Results of Proficiency Test
Gasoil B10 (10% FAME)
June 2018

Organised by: Institute for Interlaboratory Studies (iis)
Spijkenisse, the Netherlands

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1 INTRODUCTION

Since 2005, the Institute for Interlaboratory Studies organizes a proficiency test for Gasoil B10 containing 6-10% FAME, in accordance with the latest applicable version of the EN590 (0-7% FAME) and ASTM D7467 (6-20% FAME) specifications. During the annual proficiency testing program 2017/2018, it was decided to continue the round robin for the analysis of Gasoil B10.

In this interlaboratory study, a total of 66 laboratories in 35 different countries registered for participation. See appendix 3 for the number of participants per country. In this report, the results of the 2018 Gasoil B10 proficiency test are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organiser of this proficiency test. The sample analyses for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC 17025 accredited laboratory. In this proficiency test, the participants received, depending on their registration, 1 litre plus a 0.5 litre bottle Gasoil B10 (both labelled #18090) and/or a 1 litre bottle with Gasoil B10 (± 850 mL filled, labelled #18091) for Total Contamination only.
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/IEC 17043:2010 (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This PT falls under the accredited scope. This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentiality of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

The protocol followed in the organisation of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of March 2017 (iis-protocol, version 3.4). This protocol can be downloaded via the FAQ page of the iis website www.iisnl.com.

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

The necessary sample material of about 180 litres of regular EN590 Diesel (containing no FAME) was purchased from a local petrol station. To this batch 20 litre Biodiesel B100 was added to reach a final FAME concentration of approx. 10%V/V. From this batch, after homogenisation, 90 amber glass bottles of 1 litre and 90 amber glass bottles of 0.5 litre (both labelled #18090) were filled. The homogeneity of the subsamples #18090 was checked by determination of Density at 15°C in accordance with ASTM D4052 on 8 stratified randomly selected samples.

	Density at 15 °C in kg/m^3
sample #18090-1	836.53
sample #18090-2	836.51
sample #18090-3	836.52
sample #18090-4	836.52
sample #18090-5	836.52
sample #18090-6	836.52
sample #18090-7	836.52
sample #18090-8	836.52

Table 1: homogeneity test results of subsamples #18090

From the above test results the repeatability was calculated and compared with 0.3 times the corresponding reproducibility of the reference test method in agreement with the procedure of ISO 13528, Annex B2 in the next table:

	Density at 15 °C in kg/m^3
r (observed)	0.01
reference test method	ISO12185:96
0.3 * R (reference test method)	0.15

Table 2: evaluation of repeatability of the subsamples #18090

The calculated repeatability was less than 0.3 times the reproducibility of the corresponding reference test method. Therefore, homogeneity of the subsamples #18090 was assumed.

For the preparation of the Total Contamination PT subsamples, the remaining batch of 65 L was used. To each bottle (labelled #18091) Arizona Dust material in an oil suspension was added to give a total contamination of approx 15 mg/kg. To do this, a defined volume of the fresh prepared and well shaken dust 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 55 bottles were prepared and subsequently filled up to 850 mL with Gasoil B10. After homogenization, a random sample was taken to verify the actual Total Contamination content (14 mg/kg).

To the participants, depending on their registration, a 1 litre and a 0.5 litre bottle of sample #18090 and/or a 1 litre (± 850 mL filled) of sample #18091 were sent on May 16, 2018. An SDS was added to the sample package.

2.5 STABILITY OF THE SAMPLES

The stability of Gasoil B10, packed in the amber glass bottles, was checked. The material was found sufficiently stable for the period of the proficiency test.

2.6 ANALYSES

The participants were requested to determine on sample #18090: Acid number (total), Aromatics by FIA, Ash Content, Cetane Indices as per D976 and ISO4264, Cloud Point, Cold Filter Plugging Point (CFPP), Carbon Residue on 10% distillation residue, Ramsbottom Carbon Residue on 10% distillation residue, Copper Corrosion, Density at 15°C, Distillation (IBP, 10%rec., 50%rec., 90%rec., 95%rec., FBP, Volume at 250°C and 350°C), FAME, Flash Point PMcc, Kinematic Viscosity at 40°C, Lubricity by HFRR at 60°C, Oxidation Stability as per ISO12205 and EN15751, Polycyclic Aromatic Hydrocarbons (MAH, DAH, T+AH and Total AH), Pour Point (manual and automated), Sulphur and Water.
The participants were requested to determine on sample #18091 Total Contamination only.

It was explicitly requested to treat the samples as if they were routine samples. Therefore, each laboratory is advised to perform only those analyses that normally are done in daily routine (but the laboratories are allowed to do all analyses). Furthermore, it was requested to report the test results using the indicated units on the report form and not to round the test results more, 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 calculations.

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 appropriate reference test methods that will be used during the evaluation. The detailed report form and the letter of instructions are both made available on the data entry portal www.kpmd.co.uk/sgs-iis/. The participating laboratories are also requested to confirm the sample receipt on this data entry portal. The letter of instructions can also be downloaded from the iis website www.iisnl.com.

3 RESULTS

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

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

3.1 STATISTICS

The protocol followed in the organisation of this proficiency test was the one as described for proficiency testing in the report ‘iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation’ of March 2017 (iis-protocol, version 3.4).
For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as ‘<…’ or ‘>…’ were not used in the statistical evaluation.
First, the normality of the distribution of the various data sets per determination was checked by means of the Lilliefors-test, a variant of the Kolmogorov-Smirnov test and by the calculation of skewness and kurtosis. Evaluation of the three normality indicators in combination with the visual evaluation of the graphic Kernel density plot, lead to judgement of the normality being either ‘unknown’, ‘OK’, ‘suspect’ or ‘not OK’. After removal of outliers, this check was repeated. If a data set does not have a normal distribution, the (results of the) statistical evaluation should be used with due care.

According to ISO 5725 the original test results per determination were submitted to Dixon’s, Grubbs’ and/or Rosner’s outlier tests. Outliers are marked by D(0.01) for the Dixon’s test, by G(0.01) or DG(0.01) for the Grubbs’ test and by R(0.01) for the Rosner’s test. Stragglers are marked by D(0.05) for the Dixon’s test, by G(0.05) or DG(0.05) for the Grubbs’ test and by R(0.05) for the Rosner’s test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

For each assigned value, the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirements 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 was projected over the Kernel Density Graph for reference.

3.3 Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements, e.g. ASTM , ISO or EN reproducibilities, the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the variation of 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 targets values were used. In some cases, a reproducibility based on former iis proficiency tests could be used.

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

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

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.
The usual interpretation of z-scores is as follows:

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

4 EVALUATION

In this proficiency test, no problems were encountered during the dispatch of the samples. All laboratories reported test results, nine laboratories reported test results after the final reporting date and not all laboratories were able to perform all analyses requested. Finally, 66 laboratories did report 1343 numerical test results. Observed were 40 outlying test results, which is 3.0%. In proficiency tests, outlier percentages of 3% - 7.5% are quite normal.

Not all original data sets proved to have a normal Gaussian distribution. These are referred to as “not OK” or “suspect”. The statistical evaluation of these data sets should be used with due care, 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 are used by the various laboratories, are taken into account for explaining the observed differences when possible and applicable. These methods are also in the tables together with the reported test results. The abbreviations, used in these tables, are listed in appendix 4.

In the iis PT reports, ASTM methods are referred to with a number (e.g. D976) and an added designation for the year that the method was adopted or revised (e.g. D976:06). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D976:06 (2016)). In the results tables of appendix 1 only the method number and year of adoption or revision (e.g. D976:06) will be used.

Sample #18090

Acid number: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ASTM D664-B:17a.

Aromatics (FIA): No z-scores were calculated as the precision and bias of ASTM D1319 with biodiesel blends is not known and is currently under investigation, see paragraph X1.11.1 of ASTM D7467:18.

Ash: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in good agreement with the requirements of ISO6245:01.

C.I. D976: This determination was not problematic. One statistical outlier was observed and six calculation errors were found. However, the calculated reproducibility after rejection of the statistical outlier is in good agreement with the requirements of ASTM D976:06(2016).

C.I. ISO4264: This determination was not problematic. One statistical outlier was observed and four calculation errors were found. However, the calculated reproducibility after rejection of the statistical outlier is in good agreement with the requirements of ISO4264:07.

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

CFPP: This determination was problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of EN116:15.

CR on 10% res.: The consensus value of the group was below the application range (0.1% - 30% M/M) of ISO10370:14. Therefore, no z-scores were calculated.

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

Copper Corr.: No problems were observed. All reporting participants agreed on a test result of 1 or 1A/1B.

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

Distillation: This determination was not problematic. In total eight statistical outliers were observed over eight parameters. However, the calculated reproducibilities after rejection of the statistical outliers are in agreement with the requirements of ISO3405:11 (automated) for all parameters, except for Temperature at 10% recovered, which was not in agreement.

FAME: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN14078-B:14.

Flash Point: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of both ISO2719-A:16 and D93-A:16a, but not in agreement with the (more strict) requirements of EN590-Annex A:13.

Kin. Visc. 40°C: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO3104:94+corr.1997 and with EN590-Annex A:13.

Lubricity by HFRR: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of ISO12156-1-B:16.

Ox. Stab. ISO12205: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO12205:95.

Ox. Stab. EN15751: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN15751:14.

PAH: This determination was not problematic. One statistical outlier was observed and one other test result was excluded. However, the calculated reproducibility after rejection of the suspect data is in agreement with the requirements of EN12916:16.

MAH: This determination was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of EN12916:16.

DAH: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN12916:16.

Tri+-AH: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN12916:16.

Total AH: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN12916:16.

Pour Point (M): This determination was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ISO3016:94.

Pour Point (A): This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D5950:14.

Sulphur: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ISO20846:11 and ASTM D5453:16e1.

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

Sample #18091

Total Contamination: This determination was problematic. One statistical outlier was observed and four other test results were excluded. The samples were spiked with a freshly prepared suspension of Arizona Dust. Therefore, the minimum Total Contamination to be found was known. The laboratories should be able to find at least 8.4 mg/kg [15.0 $mg/kg_{(added\ amount)}$ – 6.6 $mg/kg_{(R\ EN12662)}$]. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of EN12664:14.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the relevant reference test method and the reproducibility as found for the group of participating laboratories. The assigned values, calculated reproducibilities and reproducibilities, derived from literature reference test methods (in casu ASTM, ISO, EN reference test methods) are compared in the next table.

Parameters	*unit*	*n*	*average*	*2.8 * sd*	*R (lit)*
Acid Number (total)	mgKOH/g	28	0.031	0.046	0.044
Aromatics by FIA	%V/V	13	22.9	9.6	n.a.
Ash content	%M/M	17	0.0007	0.0016	0.005
Cetane Index D976		29	54.0	0.5	2
Cetane Index ISO4264		45	54.6	0.9	2
Cloud Point	°C	53	-7.0	2.5	4
Cold Filter Plugging Point (CFPP)	°C	44	-25.8	5.2	4.6
CR micro method on 10% residue	%M/M	26	0.033	0.045	(0.025)
Ramsbottom CR on 10% residue	%M/M	8	0.088	0.050	0.034
Copper Corrosion 3hrs at 50°C	rating	46	1	n.a.	n.a.
Density at 15°C	kg/m^3	62	836.5	0.2	0.5
Initial Boiling Point	°C	59	177.0	9.8	9.7
10% recovery	°C	60	218.7	5.5	4.8
50% recovery	°C	60	278.4	3.2	3.0
90% recovery	°C	60	334.3	3.5	5.0
95% recovery	°C	61	346.8	7.1	8.7
Final Boiling Point	°C	58	355.7	5.0	7.1
Volume at 250°C	%V/V	48	27.9	1.9	2.7
Volume at 350°C	%V/V	52	95.8	1.8	2.7
Fatty Acid Methyl Ester (FAME)	%V/V	39	8.2	0.5	0.6
Flash Point PMcc	°C	61	67.8	4.2	4.8
Kinematic Viscosity at 40°C	mm^2/s	53	2.897	0.026	0.032
Lubricity by HFRR at 60°C	µm	33	194	91	90
Oxidation Stability ISO12205	g/m^3	18	2.84	5.48	7.74
Oxidation Stability EN15751	hours	24	34.8	5.4	7.0

Parameters	*unit*	*n*	*average*	*2.8 * sd*	*R (lit)*
Polycyclic Aromatic Hydrocarbons	%M/M	22	2.51	0.89	0.93
Mono-Aromatic Hydrocarbons	%M/M	21	20.1	3.2	3.2
Di-Aromatic Hydrocarbons	%M/M	22	2.29	0.83	0.92
Tri+-Aromatic Hydrocarbons	%M/M	20	0.22	0.40	0.57
Total Aromatic Hydrocarbons	%M/M	21	22.7	3.9	5.0
Pour Point (manual)	°C	27	-26.3	4.8	6.6
Pour Point (automated)	°C	26	-24.9	3.8	6.1
Sulphur	mg/kg	51	7.3	1.5	1.9
Water content	mg/kg	53	77.6	35.3	60.6
Total Contamination (#18091)	mg/kg	24	15.6	10.5	6.7

Table 3: summary of test results samples #18090 and #18091

Between brackets: evaluation with care as consensus value was below application range of the reference test method

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

4.3 COMPARISON OF THE INTERLABORATORY STUDY OF JUNE 2018 WITH PREVIOUS PTS

	June 2018	*June 2017*	*June 2016*	*May 2015*	*May 2014*
Number of reporting labs	66	68	76	73	67
Number of results reported	1343	1444	1522	1371	1317
Statistical outliers	40	33	51	32	33
Percentage outliers	3.0%	2.3%	3.4%	2.3%	2.5%

Table 4: comparison with previous proficiency tests.

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

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

	June 2018	*June 2017*	*June 2016*	*May 2015*	*May 2014*
Acid number (total)	+/-	+	++	+	+
Aromatics by FIA	n.e.	n.e.	n.e.	n.e.	n.e.
Ash content	++	++	++	+	++
Cetane Index D976	++	++	++	++	++
Cetane Index ISO4264	++	++	n.e.	n.e.	n.e.
Cloud Point	+	++	++	+	++
Cold Filter Plugging Point (CFPP)	-	+	++	+	+
CR micro method on 10% res.	(-)	(--)	(--)	(-)	(-)
Ramsbottom CR on 10% res.	-	++	+	+/-	n.e.
Density at 15°C	++	+	++	+	+
Distillation	+	+	-	+	+
Fatty Acid Methyl Ester (FAME)	+	-	+/-	-	-
Flash Point PMcc	+	+	+	+	+
Kinematic Viscosity at 40°C	+	+	+	+/-	+
Lubricity by HFRR at 60°C	+/-	+/-	+	-	++
Oxidation Stability ISO12205	+	+	-	+	+

	June 2018	*June 2017*	*June 2016*	*May 2015*	*May 2014*
Oxidation Stability EN15751	+	--	+	-	+/-
Poly Aromatic Hydrocarbons	+/-	+	-	+	-
Pour Point (manual)	+	+/-	+	+	--
Pour Point (automated)	+	+	++	-	+
Sulphur	+	+	+	+	+/-
Water content	+	++	++	++	++
Total Contamination	-	+/-	+	--	--

Table 5: comparison determinations against the reference test method

Between brackets: consensus value is below application range of the reference test method

The performance of the determinations against the requirements of the respective reference test methods is listed in the above table. The following performance categories were used:

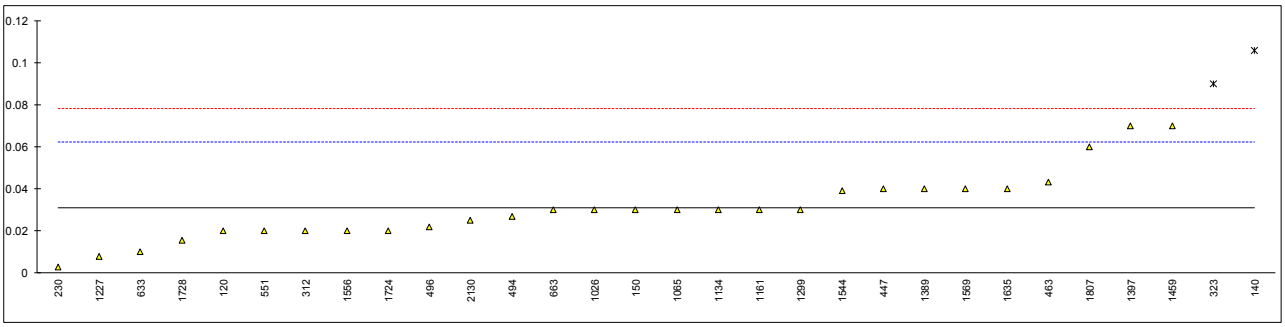
++: group performed much better than the reference test method
+ : group performed better than the reference test method
+/-: group performance equals the reference test method
- : group performed worse than the reference test method
-- : group performed much worse than the reference test method
n.e.: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

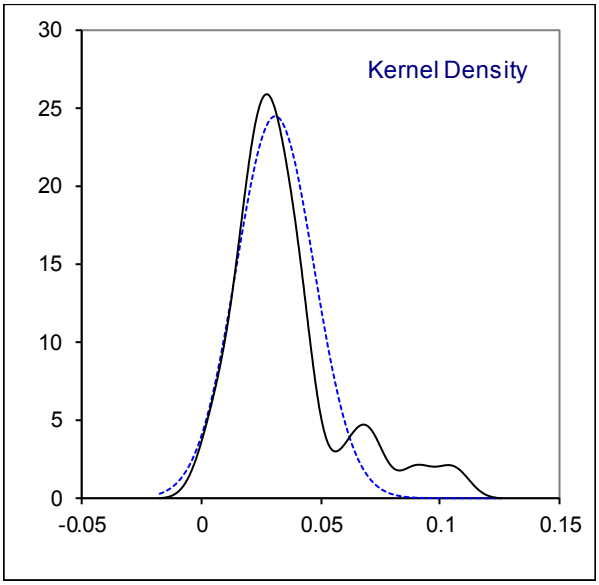
APPENDIX 1

Determination of Acid Number, total on sample #18090; result in mgKOH/g

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D664-B	0.020	C	-0.69	first reported: 20
140	D664-B	0.1055	R(0.05)	4.75	
150	D664-B	0.03		-0.05	
171	D664-A	<0.10		-----	
175		-----		-----	
194		-----		-----	
230	D664-B	0.0026		-1.79	
237	D664-B	<0.1		-----	
238		-----		-----	
312	D974	0.02		-0.69	
323	D664-B	0.09	R(0.05)	3.77	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
353		-----		-----	
381		-----		-----	
444		-----		-----	
445		-----		-----	
447	D664-B	0.04		0.59	
463	D664-B	0.043		0.78	
494	D664-B	0.027		-0.24	
496	D664-B	0.022		-0.56	
511		-----		-----	
529		-----		-----	
541	D974	<0.05		-----	
551	D974	0.02		-0.69	
603		-----		-----	
633	D664-B	0.01		-1.32	
663	D664-B	0.030		-0.05	
1017		-----		-----	
1026	D974	0.03		-0.05	
1033		-----		-----	
1059		-----		-----	
1065	D664-B	0.030		-0.05	
1134	D664-B	0.03		-0.05	
1146		-----		-----	
1161	D664-B	0.03		-0.05	
1194		-----		-----	
1227	D974	0.0079		-1.46	
1299	D664-B	0.03		-0.05	
1389	D664-B	0.04		0.59	
1397	D664-B	0.07		2.49	
1406		-----		-----	
1407		-----		-----	
1441		-----		-----	
1459	In house	0.07		2.49	
1510		-----		-----	
1544	D664-B	0.0391		0.53	
1556	D664-B	0.02		-0.69	
1569	D664-B	0.04		0.59	
1631		-----		-----	
1634		-----		-----	
1635	D664-B	0.04		0.59	
1706		-----		-----	
1724	D664-B	0.02		-0.69	
1728	D974	0.0156		-0.97	
1807	D664-B	0.06		1.86	
1811		-----		-----	
1984		-----		-----	
2130	D974	0.0252		-0.36	
6016		-----		-----	
6075		-----		-----	

normality	suspect
n	28
outliers	2
mean (n)	0.0308
st.dev. (n)	0.01630
R(calc.)	0.0456
st.dev.(D664-B:17a)	0.01571
R(D664-B:17a)	0.0440

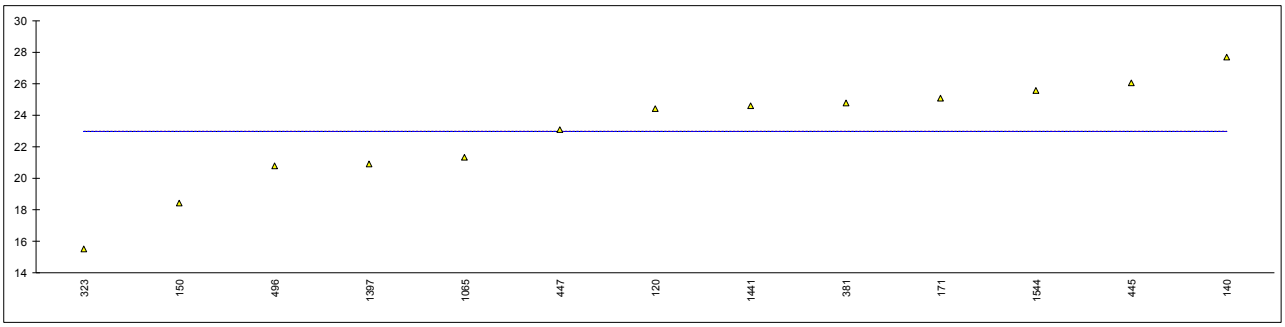

0.12
0.1
0.08
0.06
0.04
0.02
0
230
1227
633
1728
120
551
312
1556
1724
496
2130
494
663
1026
150
1065
1134
1161
1299
1544
447
1389
1569
1635
463
1807
1397
1459
323
140

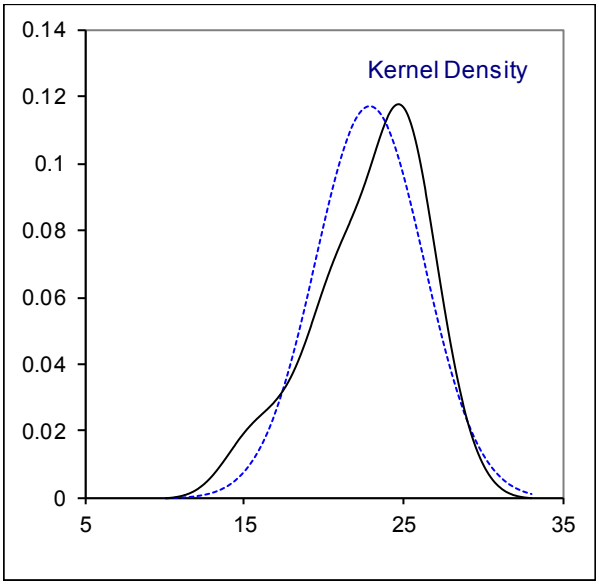

Kernel Density
30
25
20
15
10
5
0
-0.05
0
0.05
0.1
0.15

Determination of Aromatics by FIA on sample #18090; result in %V/V

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D1319	24.4		-----	
140	D1319	27.7		-----	
150	D1319	18.4		-----	
171	D1319	25.1		-----	
175		-----		-----	
194		-----		-----	
230		-----		-----	
237		-----		-----	
238		-----		-----	
312		-----		-----	
323	D1319	15.5		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
353		-----		-----	
381	D1319	24.8		-----	
444		-----		-----	
445	D1319	26.05		-----	
447	D1319	23.1		-----	
463		-----		-----	
494		-----		-----	
496	D1319	20.78		-----	
511		-----		-----	
529		-----		-----	
541		-----		-----	
551		-----		-----	
603		-----		-----	
633		-----		-----	
663		-----		-----	
1017		-----		-----	
1026		-----		-----	
1033		-----		-----	
1059		-----		-----	
1065	D1319	21.3		-----	
1134		-----		-----	
1146		-----		-----	
1161		-----		-----	
1194		-----		-----	
1227		-----		-----	
1299		-----		-----	
1389		-----		-----	
1397	D1319	20.9		-----	
1406		-----		-----	
1407		-----		-----	
1441	D1319	24.58		-----	
1459		-----		-----	
1510		-----		-----	
1544	D1319	25.55		-----	
1556		-----		-----	
1569		-----		-----	
1631		-----		-----	
1634		-----		-----	
1635		-----		-----	
1706		-----		-----	
1724		-----		-----	
1728		-----		-----	
1807		-----		-----	
1811		-----		-----	
1984		-----		-----	
2130		-----		-----	
6016		-----		-----	
6075		-----		-----	

normality	OK	
n	13	
outliers	0	
mean (n)	22.935	
st.dev. (n)	3.4107	
R(calc.)	9.550	
st.dev.(D1319:15)	n.a.	
R(D1319:15)	n.a.	compare R(D1319:15) for Gasoil without FAME = 3.7

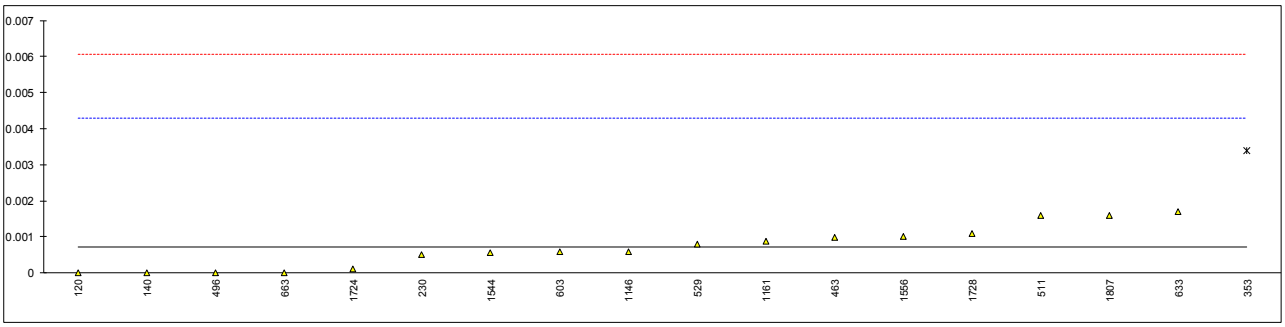

30
28
26
24
22
20
18
16
14
323
150
496
1387
1065
447
120
1441
381
171
1544
445
140

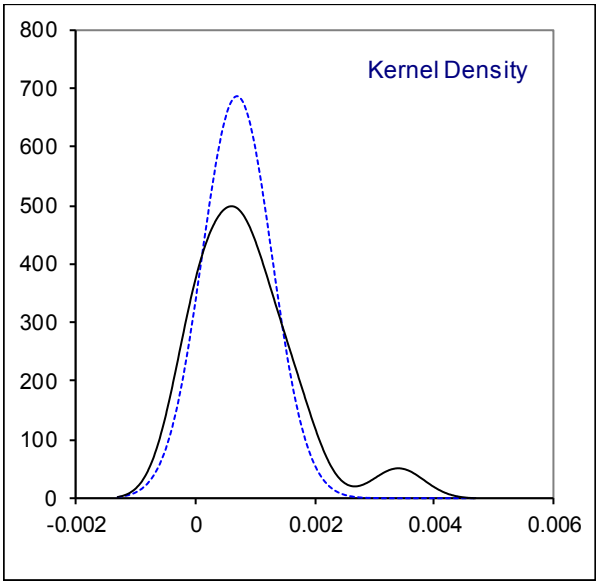

Kernel Density
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
5
15
25
35

Determination of Ash Content on sample #18090; result in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D482	0.0		-0.40	
140	D482	0		-0.40	
150	D482	<0.001		-----	
171	D482	<0.001		-----	
175		-----		-----	
194	D482	<0.001		-----	
230	ISO6245	0.0005		-0.12	
237	D482	<0.001		-----	
238		-----		-----	
312		-----		-----	
323	ISO6245	< 0.001		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
353	IP4	0.0034	G(0.01)	1.51	
381		-----		-----	
444	D482	<0.001		-----	
445	IP4	<0.001		-----	
447	D482	<0.001		-----	
463	D482	0.00098		0.15	
494	ISO6245	< 0,001		-----	
496	ISO6245	0.0000		-0.40	
511	D482	0.0016		0.50	
529	D482	0.000803		0.05	
541	ISO6245	<0.001		-----	
551	D482	<0,001		-----	
603	D482	0.00059		-0.07	
633	D482	0.0017		0.56	
663	D482	0.0000		-0.40	
1017		-----		-----	
1026	ISO6245	<0.001		-----	
1033		-----		-----	
1059	ISO6245	<0,001		-----	
1065		-----		-----	
1134	IP4	<0.001		-----	
1146	D482	0.0006		-0.06	
1161	ISO6245	0.000883		0.10	
1194		-----		-----	
1227		-----		-----	
1299		-----		-----	
1389	D482	<0.001		-----	
1397		-----		-----	
1406		-----		-----	
1407		-----		-----	
1441		-----		-----	
1459		-----		-----	
1510	IP4	<0.001		-----	
1544	ISO6245	0.00055		-0.09	
1556	ISO6245	0.001		0.16	
1569	ISO6245	<0,001		-----	
1631	ISO6245	<0.001		-----	
1634		-----		-----	
1635	ISO6245	<0.001		-----	
1706		-----		-----	
1724	D482	0.0001		-0.34	
1728	D482	0.0011		0.22	
1807	ISO6245	0.0016		0.50	
1811		-----		-----	
1984		-----		-----	
2130		-----		-----	
6016		-----		-----	
6075		-----		-----	

normality	OK		
n	17		
outliers	1		
mean (n)	0.00071		
st.dev. (n)	0.000581		
R(calc.)	0.00163		
st.dev.(ISO6245:01)	0.001786		application range: 0.001 - 0.180%
R(ISO6245:01)	0.005		compare R(D482:13) = 0.005

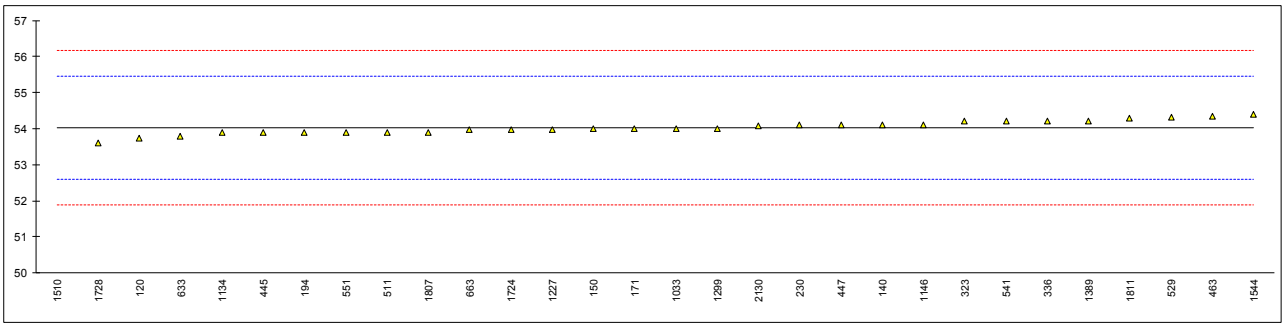

0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
120
140
496
663
1724
230
1544
603
1146
529
1161
463
1556
1728
511
1807
633
353

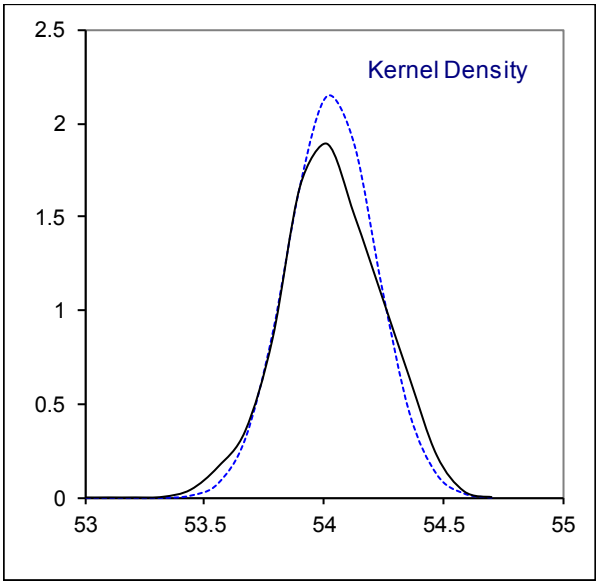

Kernel Density
800
700
600
500
400
300
200
100
0
-0.002
0
0.002
0.004
0.006

Determination of Cetane Index, two variables D976 on sample #18090

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D976	53.73	E	-0.43	iis calculated: 53.91
140	D976	54.1		0.09	
150	D976	54.0		-0.05	
171	D976	54.0		-0.05	
175		-----		-----	
194	D976	53.90	E	-0.19	iis calculated: 54.09
230	D976	54.1		0.09	
237		-----		-----	
238		-----		-----	
312		-----		-----	
323	D976	54.2		0.23	
334		-----		-----	
335		-----		-----	
336	D976	54.2		0.23	
338		-----		-----	
353		-----		-----	
381		-----		-----	
444		-----		-----	
445	D976	53.9		-0.19	
447	D976	54.1		0.09	
463	D976	54.33		0.41	
494		-----		-----	
496		-----		-----	
511	D976	53.9		-0.19	
529	D976	54.3169		0.39	
541	D976	54.2		0.23	
551	D976	53.9		-0.19	
603		-----		-----	
633	D976	53.8		-0.33	
663	D976	53.97		-0.09	
1017		-----		-----	
1026		-----		-----	
1033	D976	54.0		-0.05	
1059		-----		-----	
1065		-----		-----	
1134	D976	53.8985		-0.19	
1146	D976	54.1		0.09	
1161		-----		-----	
1194		-----		-----	
1227	D976	53.983	E	-0.08	iis calculated: 54.28
1299	D976	54.0		-0.05	
1389	D976	54.2		0.23	
1397		-----		-----	
1406		-----		-----	
1407		-----		-----	
1441		-----		-----	
1459		-----		-----	
1510		25.8	E,R(0.01)	-39.53	iis calculated: 54.07
1544	D976	54.4		0.51	
1556		-----		-----	
1569		-----		-----	
1631		-----		-----	
1634		-----		-----	
1635		-----		-----	
1706		-----		-----	
1724	D976	53.97	E	-0.09	iis calculated: 53.83
1728	D976	53.6056		-0.60	
1807	D976	53.9		-0.19	
1811	D976	54.3	E	0.37	iis calculated: 54.03
1984		-----		-----	
2130	D976	54.07		0.05	
6016		-----		-----	
6075		-----		-----	

normality	OK
n	29
outliers	1
mean (n)	54.037
st.dev. (n)	0.1847
R(calc.)	0.517
st.dev.(D976:06)	0.7143
R(D976:06)	2

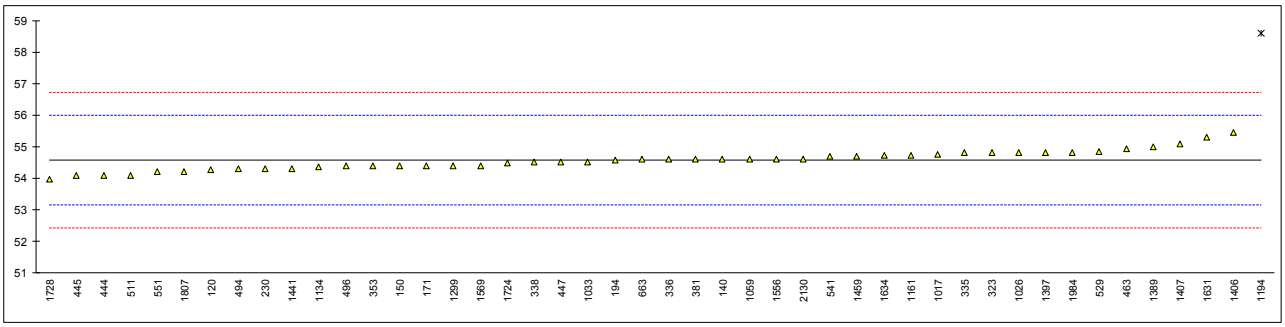

57
56
55
54
53
52
51
50
1510
1728
120
633
1134
445
194
551
511
1807
663
1724
1227
150
171
1033
1299
2130
230
447
140
1146
323
541
336
1389
1811
529
463
1544

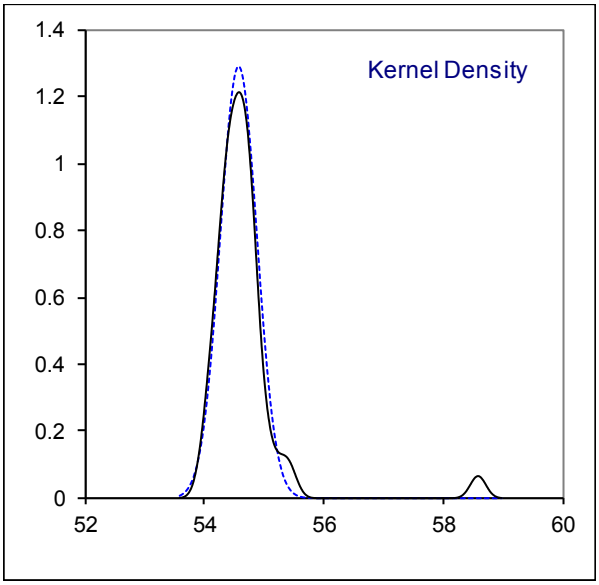

Kernel Density
2.5
2
1.5
1
0.5
0
53
53.5
54
54.5
55

Determination of Cetane Index, four variables ISO4264 on sample #18090

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D4737-A	54.26		-0.43	
140	D4737-A	54.6		0.05	
150	ISO4264	54.4		-0.23	
171	D4737-A	54.4		-0.23	
175		-----		-----	
194	D4737-A	54.58		0.02	
230	ISO4264	54.3		-0.37	
237		-----		-----	
238		-----		-----	
312		-----		-----	
323	ISO4264	54.8		0.33	
334		-----		-----	
335	ISO4264	54.8		0.33	
336	ISO4264	54.6		0.05	
338	ISO4264	54.5		-0.09	
353	IP380	54.399		-0.24	
381	ISO4264	54.6	E	0.05	iis calculated: 54.49 (ISO6246)
444	ISO4264	54.1		-0.65	
445	IP380	54.1		-0.65	
447	D4737-A	54.5		-0.09	
463	ISO4264	54.94		0.52	
494	ISO4264	54.3		-0.37	
496	ISO4264	54.39		-0.25	
511	D4737	54.1		-0.65	
529	D4737	54.840		0.38	
541	D4737-A	54.69		0.17	
551	D4737-A	54.2		-0.51	
603		-----		-----	
633		-----		-----	
663	D4737-A	54.59		0.03	
1017	ISO4264	54.75		0.26	
1026	ISO4264	54.8		0.33	
1033	IP380	54.5		-0.09	
1059	ISO4264	54.6		0.05	
1065		-----		-----	
1134	ISO4264	54.3483		-0.31	
1146		-----		-----	
1161	ISO4264	54.73		0.23	
1194	D4737-A	58.6	R(0.01)	5.65	
1227		-----		-----	
1299	D4737-B	54.4	E	-0.23	iis calculated: 53.73 (D4737-B) and 54.43 (D4737-A)
1389	ISO4264	55.0		0.61	
1397	ISO4264	54.8		0.33	
1406	ISO4264	55.44		1.22	
1407	ISO4264	55.1		0.75	
1441	D4737-A	54.3		-0.37	
1459	D4737-A	54.7		0.19	
1510		-----		-----	
1544		-----		-----	
1556	ISO4264	54.6		0.05	
1569	ISO4264	54.4	E	-0.23	iis calculated: 54.51 (ISO6246)
1631	ISO4264	55.3		1.03	
1634	ISO4264	54.72		0.21	
1635		-----		-----	
1706		-----		-----	
1724	D4737-A	54.48	E	-0.12	iis calculated: 54.31 (D4737-A)
1728	ISO4264	53.9679		-0.84	
1807	ISO4264	54.2		-0.51	
1811		-----		-----	
1984	ISO4264	54.8		0.33	
2130	IP380	54.61		0.06	
6016		-----		-----	
6075		-----		-----	

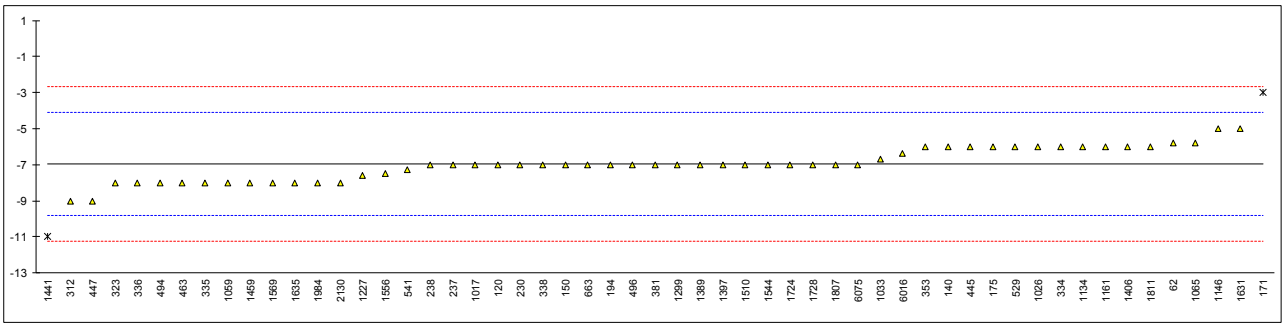
normality	OK
n	45
outliers	1
mean (n)	54.567
st.dev. (n)	0.3094
R(calc.)	0.866
st.dev.(ISO4264:07)	0.7143
R(ISO4264:07)	2

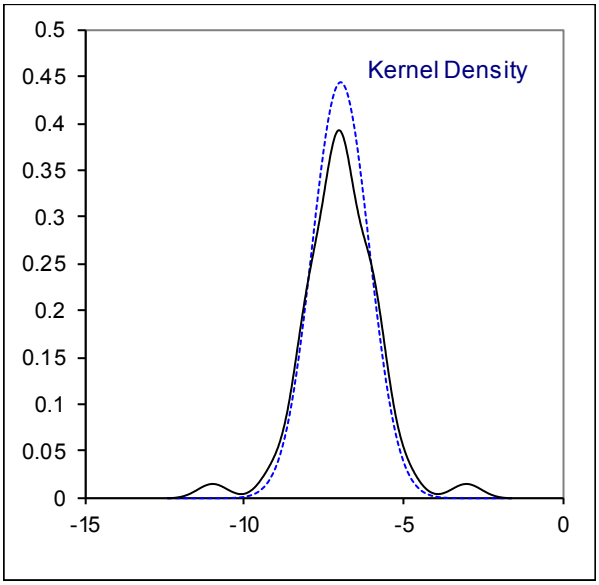

59
58
57
56
55
54
53
52
51
1728 445 444 511 551 1807 120 494 230 1441 1134 496 353 150 171 1299 1569 1724 338 447 1033 194 663 336 381 140 1059 1556 2130 541 1459 1634 1161 1017 335 323 1026 1397 1984 529 463 1389 1407 1631 1406 1194


Kernel Density
1.4
1.2
1
0.8
0.6
0.4
0.2
0
52
54
56
58
60

Determination of Cloud Point on sample #18090; result in °C

lab	method	value	mark	z(targ)	remarks
62	D5773	-5.8		0.81	
120	D5773	-7		-0.03	
140	D2500	-6		0.67	
150	D5771	-7.0		-0.03	
171	D2500	-3	R(0.01)	2.77	
175	D2500	-6		0.67	
194	D2500	-7		-0.03	
230	D2500	-7		-0.03	
237	D2500	-7		-0.03	
238	D2500	-7		-0.03	
312	D2500	-9		-1.43	
323	EN23015	-8		-0.73	
334	EN23015	-6		0.67	
335	EN23015	-8		-0.73	
336	EN23015	-8		-0.73	
338	EN23015	-7		-0.03	
353	IP219	-6		0.67	
381	ISO3015	-7		-0.03	
444		-----		-----	
445	IP219	-6		0.67	
447	D2500	-9		-1.43	
463	D2500	-8		-0.73	
494	EN23015	-8		-0.73	
496	EN23015	-7.0		-0.03	
511		-----		-----	
529	D2500	-6		0.67	
541	D5771	-7.3		-0.24	
551		-----		-----	
603		-----		-----	
633		-----		-----	
663	D2500	-7		-0.03	
1017	D2500	-7		-0.03	
1026	ISO3015	-6		0.67	
1033	D7689	-6.7		0.18	
1059	EN23015	-8		-0.73	
1065	D5771	-5.8		0.81	
1134	IP219	-6		0.67	
1146	D2500	-5.0		1.37	
1161	EN23015	-6		0.67	
1194		-----		-----	
1227	D2500	-7.6		-0.45	
1299	D2500	-7		-0.03	
1389	D2500	-7		-0.03	
1397	EN23015	-7		-0.03	
1406	ISO3015	-6.0		0.67	
1407		-----		-----	
1441	D2500	-11	R(0.01)	-2.83	
1459	ISO3015	-8.0		-0.73	
1510	D2500	-7		-0.03	
1544	EN23015	-7.0		-0.03	
1556	ISO3015	-7.5		-0.38	
1569	EN23015	-8	C	-0.73	first reported: -28
1631	EN23015	-5		1.37	
1634		-----		-----	
1635	D7689	-8		-0.73	
1706		-----		-----	
1724	D2500	-7		-0.03	
1728	D2500	-7		-0.03	
1807	EN23015	-7		-0.03	
1811	EN23015	-6		0.67	
1984	EN23015	-8		-0.73	
2130	EN23015	-8.0		-0.73	
6016	D2500	-6.4		0.39	
6075	EN23015	-7		-0.03	
	normality	OK			
	n	53			
	outliers	2			
	mean (n)	-6.96			
	st.dev. (n)	0.898			
	R(calc.)	2.52			
	st.dev.(EN23015:94)	1.429			
	R(EN23015:94)	4			compare R(D2500:17a) = 5

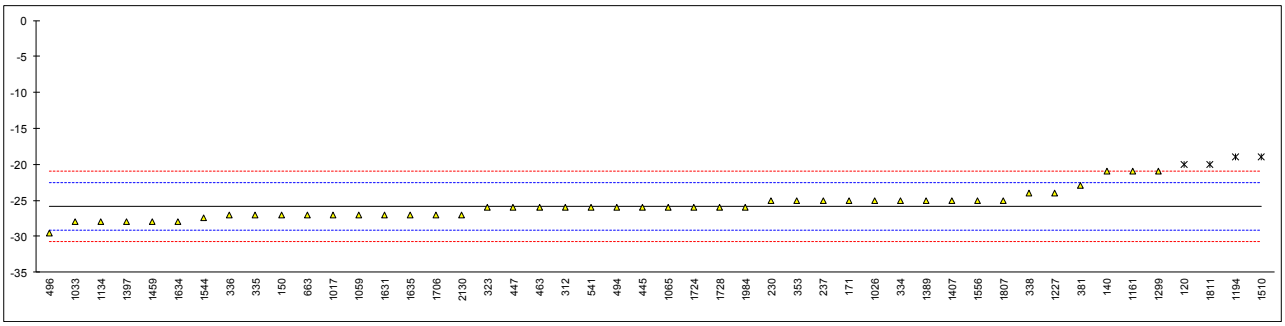

1
-1
-3
-5
-7
-9
-11
-13
1441 312 447 323 336 494 463 335 1059 1459 1569 1635 1984 2130 1227 1556 541 238 237 1017 120 230 338 150 663 194 496 381 1299 1389 1397 1510 1544 1724 1728 1807 6075 1033 6016 353 140 445 175 529 1026 334 1134 1161 1406 1811 62 1065 1146 1631 171

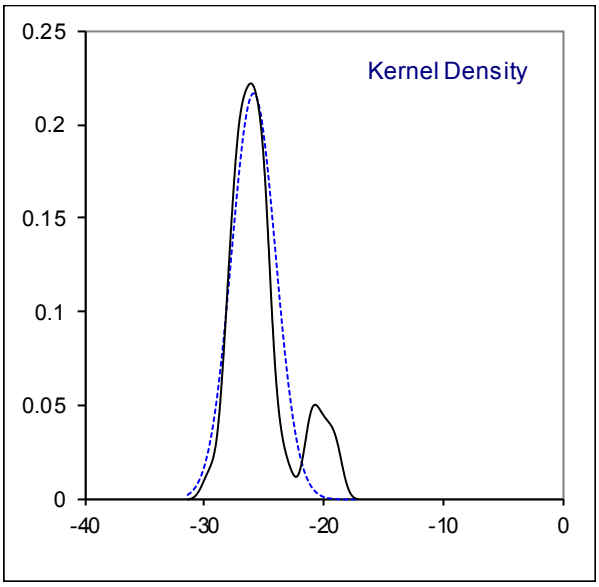

Kernel Density
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
-15
-10
-5
0

Determination of Cold Filter Plugging Point (CFPP) on sample #18090; result in °C

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D6371	-20	R(0.05)	3.59	
140	D6371	-21		2.98	
150	EN116	-27		-0.71	
171	D6371	-25		0.52	
175		-----		-----	
194		-----		-----	
230	IP309	-25	C	0.52	first reported: -19
237	D6371	-25		0.52	
238		-----		-----	
312	EN116	-26		-0.10	
323	EN116	-26		-0.10	
334	EN116	-25		0.52	
335	EN116	-27		-0.71	
336	EN116	-27		-0.71	
338	EN116	-24		1.13	
353	IP309	-25		0.52	
381	EN116	-23		1.75	
444		-----		-----	
445	IP309	-26		-0.10	
447	IP309	-26		-0.10	
463	EN116	-26		-0.10	
494	EN116	-26		-0.10	
496	EN116	-29.5		-2.25	
511		-----		-----	
529		-----		-----	
541	D6371	-26		-0.10	
551		-----		-----	
603		-----		-----	
633		-----		-----	
663	EN116	-27		-0.71	
1017	EN116	-27		-0.71	
1026	EN16329	-25		0.52	
1033	IP309	-28		-1.33	
1059	EN116	-27		-0.71	
1065	D6371	-26		-0.10	
1134	EN116	-28		-1.33	
1146		-----		-----	
1161	EN116	-21		2.98	
1194	EN116	-19	R(0.05)	4.21	
1227	EN116	-24		1.13	
1299	IP309	-21		2.98	
1389	IP309	-25		0.52	
1397	EN116	-28		-1.33	
1406		-----		-----	
1407	EN116	-25		0.52	
1441		-----		-----	
1459	EN116	-28.0		-1.33	
1510	IP309	-19	R(0.05)	4.21	
1544	EN116	-27.5		-1.02	
1556	EN116	-25		0.52	
1569		-----		-----	
1631	EN116	-27		-0.71	
1634	EN116	-28		-1.33	
1635	EN116	-27		-0.71	
1706	EN116	-27		-0.71	
1724	IP309	-26		-0.10	
1728	D6371	-26		-0.10	
1807	EN116	-25		0.52	
1811	EN116	-20	R(0.05)	3.59	
1984	EN116	-26		-0.10	
2130	EN116	-27.0		-0.71	
6016		-----		-----	
6075		-----		-----	

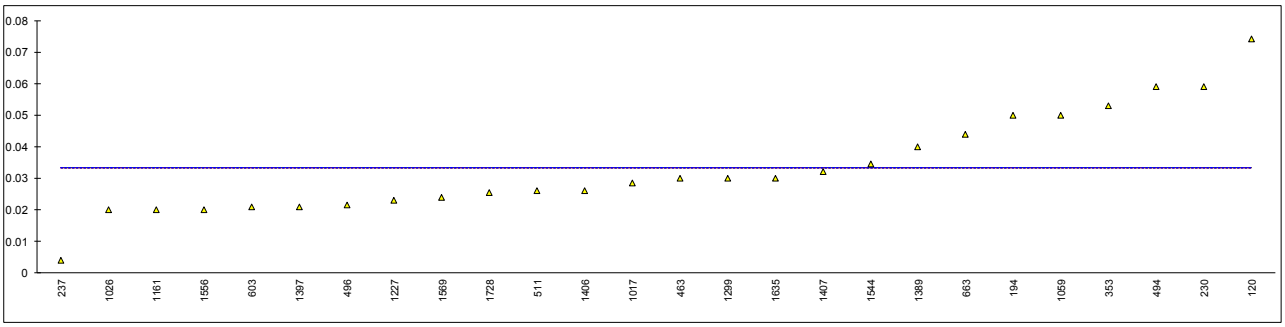
normality	not OK
n	44
outliers	4
mean (n)	-25.84
st.dev. (n)	1.839
R(calc.)	5.15
st.dev.(EN116:15)	1.625
R(EN116:15)	4.55

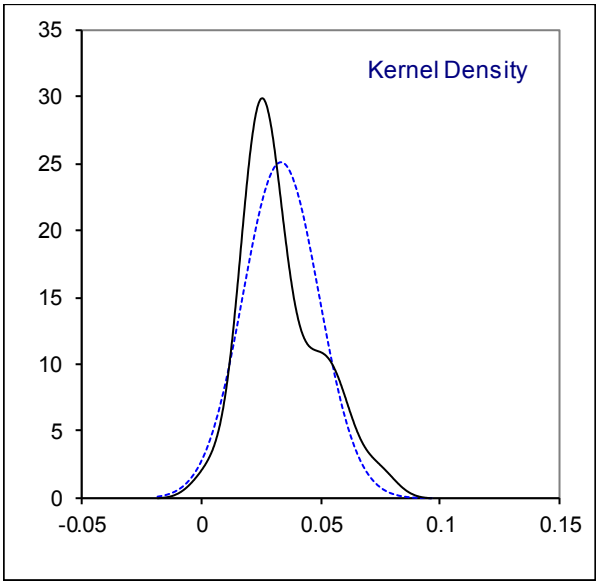

0
-5
-10
-15
-20
-25
-30
-35
496 1033 1134 1397 1459 1634 1544 336 335 150 663 1017 1059 1631 1635 1706 2130 323 447 463 312 541 494 445 1065 1724 1728 1984 230 353 237 171 1026 334 1389 1407 1556 1807 338 1227 381 140 1161 1299 120 1811 1194 1510


Kernel Density
0.25
0.2
0.15
0.1
0.05
0
-40
-30
-20
-10
0

Determination of Carbon Residue, micro method on 10% dist. res. on sample #18090; result in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D4530	0.074		-----	
140		-----		-----	
150		-----		-----	
171	D4530	<0.1		-----	
175		-----		-----	
194	D4530	0.05		-----	
230	ISO10370	0.059		-----	
237	D4530	0.004		-----	
238		-----		-----	
312		-----		-----	
323	ISO10370	< 0.10		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
353	IP398	0.053		-----	
381		-----		-----	
444		-----		-----	
445	IP398	<0.1		-----	
447	IP398	<0.10		-----	
463	ISO10370	0.03		-----	
494	ISO10370	0.059		-----	
496	ISO10370	0.0215		-----	
511	D189	0.026		-----	
529		-----		-----	
541		-----		-----	
551	D4530	<0.1		-----	
603	D4530	0.021		-----	
633		-----		-----	
663	D4530	0.044		-----	
1017	ISO10370	0.0286		-----	
1026	ISO10370	0.02		-----	
1033		-----		-----	
1059	ISO10370	0.05		-----	
1065		-----		-----	
1134		-----		-----	
1146		-----		-----	
1161	ISO10370	0.02		-----	
1194		-----		-----	
1227	D4530	0.023		-----	
1299	D4530	0.03		-----	
1389	D4530	0.04		-----	
1397	ISO10370	0.021		-----	
1406	D4530	0.026		-----	
1407	ISO10370	0.032		-----	
1441		-----		-----	
1459		-----		-----	
1510	IP398	<0.10		-----	
1544	ISO10370	0.0345		-----	
1556	ISO10370	0.02		-----	
1569	ISO10370	0.024		-----	
1631	ISO10370	<0.10		-----	
1634		-----		-----	
1635	ISO10370	0.03		-----	
1706		-----		-----	
1724	D4530	<0,1		-----	
1728	ISO10370	0.0255		-----	
1807		-----		-----	
1811		-----		-----	
1984		-----		-----	
2130	ISO10370	<0.01		-----	
6016		-----		-----	
6075		-----		-----	
	normality	OK			
	n	26			
	outliers	0			
	mean (n)	0.0333			
	st.dev. (n)	0.01591			
	R(calc.)	0.0446			
	st.dev.(ISO10370:14)	(0.00906)			application range: 0.1 – 30%M/M
	R(ISO10370:14)	(0.0254)			compare R(EN590:13-Annex A) = 0.0388

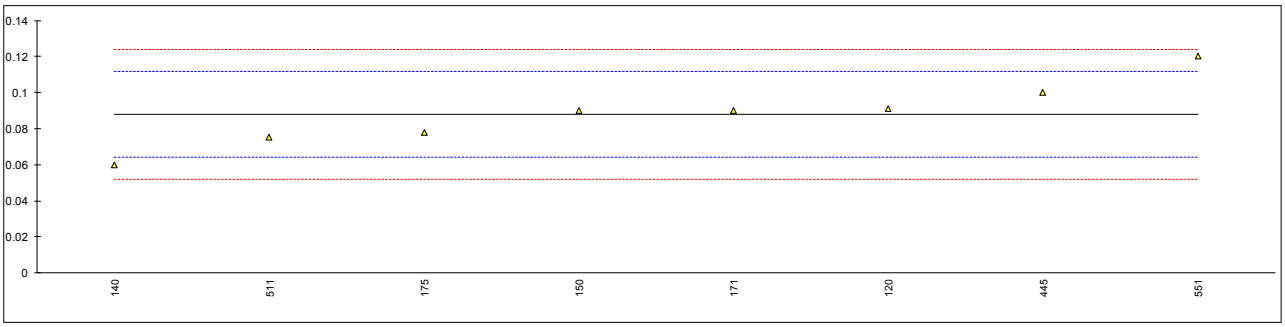

0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
237
1026
1161
1556
603
1397
496
1227
1569
1728
511
1406
1017
463
1299
1635
1407
1544
1389
663
194
1059
353
494
230
120

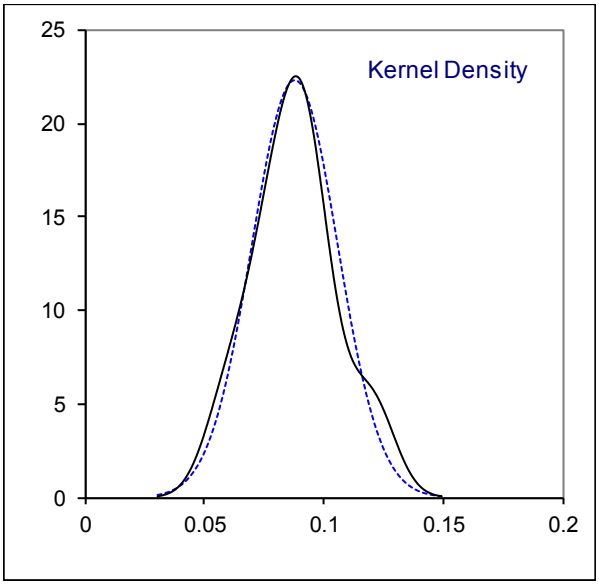

Kernel Density
35
30
25
20
15
10
5
0
-0.05
0
0.05
0.1
0.15

Determination of Ramsbottom Carbon Residue on 10% dist. res. on sample #18090; result in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D524	0.091		0.25	
140	D524	0.06		-2.34	
150	D524	0.09		0.17	
171	D524	0.09		0.17	
175	D524	0.078		-0.83	
194		-----		-----	
230		-----		-----	
237		-----		-----	
238		-----		-----	
312		-----		-----	
323		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
353		-----		-----	
381		-----		-----	
444		-----		-----	
445	IP14	0.10		1.00	
447		-----		-----	
463		-----		-----	
494		-----		-----	
496		-----		-----	
511	D524	0.075		-1.09	
529		-----		-----	
541		-----		-----	
551	D524	0.12		2.67	
603		-----		-----	
633		-----		-----	
663		-----		-----	
1017		-----		-----	
1026		-----		-----	
1033		-----		-----	
1059		-----		-----	
1065		-----		-----	
1134		-----		-----	
1146		-----		-----	
1161		-----		-----	
1194		-----		-----	
1227		-----		-----	
1299		-----		-----	
1389		-----		-----	
1397		-----		-----	
1406		-----		-----	
1407		-----		-----	
1441		-----		-----	
1459		-----		-----	
1510		-----		-----	
1544		-----		-----	
1556		-----		-----	
1569		-----		-----	
1631		-----		-----	
1634		-----		-----	
1635		-----		-----	
1706		-----		-----	
1724		-----		-----	
1728		-----		-----	
1807		-----		-----	
1811		-----		-----	
1984		-----		-----	
2130		-----		-----	
6016		-----		-----	
6075		-----		-----	

normality	unknown
n	8
outliers	0
mean (n)	0.0880
st.dev. (n)	0.01788
R(calc.)	0.0501
st.dev.(D524:15)	0.01198
R(D524:15)	0.0335


0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
140
511
175
150
171
120
445
551


Kernel Density
25
20
15
10
5
0
0
0.05
0.1
0.15
0.2

Determination of Copper Strip 3hrs at 50 °C on sample #18090

lab	method	value	mark	z(targ)	remarks
62	D130	1b		-----	
120	D130	1A		-----	
140	D130	1a		-----	
150	D130	1a		-----	
171	D130	1a		-----	
175		-----		-----	
194		-----		-----	
230	D130	1a		-----	
237	D130	1		-----	
238	D130	1a		-----	
312		-----		-----	
323	D130	1A		-----	
334	D130	1a		-----	
335		-----		-----	
336	D130	1		-----	
338		-----		-----	
353	IP154	1a		-----	
381		-----		-----	
444		-----		-----	
445	IP154	1a		-----	
447	D130	1a		-----	
463	ISO2160	1A		-----	
494	ISO2160	1a		-----	
496	ISO2160	1a		-----	
511	D130	1A		-----	
529	D130	1A		-----	
541	D130	1A		-----	
551	D130	1A		-----	
603	D130	1A		-----	
633	D130	1a		-----	
663	D130	1a		-----	
1017	D130	1A		-----	
1026	ISO2160	1A		-----	
1033	IP154	1b		-----	
1059	ISO2160	1a		-----	
1065		-----		-----	
1134	D130	1a		-----	
1146		-----		-----	
1161	ISO2160	1a		-----	
1194		-----		-----	
1227	D130	1A		-----	
1299	D130	1A		-----	
1389	D130	1A		-----	
1397	ISO2160	1		-----	
1406		-----		-----	
1407		-----		-----	
1441		-----		-----	
1459		-----		-----	
1510	D130	1a		-----	
1544	ISO2160	1a		-----	
1556	ISO2160	class 1a		-----	
1569	ISO2160	1a		-----	
1631	ISO2160	1		-----	
1634	ISO2160	1a		-----	
1635	D130	1A		-----	
1706		-----		-----	
1724	D130	1a		-----	
1728	D130	1A		-----	
1807	D130	1A		-----	
1811		-----		-----	
1984		-----		-----	
2130	IP154	1a		-----	
6016		-----		-----	
6075	ISO2160	1a		-----	
	n	46			
	mean	1 (1A/1B)			

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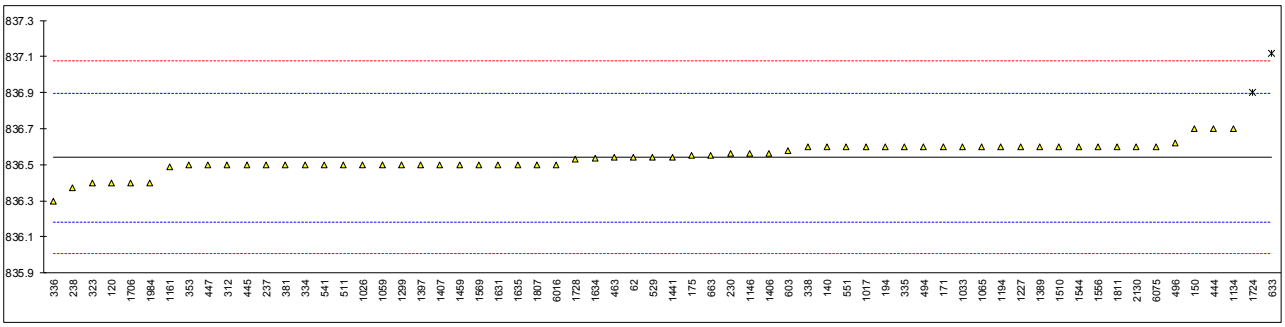
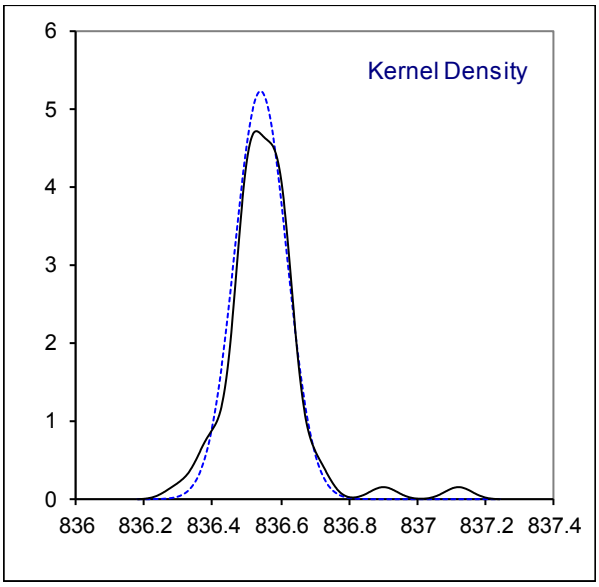
Determination of Density at 15 °C on sample #18090; result in kg/m^3

lab	method	value	mark	z(targ)	remarks
62	D4052	836.54		0.00	
120	D4052	836.4		-0.79	
140	D4052	836.6		0.33	
150	ISO12185	836.7		0.89	
171	D4052	836.6		0.33	
175	D4052	836.55		0.05	
194	D4052	836.6		0.33	
230	ISO12185	836.56		0.11	
237	D4052	836.5		-0.23	
238	D4052	836.37		-0.95	
312	D4052	836.5		-0.23	
323	ISO12185	836.4		-0.79	
334	ISO12185	836.5		-0.23	
335	ISO12185	836.6		0.33	
336	ISO12185	836.3		-1.35	
338	ISO12185	836.6		0.33	
353	IP365	836.5		-0.23	
381	ISO12185	836.5		-0.23	
444	D4052	836.7		0.89	
445	IP365	836.5		-0.23	
447	D4052	836.5		-0.23	
463	ISO12185	836.54		0.00	
494	ISO12185	836.6		0.33	
496	ISO12185	836.62		0.45	
511	D4052	836.5		-0.23	
529	D4052	836.54		0.00	
541	ISO12185	836.5		-0.23	
551	D4052	836.6		0.33	
603	D4052	836.58		0.22	
633	D1298	837.12	R(0.01)	3.25	
663	D4052	836.55		0.05	
1017	D4052	836.6		0.33	
1026	D4052	836.5		-0.23	
1033	IP365	836.6		0.33	
1059	ISO12185	836.5		-0.23	
1065	D4052	836.6		0.33	
1134	IP365	836.7		0.89	
1146	D4052	836.56		0.11	
1161	ISO12185	836.49		-0.28	
1194	ISO12185	836.6	C	0.33	reported: 0.8366 kg/m^3 (probably a unit error?)
1227	D4052	836.6	C	0.33	first reported: 0.8366
1299	D4052	836.5		-0.23	
1389	D4052	836.6		0.33	
1397	ISO12185	836.5		-0.23	
1406	ISO12185	836.56		0.11	
1407	ISO12185	836.5		-0.23	
1441	D4052	836.54		0.00	
1459	ISO12185	836.50		-0.23	
1510	IP365	836.6	C	0.33	reported: 0.8366 kg/m^3 (probably a unit error?)
1544	ISO12185	836.60		0.33	
1556	ISO12185	836.6		0.33	
1569	ISO12185	836.5		-0.23	
1631	ISO12185	836.5		-0.23	
1634	ISO12185	836.538		-0.01	
1635	ISO12185	836.5		-0.23	
1706	ISO12185	836.4		-0.79	
1724	D1298	836.9	R(0.01)	2.01	
1728	D4052	836.53		-0.06	
1807	ISO12185	836.5		-0.23	
1811	ISO12185	836.6		0.33	
1984	ISO12185	836.4		-0.79	
2130	ISO12185	836.6		0.33	
6016	D4052	836.50		-0.23	
6075	ISO12185	836.60		0.33	

normality	suspect
n	62
outliers	2
mean (n)	836.540
st.dev. (n)	0.0762
R(calc.)	0.213
st.dev.(ISO12185:96)	0.1786
R(ISO12185:96)	0.5


837.3
837.1
836.9
836.7
836.5
836.3
836.1
835.9
336 238 323 120 1706 1984 1161 353 447 312 445 237 381 334 541 511 1026 1059 1299 1307 1407 1459 1569 1631 1635 1807 6016 1728 1634 463 62 529 1441 175 663 230 1146 1406 603 338 140 551 1017 194 335 494 171 1033 1065 1194 1227 1389 1510 1544 1566 1811 2130 6075 496 150 444 1134 1724 633

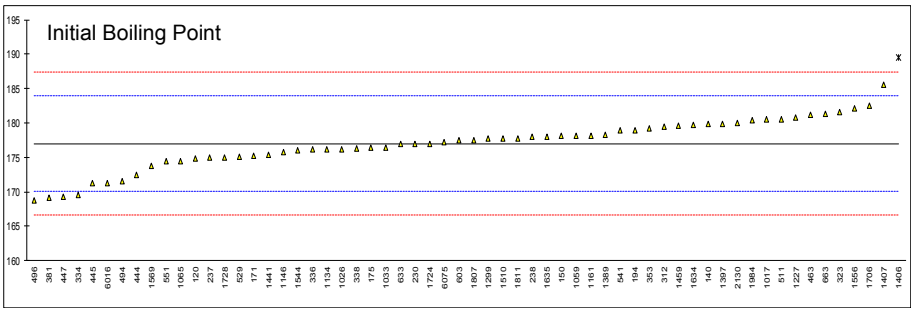

Kernel Density
6
5
4
3
2
1
0
836 836.2 836.4 836.6 836.8 837 837.2 837.4

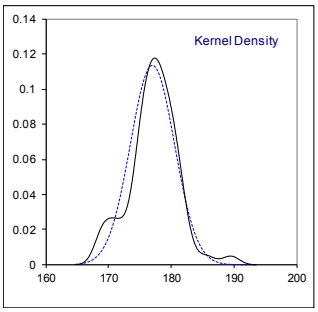
Determination of Distillation on sample #18090; result in °C

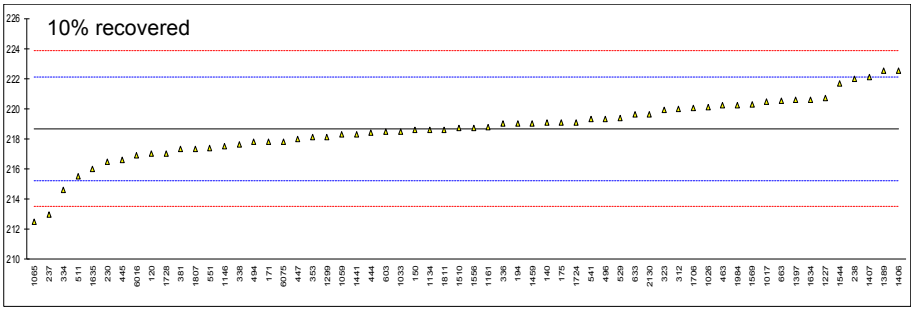
lab	method	IBP	mark	10%rec	mark	50%rec	mark	90%rec	mark	95%rec	mark	FBP	mark
62		-----		-----		-----		-----		-----		-----	
120	D86-automated	174.9		217.0		277.3		335.7		350.6		355.4	
140	D86-automated	179.9		219.1		278.5		334.4		346.6		354.3	
150		178.2		218.6		278.1		333.2		344.8		353.2	
171	D86-automated	175.2		217.8		278.3		335.1		348.8		353.8	
175	D86-automated	176.4		219.1		279.2		337.2		351.6		354.8	
194	D86-automated	179.0		219.0		278.6		335.3		347.7		356.6	
230		177.0		216.5		278.5		333.5		345.5		359.5	
237	D86-manual	175.0		213.0		276.0		333.0		345.0		356.0	
238	D86-manual	178		222		281		334		344		355	
312	D86-automated	179.4		220.0		279.6		334.5		347.4		354.2	
323	ISO3405-automated	181.6		219.9		278.7		335.3		349.7		355.6	
334		169.6		214.6		276.5		333.3		339.6		352.7	
335		-----		-----		-----		-----		-----		-----	
336	D86-automated	176.1		219.0		278.4		334.0		346.7		356.8	
338	ISO3405-automated	176.3		217.6	C	278.8		335.1		347.1		356.7	
353	D86-automated	179.2	C	218.1		277.7		337.7		352.6		358.0	
381		169.1		217.3		278.7		335.4		348.1		355.9	
444	D86-automated	172.4		218.4		276.5		332.2		342.8		356.4	
445	IP123-automated	171.3		216.6		277.2		333.2		346.0		353.8	
447	D86-automated	169.3		218		278.6		334.6		347.5		357.4	
463	ISO3405-automated	181.2		220.2		279.7		336.8		349.9		358.9	
494	ISO3405-automated	171.5		217.8		277.5		334.5		347.8		356.6	
496	D86-automated	168.8		219.3		277.5		332.7		344.5		355.3	
511	D86-manual	180.5		215.5		277.5		333		345.5		355	
529	D86	175.1		219.4		279.6		335.7		348.4		356.7	
541	ISO3405-automated	178.9		219.3		278.9		334.4		347.3		356.1	
551	D86-automated	174.4		217.4		277.5		332.6		343.9		353.2	
603	D86-automated	177.5		218.5		279.5		333.9		345.4		356.6	
633	D86-automated	176.9		219.6		278.0		334.4		345.0		346.3	R(0.01)
663	D86-automated	181.25		220.55		277.90		333.00		345.20		355.15	
1017	ISO3405-automated	180.48		220.45		278.78		334.98		347.99		357.38	
1026	ISO3405-automated	176.2		220.1		279.0		335.1		348		356.2	
1033	IP123-automated	176.4		218.5		278.4		334.4		346.8		355.7	
1059	ISO3405-automated	178.2		218.3		279.1		334.7		347.9		356.9	
1065	D7345	174.5	C	212.5	C	277.2		333.7		346.4		353.9	
1134	D86-automated	176.1		218.6		277.8		333.7		342.2		351.8	
1146	D86-automated	175.8		217.5		278.8		336.1		349.4		358.0	
1161	ISO3405-automated	178.2		218.8		279.3		335.4		347.9		355.1	
1194		-----		-----		-----		-----		-----		-----	
1227	D86-automated	180.8		220.7		279.6		335.4		348.9		355.8	
1299	D86-automated	177.7		218.1		278.0		334.1		346.8		355.4	
1389	D86-automated	178.3		222.5		279.6		335.2		347.8		357.6	
1397		179.9		220.6		279.0		334.9		348.0		357.2	
1406	ISO3405-manual	189.5	R(0.05)	222.5		281.5		336.5		353.0		357.0	
1407	ISO3405-automated	185.6		222.1		279.6		333.7		345.1		357.7	
1441	D86-automated	175.4		218.3		277.0		332.5		345.0		353.7	
1459	ISO3405-automated	179.6		219.0		279.0		332.6		344.8		352.8	
1510	D86-automated	177.8		218.7		278.5		332.1		344.9		351.2	
1544	ISO3405-automated	176.05		221.65		280.05		336.70		350.80		357.40	
1556	ISO3405-automated	182.1		218.7		278.9		335.2		348.0		356.7	
1569	ISO3405-automated	173.8		220.3		277.3		333.9	C	352.1		-----	
1631	ISO3405-automated	-----		-----		-----		-----		346.5		-----	
1634	D86-automated	179.7		220.6		278.7		333.9		345.8		357.7	
1635		178.0		216.0		276.0		333.0		343.0		358.0	
1706	ISO3405-automated	182.45		220.05		279.15		333.7		346.2		353.95	
1724	D86-automated	177		219.1		277.8		333.9		347.4		355.6	
1728	ISO3405-manual	175.0		217.0		276.0		334.5		347.0		355.5	
1807	D86-automated	177.5		217.3		277.3		333.2		344.7		356.9	
1811	D86-automated	177.8		218.6		278.3		333.2		344.3		355.1	
1984	ISO3405-automated	180.4		220.2		278.5		334.9		347.8		356.8	
2130	IP123-automated	180.0		219.6		278.8		333.9		346.4		355.8	
6016	D86-automated	171.3		216.9		276.9		333.1		344.8		351.7	
6075	ISO3405	177.2		217.8		278.5		333.0		345.6		356.0	
	normality	OK		suspect		OK		OK		OK		OK	
	n	59		60		60		60		61		58	
	outliers	1		0		0		0		0		1	
	mean (n)	177.00		218.67		278.37		334.31		346.82		355.69	
	st.dev. (n)	3.514		1.980		1.124		1.265		2.518		1.791	
	R(calc.)	9.84		5.54		3.15		3.54		7.05		5.02	
	st.dev.(ISO3405-A:11)	3.477		1.718		1.061		1.79		3.122		2.536	
	R(ISO3405-A:11)	9.74		4.81		2.97		5.01		8.74		7.1	
comp	R(ISO3405-M:11)	6.67		4.50		3.72		3.82		4.64		3.84	

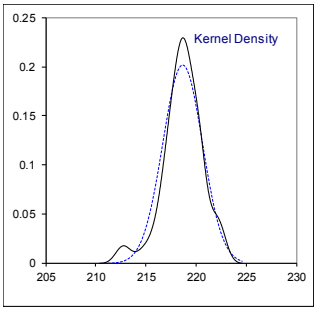
Lab 338 first reported for T. at 10% rec.: 203.8
Lab 353 first reported for IBP: 206.7

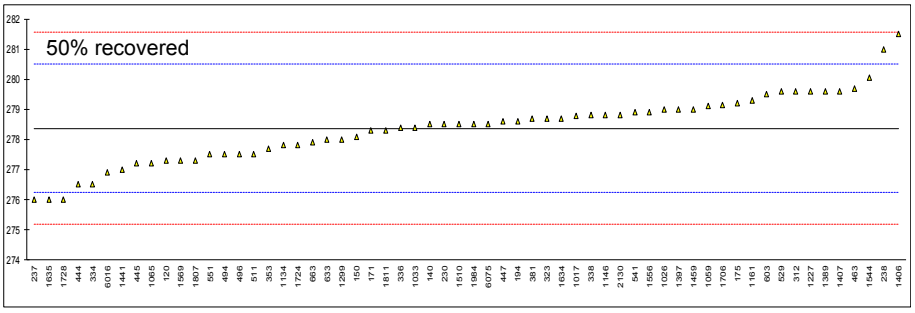
Lab 1065 first reported for IBP: 166.2 and for T. at 10% rec.: 208.6
Lab 1569 first reported for T. at 90% rec.: 345.4

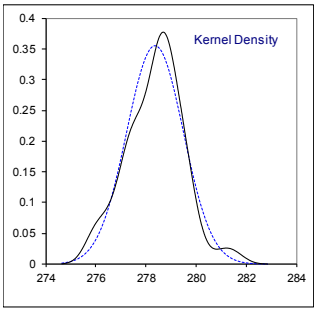

Initial Boiling Point

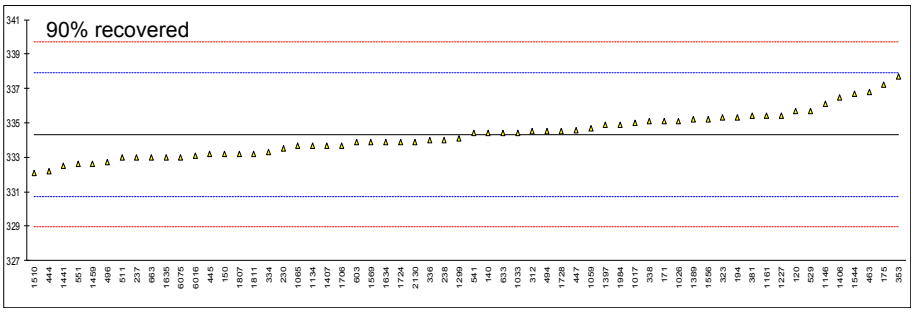

Kernel Density

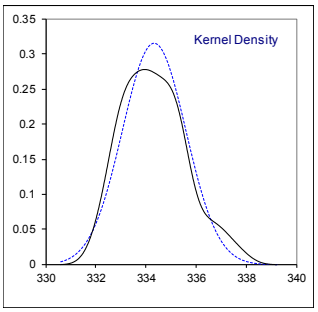

10% recovered

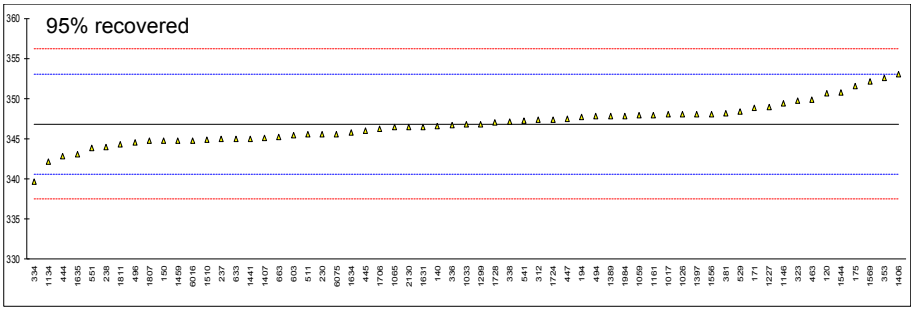

Kernel Density

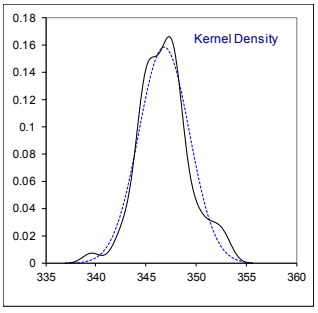

50% recovered

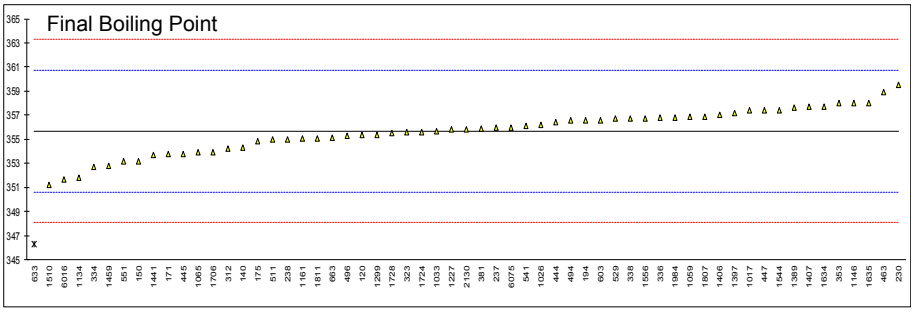

Kernel Density

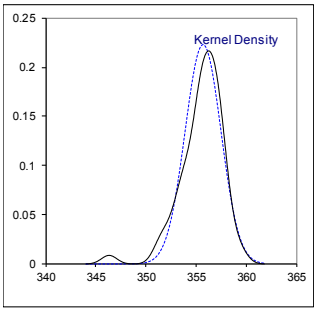

90% recovered


Kernel Density


95% recovered

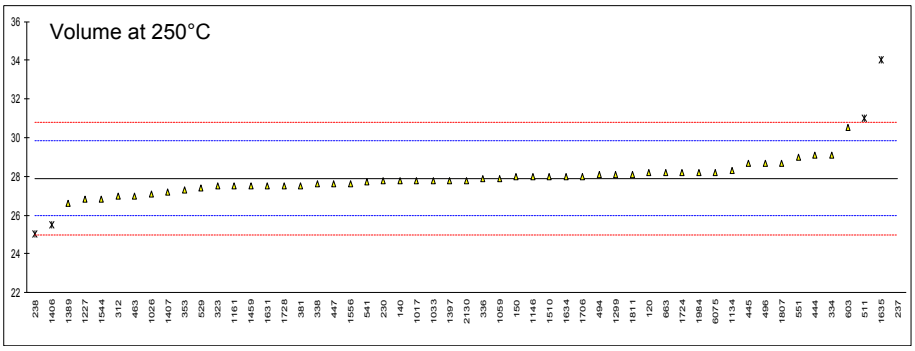

Kernel Density

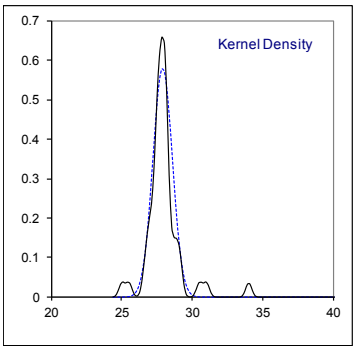

Final Boiling Point

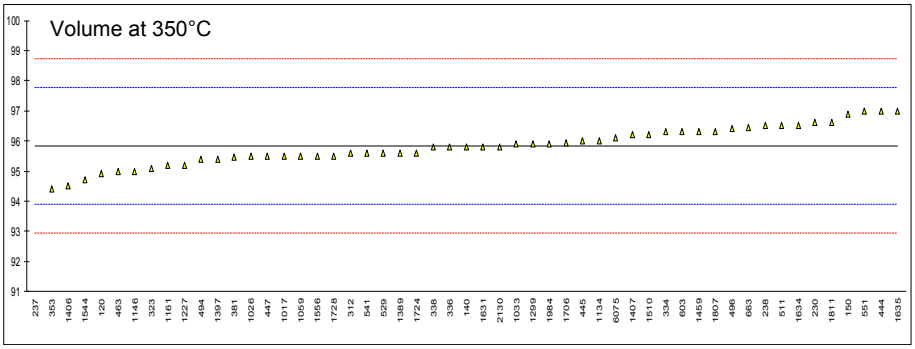

Kernel Density

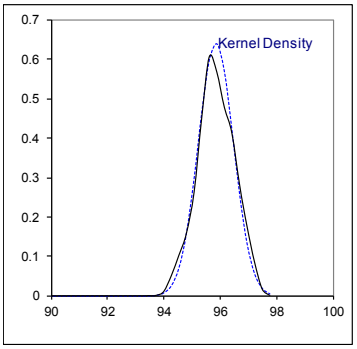
Determination of Distillation on sample #18090; result in %V/V

Lab	method	vol at 250°C	mark	z(targ)	vol at 350°C	mark	z(targ)	% residue		remark
62		-----		-----	-----		-----	-----		
120	D86-automated	28.2		0.32	94.9		-0.96	1.2	C	f.r. 97.5
140	D86-automated	27.8		-0.09	95.8		-0.03	1.4		
150		28.0		0.11	96.9		1.11	1.4		
171	D86-automated	-----		-----	-----		-----	0.9		
175	D86-automated	-----		-----	-----		-----	1.3		
194	D86-automated	-----		-----	-----		-----	1.4		
230		27.8		-0.09	96.6		0.80	1.3		
237	D86-manual	68.0	R(0.01)	41.60	30.0	R(0.01)	-68.27	96.0		
238	D86-manual	25	R(0.01)	-3.00	96.5		0.70	1.5		
312	D86-automated	27.0		-0.92	95.6		-0.24	2.0		
323	ISO3405-automated	27.5		-0.40	95.1		-0.76	1.4		
334		29.1		1.25	96.3		0.49	1.4		
335		-----		-----	-----		-----	-----		
336	D86-automated	27.9		0.01	95.8		-0.03	1.7		
338	ISO3405-automated	27.6		-0.30	95.8		-0.03	0.2		
353	D86-automated	27.3		-0.61	94.4		-1.48	1.2		
381		27.53		-0.37	95.47		-0.37	1.6		
444	D86-automated	29.1		1.25	97.0		1.22	1.4		
445	IP123-automated	28.7		0.84	96.0		0.18	1.6		
447	D86-automated	27.6		-0.30	95.5		-0.34	1.4		
463	ISO3405-automated	27.0		-0.92	95.0		-0.86	1.6		
494	ISO3405-automated	28.1		0.22	95.4		-0.44	0		
496	D86-automated	28.7		0.84	96.4		0.59	-----		
511	D86-manual	31	R(0.01)	3.22	96.5		0.70	1.4		
529	D86	27.4		-0.51	95.6		-0.24	1.4		
541	ISO3405-automated	27.7		-0.20	95.6		-0.24	0.5		
551	D86-automated	29		1.15	97		1.22	1.2		
603	D86-automated	30.5		2.71	96.3		0.49	1.4		
633	D86-automated	-----		-----	-----		-----	2.0		
663	D86-automated	28.20		0.32	96.45		0.64	1.55		
1017	ISO3405-automated	27.8		-0.09	95.5		-0.34	1.4		
1026	ISO3405-automated	27.1		-0.82	95.5		-0.34	1.7		
1033	IP123-automated	27.8		-0.09	95.9		0.07	1.4		
1059	ISO3405-automated	27.9		0.01	95.5		-0.34	1.4		
1065	D7345	-----		-----	-----		-----	-----		
1134	D86-automated	28.3		0.42	96.0		0.18	1.4		
1146	D86-automated	28		0.11	95		-0.86	1.2		
1161	ISO3405-automated	27.5		-0.40	95.2		-0.65	1.2		
1194		-----		-----	-----		-----	-----		
1227	D86-automated	26.8		-1.13	95.2		-0.65	1.0		
1299	D86-automated	28.1		0.22	95.9		0.07	1.4		
1389	D86-automated	26.6		-1.34	95.6		-0.24	1.4		
1397		27.8		-0.09	95.4		-0.44	1.1		
1406	ISO3405-manual	25.5	R(0.01)	-2.48	94.5		-1.38	1.0		
1407	ISO3405-automated	27.2		-0.72	96.2		0.39	0.7		
1441	D86-automated	-----		-----	-----		-----	1.4		
1459	ISO3405-automated	27.5		-0.40	96.3		0.49	1.4		
1510	D86-automated	28.0		0.11	96.2		0.39	1.5		
1544	ISO3405-automated	26.80		-1.13	94.70		-1.17	1.60		
1556	ISO3405-automated	27.6		-0.30	95.5		-0.34	1.4		
1569	ISO3405-automated	-----		-----	-----		-----	1.4		
1631	ISO3405-automated	27.5		-0.40	95.8		-0.03	-----		
1634	D86-automated	28.0		0.11	96.5		0.70	1.0		
1635		34	R(0.01)	6.34	97		1.22	1.5		
1706	ISO3405-automated	28.0		0.11	95.95		0.13	1.8		
1724	D86-automated	28.2		0.32	95.6		-0.24	1.3		
1728	ISO3405-manual	27.5		-0.40	95.5		-0.34	1.4		
1807	D86-automated	28.7		0.84	96.3		0.49	1.2		
1811	D86-automated	28.1		0.22	96.6		0.80	1.2		
1984	ISO3405-automated	28.2		0.32	95.9		0.07	1.4		
2130	IP123-automated	27.8		-0.09	95.8		-0.03	1.0		
6016	D86-automated	-----		-----	-----		-----	-----		
6075	ISO3405	28.2		0.32	96.1		0.28	1.1		
	normality	not OK			OK					
	n	48			52					
	outliers	5			1					
	mean (n)	27.89			95.83					
	st.dev. (n)	0.689			0.625					
	R(calc.)	1.93			1.75					
	st.dev.(ISO3405-A:11)	0.964			0.964					
	R(ISO3405-A:11)	2.7			2.7					
comp	R(ISO3405-M:11)	5.13			5.34					


Volume at 250°C


Kernel Density

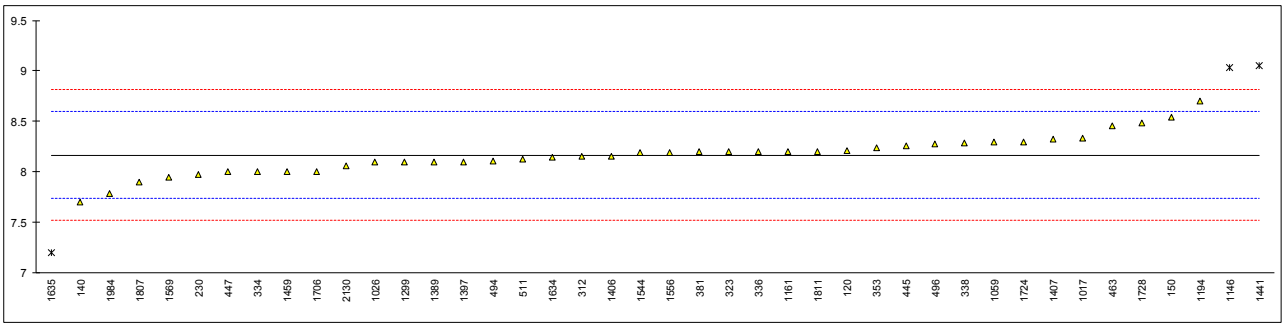

Volume at 350°C

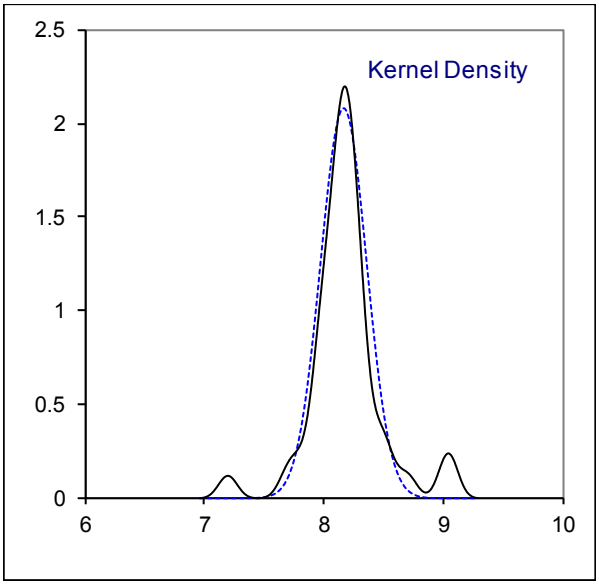

Kernel Density

Determination of Fatty Acid Methyl Esters (FAME) content on sample #18090; result in %V/V

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D7371	8.21		0.20	
140	D7371	7.7		-2.16	
150	D7371	8.54		1.72	
171		-----		-----	
175		-----		-----	
194		-----		-----	
230	EN14078 - B	7.97		-0.91	
237		-----		-----	
238		-----		-----	
312	EN14078 - B	8.15		-0.08	
323	EN14078 - B	8.2		0.15	
334	EN14078 - B	8.0		-0.77	
335		-----		-----	
336	EN14078 - B	8.2		0.15	
338	EN14078 - B	8.29		0.57	
353	EN14078 - B	8.235		0.31	
381	EN14078 - B	8.2		0.15	
444		-----		-----	
445	EN14078 - B	8.26		0.43	
447	EN14078 - B	8.0		-0.77	
463	EN14078 - B	8.453		1.32	
494	EN14078 - B	8.11		-0.27	
496	EN14078 - B	8.28		0.52	
511	D7371	8.126		-0.19	
529		-----		-----	
541		-----		-----	
551		-----		-----	
603		-----		-----	
633		-----		-----	
663		-----		-----	
1017	EN14078 - B	8.33		0.75	
1026	EN14078 - B	8.1		-0.31	
1033		-----		-----	
1059	EN14078 - B	8.3		0.61	
1065		-----		-----	
1134		-----		-----	
1146	D7371	9.0356	R(0.01)	4.01	
1161	EN14078 - B	8.20		0.15	
1194		8.7		2.46	
1227		-----		-----	
1299	EN14078 - B	8.1		-0.31	
1389	EN14078 - B	8.1		-0.31	
1397	EN14078 - B	8.1		-0.31	
1406	EN14078 - B	8.15		-0.08	
1407	EN14078 - B	8.32		0.70	
1441	EN14078 - B	9.05	C,R(0.01)	4.08	first reported: 9.5
1459	EN14078 - B	8.0		-0.77	
1510		-----		-----	
1544	EN14078 - B	8.19		0.10	
1556	EN14078 - B	8.192		0.11	
1569	EN14078 - B	7.95		-1.00	
1631		-----		-----	
1634	EN14078 - B	8.145		-0.10	
1635	EN14078 - B	7.2	R(0.01)	-4.47	
1706	EN14078 - B	8.0		-0.77	
1724	EN14078 - B	8.3		0.61	
1728	EN14078 - B	8.48		1.44	
1807	EN14078 - B	7.9		-1.24	
1811	EN14078 - A	8.2		0.15	
1984	EN14078 - B	7.79		-1.74	
2130	EN14078 - B	8.06		-0.50	
6016		-----		-----	
6075		-----		-----	

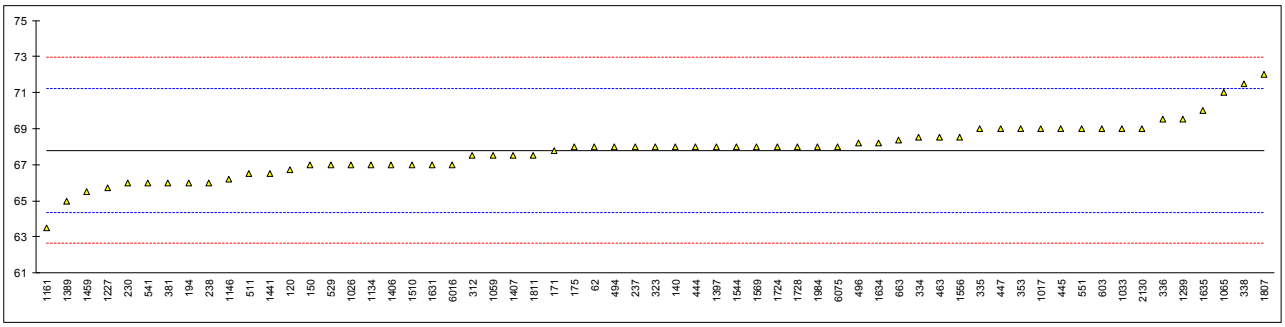
normality	suspect		
n	39		
outliers	3		
mean (n)	8.167		
st.dev. (n)	0.1921		
R(calc.)	0.538		
st.dev.(EN14078-B:14)	0.2166		
R(EN14078-B:14)	0.606		compare R(D7371:14) = 1.101

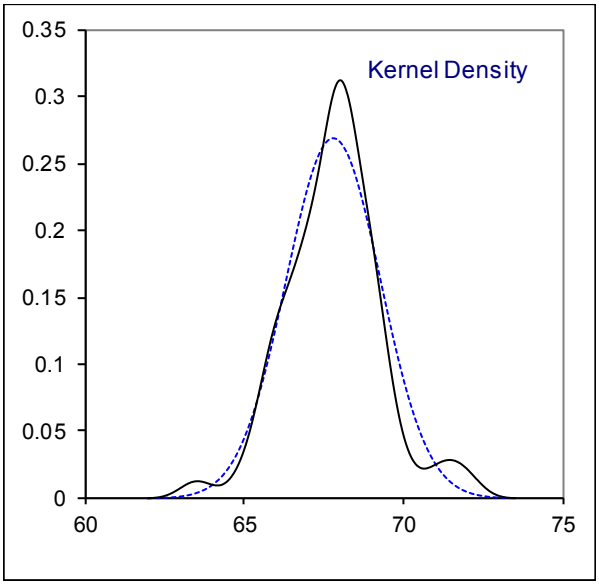

9.5
9
8.5
8
7.5
7
1635 140 1984 1807 1569 230 447 334 1459 1706 2130 1026 1299 1389 1397 494 511 1634 312 1406 1544 1556 381 323 336 1161 1811 120 353 445 496 338 1059 1724 1407 1017 463 1728 150 1194 1146 1441


Kernel Density
2.5
2
1.5
1
0.5
0
6
7
8
9
10

Determination of Flash Point PMcc on sample #18090; result in °C

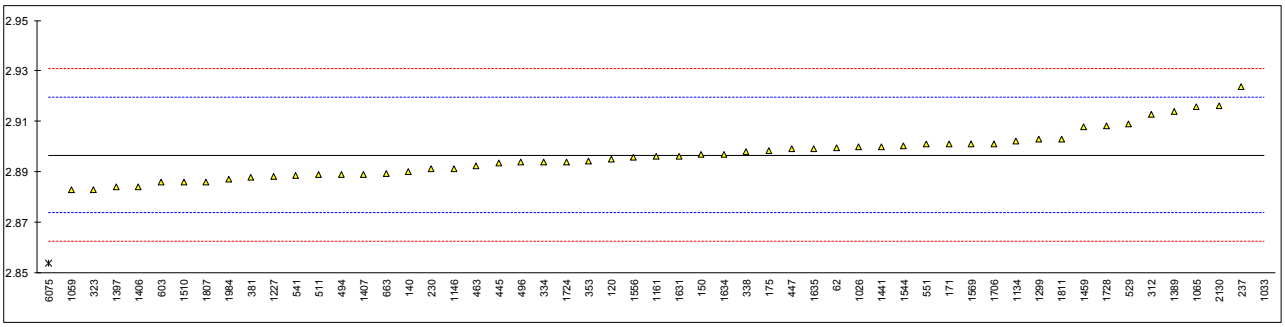
lab	method	value	mark	z(targ)	remarks
62	D93-C	68.0		0.11	
120	D93-A	66.7		-0.64	
140	D93-A	68		0.11	
150	D93-A	67.0		-0.47	
171	ISO2719-A	67.8	C	0.00	first reported: 59
175	D93-A	68		0.11	
194	D93-A	66.0		-1.05	
230	ISO2719-A	66.0		-1.05	
237	D93-A	68.0		0.11	
238	D93-A	66.0		-1.05	
312	D93-A	67.5		-0.18	
323	ISO2719-A	68.0		0.11	
334	ISO2719-A	68.5		0.40	
335	ISO2719-A	69.0		0.69	
336	ISO2719-A	69.5		0.99	
338	ISO2719-A	71.5		2.15	
353	IP34-A	69.0		0.69	
381	ISO2719-A	66.0		-1.05	
444	D93-A	68		0.11	
445	D93-A	69.0		0.69	
447	D93-A	69.0		0.69	
463	D93-A	68.5		0.40	
494	ISO2719-A	68.0		0.11	
496	ISO2719-A	68.2		0.23	
511	D93	66.5		-0.76	
529	D93	67		-0.47	
541	ISO2719-A	66.0		-1.05	
551	D93-A	69.0		0.69	
603	D93-A	69.0		0.69	
633		-----		-----	
663	D93-A	68.35		0.32	
1017	D93-A	69.0		0.69	
1026	ISO2719-A	67.0		-0.47	
1033	IP34-A	69.0		0.69	
1059	ISO2719-A	67.5		-0.18	
1065	D93-A	71		1.86	
1134	D93-A	67.0		-0.47	
1146	D93-A	66.2		-0.93	
1161	ISO2719-A	63.5		-2.50	
1194		-----		-----	
1227	D93-A	65.7		-1.22	
1299	D93-A	69.5		0.99	
1389	D93-A	65.0		-1.63	
1397	ISO2719-A	68.0		0.11	
1406	ISO2719-A	67.0		-0.47	
1407	ISO2719-A	67.5		-0.18	
1441	D93-A	66.5		-0.76	
1459	ISO2719-A	65.5		-1.34	
1510	IP34-A	67.0		-0.47	
1544	ISO2719-A	68.00		0.11	
1556	ISO2719-A	68.5		0.40	
1569	D93-A	68		0.11	
1631	ISO2719-A	67.0		-0.47	
1634	D93-A	68.2		0.23	
1635	ISO2719-A	70.0		1.28	
1706		-----		-----	
1724	D93-A	68		0.11	
1728	D93-A	68.0		0.11	
1807	ISO2719-A	72.0		2.44	
1811	D93-A	67.5		-0.18	
1984	ISO2719-A	68.0		0.11	
2130	ISO2719-A	69.0		0.69	
6016	D93-A	67.0		-0.47	
6075	ISO2719-A	68.0		0.11	
	normality	suspect			
	n	61			
	outliers	0			
	mean (n)	67.806			
	st.dev. (n)	1.4869			
	R(calc.)	4.163			
	st.dev.(ISO2719-A:16)	1.7194			compare R(D93-A:16a) =4.81
	R(ISO2719-A:16)	4.814			compare R(EN590-Annex A:13) = 3.5

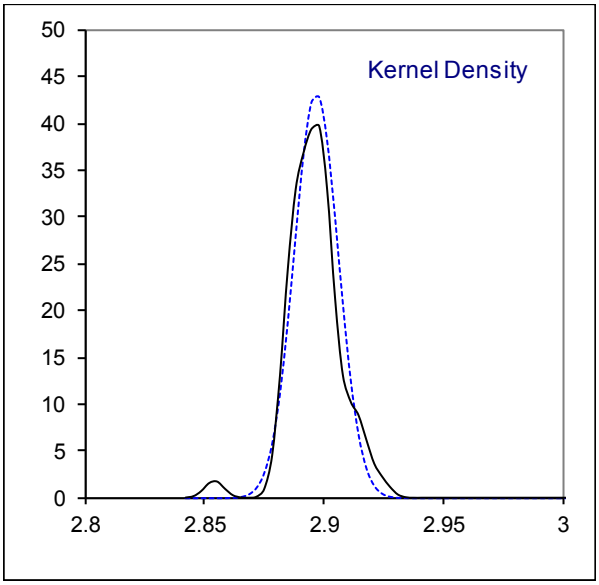

75
73
71
69
67
65
63
61
1161 1389 1459 1227 230 541 381 194 238 1146 511 1441 120 150 529 1026 1134 1406 1510 1631 6016 312 1059 1407 1811 171 175 62 494 237 323 140 444 1397 1544 1569 1724 1728 1984 6075 496 1634 663 334 463 1556 335 447 353 1017 445 551 603 1033 2130 336 1299 1635 1065 338 1807


Kernel Density
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
60
65
70
75

Determination of Kinematic Viscosity at 40°C on sample #18090; result in mm²/s

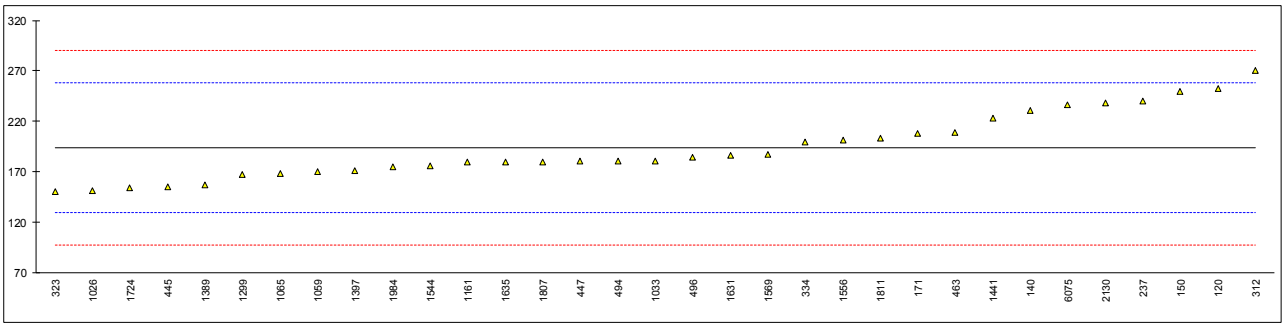
lab	method	value	mark	z(targ)	remarks
62	D445	2.8996		0.25	
120	D445	2.8951		-0.14	
140	D445	2.89		-0.59	
150	D445	2.897		0.03	
171	ISO3104	2.901		0.38	
175	D445	2.8983		0.14	
194		-----		-----	
230	ISO3104	2.8911		-0.49	
237	D445	2.9237		2.37	
238		-----		-----	
312	D445	2.9127		1.40	
323	ISO3104	2.883		-1.20	
334	ISO3104	2.894		-0.24	
335		-----		-----	
336		-----		-----	
338	ISO3104	2.898		0.11	
353	IP71	2.8942		-0.22	
381	D445	2.888		-0.76	
444		-----		-----	
445	IP71	2.8936		-0.27	
447	D445	2.899		0.20	
463	ISO3104	2.8925		-0.37	
494	ISO3104	2.889		-0.67	
496	ISO3104	2.8940		-0.24	
511	D445	2.889		-0.67	
529	D445	2.9091		1.09	
541	ISO3104	2.8885		-0.72	
551	D445	2.901	C	0.38	first reported: 2.938
603	D445	2.886		-0.94	
633		-----		-----	
663	D445	2.88930		-0.65	
1017		-----		-----	
1026	ISO3104	2.900		0.29	
1033	IP71	3.67	R(0.01)	67.76	
1059	ISO3104	2.883		-1.20	
1065	D445	2.9157		1.66	
1134	IP71	2.9023		0.49	
1146	D445	2.8914		-0.46	
1161	ISO3104	2.896		-0.06	
1194		-----		-----	
1227	D445	2.8881		-0.75	
1299	D445	2.903		0.55	
1389	D445	2.914		1.52	
1397	D7042	2.884		-1.11	
1406	ISO3104	2.884		-1.11	
1407	In house	2.889		-0.67	
1441	D445	2.900		0.29	
1459	D7042	2.9077		0.96	
1510	IP71	2.886		-0.94	
1544	ISO3104	2.9005		0.33	
1556	ISO3104	2.8956	C	-0.10	first reported: 3.284
1569	ISO3104	2.901		0.38	
1631	ISO3104	2.896		-0.06	
1634	ISO3104	2.897		0.03	
1635	ISO3104	2.899		0.20	
1706	ISO3104	2.901		0.38	
1724	D445	2.894		-0.24	
1728	D445	2.9082		1.01	
1807	ISO3104	2.886		-0.94	
1811	ISO3104	2.9030		0.55	
1984	ISO3104	2.887		-0.85	
2130	ISO3104	2.916	C	1.69	first reported: 2.961
6016		-----		-----	
6075	ISO3104	2.854	R(0.01)	-3.74	
	normality	OK			
	n	53			
	outliers	2			
	mean (n)	2.8967			
	st.dev. (n)	0.00922			
	R(calc.)	0.0258			
	st.dev.(ISO3104:94)	0.01141			
	R(ISO3104:94)	0.0320			compare R(EN590-Annex A:13) = 0.0521

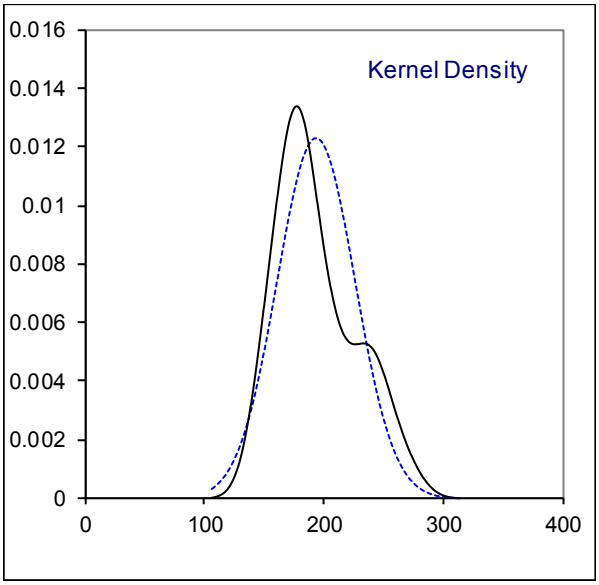

2.95
2.93
2.91
2.89
2.87
2.85
6075 1059 323 1397 1406 603 1510 1807 1984 381 1227 541 511 494 1407 663 140 230 1146 463 445 496 334 1724 353 120 1556 1161 1631 150 1634 338 175 447 1635 62 1026 1441 1544 551 171 1569 1706 1134 1299 1811 1459 1728 529 312 1389 1065 2130 237 1033


Kernel Density
50
45
40
35
30
25
20
15
10
5
0
2.8
2.85
2.9
2.95
3

Determination of Lubricity by HFRR at 60°C on sample #18090; result in µm

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D6079	252		1.81	
140	D6079	231		1.16	
150	D6079	250		1.75	
171	ISO12156-1 meth A	208		0.44	
175		-----		-----	
194		-----		-----	
230		-----		-----	
237	D6079	240		1.44	
238		-----		-----	
312	ISO12156-1 meth A	270		2.37	
323	ISO12156-1 meth A	150		-1.36	
334	ISO12156-1 meth B	200		0.19	
335		-----		-----	
336		-----		-----	
338		-----		-----	
353		-----		-----	
381		-----		-----	
444		-----		-----	
445	ISO12156-1 meth A	155		-1.21	
447	IP450	181		-0.40	
463	ISO12156-1 meth A	209		0.47	
494	ISO12156-1 meth A	181		-0.40	
496	ISO12156-1 meth A	184		-0.30	
511		-----		-----	
529		-----		-----	
541		-----		-----	
551		-----		-----	
603		-----		-----	
633		-----		-----	
663		-----		-----	
1017		-----		-----	
1026	ISO12156-1 (2006)	151		-1.33	
1033	ISO12156-1 meth A	181		-0.40	
1059	ISO12156-1 meth B	170		-0.74	
1065	IP450	168		-0.80	
1134		-----		-----	
1146		-----		-----	
1161	ISO12156-1 meth A	180.0		-0.43	
1194		-----		-----	
1227		-----		-----	
1299	ISO12156-1 (2006)	167		-0.83	
1389	ISO12156-1 meth A	157		-1.14	
1397	ISO12156-1 meth B	171		-0.71	
1406		-----		-----	
1407		-----		-----	
1441	D6079	223		0.91	
1459		-----		-----	
1510		-----		-----	
1544	ISO12156-1 (2006)	175.5		-0.57	
1556	ISO12156-1 meth A	201		0.22	
1569	ISO12156-1 (2006)	187		-0.21	
1631	ISO12156-1 meth B	186		-0.24	
1634		-----		-----	
1635	ISO12156-1 meth A	180		-0.43	
1706		-----		-----	
1724	IP450	154		-1.24	
1728		-----		-----	
1807	ISO12156-1	180		-0.43	
1811	ISO12156-1 (2006)	203		0.29	
1984	ISO12156-1 meth A	175		-0.58	
2130	ISO12156-1 meth A	238		1.38	
6016		-----		-----	
6075	ISO2156-A	236.0		1.31	
	normality	OK			
	n	33			
	outliers	0			
	mean (n)	193.77			ISO12156-1 method A = digital camera and method B = visual
	st.dev. (n)	32.444			
	R(calc.)	90.84			compare R(ISO12156-1-A:16) = 80 (digital camera)
	st.dev.(ISO12156-1-B:16)	32.143			compare R(D6079:11) = 80 (digital camera)
	R(ISO12156-1-B:16)	90			compare R(IP450:00) = 102 (visual)

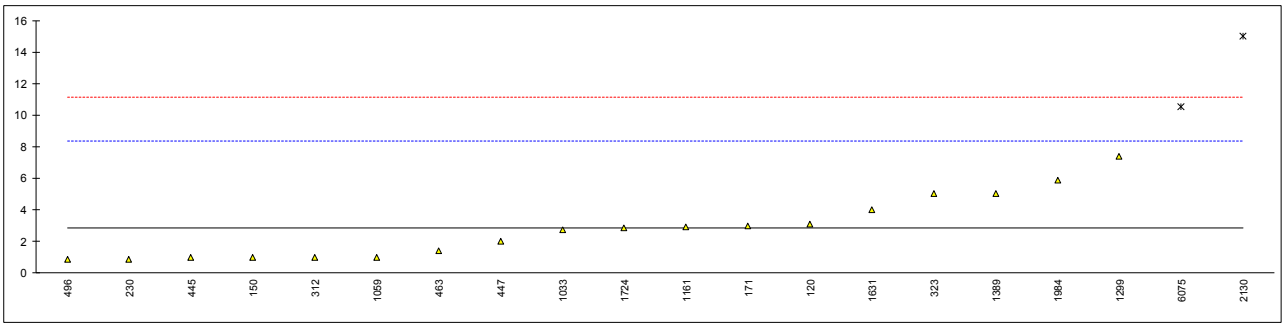

320
270
220
170
120
70
323
1026
1724
445
1389
1299
1065
1059
1397
1984
1544
1161
1635
1807
447
494
1033
496
1631
1569
334
1556
1811
171
463
1441
140
6075
2130
237
150
120
312

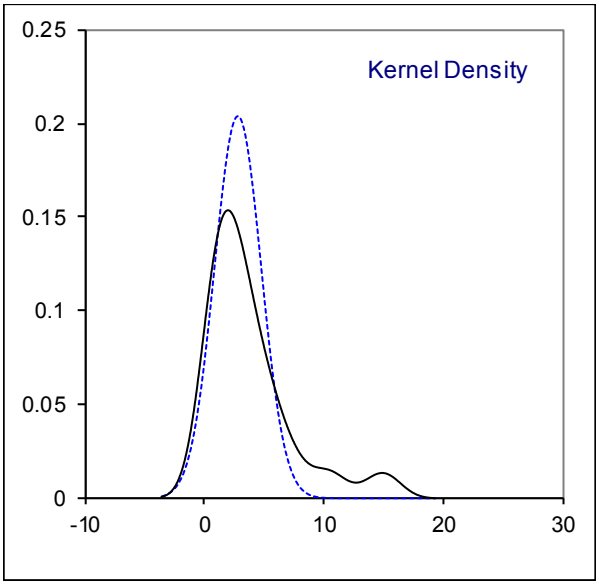

Kernel Density
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
0
100
200
300
400

Determination of Oxidation Stability ISO12205 on sample #18090; result in g/m^3

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D2274	3.1		0.10	
140		-----		-----	
150	D2274	1		-0.66	
171	ISO12205	3		0.06	
175		-----		-----	
194		-----		-----	
230	ISO12205	0.86		-0.71	
237		-----		-----	
238		-----		-----	
312	ISO12205	1		-0.66	
323	ISO12205	5		0.78	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
353		-----		-----	
381		-----		-----	
444		-----		-----	
445	IP388	1		-0.66	
447	ISO12205	2.0		-0.30	
463	ISO12205	1.43		-0.51	
494		-----		-----	
496	ISO12205	0.86		-0.71	
511		-----		-----	
529		-----		-----	
541		-----		-----	
551		-----		-----	
603		-----		-----	
633		-----		-----	
663		-----		-----	
1017		-----		-----	
1026	ISO12205	<1		-----	
1033	D2274	2.72		-0.04	
1059	ISO12205	1		-0.66	
1065		-----		-----	
1134		-----		-----	
1146		-----		-----	
1161	ISO12205	2.9		0.02	
1194		-----		-----	
1227		-----		-----	
1299	D2274	7.4		1.65	
1389	D2274	5		0.78	
1397		-----		-----	
1406		-----		-----	
1407		-----		-----	
1441		-----		-----	
1459		-----		-----	
1510		-----		-----	
1544		-----		-----	
1556		-----		-----	
1569		-----		-----	
1631	ISO12205	4		0.42	
1634		-----		-----	
1635		-----		-----	
1706		-----		-----	
1724	D2274	2.86		0.01	
1728		-----		-----	
1807	ISO12205	<1		-----	
1811		-----		-----	
1984	ISO12205	5.9		1.11	
2130	D2274	15	R(0.01)	4.40	
6016		-----		-----	
6075	ISO12205	10.5	R(0.05)	2.77	

normality	OK
n	18
outliers	2
mean (n)	2.835
st.dev. (n)	1.9557
R(calc.)	5.476
st.dev.(ISO12205:95)	2.7624
R(ISO12205:95)	7.735

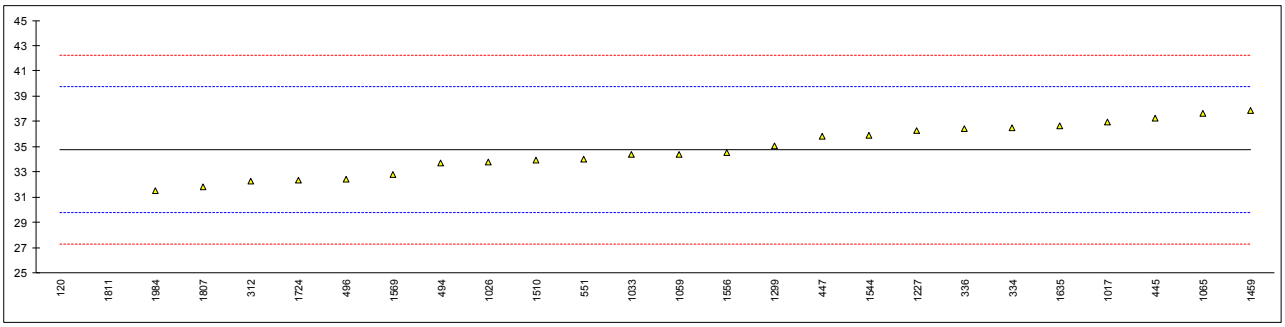

16
14
12
10
8
6
4
2
0
496
230
445
150
312
1059
463
447
1033
1724
1161
171
120
1631
323
1389
1984
1299
6075
2130

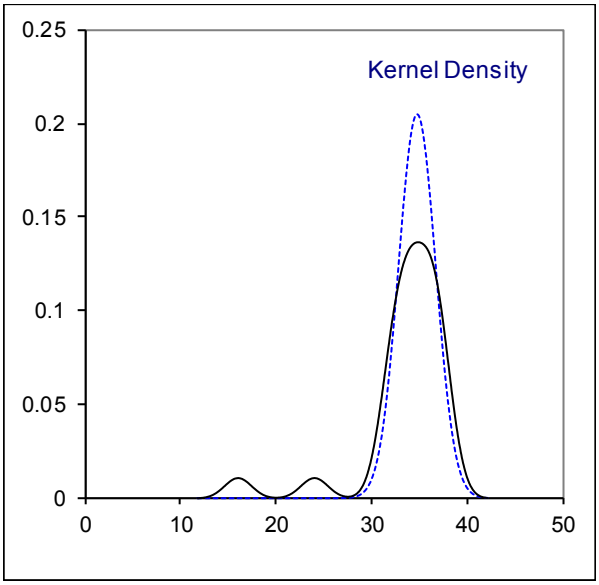

Kernel Density
0.25
0.2
0.15
0.1
0.05
0
-10
0
10
20
30

Determination of Oxidation Stability induction period EN15751 on sample #18090; result in hours

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	EN15751	16	R(0.01)	-7.51	
140		-----		-----	
150		-----		-----	
171		-----		-----	
175		-----		-----	
194		-----		-----	
230		-----		-----	
237		-----		-----	
238		-----		-----	
312	EN15751	32.3		-0.98	
323		-----		-----	
334	EN15751	36.5		0.70	
335		-----		-----	
336	EN15751	36.4		0.66	
338		-----		-----	
353		-----		-----	
381		-----		-----	
444		-----		-----	
445	EN15751	37.22		0.99	
447	EN15751	35.8		0.42	
463		-----		-----	
494	EN15751	33.7		-0.42	
496	EN15751	32.39		-0.95	
511		-----		-----	
529		-----		-----	
541		-----		-----	
551	EN15751	34		-0.30	
603		-----		-----	
633		-----		-----	
663		-----		-----	
1017	EN15751	36.99		0.90	
1026	EN15751	33.79		-0.39	
1033	EN15751	34.35		-0.16	
1059	EN15751	34.4		-0.14	
1065	EN15751	37.6		1.14	
1134		-----		-----	
1146		-----		-----	
1161		-----		-----	
1194		-----		-----	
1227	EN15751	36.26		0.60	
1299	EN15751	35.1		0.14	
1389		-----		-----	
1397		-----		-----	
1406		-----		-----	
1407		-----		-----	
1441		-----		-----	
1459	EN15751	37.88		1.25	
1510	EN14112	33.9		-0.34	
1544	EN15751	35.88		0.45	
1556	EN15751	34.52		-0.09	
1569	EN15751	32.8		-0.78	
1631		-----		-----	
1634		-----		-----	
1635	EN15751	36.63		0.75	
1706		-----		-----	
1724	EN15751	32.37		-0.95	
1728		-----		-----	
1807	EN15751	31.8		-1.18	
1811	EN15751	24	R(0.01)	-4.31	
1984	EN15751	31.5		-1.30	
2130		-----		-----	
6016		-----		-----	
6075		-----		-----	

normality	OK
n	24
outliers	2
mean (n)	34.753
st.dev. (n)	1.9459
R(calc.)	5.448
st.dev.(EN15751:14)	2.4961
R(EN15751:14)	6.989

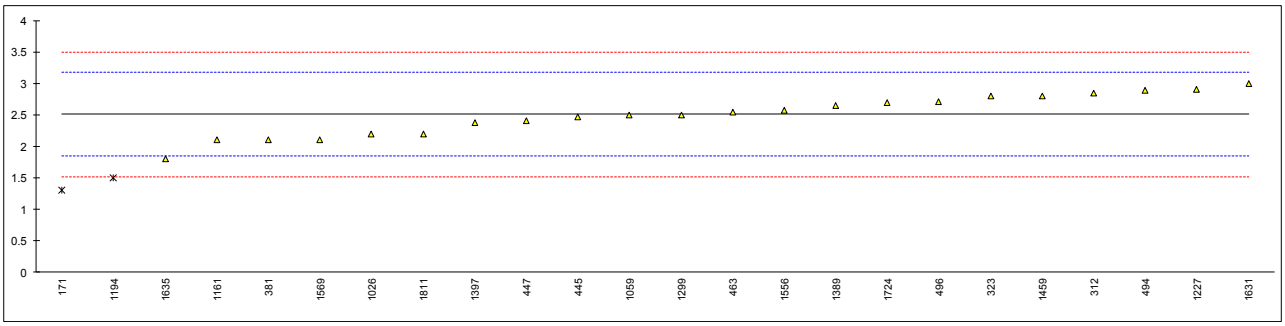

45
43
41
39
37
35
33
31
29
27
25
120
1811
1984
1807
312
1724
496
1569
494
1026
1510
551
1033
1059
1556
1299
447
1544
1227
336
334
1635
1017
445
1065
1459

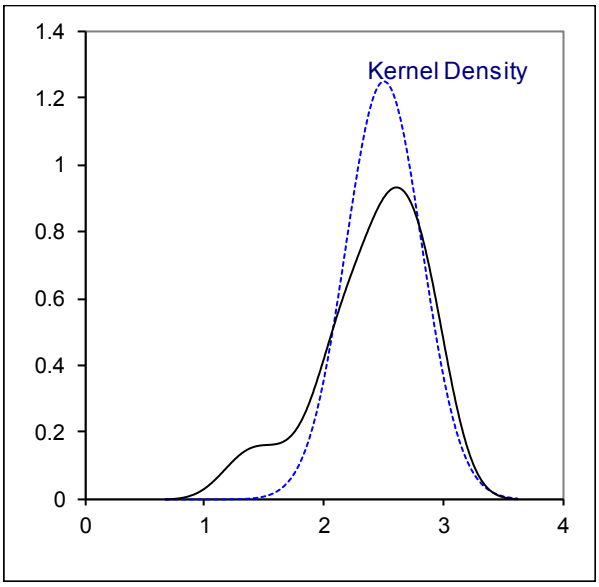

Kernel Density
0.25
0.2
0.15
0.1
0.05
0
0
10
20
30
40
50

Determination of Polycyclic Aromatic Hydrocarbons on sample #18090; result in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
140		-----		-----	
150		-----		-----	
171	EN12916	1.3	ex	-3.64	excluded, DAH value corrected without correcting PAH
175		-----		-----	
194		-----		-----	
230		-----		-----	
237		-----		-----	
238		-----		-----	
312	EN12916	2.84		1.01	
323	EN12916	2.8		0.89	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
353		-----		-----	
381	EN12916	2.1		-1.22	
444		-----		-----	
445	IP391	2.47		-0.11	
447	IP391	2.4		-0.32	
463	EN12916	2.54		0.10	
494	EN12916	2.89		1.16	
496	EN12916	2.71		0.62	
511		-----		-----	
529		-----		-----	
541		-----		-----	
551		-----		-----	
603		-----		-----	
633		-----		-----	
663		-----		-----	
1017		-----		-----	
1026	EN12916	2.2		-0.92	
1033		-----		-----	
1059	EN12916	2.5		-0.02	
1065		-----		-----	
1134		-----		-----	
1146		-----		-----	
1161	EN12916	2.1		-1.22	
1194		1.5	R(0.05)	-3.03	
1227	EN12916	2.9		1.19	
1299	EN12916	2.5		-0.02	
1389		2.643		0.41	
1397	EN12916	2.38		-0.38	
1406		-----		-----	
1407		-----		-----	
1441		-----		-----	
1459		2.8		0.89	
1510		-----		-----	
1544		-----		-----	
1556	EN12916	2.566		0.18	
1569	EN12916	2.1		-1.22	
1631	EN12916	3.0		1.49	
1634		-----		-----	
1635	EN12916	1.8		-2.13	
1706		-----		-----	
1724		2.69		0.56	
1728		-----		-----	
1807		-----		-----	
1811	IP391	2.20		-0.92	
1984		-----		-----	
2130		-----		-----	
6016		-----		-----	
6075		-----		-----	

normality	OK
n	22
outliers	1 (+1ex)
mean (n)	2.506
st.dev. (n)	0.3191
R(calc.)	0.894
st.dev.(EN12916:16)	0.3316
R(EN12916:16)	0.929

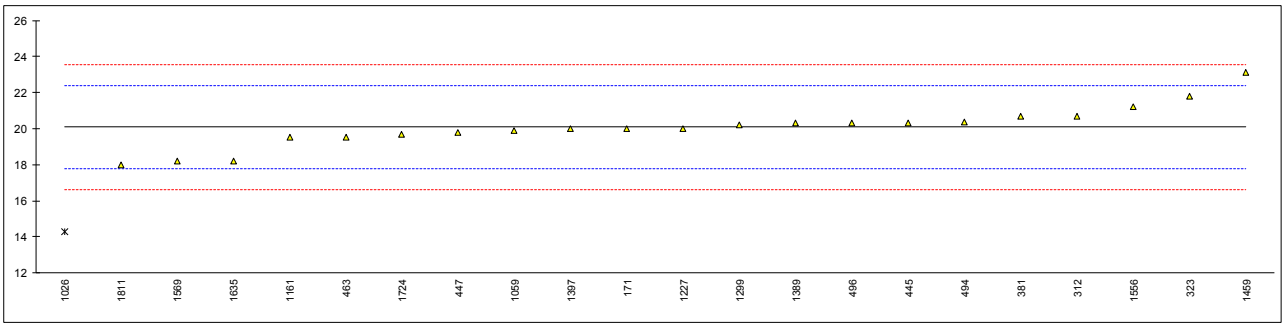

4
3.5
3
2.5
2
1.5
1
0.5
0
171
1194
1635
1161
381
1569
1026
1811
1397
447
445
1059
1299
463
1556
1389
1724
496
323
1459
312
494
1227
1631

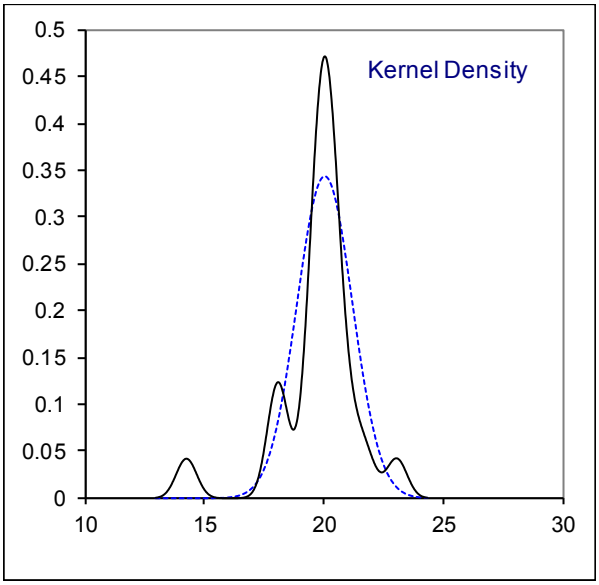

Kernel Density
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
1
2
3
4

Determination of Mono-Aromatic Hydrocarbons on sample #18090; result in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
140		-----		-----	
150		-----		-----	
171	EN12916	20.0	C	-0.08	first reported: 19.3
175		-----		-----	
194		-----		-----	
230		-----		-----	
237		-----		-----	
238		-----		-----	
312	EN12916	20.71		0.54	
323	EN12916	21.8		1.48	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
353		-----		-----	
381	EN12916	20.7		0.53	
444		-----		-----	
445	IP391	20.33		0.21	
447	IP391	19.8		-0.25	
463	EN12916	19.51		-0.50	
494	EN12916	20.37		0.24	
496	EN12916	20.33		0.21	
511		-----		-----	
529		-----		-----	
541		-----		-----	
551		-----		-----	
603		-----		-----	
633		-----		-----	
663		-----		-----	
1017		-----		-----	
1026	EN12916	14.3	R(0.01)	-5.01	
1033		-----		-----	
1059	EN12916	19.9		-0.16	
1065		-----		-----	
1134		-----		-----	
1146		-----		-----	
1161	EN12916	19.5		-0.51	
1194		-----		-----	
1227	EN12916	20.0		-0.08	
1299	EN12916	20.2		0.10	
1389		20.328		0.21	
1397	EN12916	19.98	C	-0.09	first reported: 15.2
1406		-----		-----	
1407		-----		-----	
1441		-----		-----	
1459		23.1	C	2.60	first reported: 26.3
1510		-----		-----	
1544		-----		-----	
1556	EN12916	21.22		0.98	
1569	EN12916	18.20		-1.63	
1631		-----		-----	
1634		-----		-----	
1635	EN12916	18.2		-1.63	
1706		-----		-----	
1724		19.7		-0.34	
1728		-----		-----	
1807		-----		-----	
1811	IP391	17.990		-1.82	
1984		-----		-----	
2130		-----		-----	
6016		-----		-----	
6075		-----		-----	

normality	suspect
n	21
outliers	1
mean (n)	20.089
st.dev. (n)	1.1580
R(calc.)	3.242
st.dev.(EN12916:16)	1.1560
R(EN12916:16)	3.237

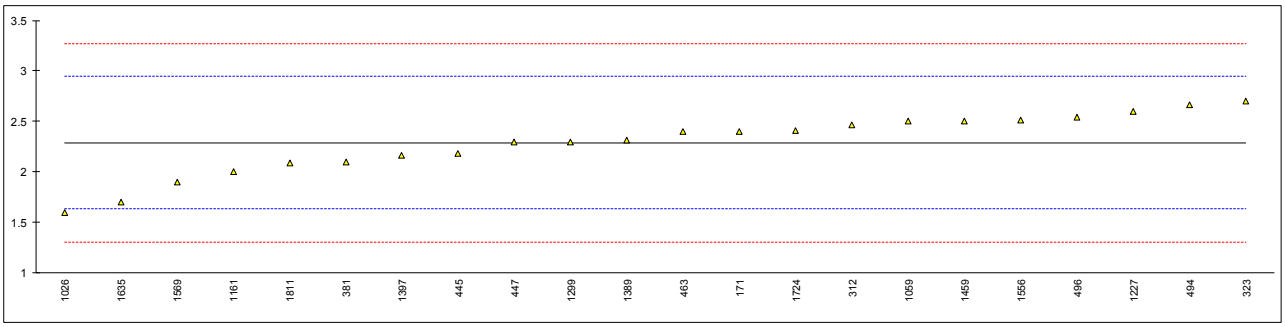

26
24
22
20
18
16
14
12
1026
1811
1569
1635
1161
463
1724
447
1059
1397
171
1227
1299
1389
496
445
494
381
312
1556
323
1459

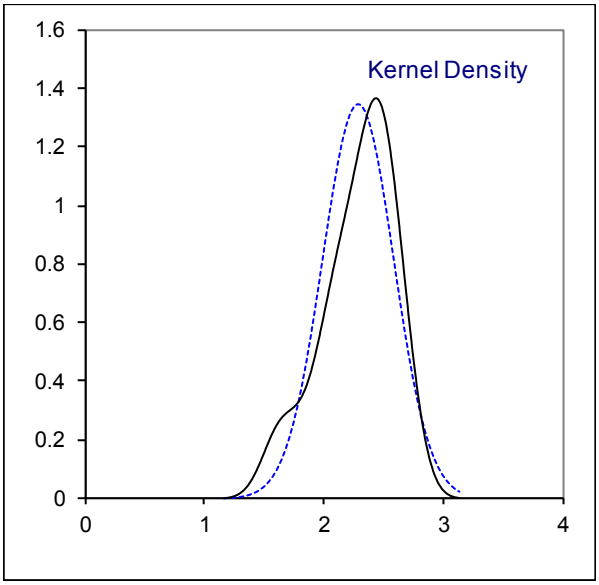

Kernel Density
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
10
15
20
25
30

Determination of Di-Aromatic Hydrocarbons on sample #18090; result in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
140		-----		-----	
150		-----		-----	
171	EN12916	2.4	C	0.34	first reported: 1.3
175		-----		-----	
194		-----		-----	
230		-----		-----	
237		-----		-----	
238		-----		-----	
312	EN12916	2.47		0.56	
323	EN12916	2.7		1.26	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
353		-----		-----	
381	EN12916	2.1		-0.57	
444		-----		-----	
445	IP391	2.18		-0.33	
447	IP391	2.3		0.04	
463	EN12916	2.40		0.34	
494	EN12916	2.66		1.14	
496	EN12916	2.54		0.77	
511		-----		-----	
529		-----		-----	
541		-----		-----	
551		-----		-----	
603		-----		-----	
633		-----		-----	
663		-----		-----	
1017		-----		-----	
1026	EN12916	1.6		-2.10	
1033		-----		-----	
1059	EN12916	2.5		0.65	
1065		-----		-----	
1134		-----		-----	
1146		-----		-----	
1161	EN12916	2.0		-0.88	
1194		-----		-----	
1227	EN12916	2.6		0.95	
1299	EN12916	2.3		0.04	
1389		2.313		0.08	
1397	EN12916	2.16		-0.39	
1406		-----		-----	
1407		-----		-----	
1441		-----		-----	
1459		2.5		0.65	
1510		-----		-----	
1544		-----		-----	
1556	EN12916	2.513		0.69	
1569	EN12916	1.9		-1.18	
1631		-----		-----	
1634		-----		-----	
1635	EN12916	1.7		-1.79	
1706		-----		-----	
1724		2.41		0.37	
1728		-----		-----	
1807		-----		-----	
1811	IP391	2.090		-0.60	
1984		-----		-----	
2130		-----		-----	
6016		-----		-----	
6075		-----		-----	

normality	OK
n	22
outliers	0
mean (n)	2.288
st.dev. (n)	0.2959
R(calc.)	0.829
st.dev.(EN12916:16)	0.3277
R(EN12916:16)	0.918

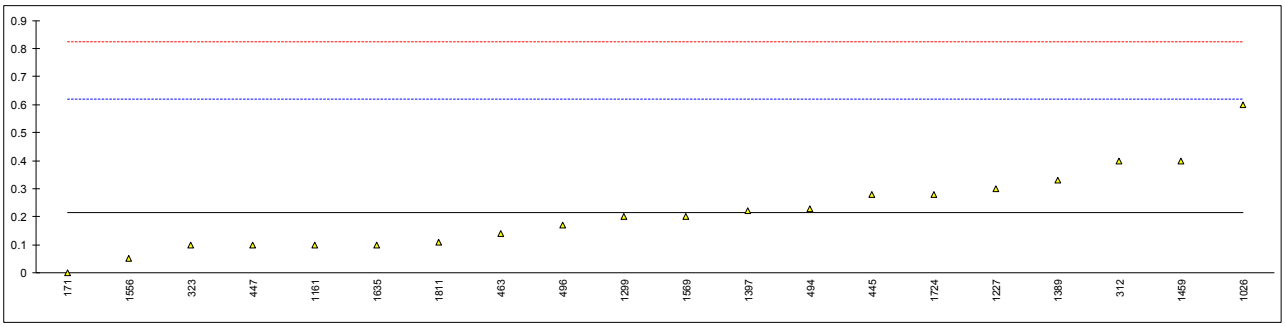

3.5
3
2.5
2
1.5
1
1026
1635
1569
1161
1811
381
1397
445
447
1299
1389
463
171
1724
312
1059
1459
1556
496
1227
494
323

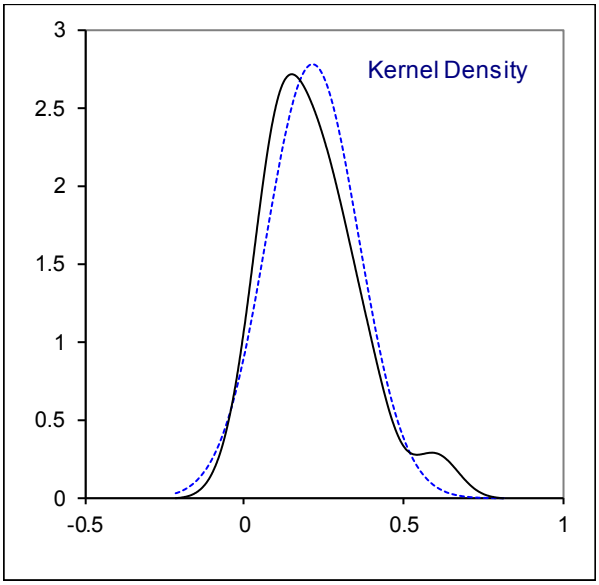

Kernel Density
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
1
2
3
4

Determination of Tri+-Aromatic Hydrocarbons on sample #18090; result in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
140		-----		-----	
150		-----		-----	
171	EN12916	0.0		-1.07	
175		-----		-----	
194		-----		-----	
230		-----		-----	
237		-----		-----	
238		-----		-----	
312	EN12916	0.40		0.91	
323	EN12916	0.1		-0.57	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
353		-----		-----	
381	EN12916	<0,1		-----	
444		-----		-----	
445	IP391	0.28		0.32	
447	IP391	0.1		-0.57	
463	EN12916	0.14		-0.37	
494	EN12916	0.23		0.07	
496	EN12916	0.17		-0.23	
511		-----		-----	
529		-----		-----	
541		-----		-----	
551		-----		-----	
603		-----		-----	
633		-----		-----	
663		-----		-----	
1017		-----		-----	
1026	EN12916	0.6		1.90	
1033		-----		-----	
1059	EN12916	<0,1		-----	
1065		-----		-----	
1134		-----		-----	
1146		-----		-----	
1161	EN12916	0.1		-0.57	
1194		-----		-----	
1227	EN12916	0.3		0.42	
1299	EN12916	0.2		-0.08	
1389		0.329		0.56	
1397	EN12916	0.22		0.02	
1406		-----		-----	
1407		-----		-----	
1441		-----		-----	
1459		0.4		0.91	
1510		-----		-----	
1544		-----		-----	
1556	EN12916	0.053		-0.80	
1569	EN12916	0.20		-0.08	
1631		-----		-----	
1634		-----		-----	
1635	EN12916	0.1		-0.57	
1706		-----		-----	
1724		0.28		0.32	
1728		-----		-----	
1807		-----		-----	
1811	IP391	0.111		-0.52	
1984		-----		-----	
2130		-----		-----	
6016		-----		-----	
6075		-----		-----	

normality	suspect
n	20
outliers	0
mean (n)	0.216
st.dev. (n)	0.1432
R(calc.)	0.401
st.dev.(EN12916:16)	0.2023
R(EN12916:16)	0.566

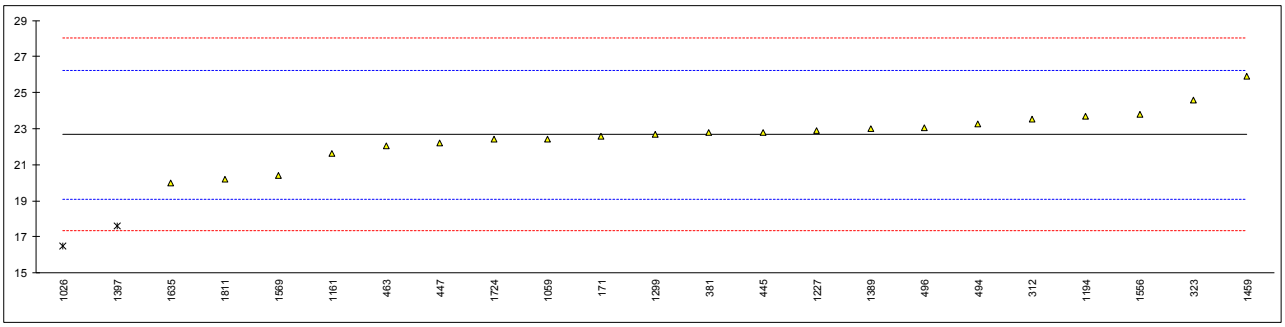

0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
171
1556
323
447
1161
1635
1811
463
496
1299
1569
1397
494
445
1724
1227
1389
312
1459
1026

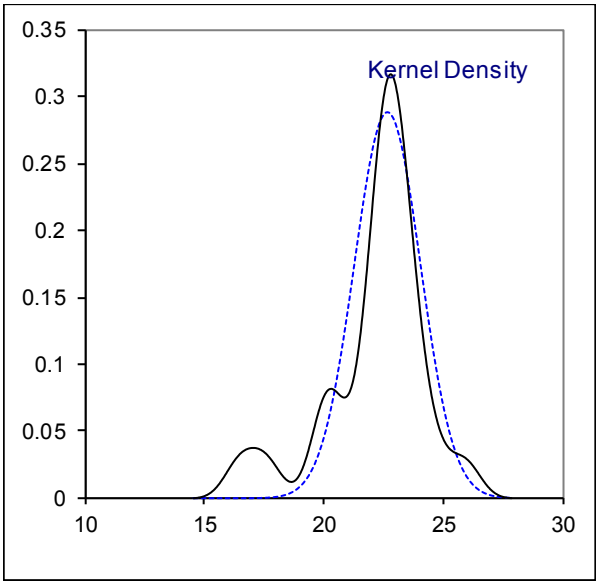

Kernel Density
3
2.5
2
1.5
1
0.5
0
-0.5
0
0.5
1

Determination of Total Aromatic Hydrocarbons on sample #18090; result in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
140		-----		-----	
150		-----		-----	
171	EN12916	22.6	C	-0.03	first reported: 2036
175		-----		-----	
194		-----		-----	
230		-----		-----	
237		-----		-----	
238		-----		-----	
312	EN12916	23.55		0.50	
323	EN12916	24.6		1.09	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
353		-----		-----	
381	EN12916	22.8		0.08	
444		-----		-----	
445	IP391	22.81		0.08	
447	IP391	22.2		-0.26	
463	EN12916	22.05		-0.34	
494	EN12916	23.26		0.34	
496	EN12916	23.04		0.21	
511		-----		-----	
529		-----		-----	
541		-----		-----	
551		-----		-----	
603		-----		-----	
633		-----		-----	
663		-----		-----	
1017		-----		-----	
1026	EN12916	16.5	R(0.05)	-3.46	
1033		-----		-----	
1059	EN12916	22.4		-0.15	
1065		-----		-----	
1134		-----		-----	
1146		-----		-----	
1161	EN12916	21.6		-0.59	
1194		23.7		0.58	
1227	EN12916	22.9		0.14	
1299	EN12916	22.7		0.02	
1389		22.971		0.17	
1397	EN12916	17.58	E, R(0.05)	-2.85	calculation error, iis calculated: 22.36
1406		-----		-----	
1407		-----		-----	
1441		-----		-----	
1459		25.9	C	1.82	first reported: 29.1
1510		-----		-----	
1544		-----		-----	
1556	EN12916	23.78		0.63	
1569	EN12916	20.40		-1.27	
1631		-----		-----	
1634		-----		-----	
1635	EN12916	20.0		-1.49	
1706		-----		-----	
1724		22.39		-0.15	
1728		-----		-----	
1807		-----		-----	
1811	IP391	20.190		-1.39	
1984		-----		-----	
2130		-----		-----	
6016		-----		-----	
6075		-----		-----	

normality	OK
n	21
outliers	2
mean (n)	22.659
st.dev. (n)	1.3825
R(calc.)	3.871
st.dev.(EN12916:16)	1.7826
R(EN12916:16)	4.991

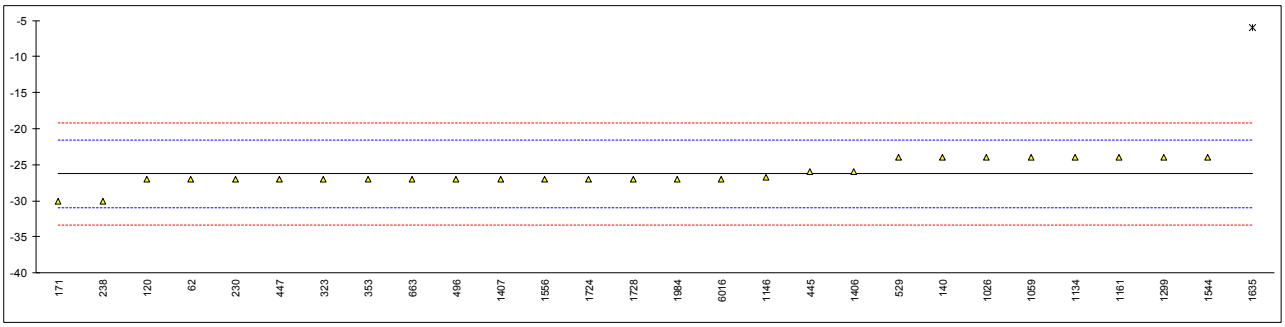

29
27
25
23
21
19
17
15
1026
1397
1635
1811
1569
1161
463
447
1724
1059
171
1299
381
445
1227
1389
496
494
312
1194
1566
323
1459

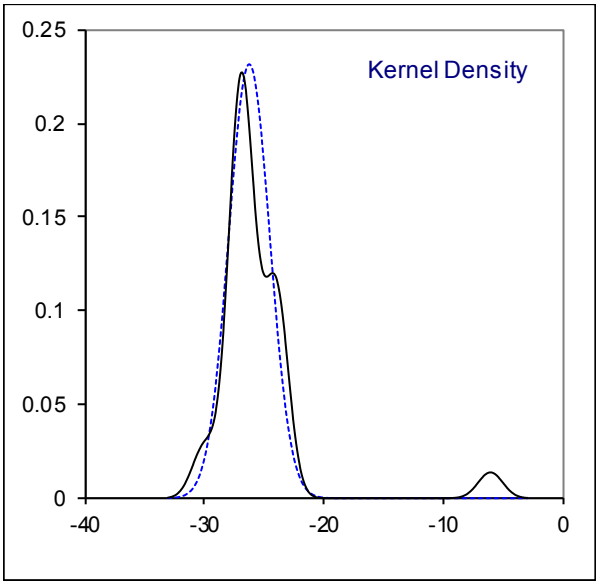

Kernel Density
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
10
15
20
25
30

Determination of Pour Point, manual on sample #18090; results in °C

lab	method	value	mark	z(targ)	remarks
62	D97	-27		-0.32	
120	D97	-27		-0.32	
140	D97	-24		0.96	
150		-----		-----	
171	D97	-30		-1.59	
175		-----		-----	
194	D97	<-24		-----	
230	ISO3016	-27		-0.32	
237	D97	<-21		-----	
238	D97	-30		-1.59	
312		-----		-----	
323	ISO3016	-27		-0.32	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
353	IP15	-27		-0.32	
381		-----		-----	
444		-----		-----	
445	IP15	-26		0.11	
447	D97	-27		-0.32	
463		-----		-----	
494		-----		-----	
496	D97	-27.0		-0.32	
511		-----		-----	
529	D97	-24		0.96	
541		-----		-----	
551		-----		-----	
603		-----		-----	
633		-----		-----	
663	D97	-27		-0.32	
1017		-----		-----	
1026	D97	-24		0.96	
1033	IP15	<-42		<-6.69	possible false negative test result?
1059	ISO3016	-24		0.96	
1065		-----		-----	
1134	IP15	-24		0.96	
1146	D97	-26.8		-0.23	
1161	ISO3016	-24		0.96	
1194		-----		-----	
1227		-----		-----	
1299	D97	-24		0.96	
1389	D97	<-21		-----	
1397		-----		-----	
1406	ISO3016	-26.0		0.11	
1407	ISO3016	-27		-0.32	
1441		-----		-----	
1459		-----		-----	
1510	D97	<-21		-----	
1544	ISO3016	-24.0		0.96	
1556	ISO3016	-27		-0.32	
1569		-----		-----	
1631		-----		-----	
1634		-----		-----	
1635	ISO3016	-6	R(0.01)	8.60	
1706		-----		-----	
1724	D97	-27		-0.32	
1728	D97	-27		-0.32	
1807		-----		-----	
1811		-----		-----	
1984	ISO3016	-27		-0.32	
2130		-----		-----	
6016	D97	-27		-0.32	
6075		-----		-----	

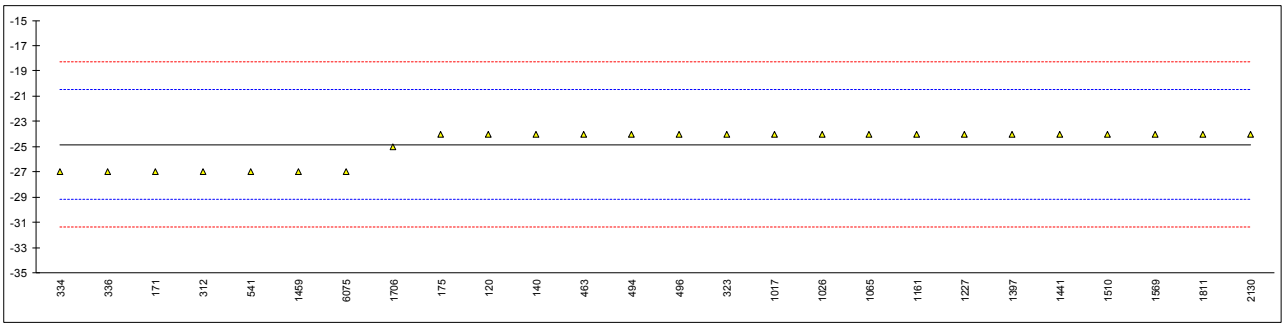
normality	OK
n	27
outliers	1
mean (n)	-26.25
st.dev. (n)	1.720
R(calc.)	4.82
st.dev.(ISO3016:94)	2.354
R(ISO3016:94)	6.59

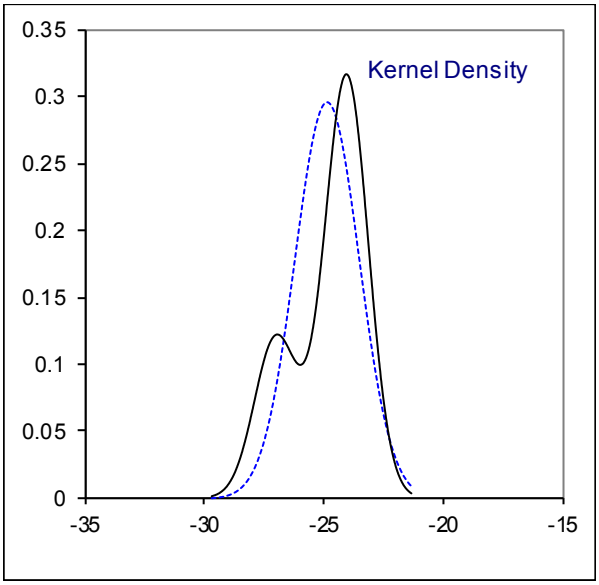

-5
-10
-15
-20
-25
-30
-35
-40
171
238
120
62
230
447
323
353
663
496
1407
1556
1724
1728
1984
6016
1146
445
1406
529
140
1026
1059
1134
1161
1299
1544
1635


Kernel Density
0.25
0.2
0.15
0.1
0.05
0
-40
-30
-20
-10
0

Determination of Pour Point, automated (3°C interval) on sample #18090; results in °C

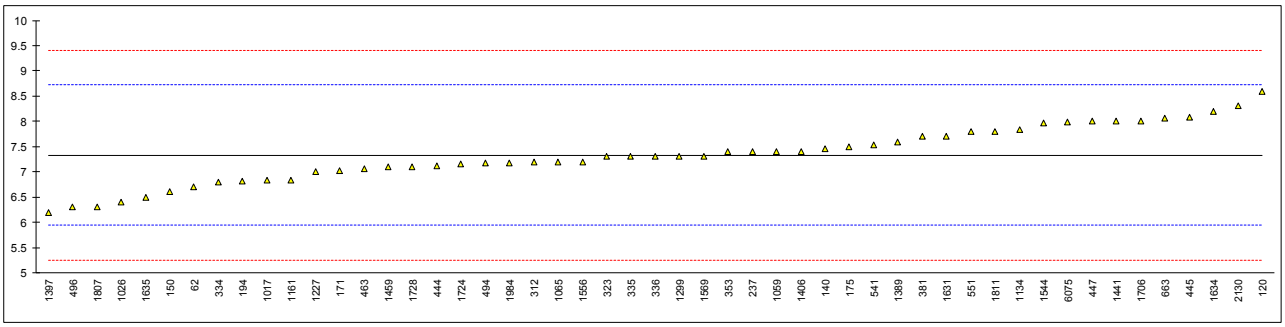
lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D5950	-24		0.39	
140	D5949	-24		0.39	
150		-----		-----	
171	D5950	-27		-0.99	
175	D5950	-24		0.39	
194		-----		-----	
230		-----		-----	
237		-----		-----	
238		-----		-----	
312	D5950	-27		-0.99	
323	D5950	-24		0.39	
334	D5950	-27		-0.99	
335		-----		-----	
336	D5950	-27		-0.99	
338		-----		-----	
353		-----		-----	
381		-----		-----	
444		-----		-----	
445		-----		-----	
447		-----		-----	
463	D6892	-24		0.39	
494	D6892	-24		0.39	
496	D6892	-24.0		0.39	
511		-----		-----	
529		-----		-----	
541	D5950	-27		-0.99	
551		-----		-----	
603		-----		-----	
633		-----		-----	
663		-----		-----	
1017	D5950	-24		0.39	
1026	D5950	-24		0.39	
1033		-----		-----	
1059		-----		-----	
1065	D5950	-24.0		0.39	
1134		-----		-----	
1146		-----		-----	
1161	D6749	-24		0.39	
1194		-----		-----	
1227	D97	-24		0.39	
1299		-----		-----	
1389		-----		-----	
1397	D5950	-24		0.39	
1406		-----		-----	
1407		-----		-----	
1441	D5950	-24		0.39	
1459	In house	-27.0		-0.99	
1510	D5950	-24		0.39	
1544		-----		-----	
1556		-----		-----	
1569	D5950	-24		0.39	
1631		-----		-----	
1634		-----		-----	
1635		-----		-----	
1706	D5950	-25		-0.07	
1724		-----		-----	
1728		-----		-----	
1807		-----		-----	
1811	D5950	-24		0.39	
1984		-----		-----	
2130	D5950	-24.0		0.39	
6016		-----		-----	
6075	NFT 60-105	-27		-0.99	
	normality	OK			
	n	26			
	outliers	0			
	mean (n)	-24.85			
	st.dev. (n)	1.347			
	R(calc.)	3.77			
	st.dev.(D5950:14)	2.179			
	R(D5950:14)	6.1			

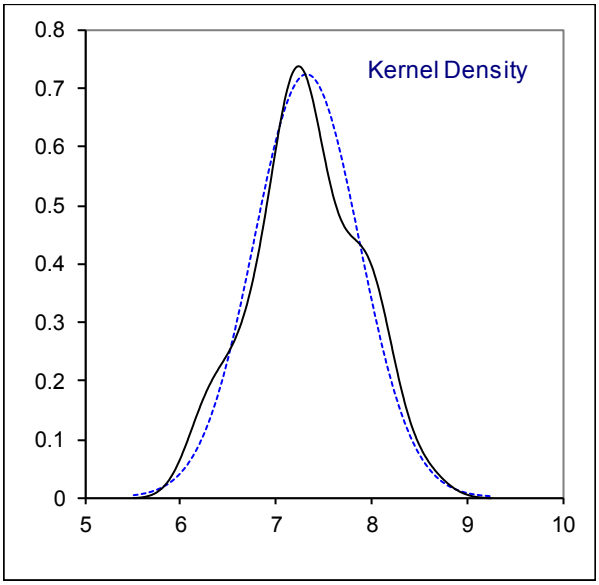

-15
-17
-19
-21
-23
-25
-27
-29
-31
-33
-35
334
336
171
312
541
1459
6075
1706
175
120
140
463
494
496
323
1017
1026
1065
1161
1227
1387
1441
1510
1569
1811
2130


Kernel Density
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
-35
-30
-25
-20
-15

Determination of Sulphur Content on sample #18090; result in mg/kg

lab	method	value	mark	z(targ)	remarks
62	D5453	6.7		-0.91	
120	D5453	8.59		1.81	
140	D2622	7.45	C	0.17	first reported: 3.45
150	D5453	6.6		-1.06	
171	D4294	7.02	C	-0.45	first reported: 121
175	D5453	7.5		0.24	
194	D2622	6.81		-0.75	
230		-----		-----	
237	D5453	7.4		0.10	
238		-----		-----	
312	D5453	7.2		-0.19	
323	ISO20846	7.3		-0.05	
334	ISO20846	6.8		-0.77	
335	ISO20846	7.3		-0.05	
336	ISO20846	7.3		-0.05	
338		-----		-----	
353	IP490	7.4		0.10	
381	D5453	7.7		0.53	
444	IP490	7.11		-0.32	
445	IP490	8.08		1.08	
447	D5453	8.0		0.96	
463	ISO20846	7.06		-0.39	
494	ISO20846	7.18		-0.22	
496	ISO20846	6.30		-1.49	
511		-----		-----	
529		-----		-----	
541	ISO20846	7.53		0.28	
551	D5453	7.8		0.67	
603		-----		-----	
633		-----		-----	
663	D5453	8.06		1.05	
1017	ISO20846	6.84		-0.71	
1026	ISO20846	6.4		-1.35	
1033		-----		-----	
1059	ISO20846	7.4		0.10	
1065	D5453	7.2		-0.19	
1134	IP490	7.84		0.73	
1146		-----		-----	
1161	ISO20846	6.84		-0.71	
1194		-----		-----	
1227	D5453	7		-0.48	
1299	ISO20884	7.3		-0.05	
1389	ISO20846	7.6		0.39	
1397	ISO20846	6.2		-1.63	
1406	ISO20846	7.4		0.10	
1407		-----		-----	
1441	D7039	8.0		0.96	
1459	ISO8754	7.1	C	-0.34	first reported 10.7
1510		-----		-----	
1544	ISO20846	7.96		0.90	
1556	ISO20884	7.2		-0.19	
1569	ISO20846	7.3		-0.05	
1631	ISO20846	7.7		0.53	
1634	ISO20846	8.195		1.24	
1635	ISO20846	6.5		-1.20	
1706	ISO20846	8.0		0.96	
1724	D5453	7.15		-0.26	
1728	D5453	7.1		-0.34	
1807	ISO20846	6.3		-1.49	
1811	ISO20846	7.8		0.67	
1984	ISO20846	7.18		-0.22	
2130	IP490	8.3		1.39	
6016		-----		-----	
6075	ISO20846	7.99		0.95	
	normality	OK			
	n	51			
	outliers	0			
	mean (n)	7.33			
	st.dev. (n)	0.551			
	R(calc.)	1.54			
	st.dev.(ISO20846:11)	0.693			
	R(ISO20846:11)	1.94			compare R(D5453:16e1) = 2.58

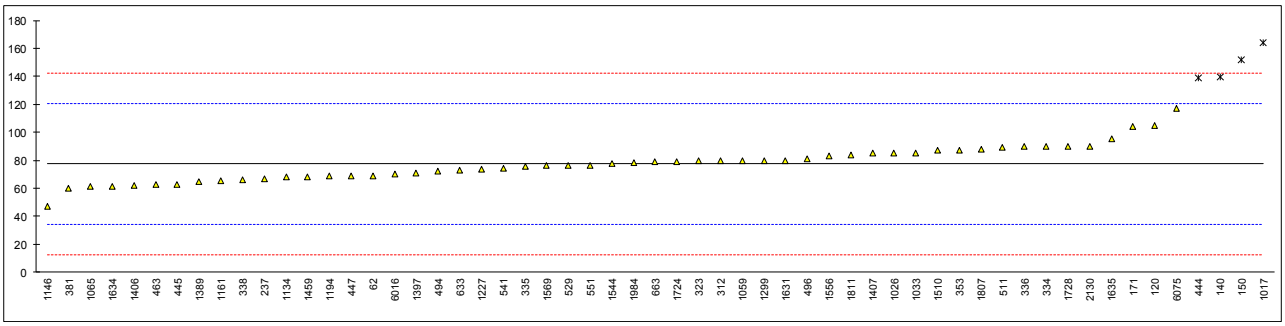

10
9.5
9
8.5
8
7.5
7
6.5
6
5.5
5
1397 496 1807 1026 1635 150 62 334 194 1017 1161 1227 171 463 1459 1728 444 1724 494 1984 312 1065 1556 323 335 336 1299 1569 353 237 1059 1406 140 175 541 1389 381 1631 551 1811 1134 1544 6075 447 1441 1706 663 445 1634 2130 120

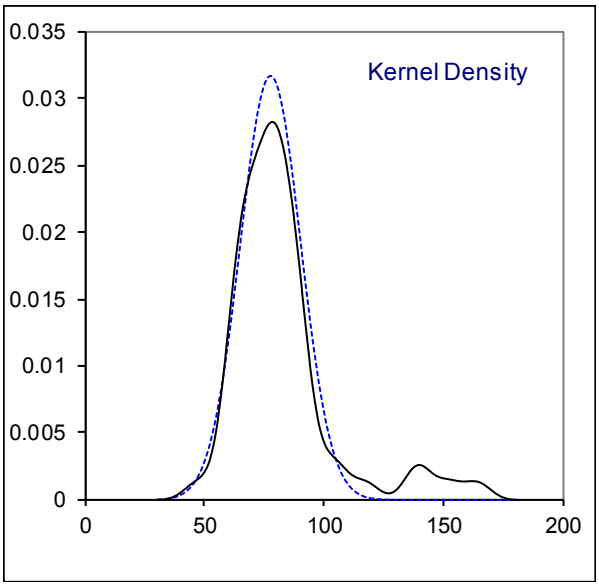

Kernel Density
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
5
6
7
8
9
10

Determination of Water content, KF on sample #18090; result in mg/kg

lab	method	value	mark	z(targ)	remarks
62	D6304-A	69		-0.40	
120	E1064	105		1.27	
140	D6304-A	139.5	R(0.01)	2.86	
150	D6304-A	152	C,R(0.01)	3.44	first reported: 193
171	D6304-A	104		1.22	
175		-----		-----	
194		-----		-----	
230	ISO3733	<500		-----	
237	D6304-A	66.53		-0.51	
238		-----		-----	
312	ISO12937	80		0.11	
323	ISO12937	80		0.11	
334	ISO12937	90		0.58	
335	ISO12937	75.6		-0.09	
336	ISO12937	90		0.58	
338	ISO12937	65.78		-0.54	
353	IP438	87.2		0.45	
381	ISO12937	60		-0.81	
444	IP438	139	R(0.01)	2.84	
445	D6304-A	63		-0.67	
447	IP438	69		-0.40	
463	D6304-A	62.5		-0.70	
494	ISO12937	72.2		-0.25	
496	D6304-A	81		0.16	
511	D6304	89.042		0.53	
529	D6304	76.593		-0.04	
541	ISO12937	74.5		-0.14	
551	D6304-A	76.6		-0.04	
603		-----		-----	
633	D6304-C	72.6		-0.23	
663	D6304-A	78.8		0.06	
1017	ISO12937	164.2	R(0.01)	4.01	
1026	D6304-A	85		0.34	
1033	IP438	85.0		0.34	
1059	ISO12937	80		0.11	
1065	D6304-C	61		-0.77	
1134	IP438	68		-0.44	
1146	D6304-C	47		-1.41	
1161	ISO12937	65.317		-0.57	
1194	ISO12937	68.96		-0.40	
1227	D6304	73.30		-0.20	
1299	ISO12937	80		0.11	
1389	ISO12937	65		-0.58	
1397	ISO12937	71		-0.30	
1406	ISO12937	62		-0.72	
1407	ISO12937	84.9		0.34	
1441		-----		-----	
1459	ISO12937	68		-0.44	
1510	IP438	87		0.44	
1544	ISO12937	77.86		0.01	
1556	ISO12937	83		0.25	
1569	In house	76.5		-0.05	
1631	ISO12937	80.0		0.11	
1634	ISO12937	61.3		-0.75	
1635	ISO12937	95		0.81	
1706		-----		-----	
1724	D6304-A	79		0.07	
1728	E203	90		0.58	
1807	ISO12937	88		0.48	
1811	ISO12937	83.8		0.29	
1984	ISO12937	78.4		0.04	
2130	IP438	90		0.58	
6016	D6304-A	70		-0.35	
6075	ISO12937	117.3		1.84	

normality	suspect
n	53
outliers	4
mean (n)	77.558
st.dev. (n)	12.6167
R(calc.)	35.327
st.dev.(ISO12937:00)	21.6299
R(ISO12937:00)	60.564


180
160
140
120
100
80
60
40
20
0
1146 381 1065 1634 1406 463 445 1389 1161 338 237 1134 1459 1194 447 62 6016 1397 494 633 1227 541 335 1569 529 551 1544 1984 663 1724 323 312 1059 1299 1631 496 1556 1811 1407 1026 1033 1510 353 1807 511 336 334 1728 2130 1635 171 120 6075 444 140 150 1017

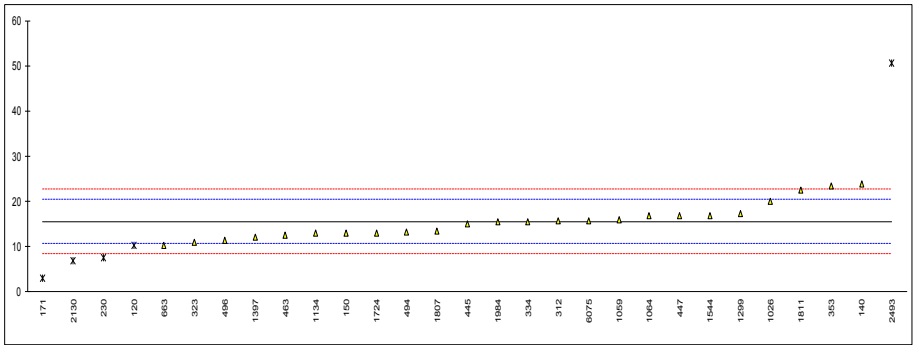

Kernel Density
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
0
50
100
150
200

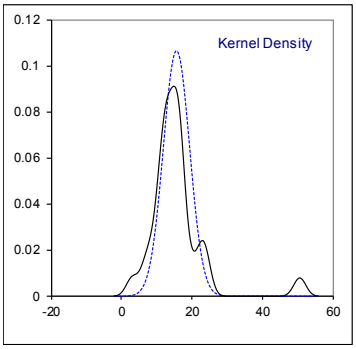
Determination of Total Contamination on sample #18091; result in mg/kg

lab	method	value	mark	z(targ)	Incomplete filtration	Volume used	filtration stopped after
120	D7321:14	10.23	ex	-2.24	NO	850	104.4
140	EN12662:2014	23.9		3.50	NO	300	-----
150	EN12662:2014	13.0		-1.08	NO	300	-----
171	EN12662:2014	3.0	ex	-5.28	NO	300	-----
230	D6217	7.60	ex	-3.35	NO	1000	9
312	EN12662:2014	15.7		0.05	NO	300	-----
323	EN12662:2014	11.0		-1.92	-----	-----	-----
334	EN12662:2014	15.5		-0.03	NO	300	-----
335		-----		-----	-----	-----	-----
336		-----		-----	-----	-----	-----
353	EN12662:2014	23.3		3.24	NO	300	-----
445	EN12662:1998	15.1		-0.20	NO	300	Complete
447	IP440	16.8		0.52	YES	-----	-----
463	EN12662:2014	12.54		-1.27	NO	300	-----
494	EN12662:2014	13.25		-0.97	-----	-----	-----
496	EN12662:2014	11.42		-1.74	NO	-----	-----
663	EN12662:2014	10.29		-2.22	NO	322	12.20
1017		-----		-----	-----	-----	-----
1026	EN12662:2014	20		1.86	NO	850	-----
1033		-----		-----	-----	-----	-----
1059	EN12662:2014	16.0		0.18	NO	300	-----
1064	EN12662:2014	16.71		0.48	NO	309	-----
1134	EN12662:2014	12.9		-1.12	-----	-----	-----
1299	EN12662:2014	17.2		0.68	NO	350	-----
1397	EN12662:2014	12.1		-1.46	NO	-----	-----
1544	EN12662:2014	16.85	C	0.54	NO	300	25 C
1724	IP440	13.02		-1.07	NO	-----	-----
1807	EN12662:2014	13.5		-0.87	NO	250	-----
1811	EN12662:2014	22.48		2.90	-----	300	-----
1984	EN12662:2014	15.45		-0.05	NO	300	-----
2130	IP440	6.9	ex	-3.64	NO	800	-----
2493	EN12662:2014	50.65	R(0.01)	14.72	NO	-----	-----
6016		-----		-----	-----	-----	-----
6075	EN12662:2014	15.7		0.05	NO	-----	-----

normality	OK		
n	24		
outliers	1 (+4ex)	spike:	recovery:
mean (n)	15.571	15.0	<104%
st.dev. (n)	3.7370		
R(calc.)	10.463		
st.dev.(EN12662:14)	2.3825		
R(EN12662:14)	6.671		

Lab 120 and 230 excluded for reporting test results in mg/L
Lab 171 and 2130 excluded for being too low in relation to the known concentration (see paragraph 4.1)
Lab 1544 first reported for Total Contamination: 33.55 and for Filtration stopped after: 5.00





APPENDIX 2

z-scores Distillation

lab	IBP	10% rec	50% rec	90% rec	95% rec	FBP
62	-----	-----	-----	-----	-----	-----
120	-0.61	-0.97	-1.01	0.77	1.21	-0.12
140	0.83	0.25	0.12	0.05	-0.07	-0.55
150	0.34	-0.04	-0.25	-0.62	-0.65	-0.98
171	-0.52	-0.51	-0.07	0.44	0.63	-0.75
175	-0.17	0.25	0.78	1.61	1.53	-0.35
194	0.57	0.19	0.22	0.55	0.28	0.36
230	0.00	-1.26	0.12	-0.45	-0.42	1.50
237	-0.58	-3.30	-2.23	-0.73	-0.58	0.12
238	0.29	1.94	2.48	-0.18	-0.90	-0.27
312	0.69	0.77	1.16	0.10	0.18	-0.59
323	1.32	0.72	0.31	0.55	0.92	-0.04
334	-2.13	-2.37	-1.76	-0.57	-2.31	-1.18
335	-----	-----	-----	-----	-----	-----
336	-0.26	0.19	0.03	-0.18	-0.04	0.44
338	-0.20	-0.62	0.41	0.44	0.09	0.40
353	0.63	-0.33	-0.63	1.89	1.85	0.91
381	-2.27	-0.80	0.31	0.61	0.41	0.08
444	-1.32	-0.16	-1.76	-1.18	-1.29	0.28
445	-1.64	-1.20	-1.10	-0.62	-0.26	-0.75
447	-2.22	-0.39	0.22	0.16	0.22	0.67
463	1.21	0.89	1.25	1.39	0.99	1.26
494	-1.58	-0.51	-0.82	0.10	0.31	0.36
496	-2.36	0.37	-0.82	-0.90	-0.74	-0.15
511	1.01	-1.85	-0.82	-0.73	-0.42	-0.27
529	-0.55	0.42	1.16	0.77	0.50	0.40
541	0.55	0.37	0.50	0.05	0.15	0.16
551	-0.75	-0.74	-0.82	-0.96	-0.94	-0.98
603	0.14	-0.10	1.07	-0.23	-0.46	0.36
633	-0.03	0.54	-0.35	0.05	-0.58	-3.70
663	1.22	1.09	-0.44	-0.73	-0.52	-0.21
1017	1.00	1.04	0.39	0.37	0.37	0.67
1026	-0.23	0.83	0.59	0.44	0.38	0.20
1033	-0.17	-0.10	0.03	0.05	-0.01	0.00
1059	0.34	-0.22	0.69	0.22	0.34	0.48
1065	-0.72	-3.59	-1.10	-0.34	-0.14	-0.71
1134	-0.26	-0.04	-0.54	-0.34	-1.48	-1.54
1146	-0.35	-0.68	0.41	1.00	0.82	0.91
1161	0.34	0.08	0.88	0.61	0.34	-0.23
1194	-----	-----	-----	-----	-----	-----
1227	1.09	1.18	1.16	0.61	0.66	0.04
1299	0.20	-0.33	-0.35	-0.12	-0.01	-0.12
1389	0.37	2.23	1.16	0.49	0.31	0.75
1397	0.83	1.12	0.59	0.33	0.38	0.59
1406	3.59	2.23	2.95	1.22	1.98	0.52
1407	2.47	2.00	1.16	-0.34	-0.55	0.79
1441	-0.46	-0.22	-1.29	-1.01	-0.58	-0.79
1459	0.75	0.19	0.59	-0.96	-0.65	-1.14
1510	0.23	0.02	0.12	-1.24	-0.62	-1.77
1544	-0.27	1.73	1.58	1.33	1.27	0.67
1556	1.47	0.02	0.50	0.49	0.38	0.40
1569	-0.92	0.95	-1.01	-0.23	1.69	-----
1631	-----	-----	-----	-----	-0.10	-----
1634	0.78	1.12	0.31	-0.23	-0.33	0.79
1635	0.29	-1.55	-2.23	-0.73	-1.22	0.91
1706	1.57	0.80	0.74	-0.34	-0.20	-0.69
1724	0.00	0.25	-0.54	-0.23	0.18	-0.04
1728	-0.58	-0.97	-2.23	0.10	0.06	-0.08
1807	0.14	-0.80	-1.01	-0.62	-0.68	0.48
1811	0.23	-0.04	-0.07	-0.62	-0.81	-0.23
1984	0.98	0.89	0.12	0.33	0.31	0.44
2130	0.86	0.54	0.41	-0.23	-0.14	0.04
6016	-1.64	-1.03	-1.39	-0.68	-0.65	-1.57
6075	0.06	-0.51	0.12	-0.73	-0.39	0.12

APPENDIX 3

Number of participants per country

1 lab in ARGENTINA
1 lab in AUSTRIA
2 labs in BELGIUM
1 lab in BRAZIL
1 lab in BULGARIA
1 lab in CANADA
1 lab in CHINA, People's Republic
2 labs in CROATIA
1 lab in CYPRUS
1 lab in CZECH REPUBLIC
6 labs in FRANCE
3 labs in GERMANY
3 labs in GREECE
1 lab in HUNGARY
1 lab in IRELAND
1 lab in ISRAEL
1 lab in KAZAKHSTAN
1 lab in MALAYSIA
1 lab in MARTINIQUE
1 lab in MAURITIUS
1 lab in MEXICO
3 labs in NETHERLANDS
2 labs in NIGERIA
1 lab in PERU
1 lab in PHILIPPINES
1 lab in PORTUGAL
1 lab in ROMANIA
1 lab in SERBIA
1 lab in SLOVENIA
4 labs in SPAIN
2 labs in SWEDEN
1 lab in THAILAND
3 labs in TURKEY
7 labs in UNITED KINGDOM
6 labs in UNITED STATES OF AMERICA

APPENDIX 4

Abbreviations

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

Literature

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3. ASTM E178:08
4. ASTM E1301:03
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6. ISO 5725, parts 1-6:94
7. ISO13528:05
8. M. Thompson and R. Wood, J. AOAC Int, 76, 926, (1993)
9. W.J. Youden and E.H. Steiner, Statistical Manual of the AOAC, (1975)
10. DIN 38402 T41/42
11. P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
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