Results of Proficiency Test Gasoline (EN specification) October 2014

Organised by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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1 INTRODUCTION

Since 1995, the Institute for Interlaboratory Studies (iis) organizes a proficiency scheme for Gasoline. During the annual proficiency testing program 2014/2015, it was decided to continue the round robin for the analysis of Gasoline in accordance with the latest applicable version of EN228 specification. The interlaboratory study on Gasoline was extended with PTs for the determination of RON/MON and Dry Vapour Pressure Equivalent. In the main PT 139 laboratories in 53 different countries have participated. In the PT for RON/MON, 90 laboratories in 46 different countries participated and in the PT on Dry Vapour Pressure Equivalent, 107 laboratories in 42 different countries participated. See appendix 4 for the number of participants per country. In this report, the results of the Gasoline 2014 proficiency test are presented and discussed. This report is also electronically available through the iis internet site www.iisnl.com.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organiser of this proficiency test. Sample analyses for fit-for-use and homogeneity testing were subcontracted. In this proficiency test, the participants received, depending on their registration, 1 litre bottle (labelled #14195) containing Euro 95 Gasoline and/or 1 litre bottle (± 750 mL filled) with Euro 95 Gasoline (labelled #14196) for DVPE only and/or 1 liter bottle (labelled #14197) and 1 litre bottle (labelled #14198), both containing Euro 95 Gasoline, for RON/MON. TAME was added to sample #14198.
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, since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie, R007). This PT falls under the accredited scope. 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

2.4.1 GASOLINE (MAIN SAMPLE)

The necessary sample material of 200 litre of Gasoline Euro 95 was obtained from a local gasoline station. After homogenisation in a mixing vessel, 200 amber glass bottles of 1 litre were filled and labelled #14195.
The homogeneity of the subsamples #14195 was checked by determination of Density @15°C in accordance with ISO12185:96 on 9 stratified randomly selected samples.

	Density @ 15°C in kg/m^3
Sample #14195-1	732.07
Sample #14195-2	732.19
Sample #14195-3	732.06
Sample #14195-4	732.19
Sample #14195-5	732.10
Sample #14195-6	732.16
Sample #14195-7	732.16
Sample #14195-8	732.17
Sample #14195-9	732.14

Table 1: homogeneity test results of subsamples #14195

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

	Density at 15°C in kg/m^3
r (observed)	0.14
reference method	ISO12185:96
0.3 x R (ref. method)	0.15

Table 2: evaluation of repeatability of subsamples #14195

The calculated repeatability is less than 0.3 times the reproducibility of the reference method. Therefore, homogeneity of the subsamples of #14195 was assumed.

2.4.2 GASOLINE – SAMPLE FOR DVPE

For the second batch, specifically for Dry Vapour Pressure Equivalent (DVPE), the necessary sample material of 200 litre of Euro 95 Gasoline was also obtained from a local gasoline station. After homogenisation, 160 amber glass bottles of 1 litre were filled with approx. 800 mL for DVPE only and labelled #14196. The homogeneity of the subsamples #14196 was checked by determination of Density at 15°C according to ISO12185:96 and DVPE in accordance with ASTM D5191:12 on 8 stratified randomly selected samples.

	Density at 15°C in kg/m^3	DVPE in kPa
Sample #14196-1	732.38	94.3
Sample #14196-2	732.40	94.1
Sample #14196-3	732.37	94.2
Sample #14196-4	732.36	94.3
Sample #14196-5	732.43	94.2
Sample #14196-6	732.38	94.3
Sample #14196-7	732.39	94.3
Sample #14196-8	732.37	94.1

Table 3: homogeneity test results of subsamples #14196

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 kPa
r	0.06	0.25
reference method	ISO12185:96	EN13016-1:07
0.3 x R (ref. method)	0.15	0.77

Table 4: repeatabilities of subsamples #14196

The repeatability of the results of homogeneity test for Density and DVPE were in agreement with 0.3 times the corresponding reproducibility of the respective reference method. Therefore, homogeneity of subsamples #14196 was assumed.

2.4.3 GASOLINE – SAMPLES FOR RON/MON

For both samples, the necessary sample material of 300 litre of Gasoline Euro 95 was obtained from a local gasoline station. For the first sample, 150 amber glass bottles of 1 litre were filled, after homogenisation in a mixing vessel and labelled #14197.
To the second sample 5% of TAME (tert-amyl methyl ether) was added and after homogenisation, 150 amber glass bottles were filled and labelled #14198.

The homogeneity of the subsamples #14197 and #14198 was checked by the determination of Density @15°C in accordance with ISO12185:96 on 8 stratified randomly selected samples.

	#14197 Density at 15°C in kg/m^3	#14198 Density at 15°C in kg/m^3
Sample 1	749.45	751.14
Sample 2	749.45	751.21
Sample 3	749.49	751.17
Sample 4	749.47	751.20
Sample 5	749.46	751.18
Sample 6	749.45	751.15
Sample 7	749.55	751.16
Sample 8	749.44	751.19

Table 5: homogeneity test results of subsamples #14197 and #14198

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

	#14197 Density at 15°C in kg/m^3	#14198 Density at 15°C in kg/m^3
r (observed)	0.10	0.07
reference method	ISO12185:96	ISO12185:96
0.3 x R (ref. method)	0.15	0.15

Table 6: evaluation of repeatability of subsamples #14197 and #14198

The calculated repeatabilities were less than 0.3 times the reproducibility of the reference method. Therefore, homogeneity of the subsamples of #14197 and #14198 was assumed.

To the participants, depending on their registration, a 1 litre bottle of sample #14195 and/or a 1 litre bottle (± 750 mL filled) of sample #14196 and/or 1 litre bottle of sample #14197 and a 1 litre bottle of sample #14198 for RON/MON were sent on October 1, 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 API Gravity, Appearance, Aromatics by FIA, Aromatics by GC, (%V/V and %M/M), Benzene, Copper Strip Corrosion, Density at 15°C, Distillation, Doctor Test, Existent gum, Lead, Manganese, Olefins by FIA, Olefins by GC (%V/V and %M/M), Oxidation Stability, Ethanol, Ethers C5 or more C atoms, MTBE, DIPE, ETBE, Iso-Butanol, Iso-Propanol, Methanol, TAME, t-Butanol, Oxygen content and Sulphur on sample #14195.
On sample #14196, the participants were requested to determine Air Saturated Vapour Pressure (ASVP) and Dry Vapour Pressure Equivalent (DVPE) according to EN13016-1.
On samples #14197 and #14198 the participants were requested to determine RON and MON.

To get comparable results a detailed report form, on which the units were prescribed as well as the required standards and a letter of instructions were prepared and made available on the data entry portal www.kpmd.co.uk/sgs-iis/. The detailed report form was also made available for download on the iis website www.iisnl.com.
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’ of April 2014 (iis-protocol, 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.

According to ISO 5725 the original results per determination were submitted to Dixon’s and/or Grubbs' and/or Rosner’s outlier tests. Outliers are marked by D(0.01) for the Dixon’s test, by G(0.01) or DG(0.01) for the Grubbs’ test and by R(0.01) for the Rosner’s test (ref. 15). Stragglers are marked by D(0.05) for the Dixon’s test, by G(0.05) or DG(0.05) for the Grubbs’ test and by R(0.05) for the Rosner’s test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

For each assigned value the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirement based on the target reproducibility in accordance with ISO13528. 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 visualise 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 cross. Accepted data are represented as a triangle.
Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms (see appendix 5; nos.13 and 14). Also a normal Gauss curve was projected over the Kernel Density Graph for reference.

3.3 Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements, e.g. ISO/EN reproducibilities, the z-scores were calculated using a target standard deviation. This result was 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

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

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

4 EVALUATION

In this proficiency test, problems were encountered with the despatch of the samples. Laboratories in Afghanistan, Brazil, Costa Rica, Iran, Oman, Qatar, Saudi Arabia and Sudan received the samples late or not at all.
For the “main Gasoline” sample, 21 participants reported the results after the final reporting date and another 11 participants did not report any results at all.
For the PT “DVPE” and “RON/MON”, respectively 13 and 14 participants reported the results after the final reporting date and respectively 12 and 13 participants did not report any results at all.
In total, 128 participants of the main round, 95 participants of the DVPE round, and 77 participants of the RON/MON round reported in total 2945 numerical results. Observed were 92 outlying results, which is 3.1%. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

4.1 EVALUATION PER TEST

In this section, the results are discussed per test.

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

For Gasoline sample #14195

API Gravity: This determination was not problematic. Two statistical outliers were observed, one laboratory was excluded for reporting a density result. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ASTM D1298:12b.

Appearance: No problems have been observed. Fifty-four participants agreed on the appearance as Clear and Bright. Other laboratories reported the appearance as clear, pass or OK.

Aromatics by FIA: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of EN15553:07.

Aromatics by GC: The determination in %V/V 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 EN22854:14. Two statistical outliers were observed for the test results in %M/M. Regretfully for the determination in %M/M no precision data are available. Therefore, no significant conclusions were drawn.

Benzene: 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 ISO22854:14. However, when only the results with ISO22854 were statistically evaluated, then the calculated reproducibility is in agreement with the requirements of ISO22854:14.

Copper strip: No problems have been observed, all participants agreed on a result of 1 or 1A, except two. These laboratories reported 1B.

Density @ 15°C: This determination was very problematic. Nine (!) statistical outliers were observed. The calculated reproducibility, after rejection of the statistical outliers, is not in agreement with the requirements of ISO12185:96.

Distillation The distillation was problematic for a number of laboratories. In total 21 statistical outliers were observed. However, all calculated reproducibilities after rejection of the statistical outliers are in agreement with the requirements of ISO3405:11, except for IBP and 50% evaporated.
For this test, the participants were requested to send the printout of the automated equipment. Based on the printouts and the information given on the report form, 98 participants used automated equipment and 18 did the test manually.

To check the calculation of the temperature at 50% evaporated, according to ISO3405 Annex D (arithmetical procedure), the temperature at 40% and 50% recovered were requested on the report form, as well as the distillation loss. The latter gave some confusion, since both observed loss (used for the calculation) as the corrected loss could have been reported. Fifty-nine participants sent in a printout of the automated equipment.
Based on the information from the printouts and the reported values for the relevant temperatures recovered and evaporated, each lab was evaluated. The results are summarized in appendix 3. When a printout was available the arithmetical calculation was checked using the data printed. If there was no printout, the calculation was verified with the reported values. This was also done for the manual distillations. From this evaluation the results of 56 laboratories were excluded for ten (!) different reasons. The main reasons included: differences in calculation, reporting an average of two tests (some even when the difference between them was higher than the repeatability of this test method), a loss higher than 4% or no loss at all and the mixing up of the temperatures for recovered and evaporated.
When statistically evaluating the values that were not excluded (60 in total), it can be noticed that only one outlier remains. All calculated reproducibilities after rejection of the statistical outlier are in agreement with the requirements of ISO 3405:11, except for IBP and 50% evaporated (which is the same as the original evaluation). However it can be noted that for 90% evaporated, E70, E100 and E150 the calculated reproducibility improve considerably.

The precision of the temperature at 50% evaporated for this PT may also be

influenced by the fact that this gasoline contains 5% of Ethanol, which will start evaporating around this temperature. This effect is obviously much larger than the investigated calculation problems.

Doctor Test: No analytical problems have been observed, all participants agreed on the absence of Mercaptans. One participant reported “pass” instead of negative for this test.

Existent Gum: This determination was problematic for a number of laboratories. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ISO6246:98.

Lead: The determination was very problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not at all in agreement with the requirements of EN237:04.
Twelve participants reported a false negative test result.
When evaluating only EN237 results the calculated reproducibility improved but was still not at all in agreement with the requirements of the EN237:04.

Manganese This determination was very problematic for a number of laboratories. Manganese was added to the samples. Therefore the minimum Mangenese content to be found was known (added amount = 4.9 mg/L). The laboratories should be able to find at least 3.513 mg/L [4.9 mg/L $_{(\text{added amount})}$ – 1.387 mg/L $_{(\text{ISO16135:11})}$]. However, 11 of the 37 laboratories reported a lower concentration than 3.513 mg/L and therefore these test results were excluded prior to data analysis.
No statistical outliers were observed. The calculated reproducibility after rejection of the suspect data is in full agreement with the requirements of ISO16135:11).

Olefins by FIA: 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 EN15553:07.

Olefins by GC: The determination in %V/V was not problematic. Six statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO2854:14. Regretfully for the determination in %M/M no precision data are available. Therefore, no significant conclusions were drawn.

Oxidation stability: Most laboratories agreed that the Oxidation Stability is >900 minutes.

Ethanol: This determination was problematic. Three statistical outliers were observed. The calculated reproducibility, after rejection of the statistical outliers, is not in agreement with EN1601:14.

Ethers (C5 and more): This determination was problematic. Two statistical outliers were observed and two laboratories were excluded for failing to recognize MTBE as “Ether C5”. The calculated reproducibility (“C5 or more C atoms”) is not in agreement with the requirements of EN1601:14.

MTBE: This determination was problematic for a number of laboratories. Two statistical outliers were observed. However, the calculated reproducibility, after rejection of the statistical outlier, is in agreement with the requirements of EN1601:14.

Other Oxygenates: The concentrations of other oxygenates were all near or below the detection limit of the method used and most of the participants reported a “less then” result. Therefore, no significant conclusions were drawn. Six false positive test results were observed, one for ETBE, two for DIPE, two for TAME and one for Others.

Oxygen content: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of EN1601:14.

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

For Gasoline sample #14196

ASVP: This determination was problematic for a number of laboratories. Four statistical outliers were observed. However, the calculated reproducibility, after rejection of the statistical outliers, is in agreement with the requirements of EN13016-1:07.

DVPE: The Air Saturated Vapour Pressure can be converted to Dry Vapour Pressure Equivalent (DVPE) according to EN13016-1. This conversion was problematic for a number of laboratories. Five statistical outliers were observed.The calculated reproducibility of DVPE after rejection of the statistical outliers is in agreement with the requirements of EN13016-1:07.

For Gasoline sample #14197

RON: The determination was problematic for a number of laboratories. Seven statistical outliers were observed and two laboratories were excluded for probably mixing up the samples #14197 and #14198. However, the calculated reproducibility after rejection of the suspect data is in full agreement with the requirements of ISO5164:14.

MON: The determination of MON was problematic. No statistical outliers were observed and one laboratory was excluded for probably mixing up the samples #14197 and #14198. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements ISO5163:14.

For Gasoline sample #14198 (spiked with 5% TAME)

RON: The determination of RON was problematic for a number of laboratories. Five statistical outliers were observed and two laboratories were excluded for probably mixing up the samples #14197 and #14198. However, the calculated reproducibility after rejection of the suspect data is in full agreement with the requirements of ISO5164:14.

MON: The determination of MON was problematic. No statistical outliers were observed and one laboratory was excluded for probably mixing up the samples #14197 and #14198. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements ISO5163:14.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the standard and the reproducibility as found for the group of participating laboratories. The average results of sample #14195, #14196, #14197 and #14198, calculated reproducibilities and reproducibilities, derived from literature standards (in casu ASTM standards) are compared in the next table.

Parameter		unit	n	mean	2.8 * sd	R (lit)
API Gravity			52	61.63	0.24	0.30
Appearance			65	C&B	n.a.	n.a.
Aromatics by FIA		%V/V	51	28.2	6.0	3.7
Aromatics by GC		%V/V	56	26.41	1.40	1.33
Aromatics by GC		%M/M	40	31.61	1.63	n.a.
Benzene		%V/V	85	0.88	0.08	0.04
Copper Strip 3 hrs @ 50°C			96	1A	n.a.	n.a.
Density at 15°C		kg/m^3	112	732.44	0.89	0.50
Distillation	IBP	ºC	113	27.9	5.6	4.7
	10%-evap.	ºC	109	40.3	2.8	3.2
	50%-evap.	ºC	104	79.1	3.5	1.9
	90%-evap.	ºC	107	144.6	3.0	3.9
	FBP	ºC	116	178.3	7.2	6.8
	%vol at 70ºC	%	111	45.0	2.9	2.7
	%vol at 100ºC	%	110	61.9	2.4	2.2
	%vol at 150ºC	%	106	92.8	1.3	1.3
Doctor Test			59	Negative	n.a.	n.a.
Existent gum (washed)		mg/100mL	47	0.6	0.7	0.8
Lead as Pb		mg/L	42	4.8	3.4	0.6
Manganese as Mn		mg/L	26	5.0	1.2	1.4
Olefins by FIA		%V/V	49	11.3	4.9	3.5
Olefins by GC		%V/V	43	11.42	1.83	1.86
Olefins by GC		%M/M	29	10.31	1.85	n.a.
Oxidation Stability		min	55	>900	n.a	n.a.
Ethanol		%V/V	83	4.67	0.60	0.40
Ethers C5 or more C atoms		%V/V	50	3.46	0.48	0.40
MTBE		%V/V	85	3.32	0.42	0.40
Oxygen content		%M/M	79	2.39	0.33	0.30
Sulphur		mg/kg	105	6.35	2.65	2.07

table 7: performance evaluation sample #14195

* results between brackets should be used with care, because the average found was below the application range

Parameter	Unit	n	mean	2.8 * sd	R (lit)
ASVP	kPa	72	100.44	2.17	2.64
DVPE acc. to EN13016	kPa	89	93.17	1.99	2.57

table 8: performance evaluation sample #14196

Parameter	unit	n	mean	2.8 * sd	R (lit)
RON #14197		66	95.3	0.5	0.7
MON #14197		58	85.3	1.1	0.9

table 9: performance evaluation sample #14197

Parameter	unit	n	mean	2.8 * sd	R (lit)
RON #14197		58	96.1	0.7	0.7
MON #14197		53	85.9	1.1	0.9

table 10: performance evaluation sample #14198

Without further statistical calculations, it can be concluded that for many 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 OCTOBER 2014 WITH PREVIOUS PTS

	October 2014	*October 2013*	*October 2012*	*October 2011*
Number of rep. participants	128	126	95	111
Number of results reported	2945	2425	1709	2153
Statistical outliers	92	74	55	68
Percentage outliers	3.1%	3.1%	3.2%	3.2%

table 11: 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	*October 2014*	*October 2013*	*October 2012*	*October 2011*
API Gravity	+	+/-	+	+
Aromatics by FIA	-	-	+	-
Aromatics by GC	+/-	-	+	-
Benzene	--	--	--	--
Density @ 15°C	-	--	--	+
Distillation	+/-	+	-	-
Existent gum (washed)	+	+/-	(+)	(-)
Lead as Pb	--	(+)	(++)	(++)
Manganese	+	--	(+/-)	n.e.
Olefins by FIA	-	-	(-)	--
Olefins by GC	+/-	++	(++)	+
Ethanol	-	-	-	--
Ethers C5 or more C atoms	-	-	n.e.	n.e.
MTBE	+/-	--	-	+
Oxygen	+/-	+	+	-
Sulphur	-	+/-	-	+
ASVP	+	-	+/-	+
DVPE EN13016-1	+	-	+/-	+
RON	+	+/-	+/-	+
MON	-	-	+	+

table 12: comparison determinations against the standard

* Results between brackets do not meet the application range of the test method.

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

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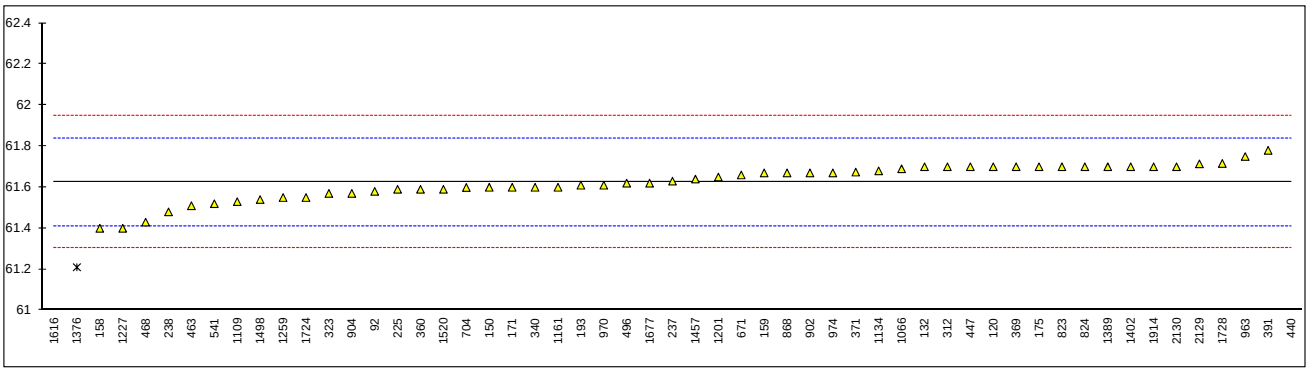
APPENDIX 1

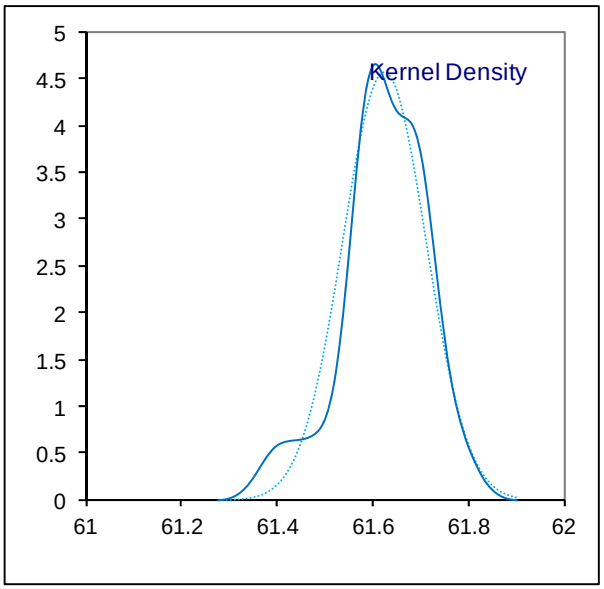
Determination of API Gravity on sample #14195;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	D4052	61.58		-0.42	1161	D28	61.6		-0.24
120	D4052	61.7		0.70	1167		-----		-----
132	D4052	61.70		0.70	1171		-----		-----
150	D4052	61.6		-0.24	1186		-----		-----
158	D4052	61.4		-2.10	1191		-----		-----
159	D4052	61.67		0.42	1194		-----		-----
171	D4052	61.6		-0.24	1199		-----		-----
175	D4052	61.7		0.70	1201	D4052	61.65		0.23
193	D4052	61.61		-0.14	1227	D1298	61.4		-2.10
194		-----		-----	1229		-----		-----
225	D4052	61.59		-0.33	1257		-----		-----
228		-----		-----	1259	D1298	61.55		-0.70
237	D4052	61.63		0.04	1299		-----	W	-----
238	D1298	61.48		-1.36	1376	D4052	61.21	R(0.01)	-3.88
273		-----		-----	1389	D4052	61.7		0.70
311		-----		-----	1395		-----		-----
312	D4052	61.70		0.70	1397		-----		-----
323	D4052	61.57		-0.52	1402	D4052	61.70		0.70
334		-----		-----	1404		-----		-----
335		-----		-----	1409		-----		-----
336		-----		-----	1428		-----		-----
337		-----		-----	1443		-----		-----
338		-----		-----	1457	D4052	61.64		0.14
340	D4052	61.6		-0.24	1491		-----		-----
344		-----		-----	1498	D1298	61.54		-0.80
350		-----		-----	1501		-----		-----
353		-----		-----	1520	D4052	61.59		-0.33
360	D1298	61.59		-0.33	1528		-----		-----
369	D4052	61.70		0.70	1537		-----		-----
370		-----		-----	1549		-----		-----
371	D1298	61.674		0.45	1556		-----		-----
391	D1298	61.78		1.44	1564		-----		-----
399		-----		-----	1569		-----		-----
402		-----		-----	1570		-----		-----
403		-----		-----	1610		-----		-----
420		-----		-----	1616	Calc.	60.6	C,R(0.01)	-9.57
431		-----		-----	1634		-----		-----
440	D4052	732.1	ex	6257.76	1635		-----		-----
444		-----		-----	1636		-----		-----
445		-----		-----	1654		-----		-----
447	D4052	61.7		0.70	1677	D4052	61.62		-0.05
463	D1298	61.51	C	-1.08	1709		-----		-----
468	D1298	61.43		-1.82	1710		-----		-----
485		-----		-----	1720		-----		-----
496	D1298	61.62		-0.05	1724	D1298	61.55		-0.70
541	D4052	61.52		-0.98	1728	D1298	61.716		0.85
556		-----		-----	1730		-----		-----
558		-----		-----	1742		-----		-----
671	D4052	61.66		0.32	1751		-----		-----
704	D1250	61.599		-0.25	1753		-----		-----
782		-----		-----	1776		-----		-----
823	D1298	61.7		0.70	1788		-----		-----
824	D4052	61.7		0.70	1805		-----		-----
868	D4052	61.67		0.42	1807		-----		-----
902	D4052	61.67		0.42	1810		-----		-----
904	D4052	61.57		-0.52	1811		-----		-----
963	D4052	61.75		1.16	1833		-----		-----
970	D4052	61.61		-0.14	1842		-----		-----
974	Calc.	61.67		0.42	1849		-----		-----
1006		-----		-----	1851		-----		-----
1026		-----		-----	1881		-----		-----
1033		-----		-----	1895		-----		-----
1059		-----		-----	1914	D4052	61.70		0.70
1066	D4052	61.69		0.60	1938		-----		-----
1080		-----		-----	1951		-----		-----
1081		-----		-----	2129	Calc.	61.714		0.83
1082		-----		-----	2130	D4052	61.70		0.70
1109	D4052	61.53		-0.89	2146		-----		-----
1126		-----		-----	7013		-----		-----
1134	D1298	61.68		0.51					

normality	OK
n	52
outliers	2 (+1ex)
mean (n)	61.625
st.dev. (n)	0.0853
R(calc.)	0.239
R(D1298:12b)	0.300

Lab 440 excluded for reporting density result
Lab 463 first reported 60.70
Lab 1299 results withdrawn, first reported 732.4
Lab 1616 first reported 61.3





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Determination of Appearance on sample #14195;

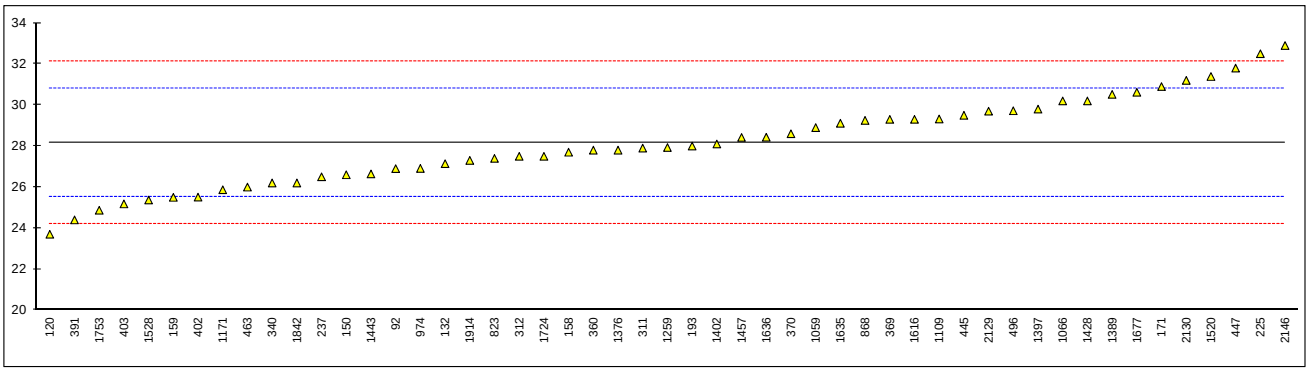
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	D4176	Pass		-----	1161		-----		-----
120	Visual	C&B		-----	1167		-----		-----
132	D4176	C&B		-----	1171		-----		-----
150	D4176	Pass		-----	1186		-----		-----
158		-----		-----	1191		-----		-----
159		Pass		-----	1194		-----		-----
171	D4176	Pass		-----	1199		-----		-----
175		-----		-----	1201	Visual	C&B		-----
193	D4176	Pass		-----	1227		C&B		-----
194		-----		-----	1229		-----		-----
225	Visual	C&B		-----	1257		-----		-----
228		-----		-----	1259		-----		-----
237	D4176	C&B		-----	1299	Visual	OK		-----
238	Visual	C&B		-----	1376	Visual	C&B		-----
273		-----		-----	1389	D4176	C&B		-----
311	Visual	Clear		-----	1395		-----		-----
312	Visual	C&B		-----	1397		-----		-----
323	INH-001	C&B		-----	1402	D4176	C&B		-----
334		-----		-----	1404	Visual	C&B		-----
335		-----		-----	1409		-----		-----
336	Visual	C&B		-----	1428		C&B		-----
337		-----		-----	1443		-----		-----
338	Visual	C&B		-----	1457	Visual	C&B		-----
340	in house	C&B		-----	1491		-----		-----
344		-----		-----	1498		-----		-----
350	D4176	C&B		-----	1501		-----		-----
353	D4176	C&B		-----	1520	Visual	C&B		-----
360	Visual	C&B		-----	1528	Visual	Clear		-----
369	Visual	C&B		-----	1537		-----		-----
370	Visual	C&B		-----	1549		-----		-----
371	Visual	C&B		-----	1556		C&B		-----
391	E2680	Pass		-----	1564		-----		-----
399	Visual	C&B		-----	1569		-----		-----
402		-----		-----	1570		-----		-----
403		-----		-----	1610	Visual	C&B		-----
420		-----		-----	1616	Visual	C&B		-----
431		-----		-----	1634	Visual	C&B		-----
440	Visual	C&B		-----	1635		-----		-----
444		-----		-----	1636		-----		-----
445	Visual	C&B		-----	1654		-----		-----
447	Visual	C&B		-----	1677	Visual	C&B		-----
463	D4176	Pass		-----	1709		-----		-----
468	D4176	Pass		-----	1710		-----		-----
485		-----		-----	1720		-----		-----
496	Visual	C&B		-----	1724		-----		-----
541	Visual	C&B		-----	1728	Visual	C&B		-----
556		-----		-----	1730		-----		-----
558		-----		-----	1742		-----		-----
671		C&B		-----	1751		-----		-----
704	Visual	C&B		-----	1753		-----		-----
782		-----		-----	1776		-----		-----
823		-----		-----	1788		-----		-----
824	Visual	C&B		-----	1805		-----		-----
868	Visual	C&B		-----	1807		-----		-----
902	D4176	C&B		-----	1810		-----		-----
904	Visual	C&B		-----	1811		-----		-----
963		-----		-----	1833		C&B		-----
970		C&B		-----	1842		-----		-----
974	Visual	C&B		-----	1849		-----		-----
1006		-----		-----	1851		-----		-----
1026		C&B		-----	1881		-----		-----
1033	Visual	C&B, Yellow		-----	1895		-----		-----
1059	Visual	C&B, Yellow		-----	1914	Visual	C&B		-----
1066	Visual	C&B		-----	1938		-----		-----
1080		-----		-----	1951		-----		-----
1081		-----		-----	2129		C&B		-----
1082		-----		-----	2130	Visual	C&B		-----
1109		-----		-----	2146		-----		-----
1126		-----		-----	7013		-----		-----
1134	Visual	C&B		-----					
	n	65							
	mean (n)	C&B							

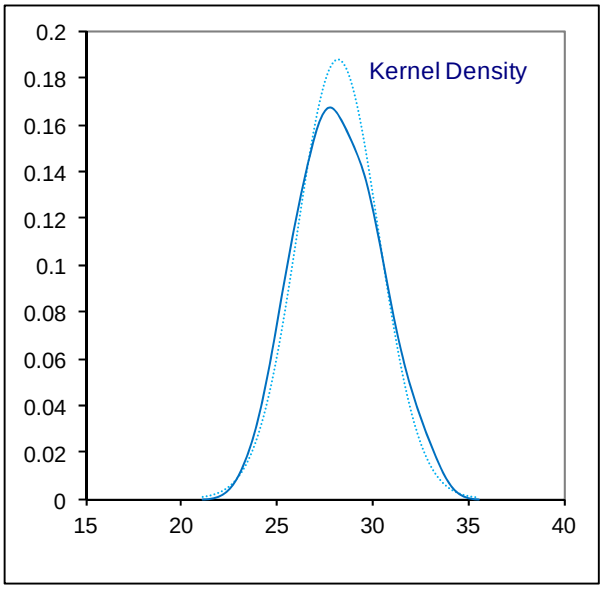
C&B = Clear and Bright

Determination of Aromatics by FIA on sample #14195; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	D1319	26.9		-0.95	1161		-----		-----
120	D1319	23.7		-3.37	1167		-----		-----
132	D1319	27.14		-0.77	1171	D1319Mod.	25.87		-1.73
150	D1319	26.6		-1.18	1186		-----		-----
158	D1319	27.7		-0.35	1191		-----		-----
159	D1319	25.5		-2.01	1194		-----		-----
171	D1319	30.9		2.08	1199		-----		-----
175		-----		-----	1201		-----		-----
193	D1319	28.0		-0.12	1227		-----		-----
194		-----		-----	1229		-----		-----
225	D1319	32.5		3.29	1257		-----		-----
228		-----		-----	1259	EN15553	27.93		-0.17
237	D1319	26.5		-1.25	1299		-----		-----
238		-----		-----	1376	D1319	27.80		-0.27
273		-----		-----	1389	D1319	30.52		1.79
311	D1319	27.9		-0.19	1395		-----		-----
312	EN15553	27.5		-0.50	1397	EN15553	29.8		1.24
323		-----		-----	1402	D1319	28.1		-0.04
334		-----		-----	1404		-----		-----
335		-----		-----	1409		-----		-----
336		-----		-----	1428		30.2		1.55
337		-----		-----	1443	EN15553	26.64		-1.15
338		-----		-----	1457	D1319	28.42		0.20
340	EN15553	26.2		-1.48	1491		-----		-----
344		-----		-----	1498		-----		-----
350		-----		-----	1501		-----		-----
353		-----		-----	1520	EN15553	31.39		2.45
360	EN15553	27.8		-0.27	1528	EN15553	25.37		-2.11
369	EN15553	29.3		0.87	1537		-----		-----
370	D1319	28.6		0.34	1549		-----		-----
371		-----		-----	1556		-----		-----
391	EN15553	24.4		-2.84	1564		-----		-----
399		-----		-----	1569		-----		-----
402	D1319	25.51		-2.00	1570		-----		-----
403	EN15553	25.18		-2.25	1610		-----		-----
420		-----		-----	1616	D1319	29.3		0.87
431		-----		-----	1634		-----		-----
440		-----		-----	1635	D1319	29.11		0.72
444		-----		-----	1636	EN15553	28.43		0.21
445	D1319	29.5		1.02	1654		-----		-----
447	D1319	31.8		2.76	1677	D1319	30.62		1.86
463	EN15553	26.0		-1.63	1709		-----		-----
468		-----		-----	1710		-----		-----
485		-----		-----	1720		-----		-----
496	EN15553	29.72		1.18	1724	EN15553	27.5		-0.50
541		-----		-----	1728		-----		-----
556		-----		-----	1730		-----		-----
558		-----		-----	1742		-----		-----
671		-----		-----	1751		-----		-----
704		-----		-----	1753	EN15553	24.87		-2.49
782		-----		-----	1776		-----		-----
823	D1319	27.4		-0.57	1788		-----		-----
824		-----		-----	1805		-----		-----
868	D1319	29.25		0.83	1807		-----		-----
902		-----		-----	1810		-----		-----
904		-----		-----	1811		-----		-----
963		-----		-----	1833		-----		-----
970		-----		-----	1842	D1319	26.2		-1.48
974	D1319	26.91		-0.94	1849		-----		-----
1006		-----		-----	1851		-----		-----
1026		-----		-----	1881		-----		-----
1033		-----		-----	1895		-----		-----
1059	EN15553	28.9		0.56	1914	D1319	27.3		-0.65
1066	EN15553	30.2		1.55	1938		-----		-----
1080		-----		-----	1951		-----		-----
1081		-----		-----	2129	EN15553	29.7		1.17
1082		-----		-----	2130	EN15553	31.2		2.30
1109	D1319	29.32		0.88	2146	D1319	32.9		3.59
1126		-----		-----	7013		-----		-----
1134		-----		-----					

normality	OK
n	51
outliers	0
mean (n)	28.16
st.dev. (n)	2.124
R(calc.)	5.95
R(EN15553:07)	3.70



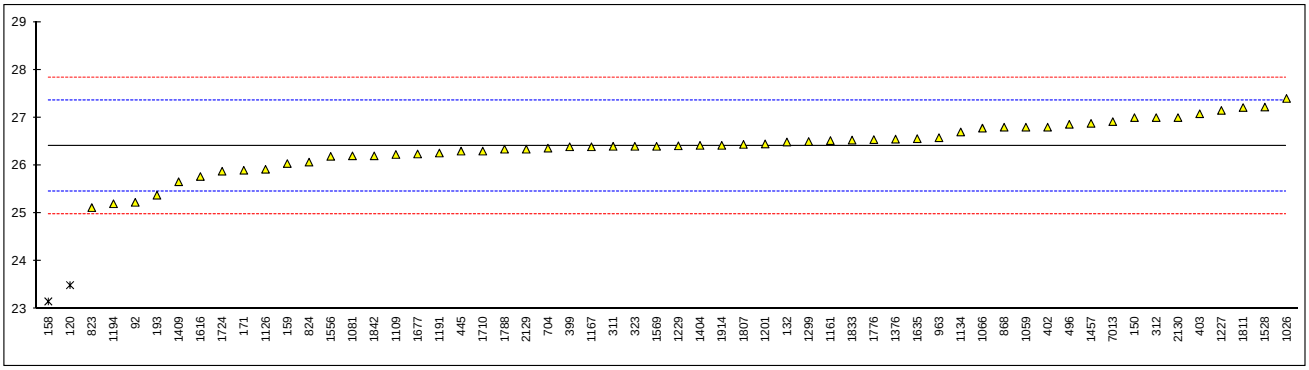


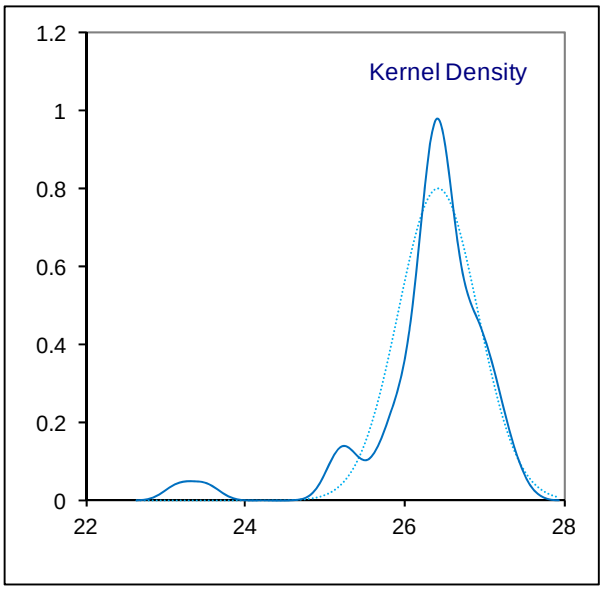
Determination of Aromatics by GC on sample #14195; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	INH-14	25.23		-2.50	1161	ISO22854	26.52		0.23
120	D5769	23.5	C,R(0.01)	-6.15	1167	ISO22854	26.39		-0.05
132	D5769	26.49		0.16	1171		-----		-----
150	D5769	27.0		1.24	1186		-----		-----
158	D5769	23.16	R(0.01)	-6.86	1191	ISO22854	26.26		-0.32
159	D5769	26.04		-0.79	1194	ISO22854	25.2		-2.56
171	D5769	25.9		-1.08	1199		-----		-----
175		-----		-----	1201	ISO22854	26.45		0.08
193	D5769	25.38		-2.18	1227	D6839	27.15		1.56
194		-----		-----	1229	ISO22854	26.41		-0.01
225		-----		-----	1257		-----		-----
228		-----		-----	1259		-----		-----
237		-----		-----	1299	ISO22854	26.5		0.18
238		-----		-----	1376	D6730	26.55		0.29
273		-----		-----	1389		-----		-----
311	ISO22854	26.4		-0.03	1395		-----		-----
312	ISO22854	27.0		1.24	1397		-----		-----
323	EN22854	26.4		-0.03	1402		-----		-----
334		-----		-----	1404	ISO22854	26.42		0.02
335		-----		-----	1409	ISO22854	25.66		-1.59
336		-----		-----	1428		-----		-----
337		-----		-----	1443		-----		-----
338		-----		-----	1457	ISO22854	26.88		0.99
340		-----		-----	1491		-----		-----
344		-----		-----	1498		-----		-----
350		-----		-----	1501		-----		-----
353		-----		-----	1520		-----		-----
360		-----		-----	1528	ISO22854	27.22		1.70
369		-----		-----	1537		-----		-----
370		-----		-----	1549		-----		-----
371		-----		-----	1556	ISO22854	26.19		-0.47
391		-----		-----	1564		-----		-----
399	ISO22854	26.39		-0.05	1569	ISO22854	26.40		-0.03
402	ISO22854	26.80		0.82	1570		-----		-----
403	ISO22854	27.08		1.41	1610		-----		-----
420		-----		-----	1616	D6839	25.77		-1.36
431		-----		-----	1634		-----		-----
440		-----		-----	1635	ISO22854	26.56		0.31
444		-----		-----	1636		-----		-----
445	EN14517	26.3		-0.24	1654		-----		-----
447		-----		-----	1677	ISO22854	26.24		-0.36
463		-----		-----	1709		-----		-----
468		-----		-----	1710	ISO22854	26.3		-0.24
485		-----		-----	1720		-----		-----
496	ISO22854	26.86		0.94	1724	ISO22854	25.88		-1.12
541		-----		-----	1728		-----		-----
556		-----		-----	1730		-----		-----
558		-----		-----	1742		-----		-----
671		-----		-----	1751		-----		-----
704	D5580	26.362		-0.11	1753		-----		-----
782		-----		-----	1776	ISO22854	26.54		0.27
823	D5580	25.12		-2.73	1788	D6839	26.34		-0.15
824	D5580	26.07		-0.72	1805		-----		-----
868	D6839	26.80		0.82	1807	ISO22854	26.44		0.06
902		-----		-----	1810		-----		-----
904		-----		-----	1811	ISO22854	27.21		1.68
963	ISO22854	26.58		0.35	1833	ISO22854	26.53	C	0.25
970		-----		-----	1842	ISO22854	26.2		-0.45
974		-----		-----	1849		-----		-----
1006		-----		-----	1851		-----		-----
1026	D6729	27.4		2.08	1881		-----		-----
1033		-----		-----	1895		-----		-----
1059	ISO22854	26.8		0.82	1914		26.42		0.02
1066	ISO22854	26.78		0.77	1938		-----		-----
1080		-----		-----	1951		-----		-----
1081	ISO22854	26.2		-0.45	2129	D6730	26.34		-0.15
1082		-----		-----	2130	D6730	27.0		1.24
1109	D6839	26.23		-0.39	2146		-----		-----
1126	EN14517	25.92		-1.04	7013	INH-DHA	26.916		1.06
1134	ISO22854	26.70		0.61					

normality	OK
n	56
outliers	2
mean (n)	26.413
st.dev. (n)	0.4982
R(calc.)	1.395
R(EN22854:14)	1.327

Lab 120 first reported 24.5
Lab 1833 first reported 31.42





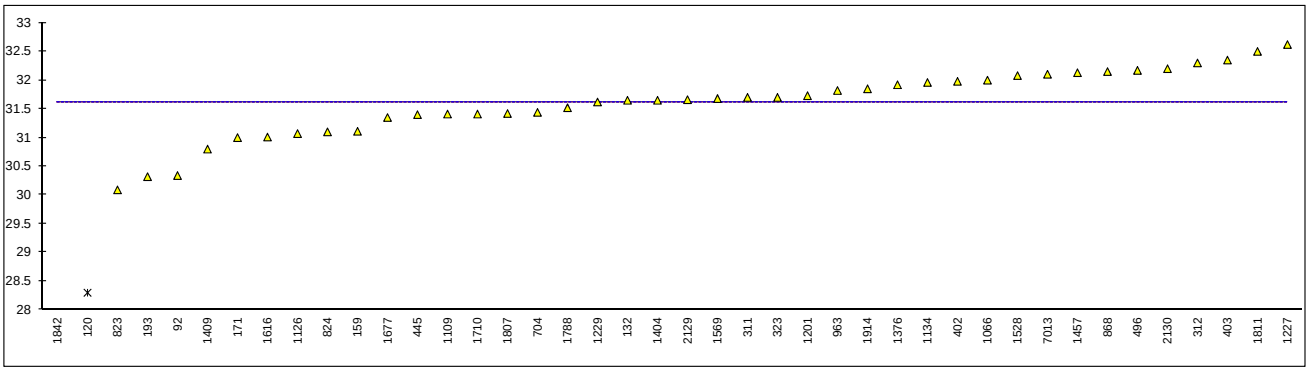
Determination of Aromatics by GC on sample #14195; results in %M/M

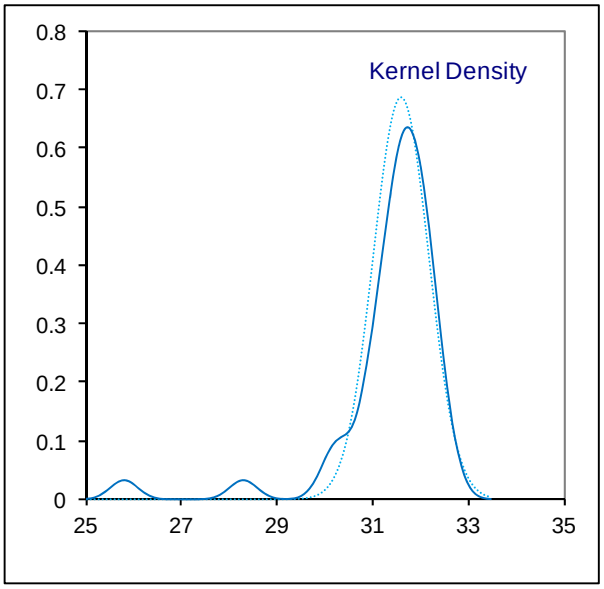
lab	method	value	mark	z(targ)
92	INH-14	30.34		-----
120	D5769	28.3	C,R(0.01)	-----
132	D5769	31.65		-----
150		-----		-----
158		-----		-----
159	D5769	31.11		-----
171	D5769	31.0		-----
175		-----		-----
193	D5769	30.32		-----
194		-----		-----
225		-----		-----
228		-----		-----
237		-----		-----
238		-----		-----
273		-----		-----
311	ISO22854	31.7		-----
312	ISO22854	32.3		-----
323	ISO22854	31.7		-----
334		-----		-----
335		-----		-----
336		-----		-----
337		-----		-----
338		-----		-----
340		-----		-----
344		-----		-----
350		-----		-----
353		-----		-----
360		-----		-----
369		-----		-----
370		-----		-----
371		-----		-----
391		-----		-----
399		-----		-----
402		31.98		-----
403		32.35		-----
420		-----		-----
431		-----		-----
440		-----		-----
444		-----		-----
445	EN14517	31.4		-----
447		-----		-----
463		-----		-----
468		-----		-----
485		-----		-----
496	ISO22854	32.17		-----
541		-----		-----
556		-----		-----
558		-----		-----
671		-----		-----
704	D5580	31.439		-----
782		-----		-----
823	D5580	30.09		-----
824	D5580	31.10		-----
868	D6839	32.15		-----
902		-----		-----
904		-----		-----
963	ISO22854	31.82		-----
970		-----		-----
974		-----		-----
1006		-----		-----
1026		-----		-----
1033		-----		-----
1059		-----		-----
1066	ISO22854	32.00		-----
1080		-----		-----
1081		-----		-----
1082		-----		-----
1109	D6839	31.41		-----
1126	EN14517	31.07		-----
1134	ISO22854	31.96		-----
1161		-----		-----
1167		-----		-----
1171		-----		-----
1186		-----		-----
1191		-----		-----
1194		-----		-----
1199		-----		-----
1201	ISO22854	31.73		-----
1227	D6839	32.62		-----
1229	ISO22854	31.62		-----
1257		-----		-----
1259		-----		-----
1299		-----		-----
1376	D6730	31.92		-----
1389		-----		-----
1395		-----		-----
1397		-----		-----
1402		-----		-----
1404	ISO22854	31.65		-----
1409	ISO22854	30.80		-----
1428		-----		-----
1443		-----		-----
1457	ISO22854	32.13		-----
1491		-----		-----
1498		-----		-----
1501		-----		-----
1520		-----		-----
1528		32.08		-----
1537		-----		-----
1549		-----		-----
1556		-----		-----
1564		-----		-----
1569	ISO22854	31.68		-----
1570		-----		-----
1610		-----		-----
1616	D6839	31.01		-----
1634		-----		-----
1635		-----		-----
1636		-----		-----
1654		-----		-----
1677	ISO22854	31.35		-----
1709		-----		-----
1710	ISO22854	31.41		-----
1720		-----		-----
1724		-----		-----
1728		-----		-----
1730		-----		-----
1742		-----		-----
1751		-----		-----
1753		-----		-----
1776		-----		-----
1788	D6839	31.52		-----
1805		-----		-----
1807	ISO22854	31.42		-----
1810		-----		-----
1811	ISO22854	32.50		-----
1833		-----		-----
1842	ISO22854	25.8	R(0.01)	-----
1849		-----		-----
1851		-----		-----
1881		-----		-----
1895		-----		-----
1914		31.85		-----
1938		-----		-----
1951		-----		-----
2129	D6730	31.66		-----
2130	D6730	32.2		-----
2146		-----		-----
7013	INH-DHA	32.103		-----

normality	OK
n	40
outliers	2
mean (n)	31.608
st.dev. (n)	0.5821
R(calc.)	1.630
R(lit)	Unknown

Compare R(iis13B05EN) = 2.223

Lab 120 first reported 29.3



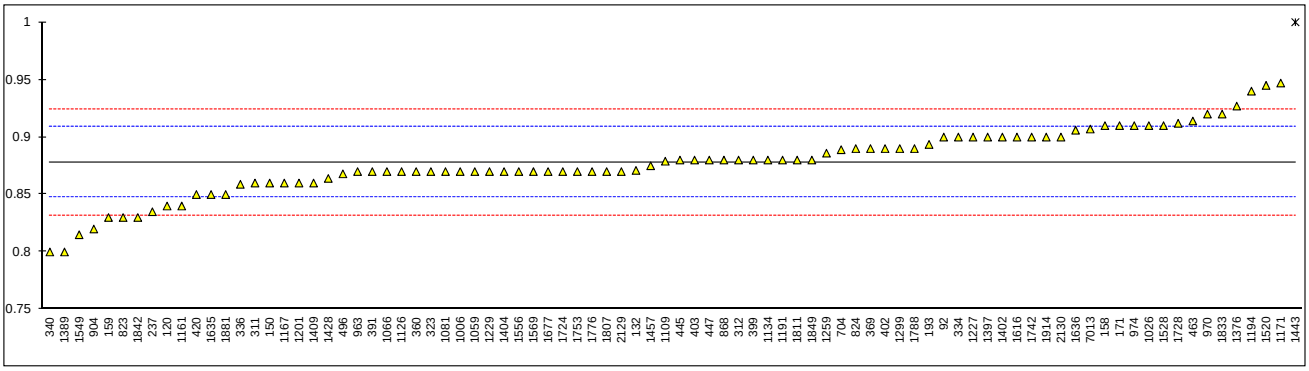


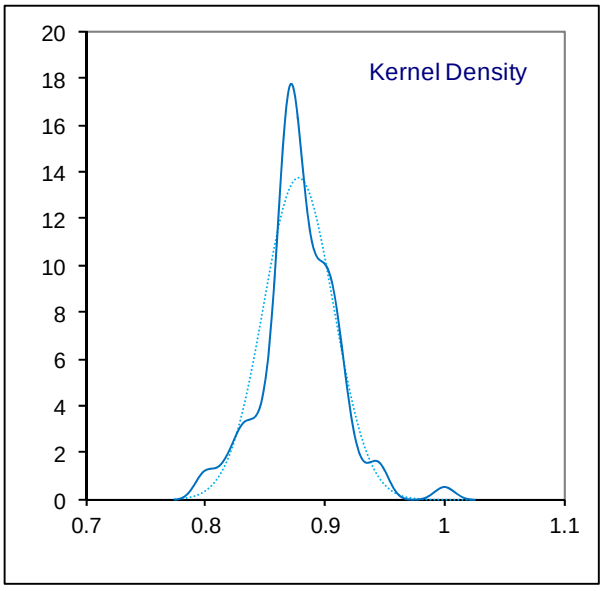
Determination of Benzene on sample #14195; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	INH-14	0.90		1.42	1161	ISO22854	0.84		-2.47
120	D3606	0.84		-2.47	1167	ISO22854	0.86		-1.18
132	D3606	0.871		-0.46	1171	D6277	0.947		4.46
150	D3606	0.86		-1.18	1186		-----		-----
158	D3606	0.91		2.06	1191	ISO22854	0.88		0.12
159	D3606	0.83		-3.12	1194	ISO22854	0.94		4.01
171	D3606	0.91		2.06	1199		-----		-----
175		-----		-----	1201	ISO22854	0.86		-1.18
193	D3606	0.8936		1.00	1227	D6839	0.90		1.42
194		-----		-----	1229	ISO22854	0.87		-0.53
225		-----		-----	1257		-----		-----
228		-----		-----	1259	EN12177	0.886		0.51
237	D5580	0.835		-2.79	1299	ISO22854	0.89		0.77
238		-----		-----	1376	D6730	0.927		3.16
273		-----		-----	1389	EN12177	0.8		-5.06
311	ISO22854	0.86		-1.18	1395		-----		-----
312	ISO22854	0.88		0.12	1397	EN238	0.9		1.42
323	ISO22854	0.87		-0.53	1402	EN238	0.9		1.42
334	EN238	0.9	C	1.42	1404	ISO22854	0.87		-0.53
335		-----		-----	1409	ISO22854	0.86		-1.18
336	EN238	0.8589		-1.25	1428	EN12177	0.864		-0.92
337		-----		-----	1443	EN12177	1.0	C,R(0.01)	7.89
338		-----		-----	1457	ISO22854	0.875		-0.20
340	EN238	0.8		-5.06	1491		-----		-----
344		-----		-----	1498		-----		-----
350		-----		-----	1501		-----		-----
353		-----		-----	1520	EN238	0.945		4.33
360	EN12177	0.87		-0.53	1528	ISO22854	0.91		2.06
369	EN238	0.89		0.77	1537		-----		-----
370		-----		-----	1549	D6277	0.815		-4.09
371		-----		-----	1556	ISO22854	0.87		-0.53
391	EN12177	0.87		-0.53	1564		-----		-----
399	ISO22854	0.88		0.12	1569	ISO22854	0.87		-0.53
402	ISO22854	0.89		0.77	1570		-----		-----
403	ISO22854	0.88		0.12	1610		-----		-----
420	EN12177	0.85		-1.82	1616	D6839	0.90		1.42
431		-----		-----	1634		-----		-----
440		-----		-----	1635	ISO22854	0.85		-1.82
444		-----		-----	1636	EN238	0.906		1.80
445	EN14517	0.88		0.12	1654		-----		-----
447	IP429	0.88		0.12	1677	ISO22854	0.87		-0.53
463	EN238	0.914		2.32	1709		-----		-----
468		-----		-----	1710		-----		-----
485		-----		-----	1720		-----		-----
496	ISO22854	0.868		-0.66	1724	ISO22854	0.87		-0.53
541		-----		-----	1728	EN238	0.912		2.19
556		-----		-----	1730		-----		-----
558		-----		-----	1742	EN238	0.9		1.42
671		-----		-----	1751		-----		-----
704	D5580	0.889		0.70	1753	EN12177	0.87		-0.53
782		-----		-----	1776	ISO22854	0.87		-0.53
823	D5580	0.83		-3.12	1788	D6839	0.89		0.77
824	D5580	0.89		0.77	1805		-----		-----
868	D6839	0.88		0.12	1807	ISO22854	0.87		-0.53
902		-----		-----	1810		-----		-----
904	D5580	0.82		-3.77	1811	ISO22854	0.88		0.12
963	ISO22854	0.87		-0.53	1833	ISO22854	0.92		2.71
970	D5580	0.92		2.71	1842	ISO22854	0.83		-3.12
974	D5580	0.91		2.06	1849	EN12177	0.88		0.12
1006		0.87		-0.53	1851		-----		-----
1026	EN12177	0.91		2.06	1881	IP429	0.85	C	-1.82
1033		-----		-----	1895		-----		-----
1059	ISO22854	0.87		-0.53	1914	IP429	0.90		1.42
1066	ISO22854	0.87		-0.53	1938		-----		-----
1080		-----		-----	1951		-----		-----
1081	ISO22854	0.87		-0.53	2129	D6730	0.87		-0.53
1082		-----		-----	2130	D6730	0.9		1.42
1109	D3606	0.879		0.06	2146		-----		-----
1126	EN14517	0.87		-0.53	7013	INH-DHA	0.907		1.87
1134	ISO22854	0.88		0.12					

		All except EN238	Only ISO22854	
normality	OK	OK	not OK	
n	85	75	32	
outliers	1	1 (+11 ex)	1 (+53 ex)	
mean (n)	0.878	0.876	0.872	
st.dev. (n)	0.0290	0.0273	0.0168	
R(calc.)	0.081	0.076	0.047	
R(ISO22854:14)	0.043	0.043	0.043	Compare R(EN12777:98) = 0.100

Lab 334 first reported 0.70
Lab 1443 first reported 0.66
Lab 1881 first reported 0.75





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Determination of Copper strip 3hrs/50°C on sample #14195;

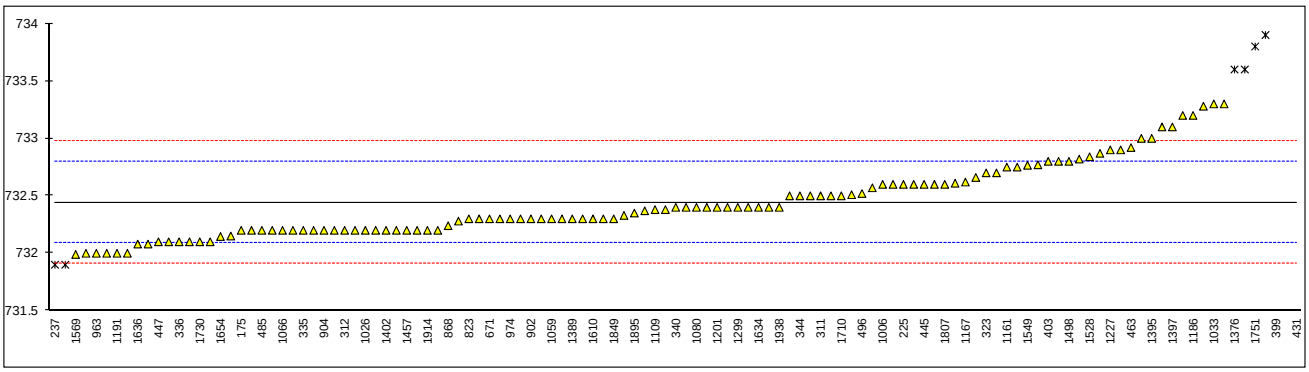
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	D130	1A		-----	1161	ISO2160	1A		-----
120	D130	1A		-----	1167	ISO2160	1A		-----
132	D130	1A		-----	1171	ISO2160	1A		-----
150	D130	1A		-----	1186	D130	1A		-----
158	D130	1A		-----	1191		-----		-----
159	D130	1A		-----	1194		-----		-----
171	D130	1A		-----	1199		-----		-----
175	D130	1A		-----	1201	D130	1A		-----
193	D130	1A		-----	1227	D130	1A		-----
194		-----		-----	1229		-----		-----
225	D130	1A		-----	1257	D130	1		-----
228		-----		-----	1259	ISO2160	1A		-----
237	D130	1A		-----	1299	D130	1A		-----
238	D130	1A		-----	1376	D130	1B		-----
273		-----		-----	1389	D130	1A		-----
311	D130	1A		-----	1395		-----		-----
312	D130	1A		-----	1397		1		-----
323		1A		-----	1402	IP154	1A		-----
334		-----		-----	1404	ISO2160	1A		-----
335		1		-----	1409	ISO2160	1A		-----
336	ISO2160	1		-----	1428	D130	1A		-----
337		-----		-----	1443		-----		-----
338		-----		-----	1457	D130	1A		-----
340	ISO2160	1A		-----	1491	ISO2160	1A		-----
344	D130	1A		-----	1498		-----		-----
350		-----		-----	1501		-----		-----
353	IP154	1A		-----	1520	ISO2160	1A		-----
360	ISO2160	1A		-----	1528	ISO2160	1B		-----
369	ISO2160	1A		-----	1537		-----		-----
370	ISO2160	1A		-----	1549		-----		-----
371	ISO2160	1A		-----	1556	ISO2160	1A		-----
391	D130	1A		-----	1564		-----		-----
399		-----		-----	1569	ISO2160	1A		-----
402	ISO2130	1A		-----	1570	ISO2160	1A		-----
403	ISO2160	1A		-----	1610		-----		-----
420	ISO2160	1A		-----	1616	D130	1A		-----
431		-----		-----	1634	D130	1A		-----
440	IP154	1A		-----	1635	D130	1A		-----
444		-----		-----	1636		1A		-----
445	IP154	1A		-----	1654	ISO2160	1A		-----
447	D130	1A		-----	1677	D130	1A		-----
463	ISO2160	1A		-----	1709		-----		-----
468		1A		-----	1710	ISO2160	1A		-----
485		-----		-----	1720		-----		-----
496	ISO2160	1A		-----	1724		-----		-----
541	D130	1A		-----	1728	D130	1A		-----
556		-----		-----	1730		-----		-----
558		-----		-----	1742		-----		-----
671	D130	1A		-----	1751	ISO2160	1A		-----
704	D130	1A		-----	1753		1A		-----
782		-----		-----	1776	ISO2160	1A		-----
823	D130	1A		-----	1788	D130	1A		-----
824		-----		-----	1805		-----		-----
868	D130	1A		-----	1807	ISO2160	1A		-----
902		-----		-----	1810		-----		-----
904	D130	1A		-----	1811		-----		-----
963	D130	1A		-----	1833		1A		-----
970	D130	1A		-----	1842	IP154	1A		-----
974	D130	1A		-----	1849	ISO2160	1A		-----
1006	D130	1A		-----	1851		-----		-----
1026	ISO2160	1A		-----	1881		-----		-----
1033	IP154	1A		-----	1895	ISO2160	1A		-----
1059	ISO2160	1A		-----	1914	D130	1A		-----
1066	D130	1A		-----	1938		-----		-----
1080	D130	1B		-----	1951		-----		-----
1081	D130	1A		-----	2129	D130	1A		-----
1082		-----		-----	2130	IP154	1A		-----
1109	D130	1A		-----	2146		-----		-----
1126		-----		-----	7013	D130	1A		-----
1134	IP130	1A		-----					
	n	96							
	mean (n)	1A							

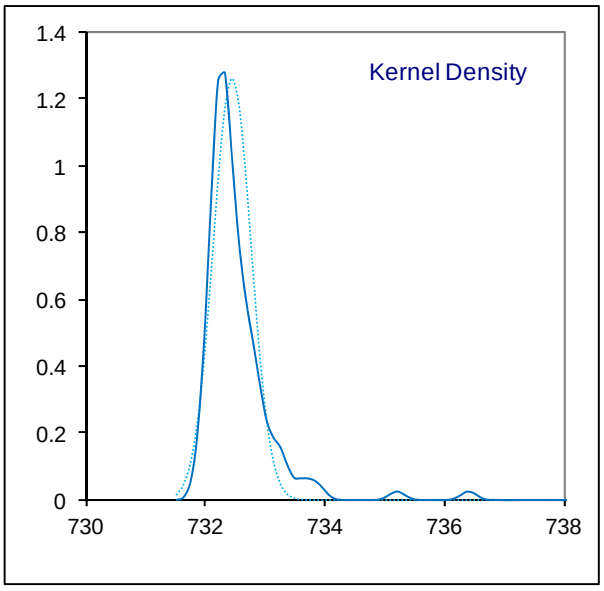
Determination of Density @ 15°C on sample #14195; results in kg/m^3

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	D4052	732.6		0.88	1161	ISO12185	732.75		1.72
120	D4052	732.2		-1.36	1167	ISO12185	732.62		1.00
132	D4052	732.20		-1.36	1171	D4052	732.6		0.88
150	D4052	732.5		0.32	1186	D1298	733.2	C	4.24
158	D4052	733.3		4.80	1191	ISO12185	732.0		-2.48
159	D4052	732.3		-0.80	1194		-----		-----
171	D4052	732.7		1.44	1199		-----		-----
175	D4052	732.2		-1.36	1201	D4052	732.4		-0.24
193	D4052	732.0		-2.48	1227	D4052	732.9		2.56
194		-----		-----	1229	ISO12185	732.4		-0.24
225	D4052	732.6		0.88	1257	D4052	733.28	C	4.69
228	D4052	732.0		-2.48	1259	ISO3675	732.8		2.00
237	D4052	731.9	C,R(0.05)	-3.04	1299	D4052	732.4		-0.24
238	D4052	732.87		2.40	1376	D4052	733.6	R(0.05)	6.48
273		-----		-----	1389	D4052	732.3		-0.80
311	ISO12185	732.5		0.32	1395	D4052	733.0		3.12
312	D4052	732.2		-1.36	1397	ISO12185	733.1		3.68
323	ISO12185	732.7		1.44	1402	IP365	732.2		-1.36
334	ISO12185	732.2		-1.36	1404	ISO12185	732.2		-1.36
335	ISO12185	732.2		-1.36	1409	ISO12185	732.4		-0.24
336	ISO12185	732.1		-1.92	1428		732.3		-0.80
337	ISO12185	732.5		0.32	1443	ISO12185	732.66		1.22
338	ISO12185	732.2		-1.36	1457	ISO12185	732.2		-1.36
340	ISO12185	732.4		-0.24	1491	ISO12185	732.33	C	-0.63
344	D4052	732.5		0.32	1498	D1298	732.8		2.00
350	ISO3675	733.0		3.12	1501		-----		-----
353	IP365	732.3		-0.80	1520	ISO12185	732.10		-1.92
360	ISO12185	732.6		0.88	1528	ISO12185	732.84	C	2.23
369	ISO12185	732.2		-1.36	1537		-----		-----
370	ISO12185	732.4		-0.24	1549	ISO12185	732.766		1.81
371	ISO12185	732.3		-0.80	1556	ISO12185	732.77		1.84
391	ISO12185	731.9	R(0.05)	-3.04	1564		-----		-----
399	D1298	735.2	R(0.01)	15.44	1569	ISO12185	731.99		-2.53
402	ISO12185	732.51		0.38	1570	ISO12185	733.6	R(0.05)	6.48
403	ISO12185	732.8		2.00	1610	IP365	732.3	C	-0.80
420		-----		-----	1616	D4052	736.4	C,R(0.01)	22.16
431	ISO12185	760.59	R(0.01)	157.63	1634	ISO12185	732.4		-0.24
440	D4052	732.1		-1.92	1635		-----		-----
444		-----		-----	1636	ISO12185	732.08		-2.03
445	IP365	732.6		0.88	1654	ISO12185	732.146		-1.66
447	IP365	732.1		-1.92	1677	D4052	732.28		-0.91
463	ISO12185	732.92	C	2.68	1709		-----		-----
468	ISO12185	733.20		4.24	1710	ISO12185	732.5		0.32
485	ISO12185	732.2		-1.36	1720		-----		-----
496	ISO12185	732.52		0.44	1724	ISO12185	732.75	C	1.72
541	ISO12185	733.1		3.68	1728	D4052	732.15		-1.64
556		-----		-----	1730	ISO12185	732.1	C	-1.92
558		-----		-----	1742	ISO12185	733.9	R(0.05)	8.16
671	D4052	732.3		-0.80	1751	ISO12185	733.8	R(0.05)	7.60
704	ISO12185	732.57		0.72	1753	ISO12185	732.3		-0.80
782	ISO12185	732.4		-0.24	1776	ISO12185	732.37		-0.40
823	ISO12185	732.3		-0.80	1788	D4052	732.38		-0.35
824	ISO12185	732.3	C	-0.80	1805		-----		-----
868	D4052	732.24		-1.13	1807	D4052	732.6		0.88
902	D4052	732.3		-0.80	1810		-----		-----
904	D4052	732.2		-1.36	1811	ISO12185	732.9	C	2.56
963	ISO12185	732.0		-2.48	1833	ISO12185	732.4		-0.24
970	D4052	732.5		0.32	1842	D4052	732.2		-1.36
974	D4052	732.3		-0.80	1849	ISO12185	732.3		-0.80
1006	D4052	732.6		0.88	1851		-----		-----
1026	D4052	732.2		-1.36	1881	ISO12185	732.08		-2.03
1033	IP365	733.3		4.80	1895	ISO12185	732.35		-0.52
1059	ISO12185	732.3		-0.80	1914	D4052	732.2		-1.36
1066	ISO12185	732.2		-1.36	1938	ISO12185	732.4		-0.24
1080	D4052	732.4		-0.24	1951		-----		-----
1081	ISO12185	732.3		-0.80	2129	D4052	732.1		-1.92
1082	ISO12185	732.2		-1.36	2130	ISO12185	732.2		-1.36
1109	D4052	732.38		-0.35	2146	ISO12185	732.61		0.94
1126	ISO12185	732.82		2.12	7013	D4052	732	C	-2.48
1134	IP365	732.2		-1.36					

normality	OK
n	112
outliers	9
mean (n)	732.442
st.dev. (n)	0.3163
R(calc.)	0.886
R(ISO12185:96)	0.500

Lab 237 first reported 0.7319
Lab 463 first reported 734.03
Lab 824 reported 0.7323 (probably a unit error)
Lab 1186 first reported 733.8
Lab 1257 reported 0.73328 (probably a unit error)
Lab 1491 first reported 723.33
Lab 1528 reported 0.73284 (probably a unit error)
Lab 1610 first reported 0.7322
Lab 1616 first reported 733.7
Lab 1724 first reported 0.73175
Lab 1730 first reported 733.3
Lab 1811 first reported 733.4
Lab 7013 reported 0.732 (probably a unit error)





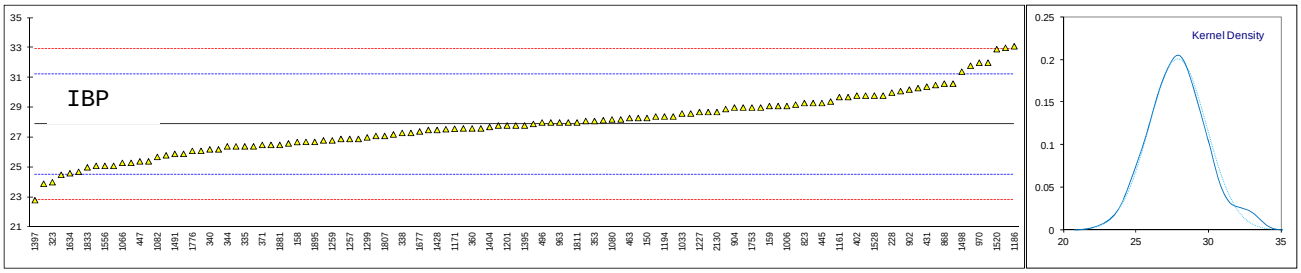
Determination of Distillation ASTM D86 (automated and manual) on sample #14195; results in °C

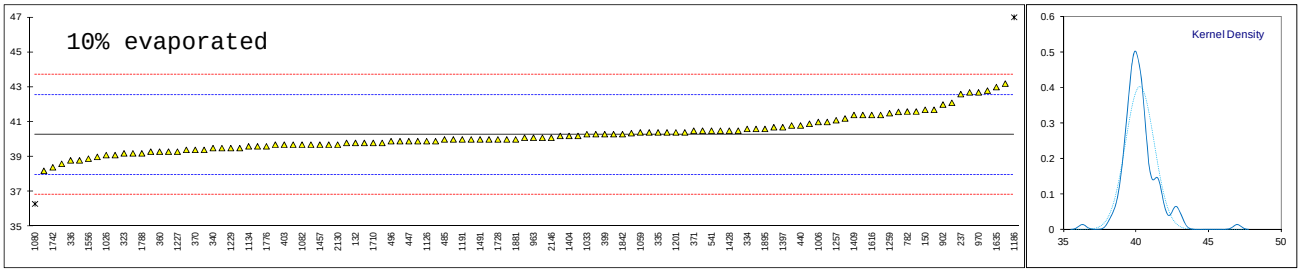
lab	method	mode	IBP	10% eva	50% eva	90% eva	FBP
92	D86	Automated	30.1	39.7	79.1	144.5	182.1
120	D86	Automated	25.3	39.7	78.6	144.8	185.4
132		Automated	-----	39.8	78.8	144.7	176.0
150	ISO3405	Automated	28.3	41.7 C	81.4	143.8	177.6
158	D86	Automated	26.69	40.36	79.40	144.4	179.75
159	D86	Automated	29.1	41.2	80.4	145.6	178.3
171	D86	Automated	27.3	40.4	79.8	145.4	176.1
175			-----	-----	-----	-----	-----
193			-----	-----	-----	-----	-----
194			-----	-----	-----	-----	-----
225	D86	Manual	28.0	40.5	77.5	142.5	183.0
228	D86	Manual	30.0	41.7	81.1	147.1	179.0
237	D86	Manual	32.0	42.6	82.2	147.1	178.0
238			-----	-----	-----	-----	-----
273			-----	-----	-----	-----	-----
311	ISO3405	Automated	24.7	39.4	78.5	144.3	173.6
312	ISO3405	Automated	26.4	39.9	79.4	144.3	178.8
323	ISO3405	Automated	24.0	39.2	78.1	143.5	177.4
334	ISO3405	Automated	28.1	40.6	79.3	144.4	178.8
335	ISO3405	Automated	26.4	40.4	79.6	144.2	180.5
336	ISO3405	Automated	25.1	38.8	78.8	144.4	174.6
337			-----	-----	-----	-----	-----
338	ISO3405	Automated	27.3	38.6	77.3	144.5	180.3
340	ISO3405	Automated	26.2	39.5	78.3	143.8	175.9
344	D86	Automated	26.4	40.2	78.0	145.3	179.1
350	ISO3405	Manual	30.3	39.3	76.6 C	142.5	173.7
353	IP123	Automated	28.1	40.7	79.2	144.7	180.3
360	ISO3405	Automated	27.6	39.3	77.3	143.7	176.1
369	ISO3405	Automated	26.9	40.4	79.2	145.3	178.1
370	ISO3405	Automated	28.3	39.4	79.0	144.0	175.4
371	ISO3405	Automated	26.5	40.5	79.3	144.0	178.4
391			-----	-----	-----	-----	-----
399	ISO3405	Automated	29.4	40.3	80.3	144.3	185.7
402	ISO3405	Automated	29.8	39.3	77.9	143.7	181.2
403	ISO3405	Automated	27.8	39.7	78.2	144.4	178.3
420	ISO3405	Automated	26.8	39.8	78.2	144.0	179.6
431	ISO3405	Automated	30.4	38.2	75.9	141.9	179.2
440	D86	Automated	27.6	40.8	81.8	147.1	179.0
444			-----	-----	-----	-----	-----
445	IP123	Automated	29.3	-----	-----	-----	175.1
447	IP123	Automated	25.4	39.9	79.2	144.8	179.3
463	ISO3405	Automated	28.3 C	39.7	79.7	144.4	180.2
468	ISO3405	Automated	27.5	40.8	80.5 C	145.0 C	178.7
485	ISO3405	Automated	28.15	40.00	78.75	144.95	182.70
496	ISO3405	Automated	28.0	39.9	78.5	143.9	178.9
541	ISO3405	Manual	28.0	40.5	80.0	147.0	175.5
556			-----	-----	-----	-----	-----
558			-----	-----	-----	-----	-----
671			-----	-----	-----	-----	-----
704	D86	Manual	27.55	39.00	78.40	143.60	172.50
782	ISO3405	Manual	30.5	41.6	79.8	144.4	178.0
823	ISO3405	Automated	29.3	40.3	79.2	146.9	176.7
824	ISO3405	Automated	29.8	40.9	79.9	144.8	178.1
868	D86	Automated	30.6	40.5	79.8	145.2	177.2
902	D86	Manual	30.2	42.0	81.0	144.9	180.7
904	ISO3405	Automated	29.0	39.1	78.5	144.7	177.9
963	ISO3405	Automated	28.0	40.1	79.6	143.5	180.0
970	D86	Manual	32.0	42.7 C	79.3	144.1	175.0
974	D86	Automated	31.8	42.7	81.3	143.3	176.7
1006		Automated	29.1	41.0	79.7	144.5	175.8
1026	ISO3405	Automated	25.8	39.1	77.9	144.2	179.4
1033	IP123	Automated	28.6	40.3	79.2	144.4	182.3
1059	ISO3405	Automated	29.1	40.4	80.6	146.3	182.0
1066	ISO3405	Automated	25.3	40.0	79.3	145.1	180.6
1080	D86	Automated	28.2	**36.3**	**74.0**	142.4	173.0
1081	D86	Automated	28.4	40.1	77.6	144.2	176.2
1082	ISO3405	Automated	25.7	39.7	78.5	144.6	178.8
1109	D86	Automated	27.1	39.9	79.5	144.7	181.0
1126	ISO3405	Automated	29.3	39.9	78.5	145.1	180.8
1134	IP123	Automated	27.2	39.6	79.0	144.3	179.0
1161	ISO3405	Automated	29.7	41.0	81.3	**149.4**	175.1
1167	ISO3405	Automated	29.7	38.8	**74.8**	141.3	173.1
1171	ISO3405	Manual	27.58	41.58	80.8 C	146.6 C	184.12
1186	D86	Manual	33.1 C	**47** C	**89** C	146 C	182.2 C
1191	ISO3405	Automated	27.6	40.0	78.7	144.2	179.1
1194	ISO3405	Automated	28.4	39.5	**74.3**	145.8	177.9

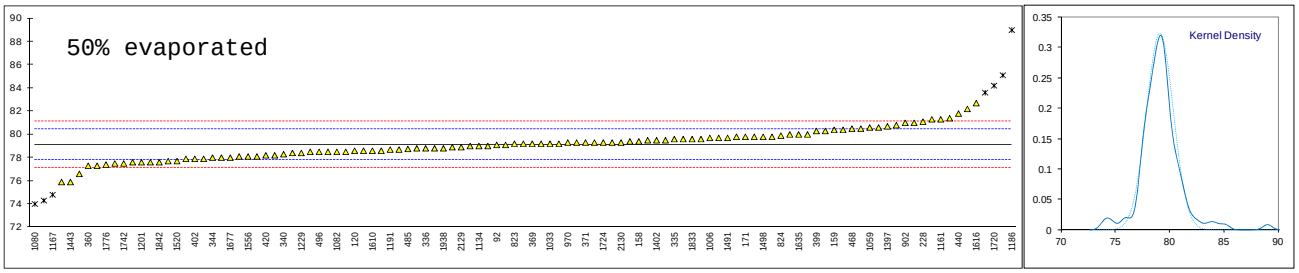
1199			-----	-----	-----	-----	-----
1201	ISO3405	Automated	27.8	40.4	77.6	143.4	175.7
1227	D86	Automated	28.7	39.3	78.0	144.7	176.7
1229	ISO3405	Automated	27.8	39.5	78.4	144.4	178.7
1257	D86		26.9	41.1	81.0	146.3	176.6
1259	ISO3405	Automated	26.8	41.5	80.5	144.6	178.0
1299	D86	Automated	27.0	-----	-----	-----	179.4
1376	D86	Automated	28.7	40.0	77.7	142.9	173.9
1389	D86	Automated	23.9	-----	-----	-----	176.5
1395	ISO3405	Automated	27.8	40.3	79.2	145.1	179.7
1397	ISO3405	Automated	22.8	40.7	80.7	144.3	174.3
1402	ISO3405	Automated	26.7	39.8	79.5	144.6	179.6
1404	ISO3405	Automated	27.7	40.2	78.8	143.7	176.6
1409	ISO3405	Automated	26.4	41.4	**83.6**	**148.9**	178.1
1428		Automated	27.5	40.5	80.3	144.9	181.6
1443	ISO3405	Automated	29.2	42.1	75.9 C	144.3 C	177.3
1457	ISO3405	Automated	26.5	39.7	78.6	144.2	177.6
1491	ISO3405	Automated	25.9	40.0	79.7	144.8	177.7
1498	D86	Automated	31.4	41.6	79.8	144.5	180.0
1501			-----	-----	-----	-----	-----
1520	ISO3405	Manual	32.9	41.4	77.7	145.9	179.8
1528	ISO3405	Automated	29.8	40.6	80.4	144.4	174.4
1537			-----	-----	-----	-----	-----
1549		Automated	-----	-----	-----	-----	178.45
1556	ISO3405	Automated	25.1	38.9	78.1	143.8	177.7
1564			-----	-----	-----	-----	-----
1569			-----	-----	-----	-----	-----
1570	ISO3405	Automated	29.8	39.9	77.9	144.0	178.2
1610	IP123	Automated	26.6	39.5	78.6	144.5	181.0
1616	D86	Manual	29.0	41.4	82.7	145.8	176.0
1634	ISO3405	Automated	24.6	39.2	77.6	144.1	177.8
1635	ISO3405	Manual	33.0	43.0	80.0	148.0	186.0
1636	ISO3405	Automated	26.2	40.0	79.1	145.2	178.0
1654		Automated	-----	-----	-----	-----	180.35
1677	D86	Automated	27.4	39.6	78.0	144.2	179.8
1709			-----	-----	-----	-----	-----
1710	ISO3405	Automated	28.4	39.8	78.1	143.7	177.8
1720	D86	Automated	28.6	43.2	**84.2**	**151.5**	178.8
1724	ISO3405	Automated	24.5	39.8	79.3	145.0	176.8
1728	ISO3405	Manual	28.9	40.0	80.6	146.7	176.6
1730			-----	-----	-----	-----	-----
1742	ISO3405	Automated	26.9	38.4	77.5	143.7	179.4
1751	ISO3405	Automated	28.2	42.8	**85.1**	**151.7**	176.2
1753	ISO3405	Manual	29	40	80	145	175
1776	ISO3405	Automated	26.1	39.6	77.4	143.7	176.3
1788	ISO3405	Automated	26.1	39.2	78.9	144.6	179.0
1805			-----	-----	-----	-----	-----
1807	ISO3405	Automated	27.1	39.7	78.6	144.6	179.0
1810			-----	-----	-----	-----	-----
1811	ISO3405	Automated	28	40.1	78.7	144.6	180.5
1833	ISO3405	Automated	25	40.4	79.6	144.5	178.2
1842	D86	Automated	30.6	40.3	77.6	143.7	178.9
1849	ISO3405	Automated	25.9	41.4	79.8	144.2	178.9
1851			-----	-----	-----	-----	-----
1881	ISO3405	Manual	26.5	40.0	79.0	143.5	176.0
1895	ISO3405	Automated	26.7	40.6	79.3	144.5	178.8
1914	ISO3405	Manual	29.0	40.5	79.5	145.5	176.0
1938	ISO3405	Automated	25.4	39.4	78.8	144.2	179.1
1951			-----	-----	-----	-----	-----
2129	ISO3405	Automated	25.1	40.2	78.9	144.0	178.4
2130	ISO3405	Automated	28.7	39.7	79.3	145.1	182.2 C
2146	ISO3405	Automated	27.9	40.1	79.6	145.0	177.3
7013			-----	-----	-----	-----	-----
	normality	Autom./Man.	OK	OK	OK	suspect	OK
	n	97/18	113	109	104	107	116
	outliers		0	2	7	4	0
	mean (n)		27.88	40.27	79.12	144.58	178.34
	st.dev. (n)		1.983	0.992	1.237	1.079	2.583
	R(calc.)		5.55	2.78	3.45	3.02	7.23
	R(ISO3405:11)		4.70	3.20	1.88	3.88	6.78

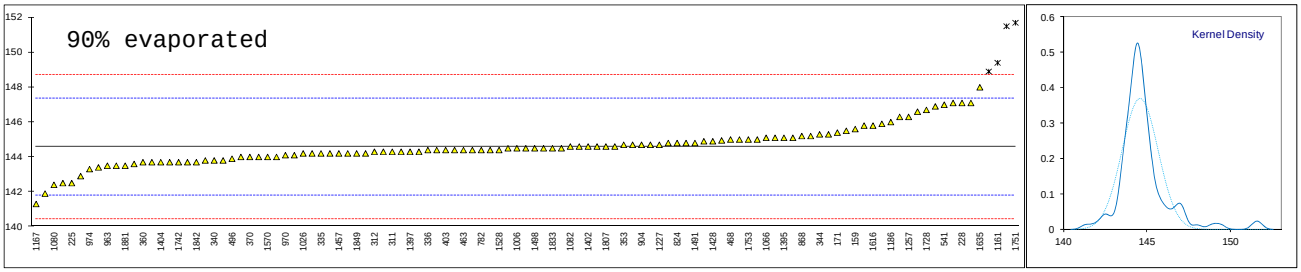
Bold and underlined test results are outliers according to Dixon/Grubbs/Rosner

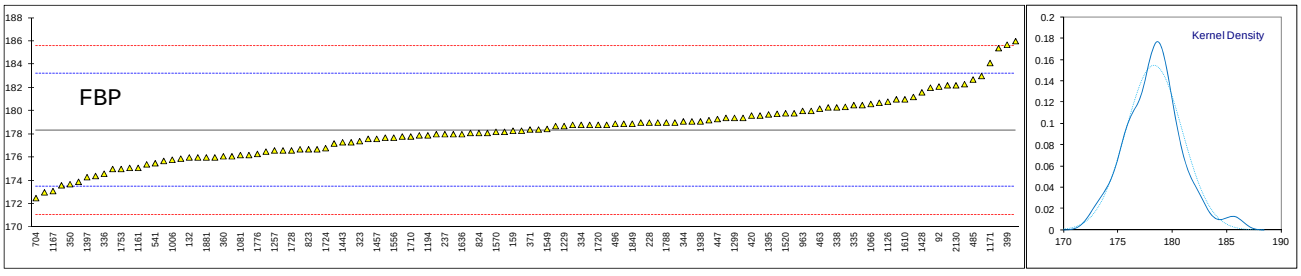
Lab 150 first reported for 10% evaporated 44.1
Lab 350 first reported for 50% evaporated 76.0
Lab 463 first reported for IBP 28.6
Lab 468 first reported for 50% evaporated 83.2 and for 90% evaporated 149.0
Lab 970 first reported for 10% evaporated 43.7
Lab 1171 first reported for 50% evaporated 84.59 and for 90% evaporated 150.61
Lab 1186 first reported for IBP 34.1, for 10% evaporated 50.1, for 50% evaporated 98.1, first reported for 90% evaporated 173.2 and for FBP 188.2
Lab 1443 first reported for 50% evaporated 86.7 and for 90% evaporated 155.2
Lab 2130 first reported for FBP 170.0











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Determination of Distillation ASTM D86 (automated and manual) on sample #14195; results in %V/V
---continued---

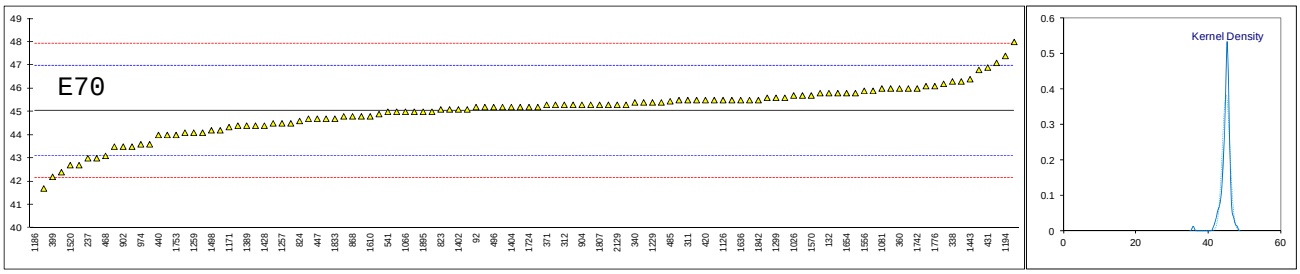
lab	method	mode	% evap 70°C	% evap 100°C	% evap 150°C	% res	% loss
92	D86	Automated	45.2	61.6	92.8	0.9	2.9
120	D86	Automated	45.3	61.8	92.8	1.0	2.3
132	D86	Automated	45.8	61.8	92.8	1.2	1.8
150	ISO3405		44.1 C	63.3	93.0	1.0	2.0
158		Automated	-----	-----	-----	1.1	1.7
159		Automated	-----	-----	-----	1.2	1.7
171	D86	Automated	44.7	61.6	92.3	1.5	1.1
175			-----	-----	-----	-----	-----
193			-----	-----	-----	-----	-----
194			-----	-----	-----	-----	-----
225	D86	Manual	45.5	63.5	93.5	1.4	0.6
228	D86	Manual	43.5	60.5	**91** C	1.0	0.5
237	D86	Manual	43.0	60.0	92.0 C	1.0	0.5
238			-----	-----	-----	-----	-----
273			-----	-----	-----	-----	-----
311	ISO3405	Automated	45.5	62.1	93.3	1.0	1.7
312	ISO3405	Automated	45.3	61.6	92.9	1.0	1.6
323	ISO3405	Automated	45.8	64.2	93.7	1.0	2.6
334	ISO3405	Automated	44.7	61.8	92.7	1.1	2.9
335	ISO3405	Automated	45.0	61.9	93.3	0.9	1.3
336	ISO3405	Automated	45.5	62.1	93.0	1.8	1.8
337			-----	-----	-----	-----	-----
338	ISO3405	Automated	46.3	62.5	92.8	1.0	2.2
340	ISO3405	Automated	45.4	62.2	92.9	1.0	2.1
344	D86	Automated	46.1	62.8	92.5	0.6	-----
350	ISO3405	Manual	47.1	63.6	93.6 C	0.9	3.9
353	IP123	Automated	45.2	61.8	92.7	0.8	0.7
360	ISO3405	Automated	46.0	62.6	92.9	1.0	1.5
369	ISO3405	Automated	44.8	61.9	92.2	1.2	1.3
370	ISO3405	Automated	44.8	61.8	93.1	1.0	2.0
371	ISO3405	Automated	45.3	62.0	93.0	1.1	1.9
391			-----	-----	-----	-----	-----
399	ISO3405	Automated	42.2 C	61.9 C	92.5 C	1.2	-----
402	ISO3405	Automated	46.0	62.6	93.0	1.1	2.1
403	ISO3405	Automated	45.6	62.1	92.7	1	2.7
420	ISO3405	Automated	45.5	62.3	93.0	1.0	1.3
431	ISO3405	Automated	46.9	63.4	94.0	0.1	4.1
440	D86	Automated	44.0	60.2	92.5 C	1.0	1.1
444			-----	-----	-----	-----	-----
445	IP123	Automated	45.5	62.0	92.7	1.3	3.5
447	IP123	Automated	44.7	61.7	92.8	1.0	1.4
463	ISO3405	Automated	45.1	61.6	92.7	1.0	2.2
468	ISO3405	Automated	43.1	59.7	93.5 C	1.5	1.4
485	ISO3405	Automated	45.45	61.70	93.00	0.9	2.3
496	ISO3405	Automated	45.2	62.3	93.1	0.9	2.5
541	ISO3405	Manual	45.0	61.0	92.0	1.0	1.0
556			-----	-----	-----	-----	-----
558			-----	-----	-----	-----	-----
671			-----	-----	-----	-----	-----
704	D86	Manual	45.50	62.13	93.25	1.25	1.75
782	ISO3405	Manual	44.0	61.8	91.9	1.2	2.0
823	ISO3405	Automated	45.1 C	61.2 C	92.0 C	1.5	1.5
824	ISO3405	Automated	44.6	61.3	92.6	1.0	1.2
868	D86	Automated	44.8	61.2	92.3	1.1	2.8
902	D86	Manual	43.5	61.5	92.5	0.8	-----
904	ISO3405	Automated	45.3	62.2	93.0	<1	<1
963	ISO3405	Automated	44.5	62.0	93.0	0.5	1.6
970	D86	Manual	43.5	62.5	92.5	0.5	0.5
974	D86	Automated	43.6 C	62.6	92.9	1.0	3.9
1006		Automated	-----	-----	-----	1.0	-----
1026	ISO3405		45.7	62.1	92.8	1.2	2.4
1033	IP123	Automated	42.4	59.3	-----	1.0	2.6
1059	ISO3405	Automated	44.4	61.0	91.9	1.4	2.1
1066	ISO3405	Automated	45.0	61.7	92.5	1.0	1.9
1080	D86	Automated	48.0	64.2	93.8	-----	-----
1081	D86	Automated	46.0	62.4	92.8	0.9	2.8
1082	ISO3405	Automated	45.4	62.3	92.6	1.2	2.1
1109	D86	Automated	45.7	61.7	92.7	0.9	1.9
1126	ISO3405	Automated	45.5	62.1	92.7	0.9	2.5
1134	IP123	Automated	45.3	62.4	92.7	1.0	1.7
1161	ISO3405	Automated	43.6	60.0	**91.0**	0.9	-----
1167	ISO3405	Automated	46	63.0	93.6	1.0	1.7
1171	ISO3405	Manual	44.34	60.8 C	91.6 C	1.0	2.0
1186	D86	Manual	**36** C	**58** C	**91** C	2	-----
1191	ISO3405	Automated	45.0	62.1	92.8	1.1	3.0
1194	ISO3405	Automated	47.4	63.1	92.2	1.1	-----

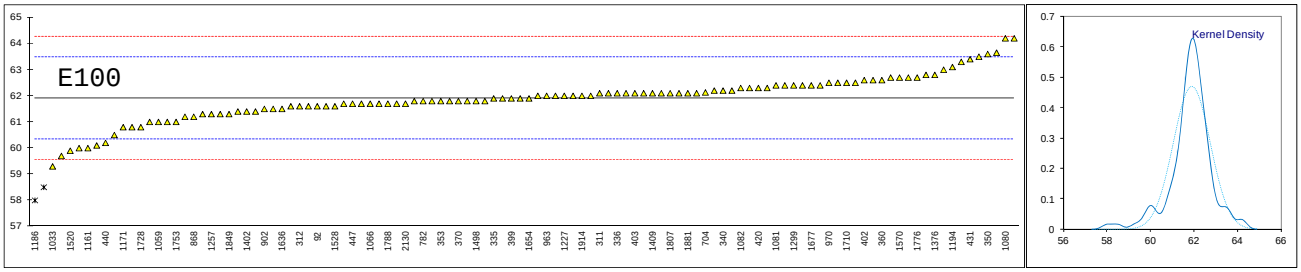
1199			-----	-----	-----		-----	-----
1201	ISO3405	Automated	45.8	62.7	93.4		0.8	2.0
1227	D86	Automated	46.3	62.0	92.2		1.5	2.2
1229	ISO3405	Automated	45.4	62.2	92.7		1.0	2.9
1257	D86		44.5	61.3	92.0		1.2	0.6
1259	ISO3405	Automated	44.1	61.4	92.7		1.0	0.8
1299	D86	Automated	45.6	62.4	92.8		1.0	1.4
1376	D86	Automated	46.2	62.8	92.9		1.0	2.1
1389	D86	Automated	44.4	60.8	91.7		1.0	0.7
1395	ISO3405	Automated	45.2	61.6	92.5		1.0	1.7
1397	ISO3405		44.4	61.3	92.9		1.4	1.5
1402	ISO3405	Automated	45.1	61.4	93.3		1.0	1.6
1404	ISO3405	Automated	45.2	62.0	93.1		0.5	2.3
1409	ISO3405	Automated	45.6	62.1	93.0		0.8	2.3
1428		Automated	44.4	61.5	93		1.0	0.5
1443	ISO3405	Automated	46.4	62.4	92.8		1.0	-----
1457	ISO3405	Automated	45.2	62.1	92.8		1.0	1.9
1491	ISO3405	Automated	44.9	61.8	93.0		1.1	1.0
1498	D86	Automated	44.2	61.8	92.6		1.0	1.9
1501			-----	-----	-----		-----	-----
1520	ISO3405	Manual	42.7	59.9	91.4		1.4	2.6
1528	ISO3405	Automated	44.2	61.6	92.8		1.1	2.0
1537			-----	-----	-----		-----	-----
1549	D7345	Automated	46.80	63.65	92.05		1.10	-----
1556	ISO3405	Automated	45.9	62.3	92.9		1.0	2.3
1564			-----	-----	-----		-----	-----
1569			-----	-----	-----		-----	-----
1570	ISO3405	Automated	45.7	62.7	93.0		1.0	1.9
1610	IP123	Automated	44.8	61.9	92.4		1.0	2.3
1616	D86	Manual	42.7	60.1	91.95	C	1.6	0.7
1634	ISO3405	Automated	45.3	62.7	92.5		1.0	1.2
1635	ISO3405	Manual	43.0	61.0	**91.0**		1.0	1.0
1636	ISO3405	Automated	45.5	61.5	92.5		1.0	1.8
1654	ISO3405		45.8	61.9	92.6		1.1	-----
1677	D86	Automated	45.8	62.4	93.1		0.8	2.9
1709			-----	-----	-----		-----	-----
1710	ISO3405	Automated	45.9	62.5	93.6		0.8	1.4
1720		Automated	-----	-----	-----		1.0	0.3
1724	ISO3405	Automated	45.2	61.7	93.2		1.3	0.8
1728	ISO3405	Manual	44.5	60.8	92.5	C	1.35	1.2
1730			-----	-----	-----		-----	-----
1742	ISO3405	Automated	46.0	62.5	93.1		1	3.3
1751	ISO3405	Automated	41.7	**58.5**	**89.2**		1	3.3
1753	ISO3405	Manual	44	61	92		1.2	1.2
1776	ISO3405	Automated	46.1	62.7	93.0		1.0	2.5
1788	ISO3405	Automated	45.5	61.7	93.4		1.1	2.5
1805			-----	-----	-----		-----	-----
1807	ISO3405	Automated	45.3	62.1	92.8		1.0	2.1
1810			-----	-----	-----		-----	-----
1811	ISO3405	Automated	45.3	62.1	92.9		1	1
1833	ISO3405	Automated	44.7	61.7	92.8		1	1.5
1842	D86	Automated	45.5	62.4	93.1		1.1	2.1
1849	ISO3405	Automated	44.1	61.3	92.5		1	-----
1851			-----	-----	-----		-----	-----
1881	ISO3405	Manual	45.1	62.1	93.0		0.9	1.1
1895	ISO3405	Automated	45.0	61.8	92.8		1.0	0.4
1914	ISO3405	Manual	45.0	62.0	92.0		1.3	0.2
1938	ISO3405	Automated	45.2	62.1	92.9		1.0	1.6
1951			-----	-----	-----		-----	-----
2129	ISO3405	Automated	45.3	62.0	92.9		1.0	2.0
2130	ISO3405	Automated	45.4	61.7	93.0		0.8	2.6
2146	ISO3405	Automated	45.3	61.4	93.1		1.4	1.5
7013			-----	-----	-----		-----	-----

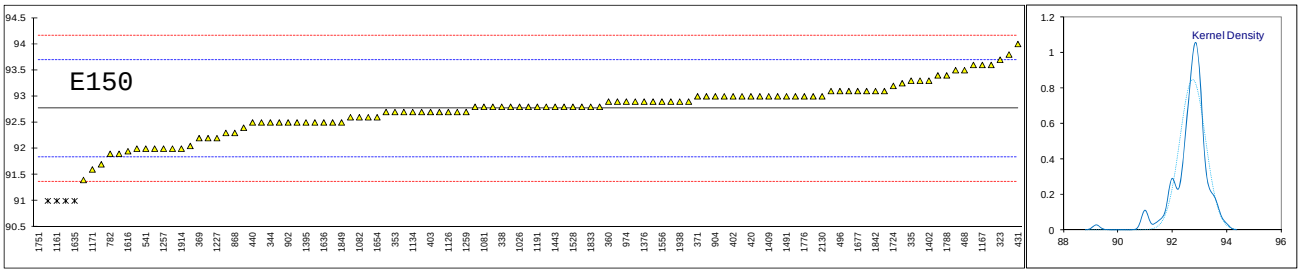
normality	suspect	suspect	OK
n	111	110	106
outliers	1	2	5
mean (n)	45.04	61.90	92.77
st.dev. (n)	1.046	0.848	0.473
R(calc.)	2.93	2.38	1.33
R(ISO3405:11)	2.70	2.20	1.30

Bold and underlined test results are outliers according to Dixon/Grubbs/Rosner

Lab 150 first reported for E70 41.6
Lab 228 first reported for E150 91.5
Lab 237 first reported for E150 90.5
Lab 350 first reported for E150 94.1
Lab 399 first reported for E70 41.6, for E100 58.3 and for E150 89.6
Lab 440 first reported for E150 91.4
Lab 468 first reported for E150 90.4
Lab 823 first reported for E70 43.1, for E100 59.4 and for E150 90.0
Lab 974 first reported for E70 41.7
Lab 1171 first reported for E100 58.73 and for E150 90.69
Lab 1186 first reported for E70 32, for E100 53 and for E150 84
Lab 1616 first reported for E150 91.8
Lab 1728 first reported for E150 91.6







Determination of Doctor Test on sample #14195;

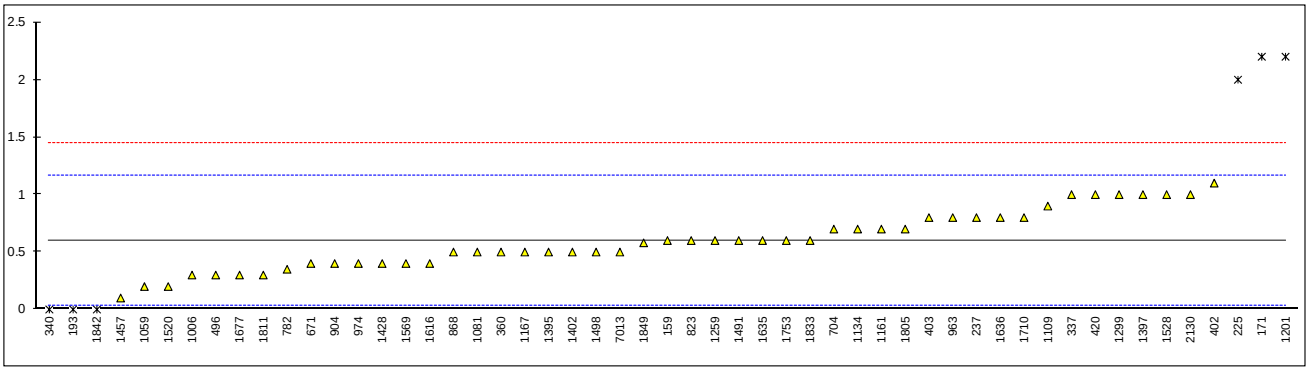
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	D4952	Negative		-----	1161		-----		-----
120	D4952	Negative		-----	1167		-----		-----
132	D4952	Negative		-----	1171		-----		-----
150	D4952	Negative		-----	1186		-----		-----
158		-----		-----	1191		-----		-----
159	D4952	Negative		-----	1194		-----		-----
171	D4952	Negative		-----	1199		-----		-----
175		-----		-----	1201	IP30	Pass		-----
193		-----		-----	1227		-----		-----
194		-----		-----	1229		-----		-----
225	D4952	Negative		-----	1257		Negative		-----
228		-----		-----	1259	D4952	Negative		-----
237	D4952	Negative		-----	1299		-----		-----
238	D4952	Negative		-----	1376		-----		-----
273		-----		-----	1389	IP30	Negative		-----
311	D4952	Negative		-----	1395		-----		-----
312	IP30	Negative		-----	1397		-----		-----
323		Negative		-----	1402	IP30	Negative		-----
334		-----		-----	1404	IP30	Negative		-----
335		-----		-----	1409		-----		-----
336		-----		-----	1428	D4952	Negative		-----
337		-----		-----	1443		-----		-----
338		-----		-----	1457	IP30	Negative		-----
340	D4952	Negative		-----	1491		-----		-----
344		-----		-----	1498		-----		-----
350		-----		-----	1501		-----		-----
353		-----		-----	1520	D4952	Negative		-----
360	D4952	Negative		-----	1528		-----		-----
369	D4952	Negative		-----	1537		-----		-----
370	D4952	Negative		-----	1549		-----		-----
371	D4952	Negative		-----	1556	D4952	Negative		-----
391	IP30	Negative		-----	1564		-----		-----
399		-----		-----	1569		-----		-----
402		-----		-----	1570		-----		-----
403		-----		-----	1610		-----		-----
420		-----		-----	1616	D4952	Negative		-----
431		-----		-----	1634		-----		-----
440	IP30	Negative		-----	1635		-----		-----
444		-----		-----	1636	D4952	Negative		-----
445	IP30	Negative		-----	1654		-----		-----
447	D4952	Negative (sweet)		-----	1677	IP30	Negative		-----
463	IP30	Negative		-----	1709		-----		-----
468		-----		-----	1710	ISO5275	Negative		-----
485		-----		-----	1720	D4952	Negative		-----
496		-----		-----	1724		-----		-----
541	IP30	Negative		-----	1728	D4952	Negative		-----
556		-----		-----	1730		-----		-----
558		-----		-----	1742		-----		-----
671		-----		-----	1751		-----		-----
704	D4254	Negative		-----	1753		-----		-----
782		-----		-----	1776		-----		-----
823	IP30	Negative		-----	1788		-----		-----
824		Negative		-----	1805		-----		-----
868	D4952	Negative		-----	1807		-----		-----
902		-----		-----	1810		-----		-----
904	IP30	Negative		-----	1811		-----		-----
963	IP30	Negative		-----	1833		Negative		-----
970	D4952	Negative		-----	1842	IP30	Negative		-----
974	D4952	Negative		-----	1849	D4952	Negative		-----
1006		-----		-----	1851		-----		-----
1026	D4952	Negative		-----	1881		-----		-----
1033		-----		-----	1895		-----		-----
1059	D4952	Negative		-----	1914	IP30	Negative		-----
1066	IP30	Negative		-----	1938		-----		-----
1080		-----		-----	1951		-----		-----
1081	D4952	Negative		-----	2129	IP30	Negative		-----
1082		-----		-----	2130	IP30	Negative		-----
1109	IP30	Negative		-----	2146		-----		-----
1126		-----		-----	7013		-----		-----
1134	IP30	Negative		-----					
	n	59							
	Mean (n)	Negative							

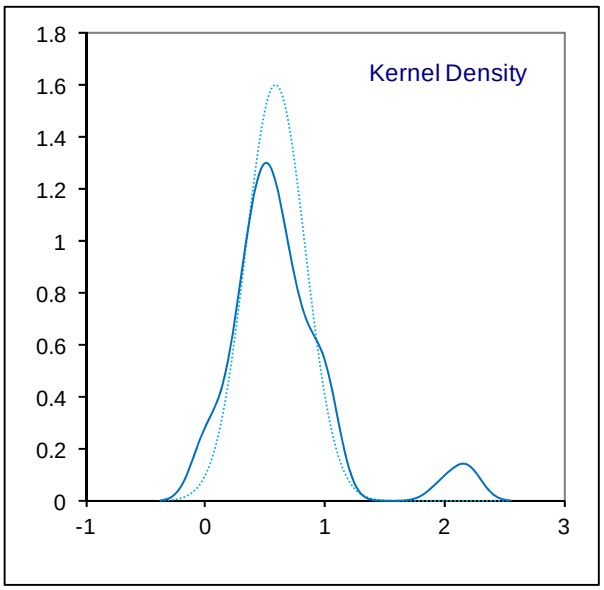
Determination of Existent Gum (washed) on sample #14195; results in mg/100mL

lab	method	value	mark	z(targ)
92	D381	<0.5		<-0.34
120	D381	<0.5		<-0.34
132	D381	<0.5		<-0.34
150	D381	<0.5		<-0.34
158		-----		-----
159	D381	0.6		0.01
171	D381	2.2	C,R(0.01)	5.65
175		-----		-----
193	D381	0.00	ex	-2.10
194		-----		-----
225	D381	2.0	R(0.01)	4.94
228		-----		-----
237	D381	0.8		0.72
238		-----		-----
273		-----		-----
311	D381	<1		<-1.42
312	D381	<0.5		<-0.34
323	ISO6246	<0.5		<-0.34
334		-----		-----
335		-----		-----
336		-----		-----
337	ISO6246	1		1.42
338		-----		-----
340	ISO6246	0	ex	-2.10
344		-----		-----
350		-----		-----
353	IP131	<0.5		<-0.34
360	ISO6246	0.5		-0.34
369	ISO6246	<0.5		<-0.34
370	ISO6246	<1		<-1.42
371		-----		-----
391	ISO6246	<0.5		<-0.34
399		-----		-----
402	ISO6246	1.10		1.77
403	ISO6246	0.8		0.72
420	ISO6246	1.0		1.42
431		-----		-----
440	IP131	<0.5		<-0.34
444		-----		-----
445	IP131	<1		<-1.42
447	IP131	<0.5		<-0.34
463	ISO6246	<1		<-1.42
468	ISO6246	<1.0		<-1.42
485		-----		-----
496	ISO6246	0.3		-1.04
541		-----		-----
556		-----		-----
558		-----		-----
671	D381	0.4		-0.69
704	ISO6246	0.7		0.36
782	ISO6246	0.35		-0.87
823	D381	0.6		0.01
824		-----		-----
868	D381	0.5		-0.34
902		-----		-----
904	D381	0.40		-0.69
963	ISO6246	0.8		0.72
970		-----		-----
974	D381	0.4		-0.69
1006	D381	0.3		-1.04
1026	ISO6246	<0.5		<-0.34
1033	IP131	<0.1		<-1.75
1059	ISO6246	0.2		-1.40
1066		-----		-----
1080	ISO6246	<1		<-1.42
1081	D381	0.5		-0.34
1082		-----		-----
1109	D381	0.9		1.07
1126		-----		-----
1134	IP131	0.7		0.36
1161	IP131	0.7		0.36
1167	ISO6246	0.7		0.36
1171	ISO6246	0.5		-0.34
1186		-----		-----
1191		-----		-----
1194		-----		-----
1199		-----		-----
1201		-----		-----
1227	D381	2.2	R(0.01)	5.65
1229		-----		-----
1257		-----		-----
1259		-----		-----
1299	ISO6246	0.6		0.01
1376	D381	1		1.42
1389	D381	<0.5		<-0.34
1395	D381	<0.5		<-0.34
1397	ISO6246	0.5		-0.34
1402	ISO6246	1.0		1.42
1404	ISO6246	0.5		-0.34
1409	ISO6246	<1		<-1.42
1428	ISO6246	<1		<-1.42
1443		0.4		-0.69
1457		-----		-----
1491	ISO6246	0.1		-1.75
1498	ISO6246	0.6		0.01
1501	D381	0.5		-0.34
1520		-----		-----
1528	ISO6246	0.2		-1.40
1537	ISO6246	1		1.42
1549		-----		-----
1556		-----		-----
1564	ISO6246	<1		<-1.42
1569		-----		-----
1570	ISO6246	0.4		-0.69
1610		-----		-----
1616		-----		-----
1634	D381	0.4		-0.69
1635		-----		-----
1636	ISO6246	0.6		0.01
1654	ISO6246	0.8		0.72
1677		-----		-----
1709	D381	0.30		-1.04
1710		-----		-----
1720	ISO6246	0.8		0.72
1724		-----		-----
1728	ISO6246	<0.5		<-0.34
1730		-----		-----
1742		-----		-----
1751		-----		-----
1753		-----		-----
1776	ISO6246	0.6		0.01
1788		-----		-----
1805		-----		-----
1807	ISO6246	0.7		0.36
1810	ISO6246	<1	C	<-1.42
1811		-----		-----
1833	ISO6246	0.3		-1.04
1842	ISO6246	0.6		0.01
1849	D381	0.0	ex	-2.10
1851	ISO6246	0.58		-0.06
1881		-----		-----
1895		-----		-----
1914		-----		-----
1938	D381	< 0.5		<-0.34
1951		-----		-----
2129		-----		-----
2130	ISO6246	<1		<-1.42
2146	ISO6246	1		1.42
7013		-----		-----

normality	OK
n	47
outliers	3 (+3ex)
mean (n)	0.60
st.dev. (n)	0.249
R(calc.)	0.70
R(ISO6246:98)	0.79

Lab 171 first reported 2.0
Lab 193 excluded, because zero is not a real value
Lab 340 excluded, because zero is not a real value
Lab 1807 first reported 3.0
Lab 1842 excluded, because zero is not a real value



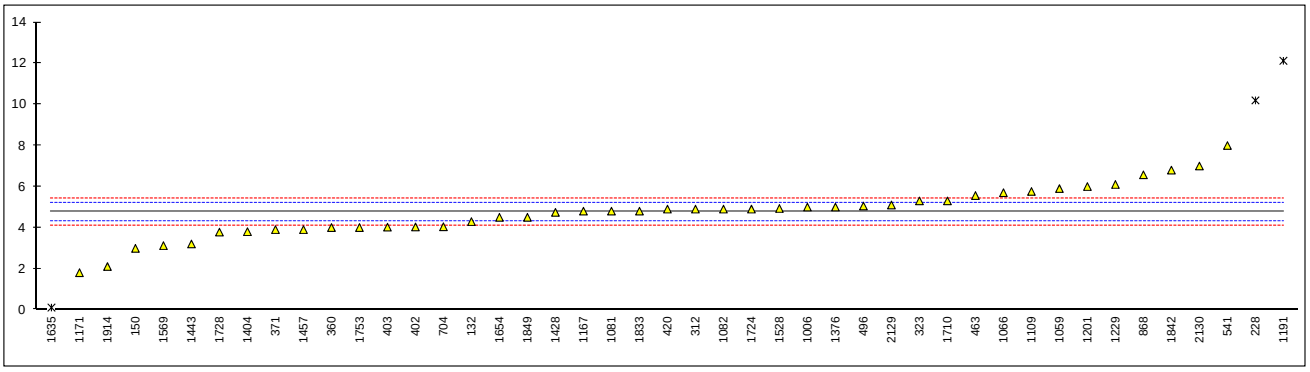


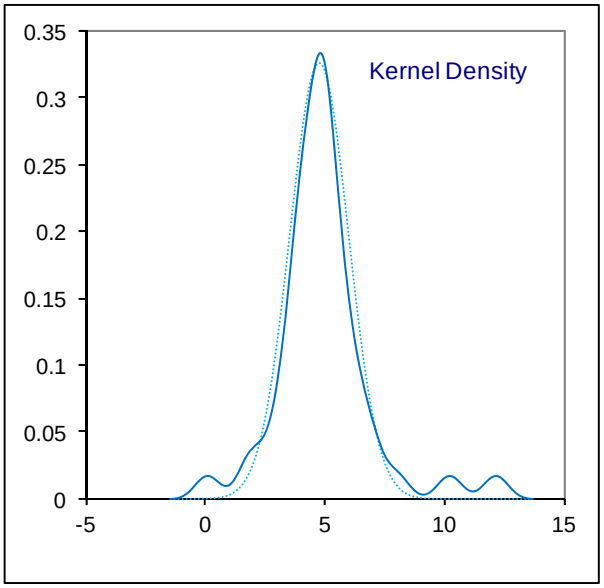
Determination of Lead as Pb on sample #14195; results in mg/L

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92		-----		-----	1161		-----		-----
120		-----		-----	1167	EN237	4.8		0.20
132	D3237	4.29		-2.11	1171	D5059	1.8		-13.35
150	D3237	2.986	C	-8.00	1186		-----		-----
158		-----		-----	1191	in house	12.13	R(0.01)	33.30
159		-----		-----	1194		-----		-----
171	D3237	<2.5	C, false -	<-10.21	1199		-----		-----
175		-----		-----	1201	EN237	6		5.62
193		-----		-----	1227		-----		-----
194		-----		-----	1229		6.1		6.07
225		-----		-----	1257		-----		-----
228	IP352	10.2	R(0.05)	24.58	1259	EN237	<2.5	false -	<-10.21
237		-----		-----	1299		-----		-----
238		-----		-----	1376		5		1.10
273		-----		-----	1389	D3237	<2.5	false -	<-10.21
311		-----		-----	1395		-----		-----
312	EN237	4.9		0.65	1397		-----		-----
323	EN237	5.3		2.45	1402	EN237	<2.5	false -	<-10.21
334		-----		-----	1404	EN237	3.8		-4.32
335		-----		-----	1409	EN237	<2.5	false -	<-10.21
336		-----		-----	1428		4.74		-0.07
337		-----		-----	1443	EN237	3.2		-7.03
338		-----		-----	1457	EN237	3.9		-3.87
340		-----		-----	1491		-----		-----
344		-----		-----	1498		-----		-----
350		-----		-----	1501		-----		-----
353		-----		-----	1520	EN237	<3.0	false -	<-7.95
360	in house	4.0		-3.42	1528	EN237	4.93		0.78
369		-----		-----	1537		-----		-----
370		-----		-----	1549		-----		-----
371	EN237	3.9	C	-3.87	1556		-----		-----
391		-----		-----	1564		-----		-----
399		-----		-----	1569	EN237	3.12		-7.39
402	EN237	4.03		-3.28	1570	EN237	<2.5	false -	<-10.21
403	EN237	4.02		-3.33	1610		-----		-----
420	EN237	4.90		0.65	1616		-----		-----
431		-----		-----	1634		-----		-----
440		-----		-----	1635	EN237	0.1	R(0.05)	-21.03
444		-----		-----	1636	IP352	<1	false -	<-16.98
445	IP428	<2.5	false -	<-10.21	1654	EN237	4.5		-1.16
447	IP428	<2.5	false -	<-10.21	1677		-----		-----
463	EN237	5.56	C	3.63	1709		-----		-----
468		-----		-----	1710	EN237	5.3		2.45
485		-----		-----	1720		-----		-----
496	EN237	5.05		1.33	1724	EN237	4.9		0.65
541	D3237	8.0		14.65	1728	EN237	3.78		-4.41
556		-----		-----	1730		-----		-----
558		-----		-----	1742		-----		-----
671		-----		-----	1751		-----		-----
704	EN237	4.04		-3.24	1753	EN237	4.0		-3.42
782		-----		-----	1776		-----		-----
823		-----		-----	1788		-----		-----
824		-----		-----	1805		-----		-----
868	D3237	6.57		8.19	1807		-----		-----
902		-----		-----	1810		-----		-----
904	EN237	< 2.5	false -	<-10.21	1811		-----		-----
963		-----		-----	1833	EN237	4.8	C	0.20
970		-----		-----	1842	INH-1	6.8	C	9.23
974		-----		-----	1849	EN237	4.5	C	-1.16
1006	D3237	5.0		1.10	1851		-----		-----
1026	D3237	<2.5	false -	<-10.21	1881		-----		-----
1033		-----		-----	1895		-----		-----
1059	EN13723Mod.	5.9		5.16	1914		2.1		-12.00
1066	D3237	5.7		4.26	1938		-----		-----
1080		-----		-----	1951		-----		-----
1081	D3237	4.8		0.20	2129	EN237	5.1		1.55
1082	EN237	4.9	C	0.65	2130	IP352	7	C	10.13
1109	D3237	5.76		4.53	2146		-----		-----
1126		-----		-----	7013		-----		-----
1134		-----		-----					

		Only EN237	Only D3237		
normality	OK	suspect	suspect		
n	42	28	15		
outliers	3	1	0	Spike	
mean (n)	4.76	4.47	4.56	5.0	<95% recovered
st.dev. (n)	1.227	0.830	1.879		
R(calc.)	3.43	2.32	5.26		
R(EN237:04)	0.62	0.62	2.60		Compare R(D3237) = 2.6

Lab 150 first reported 2.18
Lab 171 first reported 0.0
Lab 228 reported 0.0102 g/L
Lab 371 first reported <2.5
Lab 463 first reported <2.5
Lab 1082 first reported 0.0005
Lab 1833 first reported <3.0
Lab 1842 first reported 14
Lab 1849 first reported <3
Lab 2130 first reported <2.5





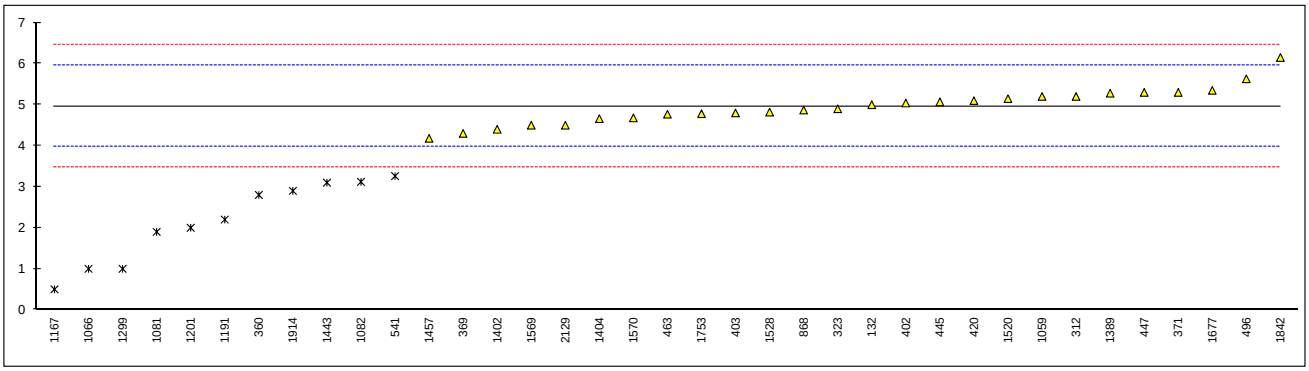
Determination of Manganese as Mn on sample #14195; results in mg/L

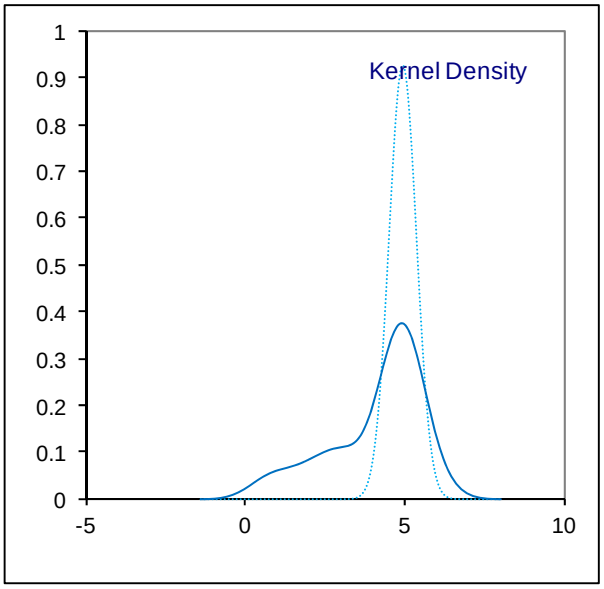
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92		-----		-----	1161		-----		-----
120		-----		-----	1167	D3831	0.5	ex	-8.95
132	D3831	5.00		0.08	1171		-----		-----
150		-----		-----	1186		-----		-----
158		-----		-----	1191	EN16136	2.2	ex	-5.54
159		-----		-----	1194		-----		-----
171		-----		-----	1199		-----		-----
175		-----		-----	1201	EN16135	2	ex	-5.94
193		-----		-----	1227		-----		-----
194		-----		-----	1229		-----		-----
225		-----		-----	1257		-----		-----
228		-----		-----	1259		-----		-----
237		-----		-----	1299	EN16135	1.0	ex	-7.95
238		-----		-----	1376		-----		-----
273		-----		-----	1389	D3831	5.28		0.65
311		-----		-----	1395		-----		-----
312	EN16136	5.2		0.48	1397		-----		-----
323	EN16136	4.9		-0.12	1402	EN16135	4.4		-1.12
334		-----		-----	1404	EN16135	4.66		-0.60
335		-----		-----	1409	EN16135	<2.0	false -	<-5.94
336		-----		-----	1428		-----		-----
337		-----		-----	1443	EN16135	3.1	ex	-3.73
338		-----		-----	1457	D3831	4.18		-1.56
340		-----		-----	1491		-----		-----
344		-----		-----	1498		-----		-----
350		-----		-----	1501		-----		-----
353		-----		-----	1520	D3831	5.146		0.38
360	EN16136	2.8	ex	-4.33	1528	EN16135	4.82		-0.28
369	EN16136	4.3	C	-1.32	1537		-----		-----
370		-----		-----	1549		-----		-----
371	EN16135	5.3		0.69	1556		-----		-----
391		-----		-----	1564		-----		-----
399		-----		-----	1569	EN16136	4.50		-0.92
402	EN16135	5.04		0.16	1570	D3831	4.68		-0.56
403	EN16135	4.80		-0.32	1610		-----		-----
420	EN16135	5.10		0.28	1616		-----		-----
431		-----		-----	1634		-----		-----
440		-----		-----	1635		-----		-----
444		-----		-----	1636		-----		-----
445	EN16136	5.07		0.22	1654		-----		-----
447	EN16135	5.3		0.69	1677	EN16135	5.35		0.79
463	EN16135	4.768		-0.38	1709		-----		-----
468		-----		-----	1710		-----		-----
485		-----		-----	1720		-----		-----
496	EN16136	5.63		1.35	1724		-----		-----
541	EN16135	3.26	ex	-3.41	1728		-----		-----
556		-----		-----	1730		-----		-----
558		-----		-----	1742		-----		-----
671		-----		-----	1751		-----		-----
704		-----		-----	1753	EN16135	4.78		-0.36
782		-----		-----	1776		-----		-----
823		-----		-----	1788		-----		-----
824		-----		-----	1805		-----		-----
868	D3831	4.87		-0.18	1807		-----		-----
902		-----		-----	1810		-----		-----
904	D3831	<10		<-10.15	1811		-----		-----
963		-----		-----	1833		-----		-----
970		-----		-----	1842	INH-1	6.15	C	2.39
974		-----		-----	1849		-----		-----
1006		-----		-----	1851		-----		-----
1026		-----		-----	1881		-----		-----
1033		-----		-----	1895		-----		-----
1059	in house	5.2		0.48	1914	D3831	2.9	ex	-4.13
1066	EN16136	1.0	ex	-7.95	1938		-----		-----
1080		-----		-----	1951		-----		-----
1081	EN16136	1.9	ex	-6.14	2129	EN16135	4.5		-0.92
1082	D5185	3.12	ex	-3.69	2130		-----		-----
1109		-----		-----	2146		-----		-----
1126		-----		-----	7013		-----		-----
1134		-----		-----					

normality	suspect
n	26
outliers	0 (+11 ex)
mean (n)	4.96
st.dev. (n)	0.430
R(calc.)	1.20
R(ISO16135:11)	1.39

Spike
4.9 <101% recovered

Lab 360, 541, 1066, 1081, 1082, 1167, 1191, 1201, 1299, 1443 and 1914 were excluded, see §4.1
Lab 369 first reported 8.1
Lab 1842 first reported 12



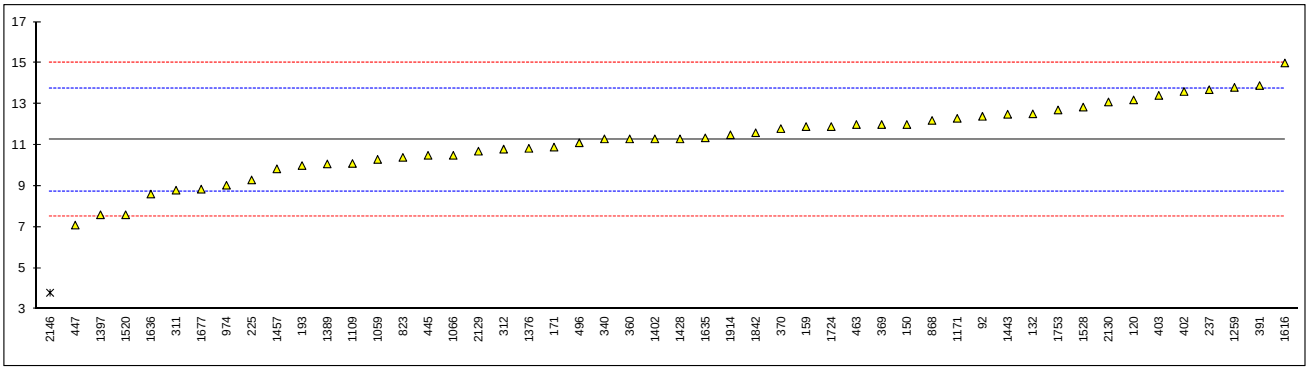


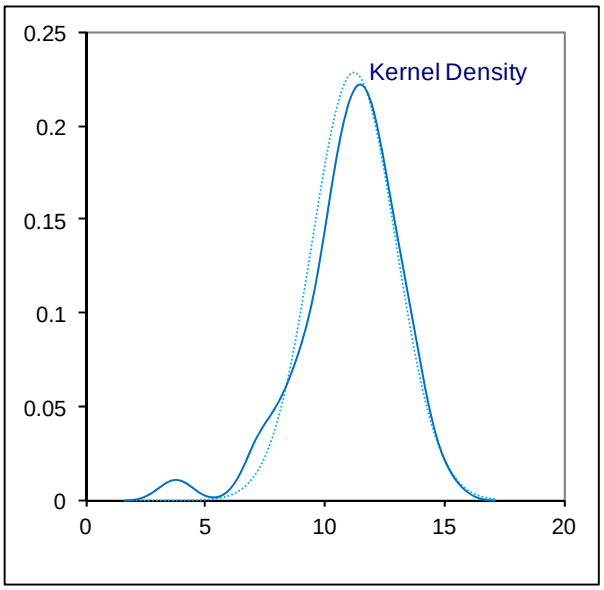
Determination of Olefins by FIA on sample #14195; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	D1319	12.4		0.92	1161		-----		-----
120	D1319	13.2		1.56	1167		-----		-----
132	D1319	12.52		1.01	1171	D1319Mod.	12.30		0.84
150	D1319	12.0		0.60	1186		-----		-----
158		-----		-----	1191		-----		-----
159	D1319	11.9		0.52	1194		-----		-----
171	D1319	10.9		-0.28	1199		-----		-----
175		-----		-----	1201		-----		-----
193	D1319	10.0		-1.00	1227		-----		-----
194		-----		-----	1229		-----		-----
225	D1319	9.3		-1.56	1257		-----		-----
228		-----		-----	1259	EN15553	13.81		2.05
237	D1319	13.7		1.96	1299		-----		-----
238		-----		-----	1376	D1319	10.84		-0.33
273		-----		-----	1389	D1319	10.08		-0.94
311	D1319	8.8		-1.96	1395		-----		-----
312	EN15553	10.8		-0.36	1397	EN15553	7.6	C	-2.92
323		-----		-----	1402	D1319	11.3		0.04
334		-----		-----	1404		-----		-----
335		-----		-----	1409		-----		-----
336		-----		-----	1428		11.3		0.04
337		-----		-----	1443	EN15553	12.50		1.00
338		-----		-----	1457	D1319	9.84		-1.13
340	EN15553	11.3		0.04	1491		-----		-----
344		-----		-----	1498		-----		-----
350		-----		-----	1501		-----		-----
353		-----		-----	1520	EN15553	7.60		-2.92
360	EN15553	11.3		0.04	1528	EN15553	12.85		1.28
369	EN15553	12.0		0.60	1537		-----		-----
370	D1319	11.8		0.44	1549		-----		-----
371		-----		-----	1556		-----		-----
391	EN15553	13.9		2.12	1564		-----		-----
399		-----		-----	1569		-----		-----
402	D1319	13.61		1.89	1570		-----		-----
403	EN15553	13.42		1.73	1610		-----		-----
420		-----		-----	1616	D1319	15.0		3.00
431		-----		-----	1634		-----		-----
440		-----		-----	1635	D1319	11.35		0.08
444		-----		-----	1636	EN15553	8.61		-2.12
445	IP156	10.5		-0.60	1654		-----		-----
447	D1319	7.1		-3.33	1677	D1319	8.85		-1.92
463	EN15553	12.0		0.60	1709		-----		-----
468		-----		-----	1710		-----		-----
485		-----		-----	1720		-----		-----
496	EN15553	11.11		-0.12	1724	EN15553	11.9		0.52
541		-----		-----	1728		-----		-----
556		-----		-----	1730		-----		-----
558		-----		-----	1742		-----		-----
671		-----		-----	1751		-----		-----
704		-----		-----	1753	EN15553	12.71		1.17
782		-----		-----	1776		-----		-----
823	D1319	10.4		-0.68	1788		-----		-----
824		-----		-----	1805		-----		-----
868	D1319	12.20		0.76	1807		-----		-----
902		-----		-----	1810		-----		-----
904		-----		-----	1811		-----		-----
963		-----		-----	1833		-----		-----
970		-----		-----	1842	D1319	11.6		0.28
974	D1319	9.04		-1.77	1849		-----		-----
1006		-----		-----	1851		-----		-----
1026		-----		-----	1881		-----		-----
1033		-----		-----	1895		-----		-----
1059	EN15553	10.3		-0.76	1914	D1319	11.5		0.20
1066	D1319	10.5		-0.60	1938		-----		-----
1080		-----		-----	1951		-----		-----
1081		-----		-----	2129	EN15553	10.7		-0.44
1082		-----		-----	2130	EN15553	13.1		1.48
1109	D1319	10.10		-0.92	2146	D1319	3.8	C,R(0.01)	-5.97
1126		-----		-----	7013		-----		-----
1134		-----		-----					

normality	OK
n	49
outliers	1
mean (n)	11.25
st.dev. (n)	1.747
R(calc.)	4.89
R(EN15553:07)	3.50

Lab 1397 first reported 4.3
Lab 2146 first reported 3.9



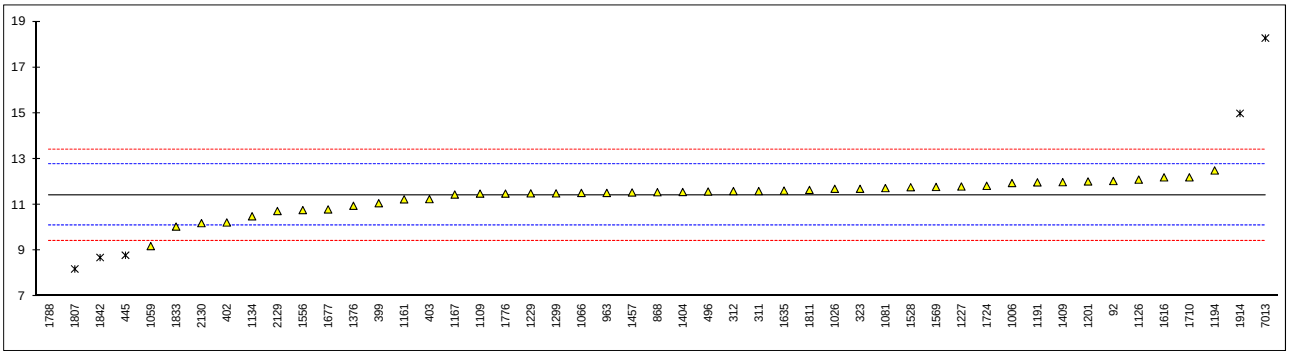


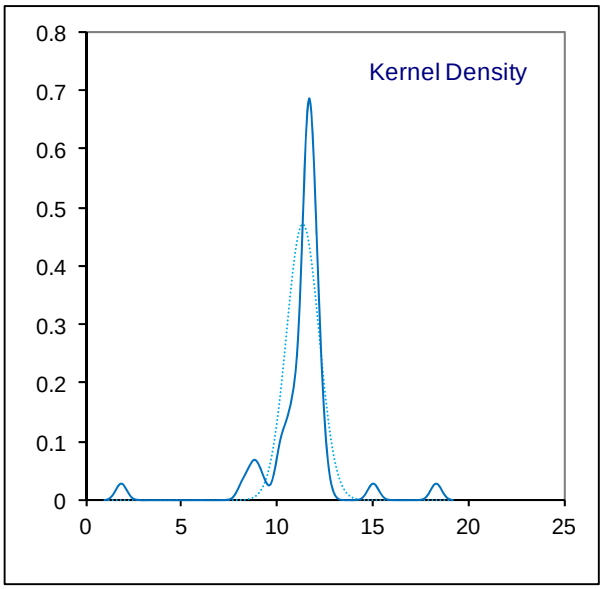
Determination of Olefins by GC on sample #14195; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	INH-14	12.04		0.92	1161	ISO22854	11.24		-0.29
120		-----		-----	1167	ISO22854	11.45		0.03
132		-----		-----	1171		-----		-----
150		-----		-----	1186		-----		-----
158		-----		-----	1191	ISO22854	11.98		0.84
159		-----		-----	1194	ISO22854	12.5		1.63
171		-----		-----	1199		-----		-----
175		-----		-----	1201	ISO22854	12.02		0.90
193		-----		-----	1227	D6839	11.80		0.56
194		-----		-----	1229	ISO22854	11.5		0.11
225		-----		-----	1257		-----		-----
228		-----		-----	1259		-----		-----
237		-----		-----	1299	ISO22854	11.5		0.11
238		-----		-----	1376	D6730	10.96		-0.71
273		-----		-----	1389		-----		-----
311	ISO22854	11.6		0.26	1395		-----		-----
312	ISO22854	11.6		0.26	1397		-----		-----
323	EN22854	11.7		0.41	1402		-----		-----
334		-----		-----	1404	ISO22854	11.56		0.20
335		-----		-----	1409	ISO22854	11.99		0.85
336		-----		-----	1428		-----		-----
337		-----		-----	1443		-----		-----
338		-----		-----	1457	ISO22854	11.54		0.17
340		-----		-----	1491		-----		-----
344		-----		-----	1498		-----		-----
350		-----		-----	1501		-----		-----
353		-----		-----	1520		-----		-----
360		-----		-----	1528	ISO22854	11.77		0.52
369		-----		-----	1537		-----		-----
370		-----		-----	1549		-----		-----
371		-----		-----	1556	ISO22854	10.77		-1.00
391		-----		-----	1564		-----		-----
399	ISO22854	11.07		-0.54	1569	ISO22854	11.78		0.53
402	ISO22854	10.23		-1.81	1570		-----		-----
403	ISO22854	11.25		-0.27	1610		-----		-----
420		-----		-----	1616	D6839	12.20		1.17
431		-----		-----	1634		-----		-----
440		-----		-----	1635	ISO22854	11.62		0.29
444		-----		-----	1636		-----		-----
445	EN14517	8.8	C,R(0.05)	-3.97	1654		-----		-----
447		-----		-----	1677	ISO22854	10.80		-0.96
463		-----		-----	1709		-----		-----
468		-----		-----	1710	ISO22854	12.2		1.17
485		-----		-----	1720		-----		-----
496	ISO22854	11.58		0.23	1724	ISO22854	11.83		0.61
541		-----		-----	1728		-----		-----
556		-----		-----	1730		-----		-----
558		-----		-----	1742		-----		-----
671		-----		-----	1751		-----		-----
704		-----		-----	1753		-----		-----
782		-----		-----	1776	ISO22854	11.49		0.09
823		-----		-----	1788	D6839	1.83	R(0.01)	-14.59
824		-----		-----	1805		-----		-----
868	D6839	11.55		0.18	1807	ISO22854	8.2	CR(0.05)	-4.91
902		-----		-----	1810		-----		-----
904		-----		-----	1811	ISO22854	11.65		0.34
963	ISO22854	11.52		0.14	1833	ISO22854	10.05	C	-2.10
970		-----		-----	1842	ISO22854	8.7	R(0.05)	-4.15
974		-----		-----	1849		-----		-----
1006	D6730	11.95	C	0.79	1851		-----		-----
1026	D6729	11.7		0.41	1881		-----		-----
1033		-----		-----	1895		-----		-----
1059	ISO22854	9.2		-3.36	1914		14.99	R(0.05)	5.41
1066	ISO22854	11.52		0.14	1938		-----		-----
1080		-----		-----	1951		-----		-----
1081	ISO22854	11.73		0.45	2129	D6730	10.73		-1.06
1082		-----		-----	2130	D6730	10.2		-1.87
1109	D6839	11.49		0.09	2146		-----		-----
1126	EN14517	12.10		1.01	7013	INH-DHA	18.278	R(0.01)	10.41
1134	ISO22854	10.50		-1.40					

normality	not OK
n	43
outliers	6
mean (n)	11.429
st.dev. (n)	0.6517
R(calc.)	1.825
R(ISO22854:14)	1.856

Lab 445 first reported 7.2
Lab 1006 first reported 13.95
Lab 1807 first reported 7.78
Lab 1833 first reported 7.25





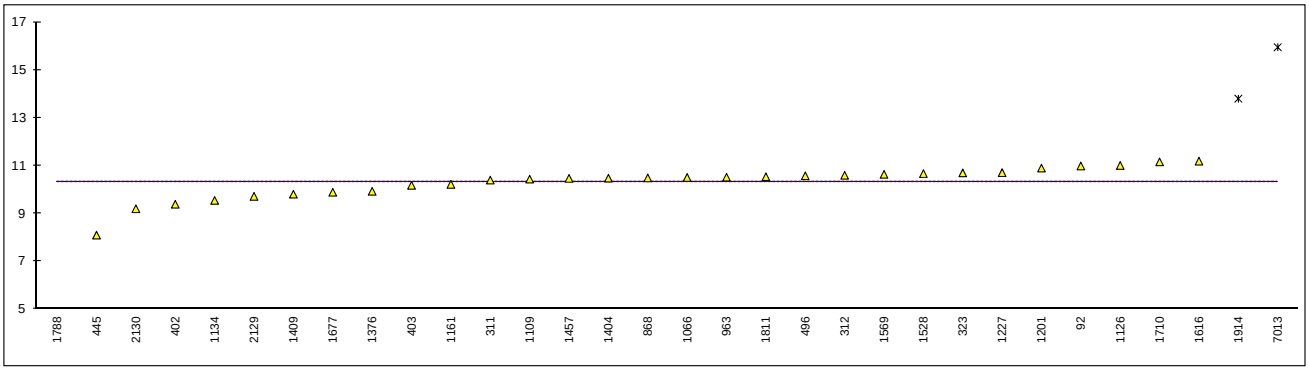
Determination of Olefins by GC on sample #14195; results in %M/M

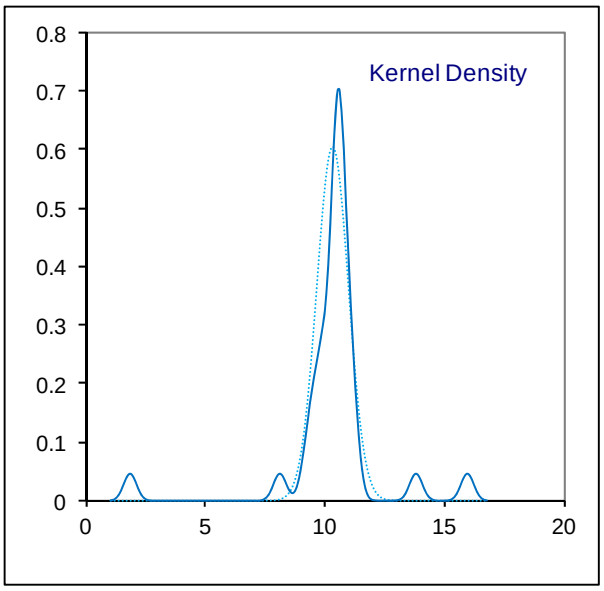
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	INH-14	10.99		-----	1161	ISO22854	10.22		-----
120		-----		-----	1167		-----		-----
132		-----		-----	1171		-----		-----
150		-----		-----	1186		-----		-----
158		-----		-----	1191		-----		-----
159		-----		-----	1194		-----		-----
171		-----		-----	1199		-----		-----
175		-----		-----	1201	ISO22854	10.90		-----
193		-----		-----	1227	D6839	10.71		-----
194		-----		-----	1229		-----		-----
225		-----		-----	1257		-----		-----
228		-----		-----	1259		-----		-----
237		-----		-----	1299		-----		-----
238		-----		-----	1376	D6730	9.93		-----
273		-----		-----	1389		-----		-----
311	ISO22854	10.4		-----	1395		-----		-----
312	ISO22854	10.6		-----	1397		-----		-----
323	EN22854	10.7		-----	1402		-----		-----
334		-----		-----	1404	ISO22854	10.48		-----
335		-----		-----	1409	ISO22854	9.81		-----
336		-----		-----	1428		-----		-----
337		-----		-----	1443		-----		-----
338		-----		-----	1457	ISO22854	10.47		-----
340		-----		-----	1491		-----		-----
344		-----		-----	1498		-----		-----
350		-----		-----	1501		-----		-----
353		-----		-----	1520		-----		-----
360		-----		-----	1528		10.67		-----
369		-----		-----	1537		-----		-----
370		-----		-----	1549		-----		-----
371		-----		-----	1556		-----		-----
391		-----		-----	1564		-----		-----
399		-----		-----	1569	ISO22854	10.64		-----
402		9.39		-----	1570		-----		-----
403		10.18		-----	1610		-----		-----
420		-----		-----	1616	D6839	11.19		-----
431		-----		-----	1634		-----		-----
440		-----		-----	1635		-----		-----
444		-----		-----	1636		-----		-----
445	EN14517	8.1	C	-----	1654		-----		-----
447		-----		-----	1677	ISO22854	9.89		-----
463		-----		-----	1709		-----		-----
468		-----		-----	1710	ISO22854	11.16		-----
485		-----		-----	1720		-----		-----
496	ISO22854	10.58		-----	1724		-----		-----
541		-----		-----	1728		-----		-----
556		-----		-----	1730		-----		-----
558		-----		-----	1742		-----		-----
671		-----		-----	1751		-----		-----
704		-----		-----	1753		-----		-----
782		-----		-----	1776		-----		-----
823		-----		-----	1788	D6839	1.83	R(0.01)	-----
824		-----		-----	1805		-----		-----
868	D6839	10.49		-----	1807		-----		-----
902		-----		-----	1810		-----		-----
904		-----		-----	1811	ISO22854	10.54		-----
963	ISO22854	10.52		-----	1833		-----		-----
970		-----		-----	1842		-----		-----
974		-----		-----	1849		-----		-----
1006		-----		-----	1851		-----		-----
1026		-----		-----	1881		-----		-----
1033		-----		-----	1895		-----		-----
1059		-----		-----	1914		13.80	R(0.01)	-----
1066	ISO22854	10.51		-----	1938		-----		-----
1080		-----		-----	1951		-----		-----
1081		-----		-----	2129	D6730	9.72		-----
1082		-----		-----	2130	D6730	9.2		-----
1109	D6839	10.44		-----	2146		-----		-----
1126	EN14517	11.01		-----	7013	INH-DHA	15.950	R(0.01)	-----
1134	ISO22854	9.55		-----					

normality	not OK
n	29
outliers	3
mean (n)	10.310
st.dev. (n)	0.6611
R(calc.)	1.851
R(ISO22854:14)	Unknown

Compare R(iis13B05EN) = 1.388

Lab 445 first reported 6.8





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Determination of Oxidation Stability on sample #14195; results in minutes

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	D525	>900		-----	1161	ISO7536	>900		-----
120		-----		-----	1167	ISO7536	>900		-----
132	D525	>900		-----	1171		-----		-----
150		-----		-----	1186		-----		-----
158		-----		-----	1191		-----		-----
159		-----		-----	1194		-----		-----
171	D525	>900		-----	1199		-----		-----
175		-----		-----	1201	D525	>1440		-----
193		-----		-----	1227		-----		-----
194		-----		-----	1229		-----		-----
225		-----		-----	1257		-----		-----
228		-----		-----	1259		-----		-----
237	D525	>900		-----	1299	D525	>960		-----
238		-----		-----	1376	D525	>900		-----
273		-----		-----	1389		-----		-----
311	D525	>900		-----	1395	D525	>2880		-----
312	D525	>900		-----	1397		-----		-----
323	ISO7536	>360		-----	1402	D525	>900		-----
334		-----		-----	1404	ISO7536	>1440		-----
335		-----		-----	1409	ISO7536	>900		-----
336	ISO7536	>900		-----	1428		>900		-----
337		-----		-----	1443		-----		-----
338		-----		-----	1457	ISO7536	>900		-----
340	ISO7536	>960		-----	1491		-----		-----
344		-----		-----	1498		-----		-----
350		-----		-----	1501		-----		-----
353		-----		-----	1520	ISO7536	>900		-----
360	ISO7536	> 900		-----	1528	ISO7536	>900		-----
369		-----		-----	1537		-----		-----
370		-----		-----	1549		-----		-----
371	ISO7536	>900		-----	1556	ISO7536	>900		-----
391	ISO7536	>900		-----	1564		-----		-----
399		-----		-----	1569	ISO7536	>900		-----
402		-----		-----	1570		-----		-----
403		-----		-----	1610		-----		-----
420	ISO7536	>900		-----	1616	D525	>900		-----
431		-----		-----	1634		-----		-----
440		-----		-----	1635	ISO7536	>1200		-----
444		-----		-----	1636	ISO7536	580		-----
445	IP40	>900		-----	1654	ISO7536	>900		-----
447	D525	>900		-----	1677	D525	>		-----
463	ISO7536	>360		-----	1709		-----		-----
468		-----		-----	1710	ISO7536	>900		-----
485		-----		-----	1720		-----		-----
496	ISO7536	>900		-----	1724	ISO7536	<1440		-----
541	D525	>900		-----	1728	ISO7536	>900		-----
556		-----		-----	1730		-----		-----
558		-----		-----	1742		-----		-----
671		-----		-----	1751		-----		-----
704		-----		-----	1753		-----		-----
782		-----		-----	1776		-----		-----
823	D525	>900		-----	1788	D525	>900		-----
824		-----		-----	1805		-----		-----
868	D525	>900		-----	1807	ISO7536	>380		-----
902		-----		-----	1810		-----		-----
904		-----		-----	1811		-----		-----
963		-----		-----	1833	ISO7536	>360		-----
970		-----		-----	1842	IP40	>900		-----
974	D525	>900		-----	1849	ISO7536	>600		-----
1006	D525	--		-----	1851		-----		-----
1026	ISO7536	>360		-----	1881		-----		-----
1033		-----		-----	1895		-----		-----
1059	ISO7536	>1485		-----	1914	D525	> 900		-----
1066		-----		-----	1938		-----		-----
1080		-----		-----	1951		-----		-----
1081	D525	>400		-----	2129	ISO7536	>900		-----
1082		-----		-----	2130	ISO7536	>900		-----
1109	D525	>1150		-----	2146		-----		-----
1126		-----		-----	7013		-----		-----
1134		-----		-----					

n	55
Mean (n)	>900

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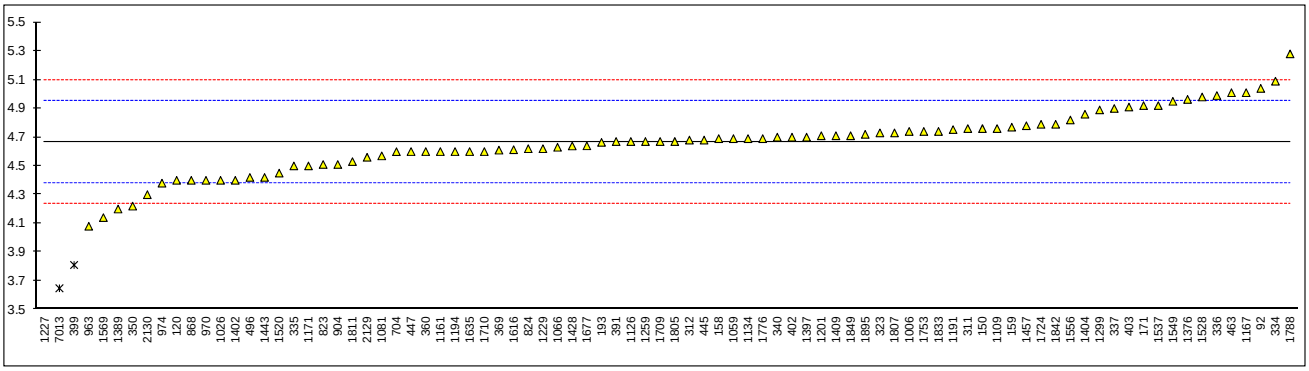
Determination of Ethanol on sample #14195; results in %V/V

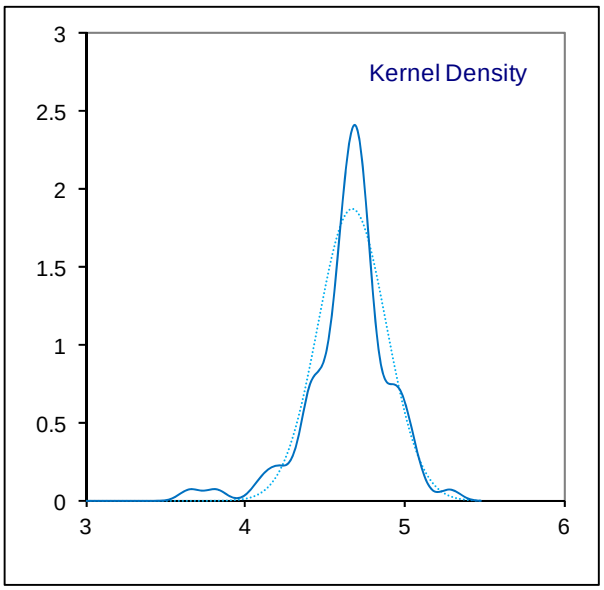
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	INH-14	5.04		2.61	1161	EN13132	4.6		-0.47
120	D4815	4.40		-1.87	1167	EN13132	5.01	C	2.40
132		-----		-----	1171	D5845Mod.	4.50		-1.17
150	EN1601	4.76		0.65	1186		-----		-----
158	D5599	4.69		0.16	1191	EN1601	4.753		0.61
159	D5599	4.77		0.72	1194	EN1601	4.6		-0.47
171	EN1601	4.92		1.77	1199		-----		-----
175		-----		-----	1201	EN22854	4.71		0.30
193	D5599	4.664		-0.02	1227	D6839	1.71	R(0.01)	-20.70
194		-----		-----	1229	EN1601	4.62		-0.33
225		-----		-----	1257		-----		-----
228		-----		-----	1259	EN13132	4.67		0.02
237		-----		-----	1299	EN22854	4.89		1.56
238		-----		-----	1376	D6730	4.963		2.08
273		-----		-----	1389	EN13132	4.2		-3.27
311	EN22854	4.76		0.65	1395		-----		-----
312	EN22854	4.68		0.09	1397	EN13132	4.7		0.23
323	EN22854	4.73		0.44	1402	IP466	4.4		-1.87
334	EN1601	5.09		2.96	1404	EN22854	4.86		1.35
335	EN1601	4.5		-1.17	1409	EN22854	4.71		0.30
336	EN1601	4.99		2.26	1428	EN13132	4.639		-0.19
337	EN13132	4.9	C	1.63	1443	EN13132	4.42		-1.73
338		-----		-----	1457	EN1601	4.78		0.79
340	EN1601	4.7		0.23	1491		-----		-----
344		-----		-----	1498		-----		-----
350	EN13132	4.22		-3.13	1501		-----		-----
353		-----		-----	1520	EN13132	4.45		-1.52
360	EN13132	4.60		-0.47	1528	EN1601	4.98		2.19
369	EN13132	4.61		-0.40	1537	EN13132	4.92		1.77
370		-----		-----	1549	D5845	4.95		1.98
371		-----		-----	1556	ISO22854	4.82		1.07
391	EN1601	4.67		0.02	1564		-----		-----
399	EN22854	3.81	R(0.05)	-6.00	1569	EN22854	4.14		-3.69
402	ISO22854	4.70		0.23	1570		-----		-----
403	ISO22854	4.91		1.70	1610		-----		-----
420		-----		-----	1616	D4815	4.613		-0.37
431		-----		-----	1634		-----		-----
440		-----		-----	1635	ISO22854	4.60		-0.47
444		-----		-----	1636		-----		-----
445	D4815	4.68		0.09	1654		-----		-----
447	EN13132	4.6		-0.47	1677	EN13132	4.64		-0.19
463	EN13132	5.01		2.40	1709	D4815	4.67		0.02
468		-----		-----	1710	EN13132	4.6		-0.47
485		-----		-----	1720		-----		-----
496	EN1601	4.42		-1.73	1724	ISO22854	4.79		0.86
541		-----		-----	1728		-----		-----
556		-----		-----	1730		-----		-----
558		-----		-----	1742		-----		-----
671		-----		-----	1751		-----		-----
704	D4815	4.599		-0.47	1753	EN13132	4.74		0.51
782		-----		-----	1776	EN22854	4.69		0.16
823	D4815	4.51		-1.10	1788	D6839	5.28		4.29
824	D4815	4.62		-0.33	1805	EN13132	4.67		0.02
868	D4815	4.40	C	-1.87	1807	EN22854	4.73		0.44
902		-----		-----	1810		-----		-----
904	D4815	4.51		-1.10	1811	EN22854	4.53		-0.96
963	ISO22854	4.08		-4.11	1833	EN1601	4.74		0.51
970	D4815	4.40		-1.87	1842	ISO22854	4.79		0.86
974	D4815	4.38		-2.01	1849	EN1601	4.71		0.30
1006	D4815	4.74		0.51	1851		-----		-----
1026	EN13132	4.4		-1.87	1881		-----		-----
1033		-----		-----	1895	EN14538	4.72		0.37
1059	EN22854	4.69		0.16	1914		-----		-----
1066	EN22854	4.63		-0.26	1938		-----		-----
1080		-----		-----	1951		-----		-----
1081	ISO20846	4.57		-0.68	2129	D6730	4.56		-0.75
1082		-----		-----	2130	D6730	4.3		-2.57
1109	D6839	4.76	C	0.65	2146		-----		-----
1126	in house	4.67		0.02	7013	INH-DHA	3.648	R(0.01)	-7.13
1134	ISO22854	4.69		0.16					

normality	OK
n	83
outliers	3
mean (n)	4.667
st.dev. (n)	0.2138
R(calc.)	0.599
R(EN1601:14)	0.400

Compare R(ISO22854) = 0.469

Lab 337 first reported 5.3
Lab 868 first reported 4.08
Lab 1109 first reported 1.80
Lab 1167 first reported 50.01





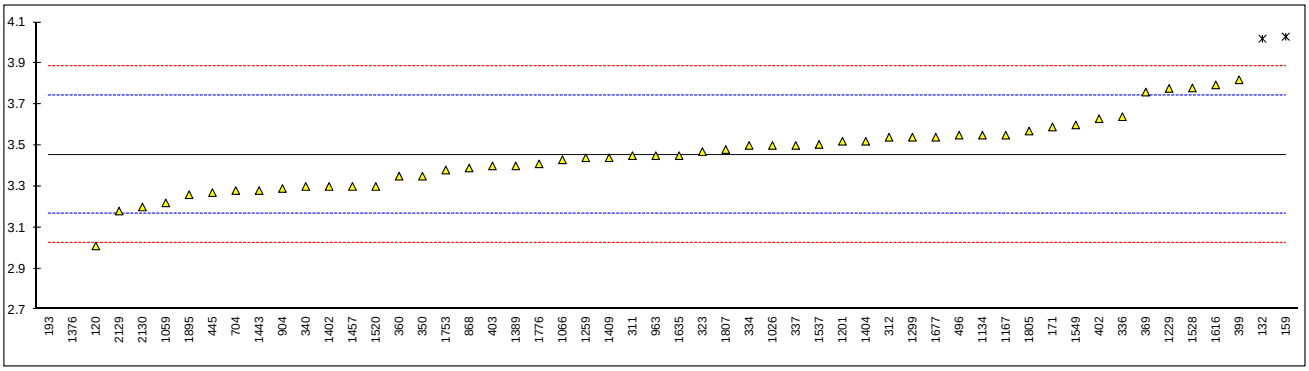
Determination of Ethers (C5 or more C atoms) on sample #14195; results in %V/V

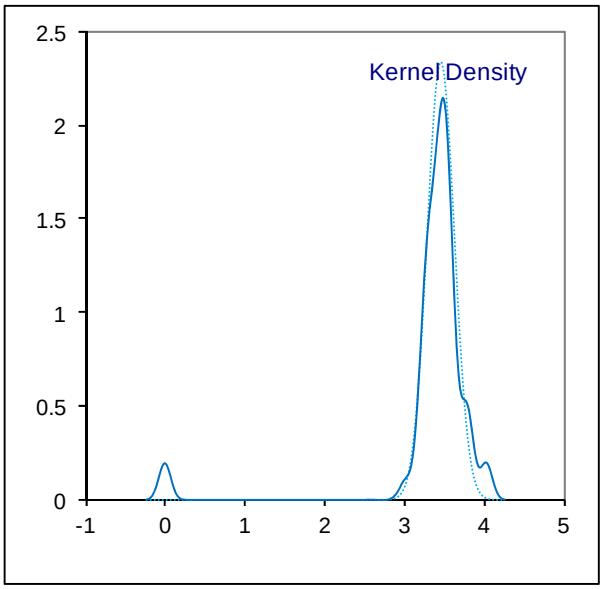
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92		-----		-----	1161	EN13132	<0.17		-----
120	D4815	3.01	C	-3.12	1167	EN13132	3.55		0.66
132	D5599	4.02	DG(0.05)	3.95	1171		-----		-----
150		-----		-----	1186		-----		-----
158		-----		-----	1191		-----		-----
159	D5599	4.03	DG(0.05)	4.02	1194		-----		-----
171	D5599	3.59		0.94	1199		-----		-----
175		-----		-----	1201	EN22854	3.52		0.45
193	D5599	0.00	ex	-24.19	1227		-----		-----
194		-----		-----	1229	EN1601	3.778		2.26
225		-----		-----	1257		-----		-----
228		-----		-----	1259	EN13132	3.44		-0.11
237		-----		-----	1299	EN22854	3.54		0.59
238		-----		-----	1376	D6730	0	ex	-24.19
273		-----		-----	1389	EN13132	3.4		-0.39
311	EN22854	3.45		-0.04	1395		-----		-----
312	EN22854	3.54		0.59	1397		-----		-----
323	EN22854	3.47		0.10	1402	IP466	3.3		-1.09
334	EN1601	3.50		0.31	1404	EN22854	3.52		0.45
335		-----		-----	1409	EN22854	3.44		-0.11
336	EN1601	3.64		1.29	1428		-----		-----
337	EN13132	3.5		0.31	1443	EN13132	3.28		-1.23
338		-----		-----	1457	EN1601	3.30		-1.09
340	EN1601	3.3		-1.09	1491		-----		-----
344		-----		-----	1498		-----		-----
350	EN13132	3.35		-0.74	1501		-----		-----
353		-----		-----	1520	EN13132	3.30		-1.09
360	EN13132	3.35		-0.74	1528	EN1601	3.78		2.27
369	EN13132	3.76		2.13	1537	EN13132	3.505		0.35
370		-----		-----	1549	D5845	3.6	C	1.01
371		-----		-----	1556		-----		-----
391		-----		-----	1564		-----		-----
399	EN22854	3.82		2.55	1569		-----		-----
402	ISO22854	3.63		1.22	1570		-----		-----
403	ISO22854	3.40		-0.39	1610		-----		-----
420		-----		-----	1616	D4815	3.795		2.38
431		-----		-----	1634		-----		-----
440		-----		-----	1635	ISO22854	3.45		-0.04
444		-----		-----	1636		-----		-----
445	D4815	3.27		-1.30	1654		-----		-----
447		-----		-----	1677	EN13132	3.54		0.59
463		-----		-----	1709		-----		-----
468		-----		-----	1710		-----		-----
485		-----		-----	1720		-----		-----
496	EN1601	3.55		0.66	1724		-----		-----
541		-----		-----	1728		-----		-----
556		-----		-----	1730		-----		-----
558		-----		-----	1742		-----		-----
671		-----		-----	1751		-----		-----
704	D4815	3.280		-1.23	1753	EN13132	3.38		-0.53
782		-----		-----	1776	EN22854	3.41		-0.32
823		-----		-----	1788		-----		-----
824		-----		-----	1805	EN13132	3.57		0.80
868	D4815	3.39		-0.46	1807	EN22854	3.48		0.17
902		-----		-----	1810		-----		-----
904	D4815	3.29		-1.16	1811		-----		-----
963	ISO22854	3.45		-0.04	1833		-----		-----
970		-----		-----	1842		-----		-----
974		-----		-----	1849		-----		-----
1006		-----		-----	1851		-----		-----
1026	EN13132	3.5		0.31	1881		-----		-----
1033		-----		-----	1895	EN14538	3.26		-1.37
1059	EN22854	3.22		-1.65	1914		-----		-----
1066	EN22854	3.43		-0.18	1938		-----		-----
1080		-----		-----	1951		-----		-----
1081		-----		-----	2129	D6730	3.18		-1.93
1082		-----		-----	2130	D6730	3.2		-1.79
1109		-----		-----	2146		-----		-----
1126		-----		-----	7013		-----		-----
1134	ISO22854	3.55		0.66					

normality	OK
n	50
outliers	2 (+2ex)
mean (n)	3.455
st.dev. (n)	0.1707
R(calc.)	0.478
R(EN1601:14)	0.400

Compare R(ISO22854) = 0.438

Lab 120 first reported 2.94
Lab 193 excluded, because of error in recognition of MTBE as “Ether C5” (result should include MTBE)
Lab 1376 excluded, because of error in recognition of MTBE as “Ether C5” (result should include MTBE)
Lab 1549 first reported 4.00





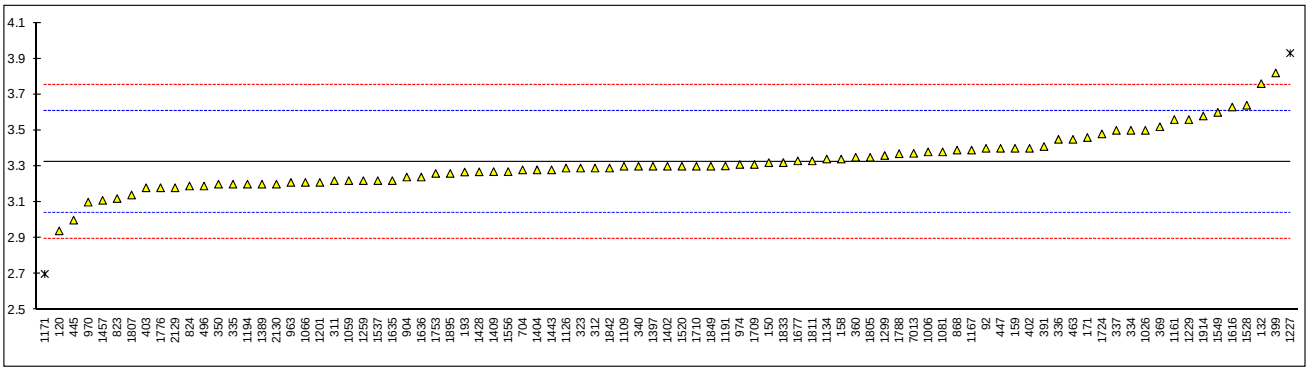
Determination of MTBE on sample #14195; results in %V/V

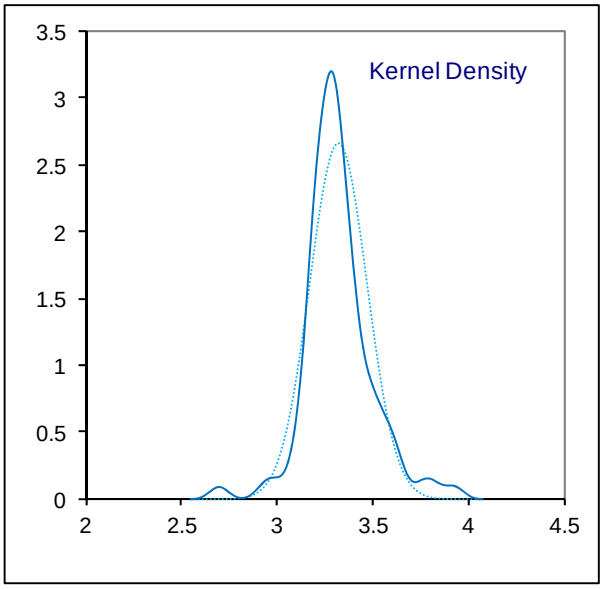
lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	INH-14	3.40		0.54	1161	EN13132	3.56		1.66
120	D4815	2.94		-2.68	1167	EN13132	3.39		0.47
132	D5599	3.76		3.06	1171	D5845Mod.	2.7	C,R(0.05)	-4.36
150	D5599	3.32		-0.02	1186		-----		-----
158	D5599	3.34		0.12	1191	EN1601	3.302		-0.15
159	D5599	3.40		0.54	1194	EN1601	3.2		-0.86
171	D5599	3.46		0.96	1199		-----		-----
175		-----		-----	1201	ISO22854	3.21		-0.79
193	D5599	3.268		-0.39	1227	D6839	3.93	R(0.05)	4.25
194		-----		-----	1229	EN1601	3.56		1.66
225		-----		-----	1257		-----		-----
228		-----		-----	1259	EN13132	3.22		-0.72
237		-----		-----	1299	ISO22854	3.36		0.26
238		-----		-----	1376		-----		-----
273		-----		-----	1389	EN13132	3.2		-0.86
311	ISO22854	3.22		-0.72	1395		-----		-----
312	ISO22854	3.29		-0.23	1397	EN13132	3.3		-0.16
323	EN22845	3.29		-0.23	1402	IP466	3.3		-0.16
334	EN1601	3.50		1.24	1404	ISO22854	3.28		-0.30
335	EN1601	3.2		-0.86	1409	ISO22854	3.27		-0.37
336	EN1601	3.45		0.89	1428	EN13132	3.269		-0.38
337	EN13132	3.5		1.24	1443	EN13132	3.28		-0.30
338		-----		-----	1457	EN1601	3.11		-1.49
340	EN1601	3.3		-0.16	1491		-----		-----
344		-----		-----	1498		-----		-----
350	EN13132	3.20		-0.86	1501		-----		-----
353		-----		-----	1520	EN13132	3.30		-0.16
360	EN13132	3.35		0.19	1528	EN1601	3.64		2.22
369	EN13132	3.52		1.38	1537	EN13132	3.22		-0.72
370		-----		-----	1549	D5845	3.6	C	1.94
371		-----		-----	1556	ISO22854	3.27		-0.37
391	EN1601	3.41		0.61	1564		-----		-----
399	ISO22854	3.82		3.48	1569		-----		-----
402	ISO22854	3.40		0.54	1570		-----		-----
403	ISO22854	3.18		-1.00	1610		-----		-----
420		-----		-----	1616	D4815	3.630		2.15
431		-----		-----	1634		-----		-----
440		-----		-----	1635	ISO22854	3.22		-0.72
444		-----		-----	1636	EN13132	3.24		-0.58
445	D4815	3.00		-2.26	1654		-----		-----
447	EN13132	3.4		0.54	1677	EN13132	3.33		0.05
463	EN13132	3.45		0.89	1709	D4815	3.31		-0.09
468		-----		-----	1710	EN13132	3.3		-0.16
485		-----		-----	1720		-----		-----
496	EN1601	3.19		-0.93	1724	ISO22854	3.48		1.10
541		-----		-----	1728		-----		-----
556		-----		-----	1730		-----		-----
558		-----		-----	1742		-----		-----
671		-----		-----	1751		-----		-----
704	D4815	3.280		-0.30	1753	EN13132	3.26		-0.44
782		-----		-----	1776	ISO22854	3.18		-1.00
823	EN1601	3.12		-1.42	1788		3.37		0.33
824	D4815	3.19		-0.93	1805	EN13132	3.35		0.19
868	D4815	3.39		0.47	1807	ISO22854	3.14		-1.28
902		-----		-----	1810		-----		-----
904	D4815	3.24		-0.58	1811	ISO22854	3.33		0.05
963	ISO22854	3.21		-0.79	1833	EN1601	3.32	C	-0.02
970	D4815	3.10		-1.56	1842	ISO22854	3.29		-0.23
974	D4815	3.31		-0.09	1849	EN13132	3.30		-0.16
1006	D4815	3.38		0.40	1851		-----		-----
1026	EN13132	3.5		1.24	1881		-----		-----
1033		-----		-----	1895	EN14538	3.26		-0.44
1059	ISO22854	3.22		-0.72	1914		3.58		1.80
1066	ISO22854	3.21		-0.79	1938		-----		-----
1080		-----		-----	1951		-----		-----
1081	ISO22854	3.38		0.40	2129	D6730	3.18		-1.00
1082		-----		-----	2130	D6730	3.2		-0.86
1109	D6839	3.30		-0.16	2146		-----		-----
1126	in house	3.29		-0.23	7013	INH-DHA	3.372		0.34
1134	ISO22854	3.34		0.12					

normality	suspect
n	85
outliers	2
mean (n)	3.324
st.dev. (n)	0.1497
R(calc.)	0.419
R(EN1601:14)	0.400

Compare R(ISO22854) = 0.435

Lab 1171 first reported 2.63
Lab 1549 first reported 4.00
Lab 1833 first reported 3.02





Determination of other oxygenates on sample #14195; results in %V/V

lab	method	ETBE	MeOH	DIPE	TAME	i-BuOH	i-PropOH	Tert-buOH	Others
92	INH-14	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-----
120	D4815	<0.01	<0.01	0.068	<0.01	<0.01	0.011	<0.01	<0.01
132	D5599	0.15	<0.10	0.11	<0.10	<0.10	<0.10	<0.10	<0.10
150	D5599	0.17	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	-----
158	D5599	-----	-----	-----	-----	0.11	-----	-----	-----
159	D5599	0.28	0.14	**0.35 +?**	-----	-----	-----	-----	-----
171	D5599	0.13	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
175		-----	-----	-----	-----	-----	-----	-----	-----
193	D5599	0.110	0.00	0.078	0.00	0.00	0.00	0.00	0.00
194		-----	-----	-----	-----	-----	-----	-----	-----
225		-----	-----	-----	-----	-----	-----	-----	-----
228		-----	-----	-----	-----	-----	-----	-----	-----
237		-----	-----	-----	-----	-----	-----	-----	-----
238		-----	-----	-----	-----	-----	-----	-----	-----
273		-----	-----	-----	-----	-----	-----	-----	-----
311	ISO22854	0.15	<0.01	0.08	<0.01	<0.01	<0.01	<0.01	0.02
312	ISO22854	0.16	<0.01	0.09	<0.01	<0.01	<0.01	<0.01	<0.01
323	EN22845	0.18	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
334	EN1601	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
335	EN1601	-----	-----	-----	-----	-----	-----	-----	-----
336	EN1601	0.19	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
337	EN13132	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
338		-----	-----	-----	-----	-----	-----	-----	-----
340	EN1601	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
344		-----	-----	-----	-----	-----	-----	-----	-----
350	EN13132	0.15	-----	-----	-----	-----	-----	-----	-----
353		-----	-----	-----	-----	-----	-----	-----	-----
360	EN13132	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
369	EN13132	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
370		-----	-----	-----	-----	-----	-----	-----	-----
371		-----	-----	-----	-----	-----	-----	-----	-----
391	EN1601	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
399	ISO22854	-----	-----	-----	-----	-----	-----	-----	-----
402	ISO22854	0.15	-----	0.08	-----	0.03	-----	-----	-----
403	ISO22854	0.14	-----	0.08	-----	0.03	-----	-----	-----
420		-----	-----	-----	-----	-----	-----	-----	-----
431		-----	-----	-----	-----	-----	-----	-----	-----
440		-----	-----	-----	-----	-----	-----	-----	-----
444		-----	-----	-----	-----	-----	-----	-----	-----
445	D4815	0.27	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
447	EN13132	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-----
463	EN13132	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-----
468		-----	-----	-----	-----	-----	-----	-----	-----
485		-----	-----	-----	-----	-----	-----	-----	-----
496	EN1601	0.28	<0.01	0.08	<0.01	<0.01	<0.01	<0.01	0.05
541		-----	-----	-----	-----	-----	-----	-----	-----
556		-----	-----	-----	-----	-----	-----	-----	-----
558		-----	-----	-----	-----	-----	-----	-----	-----
671		-----	-----	-----	-----	-----	-----	-----	-----
704	D4815	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
782		-----	-----	-----	-----	-----	-----	-----	-----
823	EN1601	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-----
824	D4815	-----	-----	-----	-----	-----	-----	-----	-----
868	D4815	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
902		-----	-----	-----	-----	-----	-----	-----	-----
904	D4815	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
963	ISO22854	0.15	<0.8	0.09	<0.8	<0.8	<0.8	<0.8	0.03
970	D4815	-----	-----	-----	-----	-----	-----	-----	-----
974	D4815	-----	-----	-----	-----	-----	-----	-----	-----
1006	D4815	0.17	n.d.	n.d.	n.d.	-----	-----	-----	-----
1026	EN13132	<0.1	<0.1	-----	-----	<0.1	<0.1	<0.1	<0.1
1033		-----	-----	-----	-----	-----	-----	-----	-----
1059	ISO22854	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1066	ISO22854	0.14	<0.01	0.08	<0.01	0.02	<0.01	<0.01	<0.01
1080		-----	-----	-----	-----	-----	-----	-----	-----
1081	ISO22854	0.16	0	-----	-----	-----	-----	-----	-----
1082		-----	-----	-----	-----	-----	-----	-----	-----
1109	D6839	0.16	<0.1	0.08	<0.1	0.02	<0.1	<0.1	-----
1126	in house	0.23	-----	-----	-----	-----	-----	-----	-----
1134	ISO22854	0.13	<0.01	0.08	<0.01	<0.01	<0.01	0.01	<0.01
1161	EN13132	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1167	EN13132	0.16	<0.1	-----	-----	<0.1	<0.1	0.07	<0.2
1171	D5845Mod.	**(0.0)**	0.0	**(0.0)**	0.0	-----	-----	0.0	-----
1186		-----	-----	-----	-----	-----	-----	-----	-----
1191	EN1601	0.141	0.012	-----	<0.05	-----	-----	-----	-----
1194	EN1601	**(0.0)**	0.0	**0.3 +?**	0.5 **+?**	0.0	-----	-----	-----

1199		-----	-----	-----	-----	-----	-----	-----	-----
1201	ISO22854	0.15	0	0.08	0.08	0.02	0	0	0
1227	D6839	0.25	-----	-----	-----	-----	-----	-----	-----
1229	EN1601	0.15	0.01	0.068	<0.05	<0.05	<0.05	0.01	-----
1257		-----	-----	-----	-----	-----	-----	-----	-----
1259	EN13132	0.20	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1299	ISO22854	<0.8	<0.8	-----	-----	<0.8	-----	<0.8	<0.8
1376		**(0)**	0	**(0)**	0	0	0	0	-----
1389	EN13132	0.15	<0.1	-----	-----	-----	-----	-----	-----
1395		-----	-----	-----	-----	-----	-----	-----	-----
1397	EN13132	<0.2	-----	-----	-----	-----	-----	-----	-----
1402	IP466	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
1404	ISO22854	0.16	<0.01	0.08	<0.01	<0.01	<0.01	<0.01	0.03
1409	ISO22854	0.17	0.05	-----	-----	0.01	0.01	0.01	-----
1428	EN13132	0.2	0	-----	-----	0	0	0	-----
1443	EN13132	<0.17	<0.17	-----	<0.17	<0.17	<0.17	<0.17	<0.17
1457	EN1601	0.14	0.01	0.05	<0.1	<0.1	<0.1	<0.1	0.02
1491		-----	-----	-----	-----	-----	-----	-----	-----
1498		-----	-----	-----	-----	-----	-----	-----	-----
1501		-----	-----	-----	-----	-----	-----	-----	-----
1520	EN13132	-----	-----	-----	-----	-----	-----	-----	-----
1528	EN1601	0.14	-----	-----	-----	-----	-----	-----	-----
1537	EN13132	0.285	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1549	D5845	<0.1	<0.1	<0.1	<0.1	-----	-----	<0.1	-----
1556	ISO22854	-----	-----	-----	-----	-----	-----	-----	-----
1564		-----	-----	-----	-----	-----	-----	-----	-----
1569		**3.20 +?**	-----	-----	0.34 **+?**	-----	-----	-----	-----
1570		-----	-----	-----	-----	-----	-----	-----	-----
1610		-----	-----	-----	-----	-----	-----	-----	-----
1616	D4815	<0.20	<0.20	<0.2	<0.20	0.098	<0.20	<0.20	<0.20
1634		-----	-----	-----	-----	-----	-----	-----	-----
1635	ISO22854	0.23	-----	-----	-----	-----	-----	-----	-----
1636	EN13132	-----	-----	-----	-----	-----	-----	-----	-----
1654		-----	-----	-----	-----	-----	-----	-----	-----
1677	EN13132	0.14	0.01	0.08	< 0.01	< 0.01	< 0.01	< 0.01	0.02
1709	D4815	-----	-----	-----	-----	-----	-----	-----	-----
1710	EN13132	0.2	0.0	-----	-----	-----	-----	-----	-----
1720		-----	-----	-----	-----	-----	-----	-----	-----
1724	ISO22854	-----	-----	-----	-----	-----	-----	-----	-----
1728		-----	-----	-----	-----	-----	-----	-----	-----
1730		-----	-----	-----	-----	-----	-----	-----	-----
1742		-----	-----	-----	-----	-----	-----	-----	-----
1751		-----	-----	-----	-----	-----	-----	-----	-----
1753	EN13132	0.12	-----	-----	-----	-----	-----	-----	-----
1776	ISO22854	0.15	<0.20	0.08	<0.20	<0.20	<0.20	0.02	<0.20
1788		0.12	-----	-----	0.00	-----	-----	-----	-----
1805	EN13132	0.22	-----	-----	-----	-----	-----	-----	-----
1807	ISO22854	0.18	<0.01	0.08	<0.01	0.03	<0.01	<0.01	<0.01
1810		-----	-----	-----	-----	-----	-----	-----	-----
1811	ISO22854	0.17	-----	-----	-----	-----	-----	-----	-----
1833	EN1601	-----	-----	-----	-----	0.02	-----	-----	8.29 **+?**
1842	ISO22854	0.23	0.07	-----	-----	-----	0.06	-----	-----
1849	EN13132	-----	-----	-----	-----	-----	-----	-----	-----
1851		-----	-----	-----	-----	-----	-----	-----	-----
1881		-----	-----	-----	-----	-----	-----	-----	-----
1895	EN14538	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
1914		-----	-----	-----	-----	-----	-----	-----	-----
1938		-----	-----	-----	-----	-----	-----	-----	-----
1951		-----	-----	-----	-----	-----	-----	-----	-----
2129	D6730	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2130	D6730	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2146		-----	-----	-----	-----	-----	-----	-----	-----
7013	INH-DHA	-----	-----	-----	-----	-----	-----	-----	-----
	normality	suspect		not OK					
	n	44	59	19	49	54	50	51	40
	outliers	1 (+3ex)	reported	2 (+2ex)	reported	reported	reported	reported	reported
	mean (n)	0.175	<0.2	0.080	<0.2	<0.2	<0.2	<0.2	<0.2
	st.dev. (n)	0.0459		0.0113					
	R(calc.)	0.128		0.032					
	R(EN1601:14)	(0.100)		Unknown					

Bold and underlined test results: statitscal outliers acc. Grubbs/Dixon/Rosner outlier test

(Bold) test results: Excluded, because zero is not a real value

+?: False positive result?

Lab 1616 first reported 0.165 for DIPE, lab 1833 first reported 0.04 for Isopropyl alcohol

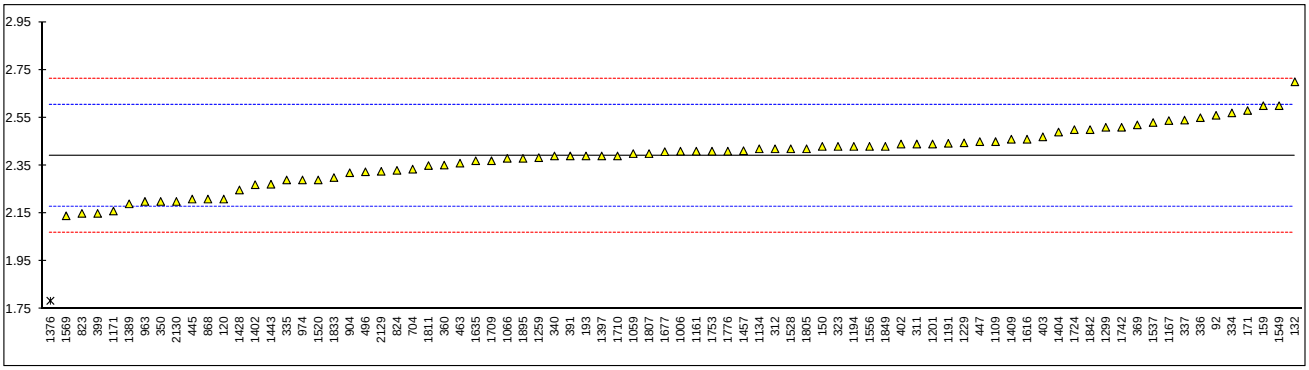
Determination of Oxygen Content on sample #14195; results in %M/M

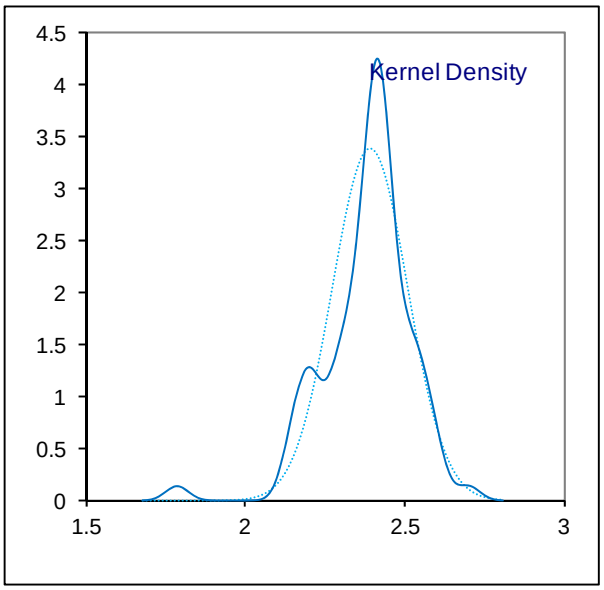
lab	method	value	mark	z(targ)
92	INH-14	2.560		1.58
120	D4815	2.21		-1.69
132	D5599	2.7		2.88
150	D5599	2.43		0.36
158		-----		-----
159	D5599	2.60		1.95
171	D5599	2.58	C	1.76
175		-----		-----
193	D5599	2.39		-0.01
194		-----		-----
225		-----		-----
228		-----		-----
237		-----		-----
238		-----		-----
273		-----		-----
311	EN22854	2.44		0.46
312	EN22854	2.42		0.27
323	EN22854	2.43		0.36
334	EN1601	2.57		1.67
335	EN1601	2.29		-0.94
336	EN1601	2.55		1.48
337	EN13132	2.54	C	1.39
338		-----		-----
340	EN1601	2.39		-0.01
344		-----		-----
350	EN13132	2.20		-1.78
353		-----		-----
360	EN13132	2.352		-0.36
369	EN13132	2.52		1.20
370		-----		-----
371		-----		-----
391	EN1601	2.39		-0.01
399	EN22854	2.15		-2.25
402	ISO22854	2.44		0.46
403	ISO22854	2.47		0.74
420		-----		-----
431		-----		-----
440		-----		-----
444		-----		-----
445	D4815	2.21		-1.69
447	EN13132	2.45		0.55
463	EN13132	2.36		-0.29
468		-----		-----
485		-----		-----
496	EN1601	2.324		-0.63
541		-----		-----
556		-----		-----
558		-----		-----
671		-----		-----
704	D4815	2.335		-0.52
782		-----		-----
823	EN1601	2.15		-2.25
824	D4815	2.33		-0.57
868	D4815	2.21		-1.69
902		-----		-----
904	D4815	2.32		-0.66
963	ISO22854	2.20		-1.78
970		-----		-----
974	D4815	2.29		-0.94
1006	D4815	2.41		0.18
1026		-----		-----
1033		-----		-----
1059	EN22854	2.40		0.08
1066	EN22854	2.38		-0.10
1080		-----		-----
1081		-----		-----
1082		-----		-----
1109	D6839	2.45		0.55
1126		-----		-----
1134	ISO22854	2.42		0.27
1161	EN13132	2.41		0.18
1167	EN13132	2.538		1.37
1171	D5845Mod.	2.160		-2.16
1186		-----		-----
1191	EN1601	2.443		0.48
1194	EN1601	2.43		0.36
1199		-----		-----
1201	EN22854	2.44		0.46
1227		-----		-----
1229	EN1601	2.445		0.50
1257		-----		-----
1259	EN13132	2.383		-0.08
1299	EN22854	2.51		1.11
1376	D6730	1.785	R(0.01)	-5.66
1389	EN13132	2.19		-1.88
1395		-----		-----
1397	EN13132	2.39		-0.01
1402	IP466	2.27		-1.13
1404	EN22854	2.49		0.92
1409	EN22854	2.46		0.64
1428	EN13132	2.248		-1.34
1443	EN13132	2.272		-1.11
1457	EN1601	2.412		0.20
1491		-----		-----
1498		-----		-----
1501		-----		-----
1520	EN13132	2.29		-0.94
1528	EN1601	2.42		0.27
1537	EN13132	2.53		1.30
1549	D5845	2.60		1.95
1556	ISO22854	2.43		0.36
1564		-----		-----
1569	EN22854	2.14		-2.34
1570		-----		-----
1610		-----		-----
1616	D4815	2.46		0.64
1634		-----		-----
1635	ISO22854	2.37		-0.20
1636		-----		-----
1654		-----		-----
1677	EN13132	2.408		0.16
1709	D4815	2.37		-0.20
1710	EN13132	2.39		-0.01
1720		-----		-----
1724	ISO22854	2.5		1.02
1728		-----		-----
1730		-----		-----
1742	D5622	2.51		1.11
1751		-----		-----
1753	EN13132	2.41		0.18
1776	EN22854	2.41		0.18
1788		-----		-----
1805	EN13132	2.42		0.27
1807	EN22854	2.40		0.08
1810		-----		-----
1811	EN22854	2.35		-0.38
1833	EN1601	2.3		-0.85
1842	ISO22854	2.5		1.02
1849	EN1601	2.43		0.36
1851		-----		-----
1881		-----		-----
1895	EN14538	2.380		-0.10
1914		-----		-----
1938		-----		-----
1951		-----		-----
2129	D6730	2.326		-0.61
2130	D6730	2.2		-1.78
2146		-----		-----
7013		-----		-----

normality	OK
n	79
outliers	1
mean (n)	2.391
st.dev. (n)	0.1182
R(calc.)	0.331
R(EN1601:14)	0.300

Compare R(ISO22854) = 0.31

Lab 171 first reported 3.16
Lab 337 first reported 2.68

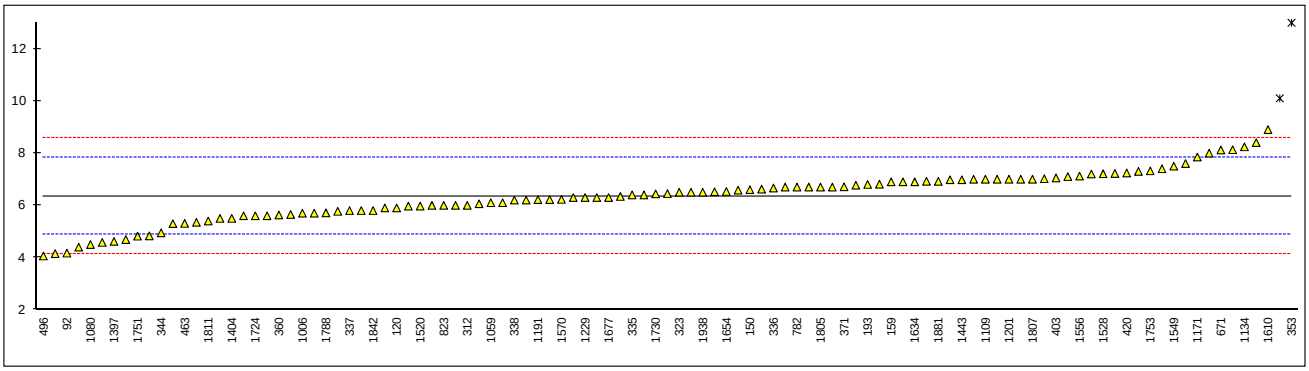


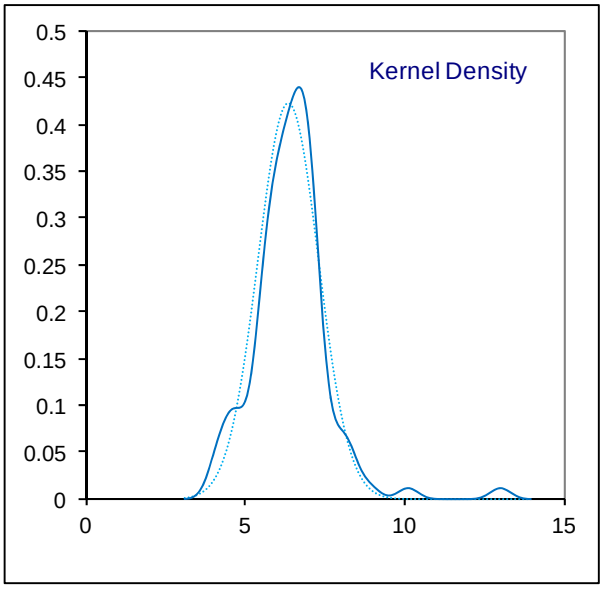


Determination of Sulphur on sample #14195; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	D5453	4.17		-2.95	1161	ISO20846	6.0		-0.47
120	D2622	5.9		-0.61	1167	ISO20846	6.45		0.13
132	D2622	6.58		0.31	1171	ISO20846	7.85		2.03
150	D5453	6.6		0.34	1186	D5453	4.69		-2.25
158	D5453	5.7		-0.88	1191	ISO20846	6.22		-0.18
159	D2622	6.9		0.74	1194	ISO20846	10.1	R(0.05)	5.07
171	D5453	6.3		-0.07	1199		-----		-----
175		-----		-----	1201	ISO20846	7.0		0.88
193	D7039	6.8		0.61	1227	D5453	5.6		-1.01
194		-----		-----	1229	ISO20846	6.3		-0.07
225		-----		-----	1257	ISO20846	6.2		-0.20
228		-----		-----	1259	ISO20846	5.97		-0.51
237		-----		-----	1299	ISO20884	5.8		-0.74
238		-----		-----	1376	D5453	5.77		-0.79
273		-----		-----	1389	ISO20846	4.15		-2.98
311	ISO20846	7.6		1.69	1395		-----		-----
312	ISO20846	6.0		-0.47	1397	ISO20846	4.62		-2.34
323	ISO20846	6.5		0.20	1402		6.3		-0.07
334	ISO20846	7.3		1.28	1404	ISO20846	5.5		-1.15
335	ISO20846	6.4		0.07	1409		-----		-----
336	ISO20846	6.663		0.42	1428		6.1		-0.34
337	ISO20846	5.8		-0.74	1443	ISO20846	6.98		0.85
338	ISO20846	6.2		-0.20	1457	ISO20846	6.62		0.36
340	ISO20846	5.5		-1.15	1491	ISO20846	6.92		0.77
344	D5453	4.947		-1.90	1498	D5453	4.4		-2.64
350		-----		-----	1501		-----		-----
353	IP531	12.99	R(0.01)	8.98	1520	ISO20846	5.97		-0.51
360	ISO20846	5.63		-0.97	1528	ISO20846	7.21		1.16
369		-----		-----	1537		-----		-----
370	ISO20846	7.1		1.01	1549	D7212	7.50		1.55
371	D5453	6.71		0.49	1556	ISO20846	7.12		1.04
391	ISO20846	7.0		0.88	1564		-----		-----
399		-----		-----	1569	ISO20846	4.83		-2.06
402	ISO20846	6.77		0.57	1570	ISO20846	6.23		-0.16
403	ISO20846	7.05		0.95	1610	D5453	8.9		3.45
420	ISO20846	7.24		1.20	1616	D5453	7.02		0.91
431		-----		-----	1634	ISO20846	6.9		0.74
440		-----		-----	1635	ISO20846	6.5		0.20
444		-----		-----	1636	ISO20846	6.52		0.23
445	D5453	6.98		0.85	1654	ISO20846	6.53		0.24
447	IP490	<3.0	false -	<-4.53	1677	ISO20846	6.30		-0.07
463	D5453	5.31		-1.41	1709	D5453	6.4		0.07
468	D5453	6.7		0.47	1710	ISO20846	6.7		0.47
485		-----		-----	1720	D5453	7.0		0.88
496	ISO20846	4.06		-3.10	1724	ISO20846	5.6		-1.01
541		-----		-----	1728	ISO20846	5.65		-0.95
556		-----		-----	1730	ISO20846	6.44		0.12
558		-----		-----	1742	ISO20846	7.22		1.18
671	D5453	8.12		2.39	1751	ISO20884	4.82		-2.07
704	ISO20846	6.34		-0.01	1753	ISO20846	7.32		1.31
782	ISO20846	6.7		0.47	1776	ISO20884	5.3		-1.42
823	ISO20846	6.0		-0.47	1788	ISO20846	5.71		-0.87
824	ISO20846	6.9		0.74	1805	ISO20884	6.7		0.47
868	D5453	7.2		1.15	1807	ISO20846	7.0		0.88
902		-----		-----	1810		-----		-----
904		-----		-----	1811	ISO20846	5.40		-1.29
963	ISO20846	6.0		-0.47	1833	ISO20846	5.6		-1.01
970	D5453	7.40		1.42	1842	D5453	5.8		-0.74
974	ISO20846	--		-----	1849	ISO20846	5.35		-1.35
1006	D5453	5.7		-0.88	1851		-----		-----
1026	ISO20846	5.9		-0.61	1881	ISO20846	6.92		0.77
1033		-----		-----	1895	ISO20846	4.58		-2.39
1059	ISO20846	6.1		-0.34	1914	ISO20846	6.7		0.47
1066	D2622	8.4		2.77	1938	ISO20846	6.5		0.20
1080	ISO20846	4.5		-2.50	1951		-----		-----
1081	ISO20846	7.0		0.88	2129	ISO20846	8.13		2.41
1082		-----		-----	2130	ISO20846	8.0		2.23
1109	D7039	7.0		0.88	2146	ISO20846	6.22		-0.18
1126	ISO20846	6.81		0.62	7013	D6667	6.06		-0.39
1134	ISO20846	8.24		2.55					

normality	OK
n	105
outliers	2
mean (n)	6.351
st.dev. (n)	0.9453
R(calc.)	2.647
R(ISO20846:11)	2.071



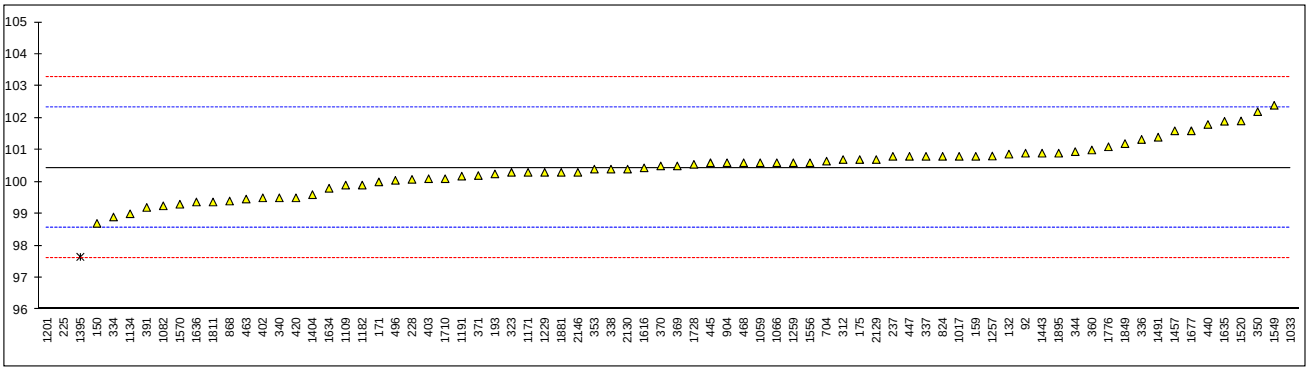


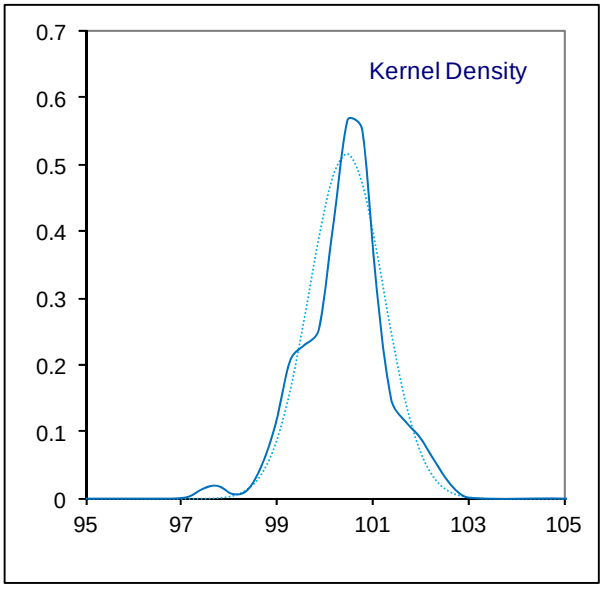
Determination of ASVP on sample #14196; results in kPa

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	D5191	100.9		0.49	1081		-----		-----
120		-----		-----	1082	EN13016-1	99.25		-1.26
132	D5191	100.870		0.45	1109	D5191	99.90		-0.57
150	D5191	98.7		-1.85	1134	D5191	99.0		-1.53
158		-----		-----	1167		-----		-----
159	EPA	100.8014		0.38	1171	EN13016-1	100.3	C	-0.15
171	D5191	100.0		-0.47	1182	D5191	99.9		-0.57
175	D5191	100.7		0.27	1191	EN13016-1	100.18		-0.28
193	D5191	100.2497		-0.20	1194		-----		-----
194		-----		---- -	1201	EN13016-1	59.9	R(0.01)	-42.98
225	D5191	87.54	C,R(0.01)	-13.68	1229	EN13016-1	100.3	C	-0.15
228	D5191	100.08		-0.38	1257	D5191	100.810		0.39
237	D5191	100.8		0.38	1259	EN13016-1	100.6		0.17
238		-----		-----	1299		-----		-----
311		-----		-----	1389		-----		-----
312	D5191	100.7		0.27	1395	EN13016-1	97.65	R(0.05)	-2.96
323	EN13016-1	100.3		-0.15	1404	EN13016-1	99.6		-0.89
334	EN13016-1	98.9		-1.63	1409		-----		-----
335		-----		-----	1428		-----		-----
336	EN13016-1	101.33		0.94	1443	EN13016-1	100.9		0.49
337	EN13016-1	100.8		0.38	1457	EN13016-1	101.6		1.23
338	EN13016-1	100.4		-0.04	1491	EN13016-1	101.4		1.02
340	EN13016-1	99.5		-1.00	1501		-----		-----
344	EN13016-1	100.948		0.54	1520	EN13016-1	101.91		1.56
350	EN13016-1	102.2		1.86	1549	EN13016-1	102.4		2.08
353	D5191	100.4		-0.04	1556	EN13016-1	100.6		0.17
360	EN13016-1	101.0		0.59	1564		-----		-----
369	EN13016-1	100.5		0.06	1570	EN13016-1	99.3		-1.21
370	EN13016-1	100.5		0.06	1610		-----		-----
371	EN13016-1	100.2		-0.26	1616	Calc.	100.44	C	0.00
391	EN13016-1	99.2		-1.32	1634	EN13016-1	99.8	C	-0.68
399		-----		-----	1635	EN13016-1	101.9		1.55
402	EN13016-1	99.5		-1.00	1636	EN13016-1	99.37		-1.14
403	EN13016-1	100.10		-0.36	1654		-----		-----
420	EN13016-1	99.5		-1.00	1677	D5191	101.6		1.23
431		-----		-----	1710	EN13016-1	100.1		-0.36
440	D5191	101.8		1.44	1724		-----		-----
445	IP394	100.6		0.17	1728	EN13016-1	100.55		0.11
447	D5191	100.8		0.38	1776	EN13016-1	101.1		0.70
463	EN13016-1	99.461		-1.04	1807		-----		-----
468	EN13016-1	100.60		0.17	1810		-----		-----
485		-----		-----	1811	EN13016-1	99.37		-1.14
496	EN13016-1	100.05		-0.42	1833		-----		-----
704	EN13016-1	100.65		0.22	1849	EN13016-1	101.2		0.80
824	EN13016-1	100.8		0.38	1851		-----		-----
868	D5191	99.4		-1.10	1881	D5191	100.3		-0.15
904	EN13016-1	100.6		0.17	1895	EN13016-1	100.9		0.49
970		-----		-----	1938		-----		-----
1006		-----		-----	1951		-----		-----
1017	EN13016-1	100.8		0.38	2124		-----		-----
1026		-----		-----	2129	EN13016-1	100.7		0.27
1033	EN13016-1	135.3	R(0.01)	36.96	2130	D5191	100.4		-0.04
1059	EN13016-1	100.6	C	0.17	2146	EN13016-1	100.3		-0.15
1066	EN13016-1	100.6		0.17					

normality	OK
n	72
outliers	4
mean (n)	100.442
st.dev. (n)	0.7748
R(calc.)	2.170
R(EN13016:07)	2.641

Lab 225 first reported 88.11
Lab 1059 first reported 93.4
Lab 1171 first reported 93.00
Lab 1229 first reported 94.9
Lab 1616 first reported 103.28
Lab 1634 first reported 92.5


105
104
103
102
101
100
99
98
97
96
1201 225 1395 150 334 1134 391 1082 1570 1636 1811 868 463 402 340 420 1404 1634 1109 1182 171 496 228 403 1710 1191 371 193 323 1171 1229 1881 2146 353 338 2130 1616 370 369 1728 445 904 468 1059 1066 1259 1556 704 312 175 2129 237 447 337 824 1017 159 1257 132 92 1443 1895 344 360 1776 1849 336 1491 1457 1677 440 1635 1520 350 1549 1033

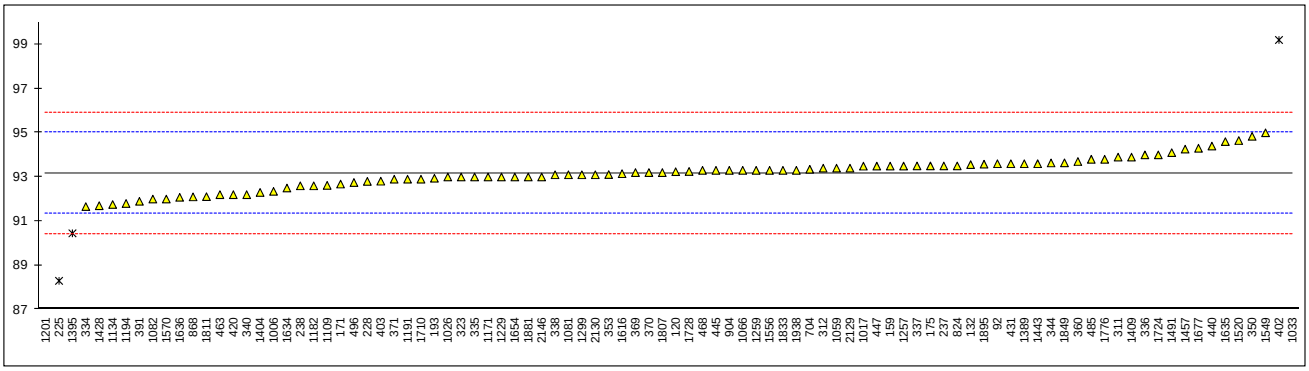

Kernel Density
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
95
97
99
101
103
105

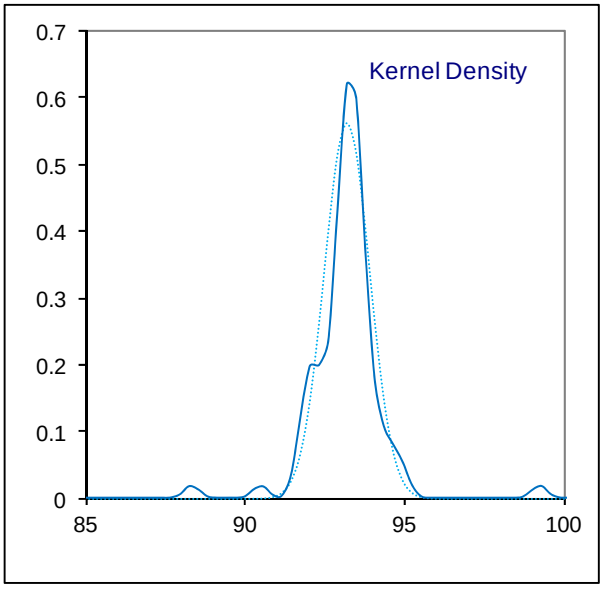
Determination of DVPE (acc. to EN13016-1) on sample #14196; results in kPa

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	D5191	93.6		0.47	1081	D5191	93.1		-0.08
120	D5191	93.24		0.08	1082	EN13016-1	92.0		-1.28
132	D5191	93.560		0.43	1109	D5191	92.62		-0.60
150		-----		-----	1134	D5191	91.755		-1.54
158		-----		-----	1167		-----		-----
159	EPA	93.4934		0.35	1171	EN13016-1	93.0	C	-0.18
171	D5191	92.68		-0.53	1182	D5191	92.6		-0.62
175	D5191	93.5		0.36	1191	EN13016-1	92.9		-0.29
193	D5191	92.9413		-0.25	1194	EN13016-1	91.8		-1.49
194		-----		-----	1201	EN13016-1	54.0	R(0.01)	-42.72
225	D5191	88.3	C,R(0.01)	-5.31	1229	EN13016-1	93.0		-0.18
228	D5191	92.80		-0.40	1257	D5191	93.495		0.35
237	D5191	93.5		0.36	1259	EN13016-1	93.3		0.14
238	D5191	92.6		-0.62	1299	D5191	93.1		-0.08
311	D5191	93.9		0.80	1389	EN13016-1	93.6		0.47
312	D5191	93.4		0.25	1395	EN13016-1	90.45	R(0.05)	-2.97
323	EN13016-1	93.0		-0.18	1404	EN13016-1	92.3		-0.95
334	EN13016-1	91.66		-1.65	1409	EN13016-1	93.9		0.80
335	EN13016-1	93		-0.18	1428		91.7		-1.60
336	EN13016-1	94.0		0.91	1443	EN13016-1	93.6		0.47
337	EN13016-1	93.5		0.36	1457	EN13016-1	94.26		1.19
338	EN13016-1	93.1		-0.08	1491	EN13016-1	94.1		1.01
340	EN13016-1	92.2		-1.06	1501		-----		-----
344	EN13016-1	93.635		0.51	1520	EN13016-1	94.65		1.61
350	EN13016-1	94.84		1.82	1549	EN13016-1	95.0		2.00
353	D5191	93.11		-0.06	1556	EN13016-1	93.3		0.14
360	EN13016-1	93.7		0.58	1564		-----		-----
369	EN13016-1	93.2		0.03	1570	EN13016-1	92.0		-1.28
370	EN13016-1	93.2		0.03	1610		-----		-----
371	EN13016-1	92.9		-0.29	1616	D5191	93.15	C	-0.02
391	EN13016-1	91.9		-1.38	1634	EN13016-1	92.5	C	-0.73
399		-----		-----	1635	EN13016-1	94.6		1.56
402	EN13016-1	99.2	R(0.01)	6.58	1636	EN13016-1	92.08		-1.19
403	EN13016-1	92.81		-0.39	1654	EN13016-1	93.0		-0.18
420	EN13016-1	92.2		-1.06	1677	D5191	94.3		1.23
431	EN13016-1	93.6		0.47	1710	EN13016-1	92.9		-0.29
440	D5191	94.4		1.34	1724	EN13016-1	94.0		0.91
445	IP394	93.3		0.14	1728	EN13016-1	93.25		0.09
447	D5191	93.492		0.35	1776	EN13016-1	93.8		0.69
463	EN13016-1	92.2		-1.06	1807	EN13016-1	93.2		0.03
468	EN13016-1	93.30		0.14	1810		-----		-----
485	EN13016-1	93.80		0.69	1811	EN13016-1	92.11		-1.16
496	EN13016-1	92.75		-0.46	1833	EN13016-1	93.3		0.14
704	EN13016-1	93.35		0.20	1849	EN13016-1	93.64		0.51
824	EN13016-1	93.5		0.36	1851		-----		-----
868	D5191	92.1		-1.17	1881	D5191	93.0		-0.18
904	EN13016-1	93.3		0.14	1895	EN13016-1	93.58	C	0.45
970		-----		-----	1938	EN13016-1	93.3		0.14
1006	D5191	92.35		-0.89	1951		-----		-----
1017	EN13016-1	93.49		0.35	2124		-----		-----
1026	D5191	93.0		-0.18	2129	EN13016-1	93.40		0.25
1033	EN13016-1	126.8	R(0.01)	36.68	2130	D5191	93.1		-0.08
1059	EN13016-1	93.4	C	0.25	2146	EN13016-1	93.0		-0.18
1066	EN13016-1	93.3		0.14					

normality	OK
n	89
outliers	5
mean (n)	93.170
st.dev. (n)	0.7104
R(calc.)	1.989
R(EN13016:07)	2.567

Lab 225 first reported 88.81
Lab 1059 first reported 100.57
Lab 1171 first reported 85.965
Lab 1616 first reported 95.889
Lab 1634 first reported 99.8
Lab 1895 first reported 90.8


99
97
95
93
91
89
87
1201 225 1395 334 1428 1134 1194 391 1082 1570 1636 888 1811 463 420 340 1404 1006 1634 238 1182 1109 171 496 228 403 371 1191 1710 193 1026 323 335 1171 1229 1654 1681 2146 338 1081 1299 2130 353 1616 369 370 1807 120 1728 468 445 904 1066 1259 1556 1833 1938 704 312 1059 2129 1017 447 159 1257 337 175 237 824 132 1895 92 431 1389 1443 344 1849 360 485 1776 311 1409 336 1724 1491 1457 1677 440 1635 1520 350 1549 402 1033

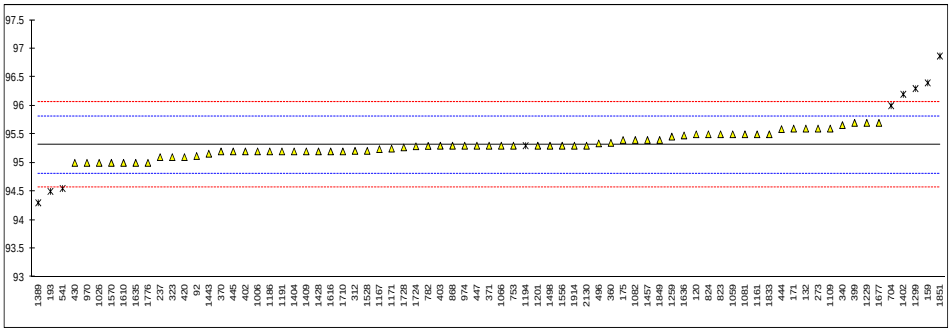

Kernel Density
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
85
90
95
100

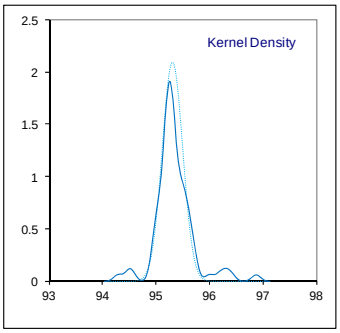
Determination of RON on sample #14197;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	D2699	95.12		-0.77	1161	ISO5164	95.5		0.75
120	D2699	95.5		0.75	1167	ISO5164	95.24		-0.29
132	D2699	95.6		1.15	1171	D2699Mod.	95.25		-0.25
159	D2699	96.4	R(0.01)	4.35	1186	D2699	95.2		-0.45
171	D2699	95.6		1.15	1191	ISO5164	95.2		-0.45
175	D2699	95.4		0.35	1194	D2699	95.3	ex	-0.05
193	D2699	94.5	R(0.05)	-3.25	1201	D2699	95.30		-0.05
228		-----		-----	1229	ISO5164	95.7		1.55
237	D2699	95.1		-0.85	1259	ISO5164	95.46		0.59
273	D2699	95.6		1.15	1299	D2699	96.3	R(0.01)	3.95
312	D2699	95.21		-0.41	1389	D2699	94.3	R(0.01)	-4.05
323	D2699	95.1		-0.85	1402	D2699	96.2	ex	3.55
334		-----		-----	1404	D2699	95.2		-0.45
340	ISO5164	95.66		1.39	1409	ISO5164	95.2		-0.45
360	D2699	95.35		0.15	1428		95.2		-0.45
370	ISO5164	95.2		-0.45	1443	ISO5164	95.16		-0.61
371	ISO5164	95.3		-0.05	1457	D2699	95.40		0.35
399	D2699	95.7	C	1.55	1491		-----		-----
402	D2699	95.20		-0.45	1498	D2699	95.3		-0.05
403	ISO5164	95.30		-0.05	1501		-----		-----
420	ISO5164	95.1		-0.85	1528	D2699	95.21		-0.41
430	D2699	95.00		-1.25	1549		-----		-----
444	D2699	95.59		1.11	1556	ISO5164	95.3		-0.05
445	IP237	95.2		-0.45	1564		-----		-----
447	D2699	95.3		-0.05	1570	D2699	95.0		-1.25
496	D2699	95.34		0.11	1610	D2699	95.0		-1.25
541	D2699	94.55	R(0.05)	-3.05	1616	D2699	95.2		-0.45
704	D2699	96.00	R(0.05)	2.75	1634		-----		-----
753	D2699	95.30		-0.05	1635	D2699	95.0		-1.25
782	ISO5164	95.296		-0.07	1636	ISO5164	95.48		0.67
823	D2699	95.5		0.75	1677	D2699	95.7		1.55
824	D2699	95.5		0.75	1710	ISO5164	95.20		-0.45
868	D2699	95.3		-0.05	1720		-----		-----
963		-----		-----	1724	D2699	95.29		-0.09
970	D2699	95.0		-1.25	1728	D2699	95.27		-0.17
974	D2699	95.3		-0.05	1776	ISO5164	95.0		-1.25
998		-----		-----	1788		-----		-----
1006	D2699	95.2		-0.45	1809		-----		-----
1026	ISO5164	95.0		-1.25	1833	D2699	95.5		0.75
1059	ISO5164	95.5		0.75	1842		-----		-----
1066	D2699	95.3		-0.05	1849	ISO5164	95.4		0.35
1081	D2699	95.5		0.75	1851	D2699	96.87	R(0.01)	6.23
1082	ISO5164	95.4		0.35	1914	D2699	95.3		-0.05
1109	D2699	95.6		1.15	1951		-----		-----
1134		-----		-----	2130	D2699	95.3		-0.05

normality	OK
n	66
outliers	7 (+2ex)
mean (n)	95.31
st.dev. (n)	0.191
R(calc.)	0.53
R(ISO5164:14)	0.70

Lab 399 first reported 96.0
Lab 1194 and 1402 excluded, see §4.1 (probably mix-up of sample #14197 and #14198)



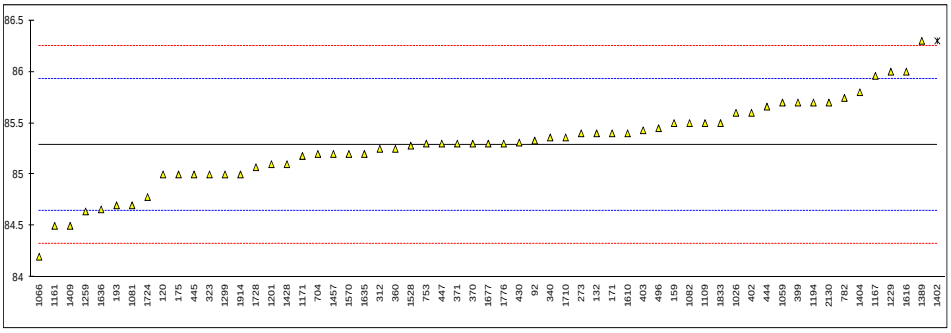


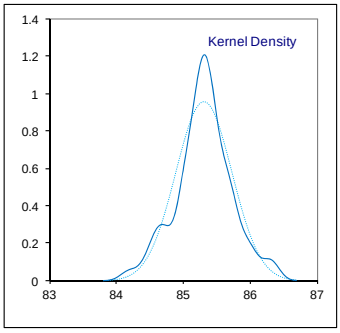
Determination of MON on sample #14197;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	D2700	85.33		0.12	1161	ISO5164	84.5		-2.46
120	D2700	85.0		-0.90	1167	ISO5163	85.96		2.08
132	D2700	85.4		0.34	1171	D2700Mod.	85.18		-0.34
159	D2700	85.5		0.65	1186		-----		-----
171	D2700	85.4		0.34	1191		-----		-----
175	D2700	85.0		-0.90	1194	D2700	85.7		1.28
193	D2700	84.7		-1.84	1201	D2700	85.10		-0.59
228		-----		-----	1229	ISO5163	86.0		2.21
237		-----		-----	1259	ISO5163	84.64		-2.02
273	D2700	85.4	C	0.34	1299	D2700	85.0		-0.90
312	D2700	85.25		-0.12	1389	D2700	86.3		3.14
323	D2700	85.0		-0.90	1402	D2700	86.3	ex	3.14
334		-----		-----	1404	D2700	85.8		1.59
340	ISO5163	85.36		0.22	1409	ISO5163	84.5		-2.46
360	D2700	85.25		-0.12	1428		85.1		-0.59
370	ISO5163	85.3		0.03	1443		-----		-----
371	ISO5163	85.3		0.03	1457	D2700	85.20		-0.28
399	D2700	85.7		1.28	1491		-----		-----
402	D2700	85.60		0.96	1498		-----		-----
403	ISO5163	85.43		0.44	1501		-----		-----
420		-----		-----	1528	D2700	85.28		-0.03
430	D2700	85.31		0.06	1549		-----		-----
444	D2700	85.66		1.15	1556		-----		-----
445	IP236	85.0		-0.90	1564		-----		-----
447	D2700	85.3		0.03	1570	D2700	85.2		-0.28
496	D2700	85.45		0.50	1610	D2700	85.4		0.34
541		-----		-----	1616	D2700	86.0	C	2.21
704	D2700	85.20		-0.28	1634		-----		-----
753	D2700	85.30		0.03	1635	D2700	85.2		-0.28
782	ISO5163	85.745		1.42	1636	ISO5163	84.66		-1.96
823		-----		-----	1677	D2700	85.3		0.03
824		-----		-----	1710	ISO5163	85.36		0.22
868		-----		-----	1720		-----		-----
963		-----		-----	1724	D2700	84.78		-1.59
970		-----		-----	1728	D2700	85.07		-0.68
974		-----		-----	1776	ISO5163	85.3		0.03
998		-----		-----	1788		-----		-----
1006		-----		-----	1809		-----		-----
1026	ISO5163	85.6		0.96	1833	D2700	85.5		0.65
1059	ISO5163	85.7		1.28	1842		-----		-----
1066	D2700	84.2		-3.39	1849		-----		-----
1081	D2700	84.7		-1.84	1851		-----		-----
1082	ISO5163	85.5		0.65	1914	D2700	85.0		-0.90
1109	D2700	85.5		0.65	1951		-----		-----
1134		-----		-----	2130	D2700	85.7		1.28

normality	OK
n	58
outliers	0 (+1ex)
mean (n)	85.29
st.dev. (n)	0.400
R(calc.)	1.12
R(ISO5163:14)	0.90

Lab 273 first reported 86.4
Lab 1616 first reported 83.1
Lab 1402 excluded, see §4.1 (probably mix-up of sample #14197 and #14198)



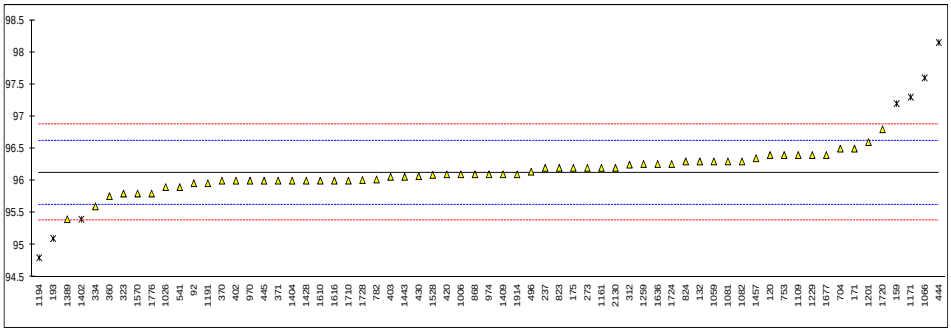


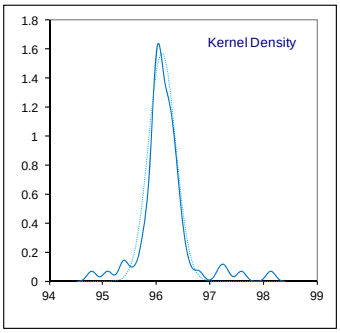
Determination of RON on sample #14198;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	D2699	95.96		-0.67	1161	ISO5164	96.2		0.29
120	D2699	96.4		1.09	1167		-----		-----
132	D2699	96.3		0.69	1171	D2699Mod.	97.30	R(0.01)	4.69
159	D2699	97.2	R(0.01)	4.29	1186		-----		-----
171	D2699	96.5		1.49	1191	ISO5164	95.96		-0.67
175	D2699	96.2		0.29	1194	D2699	94.8	ex	-5.31
193	D2699	95.1	R(0.01)	-4.11	1201	D2699	96.60		1.89
228		-----		-----	1229	ISO5164	96.4		1.09
237	D2699	96.2		0.29	1259	ISO5164	96.26		0.53
273	D2699	96.2		0.29	1299		-----		-----
312	D2699	96.25		0.49	1389	D2699	95.4		-2.91
323	D2699	95.8		-1.31	1402	D2699	95.4	ex	-2.91
334	D2699	95.6		-2.11	1404	D2699	96.0		-0.51
340		-----		-----	1409	ISO5164	96.1		-0.11
360	D2699	95.76		-1.47	1428		96.0		-0.51
370	ISO5164	96.0		-0.51	1443	ISO5164	96.06		-0.27
371	ISO5164	96.0		-0.51	1457	D2699	96.35		0.89
399		-----		-----	1491		-----		-----
402	D2699	96.0		-0.51	1498		-----		-----
403	ISO5164	96.06		-0.27	1501		-----		-----
420	ISO5164	96.1		-0.11	1528	D2699	96.09		-0.15
430	D2699	96.07		-0.23	1549		-----		-----
444	D2699	98.15	R(0.01)	8.09	1556		-----		-----
445	IP237	96.0		-0.51	1564		-----		-----
447		-----		-----	1570	D2699	95.8		-1.31
496	D2699	96.14		0.05	1610	D2699	96.0		-0.51
541	D2699	95.9		-0.91	1616	D2699	96.0		-0.51
704	D2699	96.50		1.49	1634		-----		-----
753	D2699	96.40		1.09	1635		-----		-----
782	ISO5164	96.019		-0.43	1636	ISO5164	96.26		0.53
823	D2699	96.2		0.29	1677	D2699	96.4		1.09
824	D2699	96.3		0.69	1710	ISO5164	96.00		-0.51
868	D2699	96.1		-0.11	1720	D2699	96.8		2.69
963		-----		-----	1724	D2699	96.26		0.53
970	D2699	96.0		-0.51	1728	D2699	96.01		-0.47
974	D2699	96.1		-0.11	1776	ISO5164	95.8		-1.31
998		-----		-----	1788		-----		-----
1006	D2699	96.1		-0.11	1809		-----		-----
1026	ISO5164	95.9		-0.91	1833		-----		-----
1059	ISO5164	96.3		0.69	1842		-----		-----
1066	D2699	97.6	R(0.01)	5.89	1849		-----		-----
1081	D2699	96.3		0.69	1851		-----		-----
1082	ISO5164	96.3		0.69	1914	D2699	96.1		-0.11
1109	D2699	96.4		1.09	1951		-----		-----
1134		-----		-----	2130	D2699	96.2		0.29

normality	suspect
n	58
outliers	5 (+2ex)
mean (n)	96.13
st.dev. (n)	0.239
R(calc.)	0.67
R(ISO5164:14)	0.70

Lab 1194 and 1402 excluded, see §4.1 (probably mix-up of sample #14197 and #14198)



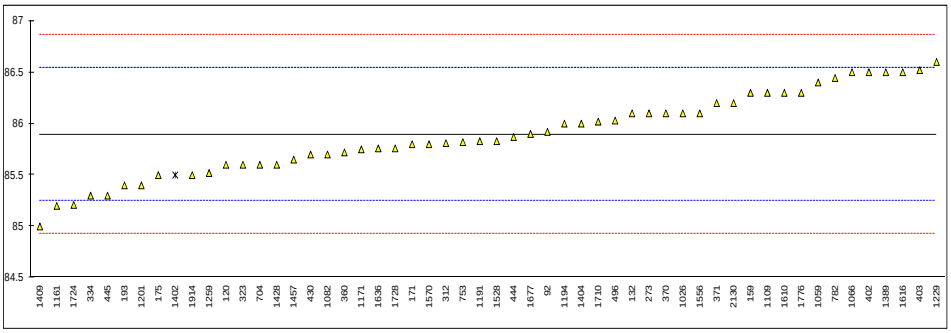


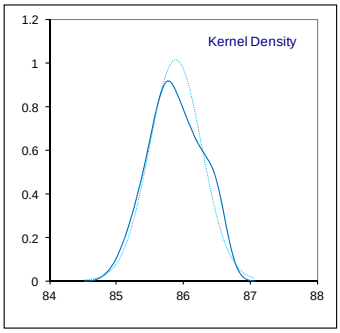
Determination of MON on sample #14198;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
92	D2700	85.92		0.08	1161	ISO5164	85.2		-2.16
120	D2700	85.6		-0.92	1167		-----		-----
132	D2700	86.1		0.64	1171	D2700Mod.	85.75		-0.45
159	D2700	86.3		1.26	1186		-----		-----
171	D2700	85.8		-0.30	1191	ISO5163	85.83		-0.20
175	D2700	85.5		-1.23	1194	D2700	86.0		0.32
193	D2700	85.4		-1.54	1201	D2700	85.40		-1.54
228		-----		-----	1229	ISO5163	86.6		2.19
237		-----		-----	1259	ISO5163	85.52		-1.17
273	D2700	86.1	C	0.64	1299		-----		-----
312	D2700	85.81		-0.27	1389	D2700	86.5		1.88
323	D2700	85.6		-0.92	1402	D2700	85.5	ex	-1.23
334	D2700	85.3		-1.85	1404	D2700	86.0		0.32
340		-----		-----	1409	ISO5163	85.0		-2.79
360	D2700	85.72		-0.55	1428		85.6		-0.92
370	ISO5163	86.1		0.64	1443		-----		-----
371	ISO5163	86.2		0.95	1457	D2700	85.65		-0.76
399		-----		-----	1491		-----		-----
402	D2700	86.50		1.88	1498		-----		-----
403	ISO5163	86.52		1.94	1501		-----		-----
420		-----		-----	1528	D2700	85.83		-0.20
430	D2700	85.70		-0.61	1549		-----		-----
444	D2700	85.87		-0.08	1556	ISO5163	86.1		0.64
445	IP236	85.3		-1.85	1564		-----		-----
447		-----		-----	1570	D2700	85.8		-0.30
496	D2700	86.03		0.42	1610	D2700	86.3		1.26
541		-----		-----	1616	D2700	86.5	C	1.88
704	D2700	85.60		-0.92	1634		-----		-----
753	D2700	85.82		-0.24	1635		-----		-----
782	ISO5163	86.444		1.71	1636	ISO5163	85.76		-0.42
823		-----		-----	1677	D2700	85.9		0.01
824		-----		-----	1710	ISO5163	86.02		0.39
868		-----		-----	1720		-----		-----
963		-----		-----	1724	D2700	85.21		-2.13
970		-----		-----	1728	D2700	85.76		-0.42
974		-----		-----	1776	ISO5163	86.3		1.26
998		-----		-----	1788		-----		-----
1006		-----		-----	1809		-----		-----
1026	ISO5163	86.1		0.64	1833		-----		-----
1059	ISO5163	86.4		1.57	1842		-----		-----
1066	D2700	86.5		1.88	1849		-----		-----
1081		-----		-----	1851		-----		-----
1082	ISO5163	85.7		-0.61	1914	D2700	85.5		-1.23
1109	D2700	86.3		1.26	1951		-----		-----
1134		-----		-----	2130	D2700	86.2		0.95

normality	OK
n	53
outliers	0 (+1ex)
mean (n)	85.90
st.dev. (n)	0.393
R(calc.)	1.10
R(ISO5163:14)	0.90

Lab 273 first reported 87.1
Lab 1616 first reported 83.5
Lab 1402 excluded, see §4.1 (probably mix-up of sample #14197 and #14198)





APPENDIX 2

z-scores distillation ASTM D86

lab	IBP	10%eva	50%eva	90%eva	FBP	%vol70	%vol100	%vol150
92	1.32	-0.50	-0.04	-0.06	1.55	0.17	-0.38	0.07
120	-1.54	-0.50	-0.78	0.16	2.92	0.27	-0.13	0.07
132	-----	-0.41	-0.48	0.09	-0.97	0.79	-0.13	0.07
150	0.25	1.25	3.39	-0.56	-0.31	-0.98	1.78	0.51
158	-0.71	0.08	0.41	-0.13	0.58	-----	-----	-----
159	0.72	0.81	1.90	0.74	-0.02	-----	-----	-----
171	-0.35	0.11	1.01	0.59	-0.93	-0.35	-0.38	-1.00
175	-----	-----	-----	-----	-----	-----	-----	-----
193	-----	-----	-----	-----	-----	-----	-----	-----
194	-----	-----	-----	-----	-----	-----	-----	-----
225	0.07	0.20	-2.42	-1.50	1.92	0.48	2.04	1.58
228	1.26	1.25	2.94	1.82	0.27	-1.60	-1.78	**-3.80**
237	2.45	2.04	4.58	1.82	-0.14	-2.12	-2.42	-1.65
238	-----	-----	-----	-----	-----	-----	-----	-----
273	-----	-----	-----	-----	-----	-----	-----	-----
311	-1.89	-0.76	-0.93	-0.20	-1.96	0.48	0.25	1.15
312	-0.88	-0.32	0.41	-0.20	0.19	0.27	-0.38	0.29
323	-2.31	-0.94	-1.52	-0.78	-0.39	0.79	2.93	2.01
334	0.13	0.29	0.26	-0.13	0.19	-0.35	-0.13	-0.14
335	-0.88	0.11	0.71	-0.27	0.89	-0.04	0.00	1.15
336	-1.66	-1.29	-0.48	-0.13	-1.54	0.48	0.25	0.51
337	-----	-----	-----	-----	-----	-----	-----	-----
338	-0.35	-1.46	-2.72	-0.06	0.81	1.31	0.76	0.07
340	-1.00	-0.67	-1.23	-0.56	-1.01	0.37	0.38	0.29
344	-0.88	-0.06	-1.67	0.52	0.31	1.10	1.15	-0.57
350	1.44	-0.85	-3.76	-1.50	-1.92	2.14	2.16	1.80
353	0.13	0.38	0.11	0.09	0.81	0.17	-0.13	-0.14
360	-0.17	-0.85	-2.72	-0.63	-0.93	1.00	0.89	0.29
369	-0.58	0.11	0.11	0.52	-0.10	-0.25	0.00	-1.22
370	0.25	-0.76	-0.18	-0.42	-1.21	-0.25	-0.13	0.72
371	-0.82	0.20	0.26	-0.42	0.02	0.27	0.13	0.51
391	-----	-----	-----	-----	-----	-----	-----	-----
399	0.90	0.03	1.75	-0.20	3.04	-2.95	0.00	-0.57
402	1.14	-0.85	-1.82	-0.63	1.18	1.00	0.89	0.51
403	-0.05	-0.50	-1.38	-0.13	-0.02	0.58	0.25	-0.14
420	-0.64	-0.41	-1.38	-0.42	0.52	0.48	0.51	0.51
431	1.50	-1.81	-4.80	-1.93	0.35	1.93	1.91	2.66
440	-0.17	0.46	3.99	1.82	0.27	-1.08	-2.16	-0.57
444	-----	-----	-----	-----	-----	-----	-----	-----
445	0.84	-----	-----	-----	-1.34	0.48	0.13	-0.14
447	-1.48	-0.32	0.11	0.16	0.40	-0.35	-0.25	0.07
463	0.25	-0.50	0.86	-0.13	0.77	0.06	-0.38	-0.14
468	-0.23	0.46	2.05	0.31	0.15	-2.01	-2.80	1.58
485	0.16	-0.24	-0.56	0.27	1.80	0.42	-0.25	0.51
496	0.07	-0.32	-0.93	-0.49	0.23	0.17	0.51	0.72
541	0.07	0.20	1.31	1.75	-1.17	-0.04	-1.15	-1.65
556	-----	-----	-----	-----	-----	-----	-----	-----
558	-----	-----	-----	-----	-----	-----	-----	-----
671	-----	-----	-----	-----	-----	-----	-----	-----
704	-0.20	-1.11	-1.08	-0.70	-2.41	0.48	0.29	1.04
782	1.56	1.16	1.01	-0.13	-0.14	-1.08	-0.13	-1.86
823	0.84	0.03	0.11	1.68	-0.68	0.06	-0.89	-1.65
824	1.14	0.55	1.16	0.16	-0.10	-0.46	-0.76	-0.36
868	1.62	0.20	1.01	0.45	-0.47	-0.25	-0.89	-1.00
902	1.38	1.51	2.79	0.23	0.97	-1.60	-0.51	-0.57
904	0.67	-1.02	-0.93	0.09	-0.18	0.27	0.38	0.51
963	0.07	-0.15	0.71	-0.78	0.69	-0.56	0.13	0.51
970	2.45	2.13	0.26	-0.34	-1.38	-1.60	0.76	-0.57
974	2.33	2.13	3.24	-0.92	-0.68	-1.49	0.89	0.29
1006	0.72	0.64	0.86	-0.06	-1.05	-----	-----	-----
1026	-1.24	-1.02	-1.82	-0.27	0.44	0.68	0.25	0.07
1033	0.43	0.03	0.11	-0.13	1.63	-2.74	-3.31	-----
1059	0.72	0.11	2.20	1.24	1.51	-0.66	-1.15	-1.86
1066	-1.54	-0.24	0.26	0.38	0.93	-0.04	-0.25	-0.57
1080	0.19	**-3.47**	**-7.63**	-1.57	-2.21	3.07	2.93	2.23
1081	0.31	-0.15	-2.27	-0.27	-0.88	1.00	0.64	0.07
1082	-1.30	-0.50	-0.93	0.02	0.19	0.37	0.51	-0.36
1109	-0.47	-0.32	0.56	0.09	1.10	0.68	-0.25	-0.14
1126	0.84	-0.32	-0.93	0.38	1.02	0.48	0.25	-0.14
1134	-0.41	-0.59	-0.18	-0.20	0.27	0.27	0.64	-0.14
1161	1.08	0.64	3.24	**3.48**	-1.34	-1.49	-2.42	**-3.80**
1167	1.08	-1.29	**-6.44**	-2.36	-2.16	1.00	1.40	1.80
1171	-0.18	1.15	2.50	1.46	2.39	-0.73	-1.40	-2.51
1186	3.11	**5.89**	**14.71**	1.03	1.59	**-9.38**	**-4.96**	**-3.80**

1191	-0.17	-0.24	-0.63	-0.27	0.31	-0.04	0.25	0.07
1194	0.31	-0.67	**-7.18**	0.88	-0.18	2.45	1.53	-1.22
1199	-----	-----	-----	-----	-----	-----	-----	-----
1201	-0.05	0.11	-2.27	-0.85	-1.09	0.79	1.02	1.37
1227	0.49	-0.85	-1.67	0.09	-0.68	1.31	0.13	-1.22
1229	-0.05	-0.67	-1.08	-0.13	0.15	0.37	0.38	-0.14
1257	-0.58	0.73	2.79	1.24	-0.72	-0.56	-0.76	-1.65
1259	-0.64	1.08	2.05	0.02	-0.14	-0.98	-0.64	-0.14
1299	-0.52	-----	-----	-----	0.44	0.58	0.64	0.07
1376	0.49	-0.24	-2.12	-1.21	-1.83	1.20	1.15	0.29
1389	-2.37	-----	-----	-----	-0.76	-0.66	-1.40	-2.29
1395	-0.05	0.03	0.11	0.38	0.56	0.17	-0.38	-0.57
1397	-3.02	0.38	2.35	-0.20	-1.67	-0.66	-0.76	0.29
1402	-0.70	-0.41	0.56	0.02	0.52	0.06	-0.64	1.15
1404	-0.11	-0.06	-0.48	-0.63	-0.72	0.17	0.13	0.72
1409	-0.88	0.99	**6.67**	**3.12**	-0.10	0.58	0.25	0.51
1428	-0.23	0.20	1.75	0.23	1.35	-0.66	-0.51	0.51
1443	0.78	1.60	-4.80	-0.20	-0.43	1.41	0.64	0.07
1457	-0.82	-0.50	-0.78	-0.27	-0.31	0.17	0.25	0.07
1491	-1.18	-0.24	0.86	0.16	-0.26	-0.15	-0.13	0.51
1498	2.09	1.16	1.01	-0.06	0.69	-0.87	-0.13	-0.36
1501	-----	-----	-----	-----	-----	-----	-----	-----
1520	2.99	0.99	-2.12	0.95	0.60	-2.43	-2.55	-2.94
1528	1.14	0.29	1.90	-0.13	-1.63	-0.87	-0.38	0.07
1537	-----	-----	-----	-----	-----	-----	-----	-----
1549	-----	-----	-----	-----	0.04	1.82	2.23	-1.54
1556	-1.66	-1.20	-1.52	-0.56	-0.26	0.89	0.51	0.29
1564	-----	-----	-----	-----	-----	-----	-----	-----
1569	-----	-----	-----	-----	-----	-----	-----	-----
1570	1.14	-0.32	-1.82	-0.42	-0.06	0.68	1.02	0.51
1610	-0.76	-0.67	-0.78	-0.06	1.10	-0.25	0.00	-0.79
1616	0.67	0.99	5.33	0.88	-0.97	-2.43	-2.29	-1.76
1634	-1.95	-0.94	-2.27	-0.34	-0.22	0.27	1.02	-0.57
1635	3.05	2.39	1.31	2.47	3.16	-2.12	-1.15	**-3.80**
1636	-1.00	-0.24	-0.04	0.45	-0.14	0.48	-0.51	-0.57
1654	-----	-----	-----	-----	0.83	0.79	0.00	-0.36
1677	-0.29	-0.59	-1.67	-0.27	0.60	0.79	0.64	0.72
1709	-----	-----	-----	-----	-----	-----	-----	-----
1710	0.31	-0.41	-1.52	-0.63	-0.22	0.89	0.76	1.80
1720	0.43	2.56	**7.56**	**4.99**	0.19	-----	-----	-----
1724	-2.01	-0.41	0.26	0.31	-0.64	0.17	-0.25	0.94
1728	0.61	-0.24	2.20	1.53	-0.72	-0.56	-1.40	-0.57
1730	-----	-----	-----	-----	-----	-----	-----	-----
1742	-0.58	-1.64	-2.42	-0.63	0.44	1.00	0.76	0.72
1751	0.19	2.21	**8.90**	**5.14**	-0.88	-3.46	**-4.33**	**-7.68**
1753	0.67	-0.24	1.31	0.31	-1.38	-1.08	-1.15	-1.65
1776	-1.06	-0.59	-2.57	-0.63	-0.84	1.10	1.02	0.51
1788	-1.06	-0.94	-0.33	0.02	0.27	0.48	-0.25	1.37
1805	-----	-----	-----	-----	-----	-----	-----	-----
1807	-0.47	-0.50	-0.78	0.02	0.27	0.27	0.25	0.07
1810	-----	-----	-----	-----	-----	-----	-----	-----
1811	0.07	-0.15	-0.63	0.02	0.89	0.27	0.25	0.29
1833	-1.72	0.11	0.71	-0.06	-0.06	-0.35	-0.25	0.07
1842	1.62	0.03	-2.27	-0.63	0.23	0.48	0.64	0.72
1849	-1.18	0.99	1.01	-0.27	0.23	-0.98	-0.76	-0.57
1851	-----	-----	-----	-----	-----	-----	-----	-----
1881	-0.82	-0.24	-0.18	-0.78	-0.97	0.06	0.25	0.51
1895	-0.70	0.29	0.26	-0.06	0.19	-0.04	-0.13	0.07
1914	0.67	0.20	0.56	0.67	-0.97	-0.04	0.13	-1.65
1938	-1.48	-0.76	-0.48	-0.27	0.31	0.17	0.25	0.29
1951	-----	-----	-----	-----	-----	-----	-----	-----
2129	-1.66	-0.06	-0.33	-0.42	0.02	0.27	0.13	0.29
2130	0.49	-0.50	0.26	0.38	1.59	0.37	-0.25	0.51
2146	0.01	-0.15	0.71	0.31	-0.43	0.27	-0.64	0.72
7013	-----	-----	-----	-----	-----	-----	-----	-----

Bold and underlined test results are outliers according to Dixon/Grubbs/Rosner

APPENDIX 3

Data from distillation printouts

lab	method	mode	Print Out	40% recovered	50% recovered	Obs. loss	50% evap.	calc by iis 50% evap	excluded for reason
92	D86	Automated	Y	66.2	84.6	2.9	79.1	79.26	
120	D86	Automated	N	64.9	83	2.3	78.6	78.84	
132		Automated	Y	63.8	82	1.7	78.8	78.91	
150	ISO3405		Y	70.5	82.7	2.0	81.4	80.26	ex – 1
158	D86	Automated	Y	64.8	82.8	1.9	79.4	79.47	ex – 2
159	D86	Automated	N	-----	-----	1.7	80.4	-----	ex – 3
171	D86	Automated	Y	63.9	81.7	1.1	79.8	79.74	
175				-----	-----	-----	-----	-----	
193				-----	-----	-----	-----	-----	
194				-----	-----	-----	-----	-----	
225	D86	Manual		63	78	0.6	77.5	77.10	ex – 4
228	D86	Manual		64.5	82	0.5	81.1	81.13	
237	D86	Manual		66	83	0.5	82.2	82.15	
238				-----	-----	-----	-----	-----	
273				-----	-----	-----	-----	-----	
311	ISO3405	Automated	Y	63.6	81.7	1.7	78.5	78.62	
312	ISO3405	Automated	Y	63.1	83	1.8	79.4	79.52	ex – 2
323	ISO3405	Automated	Y	64.2	82.8	2.4	78.1	78.34	
334	ISO3405	Automated	N	67.1	84.6	2.9	79.3	79.53	
335	ISO3405	Automated	N	64.1	82.2	1.3	79.6	79.85	
336	ISO3405	Automated	N	62.6	82.6	1.8	78.8	79.00	
337				-----	-----	-----	-----	-----	
338	ISO3405	Automated	N	65	83.9	2.2	77.3	79.74	ex – 5
340	ISO3405	Automated	Y	64.2	82.3	2.1	78.3	78.50	
344	D86	Automated	N	-----	-----	-----	78	-----	ex – 3
350	ISO3405	Manual		62.8	82.8	3.9	76.6	75.00	ex – 4
353	IP123	Automated	Y	62.9	80.5	0.7	79.2	79.27	
360	ISO3405	Automated	Y	62.8	80.5	1.5	77.3	77.85	ex – 1
369	ISO3405	Automated	Y	64.7	81.8	1.3	79.2	79.58	ex – 1
370	ISO3405	Automated	N	65	82	2.0	79	78.60	ex – 5
371	ISO3405	Automated	N	63.5	83.1	1.9	79.3	79.38	
391				-----	-----	-----	-----	-----	
399	ISO3405	Automated	Y	65.85	84.55	2.3	80.33	80.25	
402	ISO3405	Automated	Y	63.2	82.1	2.1	77.9	78.13	
403	ISO3405	Automated	N	65.4	83.7	2.7	78.2	78.76	ex – 5
420	ISO3405	Automated	Y	64	81.2	1.6	78.2	78.45	ex – 2
431	ISO3405	Automated	N	66.7	85.9	4.1	75.9	78.03	ex – 5, 6
440	D86	Automated	Y	62.6	81.8	1.1	81.8	79.69	ex – 7
444				-----	-----	-----	-----	-----	
445	IP123	Automated	N	66.7	84.8	3.5	-----	78.47	ex – 3
447	IP123	Automated	Y	63.7	81.9	1.4	79.2	79.35	
463	ISO3405	Automated	Y	64.8	83.8	2.2	79.7	79.62	
468	ISO3405	Automated	N	-----	-----	1.4	80.5	-----	ex – 3
485	ISO3405	Automated	Y	64.4	83.95	2.6	78.75	78.96	ex – 2
496	ISO3405	Automated	Y	65.5	83.2	2.5	78.5	78.78	
541	ISO3405	Manual		61	80	1.0	80	78.10	ex – 7
556				-----	-----	-----	-----	-----	
558				-----	-----	-----	-----	-----	
671				-----	-----	-----	-----	-----	
704	D86	Manual		63.2	81.6	1.8	78.4	78.38	
782	ISO3405	Manual		64.5	81.5	2.0	79.8	78.10	ex – 4
823	ISO3405	Automated	N	61.9	79.2	1.5	79.2	76.61	ex – 7
824	ISO3405	Automated	Y	64.4	82.8	1.3	79.9	80.41	ex – 1
868	D86	Automated	Y	65.7	85.05	2.8	79.8	79.63	ex – 2, 8
902	D86	Manual		64	81	-----	81	-----	ex – 7
904	ISO3405	Automated	N	62	78.5	0.0	78.5	78.50	ex – 9
963	ISO3405	Automated	Y	65.3	82.4	1.6	79.6	79.66	
970	D86	Manual	N	65	80	0.5	79.3	79.25	
974	D86	Automated	Y	72.8	87.2	3.9	81.3	81.58	
1006		Automated	N	-----	-----	-----	79.7	-----	ex – 3
1026	ISO3405		Y	64.6	82.7	2.4	77.9	78.36	ex – 1
1033	IP123	Automated	N	-----	-----	2.6	79.2	-----	ex – 3
1059	ISO3405	Automated	Y	67.4	86.5	3.1	80.6	80.58	
1066	ISO3405	Automated	Y	65	83	1.9	79.3	79.58	
1080	D86	Automated	Y	66.7	86.6	6.3	74	74.06	ex – 6
1081	D86	Automated	Y	65	84.2	3.4	77.6	77.67	
1082	ISO3405	Automated	Y	64.4	82.4	2.1	78.5	78.62	
1109	D86	Automated	Y	63.7	83	1.7	79.5	79.72	
1126	ISO3405	Automated	Y	64.2	83.1	2.5	78.5	78.38	
1134	IP123	Automated	N	64.1	82.4	1.7	79	79.29	
1161	ISO3405	Automated		-----	-----	-----	81.3	-----	ex – 3
1167	ISO3405	Automated	Y	63.75	79.7	1.7	76.75	76.99	ex – 2, 10
1171	ISO3405	Manual	N	64.75	84.5	2.0	80.8	80.55	
1186	D86	Manual		-----	-----	-----	89	-----	ex – 3

1191	ISO3405	Automated	Y	65.7	83.3	2.4	78.7	79.08	ex – 1
1194	ISO3405	Automated	N	-----	-----	-----	74.3	-----	ex – 3
1199				-----	-----	-----	-----	-----	
1201	ISO3405	Automated	Y	63.7	81.3	2.0	77.6	77.78	
1227	D86	Automated	N	61.2	82.4	2.2	78	77.74	
1229	ISO3405	Automated	Y	65.3	83.7	2.8	78.4	78.55	
1257	D86			63.3	-----	0.6	81	-----	ex – 3
1259	ISO3405	Automated	Y	64.8	81.9	0.8	80.5	80.53	
1299	D86	Automated	N	-----	-----	1.4	-----	-----	
1376	D86	Automated	Y	63.3	81.5	2.1	77.7	77.68	
1389	D86	Automated	N	62.3	81	0.7	-----	79.69	ex – 3
1395	ISO3405	Automated	Y	65.8	84.2	2.6	79.2	79.42	
1397	ISO3405		Y	64.4	83.4	1.5	80.7	80.55	
1402	ISO3405	Automated	N	64.4	83	1.6	79.5	80.02	ex – 1
1404	ISO3405	Automated	Y	65.4	83.9	2.5	78.8	79.28	ex – 1
1409	ISO3405	Automated	N	64.5	83.6	2.3	83.6	79.21	ex – 7
1428		Automated	Y	63.4	81.3	0.5	80.3	80.41	
1443	ISO3405	Automated	N	66.25	86.7	4.9	75.9	76.78	ex – 2, 6, 1
1457	ISO3405	Automated	Y	65.1	82.6	2.2	78.6	78.75	
1491	ISO3405	Automated	Y	62.4	81.4	1.0	79.7	79.50	
1498	D86	Automated	Y	67.9	84.6	2.9	79.8	79.76	
1501				-----	-----	-----	-----	-----	
1520	ISO3405	Manual		61.8	89.8	2.6	77.7	82.52	ex – 4
1528	ISO3405	Automated	Y	66.3	84.1	2.0	80.4	80.54	
1537				-----	-----	-----	-----	-----	
1549		Automated	Y	-----	-----	-----	-----	-----	ex – 2, 3
1556	ISO3405	Automated	N	63.8	82.3	2.3	78.1	78.05	
1564				-----	-----	-----	-----	-----	
1569				-----	-----	-----	-----	-----	
1570	ISO3405	Automated	Y	64.4	82.2	2.4	77.9	77.93	
1610	IP123	Automated	N	65.5	83.6	2.3	78.6	79.44	ex – 1
1616	D86	Manual		66	84	0.7	82.7	82.74	
1634	ISO3405	Automated	N	62.9	80	1.2	77.6	77.95	
1635	ISO3405	Manual		-----	-----	1.0	80	-----	ex – 3
1636	ISO3405	Automated	Y	64.2	83.7	2.3	79.1	79.22	
1654			Y	64.05	83.75	2.5	78.75	78.83	ex – 2
1677	D86	Automated	Y	64.7	83.6	2.9	78	78.12	
1709				-----	-----	-----	-----	-----	
1710	ISO3405	Automated	N	62.5	81.3	1.4	78.1	78.67	ex – 5
1720	D86	Automated	N	-----	-----	0.3	84.2	-----	ex – 3
1724	ISO3405	Automated	N	-----	-----	0.8	79.3	-----	ex – 3
1728	ISO3405	Manual		63.9	82.9	1.2	80.6	80.62	
1730				-----	-----	-----	-----	-----	
1742	ISO3405	Automated	Y	65.12	83.83	3.3	77.5	77.66	
1751	ISO3405	Automated	Y	67.1	85.1	3.7	85.1	78.44	ex – 7
1753	ISO3405	Manual		65	84	1.2	80	81.72	ex – 4
1776	ISO3405	Automated	Y	63.4	82.3	2.5	77.4	77.58	
1788	ISO3405	Automated	Y	64.9	83.7	2.5	78.9	79.00	
1805				-----	-----	-----	-----	-----	
1807	ISO3405	Automated	N	62.2	-----	2.1	78.6	-----	ex – 3
1810				-----	-----	-----	-----	-----	
1811	ISO3405	Automated	Y	64.7	82.4	2.0	78.7	78.95	ex – 2
1833	ISO3405	Automated	Y	64.6	82.2	1.5	79.6	79.56	
1842	D86	Automated	Y	64.9	81.7	2.1	77.6	78.17	ex – 1
1849	ISO3405	Automated	N	-----	-----	-----	79.8	-----	ex – 3
1851				-----	-----	-----	-----	-----	
1881	ISO3405	Manual		63.5	80.5	1.1	79	78.63	ex – 4
1895	ISO3405	Automated	N	62.6	80	0.4	79.3	79.30	
1914	ISO3405	Manual		61.5	79.5	0.2	79.5	79.14	ex - 7
1938	ISO3405	Automated	N	64.4	81.8	1.6	78.8	79.02	
1951				-----	-----	-----	-----		
2129	ISO3405	Automated	Y	64.3	82.8	2.0	78.9	79.10	
2130	ISO3405	Automated	N	65.5	84.6	2.6	79.3	79.63	
2146	ISO3405	Automated	Y	63.8	82.4	1.5	79.6	79.61	
7013				-----	-----	-----	-----	-----	

Reasons for exclusion:

- ex – 1 Difference >0.3°C on printout by software calculation of 50% evaporated
- ex – 2 Reported an average of duplicate tests
- ex – 3 Calculation could not be checked
- ex – 4 Difference >0.3°C in calculation (Manual test)
- ex – 5 No printout, difference >0.3°C
- ex – 6 High observed loss (>4%)
- ex – 7 Reported evaporated as recovered or vice versa or evaporated is the same as recovered while there is a loss
- ex – 8 Recovery, residue and loss do not add up to 100%
- ex – 9 Reported observed loss is zero (highly unlikely for gasoline)
- ex – 10 Arithmetical calculation of method done on the results of evaporated instead of recovery

Recalculation of precision data of distillation

As on page 35 of this report

	IBP	10% eva	50% eva	90% eva	FBP	% evap 70°C	% evap 100°C	% evap 150°C
normality	OK	OK	OK	suspect	OK	suspect	suspect	OK
n	113	109	104	107	116	111	110	106
outliers	0	2	7	4	0	1	2	5
mean (n)	27.88	40.27	79.12	144.58	178.34	45.04	61.90	92.77
st.dev. (n)	1.983	0.992	1.237	1.079	2.583	1.046	0.848	0.473
R(calc.)	5.55	2.78	3.45	3.02	7.23	2.93	2.38	1.33
R(ISO3405:11)	4.70	3.20	1.88	3.88	6.78	2.70	2.20	1.30

Based on data without excluded results

	IBP	10% eva	50% eva	90% eva	FBP	% evap 70°C	% evap 100°C	% evap 150°C
normality	OK	not OK	OK	not OK	OK	suspect	not OK	suspect
n	59	59	59	59	60	60	60	59
outliers	0 (+54ex)	0 (+52 ex)	0 (+52 ex)	0 (+52 ex)	0 (+56 ex)	0 (+52 ex)	0 (+52 ex)	1 (+51 ex)
mean (n)	27.48	40.14	79.20	144.55	178.48	45.03	61.91	92.78
st.dev. (n)	2.013	0.903	1.143	0.872	2.689	0.854	0.668	0.372
R(calc.)	5.64	2.53	3.20	2.44	7.53	2.39	1.87	1.04
R(ISO3405:11)	4.68	3.20	1.88	3.88	6.78	2.70	2.20	1.30

APPENDIX 4

Number of participants per country

1 lab in	AFGHANISTAN
1 lab in	ARGENTINA
1 lab in	AUSTRALIA
1 lab in	AUSTRIA
2 labs in	BELGIUM
1 lab in	BOSNIA and HERZEGOVINA
2 labs in	BRAZIL
3 labs in	BULGARIA
1 lab in	CANADA
1 lab in	CHILE
1 lab in	CHINA, People's Republic
1 lab in	COSTA RICA
1 lab in	COTE D'IVOIRE
3 labs in	CROATIA
1 lab in	CYPRUS
3 labs in	CZECH REPUBLIC
2 labs in	ESTONIA
6 labs in	FINLAND
7 labs in	FRANCE
1 lab in	GERMANY
2 labs in	GREECE
1 lab in	GUAM
1 lab in	HONG KONG
2 labs in	HUNGARY
1 lab in	INDONESIA
1 lab in	IRAN, Islamic Republic of
1 lab in	IRELAND
1 lab in	ISRAEL
2 labs in	ITALY
3 labs in	LATVIA
3 labs in	LITHUANIA
1 lab in	MACEDONIA
8 labs in	NETHERLANDS
2 labs in	NIGERIA
1 lab in	OMAN
4 labs in	POLAND
3 labs in	PORTUGAL
1 lab in	QATAR
5 labs in	ROMANIA
2 labs in	RUSSIAN FEDERATION
1 lab in	SAUDI ARABIA
1 lab in	SLOVENIA
1 lab in	SOUTH AFRICA
2 labs in	SOUTH KOREA
8 labs in	SPAIN
1 lab in	SUDAN
4 labs in	SWEDEN
2 labs in	TAIWAN
1 lab in	TOGO
10 labs in	TURKEY
1 lab in	UKRAINE
2 labs in	UNITED ARAB EMIRATES
12 labs in	UNITED KINGDOM
9 labs in	UNITED STATES OF AMERICA
1 lab in	URUGUAY

APPENDIX 5

Abbreviations:

C = final result after checking of first reported suspect result
C(0.01) = outlier in Cochran's outlier test
C(0.05) = straggler in Cochran's outlier test
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
E = error in calculations
U = reported in a different unit
W = result withdrawn on request of participant
ex = excluded from calculations
n.a. = not applicable
n.d. = not detected
fr. = first reported
SDS = Safety Data Sheet

Literature:

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11 J.N. Miller, Analyst, 118, 455, (1993)
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