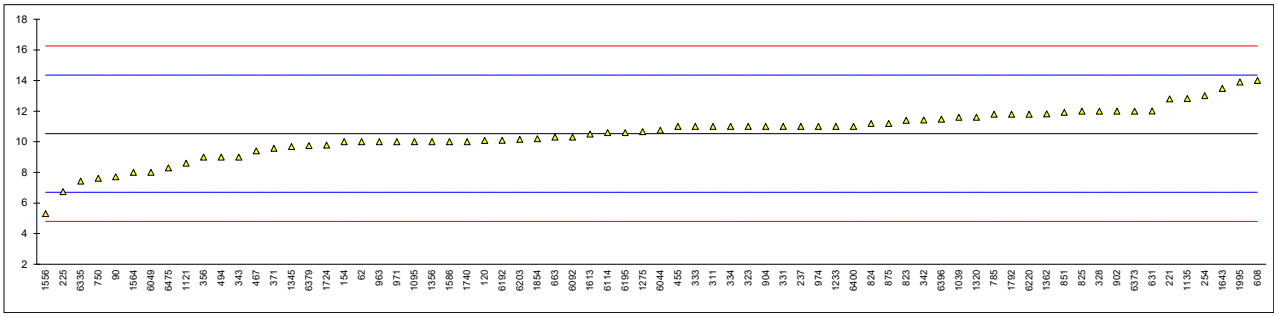


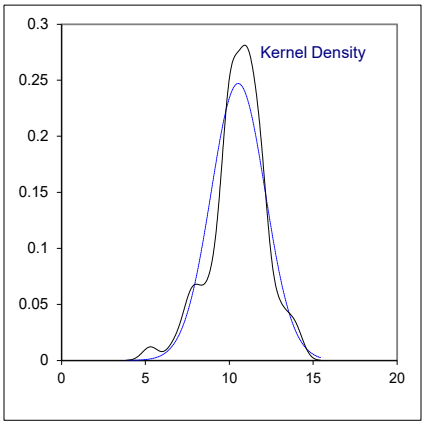
Determination of Sodium as Na on sample #22101; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62	IP501	10		-0.28	
90	D5863-B	7.7		-1.48	
92		-----		-----	
120	IP501	10.09		-0.23	
140		-----		-----	
150		-----		-----	
154	IP501	10		-0.28	
159		-----		-----	
168		-----		-----	
171		-----		-----	
175		-----		-----	
221	IP501	12.8		1.19	
225	IP501	6.73		-1.99	
237	IP501	11		0.25	
254	IP501	13.020		1.30	
311	IP501	11		0.25	
323	IP501	11		0.25	
328	IP501	12		0.77	
331	IP501Mod.	11		0.25	
333	IP501	11		0.25	
334	IP501	11		0.25	
342	IP501	11.4216		0.47	
343	IP501	9		-0.80	
356	IP501	9		-0.80	
371	IP470	9.57		-0.50	
391		-----		-----	
398		-----		-----	
399		-----		-----	
444		-----		-----	
455	IP501	11		0.25	
467	IP501	9.4		-0.59	
494	IP501	9		-0.80	
511		-----		-----	
557		-----		-----	
608	IP501	14		1.82	
631	IP470	12.01		0.77	
663	IP501	10.3		-0.12	
750	IP501	7.61		-1.53	
785	IP470	11.8		0.66	
823	IP501	11.4		0.45	
824	IP501	11.2		0.35	
825	IP501	12		0.77	
850		-----		-----	
851	IP501	11.93	C	0.73	first reported 15.62
855		-----		-----	
862		-----		-----	
863		-----		-----	
864		-----		-----	
865		-----		-----	
875	IP501	11.2		0.35	
902	IP501	12		0.77	
904	IP470	11		0.25	
912		-----		-----	
922		-----		-----	
963	IP470	10		-0.28	
971	IP501	10		-0.28	
974	IP501	11		0.25	
1039	IP501	11.6		0.56	
1059		-----		-----	
1095	IP501	10		-0.28	
1109		-----		-----	
1121	IP501	8.6		-1.01	
1135	IP501	12.817		1.20	
1218		-----		-----	
1233	IP501	11		0.25	
1275	IP501	10.664		0.07	
1299		-----		-----	
1320	IP501	11.6		0.56	
1345	IP470	9.68		-0.45	
1356	IP501	10	C	-0.28	first reported 5
1362	IP470	11.82		0.67	
1372		-----		-----	
1412		-----		-----	
1556	IP501	5.3		-2.74	

lab	method	value	mark	z(targ)	remarks
1564	D5863-B	8		-1.32	
1586	IP501	10		-0.28	
1613	IP501	10.5		-0.02	
1643	D5185	13.48		1.54	
1724	IP501	9.78		-0.39	
1740	IP501	10		-0.28	
1776	IP470	<1		<-4.99	possibly a false negative test result?
1792	IP501	11.8		0.66	
1807		-----		-----	
1810		-----		-----	
1811		-----		-----	
1854	IP501	10.2		-0.17	
1971		-----		-----	
1995	IP501	13.90	C	1.76	first reported 41.8
6044	IP501	10.756		0.12	
6049	IP501	8		-1.32	
6075		-----		-----	
6092	IP501	10.3		-0.12	
6114	IP501	10.6		0.04	
6142		-----		-----	
6192	IP501	10.1		-0.23	
6195	IP501	10.6		0.04	
6203	IP501	10.15		-0.20	
6204		-----		-----	
6220	IP501	11.8		0.66	
6335	D5185	7.43		-1.62	
6373	IP501	12		0.77	
6379	D5185	9.743		-0.41	
6396	IP501	11.475		0.49	
6400	IP501	11		0.25	
6406		-----		-----	
6472		-----		-----	
6475	EN15944/IP501	8.30		-1.17	

	normality	suspect
	n	70
	outliers	0
	mean (n)	10.53
	st.dev. (n)	1.614
	R(calc.)	4.52
	st.dev.(IP470:05)	1.911
	R(IP470:05)	5.35
Compare		
	R(IP501:05R19)	3.89



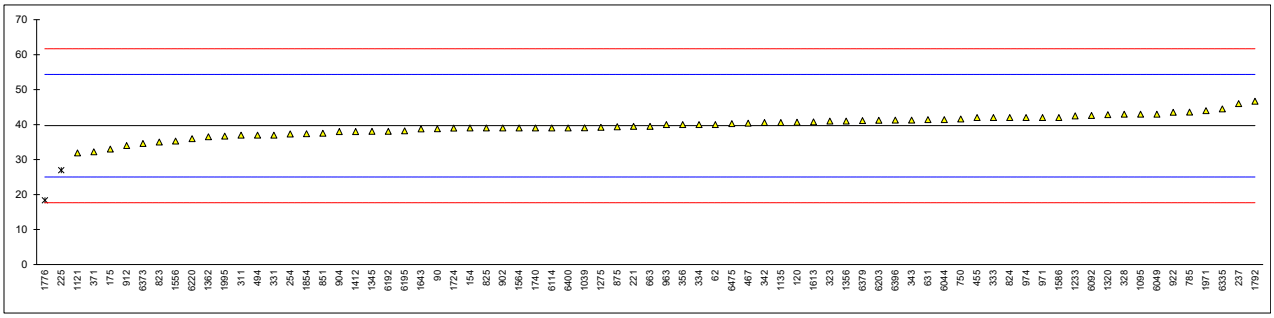


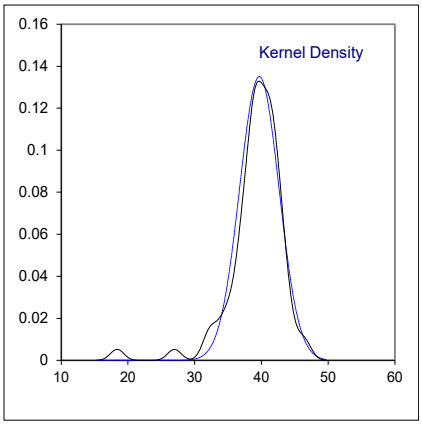
Determination of Vanadium as V on sample #22101; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62	IP501	40		0.04	
90	D5863-A	38.8		-0.12	
92		-----		-----	
120	IP501	40.69	C	0.14	first reported 89.22
140		-----		-----	
150		-----		-----	
154	IP501	39		-0.09	
159		-----		-----	
168		-----		-----	
171		-----		-----	
175	D5863-B	33		-0.91	
221	IP501	39.5		-0.03	
225	IP501	26.96	R(0.01)	-1.74	
237	IP501	46		0.86	
254	IP501	37.330		-0.32	
311	IP501	37		-0.37	
323	IP501	41		0.18	
328	IP501	43		0.45	
331	IP501Mod.	37		-0.37	
333	IP501	42		0.32	
334	IP501	40		0.04	
342	IP501	40.6094		0.13	
343	D5708	41.3		0.22	
356	IP501	40		0.04	
371	IP470	32.25		-1.01	
391		-----		-----	
398		-----		-----	
399		-----		-----	
444		-----		-----	
455	IP501	42		0.32	
467	IP501	40.4		0.10	
494	IP501	37		-0.37	
511		-----		-----	
557		-----		-----	
608		-----		-----	
631	D5863-A	41.4		0.23	
663	IP501	39.5		-0.03	
750	IP501	41.60		0.26	
785	IP470	43.6		0.53	
823	IP501	35.0		-0.64	
824	IP501	42.0		0.32	
825	IP501	39		-0.09	
850		-----		-----	
851	IP501	37.54	C	-0.29	first reported 92.54
855		-----		-----	
862		-----		-----	
863		-----		-----	
864		-----		-----	
865		-----		-----	
875	IP501	39.4		-0.04	
902	IP501	39		-0.09	
904	IP470	38		-0.23	
912	ISO14597	34		-0.78	
922	IP470	43.5		0.52	
963	IP470	40		0.04	
971	IP501	42		0.32	
974	IP501	42		0.32	
1039	IP501	39.1		-0.08	
1059		-----		-----	
1095	IP501	43		0.45	
1109		-----		-----	
1121	IP501	31.9		-1.06	
1135	IP501	40.610		0.13	
1218		-----		-----	
1233	IP501	42.5		0.38	
1275	IP501	39.228		-0.06	
1299		-----		-----	
1320	IP501	42.8		0.42	
1345	IP470	38.07		-0.22	
1356	IP501	41	C	0.18	first reported 15
1362	IP470	36.50		-0.43	
1372		-----		-----	
1412	IP501	38		-0.23	
1556	IP501	35.3		-0.60	

lab	method	value	mark	z(targ)	remarks
1564	D5863-B	39		-0.09	
1586	IP501	42		0.32	
1613	IP501	40.8		0.15	
1643	D5185	38.78		-0.12	
1724	IP501	38.99		-0.10	
1740	IP501	39		-0.09	
1776	IP470	18.37	R(0.01)	-2.91	
1792	IP501	46.7		0.96	
1807		-----		-----	
1810		-----	W	-----	test result withdrawn, reported 97.8
1811		-----		-----	
1854	IP470	37.4		-0.31	
1971	D5708	44.0		0.59	
1995	IP501	36.7		-0.41	
6044	IP501	41.401		0.23	
6049	IP501	43		0.45	
6075		-----		-----	
6092	IP501	42.6		0.40	
6114	IP501	39.0		-0.09	
6142		-----		-----	
6192	IP501	38.10		-0.22	
6195	IP501	38.2		-0.20	
6203	IP501	41.23		0.21	
6204		-----		-----	
6220	IP470	36		-0.50	
6335	D5185	44.49		0.65	
6373	IP501	34.6	C	-0.69	first reported 84
6379	D5185	41.18		0.20	
6396	IP501	41.285		0.22	
6400	IP501	39		-0.09	
6406		-----		-----	
6472		-----		-----	
6475	EN15944/IP501	40.27		0.08	

	normality	OK
	n	73
	outliers	2
	mean (n)	39.69
	st.dev. (n)	2.955
	R(calc.)	8.27
	st.dev.(IP470:05)	7.335
	R(IP470:05)	20.54
Compare		
	R(IP501:05R19)	15.29

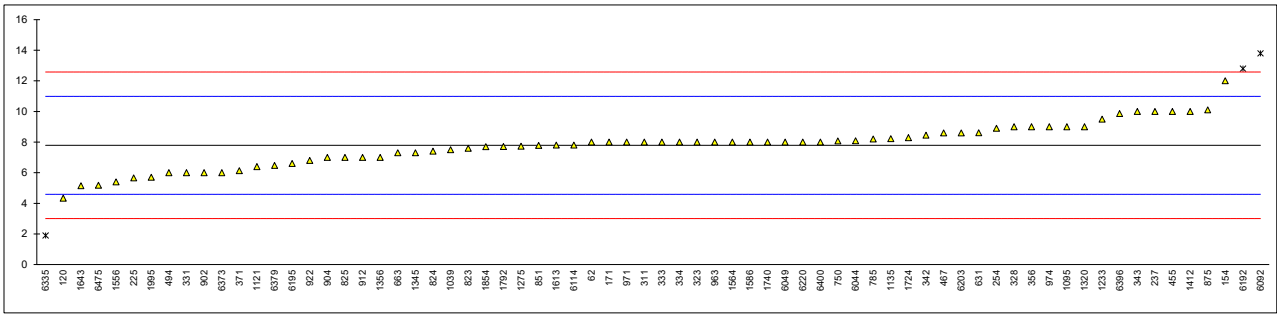


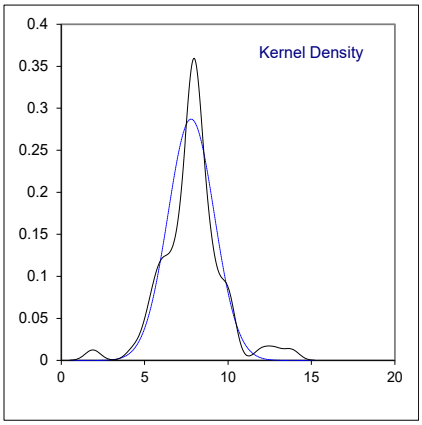


Determination of Calcium as Ca on sample #22101; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62	IP501	8		0.13	
90		-----		-----	
92		-----		-----	
120	IP501	4.34		-2.16	
140		-----		-----	
150		-----		-----	
154	IP501	12		2.63	
159		-----		-----	
168		-----		-----	
171	IP470	8		0.13	
175		-----		-----	
221		-----		-----	
225	IP501	5.66		-1.33	
237	IP501	10		1.38	
254	IP501	8.900		0.69	
311	IP501	8		0.13	
323	IP501	8		0.13	
328	IP501	9		0.76	
331	IP501Mod.	6		-1.12	
333	IP501	8		0.13	
334	IP501	8		0.13	
342	IP501	8.4565		0.42	
343	IP501	10		1.38	
356	IP501	9		0.76	
371	IP470	6.13		-1.04	
391		-----		-----	
398		-----		-----	
399		-----		-----	
444		-----		-----	
455	IP501	10		1.38	
467	IP501	8.6		0.51	
494	IP501	6		-1.12	
511		-----		-----	
557		-----		-----	
608		-----		-----	
631	IP470	8.61		0.51	
663	IP501	7.3		-0.31	
750	IP501	8.08		0.18	
785	IP470	8.2		0.26	
823	IP501	7.6		-0.12	
824	IP501	7.4		-0.24	
825	IP501	7		-0.49	
850		-----		-----	
851	IP501	7.778	C	-0.01	first reported 8.26
855		-----		-----	
862		-----		-----	
863		-----		-----	
864		-----		-----	
865		-----		-----	
875	IP501	10.1		1.45	
902	IP501	6		-1.12	
904	IP470	7		-0.49	
912	IP501	7		-0.49	
922	IP470	6.8		-0.62	
963	IP470	8		0.13	
971	IP501	8		0.13	
974	IP501	9		0.76	
1039	IP501	7.5		-0.18	
1059		-----		-----	
1095	IP501	9		0.76	
1109		-----		-----	
1121	IP501	6.4		-0.87	
1135	IP501	8.224		0.27	
1218		-----		-----	
1233	IP501	9.5		1.07	
1275	IP501	7.724		-0.04	
1299		-----		-----	
1320	IP501	9.00		0.76	
1345	IP470	7.30		-0.31	
1356	IP501	7		-0.49	
1362		-----		-----	
1372		-----		-----	
1412	IP501	10		1.38	
1556	IP501	5.4		-1.50	

lab	method	value	mark	z(targ)	remarks
1564	IP501	8		0.13	
1586	IP501	8		0.13	
1613	IP501	7.8		0.01	
1643	D5185	5.153		-1.65	
1724	IP501	8.29		0.31	
1740	IP501	8		0.13	
1776		-----		-----	
1792	IP501	7.71		-0.05	
1807		-----		-----	
1810		-----		-----	
1811		-----		-----	
1854	IP PM CW	7.7		-0.06	
1971		-----		-----	
1995	IP501	5.7		-1.31	
6044	IP501	8.083		0.18	
6049	IP501	8		0.13	
6075		-----		-----	
6092	IP501	13.8	R(0.05)	3.76	
6114	IP501	7.8		0.01	
6142		-----		-----	
6192	IP501	12.80	R(0.05)	3.14	
6195	IP501	6.6		-0.74	
6203	IP501	8.60		0.51	
6204		-----		-----	
6220	IP501	8		0.13	
6335	D5185	1.90	R(0.05)	-3.69	
6373	IP501	6		-1.12	
6379	D5185	6.467		-0.83	
6396	IP501	9.8565		1.29	
6400	IP501	8		0.13	
6406		-----		-----	
6472		-----		-----	
6475	EN15944/IP501	5.18		-1.63	
	normality	OK			
	n	67			
	outliers	3			
	mean (n)	7.79			
	st.dev. (n)	1.389			
	R(calc.)	3.89			
	st.dev.(IP470:05)	1.598			
	R(IP470:05)	4.47			
Compare					
	R(IP501:05R19)	2.45			



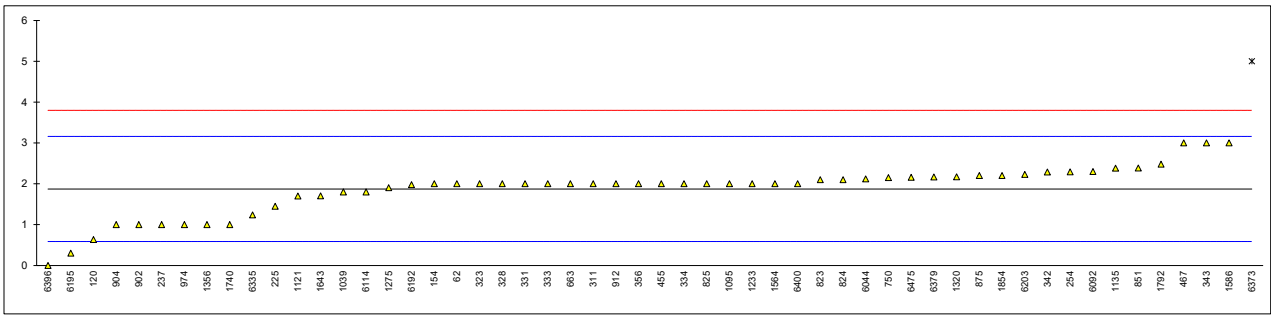


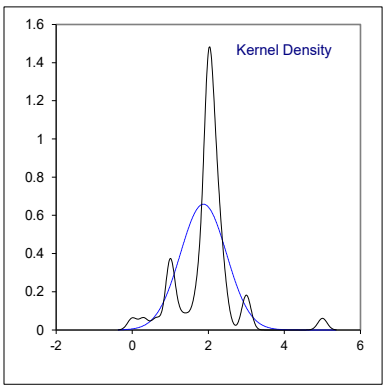
Determination of Phosphorus as P on sample #22101; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62	IP501	2		0.20	
90		-----		-----	
92		-----		-----	
120	IP501	0.633		-1.93	
140		-----		-----	
150		-----		-----	
154	IP501	2		0.20	
159		-----		-----	
168		-----		-----	
171		-----		-----	
175		-----		-----	
221		-----		-----	
225	IP501	1.45		-0.66	
237	IP501	1	C	-1.36	first reported 4
254	IP501	2.290		0.65	
311	IP501	2		0.20	
323	IP501	2		0.20	
328	IP501	2		0.20	
331	IP501Mod.	2		0.20	
333	IP501	2		0.20	
334	IP501	2		0.20	
342	IP501	2.2872		0.64	
343	IP501	3		1.75	
356	IP501	2		0.20	
371		-----		-----	
391		-----		-----	
398		-----		-----	
399		-----		-----	
444		-----		-----	
455	IP501	2		0.20	
467	IP501	3.0		1.75	
494	IP501	<1		-----	
511		-----		-----	
557		-----		-----	
608		-----		-----	
631		-----		-----	
663	IP501	2.0		0.20	
750	IP501	2.15		0.43	
785		-----		-----	
823	IP501	2.1		0.35	
824	IP501	2.1		0.35	
825	IP501	2		0.20	
850		-----		-----	
851	IP501	2.386	C	0.80	first reported 0.45
855		-----		-----	
862		-----		-----	
863		-----		-----	
864		-----		-----	
865		-----		-----	
875	IP501	2.2		0.51	
902	IP501	1		-1.36	
904	IP501	1		-1.36	
912	IP501	2		0.20	
922		-----		-----	
963	IP501	<1		-----	
971	IP501	<1		-----	
974	IP501	1		-1.36	
1039	IP501	1.8		-0.11	
1059		-----		-----	
1095	IP501	2		0.20	
1109		-----		-----	
1121	IP501	1.7		-0.27	
1135	IP501	2.383		0.79	
1218		-----		-----	
1233	IP501	2		0.20	
1275	IP501	1.903		0.05	
1299		-----		-----	
1320	IP501	2.17		0.46	
1345		-----		-----	
1356	IP501	1		-1.36	
1362		-----		-----	
1372		-----		-----	
1412		-----		-----	
1556		-----	W	-----	test result withdrawn, reported 0

lab	method	value	mark	z(targ)	remarks
1564	IP501	2		0.20	
1586	IP501	3		1.75	
1613		-----		-----	
1643	D5185	1.704		-0.26	
1724		-----	W	-----	test result withdrawn, reported 0
1740	IP501	1		-1.36	
1776		-----		-----	
1792	IP501	2.48		0.94	
1807		-----		-----	
1810		-----		-----	
1811		-----		-----	
1854	IP501	2.2		0.51	
1971		-----		-----	
1995	IP501	<1		-----	
6044	IP501	2.117		0.38	
6049	IP501	<1		-----	
6075		-----		-----	
6092	IP501	2.3		0.66	
6114	IP501	1.8		-0.11	
6142		-----		-----	
6192		1.98		0.17	
6195	IP501	0.3		-2.44	
6203	IP501	2.23		0.56	
6204		-----		-----	
6220		-----		-----	
6335	D5185	1.24		-0.98	
6373	IP501	5.0	C,R(0.01)	4.86	first reported 0
6379	D5185	2.167		0.46	
6396	IP501	0		-2.91	
6400	IP501	2		0.20	
6406		-----		-----	
6472		-----		-----	
6475	EN15944/IP501	2.16		0.45	

	normality	suspect
	n	53
	outliers	1
	mean (n)	1.87
	st.dev. (n)	0.606
	R(calc.)	1.70
	st.dev.(IP501:05R19)	0.644
	R(IP501:05R19)	1.80
Compare		
	R(IP500:03)	1.56



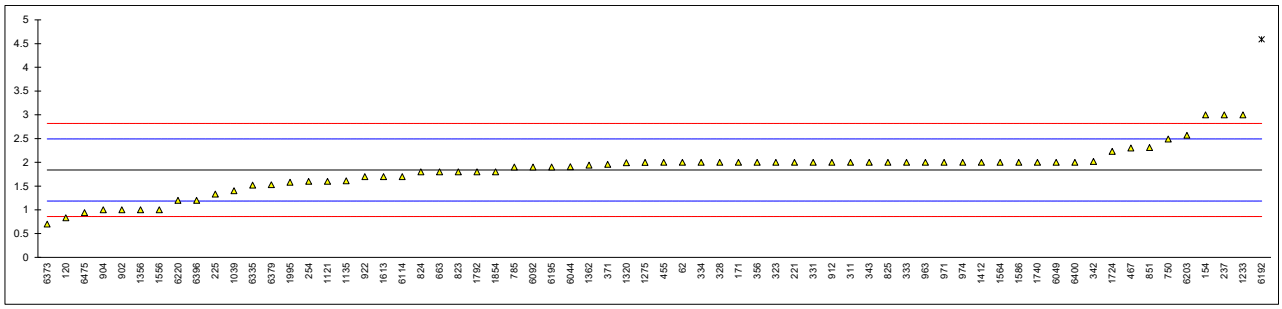


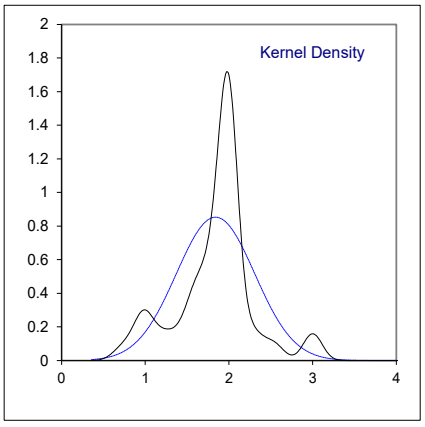
Determination of Zinc as Zn on sample #22101; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62	IP501	2		0.49	
90		-----		-----	
92		-----		-----	
120	IP501	0.831		-3.08	
140		-----		-----	
150		-----		-----	
154	IP501	3		3.55	
159		-----		-----	
168		-----		-----	
171	IP470	2		0.49	
175		-----		-----	
221	IP501	2.0		0.49	
225	IP501	1.33		-1.56	
237	IP501	3		3.55	
254	IP501	1.600		-0.73	
311	IP501	2		0.49	
323	IP501	2		0.49	
328	IP501	2		0.49	
331	IP501Mod.	2		0.49	
333	IP501	2		0.49	
334	IP501	2		0.49	
342	IP501	2.0180		0.55	
343	IP501	2		0.49	
356	IP501	2		0.49	
371	IP470	1.96		0.37	
391		-----		-----	
398		-----		-----	
399		-----		-----	
444		-----		-----	
455	IP501	2		0.49	
467	IP501	2.3		1.41	
494	IP501	<1		-----	
511		-----		-----	
557		-----		-----	
608		-----		-----	
631	IP470	<1		-----	
663	IP501	1.8		-0.12	
750	IP501	2.49		1.99	
785	IP470	1.9		0.19	
823	IP501	1.8		-0.12	
824	IP501	1.8		-0.12	
825	IP501	2		0.49	
850		-----		-----	
851	IP501	2.313	C	1.45	first reported 1.46
855		-----		-----	
862		-----		-----	
863		-----		-----	
864		-----		-----	
865		-----		-----	
875	IP501	<1		-----	
902	IP501	1		-2.57	
904	IP470	1		-2.57	
912	IP501	2		0.49	
922	IP470	1.7		-0.43	
963	IP470	2		0.49	
971	IP501	2		0.49	
974	IP501	2		0.49	
1039	IP501	1.4		-1.34	
1059		-----		-----	
1095	IP501	< 4		-----	
1109		-----		-----	
1121	IP501	1.6		-0.73	
1135	IP501	1.611		-0.70	
1218		-----		-----	
1233	IP501	3		3.55	
1275	IP501	1.997		0.48	
1299		-----		-----	
1320	IP501	1.99		0.46	
1345		-----		-----	
1356	IP501	1	C	-2.57	first reported 0
1362	IP470	1.94		0.31	
1372		-----		-----	
1412	IP501	2		0.49	
1556	IP501	1	C	-2.57	first reported 0

lab	method	value	mark	z(targ)	remarks
1564	IP501	2		0.49	
1586	IP501	2		0.49	
1613	IP501	1.7		-0.43	
1643		-----		-----	
1724	IP501	2.23		1.19	
1740	IP501	2		0.49	
1776		-----		-----	
1792	IP501	1.8		-0.12	
1807		-----		-----	
1810		-----		-----	
1811		-----		-----	
1854	IP501	1.8		-0.12	
1971		-----		-----	
1995	IP501	1.58		-0.79	
6044	IP501	1.910		0.22	
6049	IP501	2		0.49	
6075		-----		-----	
6092	IP501	1.9		0.19	
6114	IP501	1.7		-0.43	
6142		-----		-----	
6192		4.59	R(0.01)	8.41	
6195	IP501	1.9		0.19	
6203	IP501	2.57		2.23	
6204		-----		-----	
6220	IP470	1.2		-1.95	
6335	D5185	1.52		-0.98	
6373	IP501	0.7		-3.48	
6379	D5185	1.529		-0.95	
6396	IP501	1.2015		-1.95	
6400	IP501	2		0.49	
6406		-----		-----	
6472		-----		-----	
6475	EN15944/IP501	0.94		-2.75	

	normality	suspect
	n	65
	outliers	1
	mean (n)	1.84
	st.dev. (n)	0.468
	R(calc.)	1.31
	st.dev.(IP470:05)	0.327
	R(IP470:05)	0.92
Compare		
	R(IP501:05R19)	0.78





APPENDIX 2 Analytical details of the determination Total Acid Number

lab	End point determination	Volume solvent	lab	End point determination	Volume solvent	lab	End point determination	Volume solvent
62	---	---	863	---	---	6114	Inflection Point	60 mL
90	---	---	864	---	---	6142	---	---
92	---	---	865	---	---	6143	---	---
120	---	125 mL	866	---	---	6192	---	---
140	---	---	870	---	---	6203	Inflection Point	125 mL
150	---	---	875	---	---	6220	Inflection Point	125 mL
154	---	---	886	---	---	6257	---	---
158	---	---	902	---	---	6266	Inflection Point	60 mL
159	---	---	904	Inflection Point	125 mL	6279	---	---
168	---	---	912	---	---	6332	---	---
169	---	---	922	Inflection Point	125 mL	6335	Inflection Point	125 mL
171	Inflection Point	125 mL	962	Inflection Point	60 mL	6346	---	---
175	---	---	963	Inflection Point	60 mL	6364	---	---
221	---	---	971	Inflection Point	125 mL	6373	Inflection Point	60 mL
224	---	---	974	---	125 mL	6376	BEP pH 11	125 mL
225	---	---	982	---	---	6400	Inflection Point	125 mL
237	Inflection Point	125 mL	1019	---	---	6406	---	---
238	---	---	1039	Inflection Point	125 mL	6416	---	---
253	---	---	1059	---	---	6444	---	---
254	---	---	1082	---	---	6447	---	---
309	BEP pH 10	125 mL	1095	---	---	6460	Inflection Point	125 mL
311	---	---	1109	---	---	6472	Inflection Point	60 mL
313	---	---	1121	BEP pH 10	125 mL	6475	---	---
323	---	---	1126	---	---			
328	---	---	1135	---	---			
331	Inflection Point	60 mL	1177	---	60 mL			
333	---	---	1218	---	---			
334	---	---	1233	Inflection Point	60 mL			
335	---	---	1266	---	---			
339	---	---	1275	Inflection Point	125 mL			
342	BEP pH 10	125 mL	1299	---	---			
343	Inflection Point	125 mL	1320	---	---			
349	---	125 mL	1345	Inflection Point	125 mL			
356	Inflection Point	125 mL	1356	Inflection Point	60 mL			
371	---	---	1412	Inflection Point	125 mL			
391	---	---	1438	---	---			
398	---	---	1459	---	---			
399	---	---	1498	---	---			
444	---	---	1539	---	---			
455	Inflection Point	125 mL	1556	BEP pH 10	125 mL			
467	BEP pH 11	125 mL	1564	Inflection Point	60 mL			
494	Inflection Point	60 mL	1586	Inflection Point	125 mL			
495	---	---	1613	Inflection Point	60 mL			
511	---	---	1643	BEP pH 10	60 mL			
529	Inflection Point	60 mL	1688	---	---			
557	---	---	1720	---	---			
562	---	---	1724	Inflection Point	60 mL			
575	BEP pH 10	60 mL	1728	---	---			
603	---	---	1740	Inflection Point	60 mL			
604	---	---	1761	---	---			
608	Inflection Point	125 mL	1776	BEP pH 10	125 mL			
631	---	---	1792	Inflection Point	60 mL			
633	Inflection Point	125 mL	1807	---	---			
663	Inflection Point	125 mL	1810	---	---			
671	Inflection Point	125 mL	1811	---	---			
750	Inflection Point	60 mL	1849	---	---			
753	---	---	1854	Inflection Point	125 mL			
759	---	---	1906	---	---			
785	---	---	1956	---	---			
823	Inflection Point	60 mL	1964	---	---			
824	Inflection Point	125 mL	1971	---	---			
825	---	---	1995	Inflection Point	125 mL			
850	---	---	6028	---	---			
851	Inflection Point	125 mL	6039	---	---			
855	---	---	6044	Inflection Point	60 mL			
858	---	---	6049	BEP pH 10	125 mL			
859	---	---	6075	---	---			
862	---	---	6092	---	---			

APPENDIX 3

Number of participants per country

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

APPENDIX 4

Abbreviations

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

Literature

1 iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, June 2018
2 ISO5725:86
3 ISO5725 parts 1-6:94
4 ISO13528:05
5 M. Thompson and R. Wood, J. AOAC Int, 76, 926, (1993)
6 W.J. Youden and E.H. Steiner, Statistical Manual of the AOAC, (1975)
7 P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
8 J.N. Miller, Analyst, 118, 455, (1993)
9 Analytical Methods Committee, Technical Brief, No 4, January 2001
10 P.J. Lowthian and M. Thompson, The Royal Society of Chemistry, Analyst, 127, 1359-1364, (2002)
11 W. Horwitz and R. Albert, J. AOAC Int, 79.3, 589-621, (1996)
12 Bernard Rosner, Percentage Points for a Generalized ESD Many-Outlier Procedure, Technometrics, 25(2), 165-172, (1983)