Results of Proficiency Test
Biogasoline E10
May 2014

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CONTENTS

1 INTRODUCTION

Since 2009, the Institute for Interlaboratory Studies organizes every year a proficiency test for the analysis of Biogasoline E10. During the annual proficiency testing program 2013/2014, it was decided to continue the round robin for the analysis of Biogasoline E10. In this interlaboratory study, 52 laboratories in 23 different countries have participated. See appendix 3 for the number of participants per country. In this report, the results of the 2014 Biogasoline E10 proficiency test are presented and discussed.

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. In this proficiency test, the participants received, depending on their registration, two or three samples of Biogasoline E10: 2*1 litre (labelled #14060) and/or 1*1 litre (± 750 mL filled, labelled #14061 for DVPE only).
Participants were requested to report rounded and unrounded results. The unrounded 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 ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentially 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 April 2014 (iis-protocol, version 3.3).

2.3 CONFIDENTIALITY STATEMENT

All data presented in this report must be regarded as confidential and are 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 200 litres of Biogasoline E10 was purchased at a local pump station. After homogenisation, the material was transferred into 135 brown glass bottles of 1 litre (labelled #14060). And another 65 brown glass bottles of 1 litre were filled for approx. 750 mL for Dry Vapour Pressure Equivalent only (labelled #14061).
The homogeneity of the subsamples #14060 was checked by determination of Density @15°C in accordance with ASTM D4052 on 8 stratified randomly selected samples. The homogeneity of the subsamples #14061 was checked by determination of Dry Vapour Pressure Equivalent in accordance with ASTM D5191 on 8 stratified randomly selected samples.

	Density @ 15°C in kg/m^3
Sample #14060-1	728.47
Sample #14060-2	728.01
Sample #14060-3	728.26
Sample #14060-4	728.60
Sample #14060-5	728.21
Sample #14060-6	728.11
Sample #14060-7	728.20
Sample #14060-8	728.19

table 1: homogeneity test results of subsamples #14060

	DVPE in psi
Sample #14061-1	13.4
Sample #14061-2	13.4
Sample #14061-3	13.5
Sample #14061-4	13.5
Sample #14061-5	13.5
Sample #14061-6	13.5
Sample #14061-7	13.5
Sample #14061-8	13.5

table 2: homogeneity test results of subsamples #14061

From the above test results, the repeatabilities were calculated and compared with 0.3 times the corresponding reproducibilities in agreement with the procedure of ISO 13528, Annex B2 in the next table:

	Density @ 15°C in kg/m^3	DVPE in psi
r (sample #14060)	0.13	--
r (sample #14061)	--	0.19
reference test	ISO12185:96	D5191:13
0.3*R (Reference)	0.45	(0.11)
r (Reference)	(0.40)	0.22

table 3: repeatabilities of the subsamples #14060 and #14061

The calculated repeatability of the Density was less than 0.3 times the reproducibility of the corresponding reference method. Due to the strict reproducibility requirements of ASTM D5191:13 the calculated repeatability for DVPE was compared with repeatability of the corresponding reference method. The calculated repeatability of DVPE was less than the repeatability of the corresponding reference method. Therefore, homogeneity of the subsamples #14060 and #14061 was assumed.

To the participants, depending on their registration, 2*1 litre of sample #14060 and/or 1*1 litre (± 750 mL filled) of sample #14061 were sent on April 23, 2014.

2.5 STABILITY OF THE SAMPLES

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

2.6 ANALYSIS

The participants were requested to determine on sample #14060: Aromatics (FIA & GC), API gravity, Benzene, Copper Strip Corrosion 3hrs/50°C, Density @ 15°C, Distillation, Doctor test, Ethanol, Ethers, Existent Gum, Lead, Manganese, Mercaptans , Olefins (FIA & GC), Oxidation Stability, Oxygenates, Oxygen, Sulphur, RON and MON.
On sample #14061 the participants were requested to determine TVP and to calculate DVPE only (in accordance with ASTM D5191 and EPA requirements).

To get comparable results a detailed report form, on which the units were prescribed as well as some of the required standards and a letter of instructions were prepared and made available for download on the iis website.
A SDS and a form to confirm receipt of the samples were added to the sample package.

3 RESULTS

During four weeks after sample despatch, the results of the individual laboratories were gathered. The original data are tabulated per determination in appendix 1 of this report. The laboratories are presented by their code numbers. Directly after the deadline, a reminder fax was sent to the laboratories that had not reported results at that moment. Shortly after the deadline, the available results were screened for suspect data. A 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 results. Additional or corrected results are used for data analysis and original results are placed under 'Remarks' in the result tables in appendix 1.

3.1 STATISTICS

Statistical calculations were performed as described in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' (iis-protocol, April 2014 version 3.3). For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded results. 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. Not all data sets proved to have a normal distribution, in which cases the statistical evaluation of the results should be used with due care.
In accordance to ISO 5725 (1986 and 1994) the original results per determination were submitted subsequently to Dixon, Grubbs and Rosner outlier tests. Outliers are marked by D(0.01) for the Dixon test, by G(0.01) or DG(0.01) for the Grubbs test and by R(0.01) for the Rosner General ESD test (see appendix 4, no.16). Stragglers are marked by D(0.05) for the Dixon test, by G(0.05) or DG(0.05) for the Grubbs test and by R(0.05). Both outliers and stragglers were not included in the calculations of the averages and the standard deviations.

For each assigned value, the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirement based on the target reproducibility in accordance with ISO13528. When the uncertainty passed the evaluation, no remarks are made in the report. However, when the uncertainty failed the evaluation it is mentioned in the report and it will have consequences for the evaluation of the test results.

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

3.2 GRAPHICS

In order to visualize the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported analysis results are plotted. The corresponding laboratory numbers are under 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 standard. Outliers and other data, which were excluded from the calculations, are represented as a "x". 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 (see appendix 4; nos 13 and 14). Also a normal Gauss curve was projected over the Kernel Density Graph.

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 reproducibilities, the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the spread of this interlaboratory study. The target standard deviation was calculated from the literature reproducibility by division with 2.8.

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 in accordance with:

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

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

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

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

4 EVALUATION

In this proficiency test, no problems were encountered during the dispatch of the samples to the participants.
Fourteen laboratories reported the test results after the final reporting date and two laboratories did not report any result at all. Not all laboratories were able to perform all analyses requested. Finally, 50 laboratories did report 1164 numerical results. Observed were 45 outlying results, which is 3.9%. In proficiency tests, outlier percentages of 3% - 7.5% are quite normal.

4.1 EVALUATION PER TEST

In this section, the results are discussed per sample and per test. The specified test methods and requirements were taken into account for explaining the observed differences when possible and applicable. These methods are also in the tables together with the reported data. The abbreviations, used in these tables, are listed in appendix 3. In the iis PT reports, ASTM methods are referred to with a number (e.g. D2086) and an added designation for the year that the method was adopted or revised (e.g. D2086-08). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D2086-08 (2013)). In the results tables of Appendix 1 only the method number and year of adoption or revision will be used.

The majority of the data sets proved to have a normal distribution. For some other tests the number of reported test results was too small to determine whether the data set was normally distributed. In these cases the results of the statistical evaluations should be used with care.

For sample #14060

Aromatics by FIA: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement of D1319:13. The large spread may be caused by not or wrongly correcting of the results for the (high) oxygenate content.

Aromatics by GC: 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 ISO22854:14. Four participants used method ASTM D5769:10. This method is not equivalent to ISO22854:14. Two ASTM D5765 test results appeared to be statistical outliers.

API gravity: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of ASTM D4052:11.

Benzene: This determination was problematic for a number of laboratories. Four statistical outliers were observed. The calculated reproducibility, after rejection of the statistical outliers, is in agreement with the requirements of ISO22854:14.

Copper strip: No problems have been observed, all reporting participants agreed on a test result of 1.

Density @15°C: This determination is not problematic. Three 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 eighteen statistical outliers were observed. One laboratory was excluded for IBP and 10% evaporated because of the very high test result for residue. Five statistical outliers were observed for the temperature at 50% evaporated. Referring to the document “results on questionnaire iis14B01ASTM” (appendix 4, no17) it might be possible that participants that used automated equipment for the distillation, reported instead for the temperature “at 50% evaporated”, the temperature “at 50% recovered” as test result. However, all calculated reproducibilities after rejection of the statistical outliers are in agreement with the requirements of ISO3405:11.

Doctor test: No problems have been observed, all reporting participants agreed on a test result of “negative”.

Existent Gum: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with requirements of ISO6246:95.

Lead: All participants, except one, reported a “less then” result. Therefore, no significant conclusions were drawn.

Manganese: All participants, except one, reported a “less then” result. Therefore, no significant conclusions were drawn.

Mercaptans: Although the consensus value is below the application range of the method (0.0003 – 0.01% M/M), this determination was not problematic at this low concentration level. One statistical outlier and two test results were excluded. The calculated reproducibility after rejection of the suspect data is in good agreement with the requirements ASTM D3227:13.

Olefins by FIA: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D1319:13.

Olefins by GC: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility is in good agreement with the requirements of ISO22854:14.

Ethanol: This determination was problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ISO22854:14.

Methanol: This determination may be problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements mentioned in ISO22854:14. However, it should be kept in mind that the target precision may not be applicable for Methanol (ISO22854:14, note 2).

MTBE: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ISO22854:14.
Eight laboratories reported to have used to EN13132. The calculated reproducibility of these eight test results is also in agreement with the requirements of EN13132:00.

Ethers In EN228:2013 (table 1 and table 2), the 'ethers' test result is defined as ethers with "C5 or more C atoms". This is identical to the summation of "Ethers C5" and "Ethers >C5".
These determinations were not problematic. In total four statistical outliers and two false negative test results were observed. The calculated reproducibilities of the three determinations, after rejection of the suspect data are all in agreement with the requirements of ISO22854:14.

Other Oxygenates: Obviously no other oxygenates were present in the sample. Almost all participants reported a "less then" result. Therefore, no significant conclusions were drawn. One false positive test result was observed.

Total Oxygenates: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO22854:14.

Oxygen: This determination was problematic for a number of laboratories. Eleven laboratories were excluded from the statistical calculations as they did not report a test result for Methanol and/or Ethanol and/or MTBE. The test results of three other laboratories that probably made errors in the calculation of the oxygen content, were also excluded from the statistical evaluation.
The calculated reproducibility after rejection of the suspect data is in full agreement with the requirements mentioned in EN228:13 (note k).

Oxidation stability: All laboratories, except one, agreed that the Oxidation Stability is >360 minutes.

Sulphur: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility, after rejection of the statistical outlier is in full agreement with the requirements of ISO20846:11.

RON: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of ISO5164:05.

MON: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of ISO5163:05.

For sample #14061

TVP: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility, after rejection of the statistical outliers is in agreement with the requirements of ASTM D5191:13.

DVPE: The conversion of the measured Total Vapour Pressure to the corresponding Dry Vapour Pressure Equivalent (DVPE) as described in the ASTM D5191:13 and the U.S. EPA guidelines (40 CFR Part 80, App. E, Method 3), showed in total two statistical outliers. Both calculated reproducibilities after rejection of the statistical outliers are in agreement with the requirement of ASTM D5191:13.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

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

Parameter	unit	n	average	2.8 * sd	R (lit)
Aromatics (FIA)	%V/V	27	22.84	4.48	3.70
Aromatics (GC)	%V/V	22	21.09	0.99	1.09
API gravity		26	62.78	0.20	0.70
Benzene	%V/V	33	0.63	0.04	0.04
Copper Strip 3 hrs @ 50°C	-----	37	1(1A)	n.a.	n.a.
Density @ 15°C	kg/m^3	45	728.16	0.44	1.50
Initial Boiling Point	ºC	45	28.5	4.8	4.7
10% evaporated	ºC	43	42.1	2.1	3.2
50% evaporated	ºC	41	67.3	2.1	1.9
90% evaporated	ºC	42	133.3	2.4	3.7
Final Boiling Point	ºC	45	183.4	7.0	6.8
%Vol @70ºC	%V/V	42	52.3	2.8	2.7
%Vol @100ºC	%V/V	40	66.3	1.9	2.2
%Vol @150ºC	%V/V	41	93.5	1.2	1.3
Doctor test		24	negative	n.a.	n.a.
Existent Gum (washed)	mg/100mL	25	0.76	1.60	1.48
Lead as Pb	mg/L	24	<2.5	n.a.	n.a.
Manganese as Mn	mg/L	17	<2	n.a.	n.a.
Mercaptans as S	%M/M	18	0.0002	0.0001	0.0003
Olefins (FIA)	%V/V	27	10.3	2.8	3.3
Olefins (GC)	%V/V	19	10.6	0.8	1.8
Ethanol	%V/V	38	8.62	0.69	0.57
Methanol	%V/V	28	0.52	0.49	0.36
MTBE	%V/V	38	3.00	0.40	0.43
Ethers C5 or more C atoms	%V/V -	18	3.19	0.55	0.61
Other oxygenates	%V/V	20	<0.2	n.a	n.a
Total oxygenates	%V/V	8	13.23	0.74	0.68
Oxygen content	%M/M	22	4.11	0.39	0.37
Oxidation Stability	minutes	27	>360	n.a	n.a
Sulphur	mg/kg	45	5.03	1.68	1.68
RON	-----	29	96.68	0.85	0.70
MON	-----	30	85.70	1.16	0.90

table 4: performance evaluation sample #14060

Parameter	unit	n	average	2.8 * sd	R (lit)
TVP acc.to ASTM D5191	psi	39	14.37	0.28	0.38
DVPE acc.to ASTM D5191	psi	40	13.33	0.27	0.37
DVPE acc.to EPA	psi	33	13.42	0.27	0.37

table 5: performance evaluation sample #14061

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 standards. The problematic tests have been discussed in paragraph 4.1.

4.3 COMPARISON OF THE PROFICIENCY TEST OF MAY 2014 WITH PREVIOUS PT

Determination	May 2014	May 2013	May 2012	May 2011	May 2010
Number of reporting labs	50	48	40	34	30
Number of results reported	1164	892	831	642	664
Statistical outliers	45	25	30	21	47
Percentage outliers	3.9%	2.8%	3.6%	3.3%	7.1%

table 6: 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 standards. The conclusions are given the following table:

Determination	May 2014	May 2013	May 2012	May 2011	May 2010
Aromatics by FIA	-	--	+/-	--	--
Aromatics by GC	+	-	+	++	++
API gravity	++	+	+	++	++
Benzene	+/-	-	-	+	--
Density @ 15°C	++	+/-	+/-	-	+/-
Distillation	+	+	+	+	++
Existent Gum (washed)	+/-	+/-	--	n.a	--
Mercaptans as S	++	++	++	++	++
Olefins by FIA	+	--	++	--	--
Olefins by GC	++	+	++	++	++
Oxidation Stability	n.e	n.e.	n.e.	n.e.	n.e.
Ethanol	--	--	++	++	+/-
Methanol	--	n.e.	n.e.	n.e.	n.e.
MTBE	+	n.e.	n.e.	n.e.	n.e.
Ethers C5 or more atoms	-	n.e.	n.e.	n.e.	n.e.
Total oxgenates	+/-				
Oxygen content	+/-	+/-	+/-	--	++
Sulphur	+/-	+/-	-	-	+/-
RON	-	+	+	+/-	++
MON	-	-	-	--	--
TVP acc.to ASTM D5191	+	+	+/-	--	++
DVPE acc.to ASTM D5191	+	+	+/-	-	++
DVPE acc.to EPA	+	+	+/-	-	++

table 7: comparison of the quality of the various determinations against the respective standard requirements

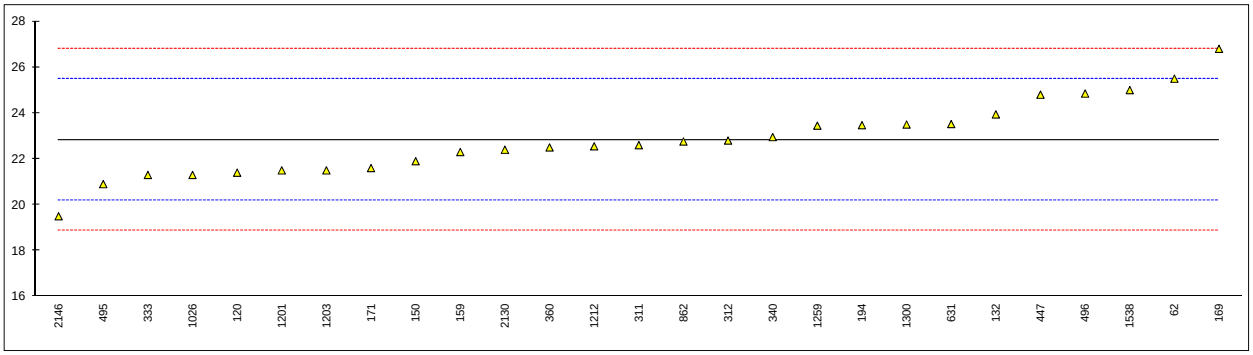
The performance of the determinations against the requirements of the respective standards is listed in the above table. The following performance categories were used:

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

APPENDIX 1

Determination of Aromatics by FIA on sample #14060; results in %V/V

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62	D1319	25.5		2.02	
120	D1319	21.4		-1.09	
132	D1319	23.94		0.83	
150	D1319/EN15553	21.9		-0.71	
159	D1319	22.3		-0.41	
169	D1319	26.8		3.00	
171	D1319	21.6		-0.94	
193		-----		-----	
194	D1319	23.47		0.48	
311	D1319	22.6		-0.18	
312	D1319	22.8		-0.03	
333	D1319	21.3		-1.16	
334		-----		-----	
335		-----		-----	
337		-----		-----	
338		-----		-----	
340	D1319	22.95		0.09	
350		-----		-----	
360	EN15553	22.50		-0.25	
430		-----		-----	
447	D1319	24.8		1.49	
494		-----		-----	
495	D1319	20.9		-1.47	
496	EN15553	24.85		1.52	
511		-----		-----	
631	D1319	23.52		0.52	
862	D1319	22.76		-0.06	
1026	D6729	21.3		-1.16	
1033		-----		-----	
1040		-----		-----	
1131		-----		-----	
1161		-----		-----	
1201	ISO22854	21.5		-1.01	
1203	D1319/EN15553	21.5		-1.01	
1212	D1319	22.55	C	-0.22	first reported: 9.49
1259	D1319	23.45		0.46	
1300	EN15553	23.50		0.50	
1346		-----		-----	
1409		-----		-----	
1459		-----		-----	
1538	EN15553	25.0		1.64	
1546		-----		-----	
1634		-----		-----	
1656		-----		-----	
1706		-----		-----	
1776		-----		-----	
1810		-----		-----	
1811		-----		-----	
1951		-----		-----	
2130	D1319	22.4		-0.33	
2146	D1319	19.5		-2.53	
	normality	OK			
	n	27			
	outliers	0			
	mean (n)	22.837			
	st.dev. (n)	1.6016			
	R(calc.)	4.484			
	R(D1319:13)	3.700			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26
24
22
20
18
16
2146
495
333
1026
120
1201
1203
171
150
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2130
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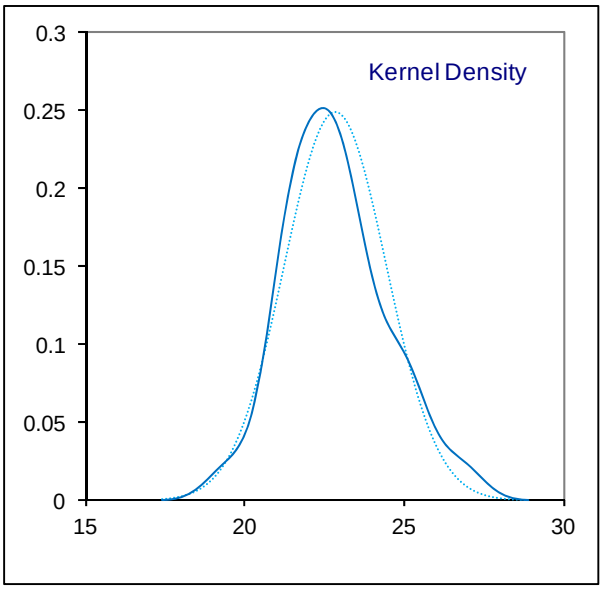
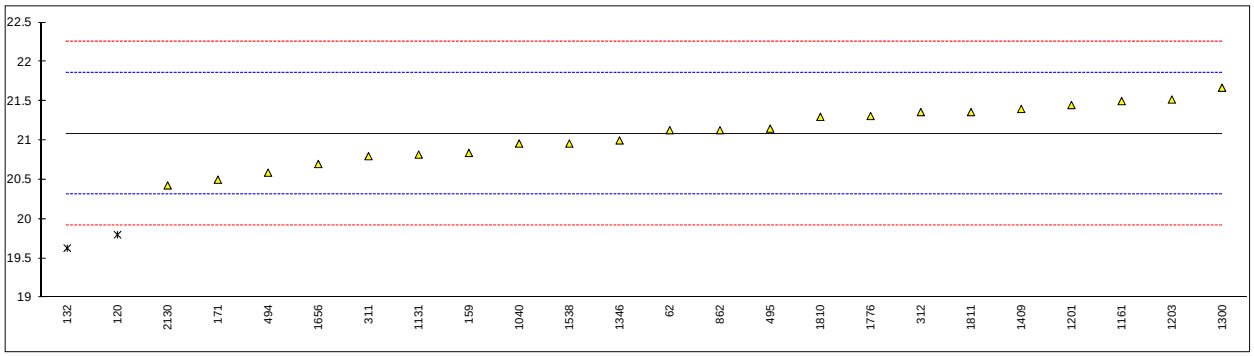
1538
62
169

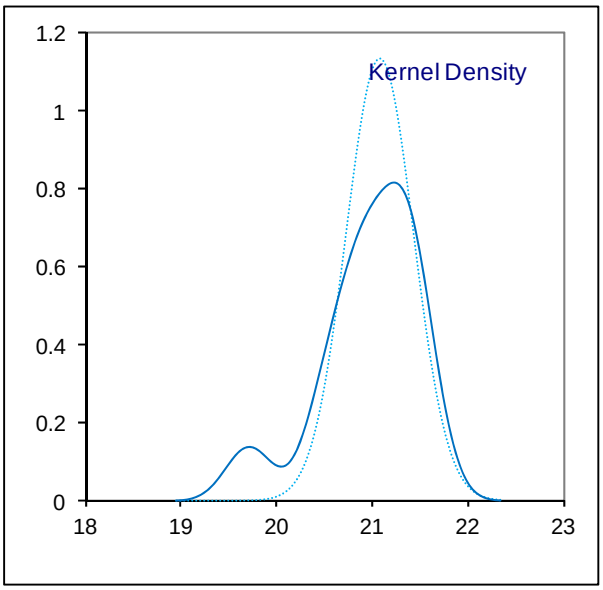

Kernel Density
0.3
0.25
0.2
0.15
0.1
0.05
0
15
20
25
30

Determination of Aromatics by GC on sample #14060; results in %V/V

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62	INH-14.3	21.13		0.11	
120	D5769	19.8	R(0.05)	-3.31	
132	D5769	19.63	R(0.05)	-3.75	
150		-----		-----	
159	D5769	20.84		-0.63	
169		-----		-----	
171	D5769	20.5		-1.51	
193		-----		-----	
194		-----		-----	
311	ISO22854	20.8		-0.73	
312	ISO22854	21.36		0.71	
333		-----		-----	
334		-----		-----	
335		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
350		-----		-----	
360		-----		-----	
430		-----		-----	
447		-----		-----	
494	ISO22854	20.59		-1.28	
495	ISO22854	21.15		0.17	
496		-----		-----	
511		-----		-----	
631		-----		-----	
862	D4815	21.13		0.11	
1026		-----		-----	
1033		-----		-----	
1040	ISO22854	20.96		-0.32	
1131	ISO22854	20.82		-0.68	
1161	ISO22854	21.5		1.07	
1201	ISO22854	21.45		0.94	
1203	ISO22854	21.52		1.12	
1212		-----		-----	
1259		-----		-----	
1300	ISO22854	21.67		1.51	
1346	ISO22854	21.0		-0.22	
1409	ISO22854	21.4		0.81	
1459		-----		-----	
1538	ISO22854	20.96		-0.32	
1546		-----		-----	
1634		-----		-----	
1656	ISO22854	20.7		-0.99	
1706		-----		-----	
1776	ISO22854	21.31		0.58	
1810	ISO22854	21.3		0.55	
1811	ISO22854	21.36		0.71	
1951		-----		-----	
2130	D6730	20.428		-1.69	
2146		-----		-----	

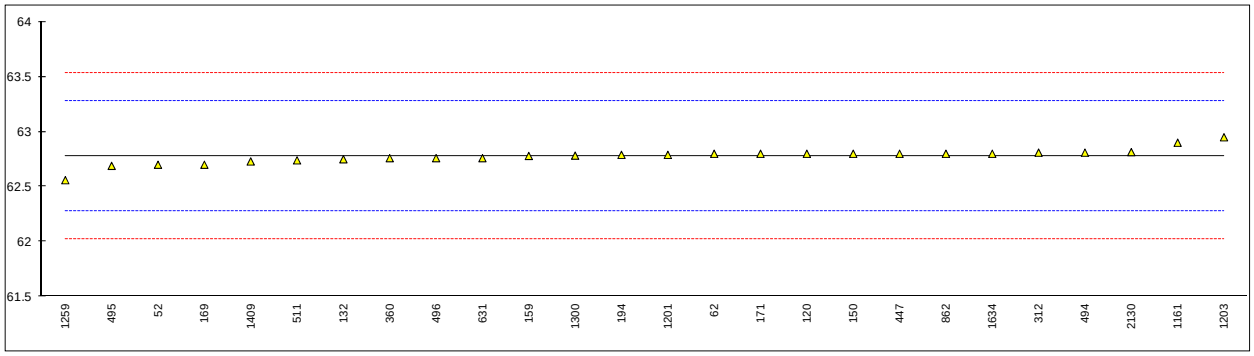
normality	OK
n	22
outliers	2
mean (n)	21.085
st.dev. (n)	0.3525
R(calc.)	0.987
R(EN22584:14)	1.087

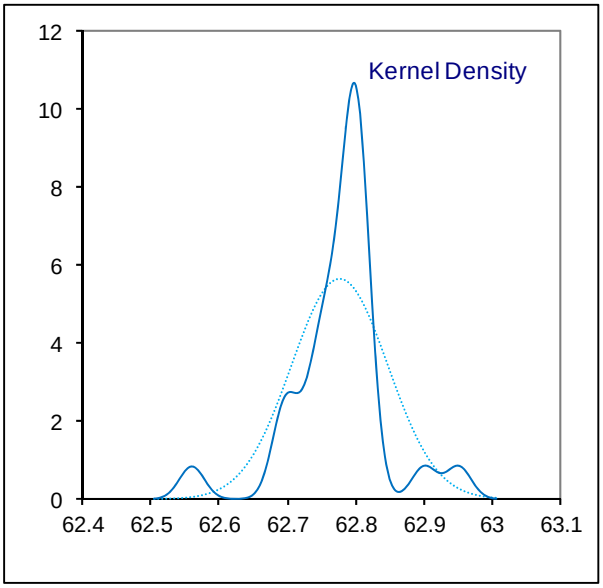

22.5
22
21.5
21
20.5
20
19.5
19
132
120
2130
171
494
1656
311
1131
159
1040
1538
1346
62
862
495
1810
1776
312
1811
1409
1201
1161
1203
1300


Kernel Density
1.2
1
0.8
0.6
0.4
0.2
0
18
19
20
21
22
23

Determination of API gravity on sample #14060;

lab	method	value	mark	z(targ)	remarks
52	D4052	62.7		-0.30	
62	D4052	62.8	C	0.10	first reported:38.9
120	D4052	62.8		0.10	
132	D4052	62.75		-0.10	
150		62.8		0.10	
159	D4052	62.78		0.02	
169	D4052	62.7		-0.30	
171	D4052	62.8		0.10	
193		-----		-----	
194	D4052	62.79		0.06	
311		-----		-----	
312	D4052	62.81		0.14	
333		-----		-----	
334		-----		-----	
335		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
350		-----		-----	
360	D4052	62.76		-0.06	
430		-----		-----	
447	D4052	62.8		0.10	
494	D4052	62.81		0.14	
495	D1298	62.69		-0.34	
496	D1298	62.76		-0.06	
511	D4052	62.74		-0.14	
631	D4052	62.76		-0.06	
862	D1298	62.80		0.10	
1026		-----		-----	
1033		-----		-----	
1040		-----		-----	
1131		-----		-----	
1161	D287	62.9		0.49	
1201		62.79		0.06	
1203		62.95		0.69	
1212		-----		-----	
1259	D4052	62.56		-0.86	
1300	D4052	62.783		0.03	
1346		-----		-----	
1409	D4052	62.73		-0.18	
1459		-----		-----	
1538		-----		-----	
1546		-----		-----	
1634	D4052	62.8		0.10	
1656		-----		-----	
1706		-----		-----	
1776		-----		-----	
1810		-----		-----	
1811		-----		-----	
1951		-----		-----	
2130	D4052	62.815		0.16	
2146		-----		-----	
	normality	not OK			
	n	26			
	outliers	0			
	mean (n)	62.776			
	st.dev. (n)	0.0706			
	R(calc.)	0.198			
	R(D4052:11)	0.703			Compare R(D1298) = 0.300

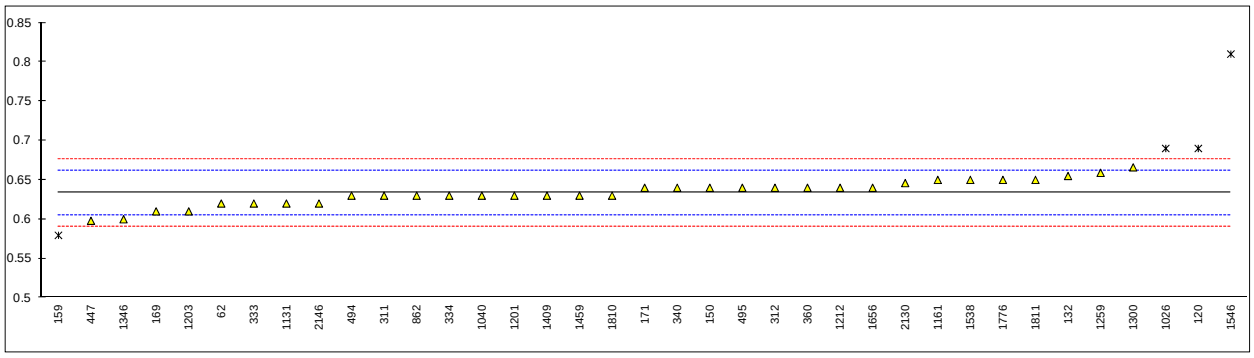

64
63.5
63
62.5
62
61.5
1259
495
52
169
1409
511
132
360
496
631
159
1300
194
1201
62
171
120
150
447
862
1634
312
494
2130
1161
1203

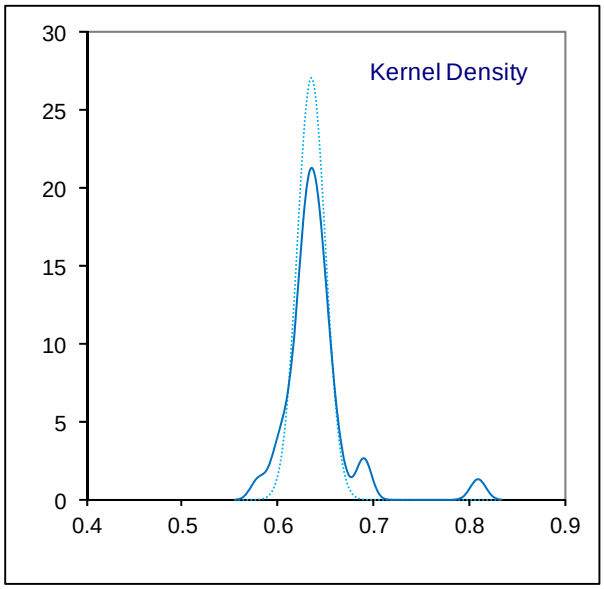

Kernel Density
12
10
8
6
4
2
0
62.4
62.5
62.6
62.7
62.8
62.9
63
63.1

Determination of Benzene on sample #14060; results in %V/V

lab	method	value	mark	z(targ)	Remarks
52		-----		-----	
62	INH-14.3	0.62		-0.96	
120	D3606	0.69	R(0.05)	3.94	
132	D3606	0.655		1.49	
150	ISO22854	0.64		0.44	
159	D3606	0.5795	R(0.05)	-3.80	
169	D3606	0.61		-1.66	
171	D3606	0.64		0.44	
193		-----		-----	
194		-----		-----	
311	ISO22854	0.63		-0.26	
312	ISO22854	0.64		0.44	
333	EN238	0.62		-0.96	
334	EN238	0.63		-0.26	
335		-----		-----	
337		-----		-----	
338		-----		-----	
340	EN238	0.64		0.44	
350		-----		-----	
360	EN12177	0.64		0.44	
430		-----		-----	
447	EN238	0.598	C	-2.50	first reported: 0.739
494	ISO22854	0.63		-0.26	
495	ISO22854	0.64		0.44	
496		-----		-----	
511		-----		-----	
631		-----		-----	
862	D4815	0.63		-0.26	
1026	EN12177	0.69	R(0.05)	3.94	
1033		-----		-----	
1040	ISO22854	0.63		-0.26	
1131	ISO22854	0.62		-0.96	
1161	ISO22854	0.65		1.14	
1201	ISO22854	0.63		-0.26	
1203	ISO22854	0.61		-1.66	
1212	EN238	0.64		0.44	
1259	EN12177	0.659		1.77	
1300	ISO22854	0.666		2.26	
1346	ISO22854	0.60		-2.36	
1409	ISO22854	0.63		-0.26	
1459	in house	0.63		-0.26	
1538	EN238	0.65		1.14	
1546	EN238	0.810	R(0.01)	12.34	
1634		-----		-----	
1656	ISO22854	0.64		0.44	
1706		-----		-----	
1776	ISO22854	0.65		1.14	
1810	ISO22854	0.63		-0.26	
1811	ISO22854	0.65		1.14	
1951		-----		-----	
2130	D6730	0.646		0.86	
2146	EN12177	0.62		-0.96	

normality	OK
n	33
outliers	4
mean (n)	0.634
st.dev. (n)	0.0159
R(calc.)	0.044
R(ISO22854:14)	0.040


0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
159
447
1346
169
1203
62
333
1131
2146
494
311
862
334
1040
1201
1409
1459
1810
171
340
150
495
312
360
1212
1656
2130
1161
1538
1776
1811
132
1259
1300
1026
120
1546


Kernel Density
30
25
20
15
10
5
0
0.4
0.5
0.6
0.7
0.8
0.9

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Determination of Copper strip 3hrs/50°C on sample #14060

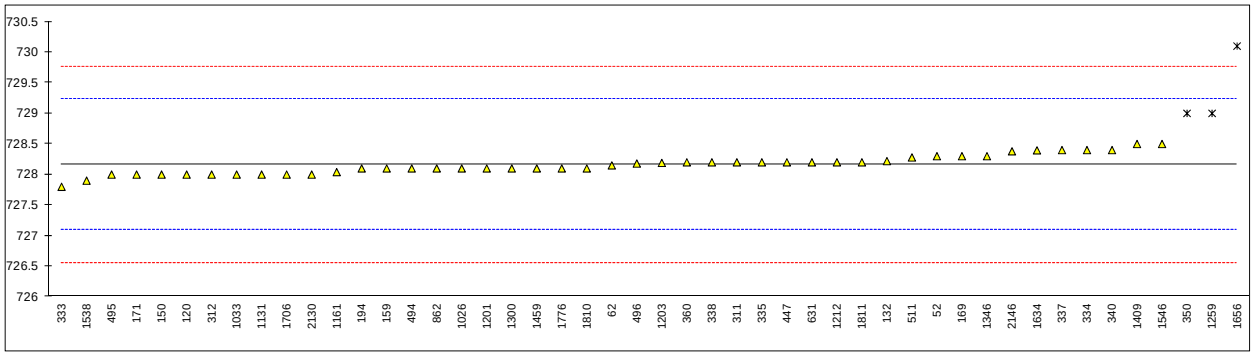
lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62	D130	1B		-----	
120	D130	1A		-----	
132	D130	1A		-----	
150	ISO2160/D130	1A		-----	
159	D130	1A		-----	
169	D130	1A		-----	
171	D130	1A		-----	
193		-----		-----	
194	D130	1A		-----	
311	D130	1A		-----	
312	D130	1A		-----	
333		-----		-----	
334		-----		-----	
335	ISO2160/D130	1		-----	
337	D130	1A		-----	
338		-----		-----	
340		-----		-----	
350		-----		-----	
360	ISO2160	1A		-----	
430		-----		-----	
447	D130	1A		-----	
494	ISO2160/D130	1A		-----	
495	D130	1A		-----	
496	ISO2160	1A		-----	
511	D130	1A		-----	
631	D130	1A		-----	
862	D130	1A		-----	
1026	ISO2160	1A		-----	
1033	IP154	1B		-----	
1040		-----		-----	
1131	ISO2160	1A		-----	
1161	ISO2160/D130	1		-----	
1201	ISO2160/D130	1A		-----	
1203	ISO2160	1A		-----	
1212	D130	1A		-----	
1259	ISO2160	1A		-----	
1300	ISO2160	1A		-----	
1346	ISO2160	1A		-----	
1409	D130	1A		-----	
1459		-----		-----	
1538	ISO2160	1A		-----	
1546	ISO2160	1		-----	
1634	D130	1A		-----	
1656	ISO2160	1A		-----	
1706		-----		-----	
1776		-----		-----	
1810		-----		-----	
1811	ISO2160	1		-----	
1951		-----		-----	
2130	D130	1A		-----	
2146		-----		-----	

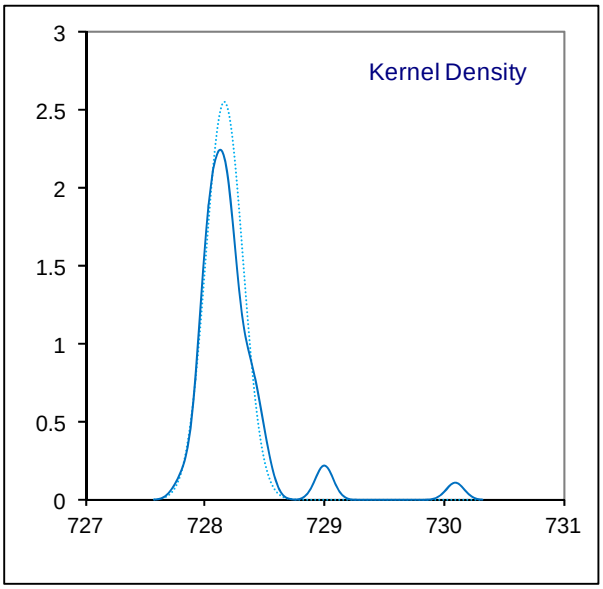
normality	n.a
n	37
outliers	n.a
mean (n)	1(1A)
st.dev. (n)	n.a
R(calc.)	n.a
R(D130:12)	n.a

Determination of Density @ 15°C on #sample #14060; results in kg/m^3

lab	method	value	mark	z(targ)	remarks
52	D4052	728.3		0.26	
62	D4052	728.15		-0.02	
120	D4052	728.0		-0.30	
132	D4052	728.22		0.11	
150	ISO12185	728.0		-0.30	
159	D4052	728.1		-0.11	
169	D4052	728.3		0.26	
171	D4052	728.0	C	-0.30	probably unit error, reported 0.7280
193		-----		-----	
194	D4052	728.1		-0.11	
311	ISO12185	728.2		0.07	
312	D4052	728.0		-0.30	
333	ISO12185	727.8		-0.67	
334	ISO12185	728.4		0.45	
335	ISO12185	728.2		0.07	
337	ISO12185	728.4		0.45	
338	ISO12185	728.2		0.07	
340	ISO12185	728.40		0.45	
350	ISO12185	729.0	C,R(0.05)	1.57	first reported: 728.75
360	ISO12185	728.2		0.07	
430		-----		-----	
447	ISO12185	728.2		0.07	
494	ISO12185	728.1		-0.11	
495	ISO12185	728.0		-0.30	
496	ISO12185	728.18		0.04	
511	D4052	728.28		0.22	
631	D4052	728.2		0.07	
862	ISO12185	728.1		-0.11	
1026	D4052	728.1		-0.11	
1033	IP365	728.0		-0.30	
1040		-----		-----	
1131	ISO12185	728.0		-0.30	
1161	ISO12185	728.04		-0.23	
1201	ISO12185	728.1		-0.11	
1203	ISO12185	728.19		0.05	
1212	ISO12185	728.2		0.07	
1259	ISO12185	729.0	R(0.01)	1.57	
1300	ISO12185	728.1		-0.11	
1346	ISO12185	728.3		0.26	
1409	ISO12185	728.5		0.63	
1459	ISO12185	728.1		-0.11	
1538	ISO12185	727.9		-0.49	
1546	ISO12185	728.5		0.63	
1634	ISO12185	728.396		0.44	
1656	ISO12185	730.1	C,R(0.01)	3.62	first reported: 731.1
1706	ISO12185	728.0		-0.30	
1776	ISO12185	728.1		-0.11	
1810	ISO12185	728.1		-0.11	
1811	ISO12185	728.2		0.07	
1951		-----		-----	
2130	D4052	728.0		-0.30	
2146	ISO12185	728.38		0.41	

normality	OK
n	45
outliers	3
mean (n)	728.161
st.dev. (n)	0.1565
R(calc.)	0.438
R(ISO12185:96)	1.500


730.5
730
729.5
729
728.5
728
727.5
727
726.5
726
333 1538 495 171 150 120 312 1033 1131 1706 2130 1161 194 159 494 862 1026 1201 1300 1459 1776 1810 62 496 1203 360 338 311 335 447 631 1212 1811 132 511 52 169 1346 2146 1634 337 334 340 1409 1546 350 1259 1656


Kernel Density
3
2.5
2
1.5
1
0.5
0
727
728
729
730
731

Determination of Distillation on sample #14060; results in °C

lab	method	mode	IBP	mark	10%eva	mark	50%eva	mark	90%eva	mark	FBP	mark
52	D86	Automated	29.2		42.1		67.1		133.6		181.3	
62	D86	Automated	32.8		42.3		67.2		133.4		184.7	
120	D86	Automated	27.2		41.6		66.3		134.3		185.2	
132	D86	Automated	27.1		41.2		67.6		133.6		183.6	
150	ISO3405/D86	Automated	29.2		42.1		68.1		133.4		186.0	
159	D86	Automated	27.9		42.0		67.2		134.0		185.1	
169	D86	Automated	28.2		43.2		68.8		134.9		183.8	
171	D86	Automated	29.6		42.6		67.0		134.6		180.4	
193			-----		-----		-----		-----		-----	
194	D86	Automated	29.44		43.67		67.2	C	133.7	C	185.28	
311	ISO3405	Automated	27.8		41.0		66.9		132.8		178.8	
312	D86	Automated	28.9		41.4		66.9		133.1		179.5	
333	D86	Automated	25.9		41.2		67.0		133.7		181.0	
334	D86	Automated	29.0		42.4		67.1		132.9		182.1	
335	ISO3405/D86	Automated	26.5		41.7		66.7		132.3		179.9	
337			-----		-----		-----		-----		-----	
338	ISO3405	Automated	28.2		42.3		68.0		133.5		186.1	
340	ISO3405	Automated	25.9		42.2		66.7		133		182.6	
350	ISO3405	Manual	28.93		42.35		66.37		131.0	C	181.90	
360	ISO3405	Automated	29.2		41.3		66.9		132.8		184.6	
430			-----		-----		-----		-----		-----	
447	IP123	Automated	26.1		41.4		66.8		132.8		183.2	
494	ISO3405/D86	Automated	28.1		42.0		66.9		132.3		182.9	
495	D86	Automated	26.9		41.4		66.5		131.8		184.0	
496	D86	Automated	28.1		42.4		67.2		132.9		185.7	
511	D86	manual	31.5		45.5	R(0.01)	95.0	R(0.01)	133.5		182.0	
631	D86	Manual	30.6		43.4		69.0		139.7	C,R(0.01)	190.0	
862	D86	Automated	27.6		41.6		65.7	R(0.05)	132.4		179.7	
1026	ISO3405	Automated	27.2		41.5		66.6		132.2		179.5	
1033	IP123	Automated	28.0		41.3		66.6		132.4		183.8	
1040			-----		-----		-----		-----		-----	
1131	ISO3405	Automated	28.9		41.8		66.8		134.1		183.9	
1161	ISO3405	Automated	32.1		43.4		68.5		142.1	C,R(0.01)	182.2	
1201	ISO3405/D86	Automated	29.0		41.6		67.0		132.2		185.0	
1203	ISO3405	Automated	30.1		43.2		68.0		134.0		183.6	
1212	ISO3405	Automated	31.8		45.2	R(0.01)	68.6		133.0		185.3	
1259	ISO3405	Automated	29.8		42.5		67.7		134.4		186.8	
1300	ISO3405	Automated	28.8		40.3		66.7		134.1		183.5	
1346	ISO3405	Automated	27.4		43.0		67.6		133.5		181.1	
1409	D86	Automated	28.3		41.5		67.5		132.4		184.6	
1459	ISO3405	Automated	26.7		41.1		65.8	R(0.05)	133.0		179.4	
1538			-----		-----		-----		-----		-----	
1546	ISO3405	Manual	30.5		43.0		70.0	R(0.05)	144.5	R(0.01)	182.5	
1634	D86	Automated	26.4		41.4		68.3		135.0		183.4	
1656	ISO3405	Automated	28.9		42.1		67.3		134.4		189.9	
1706	ISO3405	Automated	26.2		42.85		68.6		133.9		184.2	
1776	ISO3405	Automated	26.7		41.8		66.1		132.6		181.6	
1810	D86	Manual	26.4		42.4		68.1		134.2		184.5	
1811	D86	Automated	29.4		42.7		67.0		133.3		184.5	
1951			-----		-----		-----		-----		-----	
2130	D86	Automated	30.2		41.9		67.9		133.7		185.9	C
2146	ISO3405	Automated	29.9	ex	43.2	ex	70.0	R(0.05)	151.8	R(0.01)	183.5	ex
	normality		OK		not OK		OK		OK		OK	
	n		45		43		41		42		45	
	outliers		0	+1 ex	2	+1 ex	5		4		0	+1 ex
	mean (n)		28.50		42.05		67.33		133.30		183.44	
	st.dev. (n)		1.705		0.751		0.734		0.870		2.512	
	R(calc.)		4.77		2.10		2.06		2.44		7.03	
	R(ISO3405:11)		4.74		3.20		1.88		3.67		6.78	

Lab 194 first reported, 50% evap: 70.0, 90% evap: 145.5

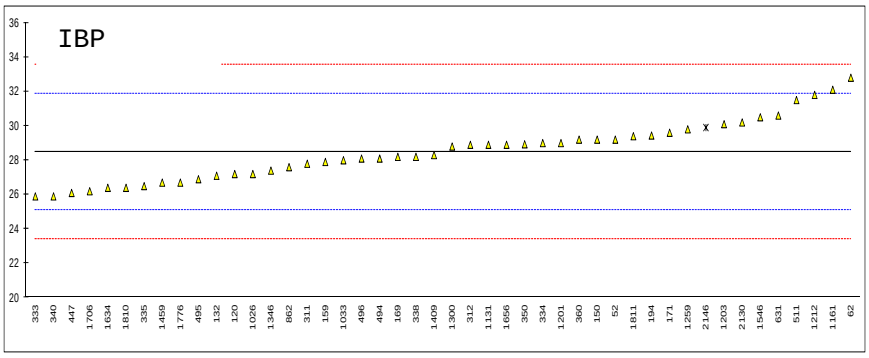
Lab 350 first reported: 137.36

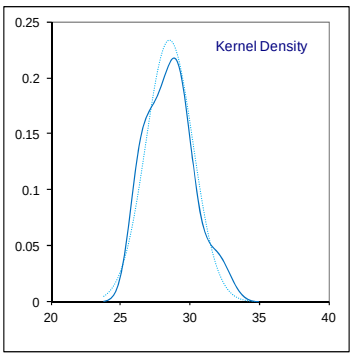
Lab 631 first reported: 137.9

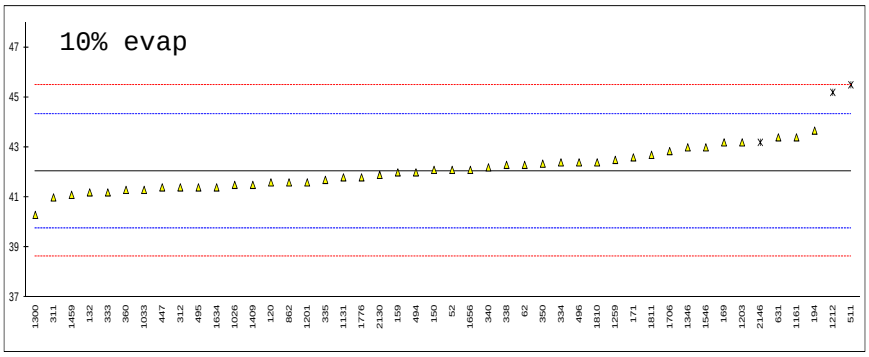
Lab 1161 first reported: 144.3

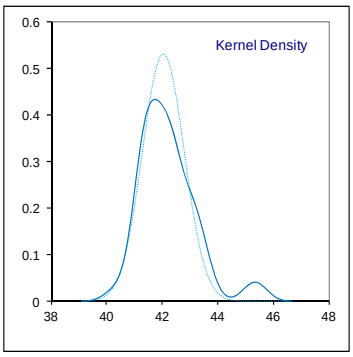
Lab 2130 first reported: 191.5

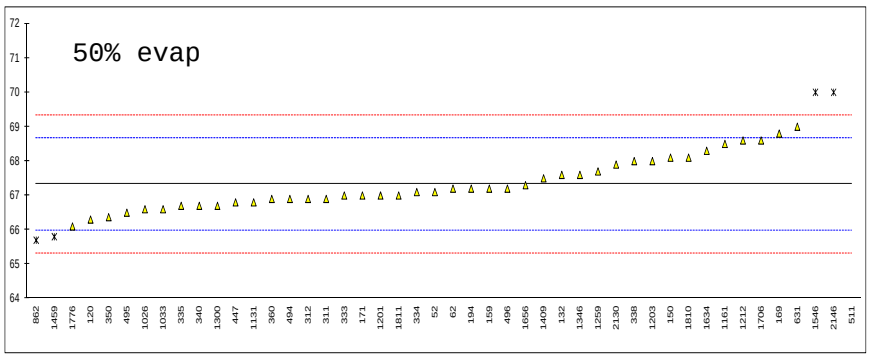
Lab 2146 excluded results for, IBP, 10% evap and FBP

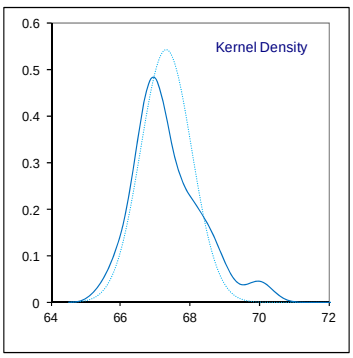

IBP

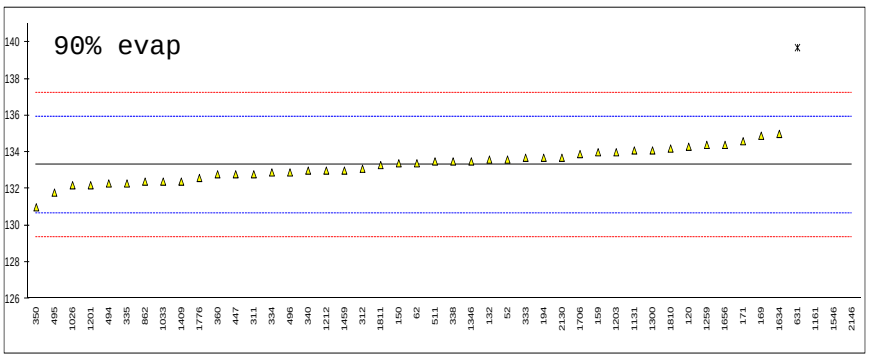

Kernel Density

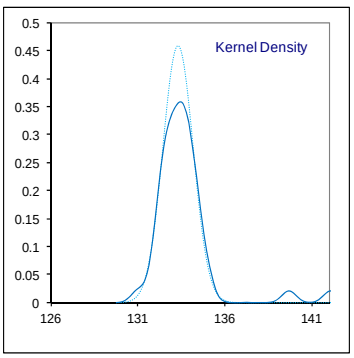

10% evap

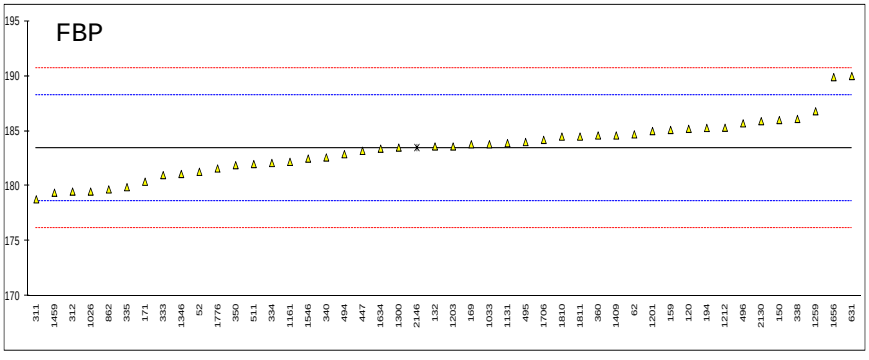

Kernel Density

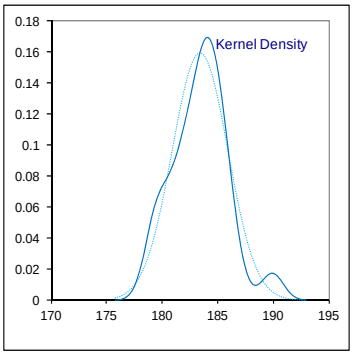

50% evap


Kernel Density


90% evap


Kernel Density


FBP


Kernel Density

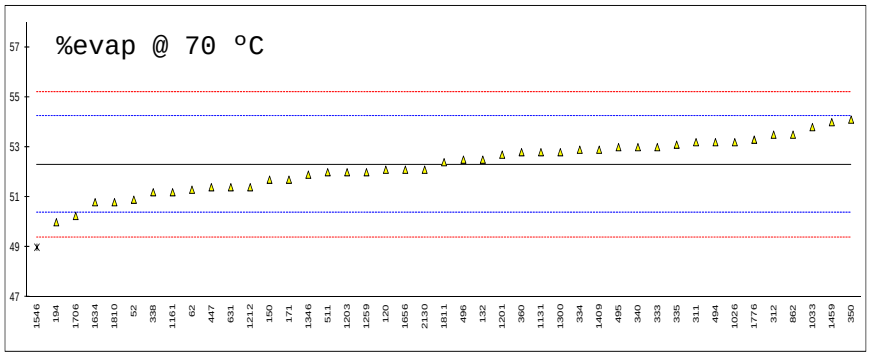
Determination of Distillation on sample #14060; results in %V/V

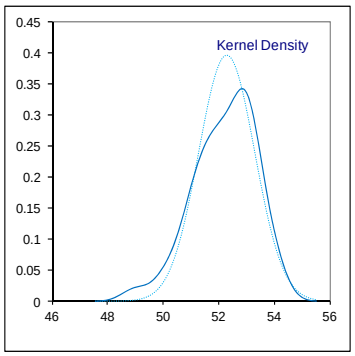
lab	Method	%vol@70°C	mark	%vol@100°C	mark	%vol@150°C	mark	residue	mark
52	D86	50.9		68		94		1.1	
62	D86	51.3		66.8		93.6		0.9	
120	D86	52.1		66.3		93.6		1.3	
132	D86	52.5		65.9		93.8		1.2	
150	ISO3405/D86	51.7		66.1		94.0		1.0	
159		-----		-----		-----		1.2	
169		-----		-----		-----		1.1	
171	D86	51.7		65.9		93.2		1.4	
193		-----		-----		-----		-----	
194	D86	50		66.91	C	93.69	C	1.0	
311	ISO3405	53.2		66.4		93.7		1.0	
312	D86	53.5		66.6		93.8		1.0	
333	D86	53.0		65.9		93.6		1.2	
334	D86	52.9		65.7		93.7		1.2	
335	ISO3405/D86	53.1		66.1		93.7		1	
337		-----		-----		-----		-----	
338	ISO3405	51.2		65.3	C	92.4		1.0	
340	ISO3405	53		66		93.4		1.0	
350	ISO3405	54.10		67.10		93.10		0.90	
360	ISO3405	52.8		66.4		93.5		1.0	
430		-----		-----		-----		-----	
447	IP123	51.4		67.1		93.9		1.2	
494	ISO3405/D86	53.2		66.8		93.9		0.8	
495	D86	53.0		66.9		93.9		0.6	
496	D86	52.5		66.0		93.5		1.1	
511	D86	52.0		63.0	R(0.05)	93.0		1.1	
631	D86	51.4		66.0		92.9		0.6	
862	D86	53.5		67.0		94.0		1.1	
1026	ISO3405	53.2		66.2		93.9		1.2	
1033	IP123	53.8		66.0		-----		1.0	
1040		-----		-----		-----		-----	
1131	ISO3405	52.8		66.0		93.3		1.0	
1161	ISO3405	51.2		63.0	C,R(0.05)	93.2	C	-----	
1201	ISO3405/D86	52.7		66.8		93.9		0.8	
1203	ISO3405	52.0		64.9		93.5		0.9	
1212	ISO3405	51.4		66.1		93.6		1.0	
1259	ISO3405	52.0		65.9		93.2		1.0	
1300	ISO3405	52.8		67.0		93.5		0.8	
1346	ISO3405	51.9		65.9		93.9		1.0	
1409	D86	52.9		66.6		94.1		0.6	
1459	ISO3405	54.0		66.7		93.9		1.0	
1538		-----		-----		-----		-----	
1546	ISO3405	49.0	R(0.05)	63.5	R(0.05)	90.5	R(0.01)	0.8	
1634	D86	50.8		67.0		93.4		1.1	
1656	ISO3405	52.1		65.4		93.8		1.1	
1706	ISO3405	50.25		64.6		92.3		0.95	
1776	ISO3405	53.3		66.6		93.7		1.0	
1810	D86	50.8		67.4		92.3		1.0	
1811	D86	52.4		66.3		93.5		1	
1951		-----		-----		-----		-----	
2130	D86	52.1		65.6		93.4		1.1	
2146		-----		62.2	R(0.05)	89.7	R(0.01)	5.0	
	normality	OK		OK		suspect			
	n	42		40		41			
	outliers	1		4		2			
	mean (n)	52.30		66.31		93.52			
	st.dev. (n)	1.007		0.673		0.445			
	R(calc.)	2.82		1.88		1.25			
	R(ISO3405:11)	2.70		2.20		1.30			

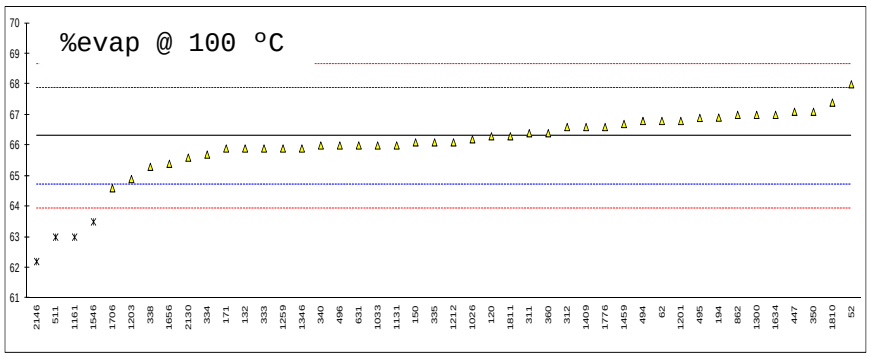
Lab 194 first reported, %vol @100: 63.93, %vol @150: 90.93

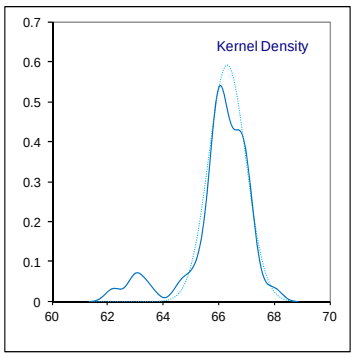
Lab 338 first reported: 64.2

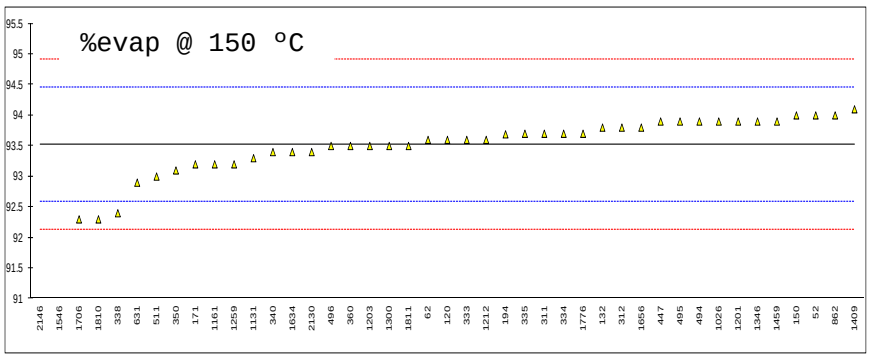
Lab 1161 first reported %vol @100: 64.2, %vol @150: 90.9

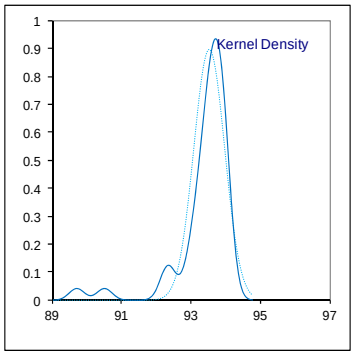

%evap @ 70 °C


Kernel Density


%evap @ 100 °C


Kernel Density


%evap @ 150 °C


Kernel Density

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Determination of Doctor test on sample #14060

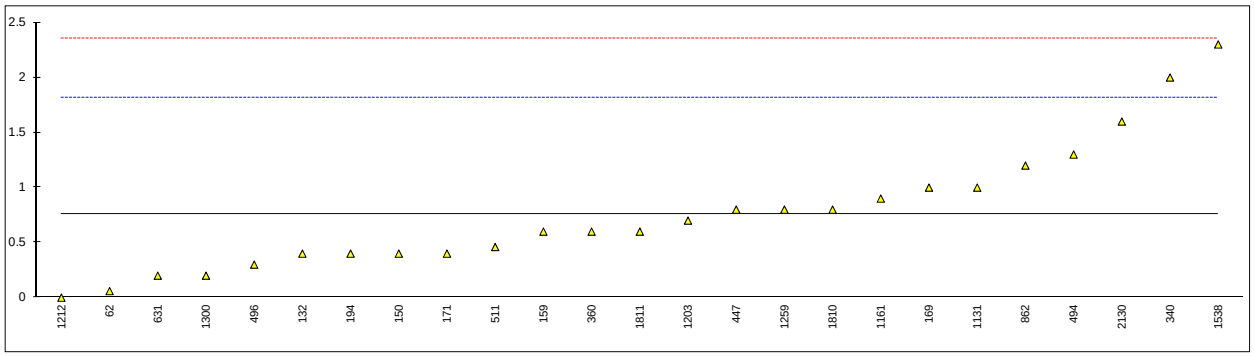
lab	method	value	mark	z(targ)	remarks
52	D4952	Negative		-----	
62		-----		-----	
120	D4952	Negative		-----	
132	D4952	Negative		-----	
150	D4952	Negative		-----	
159	D4952	Negative		-----	
169		-----		-----	
171	D4952	Negative		-----	
193		-----		-----	
194	D4952	Negative		-----	
311	D4952	Negative		-----	
312	IP30	Negative		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
337		-----		-----	
338		-----		-----	
340	D4952	Negative		-----	
350		-----		-----	
360	D4952	Negative		-----	
430		-----		-----	
447		-----		-----	
494	D4952	Negative		-----	
495	D4952	Negative		-----	
496		-----		-----	
511		-----		-----	
631		-----		-----	
862	D4952	Negative		-----	
1026	D4952	Negative		-----	
1033		-----		-----	
1040		-----		-----	
1131		-----		-----	
1161		-----		-----	
1201	D4952	Negative		-----	
1203	D4952	Negative		-----	
1212	D4952	Negative		-----	
1259	D4952	Negative		-----	
1300	D4952	Negative		-----	
1346		-----		-----	
1409		-----		-----	
1459		-----		-----	
1538		-----		-----	
1546		-----		-----	
1634		-----		-----	
1656	IP30	Negative		-----	
1706		-----		-----	
1776	D4952	Negative		-----	
1810		-----		-----	
1811	D4952	Negative		-----	
1951		-----		-----	
2130	IP30	Negative		-----	
2146		-----		-----	

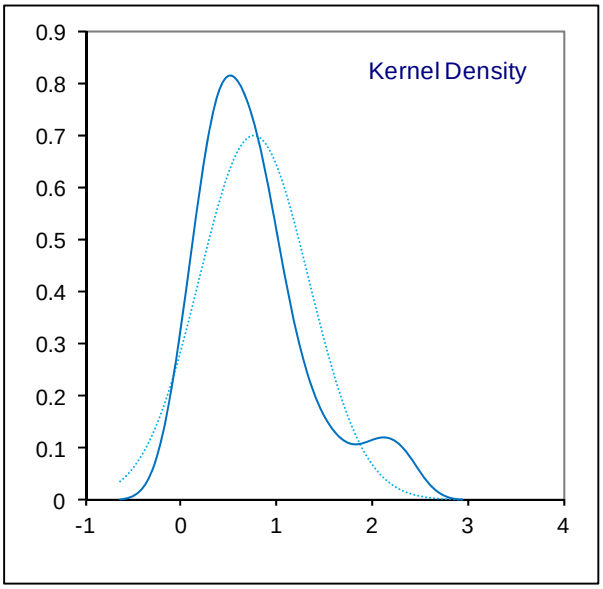
normality	n.a
n	24
outliers	n.a
mean (n)	negative
st.dev. (n)	n.a
R(calc.)	n.a
R(D4952:12)	n.a

Determination of Existent Gum (washed) on sample #14060; results in mg/100mL

lab	method	value	mark	z(targ)	remarks
52	D381	<0.5		-----	
62	D381	0.06		-1.32	
120	D381	<0.5		-----	
132	D381	0.4		-0.68	
150	ISO6246/D381	0.4		-0.68	
159	ISO6246/D381	0.6		-0.30	
169	D381	1.0		0.45	
171	D381	0.4		-0.68	
193		-----		-----	
194	D381	0.4		-0.68	
311	D381	<1		-----	
312	D381	<0.5		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
337		-----		-----	
338		-----		-----	
340	D381	2.0		2.34	
350		-----		-----	
360	ISO6246	0.60		-0.30	
430		-----		-----	
447	IP131	0.8		0.07	
494	ISO6246/D381	1.3		1.02	
495	ISO6246/D381	<1		-----	
496	ISO6246	0.3		-0.87	
511	D381	0.46		-0.57	
631	D381	0.2		-1.06	
862	D381	1.2		0.83	
1026	ISO6246	<0.5		-----	
1033	IP131	<0.1		-----	
1040		-----		-----	
1131	ISO6246	1.0		0.45	
1161	ISO6246	0.9		0.26	
1201	ISO6246/D381	<0.5		-----	
1203	ISO6246	0.7		-0.11	
1212	D381	0		-1.44	
1259	ISO6246	0.8		0.07	
1300	ISO6246	0.2		-1.06	
1346		-----		-----	
1409	D381	<1		-----	
1459		-----		-----	
1538	ISO6246	2.3		2.91	
1546		-----		-----	
1634		-----		-----	
1656	ISO6246	<1		-----	
1706		-----		-----	
1776		-----		-----	
1810	D381	0.8		0.07	
1811	D381	0.6		-0.30	
1951		-----		-----	
2130	D381	1.6		1.58	
2146		-----		-----	

normality	not OK
n	25
outliers	0
mean (n)	0.76
st.dev. (n)	0.571
R(calc.)	1.60
R(ISO6246:95)	1.48


2.5
2
1.5
1
0.5
0
1212
62
631
1300
496
132
194
150
171
511
159
360
1811
1203
447
1259
1810
1161
169
1131
862
494
2130
340
1538


Kernel Density
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-1
0
1
2
3
4

Determination of Lead as Pb on sample #14060; results in mg/L

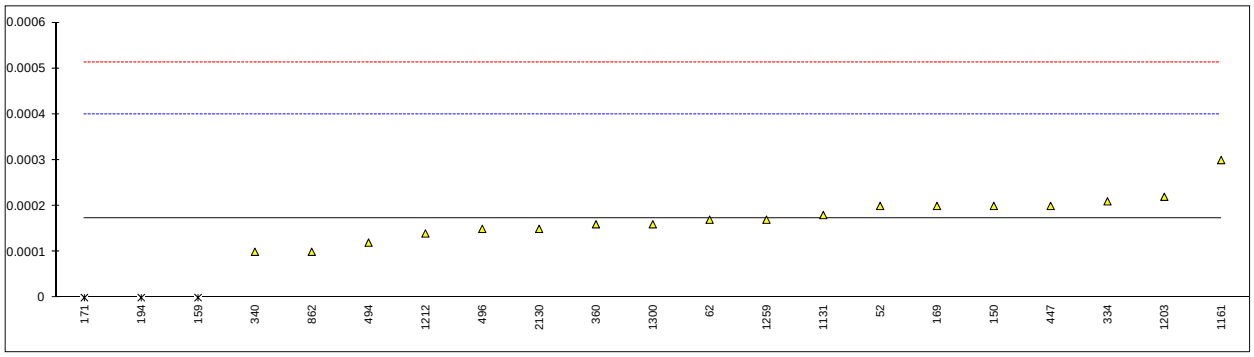
lab	method	value	mark	z(targ)	remarks
52	D3237	<2.5		-----	
62	D3237	<0.1		-----	
120		-----		-----	
132	D3237	<2.5		-----	
150	EN237/D3237	<2.5		-----	
159		-----		-----	
169		-----		-----	
171		-----		-----	
193		-----		-----	
194		-----		-----	
311		-----		-----	
312	EN237	<2.5		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
350		-----		-----	
360	in house	<2.5		-----	
430		-----		-----	
447	IP428	<2.5		-----	
494		-----		-----	
495	EN237	<2,5		-----	
496	EN237	<2.5		-----	
511	D3237	<2.5		-----	
631	D3237	<0.0025		-----	probably unit error?
862	D3237	<2.5		-----	
1026	D3237	<1		-----	
1033		-----		-----	
1040		-----		-----	
1131	EN237	<2.5		-----	
1161	EN237	<5		-----	
1201	EN237/D3237	<1		-----	
1203	EN237	<1.0		-----	
1212	D3237	<0.1		-----	
1259	EN237	<2.5		-----	
1300	EN237	<2.5		-----	
1346		-----		-----	
1409	D3237	<2.5		-----	
1459	in house	< 5		-----	
1538	EN237	<2.5		-----	
1546		-----		-----	
1634		-----		-----	
1656	EN237	<2.5		-----	
1706		-----		-----	
1776		-----		-----	
1810		-----		-----	
1811		-----		-----	
1951		-----		-----	
2130	IP352	<1		-----	
2146	ISO8754	0.4		-----	
	normality	n.a			
	n	24			
	outliers	n.a			
	mean (n)	<2.5			
	st.dev. (n)	n.a			
	R(calc.)	n.a			
	R(EN237:04)	n.a			

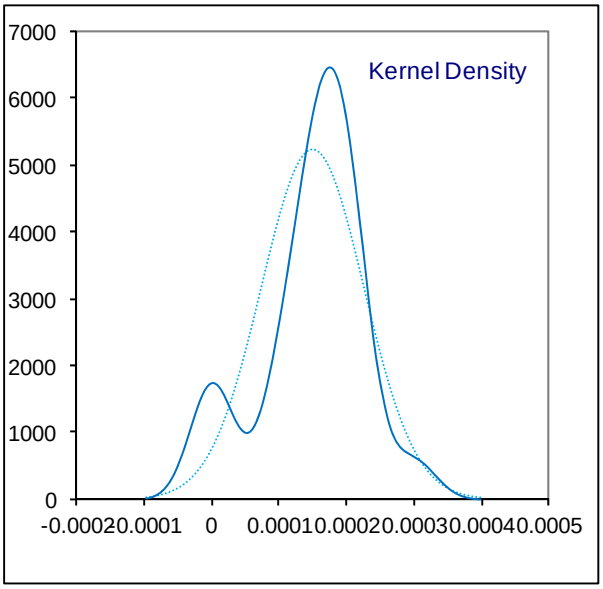
Determination of Manganese as Mn on sample #14060; results in mg/L

lab	method	value	mark	z(targ)	remarks
52	D3831	<0.25		-----	
62	D3831	<0.3		-----	
120		-----		-----	
132		-----		-----	
150		-----		-----	
159		-----		-----	
169		-----		-----	
171		-----		-----	
193		-----		-----	
194		-----		-----	
311		-----		-----	
312	EN16136	<0.5		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
350		-----		-----	
360	EN16136	<2.0		-----	
430		-----		-----	
447	EN16135	<2.0		-----	
494		-----		-----	
495	EN16135	<0.5		-----	
496	EN16126	<2		-----	
511		-----		-----	
631	D3831	<0.25		-----	
862	D3831	<0.25		-----	
1026		-----		-----	
1033		-----		-----	
1040		-----		-----	
1131	EN16135	<2.0		-----	
1161	D3831	0.25		-----	
1201		<1		-----	
1203	EN16136	<0.5		-----	
1212		-----		-----	
1259		-----		-----	
1300	EN16135	<2.0		-----	
1346		-----		-----	
1409	EN16135	<2.0		-----	
1459		-----		-----	
1538	EN16135	<2		-----	
1546		-----		-----	
1634		-----		-----	
1656	EN16135	<2		-----	
1706		-----		-----	
1776		-----		-----	
1810		-----		-----	
1811		-----		-----	
1951		-----		-----	
2130		-----		-----	
2146		-----		-----	
	normality	n.a			
	n	17			
	outliers	n.a			
	mean (n)	<2			
	st.dev. (n)	n.a			
	R(calc.)	n.a			
	R(D3831:12)	n.a			

Determination of Mercaptans as S on sample #14060; results in %M/M

lab	method	value	mark	z(targ)	remarks
52	D3227	0.0002		0.23	
62	D3227	0.00017		-0.03	
120	D3227	<0.0003		-----	
132	D3227	<0.0003		-----	
150	D3227	0.0002		0.23	
159	D3227	0	ex	-1.54	result excluded, zero is not a real value
169	D3227	0.0002		0.23	
171	D3227	0.0000	G(0.05)	-1.54	
193		-----		-----	result excluded, zero is not a real value
194	D3227	0	ex	-1.54	
311	D3227	<0.0003		-----	
312	D3227	<0.0003		-----	
333		-----		-----	
334	D3227	0.00021		0.32	
335		-----		-----	
337		-----		-----	
338		-----		-----	
340	D3227	0.0001		-0.65	
350		-----		-----	
360	D3227	0.00016		-0.12	
430		-----		-----	
447	D3227	0.0002		0.23	
494	D3227	0.00012		-0.48	
495	D3227	<0,0003		-----	
496	D3227	0.00015		-0.21	
511		-----		-----	
631		-----		-----	
862	D3227	0.0001		-0.65	
1026		-----		-----	
1033		-----		-----	
1040		-----		-----	
1131	D3227	0.00018		0.05	
1161	ISO3012	0.0003		1.11	
1201	UOP163	<0.0003		-----	
1203	D3227	0.00022		0.41	
1212	D3227	0.00014		-0.30	
1259	D3227	0.00017		-0.03	
1300	UOP163	0.00016		-0.12	
1346		-----		-----	
1409		-----		-----	
1459		-----		-----	
1538		-----		-----	
1546		-----		-----	
1634		-----		-----	
1656	IP342	<0.0001		-----	
1706		-----		-----	
1776		-----		-----	
1810		-----		-----	
1811		-----		-----	
1951		-----		-----	
2130	D3227	0.00015		-0.21	
2146		-----		-----	
	normality	suspect			
	n	18			
	outliers	1 + 2 excl			
	mean (n)	0.000174			
	st.dev. (n)	0.0000477			
	R(calc.)	0.000133			
	R(D3227:13)	0.000317			application range: 0.0003 – 0.01% M/M

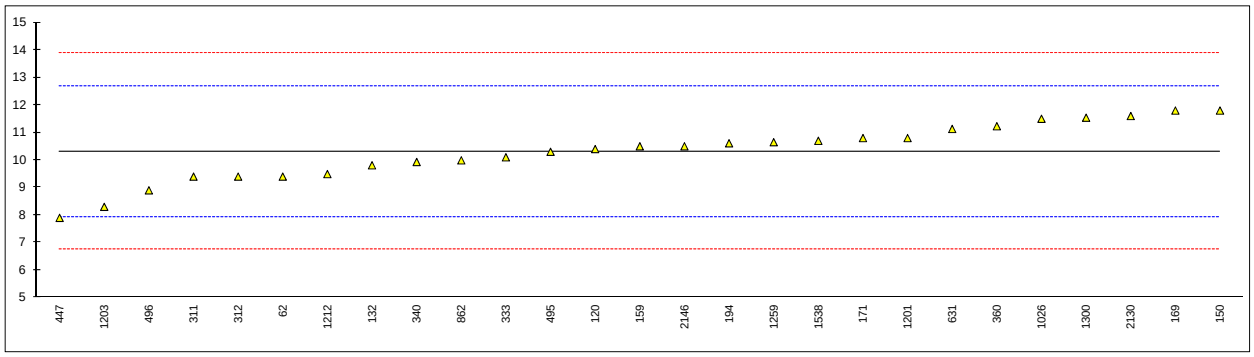

0.0006
0.0005
0.0004
0.0003
0.0002
0.0001
0
171
194
159
340
862
494
1212
496
2130
360
1300
62
1259
1131
52
169
150
447
334
1203
1161

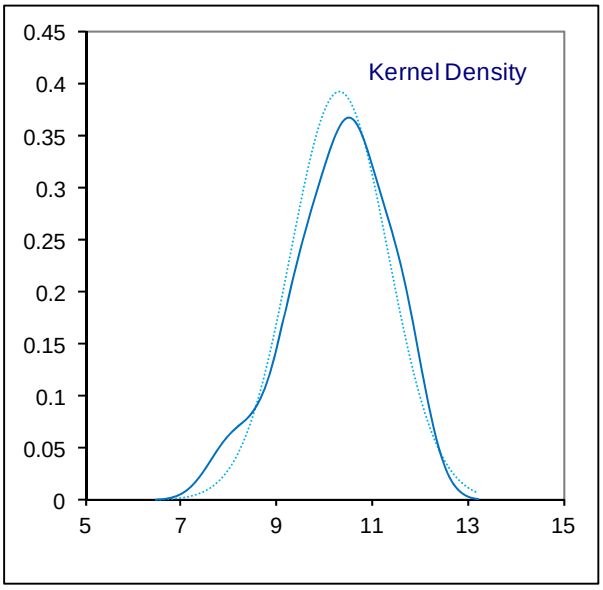

Kernel Density
7000
6000
5000
4000
3000
2000
1000
0
-0.0002
0.0001
0
0.0001
0.0002
0.0003
0.0004
0.0005

Determination of Olefins by FIA on sample #14060; results in %V/V

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62	D1319	9.4		-0.75	
120	D1319	10.4		0.09	
132	D1319	9.81		-0.41	
150	D1319/EN15553	11.8		1.27	
159	D1319	10.5		0.17	
169	D1319	11.8		1.27	
171	D1319	10.8		0.42	
193		-----		-----	
194	D1319	10.61		0.26	
311	D1319	9.4		-0.75	
312	D1319	9.4		-0.75	
333	D1319	10.1		-0.16	
334		-----		-----	
335		-----		-----	
337		-----		-----	
338		-----		-----	
340	D1319	9.93		-0.31	
350		-----		-----	
360	EN15553	11.23		0.79	
430		-----		-----	
447	D1319	7.9		-2.02	
494		-----		-----	
495	D1319	10.3		0.00	
496	EN15553	8.90		-1.17	
511		-----		-----	
631	D1319	11.13		0.70	
862	D1319	9.99		-0.26	
1026	D6729	11.5		1.01	
1033		-----		-----	
1040		-----		-----	
1131		-----		-----	
1161		-----		-----	
1201	ISO22854	10.8		0.42	
1203	D1319	8.3		-1.68	
1212	D1319	9.49	C	-0.68	first reported: 22.55
1259	D1319	10.65		0.30	
1300	EN15553	11.54		1.05	
1346		-----		-----	
1409		-----		-----	
1459		-----		-----	
1538	EN15553	10.2		-0.08	
1546		-----		-----	
1634		-----		-----	
1656		-----		-----	
1706		-----		-----	
1776		-----		-----	
1810		-----		-----	
1811		-----		-----	
1951		-----		-----	
2130	D1319	11.6		1.10	
2146	D1319	10.5		0.17	

normality	OK
n	27
outliers	0
mean (n)	10.30
st.dev. (n)	1.016
R(calc.)	2.85
R(D1319:13)	3.33

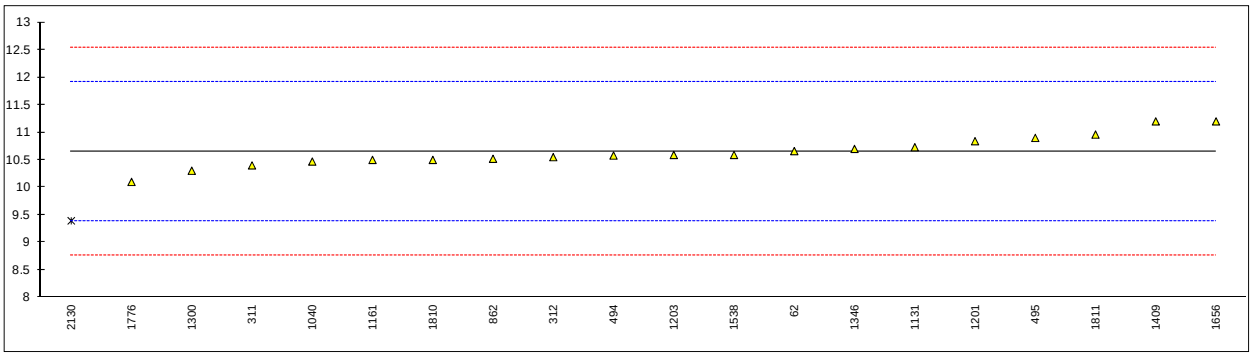

15
14
13
12
11
10
9
8
7
6
5
447
1203
496
311
312
62
1212
132
340
862
333
495
120
159
2146
194
1259
1538
171
1201
631
360
1026
1300
2130
169
150

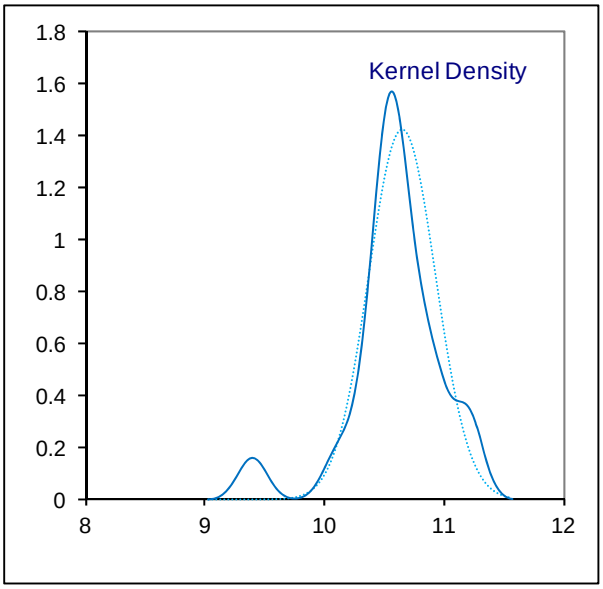

Kernel Density
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
5
7
9
11
13
15

Determination of Olefins by GC on sample #14060; results in %V/V

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62	INH-14.3	10.66		0.02	
120		-----		-----	
132		-----		-----	
150		-----		-----	
159		-----		-----	
169		-----		-----	
171		-----		-----	
193		-----		-----	
194		-----		-----	
311	ISO22854	10.4		-0.39	
312	ISO22854	10.55		-0.15	
333		-----		-----	
334		-----		-----	
335		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
350		-----		-----	
360		-----		-----	
430		-----		-----	
447		-----		-----	
494	ISO22854	10.58		-0.11	
495	ISO22854	10.9		0.40	
496		-----		-----	
511		-----		-----	
631		-----		-----	
862	D4815	10.52		-0.20	
1026		-----		-----	
1033		-----		-----	
1040	ISO22854	10.47		-0.28	
1131	ISO22854	10.73		0.13	
1161	ISO22854	10.5		-0.23	
1201	ISO22854	10.84	C	0.31	first reported: 18.84
1203	ISO22854	10.59		-0.09	
1212		-----		-----	
1259		-----		-----	
1300	ISO22854	10.303		-0.55	
1346	ISO22854	10.7		0.08	
1409	ISO22854	11.2		0.88	
1459		-----		-----	
1538	ISO22854	10.59		-0.09	
1546		-----		-----	
1634		-----		-----	
1656	ISO22854	11.2		0.88	
1706		-----		-----	
1776	ISO22854	10.10		-0.87	
1810	ISO22854	10.50		-0.23	
1811	ISO22854	10.96		0.50	
1951		-----		-----	
2130	D6730	9.393	R(0.01)	-1.99	
2146		-----		-----	

normality	OK
n	19
outliers	1
mean (n)	10.647
st.dev. (n)	0.2799
R(calc.)	0.784
R(ISO22854:14)	1.764

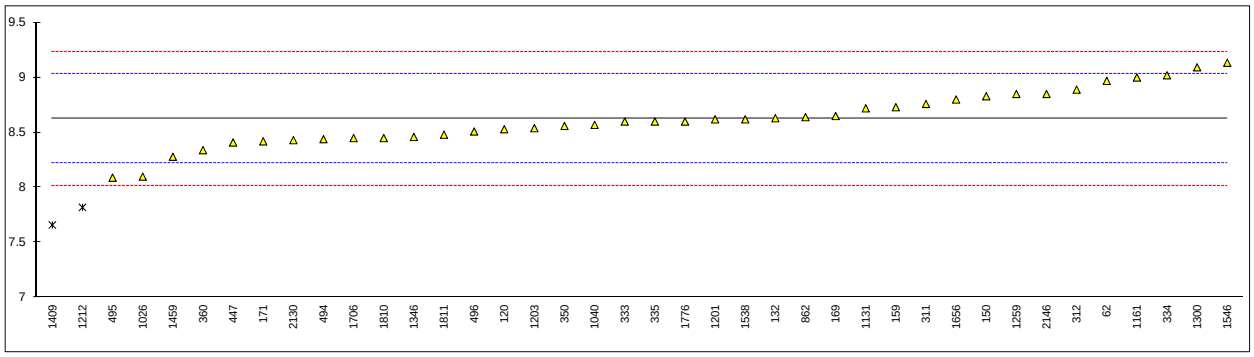

13
12.5
12
11.5
11
10.5
10
9.5
9
8.5
8
2130
1776
1300
311
1040
1161
1810
862
312
494
1203
1538
62
1346
1131
1201
495
1811
1409
1656

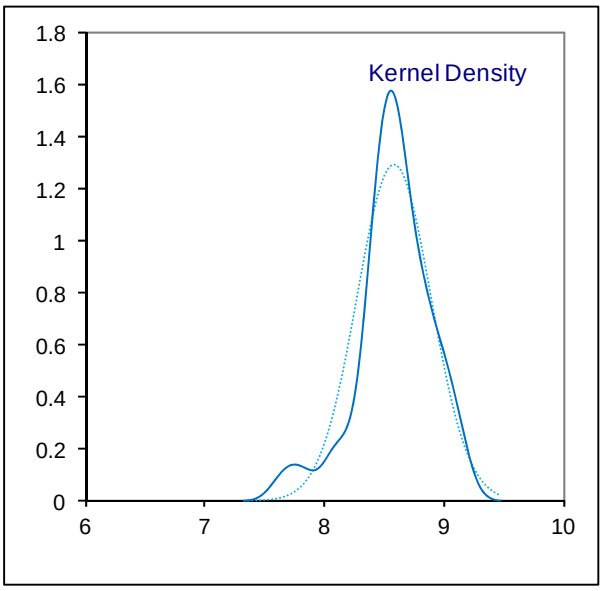

Kernel Density
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
8
9
10
11
12

Determination of Ethanol on sample #14060; results in %V/V

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62	INH-14.3	8.97		1.71	
120	D5599	8.53		-0.46	
132	D5599	8.63		0.04	
150	D5599	8.83		1.02	
159	D5599	8.73		0.53	
169	D4815	8.65		0.13	
171	D4815	8.42		-1.00	
193		-----		-----	
194		-----		-----	
311	ISO22854	8.76		0.68	
312	ISO22854	8.89		1.32	
333	EN13132	8.6		-0.11	
334	EN1601	9.02		1.96	
335	ISO22854	8.6	C	-0.11	first reported: 7.6
337		-----		-----	
338		-----		-----	
340		-----		-----	
350	EN13132	8.56		-0.31	
360	EN13132	8.34		-1.39	
430		-----		-----	
447	EN13132	8.41		-1.05	
494	ISO22854	8.44		-0.90	
495	ISO22854	8.09		-2.63	
496	EN1601	8.51		-0.56	
511		-----		-----	
631		-----		-----	
862	D4815	8.64		0.08	
1026	EN13132	8.1		-2.58	
1033		-----		-----	
1040	ISO22854	8.57		-0.26	
1131	ISO22854	8.72		0.48	
1161	ISO22854	9.0		1.86	
1201	ISO22854	8.62		-0.01	
1203	ISO22854	8.54		-0.41	
1212	D4815	7.82	DG(0.05)	-3.96	
1259	EN13132	8.85		1.12	
1300	ISO22854	9.093		2.32	
1346	ISO22854	8.46		-0.80	
1409	ISO22854	7.66	DG(0.05)	-4.75	
1459	in house	8.28		-1.69	
1538	ISO22854	8.62		-0.01	
1546	EN1601	9.134		2.52	
1634		-----		-----	
1656	ISO22854	8.8		0.87	
1706	EN13132	8.45		-0.85	
1776	ISO22854	8.60		-0.11	
1810	ISO22854	8.45		-0.85	
1811	ISO22854	8.48		-0.70	
1951		-----		-----	
2130	D6730	8.431		-0.95	
2146	EN13132	8.85		1.12	

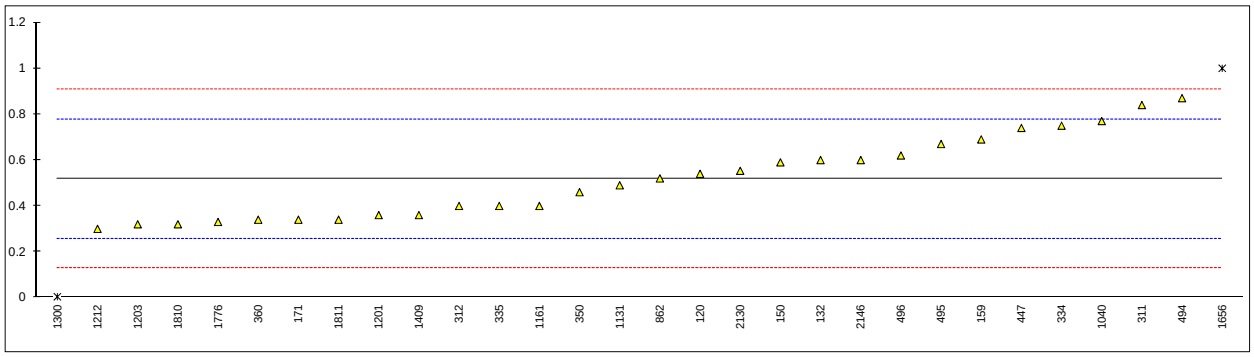
Normality	OK
N	38
Outliers	2
mean (n)	8.623
st.dev. (n)	0.2464
R(calc.)	0.690
R(ISO22854:14)	0.568

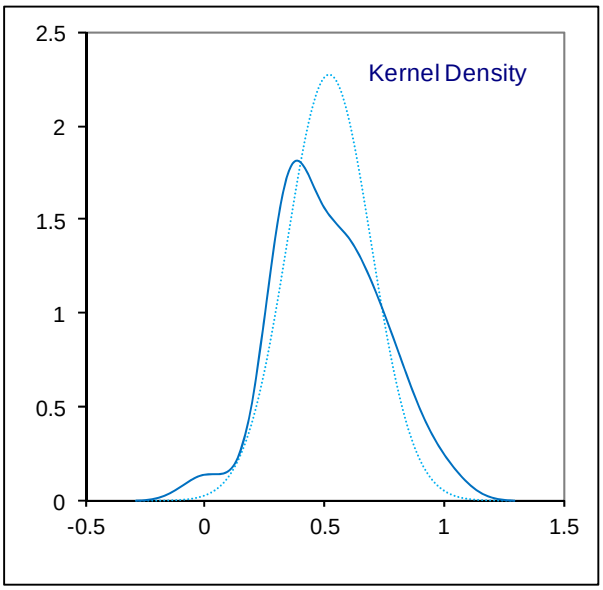

9.5
9
8.5
8
7.5
7
1409
1212
495
1026
1459
360
447
171
2130
494
1706
1810
1346
1811
496
120
1203
350
1040
333
335
1776
1201
1538
132
862
169
1131
159
311
1656
150
1259
2146
312
62
1161
334
1300
1546


Kernel Density
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
6
7
8
9
10

Determination of Methanol on sample #14060; results in %V/V

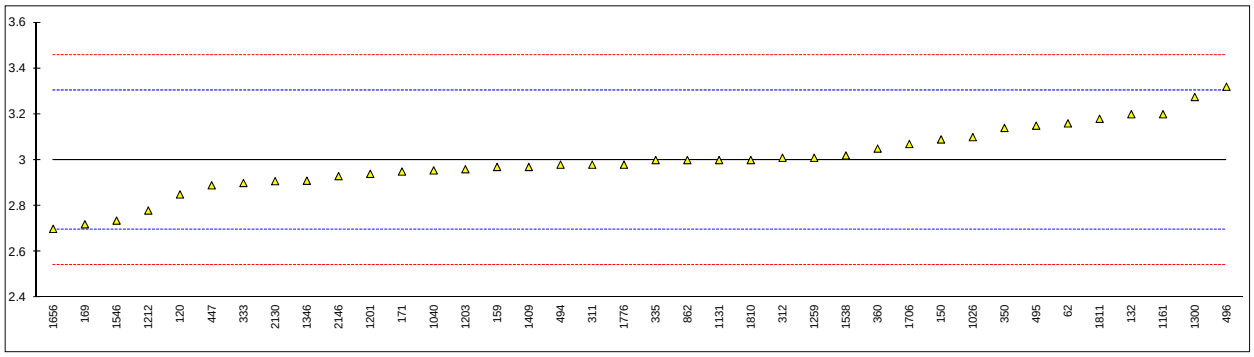
lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62		-----		-----	
120	D5599	0.54		0.17	
132	D5599	0.60		0.63	
150	D5599	0.59		0.55	
159	D5599	0.69		1.32	
169		-----		-----	
171	D4815	0.34		-1.37	
193		-----		-----	
194		-----		-----	
311	ISO22854	0.84		2.47	
312	ISO22854	0.40		-0.91	
333		-----		-----	
334	EN1601	0.75		1.78	
335	ISO22854	0.4		-0.91	
337		-----		-----	
338		-----		-----	
340		-----		-----	
350	EN13132	0.46		-0.45	
360	EN13132	0.34		-1.37	
430		-----		-----	
447	EN13132	0.74		1.70	
494	ISO22854	0.87		2.70	
495	ISO22854	0.67		1.17	
496	EN1601	0.62		0.78	
511		-----		-----	
631		-----		-----	
862	D4815	0.52		0.01	
1026	EN13132	<0.1		<-3.21	False negative?
1033		-----		-----	
1040	ISO22854	0.77		1.93	
1131	ISO22854	0.49		-0.22	
1161	ISO22854	0.4	C	-0.91	first reported: <0.2
1201	ISO22854	0.36	C	-1.22	first reported:<0.17
1203	ISO22854	0.32		-1.52	
1212	D4815	0.30		-1.68	
1259		-----		-----	
1300	ISO22854	0.0040	C,R(0.05)	-3.95	first reported: 0.0366
1346		-----		-----	
1409	ISO22854	0.36		-1.22	
1459		-----		-----	
1538		-----		-----	
1546		-----		-----	
1634		-----		-----	
1656	ISO22854	1.0	R(0.05)	3.70	
1706		-----		-----	
1776	ISO22854	0.33		-1.45	
1810		0.32		-1.52	
1811	ISO22854	0.34		-1.37	
1951		-----		-----	
2130	D6730	0.553		0.27	
2146	EN13132	0.60		0.63	
	normality	OK			
	n	28			
	outliers	2			
	mean (n)	0.518			
	st.dev. (n)	0.1753			
	R(calc.)	0.491			Application range EN13132 :0.17% - 15%V/V R = 0.1
	R(ISO22854:14)	0.364			Application range ISO22854 : 0.8% - 15% V/V

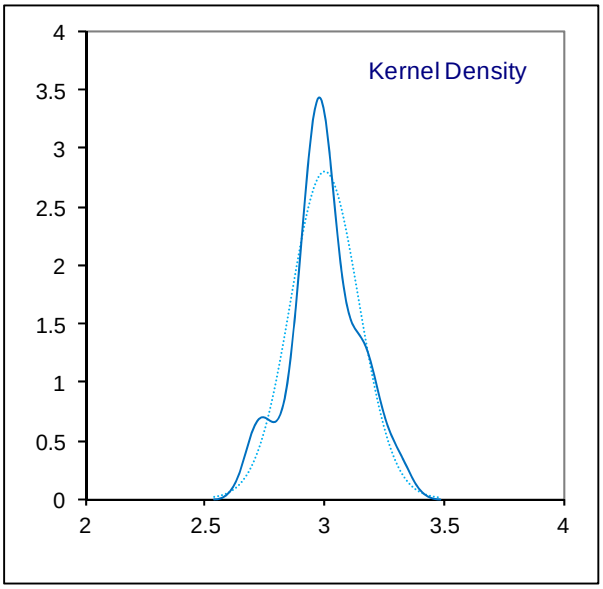

1.2
1
0.8
0.6
0.4
0.2
0
1300
1212
1203
1810
1776
360
171
1811
1201
1409
312
335
1161
350
1131
862
120
2130
150
132
2146
496
495
159
447
334
1040
311
494
1656


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

Determination of MTBE on sample #14060; results in %V/V

lab	Method	value	mark	z(targ)	remarks
52		-----		-----	
62	INH-14.3	3.16	C	1.05	first reported:4.16
120	D5599	2.85		-0.98	
132	D5599	3.20		1.31	
150	D5599	3.09		0.59	
159	D5599	2.97		-0.19	
169	D4815	2.72		-1.83	
171	D4815	2.95		-0.33	
193		-----		-----	
194		-----		-----	
311	ISO22854	2.98		-0.13	
312	ISO22854	3.01		0.07	
333	EN13132	2.9		-0.65	
334	EN1601	<0.17		<-18.05	false negative result?
335	ISO22854	3.0		0.00	
337		-----		-----	
338		-----		-----	
340		-----		-----	
350	EN13132	3.14		0.92	
360	EN13132	3.05		0.33	
430		-----		-----	
447	EN13132	2.89		-0.72	
494	ISO22854	2.98		-0.13	
495	ISO22854	3.15		0.99	
496	EN1601	3.32		2.10	
511		-----		-----	
631		-----		-----	
862	D4815	3.00		0.00	
1026	EN13132	3.1		0.66	
1033		-----		-----	
1040	ISO22854	2.955		-0.29	
1131	ISO22854	3.00		0.00	
1161	ISO22854	3.2		1.31	
1201	ISO22854	2.94		-0.39	
1203	ISO22854	2.96		-0.26	
1212	D4815	2.78		-1.44	
1259	EN13132	3.01		0.07	
1300	ISO22854	3.275		1.81	
1346	ISO22854	2.91		-0.59	
1409	ISO22854	2.97		-0.19	
1459		-----		-----	
1538	ISO22854	3.02		0.13	
1546	EN1601	2.736		-1.73	
1634		-----		-----	
1656	ISO22854	2.7		-1.97	
1706	EN13132	3.07		0.46	
1776	ISO22854	2.98		-0.13	
1810	ISO22854	3.00		0.00	
1811	ISO22854	3.18		1.18	
1951		-----		-----	
2130	D6730	2.908		-0.60	
2146	EN13132	2.93		-0.46	
	normality	OK			
	n	38			
	Outliers	0			
	mean (n)	3.000			
	st.dev. (n)	0.1423			
	R(calc.)	0.399			
	R(ISO22854:14)	0.427			Compare R(EN13132) = 0.300


3.6
3.4
3.2
3
2.8
2.6
2.4
1656 169 1546 1212 120 447 333 2130 1346 2146 1201 171 1040 1203 159 1409 494 311 1776 335 862 1131 1810 312 1259 1538 360 1706 150 1026 350 495 62 1811 132 1161 1300 496


Kernel Density
4
3.5
3
2.5
2
1.5
1
0.5
0
2
2.5
3
3.5
4

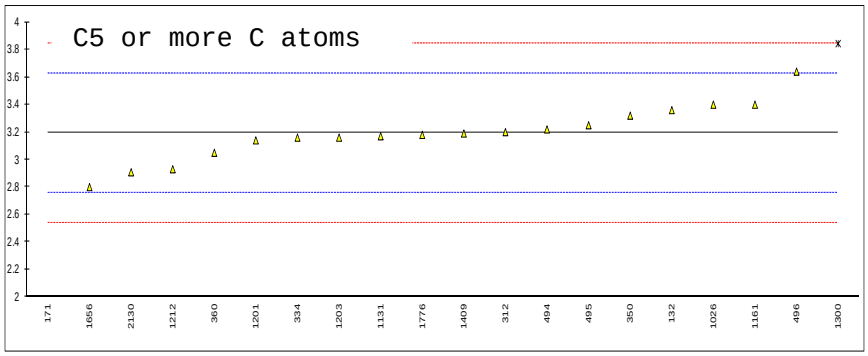
Determination of Ethers (C5 or more C atoms, C5 and >C5) on sample #14060; results in %V/V

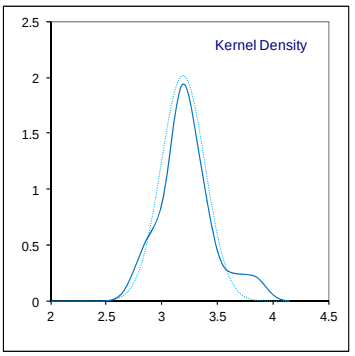
lab	Method	C5 or more C	mark	z(targ)	Ethers C5	mark	z(targ)	Ethers >C5	mark	z(targ)
52		-----		-----	-----		-----	-----		-----
62		-----		-----	-----		-----	-----		-----
120	D5599	<0.01	false -?	<-14.61	<0.01	false -?	<-18,74	<0.01		<-1.17
132	D5599	3.36		0.76	3.20		1.18	0.16		-0.06
150		-----		-----	-----		-----	-----		-----
159		-----		-----	2.97		-0.33	0.27		0.80
169		-----		-----	-----		-----	-----		-----
171	D4815	0.00	G(0.01)	-14.65	0.00	G(0.01)	-19.79	0.00		-1.32
193		-----		-----	-----		-----	-----		-----
194		-----		-----	-----		-----	-----		-----
311		-----		-----	2.98		-0.26	0.17		0.01
312	ISO22854	3.20		0.03	3.01		-0.06	0.21		0.33
333		-----		-----	-----		-----	-----		-----
334	EN1601	3.16		-0.15	-----		-----	-----		-----
335		-----		-----	3.0	C	-0.13	-----	C	-----
337		-----		-----	-----		-----	-----		-----
338		-----		-----	-----		-----	-----		-----
340		-----		-----	-----		-----	-----		-----
350	EN13132	3.32		0.58	-----		-----	-----		-----
360	EN13132	3.05		-0.66	3.05		0.20	-----		-----
430		-----		-----	-----		-----	-----		-----
447		-----		-----	-----		-----	-----		-----
494	ISO22854	3.22		0.12	2.98		-0.26	0.21		0.33
495	ISO22854	3.25		0.26	3.15		0.85	0.10		-0.54
496	EN1601	3.64		2.05	3.32		1.97	0.32		1.20
511		-----		-----	-----		-----	-----		-----
631		-----		-----	-----		-----	-----		-----
862		-----		-----	-----		-----	-----		-----
1026	EN13132	3.4		0.95	-----		-----	-----		-----
1033		-----		-----	-----		-----	-----		-----
1040		-----		-----	-----		-----	-----		-----
1131	ISO22854	3.17		-0.11	3.00		-0.13	0.17		0.01
1161	ISO22854	3.4	C	0.95	3.2	C	1.18	<0.2		-----
1201	ISO22854	3.14		-0.24	2.94		-0.52	0.20		0.25
1203	ISO22854	3.16		-0.15	2.96		-0.39	0.20		0.25
1212	D4815	2.93		-1.21	2.78		-1.57	0.15		-0.14
1259		-----		-----	-----		-----	-----		-----
1300	ISO22854	3.8438	C,G(0.05)	2.98	3.275		1.67	0.5688	C,G(0.01)	3.15
1346		-----		-----	-----		-----	-----		-----
1409	ISO22854	3.19		-0.01	2.97		-0.33	0.23		0.49
1459		-----		-----	-----		-----	-----		-----
1538		-----		-----	-----		-----	-----		-----
1546		-----		-----	-----		-----	-----		-----
1634		-----		-----	-----		-----	-----		-----
1656	ISO22854	2.8		-1.80	2.7		-2.09	0.1		-0.54
1706		-----		-----	-----		-----	-----		-----
1776	ISO22854	3.18		-0.06	2.98		-0.26	0.20		0.25
1810		-----		-----	-----		-----	-----		-----
1811		-----		-----	-----		-----	-----		-----
1951		-----		-----	-----		-----	-----		-----
2130	D6730	2.908		-1.31	2.908		-0.73	0.0		-1.32
2146		-----		-----	-----		-----	-----		-----
	normality	OK			OK			OK		
	n	18			19			16		
	Outliers	2			1			1		
	mean (n)	3.193			3.020			0.168		
	st.dev. (n)	0.1977			0.1547			0.0857		
	R(calc.)	0.554			0.433			0.240		
	R(ISO22854:14)	0.610			0.427			0.356		

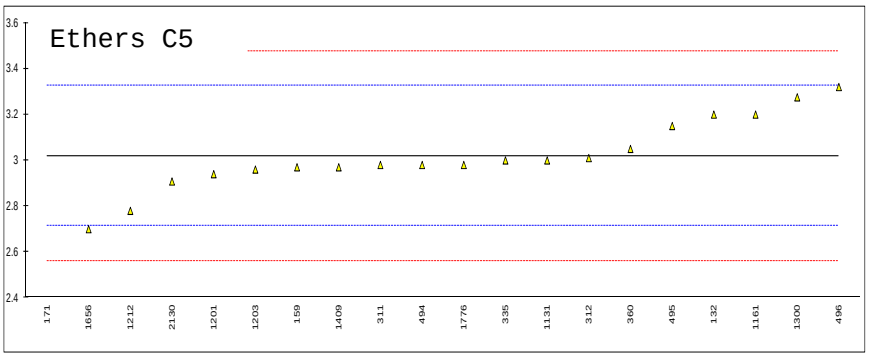
Lab 335 Reported: 3.0 in wrong column, reported first as “Ethers >C5” should be “Ethers C5“

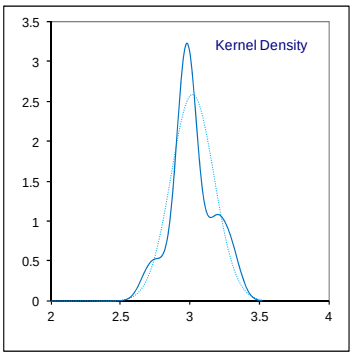
Lab 1161 first reported: “C5 or more” <0.2, Ethers C5: <0.2

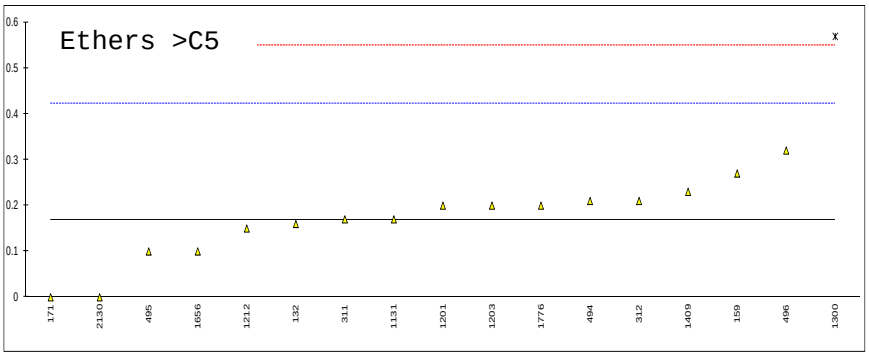
Lab 1300 first reported: “C5 or more” 4.053, Ethers >C5: 0.7772

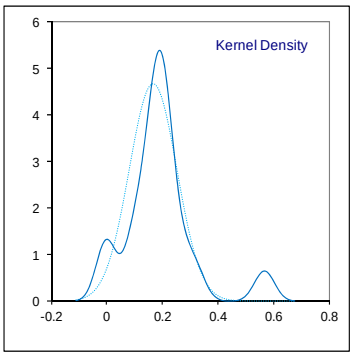

C5 or more C atoms
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
2.2
2
171 1656 2130 1212 360 1201 334 1203 1131 1776 1409 312 494 495 350 132 1026 1161 496 1300


Kernel Density
2.5
2
1.5
1
0.5
0
2 2.5 3 3.5 4 4.5


Ethers C5
3.6
3.4
3.2
3
2.8
2.6
2.4
171 1656 1212 2130 1201 1203 159 1409 311 494 1776 335 1131 312 360 495 132 1161 1300 496


Kernel Density
3.5
3
2.5
2
1.5
1
0.5
0
2 2.5 3 3.5 4


Ethers >C5
0.6
0.5
0.4
0.3
0.2
0.1
0
171 2130 495 1656 1212 132 311 1131 1201 1203 1776 494 312 1409 159 496 1300


Kernel Density
6
5
4
3
2
1
0
-0.2 0 0.2 0.4 0.6 0.8

Determination of Oxygenates on sample #14060; results in %V/V

lab	Method	DIPE	mark	ETBE	mark	i-BuOH	mark	IPA	mark	TAME	mark	t-BuOH	mark
52		-----		-----		-----		-----		-----		-----	
62		-----		-----		-----		-----		-----		-----	
120	D5599	<0.01		<0.01		0.11		<0.01		<0.01		<0.01	
132	D5599	<0.10		0.16		<0.10		<0.10		<0.10		<0.10	
150	D5599	0		0.20		<0.01		<0.01		<0.01		<0.01	
159		-----		0.27		-----		-----		-----		-----	
169		-----		-----		-----		-----		-----		-----	
171	D4815	0.00		0.20		0.00		0.00		0.00		0.00	
193		-----		-----		-----		-----		-----		-----	
194		-----		-----		-----		-----		-----		-----	
311	ISO22854	<0.10		0.17		<0.10		<0.10		<0.1		<0.1	
312	ISO22854	<0.01		0.18		<0.01		<0.01		0.03		<0.01	
333		-----		-----		-----		-----		-----		-----	
334	EN1601	<0.17		-----		<0.17		<0.17		<0.17		<0.17	
335		-----		-----		-----		-----		-----		-----	
337		-----		-----		-----		-----		-----		-----	
338		-----		-----		-----		-----		-----		-----	
340		-----		-----		-----		-----		-----		-----	
350		-----		0.18		-----		-----		-----		-----	
360	EN13132	< 0.17		<0.17		< 0.17		< 0.17		< 0.17		< 0.17	
430		-----		-----		-----		-----		-----		-----	
447	EN13132	<0.2		0.2		<0.2		<0.2		<0.2		<0.2	
494	EN-ISO22854	<0.01		0.21		<0.01		<0.01		0.03		0.03	
495	EN-ISO22854	<0,1		0.10		0.05		<0,01		<0,01		<0,01	
496	EN1601	<0.1		0.32		<0.1		<0.1		<0.1		<0.1	
511		-----		-----		-----		-----		-----		-----	
631		-----		-----		-----		-----		-----		-----	
862	D4815	<0.2		<0.2		<0.2		<0.2		<0.2		<0.2	
1026		-----		0.3		<0.1		<0.1		-----		<0.1	
1033		-----		-----		-----		-----		-----		-----	
1040	ISO22854	0.18		0.0		0.0		0.0		0.04		0.0	
1131	ISO22854	0.00		0.17		0.00		0.00		0.00		0.00	
1161	ISO22854	<0.2		<0.2		<0.2		<0.2		<0.2		>0.2	
1201	ISO22854	<0.17		0.20		<0.17		<0.17		<0.17		<0.17	
1203	ISO22854	<0.02		0.17		<0,02		<0,02		0.03		<0,02	
1212	D4815	<0.10		0.15		<0.10		<0.10		<0.10		<0.10	
1259		-----		-----		-----		-----		-----		-----	
1300	ISO22854	0.165		0.201		0.0864		0.0535		0.2080	C	0.0217	
1346		-----		-----		-----		-----		-----		-----	
1409	ISO22854	0.19	C	-----		0.01		0.01		0.03		0.02	
1459		-----		-----		-----		-----		-----		-----	
1538		-----		-----		-----		-----		-----		-----	
1546		-----		-----		-----		-----		-----		-----	
1634		-----		-----		-----		-----		-----		-----	
1656	ISO22854	<0.1		-----		<0.1		<0.1		<0.1		<0.1	
1706		-----		-----		-----		0.09		-----		-----	
1776	ISO22854	<0.2		-----		<0.2		<0.2		0.02		<0.2	
1810		-----		0.17		-----		-----		-----		-----	
1811		-----		-----		-----		-----		-----		-----	
1951		-----		-----		-----		-----		-----		-----	
2130	D6730	0.0		0.0		0.0		0.0		0.0		0.0	
2146		-----		-----		-----		-----		-----		-----	
				-----									
	normality	n.a		n.a		n.a		n.a		n.a		n.a	
	n	24		14		25		26		23		25	
	outliers	n.a		n.a		n.a		n.a		n.a		n.a	
	mean (n)	<0.2		<0.2		<0.2		<0.2		<0.2		<0.2	
	st.dev. (n)	n.a		n.a		n.a		n.a		n.a		n.a	
	R(calc.)	n.a		n.a		n.a		n.a		n.a		n.a	
	R(ISO22854:14)	n.a		n.a		n.a		n.a		n.a		n.a	

Lab 1300, first reported: 0.4108

Lab 1409, first reported: 2.97

Determination of Other oxygenates on sample #14009; results in %V/V

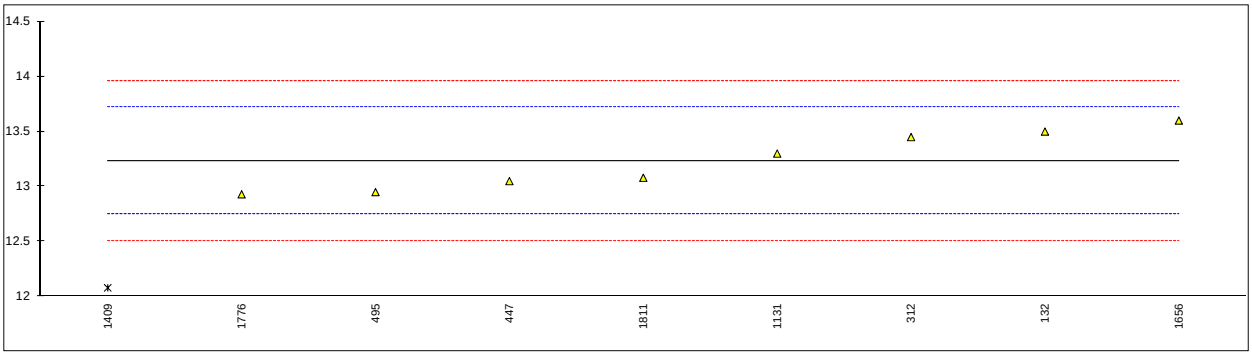
lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62		-----		-----	
120	D5599	<0.01		-----	
132	D5599	<0.10		-----	
150	D5599	<0.01		-----	
159		-----		-----	
169		-----		-----	
171	D4815	0.00		-----	
193		-----		-----	
194		-----		-----	
311	ISO22854	<0.1		-----	
312	ISO22854	<0.01		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
350		-----		-----	
360	EN13132	<0.17		-----	
430		-----		-----	
447	IP466	<0.2		-----	
494	ISO22854	<0.01		-----	
495	ISO22854	0.67		-----	false positive test result?
496	EN1601	<0.1		-----	
511		-----		-----	
631		-----		-----	
862	D4815	<0.2		-----	
1026	EN13132	<0.1		-----	
1033		-----		-----	
1040	ISO22854	0.0		-----	
1131	ISO22854	0.02		-----	
1161	ISO22854	<0.2		-----	
1201	ISO22854	<0.17		-----	
1203	ISO22854	0.03		-----	
1212	D4815	<0.10		-----	
1259		-----		-----	
1300	ISO22854	<0.1		-----	
1346		-----		-----	
1409		-----		-----	
1459		-----		-----	
1538		-----		-----	
1546		-----		-----	
1634		-----		-----	
1656		-----		-----	
1706		-----		-----	
1776		-----		-----	
1810		-----		-----	
1811		-----		-----	
1951		-----		-----	
2130	D6730	0.0		-----	
2146		-----		-----	

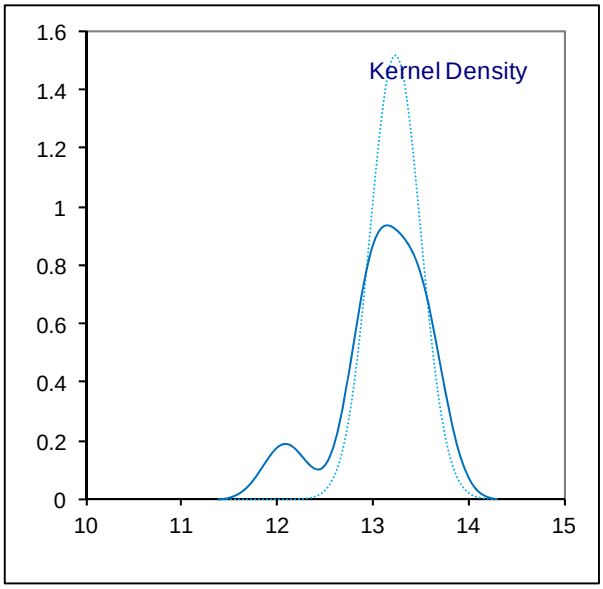
normality	unknown
n	20
outliers	n.a
mean (n)	<0.2
st.dev. (n)	n.a
R(calc.)	n.a
R(ISO22854:14)	n.a

Determination of total Oxygenates on sample #14009; results in %V/V

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
62		-----		-----	
120		-----		-----	
132	D5599	13.50		1.10	
150		-----		-----	
159		-----		-----	
169		-----		-----	
171		-----		-----	
193		-----		-----	
194		-----		-----	
311		-----		-----	
312	ISO22854	13.45		0.90	
333		-----		-----	
334		-----		-----	
335		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
350		-----		-----	
360		-----		-----	
430		-----		-----	
447	EN13132	13.05		-0.75	
494		-----		-----	
495	ISO22854	12.95		-1.16	
496		-----		-----	
511		-----		-----	
631		-----		-----	
862		-----		-----	
1026		-----		-----	
1033		-----		-----	
1040		-----		-----	
1131	ISO22854	13.3		0.28	
1161		-----		-----	
1201		-----		-----	
1203		-----		-----	
1212		-----		-----	
1259		-----		-----	
1300		-----		-----	
1346		-----		-----	
1409	ISO22854	12.08	C,G(0.05)	-4.74	first reported:11.24
1459		-----		-----	
1538		-----		-----	
1546		-----		-----	
1634		-----		-----	
1656	ISO22854	13.6		1.51	
1706		-----		-----	
1776	ISO22854	12.93		-1.24	
1810		-----		-----	
1811	ISO22854	13.08		-0.63	
1951		-----		-----	
2130		-----		-----	
2146		-----		-----	

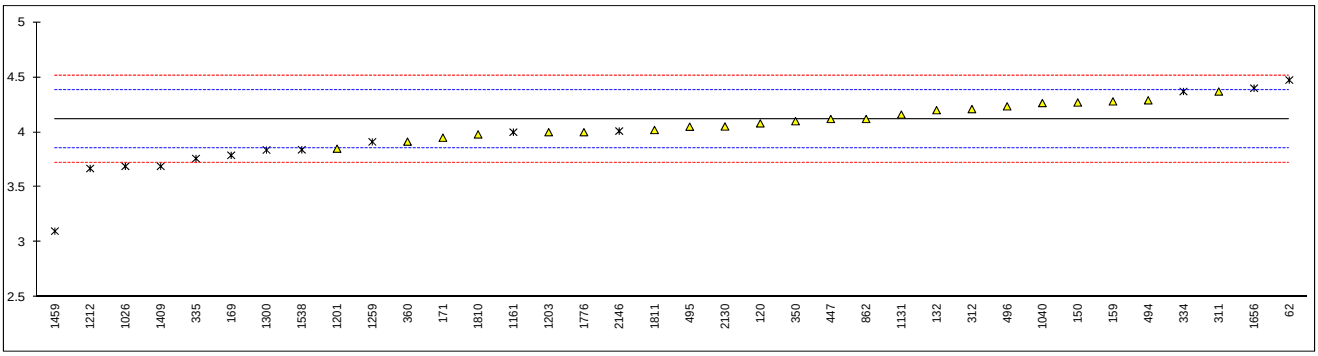
normality	OK
n	8
outliers	1
mean (n)	13.233
st.dev. (n)	0.2636
R(calc.)	0.738
R(ISO22854:14)	0.680

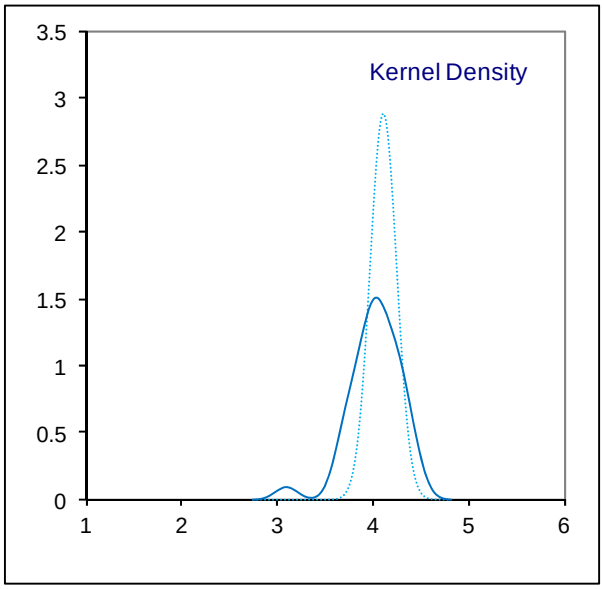

14.5
14
13.5
13
12.5
12
1409
1776
495
447
1811
1131
312
132
1656


Kernel Density
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
10
11
12
13
14
15

Determination of Oxygen content on sample #14060; results in %M/M

lab	method	value	mark	z(targ)	Remarks
52		-----		-----	
62	INH-14.3	4.474	ex	2.72	Result excluded, as no result for Methanol was reported
120	D5599	4.08		-0.26	
132	D5599	4.2		0.65	
150	D5599	4.27		1.18	
159	D5599	4.28		1.25	
169	D4815	3.79	ex	-2.45	Result excluded, as no result for Methanol was reported
171	D4815	3.95		-1.24	
193		-----		-----	
194		-----		-----	
311	ISO22854	4.37		1.93	
312	ISO22854	4.21		0.72	
333		-----		-----	
334	EN1601	4.37	ex	1.93	Result excluded, as a false negative result for MTBE was reported
335	ISO22854	3.76	E, ex	-2.68	Calculation error was observed: iis calculated 4.04%, result excluded
337		-----		-----	
338		-----		-----	
340		-----		-----	
350	EN13132	4.10		-0.11	
360	EN13132	3.914		-1.52	
430		-----		-----	
447	EN13132	4.12		0.04	
494	ISO22854	4.29		1.33	
495	ISO22854	4.05		-0.49	
496	EN1601	4.235		0.91	
511		-----		-----	
631		-----		-----	
862	D4815	4.12		0.04	
1026	EN13132	3.69	ex	-3.21	Result excluded, as a false negative result for Methanol was reported
1033		-----		-----	
1040	ISO22854	4.265		1.14	
1131	ISO22854	4.16		0.35	
1161	ISO22854	4.0	E, ex	-0.87	Calculation error was observed: iis calculated 4.23%, result excluded
1201	ISO22854	3.85		-2.00	
1203	ISO22854	4.00		-0.87	
1212	D4815	3.67	ex	-3.36	Result excluded, as a statistical outlier for Ethanol was observed
1259	EN13132	3.912	ex	-1.53	Result excluded, as no result for Methanol was reported
1300	ISO22854	3.838	ex	-2.09	Result excluded, as a false negative result for Methanol was reported
1346		-----		-----	
1409	ISO22854	3.69	ex	-3.21	Result excluded, as a statistical outlier for Ethanol was observed
1459	in house	3.1	ex	-7.68	Result excluded, as no result for Methanol and MTBE was reported
1538	ISO22854	3.84	ex	-2.08	Result excluded, as no result for Methanol was reported
1546		-----		-----	
1634		-----		-----	
1656	ISO22854	4.4	ex	2.16	Result excluded, as a statistical outlier for Methanol was observed
1706		-----		-----	
1776	ISO22854	4.00		-0.87	
1810	ISO22854	3.98		-1.02	
1811	ISO22854	4.02		-0.71	
1951		-----		-----	
2130	D6730	4.052		-0.47	
2146	EN13132	4.01	E, ex	-0.79	Calculation error was observed: iis calculated 4.23%, result excluded
	normality	OK			
	n	22			
	outliers	0	+ 14 results excluded		
	mean (n)	4.114			
	st.dev. (n)	0.1386			
	R(calc.)	0.388			
	R(EN228:13) (table 1,note k)	0.370			


5
4.5
4
3.5
3
2.5
1459
1212
1026
1409
335
169
1300
1538
1201
1259
360
171
1810
1161
1203
1776
2146
1811
495
2130
120
350
447
862
1131
132
312
496
1040
150
159
494
334
311
1656
62


Kernel Density
3.5
3
2.5
2
1.5
1
0.5
0
1
2
3
4
5
6

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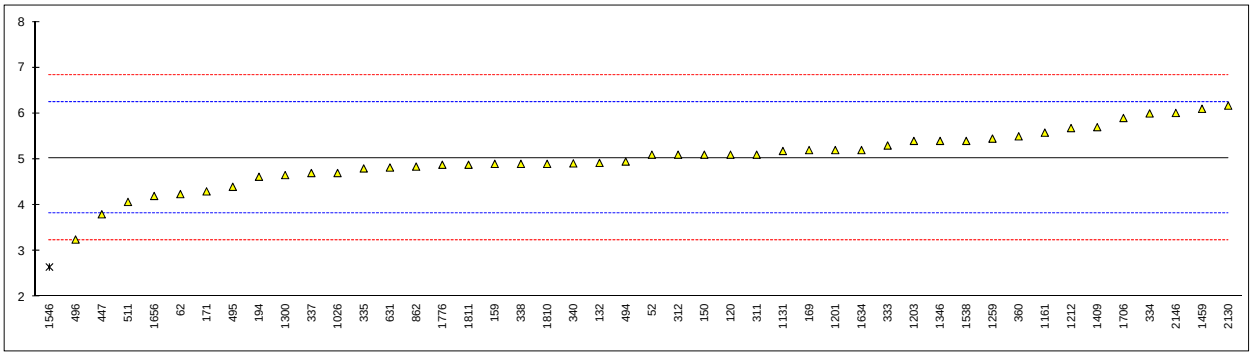
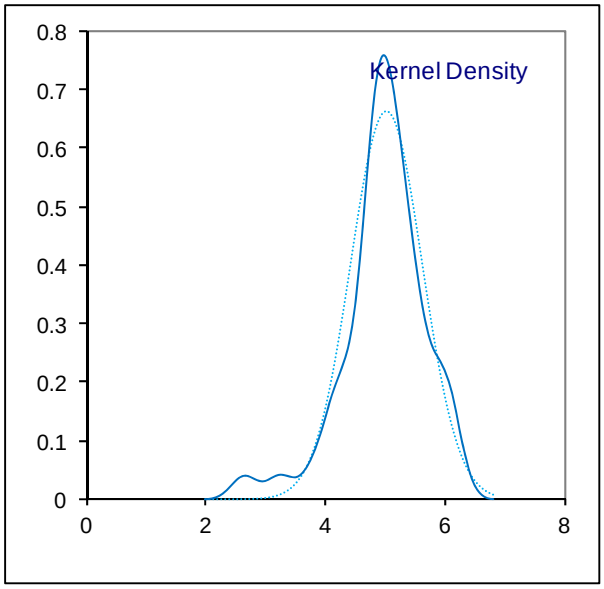
Determination of Oxidation Stability on sample #14060; results in minutes

lab	method	value	mark	z(targ)	remarks
52	D525	>900		-----	
62	D525	750		-----	
120		-----		-----	
132	D525	>1363		-----	
150	D525	>900		-----	
159		-----		-----	
169		-----		-----	
171	D525	241		-----	false positive test result?
193		-----		-----	
194	D525	>900		-----	
311	D525	>900		-----	
312	D525	>900		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
337		-----		-----	
338		-----		-----	
340	D525	>960		-----	
350		-----		-----	
360	D525	> 900		-----	
430		-----		-----	
447		-----		-----	
494	ISO7536/D525	2800		-----	
495	D525	>900		-----	
496	ISO7536	>900		-----	
511	D525	>900		-----	
631	D525	735		-----	
862	D525	>900		-----	
1026	ISO7536	>360		-----	
1033	IP40	>360		-----	
1040		-----		-----	
1131	ISO7536	1560		-----	
1161	ISO7536	>900		-----	
1201	ISO7536/D525	>900		-----	
1203	ISO7536	>900		-----	
1212		-----		-----	
1259		-----		-----	
1300	ISO7536	> 900		-----	
1346		-----		-----	
1409	D525	>360		-----	
1459		-----		-----	
1538	ISO7536	>900		-----	
1546		-----		-----	
1634		-----		-----	
1656	ISO7536	>1440		-----	
1706		-----		-----	
1776		-----		-----	
1810		-----		-----	
1811		-----		-----	
1951		-----		-----	
2130	D525	>900		-----	
2146		-----		-----	
	normality	n.a			
	n	27			
	outliers	n.a			
	mean (n)	>360			
	st.dev. (n)	n.a			
	R(calc.)	n.a			
	R(ISO7536:94)	n.a			

Determination of Sulphur on sample #14060; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52	D5453	5.1		0.11	
62	D5453	4.24		-1.32	
120	D2622	5.1		0.11	
132	D2622	4.92		-0.19	
150	D5453	5.1		0.11	
159	D5453	4.9		-0.22	
169	D5453	5.2		0.28	
171	D5453	4.3		-1.22	
193		-----		-----	
194	D5453	4.619		-0.69	
311	ISO2846	5.1		0.11	
312	D5453	5.1		0.11	
333	ISO20846	5.3		0.44	
334	D5453	6.0		1.61	
335	ISO20846/D5453	4.8		-0.39	
337	ISO20846	4.7		-0.55	
338	ISO20846	4.9		-0.22	
340	ISO20846	4.91		-0.21	
350		-----		-----	
360	ISO20846	5.50		0.78	
430		-----		-----	
447	D5453	3.8		-2.05	
494	ISO20846/D5453	4.95		-0.14	
495	ISO20846	4.4		-1.05	
496	ISO20846	3.25		-2.97	
511	D5453	4.07		-1.60	
631	D5453	4.82		-0.35	
862	D5453	4.84		-0.32	
1026	ISO20846	4.7		-0.55	
1033		-----		-----	
1040		-----		-----	
1131	ISO20846	5.18		0.24	
1161	ISO20846	5.58		0.91	
1201	ISO20846/D5453	5.2		0.28	
1203	ISO20846	5.4		0.61	
1212	D5453	5.68		1.08	
1259	ISO20846	5.45		0.69	
1300	ISO20846	4.655		-0.63	
1346	ISO20846	5.4		0.61	
1409	ISO20846	5.7		1.11	
1459	in house	6.1		1.77	
1538	ISO20846	5.4		0.61	
1546	ISO20846	2.65	R(0.05)	-3.96	
1634	ISO20846	5.2		0.28	
1656	ISO20846	4.2		-1.39	
1706	ISO20846	5.9		1.44	
1776	ISO20846	4.88	C	-0.26	first reported: 3.26
1810	ISO20846	4.9		-0.22	
1811	ISO20846	4.88		-0.26	
1951		-----		-----	
2130	D5453	6.17		1.89	
2146	ISO20846	6.01		1.62	
	normality	OK			
	n	45			
	outliers	1			
	mean (n)	5.03			
	st.dev. (n)	0.602			
	R(calc.)	1.68			
	R(ISO20846:11)	1.68			

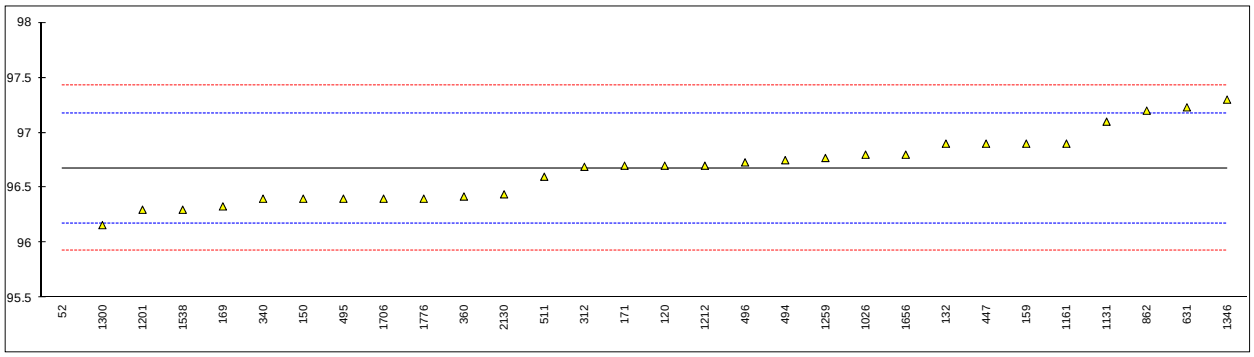

8
7
6
5
4
3
2
1546 496 447 511 1656 62 171 495 194 1300 337 1026 335 631 862 1776 1811 159 338 1810 340 132 494 52 312 150 120 311 1131 169 1201 1634 333 1203 1346 1538 1259 360 1161 1212 1409 1706 334 2146 1459 2130

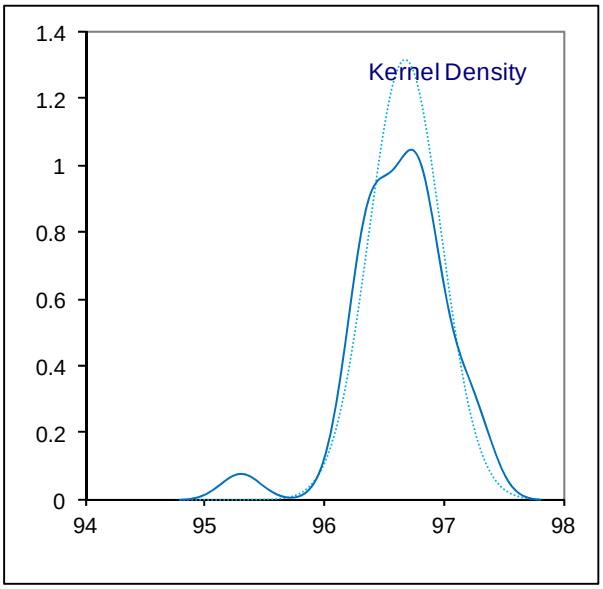

Kernel Density
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8

Determination of RON on sample #14060

lab	method	value	mark	z(targ)	remarks
52	D2699	95.3	G(0.01)	-5.51	
62		-----		-----	
120	D2699	96.7		0.09	
132	D2699	96.9		0.89	
150	ISO5164/D2699	96.4		-1.11	
159	D2699	96.9		0.89	
169	D2699	96.33		-1.39	
171	D2699	96.7		0.09	
193		-----		-----	
194		-----		-----	
311		-----		-----	
312	D2699	96.69		0.05	
333		-----		-----	
334		-----		-----	
335		-----		-----	
337		-----		-----	
338		-----		-----	
340	D2699	96.4		-1.11	
350		-----		-----	
360	ISO5164	96.42		-1.03	
430		-----		-----	
447	D2699	96.9		0.89	
494	ISO5164/D2699	96.75		0.29	
495	D2699	96.4		-1.11	
496	D2699	96.73		0.21	
511	D2699	96.6		-0.31	
631	D2699	97.23		2.21	
862	D2699	97.2		2.09	
1026	ISO5164	96.8		0.49	
1033		-----		-----	
1040		-----		-----	
1131	ISO5164	97.1		1.69	
1161	ISO5164/D2699	96.9		0.89	
1201	ISO5164/D2699	96.3		-1.51	
1203		-----		-----	
1212	D2699	96.7		0.09	
1259	ISO5164	96.77		0.37	
1300	ISO5164	96.16		-2.07	
1346	ISO5164	97.3		2.49	
1409		-----		-----	
1459		-----		-----	
1538	ISO5164	96.3		-1.51	
1546		-----		-----	
1634		-----		-----	
1656	ISO5164	96.8		0.49	
1706	in house	96.4		-1.11	
1776	ISO5164	96.4		-1.11	
1810		-----		-----	
1811		-----		-----	
1951		-----		-----	
2130	D2699	96.44		-0.95	
2146		-----		-----	

normality	OK
n	29
outliers	1
mean (n)	96.68
st.dev. (n)	0.303
R(calc.)	0.85
R(ISO5164:05)	0.70

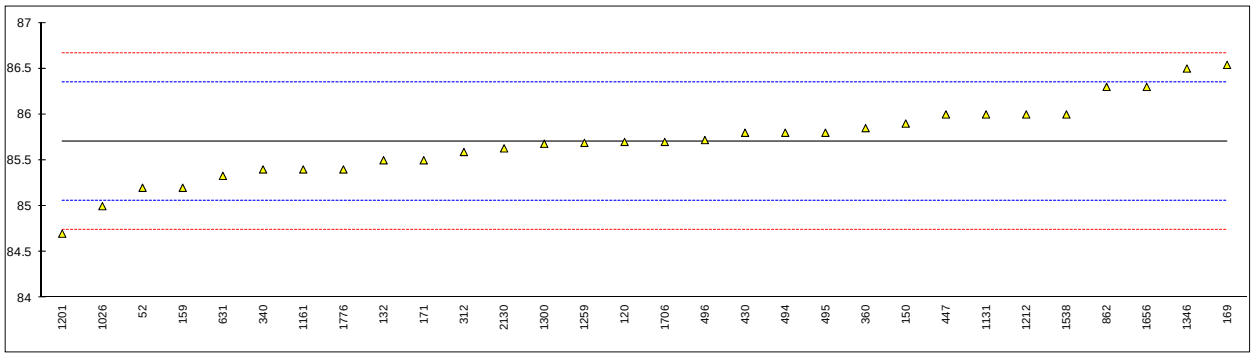

98
97.5
97
96.5
96
95.5
52
1300
1201
1538
169
340
150
495
1706
1776
360
2130
511
312
171
120
1212
496
494
1259
1026
1656
132
447
159
1161
1131
862
631
1346

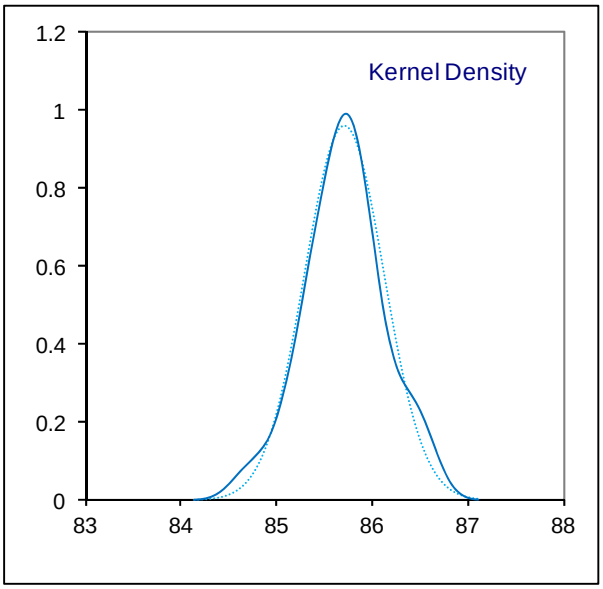

Kernel Density
1.4
1.2
1
0.8
0.6
0.4
0.2
0
94
95
96
97
98

Determination of MON on sample #14060

lab	method	value	mark	z(targ)	remarks
52	D2700	85.2		-1.57	
62		-----		-----	
120	D2700	85.7		-0.01	
132	D2700	85.5		-0.64	
150	ISO5163/D2700	85.9		0.61	
159	D2700	85.2		-1.57	
169	D2700	86.54		2.60	
171	D2700	85.5		-0.64	
193		-----		-----	
194		-----		-----	
311		-----		-----	
312	D2700	85.59		-0.36	
333		-----		-----	
334		-----		-----	
335		-----		-----	
337		-----		-----	
338		-----		-----	
340	D2700	85.4		-0.95	
350		-----		-----	
360	ISO5163	85.85		0.45	
430	ISO5163	85.8		0.30	
447	D2700	86.0		0.92	
494	ISO5163/D2700	85.8		0.30	
495	D2700	85.8		0.30	
496	D2700	85.72		0.05	
511		-----		-----	
631	D2700	85.33		-1.16	
862	D2700	86.3		1.85	
1026	ISO5163	85.0		-2.19	
1033		-----		-----	
1040		-----		-----	
1131	ISO5163	86.0		0.92	
1161	ISO5163/D2700	85.4		-0.95	
1201	ISO5163/D2700	84.7		-3.12	
1203		-----		-----	
1212	D2700	86.0		0.92	
1259	ISO5163	85.69		-0.04	
1300	ISO5163	85.68		-0.08	
1346	ISO5163	86.5		2.48	
1409		-----		-----	
1459		-----		-----	
1538	ISO5163	86.0		0.92	
1546		-----		-----	
1634		-----		-----	
1656	ISO5163	86.3		1.85	
1706	in house	85.7		-0.01	
1776	ISO5163	85.4		-0.95	
1810		-----		-----	
1811		-----		-----	
1951		-----		-----	
2130	D2700	85.63		-0.23	
2146		-----		-----	

normality	OK
n	30
outliers	0
mean (n)	85.70
st.dev. (n)	0.416
R(calc.)	1.16
R(ISO5163:05)	0.90

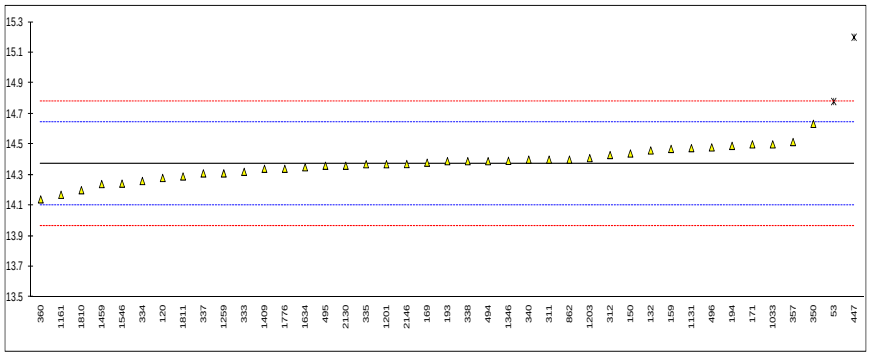

87
86.5
86
85.5
85
84.5
84
1201
1026
52
159
631
340
1161
1776
132
171
312
2130
1300
1259
120
1706
496
430
494
495
360
150
447
1131
1212
1538
862
1656
1346
169

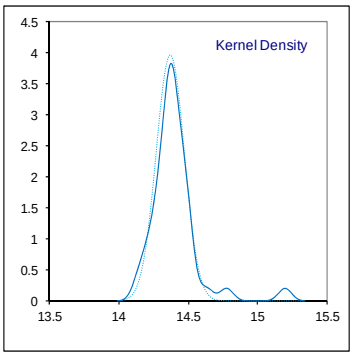

Kernel Density
1.2
1
0.8
0.6
0.4
0.2
0
83
84
85
86
87
88

Determination of Total Vapour Pressure on sample #14061; results in psi

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
53	D5191	14.78	R(0.05)	2.99	
120	D5191	14.28		-0.69	
132	D5191	14.46		0.64	
150	D5191	14.44		0.49	
159	D5191	14.47		0.71	
169	D5191	14.38		0.05	
171	D5191	14.50		0.93	
193	D5191	14.39		0.12	
194	D5191	14.49		0.86	
311	D5191	14.40		0.19	
312	D5191	14.43		0.41	
333	D5191	14.32		-0.39	
334	D5191	14.26		-0.83	
335	D5191	14.37		-0.03	
337	D5191	14.31		-0.47	
338	D5191	14.39		0.12	
340	EN13016-1	14.4	C	0.19	first reported: 13.3
350	EN13016-1	14.634		1.91	
357	D5191	14.515		1.04	
360	D5191	14.14	C	-1.72	first reported: 13.81
447	D5191	15.2	R(0.01)	6.07	
494	D5191	14.39		0.12	
495	D5191	14.36		-0.10	
496	D5191	14.480		0.78	
862	D5191	14.40		0.19	
1033	IP394	14.50		0.93	
1131	EN13016-1	14.475		0.75	
1161	D5191	14.17		-1.50	
1201	D5191	14.37		-0.03	
1203	D5191	14.41		0.27	
1259	EN13016-1	14.31		-0.47	
1346	EN13016-1	14.392		0.14	
1409	D5191	14.34		-0.25	
1459	EN13016-1	14.24		-0.98	
1546	EN13016-1	14.243		-0.96	
1634	D5191	14.350		-0.17	
1656		-----		-----	
1776	D5191	14.34		-0.25	
1810	D5191	14.2		-1.28	
1811	D5191	14.29		-0.61	
1951		-----		-----	
2130	D5191	14.36		-0.10	
2146	EN13016-1	14.371		-0.02	

normality	OK
n	39
outliers	2
mean (n)	14.374
st.dev. (n)	0.1010
R(calc.)	0.283
R(D5191:13)	0.381

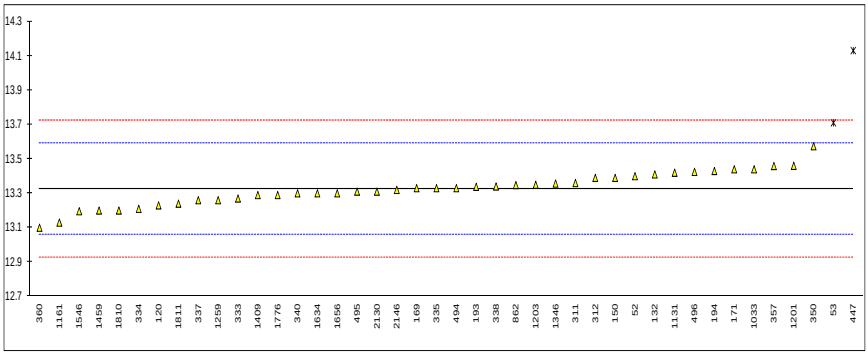


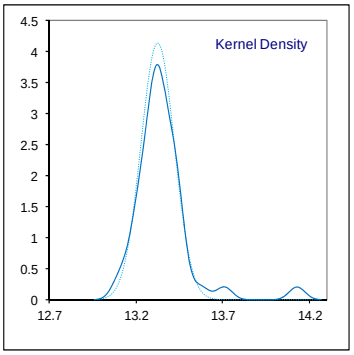


Determination of DVPE (ASTM D5191 calculation) on sample #14061; results in psi

lab	method	value	mark	z(targ)	remarks
52	D5191	13.4		0.56	
53	D5191	13.71	R(0.05)	2.90	
120	D5191	13.23		-0.73	
132	D5191	13.41		0.64	
150	D5191	13.39		0.48	
159		-----		-----	
169	D5191	13.33		0.03	
171	D5191	13.44		0.86	
193	D5191	13.338		0.09	
194	D5191	13.43	C	0.79	first reported: 12.48
311	D5191	13.36		0.26	
312	D5191	13.39		0.48	
333	D5191	13.27		-0.42	
334	D5191	13.21		-0.88	
335	D5191	13.33		0.03	
337	D5191	13.26		-0.50	
338	D5191	13.34		0.11	
340	EN13016-1	13.3		-0.20	
350	EN13016-1	13.574		1.88	
357	D5191	13.459		1.01	
360	D5191	13.10	C	-1.71	first reported: 12.78
447	D5191	14.13	R(0.01)	6.08	
494	D5191	13.33		0.03	
495	D5191	13.31		-0.12	
496	D5191	13.425		0.75	
862	D5191	13.348		0.17	
1033	IP394	13.44		0.86	
1131	EN13016-1	13.420		0.71	
1161	D5191	13.13		-1.48	
1201	D5191	13.46		1.01	
1203	D5191	13.35		0.18	
1259	EN13016-1	13.26		-0.50	
1346	EN13016-1	13.357		0.23	
1409	D5191	13.29		-0.27	
1459	D5191	13.2		-0.95	
1546	EN13016-1	13.196		-0.98	
1634	D5191	13.300		-0.20	
1656	EN13016-1	13.30		-0.20	
1776	D5191	13.29		-0.27	
1810	D5191	13.2		-0.95	
1811	D5191	13.24		-0.65	
1951		-----		-----	
2130	D5191	13.31		-0.12	
2146	EN13016-1	13.320		-0.04	

normality	OK
n	40
outliers	2
mean (n)	13.326
st.dev. (n)	0.0964
R(calc.)	0.270
R(D5191:13)	0.370

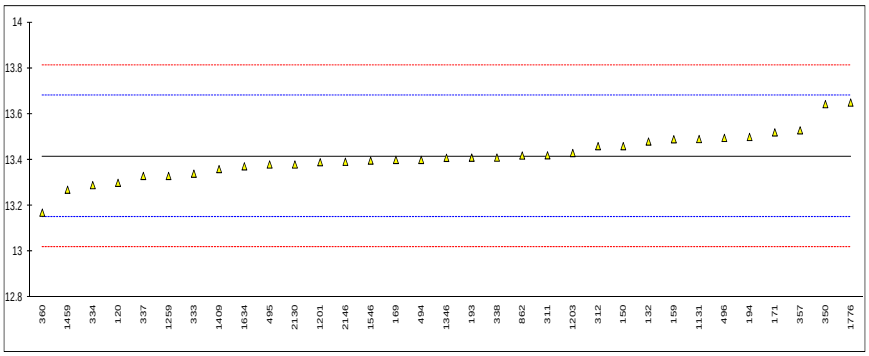


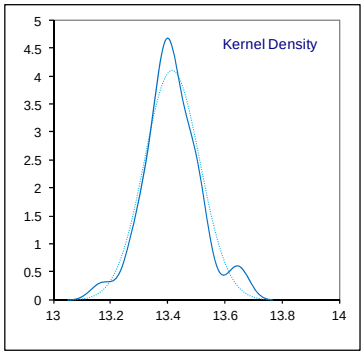


Determination of DVPE (EPA calculation) on sample #14061; results in psi

lab	method	value	mark	z(targ)	remarks
52		-----		-----	
53		-----		-----	
120	D5191	13.30		-0.87	
132	D5191	13.48		0.48	
150	D5191	13.46		0.33	
159	D5191	13.49		0.56	
169	D5191	13.40		-0.12	
171	D5191	13.52		0.79	
193	D5191	13.4098		-0.04	
194	D5191	13.50		0.64	
311	D5191	13.42		0.03	
312	D5191	13.46		0.33	
333	D5191	13.34		-0.57	
334	D5191	13.29		-0.95	
335		-----		-----	
337	D5191	13.33		-0.65	
338	D5191	13.41		-0.04	
340		-----		-----	
350	EN13016-1	13.643		1.71	
357	D5191	13.529		0.85	
360	D5191	13.17	C	-1.85	first reported: 12.86
447		-----		-----	
494	D5191	13.40		-0.12	
495	D5191	13.38		-0.27	
496	D5191	13.496		0.61	
862	D5191	13.419		0.02	
1033		-----		-----	
1131	EN13016-1	13.491		0.57	
1161		-----		-----	
1201	D5191	13.39		-0.19	
1203	D5191	13.43		0.11	
1259	EN13016-1	13.33		-0.65	
1346	EN13016-1	13.409		-0.05	
1409	D5191	13.36		-0.42	
1459	EN13016-1	13.27	C	-1.10	first reported: 12.63
1546	EN13016-1	13.397		-0.14	
1634	D5191	13.372		-0.33	
1656		-----		-----	
1776	D5191	13.65		1.77	
1810		-----		-----	
1811		-----		-----	
1951		-----		-----	
2130	D5191	13.38		-0.27	
2146	EN13016-1	13.392		-0.18	

normality	suspect
n	33
outliers	0
mean (n)	13.416
st.dev. (n)	0.0975
R(calc.)	0.273
R(D5191:13)	0.371





APPENDIX 2:

Z-scores of Distillation

lab	IBP	10%eva	50%eva	90%eva	FBP	%vol@70°C	%vol@100°C	%vol@150°C
52	0.41	0.04	-0.34	0.23	-0.88	-1.45	2.16	1.04
62	2.54	0.22	-0.19	0.07	0.52	-1.03	0.63	0.17
120	-0.77	-0.39	-1.53	0.76	0.73	-0.20	-0.01	0.17
132	-0.83	-0.74	0.41	0.23	0.07	0.21	-0.52	0.60
150	0.41	0.04	1.15	0.07	1.06	-0.62	-0.26	1.04
159	-0.36	-0.04	-0.19	0.53	0.69	-----	-----	-----
169	-0.18	1.01	2.20	1.22	0.15	-----	-----	-----
171	0.65	0.48	-0.49	0.99	-1.25	-0.62	-0.52	-0.69
193	-----	-----	-----	-----	-----	-----	-----	-----
194	0.55	1.42	-0.19	0.30	0.76	-2.38	0.77	0.37
311	-0.42	-0.92	-0.63	-0.38	-1.91	0.94	0.12	0.39
312	0.23	-0.57	-0.63	-0.15	-1.63	1.25	0.38	0.60
333	-1.54	-0.74	-0.49	0.30	-1.01	0.73	-0.52	0.17
334	0.29	0.31	-0.34	-0.31	-0.55	0.63	-0.77	0.39
335	-1.18	-0.31	-0.93	-0.77	-1.46	0.83	-0.26	0.39
337	-----	-----	-----	-----	-----	-----	-----	-----
338	-0.18	0.22	1.00	0.15	1.10	-1.14	-1.28	-2.41
340	-1.54	0.13	-0.93	-0.23	-0.34	0.73	-0.39	-0.26
350	0.25	0.26	-1.42	-1.76	-0.63	1.87	1.01	-0.90
360	0.41	-0.66	-0.63	-0.38	0.48	0.52	0.12	-0.04
430	-----	-----	-----	-----	-----	-----	-----	-----
447	-1.42	-0.57	-0.78	-0.38	-0.10	-0.93	1.01	0.82
494	-0.24	-0.04	-0.63	-0.77	-0.22	0.94	0.63	0.82
495	-0.95	-0.57	-1.23	-1.15	0.23	0.73	0.76	0.82
496	-0.24	0.31	-0.19	-0.31	0.94	0.21	-0.39	-0.04
511	1.77	3.02	41.22	0.15	-0.59	-0.31	-4.21	-1.12
631	1.24	1.18	2.49	4.88	2.71	-0.93	-0.39	-1.33
862	-0.53	-0.39	-2.42	-0.69	-1.54	1.25	0.88	1.04
1026	-0.77	-0.48	-1.08	-0.84	-1.63	0.94	-0.13	0.82
1033	-0.30	-0.66	-1.08	-0.69	0.15	1.56	-0.39	-----
1040	-----	-----	-----	-----	-----	-----	-----	-----
1131	0.23	-0.22	-0.78	0.61	0.19	0.52	-0.39	-0.47
1161	2.12	1.18	1.75	6.72	-0.51	-1.14	-4.21	-0.69
1201	0.29	-0.39	-0.49	-0.84	0.65	0.42	0.63	0.82
1203	0.94	1.01	1.00	0.53	0.07	-0.31	-1.79	-0.04
1212	1.95	2.76	1.90	-0.23	0.77	-0.93	-0.26	0.17
1259	0.77	0.39	0.56	0.84	1.39	-0.31	-0.52	-0.69
1300	0.17	-1.53	-0.93	0.61	0.03	0.52	0.88	-0.04
1346	-0.65	0.83	0.41	0.15	-0.96	-0.41	-0.52	0.82
1409	-0.12	-0.48	0.26	-0.69	0.48	0.63	0.38	1.25
1459	-1.07	-0.83	-2.27	-0.23	-1.67	1.77	0.50	0.82
1538	-----	-----	-----	-----	-----	-----	-----	-----
1546	1.18	0.83	3.98	8.55	-0.39	-3.42	-3.57	-6.50
1634	-1.24	-0.57	1.45	1.30	-0.01	-1.55	0.88	-0.26
1656	0.23	0.04	-0.04	0.84	2.67	-0.20	-1.15	0.60
1706	-1.36	0.70	1.90	0.46	0.32	-2.12	-2.17	-2.63
1776	-1.07	-0.22	-1.83	-0.54	-0.76	1.04	0.38	0.39
1810	-1.24	0.31	1.15	0.69	0.44	-1.55	1.39	-2.63
1811	0.53	0.57	-0.49	0.00	0.44	0.11	-0.01	-0.04
1951	-----	-----	-----	-----	-----	-----	-----	-----
2130	1.00	-0.13	0.85	0.30	1.02	-0.20	-0.90	-0.26
2146	0.82	1.01	3.98	14.12	0.03	-----	-5.22	-8.23

APPENDIX 3

Number of participants per country

2 labs in	AUSTRIA
1 lab in	BELGIUM
2 labs in	BULGARIA
2 labs in	CANADA
1 lab in	CHINA, People's Republic
1 lab in	CROATIA
2 labs in	CZECH REPUBLIC
1 lab in	ESTONIA
2 labs in	FINLAND
7 labs in	FRANCE
4 labs in	GERMANY
2 labs in	HUNGARY
1 lab in	LITHUANIA
4 labs in	NETHERLANDS
1 lab in	PERU
1 lab in	PHILIPPINES
1 lab in	POLAND
1 lab in	PORTUGAL
1 lab in	SPAIN
2 labs in	SWEDEN
1 lab in	TURKEY
5 labs in	UNITED KINGDOM
8 labs in	UNITED STATES OF AMERICA

APPENDIX 4

Abbreviations:

C	= final result after checking of first reported suspect 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 outlier test
R(0.05)	= straggler in Rosner outlier test
ex	= excluded from calculations
E	= error in calculations
n.a.	= not applicable
n.e.	= not evaluated
W	= withdrawn
fr.	= first reported
U	= reported in different unit
SDS	= Safety Data Sheet

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