Results of Proficiency Test
Gasoil (Diesel - EN spec.)
March 2019

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Appendices:

1   INTRODUCTION

Since 1994, the Institute for Interlaboratory Studies (iis) organizes proficiency tests for Gasoil. During the annual proficiency testing program of 2018/2019, it was decided to continue the proficiency tests for the analysis of Gasoil/automotive diesel in accordance with the latest applicable version of EN590 specification.

In this interlaboratory study in total 177 laboratories from 58 different countries registered for participation in the proficiency tests. See appendix 2 for the number of participants per country. For the main round of Gasoil 170 participants from 58 countries did register. For Cetane Number 58 participants from 28 countries, for Total Contamination 98 participants from 38 countries and for Oxidation Stability 67 participants from 30 countries did register.

In this report the results of the 2019 Gasoil 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 organiser of this proficiency test (PT). Sample analyses for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC17025 accredited laboratory.

It was decided to send 1.5L Gasoil labelled #19025 for the main Gasoil round and 4L Gasoil labelled #19026 for Cetane Number determination. For Total Contamination determination it was decided to send 1L bottle filled with 85% Gasoil labelled #19027 and for Oxidation Stability determination 1L Gasoil labelled #19028. 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 organisation of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5). This protocol is electronically available through the iis website www.iisnl.com, from the FAQ page.

2.3 CONFIDENTIALITY STATEMENT

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

2.4 SAMPLES

Preparation of samples for the PT on regular Gasoil
A batch of 400 liter Gasoil (automotive diesel) was purchased from the local market.
After homogenisation, 185 amber glass bottles of 1L and 185 amber glass bottles of 500 mL were filled and labelled #19025.
The homogeneity of the 1L and 500 mL subsamples was checked by the determination of Density in accordance with ASTM D4052 on 10 stratified randomly selected samples.

	Density at 15°C in kg/m^3
sample #19025-1	836.02
sample #19025-2	836.01
sample #19025-3	836.00
sample #19025-4	836.01
sample #19025-5	836.00
sample #19025-6	836.01
sample #19025-7	836.03
sample #19025-8	836.03
sample #19025-9	836.01
sample #19025-10	836.01

Table 1: homogeneity test results of subsamples #19025

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

	Density at 15°C in kg/m^3
r (observed)	0.03
reference test method	ISO12185:96
0.3xR (reference test method)	0.15

Table 2: evaluation of the repeatability of subsamples #19025

The calculated repeatability was in agreement with 0.3 times the corresponding reproducibility of the reference test method. Therefore, homogeneity of the subsamples #19025 was assumed.

Preparation of samples for the PT on Cetane Number in Gasoil

Another batch of 400 liter was purchased from the local market. After homogenisation, 289 amber glass bottles of 1L were filled and labelled #19026. The homogeneity of the 1L subsamples was checked by the determination of Density in accordance with ASTM D4052 on 10 stratified randomly selected samples.

	Density at 15°C in kg/m^3
sample #19026-1	836.04
sample #19026-2	836.02
sample #19026-3	836.00
sample #19026-4	836.06
sample #19026-5	836.05
sample #19026-6	836.06
sample #19026-7	836.06
sample #19026-8	836.06
sample #19026-9	836.06
sample #19026-10	836.06

Table 3: homogeneity test results of subsamples #19026

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

	Density at 15°C in kg/m^3
r (observed)	0.06
reference test method	ISO12185:96
0.3xR (reference test method)	0.15

Table 4: evaluation of the repeatability of the subsamples #19026

The calculated repeatability was in agreement with 0.3 times the corresponding reproducibility of the reference test method. Therefore, homogeneity of the subsamples #19026 was assumed.

Preparation of samples for the PT on Total Contamination in Gasoil

For the PT on Total Contamination in Gasoil approximately 105 liter was purchased from the local market. Out of this batch, 117 amber glass bottles of 1L were filled up to approximately 850 ml and labelled #19027. Each bottle was spiked with 1 ml of a freshly prepared and ultrasonically homogenized 13 g/kg Arizona Dust in oil suspension. The addition was checked by weighing each bottle before and after the addition of the spike.

Preparation of samples for the PT on Oxidation Stability in Gasoil

For the PT of Oxidation Stability in Gasoil, approximately 170 liter of Gasoil was obtained from the retain materials from earlier PTs on Gasoil. After homogenisation, 108 amber glass bottles of 1L were filled and labelled #19028. The homogeneity of the 1L subsamples was checked by the determination of Density in accordance with ASTM D4052 on 8 stratified randomly selected samples.

	Density at 15°C in kg/m^3
sample #19028-1	835.97
sample #19028-2	835.95
sample #19028-3	835.94
sample #19028-4	835.94
sample #19028-5	835.93
sample #19028-6	835.94
sample #19028-7	835.94
sample #19028-8	835.94

Table 5: homogeneity test results of subsamples #19028

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

	Density at 15°C in kg/m^3
r (observed)	0.03
reference test method	ISO12185:96
0.3xR (reference test method)	0.15

Table 6: evaluation of the repeatability of the subsamples #19028

The calculated repeatability was less than 0.3 times the reproducibility of the reference test method. Therefore, homogeneity of the subsamples #19028 was assumed.

Depending on the registration, two bottles of regular Gasoil (1x1L and 1x0.5L both labelled #19025) and/or four bottles of Gasoil for Cetane Number (4x1L labelled #19026) and/or one bottle of Gasoil for Total Contamination (1x1L, 85% filled, labelled #19027) and/or one bottle of Gasoil for Oxidation Stability (1x1L labelled #19028) were sent to the participating laboratories on February 20, 2019. An SDS was added to the sample package.

2.5 STABILITY OF THE SAMPLES

The stability of Gasoil packed in the amber glass bottles was checked. The material was found sufficiently stable for the period of the proficiency test.

2.6   ANALYSES

The participants were asked to determine on sample #19025: Acid Number (Total), Ash content, Calculated Cetane Index (four variables), Cloud Point, Cold Filter Plugging Point (CFPP), Carbon Residue (Micro method) on 10% residue, Copper Corrosion 3hrs at 50°C, Density at 15°C, Distillation at 760 mmHg (IBP, 10%, 50%, 90%, 95% recovered, FBP and %V/V at 250°C and 350°C), FAME content, Flash Point PMcc, Kinematic Viscosity at 40°C, Lubricity by HFRR at 60°C, Manganese, Nitrogen, Polycyclic-, Mono-, Di-, Tri+- and Total-Aromatic Hydrocarbons, Pour Point (Manual and Automated), Sulfur and Water.
The participants were asked to determine on sample #19026: Cetane Number, Derived Cetane Number (DCN)/Ignition Delay (ID)/Air temperature (EN15195) and Derived Cetane Number (DCN)/ Ignition Delay (ID)/Combustion Delay/Chamber Wall Temperature (EN16715).
The participants were requested to determine Total Contamination only on sample #19027.
The participants were asked to determine on sample #19028: Oxidation Stability (EN15751) and/or Oxidation Stability (ISO12205) – Filterable Insolubles (A), Adherent Insolubles (B) and Total Insolubles (A+B).

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' results, which are above the detection limit, because such test results cannot be used for meaningful statistical evaluations.

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

3   RESULTS

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

Directly after the deadline, a reminder was sent to those laboratories that had not reported test results at that moment.
Shortly after the deadline, the available test results were screened for suspect data. A test result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the reported test results (no reanalyses). 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 organisation of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5).
For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as '<…' or '>…' were not used in the statistical evaluation.

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

According to ISO5725 the original test results per determination were submitted to Dixon's and/or Grubbs' and/or Rosner's outlier tests. Outliers are marked by D(0.01) for the Dixon's test, by G(0.01) or DG(0.01) for the Grubbs' test and by R(0.01) for the Rosner's test. Stragglers are marked by D(0.05) for the Dixon's test, by G(0.05) or DG(0.05) for the Grubbs' test and by R(0.05) for the Rosner's test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

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

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

3.2 GRAPHICS

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

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

Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms. Also, a normal Gauss curve was projected over the Kernel Density Graph for reference.

3.3 Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements, e.g. ISO reproducibilities, 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. In some cases, a reproducibility based on former iis proficiency tests could be used.

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

The z-scores were calculated according to:

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

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

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

$$|z| < 1 \quad \text{good}$$
$$1 < |z| < 2 \quad \text{satisfactory}$$
$$2 < |z| < 3 \quad \text{questionable}$$
$$3 < |z| \quad \text{unsatisfactory}$$

4 EVALUATION

In this interlaboratory study, no major problems were encountered with the dispatch of the samples. For sample #19025, seven participants reported test results after the final reporting date and four other participants did not report any test results at all. For sample #19026, three participants reported test results after the final reporting date and four other participants did not report any test results at all. For sample #19027, eleven participants did not report any test results at all and one other participant reported test results after the final reporting date. For sample #19028, seven participants did not report any test results at all and one other participant reported test results after the final reporting date.

In total 173 participants reported 3565 numerical test results. Observed were 108 outlying test results, which is 3.0% of the numerical test results. In proficiency studies, outlier percentages of 3%-7.5% are quite normal.

Not all original 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.

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 where possible and applicable. These test methods are also in the tables together with the reported data. The abbreviations, used in these tables, are listed in appendix 3.

In the iis PT reports, ASTM test methods are referred to with a number (e.g. D4737) and an added designation for the year that the test method was adopted or revised (e.g. D4737:10). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D4737:10(2016)). In the results tables of appendix 1 only the test method number and year of adoption or revision e.g. D4737:10 will be used.

Sample #19025 – Gasoil main round

Acid Number, Total: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D974:14e2.

Ash content: This determination was not problematic. Seven statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO6245:01.

Cetane Index: This determination was problematic. Two statistical outliers were observed and one other test result was excluded.
Regretfully, no reproducibility is mentioned in procedure A of ASTM D4737:10(2016) nor in the equivalent test methods ISO4262:2007(E) and IP380. Therefore, iis has estimated a reproducibility for Calculated Cetane Index by Four Variable Equation based from previous iis PTs (see iis memo 1904 lit. 16). The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of iis memo 1904.

Cloud Point: This determination was not problematic. Eight statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN23015:94.

CFPP: 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 EN116:15.

Carbon Residue on 10% residue: This determination was problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with ISO10370:14.

Copper Corrosion: This determination was not problematic. All reporting laboratories agreed on a result of 1, 1a or 1b.

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

Distillation: This determination was not problematic. In total twenty-eight statistical outliers were observed and six test results were excluded over eight parameters. All calculated reproducibilities after rejection of the suspect data are in agreement with the requirements of the automated mode of ISO3405:11. Compared to the requirements of the manual mode the calculated reproducibilities after rejection of the suspect data for IBP, 50%, 95% recovered are not in agreement with the requirements of ISO3405:11.

FAME content: This determination was problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with mode B of EN14078:14.
When the test results are evaluated separately over the modes of A and B of test method EN14078, the calculated reproducibilities are also not in agreement with the respective requirements of test method EN14078:14.

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

Kin. visc. 40°C: This determination was not problematic. Seven statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with ISO3104:94.

Lubricity: 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 modes A or B of ISO12156:16.
When evaluated over with or without correction the respective calculated reproducibilities are is in agreement with requirements of ISO12156:16.

Manganese: This determination was very problematic. No statistical outliers were observed. However, the calculated reproducibility is not at all in agreement with the very strict requirements of EN16576:14.

Nitrogen: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with ASTM D4629:17.

Polycyclic-Aromatics: This determination was not problematic. Five statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements EN12916:16.

Mono-Aromatics: 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 EN12916:16.

Di-Aromatics: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements EN12916:16.

Tri+-Aromatics: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements EN12916:16.

Total Aromatics: 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 EN12916:16. Two laboratories probably made a calculation error, as the reported test result deviates from the sum of the reported test results for Mono-, Di- and Tri+-Aromatic Hydrocarbons.

Pour Point manual: This determination was not problematic. Four statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with ISO3016:94.

Pour Point automated: This determination was not problematic. Four statistical outliers were observed and one other test result was excluded. However, the calculated reproducibility after rejection of the suspect data is in agreement with ASTM D5950:14 (3°C interval).

Sulfur: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO20846:11.

Water: This determination was not problematic. Five statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO12937:00.

Sample #19026 – Gasoil Cetane Number
Cetane Number: 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 ISO5165:17.

DCN (EN15195): This determination was problematic. For Derived Cetane Number and Ignition Delay in total one statistical outlier was observed. However, both calculated reproducibilities after rejection of the statistical outlier are not in agreement with the requirements of EN15195:14.

DCN (EN16715): This determination was problematic. For Derived Cetane Number, Ignition Delay and Combustion Delay in total two statistical outliers were observed and one other test result was excluded. The calculated reproducibilities after rejection of the suspect data are not in agreement with the requirements of EN16715:15.

Sample #19027 – Gasoil Total Contamination

Total Contamination: This determination was problematic. Three statistical outliers were observed. The samples were spiked with 16.1 mg/kg Arizona Dust. Therefore, the minimal concentration to be found was known. The laboratories should be able to find at least 9.3 mg/kg [16.1 mg/kg – 6.8 mg/kg (R EN12662)]. One laboratory reported a lower amount than 9.1 mg/kg. Therefore, the test result of this laboratory was excluded from the statistical evaluation.
The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of EN12662:14.

Sample #19028 – Gasoil Oxidation Stability

Induction Period: This determination was very problematic. No statistical outliers were observed but one test result was excluded. The calculated reproducibility after rejection of the suspect data is not at all in agreement with EN15751:14.

Filterable Insolubles A: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with ISO12205:95(2012).

Adherent Insolubles B: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with ISO12205:95(2012).

Total Insolubles A+B: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with ISO12205:95(2012).
One laboratory probably made a calculation error, as the reported test result deviates from the sum of the reported test results for Filterable Insoluble (A) and Adherent Insoluble (B).

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

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

Parameters	unit	n	average	2.8 * sd	R (lit)
Acid Number, Total	mgKOH/g	80	0.037	0.032	0.04
Ash content	%M/M	62	0.0008	0.0014	0.005
Cetane index, four variables		122	56.60	1.04	0.91
Cloud Point	°C	127	-2.1	2.4	4
Cold Filter Plugging Point	°C	125	-7.7	3.9	3.5
Carbon Residue on 10% res.	%M/M	75	0.021	0.030	0.018
Copper Corrosion (3hrs at 50°C)		113	1	n.a.	n.a.
Density at 15°C	kg/m^3	158	836.0	0.3	0.5
IBP	°C	145	180.0	10.8	9.9
10% recovery	°C	143	227.1	4.8	5.0
50% recovery	°C	143	284.1	2.9	3.0
90% recovery	°C	145	339.3	3.5	5.1
95% recovery	°C	142	351.9	5.4	9.0
FBP	°C	141	359.6	4.1	7.1
Volume at 250°C	%V/V	137	23.9	2.3	2.7
Volume at 350°C	%V/V	137	94.4	1.6	2.7
FAME content	%V/V	87	6.78	0.71	0.50
Flash Point PMcc	°C	153	63.3	4.9	4.5
Kinematic Viscosity at 40°C	mm^2/s	129	3.168	0.031	0.034
Lubricity by HFRR	µm	76	207	61	80
Manganese	mg/L	32	5.30	2.49	0.70
Nitrogen	mg/kg	44	5.9	2.5	2.0
Polycyclic-Aromatics	%M/M	64	2.14	0.89	0.86
Mono-Aromatics	%M/M	64	19.2	2.7	2.4
Di-Aromatics	%M/M	65	1.91	0.69	0.61
Tri$^+$-Aromatics	%M/M	58	0.20	0.41	0.56
Total Aromatics	%M/M	65	21.6	4.0	4.8
Pour Point, manual	°C	81	-16.4	6.5	6.4
Pour Point, automated	°C	46	-15.3	3.4	6.1
Sulfur	mg/kg	134	9.0	1.9	2.1
Water	mg/kg	136	60.4	21.7	53.4

Table 7: reproducibilities of tests on sample #19025

Parameters	unit	n	average	2.8 * sd	R (lit)
Cetane Number		32	54.6	2.9	4.8
DCN (EN15195)		12	56.5	3.9	2.7
Ignition Delay (EN15195)	ms	10	3.56	0.23	0.19
DCN (D7668)		14	56.4	2.2	1.6
Ignition Delay (D7668)	ms	14	2.89	0.21	0.14
Combustion Delay (D7668)	ms	14	4.23	0.14	0.12
Total Contamination	mg/kg	83	21.5	13.2	7.6
Oxidation Stability (EN15751)	hrs	25	15.2	7.7	3.3
Oxidation Stability (ISO12205):					
Filterable Insolubles (A)	g/m^3	40	1.38	2.69	5.54
Adherent Insolubles (B)	g/m^3	41	1.45	3.44	5.54
Total Insolubles (A+B)	g/m^3	45	2.99	4.39	7.84

Table 8: reproducibilities of tests on samples #19026, #19027 and #19028

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

4.3 COMPARISON OF THE PROFICIENCY TEST OF MARCH 2019 WITH PREVIOUS PTS.

	March 2019	March 2018	March 2017	March 2016	March 2015
Number of reporting labs	173	180	174	161	169
Number of test results reported	3565	3748	3737	4203	3186
Number of statistical outliers	108	77	101	121	90
Percentage outliers	3.0%	2.1%	2.7%	2.9%	2.8%

Table 9: comparison with previous proficiency tests

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

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

	March 2019	March 2018	March 2017	March 2016	March 2015
Acid Number, Total	+	+	+	+	++
Ash content	++	++	++	++	++
Cetane Index, four variables	-	n.e.	n.e.	n.e.	n.e.
Cloud Point	+	+	+	++	++
Cold Filter Plugging Point	-	+	+	-	+
Carbon Residue on 10% res.	--	+/-	-	--	-
Density at 15°C	+	++	++	+	++
Distillation	+	+	+	+	++
FAME content	--	--	-	-	--

	March 2019	March 2018	March 2017	March 2016	March 2015
Flash Point PMcc	+/-	+	+	+	+
Kinematic Viscosity at 40°C	+	+/-	+/-	+/-	+
Lubricity by HFRR	+	-	-	+/-	--
Manganese	--	n.e.	n.e.	-	n.e.
Nitrogen	-	--	--	-	--
Polycyclic-Aromatics	+/-	+/-	+	-	+
Mono-, Di-, Tri$^+$-Aromatics	+/-	+	+	+	++
Total Aromatics	+	+	+	++	n.e.
Pour Point	+	+	+	+	+/-
Sulfur	+	+/-	+/-	+/-	+/-
Water	++	++	++	++	++
Cetane Number	+	+	+	n.e.	n.e.
DCN (EN15195)	-	-	+	n.e.	n.e.
DCN (EN16715)	-	+	+/-	n.e.	n.e.
Total Contamination	-	-	-	+	--
Oxidation Stability (EN15751)	--	--	-	--	--
Oxidation Stability (ISO12205):	+	+	+	n.e.	n.e.

Table 10: comparison determinations against the reference test method

The following performance categories were used:

  ++:   group performed much better than the reference test method
  + :   group performed better than the s reference test method
  +/-:   group performance similar to 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 (TAN) on sample #19025; result in mgKOH/g

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D974	0.034		-0.21	1126		-----		-----
140	D974	0.01		-1.89	1134	D664-A	0.03		-0.49
171	D974	0.04		0.21	1143		-----		-----
212	D664-A	0.06		1.61	1146	D664-A	0.030		-0.49
218		-----		-----	1150		-----		-----
220		-----		-----	1161	D664-A	0.02		-1.19
225	D974	0.04		0.21	1167		-----		-----
228	D974	0.0391		0.15	1171		-----		-----
237	D974	0.02385		-0.92	1191		-----		-----
238	D974	0.0212		-1.11	1199		-----		-----
273	D974	0.018		-1.33	1201	D974	0.05		0.91
311		-----		-----	1205		-----		-----
312		-----		-----	1212	D974	0.033		-0.28
317	D974	0.04		0.21	1227	D664-A	0.0300		-0.49
323		-----		-----	1229		-----		-----
331		-----		-----	1233	D664-A	0.05		0.91
333		-----		-----	1237		-----		-----
334	D974	0.036		-0.07	1251		-----		-----
335		-----		-----	1259	D664-A	0.025		-0.84
336		-----		-----	1266		-----		-----
337		-----		-----	1275	IP77	0.043		0.42
338		-----		-----	1286		-----		-----
342		-----		-----	1299	D664-A	0.04		0.21
343	D664-A	0.04		0.21	1316		-----		-----
345		-----		-----	1318	D664-A	0.038		0.07
351		-----		-----	1356	D664-A	<0.05		-----
353		-----		-----	1394		-----		-----
357	D664-A	< 0,1		-----	1397		-----		-----
360	D974	0.037		0.00	1430	D974	0.04		0.21
369	D974	0.015		-1.54	1457	D974	0.032		-0.35
370		-----		-----	1459		-----		-----
371	D974	0.039		0.14	1488	ISO6618	0.042		0.35
381	D664-A	0.02		-1.19	1491	D664-A	0.0391		0.15
391		-----		-----	1498		-----		-----
398		-----		-----	1538		-----		-----
399	D664-A	0.056	C	1.33	1539		-----		-----
403	D664-A	0.045		0.56	1556	D664-A	0.059		1.54
404		-----		-----	1569	D664-A	0.04		0.21
420	ISO6618	0.04		0.21	1575		-----		-----
431		-----		-----	1585	D974	0.038		0.07
432		-----		-----	1586	D664-A	0.03		-0.49
440		-----		-----	1613	D974	0.056		1.33
444		-----		-----	1631		-----		-----
445	D974	0.022		-1.05	1634		-----		-----
447	IP139	0.05		0.91	1635	D664-A	0.0830	R(0.05)	3.22
453	D664-A	0.03		-0.49	1656		-----		-----
485		-----		-----	1667		-----		-----
541	D974	0.056		1.33	1681		-----		-----
631	D664-A	0.052		1.05	1720	D974	0.04		0.21
663	D664-A	0.05		0.91	1724		-----		-----
671		-----		-----	1730		-----		-----
704	D974	0.032		-0.35	1740	D664-A	0.03		-0.49
781	ISO6618	0.044		0.49	1741		-----		-----
785		-----		-----	1742		-----		-----
823	D974	0.03	C	-0.49	1743	D664-A	<0.10		-----
824	D974	0.0299		-0.50	1746	D974	0.030		-0.49
872	D664-A	0.039		0.14	1749		-----		-----
873	D974	0.035		-0.14	1776	D664-A	0.01		-1.89
874		-----		-----	1807	D664-A	0.02		-1.19
875	D664-A	0.057		1.40	1810		-----		-----
902	D664-A	0.04		0.21	1811		-----		-----
904	D664-A	0.024		-0.91	1833		-----		-----
962	D974	0.05		0.91	1849		-----		-----
963	D974	0.042		0.35	1854	D664-A	0.050		0.91
971	D664-A	0.038		0.07	1858	D664-A	0.041		0.28
974	D974	0.039		0.14	1864		-----		-----
995	D974	0.031		-0.42	1872		-----		-----
997	D974	0.03		-0.49	1881	D974	0.040		0.21
998		-----		-----	1911		-----		-----
1006	D664-A	0.048		0.77	1950	D974	0.035		-0.14
1016	ISO6618	0.0374		0.03	1953		-----		-----
1059		-----		-----	1961		-----		-----
1080	D664	0.04		0.21	1976		-----		-----
1108	D974	0.04		0.21	1984		-----		-----
1109	D974	0.039	z	0.14	1986	D664-A	0.037		0.00
1121	D664-A	0.06		1.61	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	D974	0.037		0.00	6142		-----		-----
2130	D974	0.031		-0.42	6143		-----		-----
2146		-----		-----	6174		-----		-----
6005		-----		-----	6192	D664-A	0.12	R(0.01)	5.81
6018		-----		-----	6201	D974	0.04		0.21
6028		-----		-----	6203	D974	0.014		-1.61
6051		-----		-----	6241		-----		-----
6057	D664-A	0.08	R(0.05)	3.01	6242		-----		-----
6075		-----		-----	9057		-----		-----

normality	OK
n	80
outliers	3
mean (n)	0.0370
st.dev. (n)	0.01129
R(calc.)	0.0316
st.dev.(D974:14e2)	0.01429
R(D974:14e2)	0.04

Lab 399 first reported: 0.11
Lab 823 first reported: 0.08
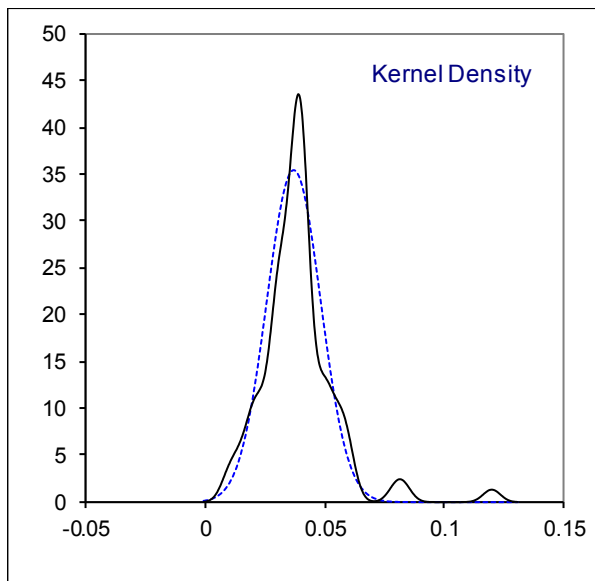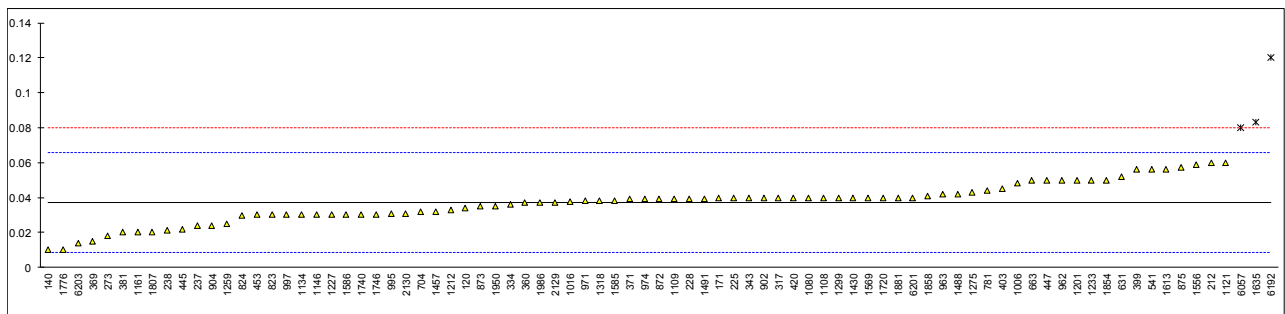
Determination of Ash content on sample #19025; result in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D482	0.002		0.69	1126		-----		-----
140	ISO6245	0.001		0.13	1134		-----		-----
171	D482	<0.001		-----	1143		-----		-----
212	ISO6245	0.001		0.13	1146	D482	0.0000		-0.43
218		-----		-----	1150	ISO6245	0.0026	R(0.05)	1.02
220		-----		-----	1161	ISO6245	0.0008		0.01
225	D482	0.0004		-0.21	1167	ISO6245	0.00080		0.01
228	D482	0.002		0.69	1171	ISO6245	0.0002		-0.32
237	D482	<0.01		-----	1191		-----		-----
238	D482	0.00063		-0.08	1199		-----		-----
273	D482	0.001		0.13	1201	ISO6245	0.000		-0.43
311		-----		-----	1205		-----		-----
312		-----		-----	1212	ISO6245	0.0001		-0.38
317	ISO6245	<0.001		-----	1227		-----		-----
323		-----		-----	1229		-----		-----
331	ISO6245	<0.001		-----	1233		-----		-----
333		-----		-----	1237		-----		-----
334	ISO6245	<0.001		-----	1251	ISO6245	0		-0.43
335		-----		-----	1259		-----		-----
336		-----		-----	1266		-----		-----
337		-----		-----	1275	IP4	0.000		-0.43
338		-----		-----	1286		-----		-----
342		-----		-----	1299	D482	<0.001		-----
343	ISO6245	<0.001		-----	1316	D482	0.003	R(0.05)	1.25
345	ISO6245	0.002		0.69	1318		-----		-----
351	ISO6245	0.0027	R(0.05)	1.08	1356	ISO6245	<0.010		-----
353	IP4	0.001		0.13	1394		-----		-----
357	ISO6245	0.001		0.13	1397	ISO6245	<0,001		-----
360	ISO6245	0.0009		0.07	1430	D482	0.005	R(0.01)	2.37
369	ISO6245	<0.001		-----	1457		-----		-----
370	ISO6245	0.0006		-0.10	1459		-----		-----
371	ISO6245	0.0006		-0.10	1488	ISO6245	0.00074		-0.02
381		-----		-----	1491	ISO6245	0.0006		-0.10
391		-----		-----	1498		-----		-----
398		-----		-----	1538		-----		-----
399		-----		-----	1539	ISO6245	< 0,001		-----
403	ISO6245	0.0002		-0.32	1556	ISO6245	<0,001		-----
404		-----		-----	1569	ISO6245	<0.005		-----
420	ISO6245	<0,001		-----	1575	D482	< 0.001		-----
431		-----		-----	1585	ISO6245	0.0006		-0.10
432		-----		-----	1586	D482	0.001		0.13
440		-----		-----	1613	D482	<0.001		-----
444		-----		-----	1631		-----		-----
445	IP4	< 0.001		-----	1634		-----		-----
447	IP4	0.003	R(0.05)	1.25	1635	ISO6245	0.001		0.13
453	IP4	<0.001		-----	1656	ISO6245	<0.01		-----
485		-----		-----	1667		-----		-----
541	ISO6245	0.0006		-0.10	1681	ISO6245	0.0015		0.41
631	D482	0.0009		0.07	1720		-----		-----
663	D482	<0.001		-----	1724	ISO6245	0.003	R(0.05)	1.25
671	D482	0.000797		0.01	1730		-----		-----
704	ISO6245	0.0006		-0.10	1740	ISO6245	0.0019		0.63
781	ISO6245	0.0003		-0.27	1741	ISO6245	0.0039	R(0.05)	1.75
785		-----		-----	1742		-----		-----
823	ISO6245	0.0008		0.01	1743	ISO6245	<0.001		-----
824	ISO6245	0.001		0.13	1746	D482	0.0008		0.01
872	ISO6245	0.0008		0.01	1749		-----		-----
873	D482	0.0007		-0.04	1776		-----		-----
874		-----		-----	1807	ISO6245	<0.0010		-----
875	D482	0.0009		0.07	1810		-----		-----
902	ISO6245	0.001		0.13	1811		-----		-----
904	ISO6245	0.00094		0.09	1833	ISO6245	0.0010		0.13
962	D482	<0.001		-----	1849	ISO6245	<0,001		-----
963	ISO6245	0.0004		-0.21	1854	ISO6245	0.0013		0.29
971	ISO6245	0.0006		-0.10	1858	D482	0.0006		-0.10
974	D482	0.0006		-0.10	1864	ISO6245	0.001		0.13
995	ISO6245	0.0008		0.01	1872		-----		-----
997	ISO6245	0.0008		0.01	1881		-----		-----
998	D482	0.0011		0.18	1911	ISO6245	<0,001		-----
1006	D482	< 0.001		-----	1950	ISO6245	0.0006		-0.10
1016	D482	0.00068		-0.05	1953		-----		-----
1059	ISO6245	<0,001		-----	1961		-----		-----
1080		-----		-----	1976		-----		-----
1108		-----		-----	1984		-----		-----
1109		-----		-----	1986	ISO6245	0.0008		0.01
1121	ISO6245	0.0001		-0.38	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	ISO6245	0.0000		-0.43	6142		-----		-----
2130		-----		-----	6143		-----		-----
2146		-----		-----	6174		-----		-----
6005		-----		-----	6192		-----		-----
6018		-----		-----	6201	ISO6245	0		-0.43
6028		-----		-----	6203	ISO6245	0.0012		0.24
6051		-----		-----	6241	D482	0.0019		0.63
6057	ISO6245	<0,001		-----	6242	D482	0.0008		0.01
6075	ISO6245	0.0000		-0.43	9057		-----		-----

normality	OK
n	62
outliers	7
mean (n)	0.00077
st.dev. (n)	0.000502
R(calc.)	0.00141
st.dev.(ISO6245:01)	0.001786
R(ISO6245:01)	0.005

Application range: 0.001 – 0.079 % M/M

Kernel Density
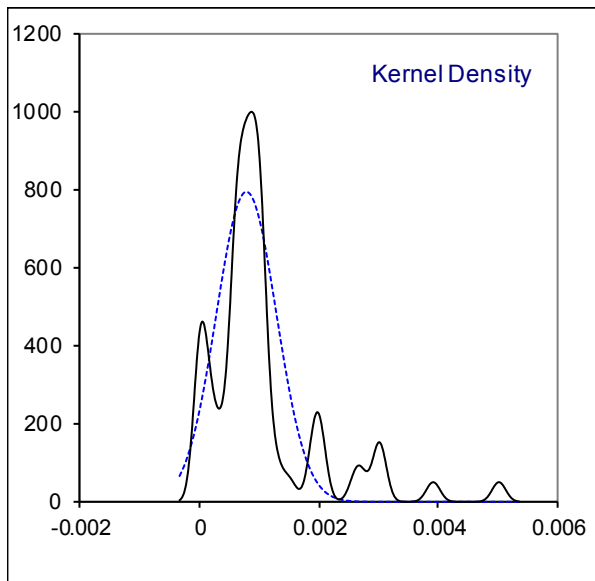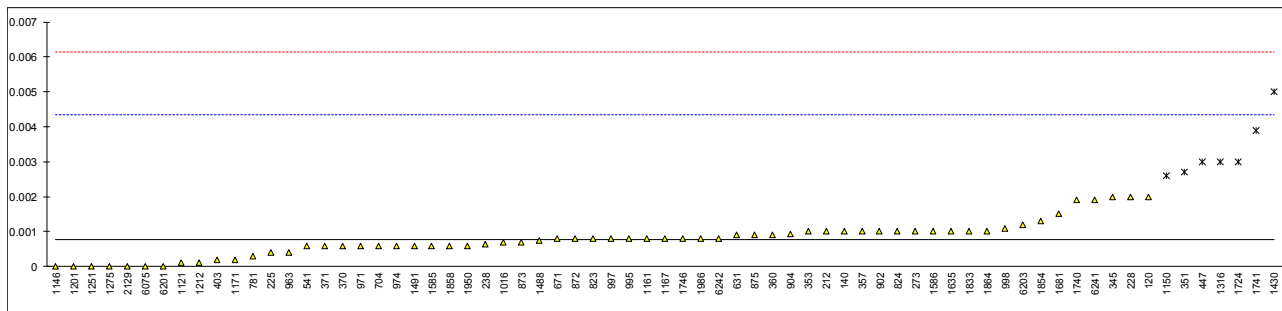
Determination of Calculated Cetane Index, four variables on sample #19025

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D4737-A	56.71		0.35	1126		-----		-----
140	ISO4264	56.6		0.01	1134	IP380	56.3434		-0.79
171	D4737-A	56.4		-0.61	1143	ISO4264	57.0		1.24
212	ISO4264	56.4		-0.61	1146		-----		-----
218		-----		-----	1150	ISO4264	56.95		1.09
220	ISO4264	56.812		0.66	1161	ISO4264	56.54		-0.18
225	Calculated	55.99		-1.88	1167	ISO4264	56.2		-1.23
228	D4737-A	56.0		-1.85	1171	ISO4264	56.01		-1.81
237	D4737-A	56.4		-0.61	1191		-----		-----
238		-----		-----	1199		-----		-----
273	D4737-A	56.33	C	-0.83	1201	ISO4264	56.6		0.01
311		-----		-----	1205		-----		-----
312	ISO4264	56.5		-0.30	1212	D4737-A	56.82		0.69
317	ISO4264	56.6		0.01	1227		55.1	R(0.05)	-4.62
323		53.5	R(0.01)	-9.56	1229		-----		-----
331		-----		-----	1233	ISO4264	56.9	C	0.93
333		-----		-----	1237		-----		-----
334	ISO4264	56.4		-0.61	1251	ISO4264	56.8		0.62
335	ISO4264	57.2		1.86	1259	ISO4264	56.68		0.25
336	ISO4264	56.8		0.62	1266	ISO4264	55.4		-3.70
337		-----		-----	1275	IP380	56.6		0.01
338	ISO4264	56.3		-0.92	1286		-----		-----
342	ISO4264	56.7		0.31	1299	D4737-A	56.5		-0.30
343	ISO4264	55.8		-2.46	1316	D4737-A	56.8		0.62
345		-----		-----	1318	D4737-A	56.8		0.62
351	ISO4264	56.11		-1.51	1356	ISO4264	61	R(0.01)	13.58
353	IP380	56.31		-0.89	1394	ISO4264	57.1		1.55
357	ISO4264	56.74		0.44	1397	ISO4264	57.1		1.55
360	ISO4264	56.69	C	0.28	1430	D4737-A	54.5	C,R(0.01)	-6.47
369	ISO4264	56.86		0.81	1457	ISO4264	56.8		0.62
370	ISO4264	56.63		0.10	1459		-----		-----
371	ISO4264	57.0		1.24	1488	ISO4264	56.99		1.21
381	ISO4264	56.2		-1.23	1491	ISO4264	56.7		0.31
391	ISO4264	57.1		1.55	1498	D4737-A	57.2	E	1.86
398		-----		-----	1538		-----		-----
399	D4737-A	56.7		0.31	1539	ISO4264	56.4		-0.61
403	ISO4264	56.5		-0.30	1556	ISO4264	56.64		0.13
404	ISO4264	56.7		0.31	1569	ISO4264	56.9		0.93
420	ISO4264	56.1		-1.54	1575		-----		-----
431		-----		-----	1585	D4737-A	56.6		0.01
432		-----		-----	1586	D4737-A	56.5		-0.30
440		-----		-----	1613	D4737-A	57.13		1.64
444	ISO4264	55.9		-2.15	1631		-----		-----
445	IP380	56.0		-1.85	1634	ISO4264	56.7		0.31
447	IP380	56.8		0.62	1635		-----		-----
453	IP380	56.840		0.75	1656	ISO4264	56.3		-0.92
485	ISO4264	57.0		1.24	1667	ISO4264	56.4		-0.61
541	D4737-A	56.85		0.78	1681	ISO4264	57.31		2.20
631	D4737-B	56.14731		-1.39	1720	D4737-B	56.8		0.62
663	D4737-A	57.18		1.80	1724	ISO4264	56.65		0.16
671		55.54		-3.26	1730		-----		-----
704	D4737-A	56.5		-0.30	1740	ISO4264	56.6		0.01
781	ISO4264	57.1		1.55	1741	ISO4264	56.9		0.93
785		-----		-----	1742		-----		-----
823	D4737-A	56.6		0.01	1743	ISO4264	56.5		-0.30
824	D4737-A	56.55		-0.15	1746	D976	55.4	ex	-3.70
872	ISO4264	56.5		-0.30	1749		-----		-----
873	ISO4264	56.7		0.31	1776	ISO4264	56.3		-0.92
874		-----		-----	1807	ISO4264	56.1		-1.54
875	ISO4264	55.59	E	-3.11	1810		-----		-----
902	ISO4264	56.9		0.93	1811	ISO4264	56.2		-1.23
904	ISO4264	56.4		-0.61	1833	ISO4264	56.9	E	0.93
962	D4737-A	56.7		0.31	1849	ISO4264	56.82		0.69
963	D4737-A	57.1		1.55	1854	D4737-A	56.66		0.19
971	D4737-A	56.5		-0.30	1858	D4737-A	56.4		-0.61
974	D4737-A	57.1		1.55	1864	ISO4264	56.696		0.30
995	ISO4264	57.1		1.55	1872		-----		-----
997		-----		-----	1881		-----		-----
998	D4737-A	55.18	E,R(0.05)	-4.38	1911	ISO4264	56.60		0.01
1006	D4737-A	56.6		0.01	1950	D4737-A	56.2		-1.23
1016		-----		-----	1953		-----		-----
1059	ISO4264	56.8		0.62	1961		-----		-----
1080		-----		-----	1976	D4737-A	56.90		0.93
1108	ISO4264	56.7		0.31	1984	ISO4264	56.7		0.31
1109	D4737-A	56.3		-0.92	1986	ISO4264	56.5		-0.30
1121	IP380	55.73		-2.68	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	IP380	56.30		-0.92	6142		-----		-----
2130	IP380	56.7		0.31	6143		-----		-----
2146		-----		-----	6174	D4737-B	56.14		-1.41
6005	ISO4264	56.9		0.93	6192	ISO4264	56.4		-0.61
6018	ISO4264	56.9		0.93	6201	ISO4264	56.7	C	0.31
6028	ISO4264	57.2	E	1.86	6203	ISO4264	56.3		-0.92
6051	ISO4264	56.3		-0.92	6241	D4737	57.1		1.55
6057	ISO4264	56.9		0.93	6242	D4737-A	57.0		1.24
6075	ISO4264	56.66		0.19	9057		-----		-----

normality	OK
n	122
outliers	2+1ex
mean (n)	56.598
st.dev. (n)	0.3723
R(calc.)	1.042
st.dev.(iis memo 1904)	0.3241
R(iis memo 1904)	0.907

Compare R(iis18G01EN) =0.717

Lab 273 first reported: 53.90
Lab 360 first reported: 41.06
Lab 1233 first reported: 54.3
Lab 1430 first reported: 54.1
Lab 6201 first reported: 59.1
Recalculated values:
Lab 875 iis calculated: 56.62
Lab 998 iis calculated: 56.14
Lab 1498 iis calculated: 56.93
Lab 1833 iis calculated: 56.66
Lab 6028 iis calculated: 57.00
Lab 1746 test result excluded as test method is not equivalent (different calculation)

Kernel Density
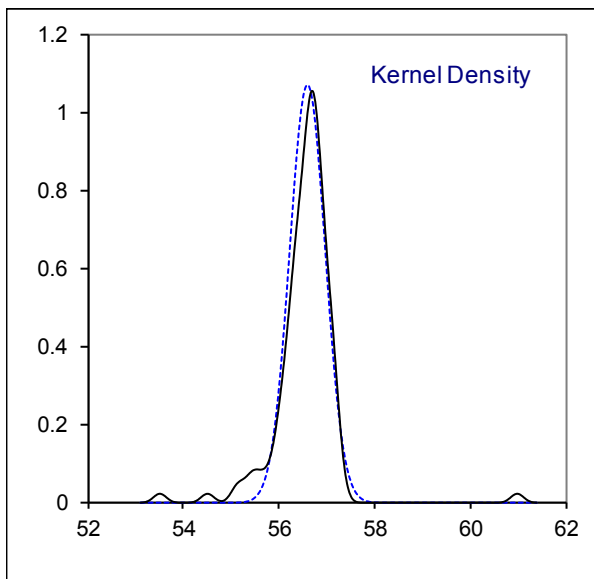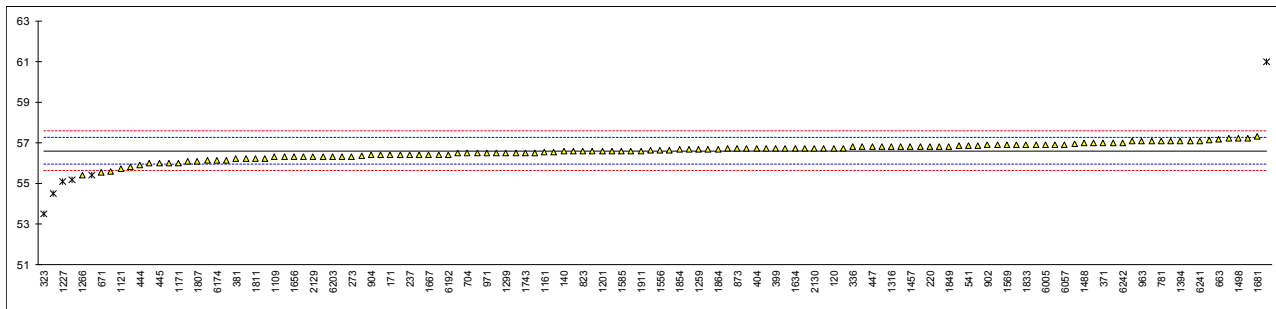
Determination of Cloud Point on sample #19025; result in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D5771	-2.1		0.02	1126		-----		-----
140	EN23015	-2		0.09	1134	IP219	-2		0.09
171	D2500	0		1.49	1143	ISO3015	1	R(0.05)	2.19
212	ISO3015	-3		-0.61	1146	D2500	-2		0.09
218		-----		-----	1150	EN23015	-3		-0.61
220		-----		-----	1161	D7683	-2		0.09
225	D2500	-1		0.79	1167		-----		-----
228	D2500	-4		-1.31	1171	ISO3015	-2.0		0.09
237	D2500	-4		-1.31	1191	D5773	-1.6		0.37
238	EN23015	-3		-0.61	1199		-----		-----
273	D2500	-6	R(0.05)	-2.71	1201	EN23015	-3		-0.61
311		-----		-----	1205		-----		-----
312	EN23015	-4		-1.31	1212	D7689	-2.7		-0.40
317	D5771	-3		-0.61	1227	D2500	-2		0.09
323	EN23015	-6	R(0.05)	-2.71	1229	D7689	-2.3		-0.12
331		-----		-----	1233	ISO3015	-3		-0.61
333	EN23015	-3		-0.61	1237		-----		-----
334	EN23015	-2		0.09	1251	EN23015	-1		0.79
335	EN23015	-2		0.09	1259	EN23015	-1		0.79
336	EN23015	-2		0.09	1266	EN23015	-1.2		0.65
337	EN23015	-3		-0.61	1275	IP219	-4		-1.31
338	EN23015	-2		0.09	1286		-----		-----
342	ISO3015	-1		0.79	1299	D2500	-1		0.79
343	EN23015	-2		0.09	1316	D5771	-2.5		-0.26
345	D5771	-1.9		0.16	1318	D7689	-2.7		-0.40
351	D7683	-2.0		0.09	1356	ISO3015	1	R(0.05)	2.19
353	IP219	-1		0.79	1394	EN23015	-2.3		-0.12
357	D5771	-3		-0.61	1397	EN23015	-2		0.09
360	EN23015	-2		0.09	1430		-----		-----
369	EN23015	-1		0.79	1457	EN23015	-1.8		0.23
370	EN23015	-3		-0.61	1459	ISO3015	-3.0		-0.61
371	EN23015	-2		0.09	1488	EN23015	-1.6		0.37
381	ISO3015	-2		0.09	1491	D2500	-3		-0.61
391		-----		-----	1498	D2500	-2		0.09
398	EN23015	-1		0.79	1538		-----		-----
399	D2500	-2		0.09	1539	ISO3015	1	R(0.05)	2.19
403	EN23015	-1		0.79	1556	ISO3015	-3.1		-0.68
404	EN23015	-2		0.09	1569	EN23015	-3		-0.61
420	EN23015	-2		0.09	1575	D2500	-6	R(0.05)	-2.71
431		-----		-----	1585	D2500	-2		0.09
432		-----		-----	1586	D2500	-2		0.09
440	IP219	0		1.49	1613	D2500	-4		-1.31
444		-----		-----	1631	D5771	0.6		1.91
445	IP219	-2		0.09	1634		-----		-----
447	IP219	-2		0.09	1635	D7689	-2		0.09
453	D5773	-1.9		0.16	1656	IP219	-2		0.09
485		-----		-----	1667	EN23015	-1.0		0.79
541	D5771	-2.10		0.02	1681	ISO3015	-1		0.79
631	D5773	-2.1		0.02	1720	D5773	-2.5		-0.26
663	D2500	-2		0.09	1724	EN23015	-2		0.09
671	D2500	-3.0		-0.61	1730		-----		-----
704	D2500	-3		-0.61	1740	ISO3015	-3		-0.61
781	ISO3015	-1		0.79	1741	ISO3015	0		1.49
785		-----		-----	1742	ISO3015	-3		-0.61
823	EN23015	-2		0.09	1743	EN23015	-2		0.09
824	D2500	-1		0.79	1746	D2500	-3		-0.61
872	EN23015	-3		-0.61	1749		-----		-----
873	D2500	-3		-0.61	1776	EN23015	-2.5		-0.26
874		-----		-----	1807	EN23015	-2		0.09
875	D2500	-1		0.79	1810	EN23015	-3		-0.61
902	EN23015	-2		0.09	1811	EN23015	-1		0.79
904	EN23015	-3		-0.61	1833	D2500	-2		0.09
962	D2500	-3		-0.61	1849		-----		-----
963	EN23015	-2		0.09	1854	D2500	-2		0.09
971	ISO3015	-3		-0.61	1858	D2500	-2		0.09
974	D2500	-2		0.09	1864	EN23015	-2		0.09
995	EN23015	-1		0.79	1872	ISO3015	-16	C,R(0.01)	-9.71
997	EN23015	-1		0.79	1881	EN23015	-2		0.09
998	D2500	-1.0		0.79	1911	ISO3015	-2.0		0.09
1006		-----		-----	1950	EN23015	-3		-0.61
1016		-----		-----	1953	D7683	-2		0.09
1059	EN23015	-3		-0.61	1961		-----		-----
1080	EN23015	-2.0		0.09	1976		-----		-----
1108	D5771	-2.5		-0.26	1984	EN23015	-3		-0.61
1109	D5773	-2.1		0.02	1986	D2500	-3		-0.61
1121	ISO3015	-3		-0.61	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	EN23015	-2.0		0.09	6142	EN23015	-2.15		-0.02
2130	EN23015	-1.1		0.72	6143	D2500	1	R(0.05)	2.19
2146		-----		-----	6174		-----		-----
6005	ISO3015	-2		0.09	6192		-----		-----
6018		-----		-----	6201	EN23015	-2		0.09
6028	D2500	-3		-0.61	6203	EN23015	-2		0.09
6051		-----		-----	6241		-----		-----
6057	EN23015	-2		0.09	6242	EN23015	-2		0.09
6075	EN23015	-2		0.09	9057		-----		-----

normality	OK
n	127
outliers	8
mean (n)	-2.13
st.dev. (n)	0.845
R(calc.)	2.37
st.dev.(EN23015:94)	1.429
R(EN23015:94)	4

Lab 1872 first reported: -11

Kernel Density
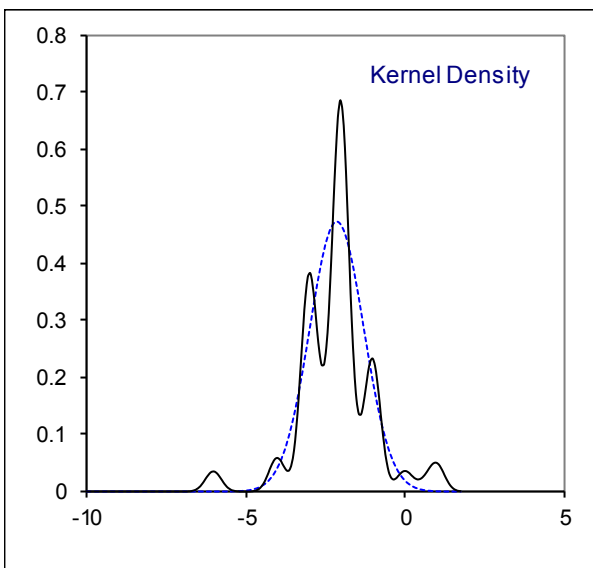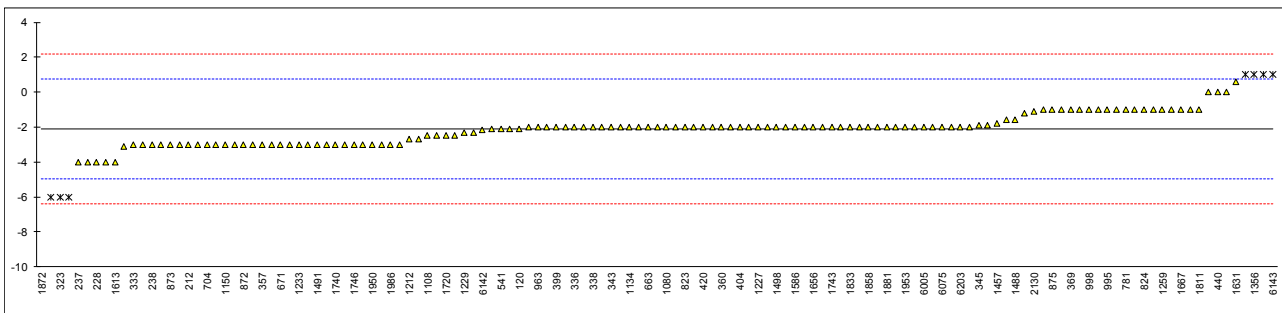
Determination of Cold Filter Plugging Point (CFPP) on sample #19025; result in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D6371	-7.0		0.53	1126		-----		-----
140	EN116	-6		1.34	1134	EN116	-8		-0.28
171	D6371	-7		0.53	1143	EN116	-10.0		-1.90
212		-----		-----	1146		-----		-----
218		-----		-----	1150	EN116	-9		-1.09
220	EN116	-7		0.53	1161	EN116	-10		-1.90
225		-----		-----	1167	EN116	-9		-1.09
228		-----		-----	1171	EN116	-8.0		-0.28
237	D6371	-5		2.15	1191	EN116	-8		-0.28
238		-----		-----	1199		-----		-----
273		-----		-----	1201	EN116	-9		-1.09
311		-----		-----	1205		-----		-----
312	EN116	-7		0.53	1212	EN116	-10		-1.90
317	EN116	-6.0		1.34	1227	EN116	-12		-3.52
323	EN116	-20	R(0.01)	-10.00	1229	EN116	-8		-0.28
331		-----		-----	1233	D6371	-8.0		-0.28
333	EN116	-8		-0.28	1237	EN116	-9		-1.09
334	EN116	-7		0.53	1251	EN116	-10		-1.90
335	EN116	-8		-0.28	1259	EN116	-9		-1.09
336	EN116	-7		0.53	1266	EN116	-7		0.53
337	EN116	-7		0.53	1275	IP309	-8		-0.28
338	EN116	-8		-0.28	1286		-----		-----
342	D6371	-7		0.53	1299	EN116	-9		-1.09
343	EN116	-6		1.34	1316	EN116	-5.0		2.15
345	EN116	-5		2.15	1318	D6371	-7		0.53
351	EN116	-9.0		-1.09	1356	D6371	-7		0.53
353	IP309	-6		1.34	1394	EN116	-7.8		-0.12
357	EN116	-7		0.53	1397	EN116	-9		-1.09
360	EN116	-8		-0.28	1430	EN116	-8		-0.28
369	EN16329	-11		-2.71	1457	EN116	-8		-0.28
370	EN116	-9		-1.09	1459	EN116	-7.0		0.53
371	EN116	-10		-1.90	1488	EN116	-11.5		-3.11
381	EN116	-11	C	-2.71	1491	EN116	-6		1.34
391	EN116	-7		0.53	1498	D6371	-7		0.53
398	EN116	-7		0.53	1538		-----		-----
399		-----		-----	1539	EN116	-6		1.34
403	EN116	-8		-0.28	1556	EN116	-7		0.53
404	EN116	-7		0.53	1569	EN116	-7		0.53
420	EN116	-6		1.34	1575		-----		-----
431	EN116	-8		-0.28	1585	IP309	-7		0.53
432		-----		-----	1586	EN116	-8		-0.28
440	IP309	-10	C	-1.90	1613	D6371	-8		-0.28
444		-----		-----	1631		-----		-----
445	IP309	-13	R(0.05)	-4.33	1634	EN116	-8		-0.28
447	IP309	-8		-0.28	1635	EN116	-8		-0.28
453	IP309	-8.0		-0.28	1656	EN116	-7		0.53
485		-----		-----	1667	EN116	-9.0	C	-1.09
541	EN116	-7.0		0.53	1681	EN116	-7		0.53
631		-----		-----	1720		-----		-----
663	EN116	-6		1.34	1724	EN116	-7		0.53
671		-----		-----	1730		-----		-----
704	EN116	-6		1.34	1740	IP309	-9		-1.09
781	EN116	-9		-1.09	1741	EN116	-9		-1.09
785		-----		-----	1742	EN116	-8		-0.28
823	EN116	-7		0.53	1743	EN116	-8		-0.28
824	EN116	-7		0.53	1746	D6371	-10		-1.90
872		-----		-----	1749		-----		-----
873	EN116	-8		-0.28	1776	EN116	-8		-0.28
874		-----		-----	1807	EN116	-8		-0.28
875		-----		-----	1810		-8		-0.28
902	EN116	-5		2.15	1811	EN116	-7		0.53
904	EN116	-5		2.15	1833	EN116	-8		-0.28
962	IP309	-6		1.34	1849	EN116	-8		-0.28
963	EN116	-6		1.34	1854	EN116	-8		-0.28
971	IP309	-8		-0.28	1858	IP309	-7		0.53
974	IP309	-7		0.53	1864	EN116	-8		-0.28
995		-----		-----	1872		-----		-----
997	EN116	-8		-0.28	1881	EN116	-6		1.34
998	D6371	-4.0		2.96	1911	EN116	-8.5		-0.69
1006		-----		-----	1950	EN116	-8		-0.28
1016		-----		-----	1953	EN116	-8		-0.28
1059	EN116	-8		-0.28	1961		-----		-----
1080	EN116	-7.0		0.53	1976	EN116	-8		-0.28
1108	EN116	-8		-0.28	1984	EN116	-7		0.53
1109	IP309	-8.0		-0.28	1986	EN116	-7		0.53
1121	IP309	-8		-0.28	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	EN116	-10.0		-1.90	6142	EN116	-7		0.53
2130	EN116	-7.0		0.53	6143		-----		-----
2146		-----		-----	6174		-----		-----
6005	EN116	-8.0		-0.28	6192	EN116	-6		1.34
6018		-----		-----	6201	EN116	-8		-0.28
6028	EN116	-6		1.34	6203	EN116	-7		0.53
6051		-----		-----	6241		-----		-----
6057	EN116	-6		1.34	6242	EN116	-5.7		1.58
6075		-----		-----	9057		-----		-----

normality	OK	
n	125	
outliers	2	
mean (n)	-7.65	
st.dev. (n)	1.385	
R(calc.)	3.88	
st.dev.(EN116:15)	1.235	
R(EN116:15)	3.46	

Lab 381 first reported: -16
Lab 440 first reported: -15
Lab 1667 first reported: -14.0
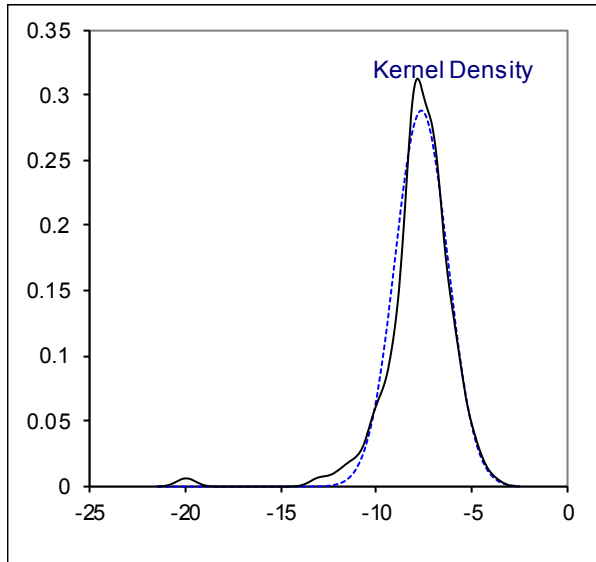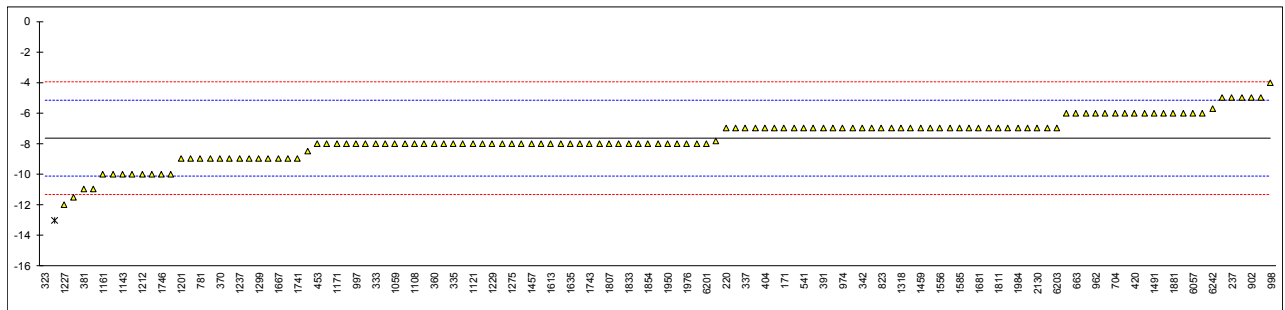
Determination of Carbon Residue (Micro method) on 10% residue on sample #19025; result in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D4530	0.055		5.22	1126		-----		-----
140	ISO10370	0.00		-3.13	1134		-----		-----
171	D4530	<0.1		-----	1143		-----		-----
212	ISO10370	0.07	R(0.01)	7.50	1146		-----		-----
218		-----		-----	1150	ISO6615	0.045		3.70
220		-----		-----	1161	ISO10370	0.02		-0.09
225	D4530	0.02		-0.09	1167	ISO10370	0.024		0.51
228		-----		-----	1171	ISO6615	0.034		2.03
237	D4530	<0.1		-----	1191		-----		-----
238		-----		-----	1199		-----		-----
273	D4530	0.02		-0.09	1201	ISO10370	0.12	R(0.01)	15.09
311		-----		-----	1205		-----		-----
312		-----		-----	1212	ISO10370	0.015		-0.85
317	D4530	<0.10		-----	1227	D4530	0.000		-3.13
323		-----		-----	1229		-----		-----
331		-----		-----	1233		-----		-----
333		-----		-----	1237		-----		-----
334	ISO10370	<0.01		-----	1251	ISO10370	0.014		-1.01
335		-----		-----	1259		-----		-----
336	ISO10370	<0.10		-----	1266		-----		-----
337		-----		-----	1275	IP398	0.027		0.97
338		-----		-----	1286		-----		-----
342	ISO10370	0.02		-0.09	1299	D4530	0.02		-0.09
343	ISO10370	0.03		1.42	1316	ISO10370	0.02		-0.09
345		-----		-----	1318		-----		-----
351	ISO10370	0.021		0.06	1356	ISO10370	<0.010		-----
353	IP13	0.016		-0.70	1394		-----		-----
357		-----		-----	1397		-----		-----
360	ISO10370	0.020		-0.09	1430	D4530	0.019		-0.25
369	ISO10370	0.034		2.03	1457	ISO10370	0.026		0.82
370	ISO10370	0.023		0.36	1459		-----		-----
371		-----		-----	1488	ISO6615	0.032		1.73
381		-----		-----	1491	ISO10370	0.028		1.12
391		-----		-----	1498		-----		-----
398		-----		-----	1538		-----		-----
399		-----		-----	1539	ISO6615	0.022		0.21
403	ISO10370	0.026		0.82	1556	ISO10370	0.023		0.36
404	ISO10370	0.028		1.12	1569	ISO10370	0.034		2.03
420		0.02		-0.09	1575		-----		-----
431		-----		-----	1585	ISO10370	0.0135		-1.08
432		-----		-----	1586	ISO10370	0.01		-1.61
440		-----		-----	1613	D4530	<0.1		-----
444		-----		-----	1631		-----		-----
445	IP398	0.03		1.42	1634		-----		-----
447	IP398	0.010		-1.61	1635	ISO10370	0.01		-1.61
453	IP398	<0.10		-----	1656	ISO10370	<0.1		-----
485		-----		-----	1667		-----		-----
541	ISO10370	0.029		1.27	1681		-----		-----
631	D4530	0.0396		2.88	1720		-----		-----
663	D4530	0.007		-2.07	1724	ISO10370	<0,10		-----
671	D4530	0.046		3.85	1730		-----		-----
704	ISO10370	0.012		-1.31	1740	ISO10370	0.02		-0.09
781	ISO10370	0.02		-0.09	1741	ISO10370	0.020		-0.09
785		-----		-----	1742	ISO10370	0.02		-0.09
823	ISO10370	0.01		-1.61	1743	ISO10370	0.01		-1.61
824	ISO10370	0.007		-2.07	1746	D4530	0.020		-0.09
872	ISO10370	0.017		-0.55	1749		-----		-----
873	D4530	0.015		-0.85	1776		-----		-----
874		-----		-----	1807		-----		-----
875	D4530	0.0507		4.57	1810		-----		-----
902	ISO10370	<0,1		-----	1811		-----		-----
904	ISO10370	0.015		-0.85	1833	ISO10370	<0.1		-----
962	D4530	0.02		-0.09	1849	ISO10370	<0,1		-----
963	ISO10370	0.03		1.42	1854	ISO10370	0.020		-0.09
971	ISO10370	0.018		-0.40	1858	D4530	0.012		-1.31
974	D4530	0.020		-0.09	1864	ISO10370	0.01		-1.61
995	D189	0.025		0.66	1872		-----		-----
997	D189	0.027		0.97	1881		-----		-----
998	D189	0.0016		-2.89	1911	ISO10370	<0,10		-----
1006		-----		-----	1950	ISO10370	0.015		-0.85
1016		-----		-----	1953		-----		-----
1059	ISO10370	0.01		-1.61	1961		-----		-----
1080		-----		-----	1976	ISO10370	0.0215		0.13
1108		-----		-----	1984		-----		-----
1109	D4530	<0.1		-----	1986	ISO10370	0.013		-1.16
1121	ISO10370	0.003		-2.68	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	ISO10370	0.014		-1.01	6142		-----		-----
2130	ISO10370	0.1	R(0.01)	12.06	6143		-----		-----
2146		-----		-----	6174		-----		-----
6005		-----		-----	6192		-----		-----
6018		-----		-----	6201	ISO10370	<0.1	C	-----
6028	ISO10370	0.02		-0.09	6203	ISO10370	0.029		1.27
6051	ISO10370	0.012		-1.31	6241	D189	0.023		0.36
6057	ISO10370	<0,10		-----	6242	ISO10370	0.006		-2.22
6075	ISO10370	0.029		1.27	9057		-----		-----

normality	suspect
n	75
outliers	3
mean (n)	0.02063
st.dev. (n)	0.010792
R(calc.)	0.03022
st.dev.(ISO10370:14)	0.006584
R(ISO10370:14)	0.01843

Lab 6201 first reported: 0
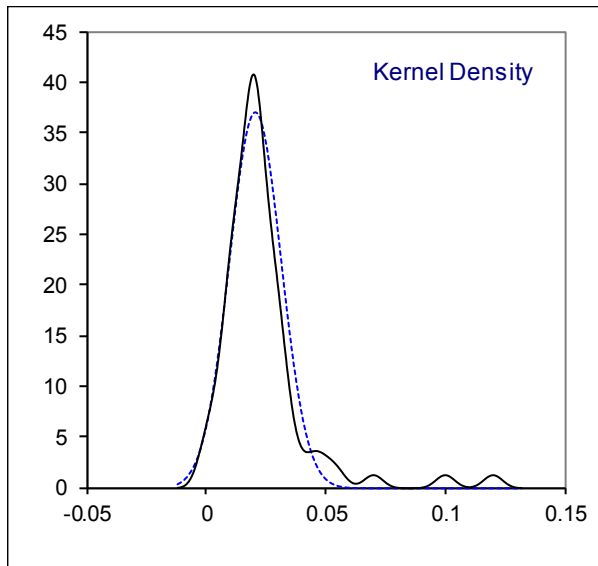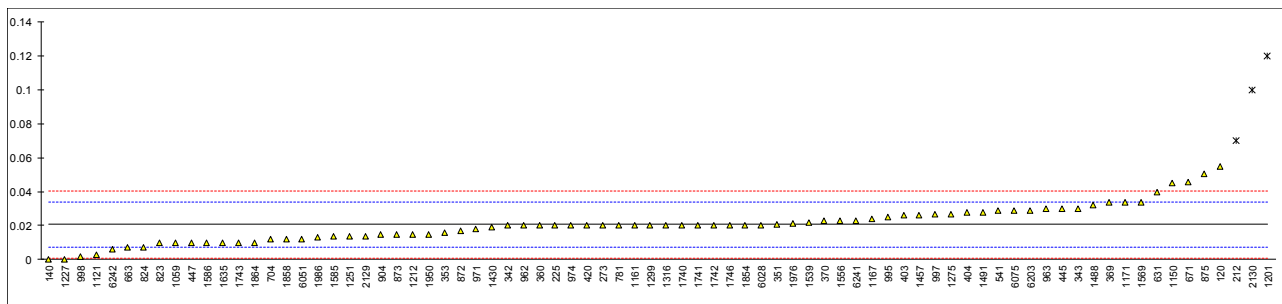
Determination of Copper Corrosion, 3 hrs at 50°C on sample #19025

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D130	1A		-----	1126		-----		-----
140	ISO2160	1a		-----	1134	D130	1a		-----
171	D130	1a		-----	1143		-----		-----
212	ISO2160	1a		-----	1146		-----		-----
218		-----		-----	1150	ISO2160	1a		-----
220		-----		-----	1161	ISO2160	1a		-----
225	D130	1A		-----	1167	ISO2160	1a		-----
228	D130	1A		-----	1171	ISO2160	1A		-----
237	D130	1A		-----	1191		-----		-----
238	D130	1A		-----	1199		-----		-----
273	D130	1a		-----	1201	D130	1A		-----
311		-----		-----	1205		-----		-----
312		-----		-----	1212	ISO2160	1A		-----
317	D130	1a		-----	1227	D130	1A		-----
323		-----		-----	1229		-----		-----
331		-----		-----	1233		-----		-----
333		-----		-----	1237		-----		-----
334	ISO2160	1		-----	1251	ISO2160	1a		-----
335	ISO2160	1B		-----	1259		-----		-----
336	ISO2160	1		-----	1266	ISO2160	1		-----
337		-----		-----	1275	IP154	1A		-----
338		-----		-----	1286		-----		-----
342	D130	1a		-----	1299	D130	1A		-----
343	ISO2160	1a		-----	1316	D130	1a		-----
345	ISO2160	1a		-----	1318	D130	1a		-----
351	ISO2160	1a		-----	1356		-----		-----
353	IP154	1a		-----	1394		-----		-----
357	ISO2160	1a		-----	1397	ISO2160	1		-----
360	ISO2160	1A		-----	1430	D130	1a		-----
369	ISO2160	1A		-----	1457		1A		-----
370	ISO2160	1A		-----	1459		-----		-----
371	D130	1a		-----	1488	ISO2160	1A		-----
381		-----		-----	1491	ISO2160	1a		-----
391		-----		-----	1498		-----		-----
398		-----		-----	1538		-----		-----
399		-----		-----	1539	ISO2160	1A		-----
403	ISO2160	class 1		-----	1556	ISO2160	1		-----
404	ISO2160	clasa 1		-----	1569	ISO2160	1a		-----
420		-----		-----	1575		-----		-----
431		-----		-----	1585	D130	1a		-----
432		-----		-----	1586	D130	1a		-----
440	IP154	1A		-----	1613	D130	1a		-----
444		-----		-----	1631		-----		-----
445	IP154	1A		-----	1634	ISO2160	1a		-----
447	IP154	1a		-----	1635		-----		-----
453	IP154	1A		-----	1656	IP154	1A		-----
485	ISO2160	1		-----	1667		-----		-----
541	D130	1a		-----	1681	ISO2160	1a		-----
631	D130	1A		-----	1720		-----		-----
663	D130	1a		-----	1724	ISO2160	no. 1a		-----
671	D130	1A		-----	1730		-----		-----
704	ISO2160	1		-----	1740	ISO2160	1A		-----
781	ISO2160	1A		-----	1741	ISO2160	Class 1a		-----
785		-----		-----	1742		-----		-----
823	D130	1a		-----	1743	ISO2160	1A		-----
824	D130	1a		-----	1746	D130	1a		-----
872		-----		-----	1749		-----		-----
873	D130	1A		-----	1776		-----		-----
874		-----		-----	1807	D130	1A		-----
875	D130	1a		-----	1810		-----		-----
902	ISO2160	1a		-----	1811		-----		-----
904	ISO2160	1a		-----	1833	ISO2160	1		-----
962	D130	1A		-----	1849	ISO2160	1A		-----
963	ISO2160	1a		-----	1854	D130	1A		-----
971	ISO2160	1a		-----	1858	D130	1A		-----
974	D130	1a		-----	1864	ISO2160	1A		-----
995	D130	1a		-----	1872	ISO2160	1a		-----
997		-----		-----	1881	ISO2160	1a		-----
998	D130	1A		-----	1911		-----		-----
1006	D130	1a		-----	1950	ISO2160	1a		-----
1016	D130	1A		-----	1953	ISO2160	1a		-----
1059	ISO2160	1a		-----	1961	ISO2160	1a		-----
1080		1A		-----	1976		-----		-----
1108	D130	1A		-----	1984		-----		-----
1109	D130	1a		-----	1986	ISO2160	1A		-----
1121	IP154	1a		-----	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	D130	1a		-----	6142			-----	-----
2130	D130	1B		-----	6143			-----	-----
2146		-----		-----	6174	D130	1A		-----
6005	ISO2160	1a		-----	6192		-----		-----
6018	ISO2160	1a		-----	6201	ISO2160	1A		-----
6028	ISO2160	1a		-----	6203	IP154	1A		-----
6051	ISO2160	1A		-----	6241	D130	1		-----
6057	D130	1A		-----	6242	ISO2160	1a		-----
6075	ISO2160	1a		-----	9057		-----		-----

	n	113
	mean (n)	1,1a,1b

Determination of Density at 15 °C on sample #19025; result in kg/m³

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D4052	835.8		-1.31	1126	ISO12185	835.99		-0.24
140	D4052	836.1		0.37	1134	D4052	836.2		0.93
171	D4052	836.1		0.37	1143	ISO3675	836.1		0.37
212	ISO12185	836.1		0.37	1146	D4052	836.02		-0.08
218	ISO12185	835.8		-1.31	1150	ISO12185	836.0		-0.19
220	ISO3675	835.8		-1.31	1161	ISO12185	835.97		-0.36
225	D4052	836.1		0.37	1167	ISO12185	836.0		-0.19
228	D4052	836.2		0.93	1171	D4052	836.45	R(0.05)	2.33
237	D4052	836.2		0.93	1191	ISO12185	836.1		0.37
238	D4052	835.87		-0.92	1199		-----		-----
273	D4052	835.9	C	-0.75	1201	ISO12185	836.0		-0.19
311		-----		-----	1205	ISO12185	836.08		0.26
312	ISO12185	835.9		-0.75	1212	ISO12185	835.9		-0.75
317	ISO12185	836.0		-0.19	1227	D4052	836.1		0.37
323	ISO12185	835.8		-1.31	1229	ISO12185	836.0		-0.19
331	ISO12185	836.2		0.93	1233	ISO12185	836.3		1.49
333	ISO12185	836.1		0.37	1237	ISO12185	835.9		-0.75
334	ISO12185	836.0		-0.19	1251	ISO12185	836.0		-0.19
335	ISO12185	836.1		0.37	1259	ISO12185	836.01		-0.13
336	ISO12185	835.8		-1.31	1266	ISO3675	836.7	R(0.01)	3.73
337	ISO12185	836.3		1.49	1275	IP365	836.0		-0.19
338	ISO12185	836.1		0.37	1286	ISO12185	836.020		-0.08
342	D4052	836.1		0.37	1299	D4052	836.0		-0.19
343	ISO12185	836.01		-0.13	1316	D4052	835.9		-0.75
345	ISO12185	836.0		-0.19	1318	D4052	835.90		-0.75
351	ISO12185	836.02		-0.08	1356	ISO12185	836.1		0.37
353	IP365	836.0		-0.19	1394	ISO12185	836.1		0.37
357	D4052	836.00		-0.19	1397	ISO12185	836.1		0.37
360	ISO12185	836.0		-0.19	1430	D4052	836.1		0.37
369	ISO12185	836.0		-0.19	1457	ISO12185	836.1		0.37
370	ISO12185	836.0		-0.19	1459	ISO12185	836.0		-0.19
371	ISO12185	836.0		-0.19	1488	ISO3675	836.21	C	0.99
381	ISO12185	836.01		-0.13	1491	ISO12185	835.94		-0.52
391	ISO12185	835.8		-1.31	1498	D4052	836.1		0.37
398	ISO12185	835.9		-0.75	1538		-----		-----
399	D4052	836.0		-0.19	1539	ISO12185	836.1		0.37
403	ISO12185	836.07		0.20	1556	ISO12185	836.06		0.15
404	ISO12185	836.0		-0.19	1569	ISO12185	835.85		-1.03
420	ISO12185	835.9		-0.75	1575	D4052	836.1		0.37
431	ISO12185	836.015		-0.10	1585	ISO12185	836.05		0.09
432	ISO12185	836.20		0.93	1586	D4052	836.1		0.37
440	D4052	836.1		0.37	1613	D4052	836.0		-0.19
444	D4052	836.5	R(0.05)	2.61	1631	ISO12185	836.058		0.14
445	IP365	836.1		0.37	1634	ISO12185	836.023		-0.06
447	IP365	835.9		-0.75	1635	ISO12185	836.1		0.37
453	IP365	836.0		-0.19	1656	D4052	835.9		-0.75
485	D4052	836.0		-0.19	1667	ISO12185	836.1		0.37
541	ISO12185	836.00		-0.19	1681	ISO12185	835.9		-0.75
631	D4052	836.1		0.37	1720	D4052	836.08		0.26
663	D4052	836.02		-0.08	1724	ISO12185	836.1		0.37
671	D4052	836.3	C	1.49	1730	ISO12185	836.04		0.04
704	ISO12185	836.0		-0.19	1740	ISO12185	836.0		-0.19
781	ISO12185	835.9		-0.75	1741	ISO12185	836.10		0.37
785		-----		-----	1742	ISO12185	836.0		-0.19
823	ISO12185	836.1		0.37	1743	ISO12185	836.0		-0.19
824	ISO12185	836.0		-0.19	1746	D4052	835.9		-0.75
872	ISO12185	835.9		-0.75	1749	ISO12185	836.05		0.09
873	D4052	836.0		-0.19	1776	ISO12185	836.1		0.37
874		-----		-----	1807	ISO12185	836.0		-0.19
875	D4052	836.3		1.49	1810	ISO12185	835.9		-0.75
902	ISO12185	836.1		0.37	1811	ISO12185	836.0		-0.19
904	ISO12185	836.3		1.49	1833	ISO12185	836.1		0.37
962	D4052	836.1		0.37	1849	ISO12185	836.1		0.37
963	ISO12185	836.1		0.37	1854	ISO12185	836.05		0.09
971	ISO12185	836.1		0.37	1858	D4052	836.0		-0.19
974	D1298	836.0		-0.19	1864	ISO12185	836.01		-0.13
995	ISO12185	836.2		0.93	1872	ISO12185	836.0	C	-0.19
997	ISO12185	836.2		0.93	1881	ISO12185	836.07		0.20
998	D4052	835.91		-0.69	1911	ISO12185	836.02		-0.08
1006	D4052	836.1		0.37	1950	ISO12185	836.1		0.37
1016		-----		-----	1953		835.4	R(0.01)	-3.55
1059	ISO12185	836.0		-0.19	1961		-----		-----
1080	ISO12185	836.1		0.37	1976	ISO12185	835.9		-0.75
1108	ISO12185	836.03		-0.02	1984	ISO12185	836.05		0.09
1109	D4052	836.0		-0.19	1986	ISO12185	836.10		0.37
1121	ISO12185	836.0		-0.19	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	D4052	836.1		0.37	6142	ISO12185	835.75		-1.59
2130	D4052	836.0		-0.19	6143	D4052	835.7		-1.87
2146	ISO12185	836.0		-0.19	6174	D4052	835.97		-0.36
6005	ISO12185	836.0		-0.19	6192	D1298	836.0		-0.19
6018	ISO12185	836.0		-0.19	6201	ISO12185	836.07	C	0.20
6028	ISO3675	836.0		-0.19	6203	ISO12185	836.12		0.48
6051	ISO12185	836.07		0.20	6241	D4052	836.4		2.05
6057	ISO12185	836.0		-0.19	6242	ISO12185	836.00		-0.19
6075	ISO12185	836.21		0.99	9057		836.21		0.99

normality	suspect
n	158
outliers	4
mean (n)	836.03
st.dev. (n)	0.111
R(calc.)	0.31
st.dev.(ISO12185:96)	0.179
R(ISO12185:96)	0.5

Lab 273 first reported: 811.4
Lab 671 first reported: 0.8363 kg/m^3
Lab 1488 first reported: 834.83
Lab 1872 first reported: 853.2
Lab 6201 first reported: 0.8307 without unit

Kernel Density
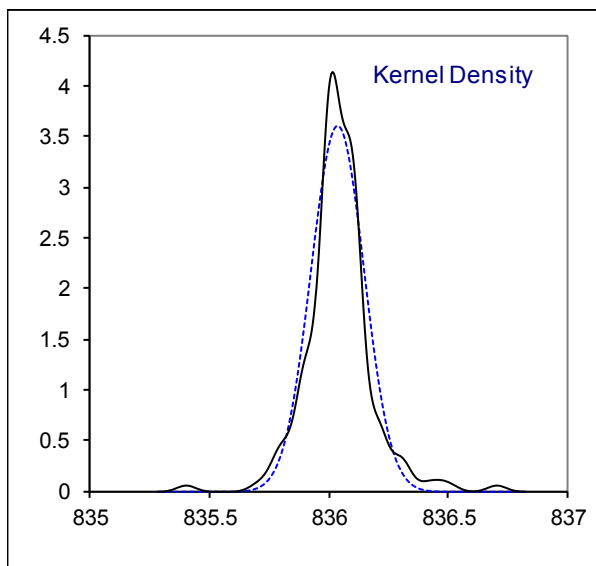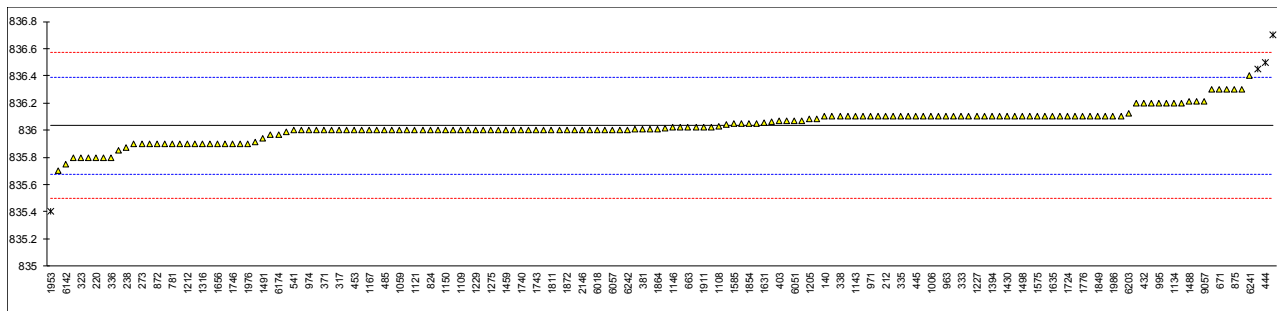
Determination of Distillation on sample #19025; result in °C

lab	method	IBP	10%rec	50%rec	90%rec	95%rec	FBP
120	D86-A	181.6	226.9	284.2	340.1	353.1	357.2
140	ISO3405-A	175.9	227.7	283.9	339.6	352.6	360.6
171	D86-A	174.7	227.5	283.0	338.3	350.8	358.4
212	ISO3405-A	178.1	226.7	283.1	340.4	352.8	358.5
218		-----	-----	-----	-----	-----	-----
220	ISO3405-A	182.3	227.6	284.4	339.9	353.5	359.0
225	D86-M	180.5	225.0	282.0	338.5	352.0	357.0
228	D86-M	180.0	224.0	283.0	336.0	348.0	359.0
237	D86-M	180.0	226.0	284.0	338.0	349.0	360.0
238	D86	179.0	228.0	285.0	339.0	352.0	360.0
273	D86-A	181.9	226.0	282.5	336.5	346.4	354.2 R5
311		-----	-----	-----	-----	-----	-----
312	ISO3405-A	178.1	225.3	283.9	338.5	350.1	358.5
317	ISO3405-A	177.0	226.3	284.5	340.5	353.4	359.8
323	ISO3405-A	171.9	210.6 R1	274.6 R1	335.1	353.1	360.1
331		-----	-----	-----	-----	-----	-----
333	D86-A	176.9	225.1	282.2	337.6	349.3	356.9
334	D86-A	177.5	225.4	283.6	339.8	352.9	359.1
335	ISO3405-A	202.9 R1	227.6 ex	287.3 ex	344.4 R5	-----	359.3 ex
336	ISO3405-A	180.3	227.8	283.5	337.9	348.9	359.9
337		-----	-----	-----	-----	-----	-----
338		174.7	225.8	283.4	339.4	352.1	359.6
342		180.1	227.9	284.5	339.7	352.3	358.7
343	ISO3405-A	175.0	223.7	281.5	338.8	351.0	359.0
345	ISO3405-A	175.4	227.1	284.5	339.5	351.8	360.4
351		179.2	223.3	283.4	340.3	354.8	360.5
353	IP123-A	180.2	226.2	283.0	338.7	351.0	360.2
357	ISO3405-A	181.2	228.3	284.3	338.5	350.3	359.1
360	ISO3405-A	172.6	228.1	283.5	339.1	351.3	359.1
369	ISO3405-A	181.8	227.4	285.3	342.2	352.1	361.2
370	ISO3405-A	182.1	226.2	284.7	340.1	356.6	361.2
371	ISO3405-A	178.0	227.4	285.8	341.0	354.5	362.5
381	ISO3405-A	174.9	225.1	282.9 C	337.7	349.4	358.2
391	ISO3405-A	180.6	229.1	285.2	340.1	352.3	360.7
398	ISO3405-A	184.8	228.8	284.4	339.2	351.3	360.0
399	D86-A	189.8	227.5	285.1	342.0	357.1	360.4
403	ISO3405-A	180.1	226.9	283.8	339.5	352.7	359.5
404	ISO3405-A	181.0	227.4	284.4	338.8	350.7	359.2
420	ISO3405-A	172.9	225.5	282.2	338.1	351.3	356.9
431		180.25	221.8	283.6	339.6	353.0	358.4
432		-----	-----	-----	-----	-----	-----
440	D86-A	185.4	228.8	286.0	339.9	350.8	356.1
444	D86-A	174.7	225.2	282.6	337.2	348.4	357.4
445	IP123-A	175.7	224.9	282.2	338.0	350.8	358.0
447	IP123-A	181.8	227.8	284.5	339.9	353.2	360.8
453	IP123-A	181.7	229.1	284.2	339.9	352.3	360.1
485		181.80	229.25	285.05	339.95	352.80	360.00
541	ISO3405-A	180.35	228.00	284.90	340.75	354.95	360.45
631	D86-M	180.0	228.0	285.0	339.0	350.5	361.0
663	D86-A	189.05	230.00	285.65	339.65	352.20	359.30
671	D86-A	181.5	230.3 C	283.1	339.8	351.9	353.4 R5
704	ISO3405-M	184.0	226.5	284.0	339.0	-----	-----
781	ISO3405-A	184.3	229.7	285.1	340.2	352.7	361.0
785		-----	-----	-----	-----	-----	-----
823	D86-A	178.6	227.5	283.9	340.0	352.9	360.7
824	D86-A	184.6	227.5	283.5	339.1	351.8	359.6
872	D86-M	182.0	226.0	284.0	340.0	353.0	359.5
873	D86-M	179.0	226.5	285.0	340.0	354.0	358.5
874		-----	-----	-----	-----	-----	-----
875	D86-M	175.0	229.5 C	283.5	339.5	353.5	360.5
902	ISO3405-A	181.7	228.7	284.8	339.4	351.3	359.5
904	ISO3405-A	179.9	226.5	283.9	338.0	349.8	360.2
962	D86-A	184.2	227.4	284.7	338.9	350.9	357.2
963	ISO3405-A	185.8	230.7	285.1	339.5	352.4	361.2
971	ISO3405-A	178.1	227.9	283.9	339.2	352.9	359.5
974	D86-A	183.0	228.5	285.9	340.6	353.3	360.4
995	ISO3405-M	180.0	227.5	287.0	340.5	354.5	362.0
997	ISO3405-M	180.0	226.5	286.5	341.0	354.0	362.0
998	D86-M	175.67	224.33	282.77 C	337.67	351.67	357.67
1006	D86-A	176.4	227.9	283.6	338.6	350.7	358.5
1016		-----	-----	-----	-----	-----	-----
1059	ISO3405-A	182.0	227.7	284.6	339.6	352.2	360.6
1080		-----	-----	-----	-----	-----	-----
1108	ISO3405-A	175.5	228.2	284.1	338.8	351.7	359.3
1109	D86-A	179.9	225.6	283.3	338.9	351.5	358.0
1121	ISO3405-M	176.5	223.0	282.0	338.5	349.5	358.0

lab	method	IBP	10%rec	50%rec	90%rec	95%rec	FBP
1126	D2887	196.1 R1	235.3 R1	290.6 R1	344.1 R5	356.4 ex	365.5 R5
1134	IP123-A	176.0	225.6	283.9	340.0	353.1	360.5
1143	ISO3405-A	183.4	229.2	285.2	339.0	350.3	358.8
1146	D86-A	184	225.2	284	338.3	349.7	361
1150	ISO3405-A	181.75	229.2	284.8	340.1	352.3	359.45
1161	ISO3405-A	180.3	226.5	283.9	341.5	353.2	362.2
1167	D86-A	170.4	224.8	282.9	340.9	355.4	362.3
1171	D86-M	184.10	225.91	282.48	338.30	350.82	361.59
1191	D86-A	182.3	228.0	284.8	339.5	351.8	360.0
1199		-----	-----	-----	-----	-----	-----
1201	ISO3405-A	178.6	226.4	284.4	340.1	353.5	360.2
1205	D86-A	183.9	228.9	284.7	339.3	351.5	361.6
1212	ISO3405-A	182.7	227.4	284.8	340.1	352.3	361.1
1227	D86-A	187.5	229.8	285.0	338.1	348.7	360.2
1229	ISO3405-A	181.8	227.5	283.6	339.6	352.4	359.5
1233		-----	-----	-----	-----	-----	-----
1237	ISO3405-A	179.2	227.5	283.5	339.4	352.4	359.3
1251	ISO3405-A	181.6	228.1	284.4	340.1	353.1	360.8
1259	ISO3405-A	185.7	228.8	283.5	337.9	349.4	360.6
1266	D86-A	175.6	221.2	282.1	338.7	350.3	355.9
1275	IP123-A	177.1	227.5	284.0	339.8	352.8	359.0
1286		-----	-----	-----	-----	-----	-----
1299	D86-A	182.3	227.2	283.6	337.9	349.6	358.6
1316	D86-A	181.8	228.0	284.3	337.9	350.4	357.6
1318	D86-A	178.2	228.4	284.3	339.6	352.1	361.2
1356		-----	248 R1	298 R1	348 R1	-----	-----
1394	D86-A	184.7	229.5	285.5	340.6	353.9	360.1
1397	ISO3405-A	180.7	228.9	286.2	341.3	354.1	361
1430	D86-A	148.8 C,R1	217.3 C.R1	277.7 C,R1	333.5 C,R1	344.1 C,R5	349.9 C,R1
1457	ISO3405-A	178.7	229.2	284.3	339.9	353.1	360.2
1459	ISO3405-A	179.7	226.7	284.0	338.0	350.3	358.4
1488	ISO3405-M	186.0	224.0	285.0	341.4	356.4	362.0
1491	ISO3405-A	176.8	228.1	283.7	338.2	350.6	359.2
1498		181.9	228.3	285.4	341.2	354.8	360.8
1538		-----	-----	-----	-----	-----	-----
1539	ISO3405-A	174.5	226.0	284.2	339.6	352.2	358.6
1556	D86-A	181.9	227.6	284.1	339.1	351.6	359.6
1569	D86-A	177.9	229.0	284.3	339.2	351.5	361.5
1575		-----	-----	-----	-----	-----	-----
1585	D86-M	181.5	226.5	284.5	339.5	353.0	359.0
1586	D86-A	178.2	226.6	284.2	339.5	351.4	359.8
1613	D86-A	189.3	229.7	285.5	340.9	353.6	361.1
1631		-----	-----	-----	-----	-----	-----
1634	D86-A	177.3	227.5	283.5	337.5	348.4	360.2
1635		171.1	226.4	284.9	340.8	354.8	360.2
1656		172.4	225.8	282.5	339.0	352.1	358.8
1667	ISO3405-A	180.6	227.3	283.2	338.7	352.6	359.2
1681	ISO3405-A	185.6	230.3	285.9	341.0	353.8	361.5
1720	D86-A	177.2	227.7	285.1	341.0	354.8	360.3
1724	ISO3405-A	181.0	228.0	283.9	338.7	351.3	359.8
1730		-----	-----	-----	-----	-----	-----
1740	ISO3405-A	181.3	226.6	284.1	339.5	352.6	359.6
1741		181.5	228.2	285.3	339.9	351.5	361.9
1742	ISO3405-A	183.3	229.2	284.8	340.0	352.3	360.9
1743	ISO3405-A	178.1	226.6	283.7	339.1	351.7	359.5
1746	D86-M	176.0	225.0	285.0	338.5	351.5	360.0
1749		177.5	226.0 C	283.0	340.0	352.0	355.0
1776	ISO3405-A	175.8	226.7	282.7	336.7	348.0	355.9
1807	D86-A	180.2	225.3	282.3	337.5	349.1	359.5
1810	D86-A	177.1	225.3	283.6	339.6	351.6	359.6
1811	D86-A	178.1	225.5	282.8	336.7	347.0	358.6
1833	ISO3405-A	183.5	227.5	284.4	338.9	350.7	359.3
1849	ISO3405-A	180.1	228.4	284.8	339.2	350.8	360.8
1854	ISO3405-A	182	227.0	284.5	339.5	-----	360
1858	D86-M	179.5	226.5	283.5	339.0	352.5	359.5
1864	ISO3405-A	181.4	227.0	284.6	339.6	350.8	361.8
1872	ISO3405-A	173.3	222.6 C	281.0 C	336.2	342.4 R1	348.6 C,R1
1881		-----	-----	-----	-----	-----	-----
1911	ISO3405-A	178.40	227.05	284.05	339.65	352.10	358.30
1950	ISO3405-M	180.0	225.5	283.0	339.0	353.0	358.5
1953	ISO3405-A	189.5	226.9	285.0	343.0	355.6	362.6
1961		-----	-----	-----	-----	-----	-----
1976	ISO3405-A	184.4	228.9	284.2	338.4	349.1	359.3
1984	ISO3405-A	180.05	227.6	284.2	339.55	352.15	360.25
1986	ISO3405-M	182.0	226.0	284.0	339.0	352.0	360.0
1995		-----	-----	-----	-----	-----	-----
2129	ISO3405-A	175.0	226.3	283.4	339.1	352.3	357.7
2130	D86-A	181.4	226.9	284.8	340.0	352.9	359.7
2146		-----	-----	-----	-----	-----	-----

lab	method	IBP	10%rec	50%rec	90%rec	95%rec	FBP
6005	ISO3405-A	183.9	229.6	284.5	339.6	351.6	361.2
6018	ISO3405-A	183.7	228.5	284.8	340.5	354.3	360.5
6028	ISO3405-A	185.7	229.6	284.8	339.4	350.7	361.2
6051	ISO3405-M	181.0	226.5	283.0	339.5	352.0	359.0
6057	ISO3405-A	182.1	229.5	284.5	339.0	350.6	360.3
6075	ISO3405-A	184.3	227.3	284.7	341.0	353.9	360.9
6142	D86-A	173.95	224.7	282.85	338.2	350.6	358.85
6143	D86-A	172.4	218 R1	279.2 R1	337	349.6	356.4
6174	D86-M	183.5	227.0	284.0	342.0	355.0	359.5
6192		179.4	227.5	282.8	336.7	347.0	358.5
6201	ISO3405-A	174.5	227.1	284.6	340.3	353.1	359.3
6203	ISO3405-A	177.6	225.7	283.4	338.4	351.4	357.4
6241	D86-A	181	227	285	338	348	356
6242	D86-A	184.5	228.4	285.3	340.4	352.4	361.6
9057		-----	-----	-----	-----	-----	-----
normality		OK	OK	OK	OK	OK	OK
n		145	143	143	145	142	141
outliers		3	5+1ex	5+1ex	4	2+1ex	5+1ex
mean (n)		180.01	227.10	284.08	339.30	351.88	359.63
st.dev. (n)		3.840	1.712	1.029	1.257	1.911	1.470
R(calc.)		10.75	4.79	2.88	3.52	5.35	4.12
st.dev.(ISO3405-A:11)		3.536	1.784	1.061	1.818	3.199	2.536
R(ISO3405-A:11)		9.90	5.00	2.97	5.09	8.96	7.1
compare							
R(ISO3405-M:11)		7.18	4.57	3.67	3.80	4.50	3.75

Please note: R(1) and R(5) means R(0.01) and R(0.05) respectively

Lab 381 first reported: 252.9
Lab 671 first reported: 219.2
Lab 875 first reported: 219.5
Lab 998 first reported: 280.67
Lab 1430 first reported: 152.2, 218.6, 275.1, 325.8, 333.33 and 345.6
Lab 1749 first reported: 221.0
Lab 1872 first reported: 214.2, 293.3 and 345.8
Test values of laboratories 335 and 1126 are excluded as related test values are statistical outliers.

Initial Boiling Point

Kernel Density

10% recovered

Kernel Density

50% recovered

Kernel Density

90% recovered

Kernel Density

95% recovered

Kernel Density

Final Boiling Point

Kernel Density
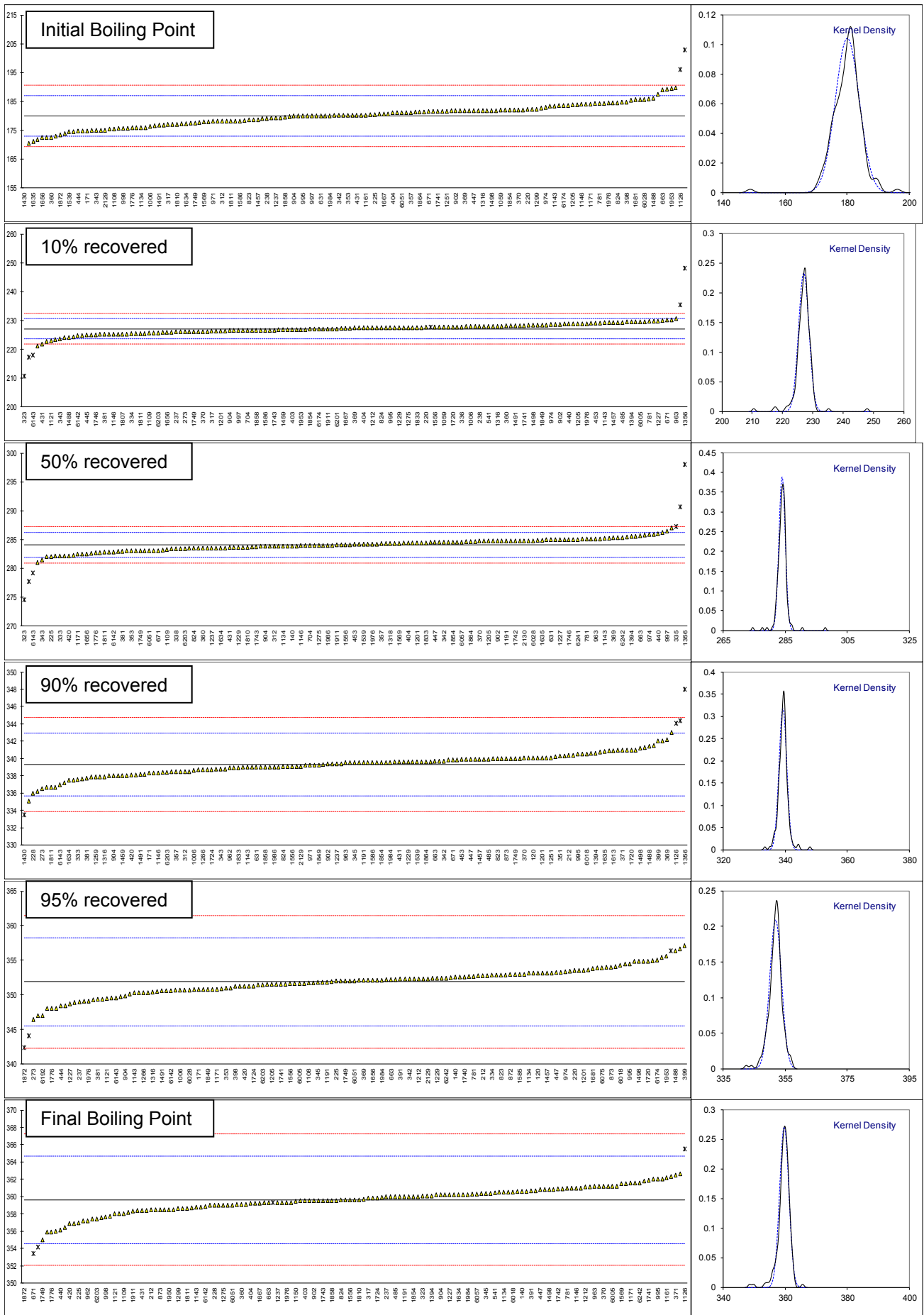
z-scores Distillation on sample #19025

lab	IBP	10%rec	50%rec	90%rec	95%rec	FBP
120	0.45	-0.11	0.11	0.44	0.38	-0.96
140	-1.16	0.34	-0.17	0.17	0.23	0.38
171	-1.50	0.23	-1.02	-0.55	-0.34	-0.48
212	-0.54	-0.22	-0.93	0.61	0.29	-0.44
218	-----	-----	-----	-----	-----	-----
220	0.65	0.28	0.30	0.33	0.51	-0.25
225	0.14	-1.18	-1.96	-0.44	0.04	-1.04
228	0.00	-1.74	-1.02	-1.81	-1.21	-0.25
237	0.00	-0.62	-0.08	-0.71	-0.90	0.15
238	-0.28	0.51	0.87	-0.16	0.04	0.15
273	0.54	-0.62	-1.49	-1.54	-1.71	-2.14
311	-----	-----	-----	-----	-----	-----
312	-0.54	-1.01	-0.17	-0.44	-0.56	-0.44
317	-0.85	-0.45	0.39	0.66	0.48	0.07
323	-2.29	-9.25	-8.94	-2.31	0.38	0.19
331	-----	-----	-----	-----	-----	-----
333	-0.88	-1.12	-1.77	-0.93	-0.81	-1.08
334	-0.71	-0.95	-0.55	0.28	0.32	-0.21
335	6.48	0.28	3.03	2.81	-----	-0.13
336	0.08	0.39	-0.55	-0.77	-0.93	0.11
337	-----	-----	-----	-----	-----	-----
338	-1.50	-0.73	-0.64	0.06	0.07	-0.01
342	0.03	0.45	0.39	0.22	0.13	-0.37
343	-1.42	-1.90	-2.43	-0.27	-0.27	-0.25
345	-1.30	0.00	0.39	0.11	-0.02	0.30
351	-0.23	-2.13	-0.64	0.55	0.91	0.34
353	0.06	-0.50	-1.02	-0.33	-0.27	0.23
357	0.34	0.67	0.21	-0.44	-0.49	-0.21
360	-2.09	0.56	-0.55	-0.11	-0.18	-0.21
369	0.51	0.17	1.15	1.60	0.07	0.62
370	0.59	-0.50	0.58	0.44	1.48	0.62
371	-0.57	0.17	1.62	0.94	0.82	1.13
381	-1.44	-1.12	-1.11	-0.88	-0.77	-0.56
391	0.17	1.12	1.05	0.44	0.13	0.42
398	1.36	0.95	0.30	-0.05	-0.18	0.15
399	2.77	0.23	0.96	1.49	1.63	0.30
403	0.03	-0.11	-0.27	0.11	0.26	-0.05
404	0.28	0.17	0.30	-0.27	-0.37	-0.17
420	-2.01	-0.90	-1.77	-0.66	-0.18	-1.08
431	0.07	-2.97	-0.45	0.17	0.35	-0.48
432	-----	-----	-----	-----	-----	-----
440	1.53	0.95	1.81	0.33	-0.34	-1.39
444	-1.50	-1.06	-1.40	-1.15	-1.09	-0.88
445	-1.22	-1.23	-1.77	-0.71	-0.34	-0.64
447	0.51	0.39	0.39	0.33	0.41	0.46
453	0.48	1.12	0.11	0.33	0.13	0.19
485	0.51	1.21	0.91	0.36	0.29	0.15
541	0.10	0.51	0.77	0.80	0.96	0.32
631	0.00	0.51	0.87	-0.16	-0.43	0.54
663	2.56	1.63	1.48	0.20	0.10	-0.13
671	0.42	1.79	-0.93	0.28	0.01	-2.46
704	1.13	-0.33	-0.08	-0.16	-----	-----
781	1.21	1.46	0.96	0.50	0.26	0.54
785	-----	-----	-----	-----	-----	-----
823	-0.40	0.23	-0.17	0.39	0.32	0.42
824	1.30	0.23	-0.55	-0.11	-0.02	-0.01
872	0.56	-0.62	-0.08	0.39	0.35	-0.05
873	-0.28	-0.33	0.87	0.39	0.66	-0.44
874	-----	-----	-----	-----	-----	-----
875	-1.42	1.35	-0.55	0.11	0.51	0.34
902	0.48	0.90	0.68	0.06	-0.18	-0.05
904	-0.03	-0.33	-0.17	-0.71	-0.65	0.23
962	1.19	0.17	0.58	-0.22	-0.31	-0.96
963	1.64	2.02	0.96	0.11	0.16	0.62
971	-0.54	0.45	-0.17	-0.05	0.32	-0.05
974	0.85	0.79	1.71	0.72	0.44	0.30
995	0.00	0.23	2.75	0.66	0.82	0.94
997	0.00	-0.33	2.28	0.94	0.66	0.94
998	-1.23	-1.55	-1.24	-0.89	-0.06	-0.77
1006	-1.02	0.45	-0.45	-0.38	-0.37	-0.44
1016	-----	-----	-----	-----	-----	-----
1059	0.56	0.34	0.49	0.17	0.10	0.38
1080	-----	-----	-----	-----	-----	-----
1108	-1.27	0.62	0.02	-0.27	-0.06	-0.13
1109	-0.03	-0.84	-0.74	-0.22	-0.12	-0.64
1121	-0.99	-2.30	-1.96	-0.44	-0.74	-0.64

lab	IBP	10%rec	50%rec	90%rec	95%rec	FBP
1126	4.55	4.60	6.15	2.64	1.41	2.32
1134	-1.13	-0.84	-0.17	0.39	0.38	0.34
1143	0.96	1.18	1.05	-0.16	-0.49	-0.33
1146	1.13	-1.06	-0.08	-0.55	-0.68	0.54
1150	0.49	1.18	0.68	0.44	0.13	-0.07
1161	0.08	-0.33	-0.17	1.21	0.41	1.01
1167	-2.72	-1.29	-1.11	0.88	1.10	1.05
1171	1.16	-0.67	-1.51	-0.55	-0.33	0.77
1191	0.65	0.51	0.68	0.11	-0.02	0.15
1199	-----	-----	-----	-----	-----	-----
1201	-0.40	-0.39	0.30	0.44	0.51	0.23
1205	1.10	1.01	0.58	0.00	-0.12	0.78
1212	0.76	0.17	0.68	0.44	0.13	0.58
1227	2.12	1.51	0.87	-0.66	-0.99	0.23
1229	0.51	0.23	-0.45	0.17	0.16	-0.05
1233	-----	-----	-----	-----	-----	-----
1237	-0.23	0.23	-0.55	0.06	0.16	-0.13
1251	0.45	0.56	0.30	0.44	0.38	0.46
1259	1.61	0.95	-0.55	-0.77	-0.77	0.38
1266	-1.25	-3.31	-1.87	-0.33	-0.49	-1.47
1275	-0.82	0.23	-0.08	0.28	0.29	-0.25
1286	-----	-----	-----	-----	-----	-----
1299	0.65	0.06	-0.45	-0.77	-0.71	-0.41
1316	0.51	0.51	0.21	-0.77	-0.46	-0.80
1318	-0.51	0.73	0.21	0.17	0.07	0.62
1356	-----	11.71	13.12	4.79	-----	-----
1394	1.33	1.35	1.34	0.72	0.63	0.19
1397	0.20	1.01	2.00	1.10	0.70	0.54
1430	-8.83	-5.49	-6.02	-3.19	-2.43	-3.84
1457	-0.37	1.18	0.21	0.33	0.38	0.23
1459	-0.09	-0.22	-0.08	-0.71	-0.49	-0.48
1488	1.70	-1.74	0.87	1.16	1.41	0.94
1491	-0.91	0.56	-0.36	-0.60	-0.40	-0.17
1498	0.54	0.67	1.24	1.05	0.91	0.46
1538	-----	-----	-----	-----	-----	-----
1539	-1.56	-0.62	0.11	0.17	0.10	-0.41
1556	0.54	0.28	0.02	-0.11	-0.09	-0.01
1569	-0.60	1.07	0.21	-0.05	-0.12	0.74
1575	-----	-----	-----	-----	-----	-----
1585	0.42	-0.33	0.39	0.11	0.35	-0.25
1586	-0.51	-0.28	0.11	0.11	-0.15	0.07
1613	2.63	1.46	1.34	0.88	0.54	0.58
1631	-----	-----	-----	-----	-----	-----
1634	-0.77	0.23	-0.55	-0.99	-1.09	0.23
1635	-2.52	-0.39	0.77	0.83	0.91	0.23
1656	-2.15	-0.73	-1.49	-0.16	0.07	-0.33
1667	0.17	0.11	-0.83	-0.33	0.23	-0.17
1681	1.58	1.79	1.71	0.94	0.60	0.74
1720	-0.79	0.34	0.96	0.94	0.91	0.27
1724	0.28	0.51	-0.17	-0.33	-0.18	0.07
1730	-----	-----	-----	-----	-----	-----
1740	0.37	-0.28	0.02	0.11	0.23	-0.01
1741	0.42	0.62	1.15	0.33	-0.12	0.90
1742	0.93	1.18	0.68	0.39	0.13	0.50
1743	-0.54	-0.28	-0.36	-0.11	-0.06	-0.05
1746	-1.13	-1.18	0.87	-0.44	-0.12	0.15
1749	-0.71	-0.62	-1.02	0.39	0.04	-1.82
1776	-1.19	-0.22	-1.30	-1.43	-1.21	-1.47
1807	0.06	-1.01	-1.68	-0.99	-0.87	-0.05
1810	-0.82	-1.01	-0.45	0.17	-0.09	-0.01
1811	-0.54	-0.90	-1.21	-1.43	-1.52	-0.41
1833	0.99	0.23	0.30	-0.22	-0.37	-0.13
1849	0.03	0.73	0.68	-0.05	-0.34	0.46
1854	0.56	-0.05	0.39	0.11	-----	0.15
1858	-0.14	-0.33	-0.55	-0.16	0.19	-0.05
1864	0.39	-0.05	0.49	0.17	-0.34	0.86
1872	-1.90	-2.52	-2.91	-1.70	-2.96	-4.35
1881	-----	-----	-----	-----	-----	-----
1911	-0.45	-0.03	-0.03	0.20	0.07	-0.52
1950	0.00	-0.90	-1.02	-0.16	0.35	-0.44
1953	2.69	-0.11	0.87	2.04	1.16	1.17
1961	-----	-----	-----	-----	-----	-----
1976	1.24	1.01	0.11	-0.49	-0.87	-0.13
1984	0.01	0.28	0.11	0.14	0.09	0.25
1986	0.56	-0.62	-0.08	-0.16	0.04	0.15
1995	-----	-----	-----	-----	-----	-----
2129	-1.42	-0.45	-0.64	-0.11	0.13	-0.76
2130	0.39	-0.11	0.68	0.39	0.32	0.03
2146	-----	-----	-----	-----	-----	-----

lab	IBP	10%rec	50%rec	90%rec	95%rec	FBP
6005	1.10	1.40	0.39	0.17	-0.09	0.62
6018	1.04	0.79	0.68	0.66	0.76	0.34
6028	1.61	1.40	0.68	0.06	-0.37	0.62
6051	0.28	-0.33	-1.02	0.11	0.04	-0.25
6057	0.59	1.35	0.39	-0.16	-0.40	0.27
6075	1.21	0.11	0.58	0.94	0.63	0.50
6142	-1.71	-1.34	-1.16	-0.60	-0.40	-0.31
6143	-2.15	-5.10	-4.60	-1.26	-0.71	-1.27
6174	0.99	-0.05	-0.08	1.49	0.98	-0.05
6192	-0.17	0.23	-1.21	-1.43	-1.52	-0.44
6201	-1.56	0.00	0.49	0.55	0.38	-0.13
6203	-0.68	-0.78	-0.64	-0.49	-0.15	-0.88
6241	0.28	-0.05	0.87	-0.71	-1.21	-1.43
6242	1.27	0.73	1.15	0.61	0.16	0.78
9057	-----	-----	-----	-----	-----	-----

Determination of Distillation on sample #19025; result in %V/V

lab	method	Vol.250°C	mark	z(targ)	Vol.350°C	mark	z(targ)
120	D86-A	24.2		0.30	94.0		-0.46
140	ISO3405-A	23.9		-0.01	94.0		-0.46
171	D86-A	24.5		0.62	94.8		0.37
212	ISO3405-A	25		1.13	94.5		0.06
218		-----		-----	-----		-----
220	ISO3405-A	23.5		-0.42	94.0		-0.46
225	D86-M	25.5		1.65	94.0		-0.46
228	D86-M	25.0		1.13	95.5		1.09
237	D86-M	23.5		-0.42	95.5		1.09
238	D86	23.0		-0.94	94.5		0.06
273	D86-A	-----		-----	-----		-----
311		-----		-----	-----		-----
312	ISO3405-A	24.2		0.30	95.0		0.57
317	ISO3405-A	24.4		0.51	93.8		-0.67
323	ISO3405-A	31.6	R(0.01)	7.98	94.3		-0.15
331		-----		-----	-----		-----
333	D86-A	-----		-----	-----		-----
334	D86-A	24.4		0.51	94.1		-0.36
335	ISO3405-A	19.5	R(0.01)	-4.57	91.1	R(0.01)	-3.47
336	ISO3405-A	24.2		0.30	95.4		0.99
337		-----		-----	-----		-----
338		24.6		0.72	94.4		-0.05
342		23.6		-0.32	94.3		-0.15
343	ISO3405-A	24.8		0.93	94.8		0.37
345	ISO3405-A	24.0		0.10	95.0		0.57
351		25.2		1.34	93.8		-0.67
353	IP123-A	23.9		-0.01	94.7		0.26
357	ISO3405-A	23.7		-0.21	94.9		0.47
360	ISO3405-A	23.4		-0.53	94.5		0.06
369	ISO3405-A	23.6		-0.32	94.1		-0.36
370	ISO3405-A	24.0		0.10	93.5		-0.98
371	ISO3405-A	23.0		-0.94	93.0		-1.50
381	ISO3405-A	25.0		1.13	95.2		0.78
391	ISO3405-A	22.6		-1.35	94.3		-0.15
398	ISO3405-A	23.3		-0.63	94.6		0.16
399	D86-A	24.1		0.20	93.3		-1.19
403	ISO3405-A	24.1		0.20	94.2		-0.26
404	ISO3405-A	23.3		-0.63	94.8		0.37
420	ISO3405-A	25.0		1.13	94.7		0.26
431		24.8		0.93	94.1		-0.36
432		-----		-----	-----		-----
440	D86-A	22.0		-1.98	94.7		0.26
444	D86-A	24.6		0.72	95.4		0.99
445	IP123-A	24.9		1.03	94.7		0.26
447	IP123-A	23.7		-0.21	94.2		-0.26
453	IP123-A	23.6		-0.32	94.3		-0.15
485		22.60		-1.35	94.10		-0.36
541	ISO3405-A	22.95		-0.99	93.30		-1.19
631	D86-M	22.0		-1.98	94.5		0.06
663	D86-A	22.75		-1.20	94.90		0.47
671	D86-A	-----		-----	-----		-----
704	ISO3405-M	-----		-----	-----		-----
781	ISO3405-A	23.5		-0.42	94.5		0.06
785		-----		-----	-----		-----
823	D86-A	24.8		0.93	94.7		0.26
824	D86-A	23.9		-0.01	94.5		0.06
872	D86-M	24.0		0.10	94.0		-0.46
873	D86-M	24.5		0.62	94.0		-0.46
874		-----		-----	-----		-----
875	D86-M	23.5	C	-0.42	93.5		-0.98
902	ISO3405-A	23.0		-0.94	94.5		0.06
904	ISO3405-A	23.8		-0.11	95.1		0.68
962	D86-A	23.5		-0.42	94.7		0.26
963	ISO3405-A	22.5		-1.46	94.3		-0.15
971	ISO3405-A	24.0		0.10	94.2		-0.26
974	D86-A	22.55		-1.41	93.90		-0.57
995	ISO3405-M	23.0		-0.94	93.5		-0.98
997	ISO3405-M	-----		-----	-----		-----
998	D86-M	23.67		-0.25	95.33		0.92
1006	D86-A	-----		-----	-----		-----
1016		-----		-----	-----		-----
1059	ISO3405-A	23.9		-0.01	94.3		-0.15
1080		-----		-----	-----		-----
1108	ISO3405-A	23.7		-0.21	94.5		0.06
1109	D86-A	24.6		0.72	94.5		0.06
1121	ISO3405-M	26.0		2.17	95.0		0.57

lab	method	Vol.250°C	mark	z(targ)	Vol.350°C	mark	z(targ)
1126	D2887	23.8	ex	-0.11	92.4	ex,C	-2.12
1134	IP123-A	24.0		0.10	94.1		-0.36
1143	ISO3405-A	23.3		-0.63	94.9		0.47
1146	D86-A	24.15		0.25	95		0.57
1150	ISO3405-A	23.15		-0.78	94.30		-0.15
1161	ISO3405-A	23.6		-0.32	93.9		-0.57
1167	D86-A	24.1		0.20	94.0		-0.46
1171	D86-M	24.58		0.70	94.83		0.40
1191	D86-A	23.7		-0.21	94.4		-0.05
1199		-----		-----	-----		-----
1201	ISO3405-A	24.2		0.30	94.0		-0.46
1205	D86-A	23.5		-0.42	94.5		0.06
1212	ISO3405-A	23.3		-0.63	94.2		-0.26
1227	D86-A	22.8		-1.15	95.4		0.99
1229	ISO3405-A	23.9		-0.01	94.3		-0.15
1233		-----		-----	-----		-----
1237	ISO3405-A	24.0		0.10	94.3		-0.15
1251	ISO3405-A	23.7		-0.21	94.1		-0.36
1259	ISO3405-A	23.6		-0.32	95.3		0.89
1266	D86-A	25.6		1.76	94.8		0.37
1275	IP123-A	23.7		-0.21	94.2		-0.26
1286		-----		-----	-----		-----
1299	D86-A	24.1		0.20	95.1		0.68
1316	D86-A	23.4		-0.53	94.9		0.47
1318	D86-A	24.0		0.10	94.3		-0.15
1356		-----		-----	-----		-----
1394	D86-A	22.7		-1.25	93.8		-0.67
1397	ISO3405-A	22.8		-1.15	93.7		-0.77
1430	D86-A	-----		-----	-----		-----
1457	ISO3405-A	23.3		-0.63	94.1		-0.36
1459	ISO3405-A	23.9		-0.01	94.9		0.47
1488	ISO3405-M	23.5		-0.42	93.4		-1.08
1491	ISO3405-A	23.9		-0.01	94.9		0.47
1498		25		1.13	95		0.57
1538		-----		-----	-----		-----
1539	ISO3405-A	24.4		0.51	94.4		-0.05
1556	D86-A	23.5		-0.42	94.6		0.16
1569	D86-A	23.6		-0.32	94.5		0.06
1575		-----		-----	-----		-----
1585	D86-M	24.5		0.62	94.0		-0.46
1586	D86-A	23.7		-0.21	94.5		0.06
1613	D86-A	22.5		-1.46	94.0		-0.46
1631		-----		-----	-----		-----
1634	D86-A	24.2		0.30	95.4		0.99
1635		24.3		0.41	93.8		-0.67
1656	D86-A	25.2		1.34	94.4		-0.05
1667	ISO3405-A	23.2		-0.73	94.1		-0.36
1681	ISO3405-A	22.5		-1.46	93.8		-0.67
1720	D86-A	23.7		-0.21	93.7		-0.77
1724	ISO3405-A	23.9		-0.01	94.6		0.16
1730		-----		-----	-----		-----
1740	ISO3405-A	24.1	C	0.20	94.2		-0.26
1741		23.2		-0.73	94.5		0.06
1742	ISO3405-A	23.3		-0.63	94.2		-0.26
1743	ISO3405-A	24.3		0.41	94.5		0.06
1746	D86-M	24.0		0.10	94.5		0.06
1749		25.5		1.65	94.0		-0.46
1776	ISO3405-A	24.6		0.72	94.9		0.47
1807	D86-A	25.0		1.13	95.3		0.89
1810	D86-A	24.3		0.41	94.4		-0.05
1811	D86-A	24.7		0.82	96.0		1.61
1833	ISO3405-A	23.2		-0.73	94.7		0.26
1849	ISO3405-A	23.2		-0.73	94.8		0.37
1854	ISO3405-A	24		0.10	94.4		-0.05
1858	D86-M	24.5		0.62	94.0		-0.46
1864	ISO3405-A	23.1		-0.84	93.9		-0.57
1872	ISO3405-A	26.3	C	2.48	98.2	R(0.01)	3.89
1881		-----		-----	-----		-----
1911	ISO3405-A	23.60		-0.32	94.40		-0.05
1950	ISO3405-M	24.5		0.62	94.0		-0.46
1953	ISO3405-A	-----		-----	-----		-----
1961		-----		-----	-----		-----
1976	ISO3405-A	23.2		-0.73	95.3		0.89
1984	ISO3405-A	23.8		-0.11	94.4		-0.05
1986	ISO3405-M	24.5		0.62	94.5		0.06
1995		-----		-----	-----		-----
2129	ISO3405-A	24.7		0.82	94.4		-0.05
2130	D86-A	23.4		-0.53	94.2		-0.26
2146		-----		-----	-----		-----

lab	method	Vol.250°C	mark	z(targ)	Vol.350°C	mark	z(targ)
6005	ISO3405-A	23.0		-0.94	94.5		0.06
6018	ISO3405-A	23.1		-0.84	93.9		-0.57
6028	ISO3405-A	23		-0.94	94.8		0.37
6051	ISO3405-M	24.5		0.62	94.5		0.06
6057	ISO3405-A	23.4	C	-0.53	94.8	C	0.37
6075	ISO3405-A	23.7		-0.21	93.8		-0.67
6142	D86-A	25.0		1.13	94.85		0.42
6143	D86-A	26.7		2.90	95.2		0.78
6174	D86-M	24		0.10	93		-1.50
6192		24.2		0.30	95.9		1.51
6201	ISO3405-A	23.8		-0.11	94.0		-0.46
6203	ISO3405-A	24.7		0.82	94.9		0.47
6241	D86-A	25		1.13	96		1.61
6242	D86-A	22.6		-1.35	94.3		-0.15
9057		-----		-----	-----		-----
	normality	OK			OK		
	n	137			137		
	outliers	2+1ex			2+1ex		
	mean (n)	23.91			94.45		
	st.dev. (n)	0.824			0.560		
	R(calc.)	2.31			1.57		
	st.dev.(ISO3405-A:11)	0.964			0.964		
	R(ISO3405-A:11)	2.7			2.7		
	compare						
	R(ISO3405-M:11)	2.80			2.41		

Lab 875 first reported: 28.5
Lab 1126 first reported: 80.2
Lab 1740 first reported: 31.9
Lab 1872 first reported: 37.2
Lab 6057 first reported: 94.8 and 98.9
Test values of lab 1126 are excluded as related test values are statistical outliers.
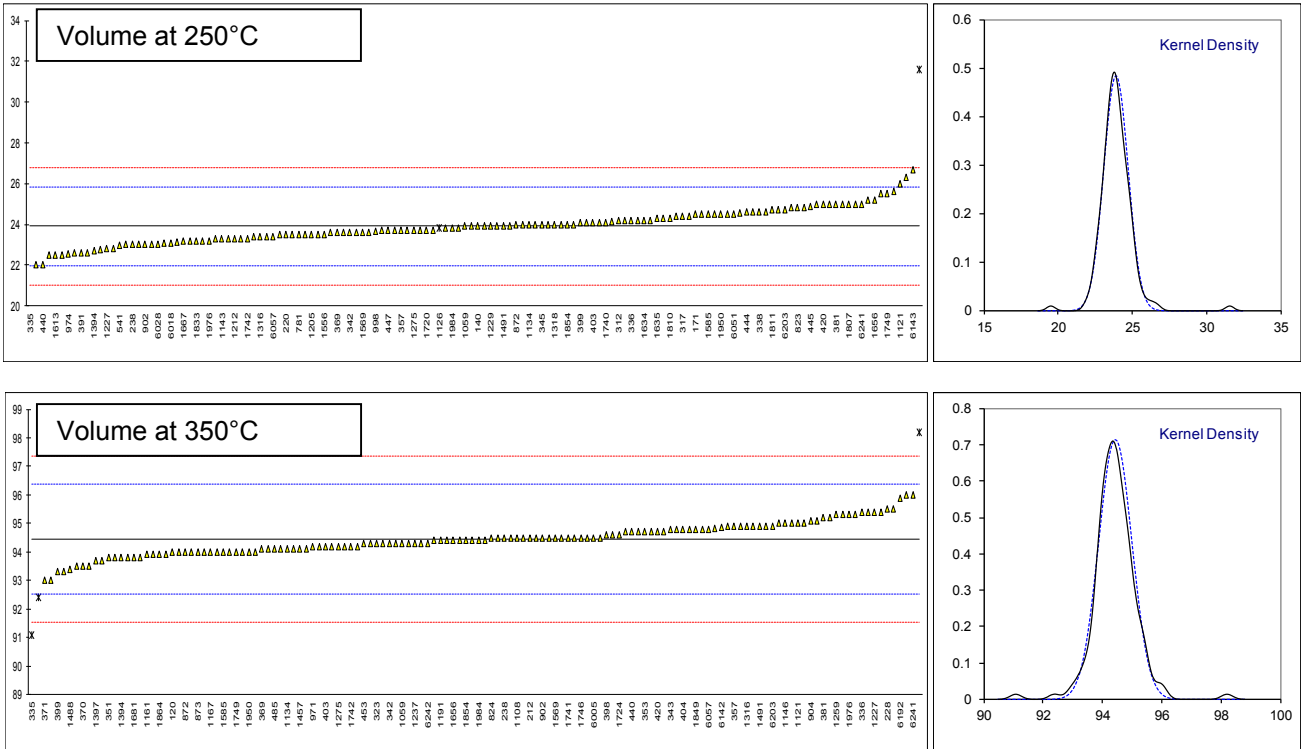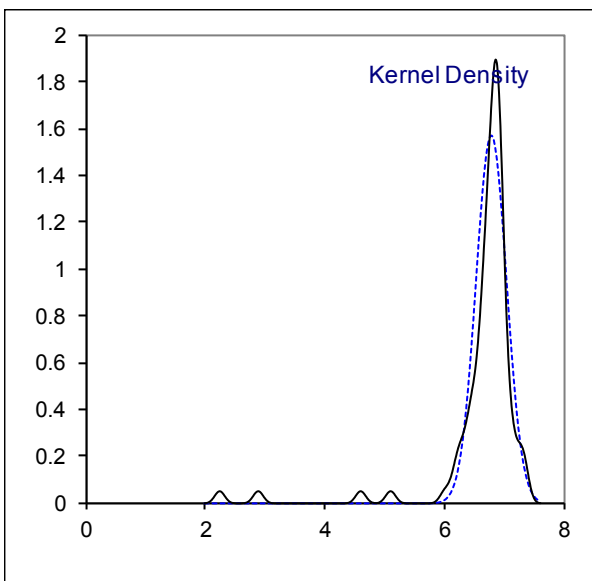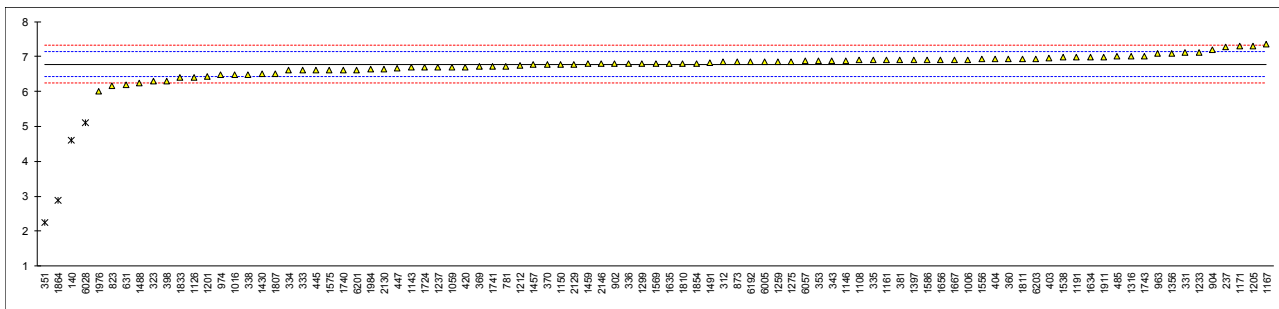
Determination of FAME content on sample #19025; result in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120		-----		-----	1126	in house	6.4		-2.15
140	EN14078-A	4.6	R(0.01)	-12.30	1134		-----		-----
171		-----		-----	1143	EN14078-B	6.68		-0.57
212		-----		-----	1146	D7371	6.884		0.58
218		-----		-----	1150	EN14078-B	6.7745		-0.03
220		-----		-----	1161	EN14078-A	6.90		0.67
225		-----		-----	1167	EN14078-A	7.35		3.21
228		-----		-----	1171	EN14078-A	7.30		2.93
237	D7371	7.27		2.76	1191	EN14078-B	6.98		1.12
238		-----		-----	1199		-----		-----
273		-----		-----	1201	EN14078-B	6.416		-2.06
311		-----		-----	1205	in house	7.31		2.99
312	EN14078-B	6.84		0.34	1212	EN14078-A	6.74		-0.23
317		-----		-----	1227		-----		-----
323		6.3		-2.71	1229		-----		-----
331	EN14078-B	7.12		1.91	1233	EN14078-A	7.12		1.91
333	EN14078-A	6.6		-1.02	1237	EN14078-B	6.69		-0.51
334	EN14078-B	6.6		-1.02	1251		-----	W	-----
335	EN14078-B	6.9		0.67	1259	EN14078-B	6.85		0.39
336	EN14078-B	6.8		0.11	1266		-----		-----
337		-----		-----	1275	EN14078-B	6.86	C	0.45
338	EN14078-B	6.484		-1.67	1286		-----		-----
342		-----		-----	1299	EN14078-B	6.8		0.11
343	EN14078-B	6.88		0.56	1316	EN14078-B	7.0		1.24
345		-----		-----	1318		-----		-----
351	EN14078-A	2.247	C,R(0.01)	-25.57	1356	EN14078-A	7.1	C	1.80
353	EN14078-B	6.88		0.56	1394		-----		-----
357		-----		-----	1397	EN14078-A	6.9		0.67
360	EN14078-B	6.92		0.79	1430	D7806	6.5	C	-1.58
369	EN14078-B	6.71		-0.40	1457	EN14078	6.76		-0.12
370	EN14078-B	6.77		-0.06	1459	EN14078-B	6.79		0.05
371		-----		-----	1488	in house	6.25		-2.99
381	EN14078-B	6.9		0.67	1491	EN14078-B	6.83		0.28
391		-----		-----	1498		-----		-----
398	EN14078-B	6.3		-2.71	1538	EN14078-B	6.97		1.07
399		-----		-----	1539		-----		-----
403	EN14078-A	6.95		0.96	1556	EN14078-A	6.9191		0.78
404	EN14078-A	6.92		0.79	1569	EN14078-B	6.80		0.11
420	EN14078-A	6.70		-0.45	1575	in house	6.6		-1.02
431		-----		-----	1585		-----		-----
432		-----		-----	1586	EN14078-B	6.9		0.67
440		-----		-----	1613		-----		-----
444		-----		-----	1631		-----		-----
445	EN14078-B	6.6		-1.02	1634	EN14078-A	6.985		1.15
447	EN14078-B	6.6715		-0.62	1635	EN14078-B	6.8		0.11
453		-----		-----	1656	EN14078-A	6.9		0.67
485	EN14078-A	7.0		1.24	1667	EN14078-B	6.9		0.67
541		-----		-----	1681		-----		-----
631	EN14078-B	6.2	C	-3.27	1720		-----		-----
663		-----		-----	1724	EN14078-A	6.68		-0.57
671		-----		-----	1730		-----		-----
704		-----		-----	1740	EN14078-B	6.6		-1.02
781	EN14078	6.72		-0.34	1741	EN14078-B	6.71		-0.40
785		-----		-----	1742		-----		-----
823	EN14078-B	6.17		-3.44	1743	EN14078-B	7.0		1.24
824		-----		-----	1746		-----		-----
872		-----		-----	1749		-----		-----
873	EN14078-B	6.84		0.34	1776		-----		-----
874		-----		-----	1807	EN14078-B	6.5		-1.58
875		-----		-----	1810	EN14078-B	6.8		0.11
902	EN14078-B	6.8		0.11	1811	EN14078-A	6.92		0.79
904	EN14078-A	7.2		2.37	1833	EN14078-B	6.39		-2.20
962		-----		-----	1849		-----		-----
963	EN14078-A	7.1		1.80	1854	EN14078-B	6.80		0.11
971		-----		-----	1858		-----		-----
974	EN14078-A	6.47		-1.75	1864	EN14078-A	2.89	C,R(0.01)	-21.95
995		-----		-----	1872		-----		-----
997		-----		-----	1881		-----		-----
998		-----		-----	1911	EN14078-B	6.99		1.18
1006	EN14078-A	6.91		0.73	1950		-----		-----
1016	EN14078-A	6.47	C	-1.75	1953		-----		-----
1059	EN14078-B	6.7		-0.45	1961		-----		-----
1080		-----		-----	1976	EN14078-A	6.01	C	-4.35
1108	EN14078-A	6.9		0.67	1984	EN14078-B	6.65		-0.74
1109		-----		-----	1986		-----		-----
1121		-----		-----	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	EN14078-A	6.78		0.00	6142		-----		-----
2130	EN14078-A	6.65		-0.74	6143		-----		-----
2146	in house	6.79		0.05	6174		-----		-----
6005	EN14078-B	6.847		0.37	6192	D7371	6.84		0.34
6018		-----		-----	6201	D7371	6.61	C	-0.96
6028	EN14078-B	5.1	C,R(0.01)	-9.48	6203	EN14078-B	6.92		0.79
6051		-----		-----	6241		-----		-----
6057	EN14078-B	6.87		0.50	6242		-----		-----
6075		-----		-----	9057		-----		-----

				Only EN14078-A	Only EN14078-B
	normality	OK		not OK	suspect
	n	87		26	48
	outliers	4		3	1
	mean (n)	6.781		6.864	6.754
	st.dev. (n)	0.2544		0.2837	0.2065
	R(calc.)	0.712		0.794	0.578
	st.dev.(EN14078-B:14)	0.1773		0.5038	0.2544
	R(EN14078-B:14)	0.496		0.366	0.494

Lab 351 first reported: 2.325
Lab 631 first reported: 5.2
Lab 1016 first reported: 5.99
Lab 1251 test result witdrawn, first reported: 2.629
Lab 1275 first reported: 8.0
Lab 1356 first reported: 5.69
Lab 1430 first reported: 5.9
Lab 1864 first reported: 2.44
Lab 1976 first reported: 3.611
Lab 6028 first reported: 4.8
Lab 6201 first reported: 6.08

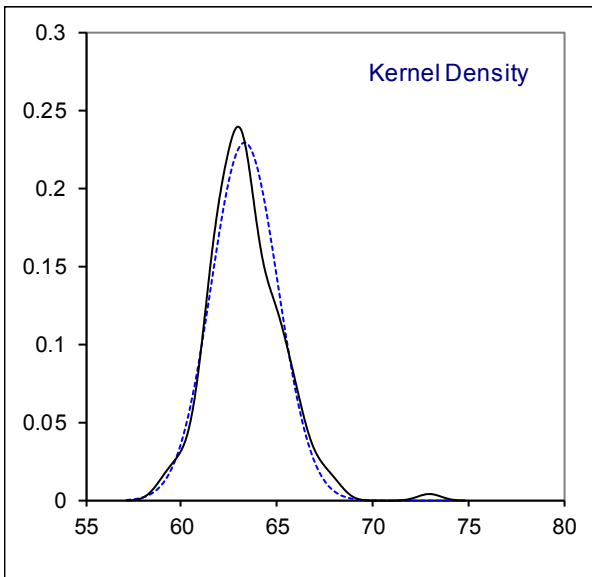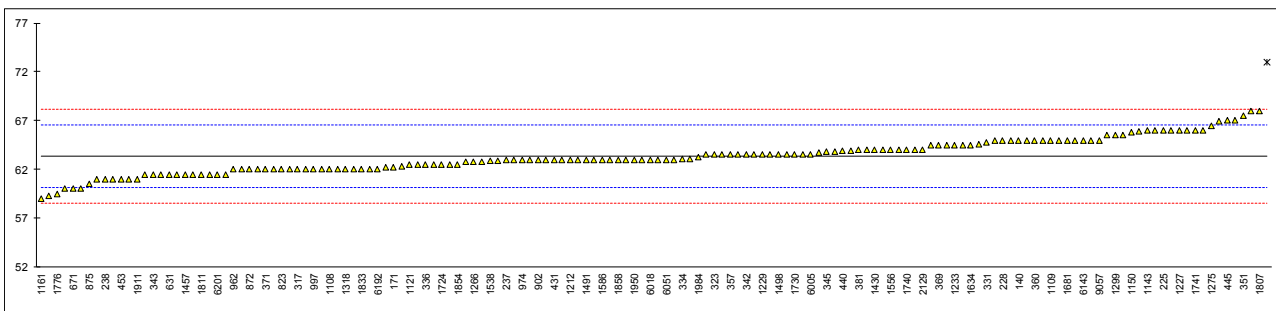Kernel Density

Determination of Flash Point PMcc on sample #19025; result in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D93-A	62.2		-0.71	1126		-----		-----
140	ISO2719-A	65.0		1.04	1134	D93-A	65.0		1.04
171	D93-A	62.2	C	-0.71	1143	ISO2719-A	66.0		1.66
212	ISO2719-A	62.8		-0.33	1146	D93-A	62.5		-0.52
218	ISO2719-A	62.0		-0.83	1150	ISO2719-B	65.8		1.53
220	ISO2719-A	62.325		-0.63	1161	ISO2719-A	59.0		-2.70
225	D93-A	66.0		1.66	1167	ISO2719-A	63.5		0.10
228	D93-A	65.0		1.04	1171	ISO2719-A	62.83		-0.32
237	D93-A	63.0		-0.21	1191	ISO2719-A	61.0		-1.45
238	D93	61.0		-1.45	1199		-----		-----
273	D93-A	66		1.66	1201	ISO2719-A	64.5		0.72
311		-----		-----	1205	D93-A	61.5		-1.14
312	ISO2719-A	61.0		-1.45	1212	ISO2719-A	63.0		-0.21
317	ISO2719-A	62.0		-0.83	1227	D93-A	66		1.66
323	ISO2719-A	63.5		0.10	1229	ISO2719-A	63.5		0.10
331	ISO2719-A	64.8		0.91	1233	ISO2719-A	64.5		0.72
333	D93-A	65.5		1.35	1237	ISO2719-A	64.6		0.79
334	ISO2719-A	63.1		-0.15	1251	ISO2719-A	63.5		0.10
335	D93-A	65.0		1.04	1259	ISO2719-A	66.0		1.66
336	ISO2719-A	62.5		-0.52	1266	ISO2719-A	62.8		-0.33
337		-----		-----	1275	IP34-A	66.5		1.97
338	ISO2719-A	65.0		1.04	1286		-----		-----
342	ISO2719-A	63.5		0.10	1299	D93-A	65.5		1.35
343	ISO2719-A	61.5		-1.14	1316	D93-A	64.5		0.72
345	ISO2719-B	63.8		0.29	1318	D93-A	62.0		-0.83
351	ISO2719-A	67.50		2.59	1356	ISO2719-A	73	C,R(0.01)	6.02
353	IP34-A	65.92		1.61	1394	D93-A	65.0		1.04
357	ISO2719-A	63.5		0.10	1397	ISO2719-A	63.0		-0.21
360	ISO2719-A	65.0		1.04	1430	D93-A	64	C	0.41
369	ISO2719-A	64.5		0.72	1457	ISO2719-A	61.5		-1.14
370	ISO2719-A	63.5		0.10	1459	ISO2719-A	61.0		-1.45
371	ISO2719-A	62.0		-0.83	1488	ISO2719-A	63.94		0.38
381	ISO2719-A	64.0		0.41	1491	ISO2719-A	63.0		-0.21
391	ISO2719-A	66.0		1.66	1498	D93-A	63.5		0.10
398	ISO2719-A	68		2.90	1538	ISO2719-A	62.9		-0.27
399	D93-A	67.0		2.28	1539	ISO2719-A	64		0.41
403	ISO2719-A	61.45		-1.17	1556	ISO2719-A	64.0		0.41
404	ISO2719-A	62.0		-0.83	1569	ISO2719-A	63.7		0.23
420	ISO2719-A	63.0		-0.21	1575	D93-A	59.3		-2.51
431	ISO2719-A	63		-0.21	1585	ISO2719-A	63.0		-0.21
432	ISO2719-A	64.5		0.72	1586	D93-A	63.0		-0.21
440	IP34-A	63.9		0.35	1613	D93-A	60.0		-2.08
444	D93-A	63.0		-0.21	1631		-----		-----
445	D93-A	67.0		2.28	1634	ISO2719-A	64.5		0.72
447	IP34-A	65.0		1.04	1635	ISO2719-A	64.0		0.41
453	IP34-A	61.0		-1.45	1656	D93-A	63.0		-0.21
485	ISO2719-A	62.0		-0.83	1667	ISO2719-A	62.5		-0.52
541	ISO2719-A	62.00		-0.83	1681	ISO2719-A	65.0		1.04
631	D93-A	61.5		-1.14	1720	D93-A	63.5		0.10
663	D93-A	63.8		0.29	1724	ISO2719-A	62.5		-0.52
671	D93-A	60.0		-2.08	1730	ISO2719-A	63.5		0.10
704		-----		-----	1740	ISO2719-A	64		0.41
781	ISO2719-A	63.0		-0.21	1741	ISO2719-A	66		1.66
785		-----		-----	1742	ISO2719-A	62.5		-0.52
823	ISO2719-A	62.0	C	-0.83	1743	ISO2719-A	65.0		1.04
824	D93-A	62.0		-0.83	1746	D93-A	61.5		-1.14
872	ISO2719-A	62.0		-0.83	1749		-----		-----
873	D93-A	62.0		-0.83	1776	ISO2719-A	59.5		-2.39
874		-----		-----	1807	D93-A	68.0		2.90
875	D93-A	60.5		-1.77	1810	D93-A	62		-0.83
902	ISO2719-A	63.0		-0.21	1811	ISO2719-A	61.5		-1.14
904	ISO2719-A	64.0		0.41	1833	ISO2719-A	62.0		-0.83
962	D93-A	62.0		-0.83	1849	ISO2719-A	64.0		0.41
963	D93-A	62.0		-0.83	1854	ISO2719-A	62.5		-0.52
971	ISO2719-A	63.5		0.10	1858	D93-A	63.0		-0.21
974	D93-A	63.0		-0.21	1864	ISO2719-A	62.9		-0.27
995	ISO2719-A	61.5		-1.14	1872		-----		-----
997	ISO2719-A	62.0		-0.83	1881	ISO2719-A	63.0		-0.21
998	D93-A	63.0		-0.21	1911	ISO2719-A	61.00		-1.45
1006	D93-A	60.0		-2.08	1950	ISO2719-A	63.0		-0.21
1016		-----		-----	1953	ISO2719-A	63.0		-0.21
1059	ISO2719-A	63.5		0.10	1961		-----		-----
1080		-----		-----	1976	ISO2719-A	66.0		1.66
1108	ISO2719-A	62.0		-0.83	1984	ISO2719-A	63.25		-0.05
1109	D93-C	65.0		1.04	1986	ISO2719-A	63.5		0.10
1121	IP34-A	62.5		-0.52	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	ISO2719-A	64.0		0.41	6142		63.0		-0.21
2130	D93-A	62.0		-0.83	6143	D93-A	65		1.04
2146		-----		-----	6174	in house	61.5		-1.14
6005	ISO2719-A	63.5		0.10	6192	D93-A	62		-0.83
6018	ISO2719-A	63.0		-0.21	6201	ISO2719-A	61.5		-1.14
6028	ISO2719-A	63.0		-0.21	6203	ISO2719-A	61.5		-1.14
6051	ISO2719-A	63.0		-0.21	6241	D93	65		1.04
6057	D93-A	65.5		1.35	6242	ISO2719-A	63.1		-0.15
6075	ISO2719-A	66.98		2.27	9057		65		1.04

normality	OK
n	153
outliers	1
mean (n)	63.336
st.dev. (n)	1.7363
R(calc.)	4.862
st.dev.(ISO2719-A:16)	1.6060
R(ISO2719-A:16)	4.497

Lab 171 first reported: 69.0
Lab 823 first reported: 57.0
Lab 1356 first reported: 70
Lab 1430 first reported: 69

Kernel Density

Determination of Kinematic Viscosity at 40°C on sample #19025; result in mm²/s

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D445	3.377	C,R(0.01)	17.13	1126		-----		-----
140	ISO3104	3.162		-0.48	1134	IP71	3.1741		0.51
171	D445	3.162		-0.48	1143		-----		-----
212	ISO3104	3.17514		0.60	1146	D445	3.1653		-0.21
218		-----		-----	1150	ISO3104	3.1715		0.30
220		-----		-----	1161	ISO3104	3.161		-0.56
225	D445	3.175		0.58	1167	ISO3104	3.158		-0.81
228	D445	3.255	R(0.01)	7.14	1171	ISO3104	3.1692		0.11
237	D445	3.181344		1.10	1191	ISO3104	3.1722		0.35
238		-----		-----	1199		-----		-----
273	D445	3.172		0.34	1201	ISO3104	3.142		-2.12
311		-----		-----	1205	ISO3104	3.165		-0.24
312	D445	3.163		-0.40	1212	D7042	3.1822		1.17
317	ISO3104	3.166		-0.15	1227	D445	3.164		-0.32
323	ISO3104	2.837	R(0.01)	-27.11	1229	ISO3104	3.162		-0.48
331	D7279 Mod.	3.16		-0.65	1233	ISO3104	3.190		1.81
333	ISO3104	3.171		0.26	1237		-----		-----
334	ISO3104	3.164		-0.32	1251		-----		-----
335	ISO3104	3.181		1.08	1259	ISO3104	3.1743		0.53
336		-----		-----	1266	ISO3104	3.154		-1.14
337		-----		-----	1275	IP71	3.1598		-0.66
338	ISO3104	3.142		-2.12	1286		-----		-----
342	ISO3104	3.1658		-0.17	1299	D445	3.165		-0.24
343	ISO3104	3.1629		-0.41	1316	D445	3.162		-0.48
345		-----		-----	1318	D7042	3.1698		0.16
351	ISO3104	3.169		0.09	1356	ISO3104	3.173		0.42
353	IP71	3.14748		-1.67	1394	D445	3.169		0.09
357	ISO3104	3.169		0.09	1397	D7042	3.181		1.08
360	ISO3104	3.1770		0.75	1430	D445	3.166		-0.15
369	ISO3104	3.1614		-0.53	1457	ISO3104	3.6144	R(0.01)	36.58
370	ISO3104	3.1585		-0.77	1459	D7042	3.174		0.50
371	ISO3104	3.162		-0.48	1488	ISO3104	3.16688		-0.08
381	ISO3104	3.150		-1.46	1491	D7042	3.1604		-0.61
391		-----		-----	1498	D445	3.165		-0.24
398		-----		-----	1538		-----		-----
399	D445	3.225	C,R(0.01)	4.68	1539	ISO3104	3.165		-0.24
403	ISO3104	3.150		-1.46	1556	ISO3104	3.1673		-0.05
404		-----		-----	1569	ISO3104	3.172		0.34
420	ISO3104	3.157		-0.89	1575	D445	3.18		0.99
431	ISO3104	3.1782		0.85	1585	ISO3104	3.1609		-0.57
432	ISO3104	3.169		0.09	1586	D445	3.169		0.09
440	D445	3.143		-2.04	1613		-----		-----
444		-----		-----	1631		-----		-----
445	IP71	3.163		-0.40	1634	D445	3.169		0.09
447	IP71	3.165		-0.24	1635	ISO3104	3.184		1.32
453	IP71	3.16857		0.06	1656	D445	3.174		0.50
485	ISO3104	3.1595		-0.69	1667	ISO3104	3.1674		-0.04
541	ISO3104	3.1460		-1.79	1681	ISO3104	3.1634		-0.37
631	D445	3.126	C,R(0.01)	-3.43	1720	D7042	3.1843		1.35
663	D445	3.1659		-0.16	1724	ISO3104	3.164		-0.32
671	D445	3.16		-0.65	1730		-----		-----
704		-----		-----	1740	ISO3104	3.166		-0.15
781	ISO3104	3.169		0.09	1741	ISO3104	3.149		-1.55
785		-----		-----	1742	ISO3104	3.180		0.99
823	ISO3104	3.157		-0.89	1743	D7279	3.136	C	-2.61
824	ISO3104	3.168		0.01	1746	D445	3.168		0.01
872	ISO3104	3.172		0.34	1749		-----		-----
873	D445	3.168		0.01	1776	D7042	3.2153	R(0.01)	3.89
874		-----		-----	1807	ISO3104	3.149		-1.55
875	D445	3.159		-0.73	1810	ISO3104	3.163	C	-0.40
902	ISO3104	3.165		-0.24	1811	ISO3104	3.181		1.08
904	ISO3104	3.166		-0.15	1833		-----		-----
962	D445	3.196		2.30	1849	ISO3104	3.159		-0.73
963	D445	3.205		3.04	1854	ISO3104	3.168		0.01
971	ISO3104	3.172		0.34	1858	D445	3.1697		0.15
974	D445	3.185		1.40	1864	ISO3104	3.1612		-0.55
995	ISO3104	3.182		1.16	1872	ISO3104	3.174		0.50
997	ISO3104	3.178		0.83	1881	D445	3.178		0.83
998	D445	3.19		1.81	1911	ISO3104	3.1697		0.15
1006	D445	3.1667		-0.10	1950	ISO3104	3.164		-0.32
1016		-----		-----	1953		-----		-----
1059	ISO3104	3.150		-1.46	1961		-----		-----
1080	D7042	3.1853		1.43	1976	ISO3104	3.1644		-0.28
1108	ISO3104	3.182		1.16	1984	ISO3104	3.1705		0.21
1109	D445	3.16295		-0.40	1986	ISO3104	3.174		0.50
1121	ISO3104	3.158		-0.81	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	ISO3104	3.1974		2.42	6142		3.188		1.65
2130	ISO3104	3.166		-0.15	6143	D445	3.160		-0.65
2146		-----		-----	6174		-----		-----
6005	ISO3104	3.1770		0.75	6192	D7042	3.173		0.42
6018		-----		-----	6201	ISO3104	3.162		-0.48
6028	ISO3104	3.17		0.17	6203	ISO3104	3.165		-0.24
6051	ISO3104	3.1633		-0.37	6241	D7042	3.167		-0.07
6057	D7042	3.181		1.08	6242	ISO3104	3.1734		0.45
6075	ISO3104	3.1718		0.32	9057		-----		-----

normality	suspect
n	129
outliers	7
mean (n)	3.1679
st.dev. (n)	0.01114
R(calc.)	0.0312
st.dev.(ISO3104:94)	0.01221
R(ISO3104:94)	0.0342

Lab 120 first reported: 3.320
Lab 399 first reported: 4.918
Lab 631 first reported: 3.1162
Lab 1743 first reported: 3.21
Lab 1810 first reported: 3

Kernel Density
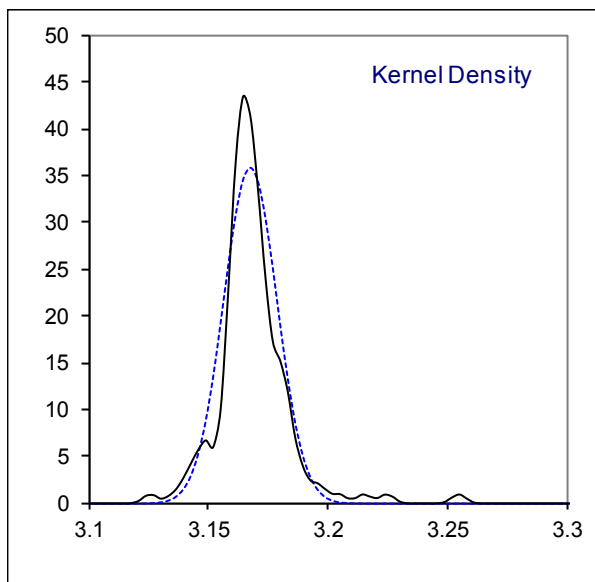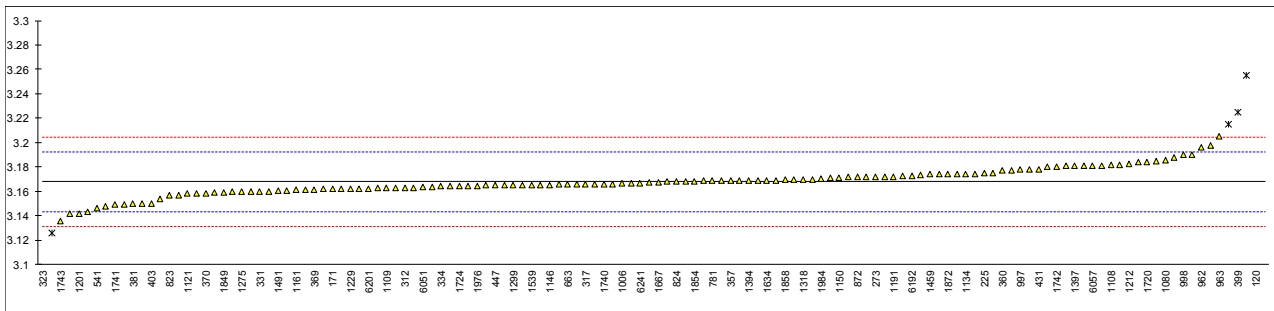
Determination of Lubricity by HFRR at 60 °C on sample #19025; result in µm

lab	method	value	mark	z(targ)	corrected	remarks
120	D6079	204.5		-0.07	NO	
140	ISO12156-1 (2006)	231		0.85		
171	D6079	220		0.47		
212		-----		-----		
218		-----		-----		
220		-----		-----		
225		-----		-----		
228		-----		-----		
237	D6079	220		0.47		
238		-----		-----		
273		-----		-----		
311		-----		-----		
312	ISO12156-1 meth A	190		-0.58		
317		-----		-----		
323		220		0.47	NO	
331		-----		-----		
333		-----		-----		
334	ISO12156-1 meth B	167.5		-1.37	NO	
335		-----		-----		
336		-----		-----		
337		-----		-----		
338		-----		-----		
342		-----		-----		
343	ISO12156-1 (2006)	179		-0.97	YES	
345		-----		-----		
351		-----		-----		
353		-----		-----		
357		-----		-----		
360	ISO12156-1 meth B	190		-0.58	NO	
369	ISO12156-1 meth B	204		-0.09	NO	
370	ISO12156-1 meth B	250		1.52	NO	
371		-----		-----		
381		-----		-----		
391	ISO12156-1 (2006)	228		0.75		
398		-----		-----		
399		-----		-----		
403	ISO12156-1 meth A	214		0.26	NO	
404		-----		-----		
420	ISO12156-1 (2006)	190		-0.58		
431		-----		-----		
432		-----		-----		
440		-----		-----		
444		-----		-----		
445	IP450	200		-0.23	NO	
447	IP450	185		-0.76	YES	
453	ISO12156-1 (2006)	175		-1.11	NO	
485		-----		-----		
541		-----		-----		
631	D7688	190		-0.58	NO	
663		-----		-----		
671	D6079	202.5		-0.14		
704		-----		-----	NO	
781	ISO12156-1	193		-0.48	YES	
785		-----		-----		
823	ISO12156-1 (2006)	183		-0.83	NO	
824	ISO12156-1 meth A	176		-1.07	NO	
872		-----		-----		
873	ISO12156-1 meth B	200		-0.23	NO	
874		-----		-----		
875		-----		-----		
902	ISO12156-1 (2006)	200		-0.23	YES	
904	ISO12156-1 (2006)	195		-0.41	NO	
962		-----		-----		
963	ISO12156-1 meth A	205		-0.06	YES	
971		-----		-----		
974	ISO12156-1 (2006)	238		1.10	YES	
995	ISO12156-1 meth A	225		0.64		
997		-----		-----		
998		-----		-----		
1006	D6079	197		-0.34	NO	
1016		-----		-----		
1059	ISO12156-1 meth B	210		0.12		
1080		-----		-----		
1108	ISO12156-1 (2006)	215		0.29	YES	
1109	IP450	210		0.12	YES	
1121		-----		-----		

lab	method	value	mark	z(targ)	corrected	remarks
1126		-----		-----		
1134		-----		-----		
1143		-----		-----		
1146		-----		-----		
1150		-----		-----		
1161	ISO12156-1 (2006)	179		-0.97	NO	
1167	ISO12156-1 meth B	221		0.50		
1171		-----		-----		
1191	ISO12156-1 meth A	201.5		-0.18	NO	
1199		-----		-----		
1201	ISO12156-1 meth A	186		-0.72	NO	
1205		-----		-----		
1212	ISO12156-1 meth A	215		0.29	NO	
1227		-----		-----		
1229	ISO12156-1	203		-0.13	NO	
1233	ISO12156-1 meth A	199		-0.27		
1237		-----		-----		
1251	ISO12156-1 meth A	200.5		-0.21	NO	
1259	ISO12156-1 meth B	200		-0.23	NO	
1266		-----		-----		
1275	IP450	224		0.61	YES	
1286		-----		-----		
1299	ISO12156-1 (2006)	194		-0.44	YES	
1316	ISO12156-1 (2006)	205		-0.06	NO	
1318	ISO12156-1 (2006)	191		-0.55	NO	
1356	ISO12156-1 (2006)	252	C	1.59		first reported: 313
1394		219.0		0.43	YES	
1397	ISO12156-1 meth B	200		-0.23	NO	
1430		-----		-----		
1457	ISO12156-1	174		-1.14	NO	
1459		-----		-----		
1488	ISO12156-1 meth B	251.5		1.57	NO	
1491		-----		-----		
1498		-----		-----		
1538		-----		-----		
1539	ISO12156-1 meth A	210		0.12		
1556	ISO12156-1 meth A	199.5		-0.25	NO	
1569	ISO12156-1 (2006)	208		0.05	YES	
1575		-----		-----		
1585		-----		-----		
1586	ISO12156-1 (2006)	204		-0.09	YES	
1613	ISO12156-1 meth A	252		1.59	NO	
1631		-----		-----		
1634		-----		-----		
1635	ISO12156-1 meth A	256		1.73		
1656	ISO12156-1 (2006)	232		0.89		
1667		-----		-----		
1681		-----		-----		
1720		-----		-----		
1724	ISO12156-1 meth A	211		0.15	NO	
1730		-----		-----		
1740	ISO12156-1 meth A	195		-0.41	NO	
1741	ISO12156-1 meth B	210		0.12	YES	
1742		-----		-----		
1743	ISO12156-1 (2006)	220		0.47		
1746		-----		-----		
1749		-----		-----		
1776	ISO12156-1 meth A	210		0.12	YES	
1807	ISO12156-1 meth A	190		-0.58		
1810	ISO12156-1 meth A	269		2.18	NO	
1811	ISO12156-1 (2006)	253.5		1.64		
1833	ISO12156-1 meth A	212		0.19	NO	
1849	ISO12156-1 meth B	184		-0.79	NO	
1854	ISO12156-1 meth A	185		-0.76	NO	
1858		-----		-----		
1864	ISO12156-1 meth B	172		-1.21	NO	
1872		-----		-----		
1881		-----		-----		
1911		-----		-----		
1950		-----		-----		
1953		-----		-----		
1961		-----		-----		
1976		-----		-----		
1984	ISO12156-1 meth A	180		-0.93		
1986		-----		-----		
1995		-----		-----		
2129	IP450	191		-0.55	NO	
2130	IP450	434	R(0.01)	7.96	YES	
2146		-----		-----		

lab	method	value	mark	z(targ)	corrected	remarks
6005		-----		-----		
6018		-----		-----		
6028	ISO12156-1 meth A	207		0.01	NO	
6051		-----		-----		
6057	ISO12156-1 meth A	189		-0.62	NO	
6075	ISO12156-1 meth A	292.5	R(0.05)	3.01	NO	
6142		215		0.29	NO	
6143		-----		-----		
6174		-----		-----		
6192		-----		-----		
6201	ISO12156-1 (2006)	205		-0.06	YES	
6203	ISO12156-1 meth A	220		0.47	YES	
6241		-----		-----		
6242		-----		-----		
9057		-----		-----		

				"NO" only	"YES" only
normality	OK			not OK	OK
n	76			40	17
outliers	2			1	1
mean (n)	206.618			201.350	207.000
st.dev. (n)	21.6699			21.3522	14.4784
R(calc.)	60.676			59.7861	40.5396
st.dev.(ISO12156-A:16)	28.5714			28.5714	28.5714
R(ISO12156-A:16)	80	(digital camera)		80	80
Compare					
R(ISO12156-B:16)	90	(visual)			
R(D6079:11)	80				
R(ISO12156:06)	102				

Kernel Density
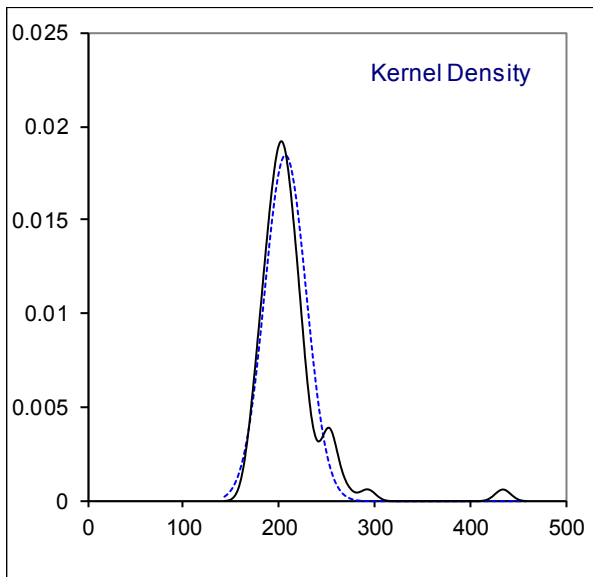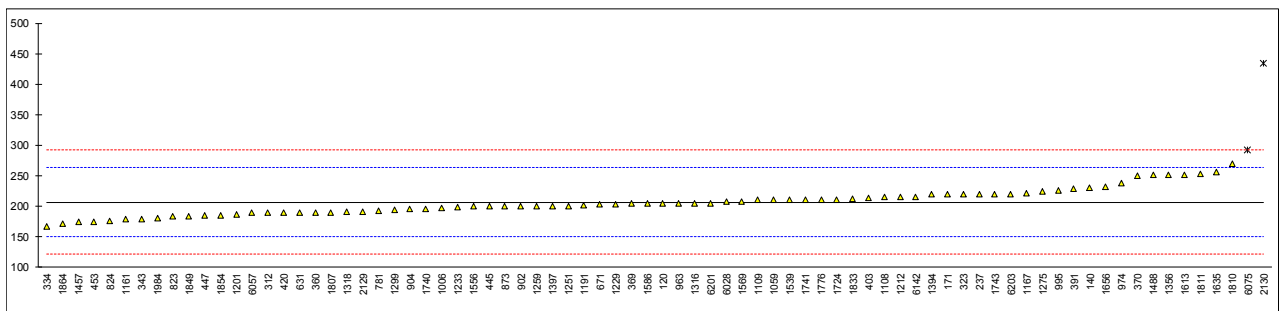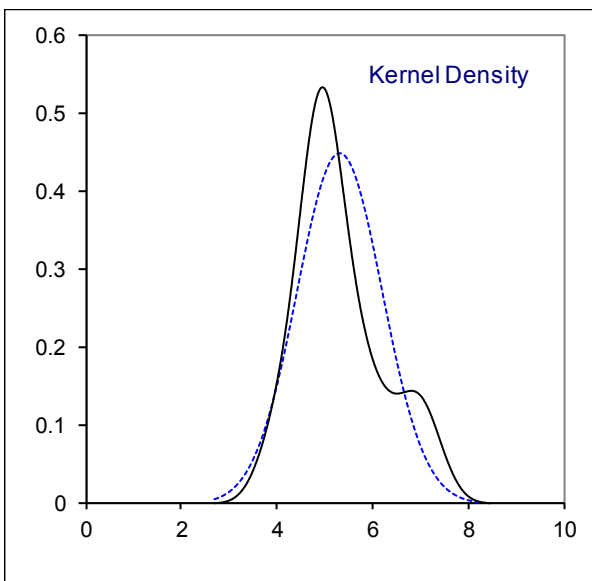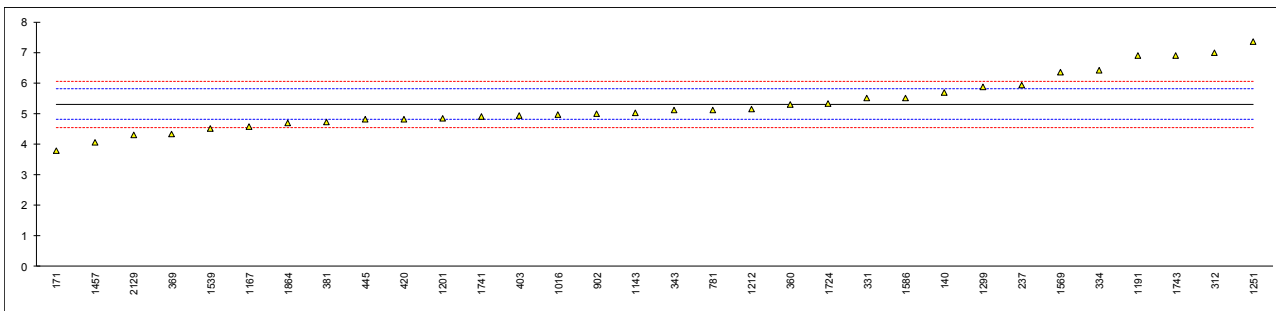
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Determination of Manganese as Mn on sample #19025; result in mg/L

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120		-----		-----	1126		-----		-----
140	EN16576	5.7		1.59	1134		-----		-----
171	D3831	3.79		-6.02	1143	EN16576	5.0166		-1.13
212		-----		-----	1146		-----		-----
218		-----		-----	1150		-----		-----
220		-----		-----	1161		-----		-----
225		-----		-----	1167	EN16576	4.578		-2.88
228		-----		-----	1171		-----		-----
237	EN16576	5.929		2.50	1191	D5185	6.9		6.38
238		-----		-----	1199		-----		-----
273		-----		-----	1201	EN16576	4.8533		-1.78
311		-----		-----	1205		-----		-----
312	D7111	7.0		6.77	1212	EN16576	5.155		-0.58
317		-----		-----	1227		-----		-----
323		-----		-----	1229		-----		-----
331	in house	5.5		0.79	1233		-----		-----
333		-----		-----	1237		-----		-----
334	EN16576	6.4		4.38	1251	EN16576	7.35		8.17
335		-----		-----	1259		-----		-----
336		-----		-----	1266		-----		-----
337		-----		-----	1275		-----		-----
338		-----		-----	1286		-----		-----
342		-----		-----	1299	EN16576	5.88		2.31
343	EN16576	5.10		-0.80	1316		-----		-----
345		-----		-----	1318		-----		-----
351		-----		-----	1356		-----		-----
353		-----		-----	1394		-----		-----
357		-----		-----	1397		-----		-----
360	EN16576	5.28		-0.08	1430		-----		-----
369	EN16576	4.33		-3.87	1457	EN16576	4.05		-4.99
370		-----		-----	1459		-----		-----
371		-----		-----	1488		-----		-----
381	EN16576	4.72		-2.32	1491		-----		-----
391		-----		-----	1498		-----		-----
398		-----		-----	1538		-----		-----
399		-----		-----	1539	EN16576	4.51		-3.15
403	EN16576	4.94		-1.44	1556		-----		-----
404		-----		-----	1569	EN16136	6.35		4.18
420	EN16576	4.8		-2.00	1575		-----		-----
431		-----		-----	1585		-----		-----
432		-----		-----	1586	EN16576	5.52		0.87
440		-----		-----	1613		-----		-----
444		-----		-----	1631		-----		-----
445	EN16576	4.8		-2.00	1634		-----		-----
447		-----		-----	1635		-----		-----
453		-----		-----	1656		-----		-----
485		-----		-----	1667		-----		-----
541		-----		-----	1681		-----		-----
631		-----		-----	1720		-----		-----
663		-----		-----	1724	EN16576	5.32		0.08
671		-----		-----	1730		-----		-----
704		-----		-----	1740		-----		-----
781	EN16576	5.1		-0.80	1741	EN16576	4.90		-1.60
785		-----		-----	1742		-----		-----
823		-----		-----	1743	EN16576	6.9		6.38
824		-----		-----	1746		-----		-----
872		-----		-----	1749		-----		-----
873		-----		-----	1776		-----		-----
874		-----		-----	1807		-----		-----
875		-----		-----	1810		-----		-----
902	EN16576	5.0		-1.20	1811		-----		-----
904		-----		-----	1833		-----		-----
962		-----		-----	1849		-----		-----
963		-----		-----	1854		-----		-----
971		-----		-----	1858		-----		-----
974		-----		-----	1864	EN16576	4.682		-2.47
995		-----		-----	1872		-----		-----
997		-----		-----	1881		-----		-----
998		-----		-----	1911		-----		-----
1006		-----		-----	1950		-----		-----
1016	EN16576	4.970		-1.32	1953		-----		-----
1059		-----		-----	1961		-----		-----
1080		-----		-----	1976		-----		-----
1108		-----		-----	1984		-----		-----
1109		-----		-----	1986		-----		-----
1121		-----		-----	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	D7111	4.3		-3.99	6142		-----		-----
2130		-----		-----	6143		-----		-----
2146		-----		-----	6174		-----		-----
6005		-----		-----	6192		-----		-----
6018		-----		-----	6201	EN16576	< 1	f-?	<-17.14
6028		-----		-----	6203		-----		-----
6051		-----		-----	6241		-----		-----
6057		-----		-----	6242		-----		-----
6075		-----		-----	9057		-----		-----

normality	OK
n	32
outliers	0
mean (n)	5.301
st.dev. (n)	0.8894
R(calc.)	2.490
st.dev.(EN16576:14)	0.2509
R(EN16576:14)	0.702
Compare	
R(Horwitz)	1.848

f-? possibly a false negative test result?

Determination of Nitrogen on sample #19025; result in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D4629	6.1		0.27	1126		-----		-----
140	D4629	6.39		0.67	1134		-----		-----
171	D4629	4.4		-2.09	1143		-----		-----
212		-----		-----	1146		-----		-----
218		-----		-----	1150		-----		-----
220		-----		-----	1161		-----		-----
225		-----		-----	1167		-----		-----
228		-----		-----	1171		-----		-----
237	D4629	7.0		1.52	1191	D4629	5.2		-0.98
238		-----		-----	1199		-----		-----
273		-----		-----	1201	D4629	5.8		-0.14
311		-----		-----	1205		-----		-----
312		-----		-----	1212		-----		-----
317		-----		-----	1227	D4629	6.7		1.10
323		-----		-----	1229	D4629	5.2		-0.98
331		-----		-----	1233		-----		-----
333	D4629	6.1		0.27	1237		-----		-----
334	D4629	5.0		-1.25	1251	D4629	6.21		0.42
335		-----		-----	1259	D4629	6.27		0.51
336		-----		-----	1266		-----		-----
337		-----		-----	1275	IP379	5.32		-0.81
338		-----		-----	1286		-----		-----
342		-----		-----	1299		-----		-----
343		-----		-----	1316		-----		-----
345		-----		-----	1318		-----		-----
351		-----		-----	1356		-----		-----
353		-----		-----	1394		-----		-----
357		-----		-----	1397		-----		-----
360		-----		-----	1430		-----		-----
369		-----		-----	1457	D4629	5.95		0.06
370		-----		-----	1459		-----		-----
371		-----		-----	1488		-----		-----
381	D4629	5.9		-0.01	1491		-----		-----
391		-----		-----	1498		-----		-----
398		-----		-----	1538		-----		-----
399	D4629	5.89		-0.02	1539		-----		-----
403	D4629	6.9		1.38	1556	D4629	4.87		-1.43
404		-----		-----	1569	D4629	5.8		-0.14
420	D4629	4.98		-1.28	1575		-----		-----
431		-----		-----	1585		-----		-----
432		-----		-----	1586	D4629	5.0		-1.25
440		-----		-----	1613		-----		-----
444	D4629	6.16		0.35	1631		-----		-----
445	D4629	10	R(0.01)	5.68	1634		-----		-----
447		-----		-----	1635	D4629	4.529		-1.91
453		-----		-----	1656		-----		-----
485		-----		-----	1667		-----		-----
541		-----		-----	1681		-----		-----
631		-----		-----	1720	D4629	4.925		-1.36
663	D4629	6.21		0.42	1724		-----		-----
671		-----		-----	1730		-----		-----
704		-----		-----	1740		-----		-----
781	D4629	6.0		0.13	1741	D4629	6.10		0.27
785		-----		-----	1742	D4629	5.5		-0.56
823	D4629	7.6		2.35	1743	D5762	4.7		-1.67
824	D4629	5.8		-0.14	1746	D4629	8.5		3.60
872		-----		-----	1749		-----		-----
873	D4629	6.4		0.69	1776	ISO3734	5.4		-0.70
874		-----		-----	1807		-----		-----
875	D4629	6.575		0.93	1810		-----		-----
902		-----		-----	1811		-----		-----
904		-----		-----	1833		-----		-----
962		-----		-----	1849		-----		-----
963	D4629	4.70		-1.67	1854		-----		-----
971	D4629	6.51		0.84	1858		-----		-----
974		-----		-----	1864		-----		-----
995		-----		-----	1872		-----		-----
997		-----		-----	1881		-----		-----
998		-----		-----	1911		-----		-----
1006		-----		-----	1950		-----		-----
1016	D4629	6.66		1.05	1953		-----		-----
1059		-----		-----	1961	D4629	5.5		-0.56
1080	D4629	4.6		-1.81	1976		-----		-----
1108	D5762	7.5		2.21	1984		-----		-----
1109	D4629	7		1.52	1986		-----		-----
1121		-----		-----	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129		-----		-----	6142		-----		-----
2130		-----		-----	6143		-----		-----
2146		-----		-----	6174		-----		-----
6005		-----		-----	6192		-----		-----
6018		-----		-----	6201	D4629	5.5	C	-0.56
6028		-----		-----	6203	D4629	6.45		0.76
6051		-----		-----	6241		-----		-----
6057		-----		-----	6242		-----		-----
6075		-----		-----	9057		-----		-----

|	
normality	OK
n	44
outliers	1
mean (n)	5.90
st.dev. (n)	0.892
R(calc.)	2.50
st.dev.(D4629:17)	0.721
R(D4629:17)	2.02

Lab 6201 first reported: 9.5
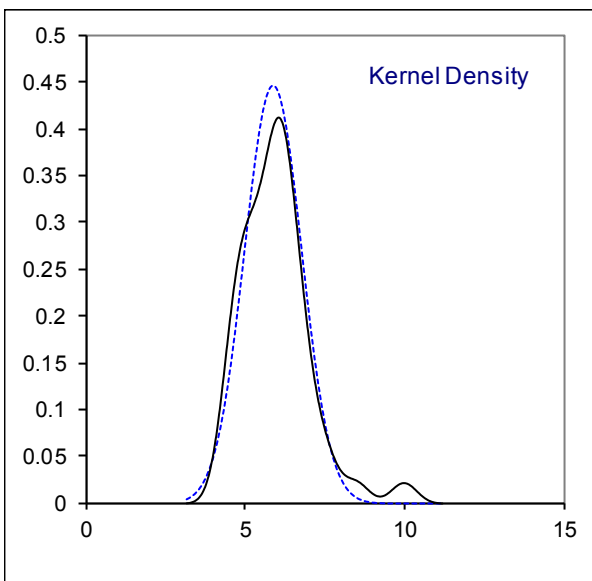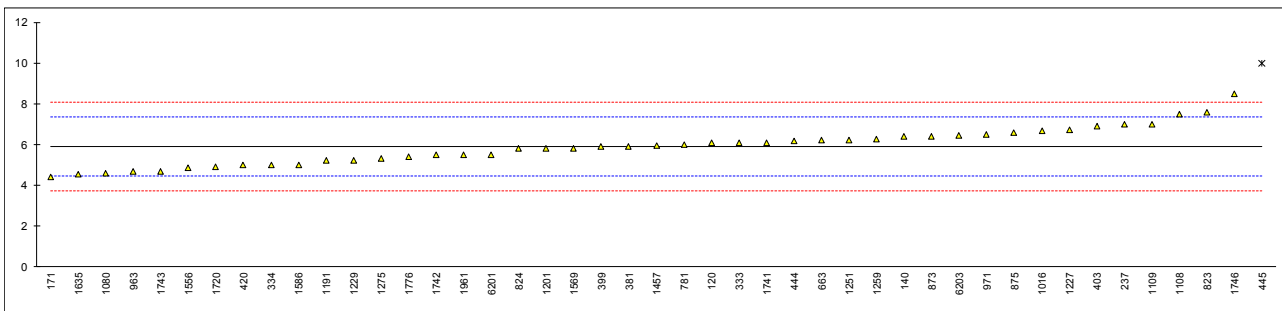
Determination of Polycyclic-Aromatic Hydrocarbons on sample #19025; result in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120		-----		-----	1126		2.8		2.13
140		-----		-----	1134		-----		-----
171	EN12916	2.6		1.48	1143		-----		-----
212		-----		-----	1146		-----		-----
218		-----		-----	1150		-----		-----
220		-----		-----	1161	EN12916	2.0		-0.47
225		-----		-----	1167	EN12916	2.27		0.41
228		-----		-----	1171	in house	0.80	R(0.01)	-4.37
237		-----		-----	1191	EN12916	4.04	R(0.01)	6.16
238		-----		-----	1199		-----		-----
273		-----		-----	1201	EN12916	2.826		2.22
311		-----		-----	1205		-----		-----
312	EN12916	1.7		-1.44	1212	EN12916	2.0		-0.47
317		-----		-----	1227	EN12916	2.2		0.18
323	EN12916	2.1		-0.14	1229	EN12916	4.3	R(0.01)	7.01
331		-----		-----	1233		-----		-----
333	EN12916	2.2		0.18	1237	EN12916	1.85		-0.95
334	IP391	2.6		1.48	1251	EN12916	2.094		-0.16
335		-----		-----	1259		2.2		0.18
336		-----		-----	1266		-----		-----
337		-----		-----	1275	IP391	2.0865		-0.18
338		-----		-----	1286		-----		-----
342		-----		-----	1299	EN12916	2.16		0.05
343	EN12916	2.23		0.28	1316		-----		-----
345		-----		-----	1318	IP391	2.345		0.66
351		-----		-----	1356		-----		-----
353		-----		-----	1394		-----		-----
357		-----		-----	1397		1.93		-0.69
360		-----		-----	1430		-----		-----
369	EN12916	1.78		-1.18	1457	EN12916	2.11		-0.11
370	EN12916	2.28		0.44	1459	EN12916	2.57	C	1.39
371		-----		-----	1488	EN12916	2.03		-0.37
381		1.83	C	-1.02	1491	in house	2.23		0.28
391		-----		-----	1498		-----		-----
398		1.99		-0.50	1538		2.07		-0.24
399	EN12916	2.21		0.22	1539		-----		-----
403		-----		-----	1556		1.7883		-1.15
404	in house	2.9		2.46	1569		2.00		-0.47
420	EN12916	2.2		0.18	1575		-----		-----
431		-----		-----	1585		2.38		0.77
432		-----		-----	1586	EN12916	2.2		0.18
440		-----		-----	1613	IP391	4.1	R(0.01)	6.36
444		-----		-----	1631		-----		-----
445	IP391	4.1	R(0.01)	6.36	1634		-----		-----
447	IP391	2.4531		1.01	1635	EN12916	1.7		-1.44
453	IP391	2.3		0.51	1656		-----		-----
485		-----		-----	1667		-----		-----
541		-----		-----	1681		-----		-----
631		-----		-----	1720		-----		-----
663		-----		-----	1724	EN12916	2.1		-0.14
671		-----		-----	1730		-----		-----
704		-----		-----	1740		-----		-----
781	EN12916	2.36		0.70	1741	EN12916	1.500		-2.09
785		-----		-----	1742	EN12916	1.3		-2.74
823	EN12916	2.24		0.31	1743	EN12916	2.0		-0.47
824	EN12916	2.23		0.28	1746		-----		-----
872		-----		-----	1749		-----		-----
873		2.35		0.67	1776		-----		-----
874		-----		-----	1807		-----		-----
875		-----		-----	1810	EN12916	1.57		-1.86
902	EN12916	1.98		-0.53	1811		2.05		-0.30
904	EN12916	2.3		0.51	1833	EN12916	2.3		0.51
962		-----		-----	1849	EN12916	2.52		1.22
963	EN12916	2.04		-0.34	1854		-----		-----
971		-----		-----	1858		-----		-----
974	IP391	2.25		0.35	1864		-----		-----
995		1.96		-0.60	1872		-----		-----
997		-----		-----	1881		-----		-----
998		-----		-----	1911	EN12916	2.24		0.31
1006		-----		-----	1950		-----		-----
1016		-----		-----	1953		-----		-----
1059	EN12916	1.3		-2.74	1961		-----		-----
1080		-----		-----	1976		-----		-----
1108	EN12916	2.08		-0.21	1984		-----		-----
1109	IP391	2.17		0.09	1986		-----		-----
1121		-----		-----	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	EN12916	2.29		0.48	6142		-----		-----
2130		-----		-----	6143		-----		-----
2146		-----		-----	6174		-----		-----
6005		-----		-----	6192		-----		-----
6018		-----		-----	6201	EN12916	2.1		-0.14
6028	EN12916	1.711		-1.40	6203	EN12916	2.51		1.19
6051		-----		-----	6241		-----		-----
6057	EN12916	2.5		1.16	6242		-----		-----
6075		-----		-----	9057		-----		-----

normality	OK	
n	64	
outliers	5	
mean (n)	2.143	
st.dev. (n)	0.3190	
R(calc.)	0.893	
st.dev.(EN12916:16)	0.3077	
R(EN12916:16)	0.861	

Lab 381 first reported: 1.61
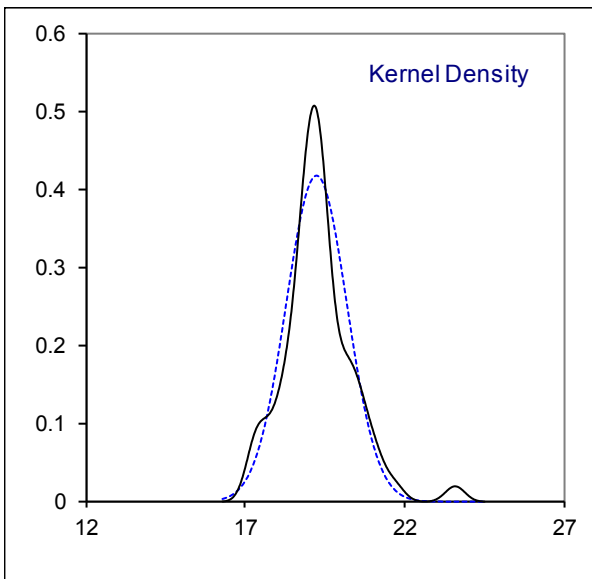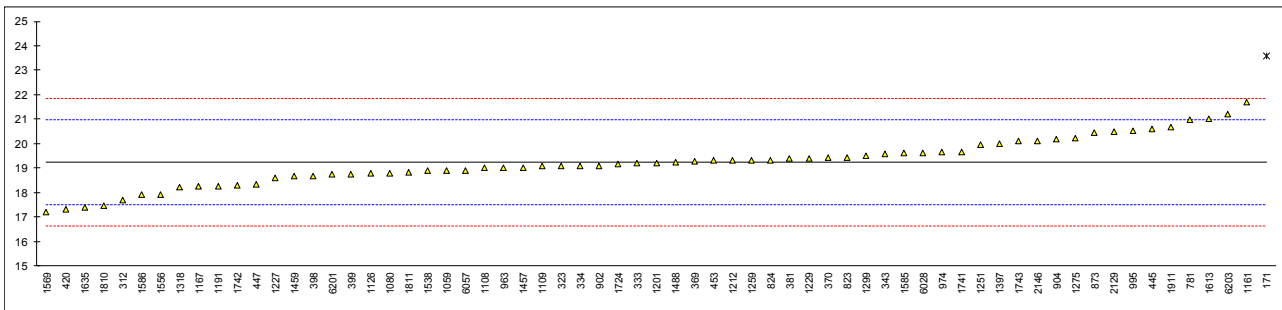Lab 1459 first reported: 4.23
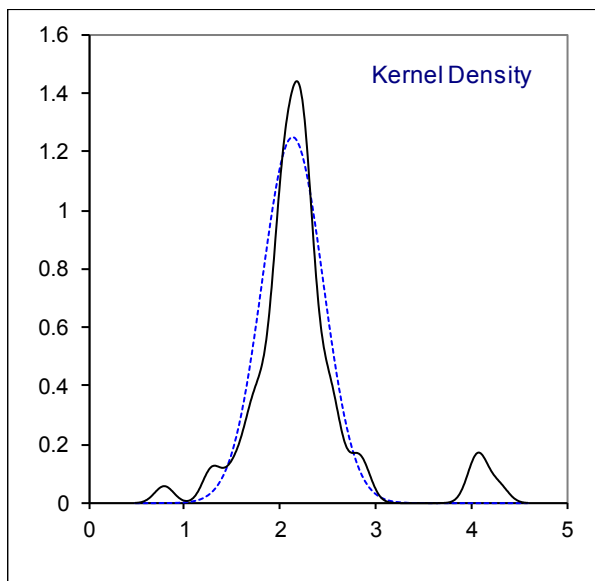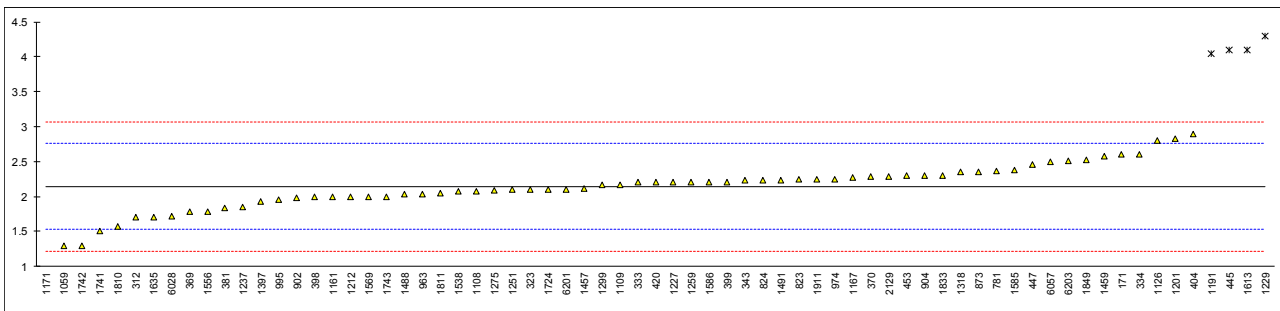
Determination of Mono-Aromatic Hydrocarbons on sample #19025; result in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120		-----		-----	1126		18.8		-0.50
140		-----		-----	1134		-----		-----
171	EN12916	23.6	R(0.01)	5.04	1143		-----		-----
212		-----		-----	1146		-----		-----
218		-----		-----	1150		-----		-----
220		-----		-----	1161	EN12916	21.7		2.85
225		-----		-----	1167	EN12916	18.26		-1.12
228		-----		-----	1171		-----		-----
237		-----		-----	1191	EN12916	18.27		-1.11
238		-----		-----	1199		-----		-----
273		-----		-----	1201	EN12916	19.218		-0.02
311		-----		-----	1205		-----		-----
312	EN12916	17.7		-1.77	1212	EN12916	19.3		0.08
317		-----		-----	1227	EN12916	18.6		-0.73
323	EN12916	19.1		-0.15	1229	EN12916	19.4		0.19
331		-----		-----	1233		-----		-----
333	EN12916	19.2		-0.04	1237		-----		-----
334	IP391	19.1		-0.15	1251	EN12916	19.966		0.84
335		-----		-----	1259		19.3		0.08
336		-----		-----	1266		-----		-----
337		-----		-----	1275	IP391	20.2091		1.13
338		-----		-----	1286		-----		-----
342		-----		-----	1299	EN12916	19.5		0.31
343	EN12916	19.57		0.39	1316		-----		-----
345		-----		-----	1318	IP391	18.234		-1.15
351		-----		-----	1356		-----		-----
353		-----		-----	1394		-----		-----
357		-----		-----	1397		20.00		0.88
360		-----		-----	1430		-----		-----
369	EN12916	19.29		0.06	1457	EN12916	19.03		-0.24
370	EN12916	19.42		0.21	1459	EN12916	18.67	C	-0.65
371		-----		-----	1488	EN12916	19.24		0.01
381		19.4	C	0.19	1491		-----		-----
391		-----		-----	1498		-----		-----
398		18.69		-0.63	1538		18.88		-0.41
399	EN12916	18.75		-0.56	1539		-----		-----
403		-----		-----	1556		17.9093		-1.53
404		-----		-----	1569		17.20		-2.35
420	EN12916	17.3		-2.23	1575		-----		-----
431		-----		-----	1585		19.6		0.42
432		-----		-----	1586	EN12916	17.9		-1.54
440		-----		-----	1613	IP391	21.0		2.04
444		-----		-----	1631		-----		-----
445	IP391	20.6		1.58	1634		-----		-----
447	IP391	18.3487		-1.02	1635	EN12916	17.4		-2.12
453	IP391	19.3		0.08	1656		-----		-----
485		-----		-----	1667		-----		-----
541		-----		-----	1681		-----		-----
631		-----		-----	1720		-----		-----
663		-----		-----	1724	EN12916	19.16		-0.09
671		-----		-----	1730		-----		-----
704		-----		-----	1740		-----		-----
781	EN12916	20.96		1.99	1741	EN12916	19.65		0.48
785		-----		-----	1742	EN12916	18.3		-1.08
823	EN12916	19.43		0.23	1743	EN12916	20.1		1.00
824	EN12916	19.33		0.11	1746		-----		-----
872		-----		-----	1749		-----		-----
873		20.45		1.40	1776		-----		-----
874		-----		-----	1807		-----		-----
875		-----		-----	1810	EN12916	17.45		-2.06
902	EN12916	19.1		-0.15	1811		18.83		-0.47
904	EN12916	20.2		1.12	1833		-----		-----
962		-----		-----	1849		-----		-----
963	EN12916	19.0		-0.27	1854		-----		-----
971		-----		-----	1858		-----		-----
974	IP391	19.65		0.48	1864		-----		-----
995		20.52		1.48	1872		-----		-----
997		-----		-----	1881		-----		-----
998		-----		-----	1911	EN12916	20.67		1.66
1006		-----		-----	1950		-----		-----
1016		-----		-----	1953		-----		-----
1059	EN12916	18.9		-0.39	1961		-----		-----
1080	EN12916	18.80		-0.50	1976		-----		-----
1108	EN12916	19.0		-0.27	1984		-----		-----
1109	IP391	19.09		-0.17	1986		-----		-----
1121		-----		-----	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	EN12916	20.47		1.43	6142		-----		-----
2130		-----		-----	6143		-----		-----
2146	EN12916	20.1		1.00	6174		-----		-----
6005		-----		-----	6192		-----		-----
6018		-----		-----	6201	EN12916	18.74	C	-0.57
6028	EN12916	19.6		0.42	6203	EN12916	21.22		2.29
6051		-----		-----	6241		-----		-----
6057	EN12916	18.9		-0.39	6242		-----		-----
6075		-----		-----	9057		-----		-----

normality	OK
n	64
outliers	1
mean (n)	19.234
st.dev. (n)	0.9564
R(calc.)	2.678
st.dev.(EN12916:16)	0.8663
R(EN12916:16)	2.426

Lab 381 first reported: 15.6
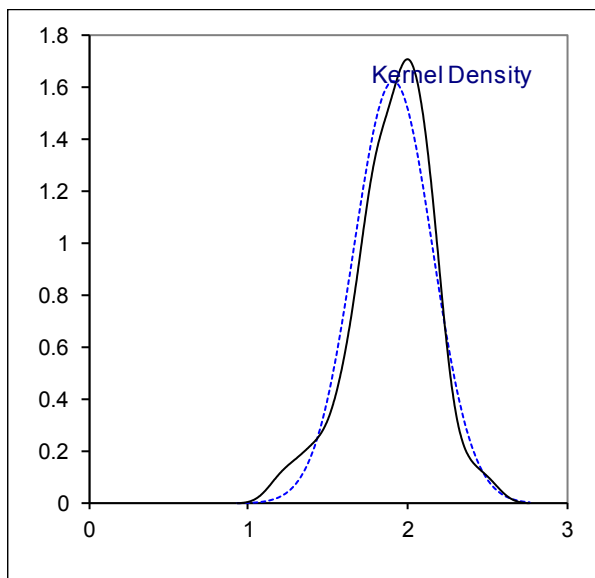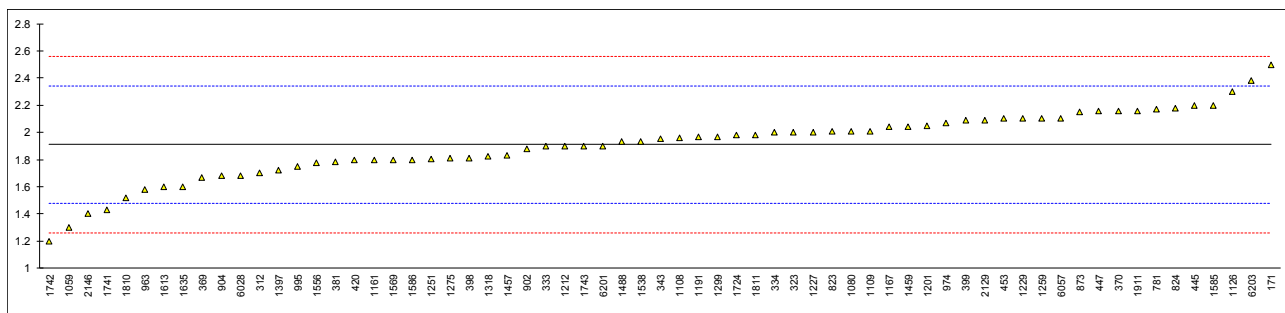Lab 1459 first reported: 16.33
Lab 6201 first reported: 16.0

Determination of Di-Aromatic Hydrocarbons on sample #19025; result in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120		-----		-----	1126		2.3		1.80
140		-----		-----	1134		-----		-----
171	EN12916	2.5		2.72	1143		-----		-----
212		-----		-----	1146		-----		-----
218		-----		-----	1150		-----		-----
220		-----		-----	1161	EN12916	1.8		-0.51
225		-----		-----	1167	EN12916	2.04		0.60
228		-----		-----	1171		-----		-----
237		-----		-----	1191	EN12916	1.97		0.28
238		-----		-----	1199		-----		-----
273		-----		-----	1201	EN12916	2.0495		0.64
311		-----		-----	1205		-----		-----
312	EN12916	1.7		-0.97	1212	EN12916	1.9		-0.05
317		-----		-----	1227	EN12916	2.0		0.41
323	EN12916	2.0		0.41	1229	EN12916	2.1		0.88
331		-----		-----	1233		-----		-----
333	EN12916	1.9		-0.05	1237		-----		-----
334	IP391	2.0		0.41	1251	EN12916	1.801		-0.51
335		-----		-----	1259		2.1		0.88
336		-----		-----	1266		-----		-----
337		-----		-----	1275	IP391	1.8094		-0.47
338		-----		-----	1286		-----		-----
342		-----		-----	1299	EN12916	1.97		0.28
343	EN12916	1.95		0.18	1316		-----		-----
345		-----		-----	1318	IP391	1.824		-0.40
351		-----		-----	1356		-----		-----
353		-----		-----	1394		-----		-----
357		-----		-----	1397		1.72		-0.88
360		-----		-----	1430		-----		-----
369	EN12916	1.67		-1.11	1457	EN12916	1.83		-0.37
370	EN12916	2.16		1.15	1459	EN12916	2.04		0.60
371		-----		-----	1488	EN12916	1.93		0.09
381		1.78	C	-0.60	1491		-----		-----
391		-----		-----	1498		-----		-----
398		1.81		-0.46	1538		1.93		0.09
399	EN12916	2.09		0.83	1539		-----		-----
403		-----		-----	1556		1.7756		-0.62
404		-----		-----	1569		1.80		-0.51
420	EN12916	1.8		-0.51	1575		-----		-----
431		-----		-----	1585		2.2		1.34
432		-----		-----	1586	EN12916	1.8		-0.51
440		-----		-----	1613	IP391	1.6		-1.43
444		-----		-----	1631		-----		-----
445	IP391	2.2		1.34	1634		-----		-----
447	IP391	2.1559		1.13	1635	EN12916	1.6		-1.43
453	IP391	2.1		0.88	1656		-----		-----
485		-----		-----	1667		-----		-----
541		-----		-----	1681		-----		-----
631		-----		-----	1720		-----		-----
663		-----		-----	1724	EN12916	1.978		0.31
671		-----		-----	1730		-----		-----
704		-----		-----	1740		-----		-----
781	EN12916	2.17		1.20	1741	EN12916	1.43		-2.22
785		-----		-----	1742	EN12916	1.2		-3.28
823	EN12916	2.01		0.46	1743	EN12916	1.9		-0.05
824	EN12916	2.18		1.24	1746		-----		-----
872		-----		-----	1749		-----		-----
873		2.15		1.11	1776		-----		-----
874		-----		-----	1807		-----		-----
875		-----		-----	1810	EN12916	1.52		-1.80
902	EN12916	1.88		-0.14	1811		1.98		0.32
904	EN12916	1.68		-1.06	1833		-----		-----
962		-----		-----	1849		-----		-----
963	EN12916	1.58		-1.53	1854		-----		-----
971		-----		-----	1858		-----		-----
974	IP391	2.07		0.74	1864		-----		-----
995		1.75		-0.74	1872		-----		-----
997		-----		-----	1881		-----		-----
998		-----		-----	1911	EN12916	2.16		1.15
1006		-----		-----	1950		-----		-----
1016		-----		-----	1953		-----		-----
1059	EN12916	1.3		-2.82	1961		-----		-----
1080	EN12916	2.01		0.46	1976		-----		-----
1108	EN12916	1.96		0.23	1984		-----		-----
1109	IP391	2.01		0.46	1986		-----		-----
1121		-----		-----	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	EN12916	2.09		0.83	6142		-----		-----
2130		-----		-----	6143		-----		-----
2146	EN12916	1.4		-2.36	6174		-----		-----
6005		-----		-----	6192		-----		-----
6018		-----		-----	6201	EN12916	1.9		-0.05
6028	EN12916	1.683		-1.05	6203	EN12916	2.38		2.17
6051		-----		-----	6241		-----		-----
6057	EN12916	2.1		0.88	6242		-----		-----
6075		-----		-----	9057		-----		-----

|	
normality	OK
n	65
outliers	0
mean (n)	1.910
st.dev. (n)	0.2454
R(calc.)	0.687
st.dev.(EN12916:16)	0.2166
R(EN12916:16)	0.606

Lab 381 first reported: 1.56

Determination of Tri⁺-Aromatic Hydrocarbons on sample #19025; result in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120		-----		-----	1126		0.5		1.48
140		-----		-----	1134		-----		-----
171	EN12916	0.1		-0.52	1143		-----		-----
212		-----		-----	1146		-----		-----
218		-----		-----	1150		-----		-----
220		-----		-----	1161	EN12916	0.2		-0.02
225		-----		-----	1167	EN12916	0.23		0.13
228		-----		-----	1171		-----		-----
237		-----		-----	1191		-----		-----
238		-----		-----	1199		-----		-----
273		-----		-----	1201	EN12916	0.776	R(0.05)	2.85
311		-----		-----	1205		-----		-----
312	EN12916	0.038		-0.83	1212	EN12916	0.1		-0.52
317		-----		-----	1227	EN12916	0.2		-0.02
323	EN12916	0.1		-0.52	1229		-----		-----
331		-----		-----	1233		-----		-----
333	EN12916	0.3		0.48	1237		-----		-----
334	IP391	0.6		1.98	1251	EN12916	0.293		0.44
335		-----		-----	1259		0.1		-0.52
336		-----		-----	1266		-----		-----
337		-----		-----	1275	IP391	0.2771		0.36
338		-----		-----	1286		-----		-----
342		-----		-----	1299	EN12916	0.19		-0.07
343	EN12916	0.28		0.38	1316		-----		-----
345		-----		-----	1318	IP391	0.521		1.58
351		-----		-----	1356		-----		-----
353		-----		-----	1394		-----		-----
357		-----		-----	1397		0.22		0.08
360		-----		-----	1430		-----		-----
369	EN12916	0.11		-0.47	1457	EN12916	0.28		0.38
370	EN12916	0.12		-0.42	1459	EN12916	0.53	C	1.63
371		-----		-----	1488	EN12916	0.10		-0.52
381		0.05		-0.77	1491		-----		-----
391		-----		-----	1498		-----		-----
398		0.18		-0.12	1538		0.14		-0.32
399	EN12916	0.12		-0.42	1539		-----		-----
403		-----		-----	1556		0.0127		-0.95
404		-----		-----	1569		0.20		-0.02
420	EN12916	0.4		0.98	1575		-----		-----
431		-----		-----	1585		0.18		-0.12
432		-----		-----	1586	EN12916	0.4		0.98
440		-----		-----	1613	IP391	2.5	R(0.01)	11.45
444		-----		-----	1631		-----		-----
445	IP391	1.9	R(0.01)	8.46	1634		-----		-----
447	IP391	0.2972		0.46	1635	EN12916	0.1		-0.52
453	IP391	0.2		-0.02	1656		-----		-----
485		-----		-----	1667		-----		-----
541		-----		-----	1681		-----		-----
631		-----		-----	1720		-----		-----
663		-----		-----	1724	EN12916	0.106		-0.49
671		-----		-----	1730		-----		-----
704		-----		-----	1740		-----		-----
781	EN12916	0.19		-0.07	1741	EN12916	0.075		-0.64
785		-----		-----	1742	EN12916	0.05		-0.77
823	EN12916	0.23		0.13	1743	EN12916	0.1		-0.52
824	EN12916	0.05		-0.77	1746		-----		-----
872		-----		-----	1749		-----		-----
873		0.20		-0.02	1776		-----		-----
874		-----		-----	1807		-----		-----
875		-----		-----	1810	EN12916	0.05		-0.77
902	EN12916	0.10		-0.52	1811		0.08		-0.62
904	EN12916	0.63		2.12	1833		-----		-----
962		-----		-----	1849		-----		-----
963	EN12916	0.46		1.28	1854		-----		-----
971		-----		-----	1858		-----		-----
974	IP391	0.18		-0.12	1864		-----		-----
995		0.21		0.03	1872		-----		-----
997		-----		-----	1881		-----		-----
998		-----		-----	1911	EN12916	0.08		-0.62
1006		-----		-----	1950		-----		-----
1016		-----		-----	1953		-----		-----
1059	EN12916	<0,1		-----	1961		-----		-----
1080	EN12916	0.14		-0.32	1976		-----		-----
1108	EN12916	0.12		-0.42	1984		-----		-----
1109	IP391	0.16		-0.22	1986		-----		-----
1121		-----		-----	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	EN12916	0.20		-0.02	6142		-----		-----
2130		-----		-----	6143		-----		-----
2146		-----		-----	6174		-----		-----
6005		-----		-----	6192		-----		-----
6018		-----		-----	6201	EN12916	0.2		-0.02
6028	EN12916	0.028		-0.88	6203	EN12916	0.13		-0.37
6051		-----		-----	6241		-----		-----
6057	EN12916	0.4		0.98	6242		-----		-----
6075		-----		-----	9057		-----		-----

|	
normality	not OK
n	58
outliers	3
mean (n)	0.204
st.dev. (n)	0.1474
R(calc.)	0.413
st.dev.(EN12916:16)	0.2004
R(EN12916:16)	0.561

Lab 1459 first reported: 2.19
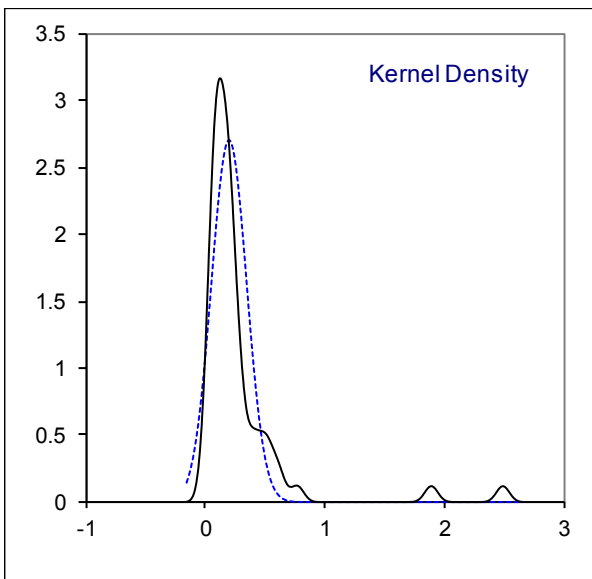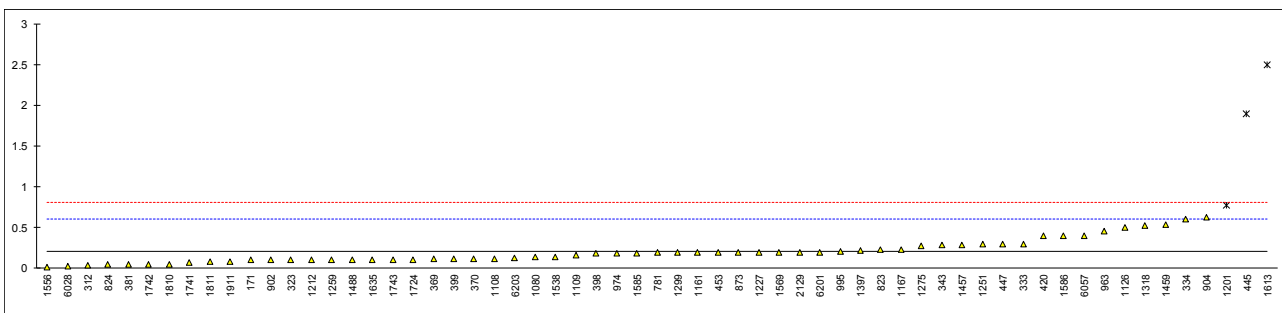
Determination of Total Aromatic Hydrocarbons on sample #19025; result in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120		-----		-----	1126		21.6		0.02
140		-----		-----	1134		-----		-----
171	EN12916	26.2		2.70	1143		-----		-----
212		-----		-----	1146		-----		-----
218		-----		-----	1150		-----		-----
220		-----		-----	1161	EN12916	23.7		1.24
225		-----		-----	1167	EN12916	20.53		-0.60
228		-----		-----	1171	in house	16.23	R(0.05)	-3.11
237		-----		-----	1191	EN12916	22.32		0.44
238		-----		-----	1199		-----		-----
273		-----		-----	1201	EN12916	22.044		0.28
311		-----		-----	1205		-----		-----
312	EN12916	19.4		-1.26	1212	EN12916	21.3		-0.16
317		-----		-----	1227	EN12916	20.8		-0.45
323	EN12916	21.2		-0.21	1229	EN12916	23.7		1.24
331		-----		-----	1233		-----		-----
333	EN12916	21.4		-0.10	1237		-----		-----
334	IP391	21.7		0.08	1251	EN12916	22.061		0.29
335		-----		-----	1259		21.5		-0.04
336		-----		-----	1266		-----		-----
337		-----		-----	1275	IP391	22.2956		0.42
338		-----		-----	1286		-----		-----
342		-----		-----	1299	EN12916	21.7		0.08
343	EN12916	21.79		0.13	1316		-----		-----
345		-----		-----	1318	IP391	20.58		-0.58
351		-----		-----	1356		-----		-----
353		-----		-----	1394		-----		-----
357		-----		-----	1397		21.94		0.22
360		-----		-----	1430		-----		-----
369	EN12916	21.07		-0.29	1457	EN12916	23.25		0.98
370	EN12916	21.70		0.08	1459	EN12916	21.24	C	-0.19
371		-----		-----	1488	EN12916	21.27		-0.17
381		21.2	C	-0.21	1491	in house	23.05		0.86
391		-----		-----	1498		-----		-----
398		22.67	E	0.64	1538		20.95		-0.36
399	EN12916	20.96		-0.35	1539		-----		-----
403		-----		-----	1556		19.6977		-1.09
404		-----		-----	1569		19.20		-1.38
420	EN12916	19.5		-1.20	1575	in house	21.6		0.02
431		-----		-----	1585		21.98		0.24
432		-----		-----	1586	EN12916	20.1		-0.85
440		-----		-----	1613	IP391	25.0		2.00
444		-----		-----	1631		-----		-----
445	IP391	24.7		1.83	1634		-----		-----
447	IP391	20.8018		-0.45	1635	EN12916	19.1		-1.44
453	IP391	21.6		0.02	1656		-----		-----
485		-----		-----	1667		-----		-----
541		-----		-----	1681		-----		-----
631		-----		-----	1720		-----		-----
663		-----		-----	1724	EN12916	21.244		-0.19
671		-----		-----	1730		-----		-----
704		-----		-----	1740		-----		-----
781	EN12916	23.32		1.02	1741	EN12916	21.16		-0.24
785		-----		-----	1742	EN12916	19.6		-1.15
823	EN12916	21.67		0.06	1743	EN12916	22.1		0.31
824	EN12916	21.57		0.00	1746		-----		-----
872		-----		-----	1749		-----		-----
873		22.80		0.72	1776		-----		-----
874		-----		-----	1807		-----		-----
875		-----		-----	1810	EN12916	19.02		-1.48
902	EN12916	21.08		-0.28	1811		20.89		-0.39
904	EN12916	22.5		0.54	1833		-----		-----
962		-----		-----	1849		-----		-----
963	EN12916	21.02		-0.32	1854		-----		-----
971		-----		-----	1858		-----		-----
974	IP391	21.90		0.19	1864		-----		-----
995		-----		-----	1872		-----		-----
997		-----		-----	1881		-----		-----
998		-----		-----	1911	EN12916	22.90		0.78
1006		-----		-----	1950		-----		-----
1016		-----		-----	1953		-----		-----
1059	EN12916	20.1		-0.85	1961		-----		-----
1080	EN12916	20.95		-0.36	1976		-----		-----
1108	EN12916	21.05		-0.30	1984		-----		-----
1109	IP391	21.26		-0.18	1986		-----		-----
1121		-----		-----	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	EN12916	22.76		0.70	6142		-----		-----
2130		-----		-----	6143		-----		-----
2146		-----		-----	6174		-----		-----
6005		-----		-----	6192		-----		-----
6018		-----		-----	6201	EN12916	18.1	E	-2.02
6028	EN12916	21.31		-0.15	6203	EN12916	23.73		1.26
6051		-----		-----	6241		-----		-----
6057	EN12916	21.4		-0.10	6242		-----		-----
6075		-----		-----	9057		-----		-----

normality	suspect
n	65
outliers	1
mean (n)	21.567
st.dev. (n)	1.4354
R(calc.)	4.019
st.dev.(EN12916:16)	1.7155
R(EN12916:16)	4.803

Lab 381 first reported: 17.21
Lab 1459 first reported: 20.56
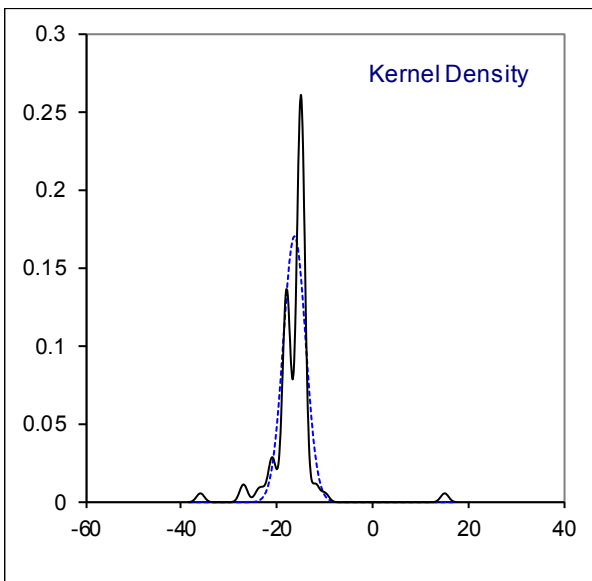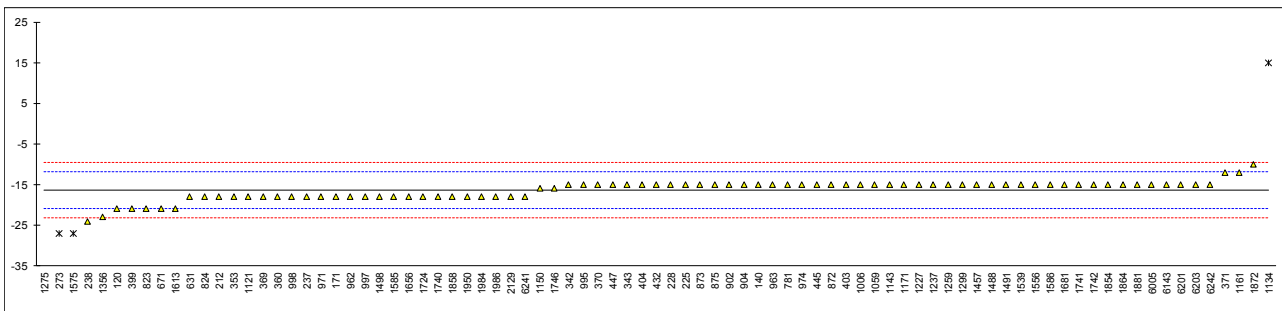Lab 398: iis calculated 20.68
Lab 6201: iis calculated 20.84
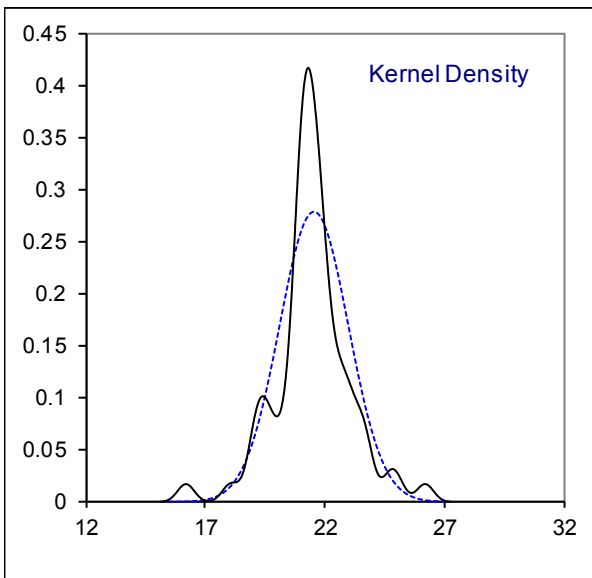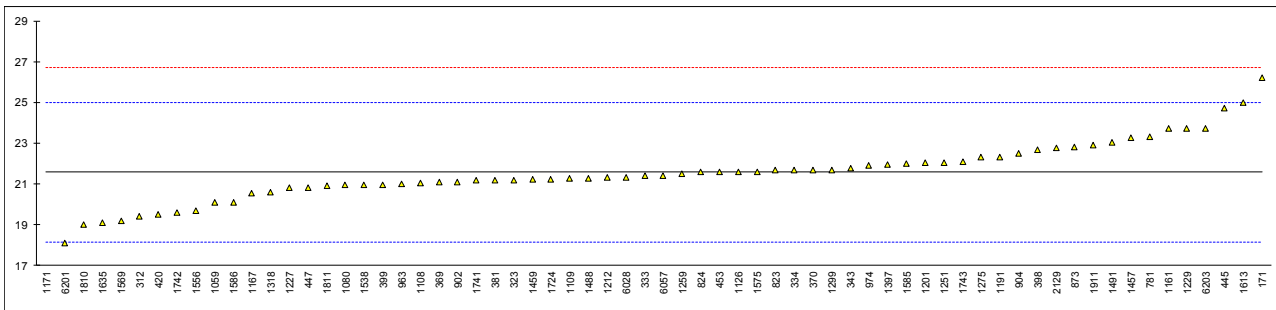
Determination of Pour Point, Manual on sample #19025; result in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D97	-21		-2.02	1126		-----		-----
140	ISO3016	-15		0.59	1134	IP15	15	R(0.01)	13.66
171	D97	-18		-0.72	1143	ISO3016	-15		0.59
212	ISO3016	-18		-0.72	1146		-----		-----
218		-----		-----	1150	ISO3016	-16		0.16
220		-----		-----	1161	ISO3016	-12		1.90
225	D97	-15		0.59	1167		-----		-----
228	D97	-15		0.59	1171	ISO3016	-15.0		0.59
237	D97	-18		-0.72	1191		-----		-----
238	D97	-24		-3.33	1199		-----		-----
273	D97	-27	R(0.01)	-4.63	1201		-----		-----
311		-----		-----	1205		-----		-----
312		-----		-----	1212		-----		-----
317		-----		-----	1227	D97	-15		0.59
323		-----		-----	1229		-----		-----
331		-----		-----	1233		-----		-----
333		-----		-----	1237	ISO3016	-15		0.59
334		-----		-----	1251		-----		-----
335		-----		-----	1259	ISO3016	-15		0.59
336		-----		-----	1266		-----		-----
337		-----		-----	1275	IP15	-36	R(0.01)	-8.55
338		-----		-----	1286		-----		-----
342	ISO3016	-15		0.59	1299	D97	-15		0.59
343	ISO3016	-15		0.59	1316		-----		-----
345		-----		-----	1318		-----		-----
351		-----		-----	1356	ISO3016	-23		-2.89
353	IP15	-18		-0.72	1394		-----		-----
357		-----		-----	1397		-----		-----
360	ISO3016	-18		-0.72	1430		-----		-----
369	D97	-18		-0.72	1457	ISO3016	-15		0.59
370	ISO3016	-15		0.59	1459		-----		-----
371	ISO3016	-12		1.90	1488	ISO3016	-15.0		0.59
381		-----		-----	1491	D97	-15		0.59
391		-----		-----	1498	D97	-18		-0.72
398		-----		-----	1538		-----		-----
399	D97	-21		-2.02	1539	ISO3016	-15		0.59
403	D97	-15		0.59	1556	ISO3016	-15		0.59
404	ISO3016	-15		0.59	1569		-----		-----
420		-----		-----	1575	D97	-27	R(0.01)	-4.63
431		-----		-----	1585	ISO3016	-18		-0.72
432	ISO3016	-15		0.59	1586	D97	-15		0.59
440		-----		-----	1613	D97	-21		-2.02
444		-----		-----	1631		-----		-----
445	IP15	-15		0.59	1634		-----		-----
447	IP15	-15		0.59	1635		-----		-----
453		-----		-----	1656	IP15	-18		-0.72
485		-----		-----	1667		-----		-----
541		-----		-----	1681	ISO3016	-15		0.59
631	D97	-18		-0.72	1720		-----		-----
663		-----		-----	1724	D97	-18		-0.72
671	D97	-21.0		-2.02	1730		-----		-----
704		-----		-----	1740	ISO3016	-18		-0.72
781	ISO3016	-15		0.59	1741	ISO3016	-15		0.59
785		-----		-----	1742	ISO3016	-15		0.59
823	ISO3016	-21		-2.02	1743		-----		-----
824	ISO3016	-18		-0.72	1746	D97	-16		0.16
872	ISO3016	-15		0.59	1749		-----		-----
873	D97	-15		0.59	1776		-----		-----
874		-----		-----	1807		-----		-----
875	D97	-15		0.59	1810		-----		-----
902	ISO3016	-15		0.59	1811		-----		-----
904	ISO3016	-15		0.59	1833		-----		-----
962	D97	-18		-0.72	1849		-----		-----
963	D97	-15		0.59	1854	ISO3016	-15		0.59
971	ISO3016	-18		-0.72	1858	D97	-18		-0.72
974	D97	-15		0.59	1864	ISO3016	-15		0.59
995	ISO3016	-15		0.59	1872	ISO3016	-10		2.77
997	ISO3016	-18		-0.72	1881	ISO3016	-15		0.59
998	D97	-18		-0.72	1911		-----		-----
1006	D97	-15		0.59	1950	ISO3016	-18		-0.72
1016		-----		-----	1953		-----		-----
1059	ISO3016	-15		0.59	1961		-----		-----
1080		-----		-----	1976		-----		-----
1108		-----		-----	1984	NFT60105	-18		-0.72
1109		-----		-----	1986	ISO3016	-18		-0.72
1121	ISO3016	-18		-0.72	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	ISO3016	-18		-0.72	6142		-----		-----
2130		-----		-----	6143	D97	-15		0.59
2146		-----		-----	6174		-----		-----
6005	ISO3016	-15		0.59	6192		-----		-----
6018		-----		-----	6201	D97	-15		0.59
6028		-----		-----	6203	D97	-15		0.59
6051		-----		-----	6241	D97	-18		-0.72
6057		-----		-----	6242	ISO3016	-15		0.59
6075		-----		-----	9057		-----		-----

|		
normality	suspect	
n	81	
outliers	4	
mean (n)	-16.36	
st.dev. (n)	2.336	
R(calc.)	6.54	
st.dev.(ISO3016:94)	2.296	
R(ISO3016:94)	6.43	

Determination of Pour Point, Automated, 3 °C interval on sample #19025; result in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D6892	-21	R(0.01)	-2.60	1126		-----		-----
140	D5949	-12.0		1.53	1134		-----		-----
171	D5950	-15		0.15	1143		-----		-----
212		-----		-----	1146	D6892	-15		0.15
218		-----		-----	1150		-----		-----
220		-----		-----	1161	D6749	-12		1.53
225		-----		-----	1167		-----		-----
228		-----		-----	1171		-----		-----
237		-----		-----	1191	D5950	-18		-1.22
238		-----		-----	1199		-----		-----
273		-----		-----	1201	D5950	-15		0.15
311		-----		-----	1205		-----		-----
312	D5950	-15		0.15	1212		-----		-----
317	D6749	-15		0.15	1227		-----		-----
323	D5950	-15		0.15	1229	ISO3016	-17	ex	-0.77
331	D5950	-24.0	C,R(0.01)	-3.98	1233		-----		-----
333		-----		-----	1237		-----		-----
334	D5950	-15		0.15	1251		-----		-----
335	D5950	-15		0.15	1259		-----		-----
336	D5950	-15		0.15	1266	D5950	-15.0		0.15
337		-----		-----	1275		-----		-----
338		-----		-----	1286		-----		-----
342		-----		-----	1299		-----		-----
343		-----		-----	1316	D5950	-17.0		-0.77
345		-----		-----	1318	D7346	-21.0	R(0.01)	-2.60
351	D6749	-15.0		0.15	1356		-----		-----
353		-----		-----	1394		-----		-----
357	D5950	-15		0.15	1397	D5950	-15		0.15
360		-----		-----	1430	D5950	-15		0.15
369		-----		-----	1457	D5950	-15		0.15
370		-----		-----	1459	in house	-15.0		0.15
371		-----		-----	1488		-----		-----
381		-----		-----	1491		-----		-----
391		-----		-----	1498		-----		-----
398		-----		-----	1538		-----		-----
399		-----		-----	1539		-----		-----
403		-----		-----	1556		-----		-----
404		-----		-----	1569	D5950	-15		0.15
420	D6749	-15		0.15	1575		-----		-----
431		-----		-----	1585		-----		-----
432	D5950	-17		-0.77	1586	D5950	-18		-1.22
440		-----		-----	1613		-----		-----
444		-----		-----	1631		-----		-----
445		-----		-----	1634		-----		-----
447		-----		-----	1635	D7346	-21	R(0.01)	-2.60
453		-----		-----	1656		-----		-----
485		-----		-----	1667		-----		-----
541	D5950	-15.0		0.15	1681		-----		-----
631	D5950	-18		-1.22	1720		-----		-----
663		-----		-----	1724		-----		-----
671		-----		-----	1730		-----		-----
704		-----		-----	1740		-----		-----
781	D5950	-15		0.15	1741		-----		-----
785		-----		-----	1742		-----		-----
823		-----		-----	1743	NFT60105	-15		0.15
824		-----		-----	1746	D5950	-16		-0.31
872		-----		-----	1749		-----		-----
873		-----		-----	1776	D5950	-18		-1.22
874		-----		-----	1807		-----		-----
875		-----		-----	1810		-----		-----
902	D5950	-15		0.15	1811	D5950	-15		0.15
904		-----		-----	1833	D5950	-15		0.15
962		-----		-----	1849		-----		-----
963	D5950	-15		0.15	1854		-----		-----
971		-----		-----	1858		-----		-----
974		-----		-----	1864	D5950	-15		0.15
995		-----		-----	1872		-----		-----
997		-----		-----	1881		-----		-----
998		-----		-----	1911		-----		-----
1006		-----		-----	1950		-----		-----
1016		-----		-----	1953	D6749	-17		-0.77
1059		-----		-----	1961		-----		-----
1080	D6749	-15.0		0.15	1976		-----		-----
1108		-----		-----	1984		-----		-----
1109		-----		-----	1986		-----		-----
1121		-----		-----	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	D5950	-15		0.15	6142	D5950	-15		0.15
2130	D5950	-15		0.15	6143		-----		-----
2146		-----		-----	6174		-----		-----
6005		-----		-----	6192	D97	-15		0.15
6018		-----		-----	6201	D5950	-15		0.15
6028	D5950	-15		0.15	6203		-----		-----
6051		-----		-----	6241		-----		-----
6057	D5950	-15		0.15	6242		-----		-----
6075	NFT60105	-15		0.15	9057		-17.3		-0.90

normality	not OK	
n	46	
outliers	4+1ex	
mean (n)	-15.33	
st.dev. (n)	1.222	
R(calc.)	3.42	
st.dev.(D5950:14)	2.179	
R(D5950:14)	6.1	3°C interval

Lab 331 first reported: -27.0
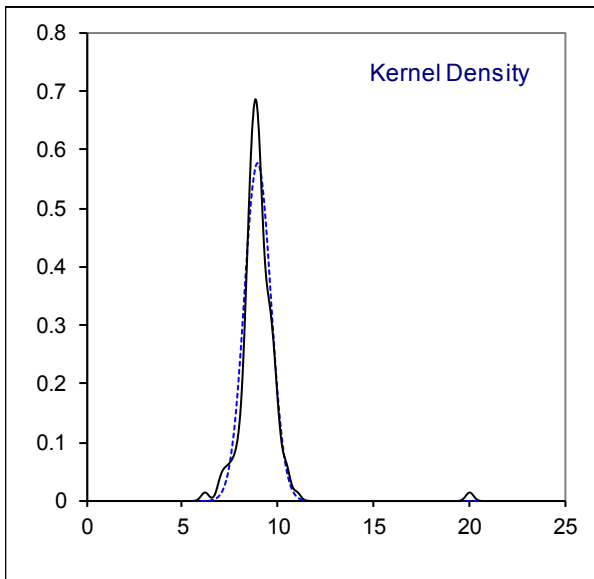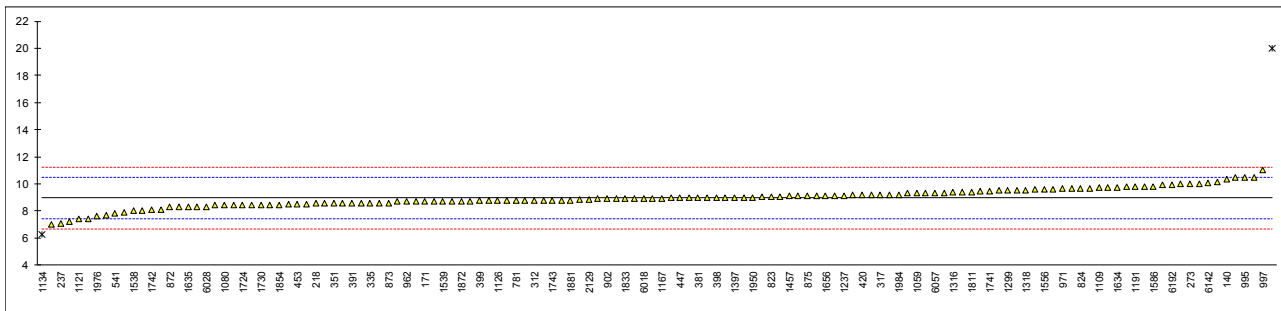Lab 1229: test result excluded as reported method is a manual method
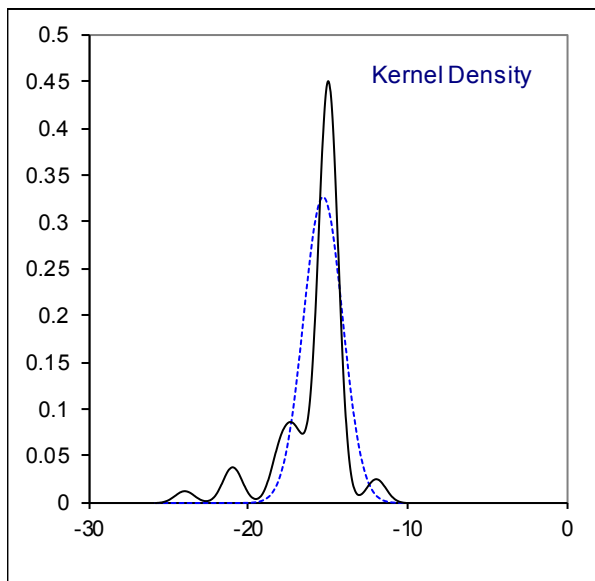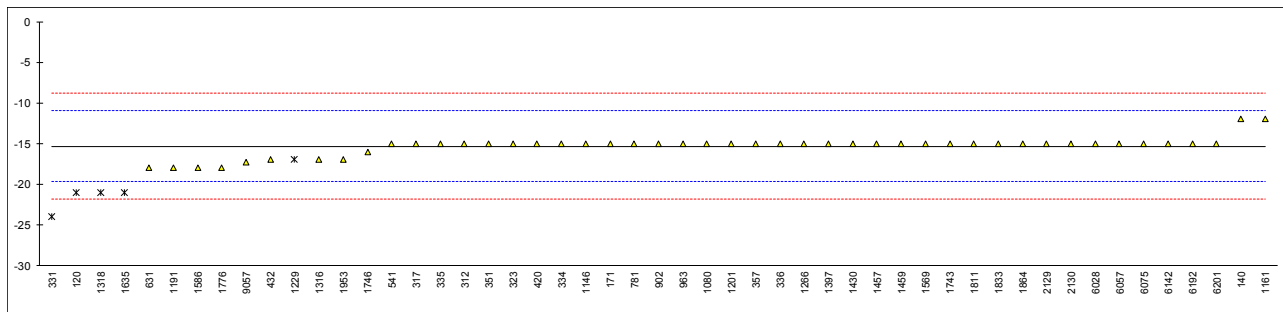
Determination of Sulfur on sample #19025; result in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D5453	10.0		1.37	1126	ISO20846	8.75		-0.28
140	ISO20846	10.33		1.80	1134	IP490	6.23	R(0.05)	-3.60
171	D5453	8.7		-0.35	1143	ISO20846	9.57		0.80
212		-----		-----	1146		-----		-----
218	ISO20846	8.56		-0.53	1150	ISO20884	10.465		1.98
220		-----		-----	1161	ISO20846	8.7		-0.35
225		-----		-----	1167	ISO20846	8.93	C	-0.04
228		-----		-----	1171	ISO20846	9.46		0.65
237	D5453	7.1		-2.46	1191	ISO20846	9.8		1.10
238		-----		-----	1199	ISO20884	9.77		1.06
273	D5453	10		1.37	1201	ISO20846	8.86		-0.14
311		-----		-----	1205	ISO20846	8.53		-0.57
312	ISO20846	8.8		-0.22	1212	ISO20846	8.76		-0.27
317	ISO20846	9.2		0.31	1227	D5453	8.9		-0.08
323		-----		-----	1229	ISO20846	9.5		0.71
331		-----		-----	1233		-----		-----
333	ISO20846	9.2		0.31	1237	ISO20846	9.13		0.22
334	ISO20846	8.6		-0.48	1251	ISO20846	8.59		-0.49
335	ISO20846	8.6		-0.48	1259	ISO20846	7.9		-1.40
336	ISO20846	8.6		-0.48	1266	ISO20846	8.11		-1.13
337		-----		-----	1275	IP490	9.72		1.00
338	ISO20846	9.8		1.10	1286		-----		-----
342		-----		-----	1299	ISO20846	9.5		0.71
343	ISO20846	8.3		-0.87	1316	ISO13032	9.4		0.58
345	ISO20846	9.0		0.05	1318	D5453	9.51		0.72
351	ISO20846	8.58		-0.51	1356	ISO8754	<300		-----
353	IP490	8.95		-0.02	1394	ISO20846	8.8		-0.22
357	ISO20846	8.8		-0.22	1397	ISO20846	9.0		0.05
360	ISO20846	8.70		-0.35	1430	ISO20847	9.3		0.44
369	ISO20846	8.74		-0.29	1457	ISO20846	9.09		0.17
370	ISO20846	8.68		-0.37	1459	ISO20884	9.0		0.05
371	ISO20846	9.67		0.93	1488		-----		-----
381	ISO20846	9.0		0.05	1491	ISO20846	8.03		-1.23
391	ISO20846	8.6		-0.48	1498	D5453	9.5		0.71
398	ISO20846	9.0		0.05	1538	D5453	8.00		-1.27
399	D5453	8.74		-0.29	1539	ISO20846	8.7		-0.35
403	ISO20846	8.9		-0.08	1556	ISO20884	9.6		0.84
404	ISO20846	8.92		-0.06	1569	ISO20846	8.4		-0.74
420	ISO20846	9.19		0.30	1575		-----		-----
431		-----		-----	1585		-----		-----
432		-----		-----	1586	D5453	9.8		1.10
440	D5453	8.4		-0.74	1613	D4294	7.0		-2.59
444	IP490	10.14		1.55	1631	ISO13032	8.45		-0.68
445	IP490	9.3		0.44	1634	ISO20846	9.745		1.03
447	IP490	8.99		0.03	1635	ISO20846	8.3		-0.87
453	ISO20846	8.5		-0.61	1656	D5453	9.1		0.18
485	ISO20846	9.06		0.13	1667		-----		-----
541	ISO20846	7.80		-1.53	1681	ISO13032	9.4		0.58
631	D4294	9.64		0.89	1720	D5453	9.168		0.27
663		-----		-----	1724	ISO20846	8.4		-0.74
671	D5453	9.97		1.33	1730	ISO20846	8.44		-0.69
704		-----		-----	1740	ISO20846	8.3		-0.87
781	ISO20846	8.79		-0.23	1741	ISO20846	9.48		0.68
785		-----		-----	1742	ISO20846	8.1		-1.14
823	ISO20846	9.06		0.13	1743	ISO20846	8.8		-0.22
824	ISO20846	9.65		0.90	1746	D5453	9.1		0.18
872	D5453	8.3		-0.87	1749		-----		-----
873	ISO20846	8.6		-0.48	1776	ISO20846	8.8		-0.22
874		-----		-----	1807	ISO20846	7.2		-2.32
875	ISO20846	9.1		0.18	1810	D5453	9.2		0.31
902	ISO20846	8.9		-0.08	1811	ISO20846	9.4		0.58
904	ISO20846	9.1		0.18	1833	ISO20846	8.9		-0.08
962	D5453	8.7		-0.35	1849	ISO20846	8.9		-0.08
963	ISO20846	9.0		0.05	1854	ISO20846	8.46		-0.66
971	ISO20846	9.64		0.89	1858	ISO20846	8.73		-0.31
974		-----		-----	1864	ISO20846	9.923		1.26
995	ISO20846	10.5		2.03	1872	ISO20884	8.72		-0.32
997	ISO20846	11.0		2.68	1881	ISO20846	8.8		-0.22
998	D4294	<17		-----	1911	ISO20846	8.57		-0.52
1006	D5453	8.5		-0.61	1950	ISO20884	9.0		0.05
1016		-----		-----	1953	D4294	20	R(0.01)	14.55
1059	ISO20846	9.3		0.44	1961		-----		-----
1080	ISO20846	8.4		-0.74	1976	ISO20846	7.6		-1.80
1108	ISO20846	9.0		0.05	1984	ISO20846	9.2		0.31
1109	D7039	9.72		1.00	1986	ISO13032	8.7		-0.35
1121	ISO20846	7.42		-2.03	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	ISO20846	8.87		-0.12	6142		10.055		1.44
2130	ISO20846	9.6		0.84	6143	D2622	9.09		0.17
2146	ISO20846	10.5		2.03	6174		-----		-----
6005	ISO20846	9.02		0.07	6192	ISO20884	9.95		1.30
6018	ISO20846	8.9		-0.08	6201	ISO20846	7.7		-1.67
6028	ISO20846	8.3		-0.87	6203	ISO20846	9.3		0.44
6051	ISO20846	8.40		-0.74	6241		-----		-----
6057	ISO20846	9.3		0.44	6242		-----		-----
6075	ISO20846	7.43		-2.02	9057		-----		-----

	normality	OK
	n	134
	outliers	2
	mean (n)	8.964
	st.dev. (n)	0.6903
	R(calc.)	1.933
	st.dev.(ISO20846:11)	0.7585
	R(ISO20846:11)	2.124

Lab 1167 first reported: 6.30

Determination of Water on sample #19025; result in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	E203	80		1.03	1126		-----		-----
140	ISO12937	92	R(0.05)	1.66	1134		-----		-----
171	D6304-A	104	R(0.01)	2.28	1143	ISO12937	59.5		-0.05
212	D6304-A	58.48		-0.10	1146	D6304-C	47	C	-0.70
218		-----		-----	1150	ISO12937	57.9		-0.13
220	ISO12937	61.4		0.05	1161	ISO12937	58.834		-0.08
225	D6304	50.40		-0.52	1167	ISO12937	57.1		-0.17
228		-----		-----	1171	ISO12937	61.3		0.05
237	D6304-C	49.0		-0.60	1191	ISO12937	63		0.14
238		-----		-----	1199		-----		-----
273	D6304-A	73		0.66	1201	ISO12937	62		0.08
311		-----		-----	1205		-----		-----
312	ISO12937	51.2		-0.48	1212	ISO12937	43.7		-0.88
317	ISO12937	50		-0.55	1227	D6304-A	58		-0.13
323	ISO12937	60		-0.02	1229	ISO12937	66		0.29
331	D6304Mod.	55.8		-0.24	1233		-----		-----
333	ISO12937	70		0.50	1237	ISO12937	63		0.14
334	ISO12937	57		-0.18	1251	ISO12937	31	R(0.05)	-1.54
335	ISO12937	42		-0.96	1259	ISO12937	66.5		0.32
336	ISO12937	70		0.50	1266	ISO12937	65.65		0.27
337	ISO12937	50		-0.55	1275	IP438	59.674		-0.04
338	ISO12937	56.51		-0.20	1286		-----		-----
342	ISO12937	68.4		0.42	1299	ISO12937	60		-0.02
343	ISO12937	54.8		-0.29	1316	ISO12937	18	R(0.01)	-2.22
345	ISO12937	59.0		-0.07	1318	D6304-C	54.0		-0.34
351	ISO12937	56.0		-0.23	1356	D6304-A	<300		-----
353	IP438	64.9		0.24	1394	ISO12937	59.5		-0.05
357	ISO12937	65		0.24	1397	ISO12937	53		-0.39
360	ISO12937	61.3		0.05	1430	D6304-A	54		-0.34
369	ISO12937	50.8		-0.50	1457	ISO12937	60		-0.02
370	ISO12937	52		-0.44	1459	ISO12937	48.0		-0.65
371	ISO12937	54.14		-0.33	1488	ISO12937	58.98		-0.07
381	ISO12937	64		0.19	1491	ISO12937	53		-0.39
391	ISO12937	60		-0.02	1498		-----		-----
398	ISO12937	60.4		0.00	1538		-----		-----
399	D6304-A	64.5		0.21	1539	ISO6296	59		-0.07
403	ISO12937	47		-0.70	1556	ISO12937	64.0		0.19
404	ISO12937	55.0		-0.28	1569	in house	60		-0.02
420	ISO12937	67		0.35	1575	D6304-A	72.5		0.63
431		-----		-----	1585	ISO12937	64.5		0.21
432	D6304-C	35.32		-1.31	1586	ISO12937	75		0.76
440	IP438	69.8		0.49	1613	D6304-A	66.24		0.31
444	IP438	61.5		0.06	1631		-----		-----
445	D6304-A	54		-0.34	1634	D6304-A	60.3		-0.01
447	IP438	60.5		0.00	1635	ISO12937	50.3		-0.53
453	IP438	63.1		0.14	1656	ISO12937	48		-0.65
485	ISO12937	60.5		0.00	1667	ISO12937	56.7		-0.19
541	ISO12937	63.0		0.14	1681	ISO12937	70.9		0.55
631		-----		-----	1720		-----		-----
663		-----		-----	1724	ISO12937	63		0.14
671		-----		-----	1730		-----		-----
704		-----		-----	1740	D6304-A	64		0.19
781	ISO12937	60.7		0.02	1741	ISO12937	51.1		-0.49
785		-----		-----	1742		-----		-----
823	ISO12937	60.4		0.00	1743	ISO12937	70		0.50
824	ISO12937	55		-0.28	1746	ISO12937	53.0		-0.39
872		-----		-----	1749	ISO12937	73.5		0.69
873	D6304-A	62		0.08	1776	ISO12937	44.8		-0.82
874		-----		-----	1807	ISO12937	70		0.50
875	D6304-A	62.5		0.11	1810	D6304-A	62		0.08
902	ISO12937	64		0.19	1811	ISO12937	64		0.19
904	ISO12937	59		-0.07	1833	ISO12937	57		-0.18
962	D6304-A	56		-0.23	1849	ISO12937	52		-0.44
963	ISO12937	65		0.24	1854	D6304-C	62.9		0.13
971	D6304-A	60.3		-0.01	1858	IP438	64.5		0.21
974	D6304-A	64		0.19	1864	ISO12937	70.65		0.54
995	ISO12937	55		-0.28	1872	ISO12937	54	C	-0.34
997	D6304-A	50		-0.55	1881	ISO12937	65		0.24
998		-----		-----	1911	ISO12937	61.3		0.05
1006	D6304-A	68		0.40	1950	IP439	63		0.14
1016	ISO12937	63.14		0.14	1953	ISO12937	52		-0.44
1059	ISO12937	60		-0.02	1961	ISO12937	64.1		0.19
1080		52		-0.44	1976	ISO12937	56.80		-0.19
1108	ISO12937	59.9		-0.03	1984	ISO12937	61.5		0.06
1109	D6304-C	58.5		-0.10	1986	IP439	62.5		0.11
1121	ISO12937	66.1		0.30	1995		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
2129	IP439	86.0		1.34	6142		74.5		0.74
2130	ISO12937	90.90	R(0.05)	1.60	6143	D6304-A	71.455		0.58
2146		-----		-----	6174		-----		-----
6005	ISO12937	57.3		-0.16	6192	ISO12937	70		0.50
6018	ISO12937	61.2		0.04	6201	ISO12937	60		-0.02
6028	ISO12937	71		0.55	6203	ISO12937	59		-0.07
6051	D6304-A	61.7		0.07	6241	D6304	56.6		-0.20
6057	ISO12937	70		0.50	6242	D6304-A	60.3		-0.01
6075	ISO12937	76.38		0.84	9057		71.75		0.59

normality	OK
n	136
outliers	5
mean (n)	60.406
st.dev. (n)	7.7347
R(calc.)	21.657
st.dev.(ISO12937:00)	19.0889
R(ISO12937:00)	53.449

Lab 1146 first reported: 0.0047mg/kg
Lab 1872 first reported: 0.004 %M/M

Kernel Density
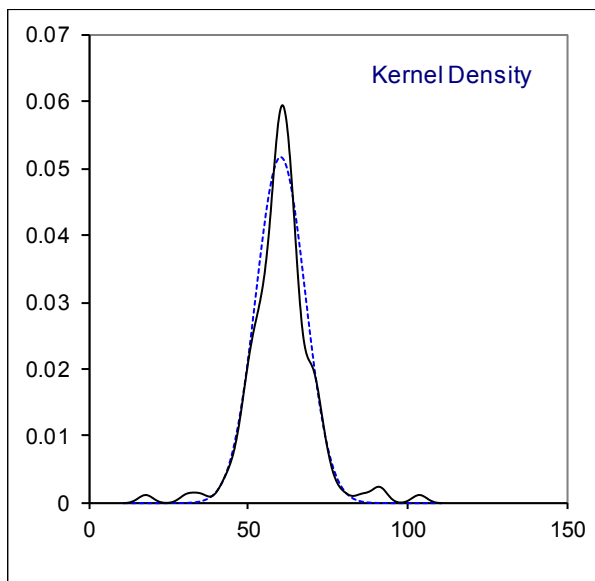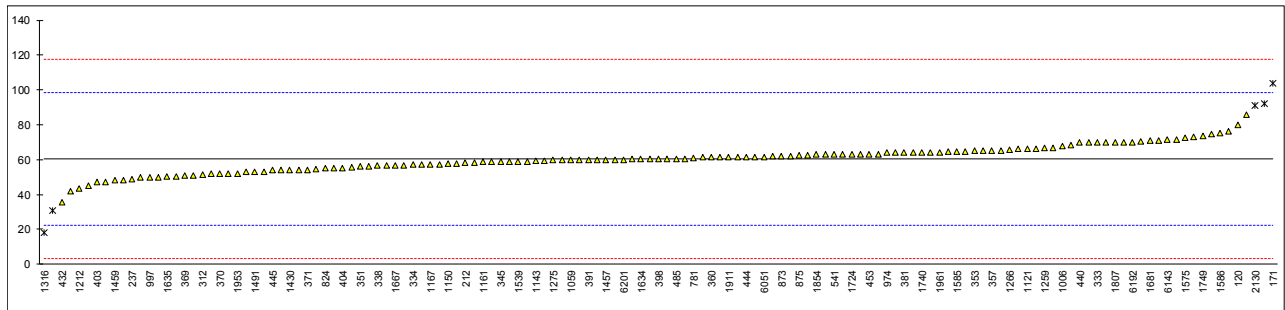
Determination of Cetane Number on sample #19026;

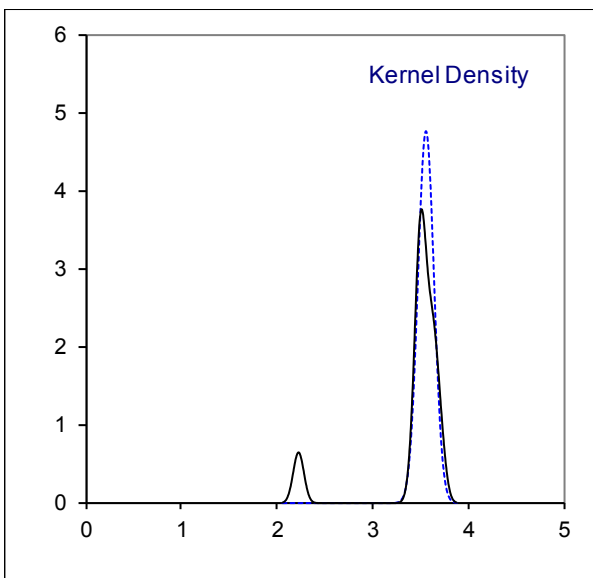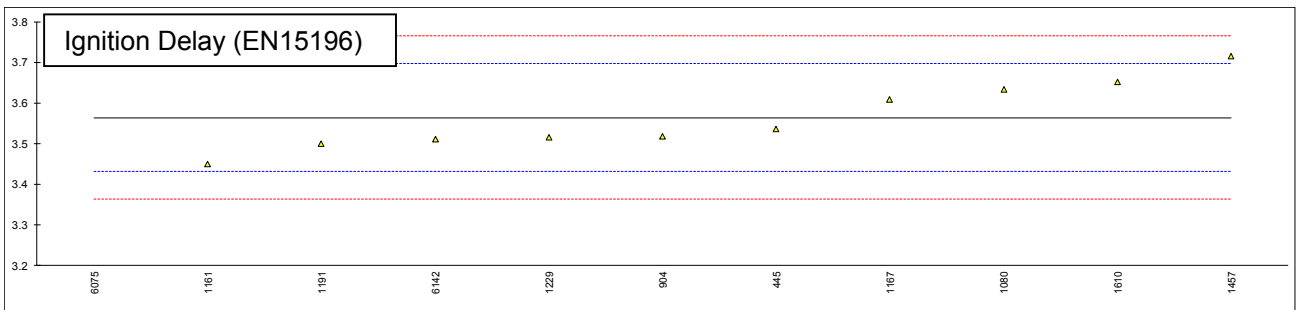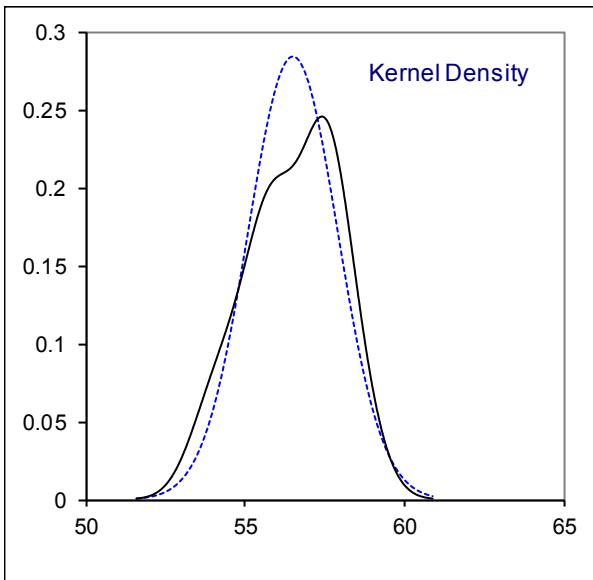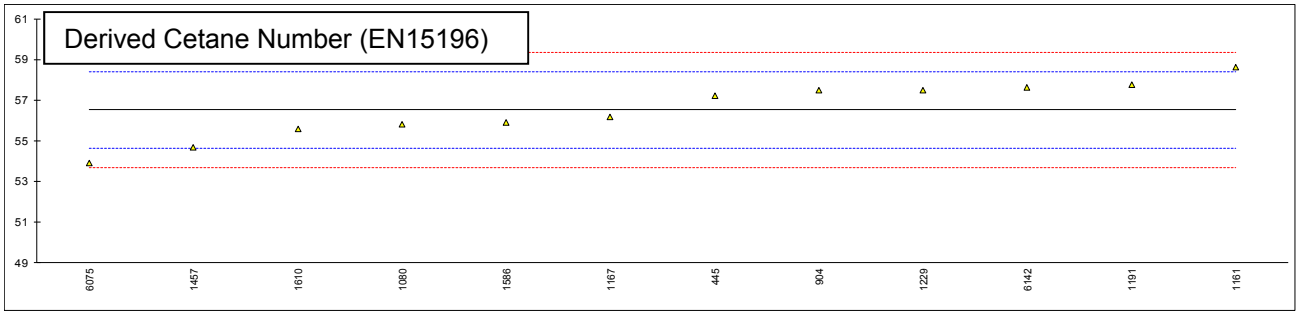| lab	method	value	mark	z(targ)	remarks
120	D613	56.0		0.82	
140	D613	54.40		-0.12	
171	D613	53.9		-0.41	
311		-----		-----	
312	ISO5165	53.8		-0.47	
323	ISO5165	54.6		0.00	
333	ISO5165	54.4		-0.12	
334	ISO5165	55.9		0.76	
336		-----		-----	
343		-----		-----	
360	ISO5165	54.95		0.20	
370	ISO5165	51.89		-1.58	
381	ISO5165	56.0		0.82	
403	ISO5165	55.06		0.27	
420	ISO5165	55.5		0.53	
444	D613	55.6		0.58	
445	IP41	58.54	R(0.05)	2.30	
447		-----		-----	
453		-----		-----	
754	ISO5165	53.63		-0.57	
824	D613	54.1		-0.29	
904		-----		-----	
1047	D613	55.2		0.35	
1059		-----		-----	
1080		-----		-----	
1143	in house	54.2		-0.23	
1161		-----		-----	
1167		-----		-----	
1171	in house	53.67		-0.54	
1191		-----		-----	
1201		-----		-----	
1212	ISO5165	53.3		-0.76	
1229		-----		-----	
1251	ISO5165	54.86		0.15	
1259	ISO5165	55.74		0.67	
1275		-----		-----	
1299	D613	56.2		0.93	
1457		-----		-----	
1491	in house	56.3		0.99	
1538		-----		-----	
1556		-----		-----	
1586		-----		-----	
1610		-----		-----	
1613	D613	55.0		0.23	
1635	ISO5165	54.6		0.00	
1741	ISO5165	54.15		-0.26	
1776		-----		-----	
1807		-----		-----	
1810		-----		-----	
1811	ISO5165	54.4		-0.12	
1833	ISO5165	54.0		-0.35	
1911	ISO5165	54.20		-0.23	
6028	ISO5165	52.6		-1.17	
6057		-----		-----	
6075		-----		-----	
6142		-----		-----	
6201	ISO5165	53.7		-0.52	
6203	ISO5165	55.32		0.42	
	normality	OK			
	n	32			
	outliers	1			
	mean (n)	54.60			
	st.dev. (n)	1.042			
	R(calc.)	2.92			
	st.dev.(ISO5165:17)	1.714			
	R(ISO5165:17)	4.8			
	compare				
	R(D613:16a)	4.62			

Kernel Density
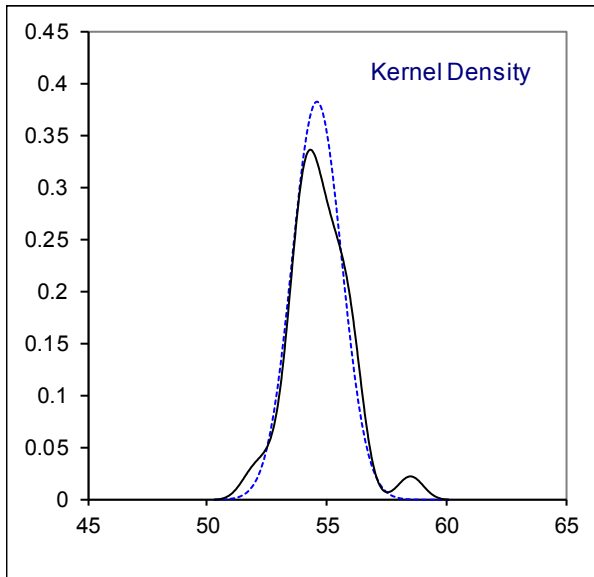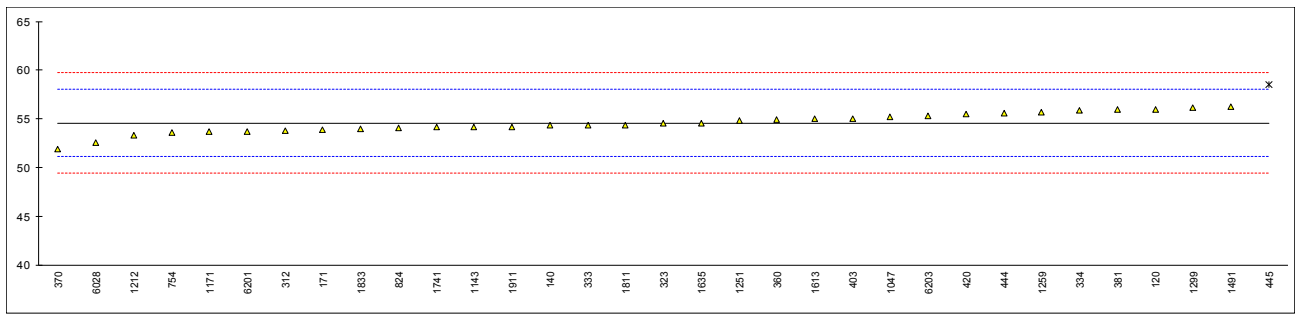
Determination of Derived Cetane Number (EN15195) on sample #19026;

lab	method	DCN	mark	z(targ)	ID (ms)	mark	z(targ)	Air Temp. (°C)	mark
120		-----		-----	-----		-----	-----	
140		-----		-----	-----		-----	-----	
171		-----		-----	-----		-----	-----	
311		-----		-----	-----		-----	-----	
312		-----		-----	-----		-----	-----	
323		-----		-----	-----		-----	-----	
333		-----		-----	-----		-----	-----	
334		-----		-----	-----		-----	-----	
336		-----		-----	-----		-----	-----	
343		-----		-----	-----		-----	-----	
360		-----		-----	-----		-----	-----	
370		-----		-----	-----		-----	-----	
381		-----		-----	-----		-----	-----	
403		-----		-----	-----		-----	-----	
420		-----		-----	-----		-----	-----	
444		-----		-----	-----		-----	-----	
445	IP498	57.23		0.75	3.536		-0.42	552.3	C
447		-----		-----	-----		-----	-----	
453		-----		-----	-----		-----	-----	
754		-----		-----	-----		-----	-----	
824		-----		-----	-----		-----	-----	
904	EN15195	57.5		1.04	3.517		-0.70	589.8	
1047		-----		-----	-----		-----	-----	
1059		-----		-----	-----		-----	-----	
1080	EN15195	55.8		-0.76	3.634		1.05	583	
1143		-----		-----	-----		-----	-----	
1161	EN15195	58.6		2.20	3.45		-1.71	588.9	
1167	EN15195	56.17		-0.37	3.609		0.68	587.1	
1171		-----		-----	-----		-----	-----	
1191	EN15195	57.77		1.32	3.500		-0.96	558.2	
1201		-----		-----	-----		-----	-----	
1212		-----		-----	-----		-----	-----	
1229	EN15195	57.5		1.04	3.516		-0.72	-----	
1251		-----		-----	-----		-----	-----	
1259		-----		-----	-----		-----	-----	
1275		-----		-----	-----		-----	-----	
1299		-----		-----	-----		-----	-----	
1457	EN15195	54.67		-1.96	3.716		2.28	576.8	
1491		-----		-----	-----		-----	-----	
1538		-----		-----	-----		-----	-----	
1556		-----		-----	-----		-----	-----	
1586	EN15195	55.88		-0.68	-----	W	-----	-----	
1610	IP498	55.57		-1.00	3.651		1.31	579.7	
1613		-----		-----	-----		-----	-----	
1635		-----		-----	-----		-----	-----	
1741		-----		-----	-----		-----	-----	
1776		-----		-----	-----		-----	-----	
1807		-----		-----	-----		-----	-----	
1810		-----		-----	-----		-----	-----	
1811		-----		-----	-----		-----	-----	
1833		-----		-----	-----		-----	-----	
1911		-----		-----	-----		-----	-----	
6028		-----		-----	-----		-----	-----	
6057		-----		-----	-----		-----	-----	
6075	EN17155	53.91		-2.76	2.2336	D(0.01)	-19.95	579.56	
6142	IP498	57.62		1.17	3.51		-0.81	590	
6201		-----		-----	-----		-----	-----	
6203		-----		-----	-----		-----	-----	
	normality	OK			OK				
	n	12			10				
	outliers	0			1				
	mean (n)	56.52			3.56				
	st.dev. (n)	1.405			0.084				
	R(calc.)	3.93			0.23				
	st.dev.(EN15195:14)	0.945			0.067				
	R(EN15195:14)	2.65			0.19				

Lab 445 first reported: 20
Lab 1586 test result withdrawn, first reported: 2.954

Derived Cetane Number (EN15196)

Kernel Density

Ignition Delay (EN15196)

Kernel Density

Determination of Derived Cetane Number (EN16715) on sample #19026;

lab	method	DCN	mark	z(targ)	ID (ms)	mark	z(targ)	CD (ms)	mark	z(targ)	W. T. (°C)
120		-----		-----	-----		-----	-----		-----	-----
140		-----		-----	-----		-----	-----		-----	-----
171		-----		-----	-----		-----	-----		-----	-----
311		-----		-----	-----		-----	-----		-----	-----
312		-----		-----	-----		-----	-----		-----	-----
323		-----		-----	-----		-----	-----		-----	-----
333		-----		-----	-----		-----	-----		-----	-----
334		-----		-----	-----		-----	-----		-----	-----
336	D7668	55.8		-0.98	2.90		0.19	4.27		1.07	601.1
343	D7668	56.3		-0.13	2.87		-0.41	4.23		0.10	-----
360		-----		-----	-----		-----	-----		-----	-----
370		-----		-----	-----		-----	-----		-----	-----
381		-----		-----	-----		-----	-----		-----	-----
403		-----		-----	-----		-----	-----		-----	-----
420		-----		-----	-----		-----	-----		-----	-----
444		-----		-----	-----		-----	-----		-----	-----
445		-----		-----	-----		-----	-----		-----	-----
447		-----		-----	-----		-----	-----		-----	-----
453		-----		-----	-----		-----	-----		-----	-----
754		-----		-----	-----		-----	-----		-----	-----
824		-----		-----	-----		-----	-----		-----	-----
904		-----		-----	-----		-----	-----		-----	-----
1047		-----		-----	-----		-----	-----		-----	-----
1059	EN16715	56.2		-0.30	2.94		0.99	4.25		0.59	594.2
1080		-----		-----	-----		-----	-----		-----	-----
1143		-----		-----	-----		-----	-----		-----	-----
1161		-----		-----	-----		-----	-----		-----	-----
1167		-----		-----	-----		-----	-----		-----	-----
1171		-----		-----	-----		-----	-----		-----	-----
1191	EN16715	56.87		0.85	2.85		-0.81	4.2		-0.63	598.72
1201	EN16715	50.11	C,D(0.01)	-10.71	3.037	ex	2.93	4.76	C,D(0.01)	13.00	594.19
1212		-----		-----	-----		-----	-----		-----	-----
1229		-----		-----	-----		-----	-----		-----	-----
1251		-----		-----	-----		-----	-----		-----	-----
1259		-----		-----	-----		-----	-----		-----	-----
1275	D7668	55.40		-1.67	2.935		0.89	4.300		1.80	583.13
1299	D7668	56.6		0.38	2.90		0.19	4.22		-0.14	589.3
1457		-----		-----	-----		-----	-----		-----	-----
1491		-----		-----	-----		-----	-----		-----	-----
1538	EN16715	56.7		0.56	2.84		-1.01	4.20		-0.63	605.84
1556	EN16715	56.99		1.05	2.92		0.59	4.19		-0.87	584.03
1586		-----		-----	-----		-----	-----		-----	-----
1610		-----		-----	-----		-----	-----		-----	-----
1613		-----		-----	-----		-----	-----		-----	-----
1635	EN16715	56.03		-0.59	3.0686		3.56	4.2622		0.88	586.17
1741	EN16715	56.00		-0.64	2.877		-0.27	4.257		0.76	596.34
1776	EN16715	58.28		3.26	2.84		-1.01	4.11		-2.82	598
1807		-----		-----	-----		-----	-----		-----	-----
1810	D7668	55.4		-1.67	2.8921		0.03	4.2967		1.72	600.2
1811		-----		-----	-----		-----	-----		-----	-----
1833	EN16715	56.98		1.03	2.7238		-3.33	4.1863		-0.96	595.99
1911		-----		-----	-----		-----	-----		-----	-----
6028		-----		-----	-----		-----	-----		-----	-----
6057	EN16715	55.7	E	-1.15	2.91		0.39	4.19		-0.87	592
6075		-----		-----	-----		-----	-----		-----	-----
6142		-----		-----	-----		-----	-----		-----	-----
6201		-----		-----	-----		-----	-----		-----	-----
6203		-----		-----	-----		-----	-----		-----	-----

normality		suspect			not OK			OK	
n		14			14			14	
outliers		1			0+1ex			1	
mean (n)		56.38			2.89			4.23	
st.dev. (n)		0.773			0.075			0.051	
R(calc.)		2.16			0.21			0.14	
st.dev.(EN16715:15)		0.585			0.050			0.041	
R(EN16715:15)		1.64			0.14			0.12	

Lab 1201 first reported: 50.44 and 4.69 respectively
Lab 6057: iis calculated: 57.04 (according to EN16715)
Lab 1201: test result excluded as related test values are statistical outliers

Derived Cetane Number (EN16715)

Ignition Delay (EN16715)

Combustion Delay (EN16715)
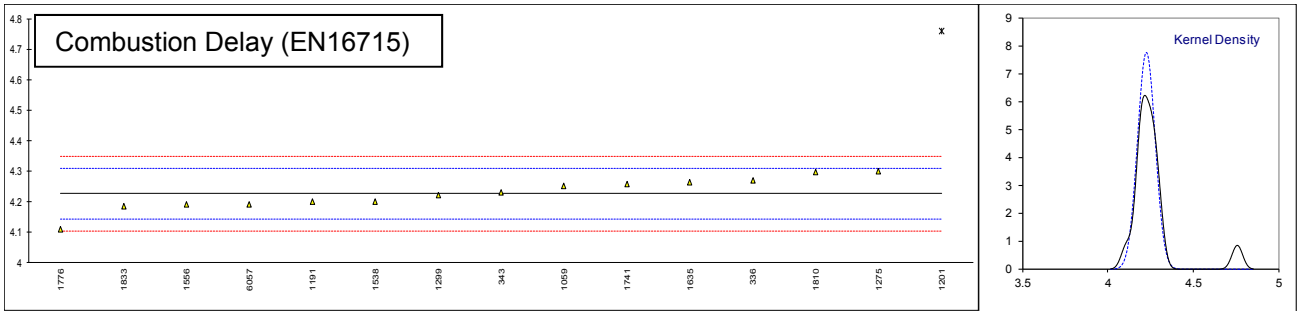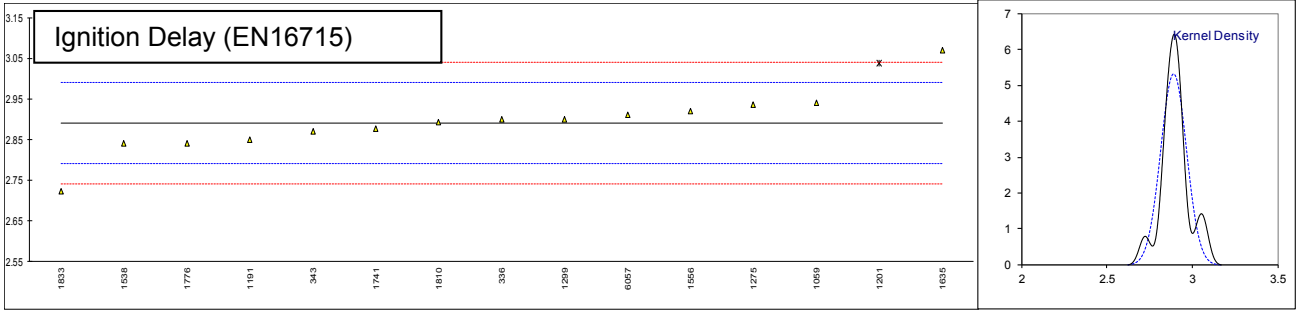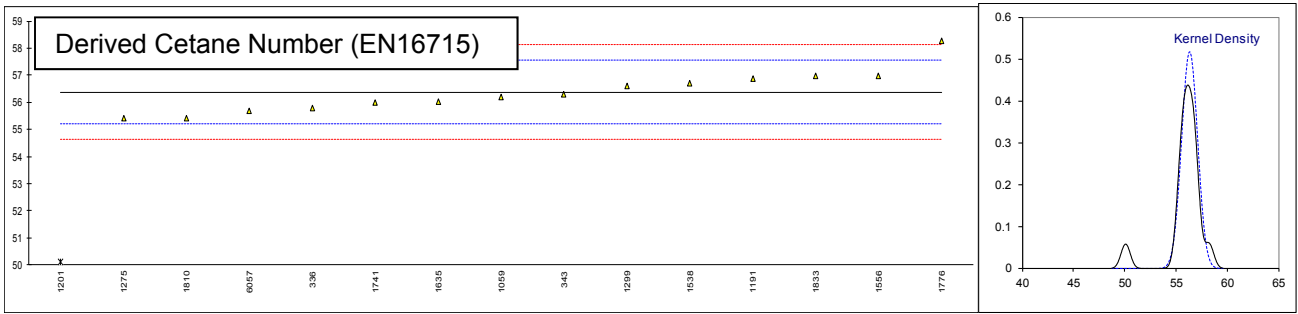
Determination of Total Contamination on sample #19027; result in mg/kg

lab	method	value	mark	z(targ)	Volume filtered (mL)	Filtration Stopped (min)	Incomplete filtration
120	EN12662:2014	10.0		-4.21	1000 *)	9	NO
140	EN12662:2014	68.1	R(0.01)	17.08	300	-----	NO
171	EN12662	11.2		-3.77	300	-----	NO
273	IP440	12.06		-3.45	-----	-----	
311		-----		-----	-----	-----	
312	EN12662:2014	25.2		1.36	-----	-----	NO
317	EN12662:2014	17.5		-1.46	-----	-----	NO
323		-----		-----	-----	-----	
331	EN12662:2014	20.0		-0.54	-----	-----	NO
334	EN12662:2014	17.0		-1.64	350	-----	NO
335		-----		-----	-----	-----	
336	EN12662:2014	19.5		-0.73	300	-----	NO
337	EN12662:2014	18.0		-1.28	-----	-----	
342		-----		-----	-----	-----	
343	EN12662:2014	21.0		-0.18	300	-----	NO
345	EN12662:2014	19.0		-0.91	300	-----	NO
351	EN12662:2014	23.62		0.78	300	-----	NO
353	EN12662:2014	24.08		0.95	565 *)	-----	NO
360	EN12662:2014	18.65		-1.04	300	-----	NO
369	EN12662:2014	19.8		-0.62	300	1.8	NO
370	EN12662:2014	23.6		0.77	300	18	NO
371	EN12662:2014	26.04		1.67	-----	-----	
391	EN12662:2008	28.2		2.46	-----	-----	NO
398	EN12662:2014	25.9		1.62	500 *)	NA	NO
399	EN12662:2014	22.6		0.41	300	-----	NO
403	EN12662:2014	21.89		0.15	-----	-----	
420	EN12662:2014	20.9		-0.21	-----	-----	
445	IP440	21.3		-0.07	337	-----	
447	IP440	27.2		2.09	300	-----	NO
453	IP440	20.26		-0.45	-----	-----	NO
663	EN12662:2014	N/A		-----	N/A	-----	NO
704	EN12662:2014	14.67		-2.50	-----	-----	NO
781	EN12662	22.0		0.19	300	4	NO
785		-----		-----	-----	-----	
823		-----		-----	-----	-----	
873	EN12662:2014	21.5		0.01	300	-----	NO
874		-----		-----	-----	-----	
875	EN12662:2014	26.4		1.80	400	-----	NO
902	EN12662:2014	20.7		-0.29	300	-----	NO
904	EN12662:2014	21.5		0.01	300	-----	
963	EN12662:2014	22.0		0.19	820 *)	180	NO
974	IP440	15.0		-2.38	800	6	YES
1006	EN12662:2014	20.5		-0.36	300	1	NO
1016	EN12662:2014	20.2		-0.47	300	-----	
1059	EN12662:2014	24.5		1.10	293	-----	NO
1064	EN12662:2014	18.23		-1.19	300	-----	NO
1095	EN12662:2014	23.0		0.55	-----	-----	
1134		-----		-----	-----	-----	
1143	EN12662:2014	19.73		-0.64	300	-----	NO
1161	EN12662:2014	22.8		0.48	-----	-----	
1167	EN12662:2014	23.2		0.63	300	15	NO
1171	EN12662:2014	31.88		3.81	299.7	-----	YES
1191	EN12662:2014	27.96		2.37	-----	-----	NO
1212	EN12662:2014	16.447		-1.85	300	-----	NO
1229	EN12662:2014	41.93	R(0.01)	7.49	300	-----	
1237	EN12662:2014	24.3		1.03	-----	-----	
1251	EN12662:2014	30.34		3.24	-----	-----	NO
1259	EN12662:2014	21.0		-0.18	300	-----	NO
1266	EN12662:2014	29.5		2.94	-----	-----	
1286	EN12662:2014	27.657		2.26	-----	-----	NO
1299	EN12662:2014	20.3		-0.43	300	-----	
1316	EN12662:2014	54.0	R(0.01)	11.91	300	1,,2	NO
1397	EN12662:2014	15.6		-2.16	290	0.9	NO
1443	EN12662:2014	29.2		2.83	-----	-----	
1457	EN12662:2014	26.86		1.97	307	-----	NO
1488	EN12662:2014	27.03		2.03	300	1.5	NO
1491	EN12662:2014	25.0		1.29	250	10	NO
1556	EN12662:2014	21.992		0.19	300	<1	NO
1586	EN12662:1998	14.5	C	-2.56	-----	-----	NO
1613	IP440	13.48		-2.93	-----	-----	
1631		-----		-----	-----	-----	
1635	EN12662:2014	15		-2.38	-----	-----	
1681	EN12662:2014	24.9		1.25	273.9	8.38	NO
1724		18.39		-1.13	-----	-----	
1740	EN12662:2014	19		-0.91	300	-----	

lab	method	value	mark	z(targ)	Volume filtered (mL)	Filtration Stopped (min)	Incomplete filtration
1741	EN12662:2008	19.5		-0.73	-----	-----	
1807	EN12662:2014	23.5		0.74	-----	-----	
1810	EN12662:2014	24.50		1.10	290	20	NO
1811	EN12662:2014	24.4		1.07	300	-----	NO
1833	EN12662:2014	18		-1.28	-----	-----	
1849	EN12662:2014	15.1		-2.34	-----	-----	
1854	EN12662:2014	24.7		1.18	300	-----	YES
1911	EN12662:2014	19.84		-0.60	-----	-----	NO
1950	EN12662:2014	18.7		-1.02	300	-----	
1961	EN12662:2014	17.8		-1.35	245	-----	NO
1976	EN12662:1998	22.47		0.36	300	-----	
1979	EN12662:2014	22.85		0.50	-----	-----	NO
1984	EN12662:2014	23.0		0.55	-----	-----	NO
2129	EN12662:2014	19.36		-0.78	300	-----	NO
2130	EN12662:2014	7.9	ex	-4.98	-----	-----	
6005	EN12662:2014	19.8		-0.62	300	3	NO
6018	EN12662:2014	22.7		0.44	300	3	NO
6028	EN12662:2014	13.8		-2.82	-----	-----	NO
6057		-----		-----	-----	-----	
6075	EN12662:2014	16.7		-1.75	-----	-----	NO
6201	EN12662:2014	35	C	4.95	-----	-----	
6203	EN12662:2014	26.3		1.76	300	-----	YES
6242	EN12662:2014	24.53		1.12	329	-----	NO

normality	OK		
n	83		
outliers	3+1ex	Spike:	
mean (n)	21.486	16.1 mg/kg	
st.dev. (n)	4.7285		
R(calc.)	13.240		
st.dev.(EN12662:14)	2.7297		
R(EN12662:14)	7.643		

*) volume not according to version of test method
Lab 1586 first reported: 8.0
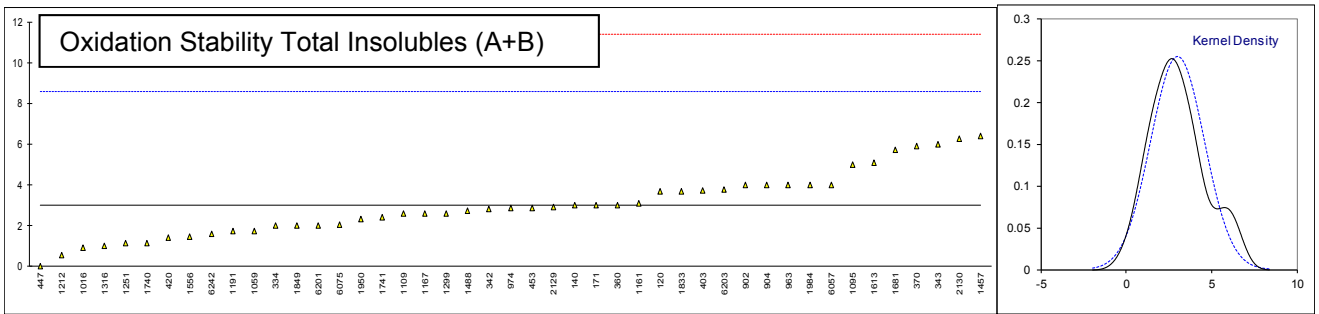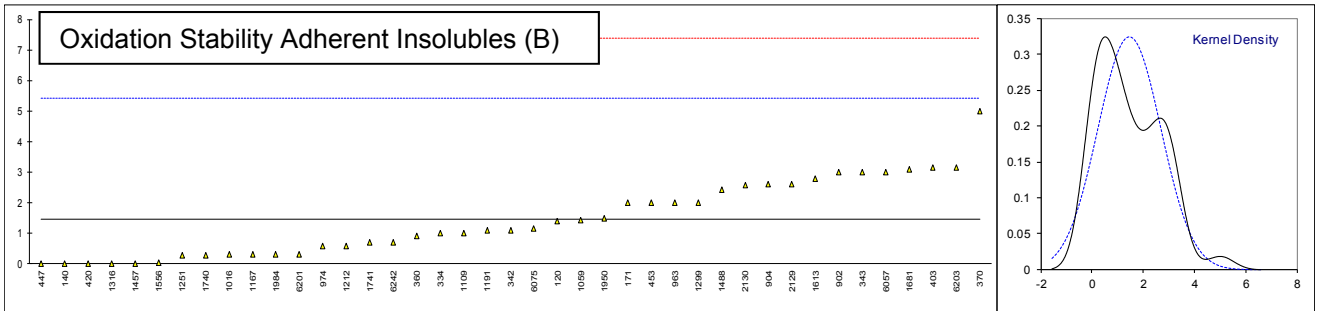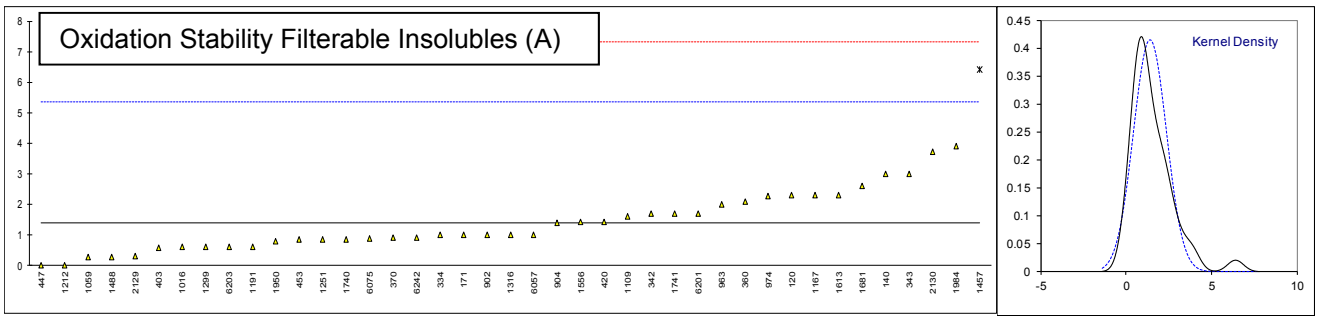Lab 2130 test result excluded: see §4.1
Lab 6201 first reported: 8

Kernel Density
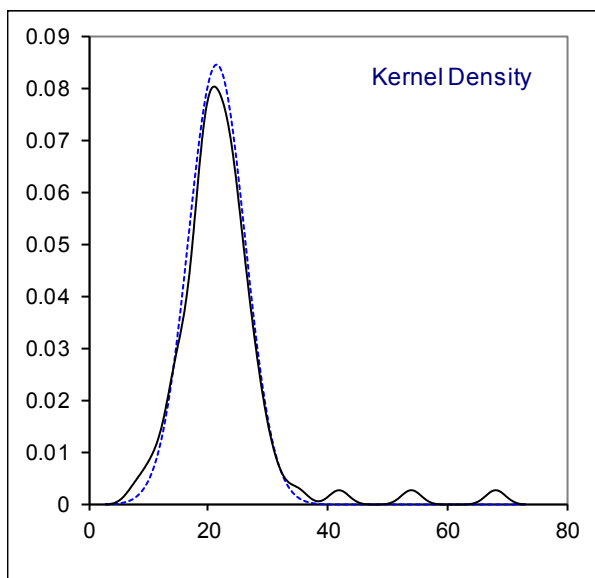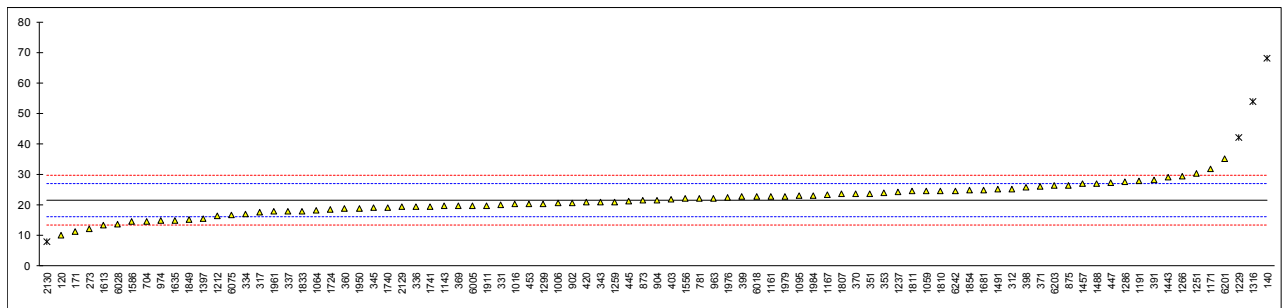
Determination of Oxidation Stability Induction period on sample #19028; results in hrs

lab	method	value	mark	z(targ)	remarks
120	EN15751	16		0.73	
140		-----		-----	
171	D2274	16	ex	0.73	test result excluded as reported method is not for Oxidation Stability
311		-----		-----	
323	EN15751	13.3		-1.59	
334	EN15751	12.4		-2.37	
342		-----		-----	
343	EN15751	18.02		2.46	
351	EN15751	21.15		5.16	
360		-----		-----	
370		-----		-----	
391	EN15751	16.8		1.42	
403		-----		-----	
420	EN14112	12.6		-2.19	
445	EN15751	13.69		-1.26	
447	EN15751	>20		-----	
453		-----		-----	
823		-----		-----	
874		-----		-----	
902		-----		-----	
904		-----		-----	
963		-----		-----	
974		-----		-----	
1016		-----		-----	
1059		-----		-----	
1095		-----		-----	
1109		-----		-----	
1134		-----		-----	
1143		-----		-----	
1161		-----		-----	
1167		-----		-----	
1191		-----		-----	
1212		-----		-----	
1251		-----		-----	
1299	EN15751	19.4		3.65	
1316	EN15751	14.8		-0.30	
1397	EN15751	13.2		-1.68	
1457		-----		-----	
1459	EN15751	14.73		-0.36	
1488		-----		-----	
1491	EN15751	12.12		-2.61	
1539	EN15751	12.4		-2.37	
1556	EN15751	12.91		-1.93	
1586	EN15751	14.58		-0.49	
1613		-----		-----	
1631		-----		-----	
1656		-----		-----	
1681		-----		-----	
1724		13.43		-1.48	
1740		-----		-----	
1741		-----		-----	
1807	EN15751	>24		-----	
1810	D7545	20.00		4.17	
1811	EN15751	20	C	4.17	
1833		-----		-----	
1849		-----		-----	
1911	EN15751	13.47		-1.45	
1950		-----		-----	
1984	EN15751	13.98		-1.01	
2129	EN15751	16.12		0.83	
2130	EN15751	16		0.73	
6005	EN15751	16.39		1.06	
6057		-----		-----	
6075		-----		-----	
6201		-----		-----	
6203	EN15751	11.32		-3.29	
6242		-----		-----	

	normality	OK	
	n	25	
	outliers	0+1ex	
	mean (n)	15.15	
	st.dev. (n)	2.766	
	R(calc.)	7.74	
	st.dev.(EN15751:14)	1.163	
	R(EN15751:14)	3.26	

Kernel Density
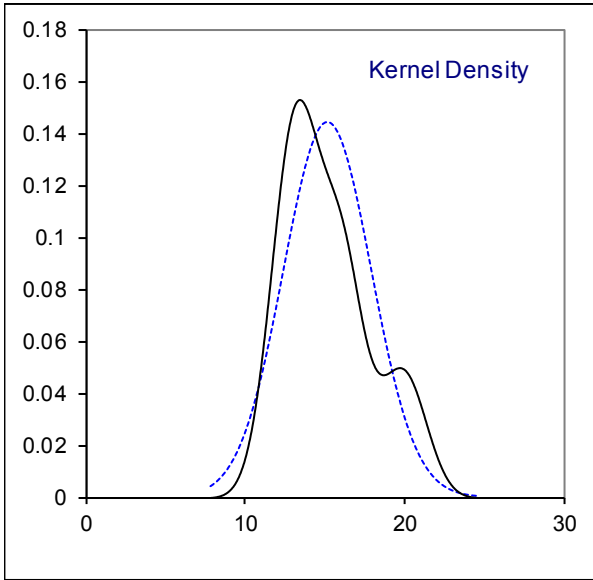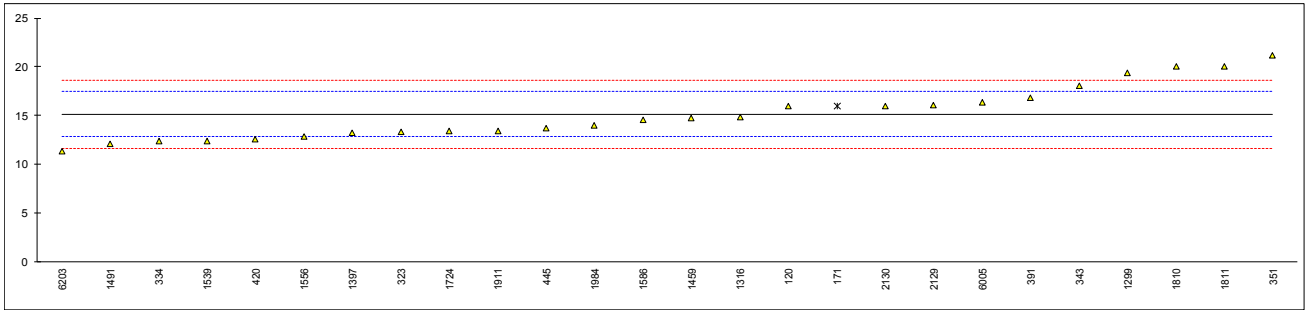
Determination of Oxidation Stability Insolubles on sample #19028; results in g/m³

lab	method	Filterable (A)	mark	z(targ)	Adherent (B)	mark	z(targ)	Total (A+B)	mark	z(targ)
120	D2274	2.3		0.46	1.4		-0.02	3.7		0.25
140	D2274	3		0.82	0		-0.73	3		0.00
171	D2274	1		-0.19	2		0.28	3		0.00
311		-----		-----	-----		-----	-----		-----
323		-----		-----	-----		-----	-----		-----
334	ISO12205	1		-0.19	1		-0.23	2		-0.35
342	ISO12205	1.7		0.16	1.1		-0.17	2.8		-0.07
343	ISO12205	3		0.82	3		0.79	6		1.07
351		-----		-----	-----		-----	-----		-----
360	ISO12205	2.1		0.36	0.9		-0.28	3.0		0.00
370	ISO12205	0.9		-0.24	5.0		1.80	5.9		1.04
391		-----		-----	-----		-----	-----		-----
403	ISO12205	0.57		-0.41	3.14		0.86	3.71		0.26
420	ISO12205	1.43		0.02	0		-0.73	1.43		-0.56
445	ISO12205	<1		-----	<1		-----	<1		-----
447	ISO12205	0		-0.70	0		-0.73	0		-1.07
453	ISO12205	0.86		-0.27	2.00		0.28	2.86		-0.05
823		-----		-----	-----		-----	-----		-----
874		-----		-----	-----		-----	-----		-----
902	ISO12205	1		-0.19	3		0.79	4		0.36
904	ISO12205	1.4		0.01	2.6		0.58	4.0		0.36
963	ISO12205	2.0		0.31	2.0		0.28	4.0		0.36
974	D2274	2.28		0.45	0.57		-0.44	2.85		-0.05
1016	ISO12205	0.6		-0.40	0.3		-0.58	0.9		-0.75
1059	ISO12205	0.286		-0.55	1.429		-0.01	1.715		-0.46
1095		-----		-----	-----		-----	5		0.72
1109	D2274	1.6		0.11	1.0		-0.23	2.6		-0.14
1134		-----		-----	-----		-----	-----		-----
1143		-----		-----	-----		-----	-----		-----
1161		-----		-----	-----		-----	3.1		0.04
1167	ISO12205	2.3		0.46	0.3		-0.58	2.6		-0.14
1191	ISO12205	0.62		-0.39	1.08		-0.18	1.71		-0.46
1212	ISO12205	0.000		-0.70	0.571		-0.44	0.571		-0.86
1251	ISO12205	0.86		-0.27	0.29		-0.58	1.15		-0.66
1299	D2274	0.6		-0.40	2.0		0.28	2.6		-0.14
1316	ISO12205	1		-0.19	0		-0.73	1		-0.71
1397		-----		-----	-----		-----	-----		-----
1457	ISO12205	6.4	R(0.01)	2.53	0		-0.73	6.4		1.22
1459		-----		-----	-----		-----	-----		-----
1488	ISO12205	0.290		-0.55	2.425		0.49	2.715		-0.10
1491		-----		-----	-----		-----	-----		-----
1539		-----		-----	-----		-----	-----		-----
1556	ISO12205	1.428		0.02	0.026		-0.72	1.454		-0.55
1586		-----		-----	-----		-----	-----		-----
1613	D2274	2.3		0.46	2.8		0.68	5.1		0.75
1631		-----		-----	-----		-----	-----		-----
1656		-----		-----	-----		-----	-----		-----
1681	ISO12205	2.6		0.61	3.1		0.84	5.7		0.97
1724		-----		-----	-----		-----	-----		-----
1740	ISO12205	0.86		-0.27	0.29		-0.58	1.15		-0.66
1741	ISO12205	1.7		0.16	0.7		-0.38	2.4		-0.21
1807		-----		-----	-----		-----	-----		-----
1810		-----		-----	-----		-----	-----		-----
1811		-----		-----	-----		-----	-----		-----
1833		-----		-----	-----		-----	3.7		0.25
1849		-----		-----	-----		-----	2		-0.35
1911		-----		-----	-----		-----	-----		-----
1950	ISO12205	0.8		-0.30	1.5		0.03	2.3		-0.25
1984	ISO12205	3.9		1.27	0.3		-0.58	4	E, iis calc. 4.2	0.36
2129	ISO12205	0.3		-0.55	2.6		0.58	2.9		-0.03
2130	ISO12205	3.714		1.18	2.571		0.57	6.285		1.18
6005		-----		-----	-----		-----	-----		-----
6057	ISO12205	1		-0.19	3		0.79	4		0.36
6075	ISO12205	0.886		-0.25	1.143		-0.15	2.029		-0.34
6201	ISO12205	1.7		0.16	0.3		-0.58	2		-0.35
6203	ISO12205	0.61		-0.39	3.14		0.86	3.75		0.27
6242	ISO12205	0.9		-0.24	0.7		-0.38	1.6		-0.50

normality		OK			OK			OK		
n		40			41			45		
outliers		1			0			0		
mean (n)		1.38			1.45			2.99		
st.dev. (n)		0.962			1.229			1.568		
R(calc.)		2.69			3.44			4.39		
st.dev.(ISO12205:95)		1.980			1.980			2.800		
R(ISO12205:95)		5.54			5.54			7.84		

Oxidation Stability Filterable Insolubles (A)

Kernel Density

Oxidation Stability Adherent Insolubles (B)

Kernel Density

Oxidation Stability Total Insolubles (A+B)

Kernel Density

APPENDIX 2

Number of participants per country

1 lab in AFGHANISTAN	1 lab in MARTINIQUE
1 lab in ARGENTINA	1 lab in MOROCCO
1 lab in AUSTRALIA	11 labs in NETHERLANDS
2 labs in AUSTRIA	1 lab in NIGER
2 labs in BELGIUM	2 labs in NIGERIA
1 lab in BOSNIA and HERZEGOVINA	2 labs in NORWAY
5 labs in BULGARIA	1 lab in PHILIPPINES
1 lab in CHILE	7 labs in POLAND
1 lab in COSTA RICA	7 labs in PORTUGAL
1 lab in COTE D'IVOIRE	3 labs in ROMANIA
3 labs in CROATIA	12 labs in RUSSIAN FEDERATION
1 lab in CYPRUS	2 labs in SAUDI ARABIA
3 labs in CZECH REPUBLIC	3 labs in SERBIA
2 labs in EGYPT	2 labs in SLOVENIA
5 labs in FINLAND	1 lab in SOMALIA
10 labs in FRANCE	1 lab in SOUTH AFRICA
2 labs in GEORGIA	2 labs in SOUTH KOREA
1 lab in GERMANY	9 labs in SPAIN
6 labs in GREECE	1 lab in SUDAN
1 lab in GUAM	5 labs in SWEDEN
1 lab in HONG KONG	1 lab in TAIWAN
1 lab in HUNGARY	1 lab in THAILAND
1 lab in IRAQ	1 lab in TOGO
2 labs in IRELAND	3 labs in TUNISIA
3 labs in ITALY	9 labs in TURKEY
1 lab in JORDAN	2 labs in UKRAINE
3 labs in LATVIA	2 labs in UNITED ARAB EMIRATES
2 labs in LITHUANIA	15 labs in UNITED KINGDOM
1 lab in MALTA	3 labs in UNITED STATES OF AMERICA

APPENDIX 3

Abbreviations:

C	= final result after checking of first reported suspect test result
D(0.01)	= outlier in Dixon's outlier test
D(0.05)	= straggler in Dixon's outlier test
G(0.01)	= outlier in Grubbs' outlier test
G(0.05)	= straggler in Grubbs' outlier test
DG(0.01)	= outlier in Double Grubbs' outlier test
DG(0.05)	= straggler in Double Grubbs' outlier test
R(0.01)/R(1)	= outlier in Rosner's outlier test
R(0.05)/R(5)	= straggler in Rosner's outlier test
E	= possibly an error in calculations
W	= test result withdrawn on request of participant
ex	= test result excluded from statistical evaluation
n.a.	= not applicable
n.e.	= not evaluated
n.d.	= not detected
fr.	= first reported
SDS	= Safety Data Sheet

Literature:

1   iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, June 2018

2   ASTM E178:02

3   ASTM E1301:03

4   ISO 5725:86

5   ISO 5725, parts 1-6, 1994

6   ISO 13528:05

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