

Results of Proficiency Test
Gasoline (ASTM specification)
February 2019

Organised by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

Author: ing. M. Meijer
Correctors: ing. A.S. Noordman-de Neef & ing. R.J. Starink
Report: iis19B01ASTM

May 2019

- Empty page -

CONTENTS

1 INTRODUCTION 4

2 SET UP 4

2.1 ACCREDITATION 4

2.2 PROTOCOL..... 4

2.3 CONFIDENTIALITY STATEMENT 4

2.4 SAMPLES 5

2.5 STABILITY OF THE SAMPLES 6

2.6 ANALYSES 7

3 RESULTS..... 7

3.1 STATISTICS 8

3.2 GRAPHICS 8

3.3 Z-SCORES..... 9

4 EVALUATION 10

4.1 EVALUATION PER SAMPLE AND PER TEST 10

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES 13

4.3 COMPARISON OF THE PROFICIENCY TEST OF FEBRUARY 2019 WITH PREVIOUS PTS..... 14

Appendices:

1. Data, statistical results and graphic results..... 16

2. z-Scores distillation ASTM D86..... 64

3. Analytical details 66

4. Number of participants per country 68

5. Abbreviations and literature 69

1 INTRODUCTION

Since 1995, the Institute for Interlaboratory Studies (iis) organizes a proficiency scheme for Gasoline. During the annual proficiency testing program 2018/2019, it was decided to continue the round robin for the analysis of Gasoline in accordance with the most recent version of the specification ASTM D4814.

In this interlaboratory study, in total 118 laboratories in 63 different countries registered for participation. See appendix 4 for the number of participants per country. In this report, the results of the 2019 proficiency test are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organizer of this proficiency test (PT). Sample analyzes for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC 17025 accredited laboratory. In this proficiency test, the participants received, depending on their registration, 1x1 liter bottle Gasoline E5 (labelled #19010) and/or 1x1 liter bottle $\pm 75\%$ filled Gasoline E5 (labelled #19011) for DVPE only, and/or 2x1 liter bottle Gasoline E5 (labelled #19012) for RON/MON only.

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

2.1 ACCREDITATION

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

2.2 PROTOCOL

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

2.3 CONFIDENTIALITY STATEMENT

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

2.4 SAMPLES

2.4.1 GASOLINE SAMPLES FOR MAIN ROUND AND FOR RON/MON

The necessary sample material, approximately 350 liters, Gasoline E5 summer grade was obtained from a local petrol station. This batch was spiked with a Manganese additive. After mixing and homogenisation in a 500 liter mixing vessel, 126 amber glass bottles of 1 liter were filled and labelled #19010 for the main round and 134 amber glass bottles of 1 liter were filled and labelled #19012 for the determination of RON/MON. The homogeneity of the subsamples #19010 and #19012 were checked by determination of Density at 15°C in accordance with ISO 12185 on 10 stratified randomly selected samples.

	Density at 15°C in kg/m ³
Sample #19010/12-1	745.72
Sample #19010/12-2	745.73
Sample #19010/12-3	745.71
Sample #19010/12-4	745.71
Sample #19010/12-5	745.69
Sample #19010/12-6	745.74
Sample #19010/12-7	745.74
Sample #19010/12-8	745.75
Sample #19010/12-9	745.74
Sample #19010/12-10	745.78

Table 1: homogeneity test results of subsamples #19010 and #19012

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

	Density at 15°C in kg/m ³
r (observed)	0.07
reference test method	D4052:18a
0.3 x R (ref. test method)	0.61

Table 2: evaluation of the repeatability of subsamples #19010 and #19012

The calculated repeatability of the results of the homogeneity tests for Density was less than 0.3 times the corresponding reproducibility of the reference test method. Therefore, the homogeneity of subsamples #19010 and #19012 was assumed.

2.4.2 GASOLINE – SAMPLE FOR DVPE

From the same Gasoline batch, approximately 100 liters were used to fill 98 bottles of 1 liter with approximately 750mL and labelled #19011. The homogeneity of the subsamples #19011 was checked by determination of Dry Vapour Pressure Equivalent in accordance with ASTM D5191 on 8 stratified randomly selected samples.

	DVPE in psi
Sample #19011-1	8.60
Sample #19011-2	8.61
Sample #19011-3	8.61
Sample #19011-4	8.61
Sample #19011-5	8.63
Sample #19011-6	8.61
Sample #19011-7	8.63
Sample #19011-8	8.61

Table 3: homogeneity test results of subsamples #19011

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

	DVPE in psi
r (observed)	0.03
reference test method	ASTM D5191:18
0.3 x R (ref. test method)	0.10

Table 4: evaluation of the repeatability of subsamples #19011

The calculated repeatability of the results of the homogeneity tests for DVPE was less than 0.3 times the reproducibility of the reference test method. Therefore, the homogeneity of subsamples #19011 was assumed.

To the participants, depending on their registration, 1x1 liter bottle of sample #19010 and/or 1x1 liter bottle (\pm 750mL filled) of sample #19011 and/or 2x1 liter bottles of sample #19012 were sent on January 30, 2019. An SDS was added to the sample package.

2.5 STABILITY OF THE SAMPLES

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

2.6 ANALYSES

The participants were requested to determine: on sample #19010: API Gravity, Aromatics by FIA, Benzene, Copper Corrosion, Silver corrosion, Density at 15°C, Distillation (IBP, at 10%, 50%, 90% and FBP), Doctor Test, Existent gum (solvent washed), Lead, Manganese, Olefins by FIA, Oxidation Stability, Oxygenates (DIPE, ETBE, Ethanol, Methanol, MTBE, TAME, Other Oxygenates), Oxygen content, Phosphorus and Total Sulfur.

Also some extra questions were asked about distillation and FIA determinations.

On sample #19011 was requested: Total Vapour Pressure and Dry Vapour Pressure Equivalent (acc. ASTM D5191 and EPA) and on sample #19012: 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 raw data of reported test results (no reanalyses). Additional or corrected test results are used for data analysis and original test results are placed under "Remarks" 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 test results are plotted. The corresponding laboratory numbers are on the X-axis.

The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected reference test method. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle.

Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms. Also a normal Gauss curve was projected over the Kernel Density Graph for reference.

3.3 Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements, e.g. ASTM or 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:

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

The $Z_{(\text{target})}$ scores are listed in the result tables of appendix 1 and 2.

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 interlaboratory study problems were encountered with the dispatch of the samples. Participants in Brazil, Kenya, Russian Federation, Saudi Arabia, Senegal, Turkey and Vietnam received the samples late or not at all. For the main round (113 participants), 12 participants did not report test results. For the “DVPE” round (80 participants), 7 participants did not report test results. For the “RON/MON” round (52 participants), 6 participants did not report test results. In total 19 participants reported test results after the final reporting date. Finally, in total 106 laboratories reported 1362 numerical test results. Observed were 55 outlying test results, which is 4.0%. 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 reported test results are discussed per sample and per test. The test methods, which were used by the various laboratories, were taken into account for explaining the observed differences where possible and applicable. These test methods are also in the tables together with the original test data. The abbreviations, used in these tables, are listed in appendix 5.

In the iis PT reports, ASTM test methods are referred to with a number e.g. D381 and an added designation for the year that the test method was adopted or revised e.g. D381:12. If applicable, a designation in parentheses is added to designate the year of reapproval e.g. D381:12 (2017). In the test results tables of appendix 1 only the test method number and year of adoption will be used.

Sample #19010

API Gravity: 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 ASTM D4052:18a.

Aromatics by FIA: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of ASTM D1319:18. No effect of change of dye could be determined as all, except one, reported to use the same dye lot no. <3000000975. See appendix 3 for the reported analytical details.

Benzene: This determination was not problematic. Five statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D3606:17.

Copper Corrosion: No problems have been observed. All reporting participants agreed on classification 1, 1a or 1b.

Silver Corrosion: No problems have been observed. All reporting participants, except one, agreed on classification 0.

Density at 15°C: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of ASTM D4052:18a.

Distillation: The distillation was not problematic. In total twenty statistical outliers were observed. However, the calculated reproducibilities after rejection of the statistical outliers are in agreement with the requirements of ASTM D86:18 automated mode. For manual mode the calculated reproducibilities are not in agreement for Initial and Final Boiling Point. In this proficiency test details were asked about the distillation equipment, see appendix 3 for the reported analytical details. However, the test results between the participants were consistent and showed little variation hence it was not useful to perform any subanalysis.

Doctor Test: All reporting laboratories, except one, agreed on the absence of Mercaptans and reported Negative.

Existent Gum: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D381:12 (2017).

Lead as Pb: This determination was not problematic. All reporting laboratories, except one, agree on a Lead content <3 mg/L. Therefore, no z-scores were calculated.

Manganese as Mn: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D3831:12 (2017).

Olefins by FIA: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of ASTM D1319:15. No effect of change of dye could be determined as all, except one, reported to use the same dye lot no. <3000000975. See appendix 3 for the reported analytical details.

Oxidation Stability: No problems have been observed. Most of the reporting laboratories agreed that the Oxidation Stability is >900 minutes.

Ethanol: 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 D4815:15b.

MTBE: This determination was problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D4815:15b.

Other Oxygenates: No other oxygenates were observed by the participating laboratories. Therefore, no z-scores were calculated.

Oxygen Content: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ASTM D4815:15b.

Phosphorus as P: This determination was very problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not at all in agreement with the requirements of ASTM D3231:13.

Sulfur, Total: This determination was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of ASTM D5453:16e1.

Sample #19011

TVP: This determination was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of ASTM D5191:15.

DVPE: The conversions of the measured Total Vapour Pressure to the corresponding Dry Vapour Pressure Equivalent (DVPE) as described in ASTM D5191:15 and to the U.S. EPA guidelines (40 CFR Part 80, App. E, Method 3) were not problematic. In total one statistical outlier was observed. Both calculated reproducibilities after rejection of the statistical outlier are in agreement with the respective requirements of ASTM D5191:15 and EPA guidelines. No calculations errors were observed.

Sample #19012

RON: This determination was problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D2699:18a.

MON: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of ASTM D2700:18a.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the relevant reference test method and the reproducibility as found for the group of participating laboratories. The number of significant test results, the average results of samples #19010, #19011 and #19012, the calculated reproducibility ($2.8 * sd$) and the target reproducibilities derived from reference test methods (in casu ASTM methods) are compared in the next table.

Parameter	unit	n	average	2.8 * sd	R (lit)
API Gravity	----	59	58.16	0.25	0.53
Aromatics by FIA	%V/V	43	32.0	4.0	3.7
Benzene	%V/V	47	0.91	0.07	0.17
Copper Corrosion 3 hrs at 50°C		84	1a	n.a.	n.a.
Silver Corrosion 3 hrs at 50°C		17	0	n.a.	n.a.
Density at 15°C	kg/m ³	96	745.9	0.7	2.0
- Initial Boiling Point	°C	87	36.9	5.1	4.7
- Temp. at 10% evaporated	°C	82	52.5	1.9	4.0
- Temp. at 50% evaporated	°C	87	94.5	3.1	4.0
- Temp. at 90% evaporated	°C	79	145.5	3.2	5.4
- Final Boiling Point	°C	83	175.6	4.0	7.1
Doctor Test		53	negative	n.a.	n.a.
Existent Gum (washed)	mg/100mL	43	0.54	0.83	2.08
Lead as Pb	mg/L	39	<3	n.a.	n.a.
Manganese as Mn	mg/L	31	3.8	1.9	3.3
Olefins by FIA	%V/V	43	8.2	3.8	2.9
Oxidation Stability	min.	35	>900	n.a.	n.a.
- Ethanol	%V/V	48	4.6	0.4	0.5
- MTBE	%V/V	45	1.78	0.22	0.18
Oxygen content	%M/M	44	2.0	0.2	0.2
Phosphorus as P	mg/L	6	0.46	0.14	0.06
Sulfur, total	mg/kg	81	6.0	2.2	2.2

Table 5: performance evaluation sample #19010

Parameter	unit	n	average	2.8 * sd	R (lit)
TVP	psi	58	9.4	0.3	0.3
DVPE acc. to ASTM D5191	psi	69	8.6	0.3	0.3
DVPE acc. EPA	psi	43	8.7	0.3	0.3

Table 6: performance evaluation sample #19011

Parameter	unit	n	average	2.8 * sd	R (lit)
RON		43	96.6	0.8	0.7
MON		33	85.9	1.3	0.9

Table 7: performance evaluation sample #19012

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

4.3 COMPARISON OF THE PROFICIENCY TEST OF FEBRUARY 2019 WITH PREVIOUS PTS

	February 2019	February 2018	February 2017	March 2016	February 2015
Number of reporting participants	106	110	111	107	123
Number of test results reported	1362	1327	1489	1435	1639
Number of statistical outliers	55	16	39	25	39
Percentage outliers	4.0%	1.2%	2.6%	1.7%	2.4%

table 8: 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 in the following table.

Parameter	February 2019	February 2018	February 2017	March 2016	February 2015
API Gravity	++	+	++	++	++
Aromatics by FIA	+/-	+/-	-	-	-
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.
Olefins by FIA	-	-	-	-	-
Ethanol	+	+/-	+/-	+	+/-
MTBE	-	-	-	--	-
Oxygen content	+/-	+/-	+/-	+/-	+/-

Parameter	February 2019	February 2018	February 2017	March 2016	February 2015
Phosphorus as P	--	-	--	--	--
Sulfur, total	+/-	+/-	+/-	+/-	+/-
TVP	+/-	+/-	+/-	+	+
DVPE	+/-	+	+/-	+	+
RON	-	-	-	-	+
MON	-	-	+/-	-	+/-

table 9: comparison determinations against the reference test method

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

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

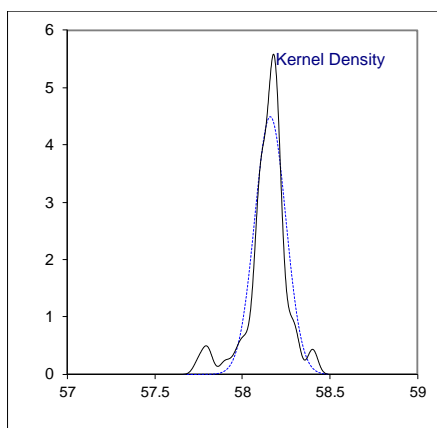
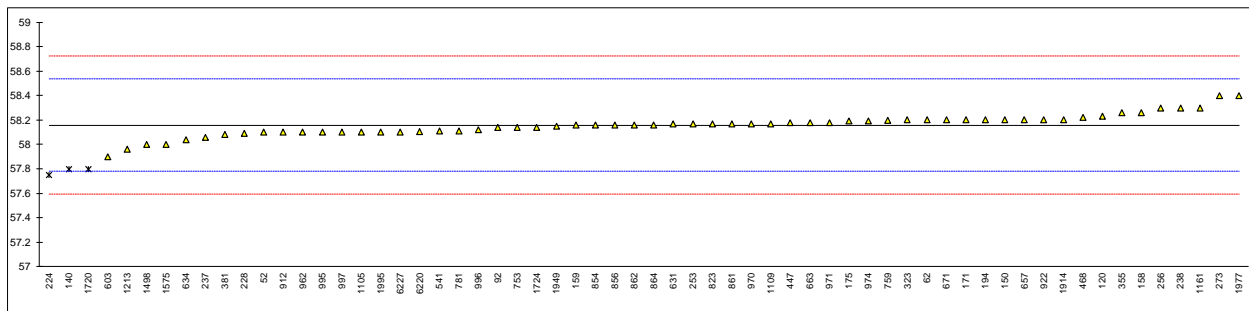
APPENDIX 1

Determination of API Gravity on sample #19010;

lab	method	value	mark	z(targ)	remarks
52	D4052	58.1		-0.31	
62	D4052	58.2		0.22	
92	D4052	58.14		-0.10	
120	D4052	58.23		0.38	
131		----		----	
140	D4052	57.8	R(0.05)	-1.91	
150	D4052	58.2		0.22	
158	D4052	58.26		0.54	
159	D4052	58.16		0.01	
169		----		----	
171	D4052	58.2		0.22	
175	D4052	58.19		0.17	
194	D4052	58.2		0.22	
217		----		----	
221		----		----	
224	D1298	57.75	C,R(0.05)	-2.17	first reported: 58.88
225		----		----	
228	D4052	58.09		-0.36	
230		----		----	
237	D4052	58.06		-0.52	
238	D4052	58.3		0.75	
253	D4052	58.17		0.06	
254		----		----	
256	D4052	58.3		0.75	
258		----		----	
273	D4052	58.4		1.29	
312		----		----	
323	D4052	58.2		0.22	
335		----		----	
336		----		----	
337		----		----	
353		----		----	
355	D4052	58.26		0.54	
381	ISO12185	58.08		-0.42	
444		----		----	
447	D4052	58.18		0.11	
468	D4052	58.22		0.33	
485		----		----	
541	D4052	58.11		-0.26	
555		----		----	
557		----		----	
558		----		----	
562		----		----	
603	D4052	57.9		-1.37	
631	D4052	58.166		0.04	
633		----		----	
634	D4052	58.04		-0.63	
657	D4052	58.20		0.22	
663	D4052	58.18		0.11	
671	D4052	58.2		0.22	
753	D4052	58.14		-0.10	
754		----		----	
759	D1298	58.195		0.19	
781	D4052	58.11		-0.26	
782		----		----	
823	D1298	58.17		0.06	
854	D4052	58.16		0.01	
856	D4052	58.16		0.01	
861	D4052	58.17		0.06	
862	D4052	58.16		0.01	
864	D4052	58.16		0.01	
912	D4052	58.1		-0.31	
922	D4052	58.2		0.22	
962	D4052	58.10		-0.31	
963		----		----	
970	D4052	58.17		0.06	
971	D4052	58.18		0.11	
974	Calculation	58.19		0.17	
995	D4052	58.1		-0.31	
996	D1298	58.12		-0.20	
997	D4052	58.1		-0.31	
998		----		----	
1006		----		----	
1012		----		----	
1016		----		----	
1017		----		----	

lab	method	value	mark	z(targ)	remarks
1059		----		----	
1080		----		----	
1105	D4052	58.1		-0.31	
1109	D4052	58.17		0.06	
1126		----		----	
1161	D287	58.3		0.75	
1171		----		----	
1199		----		----	
1213	D4052	57.96		-1.06	
1299		----		----	
1320		----		----	
1428		----		----	
1498	D4052	58.0		-0.84	
1531		----		----	
1575	D4052	58.0		-0.84	
1634		----		----	
1720	D4052	57.8	R(0.05)	-1.91	
1724	D4052	58.14		-0.10	
1730		----		----	
1746		----		----	
1807		----		----	
1810		----		----	
1811		----		----	
1849		----		----	
1914	D4052	58.20		0.22	
1949	D4052	58.15		-0.04	
1977	Calculated	58.40		1.29	
1984		----		----	
1995	D4052	58.10		-0.31	
2146		----		----	
6005		----		----	
6018		----		----	
6142		----		----	
6220	D4052	58.106		-0.28	
6227	D4052	58.1	C	-0.31	first reported: 742.63
6232		----		----	
6233		----		----	

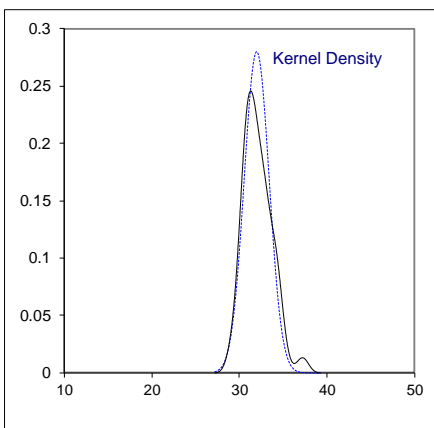
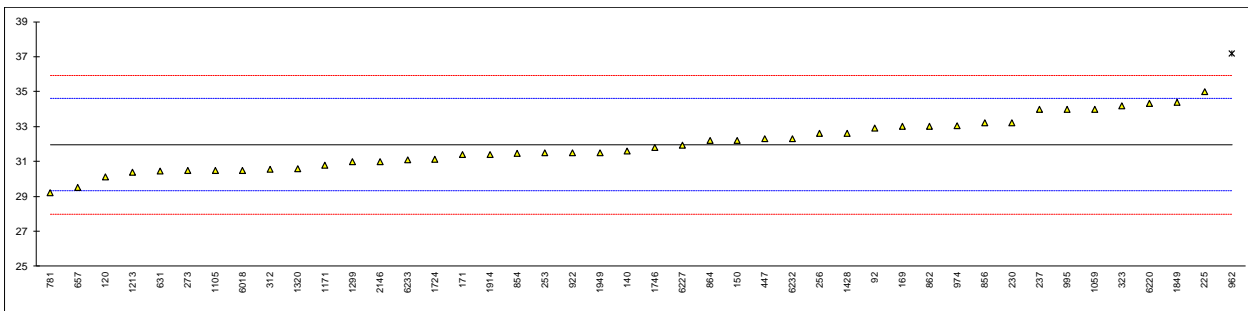
normality suspect
n 59
outliers 3
mean (n) 58.158
st.dev. (n) 0.0886
R(calc.) 0.248
st.dev.(D4052:18a) 0.1880
R(D4052:18a) 0.526



Determination of Aromatics by FIA on sample #19010; results in %V/V

lab	method	value	mark	z(targ)	remarks
52		----		----	
62		----		----	
92	D1319	32.9		0.72	
120	D1319	30.1		-1.40	
131		----		----	
140	D1319	31.6		-0.27	
150	D1319	32.2		0.19	
158		----		----	
159		----		----	
169	D1319	33.0		0.79	
171	D1319	31.4		-0.42	
175		----		----	
194		----		----	
217		----		----	
221		----		----	
224		----		----	
225	D1319	35.0		2.31	
228		----		----	
230	D1319	33.22		0.96	
237	D1319	34.0		1.55	
238		----		----	
253	D1319	31.50		-0.34	
254		----		----	
256	D5986	32.6		0.49	
258		----		----	
273	D1319	30.5		-1.10	
312	D1319	30.55		-1.06	
323	D1319	34.2		1.70	
335		----		----	
336		----		----	
337		----		----	
353		----		----	
355		----		----	
381		----		----	
444		----		----	
447	D1319	32.297		0.26	
468		----		----	
485		----		----	
541		----		----	
555		----		----	
557		----		----	
558		----		----	
562		----		----	
603		----		----	
631	In house	30.45		-1.14	
633		----		----	
634		----		----	
657	D1319	29.5		-1.85	
663		----		----	
671		----		----	
753		----		----	
754		----		----	
759		----		----	
781	D1319	29.2		-2.08	
782		----		----	
823		----		----	
854	D1319	31.46		-0.37	
856	D1319	33.2		0.95	
861		----		----	
862	D1319	33.0		0.79	
864	D1319	32.2		0.19	
912		----		----	
922	D1319	31.5		-0.34	
962	D1319	37.2	R(0.05)	3.97	
963		----		----	
970		----		----	
971		----		----	
974	D1319	33.03		0.82	
995	D1319	34.0		1.55	
996		----		----	
997		----		----	
998		----		----	
1006		----		----	
1012		----		----	
1016		----		----	
1017		----		----	

lab	method	value	mark	z(targ)	remarks
1059	D1319	34.0		1.55	
1080		----		----	
1105	D1319	30.5		-1.10	
1109		----		----	
1126		----		----	
1161		----		----	
1171	INH-1319	30.80		-0.87	
1199		----		----	
1213	D1319	30.40		-1.17	
1299	D1319	31.0		-0.72	
1320		30.58		-1.04	
1428	D1319	32.6		0.49	
1498		----		----	
1531		----		----	
1575		----		----	
1634		----		----	
1720		----		----	
1724	D1319	31.13		-0.62	
1730		----		----	
1746	D1319	31.8		-0.11	
1807		----		----	
1810		----		----	
1811		----		----	
1849	EN15553	34.4		1.85	
1914	D1319	31.4		-0.42	
1949	D1319	31.5		-0.34	
1977		----		----	
1984		----		----	
1995		----		----	
2146	ISO22854	31.0		-0.72	
6005		----		----	
6018	ISO22854	30.5		-1.10	
6142		----		----	
6220	D1319	34.32		1.79	
6227	D1319	31.93		-0.02	
6232	In house	32.3		0.26	
6233	D1319	31.097		-0.65	
normality		OK			
n		43			
outliers		1			
mean (n)		31.95			
st.dev. (n)		1.424			
R(calc.)		3.99			
st.dev.(D1319:18)		1.321			
R(D1319:18)		3.70			



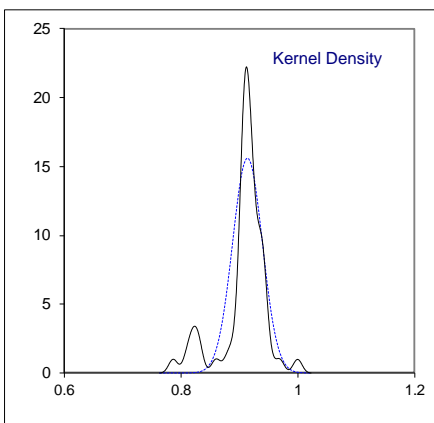
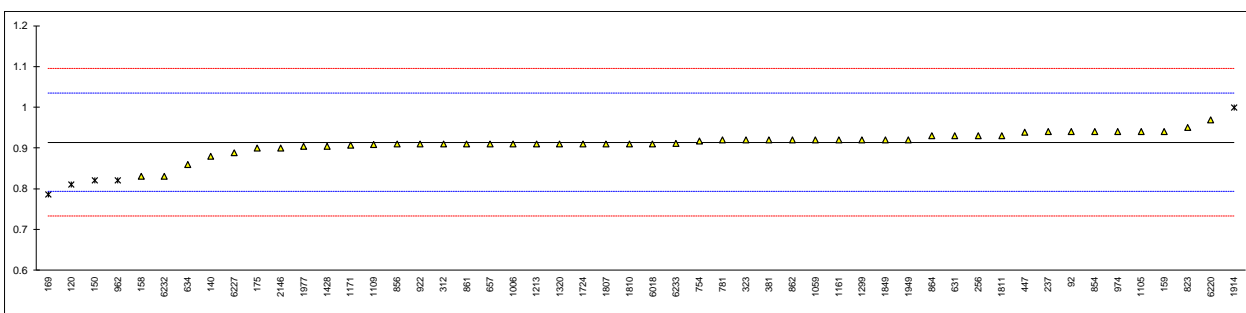
Determination of Benzene on sample #19010; results in %V/V

lab	method	value	mark	z(targ)	remarks
52		----		----	
62		----		----	
92	CGSBno.3.0-14.3	0.94		0.43	
120	D3606	0.81	R(0.05)	-1.73	
131		----		----	
140	D3606	0.88		-0.56	
150	D3606	0.82	R(0.05)	-1.56	
158	D3606	0.83		-1.39	
159	D3606	0.9402		0.43	
169	D3606	0.7865	R(0.05)	-2.11	
171		----		----	
175	D3606	0.90		-0.23	
194		----		----	
217		----		----	
221		----		----	
224		----		----	
225		----		----	
228		----		----	
230		----		----	
237	D5580	0.94		0.43	
238		----		----	
253		----		----	
254		----		----	
256	D5986	0.93		0.27	
258		----		----	
273		----		----	
312	D3606	0.91		-0.07	
323	D3606	0.92		0.10	
335		----		----	
336		----		----	
337		----		----	
353		----		----	
355		----		----	
381	EN22854	0.92		0.10	
444		----		----	
447	EN12177	0.939		0.41	
468		----		----	
485		----		----	
541		----		----	
555		----		----	
557		----		----	
558		----		----	
562		----		----	
603		----		----	
631	In house	0.93		0.27	
633		----		----	
634	D6277	0.86		-0.90	
657	D5580	0.91		-0.07	
663		----		----	
671		----		----	
753		----		----	
754	D6729	0.918		0.07	
759		----		----	
781	D6839	0.92		0.10	
782		----		----	
823	D5580	0.95		0.60	
854	D5580	0.94		0.43	
856	D5580	0.91		-0.07	
861	D5580	0.91		-0.07	
862	D5580	0.92		0.10	
864	D5580	0.93		0.27	
912		----		----	
922	D6277B	0.91		-0.07	
962	D5580	0.82	R(0.05)	-1.56	
963		----		----	
970		----		----	
971		----		----	
974	D5580	0.94		0.43	
995		----		----	
996		----		----	
997		----		----	
998		----		----	
1006	D5580	0.91		-0.07	
1012		----		----	
1016		----		----	
1017		----		----	

lab	method	value	mark	z(targ)	remarks
1059	ISO22854	0.92		0.10	
1080		----		----	
1105	D6839	0.94		0.43	
1109	D3606	0.908		-0.10	
1126		----		----	
1161	ISO22854	0.92		0.10	
1171	D6277	0.907		-0.12	
1199		----		----	
1213	D3606	0.91		-0.07	
1299	EN22854	0.92		0.10	
1320	ISO22854	0.91		-0.07	
1428	EN12177	0.904		-0.17	
1498		----		----	
1531		----		----	
1575		----		----	
1634		----		----	
1720		----		----	
1724	ISO22854	0.91		-0.07	
1730		----		----	
1746		----		----	
1807	EN22854	0.91		-0.07	
1810	D6839	0.91		-0.07	
1811	ISO22854	0.93		0.27	
1849	ISO22854	0.92		0.10	
1914	EN238	1.0	R(0.05)	1.43	
1949	D6839	0.92		0.10	
1977	D6730	0.9038		-0.17	
1984		----		----	
1995		----		----	
2146	ISO22854	0.90		-0.23	
6005		----		----	
6018	ISO22854	0.91		-0.07	
6142		----		----	
6220	D5580	0.969		0.91	
6227	D5580	0.889		-0.41	
6232	D6277	0.83		-1.39	
6233	D5580	0.911		-0.05	

normality not OK
n 47
outliers 5
mean (n) 0.914
st.dev. (n) 0.0256
R(calc.) 0.072
st.dev.(D3606:17) 0.0603
R(D3606:17) 0.169

Compare
R(D5580:15) 0.12



Determination of Copper Corrosion 3hrs at 50°C on sample #19010;

lab	method	value	mark	z(targ)	remarks
52	D130	1a		----	
62	D130	1b		----	
92	D130	1a		----	
120	D130	1A		----	
131		----		----	
140	D130	1a		----	
150	D130	1a		----	
158	D130	1A		----	
159	D130	1a		----	
169		----		----	
171	D130	1a		----	
175	D130	1a		----	
194		----		----	
217	D130	1A		----	
221		----		----	
224	D130	1a		----	
225	D130	1a		----	
228	D130	1A		----	
230	D130	1a		----	
237	D130	1A		----	
238		----		----	
253	D130	1a		----	
254		----		----	
256	D130	1A		----	
258	D130	1a		----	
273	D130	1a		----	
312	D130	1a		----	
323	D130	1A		----	
335	D130	1		----	
336	D130	1		----	
337		----		----	
353	IP154	1a		----	
355		----		----	
381	ISO2160	1		----	
444	D130	1a		----	
447	D130	1a		----	
468	D130	1A		----	
485		----		----	
541	D130	1a		----	
555		----		----	
557		----		----	
558		----		----	
562		----		----	
603	D130	1a		----	
631	D130	1A		----	
633	D130	1a		----	
634	D130	1a		----	
657	D130	1A		----	
663	D130	1a		----	
671	D130	1a		----	
753	D130	1A		----	
754	ISO2160	1a		----	
759		----		----	
781	D130	1A		----	
782		----		----	
823	D130	1a		----	
854	D130	1a		----	
856	D130	1a		----	
861	D130	1a		----	
862	D130	1a		----	
864	D130	1a		----	
912	D130	1A		----	
922	D130	1A		----	
962	D130	1A		----	
963		----		----	
970	D130	1a		----	
971	D130	1a		----	
974	D130	1a		----	
995	D130	1a		----	
996	D130	1a		----	
997		----		----	
998		----		----	
1006	D130	1a		----	
1012	D130	1a		----	
1016	D130	1A		----	
1017	D130	1A		----	

lab	method	value	mark	z(targ)	remarks
1059	D130	1a		----	
1080	D130	1a		----	
1105	D130	1a		----	
1109	D130	1a		----	
1126		----		----	
1161	ISO2160	1A		----	
1171	ISO2160	1A		----	
1199		----		----	
1213	D130	1a		----	
1299	D130	1A		----	
1320		----		----	
1428	D130	1A		----	
1498		----		----	
1531	D130	1		----	
1575	D130	1a		----	
1634	D130	1a		----	
1720		----		----	
1724		1a		----	
1730		----		----	
1746	D130	1a		----	
1807	ISO2160	1A		----	
1810		----		----	
1811		----		----	
1849	ISO2160	1A		----	
1914	D130	1A		----	
1949	D130	1a		----	
1977	ISO2160	1A		----	
1984		----		----	
1995	D130	1A		----	
2146		----		----	
6005	ISO2160	1a		----	
6018	ISO2160	1a		----	
6142		----		----	
6220	D130	1A		----	
6227	D130	1a		----	
6232	D130	1a		----	
6233	D130	1a		----	
	n	84			
	mean (n)	1a			

Determination of Silver Corrosion 3hrs at 50°C on sample #19010;

lab	method	value	mark	z(targ)	remarks
52	D7671-A	0		----	
62	D7671-A	0		----	
92		----		----	
120	D4814	0		----	
131		----		----	
140	D7671-B	0		----	
150	D7671-B	0		----	
158		----		----	
159	D7671-A	0		----	
169		----		----	
171	D7671-A	0		----	
175		----		----	
194		----		----	
217		----		----	
221		----		----	
224		----		----	
225		----		----	
228		----		----	
230		----		----	
237		----		----	
238		----		----	
253		----		----	
254		----		----	
256		----		----	
258		----		----	
273		----		----	
312	D7671-A	0		----	
323	D7671-A	0		----	
335		----		----	
336	D7671-A	0		----	
337		----		----	
353		----		----	
355		----		----	
381		----		----	
444		----		----	
447		----		----	
468		----		----	
485		----		----	
541		----		----	
555		----		----	
557		----		----	
558		----		----	
562		----		----	
603		----		----	
631		----		----	
633		----		----	
634		----		----	
657	D7671-A	0		----	
663	D7671-A	0		----	
671		----		----	
753		----		----	
754		----		----	
759		----		----	
781		----		----	
782		----		----	
823	D7671-A	0		----	
854		----		----	
856		----		----	
861		----		----	
862	D7671-A	0		----	
864		----		----	
912		----		----	
922		----		----	
962		----		----	
963		----		----	
970		----		----	
971		----		----	
974		----		----	
995		----		----	
996		----		----	
997		----		----	
998		----		----	
1006		----		----	
1012		----		----	
1016	D7667-A	0		----	
1017		----		----	

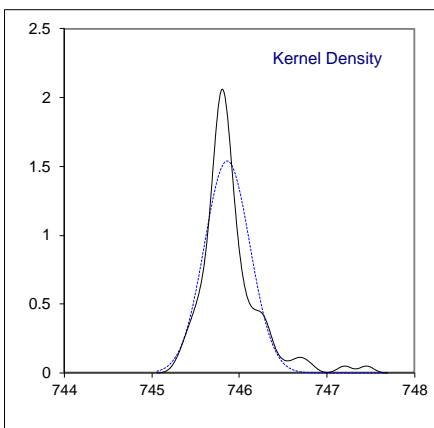
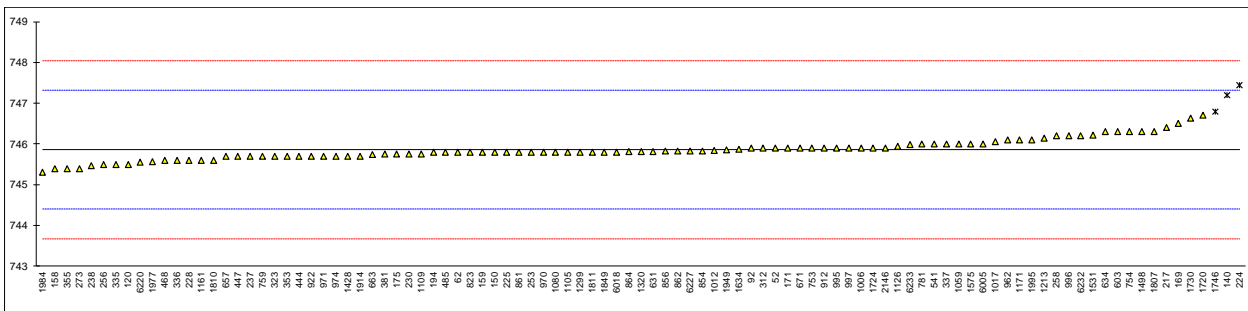
lab	method	value	mark	z(targ)	remarks
1059		----		----	
1080		----		----	
1105		----		----	
1109	D7671-A	1		----	
1126		----		----	
1161		----		----	
1171		----		----	
1199		----		----	
1213		----		----	
1299		----		----	
1320		----		----	
1428		----		----	
1498		----		----	
1531		----		----	
1575		----		----	
1634		----		----	
1720		----		----	
1724		----		----	
1730		----		----	
1746		----		----	
1807		----		----	
1810		----		----	
1811		----		----	
1849		----		----	
1914	D7667-A	0		----	
1949	D7671-A	0		----	
1977		----		----	
1984		----		----	
1995		----		----	
2146		----		----	
6005		----		----	
6018		----		----	
6142		----		----	
6220		----		----	
6227		----		----	
6232		----		----	
6233		----		----	
	n	17			
	mean (n)	0			

Determination of Density at 15°C on sample #19010; results in kg/m³

lab	method	value	mark	z(targ)	remarks
52	D4052	745.9		0.05	
62	D4052	745.8		-0.08	
92	D4052	745.9		0.05	
120	D4052	745.5		-0.49	
131		-----		-----	
140	D4052	747.2	C,R(0.01)	1.84	first reported: 0.7472 without unit
150	D4052	745.8		-0.08	
158	D4052	745.4		-0.63	
159	D4052	745.8		-0.08	
169	D4052	746.5	C	0.88	first reported: 0.74645 kg/m ³
171	D4052	745.9		0.05	
175	D4052	745.75		-0.15	
194	D4052	745.8		-0.08	
217	D4052	746.4		0.74	
221		-----		-----	
224	D1298	747.45	C,R(0.01)	2.18	first reported: 743.0 without unit
225	D4052	745.8		-0.08	
228	D4052	745.6		-0.36	
230	D4052	745.75		-0.15	
237	D4052	745.7		-0.22	
238	D4052	745.47		-0.54	
253	D4052	745.8		-0.08	
254		-----		-----	
256	D4052	745.5		-0.49	
258	D4052	746.2		0.47	
273	D4052	745.4		-0.63	
312	D4052	745.9		0.05	
323	D4052	745.7		-0.22	
335	D4052	745.5		-0.49	
336	D4052	745.6		-0.36	
337	D4052	746.0		0.19	
353	IP365	745.7		-0.22	
355	D4052	745.4		-0.63	
381	ISO12185	745.75		-0.15	
444	D4052	745.7		-0.22	
447	D4052	745.7		-0.22	
468	D4052	745.6		-0.36	
485	D4052	745.8		-0.08	
541	D4052	746.00		0.19	
555		-----		-----	
557		-----		-----	
558		-----		-----	
562		-----		-----	
603	D4052	746.3		0.60	
631	D4052	745.815		-0.06	
633		-----		-----	
634	D4052	746.3		0.60	
657	D4052	745.7		-0.22	
663	D4052	745.74		-0.17	
671	D4052	745.9		0.05	
753	D4052	745.9		0.05	
754	ISO12185	746.3		0.60	
759	D4052	745.7		-0.22	
781	D4052	746.0		0.19	
782		-----		-----	
823	D4052	745.8		-0.08	
854	D4052	745.83		-0.04	
856	D4052	745.82		-0.06	
861	D4052	745.8		-0.08	
862	D4052	745.82		-0.06	
864	D4052	745.81		-0.07	
912	D4052	745.9		0.05	
922	D4052	745.7		-0.22	
962	D4052	746.1		0.33	
963		-----		-----	
970	D4052	745.8		-0.08	
971	D4052	745.7		-0.22	
974	D4052	745.7		-0.22	
995	D4052	745.9		0.05	
996	D1298	746.2		0.47	
997	D4052	745.9		0.05	
998		-----		-----	
1006	D4052	745.9		0.05	
1012	D4052	745.84		-0.03	
1016		-----		-----	
1017	D4052	746.06		0.27	

lab	method	value	mark	z(targ)	remarks
1059	D4052	746.0		0.19	
1080	D4052	745.8		-0.08	
1105	D4052	745.8		-0.08	
1109	D4052	745.76		-0.14	
1126	ISO12185	745.94		0.11	
1161	ISO12185	745.6		-0.36	
1171	D4052	746.10		0.33	
1199		-----		-----	
1213	D4052	746.15	C	0.40	reported: 0.74615 kg/m ³
1299	D4052	745.8		-0.08	
1320	D4052	745.81		-0.07	
1428	D4052	745.7		-0.22	
1498	D4052	746.3		0.60	
1531	ISO12185	746.21		0.48	
1575	D4052	746.0		0.19	
1634	D4052	745.873		0.02	
1720	D4052	746.7		1.15	
1724	D4052	745.9		0.05	
1730	D4052	746.64		1.07	
1746	D4052	746.8	R(0.05)	1.29	
1807	ISO12185	746.3		0.60	
1810	ISO12185	745.6		-0.36	
1811	ISO12185	745.8		-0.08	
1849	ISO12185	745.8		-0.08	
1914	D4052	745.7		-0.22	
1949	D4052	745.86		0.00	
1977	ISO3675	745.57		-0.40	
1984	ISO12185	745.3		-0.77	
1995	D4052	746.1		0.33	
2146	ISO12185	745.9		0.05	
6005	D1298	746.0		0.19	
6018	ISO12185	745.8		-0.08	
6142		-----		-----	
6220	D4052	745.55		-0.43	
6227	D4052	745.82		-0.06	
6232	ISO12185	746.2	C	0.47	first reported: 748.4
6233	D4052	745.99		0.18	

normality suspect
 n 96
 outliers 3
 mean (n) 745.860
 st.dev. (n) 0.2587
 R(calc.) 0.724
 st.dev.(D4052:18a) 0.7294
 R(D4052:18a) 2.042



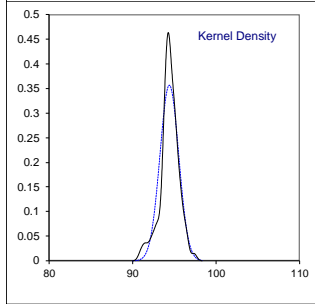
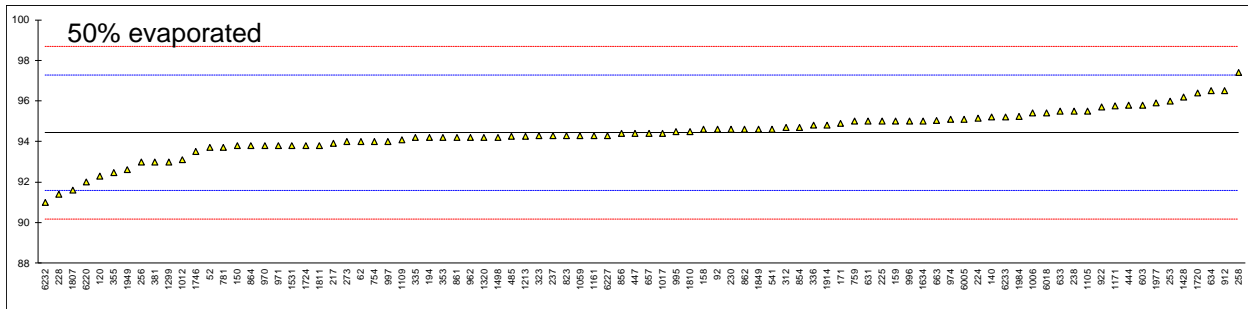
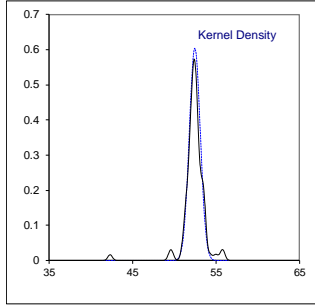
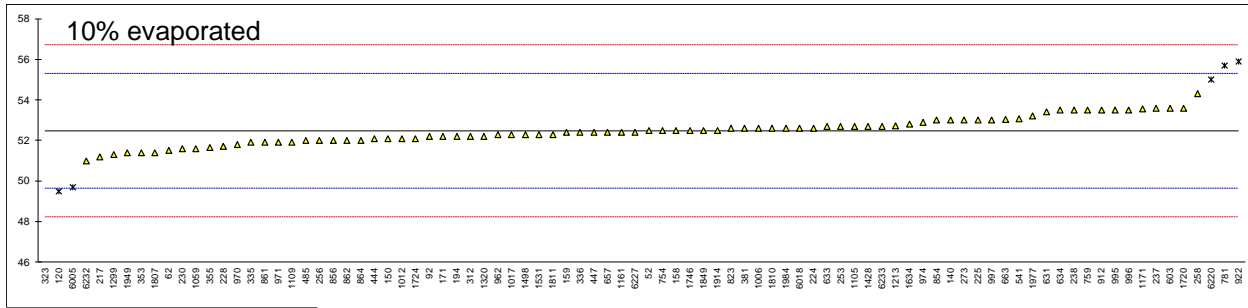
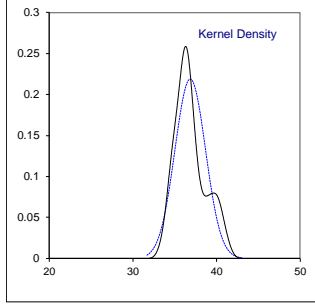
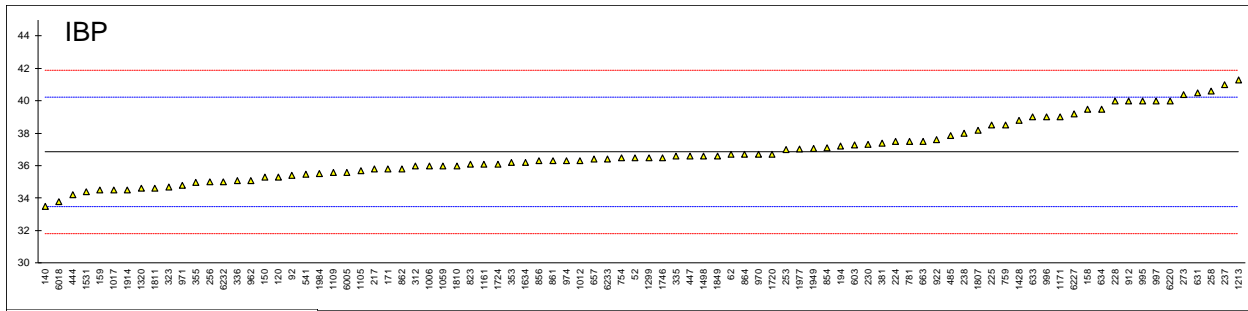
Determination of Distillation at 760 mm Hg ASTM D86 on sample #19010; results in °C

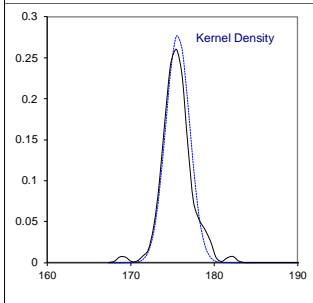
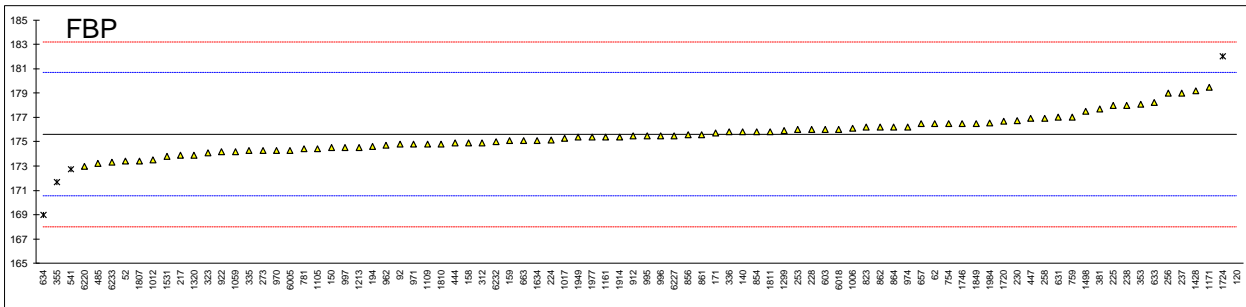
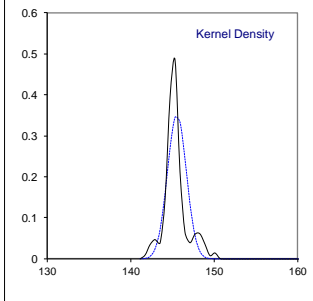
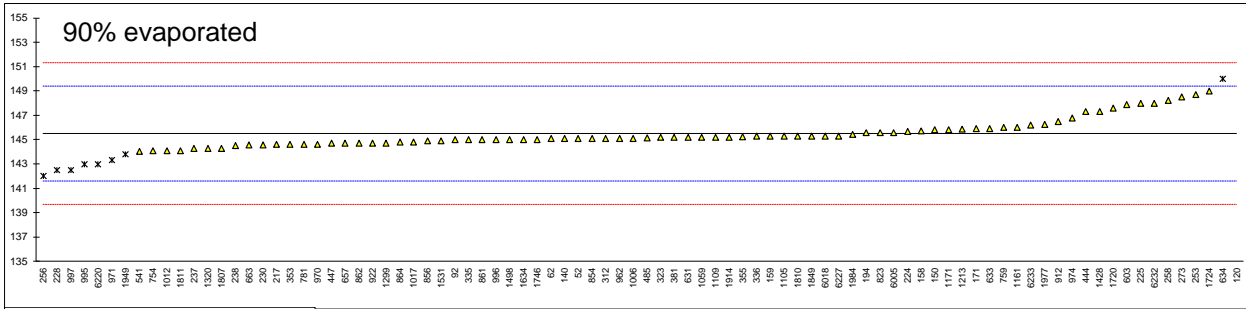
lab	method	IBP	mark	10%	mark	50%	mark	90%	mark	FBP	mark
52	D86-automated	36.5		52.5		93.7		145.1		173.4	
62	D86-automated	36.7	C	51.5		94.0		145.1		176.5	
92	D86-automated	35.4		52.2		94.6		145.0		174.8	
120	D86-automated	35.3	ex	49.5	R(0.05)	92.3	ex	292.5	R(0.01)	338.2	R(0.01)
131		----		----		----		----		----	
140	D86-automated	33.5		53.0		95.2		145.1		175.8	
150	D86-automated	35.3		52.1		93.8		145.8		174.5	
158	D86-automated	39.5		52.5		94.6		145.7		174.9	
159	D86-automated	34.5		52.4		95.0		145.3		175.1	
169		----		----		----		----		----	
171	D86-automated	35.8		52.2		94.9		145.9		175.7	
175		----		----		----		----		----	
194	D86-automated	37.2		52.2		94.2		145.6		174.6	
217	D86-automated	35.8		51.2		93.9		144.6		173.9	
221		----		----		----		----		----	
224	D86-manual	37.50		52.61		95.15		145.69		175.12	
225	D86-manual	38.5		53.0		95.0		148.0		178.0	
228		40.0		51.7		91.4		142.5	R(0.05)	176.0	
230	D86-manual	37.31		51.59		94.60		144.59		176.74	
237	D86-manual	41.0		53.6		94.3		144.3		179.0	
238	D86-manual	38.0		53.5		95.5		144.5		178.0	
253	D86-manual	37.0		52.7		96.0		148.7		176.0	
254		----		----		----		----		----	
256	D86-manual	35.0		52.0		93.0		142.0	R(0.05)	179.0	
258	D86-automated	40.6		54.3		97.4		148.2		176.9	
273	D86-automated	40.4		53.0		94.0		148.5		174.3	
312	D86-automated	36.0		52.2		94.7		145.1		174.9	
323	D86-automated	34.7		42.3	R(0.01)	94.3		145.2		174.1	
335	D86-automated	36.6		51.9		94.2		145.0		174.3	
336		35.1		52.4		94.8		145.3		175.8	
337		----		----		----		----		----	
353	IP123-automated	36.2		51.4		94.2		144.6		178.1	
355	D86-manual	34.97		51.66		92.47		145.25		171.70	R(0.01)
381	D86-automated	37.4		52.6		93.0		145.2		177.7	
444	D86-automated	34.2		52.1		95.8		147.3		174.9	
447	D86-automated	36.6		52.4		94.4		144.7		176.9	
468		----		----		----		----		----	
485		37.85		52.00		94.25		145.15		173.20	
541	D86-automated	35.49		53.06		94.62		144.04		172.74	R(0.01)
555		----		----		----		----		----	
557		----		----		----		----		----	
558		----		----		----		----		----	
562		----		----		----		----		----	
603		37.3		53.6		95.8		147.9		176.0	
631	D86-automated	40.5		53.4		95.0		145.2		177.0	
633		39.0		52.7		95.5		145.9		178.2	
634	D86-manual	39.5		53.5		96.5		150.0	R(0.05)	169.0	R(0.01)
657	D86-automated	36.4		52.4		94.4		144.7		176.5	
663	D86-automated	37.50		53.05		95.05		144.55		175.10	
671		----		----		----		----		----	
753		----		----		----		----		----	
754	ISO3405-manual	36.5		52.5		94.0		144.1		176.5	
759	D86-manual	38.5		53.5		95.0		146.0		177.0	
781	D86-automated	37.5		55.7	R(0.05)	93.7		144.6		174.4	
782		----		----		----		----		----	
823		36.1		52.6		94.3		145.6		176.2	
854	D86-automated	37.1		53.0		94.7		145.1		175.8	
856	D86-automated	36.3		52.0		94.4		144.9		175.6	
861	D86-automated	36.3		51.9		94.2		145.0		175.6	
862	D86-automated	35.8		52.0		94.6		144.7		176.2	
864	D86-automated	36.7		52.0		93.8		144.8		176.2	
912		40		53.5		96.5		146.5		175.5	
922	D86-automated	37.6		55.9	R(0.05)	95.7		144.7		174.2	
962	D86-automated	35.1		52.3		94.2		145.1		174.7	
963		----		----		----		----		----	
970	D86-automated	36.7		51.8		93.8		144.6		174.3	
971	D86-automated	34.8		51.9		93.8		143.3	R(0.05)	174.8	
974	D86-automated	36.3		52.9		95.1		146.8		176.2	
995	D86-manual	40.0		53.5		94.5		143.0	R(0.05)	175.5	
996	D86-manual	39.0		53.5		95.0		145.0		175.5	
997	D86-manual	40.0		53.0		94.0		142.5	R(0.05)	174.5	
998		----		----		----		----		----	
1006	D86-automated	36.0		52.6		95.4		145.1		176.1	
1012	D86-automated	36.3		52.1		93.1		144.1		173.5	
1016		----		----		----		----		----	
1017	D86-automated	34.5		52.3		94.4		144.8		175.3	

lab	method	IBP	mark	10%	mark	50%	mark	90%	mark	FBP	mark
1059	D86-automated	36.0		51.6		94.3		145.2		174.2	
1080		----		----		----		----		----	
1105	D86-automated	35.7		52.7		95.5		145.3		174.4	
1109	D86-automated	35.6		51.9		94.1		145.2		174.8	
1126		----		----		----		----		----	
1161	ISO3405	36.1		52.4		94.3		146.0		175.4	
1171	ISO3405-manual	39.03		53.55		95.75		145.80		179.47	
1199		----		----		----		----		----	
1213	D86	41.30		52.73		94.27		145.87		174.50	
1299	D86-automated	36.5		51.3		93.0		144.7		175.9	
1320		34.6		52.2		94.2		144.3		173.9	
1428		38.8		52.7		96.2		147.3		179.2	
1498		36.6		52.3		94.2		145.0		177.5	
1531		34.4		52.3		93.8		144.9		173.8	
1575		----		----		----		----		----	
1634	D86-automated	36.2		52.8		95.0		145.0		175.1	
1720		36.7		53.6		96.4		147.6		176.7	
1724	D86	36.1		52.1		93.8		149.0		182.0	R(0.01)
1730		----		----		----		----		----	
1746	D86-manual	36.5		52.5		93.5		145.0		176.5	
1807	ISO3405-automated	38.2		51.4		91.6		144.3		173.4	
1810	D86-automated	36.0		52.6		94.5		145.3		174.8	
1811	D86-automated	34.6		52.3		93.8		144.1		175.8	
1849	ISO3405-automated	36.6		52.5		94.6		145.3		176.5	
1914	D86-automated	34.5		52.5		94.8		145.2		175.4	
1949	D86-manual	37.05		51.38		92.62		143.80	R(0.05)	175.38	
1977	D86-automated	37.04		53.21		95.91		146.24		175.39	
1984	ISO3405-automated	35.5		52.6		95.25		145.45		176.55	
1995		----		----		----		----		----	
2146		----		----		----		----		----	
6005	ISO3405-automated	35.6		49.7	R(0.05)	95.1		145.6		174.3	
6018	ISO3405-automated	33.8		52.6		95.4		145.3		176.0	
6142		----		----		----		----		----	
6220	D86-manual	40		55	R(0.05)	92		143	R(0.05)	173	
6227	D86-automated	39.2		52.4		94.3		145.3		175.5	
6232	D86-manual	35		51		91		148		175	
6233	D86-automated	36.40		52.70		95.20		146.20		173.30	
	normality	OK		OK		suspect		not OK		OK	
	n	87		82		87		79		83	
	outliers	0 +1ex		6		0 +1ex		9		5	
	mean (n)	36.87		52.47		94.46		145.50		175.62	
	st.dev. (n)	1.823		0.660		1.100		1.132		1.435	
	R(calc.)	5.10		1.85		3.08		3.17		4.02	
	st.dev.(D86-A:18)	1.679		1.414		1.419		1.938		2.536	
	R(D86-A:18)	4.7		3.96		3.97		5.43		7.1	
Compare											
	R(D86-M:18)	4.3		3.33		3.35		3.96		3.1	

Lab 62 first reported for IBP: 23.3

Lab 120 some test results excluded as related test results are statistical outliers





Determination of Doctor Test on sample #19010;

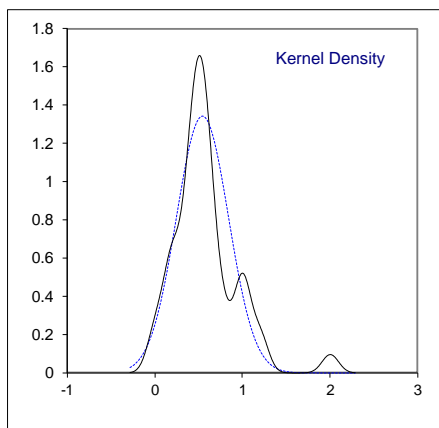
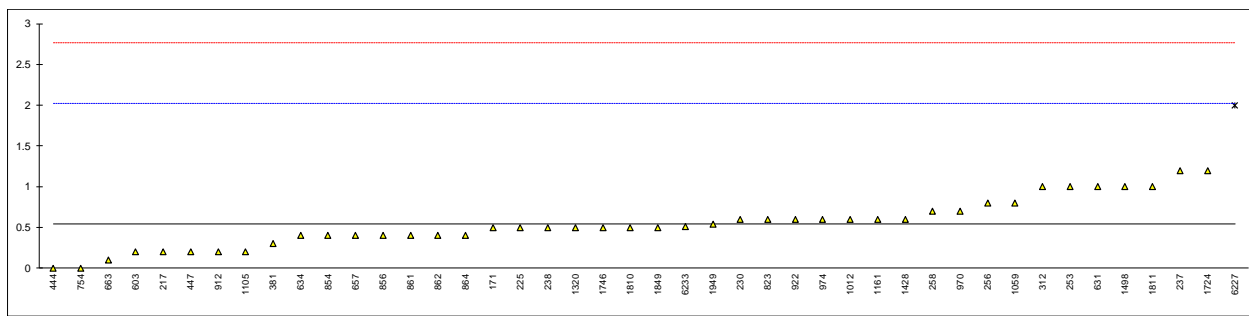
lab	method	value	mark	z(targ)	remarks
52	D4952	NEG		----	
62		----		----	
92	D4952	Negative		----	
120	D4952	Negative		----	
131		----		----	
140	D4952	negative		----	
150	D4952	neg		----	
158	D4952	Negative	C	----	first reported: Positive
159	D4952	Negative		----	
169		----		----	
171	D4952	negative		----	
175		----		----	
194		----		----	
217	IP30	negative		----	
221		----		----	
224		----		----	
225	D4952	Negative		----	
228	D4952	NEGATIVE		----	
230	D4952	Negative		----	
237	D4952	NEGATIVE		----	
238	D4952	Negative		----	
253		----		----	
254		----		----	
256	IP30	Negative		----	
258	D4952	Negative		----	
273	IP30	Negative		----	
312	IP30	Negative		----	
323	D4952	negative		----	
335		----		----	
336		----		----	
337		----		----	
353		----		----	
355		----		----	
381		----		----	
444		----		----	
447	D4952	Negative [sweet]		----	
468		----		----	
485		----		----	
541	IP30	Negative		----	
555		----		----	
557		----		----	
558		----		----	
562		----		----	
603		----		----	
631		----		----	
633		----		----	
634		----		----	
657	IP30	Negative		----	
663	D4952	Negative		----	
671		----		----	
753		----		----	
754	D4952	negative		----	
759		----		----	
781	D4952	Negative		----	
782		----		----	
823	D4952	Negative		----	
854	D4952	Negative		----	
856	D4952	Negative		----	
861	D4952	Negative		----	
862	D4952	negative		----	
864	D4952	Pass		----	
912	D4952	Negative		----	
922	D4952	Negative		----	
962	D4952	Negative		----	
963		----		----	
970	D4952	Negative		----	
971	D4952	Negative		----	
974	IP30	Negative		----	
995	D4952	negative		----	
996	D4952	negative		----	
997	D4952	negative		----	
998		----		----	
1006		----		----	
1012		----		----	
1016	IP30	Doctor negative		----	
1017		----		----	

lab	method	value	mark	z(targ)	remarks
1059	D4952	negative		----	
1080		----		----	
1105	D4952	negative		----	
1109	IP30	Negative		----	
1126		----		----	
1161		----		----	
1171		----		----	
1199		----		----	
1213		----		----	
1299	IP30	negative		----	
1320		----		----	
1428		Negative		----	
1498		----		----	
1531		----		----	
1575		----		----	
1634		----		----	
1720	D4952	negative		----	
1724	IP30	positive		----	possibly a false positive test result?
1730		----		----	
1746	D4952	Negative		----	
1807	D4952	NEGATIVE		----	
1810		----		----	
1811		----		----	
1849	D4952	Negative		----	
1914	D4952	sweet		----	
1949	D4952	sweet		----	
1977		----		----	
1984		----		----	
1995		----		----	
2146		----		----	
6005		----		----	
6018		----		----	
6142		----		----	
6220		----		----	
6227	D4952	negative		----	
6232		----		----	
6233		----		----	
	n	53			
	mean(n)	negative			

Determination of Existent Gum (solvent washed) on sample #19010; results in mg/100mL

lab	method	value	mark	z(targ)	remarks
52	D381	<0.5		----	
62	D381	<0.5		----	
92	D381	<0.5		----	
120	D381	<0.5		----	
131				----	
140	D381	<0.5		----	
150	D381	<0.5		----	
158				----	
159				----	
169				----	
171	D381	0.5		-0.06	
175				----	
194				----	
217	D381	0.2		-0.46	
221				----	
224				----	
225	D381	0.5		-0.06	
228				----	
230	D381	0.6		0.08	
237	D381	1.2		0.89	
238	D381	0.5		-0.06	
253	IP540	1.0		0.62	
254				----	
256	D381	0.8		0.35	
258	D381	0.7		0.21	
273	D381	<1		----	
312	D381	1.0		0.62	
323	D381	<0.5		----	
335				----	
336				----	
337				----	
353	IP131	<1		----	
355				----	
381	ISO6246	0.3		-0.33	
444	D381	0		-0.73	
447	D381	0.2		-0.46	
468	D381	<1		----	
485				----	
541	D381	<0.5		----	
555				----	
557				----	
558				----	
562				----	
603	D381	0.2		-0.46	
631	D381	1.0		0.62	
633				----	
634	D381	0.4		-0.19	
657	D381	0.4		-0.19	
663	D381	0.1		-0.60	
671	IP540	<0.5		----	
753				----	
754	ISO6246	0		-0.73	
759				----	
781	D381	<0.5		----	
782				----	
823	D381	0.6		0.08	
854	D381	0.4		-0.19	
856	D381	0.4		-0.19	
861	D381	0.4		-0.19	
862	D381	0.4		-0.19	
864	D381	0.4		-0.19	
912	D381	0.2		-0.46	
922	D381	0.6		0.08	
962				----	
963				----	
970	D381	0.7		0.21	
971				----	
974	D381	0.6		0.08	
995				----	
996				----	
997				----	
998				----	
1006	D381	<0.5		----	
1012	D381	0.6		0.08	
1016				----	
1017				----	

lab	method	value	mark	z(targ)	remarks
1059	ISO6246	0.8		0.35	
1080	ISO6246	<1		----	
1105	D381	0.2		-0.46	
1109	D381	<0.5		----	
1126		----		----	
1161	ISO6246	0.6		0.08	
1171		----		----	
1199		----		----	
1213	D381	<0.5		----	
1299	D381	<1		----	
1320	D381	0.5		-0.06	
1428	D381	0.6		0.08	
1498	D381	1.0		0.62	
1531		----		----	
1575		----		----	
1634		----		----	
1720		----		----	
1724	D381	1.2		0.89	
1730		----		----	
1746	D381	0.5		-0.06	
1807	ISO6246	<0,5		----	
1810	D381	0.5		-0.06	
1811	D381	1.0		0.62	
1849	ISO6246	0.5		-0.06	
1914	D381	< 0.5		----	
1949	D381	0.54		0.00	
1977		----		----	
1984		----		----	
1995		----		----	
2146		----		----	
6005		----		----	
6018		----		----	
6142		----		----	
6220		----		----	
6227	D381	2.0	R(0.01)	1.96	
6232		----		----	
6233	D381	0.51		-0.04	
normality		OK			
n		43			
outliers		1			
mean (n)		0.543			
st.dev. (n)		0.2969			
R(calc.)		0.831			
st.dev.(D381:12)		0.7416			
R(D381:12)		2.077			



Determination of Lead as Pb on sample #19010; results in mg/L

lab	method	value	mark	z(targ)	remarks
52	D3237	<2.5		----	
62		----		----	
92		----		----	
120	D3237	1.16		----	
131		----		----	
140	D3237	0.487		----	
150		----		----	
158		----		----	
159		----		----	
169		----		----	
171	D3237	<0.1		----	
175		----		----	
194		----		----	
217		----		----	
221		----		----	
224		----		----	
225		----		----	
228		----		----	
230	D7111	0.253		----	
237	IP352	<2.5		----	
238		----		----	
253		----		----	
254		----		----	
256		----		----	
258	D3237	3.9		----	possibly a false positive test result?
273		----		----	
312	D3237	<2,5		----	
323	D3237	<2.5		----	
335		----		----	
336		----		----	
337		----		----	
353		----		----	
355		----		----	
381	EN237	<2,5		----	
444		----		----	
447		----		----	
468		----		----	
485		----		----	
541	D3237	<2.5		----	
555		----		----	
557		----		----	
558		----		----	
562		----		----	
603		----		----	
631	D3237	<0.0025		----	possibly a unit error?
633		----		----	
634		----		----	
657	D3237	<2.5		----	
663		----		----	
671		----		----	
753		----		----	
754		----		----	
759		----		----	
781	D3237	0.65		----	
782		----		----	
823		----		----	
854	D3237	1.1		----	
856	D3237	<2.5		----	
861	D3237	<2.5		----	
862	D3237	1.1		----	
864	D3237	<2.5		----	
912		----		----	
922	D3237	<2.5		----	
962		----		----	
963		----		----	
970		----		----	
971	D3237	0.899		----	
974		----		----	
995	D3237	1.7	C	----	first reported: 4.7
996		----		----	
997		----		----	
998		----		----	
1006	D3237	<0.25		----	
1012		----		----	
1016		----		----	
1017		----		----	

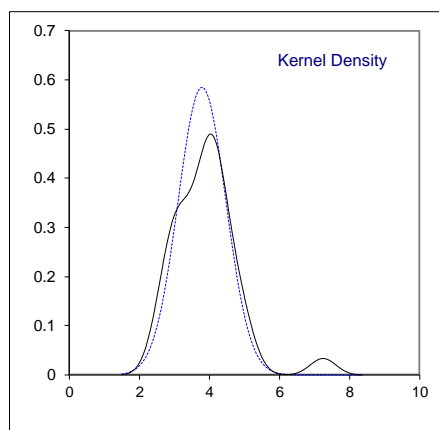
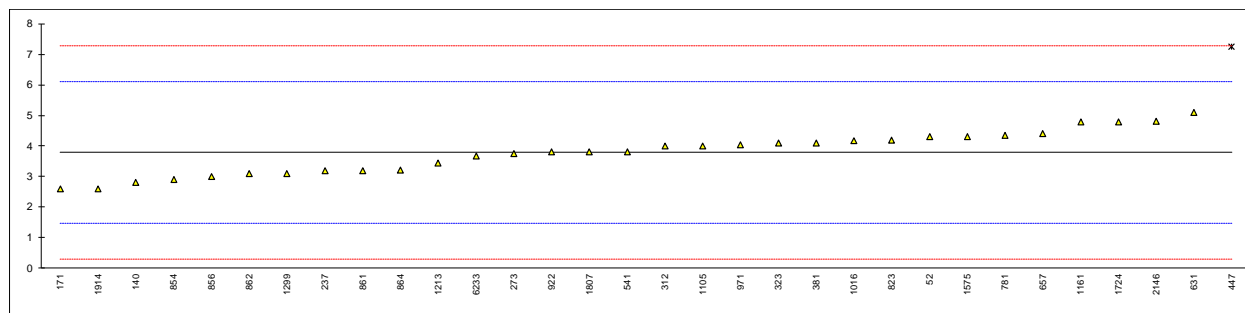
lab	method	value	mark	z(targ)	remarks
1059	EN13723	2.3		----	
1080		----		----	
1105	D8110	1.09		----	
1109		----		----	
1126		----		----	
1161	EN237	<2.5		----	
1171	D5059	0.7		----	
1199		----		----	
1213	D3237	Not detected		----	
1299	EN237	<2.5		----	
1320		----		----	
1428	EN237	<2,5		----	
1498		----		----	
1531		----		----	
1575	D5059	<2.6		----	
1634		----		----	
1720		----		----	
1724	D3237	<3.0		----	
1730		----		----	
1746	D3237	1.8		----	
1807	EN237	<3		----	
1810		----		----	
1811		----		----	
1849	EN237	<3,0		----	
1914	D3237	< 2.5		----	
1949	D3237	<2.5		----	
1977		----		----	
1984		----		----	
1995		----		----	
2146	In house	<2		----	
6005		----		----	
6018		----		----	
6142		----		----	
6220		----		----	
6227		----		----	
6232	D5059	1.1		----	
6233	D3237	<2.5		----	
n		39			
mean (n)		<3			Application range: 2.5 – 25 mg/L

Determination of Manganese as Mn on sample #19010; results in mg/L

lab	method	value	mark	z(targ)	remarks
52	D3831	4.3		0.44	
62		----		----	
92		----		----	
120		----		----	
131		----		----	
140	D3831	2.8		-0.85	
150		----		----	
158		----		----	
159		----		----	
169		----		----	
171	D3831	2.6		-1.02	
175		----		----	
194		----		----	
217		----		----	
221		----		----	
224		----		----	
225		----		----	
228		----		----	
230		----		----	
237	EN16136	3.2		-0.51	
238		----		----	
253		----		----	
254		----		----	
256		----		----	
258		----		----	
273	D3831	3.757		-0.03	
312	EN16136	4.0		0.18	
323	D3831	4.1		0.27	
335		----		----	
336		----		----	
337		----		----	
353		----		----	
355		----		----	
381	EN16135	4.1		0.27	
444		----		----	
447	EN16135	7.25	R(0.01)	2.98	
468		----		----	
485		----		----	
541	D3831	3.81		0.02	
555		----		----	
557		----		----	
558		----		----	
562		----		----	
603		----		----	
631	D3831	5.106		1.13	
633		----		----	
634		----		----	
657	D3831	4.4		0.53	
663		----		----	
671		----		----	
753		----		----	
754		----		----	
759		----		----	
781	D3831	4.35		0.48	
782		----		----	
823	D3831	4.2		0.35	
854	D3831	2.9		-0.76	
856	D3831	3.0		-0.68	
861	D3831	3.2		-0.51	
862	D3831	3.1		-0.59	
864	D3831	3.21		-0.50	
912		----		----	
922	D3831	3.8		0.01	
962		----		----	
963		----		----	
970		----		----	
971	D3831	4.04		0.22	
974		----		----	
995		----		----	
996		----		----	
997		----		----	
998		----		----	
1006		----		----	
1012		----		----	
1016	EN16136	4.17005		0.33	
1017		----		----	

lab	method	value	mark	z(targ)	remarks
1059		----		----	
1080		----		----	
1105	D8110	4.0		0.18	
1109		----		----	
1126		----		----	
1161	EN16135	4.789		0.86	
1171		----		----	
1199		----		----	
1213	D3831	3.45		-0.29	
1299	EN16135	3.1		-0.59	
1320		----		----	
1428	EN16136	<0.5		<-2.83	possibly a false negative test result?
1498		----		----	
1531		----		----	
1575	D3831	4.3		0.44	
1634		----		----	
1720		----		----	
1724	D3831	4.79		0.86	
1730		----		----	
1746		----		----	
1807	EN16135	3.8		0.01	
1810		----		----	
1811		----		----	
1849		----		----	
1914	D3831	2.6		-1.02	
1949	D3831	<0.25		<-3.04	possibly a false negative test result?
1977		----		----	
1984		----		----	
1995		----		----	
2146	In house	4.8		0.87	
6005		----		----	
6018		----		----	
6142		----		----	
6220		----		----	
6227		----		----	
6232		----		----	
6233	D3831	3.67		-0.10	
normality		OK			
n		31			
outliers		1			
mean (n)		3.788			
st.dev. (n)		0.6821			
R(calc.)		1.910			
st.dev.(D3831:12)		1.1629			
R(D3831:12)		3.256			

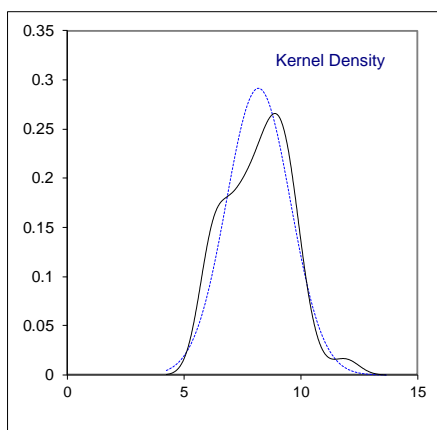
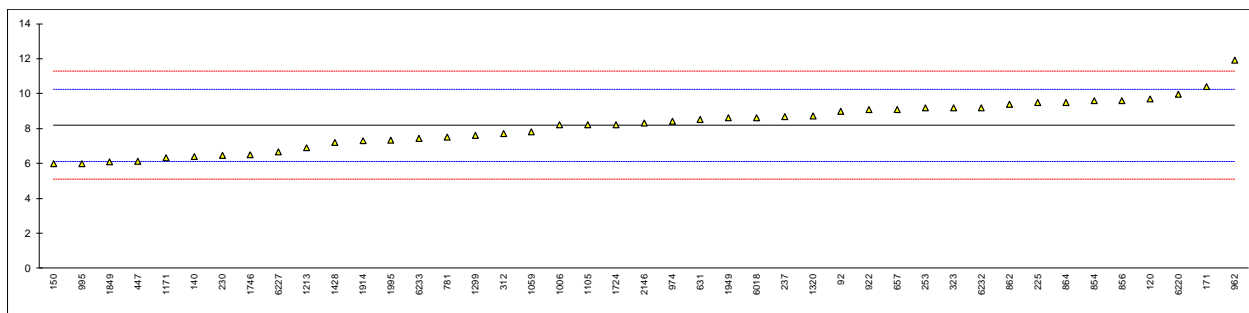
Application range: 0.25 – 40 mg/L



Determination of Olefins by FIA on sample #19010; results in %V/V

lab	method	value	mark	z(targ)	remarks
52		----		----	
62		----		----	
92	D1319	9.0		0.78	
120	D1319	9.7		1.46	
131		----		----	
140	D1319	6.4		-1.73	
150	D1319	6.0		-2.12	
158		----		----	
159		----		----	
169		----		----	
171	D1319	10.4		2.14	
175		----		----	
194		----		----	
217		----		----	
221		----		----	
224		----		----	
225	D1319	9.5		1.27	
228		----		----	
230	D1319	6.46		-1.67	
237	D1319	8.7		0.49	
238		----		----	
253	D1319	9.20		0.98	
254		----		----	
256		----		----	
258		----		----	
273		----		----	
312	D1319	7.7		-0.47	
323	D1319	9.2		0.98	
335		----		----	
336		----		----	
337		----		----	
353		----		----	
355		----		----	
381		----		----	
444		----		----	
447	D1319	6.1295		-1.99	
468		----		----	
485		----		----	
541		----		----	
555		----		----	
557		----		----	
558		----		----	
562		----		----	
603		----		----	
631	In house	8.499		0.30	
633		----		----	
634		----		----	
657	D1319	9.1		0.88	
663		----		----	
671		----		----	
753		----		----	
754		----		----	
759		----		----	
781	D1319	7.5		-0.67	
782		----		----	
823		----		----	
854	D1319	9.6		1.36	
856	D1319	9.6		1.36	
861		----		----	
862	D1319	9.4		1.17	
864	D1319	9.5		1.27	
912		----		----	
922	D1319	9.1		0.88	
962	D1319	11.9		3.59	
963		----		----	
970		----		----	
971		----		----	
974	D1319	8.42		0.22	
995	D1319	6.0		-2.12	
996		----		----	
997		----		----	
998		----		----	
1006	D1319	8.2		0.01	
1012		----		----	
1016		----		----	
1017		----		----	

lab	method	value	mark	z(targ)	remarks
1059	D1319	7.8		-0.38	
1080		----		----	
1105	D1319	8.2		0.01	
1109		----		----	
1126		----		----	
1161		----		----	
1171	D1319	6.33		-1.80	
1199		----		----	
1213	D1319	6.9		-1.25	
1299	D1319	7.6		-0.57	
1320		8.73		0.52	
1428	D1319	7.2		-0.96	
1498		----		----	
1531		----		----	
1575		----		----	
1634		----		----	
1720		----		----	
1724	D1319	8.2		0.01	
1730		----		----	
1746	D1319	6.5		-1.63	
1807		----		----	
1810		----		----	
1811		----		----	
1849	EN15553	6.1		-2.02	
1914	D1319	7.3		-0.86	
1949	D1319	8.6		0.40	
1977		----		----	
1984		----		----	
1995	D5599	7.345		-0.82	
2146	ISO22854	8.3		0.11	
6005		----		----	
6018	ISO22854	8.6		0.40	
6142		----		----	
6220	D1319	9.98		1.73	
6227	D1319	6.67		-1.47	
6232	In house	9.2		0.98	
6233	D1319	7.43		-0.74	
normality		OK			
n		43			
outliers		0			
mean (n)		8.191			
st.dev. (n)		1.3663			
R(calc.)		3.826			
st.dev.(D1319:15)		1.0343			
R(D1319:15)		2.896			



Determination of Oxidation Stability on sample #19010; results in minutes

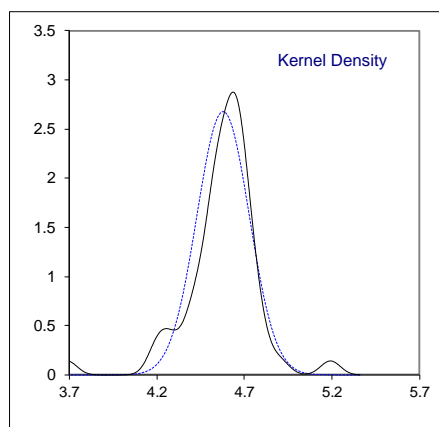
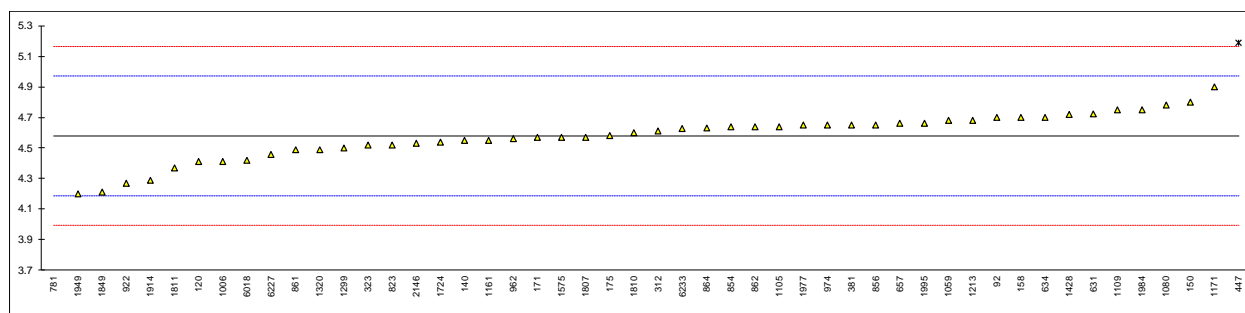
lab	method	value	mark	z(targ)	remarks
52	D525	>900		----	
62		----		----	
92		----		----	
120	D525	>900		----	
131		----		----	
140	D525	>900		----	
150	D525	>900		----	
158		----		----	
159		----		----	
169		----		----	
171	D525	>900		----	
175		----		----	
194		----		----	
217		----		----	
221		----		----	
224		----		----	
225		----		----	
228	D525	>900		----	
230		----		----	
237		----		----	
238		----		----	
253		----		----	
254		----		----	
256	D525	>900		----	
258		----		----	
273		----		----	
312	D525	>900		----	
323	D525	>900		----	
335		----		----	
336	D525	>900		----	
337	D525	>900		----	
353		----		----	
355		----		----	
381		----		----	
444		----		----	
447	D525	>900		----	
468		----		----	
485		----		----	
541		----		----	
555		----		----	
557		----		----	
558		----		----	
562		----		----	
603		----		----	
631	D525	>900		----	
633		----		----	
634		----		----	
657	D525	>900		----	
663		----		----	
671		----		----	
753		----		----	
754		----		----	
759		----		----	
781	D525	>900		----	
782		----		----	
823	D525	>720		----	
854	D525	>900		----	
856	D525	>900		----	
861	D525	>900		----	
862	D525	>900		----	
864	D525	>900		----	
912		----		----	
922		----		----	
962		----		----	
963		----		----	
970		----		----	
971		----		----	
974	D525	>900		----	
995		----		----	
996		----		----	
997		----		----	
998		----		----	
1006		----		----	
1012		----		----	
1016	D525	>480		----	
1017		----		----	

lab	method	value	mark	z(targ)	remarks
1059	ISO7536	>900		----	
1080		----		----	
1105	D525	>900		----	
1109	D525	>900		----	
1126		----		----	
1161	ISO7536	>900		----	
1171		----		----	
1199		----		----	
1213		----		----	
1299	D525	>900		----	
1320	D525	>900		----	
1428	D525	>900		----	
1498		----		----	
1531		----		----	
1575		----		----	
1634		----		----	
1720		----		----	
1724	D525	>1440		----	
1730		----		----	
1746	D525	>900		----	
1807	D525	>380		----	
1810	D7525	>800		----	
1811		----		----	
1849	ISO7536	450		----	possibly a false positive test result?
1914	D525	> 900		----	
1949	D525	>900		----	
1977	ISO7536	>900		----	
1984		----		----	
1995	D525	>900		----	
2146		----		----	
6005		----		----	
6018		----		----	
6142		----		----	
6220		----		----	
6227	D525	>900		----	
6232		----		----	
6233		----		----	
	n	35			
	mean(n)	>900			

Determination of Ethanol on sample #19010; results in %V/V

lab	method	value	mark	z(targ)	remarks
52		----		----	
62		----		----	
92		4.70		0.62	
120	D5599	4.41		-0.86	
131		----		----	
140	D5599	4.55		-0.15	
150	D5599	4.80	C	1.13	first reported: 5.11
158	D5599	4.70		0.62	
159		----		----	
169		----		----	
171	D4815	4.57		-0.04	
175	D5599	4.58		0.01	
194		----		----	
217		----		----	
221		----		----	
224		----		----	
225		----		----	
228		----		----	
230		----		----	
237		----		----	
238		----		----	
253		----		----	
254		----		----	
256		----		----	
258		----		----	
273		----		----	
312	D4815	4.61		0.16	
323	D4815	4.52		-0.30	
335		----		----	
336		----		----	
337		----		----	
353		----		----	
355		----		----	
381	ISO22854-A	4.65		0.37	
444		----		----	
447	IP466	5.19	R(0.01)	3.13	
468		----		----	
485		----		----	
541		----		----	
555		----		----	
557		----		----	
558		----		----	
562		----		----	
603		----		----	
631	D5845	4.725		0.75	
633		----		----	
634	D5845	4.7		0.62	
657	D4815	4.66		0.42	
663		----		----	
671		----		----	
753		----		----	
754		----		----	
759		----		----	
781	D6839	3.69	R(0.01)	-4.54	
782		----		----	
823	D4815	4.52		-0.30	
854	D4815	4.64		0.31	
856	D4815	4.65		0.37	
861	D4815	4.49		-0.45	
862	D4815	4.64		0.31	
864	D4815	4.63		0.26	
912		----		----	
922	D4815	4.27		-1.58	
962	D4815	4.56		-0.09	
963		----		----	
970		----		----	
971		----		----	
974	D4815	4.65		0.37	
995		----		----	
996		----		----	
997		----		----	
998		----		----	
1006	D4815	4.41		-0.86	
1012		----		----	
1016		----		----	
1017		----		----	

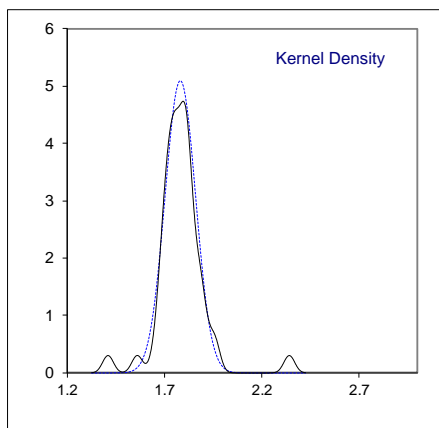
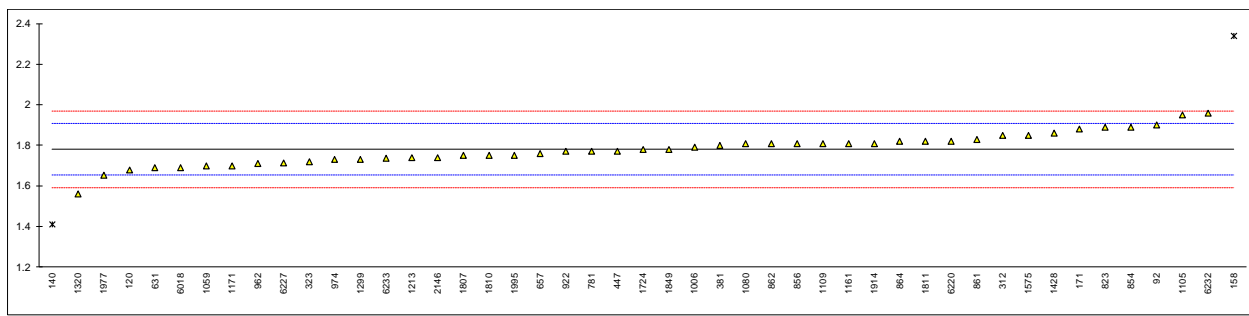
lab	method	value	mark	z(targ)	remarks
1059	ISO22854-A	4.68		0.52	
1080	In house	4.78		1.03	
1105		4.64		0.31	
1109	D6839	4.75		0.88	
1126		----		----	
1161	EN22854	4.55		-0.15	
1171	INH-5845	4.9	C	1.64	first reported: 3.87
1199		----		----	
1213	D4815	4.68		0.52	
1299	ISO22854-A	4.50		-0.40	
1320	ISO22854-A	4.49		-0.45	
1428	EN13132	4.72		0.72	
1498		----		----	
1531		----		----	
1575	D4815	4.57		-0.04	
1634		----		----	
1720		----		----	
1724	ISO22854	4.54		-0.20	
1730		----		----	
1746		----		----	
1807	ISO22854-A	4.57		-0.04	
1810	D6839	4.60		0.11	
1811		4.37		-1.07	
1849	ISO22854-A	4.21		-1.88	
1914	D4815	4.29		-1.48	
1949	D6839	4.20		-1.94	
1977	D6730	4.6496		0.36	
1984	EN1601	4.75		0.88	
1995	D5599	4.66		0.42	
2146	ISO22854-A	4.53		-0.25	
6005		----		----	
6018	ISO22854-A	4.42		-0.81	
6142		----		----	
6220		----		----	
6227	D4815	4.457		-0.62	
6232	D5845	----	W	----	first reported 4.1
6233	D4815	4.628		0.25	
normality		OK			
n		48			
outliers		2			
mean (n)		4.579			
st.dev. (n)		0.1489			
R(calc.)		0.417			
st.dev.(D4815:15b)		0.1955			
R(D4815:15b)		0.547			



Determination of MTBE on sample #19010; results in %V/V

lab	method	value	mark	z(targ)	remarks
52		----		----	
62		----		----	
92		1.90		1.89	
120	D5599	1.68		-1.60	
131		----		----	
140	D5599	1.41	R(0.01)	-5.88	
150	D5599	----		----	
158	D5599	2.34	R(0.01)	8.86	
159		----		----	
169		----		----	
171	D4815	1.88		1.57	
175		----		----	
194		----		----	
217		----		----	
221		----		----	
224		----		----	
225		----		----	
228		----		----	
230		----		----	
237		----		----	
238		----		----	
253		----		----	
254		----		----	
256		----		----	
258		----		----	
273		----		----	
312	D4815	1.85		1.09	
323	D4815	1.72		-0.97	
335		----		----	
336		----		----	
337		----		----	
353		----		----	
355		----		----	
381	ISO22854-A	1.8		0.30	
444		----		----	
447	IP466	1.77		-0.17	
468		----		----	
485		----		----	
541		----		----	
555		----		----	
557		----		----	
558		----		----	
562		----		----	
603		----		----	
631	D5845	1.69		-1.44	
633		----		----	
634	D5845	----		----	
657	D4815	1.76		-0.33	
663		----		----	
671		----		----	
753		----		----	
754		----		----	
759		----		----	
781	D6839	1.77		-0.17	
782		----		----	
823	D4815	1.89		1.73	
854	D4815	1.89		1.73	
856	D4815	1.81		0.46	
861	D4815	1.83		0.78	
862	D4815	1.81		0.46	
864	D4815	1.82		0.62	
912		----		----	
922	D4815	1.77		-0.17	
962	D4815	1.71		-1.12	
963		----		----	
970		----		----	
971		----		----	
974	D4815	1.73		-0.81	
995		----		----	
996		----		----	
997		----		----	
998		----		----	
1006	D4815	1.79	C	0.14	first reported: 2.10
1012		----		----	
1016		----		----	
1017		----		----	

lab	method	value	mark	z(targ)	remarks
1059	ISO22854-A	1.70		-1.28	
1080	In house	1.81		0.46	
1105		1.95		2.68	
1109	D6839	1.81		0.46	
1126		-----		-----	
1161	EN22854	1.81		0.46	
1171	INH-5845	1.70		-1.28	
1199		-----		-----	
1213	D4815	1.74		-0.65	
1299	ISO22854-A	1.73		-0.81	
1320	ISO22854-A	1.56		-3.50	
1428	EN13132	1.86		1.25	
1498		-----		-----	
1531		-----		-----	
1575	D4815	1.85		1.09	
1634		-----		-----	
1720		-----		-----	
1724	ISO22854	1.78		-0.02	
1730		-----		-----	
1746		-----		-----	
1807	ISO22854-A	1.75		-0.49	
1810	D6839	1.75		-0.49	
1811		1.82		0.62	
1849	ISO22854-A	1.78		-0.02	
1914	D4815	1.81		0.46	
1949		-----		-----	
1977	D6730	1.6536		-2.02	
1984	EN1601	<0.17		<-25.53	possibly a false negative test result?
1995	D5599	1.75		-0.49	
2146	ISO22854-A	1.74		-0.65	
6005		-----		-----	
6018	ISO22854-A	1.69		-1.44	
6142		-----		-----	
6220		1.82		0.62	
6227	D4815	1.714		-1.06	
6232	D5845	1.96		2.84	
6233	D4815	1.736		-0.71	
normality		OK			
n		45			
outliers		2			
mean (n)		1.781			
st.dev. (n)		0.0782			
R(calc.)		0.219			
st.dev.(D4815:15b)		0.0631			
R(D4815:15b)		0.177			



Determination of DIPE, ETBE, Methanol, TAME and other Oxygenates on sample #19010; in %V/V

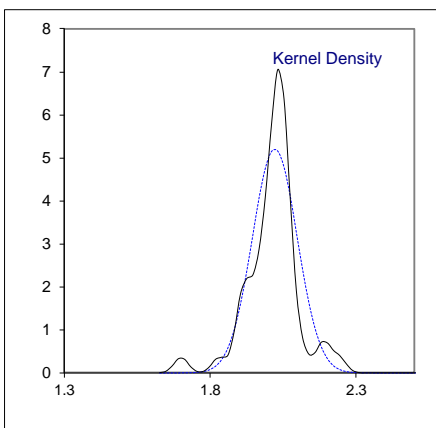
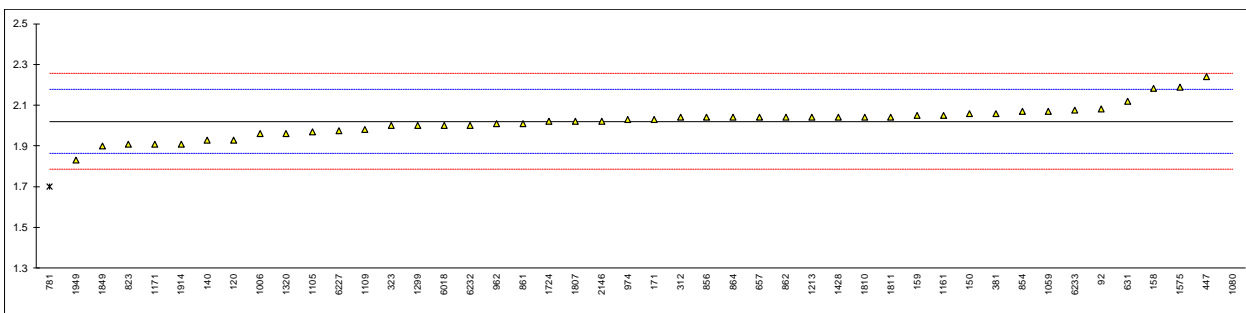
lab	method	DIPE	mark	ETBE	mark	Methanol	mark	TAME	mark	Other Oxy	mark
52		----		----		----		----		----	
62		----		----		----		----		----	
92		<0.01		<0.01		<0.01		<0.01		<0.01	
120	D5599	0.00		0.00		0.00		0.00		0.00	
131		----		----		----		----		----	
140		----		----		----		----		----	
150	D5599	<0.1		<0.1		<0.1		<0.1		----	
158	D5599	0.14		<0.01		<0.01		<0.01		0.26	
159		----		----		----		----		----	
169		----		----		----		----		----	
171	D4815	ND		ND		ND		ND		----	
175		----		----		----		----		----	
194		----		----		----		----		----	
217		----		----		----		----		----	
221		----		----		----		----		----	
224		----		----		----		----		----	
225		----		----		----		----		----	
228		----		----		----		----		----	
230		----		----		----		----		----	
237		----		----		----		----		----	
238		----		----		----		----		----	
253		----		----		----		----		----	
254		----		----		----		----		----	
256		----		----		----		----		----	
258		----		----		----		----		----	
273		----		----		----		----		----	
312	D4815	<0.2		<0.2		<0.2		<0.2		<0.2	
323	D4815	<0.20		<0.20		<0.20		<0.20		<0.20	
335		----		----		----		----		----	
336		----		----		----		----		----	
337		----		----		----		----		----	
353		----		----		----		----		----	
355		----		----		----		----		----	
381	ISO22854-A	<0,8		<0,8		<0,8		<0,8		<0,8	
444		----		----		----		----		----	
447	IP466	<0.2		<0.2		<0.2		<0.2		<0.2	
468		----		----		----		----		----	
485		----		----		----		----		----	
541		----		----		----		----		----	
555		----		----		----		----		----	
557		----		----		----		----		----	
558		----		----		----		----		----	
562		----		----		----		----		----	
603		----		----		----		----		----	
631	D5845	0.1		0.14		<0.1		0.17		----	
633		----		----		----		----		----	
634		----		----		----		----		----	
657	D4815	N.D		N.D		N.D		N.D		N.D	
663		----		----		----		----		----	
671		----		----		----		----		----	
753		----		----		----		----		----	
754		----		----		----		----		----	
759		----		----		----		----		----	
781	D6839	<0.01		<0.01		<0.01		<0.01		0.05	
782		----		----		----		----		----	
823	D4815	0.0		0.0		0.0		0.0		0	
854	D4815	<0.2		<0.2		<0.2		<0.2		<0.2	
856	D4815	<0.20		<0.20		<0.20		<0.20		<0.20	
861	D4815	<0.2		<0.2		<0.2		<0.2		<0.2	
862	D4815	<0.2		<0.2		<0.2		<0.2		<0.2	
864	D4815	<0.2		<0.2		<0.2		<0.2		<0.2	
912		----		----		----		----		----	
922	D4815	<0.2		<0.2		<0.2		<0.2		<0.2	
962	D4815	<0.2		<0.2		<0.2		<0.2		----	
963		----		----		----		----		----	
970		----		----		----		----		----	
971		----		----		----		----		----	
974	D4815	<0.20		<0.20		<0.20		<0.20		----	
995		----		----		----		----		----	
996		----		----		----		----		----	
997		----		----		----		----		----	
998		----		----		----		----		----	
1006	D4815	<0.1		<0.1		<0.1		----		----	
1012		----		----		----		----		----	
1016		----		----		----		----		----	
1017		----		----		----		----		----	
1059	ISO22854-A	<0,20		<0,20		<0,20		<0,20		<0,20	
1080	In house	----		0.04		----		----		0.02	

lab	method	DIPE	mark	ETBE	mark	Methanol	mark	TAME	mark	Other Oxy	mark
1105		----		----		----		----		----	
1109	D6839	0.00		0.00		0.00		0.00		0.00	
1126		----		----		----		----		----	
1161	EN22854	<0.1		<0.1		<0.1		<0.1		<0.1	
1171	INH-5845	0.57		0.00		0.00		0.50		----	
1199		----		----		----		----		----	
1213	D4815	n.d.		n.d.		n.d.		n.d.		n.d.	
1299	ISO22854-A	<0.01		0.03		<0.01		<0.01		0.06	
1320	ISO22854-A	0.05		----		----		----		----	
1428	EN13132	----		<0,17		<0,17		----		<0,17	
1498		----		----		----		----		----	
1531		----		----		----		----		----	
1575	D4815	0.5		0.0		0.0		0.0		----	
1634		----		----		----		----		----	
1720		----		----		----		----		----	
1724		----		----		----		----		----	
1730		----		----		----		----		----	
1746		----		----		----		----		----	
1807	ISO22854-A	<0,80		<0,80		<0,80		<0,80		<0,80	
1810	D6839	----		0.05		----		----		----	
1811		----		----		----		----		----	
1849		----		----		----		----		----	
1914	D4815	< 0.2		< 0.2		< 0.2		< 0.2		< 0.2	
1949	D6839	----		1.65		----		----		0.06	
1977		----		----		----		----		----	
1984	EN1601	----		1.75		<0.17		----		----	
1995	D5599	0		0.05		0		0		0.03	
2146	ISO22854-A	<0,10		<0,10		<0,10		<0,10		----	
6005		----		----		----		----		----	
6018	ISO22854-A	----		----		0.03		----		0.15	
6142		----		----		----		----		----	
6220		----		----		----		----		----	
6227	D4815	n.d.		n.d.		n.d.		n.d.		0.099	
6232	D5845	----		0		0.1		0		----	
6233	D4815	n.d.		n.d.		n.d.		n.d.		n.d.	

Determination of Oxygen Content on sample #19010; results in %M/M

lab	method	value	mark	z(targ)	remarks
52		----		----	
62		----		----	
92	CGSBno.3.0-14.3	2.083		0.79	
120	D5599	1.93		-1.16	
131		----		----	
140	D5599	1.93		-1.16	
150	D5599	2.06		0.50	
158	D5599	2.183		2.06	
159	D5599	2.05		0.37	
169		----		----	
171	D4815	2.03		0.12	
175		----		----	
194		----		----	
217		----		----	
221		----		----	
224		----		----	
225		----		----	
228		----		----	
230		----		----	
237		----		----	
238		----		----	
253		----		----	
254		----		----	
256		----		----	
258		----		----	
273		----		----	
312	D4815	2.04		0.24	
323	D4815	2.00		-0.27	
335		----		----	
336		----		----	
337		----		----	
353		----		----	
355		----		----	
381	ISO22854	2.06		0.50	
444		----		----	
447	EN13132	2.24		2.79	
468		----		----	
485		----		----	
541		----		----	
555		----		----	
557		----		----	
558		----		----	
562		----		----	
603		----		----	
631	D5845	2.119		1.25	
633		----		----	
634		----		----	
657	D4815	2.04		0.24	
663		----		----	
671		----		----	
753		----		----	
754		----		----	
759		----		----	
781	D6839	1.70	R(0.01)	-4.08	
782		----		----	
823	D4815	1.91		-1.41	
854	D4815	2.07		0.63	
856	D4815	2.04		0.24	
861	D4815	2.01		-0.14	
862	D4815	2.04		0.24	
864	D4815	2.04		0.24	
912		----		----	
922		----		----	
962	D4815	2.01		-0.14	
963		----		----	
970		----		----	
971		----		----	
974	D4815	2.03		0.12	
995		----		----	
996		----		----	
997		----		----	
998		----		----	
1006	D4815	1.96		-0.77	
1012		----		----	
1016		----		----	
1017		----		----	

lab	method	value	mark	z(targ)	remarks
1059	ISO22854	2.07		0.63	
1080	In house	6.98	R(0.01)	63.14	
1105	D6839	1.97		-0.65	
1109	D6839	1.98		-0.52	
1126		----		----	
1161	EN22854	2.05		0.37	
1171	INH-5845	1.91		-1.41	
1199		----		----	
1213	D4815	2.04		0.24	
1299	ISO22854	2.00		-0.27	
1320	ISO22854	1.96		-0.77	
1428	EN13132	2.04		0.24	
1498		----		----	
1531		----		----	
1575	In house	2.19		2.15	
1634		----		----	
1720		----		----	
1724		2.02		-0.01	
1730		----		----	
1746		----		----	
1807	ISO22854	2.02		-0.01	
1810	D6839	2.04		0.24	
1811	ISO22854	2.04		0.24	
1849	ISO22854	1.90		-1.54	
1914	D4815	1.91		-1.41	
1949	D6839	1.83		-2.43	
1977		----		----	
1984		----		----	
1995		----		----	
2146	ISO22854	2.02		-0.01	
6005		----		----	
6018	ISO22854	2		-0.27	
6142		----		----	
6220		----		----	
6227	D4815	1.9755		-0.58	
6232	D5845	2.0		-0.27	
6233	D4815	2.076		0.70	
normality		suspect			
n		44			
outliers		2			
mean (n)		2.021			
st.dev. (n)		0.0766			
R(calc.)		0.215			
st.dev.(D4815:15b)		0.0785			
R(D4815:15b)		0.220			



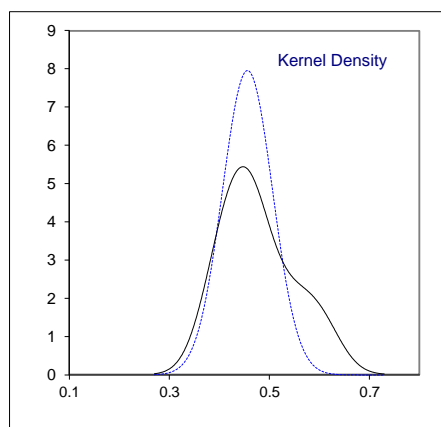
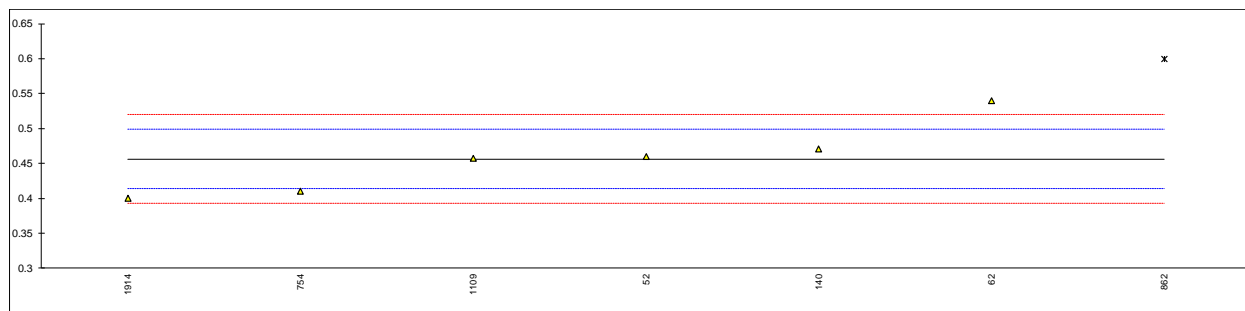
Determination of Phosphorus as P on sample #19010; results in mg/L

lab	method	value	mark	z(targ)	remarks
52	D3231	0.46		0.17	
62	D3231	0.54		3.95	
92		----		----	
120		----		----	
131		----		----	
140	D3231	0.471		0.69	
150		----		----	
158		----		----	
159		----		----	
169		----		----	
171	D3231	<0.0008	C	----	first reported: 0.0019 mg/L
175		----		----	
194		----		----	
217		----		----	
221		----		----	
224		----		----	
225		----		----	
228		----		----	
230		----		----	
237		----		----	
238		----		----	
253		----		----	
254		----		----	
256		----		----	
258		----		----	
273		----		----	
312	D3231	<0.2		----	
323		----		----	
335		----		----	
336		----		----	
337		----		----	
353		----		----	
355		----		----	
381		----		----	
444		----		----	
447		----		----	
468		----		----	
485		----		----	
541		----		----	
555		----		----	
557		----		----	
558		----		----	
562		----		----	
603		----		----	
631		----		----	
633		----		----	
634		----		----	
657	D3231	<0.2		----	
663		----		----	
671		----		----	
753		----		----	
754	D3231	0.41		-2.19	
759		----		----	
781		----		----	
782		----		----	
823		----		----	
854		----		----	
856		----		----	
861		----		----	
862	D3231	0.6	D(0.05)	6.78	
864		----		----	
912		----		----	
922		----		----	
962		----		----	
963		----		----	
970		----		----	
971		----		----	
974		----		----	
995		----		----	
996		----		----	
997		----		----	
998		----		----	
1006		----		----	
1012		----		----	
1016		----		----	
1017		----		----	

lab	method	value	mark	z(targ)	remarks
1059		----		----	
1080		----		----	
1105		----		----	
1109	D3231	0.457		0.03	
1126		----		----	
1161		----		----	
1171		----		----	
1199		----		----	
1213		----		----	
1299		----		----	
1320		----		----	
1428		----		----	
1498		----		----	
1531		----		----	
1575		----		----	
1634		----		----	
1720		----		----	
1724		----		----	
1730		----		----	
1746		----		----	
1807		----		----	
1810		----		----	
1811		----		----	
1849		----		----	
1914	D3231	0.4		-2.66	
1949	D3231	<0.2		----	
1977		----		----	
1984		----		----	
1995		----		----	
2146		----		----	
6005		----		----	
6018		----		----	
6142		----		----	
6220		----		----	
6227		----		----	
6232		----		----	
6233		----		----	

normality unknown
n 6
outliers 1
mean (n) 0.456
st.dev. (n) 0.0501
R(calc.) 0.140
st.dev.(D3231:13) 0.0212
R(D3231:13) 0.059

Application range: 0.2 – 40 mg/L

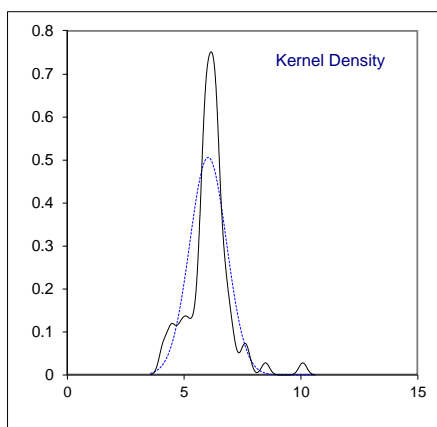
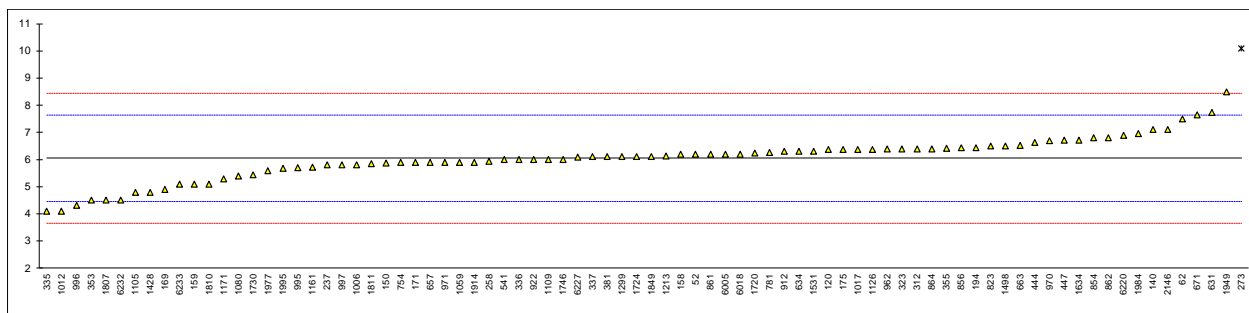


Determination of Sulfur, Total on sample #19010; results in mg/kg

lab	method	value	mark	z(targ)	remarks
52	D5453	6.2		0.19	
62	D5453	7.5		1.82	
92		----		----	
120	D2622	6.36		0.39	
131		----		----	
140	D5453	7.1		1.32	
150	D5453	5.88		-0.21	
158	D5453	6.2		0.19	
159	D5453	5.10		-1.19	
169	D5453	4.89		-1.45	
171	D5453	5.9		-0.19	
175	D5453	6.37		0.40	
194	D2622	6.44		0.49	
217		----		----	
221		----		----	
224		----		----	
225		----		----	
228		----		----	
230		----		----	
237	D5453	5.8		-0.31	
238		----		----	
253		----		----	
254		----		----	
256	D4294	<20		----	
258	D5453	5.94		-0.14	
273	D5453	10.1	R(0.01)	5.07	
312	D5453	6.4		0.44	
323	D5453	6.4		0.44	
335	D5453	4.1		-2.44	
336	D5453	6.0		-0.06	
337	D5453	6.1		0.06	
353	ISO20846	4.5		-1.94	
355	D2622	6.42		0.47	
381	ISO20846	6.1		0.06	
444	D5453	6.64		0.74	
447	ISO20846	6.71		0.83	
468		----		----	
485		----		----	
541	D5453	6.00		-0.06	
555		----		----	
557		----		----	
558		----		----	
562		----		----	
603		----		----	
631	D4294	7.73		2.11	
633		----		----	
634	D7039	6.3		0.32	
657	D5453	5.9		-0.19	
663	D5453	6.52		0.59	
671	D5453	7.65		2.01	
753		----		----	
754	D5453	5.89		-0.20	
759		----		----	
781	D5453	6.27		0.28	
782		----		----	
823	D5453	6.5		0.57	
854	D5453	6.8		0.94	
856	D5453	6.44		0.49	
861	D5453	6.2		0.19	
862	D5453	6.8		0.94	
864	D5453	6.4		0.44	
912	D4294	6.30		0.32	
922	D5453	6.0		-0.06	
962	D5453	6.4		0.44	
963		----		----	
970	D5453	6.7		0.82	
971	D5453	5.90		-0.19	
974		----		----	
995	D5453	5.7		-0.44	
996	D5453	4.32		-2.16	
997	D5453	5.8		-0.31	
998		----		----	
1006	D5453	5.8		-0.31	
1012	D5453	4.104		-2.43	
1016		----		----	
1017	ISO20846	6.37		0.40	

lab	method	value	mark	z(targ)	remarks
1059	ISO20846	5.9		-0.19	
1080	D5453	5.4		-0.81	
1105	D5453	4.8		-1.56	
1109	D7039	6.00		-0.06	
1126	ISO20846	6.37		0.40	
1161	ISO20846	5.71		-0.42	
1171	ISO20846	5.29		-0.95	
1199		----		----	
1213	D5453	6.14		0.11	
1299	ISO20846	6.1		0.06	
1320		----		----	
1428	D5453	4.8		-1.56	
1498	D5453	6.5		0.57	
1531	ISO20846	6.30		0.32	
1575		----		----	
1634	D5453	6.71		0.83	
1720	D5453	6.24		0.24	
1724		6.1		0.06	
1730	ISO20846	5.44		-0.76	
1746	D5453	6.0		-0.06	
1807	ISO20846	4.5		-1.94	
1810	D5453	5.1		-1.19	
1811	D5453	5.85		-0.25	
1849	ISO20846	6.1		0.06	
1914	D5453	5.9		-0.19	
1949	D5453	8.5		3.07	
1977	D5453	5.6	C	-0.56	first reported: 9.3
1984	ISO20846	6.95		1.13	
1995	D5453	5.68		-0.46	
2146	ISO20846	7.1		1.32	
6005	ISO20846	6.2		0.19	
6018	ISO20846	6.2		0.19	
6142		----		----	
6220	D5453	6.9		1.07	
6227	D5453	6.09		0.05	
6232	ISO20884	4.5		-1.94	
6233	D5453	5.089		-1.20	

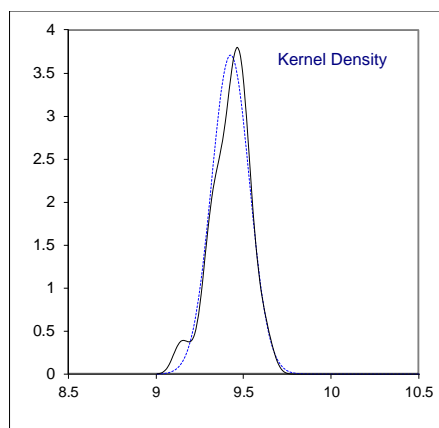
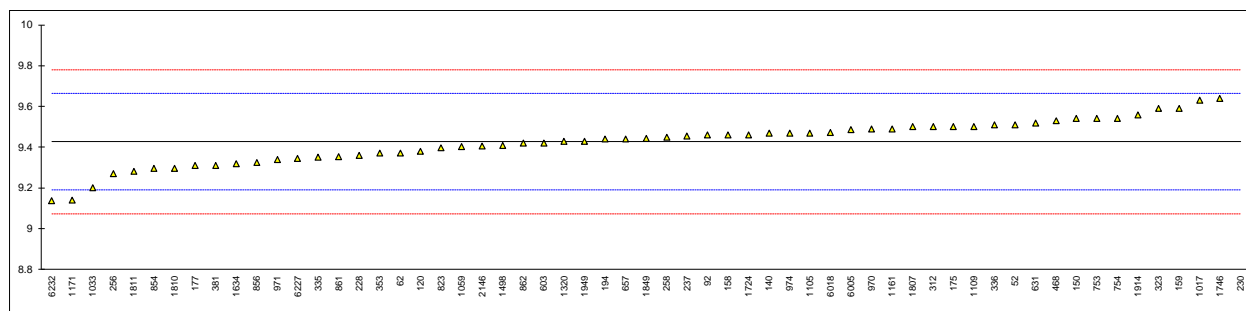
normality suspect
 n 81
 outliers 1
 mean (n) 6.048
 st.dev. (n) 0.7883
 R(calc.) 2.207
 st.dev.(D5453:16e1) 0.7985
 R(D5453:16e1) 2.236



Determination of TVP on sample #19011; results in psi

lab	method	value	mark	z(targ)	remarks
52	D5191	9.51		0.71	
62	D5191	9.37		-0.48	
92	D5191	9.46		0.28	
120	D5191	9.38		-0.39	
131		----		----	
140	D5191	9.47		0.37	
150	D5191	9.54		0.96	
158	D5191	9.46		0.28	
159	D5191	9.59		1.38	
169		----		----	
171		----		----	
175	D5191	9.50		0.62	
177	D5191	9.31		-0.98	
194	D5191	9.44		0.12	
225		----		----	
228	D5191	9.36		-0.56	
230	D5191	12.76	R(0.01)	28.21	
237	D5191	9.454		0.23	
238		----		----	
256	D5191	9.27		-1.32	
258	D5191	9.450		0.20	
312	D5191	9.50		0.62	
323	D5191	9.59		1.38	
335	D5191	9.35		-0.65	
336	D5191	9.51		0.71	
337		----		----	
353	D5191	9.370		-0.48	
381	D5191	9.311		-0.98	
433		----		----	
468	D5191	9.53		0.88	
485		----		----	
541		----		----	
557		----		----	
562		----		----	
603	D5191	9.421		-0.05	
631	D5191	9.518		0.78	
633		----		----	
657	D5191	9.44		0.12	
753	D5191	9.54		0.96	
754	D5191	9.54		0.96	
782		----		----	
823	D5191	9.40		-0.24	
854	D5191	9.30		-1.10	
856	D5191	9.33		-0.85	
861	D5191	9.35		-0.60	
862	D5191	9.42		-0.05	
963		----		----	
970	D5191	9.49		0.54	
971	D5191	9.34		-0.73	
974	D5191	9.47		0.37	
1006		----		----	
1017	EN13016-1	9.63		1.72	
1026		----		----	
1033	EN13016-1	9.20		-1.92	
1059	D5191	9.402		-0.21	
1105	D5191	9.47		0.37	
1109	D5191	9.50		0.62	
1161	D5191	9.49		0.54	
1171	EN13016-1	9.14		-2.42	
1299		----		----	
1320	EN13016-1	9.43		0.03	
1428		----		----	
1498	D5191	9.41		-0.14	
1634	D5191	9.32		-0.90	
1724	EN13016-1	9.46		0.28	
1730		----		----	
1746	D5191	9.64		1.81	
1807	EN13016-1	9.50		0.62	
1810	D5191	9.30		-1.10	
1811	D5191	9.28		-1.22	
1849	EN13016-1	9.44		0.13	
1914	D5191	9.56		1.13	
1949	D5191	9.43		0.03	
1984		----		----	
2146	EN13016-1	9.406		-0.17	
6005	EN13016-1	9.49		0.50	

lab	method	value	mark	z(targ)	remarks
6018	EN13016-1	9.47		0.38	
6142		-----		-----	
6227	D5191	9.35		-0.68	
6232	EN13016-1	9.14		-2.45	
normality		OK			
n		58			
outliers		1			
mean (n)		9.426			
st.dev. (n)		0.1076			
R(calc.)		0.301			
st.dev.(D5191:15)		0.1182			
R(D5191:15)		0.331			

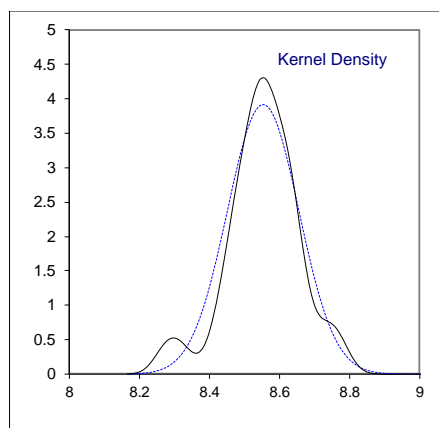
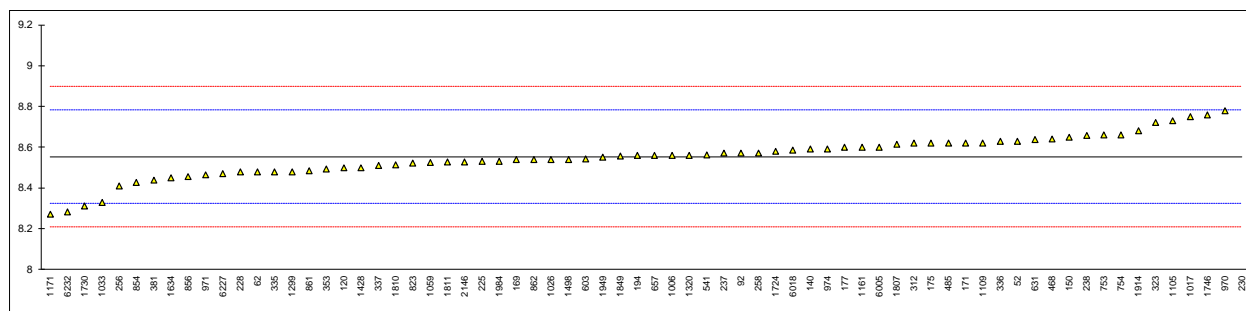


Determination of DVPE (acc. to ASTM D5191) on sample #19011; results in psi

lab	method	value	mark	z(targ)	remarks
52	D5191	8.63		0.67	
62	D5191	8.48		-0.64	
92	D5191	8.57		0.15	
120	D5191	8.50		-0.46	
131		-----		-----	
140	D5191	8.59		0.32	
150	D5191	8.65		0.84	
158		-----		-----	
159		-----		-----	
169	D5191	8.54		-0.11	
171	D5191	8.62		0.58	
175	D5191	8.620		0.58	
177	D5191	8.60		0.41	
194	D5191	8.56		0.06	
225	D5191	8.53		-0.20	
228	D5191	8.48		-0.64	
230	D5191	11.76	R(0.01)	27.89	
237	D5191	8.570		0.15	
238	D5191	8.658		0.91	
256	D5191	8.41		-1.24	
258	D5191	8.571		0.16	
312	D5191	8.62		0.58	
323	D5191	8.72		1.45	
335	D5191	8.48		-0.64	
336	D5191	8.63		0.67	
337	EN13016-1	8.51		-0.37	
353	D5191	8.494		-0.51	
381	D5191	8.437		-1.01	
433		-----		-----	
468	D5191	8.64		0.76	
485	D5191	8.62		0.58	
541	D6378	8.563		0.09	
557		-----		-----	
562		-----		-----	
603	D5191	8.543		-0.09	
631	D5191	8.637		0.73	
633		-----		-----	
657	D5191	8.56		0.06	
753	D5191	8.66		0.93	
754	D5191	8.66		0.93	
782		-----		-----	
823	D5191	8.52		-0.28	
854	D5191	8.43		-1.10	
856	D5191	8.46		-0.85	
861	D5191	8.48		-0.59	
862	D5191	8.54		-0.11	
963		-----		-----	
970	D5191	8.78		1.97	
971	D5191	8.464		-0.77	
974	D5191	8.590		0.32	
1006	D5191	8.56		0.06	
1017	EN13016-1	8.75		1.71	
1026	D5191	8.54		-0.11	
1033	EN13016-1	8.33		-1.94	
1059	D5191	8.525		-0.24	
1105	D5191	8.73		1.54	
1109	D5191	8.62		0.58	
1161	D5191	8.60		0.41	
1171	EN13016-1	8.27		-2.46	
1299	D5191	8.48		-0.64	
1320	EN13016-1	8.56		0.06	
1428	EN13016-1	8.50		-0.46	
1498	D5191	8.54		-0.11	
1634	D5191	8.45		-0.90	
1724	EN13016-1	8.58		0.23	
1730	EN13016-1	8.31		-2.11	
1746	D5191	8.76		1.80	
1807	EN13016-1	8.62		0.54	
1810	D5191	8.51		-0.34	
1811	D5191	8.53		-0.22	
1849	EN13016-1	8.56		0.04	
1914	D5191	8.68		1.10	
1949	D5191	8.55		-0.03	
1984	EN13016-1	8.53		-0.20	
2146	EN13016-1	8.529		-0.21	
6005	EN13016-1	8.60		0.41	

lab	method	value	mark	z(targ)	remarks
6018	EN13016-1	8.59		0.29	
6142		-----		-----	
6227	D5191	8.47		-0.72	
6232	EN13016-1	8.28		-2.36	

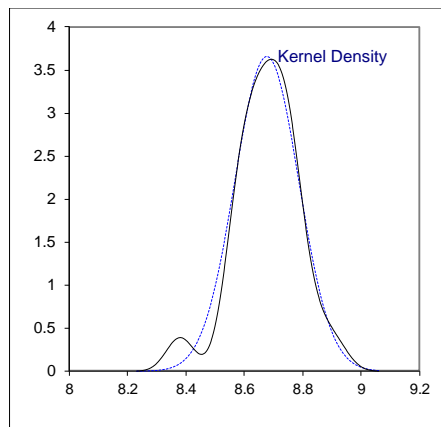
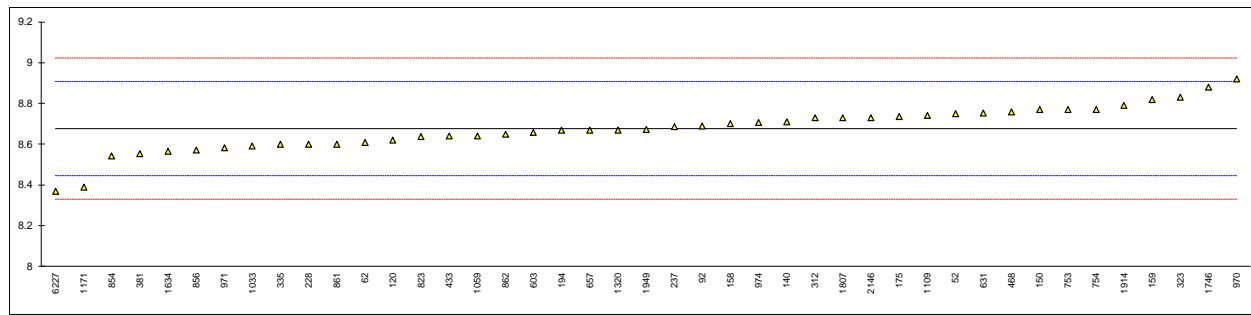
normality suspect
 n 69
 outliers 1
 mean (n) 8.553
 st.dev. (n) 0.1020
 R(calc.) 0.286
 st.dev.(D5191:15) 0.1150
 R(D5191:15) 0.322



Determination of DVPE (acc. to EPA) on sample #19011; results in psi

lab	method	value	mark	z(targ)	remarks
52	D5191	8.75		0.64	
62	D5191	8.61		-0.57	
92	D5191	8.69		0.12	
120	D5191	8.62		-0.49	
131		----		----	
140	D5191	8.71		0.29	
150	D5191	8.77		0.81	
158	D5191	8.70		0.21	
159	D5191	8.82		1.25	
169		----		----	
171		----		----	
175	D5191	8.735		0.51	
177		----		----	
194	D5191	8.67		-0.05	
225		----		----	
228	D5191	8.60		-0.66	
230		----		----	
237	D5191	8.687		0.09	
238		----		----	
256		----		----	
258		----		----	
312	D5191	8.73		0.47	
323	D5191	8.83		1.33	
335	D5191	8.60		-0.66	
336		----		----	
337		----		----	
353		----		----	
381	D5191	8.554		-1.06	
433	EN13016-1	8.64		-0.31	
468	D5191	8.76		0.73	
485		----		----	
541		----		----	
557		----		----	
562		----		----	
603	D5191	8.659		-0.15	
631	D5191	8.752		0.66	
633		----		----	
657	D5191	8.67		-0.05	
753	D5191	8.77		0.81	
754	D5191	8.77		0.81	
782		----		----	
823	D5191	8.64		-0.33	
854	D5191	8.54		-1.16	
856	D5191	8.57		-0.91	
861	D5191	8.60		-0.65	
862	D5191	8.65		-0.23	
963		----		----	
970	D5191	8.92		2.11	
971	D5191	8.582		-0.82	
974	D5191	8.706		0.26	
1006		----		----	
1017		----		----	
1026		----		----	
1033	EN13016-1	8.59		-0.75	
1059	D5191	8.641		-0.31	
1105		----		----	
1109	D5191	8.74		0.55	
1161		----		----	
1171	EN13016-1	8.39		-2.48	
1299		----		----	
1320	EN13016-1	8.67		-0.05	
1428		----		----	
1498		----		----	
1634	D5191	8.566		-0.96	
1724		----		----	
1730		----		----	
1746	D5191	8.88		1.77	
1807	EN13016-1	8.73		0.47	
1810		----		----	
1811		----		----	
1849		----		----	
1914	D5191	8.79		0.99	
1949	D5191	8.673		-0.03	
1984		----		----	
2146	EN13016-1	8.730		0.47	
6005		----		----	

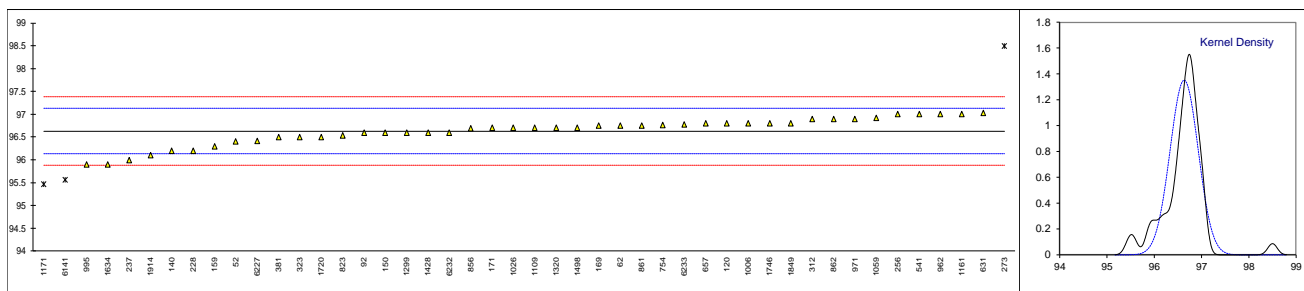
lab	method	value	mark	z(targ)	remarks
6018		-----		-----	
6142		-----		-----	
6227	D5191	8.37		-2.65	
6232		-----		-----	
	normality	suspect			
	n	43			
	outliers	0			
	mean (n)	8.676			
	st.dev. (n)	0.1091			
	R(calc.)	0.305			
	st.dev.(D5191:15)	0.1154			
	R(D5191:15)	0.323			



Determination of RON on sample #19012;

lab	method	value	mark	z(targ)	remarks
52	D2699	96.4		-0.92	
62	D2699	96.75		0.48	
92	D2699	96.6		-0.12	
120	D2699	96.8		0.68	
140	D2699	96.2		-1.72	
150	D2699	96.6		-0.12	
159	D2699	96.3		-1.32	
169	D2699	96.75		0.48	
171	D2699	96.7		0.28	
228	D2699	96.2		-1.72	
237	D2699	96.0		-2.52	
256	D2699	97.0		1.48	
273	D2699	98.5	R(0.01)	7.48	
312	D2699	96.9		1.08	
323	D2699	96.5		-0.52	
381	ISO5164	96.5		-0.52	
541	D2699	97.00		1.48	
562		-----		-----	
631	D2699	97.03		1.60	
657	D2699	96.8		0.68	
754	D2699	96.77		0.56	
782		-----		-----	
823	D2699	96.54		-0.36	
856	D2699	96.69		0.24	
861	D2699	96.75		0.48	
862	D2699	96.9		1.08	
922		-----		-----	
962	D2699	97.0		1.48	
970		-----		-----	
971	D2699	96.9		1.08	
995	D2699	95.9		-2.92	
998		-----		-----	
1006	D2699	96.8		0.68	
1026	ISO5164	96.7		0.28	
1059	D2699	96.92		1.16	
1109	D2699	96.7		0.28	
1161	ISO5164	97.0		1.48	
1171	INH-2699	95.47	R(0.05)	-4.64	
1299	D2699	96.6		-0.12	
1320	ISO5164	96.7		0.28	
1428	D2699	96.6		-0.12	
1498	D2699	96.7		0.28	
1634		95.9		-2.92	
1720	D2699	96.5		-0.52	
1746	D2699	96.8		0.68	
1849	D2699	96.8		0.68	
1914	D2699	96.1		-2.12	
6141	INH-2699	95.56	R(0.05)	-4.28	
6142		-----		-----	
6227	D2699	96.42		-0.84	
6232		96.6		-0.12	
6233	D2699	96.78		0.60	

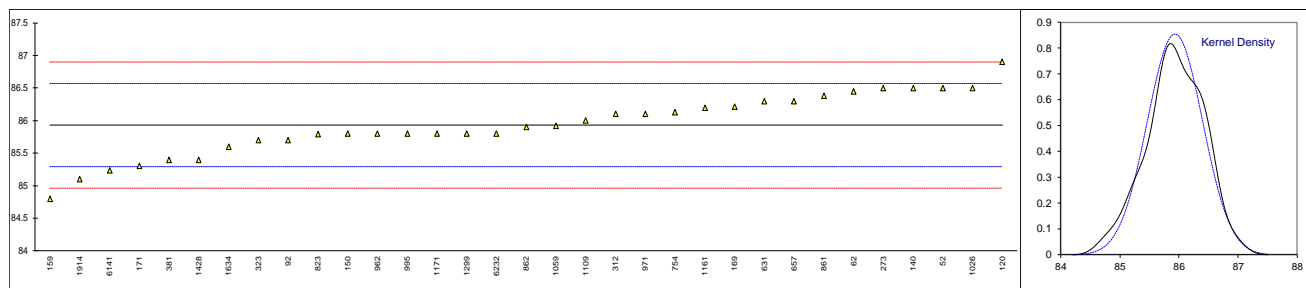
normality OK
n 43
outliers 3
mean (n) 96.630
st.dev. (n) 0.2948
R(calc.) 0.826
st.dev.(D2699:18a) 0.2500
R(D2699:18a) 0.700



Determination of MON on sample #19012;

lab	method	value	mark	z(targ)	remarks
52	D2700	86.5		1.77	
62	D2700	86.45		1.62	
92	D2700	85.7		-0.72	
120	D2700	86.9		3.02	
140	D2700	86.5		1.77	
150	D2700	85.8		-0.41	
159	D2700	84.8		-3.52	
169	D2700	86.21		0.87	
171	D2700	85.3		-1.96	
228		----		----	
237		----		----	
256		----		----	
273	D2700	86.5		1.77	
312	D2700	86.1		0.53	
323	D2700	85.7		-0.72	
381	ISO5163	85.4		-1.65	
541		----		----	
562		----		----	
631	D2700	86.294		1.13	
657	D2700	86.3		1.15	
754	D2700	86.13		0.62	
782		----		----	
823	D2700	85.79		-0.44	
856		----		----	
861	D2700	86.38		1.40	
862	D2700	85.9		-0.10	
922		----		----	
962	D2700	85.8		-0.41	
970		----		----	
971	D2700	86.1		0.53	
995	D2700	85.8		-0.41	
998		----		----	
1006		----		----	
1026	ISO5163	86.5		1.77	
1059	D2700	85.92		-0.03	
1109	D2700	86.0		0.22	
1161	ISO5163	86.2		0.84	
1171	INH-2700	85.80		-0.41	
1299	D2700	85.8		-0.41	
1320		----		----	
1428	D2700	85.4		-1.65	
1498		----		----	
1634		85.6		-1.03	
1720		----		----	
1746		----		----	
1849		----		----	
1914	D2700	85.1		-2.58	
6141	INH-2700	85.24		-2.15	
6142		----		----	
6227		----		----	
6232		85.8		-0.41	
6233		----		----	

normality OK
n 33
outliers 0
mean (n) 85.931
st.dev. (n) 0.4668
R(calc.) 1.307
st.dev.(D2700:18a) 0.3214
R(D2700:18a) 0.900



APPENDIX 2

z-scores distillation ASTM D86

lab	IBP	10%eva	50%eva	90%eva	FBP
52	-0.22	0.02	-0.53	-0.21	-0.87
62	-0.10	-0.69	-0.32	-0.21	0.35
92	-0.87	-0.19	0.10	-0.26	-0.32
120	-0.93	-2.10	-1.52	75.84	64.12
131	----	----	----	----	----
140	-2.01	0.37	0.52	-0.21	0.07
150	-0.93	-0.27	-0.46	0.15	-0.44
158	1.57	0.02	0.10	0.10	-0.28
159	-1.41	-0.05	0.38	-0.10	-0.20
169	----	----	----	----	----
171	-0.64	-0.19	0.31	0.20	0.03
175	----	----	----	----	----
194	0.20	-0.19	-0.18	0.05	-0.40
217	-0.64	-0.90	-0.39	-0.47	-0.68
221	----	----	----	----	----
224	0.38	0.10	0.49	0.10	-0.20
225	0.97	0.37	0.38	1.29	0.94
228	1.87	-0.55	-2.16	-1.55	0.15
230	0.26	-0.63	0.10	-0.47	0.44
237	2.46	0.80	-0.11	-0.62	1.33
238	0.67	0.73	0.73	-0.52	0.94
253	0.08	0.16	1.09	1.65	0.15
254	----	----	----	----	----
256	-1.11	-0.34	-1.03	-1.81	1.33
258	2.22	1.29	2.07	1.39	0.51
273	2.10	0.37	-0.32	1.55	-0.52
312	-0.52	-0.19	0.17	-0.21	-0.28
323	-1.29	-7.20	-0.11	-0.16	-0.60
335	-0.16	-0.41	-0.18	-0.26	-0.52
336	-1.05	-0.05	0.24	-0.10	0.07
337	----	----	----	----	----
353	-0.40	-0.76	-0.18	-0.47	0.98
355	-1.13	-0.58	-1.40	-0.13	-1.54
381	0.32	0.09	-1.03	-0.16	0.82
444	-1.59	-0.27	0.95	0.93	-0.28
447	-0.16	-0.05	-0.04	-0.41	0.51
468	----	----	----	----	----
485	0.58	-0.34	-0.15	-0.18	-0.95
541	-0.82	0.41	0.11	-0.75	-1.13
555	----	----	----	----	----
557	----	----	----	----	----
558	----	----	----	----	----
562	----	----	----	----	----
603	0.26	0.80	0.95	1.24	0.15
631	2.16	0.65	0.38	-0.16	0.55
633	1.27	0.16	0.73	0.20	1.02
634	1.57	0.73	1.44	2.32	-2.61
657	-0.28	-0.05	-0.04	-0.41	0.35
663	0.38	0.41	0.42	-0.49	-0.20
671	----	----	----	----	----
753	----	----	----	----	----
754	-0.22	0.02	-0.32	-0.72	0.35
759	0.97	0.73	0.38	0.26	0.55
781	0.38	2.28	-0.53	-0.47	-0.48
782	----	----	----	----	----
823	-0.46	0.09	-0.11	0.05	0.23
854	0.14	0.37	0.17	-0.21	0.07
856	-0.34	-0.34	-0.04	-0.31	-0.01
861	-0.34	-0.41	-0.18	-0.26	-0.01
862	-0.64	-0.34	0.10	-0.41	0.23
864	-0.10	-0.34	-0.46	-0.36	0.23
912	1.87	0.73	1.44	0.51	-0.05
922	0.44	2.42	0.88	-0.41	-0.56
962	-1.05	-0.12	-0.18	-0.21	-0.36
963	----	----	----	----	----
970	-0.10	-0.48	-0.46	-0.47	-0.52
971	-1.23	-0.41	-0.46	-1.14	-0.32
974	-0.34	0.30	0.45	0.67	0.23
995	1.87	0.73	0.03	-1.29	-0.05
996	1.27	0.73	0.38	-0.26	-0.05
997	1.87	0.37	-0.32	-1.55	-0.44
998	----	----	----	----	----
1006	-0.52	0.09	0.66	-0.21	0.19
1012	-0.34	-0.27	-0.96	-0.72	-0.84

lab	IBP	10%eva	50%eva	90%eva	FBP
1016	----	----	----	----	----
1017	-1.41	-0.12	-0.04	-0.36	-0.13
1059	-0.52	-0.62	-0.11	-0.16	-0.56
1080	----	----	----	----	----
1105	-0.70	0.16	0.73	-0.10	-0.48
1109	-0.76	-0.41	-0.25	-0.16	-0.32
1126	----	----	----	----	----
1161	-0.46	-0.05	-0.11	0.26	-0.09
1171	1.29	0.76	0.91	0.15	1.52
1199	----	----	----	----	----
1213	2.64	0.18	-0.13	0.19	-0.44
1299	-0.22	-0.83	-1.03	-0.41	0.11
1320	-1.35	-0.19	-0.18	-0.62	-0.68
1428	1.15	0.16	1.23	0.93	1.41
1498	-0.16	-0.12	-0.18	-0.26	0.74
1531	-1.47	-0.12	-0.46	-0.31	-0.72
1575	----	----	----	----	----
1634	-0.40	0.23	0.38	-0.26	-0.20
1720	-0.10	0.80	1.37	1.08	0.43
1724	-0.46	-0.27	-0.46	1.80	2.52
1730	----	----	----	----	----
1746	-0.22	0.02	-0.68	-0.26	0.35
1807	0.79	-0.76	-2.01	-0.62	-0.87
1810	-0.52	0.09	0.03	-0.10	-0.32
1811	-1.35	-0.12	-0.46	-0.72	0.07
1849	-0.16	0.02	0.10	-0.10	0.35
1914	-1.41	0.02	0.24	-0.16	-0.09
1949	0.11	-0.77	-1.30	-0.88	-0.09
1977	0.10	0.52	1.02	0.38	-0.09
1984	-0.82	0.09	0.56	-0.03	0.37
1995	----	----	----	----	----
2146	----	----	----	----	----
6005	-0.76	-1.96	0.45	0.05	-0.52
6018	-1.83	0.09	0.66	-0.10	0.15
6142	----	----	----	----	----
6220	1.87	1.79	-1.73	-1.29	-1.03
6227	1.39	-0.05	-0.11	-0.10	-0.05
6232	-1.11	-1.04	-2.44	1.29	-0.24
6233	-0.28	0.16	0.52	0.36	-0.91

APPENDIX 3: Analytical details

lab	Lot no. fluorescent indicator	Manufacturer distillation device	Type of distillation device
52		PAC	Optidist V 2.22 07983
62		optidisk ASTM D86	ASTM D 86
92	3000000928	Anton Paar	ADU5
120	816405	Tanaka	ad-7
131			
140	3000000969	Optidiat - ISL by PAC	Optidiat - ISL by PAC
150			
158		Tanaka	ad-7
159		PAC	OPTIDIS
169	3000000920	PAC	Optidist
171	3000000977	PAC	Optidis
175			
194			
217		PAC OPTODIST ASTM D86	
221			
224			
225			
228			
230	3000000954		
237	3000000962		
238			
253	lot number = 3000000821		
254			
256			
258			
273			
312	3000000925	Herzog	HDA627/628 + Optidist
323	3000000968	Herzog	Optidist
335		ISL	AD86 5G2
336			
337			
353		Integrated Scientific Ltd	Automatic AD86-5G2
355			
381		Orbis	PAMv2
444		PAC	OptiDist
447	Batch N: M1107	PAC	Optidist
468			
485		ALL sorts of standards	HDA 627/HDA 628 Herzog
541			
555			
557			
558			
562			
603		IPSA	PAC Optidist
631			
633	N/A	ANTON PAAR ADU5	
634			
657	3000000917	PAC	PAC-Optidist
663		Herzog	MP627
671			
753			
754			
759			
781	3000000958	Walter HERZOG PAC	OptiDist
782			
823		PAC	OPTIDSIT
854	Honeywell UOP 3000000948	herzog by PAC Model OptiDist	Type 0101-004-001
856	3000000953	PAC	PAC-Optidist
861			
862			
864	3000000905	PAC Herzog	Optidist

lab	Lot no. fluorescent indicator	Manufacturer distillation device	Type of distillation device
912			
922	Lot no. 3000000855	PAC-OptiDist (ASTM D86)	ASTM D86
962	SETA Batch No.: N1007	Herzog Optidist by PAC	Automatic
963			
970			
971		Herzog	OPTIDIST
974	Lot number : 3000000848	PAC	OPTIDIST
995			
996			
997			
998			
1006			
1012		Auto (ASTM D86) PAC- Optidist	
1016			
1017		PAC/HERZOG	OptiDist
1059	#3000000933	Herzog by PAC - Optidist	
1080			
1105	3000000826	PAC	optiDist
1109		PAC Walter Herzog	OPTIDIST
1126			
1161			
1171			
1199			
1213	3000000944 Normal Lab		
1299	lot #300000753	PAC	OPTIDIST
1320	Aromatics, Olefins- used EN ISO 22854/A	HERZOG PAC	OPTIDIST
1428			
1498			
1531		ASTM D86 - NORMALAB	NDI 450
1575			
1634			
1720		PAC	OptiDist Type:0101-004-001
1724	580	PAC	OPTIDIST
1730			
1746			
1807			
1810			
1811		Herzog- Optidist	
1849	C1157	PAC-Optidist	Global manufacturer
1914	Lot No. 3000000887	OptiDist Herzog by PAC	
1949	Lot # 638 UOP prod. # 80675	HERZOG	HDA 620
1977		Normalab France	NDI 450
1984			
1995			
2146			
6005		PAC	
6018		PAC	
6142			
6220	1.091820050 F 254 Batch. K 48926382		
6227	UOP Prod.#80675-204 Lot No.3000000962	Shanghai Shenkai Petroleum instrument	SKY2000-I
6232			
6233	Mat No: 80675-204 Lot No:3000000952	PAC	Optidist S/N:07789

APPENDIX 4**Number of participants per country – main round**

1 lab in AFGHANISTAN
1 lab in ALBANIA
1 lab in ARGENTINA
1 lab in AUSTRALIA
2 labs in BELGIUM
2 labs in BOSNIA and HERZEGOVINA
3 labs in BRAZIL
3 labs in CANADA
2 labs in CHILE
5 labs in CHINA, People's Republic
1 lab in COSTA RICA
1 lab in COTE D'IVOIRE
2 labs in CZECH REPUBLIC
1 lab in DJIBOUTI
2 labs in EGYPT
1 lab in FINLAND
4 labs in FRANCE
2 labs in GEORGIA
2 labs in GREECE
1 lab in GUAM
1 lab in GUINEA REPUBLIC
1 lab in HONG KONG
1 lab in HUNGARY
1 lab in INDIA
2 labs in IRELAND
1 lab in KENYA
1 lab in LATVIA
1 lab in MALAYSIA
1 lab in MAURITIUS
1 lab in MOZAMBIQUE
3 labs in NETHERLANDS
1 lab in NIGER
4 labs in NIGERIA
1 lab in OMAN
1 lab in P.R. of CHINA
1 lab in PAKISTAN
3 labs in PHILIPPINES
1 lab in POLAND
3 labs in PORTUGAL
6 labs in RUSSIAN FEDERATION
2 labs in SAUDI ARABIA
1 lab in SENEGAL
2 labs in SERBIA
1 lab in SINGAPORE
1 lab in SLOVAKIA
1 lab in SLOVENIA
1 lab in SOUTH AFRICA
1 lab in SOUTH KOREA
2 labs in SPAIN
1 lab in SUDAN
1 lab in SWEDEN
1 lab in TAIWAN
1 lab in TANZANIA
1 lab in THAILAND
1 lab in TOGO
1 lab in TUNISIA
4 labs in TURKEY
1 lab in TURKMENISTAN
3 labs in UNITED ARAB EMIRATES
2 labs in UNITED KINGDOM
10 labs in UNITED STATES OF AMERICA
2 labs in VIETNAM

APPENDIX 5

Abbreviations:

C	= final result after checking of first reported suspect test result
D(0.01)	= outlier in Dixon's outlier test
D(0.05)	= straggler in Dixon's outlier test
G(0.01)	= outlier in Grubbs' outlier test
G(0.05)	= straggler in Grubbs' outlier test
DG(0.01)	= outlier in Double Grubbs' outlier test
DG(0.05)	= straggler in Double Grubbs' outlier test
R(0.01)/R(1)	= outlier in Rosner's outlier test
R(0.05)/R(5)	= straggler in Rosner's outlier test
E	= possibly an error in calculations
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

Literature:

- 1 iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, June 2018
- 2 ASTM E178:16
- 3 ASTM E1301:95(2003)
- 4 ISO 5725:86 (1994)
- 5 ISO 5725, parts 1-6, 1994
- 6 ISO 13528:05
- 7 M. Thompson and R. Wood, J. AOAC Int, 76, 926, (1993)
- 8 W.J. Youden and E.H. Steiner, Statistical Manual of the AOAC, (1975)
- 9 IP 367:84
- 10 DIN 38402 T41/42
- 11 P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
- 12 J.N. Miller, Analyst, 118, 455, (1993)
- 13 Analytical Methods Committee Technical Brief, No 4, January 2001
- 14 P.J. Lowthian and M. Thompson, The Royal Society of Chemistry, Analyst 2002, 127, 1359-1364, (2002)
- 15 Bernard Rosner, Percentage Points for a Generalized ESD Many-Outlier Procedure, Technometrics, 25(2), 165-172, (1983)
- 16 Horwitz, W and Albert, R, J. AOAC Int, 79, 3, 589, (1996)
- 17 H. Verplaetse and M. Lacourt, Accred Qual Assur, 11., 521-522, (2006)