Institute for
Interlaboratory Studies

Results of Proficiency Test
Gasoil - ASTM (winter)
September 2022

Organized by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

Author: ing. M. Meijer
Correctors: ing. R.J. Starink & Mrs. E.R. Montenij-Bos
Approved by: ing. A.S. Noordman-de Neef

Report: iis22G06ASTM

December 2022

CONTENTS

1 INTRODUCTION

Since 1994 the Institute for Interlaboratory Studies (iis) organizes a proficiency scheme for the analysis of Gasoil twice a year. One round is based on the latest version of EN590 and the other round on the latest version of ASTM D975. During the annual proficiency testing program 2022/2023 it was decided to continue the round robin for the analysis of Gasoil - ASTM (winter).

In this interlaboratory study registered for participation:
- 177 laboratories in 72 countries for regular analyzes in Gasoil iis22G06ASTM
- 39 laboratories in 29 countries on the Cetane Number analyzes iis22G06CN
- 58 laboratories in 37 countries on the Total Contamination analyzes iis22G06TC
- 50 laboratories in 31 countries on the Oxidation Stability analyzes iis22G06OX

In total 183 laboratories in 72 countries registered for participation in one or more proficiency tests, see appendix 2 for the number of participants per country. In this report the results of the Gasoil - ASTM (winter) proficiency tests are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

2 SET UP

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

Sample ID	PT ID	Quantity	Purpose
#22170	iis22G06ASTM	1x 1 L + 1x 0.5 L	Regular analyzes
#22171	iis22G06CN	4x 1 L	Cetane Number and DCN
#22172	iis22G06TC	1x 1 L	Total Contamination
#22173	iis22G06OX	1x 1 L	Oxidation Stability

Table 1: Gasoil samples used in PT iis22G06

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

2.1 ACCREDITATION

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

2.2 PROTOCOL

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

2.3 CONFIDENTIALITY STATEMENT

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

2.4 SAMPLES

For the preparation of the sample for the regular analyzes in Gasoil a batch of approximately 400 liters of a winter grade Gasoil was obtained from a local supplier. After homogenization 200 amber glass bottles of 1 L and 200 amber glass bottles of 0.5 L were filled and both were labelled #22170.
The homogeneity of the subsamples was checked by the determination of Density at 15 °C in accordance with ASTM D4052 on 16 stratified randomly selected subsamples.

	Density at 15 °C in kg/m^3
sample #22170-1	833.98
sample #22170-2	833.86
sample #22170-3	833.86
sample #22170-4	833.86
sample #22170-5	833.85
sample #22170-6	833.86
sample #22170-7	833.86
sample #22170-8	833.86
sample #22170-9	833.85
sample #22170-10	833.86
sample #22170-11	833.84
sample #22170-12	833.86
sample #22170-13	833.85
sample #22170-14	833.86
sample #22170-15	833.86
sample #22170-16	833.87

Table 2: homogeneity test results of subsamples #22170

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

	Density at 15 °C in kg/m^3
r (observed)	0.09
reference test method	ASTM D4052:22
0.3 x R (reference test method)	0.15

Table 3: evaluation of the repeatability of subsamples #22170

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

For the preparation of the sample for the analyzes of Cetane Number and DCN a batch of approximately 400 liters of a winter grade Gasoil was obtained from a local supplier. After homogenization 250 amber glass bottles of 1 L were filled and labelled #22171.
The homogeneity of the subsamples was checked by the determination of Density at 15 °C in accordance with ASTM D4052 on 10 stratified randomly selected subsamples.

	Density at 15 °C in kg/m^3
sample #22171-1	833.86
sample #22171-2	833.85
sample #22171-3	833.86
sample #22171-4	833.86
sample #22171-5	833.86
sample #22171-6	833.85
sample #22171-7	833.85
sample #22171-8	833.86
sample #22171-9	833.85
sample #22171-10	833.85

Table 4: homogeneity test results of subsamples #22171

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

	Density at 15 °C in kg/m^3
r (observed)	0.01
reference test method	ASTM D4052:22
0.3 x R (reference test method)	0.15

Table 5: evaluation of the repeatability of subsamples #22171

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

For the preparation of the sample for the analyzes of Total Contamination in Gasoil a batch of approximately 100 liters of Gasoil was obtained from a local supplier. A defined volume of fresh prepared and well shaken dust suspension of Arizona Dust material in an oil suspension was added to an empty bottle by means of a calibrated pipette. The addition was checked by weighing the bottle before and after addition. In total 74 bottles were prepared and subsequently filled up with 1 L from this batch of Gasoil and homogenized. The subsamples were labelled #22172.

For the preparation of the sample for the analyzes of Oxidation Stability in Gasoil a batch of approximately 115 liters of Gasoil was obtained from a local supplier. The batch was made positive for Oxidation Stability by adding copper rods for a while to enhance the oxidation of Gasoil. After homogenization 90 amber glass bottles of 1 L were filled and labelled #22173. The homogeneity of the subsamples was checked by the determination of Density at 15 °C in accordance with ASTM D4052 on 8 stratified randomly selected subsamples.

	Density at 15 °C in kg/m^3
sample #22173-1	837.58
sample #22173-2	837.57
sample #22173-3	837.58
sample #22173-4	837.56
sample #22173-5	837.57
sample #22173-6	837.57
sample #22173-7	837.57
sample #22173-8	837.57

Table 6: homogeneity test results of subsamples #22173

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

	Density at 15 °C in kg/m^3
r (observed)	0.02
reference test method	ASTM D4052:22
0.3 x R (reference test method)	0.15

Table 7: evaluation of the repeatability of subsamples #22173

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

Depending on the registration of the participant the appropriate set of PT samples was sent on August 31, 2022. An SDS was added to the sample package.

2.5 STABILITY OF THE SAMPLES

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

2.6 ANALYZES

The participants were requested to determine on sample #22170: Total Acid Number, API Gravity, Aromatics by FIA, Ash content, Calculated Cetane Index (two and four variables), Cloud Point, Cold Filter Plugging Point (CFPP), Color ASTM, Conradson Carbon Residue on 10% residue, Ramsbottom Carbon Residue on 10% distillation residue, Copper Corrosion 3 hrs at 50 °C , Density at 15 °C, Distillation at 760 mmHg (IBP, 10%, 50%, 90%, 95% recovered, FBP, Volume at 250 °C and 350 °C, Distillation Residue), FAME content, Flash Point PMcc, Kinematic Viscosity at 40 °C, Lubricity by HFRR at 60 °C, Nitrogen, Pour Point (Manual and/or Automated), Total Sulfur, Water and Water and Sediment (D2709 and D1796).
On sample #22171 it was requested to determine: Cetane Number and Derived Cetane Number (D6890 and D7668).
On sample #22172 it was requested to determine: Particulate Contamination (D6217) and Total Contamination (EN12662).
On sample #22173 it was requested to determine: Oxidation Stability (Filterable Insolubles, Adherent Insolubles and Total Insolubles).

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

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

3 RESULTS

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

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

3.1 STATISTICS

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

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

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

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

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

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

3.2 GRAPHICS

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

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

3.3 Z-SCORES

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

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

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

The z-scores were calculated according to:

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

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

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

	$\lvert z \rvert$	< 1	good
1 <	$\lvert z \rvert$	< 2	satisfactory
2 <	$\lvert z \rvert$	< 3	questionable
3 <	$\lvert z \rvert$		unsatisfactory

4 EVALUATION

In this proficiency test several problems were encountered with the dispatch of the samples due to the pandemic Covid-19.
For the PT with the regular analyzes twenty one participants reported test results after the final reporting date and thirty two other participants did not report any test results.
For the PT on Cetane Number three participants reported test results after the final reporting date and five other participants did not report any test results.
For the PT on Total Contamination six participants reported test results after the final reporting date and ten other participants did not report any test results.
For the PT on Oxidation Stability two participants reported test results after the final reporting date and seventeen other participants did not report any test results.
Not all participants were able to report all tests requested.
In total 152 participants reported 2591 numerical test results. Observed were 75 outlying test results, which is 2.9%. In proficiency tests outlier percentages of 3% - 7.5% are quite normal.

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

4.1 EVALUATION PER SAMPLE AND PER TEST

In this section the reported test results are discussed per sample and per test. The test methods which were used by the various laboratories were taken into account for explaining the observed differences when possible and applicable. These test methods are also in the tables together with the original data in appendix 1. The abbreviations, used in these tables, are explained in appendix 3.

In the iis PT reports ASTM test methods are referred to with a number (e.g. D6304) and if appropriate an indication of sub test method (e.g. D6304-A) and an added designation for the year that the test method was adopted or revised (e.g. D6304-A:20).
When a method has been reapproved an “R” will be added and the year of approval (e.g. D5950:14R20).

sample #22170

Total Acid Number: This determination was not problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D974:21.

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

Aromatics by FIA: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of ASTM D1319:20a.
One should be aware that this Gasoil does not meet the scope of ASTM D1319 with regards to the boiling range.

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

CCI D976: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D976:21.

CCI D4737: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the reproducibility of iis memo 1904.
Regretfully, no reproducibility is mentioned in procedure A of ASTM D4737:21 nor in the equivalent test methods ISO4264 and IP380.
Therefore, iis has estimated a reproducibility for Calculated Cetane Index by Four Variable Equation based on previous iis PTs (see iis memo 1904, lit. 13). This reproducibility has been used for the evaluation.

Cloud Point: This determination was not problematic. Five statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D2500:17a.

CFPP: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of ASTM D6371:17a or EN116:15.
When the test results from ASTM D6371 and other test methods than ASTM D6371 were evaluated separately, both calculated reproducibilities are still not in agreement with the requirements of the corresponding test methods.

Color ASTM: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility is in agreement with the requirements of ASTM D1500:12R17.
Please note: test values reported as text, e.g. “L1.5”, were converted to a numeric value (L1.5 to 1.25, see also appendix 1) before calculating the z-scores.

Conradson CR: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ASTM D189:06R19.

Ramsbottom CR: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of ASTM D524:15R19.

Copper Corrosion: This determination was not problematic. All reporting participants agreed on a test result of 1 (1A/1B).

Density at 15 °C: This determination was problematic for a number of laboratories. Ten statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D4052:22.

Distillation at 760 mmHg: This determination was not problematic. In total eleven statistical outliers were observed over eight parameters and three other test results were excluded. All calculated reproducibilities after rejection of the suspect data are in agreement with the requirements of ASTM D86:20b automated mode. When evaluated against the ASTM D86:20b manual mode the calculated reproducibilities of IBP, Temperature at 95% recovered and FBP after rejection of the suspect data are not in agreement.

FAME: This determination may be problematic depending on the test method used. Five statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D7371:14R22 and EN14078:14 mode B, but not with the requirements of EN14078:14 mode A. NB Test method EN14078:14 mode is not applicable for this sample.

Flash Point PMcc: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D93-A:20.

Kinematic Viscosity at 40 °C: This determination was not problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D445:21e1.

Lubricity: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D6079:18 and ISO12156-1:18 (method A and B).
When the test results from ASTM D6079 and ISO12156/IP450 were evaluated separately the calculated reproducibility is also in agreement with the requirements of the respective test methods.

Nitrogen: This determination was not problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ASTM D4629:17.

Pour Point: The determination was not problematic for the manual mode. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D97:17b.

Also for the automated mode the determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D5950:14R20.

Total Sulfur: This determination was not problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D5453:19a.

Water: This determination was not problematic. Six statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D6304:20 for all modes A, B and C.

Water and Sediment (D2709): This determination was not problematic. All reporting participants agreed on a test result of <0.05 %V/V. Therefore, no z-scores are calculated.

Water and Sediment (D1796): This determination was not problematic. Almost all reporting participants agreed on a test result of <0.05 %V/V. Therefore, no z-scores are calculated.

sample #22171

Cetane Number: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D613:18ae1.

Derived Cetane Number (D6890): This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D6890:21.
Please note that only three participants reported a test result for DCN. For Ignition Delay (ID) only one participant reported a test result. Therefore, no z-scores are calculated for ID.

Derived Cetane Number (D7668): This determination was problematic. No statistical outliers were observed. The calculated reproducibilities for DCN, Ignition Delay (ID) and Combustion Delay (CD) are not in agreement with the requirements of ASTM D7668:17.

sample #22172

Particulate Contamination: This determination was very problematic. No statistical outliers were observed. The calculated reproducibility is not at all in agreement with the (very strict) requirements of ASTM D6217:21.

Total Contamination: 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 EN12662:14.

sample #22173

Filterable Insolubles (A): This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with ASTM D2274:14R19.

Adherent Insolubles (B): This determination was problematic for a number of laboratories. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with ASTM D2274:14R19.

Total Insolubles (A+B): This determination was problematic for a number of laboratories. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in full agreement with ASTM D2274:14R19.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

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

Parameter	unit	n	average	2.8 * sd	R(lit)
Total Acid Number	mg KOH/g	74	0.04	0.03	0.04
API Gravity		61	38.08	0.18	0.3
Aromatics by FIA	%V/V	21	22.3	5.4	3.7
Ash content	%M/M	81	<0.01	n.e.	n.e.
Calc. Cetane Index ASTM D976		65	54.0	0.6	2
Calc. Cetane Index ASTM D4737		88	54.0	1.0	0.9
Cloud Point	°C	108	-7.5	2.4	4
Cold Filter Plugging Point	°C	79	-21.5	5.7	4.7
Color ASTM		96	1.5	0.6	1
Conradson Carbon Residue	%M/M	53	0.02	0.03	0.03
Ramsbottom Carbon Residue	%M/M	13	0.06	0.06	0.03
Copper Corrosion 3 hrs at 50 °C		97	1 (1A/1B)	n.a.	n.a.
Density at 15 °C	kg/m^3	123	833.9	0.3	0.5
Initial Boiling Point	°C	119	174.1	8.2	9.6
Temp at 10% recovery	°C	120	209.8	4.8	4.6
Temp at 50% recovery	°C	120	273.3	2.8	3.0
Temp at 90% recovery	°C	119	332.3	3.8	5.0
Temp at 95% recovery	°C	116	344.7	6.6	8.4
Final Boiling Point	°C	117	353.8	6.1	7.1
Volume at 250 °C	%V/V	106	34.5	2.2	2.7
Volume at 350 °C	%V/V	106	96.3	1.9	2.7

Parameter	unit	n	average	2.8 * sd	R(lit)
FAME	%V/V	51	7.0	0.5	1.0
Flash Point PMcc	°C	130	63.0	3.8	4.5
Kinematic Viscosity at 40 °C	mm^2/s	107	2.704	0.027	0.030
Lubricity by HFRR at 60 °C	µm	47	186	45	80
Nitrogen	mg/kg	35	9.2	2.7	2.5
Pour Point Manual	°C	56	-32.8	8.1	9
Pour Point Automated 3 °C inter.	°C	34	-31.4	4.9	6.1
Total Sulfur	mg/kg	104	6.0	1.8	2.2
Water	mg/kg	99	57.4	26.0	40.7
Water and Sediment (D2709)	%V/V	40	<0.05	n.e.	n.e.
Water and Sediment (D1796)	%V/V	17	<0.05	n.e.	n.e.

Table 8: reproducibilities of tests on sample #22170

Parameter	unit	n	average	2.8 * sd	R(lit)
Cetane Number		23	52.6	2.9	4.4
DCN (D6890)		3	52.5	1.6	2.4
Iginition Delay (D6890)		1	n.e.	n.e.	n.e.
DCN (D7668)		12	52.9	1.7	1.5
Ignition Delay (D7668)		12	3.0	0.2	0.2
Combustion Delay (D7668)		12	4.5	0.2	0.1

Table 9: reproducibilities of tests on sample #22171

Parameter	unit	n	average	2.8 * sd	R(lit)
Particulate Contamination	mg/L	9	12.2	10.0	3.9
Total Contamination	mg/kg	34	17.5	10.1	7.0

Table 10: reproducibilities of tests on sample #22172

Parameter	unit	n	average	2.8 * sd	R(lit)
Oxidation Stab. Filt. Insol. A	mg/100 mL	27	0.16	0.38	0.59
Oxidation Stab. Adher. Insol. B	mg/100 mL	25	0.15	0.44	0.59
Oxidation Stab. Tot. Insol. (A+B)	mg/100 mL	27	0.39	0.90	0.84

Table 11: reproducibilities of tests on sample #22173

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

4.3 COMPARISON OF THE PROFICIENCY TEST OF SEPTEMBER 2022 WITH PREVIOUS PTS

	September 2022	September 2021	September 2020	September 2019	September 2018
Number of reporting laboratories	152	161	151	165	170
Number of test results	2591	2906	2691	3201	3027
Number of statistical outliers	75	86	67	62	84
Percentage of statistical outliers	2.9%	3.0%	2.5%	1.9%	2.8%

Table 12: comparison with previous proficiency tests

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

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

Parameter	September 2022	September 2021	September 2020	September 2019	September 2018
Total Acid Number	+	+	+	+	++
API Gravity	+	+	++	++	n.e
Aromatics by FIA	-	-	+/-	+/-	-
Ash content	n.e.	n.e.	n.e.	++	++
Calc. Cetane Index ASTM D976	++	++	++	++	++
Calc. Cetane Index ASTM D4737	+/-	+	+/-	+	n.e
Cloud Point	+	+	+	+	+
Cold Filter Plugging Point	-	+	-	-	--
Color ASTM	+	+	+	+	++
Conradson Carbon Residue	+/-	+	+/-	+/-	+/-
Ramsbottom Carbon Residue	-	-	n.e.	+/-	--
Density at 15 °C	+	+	++	+	+
Distillation at 760 mmHg	+	+	+	+	+
FAME	+	+	+	+	+
Flash Point PMcc	+	+	+/-	+/-	+/-
Kinematic Viscosity at 40 °C	+	+/-	+/-	+/-	+/-
Lubricity by HFRR at 60 °C	+	++	++	+	-
Nitrogen	+/-	+/-	--	-	--
Pour Point (Manual and Auto)	+	+	+	+	+
Total Sulfur	+	+	+/-	+	+/-
Water	+	+	++	++	++
Cetane Number	+	+	+	+	+
DCN (D6890)	+	n.e.	-	+	+
DCN (D7668)	-	-	+/-	--	+
Particulate Contamination	--	-	(--)	(--)	-
Total Contamination	-	+/-	-	-	-

Parameter	September 2022	September 2021	September 2020	September 2019	September 2018
Oxidation Stability	+	-	+/-	+	+

Table 13: comparison of determinations to the reference test methods of samples #22170, #22171, #22172 and #22173

The following performance categories were used:

++	:	group performed much better than the reference test method
+	:	group performed better than the reference test method
+/-	:	group performance 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

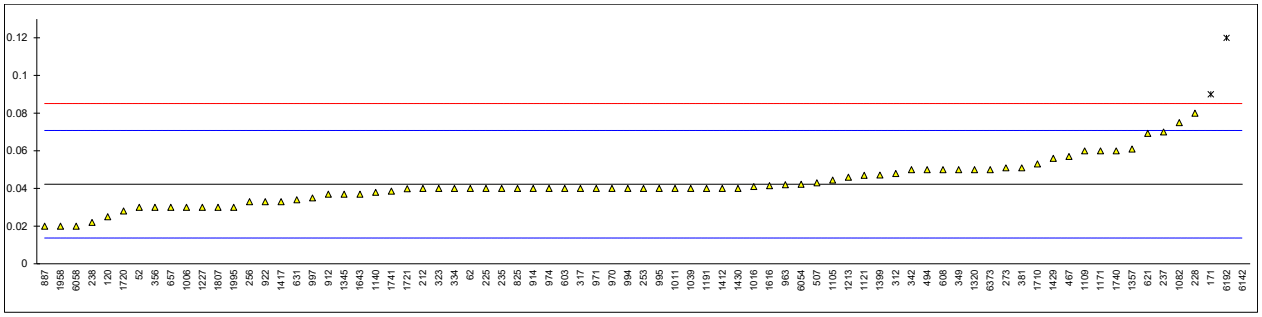
APPENDIX 1

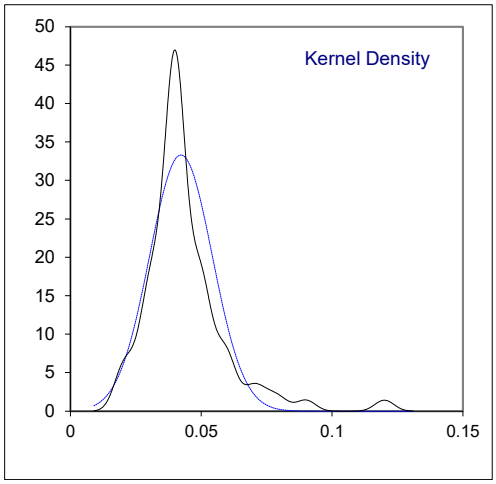
Determination of Total Acid Number on sample #22170; results in mg KOH/g

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D974	0.03		-0.86	779		-----		-----
53		-----		-----	785		-----		-----
62	D974	0.04		-0.16	825	D664-A	0.04		-0.16
90		-----		-----	845		-----		-----
92		-----		-----	846		-----		-----
120	D664-A	0.025		-1.21	851	D664-A	<0.01		-----
140	D664-A	<0.10		-----	854		-----		-----
150	D664-A	<0.1		-----	856		-----		-----
158	D664-A	<0.10		-----	862		-----		-----
159		-----		-----	863		-----		-----
169		-----		-----	864		-----		-----
171	D974	0.09	R(0.05)	3.34	872		-----		-----
175		-----		-----	873		-----		-----
203		-----		-----	874		-----		-----
212	D664-A	0.04		-0.16	886		-----		-----
215		-----		-----	887	D664-A	0.02		-1.56
217		-----		-----	912	D974	0.037		-0.37
221		-----		-----	914	D974	0.04		-0.16
224		-----		-----	922	D664-A	0.033		-0.65
225	D974	0.04		-0.16	962		-----		-----
228	D974	0.08		2.64	963	D974	0.042		-0.02
231		-----		-----	970	D974	0.04		-0.16
235	D664-A	0.04		-0.16	971	D664-A	0.04		-0.16
237	D974	0.07		1.94	974	D974	0.04		-0.16
238	D974	0.022		-1.42	988		-----		-----
253	D974	0.04		-0.16	994	D974	0.04		-0.16
254		-----		-----	995	D974	0.04		-0.16
256	D974	0.033		-0.65	996		-----		-----
258		-----		-----	997	D974	0.035		-0.51
273	D974	0.051		0.61	1006	D974	0.03		-0.86
312	D974	0.048		0.40	1011	D664-A	0.04		-0.16
317	D974	0.04		-0.16	1016	ISO6618	0.041		-0.09
323	D974	0.04		-0.16	1017		-----		-----
328		-----		-----	1039	D664-A	0.04		-0.16
333		-----		-----	1059		-----		-----
334	D974	0.04		-0.16	1082	ISO6619	0.075		2.29
335		-----		-----	1105	D974	0.0445		0.16
337		-----		-----	1109	D974	0.06		1.24
339		-----		-----	1121	D664-A	0.047		0.33
342	D664-A	0.05		0.54	1126		-----		-----
344		-----		-----	1134		-----		-----
349	D664-A	0.05		0.54	1140	D974	0.038		-0.30
355		-----		-----	1146		-----		-----
356	D974	0.03		-0.86	1155		-----		-----
365		-----		-----	1171	ISO6618	0.06		1.24
381	D974	0.051		0.61	1182		-----		-----
433		-----		-----	1186		-----		-----
467	D664-A	0.057		1.03	1191	ISO6618	0.04		-0.16
480		-----		-----	1199		-----		-----
494	D664-A	0.05		0.54	1205		-----		-----
498		-----		-----	1213	D974	0.046		0.26
507	D664-A	0.043		0.05	1227	D664-A	0.03		-0.86
511		-----		-----	1284		-----		-----
551		-----		-----	1299	D664-A	<0.100		-----
554		-----		-----	1320	D974	0.05		0.54
555		-----		-----	1345	D974	0.037		-0.37
558		-----		-----	1356	D664-A	<0.05		-----
562		-----		-----	1357	D974	0.061		1.31
575		-----		-----	1362		-----		-----
603	D664-A	0.04		-0.16	1399	D664-A	0.04715		0.34
604		-----		-----	1412	D664-A	0.04		-0.16
608	D664-A	0.05		0.54	1417	D664-A	0.033		-0.65
614		-----		-----	1429	D974	0.056		0.96
621	D664-A	0.0693		1.89	1430		0.04		-0.16
631	D974	0.034		-0.58	1498		-----		-----
633		-----		-----	1575		-----		-----
634		-----		-----	1588		-----		-----
657	D974	0.03		-0.86	1616	D974	0.0415		-0.05
710		-----		-----	1629		-----		-----
750		-----		-----	1634		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643	D664-A	0.037		-0.37	6142	D664-A	3.25	R(0.01)	224.54
1710	D664-A	0.053		0.75	6172		-----		-----
1720	D974	0.028		-1.00	6184		-----		-----
1721	D974	0.0399		-0.16	6192	D664-A	0.12	R(0.01)	5.44
1740	D974	0.06		1.24	6266		-----		-----
1741	D3242	0.0386		-0.26	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807	D664-A	0.03		-0.86	6332		-----		-----
1810		-----		-----	6346		-----		-----
1811		-----		-----	6373	D974	0.05		0.54
1906		-----		-----	6393		-----		-----
1944		-----		-----	6404		-----		-----
1958	D974	0.02		-1.56	6416		-----		-----
1995	D664-A	0.03		-0.86	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019		-----		-----	6447		-----		-----
6054	D664-A	0.04226		0.00	6479		-----		-----
6058	ISO6618	0.02		-1.56	6499		-----		-----
6103		-----		-----					

normality	suspect
n	74
outliers	3
mean (n)	0.0422
st.dev. (n)	0.01198
R(calc.)	0.0336
st.dev.(D974:21)	0.01429
R(D974:21)	0.04





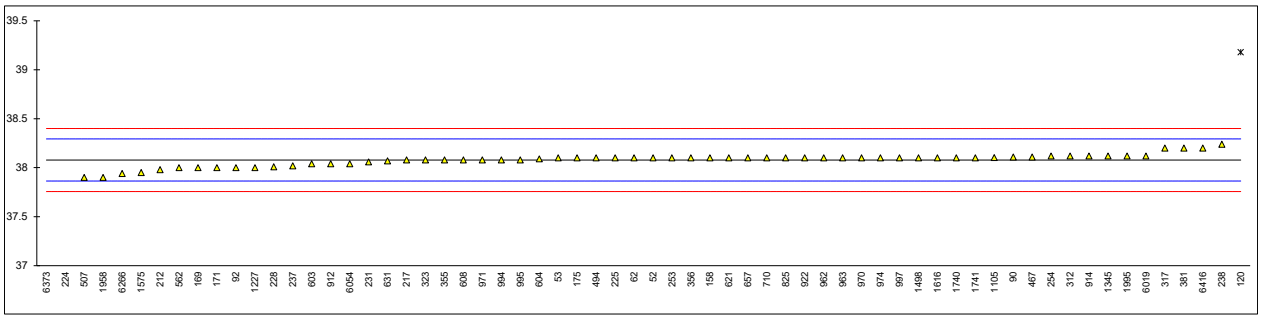
Determination of API Gravity on sample #22170;

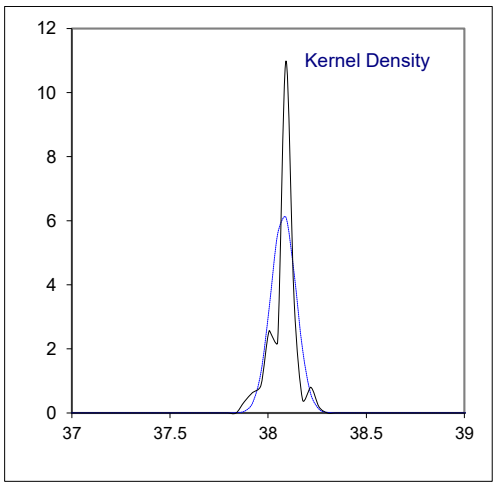
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4052	38.1		0.20	779		-----		-----
53	D4052	38.1		0.20	785		-----		-----
62	D4052	38.1		0.20	825	D4052	38.1		0.20
90	D4052	38.11		0.29	845		-----		-----
92	D4052	38.0		-0.73	846		-----		-----
120	D4052	39.18	R(0.01)	10.28	851		-----		-----
140		-----		-----	854		-----		-----
150		-----		-----	856		-----		-----
158	D4052	38.1		0.20	862		-----		-----
159		-----		-----	863		-----		-----
169	D4052	38.0		-0.73	864		-----		-----
171	D1298	38.0		-0.73	872		-----		-----
175	D4052	38.1		0.20	873		-----		-----
203		-----		-----	874		-----		-----
212	ISO12185	37.98		-0.92	886		-----		-----
215		-----		-----	887		-----		-----
217	D4052	38.08		0.01	912	D1298	38.04		-0.36
221		-----		-----	914	D1298	38.12		0.39
224	D1298	34.97	R(0.01)	-29.01	922	D4052	38.1		0.20
225	D4052	38.1		0.20	962	D4052	38.1		0.20
228	D4052	38.01		-0.64	963	D1298	38.10		0.20
231	D4052	38.06		-0.17	970	D4052	38.10		0.20
235		-----		-----	971	D1298	38.08		0.01
237	D4052	38.02		-0.55	974	D4052	38.10		0.20
238	D4052	38.24		1.51	988		-----		-----
253	D4052	38.1		0.20	994	D1250	38.08		0.01
254	D4052	38.12		0.39	995	D1298	38.08		0.01
256		-----		-----	996		-----		-----
258		-----		-----	997	D1298	38.1		0.20
273		-----		-----	1006		-----		-----
312	D4052	38.12		0.39	1011		-----		-----
317	D1298	38.2		1.13	1016		-----		-----
323	D1298	38.08		0.01	1017		-----		-----
328		-----		-----	1039		-----		-----
333		-----		-----	1059		-----		-----
334		-----		-----	1082		-----		-----
335		-----		-----	1105	D4052	38.1032		0.23
337		-----		-----	1109		-----		-----
339		-----		-----	1121		-----		-----
342		-----		-----	1126		-----		-----
344		-----		-----	1134		-----		-----
349		-----		-----	1140		-----		-----
355	D4052	38.08		0.01	1146		-----		-----
356	D4052	38.10		0.20	1155		-----		-----
365		-----		-----	1171		-----		-----
381	ISO12185	38.2		1.13	1182		-----		-----
433		-----		-----	1186		-----		-----
467	D4052	38.11		0.29	1191		-----		-----
480		-----		-----	1199		-----		-----
494	ISO12185	38.1		0.20	1205		-----		-----
498		-----		-----	1213		-----		-----
507	D4052	37.9		-1.67	1227	D4052	38		-0.73
511		-----		-----	1284		-----		-----
551		-----		-----	1299		-----		-----
554		-----		-----	1320		-----		-----
555		-----		-----	1345	D1250	38.12		0.39
558		-----		-----	1356		-----		-----
562	D1298	38.0		-0.73	1357	D1298	NA		-----
575		-----		-----	1362		-----		-----
603	D4052	38.04		-0.36	1399		-----		-----
604	D4052	38.09		0.11	1412		-----		-----
608	D4052	38.08		0.01	1417		-----		-----
614		-----		-----	1429		-----		-----
621	D4052	38.1		0.20	1430		-----		-----
631	D4052	38.07		-0.08	1498	D4052	38.1		0.20
633		-----		-----	1575	D1298	37.95		-1.20
634		-----		-----	1588		-----		-----
657	D4052	38.1		0.20	1616	Calculated	38.10		0.20
710	ISO12185	38.1	C	0.20	1629		-----		-----
750		-----		-----	1634		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643		-----		-----	6142		-----		-----
1710		-----		-----	6172		-----		-----
1720		-----		-----	6184		-----		-----
1721		-----		-----	6192		-----		-----
1740	D4052	38.1		0.20	6266	D4052	37.94		-1.29
1741	D1298	38.1		0.20	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807		-----		-----	6332		-----		-----
1810		-----		-----	6346		-----		-----
1811		-----		-----	6373	D1298	28.50	R(0.01)	-89.40
1906		-----		-----	6393		-----		-----
1944		-----		-----	6404		-----		-----
1958	D1298	37.9	C	-1.67	6416	D1298	38.2		1.13
1995	D4052	38.12		0.39	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019	ISO12185	38.12		0.39	6447		-----		-----
6054	D4052	38.04		-0.36	6479		-----		-----
6058		-----		-----	6499		-----		-----
6103		-----		-----					

normality	suspect
n	61
outliers	3
mean (n)	38.078
st.dev. (n)	0.0642
R(calc.)	0.180
st.dev.(D1298:12bR17)	0.1071
R(D1298:12bR17)	0.3

Lab 710 first reported 31.10
Lab 1958 first reported 37.69





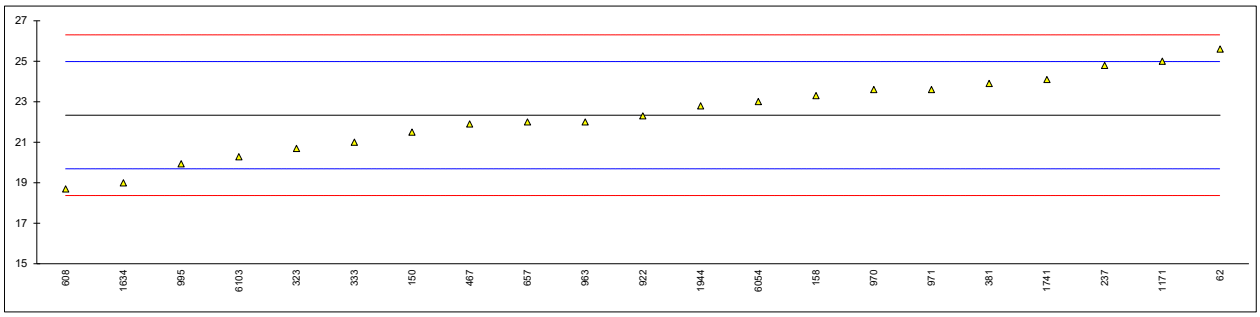
Determination of Aromatics by FIA (without oxygenates correction) on sample #22170; results in %V/V

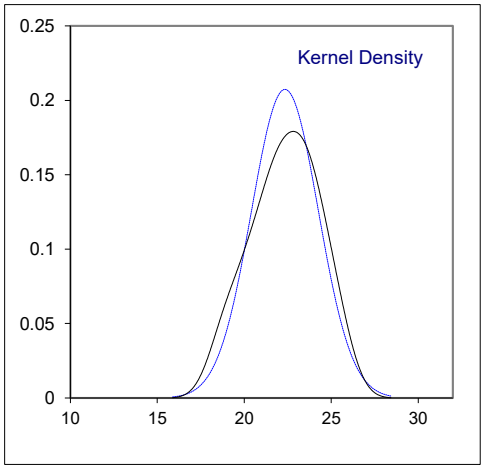
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	779		-----		-----
53		-----		-----	785		-----		-----
62	D1319	25.6	C	2.47	825		-----		-----
90		-----		-----	845		-----		-----
92		-----		-----	846		-----		-----
120		-----		-----	851		-----		-----
140		-----		-----	854		-----		-----
150	D1319	21.5		-0.63	856		-----		-----
158	D1319	23.3		0.73	862		-----		-----
159		-----		-----	863		-----		-----
169		-----		-----	864		-----		-----
171		-----		-----	872		-----		-----
175		-----		-----	873		-----		-----
203		-----		-----	874		-----		-----
212		-----		-----	886		-----		-----
215		-----		-----	887		-----		-----
217		-----		-----	912		-----		-----
221		-----		-----	914		-----		-----
224		-----		-----	922	D1319	22.3		-0.03
225		-----		-----	962		-----		-----
228		-----		-----	963	D1319	22.0		-0.25
231		-----		-----	970	D1319	23.6		0.96
235		-----		-----	971	D1319	23.6		0.96
237	D1319	24.8		1.87	974		-----		-----
238		-----		-----	988		-----		-----
253		-----		-----	994		-----		-----
254		-----		-----	995	D1319	19.94		-1.81
256		-----		-----	996		-----		-----
258		-----		-----	997		-----		-----
273		-----		-----	1006		-----		-----
312		-----		-----	1011		-----		-----
317		-----		-----	1016		-----		-----
323	D1319	20.7		-1.24	1017		-----		-----
328		-----		-----	1039		-----		-----
333	EN12916	21.0		-1.01	1059		-----		-----
334		-----		-----	1082		-----		-----
335		-----		-----	1105		-----		-----
337		-----		-----	1109		-----		-----
339		-----		-----	1121		-----		-----
342		-----		-----	1126		-----		-----
344		-----		-----	1134		-----		-----
349		-----		-----	1140		-----		-----
355		-----		-----	1146		-----		-----
356		-----		-----	1155		-----		-----
365		-----		-----	1171	EN15553Mod.	25.0	C	2.02
381	EN15553	23.9		1.18	1182		-----		-----
433		-----		-----	1186		-----		-----
467	D1319	21.9		-0.33	1191		-----		-----
480		-----		-----	1199		-----		-----
494		-----		-----	1205		-----		-----
498		-----		-----	1213		-----		-----
507		-----		-----	1227		-----		-----
511		-----		-----	1284		-----		-----
551		-----		-----	1299		-----		-----
554		-----		-----	1320		-----		-----
555		-----		-----	1345		-----		-----
558		-----		-----	1356		-----		-----
562		-----		-----	1357	D1319	NA		-----
575		-----		-----	1362		-----		-----
603		-----		-----	1399		-----		-----
604		-----		-----	1412		-----		-----
608	D1319	18.7		-2.75	1417		-----		-----
614		-----		-----	1429		-----		-----
621		-----		-----	1430		-----		-----
631		-----		-----	1498		-----		-----
633		-----		-----	1575		-----		-----
634		-----		-----	1588		-----		-----
657	D1319	22.0		-0.25	1616		-----		-----
710		-----		-----	1629		-----		-----
750		-----		-----	1634	EN12916	19.0		-2.52

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643		-----		-----	6142		-----		-----
1710		-----		-----	6172		-----		-----
1720		-----		-----	6184		-----		-----
1721		-----		-----	6192		-----		-----
1740		-----		-----	6266		-----		-----
1741	D1319	24.1		1.34	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807		-----		-----	6332		-----		-----
1810		-----		-----	6346		-----		-----
1811		-----		-----	6373		-----		-----
1906		-----		-----	6393		-----		-----
1944	D1319	22.8		0.35	6404		-----		-----
1958		-----		-----	6416		-----		-----
1995		-----		-----	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019		-----		-----	6447		-----		-----
6054	D1319	23.0129	C	0.51	6479		-----		-----
6058		-----		-----	6499		-----		-----
6103	D1319	20.28		-1.56					

normality	OK
n	21
outliers	0
mean (n)	22.335
st.dev. (n)	1.9245
R(calc.)	5.389
st.dev.(D1319:20a)	1.3214
R(D1319:20a)	3.7

Lab 62 first reported 28.6
Lab 1171 first reported 29.37
Lab 1634 reported in %M/M
Lab 6054 first reported 15.7746





Determination of Ash content on sample #22170; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D482	<0.010		-----	779		-----		-----
53		-----		-----	785		-----		-----
62	D482	<0.01		-----	825	D482	<0.001		-----
90	D482	0.001		-----	845		-----		-----
92	D482	0		-----	846		-----		-----
120	D482	0.00		-----	851		-----	C	-----
140	D482	<0.010		-----	854		-----		-----
150	D482	<0.10		-----	856		-----		-----
158	D482	<0.001		-----	862		-----		-----
159		-----		-----	863		-----		-----
169	D482	<0.010		-----	864		-----		-----
171	D482	<0.001		-----	872		-----		-----
175		-----		-----	873		-----		-----
203		-----		-----	874		-----		-----
212	ISO6245	0.000		-----	886		-----		-----
215		-----		-----	887		-----		-----
217	D482	0.001		-----	912	D482	0.0007		-----
221	D482	<0.01		-----	914	D482	0.001		-----
224	D482	0.000046		-----	922	D482	<0.01		-----
225	D482	0.001		-----	962		-----		-----
228	D482	0.0011		-----	963	D482	0.0087		-----
231		-----		-----	970	D482	<0.01		-----
235	ISO6245	0.002		-----	971	D482	0.002		-----
237	D482	<0.01		-----	974	D482	0.0008		-----
238		-----		-----	988		-----		-----
253		-----		-----	994	D482	<0.01		-----
254	D482	0.0007		-----	995	D482	<0.01		-----
256	D482	0.0007		-----	996		-----		-----
258		-----		-----	997	D482	<0.01		-----
273	D482	0.001		-----	1006		-----		-----
312		-----		-----	1011	ISO6245	<0.001		-----
317	D482	<0.010		-----	1016	D482	0		-----
323	D482	< 0.001		-----	1017		-----		-----
328		-----		-----	1039	ISO6245	0.001		-----
333		-----		-----	1059	ISO6245	<0,001		-----
334	D482	<0.010		-----	1082		-----		-----
335		-----		-----	1105	D482	0.0006		-----
337		-----		-----	1109	D482	0.002		-----
339		-----		-----	1121	D482	<0.001		-----
342	ISO6245	0.001		-----	1126		-----		-----
344	D482	<0.01		-----	1134		-----		-----
349		-----		-----	1140	IP4	0.00045		-----
355		-----		-----	1146	D482	0.0014		-----
356		-----		-----	1155	ISO6245	0.0002		-----
365	IP4	<0.001		-----	1171	ISO6245	0.0008		-----
381		-----		-----	1182		-----		-----
433		-----		-----	1186		-----		-----
467	D482	<0,001		-----	1191	ISO6245	0.000199		-----
480		-----		-----	1199		-----		-----
494	D482	<0,001		-----	1205		-----		-----
498		-----		-----	1213	D482	<0.005		-----
507	D482	<0.001		-----	1227		-----		-----
511	D482	<0.01		-----	1284		-----		-----
551		-----		-----	1299	D482	<0.010		-----
554		-----		-----	1320	D482	0.0007		-----
555		-----		-----	1345	D482	<0.01		-----
558		-----		-----	1356	ISO6245	<0.010		-----
562	D482	0		-----	1357	D482	<0.01		-----
575		-----		-----	1362		-----		-----
603	D482	< 0.001		-----	1399		-----		-----
604		-----		-----	1412	D482	<0.01		-----
608	D482	0.001		-----	1417		-----		-----
614	D482	<0.001		-----	1429		-----		-----
621	D482	<0.01		-----	1430	D482	<0.01		-----
631	D482	0.00074		-----	1498		-----		-----
633		-----		-----	1575	D482	<0.01		-----
634		-----		-----	1588		-----		-----
657	D482	<0.010		-----	1616	D482	0.0005		-----
710	D482	<0.01		-----	1629		-----		-----
750		-----		-----	1634		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643		-----		-----	6142		-----		-----
1710	ISO6245	0.0014		-----	6172		-----		-----
1720		-----		-----	6184	ISO6245	<0.001		-----
1721		-----		-----	6192	ISO6245	0.0015		-----
1740	ISO6245	0.002		-----	6266		-----		-----
1741	ISO6245	<0.001		-----	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807		-----		-----	6332		-----		-----
1810		-----		-----	6346		-----		-----
1811		-----		-----	6373	D482	0		-----
1906		-----		-----	6393		-----		-----
1944	D482	0.00029		-----	6404		-----		-----
1958	D482	0.001		-----	6416		-----		-----
1995	D482	0.0008		-----	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019		-----		-----	6447		-----		-----
6054		-----		-----	6479		-----		-----
6058	ISO6245	< 0.001		-----	6499		-----		-----
6103		-----		-----					

	n	81	
	mean (n)	<0.01	Application range: 0.010-0.180 %M/M

Lab 851 first reported 54.3 which was for Cetane Index

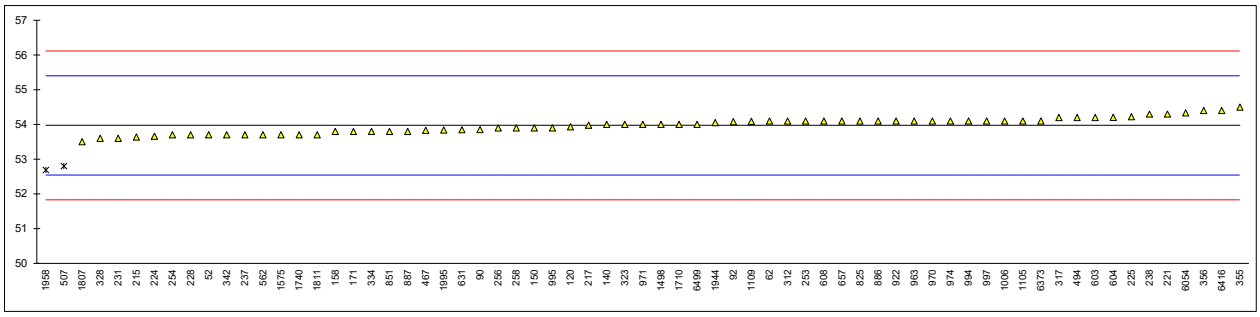
Determination of Calculated Cetane Index, two variables ASTM D976 on sample #22170

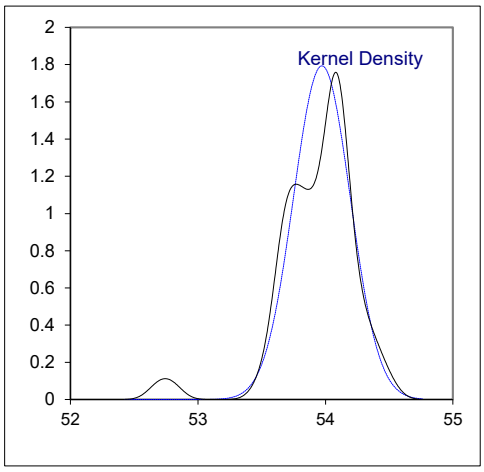
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D976	53.7		-0.38	779		-----		-----
53		-----		-----	785		-----		-----
62	D976	54.1		0.18	825	D976	54.1		0.18
90	D976	53.85		-0.17	845		-----		-----
92	D976	54.08		0.15	846		-----		-----
120	D976	53.93		-0.06	851	D976	53.8	C	-0.24
140	D976	54.0		0.04	854		-----		-----
150	D976	53.9		-0.10	856		-----		-----
158	D976	53.8		-0.24	862		-----		-----
159		-----		-----	863		-----		-----
169		-----		-----	864		-----		-----
171	D976	53.8		-0.24	872		-----		-----
175		-----		-----	873		-----		-----
203		-----		-----	874		-----		-----
212		-----		-----	886	D976	54.1	C	0.18
215	D976	53.64		-0.47	887	D976	53.8		-0.24
217	D976	53.98		0.01	912		-----		-----
221	D976	54.3		0.46	914		-----		-----
224	D976	53.661	C	-0.44	922	D976	54.1		0.18
225	D976	54.22		0.35	962		-----		-----
228	D976	53.7		-0.38	963	D976	54.1		0.18
231	D976	53.6		-0.52	970	D976	54.1		0.18
235		-----		-----	971	D976	54.0		0.04
237	D976	53.7		-0.38	974	D976	54.1		0.18
238	D976	54.3		0.46	988		-----		-----
253	D976	54.1		0.18	994	D976	54.1		0.18
254	D976	53.7		-0.38	995	D976	53.9		-0.10
256	D976	53.9		-0.10	996		-----		-----
258	D976	53.9		-0.10	997	D976	54.1		0.18
273		-----		-----	1006	D976	54.1		0.18
312	D976	54.1		0.18	1011		-----		-----
317	D976	54.2		0.32	1016		-----		-----
323	D976	54.0		0.04	1017		-----		-----
328	D976	53.6		-0.52	1039		-----		-----
333		-----		-----	1059		-----		-----
334	D976	53.8		-0.24	1082		-----		-----
335		-----		-----	1105	D976	54.1		0.18
337		-----		-----	1109	D976	54.09		0.16
339		-----		-----	1121		-----		-----
342	D976	53.7		-0.38	1126		-----		-----
344		-----		-----	1134		-----		-----
349		-----		-----	1140		-----		-----
355	D976	54.5		0.74	1146		-----		-----
356	D976	54.4		0.60	1155		-----		-----
365		-----		-----	1171		-----		-----
381		-----		-----	1182		-----		-----
433		-----		-----	1186		-----		-----
467	D976	53.83		-0.20	1191		-----		-----
480		-----		-----	1199		-----		-----
494	D976	54.2		0.32	1205		-----		-----
498		-----		-----	1213		-----		-----
507	D976	52.8	E,C,R(0.01)	-1.64	1227		-----		-----
511		-----		-----	1284		-----		-----
551		-----		-----	1299		-----		-----
554		-----		-----	1320		-----		-----
555		-----		-----	1345		-----		-----
558		-----		-----	1356		-----		-----
562	D976	53.7		-0.38	1357	D976	NA		-----
575		-----		-----	1362		-----		-----
603	D976	54.2		0.32	1399		-----		-----
604	D976	54.205		0.32	1412		-----		-----
608	D976	54.1		0.18	1417		-----		-----
614		-----		-----	1429		-----		-----
621		-----		-----	1430		-----		-----
631	D976	53.847		-0.18	1498	D976	54.0		0.04
633		-----		-----	1575	D976	53.7		-0.38
634		-----		-----	1588		-----		-----
657	D976	54.1		0.18	1616		-----		-----
710		-----		-----	1629		-----		-----
750		-----		-----	1634		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643		-----		-----	6142		-----		-----
1710	D976	54.0		0.04	6172		-----		-----
1720		-----		-----	6184		-----		-----
1721		-----		-----	6192		-----		-----
1740	D976	53.7		-0.38	6266		-----		-----
1741		-----		-----	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807	D976	53.5		-0.66	6332		-----		-----
1810		-----		-----	6346		-----		-----
1811	D976	53.7		-0.38	6373	D976	54.1		0.18
1906		-----		-----	6393		-----		-----
1944	D976	54.05		0.11	6404		-----		-----
1958	D976	52.69	E,C,R(0.01)	-1.80	6416	D976	54.4		0.60
1995	D976	53.84		-0.19	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019		-----		-----	6447		-----		-----
6054	D976	54.33		0.50	6479		-----		-----
6058		-----		-----	6499	D976	54.0		0.04
6103		-----		-----					

normality	OK
n	65
outliers	2
mean (n)	53.973
st.dev. (n)	0.2225
R(calc.)	0.623
st.dev.(D976:21)	0.7143
R(D976:21)	2

Lab 224 first reported 536.61
Lab 507 first reported 52.36 / calculation difference: iis calculated 53.2
Lab 851 first reported 54.3
Lab 886 first reported 56.6
Lab 1958 first reported 52.6 / calculation difference: iis calculated 53.57





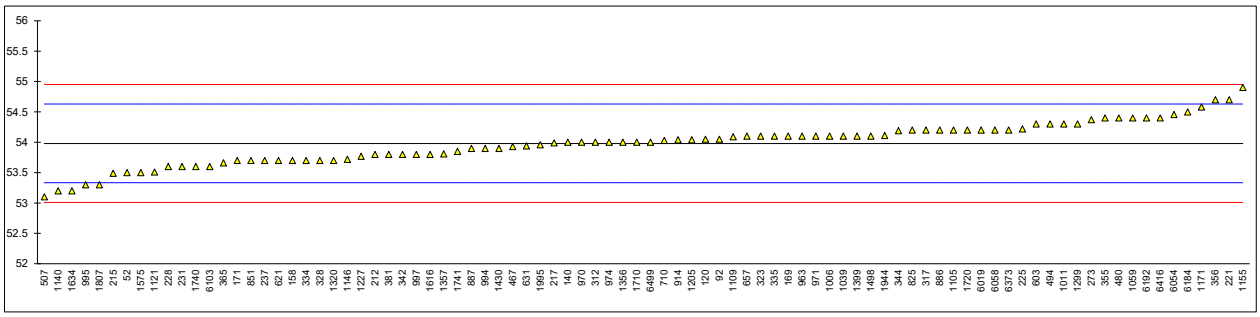
Determination of Calculated Cetane Index, four variables ASTM D4737 on sample #22170

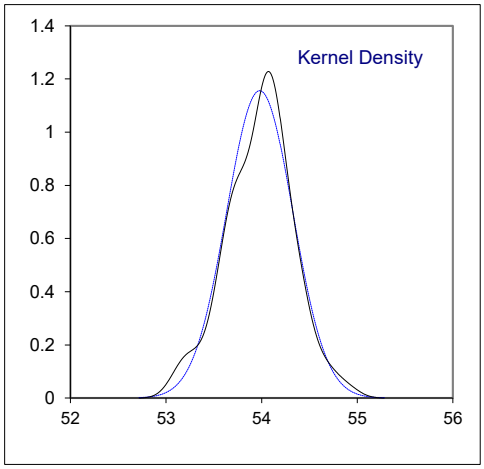
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4737-A	53.5		-1.48	779		-----		-----
53		-----		-----	785		-----		-----
62		-----		-----	825	D4737-A	54.2		0.68
90		-----		-----	845		-----		-----
92	D4737-A	54.05		0.22	846		-----		-----
120	D4737-A	54.05		0.22	851	D4737	53.7		-0.86
140	D4737-A	54.0		0.06	854		-----		-----
150		-----		-----	856		-----		-----
158	D4737-A	53.7		-0.86	862		-----		-----
159		-----		-----	863		-----		-----
169	D4737-A	54.1		0.37	864		-----		-----
171	D4737-A	53.7		-0.86	872		-----		-----
175		-----		-----	873		-----		-----
203		-----		-----	874		-----		-----
212	ISO4264	53.8		-0.56	886	D4737-A	54.2	C	0.68
215	D4737-A	53.49		-1.51	887	D4737-A	53.9		-0.25
217	D4737-A	53.99		0.03	912		-----		-----
221	D4737-A	54.7		2.22	914	D4737	54.04		0.18
224		-----		-----	922		-----		-----
225	D4737-A	54.22		0.74	962		-----		-----
228	D4737-A	53.6		-1.17	963	D4737-A	54.1		0.37
231	D4737-A	53.6		-1.17	970	D4737-A	54.0		0.06
235		-----		-----	971	D4737-A	54.1		0.37
237	D4737-A	53.7		-0.86	974	D4737-A	54.0		0.06
238		-----		-----	988		-----		-----
253		-----		-----	994	D4737-A	53.9		-0.25
254		-----		-----	995	D4737-B	53.3	E	-2.10
256		-----		-----	996		-----		-----
258		-----		-----	997	D4737-A	53.8		-0.56
273	D4737-A	54.37		1.20	1006	D4737-A	54.1		0.37
312	ISO4264	54.0		0.06	1011	ISO4264	54.3		0.99
317	ISO4264	54.2		0.68	1016		-----		-----
323	D4737-A	54.1		0.37	1017		-----		-----
328	D4737-A	53.7		-0.86	1039	ISO4264	54.1		0.37
333		-----		-----	1059	ISO4264	54.4		1.30
334	D4737-A	53.7		-0.86	1082		-----		-----
335	D4737-A	54.1		0.37	1105	D4737-A	54.2		0.68
337		-----		-----	1109	D4737-A	54.092		0.34
339		-----		-----	1121	ISO4264	53.509		-1.45
342	ISO4264	53.8		-0.56	1126		-----		-----
344	D4737-A	54.19		0.65	1134		-----		-----
349		-----		-----	1140	IP380	53.2		-2.41
355	D4737-A	54.4		1.30	1146	D4737	53.72		-0.80
356	ISO4264	54.7		2.22	1155	ISO4264	54.9		2.84
365	IP380	53.661		-0.98	1171	ISO4264	54.58	E	1.85
381	ISO4264	53.8		-0.56	1182		-----		-----
433		-----		-----	1186		-----		-----
467	ISO4264	53.93		-0.15	1191		-----		-----
480	D4737-A	54.4		1.30	1199		-----		-----
494	D4737-A	54.3		0.99	1205	ISO4264	54.04		0.18
498		-----		-----	1213		-----		-----
507	D4737-A	53.1	C	-2.72	1227	D4737-A	53.77		-0.65
511		-----		-----	1284		-----		-----
551		-----		-----	1299	D4737-A	54.3		0.99
554		-----		-----	1320	D4737-A	53.7		-0.86
555		-----		-----	1345		-----		-----
558		-----		-----	1356	ISO4264	54		0.06
562		-----		-----	1357	D4737-A	53.81		-0.53
575		-----		-----	1362		-----		-----
603	ISO4264	54.3		0.99	1399	D4737-A	54.1		0.37
604		-----		-----	1412		-----		-----
608		-----		-----	1417		-----		-----
614		-----		-----	1429		-----		-----
621	ISO4264	53.7		-0.86	1430	D4737-A	53.9		-0.25
631	D4737-A	53.940		-0.12	1498	D4737-A	54.1		0.37
633		-----		-----	1575	D4737-A	53.5		-1.48
634		-----		-----	1588		-----		-----
657	D4737-A	54.1		0.37	1616	D4737-A	53.8		-0.56
710	ISO4264	54.03		0.15	1629		-----		-----
750		-----		-----	1634	ISO4264	53.20		-2.41

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643		-----		-----	6142		-----		-----
1710	ISO4264	54.0		0.06	6172		-----		-----
1720	D4737-A	54.2		0.68	6184	ISO4264	54.5		1.60
1721		-----		-----	6192	ISO4264	54.4		1.30
1740	D4737-A	53.6		-1.17	6266		-----		-----
1741	ISO4264	53.85		-0.40	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807	D4737-A	53.3		-2.10	6332		-----		-----
1810		-----		-----	6346		-----		-----
1811		-----		-----	6373	ISO4264	54.2		0.68
1906		-----		-----	6393		-----		-----
1944	D4737-A	54.11		0.40	6404		-----		-----
1958		-----		-----	6416	D4737-A	54.4		1.30
1995	D4737-A	53.96		-0.06	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019	ISO4264	54.2		0.68	6447		-----		-----
6054	D4737-A	54.455		1.47	6479		-----		-----
6058	ISO4264	54.2		0.68	6499	D4737-A	54.0		0.06
6103	ISO4264	53.6		-1.17					

normality	OK
n	88
outliers	0
mean (n)	53.980
st.dev. (n)	0.3450
R(calc.)	0.966
st.dev.(iis memo 1904)	0.3241
R(iis memo 1904)	0.907

Lab 507 first reported 52.7
Lab 886 first reported 57.3
Lab 995 calculation difference: iis calculated 53.0 for B
Lab 1171 calculation difference: iis calculated 54.20 for A and 53.38 for B





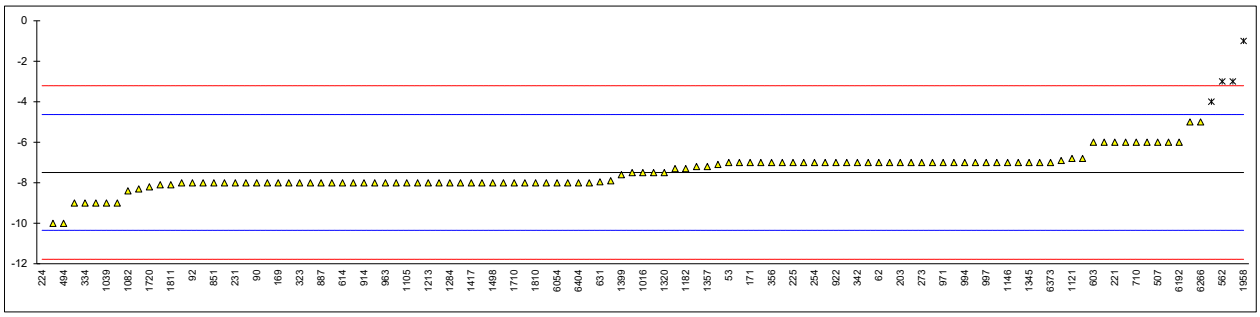
Determination of Cloud Point on sample #22170; results in °C

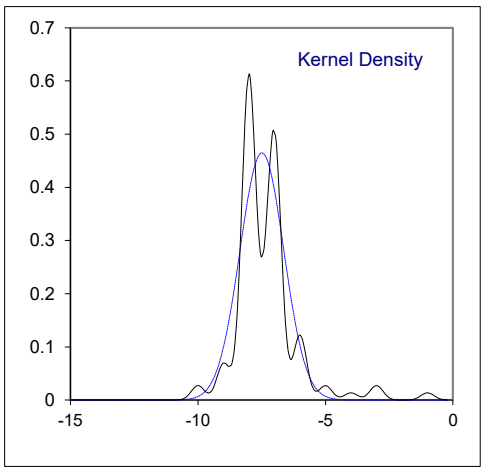
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D2500	-8		-0.36	779		-----		-----
53	D2500	-7		0.34	785		-----		-----
62	D2500	-7		0.34	825	D2500	-7		0.34
90	D2500	-8		-0.36	845		-----		-----
92	D2500	-8		-0.36	846		-----		-----
120	D5773	-7.5		-0.01	851	D2500	-8		-0.36
140	D5773	-8.0		-0.36	854		-----		-----
150	D2500	-7		0.34	856		-----		-----
158	D5773	-7.2		0.20	862		-----		-----
159		-----		-----	863		-----		-----
169	D2500	-8		-0.36	864		-----		-----
171	D2500	-7		0.34	872		-----		-----
175	D5771	-8		-0.36	873		-----		-----
203	D2500	-7		0.34	874		-----		-----
212	ISO3015	-7	C	0.34	886		-----		-----
215		-----		-----	887	D2500	-8		-0.36
217	D2500	-8		-0.36	912	D2500	-10		-1.76
221	D2500	-6		1.04	914	D2500	-8		-0.36
224	D2500	-29	R(0.01)	-15.06	922	D2500	-7	C	0.34
225	D2500	-7		0.34	962		-----		-----
228	D2500	-8		-0.36	963	D2500	-8.0		-0.36
231	D2500	-8		-0.36	970	D2500	-7		0.34
235		-----		-----	971	D2500	-7		0.34
237	D2500	-7		0.34	974	D2500	-7		0.34
238	D2500	-6		1.04	988		-----		-----
253	D2500	-7		0.34	994	D2500	-7		0.34
254	D2500	-7		0.34	995	D2500	-7		0.34
256	D2500	-6		1.04	996		-----		-----
258		-----		-----	997	D2500	-7		0.34
273	D2500	-7		0.34	1006		-----		-----
312	D2500	-8		-0.36	1011	D2500	-7		0.34
317	D5771	-8		-0.36	1016	ISO3015	-7.5		-0.01
323	D2500	-8		-0.36	1017		-----		-----
328	D2500	-9		-1.06	1039	ISO3015	-9		-1.06
333	D2500	-8.0		-0.36	1059	ISO3015	-8		-0.36
334	D2500	-9		-1.06	1082	D5771	-8.4		-0.64
335	D2500	-7.9		-0.29	1105	D5773	-8.0		-0.36
337	D2500	-7		0.34	1109	D5773	-7.3		0.13
339		-----		-----	1121	D2500	-6.8		0.48
342	D2500	-7		0.34	1126		-----		-----
344	D5771	-8.3		-0.57	1134		-----		-----
349		-----		-----	1140	D5773	-6.8		0.48
355		-----		-----	1146	D2500	-7		0.34
356	D2500	-7		0.34	1155	ISO3015	-7.5		-0.01
365	IP219	-8	C	-0.36	1171	ISO3015	-8.0		-0.36
381	ISO3015	-7	C	0.34	1182	D5773	-7.3		0.13
433		-----		-----	1186		-----		-----
467	ISO3015	-9		-1.06	1191	D5771	-7.1		0.27
480		-----		-----	1199		-----		-----
494	D2500	-10		-1.76	1205		-----		-----
498		-----		-----	1213	D2500	-8		-0.36
507	D2500	-6		1.04	1227	D2500	-8		-0.36
511		-----		-----	1284	D5771	-8.0		-0.36
551		-----		-----	1299	D2500	-7		0.34
554		-----		-----	1320	D2500	-7.5		-0.01
555		-----		-----	1345	D2500	-7		0.34
558		-----		-----	1356	EN23015	-3	R(0.01)	3.14
562	D2500	-3	R(0.01)	3.14	1357	D5773	-7.2		0.20
575		-----		-----	1362		-----		-----
603	D2500	-6		1.04	1399	D5773	-7.6		-0.08
604	D2500	-8		-0.36	1412	D2500	-8		-0.36
608	D2500	-7		0.34	1417	IP444	-8		-0.36
614	D2500	-8		-0.36	1429	D2500	-8.0		-0.36
621	D2500	-6		1.04	1430		-----		-----
631	D5773	-7.95		-0.32	1498	D2500	-8		-0.36
633		-----		-----	1575		-----		-----
634		-----		-----	1588		-----		-----
657	D2500	-7		0.34	1616	D2500	-8		-0.36
710	EN23015	-6		1.04	1629		-----		-----
750		-----		-----	1634		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643	D2500	-5		1.74	6142	EN23015	-6.9		0.41
1710	ISO3015	-8		-0.36	6172		-----		-----
1720	D5773	-8.2		-0.50	6184	ISO3015	-4	R(0.05)	2.44
1721	D2500	-8.1		-0.43	6192	D2500	-6		1.04
1740	ISO3015	-6		1.04	6266	D2500	-5.0		1.74
1741	ISO3015	-8		-0.36	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807	D2500	-7		0.34	6332		-----		-----
1810	D2500	-8.0		-0.36	6346		-----		-----
1811	D2500	-8.1		-0.43	6373	D2500	-7		0.34
1906		-----		-----	6393		-----		-----
1944	D2500	-8		-0.36	6404	ISO3015	-8		-0.36
1958	D2500	-1	R(0.01)	4.54	6416		-----		-----
1995	D5771	-9		-1.06	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019		-----		-----	6447		-----		-----
6054	D2500	-8.0		-0.36	6479		-----		-----
6058	EN23015	-8		-0.36	6499	D2500	-8		-0.36
6103		-----		-----					

normality	suspect
n	108
outliers	5
mean (n)	-7.49
st.dev. (n)	0.858
R(calc.)	2.40
st.dev.(D2500:17a)	1.429
R(D2500:17a)	4

Lab 212 first reported -2
Lab 365 first reported -22
Lab 381 first reported -3
Lab 922 first reported -4





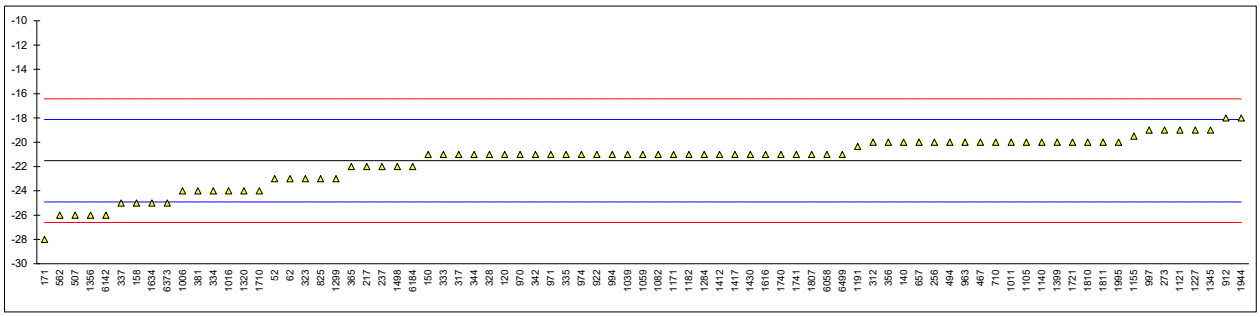
Determination of Cold Filter Plugging Point (CFPP) on sample #22170; results in °C

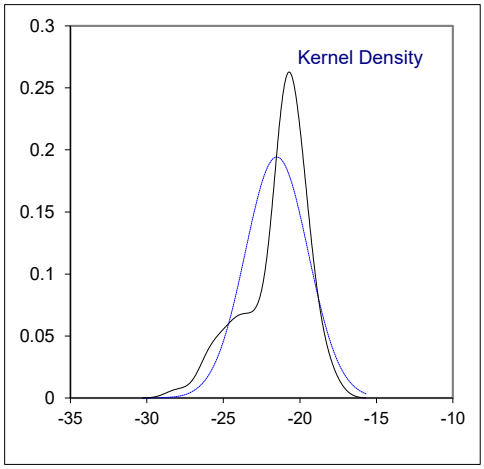
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D6371	-23		-0.88	779		-----		-----
53		-----		-----	785		-----		-----
62	D6371	-23		-0.88	825	D6371	-23		-0.88
90		-----		-----	845		-----		-----
92		-----		-----	846		-----		-----
120	D6371	-21.0		0.31	851		-----		-----
140	D6371	-20		0.90	854		-----		-----
150	D6371	-21		0.31	856		-----		-----
158	D6371	-25		-2.06	862		-----		-----
159		-----		-----	863		-----		-----
169		-----		-----	864		-----		-----
171	D6371	-28		-3.83	872		-----		-----
175		-----		-----	873		-----		-----
203		-----		-----	874		-----		-----
212		-----		-----	886		-----		-----
215		-----		-----	887		-----		-----
217	D6371	-22		-0.29	912	D6371	-18		2.08
221		-----		-----	914		-----		-----
224		-----		-----	922	D6371	-21		0.31
225		-----		-----	962		-----		-----
228		-----		-----	963	D6371	-20.0		0.90
231		-----		-----	970	D6371	-21		0.31
235		-----		-----	971	IP309	-21		0.31
237	D6371	-22		-0.29	974	D6371	-21		0.31
238		-----		-----	988		-----		-----
253		-----		-----	994	D6371	-21		0.31
254		-----		-----	995		-----		-----
256	IP309	-20		0.90	996		-----		-----
258		-----		-----	997	D6371	-19		1.49
273	D2709	-19		1.49	1006	D6371	-24		-1.47
312	D6371	-20		0.90	1011	EN116	-20		0.90
317	D6371	-21		0.31	1016	EN116	-24		-1.47
323	D6371	-23		-0.88	1017		-----		-----
328	EN116	-21		0.31	1039	EN116	-21		0.31
333	D6371	-21.0		0.31	1059	EN116	-21		0.31
334	D6371	-24		-1.47	1082	EN116	-21		0.31
335	EN116	-21		0.31	1105	D6371	-20.0		0.90
337	EN116	-25		-2.06	1109		-----		-----
339		-----		-----	1121	IP309	-19.0		1.49
342	D6371	-21		0.31	1126		-----		-----
344	EN116	-21		0.31	1134		-----		-----
349		-----		-----	1140	D6371	-20		0.90
355		-----		-----	1146		-----		-----
356	D6371	-20		0.90	1155	EN116	-19.5		1.19
365	IP309	-22	C	-0.29	1171	EN116	-21.0		0.31
381	EN116	-24		-1.47	1182	EN116	-21		0.31
433		-----		-----	1186		-----		-----
467	EN116	-20		0.90	1191	EN116	-20.333		0.70
480		-----		-----	1199		-----		-----
494	EN116	-20		0.90	1205		-----		-----
498		-----		-----	1213		-----		-----
507	D6371	-26		-2.65	1227	EN116	-19		1.49
511		-----		-----	1284	D6371	-21		0.31
551		-----		-----	1299	EN116	-23		-0.88
554		-----		-----	1320	EN116	-24		-1.47
555		-----		-----	1345	IP309	-19		1.49
558		-----		-----	1356	EN116	-26		-2.65
562	D6371	-26		-2.65	1357	D6371	NA		-----
575		-----		-----	1362		-----		-----
603		-----		-----	1399	IP309	-20		0.90
604		-----		-----	1412	D6371	-21		0.31
608		-----		-----	1417	IP309	-21		0.31
614		-----		-----	1429		-----		-----
621		-----		-----	1430	EN116	-21		0.31
631		-----		-----	1498	D6371	-22		-0.29
633		-----		-----	1575		-----		-----
634		-----		-----	1588		-----		-----
657	IP309	-20		0.90	1616	D6371	-21		0.31
710	EN116	-20		0.90	1629		-----		-----
750		-----		-----	1634	EN116	-25.0		-2.06

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643		-----		-----	6142	EN116	-26		-2.65
1710	EN116	-24		-1.47	6172		-----		-----
1720		-----		-----	6184	EN116	-22		-0.29
1721	EN116	-20		0.90	6192		-----		-----
1740	EN116	-21		0.31	6266		-----		-----
1741	EN116	-21		0.31	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807	EN116	-21		0.31	6332		-----		-----
1810	EN116	-20		0.90	6346		-----		-----
1811	D6371	-20		0.90	6373	EN116	-25		-2.06
1906		-----		-----	6393		-----		-----
1944	EN116	-18		2.08	6404		-----		-----
1958		-----		-----	6416		-----		-----
1995	D6371	-20		0.90	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019		-----		-----	6447		-----		-----
6054		-----		-----	6479		-----		-----
6058	EN116	-21		0.31	6499	D6371	-21		0.31
6103		-----		-----					

		D6371 only:	Test methods other than D6371:
	normality	suspect	OK
	n	36	43
	outliers	0	0
	mean (n)	-21.69	-21.37
	st.dev. (n)	2.109	2.017
	R(calc.)	5.90	5.65
	st.dev.(D6371:17a)	1.701	-----
	R(D6371:17a)	4.76	-----
Compare:			
	R(EN116:15)	-----	4.28

Lab 365 first reported -8





Determination of Color ASTM on sample #22170;

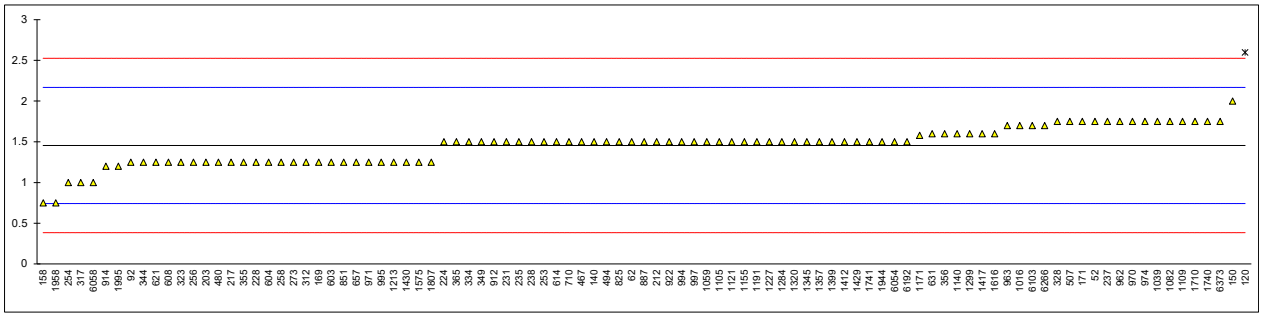
lab	method	reported test value	iis conversion*	mark	z(targ)	remarks
52	D6045	<2	1.75		0.83	
53		-----	-----		-----	
62	D1500	1.5	1.5		0.13	
90		-----	-----		-----	
92	D1500	L1.5	1.25		-0.57	
120	D1500	2.6	2.6	R(0.01)	3.21	
140	D1500	1.5	1.5		0.13	
150	D1500	2.0	2.0		1.53	
158	D1500	<1.0	0.75		-1.97	
159		-----	-----		-----	
169	D1500	L1.5	1.25		-0.57	
171	D1500	L2.0	1.75		0.83	
175		-----	-----		-----	
203	D1500	L1.5	1.25		-0.57	
212	D1500	1.5	1.5		0.13	
215		-----	-----		-----	
217	D1500	<1.5	1.25		-0.57	
221		-----	-----		-----	
224	D1500	1.5	1.5		0.13	
225		-----	-----		-----	
228	D1500	L1.5	1.25		-0.57	
231	D6045	1.5	1.5		0.13	
235	D1500	1.5	1.5		0.13	
237	D1500	L2.0	1.75		0.83	
238	D1500	1.5	1.5		0.13	
253	D1500	1.5	1.5		0.13	
254	D1500	1.0	1.0		-1.27	
256	D1500	L1.5	1.25		-0.57	
258	D1500	<1.5	1.25		-0.57	
273	D1500	L1.5	1.25		-0.57	
312	D1500	L1.5	1.25		-0.57	
317	D1500	1.0	1.0		-1.27	
323	D1500	L 1.5	1.25		-0.57	
328	D1500	L2.0	1.75		0.83	
333		-----	-----		-----	
334	D1500	1.5	1.5		0.13	
335		-----	-----		-----	
337		-----	-----		-----	
339		-----	-----		-----	
342		-----	-----		-----	
344	D1500	<1.5	1.25		-0.57	
349	D6045	1.5	1.5		0.13	
355	D1500	L1.5	1.25		-0.57	
356	D1500	1.6	1.6		0.41	
365	D6045	1.5	1.5		0.13	
381		-----	-----		-----	
433		-----	-----		-----	
467	D1500	1.5	1.5		0.13	
480	D1500	L 1,5	1.25		-0.57	
494	D1500	1.5	1.5		0.13	
498		-----	-----		-----	
507	D1500	<2.0	1.75		0.83	
511		-----	-----		-----	
551		-----	-----		-----	
554		-----	-----		-----	
555		-----	-----		-----	
558		-----	-----		-----	
562		-----	-----		-----	
575		-----	-----		-----	
603	D1500	L1.5	1.25		-0.57	
604	D1500	L1.5	1.25		-0.57	
608	D1500	L1.5	1.25		-0.57	
614	D1500	1.5	1.5		0.13	
621	D1500	L 1.5	1.25		-0.57	
631	D6045	1.6	1.6		0.41	
633		-----	-----		-----	
634		-----	-----		-----	
657	D1500	L1.5	1.25		-0.57	
710	D1500	1.5	1.5		0.13	
750		-----	-----		-----	
779		-----	-----		-----	
785		-----	-----		-----	
825	D1500	1.5	1.5		0.13	
845		-----	-----		-----	
846		-----	-----		-----	

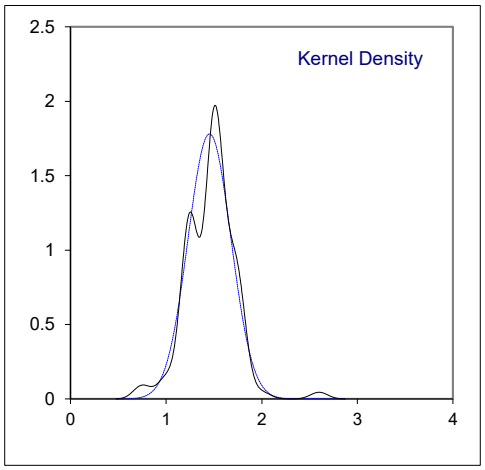
lab	method	reported test value	iis conversion*	mark	z(targ)	remarks
851	D1500	L1.5	1.25		-0.57	
854		-----	-----		-----	
856		-----	-----		-----	
862		-----	-----		-----	
863		-----	-----		-----	
864		-----	-----		-----	
872		-----	-----		-----	
873		-----	-----		-----	
874		-----	-----		-----	
886		-----	-----		-----	
887	D1500	1.5	1.5		0.13	
912	D1500	1.5	1.5		0.13	
914	D6045	1.2	1.2		-0.71	
922	D1500	1.5	1.5		0.13	
962	D1500	L2.0	1.75		0.83	
963	D1500	1.7	1.7		0.69	
970	D1500	<2.0	1.75		0.83	
971	D1500	L 1.5	1.25		-0.57	
974	D1500	L2.0	1.75		0.83	
988		-----	-----		-----	
994	D1500	1.5	1.5		0.13	
995	D1500	L1.5	1.25		-0.57	
996		-----	-----		-----	
997	D1500	1.5	1.5		0.13	
1006		-----	-----		-----	
1011		-----	-----		-----	
1016	D1500	1.7	1.7		0.69	
1017		-----	-----		-----	
1039	D1500	L2.0	1.75		0.83	
1059	D1500	1.5	1.5		0.13	
1082	D6045	L 2.0	1.75		0.83	
1105	D6045	1.5	1.5		0.13	
1109	D6045	L2.0	1.75		0.83	
1121	D1500	1.5	1.5		0.13	
1126		-----	-----		-----	
1134		-----	-----		-----	
1140	D6045	1.6	1.6		0.41	
1146		-----	-----		-----	
1155	D1500	1.5	1.5		0.13	
1171	D1500	1.58	1.58		0.35	
1182		-----	-----		-----	
1186		-----	-----		-----	
1191	D6045	1.5	1.5		0.13	
1199		-----	-----		-----	
1205		-----	-----		-----	
1213	D1500	L1.5	1.25		-0.57	
1227	D1500	1.5	1.5		0.13	
1284	D6045	1.5	1.5		0.13	
1299	D6045	1.6	1.6		0.41	
1320	D1500	1.5	1.5		0.13	
1345	D1500	1.5	1.5		0.13	
1356		-----	-----		-----	
1357	D6045	1.5	1.5		0.13	
1362		-----	-----		-----	
1399	D1500	1.5	1.5		0.13	
1412	D1500	1.5	1.5		0.13	
1417	D6045	1.6	1.6		0.41	
1429	D1500	1.5	1.5		0.13	
1430	D1500	L1.5	1.25		-0.57	
1498		-----	-----		-----	
1575	D1500	L 1.5	1.25		-0.57	
1588		-----	-----		-----	
1616	D6045	1.6	1.6		0.41	
1629		-----	-----		-----	
1634		-----	-----		-----	
1643		-----	-----		-----	
1710	D1500	L2	1.75		0.83	
1720		-----	-----		-----	
1721		-----	-----		-----	
1740	D1500	L2.0	1.75		0.83	
1741	ISO2049	1.5	1.5		0.13	
1746		-----	-----		-----	
1807	D1500	<1,5	1.25		-0.57	
1810		-----	-----		-----	
1811		-----	-----		-----	
1906		-----	-----		-----	
1944	D6045	1.5	1.5		0.13	
1958	D1500	L 1.0	0.75		-1.97	

lab	method	reported test value	iis conversion*	mark	z(targ)	remarks
1995	D1500	1.2	1.2		-0.71	
2146		-----	-----		-----	
6019		-----	-----		-----	
6054	D6045	1.5	1.5		0.13	
6058	ISO2049	1.0	1.0		-1.27	
6103	D6045	1.7	1.7		0.69	
6142		-----	-----		-----	
6172		-----	-----		-----	
6184		-----	-----		-----	
6192	D1500	1.5	1.5		0.13	
6266	D6045	1.7	1.7		0.69	
6317		-----	-----		-----	
6319		-----	-----		-----	
6332		-----	-----		-----	
6346		-----	-----		-----	
6373	D1500	L2.0	1.75		0.83	
6393		-----	-----		-----	
6404		-----	-----		-----	
6416		-----	-----		-----	
6421		-----	-----		-----	
6444		-----	-----		-----	
6447		-----	-----		-----	
6479		-----	-----		-----	
6499		-----	-----		-----	

normality	OK
n	96
outliers	1
mean (n)	1.45
st.dev. (n)	0.224
R(calc.)	0.63
st.dev.(D1500:12R17)	0.357
R(D1500:12R17)	1

*In the calculation of the mean, standard deviation and the reproducibility a reported value of ‘Ly’ or ‘<y’ is changed into y-0.25 (for example, L1.5 is changed into 1.25)





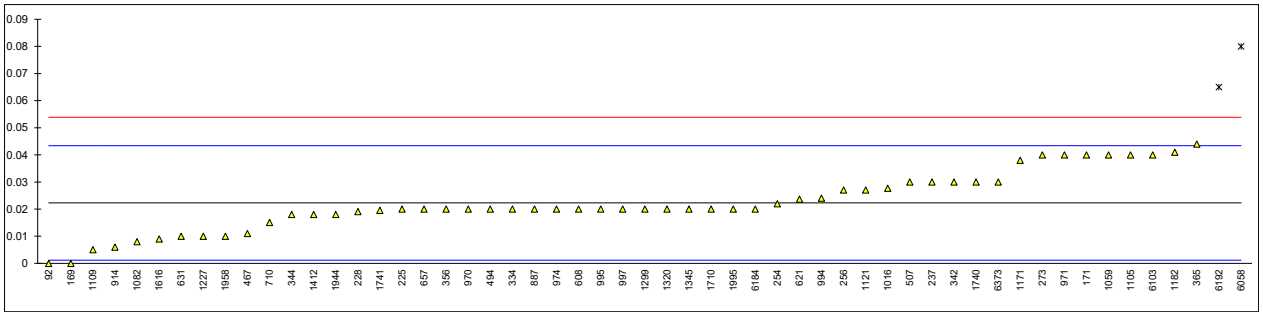
Determination of Conradson Carbon Residue on 10% residue on sample #22170; results in %M/M

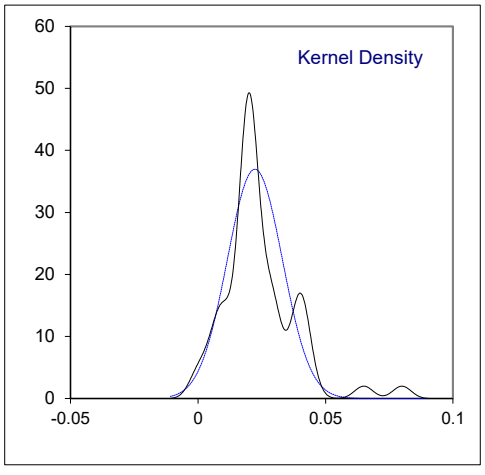
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4530	<0.1		-----	779		-----		-----
53		-----		-----	785		-----		-----
62	D4530	<0.1	C	-----	825		-----		-----
90		-----		-----	845		-----		-----
92	D4530	0		-2.11	846		-----		-----
120		-----		-----	851		-----		-----
140		-----		-----	854		-----		-----
150		-----		-----	856		-----		-----
158	D4530	<0.1		-----	862		-----		-----
159		-----		-----	863		-----		-----
169	D4530	0		-2.11	864		-----		-----
171	D189	0.04		1.68	872		-----		-----
175		-----		-----	873		-----		-----
203		-----		-----	874		-----		-----
212		-----		-----	886		-----		-----
215		-----		-----	887	D4530	0.02		-0.22
217		-----		-----	912		-----		-----
221		-----		-----	914	D4530	0.006		-1.54
224	D189	<0.1		-----	922	D189	<0.1		-----
225	D4530	0.02		-0.22	962		-----		-----
228	D189	0.0191		-0.30	963	D189	<0.10	C	-----
231		-----		-----	970	D189	0.02		-0.22
235		-----		-----	971	D4530	0.04		1.68
237	D189	0.03		0.73	974	D189	0.02		-0.22
238		-----		-----	988		-----		-----
253		-----		-----	994	D189	0.024		0.16
254	D189	0.022		-0.03	995	D189	0.02		-0.22
256	D189	0.027		0.45	996		-----		-----
258		-----		-----	997	D189	0.02		-0.22
273	D4530	0.04		1.68	1006		-----		-----
312		-----		-----	1011	ISO10370	<0.10		-----
317	D4530	<0.10		-----	1016	ISO10370	0.0277		0.51
323	D189	< 0.10		-----	1017		-----		-----
328		-----		-----	1039	ISO10370	<0.1		-----
333		-----		-----	1059	ISO10370	0.04		1.68
334	D189	0.02		-0.22	1082	ISO10370	0.00795		-1.36
335		-----		-----	1105	D4530	0.04		1.68
337		-----		-----	1109	D4530	0.005		-1.64
339		-----		-----	1121	D4530	0.027		0.45
342	ISO10370	0.03		0.73	1126		-----		-----
344	D4530	0.018		-0.41	1134		-----		-----
349		-----		-----	1140	D4530	<0.01		-----
355		-----		-----	1146		-----		-----
356	D4530	0.02		-0.22	1155		-----		-----
365	IP13	0.044		2.06	1171	ISO6615	0.038		1.49
381		-----		-----	1182	ISO10370	0.041		1.78
433		-----		-----	1186		-----		-----
467	ISO10370	0.011		-1.07	1191		-----		-----
480		-----		-----	1199		-----		-----
494	ISO10370	0.02		-0.22	1205		-----		-----
498		-----		-----	1213	D4530	<0.1		-----
507	D4530	0.03	C	0.73	1227	D4530	0.01		-1.17
511		-----		-----	1284		-----		-----
551		-----		-----	1299	D4530	0.02		-0.22
554		-----		-----	1320	D4530	0.02		-0.22
555		-----		-----	1345	D189	0.02		-0.22
558		-----		-----	1356		-----		-----
562		-----		-----	1357	D4530	<0.1		-----
575		-----		-----	1362		-----		-----
603		-----		-----	1399		-----		-----
604		-----		-----	1412	D189	0.018		-0.41
608	D4530	0.02		-0.22	1417		-----		-----
614		-----		-----	1429		-----		-----
621	D189	0.0237		0.13	1430	D4530	<0.1		-----
631	D4530	0.01		-1.17	1498		-----		-----
633		-----		-----	1575	D4530	<0.10		-----
634		-----		-----	1588		-----		-----
657	D4530	0.02		-0.22	1616	D4530	0.009		-1.26
710	ISO10370	0.0151		-0.68	1629		-----		-----
750		-----		-----	1634		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643		-----		-----	6142		-----		-----
1710	ISO10370	0.02		-0.22	6172		-----		-----
1720		-----		-----	6184	ISO10370	0.02		-0.22
1721		-----		-----	6192	ISO10370	0.065	R(0.05)	4.05
1740	ISO10370	0.03		0.73	6266		-----		-----
1741	ISO10370	0.0196		-0.25	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807		-----		-----	6332		-----		-----
1810		-----		-----	6346		-----		-----
1811		-----		-----	6373	D189	0.03		0.73
1906		-----		-----	6393		-----		-----
1944	ISO10370	0.018		-0.41	6404		-----		-----
1958	D189	0.01		-1.17	6416		-----		-----
1995	D189	0.02		-0.22	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019		-----		-----	6447		-----		-----
6054		-----		-----	6479		-----		-----
6058	ISO10370	0.08	R(0.01)	5.47	6499		-----		-----
6103	ISO10370	0.04		1.68					

normality	OK
n	53
outliers	2
mean (n)	0.0223
st.dev. (n)	0.01080
R(calc.)	0.0302
st.dev.(D189:06R19)	0.01054
R(D189:06R19)	0.0295

Lab 62 first reported 0.1
Lab 507 first reported 0.06
Lab 963 first reported 0.06





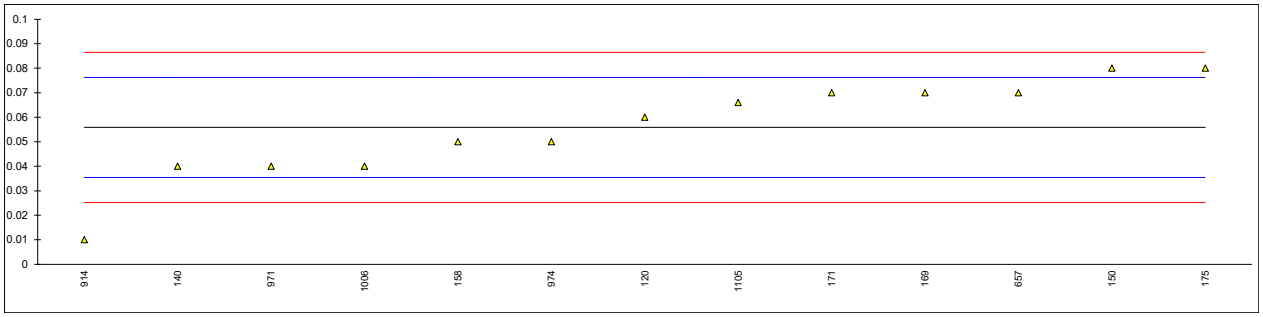
Determination of Ramsbottom Carbon Residue on 10% distillation residue on sample #22170; results in %M/M

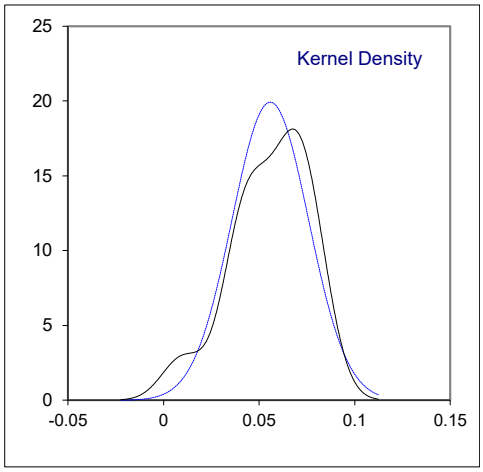
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	779		-----		-----
53		-----		-----	785		-----		-----
62		-----		-----	825		-----		-----
90		-----		-----	845		-----		-----
92		-----		-----	846		-----		-----
120	D524	0.060		0.41	851		-----		-----
140	D524	0.04		-1.55	854		-----		-----
150	D524	0.08		2.36	856		-----		-----
158	D524	0.05		-0.57	862		-----		-----
159		-----		-----	863		-----		-----
169	D524	0.07		1.39	864		-----		-----
171	D524	0.07		1.39	872		-----		-----
175	D524	0.08		2.36	873		-----		-----
203		-----		-----	874		-----		-----
212		-----		-----	886		-----		-----
215		-----		-----	887		-----		-----
217		-----		-----	912		-----		-----
221		-----		-----	914	D524	0.01		-4.49
224		-----		-----	922		-----		-----
225		-----		-----	962		-----		-----
228		-----		-----	963	D524	<0.10	C	-----
231		-----		-----	970		-----		-----
235		-----		-----	971	D524	0.04		-1.55
237		-----		-----	974	D524	0.05		-0.57
238		-----		-----	988		-----		-----
253		-----		-----	994		-----		-----
254		-----		-----	995		-----		-----
256		-----		-----	996		-----		-----
258		-----		-----	997		-----		-----
273		-----		-----	1006	D524	0.04		-1.55
312		-----		-----	1011		-----		-----
317		-----		-----	1016		-----		-----
323		-----		-----	1017		-----		-----
328		-----		-----	1039		-----		-----
333		-----		-----	1059		-----		-----
334		-----		-----	1082		-----		-----
335		-----		-----	1105	D524	0.066		0.99
337		-----		-----	1109		-----		-----
339		-----		-----	1121		-----		-----
342		-----		-----	1126		-----		-----
344		-----		-----	1134		-----		-----
349		-----		-----	1140		-----		-----
355		-----		-----	1146		-----		-----
356		-----		-----	1155		-----		-----
365		-----		-----	1171		-----		-----
381		-----		-----	1182		-----		-----
433		-----		-----	1186		-----		-----
467		-----		-----	1191		-----		-----
480		-----		-----	1199		-----		-----
494		-----		-----	1205		-----		-----
498		-----		-----	1213		-----		-----
507		-----		-----	1227		-----		-----
511		-----		-----	1284		-----		-----
551		-----		-----	1299		-----		-----
554		-----		-----	1320		-----		-----
555		-----		-----	1345		-----		-----
558		-----		-----	1356		-----		-----
562		-----		-----	1357	D524	NA		-----
575		-----		-----	1362		-----		-----
603		-----		-----	1399		-----		-----
604		-----		-----	1412		-----		-----
608		-----		-----	1417		-----		-----
614		-----		-----	1429		-----		-----
621		-----		-----	1430		-----		-----
631		-----		-----	1498		-----		-----
633		-----		-----	1575		-----		-----
634		-----		-----	1588		-----		-----
657	D524	0.07		1.39	1616		-----		-----
710		-----		-----	1629		-----		-----
750		-----		-----	1634		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643		-----		-----	6142		-----		-----
1710		-----		-----	6172		-----		-----
1720		-----		-----	6184		-----		-----
1721		-----		-----	6192		-----		-----
1740		-----		-----	6266		-----		-----
1741		-----		-----	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807		-----		-----	6332		-----		-----
1810		-----		-----	6346		-----		-----
1811		-----		-----	6373		-----		-----
1906		-----		-----	6393		-----		-----
1944		-----		-----	6404		-----		-----
1958		-----		-----	6416		-----		-----
1995		-----		-----	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019		-----		-----	6447		-----		-----
6054		-----		-----	6479		-----		-----
6058		-----		-----	6499		-----		-----
6103		-----		-----					

normality	OK
n	13
outliers	0
mean (n)	0.0558
st.dev. (n)	0.02002
R(calc.)	0.0561
st.dev.(D524:15R19)	0.01022
R(D524:15R19)	0.0286

Lab 963 first reported 0.12





Determination of Copper Corrosion 3 hrs at 50 °C on sample #22170;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D130	1a		-----	779		-----		-----
53		-----		-----	785		-----		-----
62	D130	1A		-----	825	D130	1a		-----
90	D130	1a		-----	845		-----		-----
92	D130	1a		-----	846		-----		-----
120		-----		-----	851	D130	1b		-----
140	D130	1A		-----	854		-----		-----
150	D130	1A		-----	856		-----		-----
158	D130	1a		-----	862		-----		-----
159		-----		-----	863		-----		-----
169	D130	1A		-----	864		-----		-----
171	D130	1a		-----	872		-----		-----
175		-----		-----	873		-----		-----
203	D130	1a		-----	874		-----		-----
212	D130	1a		-----	886		-----		-----
215		-----		-----	887	D130	1a		-----
217	D130	1A		-----	912		-----		-----
221	D130	1A		-----	914	D130	1a		-----
224	D130	1A		-----	922	D130	1A		-----
225	D130	1a		-----	962	D130	1a		-----
228	D130	1A		-----	963	D130	1a		-----
231		-----		-----	970	D130	1a		-----
235	D130	1a		-----	971	D130	1a		-----
237	D130	1A		-----	974	D130	1a		-----
238	D130	1a		-----	988		-----		-----
253	D130	1A		-----	994	D130	1a		-----
254	D130	1A		-----	995	D130	1a		-----
256	D130	1A		-----	996		-----		-----
258	D130	1A		-----	997		-----		-----
273	D130	1a		-----	1006	D130	1a		-----
312	D130	1A		-----	1011	ISO2160	1a		-----
317	D130	1A		-----	1016	ISO2160	1A		-----
323	D130	1A		-----	1017		-----		-----
328	D130	1a		-----	1039	ISO2160	1A		-----
333		-----		-----	1059	ISO2160	1a		-----
334	D130	1a		-----	1082	ISO2160	1a		-----
335	D130	1a		-----	1105	D130	1a		-----
337		-----		-----	1109	D130	1a		-----
339		-----		-----	1121	D130	1a		-----
342	D130	1a		-----	1126		-----		-----
344	D130	1a		-----	1134		-----		-----
349		-----		-----	1140	D130	1A		-----
355		-----		-----	1146		-----		-----
356	D130	1A		-----	1155	ISO2160	1a		-----
365	IP154	1a		-----	1171	ISO2160	1A		-----
381		-----		-----	1182		-----		-----
433		-----		-----	1186		-----		-----
467	ISO2160	1a		-----	1191	ISO2160	1a		-----
480	ISO2160	1A		-----	1199		-----		-----
494	ISO2160	1a		-----	1205		-----		-----
498		-----		-----	1213	D130	1a		-----
507	D130	1a		-----	1227	D130	1A		-----
511	D130	1A		-----	1284		-----		-----
551		-----		-----	1299	D130	1A		-----
554		-----		-----	1320		-----		-----
555		-----		-----	1345	D130	1a		-----
558		-----		-----	1356		-----		-----
562	D130	1A		-----	1357	D130	1a		-----
575		-----		-----	1362		-----		-----
603	D130	1A		-----	1399		-----		-----
604		-----		-----	1412	D130	1a		-----
608	D130	1a		-----	1417	D130	1B		-----
614	D130	1a		-----	1429	D130	1A		-----
621	D130	1A		-----	1430	D130	1A		-----
631	D130	1a		-----	1498		-----		-----
633		-----		-----	1575	D130	1a		-----
634		-----		-----	1588		-----		-----
657	D130	1a		-----	1616	D130	1a		-----
710		-----		-----	1629		-----		-----
750		-----		-----	1634	ISO2160	1a		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643		-----		-----	6142		-----		-----
1710	ISO2160	1A		-----	6172		-----		-----
1720		-----		-----	6184	ISO2160	1a		-----
1721	D130	1a		-----	6192	ISO2160	1a		-----
1740	ISO2160	1A		-----	6266	D130	1a		-----
1741	ISO2160	Class 1		-----	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807	D130	1a		-----	6332		-----		-----
1810		-----		-----	6346		-----		-----
1811		-----		-----	6373	ISO2160	1A		-----
1906		-----		-----	6393		-----		-----
1944	D130	1a		-----	6404		-----		-----
1958		-----		-----	6416		-----		-----
1995	D130	1 a		-----	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019	D130	1		-----	6447		-----		-----
6054		-----		-----	6479		-----		-----
6058	ISO2160	1a		-----	6499		-----		-----
6103	D130	1a		-----					
	n	97							
	mean (n)	1 (1A/1B)							

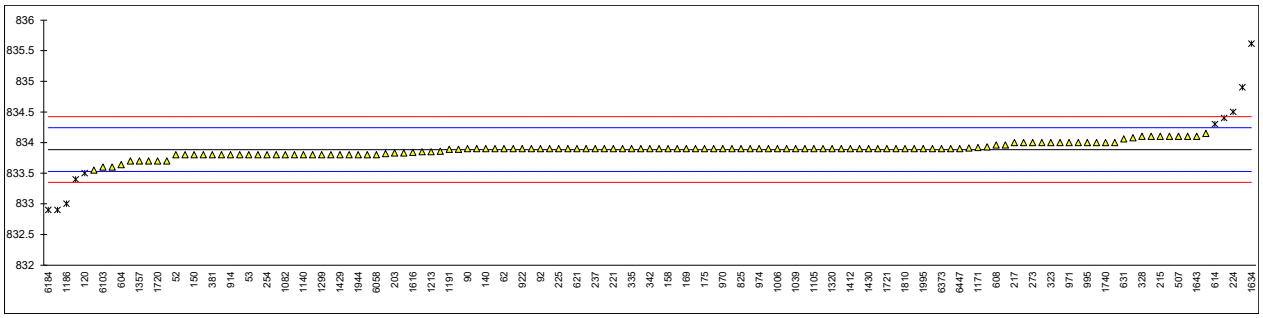
Determination of Density at 15 °C on sample #22170; results in kg/m^3

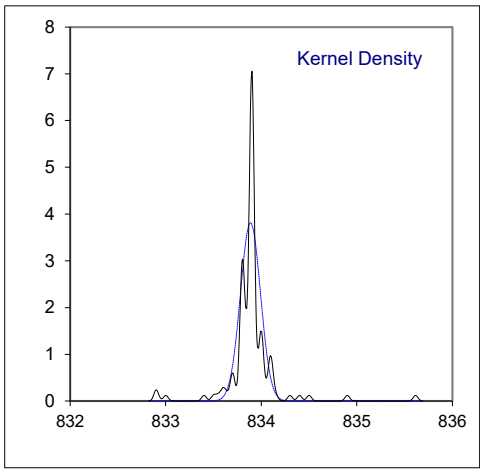
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4052	833.8		-0.48	779		-----		-----
53	D4052	833.8		-0.48	785		-----		-----
62	D4052	833.9		0.08	825	D4052	833.9		0.08
90	D4052	833.9		0.08	845		-----		-----
92	D4052	833.9		0.08	846		-----		-----
120	D4052	833.5	R(0.05)	-2.16	851	D4052	834.0		0.64
140	D4052	833.9		0.08	854		-----		-----
150	D4052	833.8		-0.48	856		-----		-----
158	D4052	833.9		0.08	862		-----		-----
159		-----		-----	863		-----		-----
169	D4052	833.9	C	0.08	864		-----		-----
171	D4052	833.8		-0.48	872		-----		-----
175	D4052	833.9		0.08	873		-----		-----
203	D4052	833.83		-0.32	874		-----		-----
212	ISO12185	834.15		1.48	886	D4052	833.8	C	-0.48
215	D1298	834.1		1.20	887	D4052	833.9		0.08
217	D4052	834.0		0.64	912	D4052	833.9		0.08
221	D4052	833.9		0.08	914	D4052	833.8		-0.48
224	D1298	834.5	R(0.01)	3.44	922	D4052	833.9		0.08
225	D4052	833.9		0.08	962	D4052	833.9		0.08
228	D4052	834.0		0.64	963	D4052	833.9		0.08
231	D4052	834.1		1.20	970	D4052	833.9	C	0.08
235	D4052	833.9		0.08	971	D4052	834.0		0.64
237	D4052	833.9		0.08	974	D4052	833.9		0.08
238		-----		-----	988		-----		-----
253	D4052	833.9		0.08	994	D4052	834.0		0.64
254	D4052	833.8		-0.48	995	D4052	834.0		0.64
256	D4052	833.9		0.08	996		-----		-----
258	D4052	833.9		0.08	997	D4052	833.9		0.08
273	D4052	834.0		0.64	1006	D4052	833.9		0.08
312	D4052	833.8		-0.48	1011	ISO12185	833.8		-0.48
317	D4052	833.9		0.08	1016		-----		-----
323	D4052	834.0		0.64	1017	D4052	833.9		0.08
328	D4052	834.1		1.20	1039	ISO12185	833.9		0.08
333	D4052	833.7		-1.04	1059	ISO12185	833.9		0.08
334	D4052	833.9		0.08	1082	ISO12185	833.8		-0.48
335	D4052	833.9		0.08	1105	D4052	833.9		0.08
337	D4052	833.9		0.08	1109	D4052	833.8	C	-0.48
339		-----		-----	1121	D4052	834.0		0.64
342	D4052	833.9		0.08	1126	D4052	833.83		-0.32
344	D4052	834.1		1.20	1134		-----		-----
349	D4052	833.8		-0.48	1140	IP365	833.8		-0.48
355	D4052	834.0		0.64	1146	D4052	833.96		0.41
356	D4052	833.9		0.08	1155	ISO3675	833.55	C	-1.88
365	IP365	833.8		-0.48	1171	D4052	833.92	C	0.19
381	ISO12185	833.8		-0.48	1182	ISO12185	833.8		-0.48
433	ISO12185	833.9		0.08	1186		833.0	R(0.01)	-4.96
467	D4052	833.85		-0.20	1191	ISO12185	833.89		0.02
480	D4052	833.9		0.08	1199		-----		-----
494	ISO12185	833.9		0.08	1205	ISO12185	833.91		0.13
498		-----		-----	1213	D4052	833.85		-0.20
507	D4052	834.1		1.20	1227	D4052	833.9		0.08
511		-----		-----	1284	D4052	833.89		0.02
551		-----		-----	1299	D4052	833.8		-0.48
554		-----		-----	1320	D4052	833.9		0.08
555		-----		-----	1345	D4052	833.8		-0.48
558		-----		-----	1356	ISO12185	833.9		0.08
562	D1298	834.4	R(0.01)	2.88	1357	D4052	833.7		-1.04
575		-----		-----	1362		-----		-----
603	D4052	833.9		0.08	1399	D4052	833.7		-1.04
604	D4052	833.64		-1.38	1412	D4052	833.9		0.08
608	D4052	833.96		0.41	1417	IP365	833.9		0.08
614	D4052	834.3	R(0.05)	2.32	1429	D4052	833.8		-0.48
621	D4052	833.9		0.08	1430	D4052	833.9		0.08
631	D4052	834.06		0.97	1498	D4052	833.8		-0.48
633		-----		-----	1575		-----		-----
634		-----		-----	1588	ISO12185	833.86		-0.15
657	D4052	834.1		1.20	1616	D4052	833.84		-0.26
710	ISO12185	833.93		0.24	1629		-----		-----
750		-----		-----	1634	ISO12185	835.6145	R(0.01)	9.68

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643	D4052	834.1		1.20	6142	ISO12185	833.4	R(0.01)	-2.72
1710	ISO12185	833.9		0.08	6172	D4052	833.9	C	0.08
1720	D4052	833.7		-1.04	6184	ISO3675	832.9	R(0.01)	-5.52
1721	D4052	833.9	C	0.08	6192	D1298	833.6		-1.60
1740	ISO12185	834.0		0.64	6266	D4052	834.08		1.08
1741	ISO12185	834.0		0.64	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807	ISO12185	833.9		0.08	6332		-----		-----
1810	D4052	833.9		0.08	6346		-----		-----
1811	D4052	833.9		0.08	6373	D4052	833.9		0.08
1906		-----		-----	6393		-----		-----
1944	D1298	833.8		-0.48	6404	ISO12185	833.9		0.08
1958	D4052	834.9	C,R(0.01)	5.68	6416	D1298	832.9	C,R(0.01)	-5.52
1995	D4052	833.9		0.08	6421		-----		-----
2146	ISO12185	833.7		-1.04	6444		-----		-----
6019	ISO12185	833.8		-0.48	6447	D4052	833.9		0.08
6054	D4052	833.82		-0.37	6479		-----		-----
6058	ISO12185	833.8		-0.48	6499		-----		-----
6103	ISO12185	833.6		-1.60					

normality	suspect
n	123
outliers	10
mean (n)	833.887
st.dev. (n)	0.1046
R(calc.)	0.293
st.dev.(D4052:22)	0.1786
R(D4052:22)	0.5

Lab 169 first reported 834.4
Lab 886 first reported 0.8269 kg/L
Lab 970 first reported 0.8339 kg/m^3
Lab 1109 first reported 0.8338 kg/m^3
Lab 1155 first reported 833.0
Lab 1171 first reported 833.03
Lab 1721 first reported 0.8339 kg/m^3
Lab 1958 first reported 0.8356 kg/L
Lab 6172 first reported 834.9
Lab 6416 first reported 0.8334 kg/L





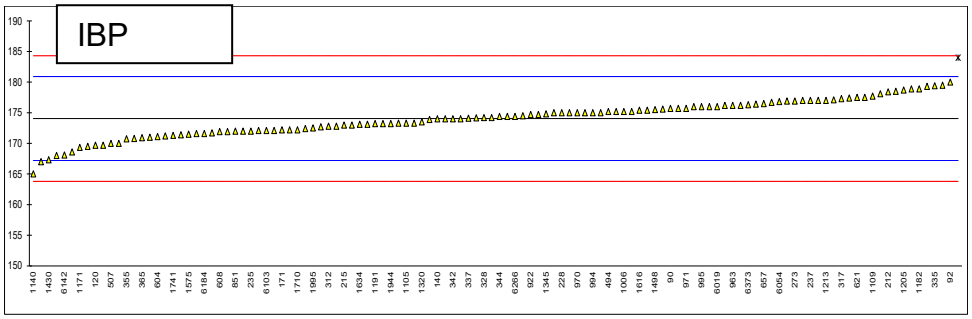
Determination of Distillation at 760 mmHg on sample #22170; results in °C

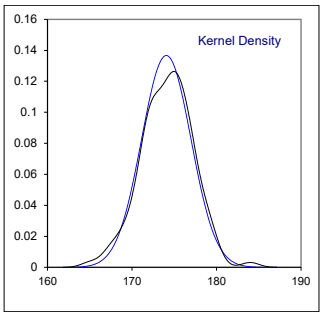
lab	method	IBP	10% rec	50% rec	90% rec	95% rec	FBP
52	D86-automated	168.6	207.3	271.9	331.2	344.4	353.2
53		-----	-----	-----	-----	-----	-----
62	D86-automated	171.2	211.5	274.0	332.2	345.0	354.5
90	D86-manual	175.7	206.7	272.7	331.6	344.6	352.6
92	D86-automated	180.0	209.8	274.0	331.8	344.9	351.6
120	D86-automated	169.7	209.0	273.1	333.6	347.9	352.6
140	D86-automated	174.0	209.9	273.4	332.1	344.1	353.3
150	D86-automated	171.7	208.3	272.6	332.2	345.1	353.4
158	D86-automated	169.7	209.1	272.2	331.6	344.1	352.5
159		-----	-----	-----	-----	-----	-----
169	D86-automated	177.1	211.0	274.4	333.3	347.6	356.3
171	D86-automated	172.2	208.7	272.2	331.4	343.6	353.6
175	D86-automated	175.7	208.3	274.1	334.6	349.6	354.0
203		-----	-----	-----	-----	-----	-----
212	ISO3405-automated	178.4	211.7	272.2	332.3	345.4	353.9
215	D86-manual	173.0	208.0	272.0	331.0	343.0	352.0
217	D86-automated	175.0	210.2	273.5	331.6	344.0	352.6
221	D86-manual	173.9 C	214.0	275.0	336.0	349.0	358.0
224	D86-manual	174.40	206.43	272.50	335.4 C	346.06	358.07 C
225	D86-manual	173.0	210.0	274.5	336.0	348.0	355.0
228	D86-manual	175.0	209.0	272.0	329.0	339.0	352.0
231	D86-manual	174.0	209.0	272.0	332.0	344.0	353.0
235	D86	172.0	210.3	273.5	333.1	346.6	350.9
237	D86-manual	177.0	209.0	272.0	330.0	341.0	354.0
238	D86-manual	176.0	211.0	274.0	333.0	345.0	355.0
253	D86	171.0	209.0	274.0	332.0	345.0	355.0
254	D86-manual	175.0	206.0	272.0	332.0	344.0	357.0
256	D86-manual	174.0	208.0	273.0	333.0	346.0	353.0
258	D86-automated	173.3	209.1	272.8	331.9	343.7	351.4
273	D86-automated	176.9	211.8	274.5	331.7	343.3	357.4
312	D86-automated	172.8	209.2	273.6	331.9	344.3	353.6
317	D86-automated	177.3	210.5	274.4	333.6	346.7	355.0
323	D86-automated	177.4	211.0	273.6	332.0	343.9	354.7
328	D86-automated	174.2	209.9 C	272.0	331.3	343.8	351.8
333		-----	-----	-----	-----	-----	-----
334	D86-automated	169.5	208.3	272.3	330.8	343.5	351.5
335		179.4	211.1	273.6	334.1	348.2	355.8
337		174.1	208.7	273.9	332.7	344.3	350.8
339		-----	-----	-----	-----	-----	-----
342	D86	174.0	211.0	272.1	331.8	345.1	352.4
344	D86-automated	174.4	210.4	274.7	333.7	347.2	354.5
349	D86-automated	168.0	210.4	272.6	331.4	343.7	351.5
355	D86-manual	170.75	209.25	276	338 R(5)	350.5	362.75 R(5)
356	D86-automated	171.6	213.8	275.6	334.0	346.4	357.9
365	D86-automated	170.9	207.8	272.3	331.8	344.7	351.4
381	ISO3405-automated	172.7	209.1	272.5	332.1	343.4	351.7
433		-----	-----	-----	-----	-----	-----
467	D86-automated	175.2	211.0	272.5	330.1	342.6	353.9
480	D86-automated	174.15	212.3	274.7	332.05	343.5	349.9
494	D86-automated	175.2	212.0	274.3	332.8	345.0	355.9
498		-----	-----	-----	-----	-----	-----
507	D86-manual	170	206	270 C	329	340	349
511		-----	-----	-----	-----	-----	-----
551		-----	-----	-----	-----	-----	-----
554		-----	-----	-----	-----	-----	-----
555		-----	-----	-----	-----	-----	-----
558		-----	-----	-----	-----	-----	-----
562	D86-automated	176.9	212.3	273	332.5	-----	-----
575		-----	-----	-----	-----	-----	-----
603	D86-automated	176.7	211.7	274.4	332.2	344.9	353.5
604	D86-automated	171.1	213.3	273.9	333.7	347.2	353.7
608	D86-automated	171.9	211.2	274.0	332.8	345.8	352.9
614		-----	-----	-----	-----	-----	-----
621	D86-manual	177.5	208.0	272.8	332.2	345.7	355.6
631	D86-manual	177.0	211.0	273.0	334.0	346.0	358.0
633		-----	-----	-----	-----	-----	-----
634		-----	-----	-----	-----	-----	-----
657	D86-automated	176.5	210.8	274.1	331.8	344.7	353.6
710	D86-manual	177.0	211.0	273.0	335.0	347.0	358.0
750		-----	-----	-----	-----	-----	-----
779		-----	-----	-----	-----	-----	-----
785		-----	-----	-----	-----	-----	-----
825	D86-automated	172.2	210.8	274.0	332.8	345.3	353.9
845		-----	-----	-----	-----	-----	-----
846		-----	-----	-----	-----	-----	-----

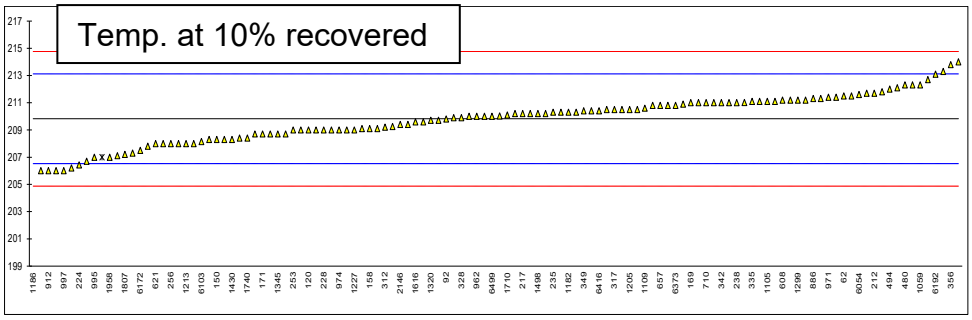
lab	method	IBP		10% rec		50% rec		90% rec		95% rec		FBP	
851	D86-automated	172.0	C	208.7	C	272.7	C	332.2	C	344.8	C	354.0	
854		-----		-----		-----		-----		-----		-----	
856		-----		-----		-----		-----		-----		-----	
862		-----		-----		-----		-----		-----		-----	
863		-----		-----		-----		-----		-----		-----	
864		-----		-----		-----		-----		-----		-----	
872		-----		-----		-----		-----		-----		-----	
873		-----		-----		-----		-----		-----		-----	
874		-----		-----		-----		-----		-----		-----	
886		-----		211.3		273.8		332.1		-----		-----	
887	D86-automated	172.1		210.5		272.7		330.9		342.4		355.3	
912	D86	172		206		274		334		346		356	
914	D86	170.8		210.2		273.3		332.0		344.8		353.8	
922	D86-automated	174.7		210.5		274.0		332.6		345.6		354.0	
962	D86-automated	176.2		210.0		273.9		332.5		344.9		354.8	
963	D86-automated	176.2		210.03		273.89		332.50		344.89		354.78	
970	D86-manual	175		209		273		333		345		356	
971	D86-automated	175.7		211.4		273.4		333.1		347.3		355.4	
974	D86-automated	175.0		209.0		273.9		333.0		345.0		356.0	
988		-----		-----		-----		-----		-----		-----	
994	D86-manual	175.0		208.0		274.0		334.0		348.0		358.0	
995	D86-manual	176.0		207.0		273.5		334.5		348.5		358.5	
996		-----		-----		-----		-----		-----		-----	
997	D86-manual	175.0		206.0		274.0		333.0		348.0		355.0	
1006	D86-automated	175.2		210.2		273.9		332.4		344.3		352.4	
1011	ISO3405-automated	174.7		211.5		274.0		332.4		345.7		355.2	
1016		-----		-----		-----		-----		-----		-----	
1017		-----		-----		-----		-----		-----		-----	
1039	ISO3405-automated	175.2		211.1		273.3		330.8		342.2		352.8	
1059	ISO3405-automated	178.9		212.3		274.2		332.8		345.2		356.2	
1082	ISO3405-automated	179.3		210.3		274.3		332.9		345.6		355.6	
1105	D86-automated	173.3		211.1		273.9		332.6		344.9		353.6	
1109	D86-automated	177.7		210.6		273.4		331.1		342.5		354.2	
1121	D86-manual	167.0		209.0		271.4		331.7		344.0		351.6	
1126	D86-automated	176.2		211.1		273.2		331.4		-----		356.8	
1134		-----		-----		-----		-----		-----		-----	
1140	D86-automated	165.0		206.2		270.4		330.7		343.4		351.8	
1146	D86-automated	178.1		208.4		272.6		331.4		342.9		355.5	
1155		178.5		212.7		275.0		333.2		346.2		354.2	
1171	ISO3405-automated	169.33		211.01		274.02		332.37		343.98		354.84	
1182		178.9		210.3		272.9		330.8		341.7		356.2	
1186		184	ex	196	R(1)	269	R(1)	335	ex	358	R(1)	362	R(5)
1191	ISO3405-automated	173.2		210.8		273.0		331.1		342.3		351.6	
1199		-----		-----		-----		-----		-----		-----	
1205	D86-automated	178.7		210.5		273.4		331.4		343.2		354.4	
1213	D86	177.0		208.0		272.5		332.5		-----		353.0	
1227	D86-automated	176		209		272.6		332.1		344.7		353.9	
1284	D86-automated	172.8		211.2		273.1		331.9		344.1		353.5	
1299	D86-automated	175.6		211.2		273.9		333.1		345.9		356.6	
1320	D86-automated	173.5		209.7		272.1		330.8		342.5		351.5	
1345	D86-automated	174.8		208.7		272.9		333.5		343.6		357.9	
1356		-----		207	ex	277	R(5)	343	R(1)	-----		-----	
1357	D86-automated	NA		NA		NA		331.2		NA		NA	
1362		-----		-----		-----		-----		-----		-----	
1399		-----		-----		-----		-----		-----		-----	
1412	D86-manual	174.5		208.0		273.5		332.0		343.0		357.0	
1417		172.4		212.1		275.2		334.5		351.7		354.8	
1429		-----		-----		-----		-----		-----		-----	
1430	D86-automated	167.3		208.3		273.3		335.1		352.3		352.6	
1498	D86-automated	175.5		210.2		273.4		332.9		345.7		355.2	
1575	D7345	171.5		207.1		272.7		332.3		345.4		353.2	
1588		-----		-----		-----		-----		-----		-----	
1616	D86-automated	175.4		209.6		272.2		329.6		341.4		352.7	
1629		-----		-----		-----		-----		-----		-----	
1634	ISO3405-automated	173.1		210.0		273.2		331.6		343.4		355.0	
1643		-----		-----		-----		-----		-----		-----	
1710	ISO3405-automated	172.2		210.1		273.3		332.1		344.3		353.6	
1720	D86-automated	173.2		210.5		273.7		333.2		347.0		354.6	
1721		-----		-----		-----		-----		-----		-----	
1740	ISO3405-automated	177.5		208.4		272.2		327.2	R(5)	340.0		350.1	
1741		171.3		210.2		272.7		331.9		343.5		354.1	
1746		-----		-----		-----		-----		-----		-----	
1807	D86-automated	171.9		207.2		270.8		328.5		338.7		351.9	
1810		173.1		209.6		272.8		330.8		341.6		351.8	
1811	D86-automated	173.3		208.7		272.5		331.2		342.2		351.5	
1906		-----		-----		-----		-----		-----		-----	
1944	D86-manual	173.2		210.3		273.5		332.7		344.7		354.2	
1958		170		207	C	273		334		340		350	

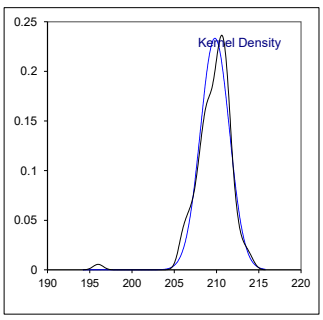
lab	method	IBP	10% rec	50% rec	90% rec	95% rec	FBP
1995	D86-automated	172.5	211.2	272.6	331.9	344.5	355.1
2146	ISO3405-automated	174.2	209.4	273.0	331.8	344.5	354.3
6019	ISO3405-automated	176.0	211.3	273.6	331.2	343.1	354.0
6054	D86-automated	176.8	211.6	274.9	332.9	345.6	355.9
6058	ISO3405-automated	176.4	211.4	273.6	331.1	342.6	348.3
6103	ISO3405-automated	172.1	208.15	271.45	330.9	344.1	350.85
6142	ISO3405-automated	168.1	209.7	272.8	331.5	343.6	353
6172	D86-automated	172.1	207.5	272.2	332.6	346.9	352.4
6184	ISO3504-A	171.6	209.4	273.4	332.2	343.1	352.5
6192	D86-automated	179.5	213.1	273.6	329.8	340.0	352.0
6266	D86	174.4	210.9	273.2	331.7	343.61	351.85
6317		-----	-----	-----	-----	-----	-----
6319		-----	-----	-----	-----	-----	-----
6332		-----	-----	-----	-----	-----	-----
6346		-----	-----	-----	-----	-----	-----
6373	ISO3405-automated	176.3	210.8	274.0	331.9	344.5	352.8
6393		-----	-----	-----	-----	-----	-----
6404		-----	-----	-----	-----	-----	-----
6416	D86-automated	171.4	210.4	274.3	334.6	350.5	355.2
6421		-----	-----	-----	-----	-----	-----
6444		-----	-----	-----	-----	-----	-----
6447		-----	-----	-----	-----	-----	-----
6479		-----	-----	-----	-----	-----	-----
6499	D86-automated	175.4	210.0	273.6	334.2	346.6	346.8
	normality	OK	OK	OK	OK	suspect	OK
	n	119	120	120	119	116	117
	outliers	0+ 1ex	1 +1ex	2	3 +1ex	1	2
	mean (n)	174.06	209.82	273.26	332.29	344.74	353.83
	st.dev. (n)	2.918	1.710	0.991	1.342	2.370	2.185
	R(calc.)	8.17	4.79	2.77	3.76	6.64	6.12
	st.dev.(D86-A:20b)	3.419	1.649	1.071	1.780	3.002	2.536
	R(D86-A:20b)	9.57	4.62	3.0	4.98	8.40	7.10
Compare:							
	R(D86-M:20b)	6.13	4.44	3.84	3.91	4.67	3.86

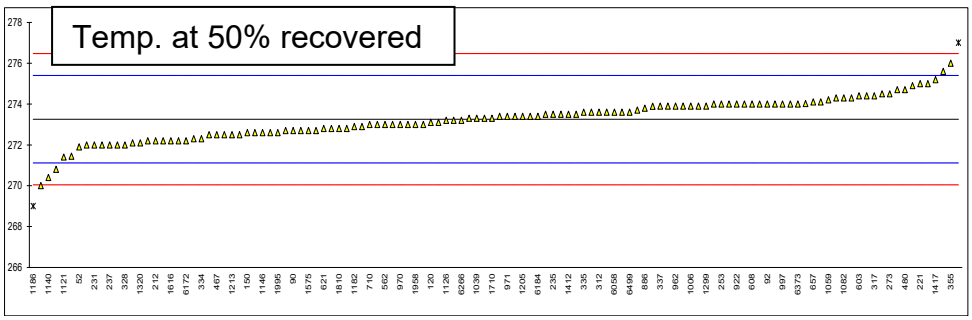
Lab 221 first reported 193.0 for IBP
Lab 224 reported 33.54 for temp. at 90% rec. and 358.07 for FBP
Lab 328 first reported 197.1 for temp. at 10% rec.
Lab 507 first reported 268 for temp. at 50% rec.
Lab 851 first reported 173.9, 211.1, 274.9, 336.5 and 353.8 for temp. at resp. IBP, 10% rec., 50% rec., 90% rec., 95% rec. and FBP
Lab 1958 first reported 202 for temp. at 10% rec.

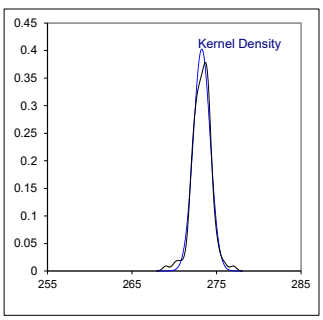

IBP

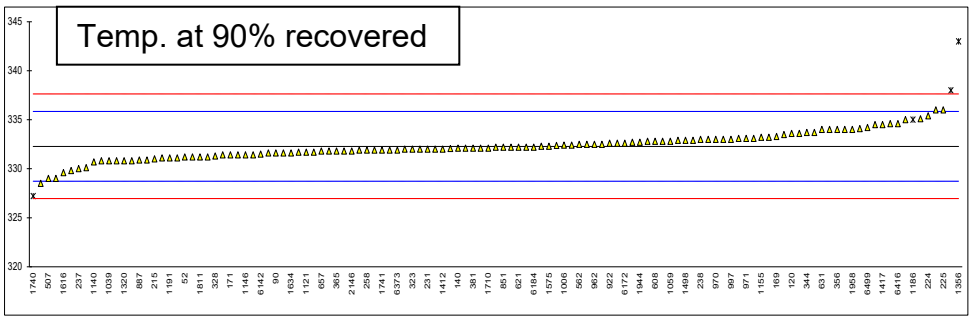

Kernel Density

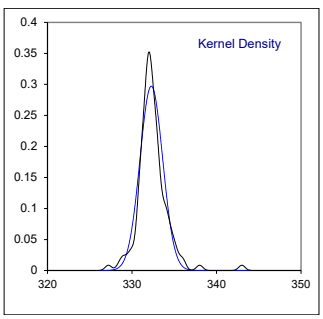

Temp. at 10% recovered

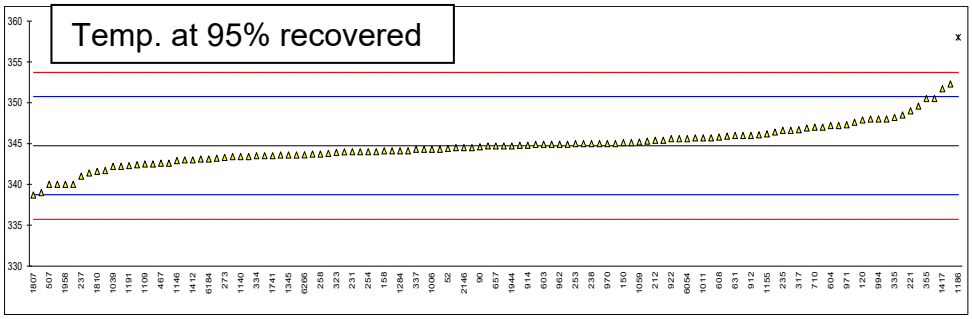

Kernel Density

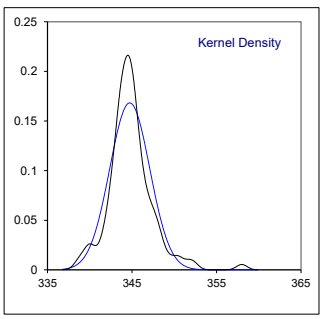

Temp. at 50% recovered

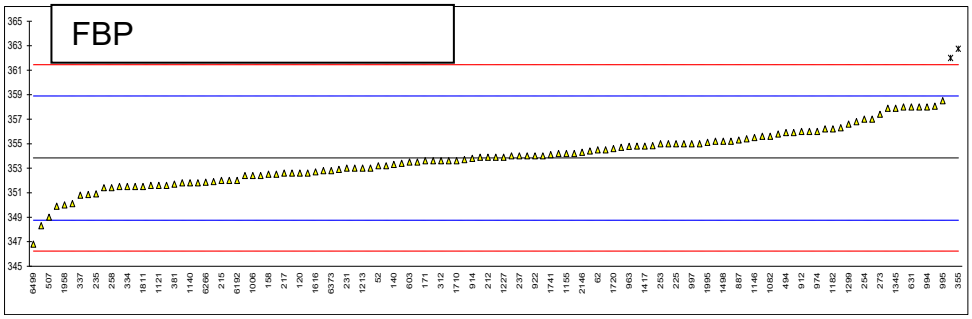

Kernel Density

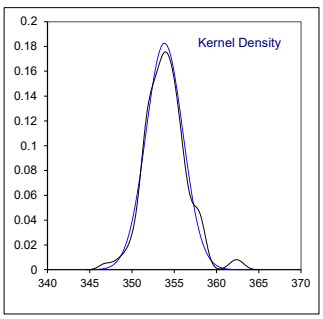

Temp. at 90% recovered


Kernel Density


Temp. at 95% recovered


Kernel Density


FBP


Kernel Density

z-scores Distillation at 760 mmHg on sample #22170

lab	IBP	10% rec	50% rec	90% rec	95% rec	FBP
52	-1.60	-1.53	-1.27	-0.61	-0.11	-0.25
53	-----	-----	-----	-----	-----	-----
62	-0.84	1.02	0.69	-0.05	0.09	0.26
90	0.48	-1.89	-0.52	-0.39	-0.05	-0.49
92	1.74	-0.01	0.69	-0.27	0.05	-0.88
120	-1.27	-0.50	-0.15	0.74	1.05	-0.49
140	-0.02	0.05	0.13	-0.10	-0.21	-0.21
150	-0.69	-0.92	-0.62	-0.05	0.12	-0.17
158	-1.27	-0.44	-0.99	-0.39	-0.21	-0.53
159	-----	-----	-----	-----	-----	-----
169	0.89	0.71	1.06	0.57	0.95	0.97
171	-0.54	-0.68	-0.99	-0.50	-0.38	-0.09
175	0.48	-0.92	0.78	1.30	1.62	0.07
203	-----	-----	-----	-----	-----	-----
212	1.27	1.14	-0.99	0.01	0.22	0.03
215	-0.31	-1.11	-1.18	-0.72	-0.58	-0.72
217	0.28	0.23	0.22	-0.39	-0.25	-0.49
221	-0.05	2.53	1.62	2.09	1.42	1.64
224	0.10	-2.06	-0.71	1.75	0.44	1.67
225	-0.31	0.11	1.16	2.09	1.09	0.46
228	0.28	-0.50	-1.18	-1.85	-1.91	-0.72
231	-0.02	-0.50	-1.18	-0.16	-0.25	-0.33
235	-0.60	0.29	0.22	0.46	0.62	-1.16
237	0.86	-0.50	-1.18	-1.28	-1.25	0.07
238	0.57	0.71	0.69	0.40	0.09	0.46
253	-0.89	-0.50	0.69	-0.16	0.09	0.46
254	0.28	-2.32	-1.18	-0.16	-0.25	1.25
256	-0.02	-1.11	-0.24	0.40	0.42	-0.33
258	-0.22	-0.44	-0.43	-0.22	-0.35	-0.96
273	0.83	1.20	1.16	-0.33	-0.48	1.41
312	-0.37	-0.38	0.32	-0.22	-0.15	-0.09
317	0.95	0.41	1.06	0.74	0.65	0.46
323	0.98	0.71	0.32	-0.16	-0.28	0.34
328	0.04	0.05	-1.18	-0.55	-0.31	-0.80
333	-----	-----	-----	-----	-----	-----
334	-1.33	-0.92	-0.90	-0.83	-0.41	-0.92
335	1.56	0.78	0.32	1.02	1.15	0.78
337	0.01	-0.68	0.60	0.23	-0.15	-1.20
339	-----	-----	-----	-----	-----	-----
342	-0.02	0.71	-1.08	-0.27	0.12	-0.57
344	0.10	0.35	1.34	0.79	0.82	0.26
349	-1.77	0.35	-0.62	-0.50	-0.35	-0.92
355	-0.97	-0.35	2.56	3.21	1.92	3.52
356	-0.72	2.41	2.18	0.96	0.55	1.60
365	-0.92	-1.23	-0.90	-0.27	-0.01	-0.96
381	-0.40	-0.44	-0.71	-0.10	-0.45	-0.84
433	-----	-----	-----	-----	-----	-----
467	0.33	0.71	-0.71	-1.23	-0.71	0.03
480	0.03	1.50	1.34	-0.13	-0.41	-1.55
494	0.33	1.32	0.97	0.29	0.09	0.81
498	-----	-----	-----	-----	-----	-----
507	-1.19	-2.32	-3.04	-1.85	-1.58	-1.91
511	-----	-----	-----	-----	-----	-----
551	-----	-----	-----	-----	-----	-----
554	-----	-----	-----	-----	-----	-----
555	-----	-----	-----	-----	-----	-----
558	-----	-----	-----	-----	-----	-----
562	0.83	1.50	-0.24	0.12	-----	-----
575	-----	-----	-----	-----	-----	-----
603	0.77	1.14	1.06	-0.05	0.05	-0.13
604	-0.86	2.11	0.60	0.79	0.82	-0.05
608	-0.63	0.84	0.69	0.29	0.35	-0.37
614	-----	-----	-----	-----	-----	-----
621	1.01	-1.11	-0.43	-0.05	0.32	0.70
631	0.86	0.71	-0.24	0.96	0.42	1.64
633	-----	-----	-----	-----	-----	-----
634	-----	-----	-----	-----	-----	-----
657	0.71	0.59	0.78	-0.27	-0.01	-0.09
710	0.86	0.71	-0.24	1.52	0.75	1.64
750	-----	-----	-----	-----	-----	-----
779	-----	-----	-----	-----	-----	-----
785	-----	-----	-----	-----	-----	-----
825	-0.54	0.59	0.69	0.29	0.19	0.03
845	-----	-----	-----	-----	-----	-----
846	-----	-----	-----	-----	-----	-----

lab	IBP	10% rec	50% rec	90% rec	95% rec	FBP
851	-0.60	-0.68	-0.52	-0.05	0.02	0.07
854	-----	-----	-----	-----	-----	-----
856	-----	-----	-----	-----	-----	-----
862	-----	-----	-----	-----	-----	-----
863	-----	-----	-----	-----	-----	-----
864	-----	-----	-----	-----	-----	-----
872	-----	-----	-----	-----	-----	-----
873	-----	-----	-----	-----	-----	-----
874	-----	-----	-----	-----	-----	-----
886	-----	0.90	0.50	-0.10	-----	-----
887	-0.57	0.41	-0.52	-0.78	-0.78	0.58
912	-0.60	-2.32	0.69	0.96	0.42	0.85
914	-0.95	0.23	0.04	-0.16	0.02	-0.01
922	0.19	0.41	0.69	0.18	0.29	0.07
962	0.63	0.11	0.60	0.12	0.05	0.38
963	0.63	0.13	0.59	0.12	0.05	0.37
970	0.28	-0.50	-0.24	0.40	0.09	0.85
971	0.48	0.96	0.13	0.46	0.85	0.62
974	0.28	-0.50	0.60	0.40	0.09	0.85
988	-----	-----	-----	-----	-----	-----
994	0.28	-1.11	0.69	0.96	1.09	1.64
995	0.57	-1.71	0.22	1.24	1.25	1.84
996	-----	-----	-----	-----	-----	-----
997	0.28	-2.32	0.69	0.40	1.09	0.46
1006	0.33	0.23	0.60	0.06	-0.15	-0.57
1011	0.19	1.02	0.69	0.06	0.32	0.54
1016	-----	-----	-----	-----	-----	-----
1017	-----	-----	-----	-----	-----	-----
1039	0.33	0.78	0.04	-0.83	-0.85	-0.41
1059	1.42	1.50	0.88	0.29	0.15	0.93
1082	1.53	0.29	0.97	0.34	0.29	0.70
1105	-0.22	0.78	0.60	0.18	0.05	-0.09
1109	1.07	0.47	0.13	-0.67	-0.75	0.14
1121	-2.06	-0.50	-1.74	-0.33	-0.25	-0.88
1126	0.63	0.78	-0.06	-0.50	-----	1.17
1134	-----	-----	-----	-----	-----	-----
1140	-2.65	-2.20	-2.67	-0.89	-0.45	-0.80
1146	1.18	-0.86	-0.62	-0.50	-0.61	0.66
1155	1.30	1.75	1.62	0.51	0.49	0.14
1171	-1.38	0.72	0.71	0.05	-0.25	0.40
1182	1.42	0.29	-0.34	-0.83	-1.01	0.93
1186	2.91	-8.38	-3.98	1.52	4.42	3.22
1191	-0.25	0.59	-0.24	-0.67	-0.81	-0.88
1199	-----	-----	-----	-----	-----	-----
1205	1.36	0.41	0.13	-0.50	-0.51	0.22
1213	0.86	-1.11	-0.71	0.12	-----	-0.33
1227	0.57	-0.50	-0.62	-0.10	-0.01	0.03
1284	-0.37	0.84	-0.15	-0.22	-0.21	-0.13
1299	0.45	0.84	0.60	0.46	0.39	1.09
1320	-0.16	-0.07	-1.08	-0.83	-0.75	-0.92
1345	0.22	-0.68	-0.34	0.68	-0.38	1.60
1356	-----	-1.71	3.49	6.02	-----	-----
1357	-----	-----	-----	-0.61	-----	-----
1362	-----	-----	-----	-----	-----	-----
1399	-----	-----	-----	-----	-----	-----
1412	0.13	-1.11	0.22	-0.16	-0.58	1.25
1417	-0.48	1.38	1.81	1.24	2.32	0.38
1429	-----	-----	-----	-----	-----	-----
1430	-1.98	-0.92	0.04	1.58	2.52	-0.49
1498	0.42	0.23	0.13	0.34	0.32	0.54
1575	-0.75	-1.65	-0.52	0.01	0.22	-0.25
1588	-----	-----	-----	-----	-----	-----
1616	0.39	-0.13	-0.99	-1.51	-1.11	-0.45
1629	-----	-----	-----	-----	-----	-----
1634	-0.28	0.11	-0.06	-0.39	-0.45	0.46
1643	-----	-----	-----	-----	-----	-----
1710	-0.54	0.17	0.04	-0.10	-0.15	-0.09
1720	-0.25	0.41	0.41	0.51	0.75	0.30
1721	-----	-----	-----	-----	-----	-----
1740	1.01	-0.86	-0.99	-2.86	-1.58	-1.47
1741	-0.81	0.23	-0.52	-0.22	-0.41	0.10
1746	-----	-----	-----	-----	-----	-----
1807	-0.63	-1.59	-2.30	-2.13	-2.01	-0.76
1810	-0.28	-0.13	-0.43	-0.83	-1.05	-0.80
1811	-0.22	-0.68	-0.71	-0.61	-0.85	-0.92
1906	-----	-----	-----	-----	-----	-----
1944	-0.25	0.29	0.22	0.23	-0.01	0.14
1958	-1.19	-1.71	-0.24	0.96	-1.58	-1.51

lab	IBP	10% rec	50% rec	90% rec	95% rec	FBP
1995	-0.46	0.84	-0.62	-0.22	-0.08	0.50
2146	0.04	-0.26	-0.24	-0.27	-0.08	0.18
6019	0.57	0.90	0.32	-0.61	-0.55	0.07
6054	0.80	1.08	1.53	0.34	0.29	0.81
6058	0.69	0.96	0.32	-0.67	-0.71	-2.18
6103	-0.57	-1.01	-1.69	-0.78	-0.21	-1.18
6142	-1.74	-0.07	-0.43	-0.44	-0.38	-0.33
6172	-0.57	-1.41	-0.99	0.18	0.72	-0.57
6184	-0.72	-0.26	0.13	-0.05	-0.55	-0.53
6192	1.59	1.99	0.32	-1.40	-1.58	-0.72
6266	0.10	0.65	-0.06	-0.33	-0.38	-0.78
6317	-----	-----	-----	-----	-----	-----
6319	-----	-----	-----	-----	-----	-----
6332	-----	-----	-----	-----	-----	-----
6346	-----	-----	-----	-----	-----	-----
6373	0.66	0.59	0.69	-0.22	-0.08	-0.41
6393	-----	-----	-----	-----	-----	-----
6404	-----	-----	-----	-----	-----	-----
6416	-0.78	0.35	0.97	1.30	1.92	0.54
6421	-----	-----	-----	-----	-----	-----
6444	-----	-----	-----	-----	-----	-----
6447	-----	-----	-----	-----	-----	-----
6479	-----	-----	-----	-----	-----	-----
6499	0.39	0.11	0.32	1.08	0.62	-2.77

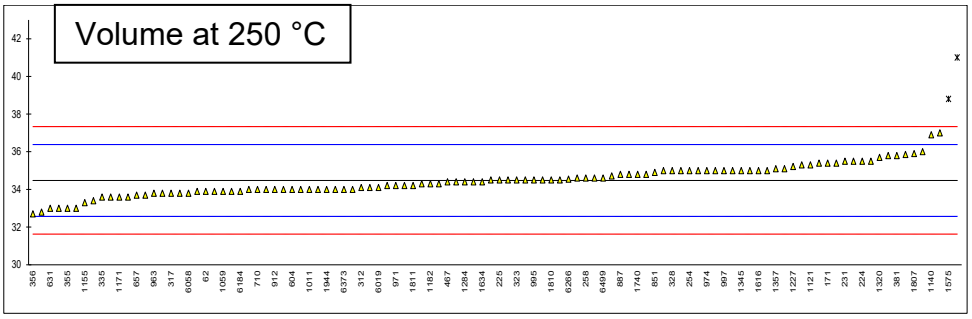
Determination of Distillation at 760 mmHg on sample #22170; results in %V/V

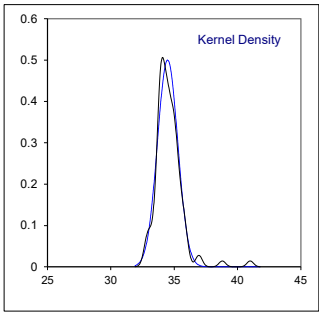
lab	method	Vol. 250 °C	mark	z(targ)	Vol. 350 °C	mark	z(targ)	% residue
52	D86-automated	35.3		0.86	96.2		-0.09	1.0
53		-----		-----	-----		-----	-----
62	D86-automated	33.9		-0.61	96.2		-0.09	1.1
90	D86-manual	35.0		0.55	96.0		-0.30	1.0
92	D86-automated	34.3		-0.19	96.6		0.33	2.0
120	D86-automated	34.6		0.13	95.5		-0.83	1.3
140		-----		-----	-----		-----	1.4
150	D86-automated	35.8		1.39	96.7		0.43	1.3
158		-----		-----	-----		-----	1.4
159		-----		-----	-----		-----	-----
169	D86-automated	33.8		-0.72	95.5		-0.83	1.4
171	D86-automated	35.4		0.97	96.4		0.12	1.1
175		-----		-----	-----		-----	1.2
203		-----		-----	-----		-----	-----
212	ISO3405-automated	35.5		1.07	96.5		0.22	1.8
215	D86-manual	35.0		0.55	96.0		-0.30	1.0
217	D86-automated	34.2		-0.29	96.3		0.01	1.4
221	D86-manual	34.0		-0.50	96.0		-0.30	1.4
224	D86-manual	35.5		1.07	95.50		-0.83	1.4
225	D86-manual	34.5		0.02	95.5		-0.83	-----
228	D86-manual	35.0		0.55	97.5		1.27	1.4
231	D86-manual	35.5		1.07	96.5		0.22	1.8
235	D86	34.0		-0.50	95.8		-0.52	1.4
237		-----		-----	-----		-----	1.0
238	D86-manual	33.0		-1.56	96.0		-0.30	1.5
253	D86	35.4		0.97	96.2		-0.09	1.5
254	D86-manual	35.0		0.55	96.0		-0.30	-----
256		-----		-----	-----		-----	-----
258	D86-automated	34.6		0.13	96.6		0.33	2.0
273		-----		-----	-----		-----	-----
312	D86-automated	34.1		-0.40	96.4		0.12	2.1
317	D86-automated	33.8		-0.72	96.0		-0.30	1.2
323	D86-automated	34.5		0.02	96.4		0.12	1.3
328	D86-automated	35.0		0.55	96.5		0.22	1.2
333		-----		-----	-----		-----	-----
334	D86-automated	34.8		0.34	96.7		0.43	1.3
335		33.6		-0.93	95.3		-1.04	1.4
337		34.5		0.02	96.7		0.43	1.7
339		-----		-----	-----		-----	-----
342	D86	35.5		1.07	96.0		-0.30	1.4
344	D86-automated	33.9		-0.61	95.7		-0.62	1
349		-----		-----	-----		-----	1.4
355	D86-manual	33		-1.56	94.75		-1.62	1.5
356	D86-automated	32.7		-1.87	95.8		-0.52	1.7
365	D86-automated	35.4		0.97	96.4		0.12	1.4
381	ISO3405-automated	35.8		1.39	96.7		0.43	1.4
433		-----		-----	-----		-----	-----
467	D86-automated	34.4		-0.08	96.6		0.33	1.5
480	D86-automated	33.6		-0.93	96.7		0.43	1.6
494	D86-automated	33.4		-1.14	96.2		-0.09	0.5
498		-----		-----	-----		-----	-----
507	D86-manual	37.0	C	2.65	98.0		1.80	1.9
511		-----		-----	-----		-----	-----
551		-----		-----	-----		-----	-----
554		-----		-----	-----		-----	-----
555		-----		-----	-----		-----	-----
558		-----		-----	-----		-----	-----
562		-----		-----	-----		-----	-----
575		-----		-----	-----		-----	-----
603		-----		-----	-----		-----	1.4
604	D86-automated	34.0	C	-0.50	95.7		-0.62	1.4
608		-----		-----	-----		-----	-----
614		-----		-----	-----		-----	-----
621	D86-manual	33		-1.56	96		-0.30	1
631	D86-manual	33		-1.56	96		-0.30	1.5
633		-----		-----	-----		-----	-----
634		-----		-----	-----		-----	-----
657	D86-automated	33.7		-0.82	96.2		-0.09	1.5
710	D86-manual	34.0		-0.50	95.5		-0.83	1.0
750		-----		-----	-----		-----	-----
779		-----		-----	-----		-----	-----
785		-----		-----	-----		-----	-----
825	D86-automated	33.9		-0.61	96.1		-0.20	1.4
845		-----		-----	-----		-----	-----
846		-----		-----	-----		-----	-----

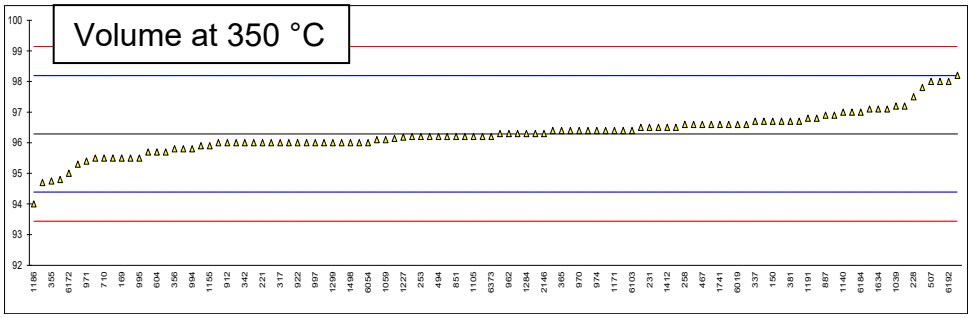
lab	method	Vol. 250 °C	mark	z(targ)	Vol. 350 °C	mark	z(targ)	% residue
851	D86-automated	34.9	C	0.44	96.2	C	-0.09	1.4
854		-----		-----	-----		-----	-----
856		-----		-----	-----		-----	-----
862		-----		-----	-----		-----	-----
863		-----		-----	-----		-----	-----
864		-----		-----	-----		-----	-----
872		-----		-----	-----		-----	-----
873		-----		-----	-----		-----	-----
874		-----		-----	-----		-----	-----
886		-----		-----	-----		-----	-----
887	D86-automated	34.8		0.34	96.9		0.64	1.8
912	D86	34		-0.50	96		-0.30	1.5
914	D86	34.5		0.02	96.2		-0.09	1.4
922	D86-automated	34.		-0.50	96.0		-0.30	1.4
962	D86-automated	33.8		-0.72	96.3		0.01	1.4
963	D86-automated	33.8		-0.72	96.3		0.01	1.4
970	D86-manual	35.0		0.55	96.4		0.12	1.5
971	D86-automated	34.2		-0.29	95.4		-0.94	0.3
974	D86-automated	35.0		0.55	96.4		0.12	1.5
988		-----		-----	-----		-----	-----
994	D86-manual	34.5		0.02	95.8		-0.52	1.0
995	D86-manual	34.5		0.02	95.5		-0.83	-----
996		-----		-----	-----		-----	-----
997	D86-manual	35.0		0.55	96.0		-0.30	1.5
1006	D86-automated	34.0		-0.50	96.4		0.12	1.4
1011	ISO3405-automated	34.0		-0.50	96.0		-0.30	-----
1016		-----		-----	-----		-----	-----
1017		-----		-----	-----		-----	-----
1039	ISO3405-automated	34.4		-0.08	97.2		0.96	1.3
1059	ISO3405-automated	33.9		-0.61	96.1		-0.20	1.4
1082	ISO3405-automated	33.7		-0.82	95.9		-0.41	-----
1105	D86-automated	34.0		-0.50	96.2		-0.09	1.5
1109		-----		-----	-----		-----	1.6
1121	D86-manual	35.3		0.86	96.6		0.33	2.0
1126	D86-automated	34.1		-0.40	96.2		-0.09	1.5
1134		-----		-----	-----		-----	-----
1140	D86-automated	36.9		2.55	97.0		0.75	1.4
1146	D86-automated	35		0.55	97		0.75	1.0
1155		33.3		-1.24	95.9		-0.41	1.0
1171	ISO3405-automated	33.60		-0.93	96.40		0.12	1.75
1182		34.3		-0.19	97.1		0.85	0.8
1186		41	R(0.01)	6.86	94		-2.41	2.6
1191	ISO3405-automated	34.3		-0.19	96.8		0.54	-----
1199		-----		-----	-----		-----	-----
1205	D86-automated	33.9		-0.61	96.7		0.43	1.4
1213		-----		-----	-----		-----	1.9
1227	D86-automated	35.22		0.78	96.18		-0.12	0.65
1284	D86-automated	34.4	C	-0.08	96.3		0.01	1.4
1299	D86-automated	34.4		-0.08	96.0		-0.30	1.4
1320	D86-automated	35.7		1.28	97.8		1.59	1.4
1345	D86-automated	35.0		0.55	96.0		-0.30	1.8
1356		-----		-----	-----		-----	-----
1357	D86-automated	35.1		0.65	96.8		0.54	NA
1362		-----		-----	-----		-----	-----
1399		-----		-----	-----		-----	-----
1412	D86-manual	34.5		0.02	96.5		0.22	-----
1417		32.8		-1.77	94.7		-1.67	1.3
1429		-----		-----	-----		-----	-----
1430		-----		-----	-----		-----	-----
1498	D86-automated	35		0.55	96		-0.30	1.4
1575	D7345	38.8	R(0.01)	4.55	96.3		0.01	1.7
1588		-----		-----	-----		-----	-----
1616	D86-automated	35.0		0.55	96.9		0.64	1.3
1629		-----		-----	-----		-----	-----
1634	ISO3405-automated	34.4		-0.08	97.1		0.85	1.0
1643		-----		-----	-----		-----	-----
1710	ISO3405-automated	35.1		0.65	96.4		0.12	1.6
1720	D86-automated	34.2		-0.29	95.7		-0.62	-----
1721		-----		-----	-----		-----	-----
1740	ISO3405-automated	34.8		0.34	97.1		0.85	1.4
1741		34.6		0.13	96.6		0.33	0.9
1746		-----		-----	-----		-----	-----
1807	D86-automated	35.9		1.50	98.2		2.01	0.2
1810		34.5		0.02	97.2		0.96	1.1
1811	D86-automated	34.2		-0.29	96.6		0.33	1.2
1906		-----		-----	-----		-----	-----
1944	D86-manual	34.0		-0.50	96.0		-0.30	1.5
1958		36	C	1.60	98		1.80	-----

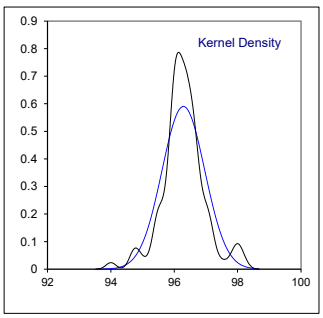
lab	method	Vol. 250 °C	mark	z(targ)	Vol. 350 °C	mark	z(targ)	% residue
1995	D86-automated	34.71		0.24	96.14		-0.16	0.5
2146	ISO3405-automated	35.0		0.55	96.3		0.01	1.4
6019	ISO3405-automated	34.1		-0.40	96.6		0.33	1.8
6054	D86-automated	33.6		-0.93	96.0		-0.30	1.7
6058	ISO3405-automated	33.8		-0.72	-----		-----	2.3
6103	ISO3405-automated	35.85		1.44	96.4		0.12	1.4
6142	ISO3405-automated	34.8		0.34	96.5		0.22	1.4
6172	D86-automated	34.5	C	0.02	95		-1.36	1.4
6184	ISO3504-A	33.9		-0.61	97		0.75	2.4
6192	D86-automated	34.0		-0.50	98.0		1.80	1.2
6266	D86	34.55		0.07	96.6		0.33	1.7
6317		-----		-----	-----		-----	-----
6319		-----		-----	-----		-----	-----
6332		-----		-----	-----		-----	-----
6346		-----		-----	-----		-----	-----
6373	ISO3405-automated	34.0		-0.50	96.2		-0.09	1.4
6393		-----		-----	-----		-----	-----
6404		-----		-----	-----		-----	-----
6416	D86-automated	34.0	C	-0.50	94.8		-1.57	1.4
6421		-----		-----	-----		-----	-----
6444		-----		-----	-----		-----	-----
6447		-----		-----	-----		-----	-----
6479		-----		-----	-----		-----	-----
6499	D86-automated	34.6		0.13	-----		-----	2.3
	normality	OK			suspect			
	n	106			106			
	outliers	2			0			
	mean (n)	34.48			96.29			
	st.dev. (n)	0.798			0.676			
	R(calc.)	2.23			1.89			
	st.dev.(D86-A:20b)	0.950			0.950			
	R(D86-A:20b)	2.66			2.66			
Compare:								
	R(D86-M:20b)	2.62			2.48			

Lab 507 first reported 38.0
Lab 604 first reported 30.4
Lab 851 first reported 33.8 for Vol. 250 °C and 93.8 for Vol. 350 °C
Lab 1284 first reported 39.3
Lab 1958 first reported 40
Lab 6172 first reported 38%
Lab 6416 first reported 38.5









Determination of FAME on sample #22170; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	779		-----		-----
53		-----		-----	785		-----		-----
62		-----		-----	825		-----		-----
90		-----		-----	845		-----		-----
92		-----		-----	846		-----		-----
120	D7371	7.04		0.22	851	EN14078-B	7.42	R(0.05)	1.24
140		-----		-----	854		-----		-----
150		-----		-----	856		-----		-----
158		-----		-----	862		-----		-----
159		-----		-----	863		-----		-----
169		-----		-----	864		-----		-----
171		-----		-----	872		-----		-----
175		-----		-----	873		-----		-----
203		-----		-----	874		-----		-----
212		-----		-----	886		-----		-----
215		-----		-----	887		-----		-----
217		-----		-----	912		-----		-----
221		-----		-----	914		-----		-----
224		-----		-----	922	EN14078-B	7.1		0.38
225		-----		-----	962		-----		-----
228		-----		-----	963	D7371	7.05		0.24
231		-----		-----	970		-----		-----
235		-----		-----	971		-----		-----
237	D7371	6.89		-0.18	974	EN14078-A	7.05		0.24
238		-----		-----	988		-----		-----
253		-----		-----	994	EN14078-A	6.98		0.06
254		-----		-----	995		-----		-----
256		-----		-----	996		-----		-----
258		-----		-----	997		-----		-----
273		-----		-----	1006	EN14078-A	7.08		0.33
312	EN14078-A	6.9		-0.16	1011	EN14078-A	6.7		-0.69
317		-----		-----	1016	EN14078-A	6.67		-0.78
323	D7371	7.3		0.92	1017	EN14078-A	6.694		-0.71
328	EN14078-B	7.0		0.11	1039	EN14078-B	7.11		0.41
333		-----		-----	1059	EN14078-B	7.1		0.38
334	EN14078-B	6.9		-0.16	1082		-----		-----
335	EN14078-B	6.9		-0.16	1105		-----		-----
337		-----		-----	1109		-----		-----
339		-----		-----	1121		-----		-----
342		-----		-----	1126	EN14078-A	6.43		-1.42
344	EN14078-A	7.33		1.00	1134		-----		-----
349	EN14078-A	6.3	R(0.05)	-1.77	1140	EN14078-A	7.21		0.67
355		-----		-----	1146		-----		-----
356	EN14078-A	7.0		0.11	1155		-----		-----
365	EN14078-A	7.213		0.68	1171	EN14078-A	6.84		-0.32
381	EN14078-A	6.9		-0.16	1182		-----		-----
433		-----		-----	1186		-----		-----
467	EN14078-A	7.15		0.51	1191		-----		-----
480	EN14078-A	7.07		0.30	1199		-----		-----
494	D7371	6.8		-0.43	1205	In house	6.84		-0.32
498		-----		-----	1213		-----		-----
507	EN14078-A	2.30	C,R(0.01)	-12.51	1227		-----		-----
511	D7371	6.97		0.03	1284		-----		-----
551		-----		-----	1299	EN14078-B	6.7		-0.69
554		-----		-----	1320	EN14078-B	7.0		0.11
555		-----		-----	1345		-----		-----
558		-----		-----	1356	EN14078-A	7.38	R(0.05)	1.13
562		-----		-----	1357	D7371	NA		-----
575		-----		-----	1362		-----		-----
603		-----		-----	1399		-----		-----
604		-----		-----	1412	EN14078-A	7.0		0.11
608		-----		-----	1417		-----		-----
614		-----		-----	1429		-----		-----
621	EN14078-B	6.89		-0.18	1430	EN14078-A	6.94		-0.05
631	EN14078-A	6.79		-0.45	1498		-----		-----
633		-----		-----	1575	In house	6.99		0.08
634		-----		-----	1588		-----		-----
657	EN14078-A	6.76		-0.53	1616		-----		-----
710		-----		-----	1629		-----		-----
750		-----		-----	1634	EN14078-A	7.09		0.35

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643		-----		-----	6142	EN14078-A	4.04	R(0.01)	-7.84
1710	EN14078-A	6.87		-0.24	6172		-----		-----
1720		-----		-----	6184	EN14078-A	7.20		0.65
1721		-----		-----	6192	D7371	7.02		0.16
1740	EN14078	7.0		0.11	6266		-----		-----
1741	EN14078-B	7.09		0.35	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807	EN14078-A	6.9		-0.16	6332		-----		-----
1810	EN14078-A	6.8		-0.43	6346		-----		-----
1811	D7371	7.0		0.11	6373		-----		-----
1906		-----		-----	6393		-----		-----
1944		-----		-----	6404	EN14078-A	6.8		-0.43
1958		-----		-----	6416		-----		-----
1995		-----		-----	6421		-----		-----
2146	In house	7.13		0.46	6444		-----		-----
6019		-----		-----	6447		-----		-----
6054		-----		-----	6479		-----		-----
6058	EN14078-A	7.12		0.43	6499	D7371	7.0		0.11
6103	EN14078-A	6.59		-0.99					

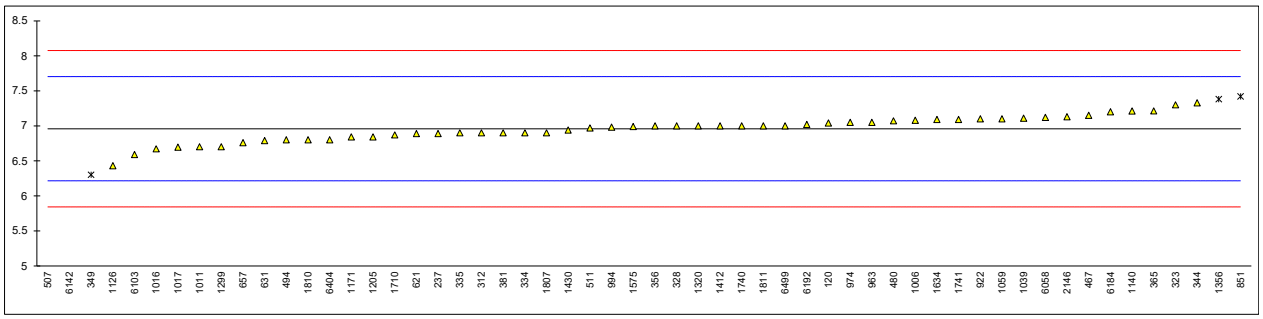
	normality	OK
	n	51
	outliers	5
	mean (n)	6.959
	st.dev. (n)	0.1793
	R(calc.)	0.502
	st.dev.(D7371:14R22)	0.3725
	R(D7371:14R22)	1.043
Compare:		
	R(EN14078-A:14)	0.370
	R(EN14078-B:14)	0.511

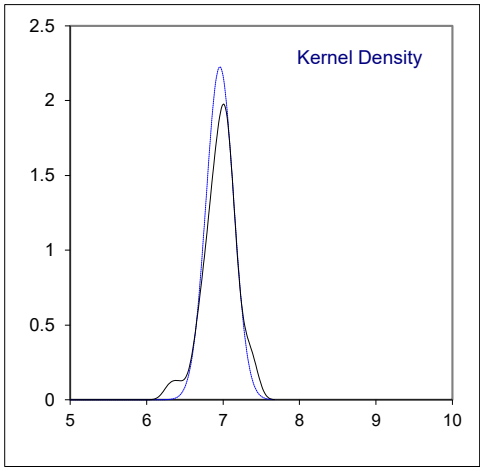
range: 1-20 %V/V

range: 0.05-3 %V/V

range: 3-20 %V/V

Lab 507 first reported 11.92





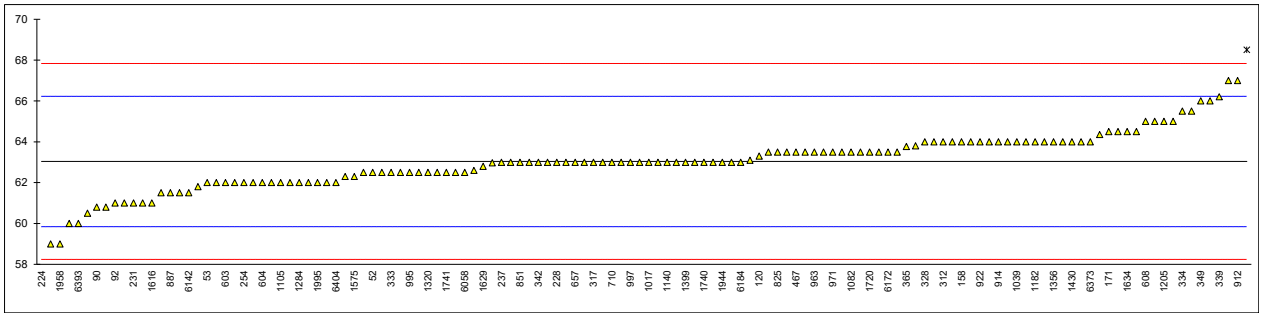
Determination of Flash Point PMcc on sample #22170; results in °C

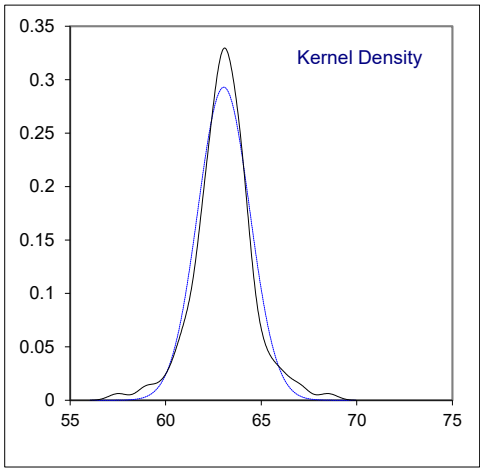
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D93-A	62.5		-0.34	779		-----		-----
53	D93-A	62.0		-0.65	785		-----		-----
62		-----		-----	825	D93-A	63.5		0.29
90	D93-A	60.8		-1.40	845		-----		-----
92	D93-A	61.0		-1.27	846		-----		-----
120	D93	63.3		0.16	851	D93-A	63	C	-0.02
140	D93-A	64.0		0.60	854		-----		-----
150	D93-A	61.0		-1.27	856		-----		-----
158	D93-A	64.0		0.60	862		-----		-----
159		-----		-----	863		-----		-----
169	D93-A	63.5		0.29	864		-----		-----
171	D93-A	64.5		0.91	872		-----		-----
175	D93-A	63		-0.02	873		-----		-----
203	D93-A	63		-0.02	874		-----		-----
212	D93-A	63.8		0.48	886	D93-A	64.0		0.60
215	ISO2719	62.97		-0.04	887	D93-A	61.5		-0.96
217	D93-A	62.5		-0.34	912	D93	67		2.48
221		-----		-----	914	D93-A	64.0		0.60
224	D93-A	57.5	R(0.05)	-3.46	922	D93-A	64.0		0.60
225	D93-A	60.0		-1.90	962	D93-A	64.0		0.60
228	D93-A	63.0		-0.02	963	D93-A	63.5		0.29
231	D93-A	61.0		-1.27	970	D93-A	63.5		0.29
235	D93-A	61		-1.27	971	D93-A	63.5		0.29
237	D93-A	63.0		-0.02	974	D93-A	63.5		0.29
238	D93-A	63.5		0.29	988		-----		-----
253	D93-A	63.5		0.29	994	D93-A	63.0		-0.02
254	D93-A	62.0		-0.65	995	D93-A	62.5		-0.34
256	D93-A	63.0		-0.02	996		-----		-----
258	D93	61.8		-0.77	997	D93-A	63.0		-0.02
273	D93-A	64.5		0.91	1006	D93-A	63.0		-0.02
312	D93-A	64.0		0.60	1011	ISO2719-A	62.0		-0.65
317	D93-A	63.0		-0.02	1016		-----		-----
323	D93-A	62.5		-0.34	1017	D93-A	63.0		-0.02
328	D93-A	64.0		0.60	1039	ISO2719-A	64.0		0.60
333	D93-A	62.5		-0.34	1059	ISO2719-A	63.0		-0.02
334	D93-A	65.5		1.54	1082	ISO2719-A	63.5		0.29
335	ISO2719-A	64.0		0.60	1105	D93-A	62.0		-0.65
337	D93-A	68.5	R(0.05)	3.42	1109	D93-A	62.0		-0.65
339	D93-A	66.2		1.98	1121	D93-A	60.8		-1.40
342	D93-A	63		-0.02	1126		-----		-----
344	D93-A	64		0.60	1134		-----		-----
349	D93-A	66		1.85	1140	D93-A	63.0		-0.02
355	D93-A	61.5		-0.96	1146	D93-A	64.0		0.60
356	D93-A	65.0		1.23	1155	ISO2719-A	63.5		0.29
365	IP34-A	63.775		0.46	1171	ISO2719-A	62.60		-0.27
381	ISO2719-A	63.0		-0.02	1182	D93-A	64		0.60
433	ISO2719-A	62		-0.65	1186		-----		-----
467	D93-A	63.5		0.29	1191	ISO2719-A	62.5		-0.34
480	D93-A	62.5		-0.34	1199		-----		-----
494	D93-A	67.0	C	2.48	1205	D93-A	65.0		1.23
498	ISO2719-A	59.0		-2.53	1213	D93	63.0		-0.02
507	D93-A	62.0		-0.65	1227		-----		-----
511		-----		-----	1284	D93-A	62.0		-0.65
551		-----		-----	1299	D93-A	61.5		-0.96
554		-----		-----	1320	D93-A	62.5		-0.34
555		-----		-----	1345	D93-A	64.0		0.60
558		-----		-----	1356	ISO2719-A	64		0.60
562	D93-A	62.3		-0.46	1357	D93-A	63.1		0.04
575		-----		-----	1362		-----		-----
603	D93-A	62.0		-0.65	1399	D93-A	63		-0.02
604	D93-A	62.0		-0.65	1412	D93-A	64.0		0.60
608	D93-A	65.0		1.23	1417	D93-A	65		1.23
614	D93-A	63		-0.02	1429	D93-A	62.0		-0.65
621	D93-A	63.0		-0.02	1430	D93-A	64		0.60
631	D93-A	62.0		-0.65	1498	D93-A	63.0		-0.02
633		-----		-----	1575	D93-A	62.3		-0.46
634		-----		-----	1588		-----		-----
657	D93-A	63.0		-0.02	1616	D93-A	61.0		-1.27
710	D93-A	63.0		-0.02	1629		62.8		-0.15
750		-----		-----	1634	ISO2719-A	64.5		0.91

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643	D93-A	64.35		0.82	6142	ISO2719-A	61.5		-0.96
1710	ISO2719-A	62.5		-0.34	6172	D93-A	63.5		0.29
1720	D93-A	63.5		0.29	6184	ISO2719-A	63.0		-0.02
1721	D93-A	60.5		-1.59	6192	ISO2719-A	64		0.60
1740	ISO2719-A	63.0		-0.02	6266	D93	64.5		0.91
1741	ISO2719-A	62.5		-0.34	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807	D93-A	65.5		1.54	6332		-----		-----
1810	D93-A	63.0		-0.02	6346		-----		-----
1811	D93-A	62.5		-0.34	6373	D93-A	64.0		0.60
1906		-----		-----	6393	ISO2719-A	60		-1.90
1944	D93-A	63.0		-0.02	6404	D93-A	62.0	C	-0.65
1958		59		-2.53	6416	D93-A	63.5		0.29
1995	D93-A	62		-0.65	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019	ISO2719-A	63.0		-0.02	6447		-----		-----
6054	D93-A	62.0		-0.65	6479		-----		-----
6058	ISO2719-A	62.5		-0.34	6499	D93-A	66		1.85
6103	D93-A	63.5		0.29					

normality	suspect
n	130
outliers	2
mean (n)	63.038
st.dev. (n)	1.3612
R(calc.)	3.811
st.dev.(D93-A:20)	1.5985
R(D93-A:20)	4.476

Lab 494 first reported 69.0
Lab 851 first reported 68
Lab 6404 first reported 68.5





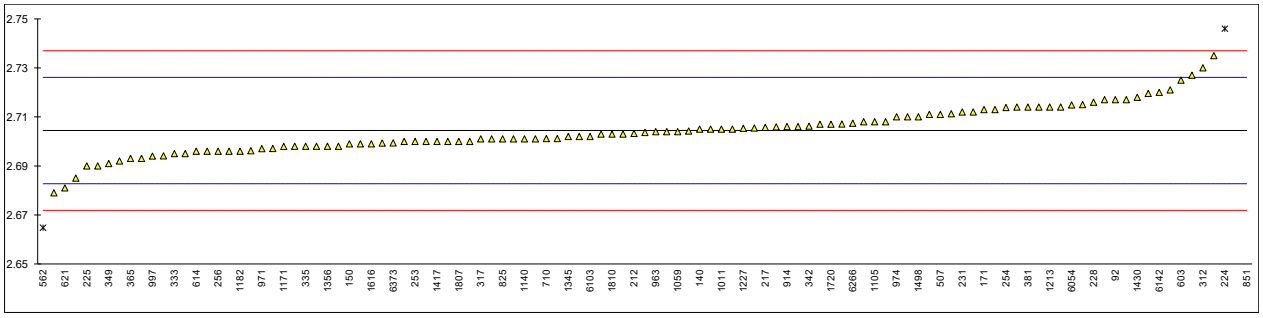
Determination of Kinematic Viscosity at 40 °C, on sample #22170; results in mm^2/s

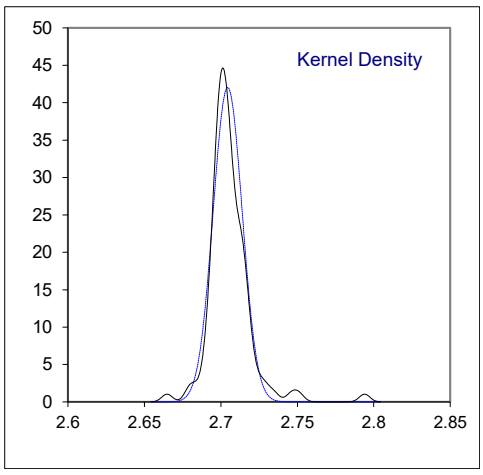
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D445	2.696		-0.78	779		-----		-----
53		-----		-----	785		-----		-----
62	D445	2.715		0.97	825	D445	2.701	C	-0.32
90	D445	2.6993		-0.47	845		-----		-----
92	D445	2.717		1.16	846		-----		-----
120		-----		-----	851	D445	2.794	C,R(0.01)	8.26
140	D445	2.705		0.05	854		-----		-----
150	D445	2.699		-0.50	856		-----		-----
158		-----		-----	862		-----		-----
159		-----		-----	863		-----		-----
169		-----		-----	864		-----		-----
171	D445	2.713		0.79	872		-----		-----
175	D445	2.700		-0.41	873		-----		-----
203		-----		-----	874		-----		-----
212	ISO3104	2.70326		-0.11	886		-----		-----
215		-----		-----	887	D445	2.714		0.88
217	D445	2.7057		0.12	912	D445	2.717		1.16
221	D445	2.711		0.60	914	D445	2.706		0.14
224	D445	2.746	R(0.01)	3.83	922	D445	2.698		-0.59
225	D445	2.690		-1.33	962		-----		-----
228	D445	2.716		1.07	963	D445	2.704		-0.04
231	D445	2.712	C	0.70	970	D445	2.710		0.51
235	D445	2.685		-1.79	971	D445	2.697		-0.69
237	D445	2.700		-0.41	974	D445	2.710		0.51
238		-----		-----	988		-----		-----
253	D445	2.70		-0.41	994	D7042	2.693		-1.05
254	D445	2.7138		0.86	995	D445	2.699		-0.50
256	D445	2.696		-0.78	996		-----		-----
258		-----		-----	997	D445	2.694		-0.96
273	D445	2.707		0.24	1006	D445	2.701		-0.32
312	D445	2.730		2.36	1011	ISO3104	2.705		0.05
317	D445	2.701		-0.32	1016		-----		-----
323	D445	2.751	R(0.01)	4.29	1017		-----		-----
328		-----		-----	1039	ISO3104	2.692		-1.15
333	D445	2.695		-0.87	1059	ISO3104	2.704		-0.04
334	D445	2.705		0.05	1082	ISO3104	2.7055		0.10
335	D445	2.698		-0.59	1105	D445	2.708		0.33
337	D445	2.713		0.79	1109	D445	2.6962		-0.76
339		-----		-----	1121	D445	2.717		1.16
342	ISO3104	2.7062		0.16	1126		-----		-----
344		-----		-----	1134		-----		-----
349	D445	2.691		-1.24	1140	D445	2.701		-0.32
355	D445	2.7071		0.25	1146	D445	2.6941		-0.95
356	D445	2.696		-0.78	1155	ISO3104	2.7059		0.13
365	IP71	2.693		-1.05	1171	ISO3104	2.6979		-0.60
381	D445	2.714		0.88	1182	D7042	2.696		-0.78
433		-----		-----	1186		-----		-----
467	D7042	2.7140		0.88	1191	ISO3104	2.70115		-0.30
480		-----		-----	1199		-----		-----
494	D445	2.701		-0.32	1205	D7042	2.7113		0.63
498		-----		-----	1213	D445	2.714		0.88
507	D445	2.711		0.60	1227	D7042	2.7053		0.08
511		-----		-----	1284	D445	2.714		0.88
551		-----		-----	1299	D445	2.712		0.70
554		-----		-----	1320	D445	2.698		-0.59
555		-----		-----	1345	D445	2.702		-0.22
558		-----		-----	1356	ISO3104	2.698		-0.59
562	D445	2.664777	R(0.01)	-3.66	1357	D445	2.705		0.05
575		-----		-----	1362		-----		-----
603	D445	2.725		1.90	1399		-----	W	-----
604	D445	2.71955		1.39	1412	D445	2.721		1.53
608	D445	2.704		-0.04	1417	D445	2.700		-0.41
614	D445	2.696		-0.78	1429	D445	2.701		-0.32
621	D445	2.681		-2.16	1430	D445	2.718		1.25
631	D445	2.7080		0.33	1498	D445	2.710		0.51
633		-----		-----	1575	D445	2.69		-1.33
634		-----		-----	1588		-----		-----
657	D445	2.735		2.82	1616	D445	2.699		-0.50
710	D445	2.7011		-0.31	1629		-----		-----
750		-----		-----	1634	D445	2.698		-0.59

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643	D445	2.6971		-0.68	6142	ISO3104	2.720		1.43
1710	ISO3104	2.700		-0.41	6172	D445	2.7036		-0.08
1720	D7042	2.707		0.24	6184	ISO3104	2.7042		-0.02
1721	D445	2.7270		2.08	6192	D7042	2.703		-0.13
1740	ISO3104	2.703		-0.13	6266	D4072	2.7074		0.27
1741	ISO3104	2.702		-0.22	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807	D445	2.700		-0.41	6332		-----		-----
1810	D445	2.703		-0.13	6346		-----		-----
1811	D445	2.708		0.33	6373	D445	2.6994		-0.46
1906		-----		-----	6393		-----		-----
1944	D445	2.706	C	0.14	6404		-----		-----
1958		2.679		-2.34	6416		-----		-----
1995	D445	2.70	C	-0.41	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019		-----		-----	6447		-----		-----
6054	D445	2.7148599		0.96	6479		-----		-----
6058	ISO3104	2.695		-0.87	6499		-----		-----
6103	ISO3104	2.702		-0.22					

normality	OK
n	107
outliers	4
mean (n)	2.7044
st.dev. (n)	0.00949
R(calc.)	0.0266
st.dev.(D445:21e1)	0.01085
R(D445:21e1)	0.0304

Lab 231 first reported 2.738
Lab 825 first reported 2.497
Lab 851 first reported 2.667
Lab 1399 test result withdrawn, reported 2.649
Lab 1944 first reported 2.738
Lab 1995 first reported 2.637





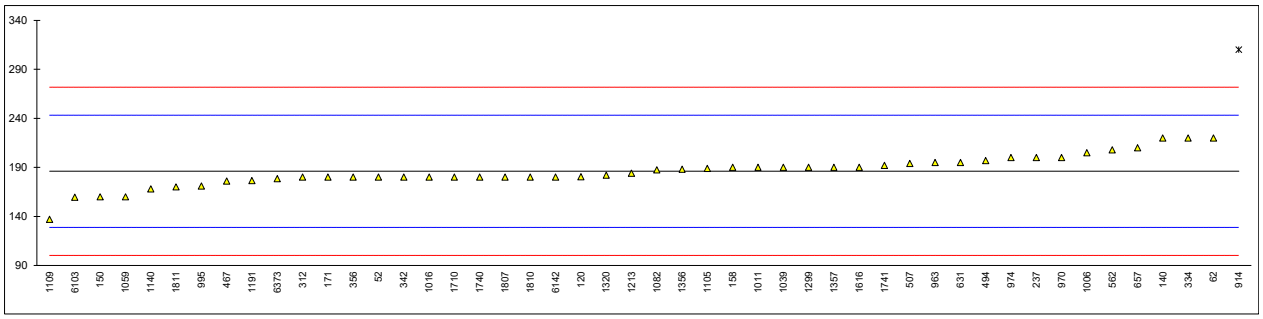
Determination of Lubricity by HFRR at 60 °C, rel. humidity 30-85% on sample #22170; results in µm

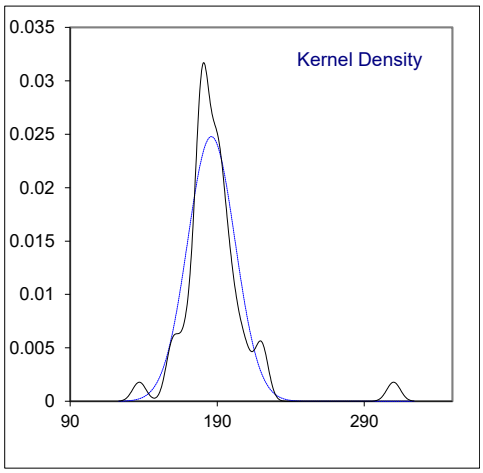
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D6079	180		-0.21	779		-----		-----
53		-----		-----	785		-----		-----
62	D6079	220		1.19	825		-----		-----
90		-----		-----	845		-----		-----
92		-----		-----	846		-----		-----
120	D6079	180.5		-0.19	851		-----		-----
140	D6079	220		1.19	854		-----		-----
150	D6079	160		-0.91	856		-----		-----
158	D6079	190		0.14	862		-----		-----
159		-----		-----	863		-----		-----
169		-----		-----	864		-----		-----
171	D6079	180		-0.21	872		-----		-----
175		-----		-----	873		-----		-----
203		-----		-----	874		-----		-----
212		-----		-----	886		-----		-----
215		-----		-----	887		-----		-----
217		-----		-----	912		-----		-----
221		-----		-----	914	D6079	310	R(0.01)	4.34
224		-----		-----	922		-----		-----
225		-----		-----	962		-----		-----
228		-----		-----	963	D6079	195		0.31
231		-----		-----	970	D6079	200		0.49
235		-----		-----	971		-----		-----
237	D6079	200		0.49	974	D6079	200		0.49
238		-----		-----	988		-----		-----
253		-----		-----	994		-----		-----
254		-----		-----	995	D6079	171		-0.53
256		-----		-----	996		-----		-----
258		-----		-----	997		-----		-----
273		-----		-----	1006	D6079	205		0.66
312	ISO12156-1-A	180		-0.21	1011	ISO12156-1-A	190		0.14
317		-----		-----	1016	ISO12156-1-A	180		-0.21
323	ISO12156-1-A	< 200		-----	1017		-----		-----
328		-----		-----	1039	ISO12156-1 (2006)	190		0.14
333		-----		-----	1059	ISO12156-1-A	160		-0.91
334	ISO12156-1-A	220	C	1.19	1082	ISO12156-1-A	187.5		0.05
335		-----		-----	1105	D6079	189		0.10
337		-----		-----	1109	IP450	137		-1.72
339		-----		-----	1121		-----		-----
342	ISO12156-1-A	180		-0.21	1126		-----		-----
344		-----		-----	1134		-----		-----
349		-----		-----	1140	D6079	168		-0.63
355		-----		-----	1146		-----		-----
356	ISO12156-1 (2006)	180		-0.21	1155		-----		-----
365		-----		-----	1171		-----		-----
381		-----		-----	1182		-----		-----
433		-----		-----	1186		-----		-----
467	D6079	176		-0.35	1191	ISO12156-1 (2006)	176.5		-0.33
480		-----		-----	1199		-----		-----
494	ISO12156-1-A	197		0.38	1205		-----		-----
498		-----		-----	1213	D6079	184		-0.07
507	D6079	194		0.28	1227		-----		-----
511		-----		-----	1284		-----		-----
551		-----		-----	1299	ISO12156-1-A	190		0.14
554		-----		-----	1320	ISO12156-1-A	182		-0.14
555		-----		-----	1345		-----		-----
558		-----		-----	1356	ISO12156-1-B	188		0.07
562	D6079	207.9		0.77	1357	D6079	190		0.14
575		-----		-----	1362		-----		-----
603		-----		-----	1399		-----		-----
604		-----		-----	1412		-----		-----
608		-----		-----	1417		-----		-----
614		-----		-----	1429		-----		-----
621		-----		-----	1430		-----		-----
631	D7688	195		0.31	1498		-----		-----
633		-----		-----	1575		-----		-----
634		-----		-----	1588		-----		-----
657	D6079	210		0.84	1616	D6079	190		0.14
710		-----		-----	1629		-----		-----
750		-----		-----	1634		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643		-----		-----	6142	ISO12156-1-A	180		-0.21
1710	ISO12156-1-A	180		-0.21	6172		-----		-----
1720		-----		-----	6184		-----		-----
1721		-----		-----	6192		-----		-----
1740	ISO12156-1-B	180		-0.21	6266		-----		-----
1741	ISO12156-1-B	192		0.21	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807	ISO12156-1-A	180		-0.21	6332		-----		-----
1810	ISO12156-1 (2006)	180		-0.21	6346		-----		-----
1811	D6079	170		-0.56	6373	ISO12156-1 (2006)	178.5		-0.26
1906		-----		-----	6393		-----		-----
1944		-----		-----	6404		-----		-----
1958		-----		-----	6416		-----		-----
1995		-----		-----	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019		-----		-----	6447		-----		-----
6054		-----		-----	6479		-----		-----
6058		-----		-----	6499		-----		-----
6103	ISO12156-1-A	159.5		-0.93					

				D6079 only:	ISO12156/IP450 only:
	normality	suspect		OK	not OK
	n	47		23	23
	outliers	1		1	0
	mean (n)	186.0		190.5	181.2
	st.dev. (n)	16.10		16.17	15.24
	R(calc.)	45.1		45.3	42.7
	st.dev.(D6079:18)	28.57		28.57	-----
	R(D6079:18)	80		80	-----
Compare:					
	R(ISO12156-1A:18)	80	(digital camera)	-----	80
	R(ISO12156-1B:18)	90	(visual)	-----	90

Lab 334 first reported 270





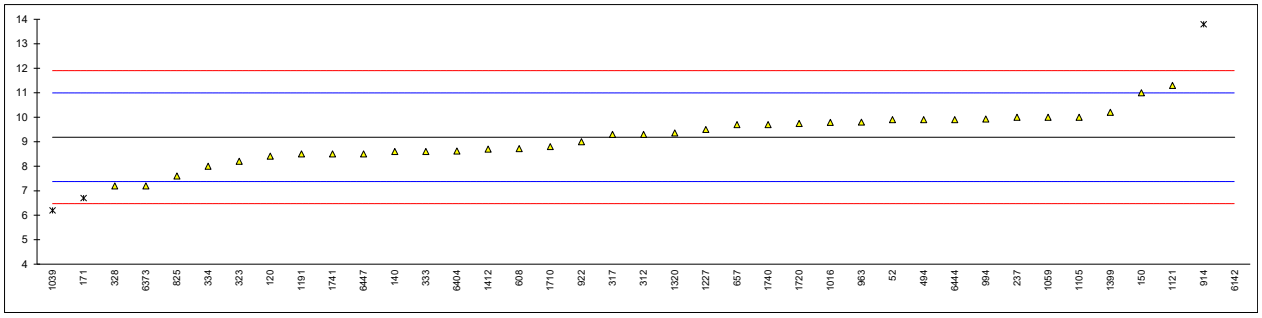
Determination of Nitrogen on sample #22170; results in mg/kg

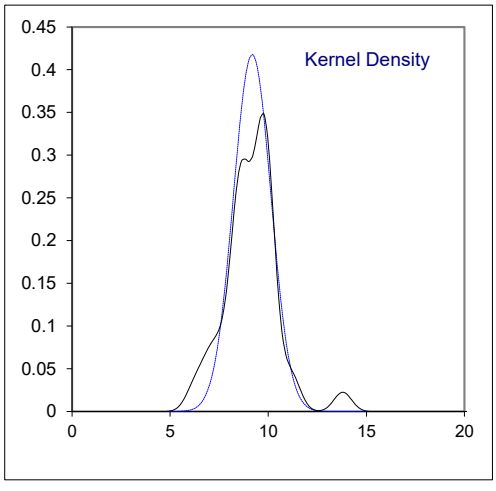
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D4629	9.9		0.79	779		-----		-----
53		-----		-----	785		-----		-----
62		-----		-----	825	D4629	7.6		-1.75
90		-----		-----	845		-----		-----
92		-----		-----	846		-----		-----
120	D4629	8.413		-0.85	851		-----		-----
140	D4629	8.6		-0.65	854		-----		-----
150	D4629	11	C	2.00	856		-----		-----
158		-----		-----	862		-----		-----
159		-----		-----	863		-----		-----
169		-----		-----	864		-----		-----
171	D4629	6.7	R(0.01)	-2.74	872		-----		-----
175		-----		-----	873		-----		-----
203		-----		-----	874		-----		-----
212		-----		-----	886		-----		-----
215		-----		-----	887		-----		-----
217		-----		-----	912		-----		-----
221		-----		-----	914	D4629	13.8	R(0.01)	5.10
224		-----		-----	922	D4629	9.0		-0.20
225		-----		-----	962		-----		-----
228		-----		-----	963	D4629	9.8		0.68
231		-----		-----	970		-----		-----
235		-----		-----	971		-----		-----
237	D4629	10		0.90	974		-----		-----
238		-----		-----	988		-----		-----
253		-----		-----	994	D4629	9.93		0.82
254		-----		-----	995		-----		-----
256		-----		-----	996		-----		-----
258		-----		-----	997		-----		-----
273		-----		-----	1006		-----		-----
312	D4629	9.3		0.13	1011		-----		-----
317	D4629	9.3		0.13	1016	D4629	9.79		0.67
323	D4629	8.2		-1.09	1017		-----		-----
328	D4629	7.2		-2.19	1039	D4629	6.2	R(0.01)	-3.30
333	D4629	8.6		-0.65	1059	D4629	10		0.90
334	D4629	8.0		-1.31	1082		-----		-----
335		-----		-----	1105	D4629	10.0		0.90
337		-----		-----	1109		-----		-----
339		-----		-----	1121	D4629	11.3		2.34
342		-----		-----	1126		-----		-----
344		-----		-----	1134		-----		-----
349		-----		-----	1140		-----		-----
355		-----		-----	1146		-----		-----
356		-----		-----	1155		-----		-----
365		-----		-----	1171		-----		-----
381		-----		-----	1182		-----		-----
433		-----		-----	1186		-----		-----
467		-----		-----	1191	D4629	8.5		-0.76
480		-----		-----	1199		-----		-----
494	D4629	9.9		0.79	1205		-----		-----
498		-----		-----	1213		-----		-----
507		-----		-----	1227	D4629	9.5		0.35
511		-----		-----	1284		-----		-----
551		-----		-----	1299		-----		-----
554		-----		-----	1320	D4629	9.36		0.19
555		-----		-----	1345		-----		-----
558		-----		-----	1356		-----		-----
562		-----		-----	1357	D4629	NA		-----
575		-----		-----	1362		-----		-----
603		-----		-----	1399	D4629	10.20		1.12
604		-----		-----	1412	D4629	8.7		-0.54
608	D4629	8.72		-0.51	1417		-----		-----
614		-----		-----	1429		-----		-----
621		-----		-----	1430		-----		-----
631		-----		-----	1498		-----		-----
633		-----		-----	1575	D3228	<150		-----
634		-----		-----	1588		-----		-----
657	D4629	9.7		0.57	1616		-----		-----
710		-----		-----	1629		-----		-----
750		-----		-----	1634		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643		-----		-----	6142		51.94	R(0.01)	47.22
1710	In house	8.8		-0.43	6172		-----		-----
1720	D4629	9.75		0.62	6184		-----		-----
1721		-----		-----	6192		-----		-----
1740	D4629	9.7	C	0.57	6266		-----		-----
1741	D4629	8.50		-0.76	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807		-----		-----	6332		-----		-----
1810		-----		-----	6346		-----		-----
1811		-----		-----	6373	D4629	7.2		-2.19
1906		-----		-----	6393		-----		-----
1944		-----		-----	6404	D4629	8.62		-0.62
1958		-----		-----	6416		-----		-----
1995		-----	W	-----	6421		-----		-----
2146		-----		-----	6444	D4629	9.9		0.79
6019		-----		-----	6447	D4629	8.5		-0.76
6054		-----		-----	6479		-----		-----
6058		-----		-----	6499		-----		-----
6103		-----		-----					

normality	OK
n	35
outliers	4
mean (n)	9.19
st.dev. (n)	0.955
R(calc.)	2.68
st.dev.(D4629:17)	0.906
R(D4629:17)	2.54

Lab 150 first reported 13
Lab 1740 first reported 5.7
Lab 1995 test result withdrawn, reported 12.9



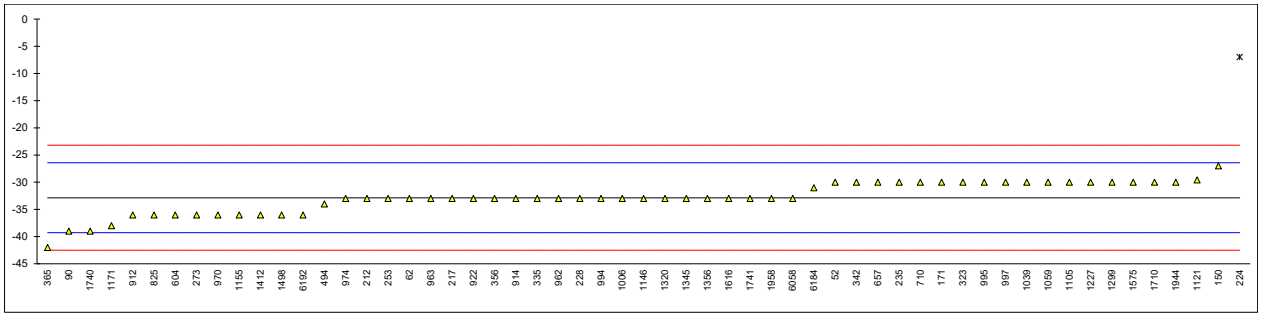


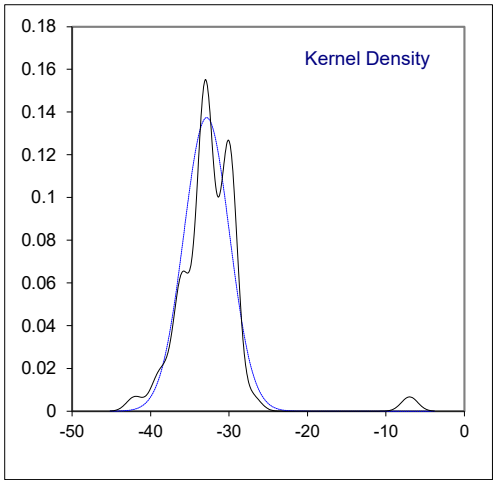
Determination of Pour Point Manual on sample #22170; results in °C

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D97	-30		0.89	779		-----		-----
53		-----		-----	785		-----		-----
62	D97	-33		-0.05	825	D97	-36		-0.98
90	D97	-39		-1.91	845		-----		-----
92	D97	<-30		-----	846		-----		-----
120		-----		-----	851	D97	<-21		-----
140		-----		-----	854		-----		-----
150	D97	-27		1.82	856		-----		-----
158		-----		-----	862		-----		-----
159		-----		-----	863		-----		-----
169	D97	<-33		-----	864		-----		-----
171	D97	-30		0.89	872		-----		-----
175		-----		-----	873		-----		-----
203		-----		-----	874		-----		-----
212	ISO3016	-33		-0.05	886		-----		-----
215		-----		-----	887		-----		-----
217	D97	-33		-0.05	912	D97	-36		-0.98
221	D97	<-27		-----	914	D97	-33		-0.05
224	D97	-7	R(0.01)	8.04	922	D97	-33		-0.05
225		-----		-----	962	D97	-33		-0.05
228	D97	-33		-0.05	963	D97	-33.0		-0.05
231	D97	<-24		-----	970	D97	-36		-0.98
235	D97	-30		0.89	971	D97	<-36		-----
237	D97	<-21		-----	974	D97	-33		-0.05
238		-----		-----	988		-----		-----
253	D97	-33		-0.05	994	D97	-33		-0.05
254		-----		-----	995	D97	-30		0.89
256		-----		-----	996		-----		-----
258		-----		-----	997	D97	-30		0.89
273	D97	-36		-0.98	1006	D97	-33		-0.05
312		-----		-----	1011	D97	<-21		-----
317		-----		-----	1016		-----		-----
323	D97	-30		0.89	1017		-----		-----
328		-----		-----	1039	ISO3016	-30		0.89
333		-----		-----	1059	ISO3016	-30		0.89
334		-----		-----	1082		-----		-----
335	D97	-33		-0.05	1105	D97	-30.0		0.89
337		-----		-----	1109		-----		-----
339		-----		-----	1121	D97	-29.58		1.02
342	ISO3016	-30		0.89	1126		-----		-----
344		-----		-----	1134		-----		-----
349		-----		-----	1140		-----		-----
355		-----		-----	1146	D97	-33		-0.05
356	D97	-33		-0.05	1155	ISO3016	-36		-0.98
365	IP15	-42		-2.85	1171	ISO3016	-38.0		-1.60
381		-----		-----	1182		-----		-----
433		-----		-----	1186		-----		-----
467		-----		-----	1191		-----		-----
480		-----		-----	1199		-----		-----
494	ISO3016	-34		-0.36	1205		-----		-----
498		-----		-----	1213	D97	<-33		-----
507	D97	<-30		-----	1227	D97	-30		0.89
511		-----		-----	1284		-----		-----
551		-----		-----	1299	D97	-30		0.89
554		-----		-----	1320	ISO3016	-33		-0.05
555		-----		-----	1345	D97	-33		-0.05
558		-----		-----	1356	ISO3016	-33		-0.05
562		-----		-----	1357	D97	NA		-----
575		-----		-----	1362		-----		-----
603		-----		-----	1399		-----		-----
604	D97	-36		-0.98	1412	D97	-36		-0.98
608	D97	≤-36		-----	1417		-----		-----
614		-----		-----	1429	D97	<-27.0		-----
621	D97	<21.0		-----	1430		-----		-----
631		-----		-----	1498	D97	-36		-0.98
633		-----		-----	1575	D97	-30		0.89
634		-----		-----	1588		-----		-----
657	D97	-30		0.89	1616	D97	-33		-0.05
710	D97	-30		0.89	1629		-----		-----
750		-----		-----	1634		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643		-----		-----	6142		-----		-----
1710	ISO3016	-30		0.89	6172		-----		-----
1720		-----		-----	6184	ISO3016	-31		0.58
1721		-----		-----	6192	ISO3016	-36		-0.98
1740	ISO3016	-39		-1.91	6266		-----		-----
1741	ISO3016	-33		-0.05	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807		-----		-----	6332		-----		-----
1810		-----		-----	6346		-----		-----
1811		-----		-----	6373		-----		-----
1906		-----		-----	6393		-----		-----
1944	D97	-30		0.89	6404		-----		-----
1958	D97	-33		-0.05	6416		-----		-----
1995		-----		-----	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019		-----		-----	6447		-----		-----
6054		-----		-----	6479		-----		-----
6058	ISO3016	-33		-0.05	6499		-----		-----
6103		-----		-----					

normality	OK
n	56
outliers	1
mean (n)	-32.85
st.dev. (n)	2.903
R(calc.)	8.13
st.dev.(D97:17b)	3.214
R(D97:17b)	9





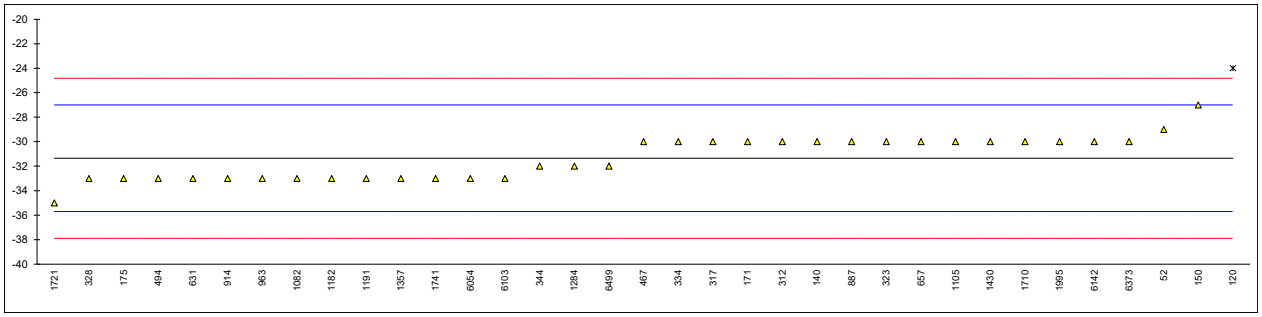
Determination of Pour Point Automated 3 °C interval on sample #22170; results in °C

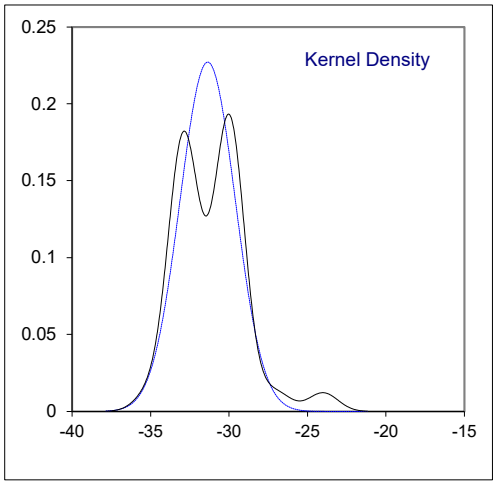
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D5949	-29		1.08	779		-----		-----
53		-----		-----	785		-----		-----
62		-----		-----	825		-----		-----
90		-----		-----	845		-----		-----
92		-----		-----	846		-----		-----
120	D5949	-24.0	R(0.01)	3.38	851		-----		-----
140		-30		0.62	854		-----		-----
150	D5950	-27		2.00	856		-----		-----
158		-----		-----	862		-----		-----
159		-----		-----	863		-----		-----
169		-----		-----	864		-----		-----
171	D5950	-30		0.62	872		-----		-----
175	D5950	-33		-0.76	873		-----		-----
203		-----		-----	874		-----		-----
212		-----		-----	886		-----		-----
215		-----		-----	887	D6749	-30		0.62
217		-----		-----	912		-----		-----
221		-----		-----	914	D5950	-33		-0.76
224		-----		-----	922		-----		-----
225		-----		-----	962		-----		-----
228		-----		-----	963	D5950	-33.0		-0.76
231		-----		-----	970		-----		-----
235		-----		-----	971		-----		-----
237		-----		-----	974		-----		-----
238		-----		-----	988		-----		-----
253		-----		-----	994		-----		-----
254		-----		-----	995		-----		-----
256		-----		-----	996		-----		-----
258		-----		-----	997		-----		-----
273		-----		-----	1006		-----		-----
312	D5950	-30		0.62	1011		-----		-----
317	D6749	-30		0.62	1016		-----		-----
323	D5950	-30		0.62	1017		-----		-----
328	D5950	-33		-0.76	1039		-----		-----
333		-----		-----	1059		-----		-----
334	D5950	-30		0.62	1082	D5950	-33		-0.76
335		-----		-----	1105	D5950	-30.0		0.62
337		-----		-----	1109		-----		-----
339		-----		-----	1121		-----		-----
342		-----		-----	1126		-----		-----
344	D5950	-32		-0.30	1134		-----		-----
349		-----		-----	1140		-----		-----
355		-----		-----	1146		-----		-----
356		-----		-----	1155		-----		-----
365		-----		-----	1171		-----		-----
381		-----		-----	1182		-33	C	-0.76
433		-----		-----	1186		-----		-----
467	D6892	-30		0.62	1191	D5950	-33		-0.76
480		-----		-----	1199		-----		-----
494	D5950	-33		-0.76	1205		-----		-----
498		-----		-----	1213		-----		-----
507		-----		-----	1227		-----		-----
511		-----		-----	1284	D5950	-32		-0.30
551		-----		-----	1299		-----		-----
554		-----		-----	1320		-----		-----
555		-----		-----	1345		-----		-----
558		-----		-----	1356		-----		-----
562		-----		-----	1357	D5950	-33.0		-0.76
575		-----		-----	1362		-----		-----
603		-----		-----	1399		-----		-----
604		-----		-----	1412		-----		-----
608		-----		-----	1417		-----		-----
614		-----		-----	1429		-----		-----
621		-----		-----	1430	D5950	-30		0.62
631	D5949	-33		-0.76	1498		-----		-----
633		-----		-----	1575		-----		-----
634		-----		-----	1588		-----		-----
657	D5950	-30		0.62	1616		-----		-----
710		-----		-----	1629		-----		-----
750		-----		-----	1634		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643		-----		-----	6142	D5950	-30		0.62
1710	D5950	-30		0.62	6172		-----		-----
1720		-----		-----	6184		-----		-----
1721	D5950	-35		-1.67	6192		-----		-----
1740		-----		-----	6266		-----		-----
1741	D5950	-33		-0.76	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807		-----		-----	6332		-----		-----
1810		-----		-----	6346		-----		-----
1811		-----		-----	6373	D5950	-30		0.62
1906		-----		-----	6393		-----		-----
1944		-----		-----	6404		-----		-----
1958		-----		-----	6416		-----		-----
1995	D5950	-30		0.62	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019		-----		-----	6447		-----		-----
6054	D5950	-33.0		-0.76	6479		-----		-----
6058		-----		-----	6499	D6749	-32		-0.30
6103	D5950	-33		-0.76					

normality	OK
n	34
outliers	1
mean (n)	-31.35
st.dev. (n)	1.756
R(calc.)	4.92
st.dev.(D5950:14R20)	2.179
R(D5950:14R20)	6.1

Lab 1182 first reported -25





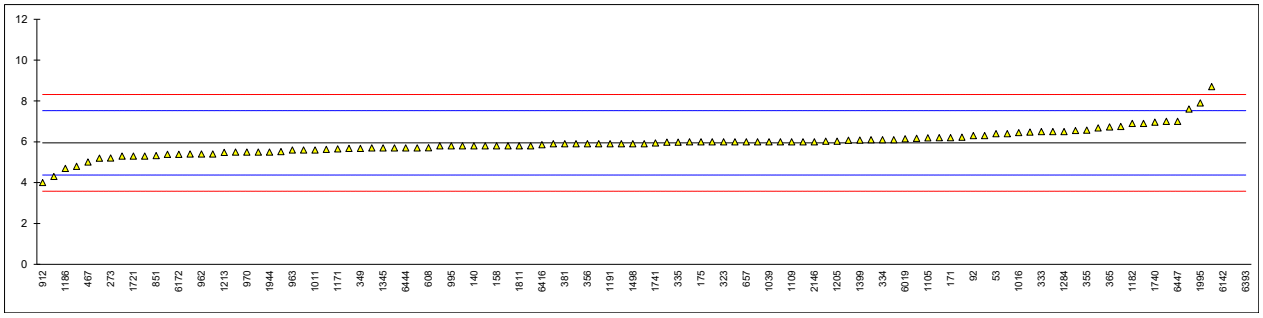
Determination of Total Sulfur on sample #22170; results in mg/kg

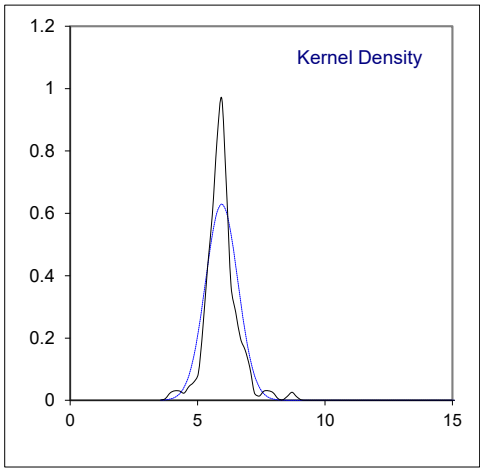
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D5453	5.6		-0.44	779		-----		-----
53	D5453	6.4		0.57	785		-----		-----
62	D5453	5.4		-0.70	825	D5453	5.9		-0.06
90		-----		-----	845		-----		-----
92	D5453	6.3	C	0.44	846		-----		-----
120	D5453	6.479		0.67	851	D2622	5.325		-0.79
140	D5453	5.8		-0.19	854		-----		-----
150		-----		-----	856		-----		-----
158		5.8		-0.19	862		-----		-----
159		-----		-----	863		-----		-----
169	D5453	6.5		0.70	864		-----		-----
171	D5453	6.2		0.32	872		-----		-----
175	D5453	6.0		0.06	873		-----		-----
203		-----		-----	874		-----		-----
212		-----		-----	886		-----		-----
215		-----		-----	887		-----		-----
217	D5453	6.0		0.06	912	D5453	4.0		-2.47
221		-----		-----	914	D5453	5.5		-0.57
224		-----		-----	922	D5453	5.9		-0.06
225		-----		-----	962	D5453	5.4		-0.70
228	D2622	4.3		-2.09	963	D5453	5.6		-0.44
231		-----		-----	970	D5453	5.5		-0.57
235		-----		-----	971	D5453	5.625		-0.41
237	D5453	6.0		0.06	974	D5453	5.5		-0.57
238		-----		-----	988		-----		-----
253		-----		-----	994	D5453	5.9		-0.06
254	D4294	<17		-----	995	D5453	5.8		-0.19
256		-----		-----	996		-----		-----
258	D5453	8.7	C	3.49	997	D5453	6.2		0.32
273	D5453	5.21		-0.94	1006	D5453	4.8		-1.46
312	D5453	5.4		-0.70	1011	ISO20846	5.6		-0.44
317	D5453	6.0		0.06	1016	ISO20846	6.45		0.63
323	D5453	6.0		0.06	1017		-----		-----
328	D5453	6.1		0.19	1039	ISO20884	6.0		0.06
333	D5453	6.5		0.70	1059	ISO20846	6.0		0.06
334	ISO20846	6.1		0.19	1082		-----		-----
335	ISO20846	5.985		0.04	1105	D7039	6.19		0.30
337	D5453	6.0		0.06	1109	D2622	6.0		0.06
339		-----		-----	1121	D5453	6.03		0.10
342		-----		-----	1126	ISO20846	5.7		-0.32
344	D5453	5.39		-0.71	1134		-----		-----
349	D2622	5.68		-0.34	1140	D5453	5.8		-0.19
355	D2622	6.5725		0.79	1146	D4294	<100		-----
356	ISO20846	5.9		-0.06	1155	ISO20846	6.55		0.76
365	ISO20846	6.72		0.98	1171	ISO20846	5.65		-0.38
381	ISO20846	5.9		-0.06	1182	ISO20846	6.9		1.20
433		-----		-----	1186		4.7		-1.59
467	D5453	5.01		-1.19	1191	ISO20846	5.9		-0.06
480	D5453	5.80		-0.19	1199		-----		-----
494	ISO20846	5.8		-0.19	1205	ISO20846	6.03		0.10
498		-----		-----	1213	D5453	5.48		-0.60
507	ISO8754	5.8		-0.19	1227	D5453	5.3		-0.82
511	D5453	5.68		-0.34	1284	D2622	6.5		0.70
551		-----		-----	1299	ISO20884	6.9		1.20
554		-----		-----	1320	ISO20846	6.22		0.34
555		-----		-----	1345	D5453	5.7		-0.32
558		-----		-----	1356	ISO8754	<300		-----
562		-----		-----	1357	D5453	5.9		-0.06
575		-----		-----	1362		-----		-----
603		-----		-----	1399	D5453	6.085		0.17
604		-----		-----	1412	D5453	5.7		-0.32
608	D5453	5.71		-0.30	1417	In house	50	R(0.01)	55.85
614		-----		-----	1429		-----		-----
621	D4294	<20		-----	1430	ISO8754	<5		-----
631	D4294	7.6		2.09	1498	D5453	5.9		-0.06
633		-----		-----	1575		-----		-----
634		-----		-----	1588		-----		-----
657	D5453	6.0		0.06	1616	D5453	5.98		0.04
710	ISO20884	5.2		-0.95	1629		-----		-----
750		-----		-----	1634	ISO20846	6.08		0.16

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643		-----		-----	6142	ISO20846	24	R(0.01)	22.88
1710	ISO20846	6.4		0.57	6172	D5453	5.39		-0.71
1720	D5453	5.52		-0.55	6184	ISO20846	6.3		0.44
1721	ISO20846	5.3		-0.82	6192	D5453	5.80		-0.19
1740	ISO20846	6.96		1.28	6266		-----		-----
1741	ISO20846	5.94		-0.01	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807		-----		-----	6332		-----		-----
1810	D5453	5.9		-0.06	6346		-----		-----
1811	D5453	5.8		-0.19	6373	ISO20846	5.3		-0.82
1906		-----		-----	6393	D1552	560	R(0.01)	702.42
1944	D5453	5.50		-0.57	6404	ISO20846	6.17		0.28
1958	D5453	6		0.06	6416	D5453	5.85		-0.13
1995	D5453	7.9		2.47	6421		-----		-----
2146	ISO20846	6.0		0.06	6444	D5453	5.7		-0.32
6019	ISO20846	6.14		0.24	6447	D2622	7	C	1.33
6054	D4294	7		1.33	6479	IP600	6.75		1.01
6058	ISO20884	6.1		0.19	6499	D7220	5.7		-0.32
6103	D5453	6.68		0.93					

normality	not OK
n	104
outliers	3
mean (n)	5.950
st.dev. (n)	0.6335
R(calc.)	1.774
st.dev.(D5453:19a)	0.7888
R(D5453:19a)	2.209

Lab 92 first reported 10.7
Lab 258 first reported 3.5
Lab 6447 first reported 0.0007





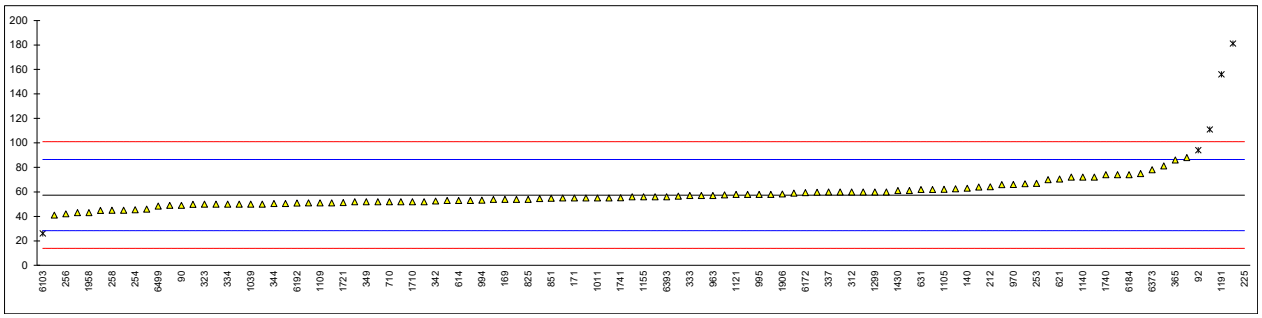
Determination of Water on sample #22170; results in mg/kg

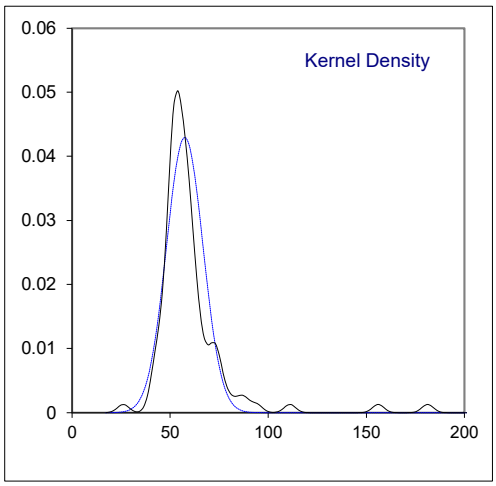
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D6304-A:20	49		-0.58	779		-----		-----
53		-----		-----	785		-----		-----
62	D6304-A:20	55		-0.17	825	D6304-A:20	54		-0.23
90	D6304-A:20	49		-0.58	845		-----		-----
92	E203	94	R(0.05)	2.52	846		-----		-----
120		-----		-----	851	D6304-A:20	54.79935		-0.18
140	D6304-A:20	63	C	0.38	854		-----		-----
150	D6304-A:20	45		-0.85	856		-----		-----
158		-----		-----	862		-----		-----
159		-----		-----	863		-----		-----
169	D6304-A:20	54	C	-0.23	864		-----		-----
171	D6304-A:16e1	55		-0.17	872		-----		-----
175		-----		-----	873		-----		-----
203	D6304-A:20	81.28		1.64	874		-----		-----
212	D6304-B:20	64.2	C	0.47	886		-----		-----
215		-----		-----	887		-----		-----
217	D6304-A:20	55		-0.17	912		-----		-----
221		-----		-----	914	D6304	60		0.18
224		-----		-----	922	D6304-A:20	54		-0.23
225	D95	500	R(0.01)	30.45	962	D6304-A:16e1	52		-0.37
228		-----		-----	963	D6304-A:20	57		-0.03
231	D6304-A:20	54.51		-0.20	970	D6304	66.1		0.60
235		-----		-----	971	D6304-A:16e1	72		1.00
237	D6304-C:16e1	70		0.87	974	D6304-A:20	66		0.59
238		-----		-----	988		-----		-----
253	D6304	67		0.66	994	D6304-A:20	53.3		-0.28
254	D6304-B:20	45.33		-0.83	995	D6304-A:20	58		0.04
256	D6304-B:20	42.12		-1.05	996		-----		-----
258	D6304	45		-0.85	997	D6304-A:20	50		-0.51
273	D6304	57.55		0.01	1006	D6304-A:20	62		0.32
312	ISO12937	60		0.18	1011	ISO12937	55		-0.17
317	D6304-A:20	53		-0.30	1016	ISO12937	59.67		0.16
323	ISO12937	50		-0.51	1017		-----		-----
328	ISO12937	50		-0.51	1039	ISO12937	50		-0.51
333	D6304-A:20	57		-0.03	1059	ISO12937	50		-0.51
334	D6304-A:20	50		-0.51	1082	ISO12937	51.05		-0.44
335	D6304-A:20	64		0.45	1105	D6304-A:20	62.2		0.33
337	ISO12937	60		0.18	1109	D6304-B:20	51		-0.44
339		-----		-----	1121	D6304-A:20	57.95		0.04
342	ISO12937	52.6		-0.33	1126		-----		-----
344	ISO12937	50.5		-0.48	1134		-----		-----
349	D6304-A:20	52		-0.37	1140	IP438	72		1.00
355		-----		-----	1146	D6403-B:20	43		-0.99
356	ISO12937	56		-0.10	1155	ISO12937	56.0		-0.10
365	IP438	86		1.97	1171	ISO12937	49.8		-0.52
381	ISO12937	75		1.21	1182		-----		-----
433		-----		-----	1186		-----		-----
467	D6304-A:20	56.5		-0.06	1191	ISO12937	156.0	R(0.01)	6.78
480	D6304-A:20	51.0		-0.44	1199		-----		-----
494	D6304-A:20	60		0.18	1205		-----		-----
498	ISO12937	181.2	R(0.01)	8.52	1213	D6304	51.9		-0.38
507		-----		-----	1227	D6304-A:20	46		-0.79
511		-----		-----	1284		-----		-----
551		-----		-----	1299	ISO12937	60		0.18
554		-----		-----	1320	ISO12937	50.5		-0.48
555		-----		-----	1345	D6304-A:20	56		-0.10
558		-----		-----	1356	ISO3733	<200		-----
562		-----		-----	1357	D6304-A:20	NA		-----
575		-----		-----	1362		-----		-----
603	D6304-A:20	52		-0.37	1399	IP438	41		-1.13
604		-----		-----	1412	D6304-A:20	55		-0.17
608	D6304-A	58		0.04	1417	D6304-A:20	72		1.00
614	D6304-B:20	53		-0.30	1429		-----		-----
621	D6304-A:20	70.5		0.90	1430	D6304-A:20	61.1		0.25
631	D6304-A:20	62		0.32	1498		-----		-----
633		-----		-----	1575	D6304-A:20	66.7		0.64
634		-----		-----	1588		-----		-----
657	D6304-A:20	57		-0.03	1616	UOP481	62.5		0.35
710	ISO12937	52		-0.37	1629		-----		-----
750		-----		-----	1634	ISO12937	44.85		-0.86

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643	ISO6296	88	C	2.10	6142	ISO12937	111	R(0.01)	3.69
1710	ISO12937	52		-0.37	6172	D6304-A:20	59.326		0.13
1720		-----		-----	6184	ISO12937	74.08		1.15
1721	ISO12937	51.3		-0.42	6192	ISO12937	50.9		-0.45
1740	ISO12937	74		1.14	6266		-----		-----
1741	ISO12937	55.3		-0.15	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807	ISO12937	60		0.18	6332		-----		-----
1810	ISO12937	58		0.04	6346		-----		-----
1811	D6304-A:16e1	59		0.11	6373	ISO12937	78		1.42
1906	D6304-C:20	58.36		0.07	6393	ISO6296	56		-0.10
1944	D6304-A:20	53.8		-0.25	6404	ISO12937	53		-0.30
1958	D6304-A:16e1	43		-0.99	6416		-----		-----
1995	D4928	74		1.14	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019	ISO12937	61.1		0.25	6447		-----		-----
6054		-----		-----	6479		-----		-----
6058	ISO12937	52		-0.37	6499	D6304-A:20	48.42		-0.62
6103	ISO12937	26.05	R(0.05)	-2.16					

	normality	not OK
	n	99
	outliers	6
	mean (n)	57.42
	st.dev. (n)	9.287
	R(calc.)	26.00
	st.dev.(D6304-A:20)	14.533
	R(D6304-A:20)	40.69 range: 20-25000 mg/kg
Compare:		
	R(D6304-B:20)	122.66 range: 30-2100 mg/kg
	R(D6304-C:A:20)	28.56 range: 20-360 mg/kg

Lab 140 first reported 130
Lab 169 first reported 91
Lab 212 first reported 91.2
Lab 1643 first reported 0.0104 %M/M





Determination of Water and Sediment (D2709) on sample #22170; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52	D2709	<0.010		-----	779		-----		-----
53		-----		-----	785		-----		-----
62	D2709	<0.01		-----	825	D2709	<0.01		-----
90		-----		-----	845		-----		-----
92	D2709	Trace		-----	846		-----		-----
120	D2709	0		-----	851	D2709	<0.005		-----
140	D2709	<0.01		-----	854		-----		-----
150	D2709	<0.01		-----	856		-----		-----
158	D2709	<0.01		-----	862		-----		-----
159		-----		-----	863		-----		-----
169		-----		-----	864		-----		-----
171	D2709	<0.01		-----	872		-----		-----
175		-----		-----	873		-----		-----
203		-----		-----	874		-----		-----
212		-----		-----	886		-----		-----
215		-----		-----	887		-----		-----
217	D2709	<0.01		-----	912	D2709	<0.05		-----
221		-----		-----	914	D2709	<0.005		-----
224		-----		-----	922	D2709	0.00		-----
225		-----		-----	962		-----		-----
228		-----		-----	963	D2709	<0.01		-----
231		-----		-----	970	D2709	0.0		-----
235		-----		-----	971	D2709	<0.01		-----
237	D2709	<0.01		-----	974	D2709	0.00		-----
238		-----		-----	988		-----		-----
253		-----		-----	994	D2709	<0.05		-----
254		-----		-----	995		-----		-----
256		-----		-----	996		-----		-----
258		-----		-----	997	D2709	<0.01		-----
273		-----		-----	1006		-----		-----
312		-----		-----	1011		-----		-----
317		-----		-----	1016		-----		-----
323		-----		-----	1017		-----		-----
328		-----		-----	1039		-----		-----
333		-----		-----	1059	D2709	<0,05		-----
334		-----		-----	1082		-----		-----
335		-----		-----	1105	D2709	<0.01		-----
337		-----		-----	1109	D2709	0.000		-----
339		-----		-----	1121		-----		-----
342	D2709	0.00		-----	1126		-----		-----
344	D2709	<0.05		-----	1134		-----		-----
349		-----		-----	1140		-----		-----
355		-----		-----	1146		-----		-----
356		-----		-----	1155		-----		-----
365		-----		-----	1171		-----		-----
381		-----		-----	1182		-----		-----
433		-----		-----	1186		-----		-----
467		-----		-----	1191		-----		-----
480		-----		-----	1199		-----		-----
494		-----		-----	1205		-----		-----
498		-----		-----	1213		-----		-----
507	D2709	0.0		-----	1227		-----		-----
511	D2709	<0.05		-----	1284		-----		-----
551		-----		-----	1299	D2709	<0.01		-----
554		-----		-----	1320		-----		-----
555		-----		-----	1345		-----		-----
558		-----		-----	1356		-----		-----
562	D2709	0		-----	1357	D2709	<0.05		-----
575		-----		-----	1362		-----		-----
603		-----		-----	1399		-----		-----
604		-----		-----	1412	D2709	<0.05		-----
608		-----		-----	1417		-----		-----
614		-----		-----	1429		-----		-----
621	D2709	<0.01		-----	1430		-----		-----
631	D2709	0		-----	1498	D2709	0.005		-----
633		-----		-----	1575	D2709	<0.05		-----
634		-----		-----	1588		-----		-----
657	D2709	<0.01		-----	1616		-----		-----
710		-----		-----	1629		-----		-----
750		-----		-----	1634		-----		-----

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643		-----		-----	6142		-----		-----
1710		-----		-----	6172		-----		-----
1720		-----		-----	6184		-----		-----
1721		-----		-----	6192		-----		-----
1740	D2709	0.005		-----	6266		-----		-----
1741		-----		-----	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807		-----		-----	6332		-----		-----
1810		-----		-----	6346		-----		-----
1811		-----		-----	6373		-----		-----
1906		-----		-----	6393		-----		-----
1944	D2709	<0.05		-----	6404		-----		-----
1958	D2709	0.05		-----	6416		-----		-----
1995		-----		-----	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019		-----		-----	6447		-----		-----
6054		-----		-----	6479		-----		-----
6058		-----		-----	6499		-----		-----
6103		-----		-----					

n	40
mean (n)	<0.05

Determination of Water and Sediment (D1796) on sample #22170; results in %V/V

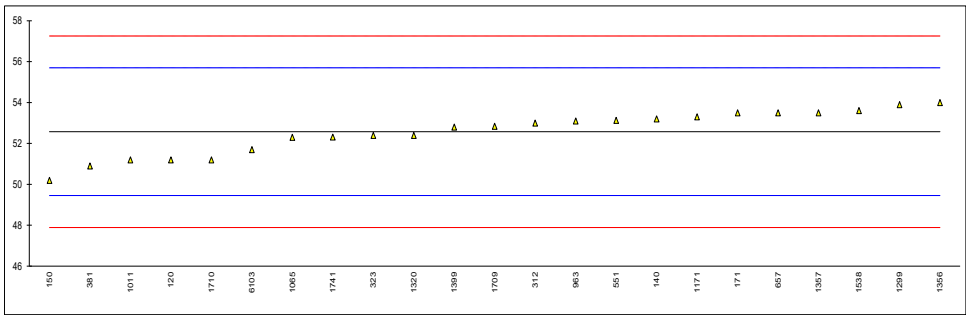
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
52		-----		-----	779		-----		-----
53		-----		-----	785		-----		-----
62		-----		-----	825	D1796	<0.01		-----
90		-----		-----	845		-----		-----
92		-----		-----	846		-----		-----
120	D1796	0		-----	851		-----		-----
140		-----		-----	854		-----		-----
150		-----		-----	856		-----		-----
158		-----		-----	862		-----		-----
159		-----		-----	863		-----		-----
169	D1796	0.00		-----	864		-----		-----
171	D1796	<0.01		-----	872		-----		-----
175		-----		-----	873		-----		-----
203		-----		-----	874		-----		-----
212		-----		-----	886		-----		-----
215		-----		-----	887		-----		-----
217	D1796	0.00		-----	912	D1796	<0.1		-----
221		-----		-----	914		-----		-----
224		-----		-----	922		-----		-----
225		-----		-----	962		-----		-----
228		-----		-----	963	D1796	<0.01		-----
231		-----		-----	970	D1796	0.0		-----
235		-----		-----	971	D1796	0.0		-----
237		-----		-----	974	D1796	0.00		-----
238		-----		-----	988		-----		-----
253		-----		-----	994	D1796	<0.1		-----
254		-----		-----	995		-----		-----
256		-----		-----	996		-----		-----
258		-----		-----	997		-----		-----
273		-----		-----	1006		-----		-----
312		-----		-----	1011		-----		-----
317		-----		-----	1016		-----		-----
323	D1796	< 0.05		-----	1017		-----		-----
328		-----		-----	1039		-----		-----
333		-----		-----	1059		-----		-----
334	D1796	0		-----	1082		-----		-----
335		-----		-----	1105		-----		-----
337		-----		-----	1109		-----		-----
339		-----		-----	1121		-----		-----
342		-----		-----	1126		-----		-----
344		-----		-----	1134		-----		-----
349		-----		-----	1140		-----		-----
355		-----		-----	1146		-----		-----
356		-----		-----	1155		-----		-----
365		-----		-----	1171		-----		-----
381		-----		-----	1182		-----		-----
433		-----		-----	1186		-----		-----
467		-----		-----	1191		-----		-----
480		-----		-----	1199		-----		-----
494		-----		-----	1205		-----		-----
498		-----		-----	1213		-----		-----
507	D1796	0.0		-----	1227		-----		-----
511	D1796	<0.01		-----	1284		-----		-----
551		-----		-----	1299		-----		-----
554		-----		-----	1320		-----		-----
555		-----		-----	1345		-----		-----
558		-----		-----	1356		-----		-----
562		-----		-----	1357	D1796	NA		-----
575		-----		-----	1362		-----		-----
603		-----		-----	1399		-----		-----
604		-----		-----	1412		-----		-----
608		-----		-----	1417		-----		-----
614		-----		-----	1429		-----		-----
621		-----		-----	1430		-----		-----
631	D1796	0		-----	1498		-----		-----
633		-----		-----	1575		-----		-----
634		-----		-----	1588		-----		-----
657		-----		-----	1616		-----		-----
710		-----		-----	1629		-----		-----
750		-----		-----	1634		-----		-----

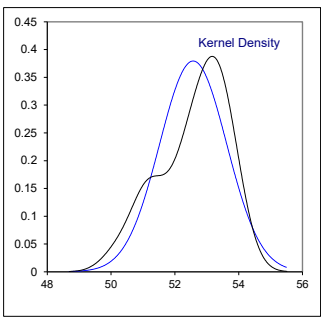
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
1643		-----		-----	6142		-----		-----
1710		-----		-----	6172		-----		-----
1720		-----		-----	6184		-----		-----
1721		-----		-----	6192		-----		-----
1740	D1796	0		-----	6266		-----		-----
1741	ISO3734	<0.05		-----	6317		-----		-----
1746		-----		-----	6319		-----		-----
1807		-----		-----	6332		-----		-----
1810		-----		-----	6346		-----		-----
1811		-----		-----	6373		-----		-----
1906		-----		-----	6393		-----		-----
1944		-----		-----	6404		-----		-----
1958		-----		-----	6416		-----		-----
1995		-----		-----	6421		-----		-----
2146		-----		-----	6444		-----		-----
6019		-----		-----	6447		-----		-----
6054		-----		-----	6479		-----		-----
6058		-----		-----	6499		-----		-----
6103	D1796	<0.05		-----					
	n	17							
	mean (n)	<0.05							

Determination of Cetane Number (ASTM D613) of sample #22171

lab	method	value	mark	z(targ)	remarks
120	D613	51.2		-0.88	
140	D613	53.2		0.40	
150	D613	50.2		-1.52	
171	D613	53.5		0.59	
312	D613	53.0		0.27	
323	D613	52.4		-0.11	
328		-----		-----	
356		-----		-----	
381	ISO5165	50.9		-1.07	
494		-----		-----	
551	D613	53.13		0.36	
657	D613	53.5		0.59	
846		-----		-----	
862		-----		-----	
963	D613	53.1		0.34	
1011	ISO5165	51.2		-0.88	
1039		-----		-----	
1059		-----		-----	
1065	D613	52.3		-0.18	
1134		-----		-----	
1140		-----		-----	
1171	D613Mod.	53.30		0.47	
1191		-----		-----	
1299	D613	53.9		0.85	
1320	ISO5165	52.4		-0.11	
1356	ISO5165	54		0.91	
1357	D613	53.5		0.59	
1399	D613	52.8		0.15	
1538	ISO5165	53.61		0.66	
1616		-----		-----	
1709	D613	52.84		0.17	
1710	ISO5165	51.2		-0.88	
1741	D613	52.31		-0.17	
1807		-----		-----	
1810		-----		-----	
6103	D613	51.7		-0.56	
6142		-----		-----	
6373		-----		-----	
6421		-----		-----	

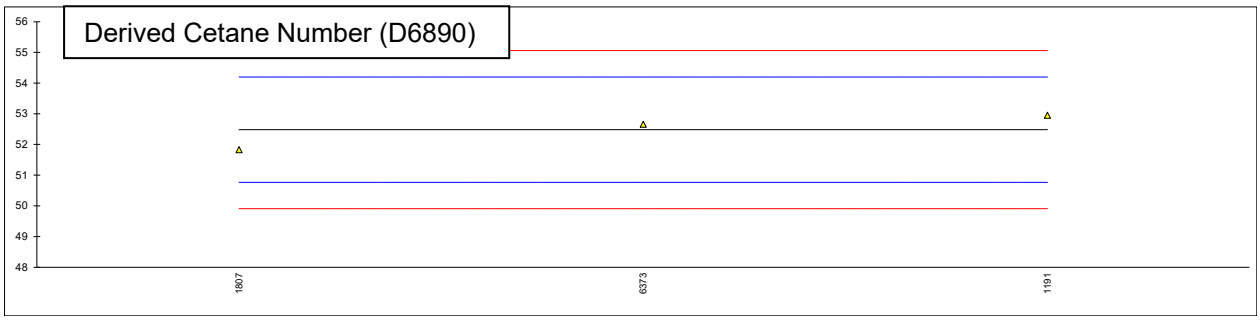
normality	OK
n	23
outliers	0
mean (n)	52.57
st.dev. (n)	1.051
R(calc.)	2.94
st.dev.(D613:18ae1)	1.561
R(D613:18ae1)	4.37





Determination of Derived Cetane Number (D6890) of sample #22171

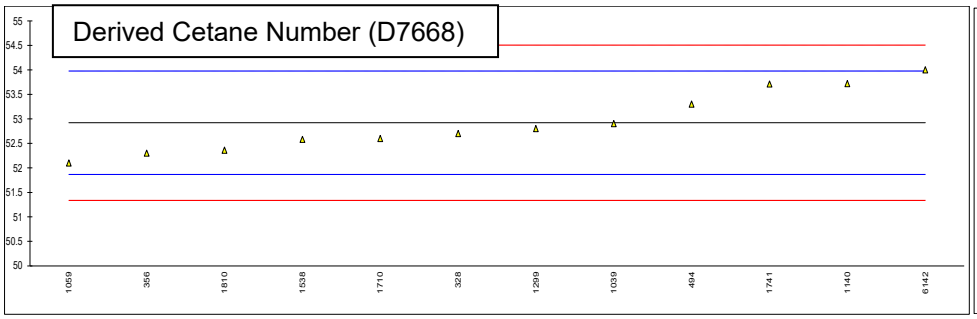
lab	method	DCN	mark	z(targ)	ID (ms)	mark	z(targ)	Air Temp. (°C)
120		-----		-----	-----		-----	-----
140		-----		-----	-----		-----	-----
150		-----		-----	-----		-----	-----
171		-----		-----	-----		-----	-----
312		-----		-----	-----		-----	-----
323		-----		-----	-----		-----	-----
328		-----		-----	-----		-----	-----
356		-----		-----	-----		-----	-----
381		-----		-----	-----		-----	-----
494		-----		-----	-----		-----	-----
551		-----		-----	-----		-----	-----
657		-----		-----	-----		-----	-----
846		-----		-----	-----		-----	-----
862		-----		-----	-----		-----	-----
963		-----		-----	-----		-----	-----
1011		-----		-----	-----		-----	-----
1039		-----		-----	-----		-----	-----
1059		-----		-----	-----		-----	-----
1065		-----		-----	-----		-----	-----
1134		-----		-----	-----		-----	-----
1140		-----		-----	-----		-----	-----
1171		-----		-----	-----		-----	-----
1191	EN15195	52.952		0.55	3.848		-----	-----
1299		-----		-----	-----		-----	-----
1320		-----		-----	-----		-----	-----
1356		-----		-----	-----		-----	-----
1357	D6890	NA		-----	NA		-----	NA
1399		-----		-----	-----		-----	-----
1538		-----		-----	-----		-----	-----
1616		-----		-----	-----		-----	-----
1709		-----		-----	-----		-----	-----
1710		-----		-----	-----		-----	-----
1741		-----		-----	-----		-----	-----
1807	EN17155	51.83		-0.76	-----		-----	-----
1810		-----		-----	-----		-----	-----
6103		-----		-----	-----		-----	-----
6142		-----		-----	-----		-----	-----
6373	D6890	52.66		0.21	-----		-----	-----
6421		-----		-----	-----		-----	-----
	normality	unknown			n.e.			
	n	3			1			
	outliers	0			n.e.			
	mean (n)	52.48			n.e.			
	st.dev. (n)	0.582			n.e.			
	R(calc.)	1.63			n.e.			
	st.dev.(D6890:21)	0.859			n.e.			
	R(D6890:21)	2.40			n.e.			

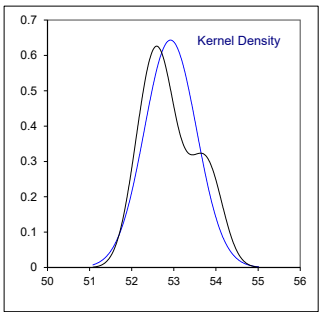


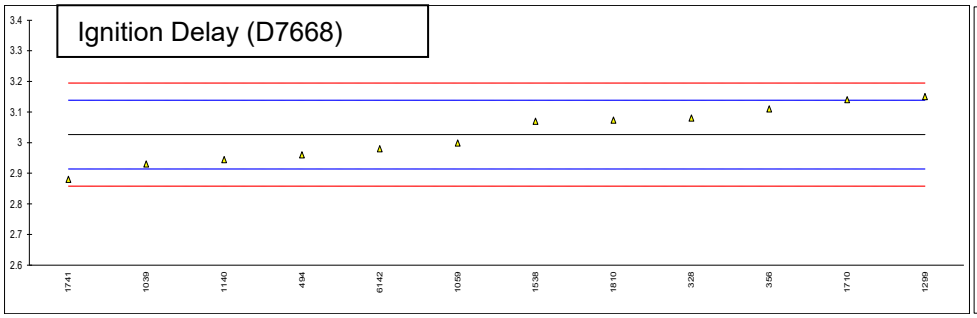
Determination of Derived Cetane Number (D7668) of sample #22171

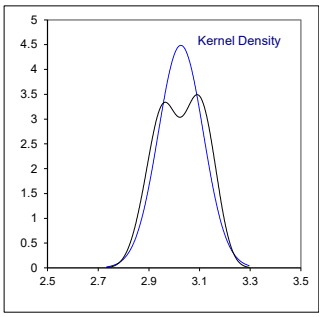
lab	method	DCN	mark	z(targ)	ID (ms)	mark	z(targ)	CD (ms)	mark	z(targ)	W.T. (°C)
120		-----		-----	-----		-----	-----		-----	-----
140		-----		-----	-----		-----	-----		-----	-----
150		-----		-----	-----		-----	-----		-----	-----
171		-----		-----	-----		-----	-----		-----	-----
312		-----		-----	-----		-----	-----		-----	-----
323		-----		-----	-----		-----	-----		-----	-----
328	D7668	52.7		-0.42	3.08		0.96	4.51		0.39	596.8
356	D7668	52.3		-1.18	3.11		1.49	4.55		1.25	610
381		-----		-----	-----		-----	-----		-----	-----
494	D7668	53.3		0.72	2.96		-1.18	4.46		-0.69	611.9
551		-----		-----	-----		-----	-----		-----	-----
657		-----		-----	-----		-----	-----		-----	-----
846		-----		-----	-----		-----	-----		-----	-----
862		-----		-----	-----		-----	-----		-----	-----
963		-----		-----	-----		-----	-----		-----	-----
1011		-----		-----	-----		-----	-----		-----	-----
1039	EN16715	52.9		-0.04	2.93		-1.72	4.49		-0.04	604.9
1059	D7668	52.1		-1.56	2.9990		-0.49	4.5635		1.54	601.69
1065		-----		-----	-----		-----	-----		-----	-----
1134		-----		-----	-----		-----	-----		-----	-----
1140	D7668	53.72		1.51	2.9440		-1.47	4.4251		-1.44	603.26
1171		-----		-----	-----		-----	-----		-----	-----
1191		-----		-----	-----		-----	-----		-----	-----
1299	D7668	52.8		-0.23	3.15		2.20	4.50		0.17	592
1320		-----		-----	-----		-----	-----		-----	-----
1356		-----		-----	-----		-----	-----		-----	-----
1357	D7668	NA		-----	NA		-----	NA		-----	NA
1399		-----		-----	-----		-----	-----		-----	-----
1538	EN16715	52.58		-0.65	3.07		0.78	4.52		0.60	-----
1616		-----		-----	-----		-----	-----		-----	-----
1709		-----		-----	-----		-----	-----		-----	-----
1710	EN16715	52.6		-0.61	3.14		2.03	4.52		0.60	594
1741	EN16715	53.71		1.49	2.88		-2.61	4.42		-1.55	603.46
1807		-----		-----	-----		-----	-----		-----	-----
1810	D7668	52.36		-1.07	3.0732		0.84	4.5432		1.10	598.09
6103		-----		-----	-----		-----	-----		-----	-----
6142	D7668	54		2.04	2.98		-0.83	4.4027		-1.93	603.375
6373		-----		-----	-----		-----	-----		-----	-----
6421		-----		-----	-----		-----	-----		-----	-----
	normality	OK			OK			OK			
	n	12			12			12			
	outliers	0			0			0			
	mean (n)	52.92			3.03			4.49			
	st.dev. (n)	0.620			0.089			0.054			
	R(calc.)	1.74			0.25			0.15			
	st.dev.(D7668:17)	0.528			0.056			0.046			
	R(D7668:17)	1.48			0.16			0.13			

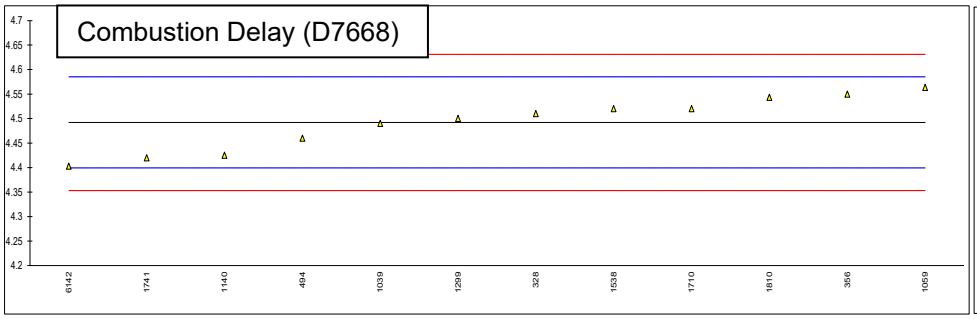
W.T. = Chamber Wall Temperature

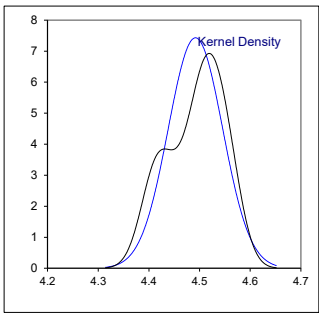

Derived Cetane Number (D7668)
55
54.5
54
53.5
53
52.5
52
51.5
51
50.5
50
1059
356
1810
1538
1710
328
1299
1039
494
1741
1140
6142


Kernel Density
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
50
51
52
53
54
55
56


Ignition Delay (D7668)
3.4
3.3
3.2
3.1
3
2.9
2.8
2.7
2.6
1741
1039
1140
494
6142
1059
1538
1810
328
356
1710
1299


Kernel Density
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
2.5
2.7
2.9
3.1
3.3
3.5

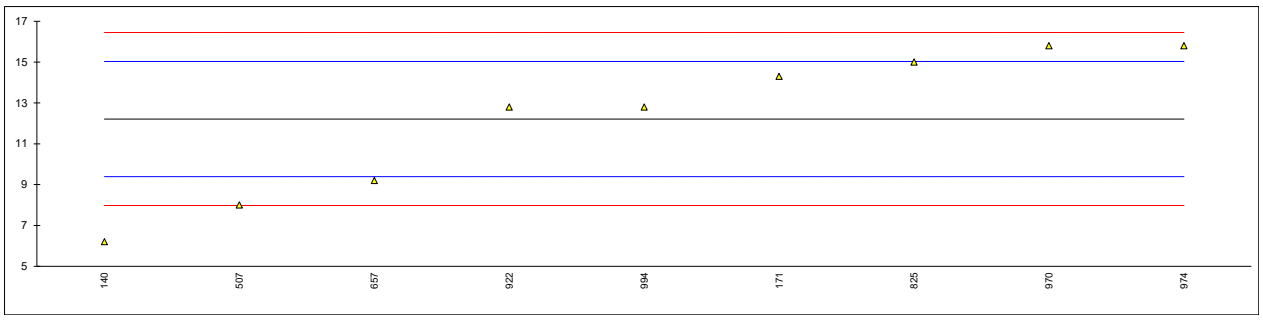

Combustion Delay (D7668)
4.7
4.65
4.6
4.55
4.5
4.45
4.4
4.35
4.3
4.25
4.2
6142
1741
1140
494
1039
1299
328
1538
1710
1810
356
1059

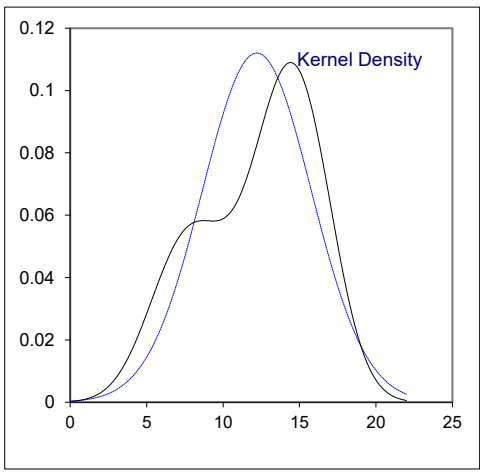

Kernel Density
8
7
6
5
4
3
2
1
0
4.2
4.3
4.4
4.5
4.6
4.7

Determination of Particulate Contamination on sample #22172; results in mg/L

lab	method	Part. Cont.	mark	z(targ)	Vol. filtered (mL)	No. of filtrations	remarks
120		-----		-----	-----	-----	
140	D6217	6.2		-4.26	1000	1	
150		-----		-----	-----	-----	
171	D6217	14.3		1.48	1000	2	
235		-----		-----	-----	-----	
237		-----		-----	-----	-----	
273		-----		-----	-----	-----	
317		-----		-----	-----	-----	
323		-----		-----	-----	-----	
328		-----		-----	-----	-----	
333		-----		-----	-----	-----	
334		-----		-----	-----	-----	
335		-----		-----	-----	-----	
342		-----		-----	-----	-----	
349		-----		-----	-----	-----	
356		-----		-----	-----	-----	
365		-----		-----	-----	-----	
467		-----		-----	-----	-----	
494		-----		-----	-----	-----	
507	D6217	8.0		-2.99	1000	1	
551		-----		-----	-----	-----	
603		-----		-----	-----	-----	
621		-----		-----	-----	-----	
657	D6217	9.2		-2.14	1000	3	
750		-----		-----	-----	-----	
825	D6217	15.0		1.98	600	1	
862		-----		-----	-----	-----	
874		-----		-----	-----	-----	
912		-----		-----	-----	-----	
922	D6217	12.8		0.42	1000	2	
963		-----		-----	-----	-----	
970	D6217	15.8		2.54	900	-----	
974	D6217	15.8		2.54	900	-----	
994	D6217	12.8		0.42	500	1	
1006		-----		-----	-----	-----	
1011		-----		-----	-----	-----	
1016		-----		-----	-----	-----	
1039		-----		-----	-----	-----	
1059		-----		-----	-----	-----	
1121		-----		-----	-----	-----	
1134		-----		-----	-----	-----	
1135		-----		-----	-----	-----	
1155		-----		-----	-----	-----	
1191		-----		-----	-----	-----	
1299		-----		-----	-----	-----	
1320		-----		-----	-----	-----	
1357	D6217	NA		-----	NA	NA	
1399		-----		-----	-----	-----	
1634		-----		-----	-----	-----	
1710		-----		-----	-----	-----	
1721		-----		-----	-----	-----	
1741		-----		-----	-----	-----	
1807		-----		-----	-----	-----	
6058		-----		-----	-----	-----	
6103		-----		-----	-----	-----	
6184		-----		-----	-----	-----	
6373		-----		-----	-----	-----	
6421		-----		-----	-----	-----	

normality	OK
n	9
outliers	0
mean (n)	12.21
st.dev. (n)	3.562
R(calc.)	9.97
st.dev.(D6217:21)	1.410
R(D6217:21)	3.95

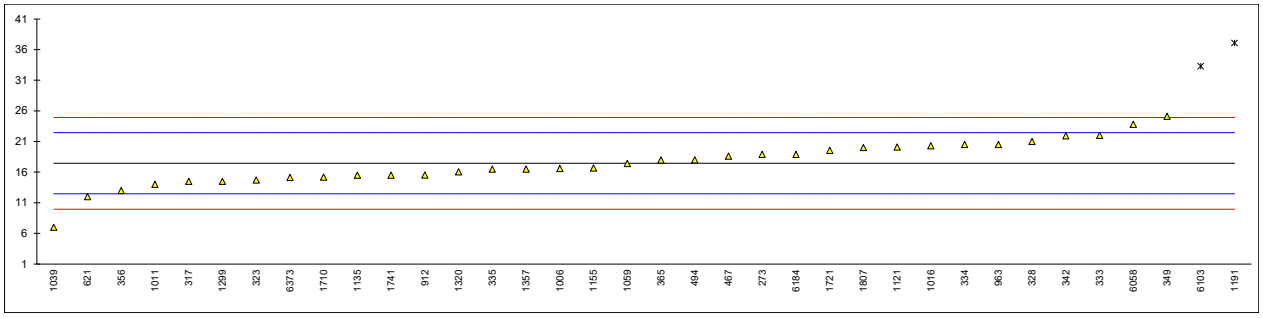

17
15
13
11
9
7
5
140
507
657
922
994
171
825
970
974

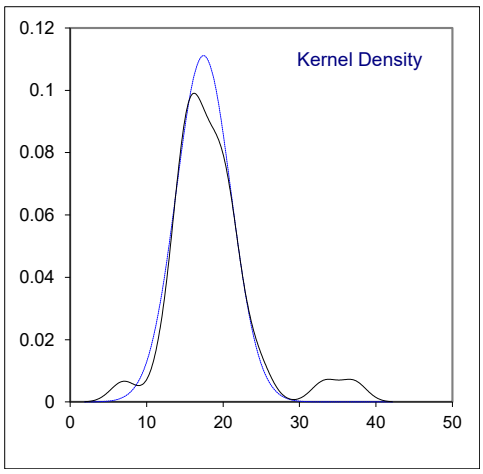

0.12
0.1
0.08
0.06
0.04
0.02
0
0
5
10
15
20
25
Kernel Density

Determination of Total Contamination on sample #22172; results in mg/kg

lab	method	Total C.	mark	z(targ)	Complete filtration?	Vol. filtered (mL)	Filtration stopped after (min)	remarks
120		-----		-----	-----	-----	-----	
140		-----		-----	-----	-----	-----	
150	EN12662:2014	<12.0		-----	-----	300	-----	
171		-----		-----	-----	-----	-----	
235		-----		-----	-----	-----	-----	
237	EN12662:2014	>30	C, f+?	>5.03	Yes	300	-----	first reported 33
273	IP440	18.9		0.58	-----	-----	-----	
317	EN12662:2014	14.5		-1.18	Yes	-----	-----	
323	EN12662:2014	14.7		-1.10	Yes	300	-----	
328	EN12662:2014	21.0		1.42	Yes	300	-----	
333	EN12662:2014	22		1.82	Yes	300	-----	
334	EN12662:2014	20.5		1.22	Yes	300	-----	
335	EN12662:2014	16.5		-0.38	Yes	-----	-----	
342	EN12662:2014	21.9		1.78	-----	300	7	
349	EN12662:2014	25.1	C	3.07	Yes	300	-----	first reported 28.9
356	EN12662:2014	13.0		-1.79	-----	300	-----	
365	IP440	17.98		0.21	Yes	300	-----	
467	EN12662:2008	18.59		0.46	Yes	310	1-2	
494	EN12662:2014	18		0.22	Yes	350	-----	
507		-----		-----	-----	-----	-----	
551		-----		-----	-----	-----	-----	
603		-----		-----	-----	-----	-----	
621	EN12662:2014	12	C	-2.19	Yes	300	5	first reported 35.7
657		-----		-----	-----	-----	-----	
750		-----		-----	-----	-----	-----	
825		-----		-----	-----	-----	-----	
862		-----		-----	-----	-----	-----	
874		-----		-----	-----	-----	-----	
912	EN12662	15.52		-0.77	-----	-----	-----	
922		-----		-----	-----	-----	-----	
963	EN12662:2014	20.5	C	1.22	Yes	300	-----	first reported 30.5
970		-----		-----	-----	-----	-----	
974		-----		-----	-----	-----	-----	
994		-----		-----	-----	-----	-----	
1006	EN12662:2014	16.6		-0.34	Yes	206	-----	
1011	EN12662:2014	14.0		-1.38	Yes	-----	-----	
1016	EN12662:2014	20.3		1.14	Yes	300	-----	
1039	EN12662:2014	7		-4.19	Yes	800	5	
1059	EN12662:2014	17.4		-0.02	Yes	286	-----	
1121	EN12662:2014	20.1		1.06	Yes	160	30	
1134		-----		-----	-----	-----	-----	
1135	EN12662:2014	15.5		-0.78	Yes	326	0.33	
1155	EN12662:2014	16.667		-0.31	Yes	300	1.37	
1191	EN12662:2014	37.0622	R(0.01)	7.87	-----	300	-----	
1299	EN12662:2014	14.5		-1.18	Yes	300	-----	
1320	EN12662:2014	16.04		-0.57	Yes	-----	-----	
1357	IP440	16.5		-0.38	Yes	NA	NA	
1399		-----	W	-----	Yes	320.8	NA	test result withdrawn, reported 5.018
1634		-----		-----	-----	-----	-----	
1710	EN12662:2014	15.2		-0.90	Yes	300	-----	
1721	EMN12662	19.53		0.83	-----	800	-----	
1741	EN12662:2014	15.5	C	-0.78	Yes	300	-----	first reported 32
1807	EN12662:2014	20.0		1.02	Yes	300	-----	
6058	EN12662:2014	23.8		2.55	Yes	-----	-----	
6103	EN12662:2014	33.28	R(0.01)	6.35	Yes	300	7.52	
6184	EN12662	18.9		0.58	-----	-----	-----	
6373	EN12662:2014	15.12		-0.94	Yes	-----	-----	
6421		-----		-----	-----	-----	-----	

normality	suspect
n	34
outliers	2
mean (n)	17.45
st.dev. (n)	3.589
R(calc.)	10.05
st.dev.(EN12662:14)	2.493
R(EN12662:14)	6.98

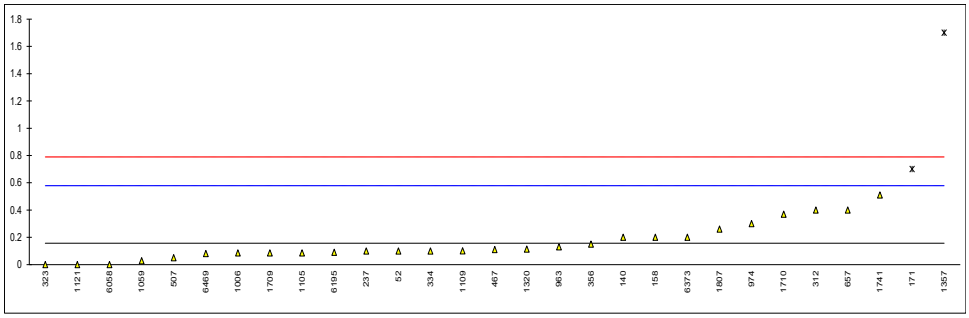

41
36
31
26
21
16
11
6
1
1039
621
356
1011
317
1299
323
6373
1710
1135
1741
912
1320
335
1357
1006
1155
1059
365
494
467
273
6184
1721
1807
1121
1016
334
963
328
342
333
6058
349
6103
1191

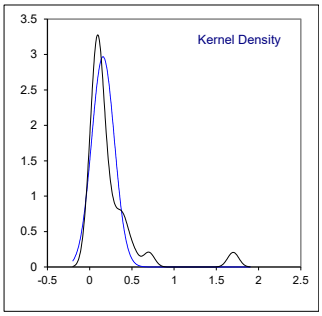

Kernel Density
0.12
0.1
0.08
0.06
0.04
0.02
0
0
10
20
30
40
50

Determination of Oxidation Stability Filterable Insolubles (A) on sample #22173; results in mg/100 mL

lab	method	value	mark	z(targ)	remarks
52	D2274	0.1		-0.27	
120		-----		-----	
140	D2274	0.2		0.20	
150		-----		-----	
158	D2274	0.2		0.20	
171	D2274	0.7	R(0.05)	2.57	
235		-----		-----	
237	D2274	0.1		-0.27	
312	D2274	0.4		1.15	
323	D2274	0.0		-0.75	
334	ISO12205	0.1		-0.27	
344		-----		-----	
356	ISO12205	0.15		-0.04	
467	D2274	0.11		-0.23	
494		-----		-----	
507	ISO12205	0.05		-0.51	
551		-----		-----	
657	D2274	0.4		1.15	
750		-----		-----	
846		-----		-----	
862		-----		-----	
864		-----		-----	
874		-----		-----	
963	D2274	0.13	C	-0.13	first reported 1.3
970		-----		-----	
974	D2274	0.3		0.68	
1006	D2274	0.0857		-0.34	
1016	ISO12205	<1		-----	
1039		-----		-----	
1059	ISO12205	0.0286		-0.61	
1105	D2274	0.086		-0.34	
1109	D2274	0.1015		-0.27	
1121	D2274	0.0		-0.75	
1134		-----		-----	
1135	ISO12205	<0.1		-----	
1191		-----		-----	
1227		-----		-----	
1299		-----		-----	
1320	ISO12205	0.114		-0.21	
1357	D2274	1.7	C,R(0.01)	7.32	first reported 0.9
1709	D2274	0.0857		-0.34	
1710	ISO12205	0.37		1.01	
1741	ISO12205	0.51		1.67	
1807	ISO12205	0.26		0.49	
6058	ISO12205	0		-0.75	
6103		-----		-----	
6195	D2274	0.09		-0.32	
6373	ISO12205	0.2		0.20	
6421		-----		-----	
6469	D2274	0.08		-0.37	

normality	suspect
n	27
outliers	2
mean (n)	0.157
st.dev. (n)	0.1344
R(calc.)	0.376
st.dev.(D2274:14R19)	0.2109
R(D2274:14R19)	0.590

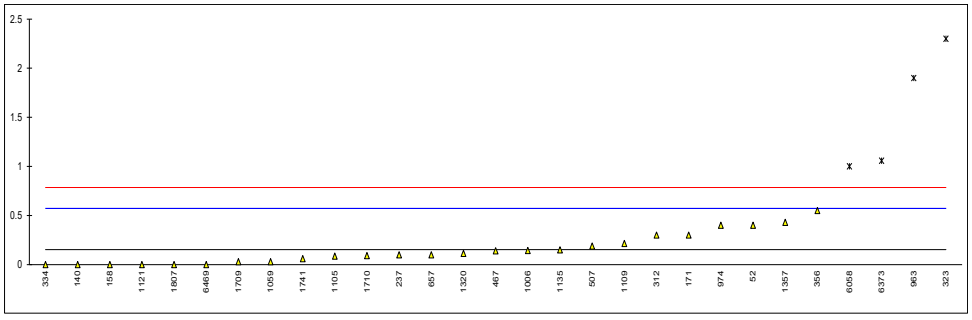


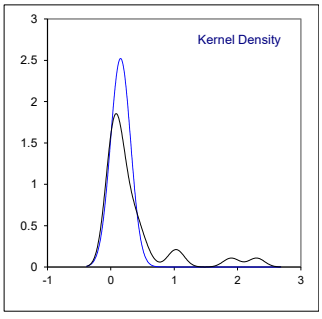


Determination of Oxidation Stability Adherent Insolubles (B) on sample #22173; results in mg/100 mL

lab	method	value	mark	z(targ)	remarks
52	D2274	0.4		1.17	
120		-----		-----	
140	D2274	0.0		-0.73	
150		-----		-----	
158	D2274	0.0		-0.73	
171	D2274	0.3		0.70	
235		-----		-----	
237	D2274	0.1		-0.25	
312	D2274	0.3		0.70	
323	D2274	2.3	R(0.01)	10.18	
334	ISO12205	0		-0.73	
344		-----		-----	
356	ISO12205	0.55		1.88	
467	D2274	0.14		-0.06	
494		-----		-----	
507	ISO12205	0.189		0.17	
551		-----		-----	
657	D2274	0.1		-0.25	
750		-----		-----	
846		-----		-----	
862		-----		-----	
864		-----		-----	
874		-----		-----	
963	D2274	1.90	C,R(0.01)	8.28	first reported 19
970		-----		-----	
974	D2274	0.4		1.17	
1006	D2274	0.1429		-0.05	
1016	ISO12205	<1		-----	
1039		-----		-----	
1059	ISO12205	0.0286		-0.59	
1105	D2274	0.086		-0.32	
1109	D2274	0.2145		0.29	
1121	D2274	0.0		-0.73	
1134		-----		-----	
1135	ISO12205	0.15		-0.01	
1191		-----		-----	
1227		-----		-----	
1299		-----		-----	
1320	ISO12205	0.114		-0.18	
1357	D2274	0.43		1.31	
1709	D2274	0.0285		-0.59	
1710	ISO12205	0.09		-0.30	
1741	ISO12205	0.06		-0.44	
1807	ISO12205	0		-0.73	
6058	ISO12205	1.0	R(0.01)	4.02	
6103		-----		-----	
6195	D2274	Nil		-----	
6373	ISO12205	1.057	R(0.05)	4.29	
6421		-----		-----	
6469	D2274	0.00		-0.73	

normality	suspect
n	25
outliers	4
mean (n)	0.153
st.dev. (n)	0.1582
R(calc.)	0.443
st.dev.(D2274:14R19)	0.2109
R(D2274:14R19)	0.590

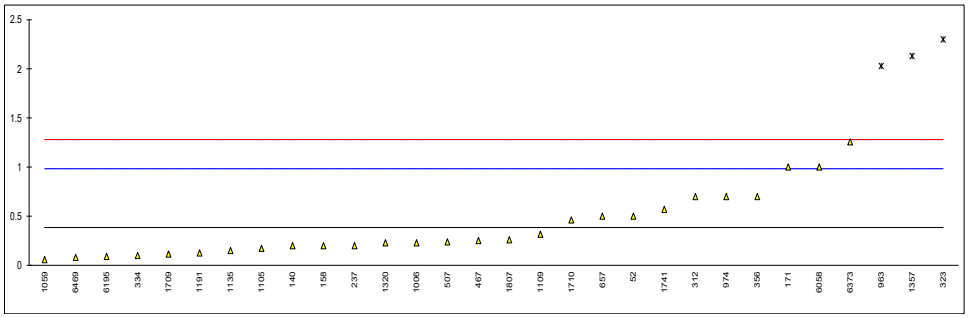


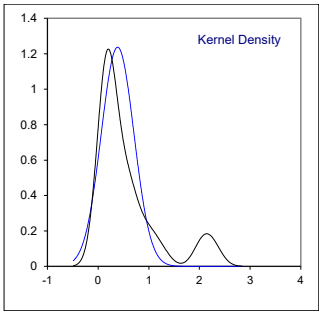


Determination of Oxidation Stability Total Insolubles (A+B) on sample #22173; results in mg/100 mL

lab	method	value	mark	z(targ)	remarks
52	D2274	0.5		0.39	
120		-----		-----	
140	D2274	0.2		-0.62	
150		-----		-----	
158	D2274	0.2		-0.62	
171	D2274	1.0		2.06	
235		-----		-----	
237	D2274	0.2		-0.62	
312	D2274	0.7		1.06	
323	D2274	2.3	R(0.01)	6.42	
334	ISO12205	0.1		-0.96	
344		-----		-----	
356	ISO12205	0.7		1.06	
467	D2274	0.25		-0.45	
494		-----		-----	
507	ISO12205	0.239		-0.49	
551		-----		-----	
657	D2274	0.5		0.39	
750		-----		-----	
846		-----		-----	
862		-----		-----	
864		-----		-----	
874		-----		-----	
963	D2274	2.03	C,R(0.01)	5.52	first reported 20.3
970		-----		-----	
974	D2274	0.7		1.06	
1006	D2274	0.2286		-0.52	
1016	ISO12205	<3		-----	
1039		-----		-----	
1059	ISO12205	0.0572		-1.10	
1105	D2274	0.172		-0.71	
1109	D2274	0.3160		-0.23	
1121	D2274	<0.1		-----	
1134		-----		-----	
1135	ISO12205	0.15		-0.79	
1191	ISO12205	0.1251428		-0.87	
1227		-----		-----	
1299	D2274	<1		-----	
1320	ISO12205	0.228		-0.53	
1357	D2274	2.13	C,R(0.01)	5.85	first reported 1.33
1709	D2274	0.1142		-0.91	
1710	ISO12205	0.46		0.25	
1741	ISO12205	0.57		0.62	
1807	ISO12205	0.26		-0.42	
6058	ISO12205	1.0		2.06	
6103		-----		-----	
6195	D2274	0.09		-0.99	
6373	ISO12205	1.257		2.92	
6421		-----		-----	
6469	D2274	0.08		-1.02	

normality	suspect
n	27
outliers	3
mean (n)	0.385
st.dev. (n)	0.3224
R(calc.)	0.903
st.dev.(D2274:14R19)	0.2982
R(D2274:14R19)	0.835





APPENDIX 2

Number of participants per country

1 lab in	ALBANIA	1 lab in	MONTENEGRO
2 labs in	AUSTRALIA	2 labs in	MOROCCO
2 labs in	AUSTRIA	1 lab in	MOZAMBIQUE
3 labs in	AZERBAIJAN	9 labs in	NETHERLANDS
5 labs in	BELGIUM	1 lab in	NIGER
1 lab in	BOSNIA and HERZEGOVINA	2 labs in	NIGERIA
4 labs in	BRAZIL	1 lab in	NORWAY
5 labs in	CANADA	2 labs in	OMAN
3 labs in	CHILE	1 lab in	PAKISTAN
7 labs in	CHINA, People's Republic	1 lab in	PANAMA
1 lab in	COLOMBIA	1 lab in	PERU
1 lab in	COSTA RICA	3 labs in	PHILIPPINES
2 labs in	COTE D'IVOIRE	2 labs in	POLAND
2 labs in	CZECH REPUBLIC	3 labs in	PORTUGAL
1 lab in	DJIBOUTI	2 labs in	QATAR
2 labs in	EGYPT	2 labs in	ROMANIA
3 labs in	FINLAND	8 labs in	RUSSIAN FEDERATION
6 labs in	FRANCE	2 labs in	SAUDI ARABIA
4 labs in	GEORGIA	1 lab in	SENEGAL
2 labs in	GERMANY	3 labs in	SERBIA
5 labs in	GREECE	1 lab in	SINGAPORE
1 lab in	GUINEA REPUBLIC	1 lab in	SLOVAKIA
3 labs in	HONG KONG	1 lab in	SLOVENIA
1 lab in	HUNGARY	2 labs in	SOUTH AFRICA
2 labs in	INDIA	6 labs in	SPAIN
1 lab in	INDONESIA	1 lab in	SUDAN
2 labs in	IRELAND	2 labs in	SWEDEN
2 labs in	ISRAEL	5 labs in	TAIWAN
1 lab in	KAZAKHSTAN	4 labs in	TANZANIA
2 labs in	KENYA	1 lab in	TOGO
1 lab in	KOREA, Republic of	2 labs in	TUNISIA
2 labs in	LATVIA	2 labs in	TURKMENISTAN
1 lab in	LIBERIA	5 labs in	UNITED ARAB EMIRATES
3 labs in	MALAYSIA	7 labs in	UNITED KINGDOM
1 lab in	MALTA	8 labs in	UNITED STATES OF AMERICA
1 lab in	MAURITIUS	1 lab in	VIETNAM

APPENDIX 3

Abbreviations

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

Literature

1 iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, June 2018
2 ISO5725:86
3 ISO5725 parts 1-6:94
4 ISO13528:05
5 M. Thompson and R. Wood, J. AOAC Int, 76, 926, (1993)
6 W.J. Youden and E.H. Steiner, Statistical Manual of the AOAC, (1975)
7 P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
8 J.N. Miller, Analyst, 118, 455, (1993)
9 Analytical Methods Committee, Technical Brief, No 4, January 2001
10 P.J. Lowthian and M. Thompson, The Royal Society of Chemistry, Analyst, 127, 1359-1364, (2002)
11 W. Horwitz and R. Albert, J. AOAC Int, 79.3, 589-621, (1996)
12 Bernard Rosner, Percentage Points for a Generalized ESD Many-Outlier Procedure, Technometrics, 25(2), 165-172, (1983)
13 iis memo 1904 Precision data of Calculated Cetane Index Four Variables in Gasoil