Results of Proficiency Test
Gasoline (EN specification)
October 2018

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CONTENTS

Appendices:

1   INTRODUCTION

Since 1995, the Institute for Interlaboratory Studies (iis) organizes proficiency tests for Gasoline every year. During the annual proficiency testing program 2018/2019, it was decided to continue the proficiency test 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 Dry Vapour Pressure Equivalent (DVPE) and RON/MON.

In the main PT 139 laboratories in 51 different countries registered for participation. In the PT on Dry Vapour Pressure Equivalent, 119 laboratories in 44 different countries registered for participation and in the PT for RON/MON, 73 laboratories in 45 different countries registered for participation. In total 145 laboratories in 53 different countries registered for at least one of the three PTs. See appendix 3 for the number of participants per country for the main round.
In this report, the results of the 2018 Gasoline proficiency test are presented and discussed.
This report is also available as PDF file from the iis website www.iisnl.com.

2   SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organiser of this proficiency test (PT). Sample analyses for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC 17025 accredited laboratory. In this proficiency test the participants received depending on the registration; 1 litre bottle labelled #18200 containing regular Gasoline for the main round and/or 1 litre bottle (± 750 mL filled) with regular Gasoline labelled #18201 for the DVPE round and/or 2 x 1 litre bottle labelled #18202 with regular Gasoline for the RON/MON round. Participants were requested to report rounded and unrounded test results. The unrounded test results were preferably used for statistical evaluation.

2.1   ACCREDITATION

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, is accredited in agreement with ISO/IEC 17043:2010 (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This PT falls under the accredited scope. This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentiality of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2   PROTOCOL

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

2.3   CONFIDENTIALITY STATEMENT

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

2.4   SAMPLES

2.4.1 GASOLINE SAMPLES FOR MAIN ROUND

The necessary bulk material of approx. 200 litre of a regular winter grade Gasoline was purchased from the local market. The Gasoline was spiked with 5.1 mg/L Lead and 6.7 mg/L Manganese. After homogenization in a mixing vessel, out of this batch, 197 bottles of 1 L amber glass bottles for the main round were filled and labelled #18200.
The homogeneity of the subsamples #18200 was checked by determination of Density at 15°C in accordance with test method ASTM D4052 on 8 stratified randomly selected samples and by determination of Lead in accordance with test method ASTM D3237 on 8 stratified randomly selected samples.

	Density at 15°C in kg/m^3	Lead in mg/L
Sample #18200-1	738.79	5.0
Sample #18200-2	738.76	4.7
Sample #18200-3	738.81	4.8
Sample #18200-4	738.81	4.8
Sample #18200-5	738.84	4.8
Sample #18200-6	738.76	4.7
Sample #18200-7	738.80	4.8
Sample #18200-8	738.81	4.8

Table 1: homogeneity test results of subsamples #18200

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

	Density at 15°C in kg/m^3	Lead in mg/L
r (observed)	0.08	0.26
reference test method	ISO12185:96	D3237:17
0.3 x R (ref. test method)	0.45	0.78

Table 2: evaluation of repeatability of subsamples #18200

The calculated repeatability is less than 0.3 times the reproducibility of the reference test methods. Therefore, homogeneity of the subsamples of #18200 was assumed.

2.4.2 GASOLINE SAMPLES FOR DVPE

The necessary bulk material of approx. 200 litre of a regular winter grade Gasoline was purchased from the local market. After homogenization in a mixing vessel, out of this batch, 161 amber glass bottles of 1 L were filled with approx. 750 ml for the DVPE round and labelled #18201. The homogeneity of the subsamples #18201 was checked by determination of DVPE according to ASTM D5191 on 8 stratified randomly selected samples and converted to kPa.

	DVPE in kPa
Sample #18201-1	92.11
Sample #18201-2	91.77
Sample #18201-3	92.60
Sample #18201-4	92.39
Sample #18201-5	92.18
Sample #18201-6	92.39
Sample #18201-7	92.53
Sample #18201-8	91.91

Table 3: homogeneity test results of subsamples #18201

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

	DVPE in kPa
r (observed)	0.8
reference test method	EN13016-1:07
0.3 x R (ref. test method)	0.8

Table 4: evaluation of repeatability of subsamples #18201

The calculated repeatability is equal to 0.3 times the reproducibility of the reference test method. Therefore, homogeneity of the subsamples of #18201 was assumed.

2.4.3 GASOLINE SAMPLES FOR RON/MON

The necessary bulk material of approx. 220 litre of regular winter grade Gasoline was purchased from the local market. After homogenization in a mixing vessel, out of this batch, 212 amber glass bottles of 1 L were filled with approx. 750 ml for the RON/MON round and labelled #18202. The homogeneity of the subsamples #18202 was checked by determination of Density at 15°C in accordance with ASTM D4052 on 8 stratified randomly selected samples.

	Density at 15°C in kg/m^3
Sample #18202-1	726.09
Sample #18202-2	726.16
Sample #18202-3	726.08
Sample #18202-4	726.23
Sample #18202-5	726.09
Sample #18202-6	726.11
Sample #18202-7	726.05
Sample #18202-8	726.53

Table 5: homogeneity test results of subsamples #18202

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

	Density at 15°C in kg/m^3
r (observed)	0.44
reference test method	ISO12185:96
0.3 x R (ref. test method)	0.45

Table 6: evaluation of repeatability of subsamples #18202

The calculated repeatability is equal to 0.3 times the reproducibility of the reference test method. Therefore, homogeneity of the subsamples of #18202 was assumed.

To each of the participating laboratories, depending on the registration: 1 x 1 litre of sample #18200 for the main round and/or 1 x 1 litre (± 750 ml filled) of sample #18201 for DVPE only and/or 2 x 1 litre of sample #18202 for RON/MON only was sent on September 26, 2018. An SDS was added to the sample package.

2.5   STABILITY OF THE SAMPLES

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

2.6   ANALYSES

The participants were requested to determine on sample #18200: API Gravity, Appearance, Aromatics by FIA and by GC, (%V/V and %M/M), Benzene, Copper Strip Corrosion, Density at 15°C, Distillation at 760 mm Hg, Doctor Test, Existent gum, Lead, Manganese, Olefins by FIA and by GC (%V/V and %M/M), Oxidation Stability, Oxygenates: Methanol, Ethanol, Iso-Propanol, Iso-Butanol, t-Butanol, Ethers (C5 or more C atoms), DIPE, ETBE, MTBE, TAME, sum of other oxygenates, Oxygen content and Sulphur; on sample #18201: Air Saturated Vapour Pressure (ASVP) and Dry Vapour Pressure Equivalent (DVPE) and on sample #18202: RON and MON.

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

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

3 RESULTS

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

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

3.1 STATISTICS

The protocol followed in the organisation of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5).

For the statistical evaluation, the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as '<…' or '>…' were not used in the statistical evaluation.

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

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

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

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

3.2 GRAPHICS

In order to visualize the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis, the reported analysis results are plotted. The corresponding laboratory numbers are on the X-axis.
The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected reference method. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle.
Furthermore, Kernel Density Graphs were made. The Kernel Density Graph is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms. Also, a normal Gauss curve was projected over the Kernel Density Graph for reference.

3.3 Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements, e.g. ISO reproducibilities, the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the variation in this interlaboratory study.
The target standard deviation was calculated from the literature reproducibility by division with 2.8. In case no literature reproducibility was available, other target values were used. In some cases, a reproducibility based on former iis proficiency tests could be used.

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

The z-scores were calculated according to:

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

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

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

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

4   EVALUATION

In this proficiency test, no problems with sample dispatch were encountered. For the main round, six participants reported the test results after the final reporting date and two other participants did not report any test results at all.

For the DVPE round seven participants reported the test results after the final reporting date and five other participants did not report any test results at all.

For the RON/MON round five participants reported the test results after the final reporting date and four other participants did not report any test results at all. Not all participants were able to report all analyses requested. In total, 143 participants (combination of the main, DVPE and the RON/MON rounds) reported in total 2587 numerical test results. Observed were 77 outlying test results, which is 3.0%. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal. Not all original data sets proved to have a normal Gaussian distribution. These are referred to as "not OK" or "suspect". The statistical evaluation of these data sets should be used with due care, see also paragraph 3.1.

4.1   EVALUATION PER SAMPLE AND PER TEST

In this section the results are discussed per sample and per test. The test methods, which were used by the various laboratories were taken into account for explaining the observed differences when possible and applicable. These test methods are also in the tables together with the original data. The abbreviations, used in these tables, are listed in appendix 4.

In the iis PT reports the ASTM test methods are referred to with a number (e.g. ASTM D1298) and an added designation for the year that the test method was adopted or revised (e.g. ASTM D1298:12b). If applicable a designation in parentheses is added to designate the year of reapproval (e.g. ASTM D1298:12b(2017)). In the tables of Appendix 1 only the test method number and year of adoption or revision will be used.

The reference test methods for the analyses of Gasoline were selected according to the scope of the latest version of EN228. In case no precision data was mentioned, the calculated reproducibility was compared against the estimated requirements based on the Horwitz equation.

Sample #18200 Main round

API Gravity: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D1298:12b(2017).

Appearance: No problems have been observed with this determination. Eigthy-six participants agreed on the appearance as Pass or Clear and Bright.

Aromatics 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. This could be due to a new batch of Fluorescent indicator dyed gel, see also the discussion in §5.

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 ISO22854-A:16.

One statistical outlier was observed in the test results reported in %M/M. Regretfully for the determination in %M/M no precision data is available. Therefore, no z-scores were calculated. The calculated reproducibility after rejection of the statistical outlier is in line with PT iis17B04EN of last year.

Benzene: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN12177:00.

Copper strip: No problems have been observed in this determination, all participants agreed on a test result of 1 (1A or 1B).

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

Distillation: The distillation was problematic for two of the eight reported distillation parameters. In total thirty-one statistical outliers were observed and seven other test results were excluded.
All calculated reproducibilities after rejection of the suspect data are in agreement with the requirements of ISO3405-A:11 (A=automatic), except for 50% evaporated and % evaporated at 100°C.

Doctor Test: No problems have been observed, all participants agreed on the absence of Mercaptans.

Existent Gum: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO6246:17.

Lead: This determination may be problematic dependent on the test method used. One statistical outlier was observed, and two other test results were excluded. The samples were spiked with 5.1 mg Lead/L. Therefore, the minimal concentration the laboratories should be able to find was at least 2.5 mg/L (5.1 mg/L - 2.6 mg/L, based on the reproducibility from ASTM D3237:17). Therefore, test results lower than 2.5 mg/L were excluded from the statistical evaluation. The calculated reproducibility after rejection of the suspect data is in agreement with the requirements of ASTM D3237:17, but not with the very strict requirements of EN237:04.

Manganese: This determination was problematic. One statistical outlier was observed and three other test results were excluded. The samples were spiked with 6.7 mg Manganese/L. Therefore, the minimal concentration the laboratories should be able to find was at least 5.1 mg/L (6.7 mg/L - 1.6 mg/L, based on the reproducibility from EN16135:11). Therefore, test results lower than 5.1 mg/L

were excluded from the statistical evaluation. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of EN16135:11.

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. This could be due to a new batch of Fluorescent indicator dyed gel, see also the discussion in §5.

Olefins by GC: The determination in %V/V was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO22854-A:16.

No statistical outliers were observed in the test results reported in %M/M. Regretfully, no precision data is available for the determination in %M/M. Therefore, no z-scores were calculated. The calculated reproducibility is much lower than observed in previous PT iis17B04EN.

Oxidation stability: Most participants agreed on an Oxidation Stability >360 minutes. Therefore, no z-scores were calculated.

Methanol: Most reporting participants agreed on a Methanol concentration of <0.2 %V/V, but reported no numerical test result. Therefore, no z-scores were calculated.

Ethanol: This determination was problematic for a number of laboratories. Five statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ISO22854-A:16.

Ethers (C5 and more): This determination was problematic for a number of laboratories. Three statistical outliers were observed, and two other test results were excluded. However, the calculated reproducibility after rejection of the suspect data is in agreement with the requirements of ISO22854-A:16.

MTBE: This determination was not problematic. Three statistical outliers were observed, and one other test result was excluded. However, the calculated reproducibility after rejection of the suspect data is in agreement with the requirements of ISO22854-A:16.

Other Oxygenates: The concentrations of other oxygenates were all near or below the detection limit of the test method used. Most of the participants reported a "less than" test result. Therefore, no significant conclusions were drawn.

Oxygen Content: This determination was not problematic. Four statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO22854-A:16.

Sulphur: This determination was problematic depending on the test method used. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ISO20846:11, but it is in full agreement with the requirements of ASTM D5453:16e1.

Sample #18201

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 full agreement with the requirements of EN13016-1:07.

DVPE: The Air Saturated Vapour Pressure (ASVP) can be converted to Dry Vapour Pressure Equivalent (DVPE) according to EN13016-1. This conversion was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of EN13016-1:07.

Sample #18202

RON: The determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of ISO5164:14.

MON: The determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of ISO5163:14.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the reference test method and the reproducibility as found for the group of participating laboratories. The target reproducibilities derived from reference test methods and the calculated reproducibilities of samples #18200, #18201, #18202 are compared in the next tables.

Parameter		unit	n	mean	2.8 * sd	R (lit)
API Gravity			50	59.9	0.3	0.3
Appearance			86	Pass	n.a.	n.a.
Aromatics by FIA		%V/V	48	30.2	4.7	3.7
Aromatics by GC		%V/V	60	29.0	1.3	1.4
Aromatics by GC		%M/M	35	34.2	1.3	n.a.
Benzene		%V/V	98	0.78	0.09	0.10
Copper Strip 3 hrs at 50°C			100	1	n.a.	n.a.
Density at 15°C		kg/m^3	128	739.0	1.0	1.5
Distillation	IBP	ºC	125	31.1	4.9	4.9
	10%-evap.	ºC	122	46.0	2.5	3.2
	50%-evap.	ºC	118	88.6	3.2	1.9
	90%-evap.	ºC	119	148.0	2.8	4.0
	FBP	ºC	125	178.7	6.3	6.8

Parameter		unit	n	mean	2.8 * sd	R (lit)
	%vol at 70ºC	%V/V	114	39.4	2.3	2.7
	%vol at 100ºC	%V/V	117	57.2	2.5	2.2
	%vol at 150ºC	%V/V	115	91.1	1.4	1.3
Doctor Test			58	Negative	n.a.	n.a.
Existent gum (washed)		mg/100mL	56	0.6	1.3	2.2
Lead as Pb		mg/L	36	4.7	2.3	2.6
Manganese as Mn		mg/L	37	7.0	2.7	1.7
Olefins by FIA		%V/V	45	7.2	3.5	2.7
Olefins by GC		%V/V	58	7.5	1.2	1.4
Olefins by GC		%M/M	34	6.9	1.1	n.a.
Oxidation Stability		min	54	>360	n.a.	n.a.
Methanol		%V/V	57	<0.2	n.a.	n.a.
Ethanol		%V/V	83	4.63	0.45	0.47
Ethers C5 or more C atoms		%V/V	48	2.50	0.30	0.41
MTBE		%V/V	82	2.46	0.28	0.41
Oxygen content		%M/M	78	2.20	0.21	0.31
Sulphur		mg/kg	120	5.7	2.2	2.0

Table 7: performance evaluation sample #18200

Parameter	unit	n	mean	2.8 * sd	R (lit)
ASVP	kPa	75	98.71	2.64	2.62
DVPE acc. to EN13016-1	kPa	112	91.51	2.49	2.55

Table 8: performance evaluation sample #18201

Parameter	unit	n	mean	2.8 * sd	R (lit)
RON		69	95.5	0.8	0.7
MON		59	85.7	1.1	0.9

Table 9: performance evaluation sample #18202

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 reference test methods. The problematic tests have been discussed in paragraph 4.1.

4.3 COMPARISON OF THE PROFICIENCY TEST OF OCTOBER 2018 WITH PREVIOUS PTS

	October 2018	October 2017	October 2016	October 2015	October 2014
Number of reporting labs	143	148	146	146	128
Number of test results	2587	2694	2570	2836	2945
Statistical outliers	77	77	54	105	92
Percentage outliers	3.0%	2.9%	2.1%	3.9%	3.1%

Table 10: comparison with previous proficiency tests

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

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

Determination	*October 2018*	*October 2017*	*October 2016*	*October 2015*	*October 2014*
API Gravity	+/-	+/-	+/-	+/-	+
Aromatics by FIA	-	+	-	-	-
Aromatics by GC	+/-	+/-	+	-	+/-
Benzene	+	+/-	+/-	--	--
Density at 15°C	+	++	+	+	-
Distillation	+/-	+/-	+/-	+/-	+/-
Existent gum (washed)	+	++	+	+	+
Lead as Pb	+	n.e.	n.e.	n.e.	--
Manganese as Mn	-	n.e.	n.e.	n.e.	+
Olefins by FIA	-	+/-	+/-	-	-
Olefins by GC	+	+/-	+	+	+/-
Methanol	n.e.	+	n.e.	n.e.	n.e.
Ethanol	+/-	-	+/-	-	-
Ethers C5 or more C atoms	+	+	+/-	+/-	-
MTBE	+	+	+/-	+/-	+/-
Oxygen content	+	+	+	+/-	+/-
Sulphur	+/-	+/-	+/-	-	-
ASVP	+/-	+	+/-	+	+
DVPE acc. to EN13016-1	+/-	+	+/-	+	+
RON	-	-	+/-	+/-	+
MON	-	+/-	+/-	-	-

Table 11: comparison determinations against the reference test method

The following performance categories in above table were used:

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

5   DISCUSSION

At November 30, 2018 a new JIG Bulletin No.117 / issue 30 November 2018 was published. One of the topics of this bulletin concerns the determination of Hydrocarbons by FIA according ASTM D1319 with a new batch of Fluorescent indicator dyed gel. ASTM D1319 is a very widely used test that has been around for decades. It is simple, robust and relatively inexpensive. At the heart of the test is a dyed silica gel. The gel has only ever been manufactured by one company. For various technical HSE and commercial reasons the gel can no longer be manufactured using the same components. Several alternative formulations have been tried, but none yield the same results as the original formulation. In use, the revised gels give misleading results. This is also acknowlegded in the letter to "CEN/TC 19/WG21 – FIA Dye issue" of 22 November 2018. Unfortunately, this issue may be visible in the Aromatics and Olefins determination by FIA in this 2018 proficiency test of Gasoline. However, it is advised that each participant evaluate this determination and check the dyed gel used. Fluorescent indicator dyed gel with lot numbers 3000000975, and above were produced with an incorrect dye and will not provide accurate measurements.

APPENDIX 1

Determination of API Gravity on sample #18200;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D4052	59.97		0.39	1134	D4052	59.95		0.20
140	D4052	59.9		-0.27	1161	D1298	60.1		1.60
159	D4052	60.0		0.67	1167		-----		-----
171	D4052	59.1	R(0.01)	-7.73	1186		-----		-----
194	D4052	60.0		0.67	1191		-----		-----
225	D4052	60.0		0.67	1194		-----		-----
237	D4052	59.82		-1.01	1199		-----		-----
238	D4052	60.0		0.67	1201		-----		-----
273	D4052	60.1		1.60	1212	D4052	59.99		0.57
311		-----		-----	1237		-----		-----
312		-----		-----	1259	Calculated	59.77		-1.48
323	D1298	59.97		0.39	1266		-----		-----
333		-----		-----	1275		-----		-----
334		-----		-----	1299		-----		-----
335		-----		-----	1397		-----		-----
336		-----		-----	1402	D4052	59.97		0.39
337		-----		-----	1406		-----		-----
338		-----		-----	1407		-----		-----
343	D1298	59.72		-1.95	1428		-----		-----
344		-----		-----	1443		-----		-----
353		-----		-----	1459		-----		-----
369	D4052	59.98		0.48	1491		-----		-----
370	ISO12185	60.0		0.67	1498	D4052	59.7		-2.13
371	D4052	59.96		0.29	1528		-----		-----
372	D1298	60.0		0.67	1538		-----		-----
381	ISO12185	59.85		-0.73	1546		-----		-----
391	ISO12185	60.03		0.95	1556		-----		-----
399	D4052	59.66		-2.51	1569		-----		-----
403		-----		-----	1586	D1298	59.94		0.11
420		-----		-----	1613	D4052	59.59	R(0.05)	-3.16
431		-----		-----	1631		-----		-----
440		-----		-----	1634		-----		-----
444		-----		-----	1635		-----		-----
445		-----		-----	1636		-----		-----
447	D4052	59.95		0.20	1667		-----		-----
453		-----		-----	1677	D4052	60.00		0.67
463	D4052	59.955		0.25	1710		-----		-----
468	D4052	60.02		0.85	1720	D4052	59.74		-1.76
485		-----		-----	1724	D4052	59.9		-0.27
496	D1298	59.89		-0.36	1728	D4052	59.98		0.48
541	D4052	59.9		-0.27	1740		-----		-----
631	D4052	59.9681		0.37	1742		-----		-----
633		-----		-----	1753		-----		-----
671	D4052	59.89		-0.36	1776		-----		-----
704	D1298	59.92		-0.08	1807		-----		-----
754		-----		-----	1810		-----		-----
781	ISO12185	59.97		0.39	1811		-----		-----
782		-----		-----	1849		-----		-----
785		-----		-----	1881		-----		-----
798	D1250	60.0		0.67	1936		-----		-----
824	D4052	59.96		0.29	1937		-----		-----
846		-----		-----	1938		-----		-----
861	D4052	59.92		-0.08	1953		-----		-----
875	D1250	59.95		0.20	2129	Calculated	59.962		0.31
902	D4052	59.93		0.01	2130	ISO12185	59.82		-1.01
904	ISO12185	59.88		-0.45	2146		-----		-----
971	ISO12185	59.95		0.20	6005		-----		-----
974	Caculation	59.97		0.39	6012		-----		-----
994	D1250	59.87		-0.55	6018		-----		-----
1006		-----		-----	6028		-----		-----
1011		-----		-----	6045		-----		-----
1026		-----		-----	6075		-----		-----
1033		-----		-----	6103		-----		-----
1059		-----		-----	6142		-----		-----
1079		-----		-----	6170		-----		-----
1082		-----		-----	6191		-----		-----
1095		-----		-----	6192		-----		-----
1108		-----		-----	6201	ISO12185	59.93		0.01
1109	D287	59.83		-0.92	6203		-----		-----
1126		-----		-----					

normality	suspect
n	50
outliers	2
mean (n)	59.929
st.dev. (n)	0.0929
R(calc.)	0.260
st.dev.(D1298:12b)	0.1071
R(D1298:12b)	0.300
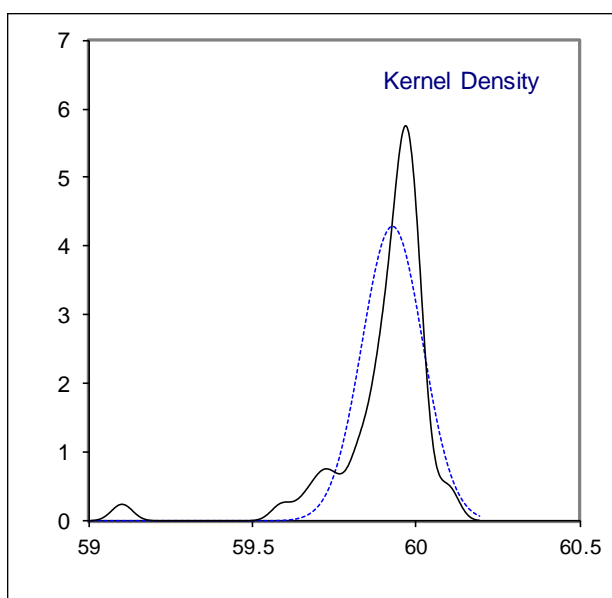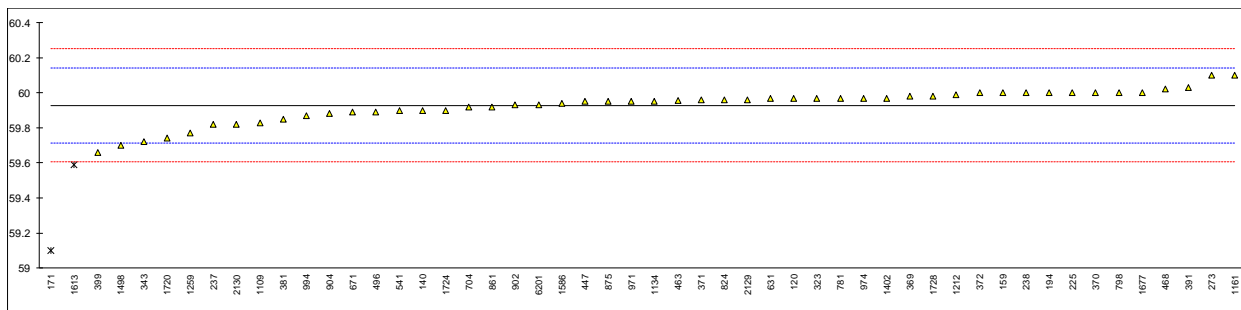
Determination of Appearance on sample #18200;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D4176	clear and bright		-----	1134		-----		-----
140	Visual	C&B		-----	1161	D4176	C and B		-----
159		-----		-----	1167	Visual	clear and bright		-----
171		-----		-----	1186		-----		-----
194		-----		-----	1191		-----		-----
225	Visual	Clear & Bright		-----	1194		-----		-----
237	Visual	clear and brigth		-----	1199		-----		-----
238	Visual	B & C		-----	1201	D4176	Br & Cl		-----
273	Visual	Pass		-----	1212	D4176	C & B		-----
311		-----		-----	1237		-----		-----
312		-----		-----	1259		C&B		-----
323	D4176	clear & bright		-----	1266	D4176	clear and bright		-----
333		-----		-----	1275	D4176	Pass		-----
334	Visual	Clear and Bright		-----	1299	Visual	OK		-----
335	Visual	clear and bright		-----	1397		-----		-----
336	Visual	C&B		-----	1402	D4176	C & B		-----
337	Visual	Clear and bright		-----	1406		-----		-----
338	Visual	Clear and bright		-----	1407		-----		-----
343		C&B		-----	1428	Visual	C&B		-----
344	D4176	C&B		-----	1443		-----		-----
353	D4176	Pass		-----	1459		-----		-----
369	Visual	C & B		-----	1491	Visual	clear and brigth		-----
370	D4176	clear and bright		-----	1498	D4176	pass		-----
371	Visual	Pass		-----	1528	Visual	clear and bright		-----
372	D4176	Pass		-----	1538		-----		-----
381	Visual	clear		-----	1546	Visual	clear and bright		-----
391	E2680	pass		-----	1556	Visual	C&B		-----
399	Visual	C&B		-----	1569	D4176	pass		-----
403		-----		-----	1586	Visual	C&B		-----
420		-----		-----	1613	Visual	B & C		-----
431		-----		-----	1631		-----		-----
440	Visual	C + B		-----	1634		-----		-----
444	E2680	Pass		-----	1635		-----		-----
445	Visual	C & B		-----	1636	Visual	C&B		-----
447	Visual	C+B		-----	1667		-----		-----
453	D4176	satis		-----	1677		-----		-----
463	D4176	pass		-----	1710	D4176	Pass		-----
468	D4176	Pass		-----	1720		-----		-----
485		-----		-----	1724	Visual	clear&bright		-----
496	Visual	clear&bright		-----	1728	Visual	CLEAR		-----
541	D4176	C&B		-----	1740		-----		-----
631	Visual	Clear & Bright		-----	1742		-----		-----
633	Visual	Clear and Bright		-----	1753		-----		-----
671	Visual	C/B		-----	1776		-----		-----
704	Visual	Clear&Bright		-----	1807		-----		-----
754	D4176	pass		-----	1810		-----		-----
781	D4176	pass		-----	1811		-----		-----
782	D4176	clear and bright		-----	1849		-----		-----
785		-----		-----	1881		-----		-----
798		-----		-----	1936	D4176	C&B		-----
824	Visual	Clear & Bright		-----	1937		-----		-----
846	Visual	pass		-----	1938	D4176	C&B		-----
861	Visual	Clear & Bright		-----	1953	D4176	Clear and bright		-----
875	Visual	C&B		-----	2129	D4176	C&B		-----
902	D4176	PASS		-----	2130	Visual	Clear & bright		-----
904		-----		-----	2146		-----		-----
971	Visual	Clear & Bright		-----	6005	Visual	Clear and Bright		-----
974	Visual	Clear & Bright		-----	6012	Visual	clear		-----
994	Visual	pass		-----	6018	Visual	Clear and Bright		-----
1006		-----		-----	6028	D4176	Clear & Bright		-----
1011		-----		-----	6045		-----		-----
1026		Bright & Clear		-----	6075		-----		-----
1033	Visual	Clear Bright Yellow Liquid		-----	6103	EN15769	CLEAR		-----
1059	Visual	clear & bright		-----	6142		-----		-----
1079	D4176	Bright & Clear		-----	6170		-----		-----
1082		-----		-----	6191		-----		-----
1095		-----		-----	6192		-----		-----
1108	Visual	C&B		-----	6201	D4176	clear and Bright		-----
1109	D4176	Pass		-----	6203	Visual	Clear and Bright		-----
1126		-----		-----					

n   86
mean (n)   Pass (Clear and Bright)
C&B: Clear and Bright

Determination of Aromatics by FIA without oxygenates correction on sample #18200; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D1319	27.9		-1.75	1134		-----		-----
140	D1319	34.0		2.87	1161		-----		-----
159		-----		-----	1167		-----		-----
171	D1319	28.2		-1.52	1186		-----		-----
194		-----		-----	1191		-----		-----
225		-----		-----	1194	D1319	29.3		-0.69
237	D1319	31.0		0.60	1199		-----		-----
238		-----		-----	1201		-----		-----
273		-----		-----	1212	EN15553	30.11		-0.07
311		-----		-----	1237		-----		-----
312	EN15553	31.0		0.60	1259	EN15553	28.6		-1.22
323	EN15553	31.9		1.28	1266		28.4		-1.37
333		-----		-----	1275		29.1		-0.84
334		-----		-----	1299	D1319	30.9		0.52
335		-----		-----	1397	EN15553	30.1		-0.08
336		-----		-----	1402		-----		-----
337		-----		-----	1406		-----		-----
338		-----		-----	1407		-----		-----
343	D1319	27.1		-2.35	1428	EN15553	29.9		-0.23
344		-----		-----	1443		-----		-----
353		-----		-----	1459		-----		-----
369	EN15553	28.1		-1.59	1491	D1319	27.0		-2.43
370	D1319	28.92		-0.97	1498		-----		-----
371		-----		-----	1528	EN15553	29.12		-0.82
372	EN15553	29.5		-0.54	1538	EN15553	27.8		-1.82
381	EN15553	31.1		0.68	1546		-----		-----
391	EN15553	29.0		-0.91	1556		-----		-----
399		-----		-----	1569		-----		-----
403		-----		-----	1586	D1319	31.0		0.60
420		-----		-----	1613		-----		-----
431		-----		-----	1631		-----		-----
440		-----		-----	1634		-----		-----
444		-----		-----	1635	D1319	31.3		0.83
445	D1319	29.90		-0.23	1636	EN15553	31.05		0.64
447	D1319	30.1		-0.08	1667		-----		-----
453		-----		-----	1677	D1319	32.3		1.58
463	D1319	30.2		-0.01	1710		-----		-----
468		-----		-----	1720		-----		-----
485		-----		-----	1724	D1319	30.7		0.37
496	EN15553	31.80		1.21	1728		-----		-----
541		-----		-----	1740		-----		-----
631	D1319	33.07		2.17	1742		-----		-----
633		-----		-----	1753	EN15553	29.24		-0.73
671	D1319	36.962	R(0.05)	5.11	1776		-----		-----
704		-----		-----	1807		-----		-----
754		-----		-----	1810		-----		-----
781	D1319	29.7		-0.38	1811		-----		-----
782		-----		-----	1849		-----		-----
785		-----		-----	1881		-----		-----
798		-----		-----	1936		-----		-----
824	D1319	29.8		-0.31	1937		-----		-----
846	GB/T11132	29.8		-0.31	1938		-----		-----
861	D1319	31.6		1.05	1953		-----		-----
875		-----		-----	2129	EN15553	29.5		-0.54
902		-----		-----	2130	EN15553	34.0		2.87
904		-----		-----	2146		-----		-----
971		-----		-----	6005		-----		-----
974	D1319	33.17		2.24	6012	D1319	29.7	C	-0.38
994		-----		-----	6018		-----		-----
1006		-----		-----	6028	D1319	33.5		2.49
1011		-----		-----	6045	D1319	28.8		-1.07
1026		-----		-----	6075		-----		-----
1033		-----		-----	6103		-----		-----
1059	EN15553	28.8		-1.07	6142		-----		-----
1079	D1319	30.8		0.45	6170		-----		-----
1082		-----		-----	6191		-----		-----
1095		-----		-----	6192		-----		-----
1108		-----		-----	6201	D1319	31.7		1.13
1109	D1319	30.38		0.13	6203		-----		-----
1126		-----		-----					

normality	OK
n	48
outliers	1
mean (n)	30.21
st.dev. (n)	1.694
R(calc.)	4.74
st.dev.(EN15553:07)	1.321
R(EN15553:07)	3.7

Lab 6012: first reported 24.3
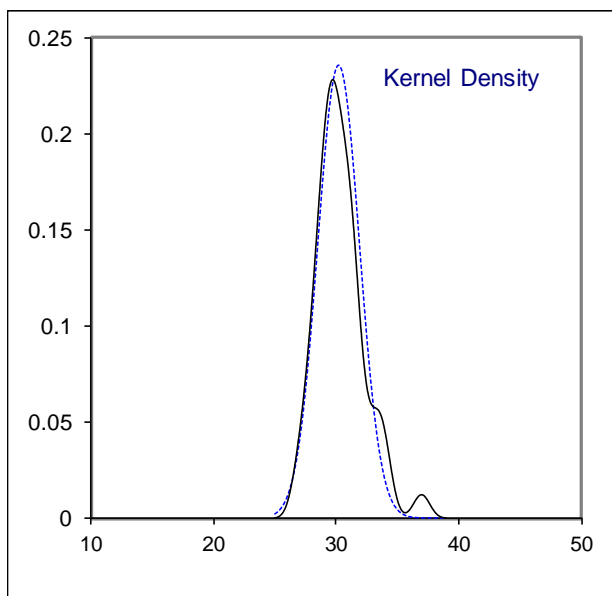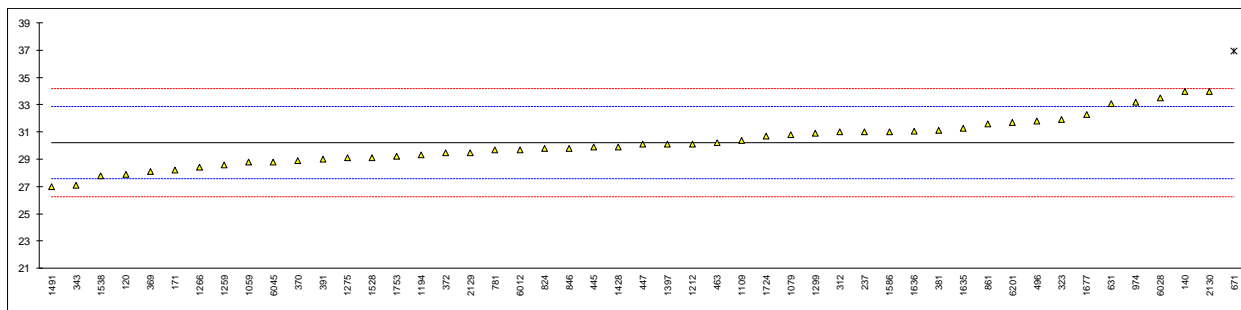
Determination of Aromatics by GC on sample #18200; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D5769	25.2	C,R(0.01)	-7.34	1134	D6839	28.65		-0.64
140		-----		-----	1161	ISO22854	28.6		-0.74
159	D5769	30.0		1.98	1167	ISO22854	28.82		-0.31
171	ISO22854	28.57		-0.80	1186		-----		-----
194		-----		-----	1191	ISO22854	28.26		-1.40
225		-----		-----	1194		-----		-----
237		-----		-----	1199		-----		-----
238		-----		-----	1201	ISO22854	28.7		-0.55
273		-----		-----	1212		-----		-----
311	ISO22854	28.61		-0.72	1237		-----		-----
312	ISO22854	29.23		0.48	1259		-----		-----
323	ISO22854	28.0		-1.90	1266		-----		-----
333	ISO22854	29.3		0.62	1275	ISO22854	28.79		-0.37
334	ISO22854	28.46		-1.01	1299	ISO22854	29.1		0.23
335		-----		-----	1397		-----		-----
336		-----		-----	1402		-----		-----
337		-----		-----	1406	In house	30.1		2.17
338		-----		-----	1407	In house	29.8	C	1.59
343		-----		-----	1428		-----		-----
344		-----		-----	1443	ISO22854	29.4		0.81
353		-----		-----	1459		-----		-----
369		-----		-----	1491		-----		-----
370		-----		-----	1498		-----		-----
371		-----		-----	1528	ISO22854	29.47		0.95
372		-----		-----	1538	ISO22854	28.6		-0.74
381	ISO22854	29.1		0.23	1546		-----		-----
391		-----		-----	1556	ISO22854	28.80		-0.35
399	ISO22854	29.52		1.05	1569	ISO22854	28.38		-1.17
403	ISO22854	29.59		1.18	1586	ISO22854	28.81		-0.33
420	ISO22854	29.45		0.91	1613	D6839	28.90		-0.16
431		-----		-----	1631	ISO22854	28.97		-0.02
440		-----		-----	1634		-----		-----
444		-----		-----	1635	ISO22854	28.9		-0.16
445	ISO22854	28.22		-1.48	1636		-----		-----
447		-----		-----	1667		-----		-----
453	ISO22854	28.8		-0.35	1677	D6839	29.15		0.33
463		-----		-----	1710	ISO22854	28.54		-0.86
468		-----		-----	1720		-----		-----
485		-----		-----	1724	ISO22854	28.48		-0.97
496	ISO22854	28.77		-0.41	1728		-----		-----
541		-----		-----	1740		-----		-----
631		-----		-----	1742		-----		-----
633		-----		-----	1753		-----		-----
671		-----		-----	1776	ISO22854	29.19		0.41
704	D5580	28.423		-1.08	1807	ISO22854	28.8		-0.35
754	D6729	28.266		-1.39	1810	ISO22854	29.5		1.01
781	ISO22854	29.0		0.04	1811	ISO22854	28.96		-0.04
782		-----		-----	1849	ISO22854	29.3		0.62
785		-----		-----	1881		-----		-----
798		-----		-----	1936		-----		-----
824	D5580	28.99		0.02	1937		-----		-----
846	GB/T28768	29.33		0.68	1938		-----		-----
861	D5580	28.55		-0.84	1953		-----		-----
875		-----		-----	2129	D6730	28.90		-0.16
902		-----		-----	2130		-----		-----
904		-----		-----	2146	ISO22854	29.2		0.42
971		-----		-----	6005		-----		-----
974		-----		-----	6012		-----		-----
994	D6729	29.439		0.89	6018		-----		-----
1006	D5580	29.23		0.48	6028		-----		-----
1011	ISO22854	29.2		0.42	6045		-----		-----
1026	ISO22854	31.4	C,R(0.01)	4.70	6075		-----		-----
1033		-----		-----	6103		-----		-----
1059	ISO22854	28.6		-0.74	6142		-----		-----
1079	ISO22854	28.82		-0.31	6170		-----		-----
1082	ISO22854	28.8		-0.35	6191		-----		-----
1095	ISO22854	30.3		2.56	6192		-----		-----
1108	ISO22854	29.36		0.74	6201	ISO22854	28.78		-0.39
1109	D6839	28.72		-0.51	6203	ISO22854	29.30		0.62
1126	ISO22854	29.07		0.17					

normality	OK
n	60
outliers	2
mean (n)	28.981
st.dev. (n)	0.4672
R(calc.)	1.308
st.dev.(ISO22854-A:16)	0.5152
R(ISO22854-A:16)	1.443

Lab 120: first reported 24.99
Lab 1026: first reported 34.4
Lab 1407: first reported 30.8
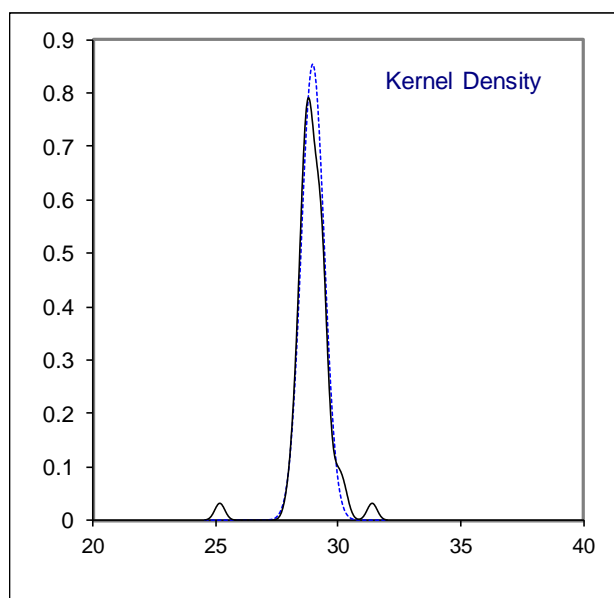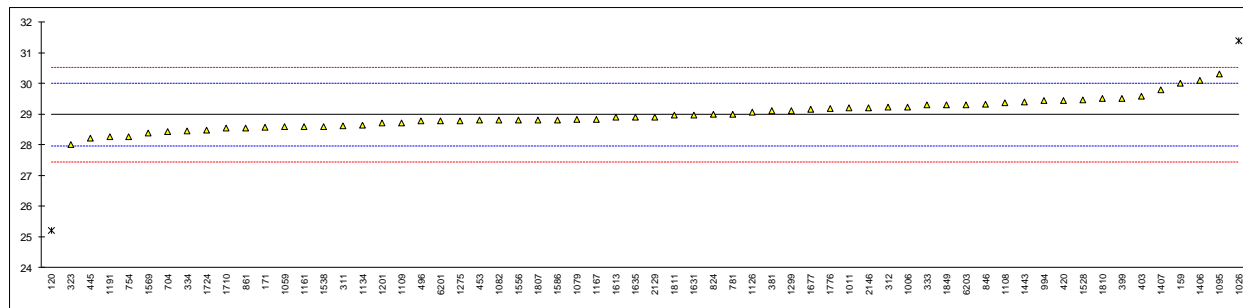
Determination of Aromatics by GC on sample #18200; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D5769	29.8	C,R(0.01)	-----	1134	D6839	33.99		-----
140		-----		-----	1161	ISO22854	34.0		-----
159		-----		-----	1167		-----		-----
171	ISO22854	33.87		-----	1186		-----		-----
194		-----		-----	1191		-----		-----
225		-----		-----	1194		-----		-----
237		-----		-----	1199		-----		-----
238		-----		-----	1201	ISO22854	34.1		-----
273		-----		-----	1212		-----		-----
311	ISO22854	33.90		-----	1237		-----		-----
312	ISO22854	34.57		-----	1259		-----		-----
323	ISO22854	34.3		-----	1266		-----		-----
333		-----		-----	1275		-----		-----
334	ISO22854	33.75		-----	1299	ISO22854	34.5		-----
335		-----		-----	1397		-----		-----
336		-----		-----	1402		-----		-----
337		-----		-----	1406		-----		-----
338		-----		-----	1407		-----		-----
343		-----		-----	1428		-----		-----
344		-----		-----	1443		-----		-----
353		-----		-----	1459		-----		-----
369		-----		-----	1491		-----		-----
370		-----		-----	1498		-----		-----
371		-----		-----	1528	ISO22854	34.82		-----
372		-----		-----	1538		-----		-----
381	ISO22854	34.4		-----	1546		-----		-----
391		-----		-----	1556		-----		-----
399	ISO22854	35.13		-----	1569	ISO22854	33.80		-----
403	ISO22854	35.03		-----	1586	ISO22854	33.27		-----
420	ISO22854	34.83		-----	1613	D6839	34.25		-----
431		-----		-----	1631		-----		-----
440		-----		-----	1634		-----		-----
444		-----		-----	1635		-----		-----
445	ISO22854	33.45		-----	1636		-----		-----
447		-----		-----	1667		-----		-----
453		-----		-----	1677	D6839	34.51		-----
463		-----		-----	1710	ISO22854	33.84		-----
468		-----		-----	1720		-----		-----
485		-----		-----	1724	ISO22854	33.83		-----
496	ISO22854	34.08		-----	1728		-----		-----
541		-----		-----	1740		-----		-----
631		-----		-----	1742		-----		-----
633		-----		-----	1753		-----		-----
671		-----		-----	1776		-----		-----
704	D5580	33.605		-----	1807		-----		-----
754	D6729	33.659		-----	1810		-----		-----
781	ISO22854	34.4		-----	1811		-----		-----
782		-----		-----	1849		-----		-----
785		-----		-----	1881		-----		-----
798		-----		-----	1936		-----		-----
824	D5580	34.27		-----	1937		-----		-----
846		-----		-----	1938		-----		-----
861	D5580	33.75		-----	1953		-----		-----
875		-----		-----	2129	D6730	34.38		-----
902		-----		-----	2130		-----		-----
904		-----		-----	2146		-----		-----
971		-----		-----	6005		-----		-----
974		-----		-----	6012		-----		-----
994	D6729	34.843		-----	6018		-----		-----
1006		-----		-----	6028		-----		-----
1011		-----		-----	6045		-----		-----
1026		-----		-----	6075		-----		-----
1033		-----		-----	6103		-----		-----
1059		-----		-----	6142		-----		-----
1079	ISO22854	34.12		-----	6170		-----		-----
1082		-----		-----	6191		-----		-----
1095		-----		-----	6192		-----		-----
1108	ISO22854	34.86		-----	6201	ISO22854	34.10		-----
1109	D6839	34.01		-----	6203	ISO22854	34.67		-----
1126	ISO22854	34.15		-----					

normality	OK
n	35
outliers	1
mean (n)	34.201
st.dev. (n)	0.4578
R(calc.)	1.282
st.dev.(lit)	unknown
R(lit)	unknown
Compare	
R(iis17B04EN)	1.219

Lab 120: first reported 29.6
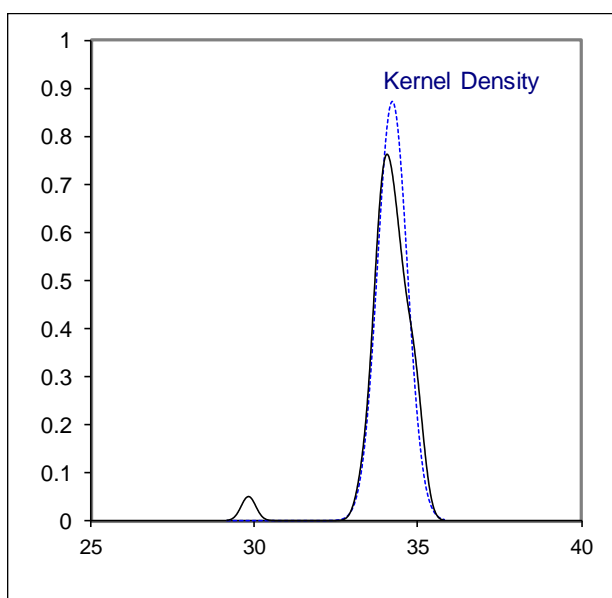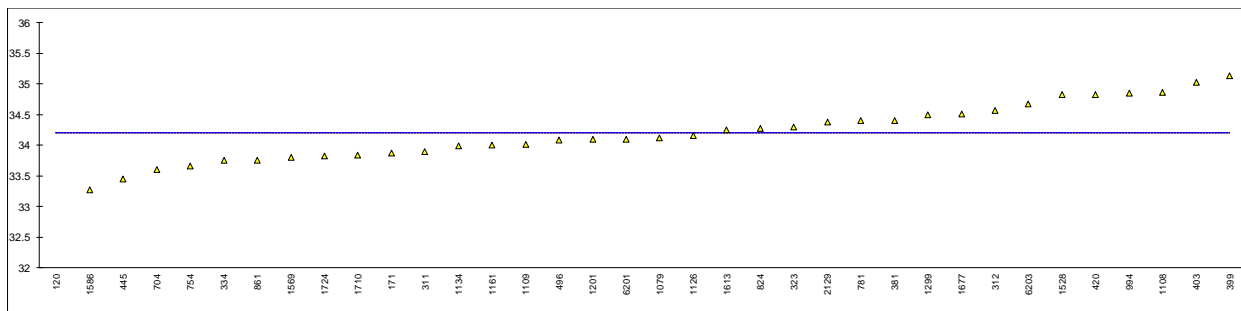
Determination of Benzene on sample #18200; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D3606	0.79		0.35	1134	D6839	0.78		0.07
140	D3606	0.73		-1.33	1161	ISO22854	0.78		0.07
159	D3606	0.72		-1.61	1167	ISO22854	0.77		-0.21
171	ISO22854	0.78		0.07	1186		-----		-----
194		-----		-----	1191	ISO22854	0.77		-0.21
225	D6277	0.81		0.91	1194	D6277	0.75		-0.77
237		-----		-----	1199		-----		-----
238		-----		-----	1201	ISO22854	0.77		-0.21
273		-----		-----	1212	EN238	0.87		2.59
311	ISO22854	0.77		-0.21	1237	EN238	0.77		-0.21
312	ISO22854	0.79		0.35	1259	EN12177	0.80		0.63
323	ISO22854	0.77		-0.21	1266	EN238	0.78		0.07
333	ISO22854	0.66	R(0.05)	-3.29	1275	ISO22854	0.77		-0.21
334	ISO22854	0.77		-0.21	1299	ISO22854	0.78		0.07
335		-----		-----	1397	EN238	0.75		-0.77
336		-----		-----	1402	EN238	0.847		1.95
337		-----		-----	1406	In house	0.74	C	-1.05
338		-----		-----	1407	EN238	0.83	C	1.47
343	EN238	0.7		-2.17	1428	EN12177	0.801		0.66
344		-----		-----	1443	ISO22854	0.74		-1.05
353		-----		-----	1459	EN12177	0.78		0.07
369	EN238	0.74		-1.05	1491	EN238	0.81		0.91
370	EN238	0.81		0.91	1498		-----		-----
371		-----		-----	1528	ISO22854	0.78		0.07
372	EN12177	0.77		-0.21	1538	EN238	0.81		0.91
381	EN12177	0.78		0.07	1546	EN238	0.79		0.35
391	EN12177	0.79		0.35	1556	ISO22854	0.77		-0.21
399	ISO22854	0.82		1.19	1569	ISO22854	0.71	C	-1.89
403	ISO22854	0.79		0.35	1586	ISO22854	0.78		0.07
420	ISO22854	0.79		0.35	1613	D6839	0.78		0.07
431		-----		-----	1631	EN12177	0.78		0.07
440		-----		-----	1634		-----		-----
444		-----		-----	1635	ISO22854	0.78		0.07
445	ISO22854	0.78		0.07	1636	EN238	0.81		0.91
447	IP429	0.83		1.47	1667	EN12177	0.8		0.63
453	ISO22854	0.78		0.07	1677	D3606	0.78		0.07
463	EN238	0.75		-0.77	1710	ISO22854	0.78		0.07
468		-----		-----	1720		-----		-----
485		-----		-----	1724	ISO22854	0.79		0.35
496	ISO22854	0.780		0.07	1728	EN238	0.78		0.07
541		-----		-----	1740		-----		-----
631	D6277	0.80		0.63	1742	EN238	0.85		2.03
633	D6277	0.55	R(0.01)	-6.37	1753	EN12177	0.77		-0.21
671		-----		-----	1776	ISO22854	0.79		0.35
704	D5580	0.790		0.35	1807	ISO22854	0.77		-0.21
754	D6730	0.782		0.13	1810	ISO22854	0.78		0.07
781	ISO22854	0.77		-0.21	1811	ISO22854	0.79		0.35
782	D6277	0.79		0.35	1849	ISO22854	0.78		0.07
785		-----		-----	1881	IP429	0.71		-1.89
798		-----		-----	1936		-----		-----
824	D5580	0.77		-0.21	1937		-----		-----
846	GB/T28768	0.772		-0.15	1938		-----		-----
861	D5580	0.77		-0.21	1953	In house	0.69		-2.45
875	EN12177	0.754		-0.66	2129	D6730	0.79		0.35
902		-----		-----	2130		-----		-----
904	EN12177	0.76		-0.49	2146	ISO22854	0.77		-0.21
971		-----		-----	6005		-----		-----
974	D6730	0.80		0.63	6012	D6277	0.79		0.35
994	D6729	0.783		0.16	6018		-----		-----
1006	D5580	0.78		0.07	6028	EN238	0.72		-1.61
1011	ISO22854	0.79		0.35	6045		-----		-----
1026	EN12177	0.84		1.75	6075	EN238	0.55	R(0.01)	-6.37
1033		-----		-----	6103	EN238	0.69		-2.45
1059	ISO22854	0.78		0.07	6142		-----		-----
1079	ISO22854	0.77		-0.21	6170	EN12177	0.70		-2.17
1082	ISO22854	0.76		-0.49	6191		-----		-----
1095	ISO22854	0.81		0.91	6192	EN238	0.76		-0.49
1108	EN238	0.76		-0.49	6201	ISO22854	0.81		0.91
1109	D3606	0.766		-0.32	6203	ISO22854	0.79		0.35
1126	EN12177	0.79		0.35					

normality	suspect
n	98
outliers	3
mean (n)	0.7774
st.dev. (n)	0.03166
R(calc.)	0.0886
st.dev.(EN12177:00)	0.03571
R(EN12177:00)	0.10

Lab 1406: first reported 0.58
Lab 1407: first reported 0.67
Lab 1569: first reported 0.36
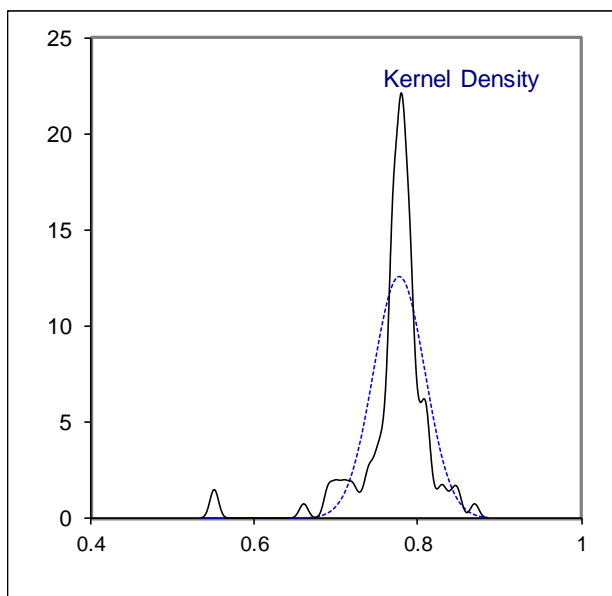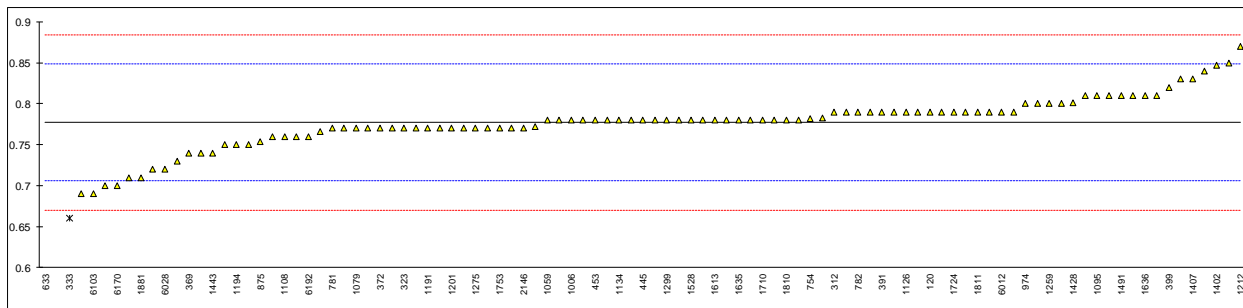
Determination of Copper strip 3hrs/50°C on sample #18200;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D130	1A		-----	1134	D130	1a		-----
140	D130	1a		-----	1161	ISO2160	1a		-----
159	D130	1a		-----	1167	ISO2160	1a		-----
171	D130	1a		-----	1186	D130	1A		-----
194		-----		-----	1191		-----		-----
225	D130	1a		-----	1194		-----		-----
237	D130	1		-----	1199		-----		-----
238	D130	1a		-----	1201	ISO2160	1A		-----
273	D130	1a		-----	1212	ISO2160	1A		-----
311	ISO2160	1a		-----	1237		-----		-----
312		-----		-----	1259		1A		-----
323	ISO2160	1A		-----	1266	ISO2160	1A		-----
333		-----		-----	1275	IP154	1A		-----
334	ISO2160	1		-----	1299	D130	1A		-----
335		-----		-----	1397	ISO2160	1		-----
336	ISO2160	1		-----	1402	IP154	1A		-----
337		-----		-----	1406		-----		-----
338		-----		-----	1407		-----		-----
343	D130	1a		-----	1428	ISO2160	1A		-----
344	D130	1a		-----	1443	ISO2160	1a		-----
353	IP154	1a		-----	1459		-----		-----
369	ISO2160	1A		-----	1491	ISO2160	1a		-----
370	ISO2160	1A		-----	1498		-----		-----
371	ISO2160	1a		-----	1528	ISO2160	1a		-----
372	ISO2160	1A		-----	1538	ISO2160	1A		-----
381	ISO2160	1		-----	1546	ISO2160	1a		-----
391	D130	1a		-----	1556	ISO2160	Class 1a		-----
399		-----		-----	1569	ISO2160	1a		-----
403		-----		-----	1586	D130	1A		-----
420	ISO2160	Class 1		-----	1613	D130	1a		-----
431		-----		-----	1631	ISO2160	1		-----
440	IP154	1A		-----	1634	ISO2160	1a		-----
444		-----		-----	1635	D130	1a		-----
445	IP154	1a		-----	1636	ISO2160	1a		-----
447	D130	1A		-----	1667		-----		-----
453	IP154	1A		-----	1677	D130	1A		-----
463	ISO2160	1A		-----	1710	ISO2160	1B		-----
468	D130	1A		-----	1720		-----		-----
485		-----		-----	1724	D130	1a		-----
496	ISO2160	1a		-----	1728	D130	1a		-----
541	D130	1a		-----	1740	ISO2160	1A		-----
631	D130	1a		-----	1742		-----		-----
633	D130	1a		-----	1753		-----		-----
671	D130	1A		-----	1776		-----		-----
704	ISO2160	1		-----	1807	D130	1A		-----
754	D130	1a		-----	1810		-----		-----
781	ISO2160	1a		-----	1811		-----		-----
782		-----		-----	1849	ISO2160	1A		-----
785	D130	1a		-----	1881		-----		-----
798	D130	1a		-----	1936		-----		-----
824	D130	1a		-----	1937		-----		-----
846	GB/T5096	1a		-----	1938		-----		-----
861	D130	1a		-----	1953	ISO2160	1A		-----
875	D130	1a		-----	2129	D130	1a		-----
902	D130	1a		-----	2130	IP154	1a		-----
904	ISO2160	1a		-----	2146		-----		-----
971	ISO2160	1a		-----	6005	ISO2160	1a		-----
974	D130	1a		-----	6012	D130	1A		-----
994	D130	1a		-----	6018	ISO2160	1a		-----
1006	D130	1a		-----	6028	ISO2160	1a		-----
1011	ISO2160	1a		-----	6045	D130	1a		-----
1026	ISO2160	1A		-----	6075	ISO2160	1a		-----
1033	IP154	1a		-----	6103		-----		-----
1059	ISO2160	1a		-----	6142		-----		-----
1079	ISO2160	1A		-----	6170		-----		-----
1082		-----		-----	6191		-----		-----
1095	ISO2160	1a		-----	6192		-----		-----
1108	ISO2160	1		-----	6201	D130	1A		-----
1109	D130	1a		-----	6203	ISO2160	1B		-----
1126		-----		-----					

n   100
mean (n)   1 (1a/1b)

Determination of Density at 15°C on sample #18200; results in kg/m³

lab	method	conv. value	mark	z(targ)	lab	method	conv. value	mark	z(targ)
120	D4052	738.7		-0.57	1134	D4052	738.9		-0.20
140	D4052	739.0		-0.01	1161	ISO12185	738.7		-0.57
159	D4052	738.8		-0.39	1167	ISO12185	739.0		-0.01
171	D4052	741.6	R(0.01)	4.84	1186	D1298	738.9		-0.20
194	D4052	738.8		-0.39	1191	ISO12185	738.8		-0.39
225	D4052	738.8		-0.39	1194		-----		-----
237	D4052	738.8		-0.39	1199		-----		-----
238	D4052	738.6		-0.76	1201	ISO12185	739.0		-0.01
273	D4052	737.9		-2.07	1212	ISO12185	738.7		-0.57
311	ISO12185	738.8		-0.39	1237	ISO12185	738.7		-0.57
312	ISO12185	738.9		-0.20	1259	ISO12185	739.6		1.11
323	ISO12185	738.8		-0.39	1266	ISO3675	739.5		0.92
333	ISO12185	738.7		-0.57	1275	IP365	739.2		0.36
334	ISO12185	739.2		0.36	1299	D4052	738.6		-0.76
335	ISO12185	739.2		0.36	1397	ISO12185	738.8		-0.39
336	ISO12185	738.8		-0.39	1402	IP365	738.7		-0.57
337	ISO12185	739.2		0.36	1406	ISO12185	738.80		-0.39
338	ISO12185	738.9		-0.20	1407	ISO12185	739.43		0.79
343	ISO12185	739.7		1.29	1428	ISO12185	738.8		-0.39
344	D4052	742.6	R(0.01)	6.71	1443	ISO12185	740.0		1.85
353	IP365	739.8		1.48	1459	ISO12185	738.85		-0.29
369	ISO12185	738.8		-0.39	1491	ISO12185	738.79		-0.40
370	ISO12185	738.8		-0.39	1498	D4052	739.9		1.67
371	ISO12185	738.8		-0.39	1528	D4052	738.80		-0.39
372	ISO12185	738.8		-0.39	1538	ISO12185	738.7		-0.57
381	ISO12185	738.80		-0.39	1546	ISO12185	739.15		0.27
391	ISO12185	738.6		-0.76	1556	ISO12185	739.28		0.51
399	D4052	740.0		1.85	1569	ISO12185	739.2		0.36
403	ISO12185	739.32		0.59	1586	D4052	738.9		-0.20
420	ISO12185	738.8		-0.39	1613	D4052	739.8		1.48
431	ISO12185	738.93		-0.14	1631	ISO12185	738.7		-0.57
440	D4052	739.1		0.17	1634	ISO12185	739.03		0.04
444	D4052	738.7		-0.57	1635	ISO3675	726.2	R(0.01)	-23.91
445	IP365	738.9		-0.20	1636	ISO12185	739.2		0.36
447	D4052	738.8		-0.39	1667	ISO12185	739.0		-0.01
453	IP365	739.0		-0.01	1677	D4052	738.9		-0.20
463	ISO12185	738.85		-0.29	1710	ISO12185	739.1		0.17
468	ISO12185	738.6		-0.76	1720	D4052	739.9		1.67
485	ISO12185	738.9		-0.20	1724	D4052	739.2		0.36
496	ISO12185	739.12		0.21	1728	D4052	738.80		-0.39
541	ISO12185	739.1		0.17	1740	D4052	739.3		0.55
631	D4052	738.815		-0.36	1742	ISO12185	738.8		-0.39
633	D4052	737.5	R(0.05)	-2.81	1753	ISO12185	738.9		-0.20
671	D4052	739.2		0.36	1776	ISO12185	739.61		1.13
704	ISO12185	738.96		-0.09	1807	ISO12185	739.1		0.17
754	D4052	739.1		0.17	1810	ISO12185	739.0		-0.01
781	ISO12185	738.8		-0.39	1811	ISO12185	738.9		-0.20
782	ISO12185	738.7		-0.57	1849	ISO12185	738.8		-0.39
785	D4052	738.9		-0.20	1881	ISO12185	738.81		-0.37
798	D4052	738.9		-0.20	1936	ISO12185	738.8		-0.39
824	ISO12185	738.8		-0.39	1937	ISO12185	739.05		0.08
846	SH/T0604	740.31	R(0.05)	2.43	1938	ISO12185	738.8		-0.39
861	D4052	739.0		-0.01	1953	ISO12185	736.6	R(0.01)	-4.49
875	D4052	738.9		-0.20	2129	D4052	738.8		-0.39
902	D4052	738.9		-0.20	2130	IP365	738.9		-0.20
904	ISO12185	738.6		-0.76	2146	ISO12185	739.5		0.92
971	ISO12185	738.9		-0.20	6005	ISO12185	738.9		-0.20
974	D1298	738.8		-0.39	6012	ISO3675	737.4	R(0.05)	-3.00
994	ISO12185	739.2		0.36	6018	ISO12185	738.8		-0.39
1006	D4052	739.2		0.36	6028	ISO12185	738.8		-0.39
1011	ISO12185	739.2		0.36	6045	D4052	739.0		-0.01
1026	D4052	738.8		-0.39	6075	ISO12185	738.85		-0.29
1033	IP365	738.7		-0.57	6103	ISO3675	737.7	R(0.05)	-2.44
1059	ISO12185	739.0		-0.01	6142		-----		-----
1079	ISO12185	738.8		-0.39	6170	ISO3675	739.2		0.36
1082	ISO12185	740.0		1.85	6191	ISO12185	739.84		1.56
1095	ISO12185	738.8		-0.39	6192	D1298	739.9		1.67
1108	ISO12185	739.6	C	1.11	6201	ISO12185	738.9		-0.20
1109	D4052	738.9		-0.20	6203	ISO12185	739.2		0.36
1126	ISO12185	739.39		0.72					

normality	not OK
n	128
outliers	8
mean (n)	739.006
st.dev. (n)	0.3483
R(calc.)	0.975
st.dev.(ISO12185:96)	0.5357
R(ISO12185:96)	1.5

Lab 1108: first reported 724.54
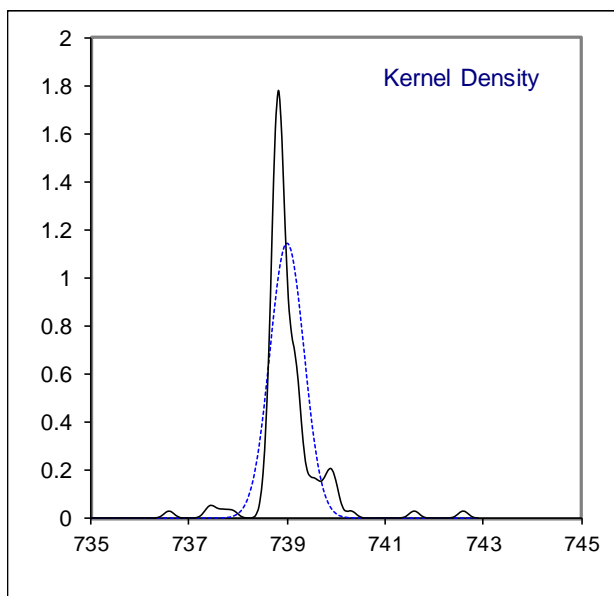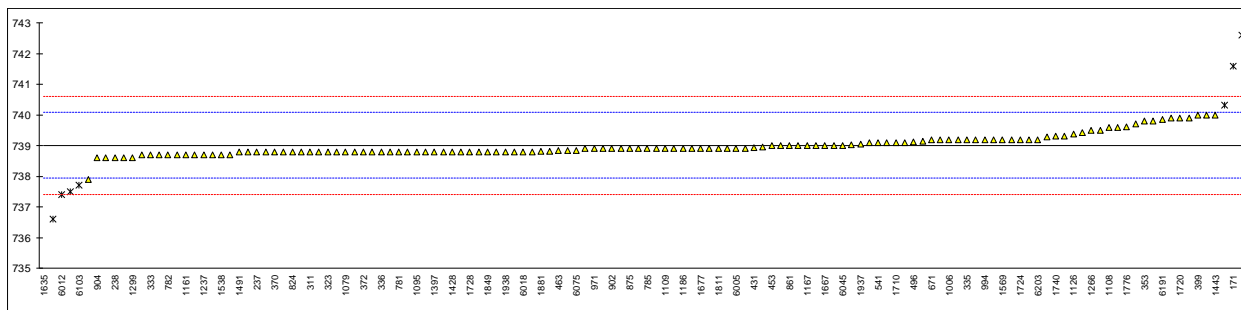
Determination of Distillation at 760 mmHg on sample #18200; results in °C

lab	method	IBP	mark	10% eva	mark	50% eva	mark	90% eva	mark	FBP	mark
120	D86-automated	31.1		45.4		87.8		148.1		176.9	
140	D86-automated	30.4		46.9		88.5		147.7		177.7	
159	D86-automated	29.7		46.2		88.8		147.9		178.2	
171	D86-automated	31.6	ex	42.4	ex	84.7	ex	130.5	R(0.01)	168.4	R(0.01)
194	D86-automated	30.4		45.3		88.3		147.9		179.4	
225	D86-manual	33.0		46.5		89.0		150.0		181.0	
237	D86-manual	34.0		-----		-----		-----		-----	
238	D86-manual	32.0		47.5		89.5		147.5		182	
273	D86-automated	33.1		49.4	R(0.05)	89.2		146.5		182.0	
311	D86-automated	28.5		45.5		88.1		147.7		178.4	
312	ISO3405-automated	31.3		46.0		89.2		147.7		178.7	
323	ISO3405-automated	30.9		45.5		88.1		148.0		177.1	
333	D86-automated	28.0		45.0		88.0		148.0		183.1	
334	ISO3405-automated	29.0		45.1		86.6		147.0		179.2	
335	ISO3405-automated	31.5		46.0		88.1		147.7		178.9	
336	D86-automated	30.4		46.6		89.3		148.3		178.8	
337		-----		-----		-----		-----		-----	
338		30.2		44.7		86.9		147.5		181.9	
343	ISO3405-automated	34.8		47.3		87.7		148.8		172.5	
344	D86-automated	34.1		47.0		92.3		149.6		181.4	
353	IP123-automated	31.0		45.3		88.5		147.4		176.1	
369	ISO3405-automated	33.2		47.1		86.8		147.1		181.1	
370	ISO3405-automated	31.7		45.8		87.8		147.6		179.3	
371	ISO3405-automated	31.0		46.2		87.8		148.0		180.5	
372	ISO3405-automated	32.9		48.8		88.0		147.6		179.8	
381	ISO3405-automated	32.0		47.6		89.7		147.6		178.5	
391		-----		-----		-----		-----		-----	
399	D86-automated	31.4		45.9		87.5		147.4		175.5	
403	ISO3405-automated	33.3		45.5		88.8		147.5		181.5	
420	ISO3405-automated	28.5		43.6		86.8	C	145.0		176.5	
431		34.5		46.5		91.5		153.2	R(0.05)	180.0	
440	IP123-manual	30.5		47.5		90.0		149.5		177.5	
444	D86-automated	30.4		45.4		87.9		148.1		177.5	
445	IP123-automated	28.6		45.9		87.8		147.2		176.9	
447	D86-automated	30.4		46.6		89.2		148.3		185.2	
453	IP123-automated	28.8		45.7		87.8		147.0		178.6	
463	ISO3405-automated	32.7		46.4		90.2		149.5		178.8	
468		-----		-----		-----		-----		-----	
485	ISO3405-automated	31.95		45.90		88.65		147.75		178.65	
496	ISO3405-automated	31.8		46.3		88.3		148		179.2	
541	ISO3405-automated	29.63		45.80		88.66		147.80		180.10	
631	D86-manual	28.8		45.9		82.2	R(0.01)	150.1		178.8	
633	D86-automated	36.5		48.0		93.3	R(0.05)	153.6	R(0.05)	176.5	
671		-----		-----		-----		-----		-----	
704	ISO3405-manual	31.9		46.1		88.0		147.1		177.2	
754	D86-manual	33.5		44.8		87.8		148.5		180.0	
781	ISO3405-automated	30.8		46.4		88.3		147.5		178.7	
782	ISO3405-manual	34.0		47.7		89.4		147.5		180.5	
785	ISO3405-manual	31.0		47.0		89.0		149.0		177.0	
798	D86-automated	30.1		46.2		88.8		147.6		179.1	
824	D86-automated	30.2		45.7		87.8		147.8		176.3	
846	GB/T6536	32.8		46.9		90.3		148.5		179.3	
861	D86-automated	31.5		46.0		88.5		148.0		176.6	
875	D86-automated	30.8		45.7		88.9		147.9		178.6	
902	D86-automated	29.9		45.0		87.0		146.9		179.0	
904	ISO3405-automated	30.9		46.5		88.5		147.7		179.4	
971		-----		-----		-----		-----		-----	
974	D86-automated	28.6		45.7		88.8	C	150.2		178.2	
994	D86-manual	32.0		45.88		89.2		147.3		177.5	
1006	D86-automated	31.3		46.1		89.3		148.2		179.6	
1011	ISO3405-automated	31.9		46.5		90.6		148.2		181.8	
1026	ISO3405-automated	29.6		45.2		89.2		147.5		183.2	
1033	IP123-automated	29.0		46.8		91.6		151.0		177.2	
1059	ISO3405-automated	30.1		44.7		88.0		147.4		177.2	
1079	ISO3405-automated	28.7		45.0		87.4		147.2		174.1	
1082	D86-automated	28.2		45.5		88.4		148.6		178.8	
1095	ISO3405-automated	30.6		46.2		89.0		148.6		180.6	
1108	ISO3405-automated	31.3		45.5		88.8		148.7		190.9	C,R(0.01)
1109	D86-automated	28.1		45.2		87.8		147.6		177.2	
1126	D2887	33.6		45.8		80.9	R(0.01)	149.9		184.5	
1134	D86-automated	30.6		45.0		87.3		147.4		176.0	
1161	ISO3405-automated	30.6		46.0		88.8		148.7		178.1	
1167	ISO3405-automated	32.2		47.3		88.8		147.4		174.2	
1186		34.0		47		88		144	R(0.05)	172	
1191	D86-automated	30.6		45.8		88.2		148.2		181.1	
1194		-----		-----		-----		-----		-----	

lab	method	IBP	mark	10% eva	mark	50% eva	mark	90% eva	mark	FBP	mark
1199		-----		-----		-----		-----		-----	
1201	ISO3405-automated	30.0		45.4		87.8		147.8	C	180.2	
1212	ISO3405-automated	29.7		46.2		88.8		148.2		182.8	
1237	ISO3405-automated	30.0		45.4		87.4		147.0		175.4	
1259	ISO3405-automated	31.1		46.8		90.7		149.9		178.9	
1266	ISO3405-automated	31.6		45.7		87.1		147.1		173.0	
1275	IP123-automated	25.7		47.5		91.7		152.4	R(0.05)	178.5	
1299	D86-automated	30.5		45.1		87.8		148.2		178.8	
1397	ISO3405-automated	33.4		46.3		89.1		147.7		179.1	
1402	ISO3405-automated	31.3		46.4		88.6		148.0		181.9	
1406	ISO3405-manual	32.0		45.0		87.5		146.0		183.0	
1407	ISO3405-automated	31.1		46.5		90.0		148.8		175.5	
1428	ISO3405-automated	34.1		46.0		89.0		147.9		179.8	
1443		31.3		45.4		89.0		148.0		180.5	
1459	ISO3405-automated	29.8		45.7	C	88.4	C	147.8	C	177.0	
1491	ISO3405-automated	29.7		44.9		88.1		147.6		178.2	
1498		34.2		46.0		88.4		148.0		178.3	
1528	D86-automated	32.7		45.7		88.3		147.6		177.1	
1538		31.2		46.2		88.5		149.3		178.3	
1546	ISO3405-automated	31.45		45.35		87.35		147.50		176.75	
1556	ISO3405-automated	28.3		44.9		87.7		147.9		178.7	
1569	D86-automated	27.7		44.7		86.7		146.3		176.4	
1586	D86-automated	29.1		47.4		90.0		147.5		178.5	
1613	D86-automated	29.9		46.9		90.2		149.8		180.1	
1631	ISO3405-automated	31.9		-----		-----		-----		178.9	
1634	ISO3405-automated	29.8		45.6		88.9		148.5		177.9	
1635		31.9		47.2		91.4		151.4		177.3	
1636	ISO3405-automated	30.8		46.1		89.0		148.6		176.6	
1667	ISO3405-automated	31.8		45.4		88.0		147.8		177.5	
1677	D86-automated	31.0		45.8		86.7		147.2		176.7	
1710	ISO3405-automated	29.3		46.5		89.2		148.1		178.5	
1720	D86-automated	30.9		44.7		87.4		147.4		178.9	
1724	D86-automated	30.7		45.9		88.0		147.7		180.1	
1728	ISO3405-manual	31.2		45.3		87.6		148.6		179.1	
1740	D86-automated	30.5		44.4		87.0		147.1		174.9	
1742	ISO3405-automated	30.0		44.1		87.1		147.5		179.7	
1753	ISO3405-manual	32.0		46.0		89.0		149.0		178.3	
1776	ISO3405-automated	32.0		49.4	R(0.05)	84.1	R(0.05)	147.6		178.1	
1807		31.4		45		87.5		147.8		179.4	
1810	D86-automated	29.3		46.1		88.2		147.5		176.8	
1811	D86-automated	30.6		45.9		88.5		147.5		178.8	
1849	ISO3405-automated	30.7		46.0		88.3		148.3		181.2	
1881		-----		-----		-----		-----		-----	
1936	ISO3405-automated	-----		-----		-----		-----		178.2	
1937	ISO3405-automated	30.3		46.75		88.20		147.65		180.65	
1938	ISO3405-automated	-----		-----		-----		-----		178.0	
1953	ISO3405-automated	24.4	R(0.05)	45.7		87.3		146.9		164.5	R(0.01)
2129	ISO3405-automated	29.5		46.5		88.5		147.8		179.3	
2130	D86-automated	29.2		46.6		89.3		148.8		181.6	
2146		31.1		46.3		88.3		147.7		180.0	
6005	ISO3405-automated	29.6		47.3		90.6		150.0		179.7	
6012	D86-manual	34.2		47.3		88.3		150.3		174.9	
6018	ISO3405-automated	30.5		47.4		91.3		150.6		178.5	
6028	ISO3405-automated	30.9		46.4		89.5		148.7		180.1	
6045	D86-automated	31.4		47.4		-----		148.0		178.9	
6075	ISO3405-automated	30.8		45.1		87.1		146.0		177.6	
6103	ISO3405-automated	34.4		47.8		92.8	R(0.05)	152.3	R(0.05)	180.3	
6142		-----		-----		-----		-----		-----	
6170		31.0		46.0		87.0		148.0		176.0	
6191		28.8		43.5		87.7		147.3		176.1	
6192		33.5	ex	48.6	ex	93.7	R(0.05)	152.6	R(0.05)	179.1	ex
6201	ISO3405-automated	33.1		45.6		88.7		147.8		180.1	
6203	ISO3405-automated	34.2		45.9		89.8		148.6		179.4	
	normality	OK		OK		OK		suspect		OK	
	n	125		122		118		119		125	
	outliers	1 +2ex		2 +2ex		6 +1ex		7		3 +1ex	
	mean (n)	31.05		46.02		88.56		148.03		178.65	
	st.dev. (n)	1.750		0.904		1.153		1.002		2.242	
	R(calc.)	4.90		2.53		3.23		2.81		6.28	
	st.dev.(ISO3405-A:11)	1.748		1.143		0.671		1.410		2.421	
	R(ISO3405-A:11)	4.89		3.20		1.88		3.95		6.78	
Compare											
	R(ISO3405-M:11)	5.6		3.99		4.21		3.90		7.2	

Ex=excluded. Test result excluded due to observed statistical outliers in other related distillation parameters.

Lab 420: first reported 84.9
Lab 1108: first reported 186.9
Lab 1459: first reported 47.0; 91.4; 150.9

Lab 974: first reported 81.9
Lab 1201: first reported 131.6

Initial Boiling Point

Kernel Density

10% evaporated

Kernel Density

50% evaporated

Kernel Density

90% evaporated

Kernel Density

Final Boiling Point

Kernel Density
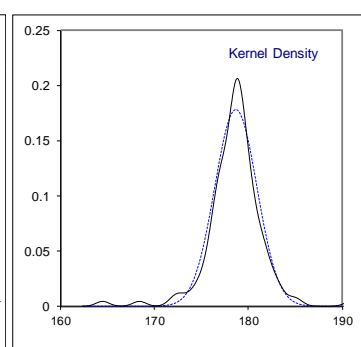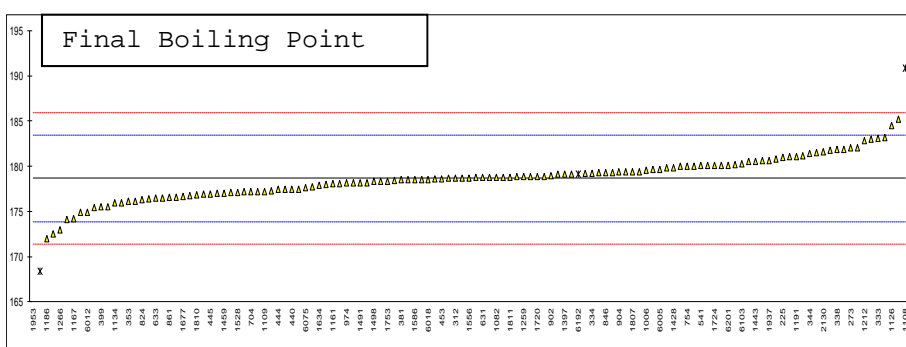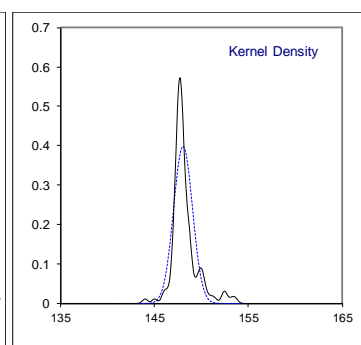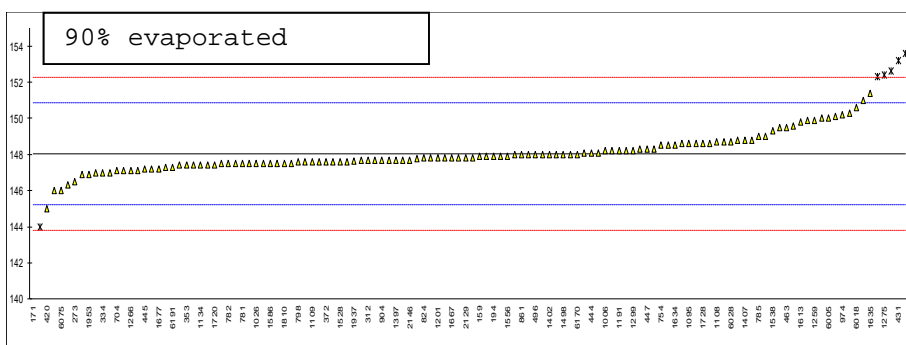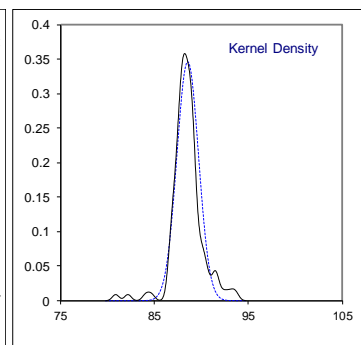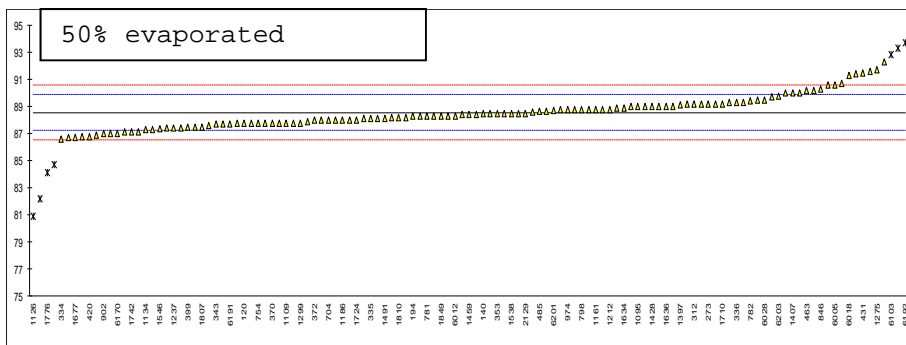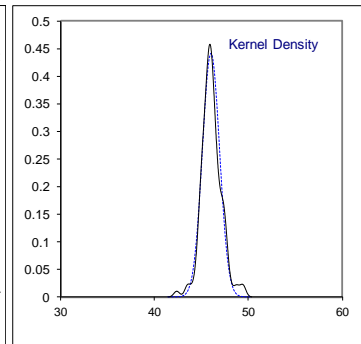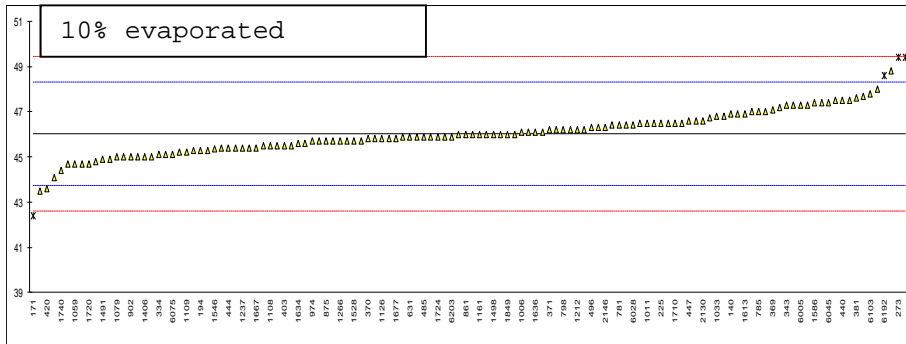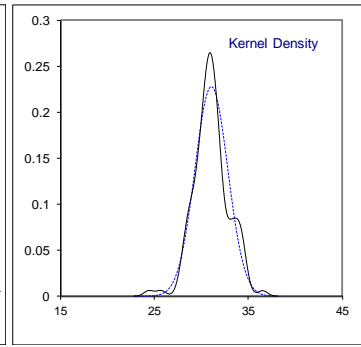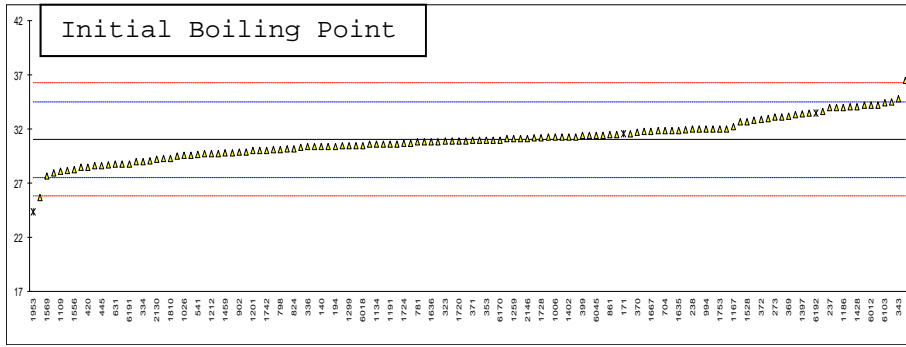
Determination of Distillation at 760 mmHg on sample #18200; results in %V/V ---continued---

lab	method	%E70°C	mark	%E100°C	mark	%E150°C	mark	%residue	mark	%loss	mark
120	D86-automated	39.8		57.6		91.0		1.1		1.6	
140	D86-automated	38.9		57.2		91.0		1.0		1.3	
159	D86-automated	-----		-----		-----		1.0		1.0	
171	D86-automated	41.1	ex	62.7	R(0.01)	96.9	R(0.01)	0.8		1.9	
194	D86-automated	-----		-----		-----		1.0		2.3	
225	D86-manual	38.0		57.0		90.5		1.0		1.6	
237	D86-manual	-----		-----		-----		-----		-----	
238	D86-manual	38.5		57.0		92.0		0.5		0.5	
273	D86-automated	-----		-----		-----		-----		-----	
311	D86-automated	40.0		57.3		91.1		1.0		1.2	
312	ISO3405-automated	39.3		56.9		91.8		0.9		0.7	
323	ISO3405-automated	40.2		57.3		91.2		1.1		1.5	
333	D86-automated	40.0		57.4		91.0		1.0		1.7	
334	ISO3405-automated	40.6		58.2		91.7		1.0		1.1	
335	ISO3405-automated	39.7		57.6		92.0		0.9		1.3	
336	D86-automated	38.6		56.7		90.9		1.1		1.3	
337		-----		-----		-----		-----		-----	
338		40.6		57.9		91.3		1.0		2.4	
343	ISO3405-automated	33.5	C,R(0.01)	59.0		90.5		1.0		1.0	
344	D86-automated	38.6		54.9		90.2		1		-----	
353	IP123-automated	39.6		57.7		91.6		1.3		1.4	
369	ISO3405-automated	38.8		57.8		91.2		1.0		1.1	
370	ISO3405-automated	39.3		57.5		91.4		1.0		1.5	
371	ISO3405-automated	38.6		57.6		91.3		1.0		0.1	
372	ISO3405-automated	38.7		57.8		91.2		1.0		1.0	
381	ISO3405-automated	38.7		56.6		90.9		1		0.8	
391		-----		-----		-----		-----		-----	
399	D86-automated	37.2		55.2		88.7	R(0.01)	1.2		1.7	
403	ISO3405-automated	39.9		57.4		91.2		1.0		1.9	
420	ISO3405-automated	41.4		59.4		91.9	C	1.0		2.0	
431		40.7		58.1		91.7		1.0		2.3	
440	IP123-manual	38		56.5		90		1		1	
444	D86-automated	40.0		57.5		91.1		1.2		1.8	
445	IP123-automated	39.9		57.7		91.5		1.0		1.0	
447	D86-automated	38.7		56.7		90.8		1.0		0.9	
453	IP123-automated	40.3		57.6		91.6		0.9		1.3	
463	ISO3405-automated	38.7		56.2		90.3		1.1		2.1	
468		-----		-----		-----		-----		-----	
485	ISO3405-automated	39.55		56.95		91.30		1.0		1.9	
496	ISO3405-automated	39.2		57.5		91.1		1.2		1.4	
541	ISO3405-automated	38.86		57.36		91.00		1.43		1.00	
631	D86-manual	42.45	R(0.05)	59.91		90.89		0.6		1.1	
633	D86-automated	-----		-----		-----		1.1		3.6	
671		-----		-----		-----		-----		-----	
704	ISO3405-manual	39.5		57.0		91.0		1.1		0.9	
754	D86-manual	38.5		56.0		91	C	1.0		1.5	
781	ISO3405-automated	39.9		57.5		91.4		1.0		0.7	
782	ISO3405-manual	38.1		57.0		91.1		0.8		1.2	
785	ISO3405-manual	39.0		56.5		90.5		1.1		1.4	
798	D86-automated	38.3		55.7		90.1	C	1.0		0.8	
824	D86-automated	39.6		57.6		91.2		1.0		1.3	
846	GB/T6536	-----		-----		-----		0.8		0.5	
861	D86-automated	39.5		57.1		91.2		1.0		1.8	
875	D86-automated	39.4		56.8		90.4		1.2		1.3	
902	D86-automated	40.0		58.0		91.5		1.0		-----	
904	ISO3405-automated	39.2		57.3		91.2		0.9		1.0	
971		-----		-----		-----		-----		-----	
974	D86-automated	38.67	C	57.18	C	91.00		1.0		0.5	
994	D86-manual	39.5		56.0		91.5		1.0		0.6	
1006	D86-automated	-----		-----		-----		1.0		1.0	
1011	ISO3405-automated	38.4		56.3		90.9		1.4		0.5	
1026	ISO3405-automated	39.3		56.7		91.4		1.0		1.1	
1033	IP123-automated	38.3		55.2		89.5		1.0		2.0	
1059	ISO3405-automated	39.7		57.5		91.4		1.0		1.5	
1079	ISO3405-automated	40.2		57.9		91.6		1.0		1.9	
1082	D86-automated	39.5	C	57.0	C	90.8	C	1.2		-----	
1095	ISO3405-automated	39.2		56.6		90.8		-----		-----	
1108	ISO3405-automated	39.7		56.8		90.8		1.0		2.6	
1109	D86-automated	40.1		57.6		91.6		1.0		1.2	
1126	D2887	-----		60.7	R(0.05)	90.1		-----		-----	
1134	D86-automated	40		58		91.4		1.0		2.8	
1161	ISO3405-automated	38.4		55.4		91.3	C	1.0		-----	
1167	ISO3405-automated	38.6		56.7		91.1		1.0		1.8	
1186		37		58		93	R(0.05)	0.5		-----	
1191	D86-automated	39.6		57.4		91.0		1.0		-----	
1194		-----		-----		-----		-----		-----	

lab	method	%E70°C	mark	%E100°C	mark	%E150°C	mark	%residue	mark	%loss	mark
1199		-----		-----		-----		-----		-----	
1201	ISO3405-automated	40.2		57.5		91.2		1.0		2.7	
1212	ISO3405-automated	39.2		56.8		91.0		0.8		1.3	
1237	ISO3405-automated	39.5		57.8		91.7		1.0		2.3	
1259	ISO3405-automated	38.1		56.2		90.1		1.0		1.0	
1266	ISO3405-automated	40.4		57.8		91.4		1.0		1.9	
1275	IP123-automated	39.8		57.6		91.4		1.0		2.6	
1299	D86-automated	40.0		57.5		91.0		1.1		1.4	
1397	ISO3405-automated	39.1		56.9		91.4		1.0		1.1	
1402	ISO3405-automated	39.4		57.4		90.8		1.2		2.1	
1406	ISO3405-manual	41.0		59.0		92.0		0.5		1.0	
1407	ISO3405-automated	38.3		56.3		90.7		1.4		1.4	
1428	ISO3405-automated	39.2		57.0		91.1		1.1		1.3	
1443		40.0		57.0		91.0		1.0		1.0	
1459	ISO3405-automated	39.8		57.0		91.2		1.0		2.0	
1491	ISO3405-automated	40.3		57.5		91.9		1.0		1.8	
1498		40		57		91		1.0		1.5	
1528	D86-automated	39.5		57.4		91.2		1.1		2.5	
1538		39.4		57.2		90.3		1.0		1.0	
1546	ISO3405-automated	39.3		57.9		91.35		1.0		2.0	
1556	ISO3405-automated	40.0		57.7		91.0		1.0		1.8	
1569	D86-automated	40.5		58.5		92.3		1.0		0.7	
1586	D86-automated	38.5		56.6		91.1		1.0		1.0	
1613	D86-automated	39.0		57.0		91.0		1.0		0.8	
1631	ISO3405-automated	38.8		56.6		90.8		1		-----	
1634	ISO3405-automated	39.0		57.0		90.6		1.1		1.5	
1635		39.7		58.1		91.7		1.0		2.5	
1636	ISO3405-automated	39.4		56.9		90.8		1.0		1.6	
1667	ISO3405-automated	39.5		57.3		90.9		1.0		-----	
1677	D86-automated	40.3		57.8		91.4		1.0		1.5	
1710	ISO3405-automated	39.4		56.8		91.2		1.0		0.8	
1720	D86-automated	-----		-----		-----		-----		-----	
1724	D86-automated	39.6		57.7		91.3		1.0		1.3	
1728	ISO3405-manual	39.4		57.8		91.0		1.1		1.5	
1740	D86-automated	40.6		57.9		91.6		1		3.2	
1742	ISO3405-automated	40.5		57.6		91.7		1.0		3.1	
1753	ISO3405-manual	39.4		57.6		90.6		1.1		1.0	
1776	ISO3405-automated	34.2	R(0.01)	59.1		91.3		1.0		0.1	
1807		39.9		57.8		91.1		1.0		2.3	
1810	D86-automated	39.3	C	57.3		91.3		1		1	
1811	D86-automated	39.2		57.3		91.3		1.0		1.6	
1849	ISO3405-automated	39.7		57.3		90.9		1.0		-----	
1881		-----		-----		-----		-----		-----	
1936	ISO3405-automated	40.2		57.7		91.5		1.0		-----	
1937	ISO3405-automated	39.40		57.40		91.40		1.0		1.8	
1938	ISO3405-automated	40.4		58.5		91.6		1.0		-----	
1953	ISO3405-automated	-----		-----		-----		1.0		1.6	
2129	ISO3405-automated	39.1		57.4		91.2		1.0		1.0	
2130	D86-automated	39.2		56.7		90.6		1.0		0.9	
2146		39.2		57.1		91.3		1.2		0.4	
6005	ISO3405-automated	37.8		55.9		90.0		0.9		1.2	
6012	D86-manual	38.6		58.1		90.1		1.2		0.8	
6018	ISO3405-automated	37.9		55.6		89.7		0.5		1.9	
6028	ISO3405-automated	39.1		56.4		90.8		1.0		1.0	
6045	D86-automated	-----		-----		-----		-----		-----	
6075	ISO3405-automated	40.1		57.9		92.1		0.6		2.5	
6103	ISO3405-automated	36.5		54.6		88.3	R(0.01)	1.0		2.8	
6142		-----		-----		-----		-----		-----	
6170		39.5		58.5		91.0		1.0		1.0	
6191		41.2		57.6		92.0		0.9		4.0	
6192		35.2	R(0.01)	53.9	R(0.05)	87.4	R(0.01)	0.88		4.2	
6201	ISO3405-automated	39.3		54.4		91.0		1.0		2.5	
6203	ISO3405-automated	38.9		56.5		90.8		1.1		1.7	
	normality	OK		suspect		OK					
	n	114		117		115					
	outliers	4 +1ex		3		5					
	mean (n)	39.357		57.219		91.102					
	st.dev. (n)	0.8358		0.8902		0.5093					
	R(calc.)	2.340		2.493		1.426					
	st.dev.(ISO3405-A:11)	0.9643		0.7857		0.4643					
	R(ISO3405-A:11)	2.7		2.2		1.3					
Compare											
	R(ISO3405-M:11)	unknown		unknown		unknown					

Ex=excluded. Test result excluded due to observed statistical outliers in other related distillation parameters.

Lab 343: first reported 35.5
Lab 420: first reported 93.3
Lab 754: first reported 89
Lab 798: first reported 89.6
Lab 974: first reported 42.37; 59.95
Lab 1082: first reported 38.1; 55.7; 89.5
Lab 1161: first reported 89.1
Lab 1810: first reported 29.3
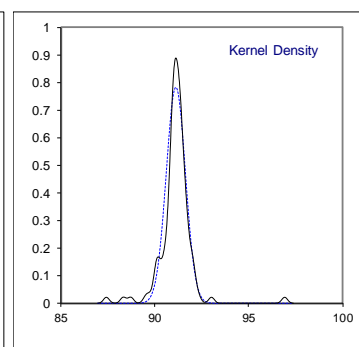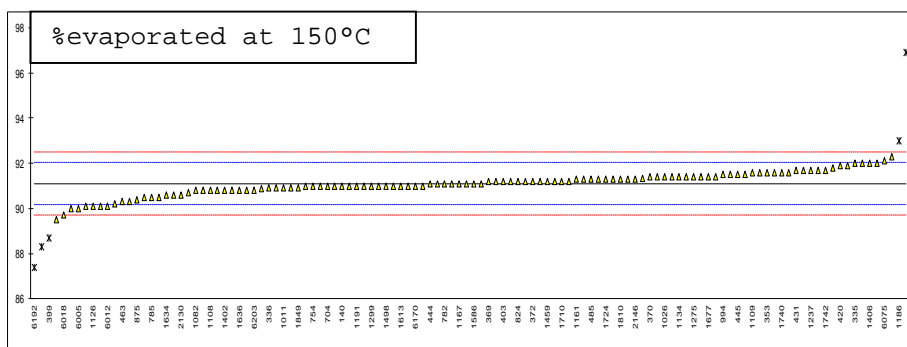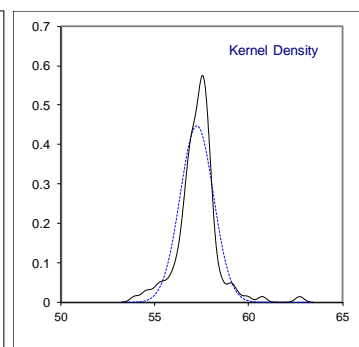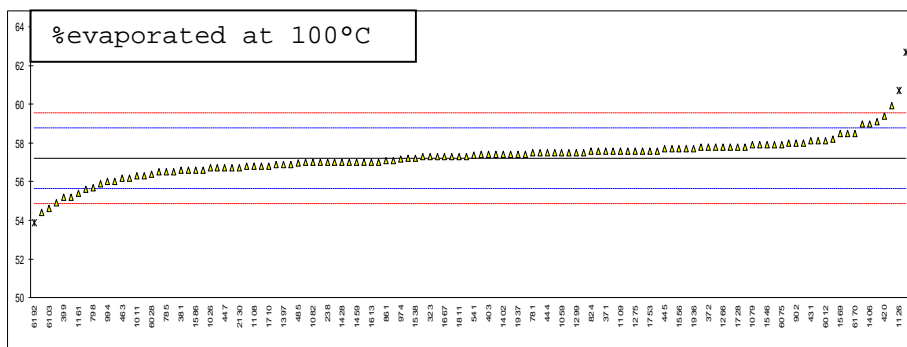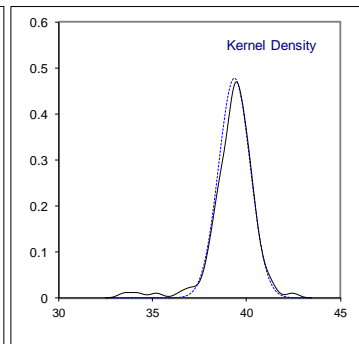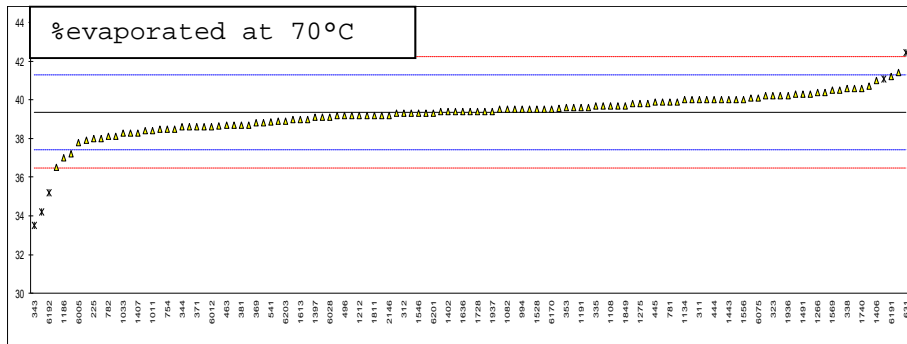
Determination of Doctor Test on sample #18200;

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D4952	Negative		-----	1134	IP30	negative		-----
140	D4952	Negative		-----	1161		-----		-----
159		-----		-----	1167		-----		-----
171	D4952	negative		-----	1186		-----		-----
194		-----		-----	1191		-----		-----
225	D4952	Negative		-----	1194		-----		-----
237	D4952	Negative		-----	1199		-----		-----
238	D4952	Negative		-----	1201		-----		-----
273	IP30	Negative		-----	1212	D4952	Neg		-----
311	D4952	NEG		-----	1237		-----		-----
312	IP30	Negative		-----	1259		-----		-----
323	IP30	negative		-----	1266		-----		-----
333		-----		-----	1275	IP30	Doctor Negative mercaptans [thiols] absent		-----
334	D4952	negative		-----	1299	IP30	NEGATIVE		-----
335		-----		-----	1397		-----		-----
336	D4952	negative		-----	1402	IP30	negative		-----
337		-----		-----	1406		-----		-----
338		-----		-----	1407		-----		-----
343		-----		-----	1428		Negative		-----
344		-----		-----	1443		-----		-----
353		-----		-----	1459		-----		-----
369	D4952	Negative		-----	1491		-----		-----
370	D4952	negative		-----	1498		-----		-----
371	D4952	Negaive		-----	1528		-----		-----
372	ISO5275	Negative		-----	1538		-----		-----
381		-----		-----	1546		-----		-----
391	IP30	negative		-----	1556	D4952	Negative		-----
399	D4952	negative		-----	1569		-----		-----
403		-----		-----	1586	IP30	NEGATIVE		-----
420		-----		-----	1613	IP30	Neg.		-----
431		-----		-----	1631		-----		-----
440		-----		-----	1634		-----		-----
444		-----		-----	1635		-----		-----
445	IP30	Negative		-----	1636		-----		-----
447	D4952	Negative		-----	1667		-----		-----
453		-----		-----	1677	IP30	negative		-----
463	IP30	neg		-----	1710	ISO5275	Negativ		-----
468		-----		-----	1720	D4952	negative		-----
485		-----		-----	1724	IP30	negative		-----
496		-----		-----	1728	D4952	NEGATIVE		-----
541	IP30	Negative		-----	1740	D4952	negative		-----
631		-----		-----	1742		-----		-----
633		-----		-----	1753		-----		-----
671		-----		-----	1776		-----		-----
704	D4952	negative		-----	1807	D4952	NEGATIVE		-----
754	D4952	negative		-----	1810		-----		-----
781	IP30	Negative		-----	1811		-----		-----
782		-----		-----	1849	TS2884	Negative		-----
785		-----		-----	1881		-----		-----
798		-----		-----	1936		-----		-----
824	D4952	Negative		-----	1937		-----		-----
846	SH/T0174	Negative (pass)		-----	1938		-----		-----
861	D4952	Pass		-----	1953		-----		-----
875		-----		-----	2129	IP30	Negative		-----
902		-----		-----	2130	IP30	Negative		-----
904	D4952	negative		-----	2146		-----		-----
971	ISO5275	Negative		-----	6005		-----		-----
974	D4952	Negative		-----	6012		-----		-----
994	D4952	negative		-----	6018		-----		-----
1006		-----		-----	6028	ISO5275	négative		-----
1011		-----		-----	6045		-----		-----
1026	D4952	Negative		-----	6075		-----		-----
1033		-----		-----	6103		-----		-----
1059	ISO5275	negative		-----	6142		-----		-----
1079		-----		-----	6170		-----		-----
1082		-----		-----	6191		-----		-----
1095	D4952	negativo		-----	6192		-----		-----
1108		-----		-----	6201	IP30	pass		-----
1109	IP30	Negative		-----	6203	D4952	Negative		-----
1126		-----		-----					

n   58
mean (n)   negative

Determination of Existent Gum (solvent washed) on sample #18200; results in mg/100mL

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120		-----		-----	1134	IP131	0		-0.82
140	D381	<0.5		-----	1161	ISO6246	0.8		0.21
159		-----		-----	1167	ISO6246	0.4		-0.31
171	D381	540.0	R(0.01)	693.10	1186		-----		-----
194		-----		-----	1191		-----		-----
225	D381	0.6		-0.05	1194		-----		-----
237	D381	1.0		0.47	1199		-----		-----
238	D381	1.0		0.47	1201	ISO6246	1.3		0.85
273	D381	<0.5		-----	1212	ISO6246	0.4		-0.31
311	D381	<0.5		-----	1237		-----		-----
312	D381	1.0		0.47	1259	ISO6246	<0.5		-----
323	ISO6246	<0.5		-----	1266		-----		-----
333		-----		-----	1275	IP131	1.3		0.85
334	ISO6246	0.2		-0.56	1299	D381	<0.5		-----
335		-----		-----	1397	ISO6246	1.0		0.47
336		-----		-----	1402	IP131	0.0		-0.82
337		-----		-----	1406		-----		-----
338		-----		-----	1407		-----		-----
343	D381	<0,5		-----	1428	ISO6246	0.4		-0.31
344		-----		-----	1443		-----		-----
353	IP131	<1		-----	1459		-----		-----
369	ISO6246	<0.5		-----	1491	ISO6246	0.4		-0.31
370	ISO6246	0.4		-0.31	1498	D381	0.5		-0.18
371		-----		-----	1528	ISO6246	0.2		-0.56
372	ISO6246	0.5		-0.18	1538	ISO6246	0.6		-0.05
381	ISO6246	0.8		0.21	1546		-----		-----
391		-----		-----	1556	ISO6246	0		-0.82
399		-----		-----	1569		-----		-----
403		-----		-----	1586	D381	0.2		-0.56
420	ISO6246	1		0.47	1613	D381	<0.5		-----
431		-----		-----	1631	ISO6246	0.5		-0.18
440		-----		-----	1634		-----		-----
444	D381	0		-0.82	1635		-----		-----
445	IP131	<0.5		-----	1636	ISO6246	0.6		-0.05
447	D381	0.5		-0.18	1667		-----		-----
453	IP131	0.5		-0.18	1677	D381	<0,5		-----
463	ISO6246	1.1		0.59	1710	ISO6246	1.5		1.11
468	D381	0.6		-0.05	1720		-----		-----
485		-----		-----	1724	D381	1.2		0.72
496	ISO6246	1.2		0.72	1728		-----		-----
541	D381	<0.5		-----	1740		-----		-----
631	D381	0.2		-0.56	1742		-----		-----
633		-----		-----	1753		-----		-----
671	D381	0.6		-0.05	1776		-----		-----
704	ISO6246	0.50		-0.18	1807	ISO6246	<0.5	C	-----
754	ISO6246	0.3		-0.43	1810	ISO6246	2.5	R(0.05)	2.39
781	ISO6246	0.5		-0.18	1811	ISO6246	2.0		1.75
782	D381	0.5		-0.18	1849	ISO6246	0.5		-0.18
785		-----		-----	1881		-----		-----
798		-----		-----	1936		-----		-----
824	D381	0.5		-0.18	1937		-----		-----
846	GB/T8019	<0.5		-----	1938		-----		-----
861	D381	<0.5		-----	1953		-----		-----
875	D381	0.60		-0.05	2129	ISO6246	0.4		-0.31
902		-----		-----	2130	IP131	<1		-----
904	ISO6246	0.6		-0.05	2146		-----		-----
971		-----		-----	6005		-----		-----
974	D381	0.5		-0.18	6012		-----		-----
994	D381	0.5		-0.18	6018		-----		-----
1006	D381	< 0.5		-----	6028	ISO6246	1.0		0.47
1011	ISO6246	2		1.75	6045		-----		-----
1026	ISO6246	0		-0.82	6075		-----		-----
1033		-----		-----	6103		-----		-----
1059	ISO6246	1.0		0.47	6142		-----		-----
1079	ISO6246	0.2		-0.56	6170		-----		-----
1082		-----		-----	6191		-----		-----
1095	ISO6246	0		-0.82	6192		-----		-----
1108		-----		-----	6201	D381	<0.5		-----
1109	D381	0.0		-0.82	6203	ISO6246	1.6		1.24
1126		-----		-----					

normality	OK
n	56
outliers	2
mean (n)	0.638
st.dev. (n)	0.4781
R(calc.)	1.339
st.dev.(ISO6246:17)	0.7782
R(ISO6246:17)	2.179

Lab 1807: first reported 3.5

Kernel Density
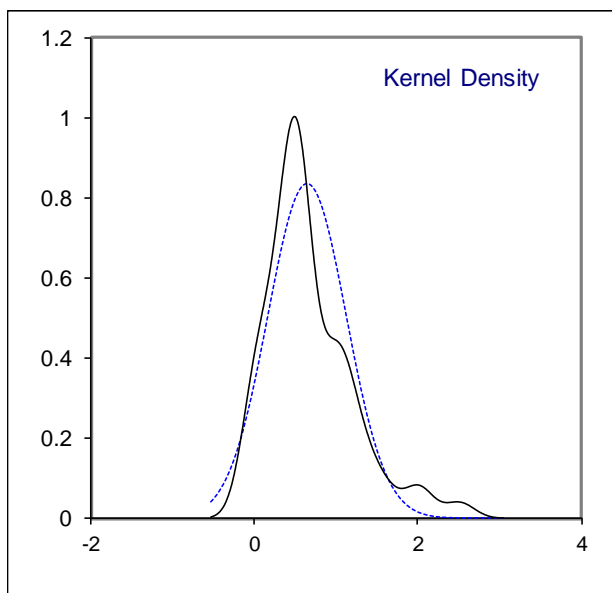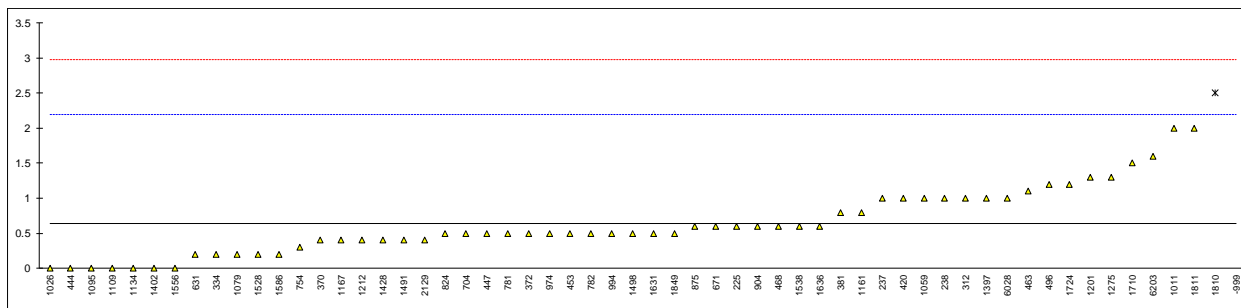
Determination of Lead as Pb on sample #18200; results in mg/L

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120		-----		-----	1134		-----		-----
140	D3237	6.2		1.61	1161	EN237	<2,5		-----
159		-----		-----	1167	EN237	4.44		-0.29
171	D3237	<2.5		-----	1186		-----		-----
194		-----		-----	1191	In house	4.37		-0.36
225		-----		-----	1194		-----		-----
237	IP352	<2.5		-----	1199		-----		-----
238		-----		-----	1201		-----		-----
273		-----		-----	1212	D3237	4.10		-0.66
311		-----		-----	1237		-----		-----
312	EN237	4.66		-0.05	1259		-----		-----
323	EN237	5.4		0.74	1266		-----		-----
333		-----		-----	1275		-----		-----
334	EN237	1.79	ex	-3.14	1299	EN237	3.4		-1.41
335		-----		-----	1397		-----		-----
336		-----		-----	1402		-----		-----
337		-----		-----	1406		-----		-----
338		-----		-----	1407		-----		-----
343		-----		-----	1428	EN237	4.10		-0.66
344		-----		-----	1443	EN237	3.2		-1.62
353		-----		-----	1459	EN237	< 5		<0.31
369		-----		-----	1491		-----		-----
370		-----		-----	1498		-----		-----
371	EN237	4.38		-0.35	1528	EN237	4.12		-0.63
372	EN237	4.9		0.21	1538	EN237	4.27		-0.47
381	EN237	<2,5		-----	1546		-----		-----
391		-----		-----	1556		-----		-----
399		-----		-----	1569	In house	2.7		-2.16
403		-----		-----	1586	EN237	<2.5	C	-----
420	EN237	4.5		-0.22	1613		-----		-----
431		-----		-----	1631	EN237	5.5		0.85
440		-----		-----	1634		-----		-----
444		-----		-----	1635		-----		-----
445		-----		-----	1636		-----		-----
447	D3237	<2.5		-----	1667		-----		-----
453		-----		-----	1677		-----		-----
463	EN237	<2	-f?	<-2.92	1710		-----		-----
468		-----		-----	1720		-----		-----
485		-----		-----	1724	IP428	5.04		0.36
496		-----		-----	1728	EN237	4.1		-0.66
541	D3237	4.80		0.10	1740		-----		-----
631	D3237	8.4619	R(0.01)	4.04	1742		-----		-----
633		-----		-----	1753	EN237	4.12		-0.63
671		-----		-----	1776		-----		-----
704		-----		-----	1807	EN237	4.5		-0.22
754		-----		-----	1810		-----		-----
781	EN237	5.48		0.83	1811		-----		-----
782		-----		-----	1849	EN237	5		0.31
785		-----		-----	1881		-----		-----
798		-----		-----	1936		-----		-----
824	D3237	5.4	C	0.74	1937		-----		-----
846	GB/T8020	5.0		0.31	1938		-----		-----
861	D3237	5.42		0.77	1953		-----		-----
875		-----		-----	2129	EN237	4.35		-0.39
902		-----		-----	2130	IP352	0	ex,C	-5.07
904		-----		-----	2146	In house	6.0		1.39
971	D3237	3.64		-1.15	6005		-----		-----
974		-----		-----	6012	D3237	<2.5		-----
994		-----		-----	6018		-----		-----
1006	D3237	5.05		0.37	6028		-----		-----
1011	EN237	<3		<-1.84	6045		-----		-----
1026		-----		-----	6075		-----		-----
1033		-----		-----	6103	D5059-C	6.7		2.14
1059	EN13723	5.9		1.28	6142		-----		-----
1079	EN237	5.07		0.39	6170		-----		-----
1082		-----		-----	6191		-----		-----
1095		-----		-----	6192		-----		-----
1108		-----		-----	6201	EN237	4.9		0.21
1109	D3237	4.11		-0.64	6203	EN237	4.7		-0.01
1126		-----		-----					

normality	OK		
n	36		
outliers	1+2ex	spike:	recovery:
mean (n)	4.709	5.1	<91%
st.dev. (n)	0.8384		
R(calc.)	2.347		
st.dev.(D3237:17)	0.9286		
R(D3237:17)	2.6		
Compare			
R(EN237:04)	0.62		

Lab 824: first reported 8
Lab 1586: first reported 0.07
Lab 2130: first reported 0.006
-f? = possibly a false negative test result?
ex = test result excluded from statistical evaluation, see paragraph 4.1

Kernel Density
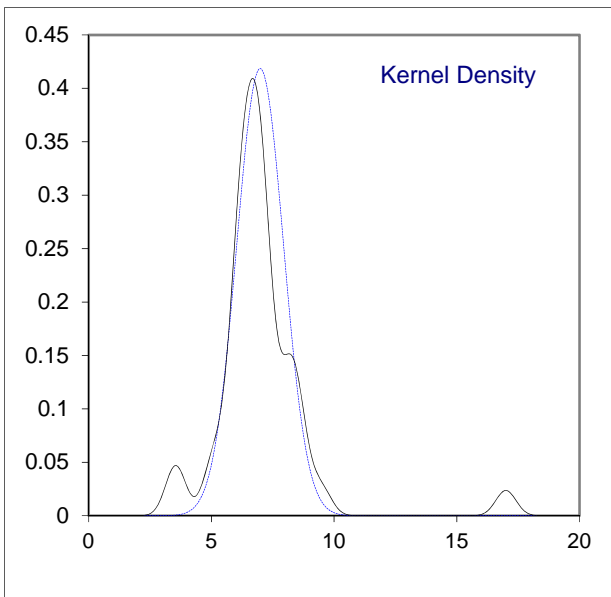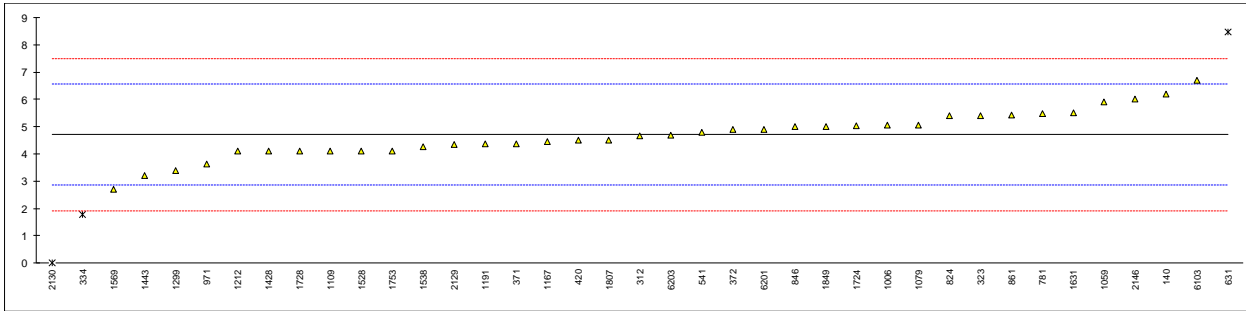
Determination of Manganese as Mn on sample #18200; results in mg/L

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120		-----		-----	1134		-----		-----
140	D3831	6.6		-0.65	1161	EN16135	7.9		1.54
159		-----		-----	1167	EN16136	6.227		-1.28
171	D3831	<0.25	-f?	<-11.37	1186		-----		-----
194		-----		-----	1191		-----		-----
225		-----		-----	1194		-----		-----
237	EN16136	<2.0	-f?	<-8.42	1199		-----		-----
238		-----		-----	1201	EN16136	6.5		-0.82
273		-----		-----	1212	EN16136	6.3		-1.16
311		-----		-----	1237		-----		-----
312	EN16136	6.87		-0.20	1259		-----		-----
323	EN16135	6.1		-1.50	1266		-----		-----
333		-----		-----	1275		-----		-----
334	EN16135	7.2	C	0.36	1299	EN16135	6.9		-0.14
335		-----		-----	1397		-----		-----
336		-----		-----	1402		-----		-----
337		-----		-----	1406		-----		-----
338		-----		-----	1407		-----		-----
343		-----		-----	1428	EN16136	6.1		-1.50
344		-----		-----	1443	EN16135	8.3		2.22
353		-----		-----	1459	In house	7.3		0.53
369	EN16136	8.10		1.88	1491		-----		-----
370		-----		-----	1498		-----		-----
371	EN16135	6.80		-0.31	1528	EN16135	5.99	C	-1.68
372	EN16135	8.3		2.22	1538	EN16135	5.927		-1.79
381	EN16136	6.5		-0.82	1546		-----		-----
391		-----		-----	1556		-----		-----
399		-----		-----	1569	In house	3.6	ex	-5.72
403	EN16135	6.93		-0.09	1586	EN16135	6.1		-1.50
420	EN16135	7.1		0.19	1613		-----		-----
431		-----		-----	1631		-----		-----
440		-----		-----	1634		-----		-----
444		-----		-----	1635		-----		-----
445	EN16136	6.4		-0.99	1636		-----		-----
447	IP588	<2.0	-f?	<-8.42	1667		-----		-----
453		-----		-----	1677		-----		-----
463	EN16135	6.428		-0.94	1710	EN16136	3.49	ex,C	-5.90
468		-----		-----	1720		-----		-----
485		-----		-----	1724	EN16135	6.87		-0.20
496		-----		-----	1728		-----		-----
541	D3831	5.12		-3.15	1740		-----		-----
631	D3831	6.6575		-0.55	1742		-----		-----
633		-----		-----	1753		-----		-----
671		-----		-----	1776		-----		-----
704		-----		-----	1807	EN16135	5.0	ex	-3.35
754		-----		-----	1810		-----		-----
781	D3831	7.16	C	0.29	1811		-----		-----
782		-----		-----	1849		-----		-----
785		-----		-----	1881		-----		-----
798		-----		-----	1936		-----		-----
824		-----		-----	1937		-----		-----
846	SH/T0711	9.5		4.25	1938		-----		-----
861	D3831	8.47		2.51	1953		-----		-----
875	EN16135	8.8		3.06	2129	D3831	7.1		0.19
902		-----		-----	2130		-----		-----
904		-----		-----	2146	In house	7.6		1.04
971	D3831	6.31		-1.14	6005		-----		-----
974		-----		-----	6012		-----		-----
994		-----		-----	6018		-----		-----
1006		-----		-----	6028	D5185	5.6		-2.34
1011		-----		-----	6045		-----		-----
1026		-----		-----	6075		-----		-----
1033		-----		-----	6103	In house	17	R(0.01)	16.91
1059		-----		-----	6142		-----		-----
1079	EN16135	6.93		-0.09	6170		-----		-----
1082		-----		-----	6191		-----		-----
1095		-----		-----	6192		-----		-----
1108		-----		-----	6201	EN16135	8.38		2.35
1109		-----		-----	6203	EN16135	7.1		0.19
1126		-----		-----					

```
normality          OK
n                  37
outliers           1+3ex      spike:     recovery:
mean (n)           6.986      6.7        <101%
st.dev. (n)        0.9532
R(calc.)           2.669
st.dev.(EN16135:11) 0.5922
R(EN16135:11)      1.658
```

Lab 334: first reported 9.75
Lab 781: first reported 9.16
Lab 1528: first reported 3.99
Lab 1710: first reported 4.3
-f? = possibly a false negative test result?
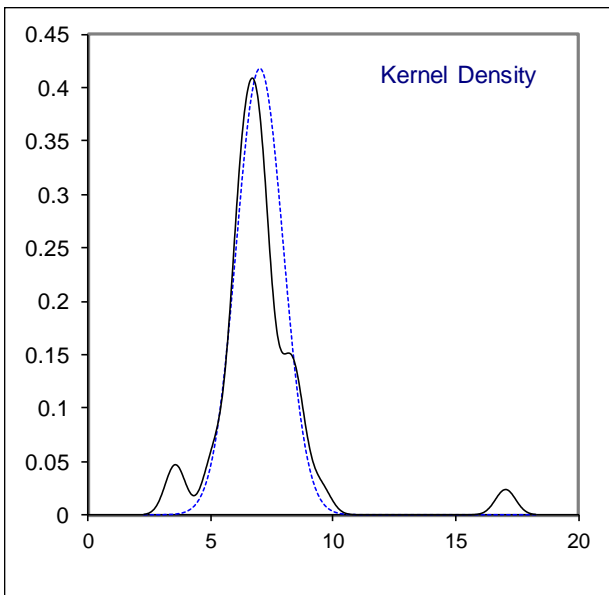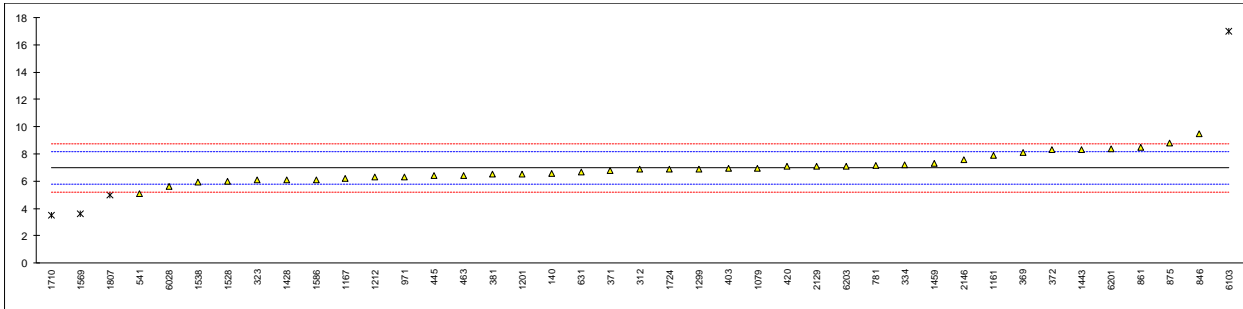ex = test result excluded from statistical evaluation, see paragraph 4.1

Kernel Density

Determination of Olefins by FIA without oxygenates correction on sample #18200; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D1319	9.8		2.70	1134		-----		-----
140	D1319	8.7		1.55	1161		-----		-----
159		-----		-----	1167		-----		-----
171	D1319	10.8		3.75	1186		-----		-----
194		-----		-----	1191		-----		-----
225		-----		-----	1194	D1319	6.0		-1.27
237		-----		-----	1199		-----		-----
238		-----		-----	1201		-----		-----
273		-----		-----	1212	EN15553	5.28		-2.02
311		-----		-----	1237		-----		-----
312	EN15553	6.8		-0.43	1259	EN15553	7.6		0.40
323	EN15553	6.6		-0.64	1266		7.0		-0.22
333		-----		-----	1275	IP156	6.2		-1.06
334		-----		-----	1299	D1319	8.0		0.82
335		-----		-----	1397	EN15553	6.5		-0.75
336		-----		-----	1402		-----		-----
337		-----		-----	1406		-----		-----
338		-----		-----	1407		-----		-----
343	D1319	9.4		2.28	1428	EN15553	6.7		-0.54
344		-----		-----	1443		-----		-----
353		-----		-----	1459		-----		-----
369	EN15553	7.8		0.61	1491		-----		-----
370	D1319	7.2		-0.02	1498		-----		-----
371		-----		-----	1528	EN15553	6.97		-0.26
372	EN15553	6.6		-0.64	1538	EN15553	6.5		-0.75
381	EN15553	8.3		1.13	1546		-----		-----
391	EN15553	7.5		0.30	1556		-----		-----
399		-----		-----	1569		-----		-----
403		-----		-----	1586	D1319	5.8		-1.48
420		-----		-----	1613		-----		-----
431		-----		-----	1631		-----		-----
440		-----		-----	1634		-----		-----
444		-----		-----	1635	D1319	6.28		-0.98
445	IP156	8.20		1.03	1636	EN15553	6.17		-1.09
447	D1319	7.6		0.40	1667		-----		-----
453		-----		-----	1677	D1319	7.45		0.25
463	D1319	6.1		-1.17	1710		-----		-----
468		-----		-----	1720		-----		-----
485		-----		-----	1724	D1319	6.1		-1.17
496	EN15553	7.50		0.30	1728		-----		-----
541		-----		-----	1740		-----		-----
631	D1319	6.772		-0.46	1742		-----		-----
633		-----		-----	1753	EN15553	7.12		-0.10
671		-----		-----	1776		-----		-----
704		-----		-----	1807		-----		-----
754		-----		-----	1810		-----		-----
781	D1319	8.9		1.76	1811		-----		-----
782		-----		-----	1849		-----		-----
785		-----		-----	1881		-----		-----
798		-----		-----	1936		-----		-----
824	D1319	6.5		-0.75	1937		-----		-----
846	GB/T11132	7.6		0.40	1938		-----		-----
861	D1319	8.6		1.45	1953		-----		-----
875		-----		-----	2129	EN15553	7.3		0.09
902		-----		-----	2130	EN15553	9.3	C	2.18
904		-----		-----	2146		-----		-----
971		-----		-----	6005		-----		-----
974	D1319	6.78		-0.45	6012	D1319	4.1		-3.26
994		-----		-----	6018		-----		-----
1006		-----		-----	6028	D1319	12	C,R(0.05)	5.00
1011		-----		-----	6045	D1319	7.3		0.09
1026		-----		-----	6075		-----		-----
1033		-----		-----	6103		-----		-----
1059	EN15553	6.0		-1.27	6142		-----		-----
1079	D1319	7.88		0.70	6170		-----		-----
1082		-----		-----	6191		-----		-----
1095		-----		-----	6192		-----		-----
1108		-----		-----	6201	D1319	5.5		-1.79
1109	D1319	7.56		0.36	6203		-----		-----
1126		-----		-----					

normality	OK
n	45
outliers	1
mean (n)	7.215
st.dev. (n)	1.2615
R(calc.)	3.532
st.dev.(EN15553:07)	0.9567
R(EN15553:07)	2.679

Lab 2130: first reported 11.2
Lab 6028: first reported 10.9
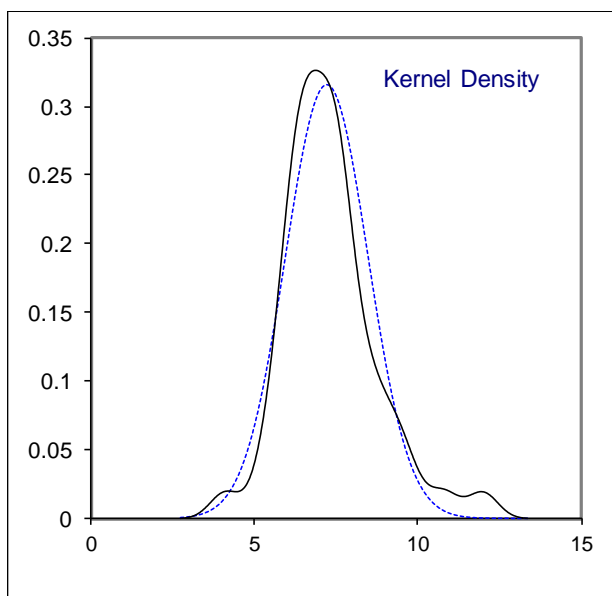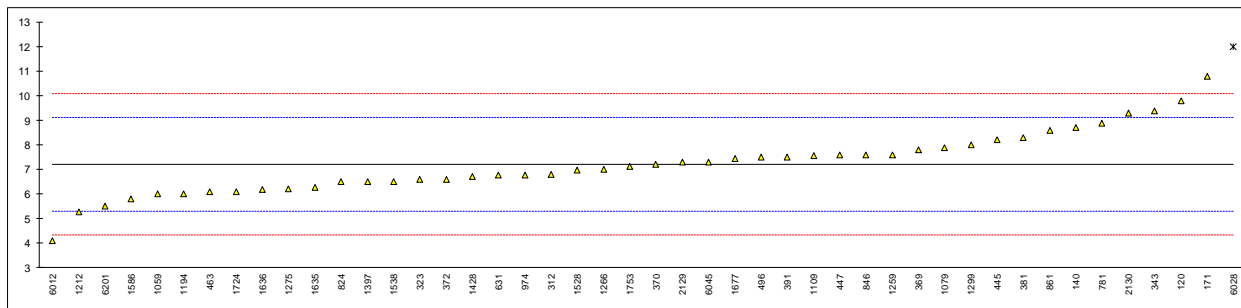
Determination of Olefins by GC on sample #18200; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120		-----		-----	1134	D6839	7.01		-0.96
140		-----		-----	1161	ISO22854	7.50		0.02
159		-----		-----	1167	ISO22854	7.66		0.34
171	ISO22854	7.68		0.39	1186		-----		-----
194		-----		-----	1191	ISO22854	7.86		0.75
225		-----		-----	1194		-----		-----
237		-----		-----	1199		-----		-----
238		-----		-----	1201	ISO22854	7.7		0.43
273		-----		-----	1212		-----		-----
311	ISO22854	7.81		0.65	1237		-----		-----
312	ISO22854	7.82		0.67	1259		-----		-----
323	ISO22854	7.4		-0.18	1266		-----		-----
333	ISO22854	7.7		0.43	1275	ISO22854	7.49		0.00
334	ISO22854	7.82		0.67	1299	ISO22854	7.8		0.63
335		-----		-----	1397		-----		-----
336		-----		-----	1402		-----		-----
337		-----		-----	1406	In house	4.0	R(0.01)	-7.01
338		-----		-----	1407		-----		-----
343		-----		-----	1428		-----		-----
344		-----		-----	1443	ISO22854	6.6		-1.79
353		-----		-----	1459		-----		-----
369		-----		-----	1491		7.3		-0.38
370		-----		-----	1498		-----		-----
371		-----		-----	1528	ISO22854	6.98		-1.02
372		-----		-----	1538	ISO22854	7.8		0.63
381	ISO22854	7.6		0.22	1546		-----		-----
391		-----		-----	1556	ISO22854	7.79		0.61
399	ISO22854	6.85		-1.28	1569	ISO22854	7.94		0.91
403	ISO22854	7.18		-0.62	1586	ISO22854	7.61		0.24
420	ISO22854	7.59		0.20	1613	D6839	7.65		0.32
431		-----		-----	1631	ISO22854	6.98		-1.02
440		-----		-----	1634		-----		-----
444		-----		-----	1635	ISO22854	7.5		0.02
445	ISO22854	7.71		0.45	1636		-----		-----
447		-----		-----	1667		-----		-----
453	ISO22854	7.8		0.63	1677	D6839	7.47		-0.04
463		-----		-----	1710	ISO22854	7.78		0.59
468		-----		-----	1720		-----		-----
485		-----		-----	1724	ISO22854	6.48		-2.03
496	ISO22854	7.71		0.45	1728		-----		-----
541		-----		-----	1740		-----		-----
631		-----		-----	1742		-----		-----
633		-----		-----	1753		-----		-----
671		-----		-----	1776	ISO22854	7.0		-0.98
704	D6730	6.765		-1.45	1807	ISO22854	8.0		1.03
754	D6729	6.858		-1.27	1810	ISO22854	7.7		0.43
781	ISO22854	7.4		-0.18	1811	ISO22854	7.7		0.43
782		-----		-----	1849	ISO22854	7.63		0.28
785		-----		-----	1881		-----		-----
798		-----		-----	1936		-----		-----
824	D6839	7.6		0.22	1937		-----		-----
846	GB/T28768	7.71		0.45	1938		-----		-----
861	D6730	6.399		-2.19	1953		-----		-----
875		-----		-----	2129	D6730	6.41		-2.17
902		-----		-----	2130		-----		-----
904		-----		-----	2146	ISO22854	7.7		0.43
971		-----		-----	6005		-----		-----
974		-----		-----	6012		-----		-----
994	D6729	6.771		-1.44	6018		-----		-----
1006	D6730	8.5		2.03	6028		-----		-----
1011	ISO22854	7.4		-0.18	6045		-----		-----
1026	ISO22854	2.2	R(0.01)	-10.63	6075		-----		-----
1033		-----		-----	6103		-----		-----
1059	ISO22854	7.6		0.22	6142		-----		-----
1079	ISO22854	7.76		0.55	6170		-----		-----
1082	ISO22854	7.64		0.30	6191		-----		-----
1095	ISO22854	8.0		1.03	6192		-----		-----
1108	ISO22854	7.70		0.43	6201	ISO22854	7.4		-0.18
1109	D6839	7.75		0.53	6203	ISO22854	7.76		0.55
1126	ISO22854	7.61		0.24					

normality	OK
n	58
outliers	2
mean (n)	7.489
st.dev. (n)	0.4326
R(calc.)	1.211
st.dev.(ISO22854-A:16)	0.4973
R(ISO22854-A:16)	1.392
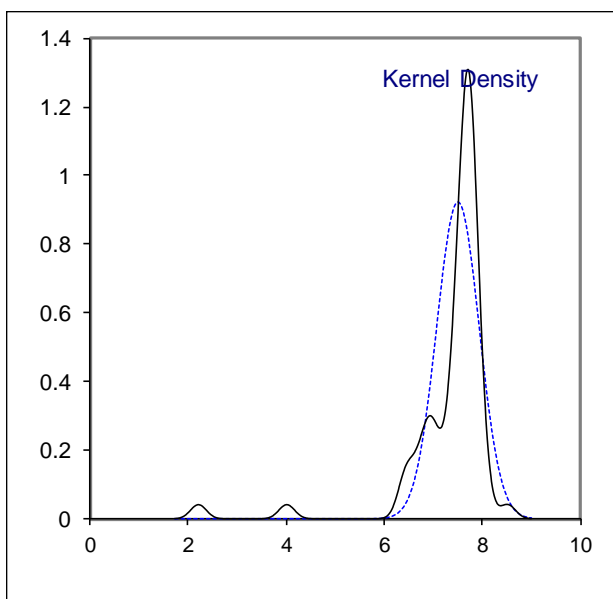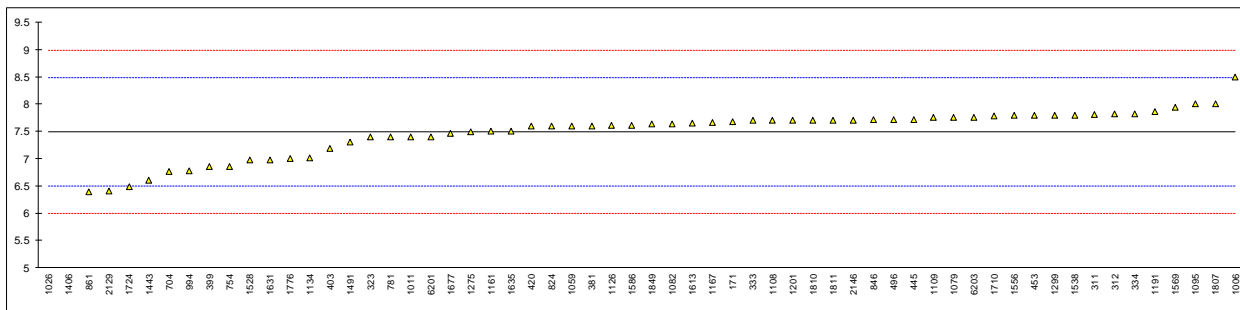
Kernel Density

Determination of Olefins by GC on sample #18200; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120		-----		-----	1134	D6839	6.36		-----
140		-----		-----	1161	ISO22854	6.90		-----
159		-----		-----	1167		-----		-----
171	ISO22854	7.11		-----	1186		-----		-----
194		-----		-----	1191		-----		-----
225		-----		-----	1194		-----		-----
237		-----		-----	1199		-----		-----
238		-----		-----	1201	ISO22854	7.6		-----
273		-----		-----	1212		-----		-----
311	ISO22854	7.24		-----	1237		-----		-----
312	ISO22854	7.24		-----	1259		-----		-----
323	ISO22854	7.5		-----	1266		-----		-----
333		-----		-----	1275		-----		-----
334	ISO22854	7.24		-----	1299	ISO22854	7.2		-----
335		-----		-----	1397		-----		-----
336		-----		-----	1402		-----		-----
337		-----		-----	1406		-----		-----
338		-----		-----	1407		-----		-----
343		-----		-----	1428		-----		-----
344		-----		-----	1443		-----		-----
353		-----		-----	1459		-----		-----
369		-----		-----	1491		-----		-----
370		-----		-----	1498		-----		-----
371		-----		-----	1528	ISO22854	6.52		-----
372		-----		-----	1538		-----		-----
381	ISO22854	7.1		-----	1546		-----		-----
391		-----		-----	1556		-----		-----
399	ISO22854	6.25		-----	1569	ISO22854	7.33		-----
403	ISO22854	6.57		-----	1586	ISO22854	7.08		-----
420	ISO22854	7.02		-----	1613	D6839	7.08		-----
431		-----		-----	1631		-----		-----
440		-----		-----	1634		-----		-----
444		-----		-----	1635		-----		-----
445	ISO22854	7.22		-----	1636		-----		-----
447		-----		-----	1667		-----		-----
453		-----		-----	1677	D6839	6.86		-----
463		-----		-----	1710	ISO22854	7.21		-----
468		-----		-----	1720		-----		-----
485		-----		-----	1724		-----	W	-----
496	ISO22854	7.11		-----	1728		-----		-----
541		-----		-----	1740		-----		-----
631		-----		-----	1742		-----		-----
633		-----		-----	1753		-----		-----
671		-----		-----	1776		-----		-----
704	D6730	6.455		-----	1807		-----		-----
754	D6729	6.313		-----	1810		-----		-----
781	ISO22854	6.8		-----	1811		-----		-----
782		-----		-----	1849		-----		-----
785		-----		-----	1881		-----		-----
798		-----		-----	1936		-----		-----
824	D6839	7.0		-----	1937		-----		-----
846		-----		-----	1938		-----		-----
861	D6730	6.938		-----	1953		-----		-----
875		-----		-----	2129	D6730	5.85		-----
902		-----		-----	2130		-----		-----
904		-----		-----	2146		-----		-----
971		-----		-----	6005		-----		-----
974		-----		-----	6012		-----		-----
994	D6729	6.202		-----	6018		-----		-----
1006		-----		-----	6028		-----		-----
1011		-----		-----	6045		-----		-----
1026		-----		-----	6075		-----		-----
1033		-----		-----	6103		-----		-----
1059		-----		-----	6142		-----		-----
1079	ISO22854	7.19		-----	6170		-----		-----
1082		-----		-----	6191		-----		-----
1095		-----		-----	6192		-----		-----
1108	ISO22854	7.08		-----	6201	ISO22854	6.9		-----
1109	D6839	7.18		-----	6203	ISO22854	7.25		-----
1126	ISO22854	7.0	C	-----					

	normality	OK
	n	34
	outliers	0
	mean (n)	6.938
	st.dev. (n)	0.3999
	R(calc.)	1.120
	st.dev.(lit)	unknown
	R(lit)	unknown
Compare		
	R(iis17B04EN)	1.805

Lab 1126: first reported 8.00
Lab 1724: withdrawn test result; first reported 6.06
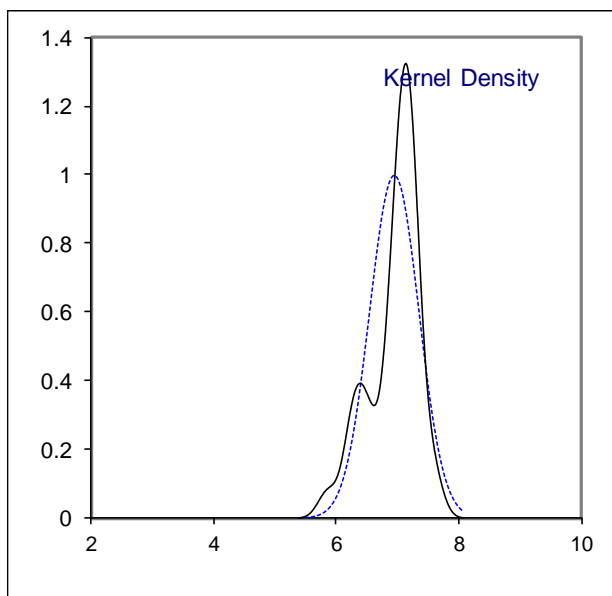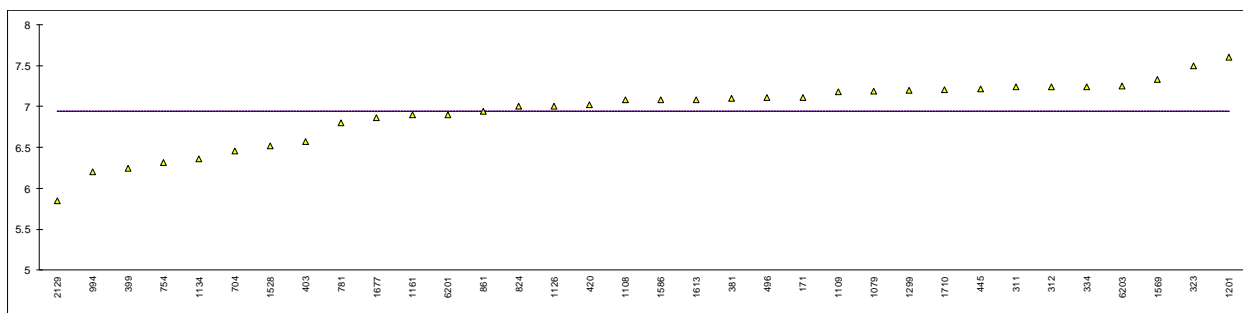
Determination of Oxidation Stability on sample #18200; results in minutes

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D525	869		-----	1134	D525	>900		-----
140	D525	>900		-----	1161	ISO7536	>900		-----
159		-----		-----	1167	ISO7536	>900		-----
171	D525	300	-f?	-----	1186		-----		-----
194		-----		-----	1191		-----		-----
225	D525	>360		-----	1194		-----		-----
237		-----		-----	1199		-----		-----
238		-----		-----	1201	ISO7536	>1000		-----
273		-----		-----	1212	ISO7536	>900		-----
311	D525	>900		-----	1237		-----		-----
312	D525	>900		-----	1259		-----		-----
323	ISO7536	>900		-----	1266		-----		-----
333		-----		-----	1275	IP40	>900		-----
334	ISO7536	>900		-----	1299	D525	>900		-----
335		-----		-----	1397		-----		-----
336	ISO7536	>900		-----	1402		-----		-----
337	ISO7536	>1200		-----	1406		-----		-----
338		-----		-----	1407		-----		-----
343	D525	<360	-f?	-----	1428	ISO7536	>900		-----
344		-----		-----	1443		-----		-----
353		-----		-----	1459		-----		-----
369		-----		-----	1491		-----		-----
370		-----		-----	1498		-----		-----
371	ISO7536	>900		-----	1528	ISO7536	>900		-----
372	ISO7536	>900		-----	1538	ISO7536	>900		-----
381		-----		-----	1546		-----		-----
391		-----		-----	1556	ISO7536	>900		-----
399		-----		-----	1569	ISO7536	>500		-----
403		-----		-----	1586		-----		-----
420	ISO7536	>600		-----	1613	D525	>360		-----
431		-----		-----	1631	ISO7536	>900		-----
440		-----		-----	1634		-----		-----
444		-----		-----	1635		-----		-----
445	IP40	>900		-----	1636	ISO7536	>900		-----
447	D525	>900		-----	1667		-----		-----
453	IP40	>1000		-----	1677	D525	>900		-----
463	D525	>900		-----	1710	ISO7536	>720		-----
468		-----		-----	1720		-----		-----
485		-----		-----	1724	D525	>1440		-----
496	ISO7536	>900		-----	1728	D525	>900		-----
541		-----		-----	1740		-----		-----
631	D525	985		-----	1742		-----		-----
633		-----		-----	1753		-----		-----
671		-----		-----	1776		-----		-----
704		-----		-----	1807	D525	>380		-----
754		-----		-----	1810		-----		-----
781	ISO7536	>900		-----	1811		-----		-----
782		-----		-----	1849	ISO7536	720		-----
785		-----		-----	1881		-----		-----
798		-----		-----	1936		-----		-----
824	D525	>900		-----	1937		-----		-----
846	GB/T8018	>900		-----	1938		-----		-----
861	D525	>900		-----	1953		-----		-----
875		-----		-----	2129	ISO7536	>900		-----
902		-----		-----	2130		-----		-----
904	ISO7536	360+		-----	2146		-----		-----
971		-----		-----	6005		-----		-----
974	D525	>900		-----	6012		-----		-----
994		-----		-----	6018		-----		-----
1006		-----		-----	6028		-----		-----
1011	ISO7536	>400		-----	6045		-----		-----
1026		-----		-----	6075		-----		-----
1033	IP40	>900		-----	6103		-----		-----
1059	ISO7536	>900		-----	6142		-----		-----
1079	ISO7536	>900		-----	6170		-----		-----
1082		-----		-----	6191		-----		-----
1095		-----		-----	6192		-----		-----
1108	ISO7536	1356		-----	6201	D525	>360		-----
1109	D525	>1320		-----	6203	ISO7536	>900		-----
1126		-----		-----					

	n	54
	mean (n)	>360

-f? = possibly a false negative test result?

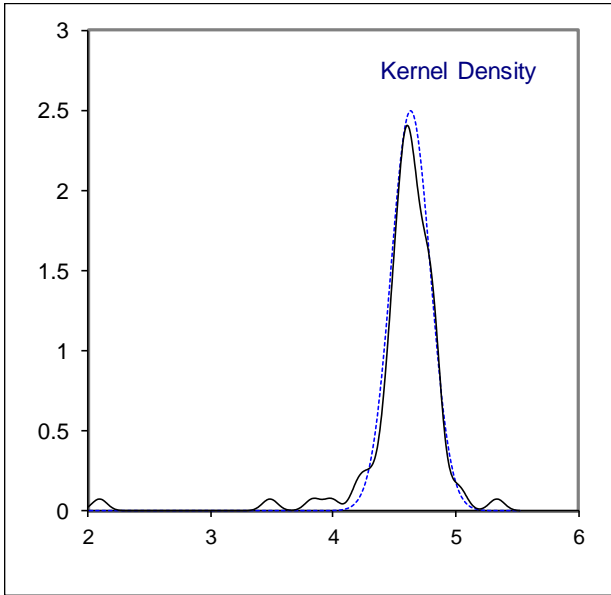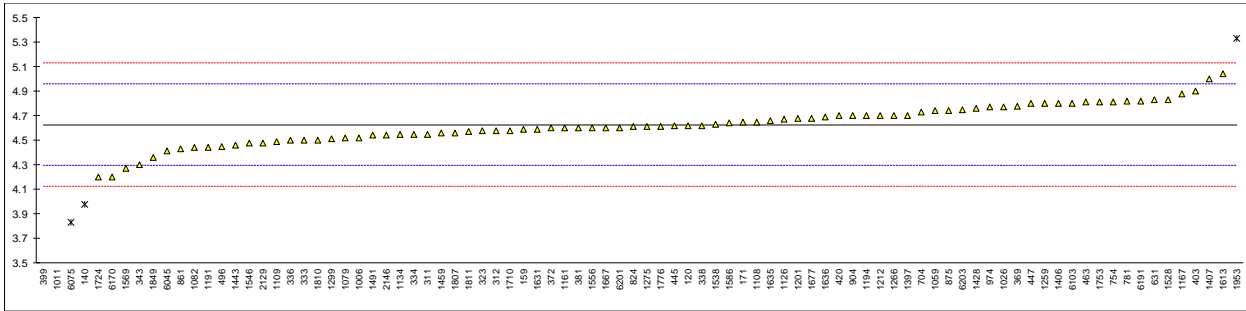## Determination of Methanol on sample #18200; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D5599	0		-----	1134	D6839	0		-----
140	D5599	0.00		-----	1161	ISO22854	<0,1		-----
159	D5599	-----		-----	1167	EN13132	<0.2		-----
171	ISO22854	<0.10		-----	1186		-----		-----
194		-----		-----	1191		0		-----
225		-----		-----	1194	D5845	0		-----
237		-----		-----	1199		-----		-----
238		-----		-----	1201	ISO22854	<0.1		-----
273		-----		-----	1212	EN13132	<0.1		-----
311	ISO22854	<0.01		-----	1237		-----		-----
312	ISO22854	<0.1		-----	1259	EN13132	-----		-----
323	ISO22854	<0.10		-----	1266	D5845	0.0		-----
333	ISO22854	-----		-----	1275	ISO22854	-----		-----
334	ISO22854	0		-----	1299	ISO22854	<0.01		-----
335		-----		-----	1397	EN13132	-----		-----
336	EN1601	<0.17		-----	1402		-----		-----
337		-----		-----	1406	In house	<LOQ		-----
338	EN1601	-----		-----	1407	In house	-----		-----
343	EN13132	<0,2		-----	1428	EN13132	<0,17		-----
344		-----		-----	1443		< 0.8		-----
353		-----		-----	1459	In house	-----		-----
369	EN13132	<0.17		-----	1491	D5845	-----		-----
370		-----		-----	1498		-----		-----
371		-----		-----	1528	ISO22854	-----		-----
372	EN13132	<0.2		-----	1538		<0,80		-----
381	EN13132	<0,17		-----	1546	EN1601	Below 0.5		-----
391		-----		-----	1556	ISO22854	0.02		-----
399	ISO22854	<0.01		-----	1569	ISO22854	Not detected		-----
403		-----		-----	1586	ISO22854	0		-----
420	ISO22854	<0,1		-----	1613	D6839	0.0		-----
431		-----		-----	1631	ISO22854	<0.8		-----
440		-----		-----	1634		-----		-----
444		-----		-----	1635		-----		-----
445	ISO22854	<0.01		-----	1636	EN13132	-----		-----
447	IP466	<0.2		-----	1667	EN13132	-----		-----
453		-----		-----	1677		0.02		-----
463	EN13132	0.13		-----	1710	ISO22854	0		-----
468		-----		-----	1720		-----		-----
485		-----		-----	1724	ISO22854	<0,17		-----
496	ISO22854	<0.01		-----	1728		-----		-----
541		-----		-----	1740		-----		-----
631	D5845	0.043		-----	1742		-----		-----
633		-----		-----	1753	EN13132	-----		-----
671		-----		-----	1776		<0,2		-----
704	D4815	N/D		-----	1807		<0.80		-----
754	D6729	-----		-----	1810	ISO22854	-----		-----
781	ISO22854	<0.01		-----	1811		0.0		-----
782		-----		-----	1849	ISO22854	-----		-----
785		-----		-----	1881		-----		-----
798		-----		-----	1936		-----		-----
824	D4815	<0.2		-----	1937		-----		-----
846	SH/T0663	<0.2		-----	1938		-----		-----
861	D4815	<0.2		-----	1953		0		-----
875	EN13132	-----		-----	2129	D6730	0.01		-----
902		-----		-----	2130		-----		-----
904	D4815	<0,2		-----	2146	ISO22854	<0,1		-----
971		-----		-----	6005		-----		-----
974	D4815	<0.20		-----	6012		-----		-----
994	D6729	<0.1		-----	6018		-----		-----
1006		<0.1		-----	6028	ISO22854	-----		-----
1011	ISO22854	-----		-----	6045	D4815	-----		-----
1026	ISO22854	-----		-----	6075	EN13132	-----		-----
1033		-----		-----	6103	D5845	0.0		-----
1059	ISO22854	<0,20		-----	6142		-----		-----
1079	ISO22854	0		-----	6170		-----		-----
1082		0		-----	6191	In house	-----		-----
1095	ISO22854	<0.80		-----	6192		-----		-----
1108	ISO22854	-----		-----	6201	ISO22854	<0.1		-----
1109	D6839	0.00		-----	6203	ISO22854	0		-----
1126		<0.1		-----					

	n	57
	mean (n)	<0.2

Determination of Ethanol on sample #18200; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D5599	4.62		-0.04	1134	D6839	4.55		-0.46
140	D5599	3.98	R(0.05)	-3.87	1161	ISO22854	4.60		-0.16
159	D5599	4.59		-0.22	1167	EN13132	4.88		1.52
171	ISO22854	4.65		0.14	1186		-----		-----
194		-----		-----	1191		4.44		-1.12
225		-----		-----	1194	D5845	4.7		0.44
237		-----		-----	1199		-----		-----
238		-----		-----	1201	ISO22854	4.68		0.32
273		-----		-----	1212	EN13132	4.7		0.44
311	ISO22854	4.55		-0.46	1237		-----		-----
312	ISO22854	4.58		-0.28	1259	EN13132	4.8		1.04
323	ISO22854	4.58		-0.28	1266	D5845	4.7		0.44
333	ISO22854	4.5		-0.76	1275	ISO22854	4.61		-0.10
334	ISO22854	4.55		-0.46	1299	ISO22854	4.51		-0.70
335		-----		-----	1397	EN13132	4.7		0.44
336	EN1601	4.5		-0.76	1402		-----		-----
337		-----		-----	1406	In house	4.8		1.04
338	EN1601	4.62		-0.04	1407	In house	5.0		2.23
343	EN13132	4.3		-1.96	1428	EN13132	4.76		0.80
344		-----		-----	1443		4.46		-1.00
353		-----		-----	1459	In house	4.56		-0.40
369	EN13132	4.78		0.92	1491	D5845	4.54		-0.52
370		-----		-----	1498		-----		-----
371		-----		-----	1528	ISO22854	4.83		1.22
372	EN13132	4.6		-0.16	1538		4.63		0.02
381	EN13132	4.6		-0.16	1546	EN1601	4.475		-0.91
391		-----		-----	1556	ISO22854	4.60		-0.16
399	ISO22854	2.09	R(0.01)	-15.19	1569	ISO22854	4.27	C	-2.14
403		4.90		1.64	1586	ISO22854	4.64		0.08
420	ISO22854	4.7		0.44	1613	D6839	5.04		2.47
431		-----		-----	1631	ISO22854	4.59		-0.22
440		-----		-----	1634		-----		-----
444		-----		-----	1635		4.66		0.20
445	ISO22854	4.62		-0.04	1636	EN13132	4.69		0.38
447	IP466	4.8		1.04	1667	EN13132	4.6		-0.16
453		-----		-----	1677		4.68		0.32
463	EN13132	4.81		1.10	1710	ISO22854	4.58		-0.28
468		-----		-----	1720		-----		-----
485		-----		-----	1724	ISO22854	4.2		-2.56
496	ISO22854	4.45		-1.06	1728		-----		-----
541		-----		-----	1740		-----		-----
631	D5845	4.83		1.22	1742		-----		-----
633		-----		-----	1753	EN13132	4.81		1.10
671		-----		-----	1776		4.61		-0.10
704	D4815	4.729		0.61	1807		4.56		-0.40
754	D6729	4.812		1.11	1810	ISO22854	4.5		-0.76
781	ISO22854	4.82		1.16	1811		4.57		-0.34
782		-----		-----	1849	ISO22854	4.36		-1.60
785		-----		-----	1881		-----		-----
798		-----		-----	1936		-----		-----
824	D4815	4.61		-0.10	1937		-----		-----
846	SH/T0663	-----		-----	1938		-----		-----
861	D4815	4.43		-1.18	1953		5.33	R(0.01)	4.21
875	EN13132	4.74	C	0.68	2129	D6730	4.48		-0.88
902		-----		-----	2130		-----		-----
904	D4815	4.7		0.44	2146	ISO22854	4.54		-0.52
971		-----		-----	6005		-----		-----
974	D4815	4.77		0.86	6012		-----		-----
994	D6729	-----		-----	6018		-----		-----
1006		4.52		-0.64	6028	ISO22854	-----		-----
1011	ISO22854	3.48	R(0.01)	-6.87	6045	D4815	4.41		-1.30
1026	ISO22854	4.77		0.86	6075	EN13132	3.83	R(0.01)	-4.77
1033		-----		-----	6103	D5845	4.8		1.04
1059	ISO22854	4.74		0.68	6142		-----		-----
1079	ISO22854	4.52		-0.64	6170		4.2		-2.56
1082		4.44		-1.12	6191	In house	4.82		1.16
1095	ISO22854	<0.80	-f?	<-22.91	6192		-----		-----
1108	ISO22854	4.65	C	0.14	6201	ISO22854	4.6		-0.16
1109	D6839	4.49		-0.82	6203	ISO22854	4.75		0.74
1126		4.67		0.26					

normality	OK
n	83
outliers	5
mean (n)	4.6268
st.dev. (n)	0.15998
R(calc.)	0.4479
st.dev.(ISO22854-A:16)	0.16701
R(ISO22854-A:16)	0.4676

Lab 875: first reported 5.1
Lab 1108: first reported 3.88
Lab 1569: first reported 2.76
-f? = possibly a false negative test result?

Kernel Density

Determination of Ethers (C5 or more C atoms) on sample #18200; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D5599	0	ex	-16.89	1134	D6839	2.49		-0.06
140	D5599	0.00	R(0.01)	-16.89	1161	ISO22854	2.55		0.34
159	D5599	-----		-----	1167	EN13132	2.56		0.41
171	ISO22854	2.43		-0.47	1186		-----		-----
194		-----		-----	1191		-----		-----
225		-----		-----	1194	D5845	-----		-----
237		-----		-----	1199		-----		-----
238		-----		-----	1201	ISO22854	-----		-----
273		-----		-----	1212	EN13132	2.5		0.01
311	ISO22854	2.46		-0.26	1237		-----		-----
312	ISO22854	2.48		-0.13	1259	EN13132	-----		-----
323	ISO22854	2.45		-0.33	1266	D5845	-----		-----
333	ISO22854	-----		-----	1275	ISO22854	-----		-----
334	ISO22854	2.46		-0.26	1299	ISO22854	2.51		0.07
335		-----		-----	1397	EN13132	-----		-----
336	EN1601	2.5		0.01	1402		-----		-----
337		-----		-----	1406	In house	2.8		2.03
338	EN1601	-----		-----	1407	In house	-----		-----
343	EN13132	3.27	C,R(0.01)	5.21	1428	EN13132	2.52		0.14
344		-----		-----	1443		2.55		0.34
353		-----		-----	1459	In house	-----		-----
369	EN13132	2.77		1.83	1491	D5845	-----		-----
370		-----		-----	1498		-----		-----
371		-----		-----	1528	ISO22854	2.47		-0.20
372	EN13132	2.5		0.01	1538		-----		-----
381	EN13132	2.5		0.01	1546	EN1601	2.33		-1.14
391		-----		-----	1556	ISO22854	2.49		-0.06
399	ISO22854	2.94	R(0.05)	2.98	1569	ISO22854	2.49		-0.06
403		-----		-----	1586	ISO22854	2.42		-0.54
420	ISO22854	2.52		0.14	1613	D6839	2.55		0.34
431		-----		-----	1631	ISO22854	-----		-----
440		-----		-----	1634		-----		-----
444		-----		-----	1635		-----		-----
445	ISO22854	2.52		0.14	1636	EN13132	2.39		-0.74
447	IP466	2.5		0.01	1667	EN13132	-----		-----
453		-----		-----	1677		-----		-----
463	EN13132	2.61		0.75	1710	ISO22854	2.47		-0.20
468		-----		-----	1720		-----		-----
485		-----		-----	1724	ISO22854	-----		-----
496	ISO22854	2.49		-0.06	1728		-----		-----
541		-----		-----	1740		-----		-----
631	D5845	-----		-----	1742		-----		-----
633		-----		-----	1753	EN13132	2.50		0.01
671		-----		-----	1776		2.50		0.01
704	D4815	2.460		-0.26	1807		2.3		-1.35
754	D6729	2.761		1.77	1810	ISO22854	-----		-----
781	ISO22854	2.46		-0.26	1811		-----		-----
782		-----		-----	1849	ISO22854	-----		-----
785		-----		-----	1881		-----		-----
798		-----		-----	1936		-----		-----
824	D4815	2.47		-0.20	1937		-----		-----
846	SH/T0663	-----		-----	1938		-----		-----
861	D4815	2.60		0.68	1953		0	ex	-16.89
875	EN13132	-----		-----	2129	D6730	2.23		-1.82
902		-----		-----	2130		-----		-----
904	D4815	2.7		1.36	2146	ISO22854	2.55		0.34
971		-----		-----	6005		-----		-----
974	D4815	2.48		-0.13	6012		-----		-----
994	D6729	-----		-----	6018		-----		-----
1006		-----		-----	6028	ISO22854	-----		-----
1011	ISO22854	-----		-----	6045	D4815	-----		-----
1026	ISO22854	-----		-----	6075	EN13132	-----		-----
1033		-----		-----	6103	D5845	-----		-----
1059	ISO22854	2.42		-0.54	6142		-----		-----
1079	ISO22854	2.40		-0.67	6170		-----		-----
1082		-----		-----	6191	In house	-----		-----
1095	ISO22854	2.28		-1.48	6192		-----		-----
1108	ISO22854	2.51		0.07	6201	ISO22854	<0.1	-f?	<-16.22
1109	D6839	-----		-----	6203	ISO22854	2.51		0.07
1126		2.55		0.34					

normality	not OK
n	48
outliers	3 +2ex
mean (n)	2.4992
st.dev. (n)	0.10852
R(calc.)	0.3039
st.dev.(ISO22854-A:16)	0.14794
R(ISO22854-A:16)	0.4142

Lab 343: first reported 3.5
ex = test result excluded, as zero is not a real test result
-f? = possibly a false negative test result?
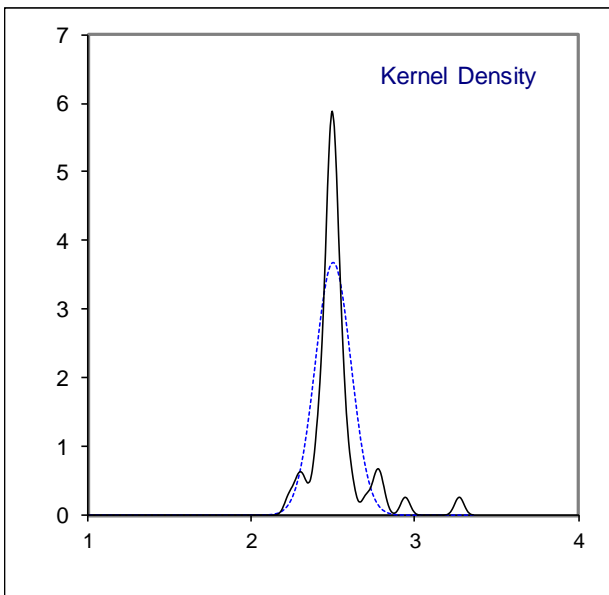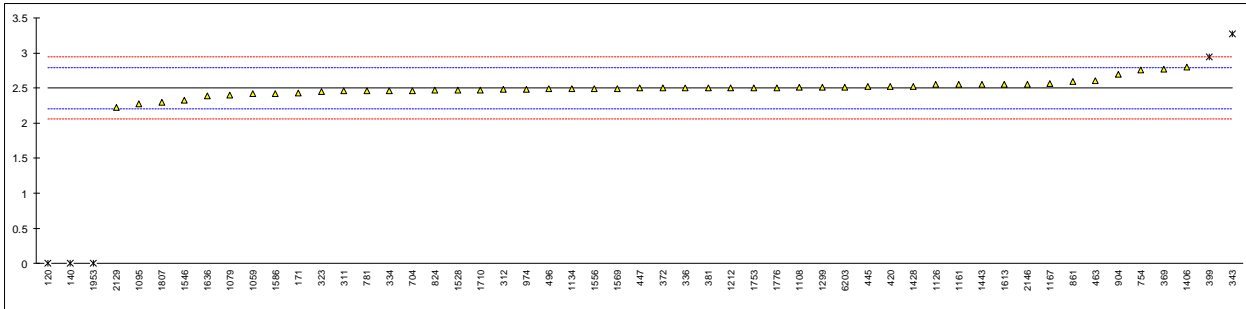
Determination of MTBE on sample #18200; results in %V/V

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D5599	2.51		0.31	1134	D6839	2.42		-0.29
140	D5599	2.07	R(0.05)	-2.67	1161	ISO22854	2.52		0.38
159	D5599	2.47		0.04	1167	EN13132	2.53		0.45
171	ISO22854	2.23		-1.58	1186		-----		-----
194		-----		-----	1191		2.47		0.04
225		-----		-----	1194	D5845	2.6		0.92
237		-----		-----	1199		-----		-----
238		-----		-----	1201	ISO22854	-----		-----
273		-----		-----	1212	EN13132	2.5		0.25
311	ISO22854	2.43		-0.23	1237		-----		-----
312	ISO22854	2.48		0.11	1259	EN13132	2.5		0.25
323	ISO22854	2.45		-0.09	1266	D5845	2.5		0.25
333	ISO22854	2.57		0.72	1275	ISO22854	2.45		-0.09
334	ISO22854	2.43		-0.23	1299	ISO22854	2.42		-0.29
335		-----		-----	1397	EN13132	2.4		-0.43
336	EN1601	2.5		0.25	1402		-----		-----
337		-----		-----	1406	In house	2.2		-1.79
338	EN1601	2.46		-0.02	1407	In house	-----		-----
343	EN13132	2.3		-1.11	1428	EN13132	2.518		0.37
344		-----		-----	1443		2.52		0.38
353		-----		-----	1459	In house	-----		-----
369	EN13132	2.66		1.33	1491	D5845	2.55		0.59
370		-----		-----	1498		-----		-----
371		-----		-----	1528	ISO22854	2.47		0.04
372	EN13132	2.5		0.25	1538		2.43		-0.23
381	EN13132	2.4		-0.43	1546	EN1601	2.33		-0.90
391		-----		-----	1556	ISO22854	2.46		-0.02
399	ISO22854	2.94	R(0.01)	3.23	1569	ISO22854	2.46		-0.02
403		2.52		0.38	1586	ISO22854	2.38		-0.57
420	ISO22854	2.49		0.18	1613	D6839	2.55		0.59
431		-----		-----	1631	ISO22854	2.47		0.04
440		-----		-----	1634		-----		-----
444		-----		-----	1635		2.49		0.18
445	ISO22854	2.52		0.38	1636	EN13132	2.39		-0.50
447	IP466	2.5		0.25	1667	EN13132	2.4		-0.43
453		-----		-----	1677		2.49		0.18
463	EN13132	2.61		0.99	1710	ISO22854	2.44		-0.16
468		-----		-----	1720		-----		-----
485		-----		-----	1724	ISO22854	2.7		1.60
496	ISO22854	2.43		-0.23	1728		-----		-----
541		-----		-----	1740		-----		-----
631	D5845	2.50		0.25	1742		-----		-----
633		-----		-----	1753	EN13132	2.50		0.25
671		-----		-----	1776		2.45		-0.09
704	D4815	2.460		-0.02	1807		<0.80	-f?	<-11.27
754	D6729	2.761	C	2.02	1810	ISO22854	2.4		-0.43
781	ISO22854	2.43		-0.23	1811		2.56		0.65
782		-----		-----	1849	ISO22854	2.46		-0.02
785		-----		-----	1881		-----		-----
798		-----		-----	1936		-----		-----
824	D4815	2.47		0.04	1937		-----		-----
846	SH/T0663	-----		-----	1938		-----		-----
861	D4815	2.50		0.25	1953		0	ex	-16.69
875	EN13132	2.39		-0.50	2129	D6730	2.23		-1.58
902		-----		-----	2130		-----		-----
904	D4815	2.5		0.25	2146	ISO22854	2.46		-0.02
971		-----		-----	6005		-----		-----
974	D4815	2.48		0.11	6012		-----		-----
994	D6729	2.550		0.59	6018		-----		-----
1006		2.56		0.65	6028	ISO22854	-----		-----
1011	ISO22854	2.50		0.25	6045	D4815	2.35		-0.77
1026	ISO22854	2.23		-1.58	6075	EN13132	2.62		1.06
1033		-----		-----	6103	D5845	2.5		0.25
1059	ISO22854	2.42		-0.29	6142		-----		-----
1079	ISO22854	2.37		-0.63	6170		2.4		-0.43
1082		2.49		0.18	6191	In house	1.95	R(0.01)	-3.48
1095	ISO22854	2.22		-1.65	6192		-----		-----
1108	ISO22854	2.48		0.11	6201	ISO22854	2.3		-1.11
1109	D6839	2.45		-0.09	6203	ISO22854	2.48		0.11
1126		2.52		0.38					

normality	suspect
n	82
outliers	3 +1ex
mean (n)	2.4635
st.dev. (n)	0.09822
R(calc.)	0.2750
st.dev.(ISO22854-A:16)	0.14762
R(ISO22854-A:16)	0.4133

Lab 754: first reported test result as TAME
ex = test result excluded, as zero is not a real test result
-f? = possibly a false negative test result?
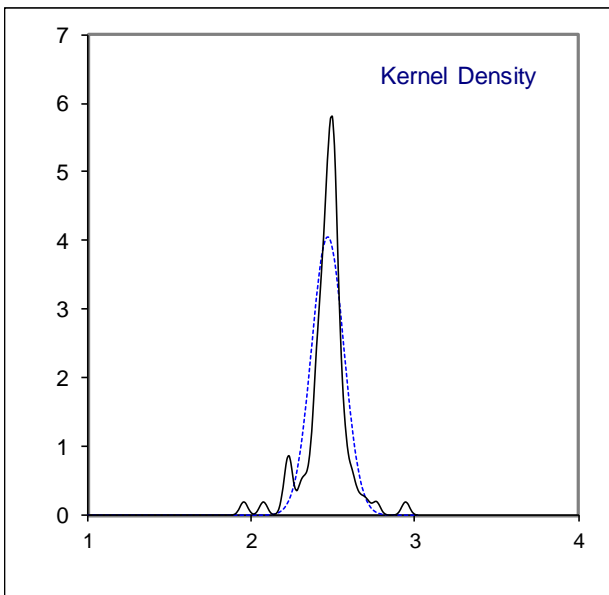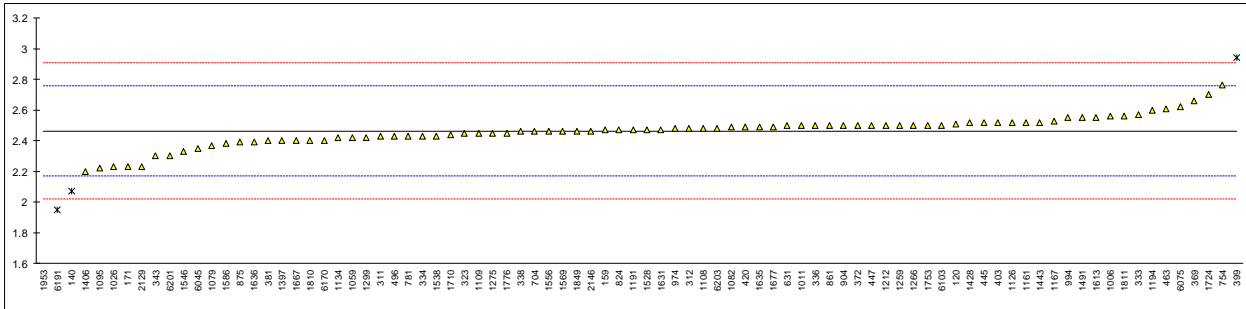
Determination of other oxygenates on sample #18200; results in %V/V

lab	method	i-PrOH	i-BuOH	t-buOH	DIPE	ETBE	TAME	Sum of Other Oxy.	
120	D5599	0	0	0	0	0	0	0	C
140	D5599	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
159	D5599	-----	-----	-----	-----	-----	-----	-----	
171	ISO22854	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
194		-----	-----	-----	-----	-----	-----	-----	
225		-----	-----	-----	-----	-----	-----	-----	
237		-----	-----	-----	-----	-----	-----	-----	
238		-----	-----	-----	-----	-----	-----	-----	
273		-----	-----	-----	-----	-----	-----	-----	
311	ISO22854	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	0.04	
312	ISO22854	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
323	ISO22854	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
333	ISO22854	-----	-----	-----	-----	<0.1	-----	-----	
334	ISO22854	0	0	0	0	0.03	0	0	
335		-----	-----	-----	-----	-----	-----	-----	
336	EN1601	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	
337		-----	-----	-----	-----	-----	-----	-----	
338	EN1601	-----	-----	-----	-----	-----	-----	-----	
343	EN13132	<0,2	<0,2	<0,2	-----	<0,2	0.94 C	<0,2	
344		-----	-----	-----	-----	-----	-----	-----	
353		-----	-----	-----	-----	-----	-----	-----	
369	EN13132	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	
370		-----	-----	-----	-----	-----	-----	-----	
371		-----	-----	-----	-----	-----	-----	-----	
372	EN13132	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
381	EN13132	<0,17	<0,17	<0,17	<0,17	<0,17	<0,17	<0,17	
391		-----	-----	-----	-----	-----	-----	-----	
399	ISO22854	<0.01	<0.01	<0.01	<0.01	<0.01	0.91	0.05	
403		-----	0.05	-----	-----	-----	-----	-----	
420	ISO22854	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	
431		-----	-----	-----	-----	-----	-----	-----	
440		-----	-----	-----	-----	-----	-----	-----	
444		-----	-----	-----	-----	-----	-----	-----	
445	ISO22854	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	0.06	
447	IP466	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
453		-----	-----	-----	-----	-----	-----	-----	
463	EN13132	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-----	
468		-----	-----	-----	-----	-----	-----	-----	
485		-----	-----	-----	-----	-----	-----	-----	
496	ISO22854	<0.01	<0.01	<0.01	<0.01	0.06	<0.01	<0.01	
541		-----	-----	-----	-----	-----	-----	-----	
631	D5845	0	0	0	0	0	0	7.218	
633		-----	-----	-----	-----	-----	-----	-----	
671		-----	-----	-----	-----	-----	-----	-----	
704	D4815	N/D	N/D	N/D	N/D	N/D	N/D	N/D	
754	D6729	-----	-----	-----	-----	-----	-----	-----	
781	ISO22854	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	0.04	
782		-----	-----	-----	-----	-----	-----	-----	
785		-----	-----	-----	-----	-----	-----	-----	
798		-----	-----	-----	-----	-----	-----	-----	
824	D4815	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
846	SH/T0663	-----	-----	-----	-----	-----	-----	-----	
861	D4815	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
875	EN13132	-----	-----	-----	-----	-----	-----	-----	
902		-----	-----	-----	-----	-----	-----	-----	
904	D4815	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	-----	
971		-----	-----	-----	-----	-----	-----	-----	
974	D4815	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-----	
994	D6729	<0.1	<0.1	<0.1	-----	-----	<0.1	-----	
1006		<0.1	<0.1	-----	<0.1	<0.1	<0.1	-----	
1011	ISO22854	-----	-----	-----	<0.80	<0.80	<0.80	-----	
1026	ISO22854	-----	-----	-----	-----	0.31	-----	-----	
1033		-----	-----	-----	-----	-----	-----	-----	
1059	ISO22854	<0,20	<0,20	<0,20	<0,20	<0,20	<0,20	<0,20	
1079	ISO22854	0	0	0.04	0	0.03	0	0	
1082		-----	-----	-----	-----	-----	-----	-----	
1095	ISO22854	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	
1108	ISO22854	-----	-----	0.04	-----	0.03	-----	-----	
1109	D6839	0.00	0.00	0.00	0.00	0.06	0.00	-----	
1126		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
1134	D6839	0	0	0.04	0.03	0	0	0	
1161	ISO22854	<0,10	<0,10	<0,10	<0,1	<0,1	<0,1	<0,1	
1167	EN13132	<0.2	<0.2	<0.2	-----	<0.2	-----	<0.2	
1186		-----	-----	-----	-----	-----	-----	-----	
1191		0	0	0	-----	0	0.03	-----	
1194	D5845	-----	-----	0	0.7	0	0.7	-----	

lab	method	i-PrOH	i-BuOH	t-buOH	DIPE	ETBE	TAME	Sum of Other Oxy.
1199		-----	-----	-----	-----	-----	-----	-----
1201	ISO22854	<0.01	0.05	-----	W -----	-----	-----	0.01
1212	EN13132	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
1237		-----	-----	-----	-----	-----	-----	-----
1259	EN13132	-----	-----	-----	-----	-----	-----	-----
1266	D5845	-----	-----	-----	-----	-----	-----	-----
1275	ISO22854	0.06	-----	-----	-----	0.03	-----	-----
1299	ISO22854	<0.01	<0.01	<0.01	<0.01	0.06	<0.01	<0.01
1397	EN13132	-----	-----	-----	-----	<0,2	-----	-----
1402		-----	-----	-----	-----	-----	-----	-----
1406	In house	-----	-----	<LOQ	<LOQ	0.6	<LOQ	-----
1407	In house	-----	-----	-----	-----	-----	-----	-----
1428	EN13132	<0,17	<0,17	<0,17	-----	<0,17	-----	<0,17
1443		< 0.8	< 0.8	<0.8	< 0.8	< 0.8	< 0.8	< 0.8
1459	In house	-----	-----	-----	-----	0.0	-----	-----
1491	D5845	-----	-----	-----	-----	-----	-----	-----
1498		-----	-----	-----	-----	-----	-----	-----
1528	ISO22854	-----	-----	-----	-----	-----	-----	-----
1538		<0,80	<0,80	<0,80	<0,80	<0,80	<0,80	-----
1546	EN1601	Below 0.5	Below 0.5	Below 0.5	-----	Below 0.4	Below 0.3	-----
1556	ISO22854	<0,20	<0,20	<0,20	<0,20	<0,20	0.03	<0,20
1569	ISO22854	Not detected	0.21	Not detected	Not detected	0.03	-----	0.06
1586	ISO22854	0	0	0	0	0.04	0	0.11
1613	D6839	-----	0.0	0.0	0.0	0.0	0.0	-----
1631	ISO22854	<0.8	<0.8	<0.8	-----	-----	-----	<0.8
1634		-----	-----	-----	-----	-----	-----	-----
1635		-----	-----	-----	-----	-----	-----	-----
1636	EN13132	-----	-----	-----	-----	-----	-----	-----
1667	EN13132	-----	-----	-----	-----	-----	-----	-----
1677		<0,01	<0,01	0.01	<0,01	<0,01	<0,01	<0,01
1710	ISO22854	0	0	0	0	0.03	0	-----
1720		-----	-----	-----	-----	-----	-----	-----
1724	ISO22854	<0,17	<0,17	<0,17	<0,17	<0,17	<0,17	-----
1728		-----	-----	-----	-----	-----	-----	-----
1740		-----	-----	-----	-----	-----	-----	-----
1742		-----	-----	-----	-----	-----	-----	-----
1753	EN13132	-----	-----	-----	-----	-----	-----	-----
1776		-----	-----	-----	-----	0.03	-----	<0,2
1807		<0.80	<0.80	<0.80	<0.80	2.26	<0.80	<0.80
1810	ISO22854	-----	-----	-----	-----	-----	-----	-----
1811		-----	-----	-----	-----	0.0	-----	-----
1849	ISO22854	-----	-----	-----	-----	-----	-----	-----
1881		-----	-----	-----	-----	-----	-----	-----
1936		-----	-----	-----	-----	-----	-----	-----
1937		-----	-----	-----	-----	-----	-----	-----
1938		-----	-----	-----	-----	-----	-----	-----
1953		0	0	0	0	0	0	7.11
2129	D6730	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2130		-----	-----	-----	-----	-----	-----	-----
2146	ISO22854	-----	-----	-----	<0,1	<0,1	<0,1	-----
6005		-----	-----	-----	-----	-----	-----	-----
6012		-----	-----	-----	-----	-----	-----	-----
6018		-----	-----	-----	-----	-----	-----	-----
6028	ISO22854	-----	-----	-----	-----	-----	-----	-----
6045	D4815	-----	-----	-----	-----	-----	-----	-----
6075	EN13132	-----	-----	-----	-----	-----	-----	-----
6103	D5845	-----	-----	-----	0.2	0.0	0.0	-----
6142		-----	-----	-----	-----	-----	-----	-----
6170		-----	-----	-----	-----	-----	-----	-----
6191	In house	-----	-----	-----	-----	-----	-----	-----
6192		-----	-----	-----	-----	-----	-----	-----
6201	ISO22854	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
6203	ISO22854	0	0.05	0	0	0.03	0	0

Lab 120: first reported 7.13 for Other Oxygenates
Lab 343: first reported 1.2 for TAME
Lab 1201: withdrawn test result for t-buOH; first reported 2.44

Determination of Oxygen Content on sample #18200; results in %M/M

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D5599	2.18		-0.18	1134	D6839	2.16		-0.36
140	D5599	1.84	R(0.01)	-3.25	1161	ISO22854	2.20		0.00
159	D5599	2.19		-0.09	1167	EN13132	2.344		1.30
171	ISO22854	2.20		0.00	1186		-----		-----
194		-----		-----	1191	ISO22854	2.13		-0.64
225		-----		-----	1194	D5845	2.4		1.80
237		-----		-----	1199		-----		-----
238		-----		-----	1201	ISO22854	2.21		0.09
273		-----		-----	1212	EN13132	2.2		0.00
311	ISO22854	2.16		-0.36	1237		-----		-----
312	ISO22854	2.19		-0.09	1259	EN13132	2.25		0.45
323	ISO22854	2.15		-0.45	1266	EN1601	2.4		1.80
333	EN22854	2.18		-0.18	1275	ISO22854	2.19		-0.09
334	EN22854	2.17		-0.27	1299	ISO22854	2.14		-0.54
335		-----		-----	1397	EN13132	2.20		0.00
336	EN1601	2.14		-0.54	1402		-----		-----
337		-----		-----	1406	In house	2.27		0.63
338	EN1601	2.18		-0.18	1407		-----		-----
343	EN13132	2.25		0.45	1428	EN13132	2.25		0.45
344		-----		-----	1443	EN22854	2.11		-0.82
353		-----		-----	1459		-----		-----
369	EN13132	2.30		0.90	1491	D5845	2.2		0.00
370		-----		-----	1498		-----		-----
371		-----		-----	1528	ISO22854	2.27		0.63
372	EN13132	2.18		-0.18	1538	ISO22854	2.21		0.09
381	EN13132	2.18		-0.18	1546	EN1601	2.10		-0.91
391		-----		-----	1556	ISO22854	2.20		0.00
399	ISO22854	1.49	R(0.01)	-6.42	1569	ISO22854	2.04	C	-1.45
403	ISO22854	2.29		0.81	1586	ISO22854	2.21		0.09
420	ISO22854	2.24		0.36	1613	D6839	2.24		0.36
431		-----		-----	1631	ISO22854	2.18		-0.18
440		-----		-----	1634		-----		-----
444		-----		-----	1635	ISO22854	2.20		0.00
445	ISO22854	2.21		0.09	1636	EN13132	2.19		-0.09
447	IP466	2.22		0.18	1667		-----		-----
453		-----		-----	1677	EN22854	2.224		0.21
463	EN13132	2.34		1.26	1710	ISO22854	2.18		-0.18
468		-----		-----	1720		-----		-----
485		-----		-----	1724	ISO22854	2.08		-1.09
496	ISO22854	2.12		-0.73	1728		-----		-----
541		-----		-----	1740		-----		-----
631	D5845	2.20		0.00	1742	D5622	2.29		0.81
633		-----		-----	1753	EN13132	2.28		0.72
671		-----		-----	1776	ISO22854	2.19		-0.09
704	D4815	2.140		-0.54	1807	ISO22854	2.08		-1.09
754		-----		-----	1810	ISO22854	2.15		-0.45
781	ISO22854	2.26		0.54	1811	ISO22854	2.19		-0.09
782		-----		-----	1849	ISO22854	2.10		-0.91
785		-----		-----	1881		-----		-----
798		-----		-----	1936		-----		-----
824	D4815	2.19		-0.09	1937		-----		-----
846	SH/T0663	2.32		1.08	1938		-----		-----
861	D4815	2.21		0.09	1953	In house	2.42		1.98
875		-----		-----	2129	D6730	2.096		-0.94
902		-----		-----	2130		-----		-----
904	EN22854	2.24		0.36	2146	ISO22854	2.18		-0.18
971		-----		-----	6005		-----		-----
974	D4815	2.24		0.36	6012	D5845	2.15		-0.45
994		-----		-----	6018		-----		-----
1006	D4815	2.12		-0.73	6028		-----		-----
1011		-----		-----	6045		-----		-----
1026		-----		-----	6075	EN13132	1.91	R(0.05)	-2.62
1033		-----		-----	6103	D6730	2.85	R(0.01)	5.87
1059	ISO22854	2.24		0.36	6142		-----		-----
1079	ISO22854	2.15		-0.45	6170	EN13132	2.07		-1.18
1082	EN22854	2.14		-0.54	6191		-----		-----
1095	ISO22854	<1.50	-f?	<-6.33	6192		-----		-----
1108	ISO22854	2.20	C	0.00	6201	ISO22854	2.15		-0.45
1109	D6839	2.14		-0.54	6203	ISO22854	2.24		0.36
1126	EN22854	2.20		0.00					

normality	suspect
n	78
outliers	4
mean (n)	2.2003
st.dev. (n)	0.07334
R(calc.)	0.2053
st.dev.(ISO22854-A:16)	0.11071
R(ISO22854-A:16)	0.31

Lab 1108: first reported 1.92
Lab 1569: first reported 1.56
-f? = possibly a false negative test result?
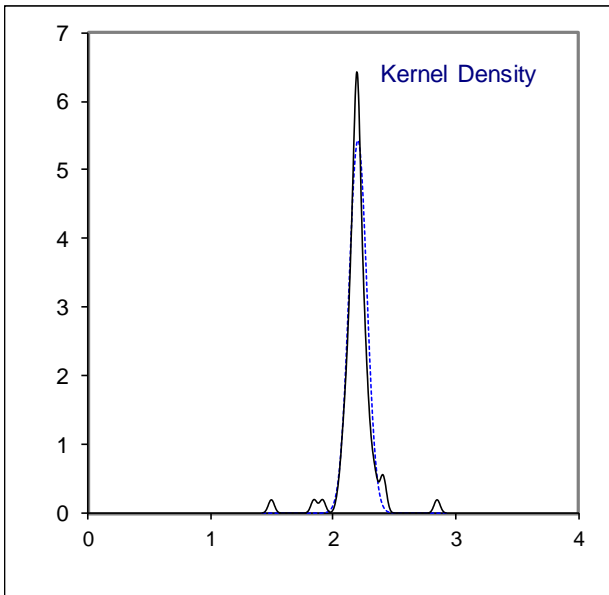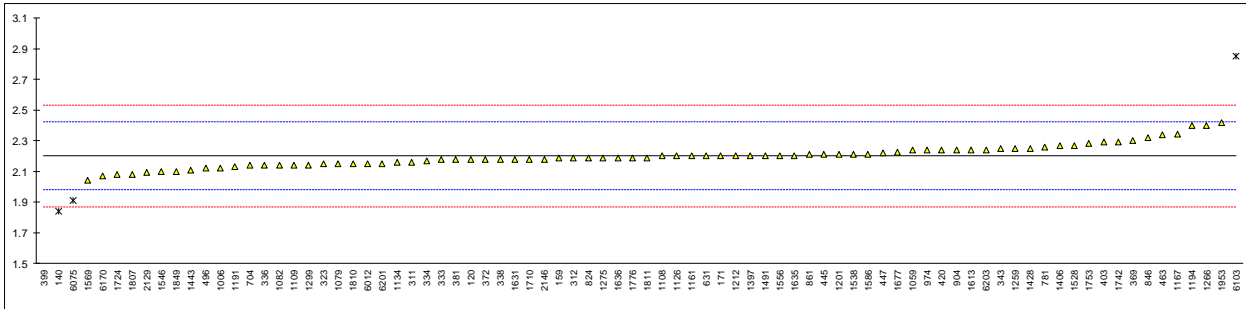
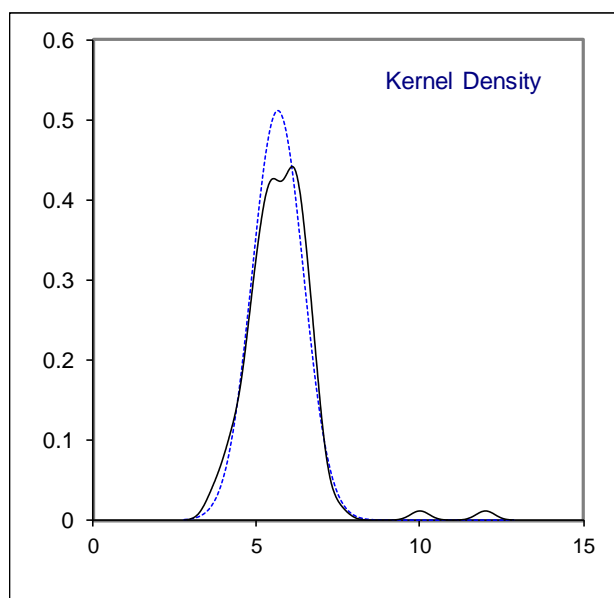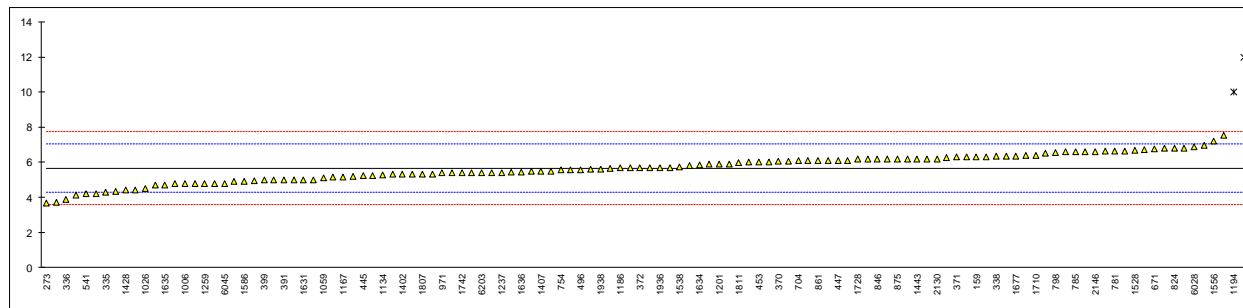## Determination of Sulphur on sample #18200; results in mg/kg

lab	method	value	mark	z(targ)	lab	method	value	mark	z(targ)
120	D2622	5.8	C	0.19	1134	IP490	5.28		-0.55
140	D2622	6.2		0.77	1161	ISO20846	5.66		-0.01
159	D5453	6.3		0.91	1167	ISO20846	5.16		-0.73
171	D5453	4.7		-1.39	1186	D5453	5.68		0.02
194		-----		-----	1191	ISO20846	5.3		-0.53
225		-----		-----	1194	D7220/IP532	10.0	R(0.01)	6.22
237		-----		-----	1199		-----		-----
238		-----		-----	1201	ISO20846	5.9		0.34
273	D5453	3.66		-2.88	1212	ISO20846	6.09		0.61
311	ISO20846	6.1		0.62	1237	ISO20846	5.42		-0.35
312	ISO20846	6.06		0.57	1259	ISO20846	4.8		-1.24
323	ISO20846	6.2		0.77	1266	ISO20846	5.5		-0.24
333	ISO20846	5.7		0.05	1275	IP490	6.59		1.33
334	ISO20846	4.9		-1.10	1299	ISO20846	6.4		1.05
335	ISO20846	4.3		-1.96	1397	ISO20846	6.2		0.77
336	ISO20846	3.9		-2.53	1402	IP490	5.3		-0.53
337		-----		-----	1406	ISO20846	5.0		-0.96
338	ISO20846	6.33		0.95	1407	ISO20846	5.5		-0.24
343	ISO20846	4.8		-1.24	1428	ISO20846	4.4		-1.82
344	D5453	4.953		-1.02	1443	ISO20884	6.2		0.77
353	IP490	3.71		-2.81	1459	ISO20884	6.2		0.77
369	ISO20846	6.26		0.85	1491	ISO20846	5.31		-0.51
370	ISO20846	6.05		0.55	1498	D5453	5.9		0.34
371	ISO20846	6.29		0.90	1528	ISO20884	6.69		1.47
372	ISO20846	5.7		0.05	1538	ISO14596	5.75		0.12
381	ISO20846	5.7		0.05	1546	ISO20846	4.8		-1.24
391	ISO20846	5.0		-0.96	1556	ISO20884	7.2		2.20
399	D5453	4.99		-0.97	1569	ISO20846	5.3		-0.53
403	ISO20846	5.58		-0.12	1586	ISO20846	4.9		-1.10
420	ISO20846	6.95		1.84	1613	D4294	<20	C	-----
431		-----		-----	1631	ISO20846	5.0		-0.96
440	D5453	4.80		-1.24	1634	ISO20846	5.87		0.29
444	D5453	5.20		-0.67	1635	ISO20846	4.7		-1.39
445	IP490	5.25		-0.60	1636	ISO20846	5.46		-0.30
447	IP490	6.1		0.62	1667		-----		-----
453	ISO20846	6.0		0.48	1677	D5453	6.36		1.00
463	ISO20846	5.14		-0.75	1710	ISO20846	6.4		1.05
468		-----		-----	1720	D5453	6.8		1.63
485		-----		-----	1724	D5453	5.45		-0.31
496	ISO20846	5.585		-0.12	1728	D5453	6.19		0.75
541	ISO20846	4.20		-2.10	1740	D5453	5.0		-0.96
631	D4294	5.406		-0.37	1742	ISO20846	5.4		-0.38
633		-----		-----	1753	ISO20846	6.6		1.34
671	D5453	6.76		1.57	1776	ISO20846	4.2		-2.10
704	ISO20846	6.09		0.61	1807	ISO20846	5.3		-0.53
754	ISO20846	5.57		-0.14	1810	ISO20846	5.6		-0.09
781	ISO20846	6.63		1.38	1811	ISO20846	5.96		0.42
782	ISO20884	6.8		1.63	1849	ISO20846	6.3		0.91
785	ISO20846	6.6		1.34	1881	ISO20846	6.10		0.62
798	ISO20884	6.54		1.25	1936	ISO20846	5.7		0.05
824	D5453	6.8		1.63	1937	ISO20846	5.5		-0.24
846	SH/T0689	6.20		0.77	1938	ISO20846	5.6		-0.09
861	D5453	6.1		0.62	1953	D4294	12	R(0.01)	9.09
875	ISO20846	6.2		0.77	2129	ISO20846	6.53		1.24
902	D5453	6.7		1.48	2130	IP490	6.2		0.77
904	ISO20846	5.9		0.34	2146	ISO20846	6.6		1.34
971	ISO20846	5.40		-0.38	6005		-----		-----
974		-----		-----	6012	ISO20846	4.33		-1.92
994	D5453	6.36		1.00	6018	ISO20846	4.4		-1.82
1006	D5453	4.8		-1.24	6028	ISO20846	6.9		1.77
1011	ISO20846	5.4		-0.38	6045	D7039	4.8		-1.24
1026	ISO20846	4.5		-1.67	6075	ISO20846	4.11		-2.23
1033		-----		-----	6103	D2622	7.55		2.70
1059	ISO20846	5.1		-0.81	6142		-----		-----
1079	ISO20846	6.30		0.91	6170	ISO20846	5.25		-0.60
1082	D7039	6.64		1.40	6191		-----		-----
1095	ISO20846	6.0		0.48	6192	ISO20884	5.4		-0.38
1108	ISO20846	5.0		-0.96	6201	ISO20846	6.00		0.48
1109	D7039	6.62		1.37	6203	ISO20846	5.4		-0.38
1126	ISO20846	5.71		0.06					

|		
	normality	OK
	n	120
	outliers	2
	mean (n)	5.666
	st.dev. (n)	0.7812
	R(calc.)	2.187
	st.dev.(ISO20846:11)	0.6968
	R(ISO20846:11)	1.951
Compare		
	R(D5453:16e1)	2.129

Lab 120: first reported 0.000576 mg/kg
Lab 1613: first reported 10

Determination of ASVP on sample #18201; results in kPa

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
140		-----		-----	
159	D5191	99.28		0.61	
171		-----		-----	
194	D5191	99.5		0.84	
225		-----		-----	
237		-----		-----	
238		-----		-----	
311		-----		-----	
312	EN13016-1	100.0		1.37	
323	EN13016-1	98.9		0.20	
333		-----		-----	
334		-----		-----	
335	EN13016-1	98.4		-0.33	
336	EN13016-1	99.8		1.16	
337	EN13016-1	100.4		1.80	
338		-----		-----	
343		-----		-----	
344	EN13016-1	99.35		0.68	
353	IP391	98.9		0.20	
369	EN13016-1	98.9		0.20	
370	EN13016-1	99.3		0.63	
371		-----		-----	
372	EN13016-1	99.3		0.63	
381	EN13016-1	99.9		1.27	
391		-----		-----	
399		-----		-----	
403	EN13016-1	99.05		0.36	
420	EN13016-1	99.3		0.63	
440	D5191	100.4		1.80	
444	D5191	92.17	C,R(0.01)	-6.98	first reported 65.63
445	EN13016-1	96.2		-2.68	
447		-----		-----	
453		-----		-----	
463	EN13016-1	99.90		1.27	
468	EN13016-1	99.668		1.02	
485		-----		-----	
496	EN13016-1	98.9		0.20	
541		-----		-----	
631	D5191	98.05		-0.71	
633	D5191	99.3		0.63	
704	EN13016-1	99.51		0.85	
754	D5191	99.1		0.41	
782	EN13016-1	99.4		0.73	
785	EN13016-1	98.8		0.09	
798		-----		-----	
824	D5191	99.7		1.05	
846	SH/T0794	98.2		-0.55	
861	D5191	97.50		-1.29	
875	D5191	98.4		-0.33	
902	EN13016-1	99.0		0.31	
904	EN13016-1	98.5		-0.23	
971	EN13016-1	98.3		-0.44	
974	D5191	97.65		-1.13	
1006		-----		-----	
1011		-----		-----	
1026		-----		-----	
1033	IP394	96.8		-2.04	
1059	EN13016-1	97.5		-1.29	
1082	EN13016-1	98.5		-0.23	
1095	EN13016-1	98.9		0.20	
1108	EN13016-1	99.15		0.47	
1109	D5191	97.15		-1.67	
1134	D5191	83.57	R(0.01)	-16.16	
1161	EN13016-1	98.2		-0.55	
1167		-----		-----	
1182	D5191	98.5		-0.23	
1191	EN13016-1	98.7		-0.01	
1194		-----		-----	
1201		-----		-----	
1212	EN13016-1	100.0		1.37	
1259	EN13016-1	97.3		-1.51	
1275	EN13016-1	99.3		0.63	
1299		-----		-----	
1397	EN13016-1	98.6		-0.12	
1406		-----		-----	

lab	method	value	mark	z(targ)	remarks
1407		-----		-----	
1428		-----		-----	
1446		-----		-----	
1459	EN13016-1	97.6		-1.19	
1491	EN13016-1	99.3		0.63	
1498	D5191	89.9	R(0.01)	-9.41	
1510	D5191	99.22		0.54	
1528	EN13016-1	99.3		0.63	
1538		-----		-----	
1546	EN13016-1	98.75		0.04	
1556	EN13016-1	98.9		0.20	
1586	EN13016-1	98.0		-0.76	
1613	D5191	98.8		0.09	
1631		-----		-----	
1634	EN13016-1	96.6		-2.25	
1635		-----		-----	
1636	EN13016-1	98.6		-0.12	
1677	D5191	100.16		1.55	
1710	EN13016-1	98.9		0.20	
1720		-----		-----	
1724		-----		-----	
1728	EN13016-1	99.25		0.57	
1730		-----		-----	
1776	EN13016-1	93.4	R(0.01)	-5.67	
1807	EN13016-1	98.4		-0.33	
1811	EN13016-1	96.8		-2.04	
1849	EN13016-1	97.7		-1.08	
1881	D5191	99.0		0.31	
1936	EN13016-1	99.5		0.84	
1937		-----		-----	
1938		-----		-----	
1953	EN13016-1	96.6		-2.25	
2129	EN13016-1	98.8		0.09	
2130	D5191	98.1		-0.65	
2146	EN13016-1	98.6		-0.12	
6005	EN13016-1	98.7		-0.01	
6018	EN13016-1	98.7		-0.01	
6028		-----		-----	
6075	EN13016-1	96.70		-2.15	
6142		-----		-----	
6170	D5191	100.0		1.37	
6201	D5191	98.1		-0.65	
6203	EN13016-1	99.0		0.31	
	normality	OK			
	n	75			
	outliers	4			
	mean (n)	98.712			
	st.dev. (n)	0.9437			
	R(calc.)	2.642			
	st.dev.(EN13016-1:07)	0.9369			
	R(EN13016-1:07)	2.623			
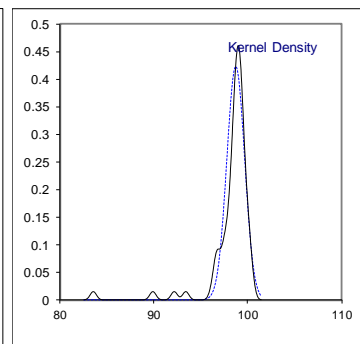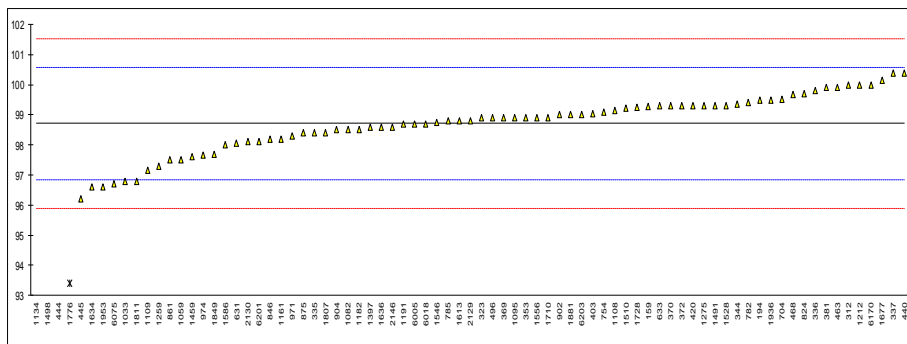
Determination of DVPE (acc. to EN13016-1) on sample #18201; results in kPa

lab	method	value	mark	z(targ)	remarks
120	D5191	93.079		1.72	
140	D5191	91.70		0.21	
159	D5191	92.53		1.12	
171	D5191	89.91		-1.76	
194	D5191	92.2		0.76	
225	D5191	91.0		-0.56	
237		-----		-----	
238	D5191	90.4		-1.22	
311	D5191	91.8		0.32	
312	EN13016-1	92.7		1.31	
323	EN13016-1	91.7		0.21	
333	EN13016-1	91.7		0.21	
334	D5191	91.3		-0.23	
335	EN13016-1	91.2		-0.34	
336	EN13016-1	92.5		1.09	
337	EN13016-1	93.1		1.75	
338	EN13016-1	91.5		-0.01	
343	EN13016-1	93		1.64	
344	EN13016-1	92.09		0.64	
353	IP394	91.66		0.17	
369	EN13016-1	91.66		0.17	
370	EN13016-1	92.0		0.54	
371		-----		-----	
372	EN13016-1	92.0		0.54	
381	EN13016-1	92.6		1.20	
391	EN13016-1	91.2		-0.34	
399	D5191	91.7		0.21	
403	EN13016-1	91.80		0.32	
420	EN13016-1	92.0		0.54	
440	D5191	93.11		1.76	
444		-----		-----	
445	EN13016-1	89.0		-2.75	
447	EN13016-1	92.1		0.65	
453	IP394	93.0		1.64	
463	EN13016-1	92.62		1.22	
468	EN13016-1	92.400		0.98	
485	EN13016-1	92.46		1.04	
496	EN13016-1	91.7		0.21	
541	D6378	91.63		0.13	
631	D5191	90.84		-0.73	
633	D5191	92.04		0.58	
704	EN13016-1	92.25		0.81	
754	D5191	91.8		0.32	
782	EN13016-1	92.1		0.65	
785	EN13016-1	91.5		-0.01	
798	D5191	91.7		0.21	
824	D5191	92.4		0.98	
846	SH/T0794	91.0		-0.56	
861	D5191	90.31		-1.32	
875	D5191	91.2		-0.34	
902	EN13016-1	91.7		0.21	
904	EN13016-1	91.3		-0.23	
971	EN13016-1	91.1		-0.45	
974	D5191	90.46		-1.15	
1006	D5191	90.6	C	-1.00	first reported 96.6
1011	EN13016	92.3		0.87	
1026	D5191	90.6		-1.00	
1033	IP394	89.6		-2.10	
1059	EN13016-1	90.3		-1.33	
1082	EN13016-1	91.2		-0.34	
1095	EN13016-1	91.6		0.10	
1108	EN13016-1	91.91	C	0.44	first reported 13.33
1109	D5191	89.97		-1.69	
1134	D5191	76.87	R(0.01)	-16.07	
1161	EN13016-1	90.9		-0.67	
1167	EN13016-1	90.5		-1.11	
1182	D5191	91.2		-0.34	
1191	EN13016-1	91.46		-0.05	
1194	EN13016-1	91.2		-0.34	
1201	EN13016-1	92.0		0.54	
1212	EN13016-1	92.7		1.31	
1259	EN13016-1	90.1		-1.55	
1275	EN13016-1	92.0		0.54	
1299	D5191	91.5		-0.01	
1397	EN13016-1	91.3		-0.23	
1406	EN13016-1	89.8		-1.88	

lab	method	value	mark	z(targ)	remarks
1407		-----		-----	
1428	EN13016-1	90.6		-1.00	
1446	EN13016-1	90.9		-0.67	
1459	EN13016-1	90.4		-1.22	
1491	EN13016-1	92.0		0.54	
1498	D5191	91.01	E	-0.55	iis calculated for DVPE: 82.97
1510	D5191	91.91		0.44	
1528	EN13016-1	92.0		0.54	
1538	EN13016-1	91.3		-0.23	
1546	EN13016-1	91.55		0.05	
1556	EN13016-1	91.6		0.10	
1586	EN13016-1	90.8		-0.78	
1613	D5191	91.5		-0.01	
1631	EN13016-1	91.5		-0.01	
1634	EN13016-1	89.4		-2.32	
1635	EN13016-1	94.1		2.84	
1636	EN13016-1	91.6		0.10	
1677	D5191	92.87		1.49	
1710	EN13016-1	91.7		0.21	
1720		-----		-----	
1724	IP394	91.8		0.32	
1728	EN13016-1	91.996		0.53	
1730	EN13016-1	92.30		0.87	
1776	EN13016-1	91.65	E	0.16	iis calculated for DVPE: 86.35
1807	EN13016-1	91.2		-0.34	
1811	EN13016-1	91.1	E	-0.45	iis calculated for DVPE: 89.6
1849	EN13016-1	90.5		-1.11	
1881	D5191	91.8		0.32	
1936	EN13016-1	92.2		0.76	
1937	EN13016-1	91.95		0.48	
1938	EN13016-1	91.8		0.32	
1953	EN13016-1	89.4		-2.32	
2129	EN13016-1	91.56		0.06	
2130	D5191	90.9		-0.67	
2146	EN13016-1	91.37		-0.15	
6005	EN13016-1	91.4		-0.12	
6018	EN13016-1	91.4		-0.12	
6028	EN13016-1	90.7		-0.89	
6075	EN13016-1	89.53		-2.17	
6142		-----		-----	
6170	D5191	92.50		1.09	
6201	D5191	90.9		-0.67	
6203	EN13016-1	91.8		0.32	
	normality	OK			
	n	112			
	outliers	1			
	mean (n)	91.509			
	st.dev. (n)	0.8877			
	R(calc.)	2.486			
	st.dev.(EN13016-1:07)	0.9108			
	R(EN13016-1:07)	2.550			
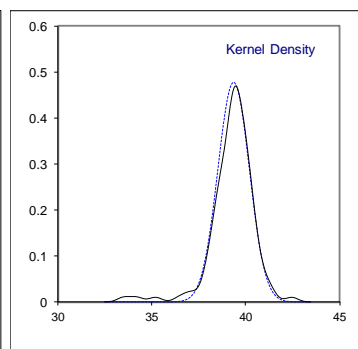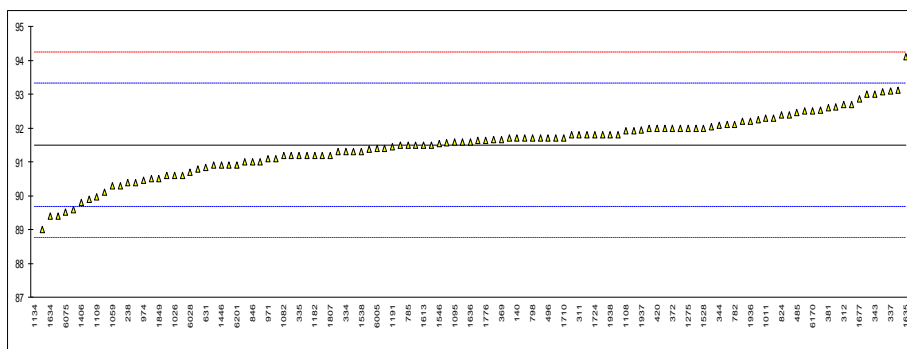
Determination of RON on sample #18202;

lab	method	value	mark	z(targ)	remarks
120	D2699	95.3		-0.79	
140	D2699	95.6		0.41	
159	D2699	95.4		-0.39	
171	D2699	95.2		-1.19	
237		-----		-----	
273	D2699	96.2		2.81	
311	ISO5164	95.4		-0.39	
312	ISO5164	95.63		0.53	
323	ISO5164	95.6		0.41	
334	ISO5164	95.7		0.81	
370	ISO5164	95.18		-1.27	
371	ISO5164	95.0		-1.99	
381	ISO5164	95.5		0.01	
399	ISO5164	95.0		-1.99	
403	ISO5164	95.24		-1.03	
420	ISO5164	95.8		1.21	
444	D2699	95.23		-1.07	
445	IP237	95.70		0.81	
447	D2699	95.6		0.41	
453	D2699	95.66		0.65	
496	ISO5164	95.2		-1.19	
541	D2699	95.2		-1.19	
631	D2699	95.095		-1.61	
754	ISO5164	95.20		-1.19	
782	ISO5164	95.18		-1.27	
824	D2699	95.4		-0.39	
846	GB/T5487	95.40		-0.39	
861	D2699	95.68		0.73	
962	D2699	95.6		0.41	
971	ISO5164	95.63		0.53	
1006	D2699	95.4		-0.39	
1011	ISO5164	95.7		0.81	
1026	ISO5164	95.6		0.41	
1059	ISO5164	95.4		-0.39	
1082	ISO5164	95.37		-0.51	
1095	ISO5164	95.6		0.41	
1109	D2699	95.4		-0.39	
1134		-----		-----	
1161	ISO5164	95.6		0.41	
1167	ISO5164	95.72		0.89	
1186	D2699	96.1		2.41	
1191	ISO5164	95.56		0.25	
1194	D2699	95.8		1.21	
1212	ISO5164	95.4		-0.39	
1259	ISO5164	95.62		0.49	
1275	IP237	95.42		-0.31	
1299	D2699	95.6		0.41	
1320	ISO5164	96.1		2.41	
1406	ISO5164	95.5		0.01	
1407	D2699	95.5		0.01	
1428	ISO5164	95.8		1.21	
1491		94.9		-2.39	
1498	D2699	95.4		-0.39	
1528	D2699	95.95		1.81	
1538	ISO5164	95.3		-0.79	
1556	ISO5164	95.5		0.01	
1586	D2699	95.2		-1.19	
1613	D2699	95.2		-1.19	
1634	ISO5164	94.7		-3.19	
1635	ISO5164	95.5		0.01	
1636	ISO5164	95.61		0.45	
1677	D2699	95.5		0.01	
1710	ISO5164	95.6		0.41	
1720	D2699	95.6		0.41	
1728	D2699	95.87		1.49	
1776		-----		-----	
1849	ISO5164	96.1		2.41	
2130	D2699	95.8		1.21	
6028	ISO5164	95.6		0.41	
6075	ISO5164	95.60		0.41	
6142		-----		-----	
6201	ISO5164	95.2		-1.19	
6203	ISO5164	95.55		0.21	

normality	OK
n	69
outliers	0
mean (n)	95.50
st.dev. (n)	0.285
R(calc.)	0.80
st.dev.(ISO5164:14)	0.250
R(ISO5164:14)	0.7

Kernel Density
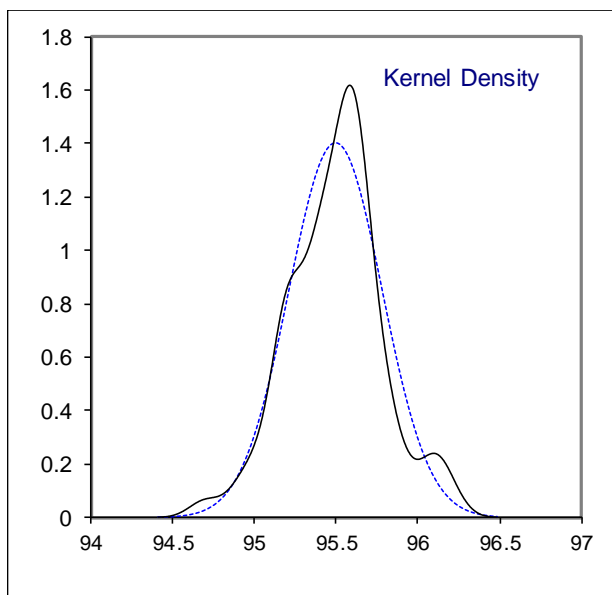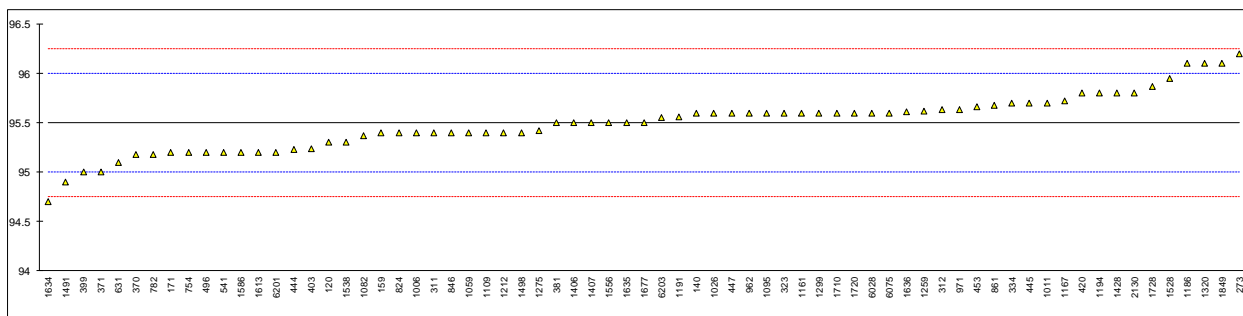
Determination of MON on sample #18202;

lab	method	value	mark	z(targ)	remarks
120	D2700	86.1		1.38	
140	D2700	86.1		1.38	
159	D2700	85.1		-1.73	
171	D2700	85.8		0.45	
237		-----		-----	
273	D2700	85.3		-1.11	
311	ISO5163	85.3		-1.11	
312	ISO5163	85.33		-1.01	
323	ISO5163	85.5		-0.48	
334	ISO5163	86.0		1.07	
370	ISO5163	85.43		-0.70	
371	ISO5163	85.3		-1.11	
381	ISO5163	85.6		-0.17	
399	ISO5163	85.4		-0.79	
403	ISO5163	85.60		-0.17	
420	ISO5163	85.2		-1.42	
444	D2700	85.51		-0.45	
445	IP236	84.70		-2.97	
447	D2700	85.7		0.14	
453	D2700	85.67		0.05	
496	ISO5163	85.5		-0.48	
541		-----		-----	
631	D2700	85.336		-0.99	
754	ISO5163	86.09		1.35	
782	ISO5163	85.12		-1.67	
824	D2700	85.6		-0.17	
846	GB/T503	85.72		0.20	
861	D2700	85.77		0.36	
962	D2700	85.3		-1.11	
971	ISO5163	85.31		-1.07	
1006		-----		-----	
1011	ISO5163	86.3		2.01	
1026	ISO5163	86.0		1.07	
1059	ISO5163	85.7		0.14	
1082	ISO5163	85.78		0.39	
1095	ISO5163	86.4		2.32	
1109	D2700	85.8		0.45	
1134		-----		-----	
1161	ISO5163	85.7		0.14	
1167	ISO5163	85.87		0.67	
1186		-----		-----	
1191	ISO5163	86.00		1.07	
1194	D2700	86.1		1.38	
1212	ISO5163	85.6		-0.17	
1259	ISO5163	85.28		-1.17	
1275	IP236	86.0		1.07	
1299	D2700	85.6		-0.17	
1320	ISO5163	85.5		-0.48	
1406		-----		-----	
1407		-----		-----	
1428	ISO5163	85.2		-1.42	
1491		84.9		-2.35	
1498		-----		-----	
1528	D2700	86.05		1.23	
1538	ISO5163	86.0		1.07	
1556	ISO5163	86.65		3.09	
1586		-----		-----	
1613		-----		-----	
1634	ISO5163	85.1		-1.73	
1635	ISO5163	85.6		-0.17	
1636	ISO5163	86.55		2.78	
1677	D2700	85.7		0.14	
1710	ISO5163	85.6		-0.17	
1720		-----		-----	
1728	D2700	85.85		0.61	
1776		-----		-----	
1849	ISO5163	86.2		1.69	
2130	D2700	85.8		0.45	
6028		-----		-----	
6075	ISO5163	85.20		-1.42	
6142		-----		-----	
6201	ISO5163	85.9		0.76	
6203	ISO5163	85.35		-0.95	

normality	OK
n	59
outliers	0
mean (n)	85.66
st.dev. (n)	0.397
R(calc.)	1.11
st.dev.(ISO5163:14)	0.321
R(ISO5163:14)	0.9

Kernel Density
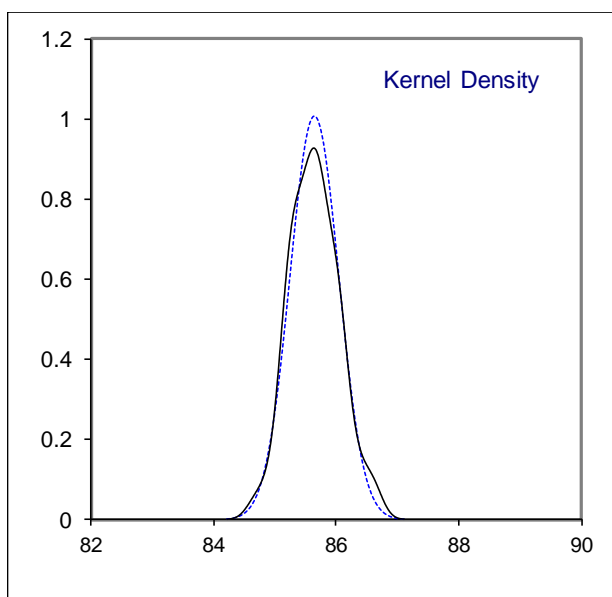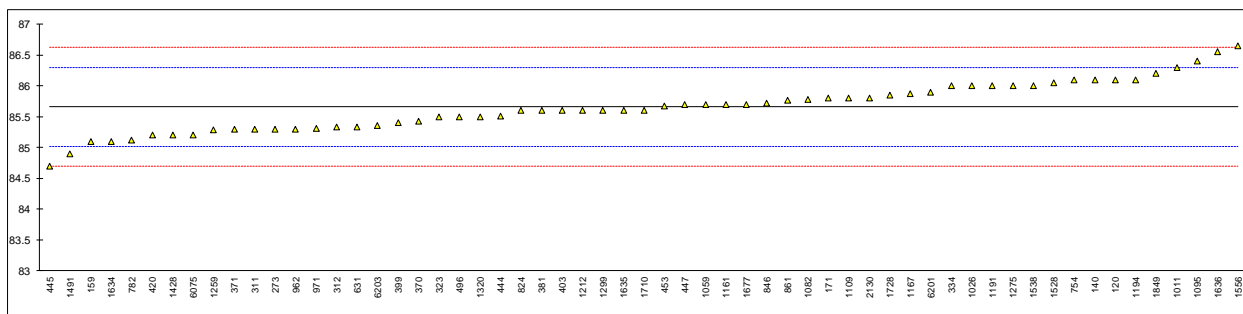
APPENDIX 2: z-scores distillation

lab	IBP	10% eva	50% eva	90% eva	FBP	E70%V/V	E100%V/V	E150%V/V
120	0.03	-0.54	-1.13	0.05	-0.72	0.46	0.49	-0.22
140	-0.37	0.77	-0.09	-0.24	-0.39	-0.47	-0.02	-0.22
159	-0.77	0.16	0.36	-0.10	-0.19	-----	-----	-----
171	0.32	-3.17	-5.75	-12.43	-4.24	1.81	6.98	12.49
194	-0.37	-0.63	-0.39	-0.10	0.31	-----	-----	-----
225	1.12	0.42	0.65	1.39	0.97	-1.41	-0.28	-1.30
237	1.69	-----	-----	-----	-----	-----	-----	-----
238	0.54	1.30	1.40	-0.38	1.38	-0.89	-0.28	1.93
273	1.17	2.96	0.95	-1.09	1.38	-----	-----	-----
311	-1.46	-0.45	-0.69	-0.24	-0.11	0.67	0.10	0.00
312	0.14	-0.02	0.95	-0.24	0.02	-0.06	-0.41	1.50
323	-0.08	-0.45	-0.69	-0.02	-0.64	0.87	0.10	0.21
333	-1.74	-0.89	-0.84	-0.02	1.84	0.67	0.23	-0.22
334	-1.17	-0.80	-2.92	-0.73	0.23	1.29	1.25	1.29
335	0.26	-0.02	-0.69	-0.24	0.10	0.36	0.49	1.93
336	-0.37	0.51	1.10	0.19	0.06	-0.78	-0.66	-0.44
337	-----	-----	-----	-----	-----	-----	-----	-----
338	-0.49	-1.15	-2.47	-0.38	1.34	1.29	0.87	0.43
343	2.15	1.12	-1.28	0.54	-2.54	-6.07	2.27	-1.30
344	1.75	0.86	5.57	1.11	1.13	-0.78	-2.95	-1.94
353	-0.03	-0.63	-0.09	-0.45	-1.06	0.25	0.61	1.07
369	1.23	0.95	-2.62	-0.66	1.01	-0.58	0.74	0.21
370	0.37	-0.19	-1.13	-0.31	0.27	-0.06	0.36	0.64
371	-0.03	0.16	-1.13	-0.02	0.89	-0.78	0.49	0.43
372	1.06	2.43	-0.84	-0.31	0.47	-0.68	0.74	0.21
381	0.54	1.38	1.70	-0.31	-0.06	-0.68	-0.79	-0.44
391	-----	-----	-----	-----	-----	-----	-----	-----
399	0.20	-0.10	-1.58	-0.45	-1.30	-2.24	-2.57	-5.17
403	1.29	-0.45	0.36	-0.38	1.18	0.56	0.23	0.21
420	-1.46	-2.12	-2.62	-2.15	-0.89	2.12	2.78	1.72
431	1.98	0.42	4.38	3.66	0.56	1.39	1.12	1.29
440	-0.31	1.30	2.14	1.04	-0.48	-1.41	-0.91	-2.37
444	-0.37	-0.54	-0.98	0.05	-0.48	0.67	0.36	0.00
445	-1.40	-0.10	-1.13	-0.59	-0.72	0.56	0.61	0.86
447	-0.37	0.51	0.95	0.19	2.70	-0.68	-0.66	-0.65
453	-1.29	-0.28	-1.13	-0.73	-0.02	0.98	0.49	1.07
463	0.95	0.33	2.44	1.04	0.06	-0.68	-1.30	-1.73
468	-----	-----	-----	-----	-----	-----	-----	-----
485	0.52	-0.10	0.13	-0.20	0.00	0.20	-0.34	0.43
496	0.43	0.25	-0.39	-0.02	0.23	-0.16	0.36	0.00
541	-0.81	-0.19	0.15	-0.17	0.60	-0.52	0.18	-0.22
631	-1.29	-0.10	-9.47	1.46	0.06	3.21	3.43	-0.46
633	3.12	1.73	7.06	3.95	-0.89	-----	-----	-----
671	-----	-----	-----	-----	-----	-----	-----	-----
704	0.49	0.07	-0.84	-0.66	-0.60	0.15	-0.28	-0.22
754	1.40	-1.07	-1.13	0.33	0.56	-0.89	-1.55	-0.22
781	-0.14	0.33	-0.39	-0.38	0.02	0.56	0.36	0.64
782	1.69	1.47	1.25	-0.38	0.76	-1.30	-0.28	0.00
785	-0.03	0.86	0.65	0.68	-0.68	-0.37	-0.91	-1.30
798	-0.54	0.16	0.36	-0.31	0.18	-1.10	-1.93	-2.16
824	-0.49	-0.28	-1.13	-0.17	-0.97	0.25	0.49	0.21
846	1.00	0.77	2.59	0.33	0.27	-----	-----	-----
861	0.26	-0.02	-0.09	-0.02	-0.85	0.15	-0.15	0.21
875	-0.14	-0.28	0.51	-0.10	-0.02	0.04	-0.53	-1.51
902	-0.66	-0.89	-2.32	-0.80	0.14	0.67	0.99	0.86
904	-0.08	0.42	-0.09	-0.24	0.31	-0.16	0.10	0.21
971	-----	-----	-----	-----	-----	-----	-----	-----
974	-1.40	-0.28	0.36	1.54	-0.19	-0.71	-0.05	-0.22
994	0.54	-0.12	0.95	-0.52	-0.48	0.15	-1.55	0.86
1006	0.14	0.07	1.10	0.12	0.39	-----	-----	-----
1011	0.49	0.42	3.04	0.12	1.30	-0.99	-1.17	-0.44
1026	-0.83	-0.72	0.95	-0.38	1.88	-0.06	-0.66	0.64
1033	-1.17	0.68	4.53	2.10	-0.60	-1.10	-2.57	-3.45
1059	-0.54	-1.15	-0.84	-0.45	-0.60	0.36	0.36	0.64
1079	-1.34	-0.89	-1.73	-0.59	-1.88	0.87	0.87	1.07
1082	-1.63	-0.45	-0.24	0.40	0.06	0.15	-0.28	-0.65
1095	-0.26	0.16	0.65	0.40	0.80	-0.16	-0.79	-0.65
1108	0.14	-0.45	0.36	0.47	5.06	0.36	-0.53	-0.65
1109	-1.69	-0.72	-1.13	-0.31	-0.60	0.77	0.49	1.07
1126	1.46	-0.19	-11.41	1.32	2.41	-----	4.43	-2.16
1134	-0.26	-0.89	-1.88	-0.45	-1.10	0.67	0.99	0.64
1161	-0.26	-0.02	0.36	0.47	-0.23	-0.99	-2.31	0.43
1167	0.66	1.12	0.36	-0.45	-1.84	-0.78	-0.66	0.00
1186	1.69	0.86	-0.84	-2.86	-2.75	-2.44	0.99	4.09
1191	-0.26	-0.19	-0.54	0.12	1.01	0.25	0.23	-0.22
1194	-----	-----	-----	-----	-----	-----	-----	-----

lab	IBP	10% eva	50% eva	90% eva	FBP	E70%V/V	E100%V/V	E150%V/V
1199	-----	-----	-----	-----	-----	-----	-----	-----
1201	-0.60	-0.54	-1.13	-0.17	0.64	0.87	0.36	0.21
1212	-0.77	0.16	0.36	0.12	1.71	-0.16	-0.53	-0.22
1237	-0.60	-0.54	-1.73	-0.73	-1.34	0.15	0.74	1.29
1259	0.03	0.68	3.19	1.32	0.10	-1.30	-1.30	-2.16
1266	0.32	-0.28	-2.18	-0.66	-2.34	1.08	0.74	0.64
1275	-3.06	1.30	4.68	3.10	-0.06	0.46	0.49	0.64
1299	-0.31	-0.80	-1.13	0.12	0.06	0.67	0.36	-0.22
1397	1.35	0.25	0.80	-0.24	0.18	-0.27	-0.41	0.64
1402	0.14	0.33	0.06	-0.02	1.34	0.04	0.23	-0.65
1406	0.54	-0.89	-1.58	-1.44	1.79	1.70	2.27	1.93
1407	0.03	0.42	2.14	0.54	-1.30	-1.10	-1.17	-0.87
1428	1.75	-0.02	0.65	-0.10	0.47	-0.16	-0.28	0.00
1443	0.14	-0.54	0.65	-0.02	0.76	0.67	-0.28	-0.22
1459	-0.71	-0.28	-0.24	-0.17	-0.68	0.46	-0.28	0.21
1491	-0.77	-0.98	-0.69	-0.31	-0.19	0.98	0.36	1.72
1498	1.80	-0.02	-0.24	-0.02	-0.15	0.67	-0.28	-0.22
1528	0.95	-0.28	-0.39	-0.31	-0.64	0.15	0.23	0.21
1538	0.09	0.16	-0.09	0.90	-0.15	0.04	-0.02	-1.73
1546	0.23	-0.59	-1.80	-0.38	-0.79	-0.06	0.87	0.53
1556	-1.57	-0.98	-1.28	-0.10	0.02	0.67	0.61	-0.22
1569	-1.92	-1.15	-2.77	-1.23	-0.93	1.19	1.63	2.58
1586	-1.11	1.21	2.14	-0.38	-0.06	-0.89	-0.79	0.00
1613	-0.66	0.77	2.44	1.25	0.60	-0.37	-0.28	-0.22
1631	0.49	-----	-----	-----	0.10	-0.58	-0.79	-0.65
1634	-0.71	-0.37	0.51	0.33	-0.31	-0.37	-0.28	-1.08
1635	0.49	1.03	4.23	2.39	-0.56	0.36	1.12	1.29
1636	-0.14	0.07	0.65	0.40	-0.85	0.04	-0.41	-0.65
1667	0.43	-0.54	-0.84	-0.17	-0.48	0.15	0.10	-0.44
1677	-0.03	-0.19	-2.77	-0.59	-0.81	0.98	0.74	0.64
1710	-1.00	0.42	0.95	0.05	-0.06	0.04	-0.53	0.21
1720	-0.08	-1.15	-1.73	-0.45	0.10	-----	-----	-----
1724	-0.20	-0.10	-0.84	-0.24	0.60	0.25	0.61	0.43
1728	0.09	-0.63	-1.43	0.40	0.18	0.04	0.74	-0.22
1740	-0.31	-1.42	-2.32	-0.66	-1.55	1.29	0.87	1.07
1742	-0.60	-1.68	-2.18	-0.38	0.43	1.19	0.49	1.29
1753	0.54	-0.02	0.65	0.68	-0.15	0.04	0.49	-1.08
1776	0.54	2.96	-6.64	-0.31	-0.23	-5.35	2.39	0.43
1807	0.20	-0.89	-1.58	-0.17	0.31	0.56	0.74	0.00
1810	-1.00	0.07	-0.54	-0.38	-0.77	-0.06	0.10	0.43
1811	-0.26	-0.10	-0.09	-0.38	0.06	-0.16	0.10	0.43
1849	-0.20	-0.02	-0.39	0.19	1.05	0.36	0.10	-0.44
1881	-----	-----	-----	-----	-----	-----	-----	-----
1936	-----	-----	-----	-----	-0.19	0.87	0.61	0.86
1937	-0.43	0.64	-0.54	-0.27	0.82	0.04	0.23	0.64
1938	-----	-----	-----	-----	-0.27	1.08	1.63	1.07
1953	-3.80	-0.28	-1.88	-0.80	-5.85	-----	-----	-----
2129	-0.89	0.42	-0.09	-0.17	0.27	-0.27	0.23	0.21
2130	-1.06	0.51	1.10	0.54	1.22	-0.16	-0.66	-1.08
2146	0.03	0.25	-0.39	-0.24	0.56	-0.16	-0.15	0.43
6005	-0.83	1.12	3.04	1.39	0.43	-1.61	-1.68	-2.37
6012	1.80	1.12	-0.39	1.61	-1.55	-0.78	1.12	-2.16
6018	-0.31	1.21	4.08	1.82	-0.06	-1.51	-2.06	-3.02
6028	-0.08	0.33	1.40	0.47	0.60	-0.27	-1.04	-0.65
6045	0.20	1.21	-----	-0.02	0.10	-----	-----	-----
6075	-0.14	-0.80	-2.18	-1.44	-0.44	0.77	0.87	2.15
6103	1.92	1.56	6.31	3.02	0.68	-2.96	-3.33	-6.04
6142	-----	-----	-----	-----	-----	-----	-----	-----
6170	-0.03	-0.02	-2.32	-0.02	-1.10	0.15	1.63	-0.22
6191	-1.29	-2.20	-1.28	-0.52	-1.06	1.91	0.49	1.93
6192	1.40	2.26	7.65	3.24	0.18	-4.31	-4.22	-7.97
6201	1.17	-0.37	0.21	-0.17	0.60	-0.06	-3.59	-0.22
6203	1.80	-0.10	1.85	0.40	0.31	-0.47	-0.91	-0.65

APPENDIX 3

Number of participants per country – main round

```
 1 lab in   ARGENTINA
 1 lab in   AUSTRALIA
 1 lab in   AUSTRIA
 1 lab in   AZERBAIJAN
 2 labs in  BELGIUM
 3 labs in  BULGARIA
 1 lab in   CHILE
 3 labs in  CHINA, People's Republic
 1 lab in   COTE D'IVOIRE
 5 labs in  CROATIA
 1 lab in   CYPRUS
 3 labs in  CZECH REPUBLIC
 2 labs in  ESTONIA
 4 labs in  FINLAND
 8 labs in  FRANCE
 1 lab in   GERMANY
 5 labs in  GREECE
 1 lab in   GUAM
 1 lab in   HONG KONG
 1 lab in   HUNGARY
 2 labs in  IRELAND
 1 lab in   ISRAEL
 2 labs in  ITALY
 1 lab in   JORDAN
 2 labs in  LATVIA
 2 labs in  LITHUANIA
 1 lab in   MACEDONIA
 1 lab in   MALTA
 1 lab in   MARTINIQUE
 1 lab in   MOROCCO
 6 labs in  NETHERLANDS
 2 labs in  NIGERIA
 2 labs in  PHILIPPINES
 2 labs in  POLAND
 6 labs in  PORTUGAL
 5 labs in  ROMANIA
 6 labs in  RUSSIAN FEDERATION
 1 lab in   SERBIA
 2 labs in  SLOVENIA
 1 lab in   SOUTH AFRICA
 1 lab in   SOUTH KOREA
 6 labs in  SPAIN
 1 lab in   SUDAN
 5 labs in  SWEDEN
 1 lab in   TAIWAN
 1 lab in   TUNISIA
11 labs in  TURKEY
 1 lab in   UKRAINE
 2 labs in  UNITED ARAB EMIRATES
12 labs in  UNITED KINGDOM
 5 labs in  UNITED STATES OF AMERICA
```

APPENDIX 4

Abbreviations:

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

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