

Results of Proficiency Test
Gasoline
October 2009

Organised by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

Authors: Ing. R.J.Starink
Correctors: Dr. R.G. Visser & ing. L. Sweere
Report: iis09B04X

December 2009

CONTENTS

1	INTRODUCTION	3
2	SET UP.....	3
2.1	ACCREDITATION.....	3
2.2	PROTOCOL	3
2.3	CONFIDENTIALITY STATEMENT	3
2.4	SAMPLES.....	4
2.5	STABILITY OF THE SAMPLES	5
2.6	ANALYSES	5
3	RESULTS.....	5
3.1	STATISTICS.....	5
3.2	GRAPHICS.....	6
3.3	Z-SCORES.....	6
4	EVALUATION.....	6
4.1	EVALUATION PER TEST	7
4.2	PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES	10
4.3	COMPARISON OF THE RESULTS OF OCTOBER 2009 WITH PREVIOUS PTS.....	12

Appendices:

1.	Data, statistical results and graphic results	14
2.	z-Scores distillation ASTM D86	63
3.	List of participants per country	64
4.	Abbreviations and literature	65

1 INTRODUCTION

Since 1995, the Institute organized a proficiency test for Gasoline every year. During the annual proficiency testing program 2009/2010, it was decided to continue the round robin for the analysis of Gasoline. In this international Interlaboratory Studies 67 laboratories in 37 different countries have participated. See appendix 4 for the list of participants in alphabetical country order. In this report, the results of the gasoline proficiency test are presented and discussed.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organiser of this proficiency test. Sample analyses for fit-for-use and homogeneity testing were subcontracted. In this proficiency test, the participants received, depending on their registration, two or three samples of Gasoline: 2*1 litre euro 95 Gasoline (labelled #0970) and/or 1*1 litre (\pm 800 mL filled) euro 95 Gasoline (labelled #0971) for DVPE only.

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

2.1 ACCREDITATION

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, is accredited in accordance with ISO guide 43 and ILAC-G13:2007, (R007), since January 2000, by the Dutch Accreditation Council: RvA (Raad voor Accreditatie). This ensures 100% confidentiality of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

The protocol followed in the organisation of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: 'Protocol for the Organisation, Statistics and Evaluation' of November 2008 (iis-protocol, version 3.1).

2.3 CONFIDENTIALITY STATEMENT

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

2.4 SAMPLES

The necessary sample material of 400 litre of Gasoline Euro 95 was purchased at a regular fuel pump station in the Netherlands. After homogenisation in a 500 L mixing vessel, 70 amber glass bottles of 1 litre were filled with approx. 800 mL for Vapour Pressure only and labelled #0971. Another 139 amber glass bottles of 1 litre were filled and labelled #0970.

The homogeneity of the subsamples #0970 was checked by determination of Density @15°C in accordance with ASTM D4052:02e1 on 5 stratified randomly selected samples. The homogeneity of the subsamples #0971 was checked by determination of Dry Vapour Pressure Equivalent in accordance with ASTM D5191:07 on 5 stratified randomly selected samples.

The homogeneity testing was performed by a subcontracted ISO17025 accredited laboratory.

	Density @ 15°C in kg/m ³
Sample #0970-1	748.43
Sample #0970-2	748.43
Sample #0970-3	748.43
Sample #0970-4	748.47
Sample #0970-5	748.50

Table 1: homogeneity test of subsamples #0970

	DVPE in psi
Sample #0971-1	8.70
Sample #0971-2	8.60
Sample #0971-3	8.57
Sample #0971-4	8.60
Sample #0971-5	8.53

Table 2: homogeneity test of subsamples #0971

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

	Density@ 15 °C in kg/m ³	DVPE in psi
r (sample #0970)	0.09	----
r (sample #0971)	----	0.18
reference method	ASTM D4052:02e1	ASTM D5191:07
0.3 x R (ref. method)	0.15	0.19

Table 3: repeatabilities of subsamples #0970 and #0971

The repeatabilities of the results of homogeneity test for Density and DVPE were in agreement with the respective repeatabilities required by ASTM D4052:02e1 and ASTM D5191:07. Therefore, homogeneity of subsamples #0970 and #0971 was assumed.

To the participants, depending on their registration, 2*1 litre of sample #0970 and/or 1*1 litre (\pm 800 mL filled) of sample #0971 were sent on September 23, 2009.

2.5 STABILITY OF THE SAMPLES

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

2.6 ANALYSIS

The participants were requested to determine API Gravity, Aromatics by FIA, Aromatics by GC (%V/V and %M/M), Benzene, Copper Strip Corrosion, Doctor Test, Density @ 15°C, Distillation (automated and manual), Existent gum, Lead, Mercaptans, Olefins by FIA, Olefins by GC (%V/V and %M/M), DIPE, Ethanol, ETBE, MTBE, isobutanol, TAME, Oxidation Stability, Sulphur, RON and MON (before and after correction) on sample #0970.

On sample #0971, the participants were requested to determine Total Vapour Pressure and DVPE (acc. ASTM D5191 and EPA). To get comparable results, a detailed report form on which the units and the preferred test methods were printed, was sent together with each set of samples. Also a letter of instructions and a SDS were added to the package.

3 RESULTS

During four weeks after sample despatch, the results of the individual laboratories were gathered. The original data are tabulated per determination in appendix 1 of this report. The laboratories are presented by their code numbers.

Directly after the deadline, a reminder fax was sent to the laboratories that had not reported results at that moment. Shortly after the deadline, the available results were screened for suspect data. A result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the results. Additional or corrected results are used for data analysis and original results are placed under 'Remarks' in the result tables in appendix 1.

3.1 STATISTICS

Statistical calculations were performed as described in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of November 2008 (iis-protocol, version 3.1).

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

First, the normality of the distribution of the various data sets per determination was checked by means of the Lilliefors-test. After removal of outliers, this check was repeated. Not all data sets proved to have a normal distribution, in which cases the statistical evaluation of the results should be used with due care.

In accordance to ISO 5725 (1986 and 1994) the original results per determination were submitted subsequently to Dixon and Grubbs outlier tests. Outliers are marked by D(0.01) for the Dixon test, by G(0.01) or DG(0.01) for the Grubbs test. Stragglers are marked by D(0.05)

for the Dixon test, by $G(0.05)$ or $DG(0.05)$ for the Grubbs test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

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

3.2 GRAPHICS

In order to visualise the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported analysis results are plotted. The corresponding laboratory numbers are under the X-axis.

The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected standard. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle. Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms (see appendix 4; nr.14 and 15).

3.3 Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements, e.g. ASTM reproducibilities, the z-scores were calculated using a target standard deviation. This result was an evaluation independent of the spread of this interlaboratory study. The target standard deviation was calculated from the literature reproducibility by division with 2.8. The z-scores were calculated in accordance with:

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

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

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

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

4 EVALUATION

In this proficiency test, major problems were encountered during the transport of the samples to the laboratories in Cote D'Ivoire and Sudan. The samples to these laboratories arrived near of after the final reporting date.

From the 67 participants, 11 participants did report the results after the deadline for reporting and 4 participants did not report any results at all. The 63 reporting laboratories did send in 1197 numerical results. Observed were 58 outlying results, which is 4.8%. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

4.1 EVALUATION PER TEST

In this section, the results are discussed per test.

Not all data sets proved to have a normal distribution. Not normal distributions were found for the following determinations: Benzene, Distillation (10% and 90% evaporated), ETBE, sulfur, RONm and RON (after correction). In these cases, the statistical evaluation should be used with care.

API Gravity: This determination is not problematic. No statistical outliers were detected and the calculated reproducibility is in full agreement with the requirements of ASTM D1298:05.

Aromatics by FIA: This determination is problematic. No statistical outliers were detected, but the calculated reproducibility, after rejection of the statistical outliers, is not in agreement with the requirements of ASTM D1319:08. This may be caused by the fact that in the last version of ASTM D1319 the sample is no longer deparaffinized. And several participating laboratories may have used the previous version of this method that did prescribe deparaffinization.

Aromatics by GC: The determination is problematic for several laboratories. In total seven statistical outliers were detected (5 in %M/M and 2 in %V/V), but the calculated reproducibilities, after rejection of the statistical outliers are both almost in agreement with the requirements of EN14517:04.

Benzene: This determination is not problematic. Only one statistical outlier was observed and the calculated reproducibility is in full agreement with the requirements of ASTM D3606:07.

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

Doctor Test: No analytical problems have been observed, all participants, except one agreed on the absence of Mercaptans (see also: Determination of Mercaptans). One participant reported the Doctor test as positive.

Density @ 15°C: This determination is somewhat problematic. Only one statistical outlier was observed. However, the calculated reproducibility, after rejection of the statistical outlier, is not in agreement with the requirements of ASTM D4052:02e1.

Distillation: This determination is not problematic. In total ten statistical outliers were observed. All calculated reproducibilities were, after rejection of the statistical

outliers, in agreement with the requirements of ASTM D86:07a. However, when evaluated against the new ASTM D86:09, all calculated reproducibilities agree, except for the 50% evaporated point. Regretfully, only the precision data for evaporated (not for recovered) are given in ASTM D86:09. One participant reported for evaporated a higher result than for recovered. These reported results are therefore suspect and were excluded from calculations.

- Existent Gum: This determination is problematic for three laboratories. Three statistical outliers were observed. The calculated reproducibility, after rejection of the statistical outliers, is in good agreement with the requirements of ASTM D381:04e1.
- (washed)
- Lead: The consensus value of the group is below the application range (2.5 - 25 mg/L) and most of the participants reported a “less then” result. Therefore, it is hard to draw a significant conclusion.
- Mercaptans: This determination is not problematic at this low level (application range: 0.0003 – 0.01%M/M). Only one statistical outlier was observed and the calculated reproducibility is in full agreement with the requirements of ASTM D3227:04a.
- Olefins by FIA: This determination is problematic. No statistical outliers were detected, but the calculated reproducibility is not in agreement with the requirements of ASTM D1319:08. As the sample contained a certain amount of Oxygenates (MTBE) the calculation for the correction on a total-sample basis does play a role. Reported in an independent investigation, a cause for the observed spread may be the humidity of the silica used due to insufficient drying (see appendix 5; ref nr 14). Another cause for the large spread observed may be the fact that in the last version of ASTM D1319 the sample is no longer depentanized. And several participating laboratories may have used the previous version of this method that did prescribe depentanization.
- Olefins by GC: The determination in %V/V is only problematic for several individual laboratories. Two statistical outliers were detected. The calculated reproducibility is, after rejection of the statistical outliers, almost in agreement with the requirements of EN14517:04. Regretfully for the determination in %M/M no precision data are available. Therefore, no significant conclusions can be drawn.
- DiPE: The concentration of DiPE was near or below the detection limit of the methods used and most of the participants reported a “less then” result. Therefore, it is hard to draw any significant conclusions.
- Ethanol: The determination of Ethanol in the investigated sample was problematic. Six statistical outliers were observed and the calculated reproducibility, after

rejection of the statistical outliers, is not in agreement with the requirements of ASTM D4815:04.

ETBE: The concentration of ETBE was near or below the detection limit of the methods used and most of the participants reported a “less than” result. Therefore, it is hard to draw any significant conclusions.

i-Butanol: The concentration of iso-Butanol was near or below the detection limit of the methods used and most of the participants reported a “less than” result. Therefore, it is hard to draw any significant conclusions.

MTBE: The determination of MTBE in the investigated sample was problematic. Four statistical outliers were observed and the calculated reproducibility is, after rejection of the statistical outliers, not in agreement with the requirements of ASTM D4815:04. When the ASTM D4815, D6839, EN13132 and EN14517 data are evaluated separately, only the calculated reproducibility of ASTM D4815 does not agree with the requirements of the respective standard.

TAME: The concentration of TAME was near or below the detection limit of the methods used and most of the participants reported a “less than” result. Therefore, it is hard to draw any significant conclusions.

Oxidation stability: The majority of the laboratories agreed that the Oxidation Stability is >360 (or even >900) minutes. However, four laboratories reported relatively a low oxidation stability (from 120 – 310 minutes)!

Sulphur: This determination was not problematic at the low level of 5 mg/kg, although five statistical outliers were detected. The calculated reproducibility, after rejection of statistical outliers, is in full agreement with the requirements of ASTM D5453:08b.

RON: This determination is problematic. Only one statistical outlier was detected. However, the calculated reproducibility, after rejection of the statistical outlier, is not in agreement with the requirements of ASTM D2699:08. In theory, the difference between the consensus values of RONm (uncorrected, measured) and RON (corrected) should be exactly 0.2. However, the observed difference is 0.25. When only the results are evaluated from the 20 laboratories that reported both results for RONm (uncorrected, measured) as well as for RON (corrected) the new difference between both new consensus values is exactly 0.20 as expected. It is noticed that the new consensus value of RON (corrected) is 0.06 larger than the original value and is probably more reliable. It is too bad that not all participants that reported a RONm result also reported a RON result.

- MON:** This determination is problematic. Only one statistical outlier was detected. However, the calculated reproducibility, after rejection of the statistical outlier, is not in agreement with the requirements ASTM D2700:08. In theory, the difference between the consensus values of MONm (uncorrected, measured) and MON (corrected) should be exactly 0.2. However, the observed difference is 0.16. When only the results are evaluated from the 17 laboratories that reported both results for MONm (uncorrected) as well as for MON (corrected), the new difference between both new consensus values is exactly 0.20 as expected. It is noticed that the new consensus value of MONm is 0.04 larger than the original value and is probably more reliable. It is too bad that not all participants that reported a MONm result also reported a MON result.
- TVP:** This determination is problematic. Two statistical outliers were detected. The calculated reproducibility, after rejection of the statistical outliers, is not in agreement with the requirements of ASTM D5191:07 and not at all in agreement with the 0.30 psi required by EPA for re-analysis of batches RFG that are downstream in the distribution chain.
- DVPE:** The conversion of the measured Total Vapour Pressure to the corresponding Dry Vapour Pressure Equivalent (DVPE) as described in the ASTM D5191:07 and the U.S. EPA guidelines (40 CFR Part 80, App. E, Method3), showed two statistical outliers its for DVPE-ASTM and two for DVPE-EPA. One laboratory seemed to have mixed up the results of the two calculations. The calculated reproducibilities of DVPE-ASTM and DVPE-EPA, after rejection of the statistical outliers, are both not in agreement with the requirements of ASTM D5191:07 and the EPA guidelines. No calculation errors with the conversion of TVP to DVPE-ASTM and/or DVPE-EPA were observed.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the relevant standard and the reproducibility as found for the group of participating laboratories. The average results of sample #0970 and #0971, calculated reproducibilities and reproducibilities, derived from literature standards (in casu ASTM standards) are compared in the next table.

Parameter	unit	n	mean	2.8 * sd	R (lit)		
API Gravity	-----	19	57.40	0.25	0.30		
Aromatics by FIA	% V/V	21	33.69	4.32	3.70		
Aromatics by GC	% V/V	27	31.82	1.63	1.57		
Aromatics by GC	% M/M	22	37.34	1.88	1.82		
Benzene	% V/V	42	0.833	0.107	0.142		
Copper Strip 3 hrs @ 50°C	-----	43	1 (1a)	n.a.	n.a.		
Doctor Test	-----	32	negative	n.a.	n.a.		
Density @ 15 °C	kg/m ³	53	748.75	0.55	0.50		
Dist. Autom.	IBP	°C	54	37.21	4.66	8.50	5.26
	10%-evap.	°C	49	51.05	2.44	5.99	3.20
	50%-evap.	°C	48	93.85	2.91	8.11	1.88
	90%-evap.	°C	48	156.07	3.48	6.83	4.10
	FBP	°C	56	189.39	10.19	10.50	6.78
	10%-rec.	°C	36	51.51	1.95	6.04	3.20
	50%-rec.	°C	36	94.82	3.93	8.14	1.88
	90%-rec.	°C	37	157.13	3.98	6.78	1.42
	EP	%V/V	34	97.71	2.11	unknown	
Existent gum (washed)	mg/100mL	23	0.68	1.05	2.22		
Lead as Pb	mg/L	10	0.32	0.92	unknown		
Mercaptans as S	% M/M	21	0.00020	0.00017	(0.00032)*		
DIPE	% V/V	6	n.a.	n.a.	n.a.		
Ethanol	% V/V	28	4.66	0.71	0.55		
ETBE	% V/V	9	n.a.	n.a.	n.a.		
i-Butanol	% V/V	4	n.a.	n.a.	n.a.		
MTBE	% V/V	35	1.81	0.23	0.18		
TAME	% V/V	6	n.a.	n.a.	n.a.		
Olefins by FIA	% V/V	21	8.55	4.06	2.97		
Olefins by GC	%V/V	27	9.55	1.82	1.64		
Olefins by GC	%M/M	22	8.67	1.27	unknown		
Oxidation Stability	min	7	n.a.	n.a.	n.a.		
Sulphur	mg/kg	41	4.69	1.58	1.84		
RONm	-----	28	96.29	0.87	0.70		
RON (after correction)	-----	20	96.03	0.86	0.70		
MONm	-----	24	85.56	1.17	0.90		
MON (after correction)	-----	18	85.40	1.05	0.90		

table 4: performance evaluation sample #0970

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

Parameter	Unit	n	mean	2.8 * sd	R (lit)
Total Vapour Pressure	psi	35	9.46	0.40	0.33
DVPE acc. to ASTM D5191	psi	38	8.58	0.38	0.32
DVPE acc. to EPA	psi	30	8.69	0.36	0.32

table 5: performance evaluation sample #0971

Without further statistical calculations, it can be concluded that for about half of the tests there is a (good) compliance of the group of participants with the relevant standards. The problematic tests have been discussed in paragraph 4.1.

4.3 COMPARISON OF THE PROFICIENCY TEST OF OCTOBER 2009 WITH PREVIOUS PTS

	<i>October 2009</i>	<i>February 2009</i>	<i>October 2008</i>	<i>February 2008</i>
Number of rep. participants	66	126	64	127
Number of results reported	1197	2378	1188	1777
Statistical outliers	58	79	56	102
Percentage outliers	4.8%	3.3%	4.7%	5.7%

Table 6: comparison with previous proficiency tests

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

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

Determination	<i>October 2009</i>	<i>February 2009</i>	<i>October 2008</i>	<i>February 2008</i>
API Gravity	++	+	+	+
Aromatics by FIA	--	--	++	++
Aromatics by GC	+/-	--	--	--
Benzene	++	+/-	++	++
Density @ 15°C	-	+/-	--	--
Distillation Automated	++	++	+	++
Distillation Manual	n.e.	+/-	--	--
Existent gum (washed)	++	++	++	++
Lead as Pb	n.e.	n.e.	(++)	(++)
Mercaptans as S	(+)	(+)	(+/-)	(-)
DiPE	n.e.	n.e.	n.e.	n.e.
Ethanol	--	n.e.	n.e.	n.e.
ETBE	n.e.	n.e.	n.e.	++
iso-Butanol	n.e.	n.e.	n.e.	n.e.
MTBE	--	n.e.	++	++
TAME	n.e.	n.e.	n.e.	n.e.
Olefins by FIA	--	--	--	--
Olefins by GC	+/-	--	+	--
Sulphur	++	--	--	+
RON	--	--	+/-	--
MON	--	--	--	--
TVP	--	-	-	--
DVPE ASTM D5191	--	+	+/-	+/-
DVPE EPA	--	+/-	-	+/-

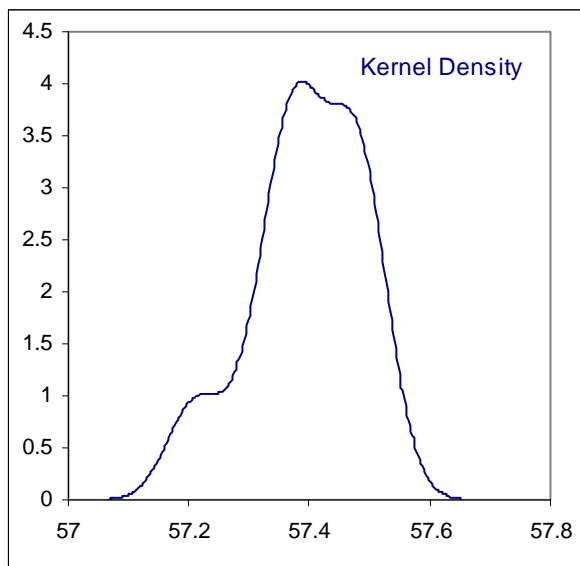
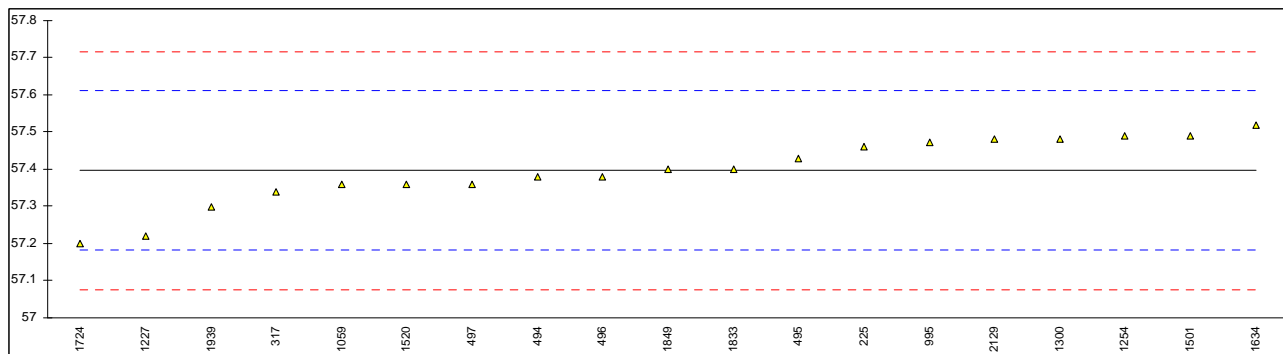
Table 7: comparison determinations against the standard
Results between brackets do not meet the application range of the test method.

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

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

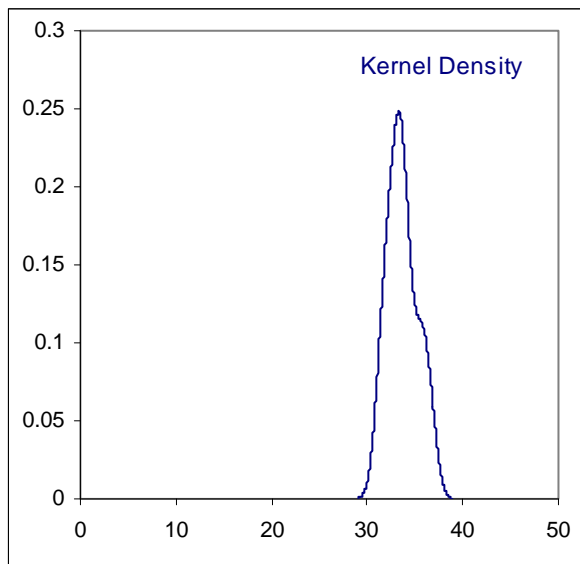
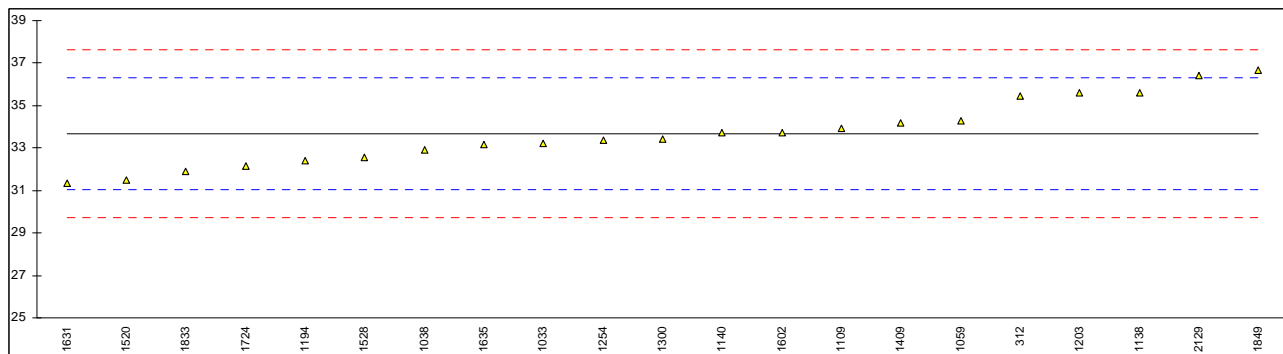
APPENDIX 1 Determination of API Gravity on sample #0970;

lab	method	value	mark	z(targ)	remarks
225	calc.	57.46		0.60	
312		----		----	
317	D1298	57.34		-0.52	
336		----		----	
353		----		----	
430		----		----	
440		----		----	
494	D1298	57.38		-0.15	
495	D1298	57.43		0.32	
496	D1298	57.38		-0.15	
497	D1298	57.36		-0.34	
995	calc.	57.472		0.71	
1033		----		----	
1038		----		----	
1059	D4052	57.36		-0.34	
1080		----		----	
1081		----		----	
1108		----		----	
1109		----		----	
1126		----		----	
1138		----		----	
1140		----		----	
1161		----		----	
1186		----		----	
1194		----		----	
1201		----		----	
1203		----		----	
1205		----		----	
1218		----		----	
1227	D1298	57.22		-1.64	
1238		----		----	
1251		----		----	
1254	D1298	57.49		0.88	
1257		----		----	
1300	D1298	57.48		0.78	
1318		----		----	
1409		----		----	
1426		----		----	
1501	D4052	57.49		0.88	
1520	D1298	57.36		-0.34	
1528		----		----	
1531		----		----	
1602		----		----	
1603		----		----	
1613		----		----	
1631		----		----	
1634	D1298	57.52		1.16	
1635		----		----	
1709		----		----	
1720		----		----	
1724	D1298	57.2		-1.83	
1810		----		----	
1811		----		----	
1833	D1298	57.4		0.04	
1842		----		----	
1849	D1298	57.40		0.04	
1851		----		----	
1864		----		----	
1936		----		----	
1937		----		----	
1938		----		----	
1939	D1298	57.3		-0.90	
1948		----		----	
1952		----		----	
2129	D1298	57.48		0.78	
2130		----		----	
2146		----		----	
	normality	OK			
	n	19			
	outliers	0			
	mean (n)	57.396			
	st.dev. (n)	0.0896			
	R(calc.)	0.251			
	R(D1298:05)	0.300			



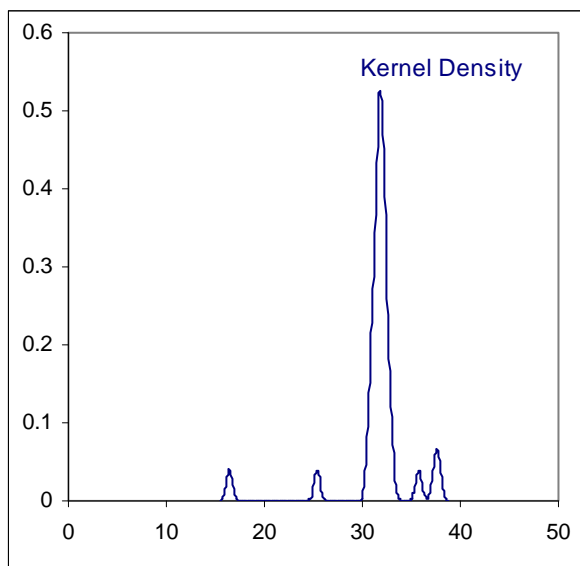
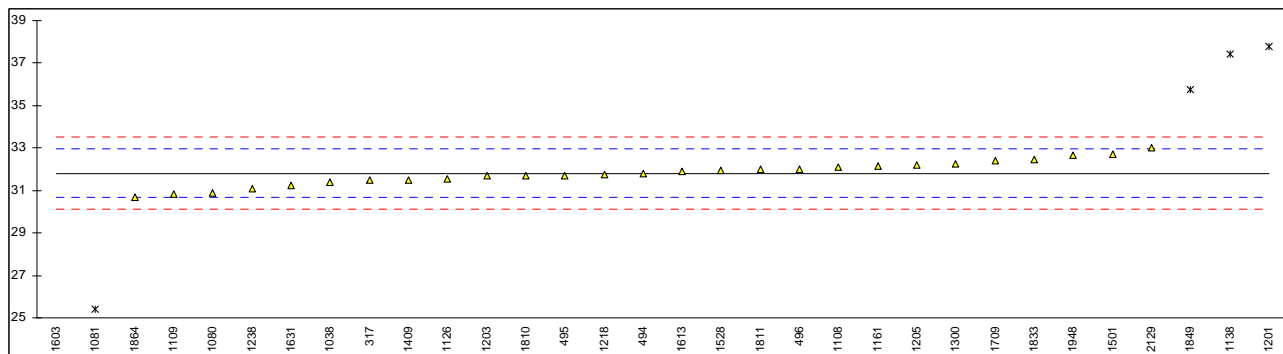
Determination of Aromatics by FIA on sample #0970; results in %V/V

lab	method	value	mark	z(targ)	remarks
225		----		----	
312	D1319	35.44		1.33	
317		----		----	
336		----		----	
353		----		----	
430		----		----	
440		----		----	
494		----		----	
495		----		----	
496		----		----	
497		----		----	
995		----		----	
1033	IP156	33.2		-0.37	
1038	D1319	32.9		-0.60	
1059	D1319	34.3		0.46	
1080		----		----	
1081		----		----	
1108		----		----	
1109	D1319	33.93		0.18	
1126		----		----	
1138	D1319	35.6		1.45	
1140	D1319	33.7		0.01	
1161		----		----	
1186		----		----	
1194	in house	32.4		-0.98	
1201		----		----	
1203	D1319	35.6		1.45	
1205		----		----	
1218		----		----	
1227		----		----	
1238		----		----	
1251		----		----	
1254	D1319	33.37		-0.24	
1257		----		----	
1300	D1319	33.438		-0.19	
1318		----		----	
1409	D1319	34.2		0.39	
1426		----		----	
1501		----		----	
1520	D1319	31.48		-1.67	
1528	D1319	32.54		-0.87	
1531		----		----	
1602	EN15553	33.73		0.03	
1603		----		----	
1613		----		----	
1631	D1319	31.34		-1.78	
1634		----		----	
1635	D1319	33.16		-0.40	
1709		----		----	
1720		----		----	
1724	D1319	32.14		-1.17	
1810		----		----	
1811		----		----	
1833	D1319	31.91		-1.35	
1842		----		----	
1849	D1319	36.65		2.24	
1851		----		----	
1864		----		----	
1936		----		----	
1937		----		----	
1938		----		----	
1939		----		----	
1948		----		----	
1952		----		----	
2129	D1319	36.429		2.07	
2130		----		----	
2146		----		----	
	normality	OK			
	n	21			
	outliers	0			
	mean (n)	33.688			
	st.dev. (n)	1.5425			
	R(calc.)	4.319			
	R(D1319:08)	3.700			



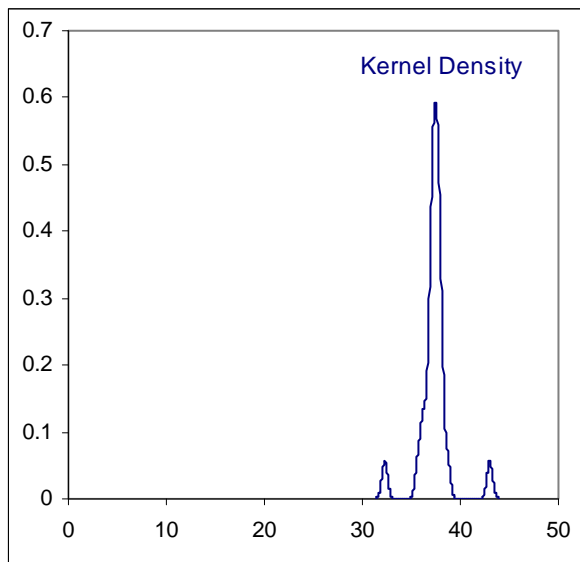
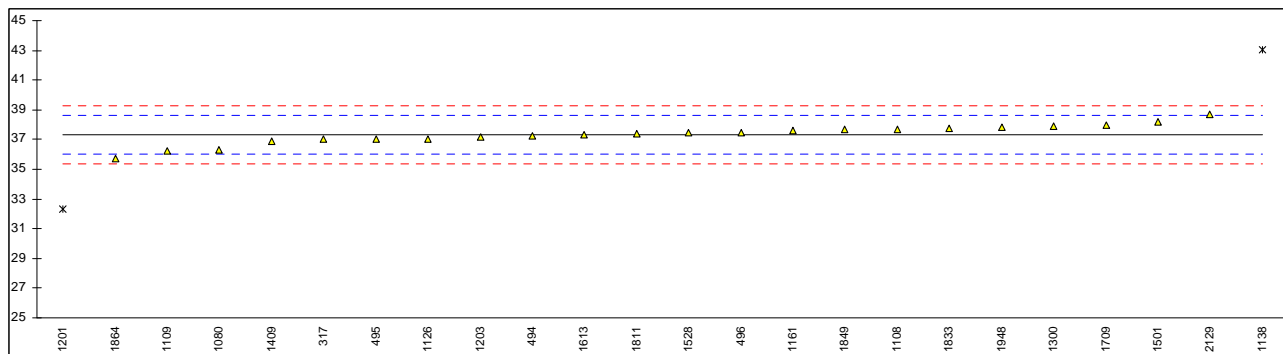
Determination of Aromatics by GC on sample #0970; results in %V/V

lab	method	value	mark	z(targ)	remarks
225		----		----	
312		----		----	
317	EN14517	31.5		-0.57	
336		----		----	
353		----		----	
430		----		----	
440		----		----	
494	EN22854	31.81		-0.02	
495	EN22854	31.7		-0.21	
496	ISO22584	32.02		0.36	
497		----		----	
995		----		----	
1033		----		----	
1038	D6839	31.4		-0.75	
1059		----		----	
1080	EN14517	30.89		-1.66	
1081	EN14517	25.4	G(0.05)	-11.45	
1108	EN14517	32.1		0.50	
1109	D6839	30.84		-1.75	
1126	D6839	31.55		-0.48	
1138	EN14517	37.44	G(0.01)	10.02	
1140		----		----	
1161	EN14517	32.16		0.61	
1186		----		----	
1194		----		----	
1201	EN14517	37.8	G(0.05)	10.66	
1203	EN14517	31.68		-0.25	
1205	EN14517	32.2		0.68	
1218	EN14517	31.73		-0.16	
1227		----		----	
1238	D5580	31.0866		-1.31	
1251		----		----	
1254		----		----	
1257		----		----	
1300	EN14517	32.252		0.77	
1318		----		----	
1409	EN14517	31.5		-0.57	
1426		----		----	
1501	D6293	32.69		1.55	
1520		----		----	
1528	EN14517	31.97		0.27	
1531		----		----	
1602		----		----	
1603	in house	16.448	G(0.01)	-27.41	
1613	D6839	31.88		0.11	
1631	EN14517	31.22		-1.07	
1634		----		----	
1635		----		----	
1709	D6730	32.385		1.01	
1720		----		----	
1724		----		----	
1810	EN14517	31.7		-0.21	
1811	EN14517	32.02		0.36	
1833	EN14517	32.46	C	1.14	First reported 29.3
1842		----		----	
1849	EN14517	35.777	G(0.01)	7.06	
1851		----		----	
1864	D5134	30.691	C	-2.01	First reported 33.744
1936		----		----	
1937		----		----	
1938		----		----	
1939		----		----	
1948	EN14517	32.66	C	1.50	First reported 26.90
1952		----		----	
2129	EN14517	33.03		2.16	
2130		----		----	
2146		----		----	
	normality	OK			
	n	27			
	outliers	5			
	mean (n)	31.819			
	st.dev. (n)	0.5816			
	R(calc.)	1.629			
	R(EN14517:04)	1.570			



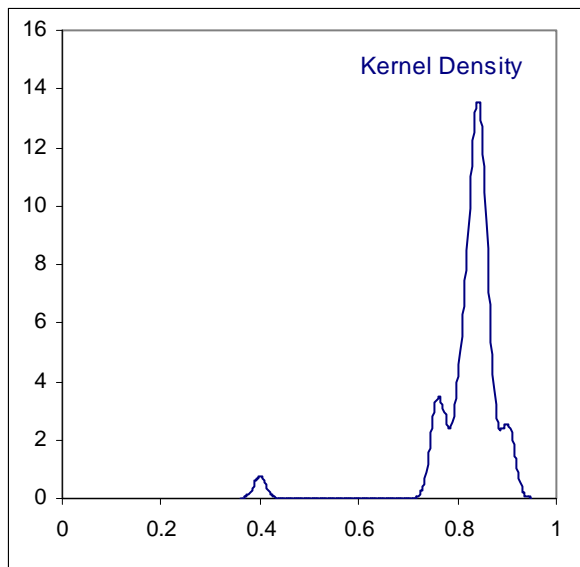
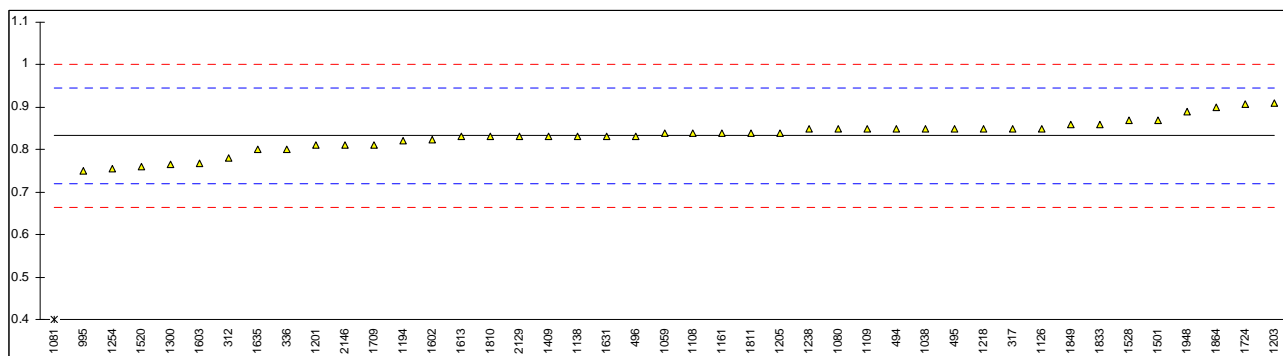
Determination of Aromatics by GC on sample #0970; results in %M/M

lab	method	value	mark	z(targ)	remarks
225		----		----	
312		----		----	
317	EN14517	37.0		-0.52	
336		----		----	
353		----		----	
430		----		----	
440		----		----	
494	EN22854	37.22		-0.18	
495	EN22854	37.0		-0.52	
496	ISO22584	37.47		0.20	
497		----		----	
995		----		----	
1033		----		----	
1038		----		----	
1059		----		----	
1080	EN14517	36.32		-1.57	
1081		----		----	
1108	EN14517	37.65		0.48	
1109	D6839	36.22		-1.72	
1126	D6839	37.01		-0.50	
1138	EN14517	43.01	G(0.01)	8.73	
1140		----		----	
1161	EN14517	37.61		0.42	
1186		----		----	
1194		----		----	
1201	EN14517	32.3	G(0.05)	-7.76	
1203	EN14517	37.17		-0.26	
1205		----		----	
1218		----		----	
1227		----		----	
1238		----		----	
1251		----		----	
1254		----		----	
1257		----		----	
1300	EN14517	37.890		0.85	
1318		----		----	
1409	EN14517	36.9		-0.67	
1426		----		----	
1501	D6293	38.17		1.28	
1520		----		----	
1528	EN14517	37.44		0.16	
1531		----		----	
1602		----		----	
1603		----		----	
1613	D6839	37.35		0.02	
1631		----		----	
1634		----		----	
1635		----		----	
1709	D6730	37.951		0.94	
1720		----		----	
1724		----		----	
1810		----		----	
1811	EN14517	37.40		0.10	
1833	EN14517	37.76	C	0.65	First reported 34.8
1842		----		----	
1849	EN14517	37.65		0.48	
1851		----		----	
1864	D5134	35.709	C	-2.51	First reported 39.777
1936		----		----	
1937		----		----	
1938		----		----	
1939		----		----	
1948	EN14517	37.85	C	0.79	First reported 29.62
1952		----		----	
2129	EN14517	38.69		2.08	
2130		----		----	
2146		----		----	
	normality	OK			
	n	22			
	outliers	2			
	mean (n)	37.338			
	st.dev. (n)	0.6709			
	R(calc.)	1.878			
	R(EN14517:04)	1.819			



Determination of Benzene on sample #0970; results in %V/V

lab	method	value	mark	z(targ)	remarks
225		----		----	
312	EN12177	0.78		-0.93	
317	EN14517	0.85		0.31	
336	EN238	0.8		-0.58	
353		----		----	
430		----		----	
440		----		----	
494	EN22854	0.85		0.31	
495	EN22854	0.85		0.31	
496	EN22584	0.83		-0.05	
497		----		----	
995	D6729	0.75		-1.46	
1033		----		----	
1038	D3606	0.85		0.31	
1059	EN12177	0.84		0.13	
1080	EN14517	0.85		0.31	
1081	EN14517	0.40	G(0.01)	-7.66	
1108	D3606	0.84		0.13	
1109	D6839	0.85		0.31	
1126	D6839	0.85		0.31	
1138	D3606	0.83		-0.05	
1140		----		----	
1161	EN14517	0.84		0.13	
1186		----		----	
1194	D6277	0.82		-0.22	
1201	EN14517	0.81		-0.40	
1203	EN12177	0.91		1.37	
1205	EN14517	0.84		0.13	
1218	EN14517	0.85		0.31	
1227		----		----	
1238	D5850	0.8496		0.30	
1251		----		----	
1254	IP429	0.755	C	-1.37	First reported 0.915
1257		----		----	
1300	D3606	0.766		-1.18	
1318		----		----	
1409	D3606	0.83		-0.05	
1426		----		----	
1501	D6293	0.87		0.66	
1520	D3606	0.76		-1.29	
1528	D3606	0.869		0.64	
1531		----		----	
1602	EN12177	0.824		-0.15	
1603	in house	0.767		-1.16	
1613	D6839	0.83		-0.05	
1631	EN14517	0.83		-0.05	
1634		----		----	
1635	EN238	0.8		-0.58	
1709	D5580	0.81		-0.40	
1720		----		----	
1724	EN12177	0.9064		1.30	
1810	D3606	0.83		-0.05	
1811	D3606	0.84		0.13	
1833	D3606	0.86		0.48	
1842		----		----	
1849	D3606	0.8579		0.45	
1851		----		----	
1864	D5134	0.8988		1.17	
1936		----		----	
1937		----		----	
1938		----		----	
1939		----		----	
1948	D3606	0.89		1.01	
1952		----		----	
2129	D3606	0.83		-0.05	
2130		----		----	
2146	EN12177	0.81		-0.40	
	normality	not OK			
	n	42			
	outliers	1			
	mean (n)	0.8327			
	st.dev. (n)	0.03818			
	R(calc.)	0.1069			
	R(D3606:07)	0.1583			



Determination of Copper strip 3hrs/50°C on sample #0970;

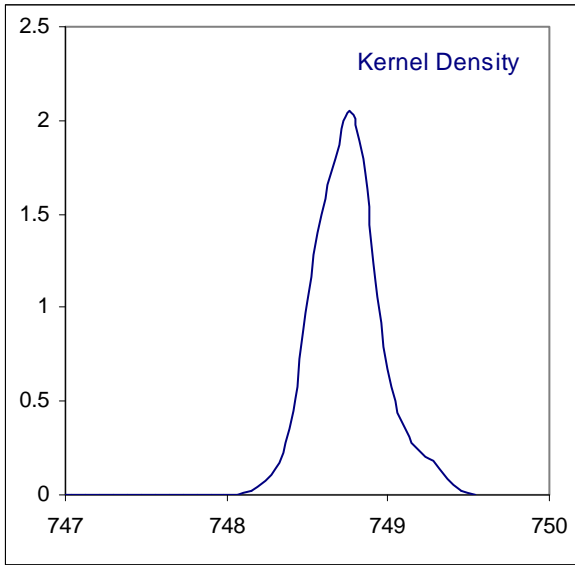
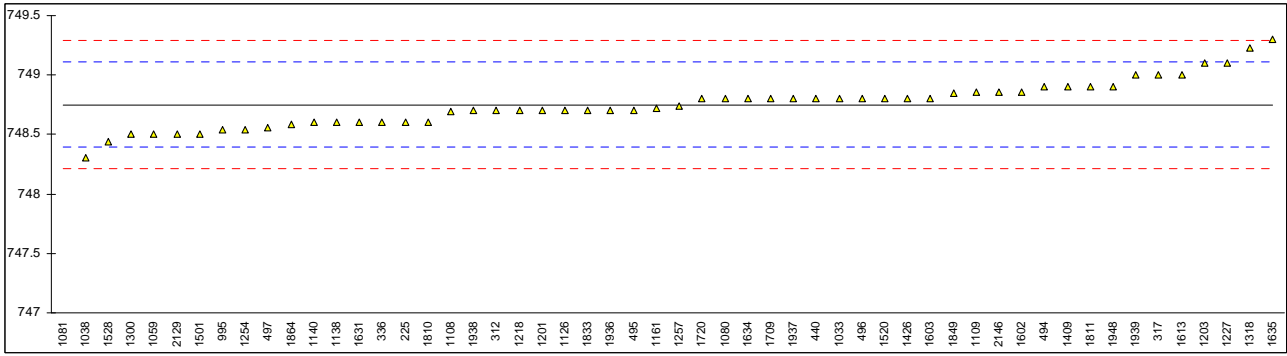
lab	method	value	mark	z(targ)	remarks
225	D130	1		----	
312		----		----	
317	D130	1a		----	
336	D130	1a		----	
353	D130	1a		----	
430		----		----	
440	D130	1a		----	
494	D130	1		----	
495	D130	1a		----	
496	D130	1a		----	
497	D130	1a		----	
995	D130	1a		----	
1033	IP154	1a		----	
1038	D130	1a		----	
1059	ISO2160	1a		----	
1080	D130	1a		----	
1081	D130	1a		----	
1108	D130	1a		----	
1109	D130	1a		----	
1126		----		----	
1138	D130	1a		----	
1140		----		----	
1161	ISO2160	1		----	
1186		----		----	
1194		----		----	
1201	D130	1a		----	
1203	ISO2160	1a		----	
1205		----		----	
1218		----		----	
1227	D130	1a		----	
1238	D130	1a		----	
1251		----		----	
1254	D130	1a		----	
1257		----		----	
1300	D130	1a		----	
1318	D130	1a		----	
1409	D130	1a		----	
1426		----		----	
1501	D130	1a		----	
1520	D130	1a		----	
1528	D130	1a		----	
1531		----		----	
1602	ISO2160	1		----	
1603		----		----	
1613	D130	1a		----	
1631	D130	1		----	
1634	D130	1a		----	
1635	D130	1a		----	
1709		----		----	
1720		----		----	
1724	D130	1a		----	
1810		----		----	
1811	D130	1		----	
1833	D130	1a		----	
1842		----		----	
1849	D130	1		----	
1851		----		----	
1864	ISO2160	1a		----	
1936		----		----	
1937		----		----	
1938		----		----	
1939	D130	1a		----	
1948	D130	1a		----	
1952		----		----	
2129	IP154	1a		----	
2130		----		----	
2146		----		----	
	normality	n.a.			
	n	43			
	outliers	0			
	mean (n)	1 (1a)			
	st.dev. (n)	n.a.			
	R(calc.)	n.a.			
	R(D130:04e1)	n.a.			

Determination of Doctor Test on sample #0970;

lab	method	value	mark	z(targ)	remarks
225	D4952	negative		----	
312	IP30	negative		----	
317	IP30	negative		----	
336	D4952	negative		----	
353		----		----	
430		----		----	
440	IP30	negative		----	
494	D4952	negative		----	
495	D4952	negative		----	
496		----		----	
497	D4952	negative		----	
995	D4952	negative		----	
1033		----		----	
1038	IP30	negative		----	
1059	ISO5275	negative		----	
1080		----		----	
1081		----		----	
1108	D4952	negative		----	
1109	IP30	negative		----	
1126		----		----	
1138	D4952	negative		----	
1140	D4952	negative		----	
1161		----		----	
1186		----		----	
1194		----		----	
1201	D4952	negative		----	
1203	D4952	negative		----	
1205		----		----	
1218		----		----	
1227		----		----	
1238	Inhouse	negative		----	
1251		----		----	
1254	D4952	negative		----	
1257		----		----	
1300	D4952	negative		----	
1318		----		----	
1409		----		----	
1426		----		----	
1501	D4952	negative		----	
1520	D4952	negative		----	
1528		----		----	
1531		----		----	
1602		----		----	
1603		----		----	
1613	D4952	negative		----	
1631		----		----	
1634		----		----	
1635	D4952	negative		----	
1709		----		----	
1720	D4952	negative		----	
1724	IP30	negative		----	
1810		----		----	
1811	D4952	negative		----	
1833	D4952	negative		----	
1842		----		----	
1849	D4952	negative		----	
1851		----		----	
1864	D4952	negative		----	
1936		----		----	
1937		----		----	
1938		----		----	
1939	IP30	negative		----	
1948		----		----	
1952		----		----	
2129	D4952	Positive		----	false positive?
2130		----		----	
2146		----		----	
	normality	n.a.			
	n	32			
	outliers	0			
	mean (n)	negative			
	st.dev. (n)	n.a.			
	R(calc.)	n.a.			
	R(D4952:07)	n.a.			

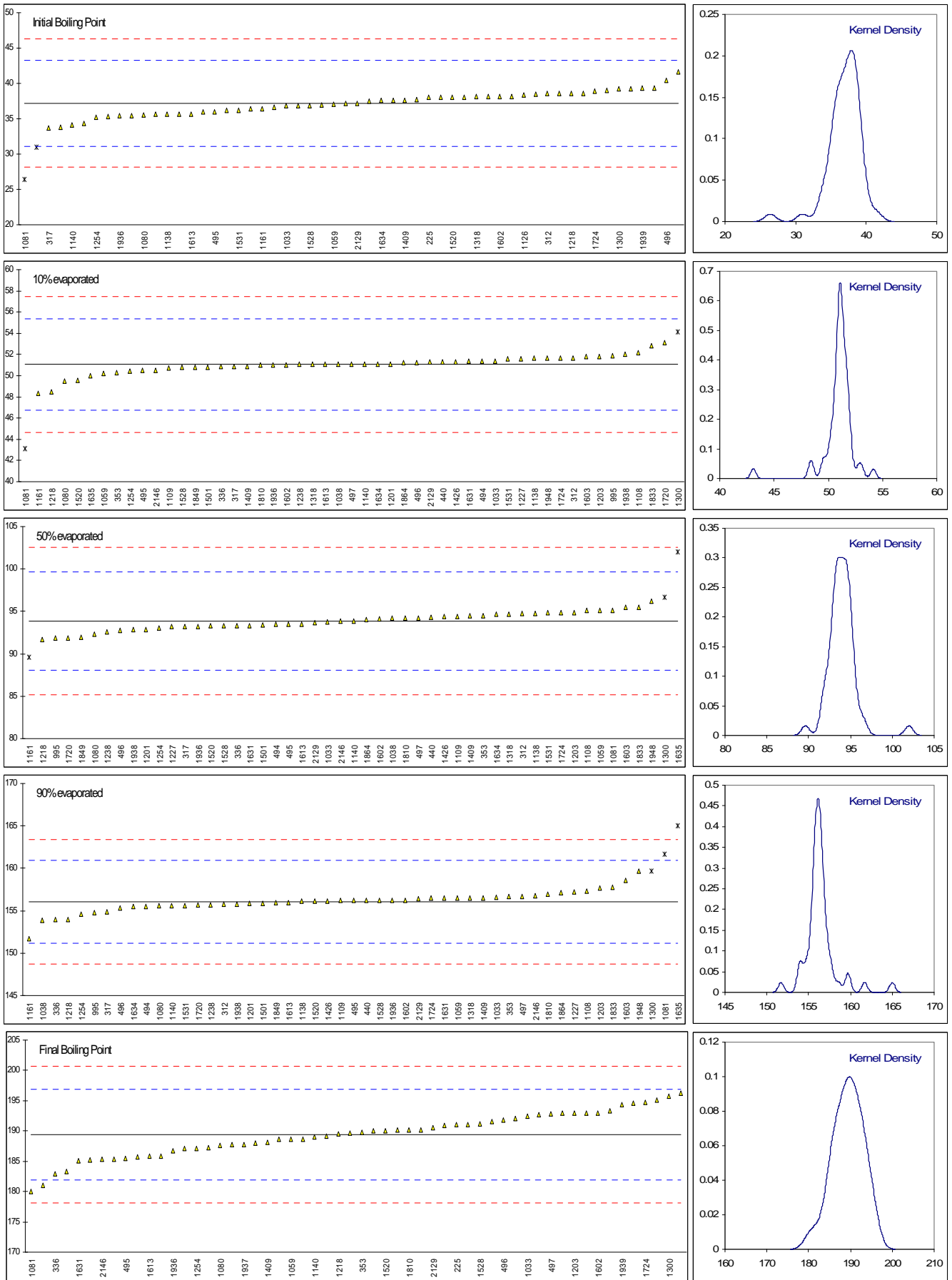
Determination of Density @ 15°C on sample #0970; results in kg/m³

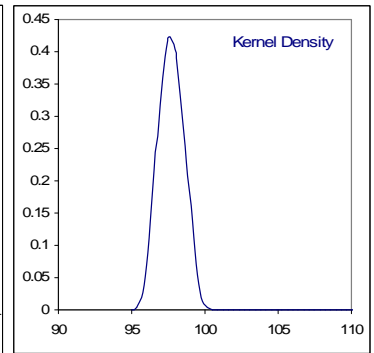
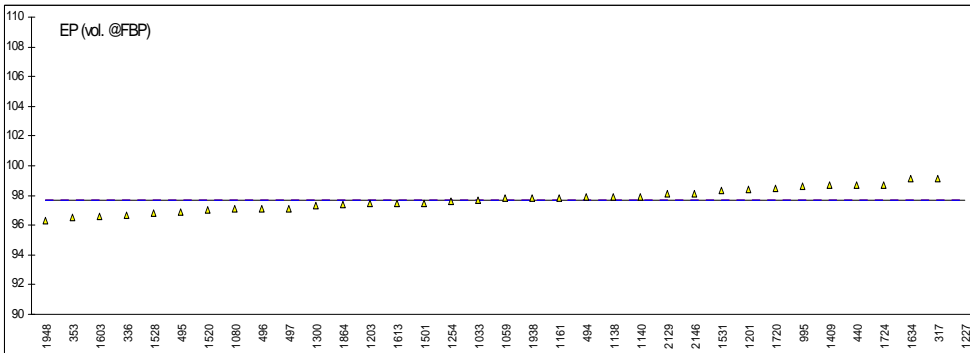
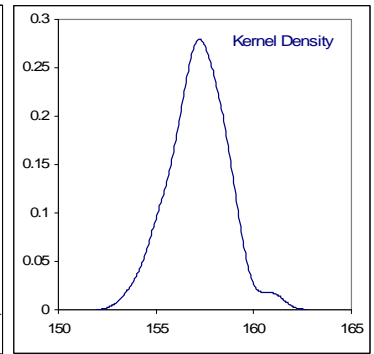
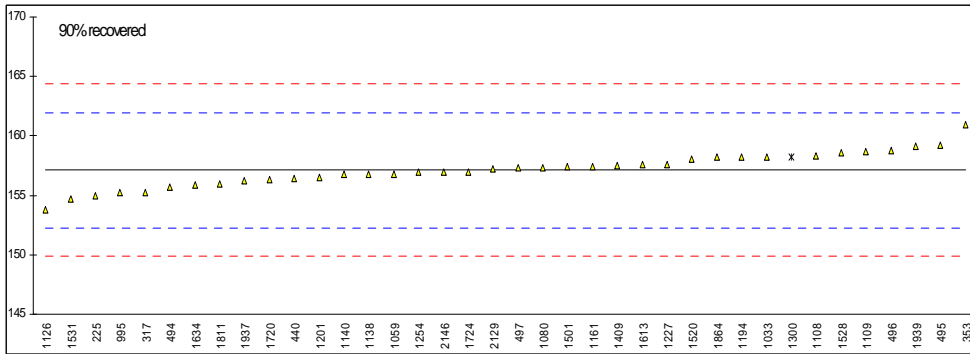
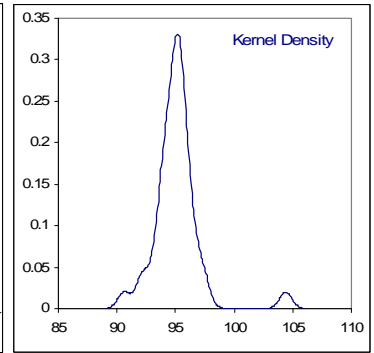
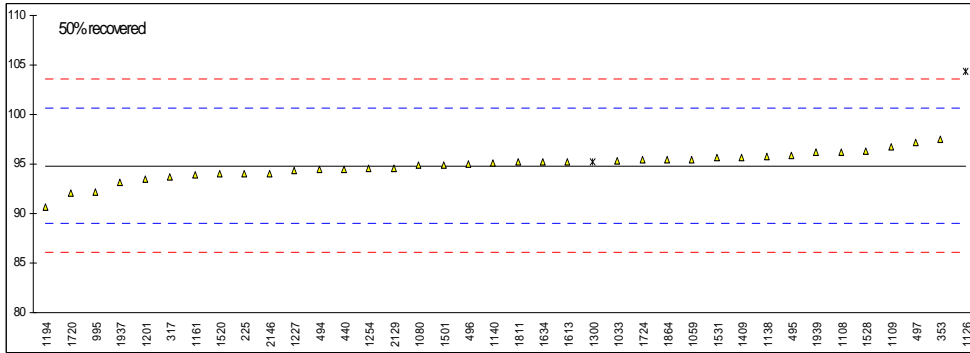
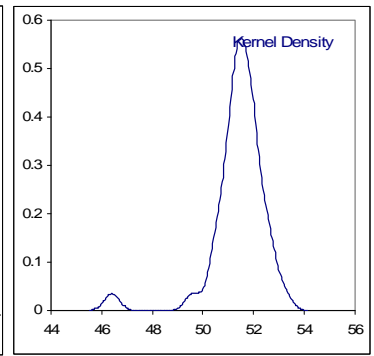
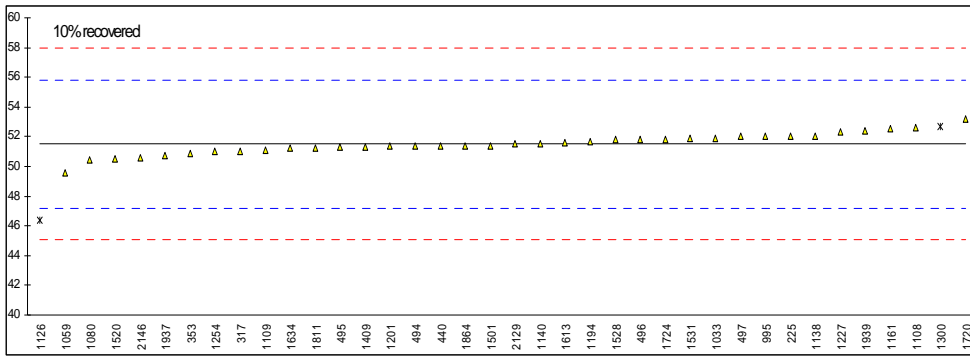
lab	method	value	mark	z(targ)	remarks
225	D4052	748.6		-0.85	
312	D4052	748.7		-0.29	
317	D4052	749.0		1.39	
336	D4052	748.6		-0.85	
353		-----		-----	
430		-----		-----	
440	D4052	748.8		0.27	
494	D4052	748.9		0.83	
495	D4052	748.7		-0.29	
496	D4052	748.80		0.27	
497	D4052	748.56		-1.08	
995	D4052	748.54		-1.19	
1033	IP365	748.8		0.27	
1038	D4052	748.3		-2.53	
1059	ISO12185	748.5		-1.41	
1080	ISO12185	748.8		0.27	
1081	ISO12185	727.8	G(0.01)	-117.33	
1108	D4052	748.69		-0.35	
1109	D4052	748.86		0.60	
1126	D4052	748.7		-0.29	
1138	D4052	748.6		-0.85	
1140	D4052	748.6		-0.85	
1161	ISO12185	748.72	C	-0.18	First reported 749.33
1186		-----		-----	
1194		-----		-----	
1201	D4052	748.7		-0.29	
1203	ISO12185	749.1		1.95	
1205		-----		-----	
1218	D4052	748.7		-0.29	
1227	D4052	749.1		1.95	
1238		-----		-----	
1251		-----		-----	
1254	D4052	748.54		-1.19	
1257	D4052	748.74		-0.07	
1300	D4052	748.5		-1.41	
1318	D4052	749.23		2.67	
1409	ISO12185	748.9		0.83	
1426	D4052	748.8	C	0.27	First reported 0.7488
1501	D4052	748.5		-1.41	
1520	D4052	748.6	C	-0.85	First reported 0.74858
1528	D4052	748.44		-1.75	
1531		-----		-----	
1602	ISO12185	748.86		0.60	
1603	D4052	748.8		0.27	
1613	D4052	749.0		1.39	
1631	D4052	748.6		-0.85	
1634	D4052	748.8		0.27	
1635	D4052	749.3		3.07	
1709	D4052	748.8		0.27	
1720	D4052	748.8		0.27	
1724		-----		-----	
1810	D4052	748.6		-0.85	
1811	D4052	748.9		0.83	
1833	D4052	748.7		-0.29	
1842		-----		-----	
1849	D4052	748.844		0.51	
1851		-----		-----	
1864	ISO12185	748.585		-0.94	
1936	EN ISO 12185	748.7		-0.29	
1937	D4052	748.8		0.27	
1938	D4052	748.7		-0.29	
1939	D4052	749.0		1.39	
1948	D4052	748.9		0.83	
1952		-----		-----	
2129	D4052	748.5		-1.41	
2130		-----		-----	
2146	ISO12185	748.86		0.60	
	normality	OK			
	n	53			
	outliers	1			
	mean (n)	748.75			
	st.dev. (n)	0.196			
	R(calc.)	0.55			
	R(D4052:02e1)	0.50			



Determination of Distillation ASTM D86 (automated) on sample #0970; results in °C (EP in %)

lab	method	IBP	10% eva	50% eva	90% eva	FBP	10% rec	50% rec	90% rec	EP in %	mark	
225	D86-M	38.0	----	----	----	191.0	52.0	94.0	155.0	----		
312	D86-A	38.6	51.7	94.8	155.8	192.1	----	----	----	----		
317	D86-A	33.7	50.9	93.2	154.9	188.0	51.0	93.7	155.2	99.1		
336	D86-A	39.0	50.9	93.3	154.0	182.9	----	----	----	96.7		
353	IP123-A	36.4	50.3	94.5	156.7	189.8	50.9	97.5	160.9	96.5		
430		----	----	----	----	----	----	----	----	----		
440	D86-A	36.0	51.3	94.3	156.2	191.5	51.4	94.5	156.4	98.7		
494	D86-A	35.4	51.4 C	93.5	155.5	185.4	51.4 C	94.5	155.7	97.9		
495	D86-A	36.0	50.5	93.5	156.2	185.5	51.3	95.9	159.2	96.9		
496	D86-A	40.4	51.2	92.8	155.3	191.8	51.8	95	158.8	97.1		
497	D86-A	38.2	51.1	94.2	156.7	192.8	52.0	97.2	157.3	97.1		
995	D86-M	37.5	51.87	91.9	154.8	187.3	52	92.2	155.2	98.6		
1033	IP123-A	36.8	51.4	93.8	156.6	192.4	51.9	95.3	158.2	97.7 C		
1038	D86-A	38.2	51.1	94.2	153.9	193.0	----	----	----	----		
1059	ISO3405-A	37.1	50.2	95.1	156.5	188.6	49.6	95.4	156.8	97.8		
1080	D86-A	35.5	49.5	92.3	155.6	187.6	50.4	94.9	157.3	97.1		
1081	D86-A	26.4	43.1	95.1	161.7	180.0	----	----	----	----		
1108	D86-A	36.8	52.2	95.1	157.3	195.1	52.6	96.2	158.3	----		
1109	D86-A	38.5	50.7	94.4	156.2	193.3	51.1	96.7	158.7	----		
1126	in house	38.4	----	----	----	185.2	46.4	104.4	153.8	----		
1138	D86-A	35.6	51.7	94.8	156.1	191.0	52.0	95.8	156.8	97.9		
1140	D86-A	34.1	51.1	93.9	155.6	189.0	51.5	95.1	156.8	97.9		
1161	ISO3405-A	36.43	48.33	89.63 C	151.7 C	194.57	52.57	93.87	157.40	97.8		
1186		----	----	----	----	----	----	----	----	----		
1194	in house	33.8	----	----	----	183.3	51.7	90.6	158.2	----		
1201	D86-A	35.6	51.1	92.9	155.9	185.7	51.4	93.5	156.5	98.4		
1203	ISO3405-A	38.0	51.8	94.9	157.7	193.0	----	----	----	97.5		
1205		----	----	----	----	----	----	----	----	----		
1218	D86-A	38.6	48.5	91.7	154.0	189.5	----	----	----	----		
1227	D86-A	39.4	51.6	93.2	157.2	187.1	52.3	94.3	157.6	187.2		
1238		----	51.1	92.6	155.7	----	----	----	----	----		
1251		----	----	----	----	----	----	----	----	----		
1254	D86-A	35.2	50.4	93.0	154.6	187.1	51.0	94.6	157.0	97.6		
1257		----	----	----	----	----	----	----	----	----		
1300	D86-M	39.19	54.15	96.67 ex	x	159.71e	52.70 ex	95.22 ex	x	158.26e	97.35	eva>rec
1318	D86-A	38.2	51.1	94.7	156.5	190.1	----	----	----	----		
1409	ISO3405-A	37.6	50.9	94.5	156.5	188.1	51.3	95.6	157.5	98.7		
1426	D86-A	38.6	51.3	94.4	156.1	190	----	----	----	----		
1501	D86-M	36.92	50.8	93.4	155.9	190.87	51.41	94.90	157.38	97.5		
1520	D86-M	38.0	49.6 C	93.3	156.1	190.0	50.5	94.0	158.0	97.0		
1528	D86-A	36.9	50.8	93.3	156.2	191.2	51.8	96.3	158.6	96.8		
1531	D86-A	36.2	51.6	94.9	155.6	192.7	51.9	95.6	154.7	98.3		
1602	ISO3405-A	38.20	51.03	94.13	156.22	193.01	----	----	----	----		
1603	D86-A	36.6	51.8	95.5	158.6	189.2	----	----	----	96.6		
1613	D86-A	35.7	51.1	93.5	156.0	185.8	51.6	95.2	157.6	97.5		
1631	D86-A	37.2	51.4	93.3	156.5	185.1	----	----	----	----		
1634	D86-A	37.6	51.1	94.7	155.5	192.9	51.2	95.2	155.9	99.1		
1635	D86-M	31.0	50.0	102.0	165.0	181.0	----	----	----	----		
1709		----	----	----	----	----	----	----	----	----		
1720	D86-A	38.6	53.1	91.9	155.7	188.6	53.2	92.1	156.3	98.5		
1724	D86-A	38.9	51.7	94.9	156.5	194.7	51.8	95.4	157.0	98.7		
1810	D86-A	35.3	51.0	94.2	157.0	190.1	----	----	----	----		
1811	D86-A	37.6	----	----	----	190.2	51.2	95.2	156.0	----		
1833	D86-A	41.6	52.8	95.5	157.8	196.2	----	----	----	----		
1842		----	----	----	----	----	----	----	----	----		
1849	D86-A	39.2	50.8	92.0	156.0	189.6	----	----	----	----		
1851		----	----	----	----	----	----	----	----	----		
1864	ISO3405-A	34.3	51.2	94.0	157.1	188.7	51.4	95.4	158.2	97.4		
1936	ISO3405-A	35.4	51.0	93.2	156.2	186.7	----	----	----	----		
1937	D86-A	35.7	----	----	----	187.7	50.7	93.1	156.2	----		
1938	D86-A	36.2	52.0	92.9	155.8	185.8	----	----	----	97.8		
1939	D86-A	39.3	----	----	----	194.4	52.4	96.2	159.1	----		
1948	D86-A	37.7	51.7	96.2	159.7	187.7	----	----	----	96.3		
1952		----	----	----	----	----	----	----	----	----		
2129	D86-A	37.2	51.3	93.7	156.4	190.5	51.5	94.6	157.2	98.1		
2130		----	----	----	----	----	----	----	----	----		
2146	ISO3405-A	38.0	50.5	93.9	156.8	185.3	50.6 C	94.0	157.0	98.1		
	normality	OK	not OK	OK	not OK	OK	OK	OK	OK	OK		
	n	54	49	48	48	56	36	36	37	34		
	outliers	2		2	2	0	1	0	0	1		
	mean (n)	37.21	51.05	93.85	156.07	189.39	51.51	94.82	157.13	97.71		
	st.dev. (n)	1.664	0.871	1.038	1.243	3.638	0.696	1.405	1.422	0.752		
	R(calc.)	4.66	2.44	2.91	3.48	10.19	1.95	3.93	3.98	2.11		
	R(D86:07a-A)	8.50	5.99	8.11	6.83	10.50	6.04	8.14	6.78	n.a.		
	R(D86:09-A)	5.26	3.20	1.88	4.10	6.78	n.a.	n.a.	n.a.	n.a.		

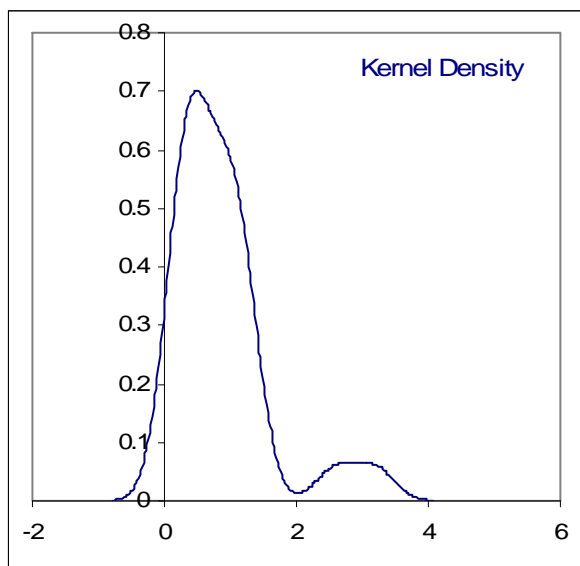
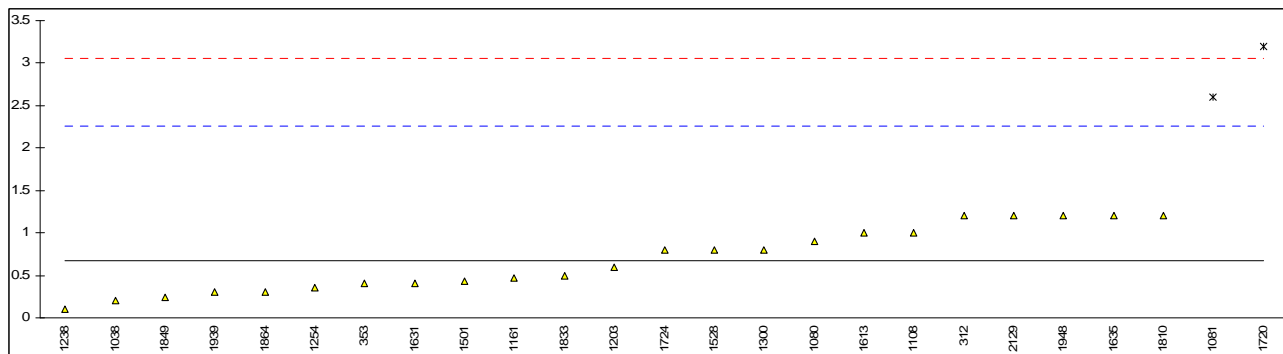




--- empty page ---

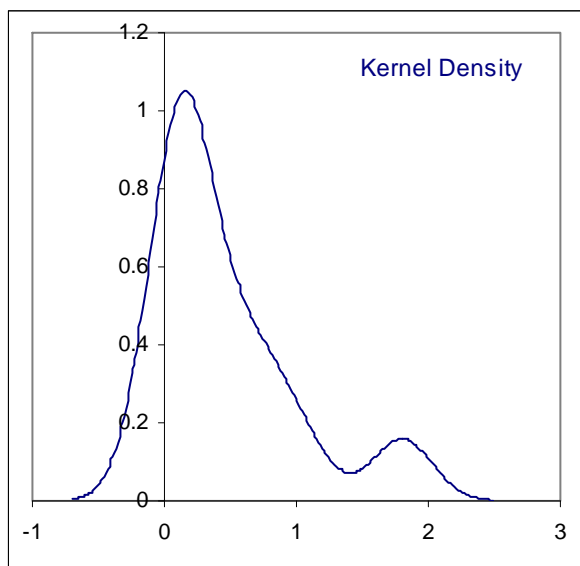
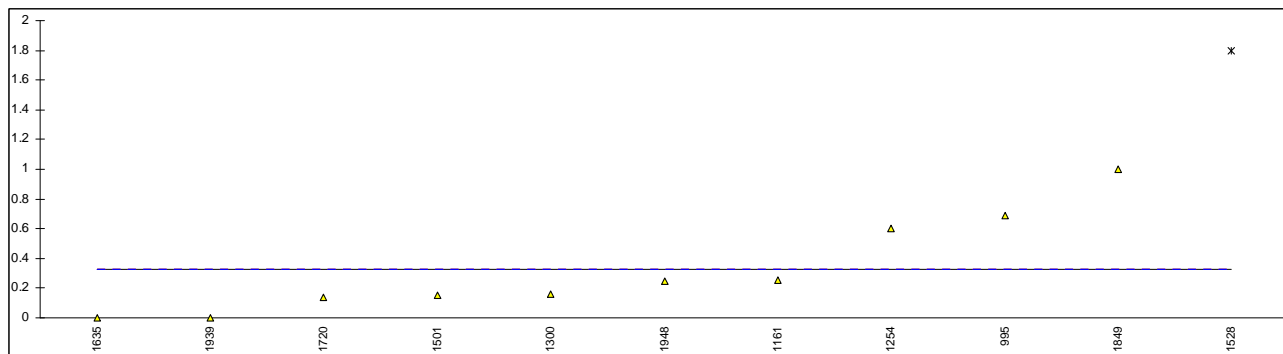
Determination of Existent Gum (washed) on sample #0970; results in mg/100mL

lab	method	value	mark	z(targ)	remarks
225		----		----	
312	D381	1.2		0.66	
317	D381	<1		----	
336		----		----	
353	D381	0.4		-0.35	
430		----		----	
440		----		----	
494	D381	<0.5		----	
495	D381	<1		----	
496	D381	<1		----	
497		----		----	
995		----		----	
1033	IP131	<0.1		----	
1038	D381	0.2		-0.60	
1059	ISO6246	<1		----	
1080	ISO6246	0.9		0.28	
1081	D381	2.6	G(0.01)	2.43	false positive?
1108	D381	1.0		0.41	
1109	D381	<1		----	
1126		----		----	
1138	D381	<1		----	
1140	D381	<1		----	
1161	ISO6246	0.466		-0.27	
1186		----		----	
1194		----		----	
1201		----		----	
1203	ISO6246	0.6		-0.10	
1205		----		----	
1218		----		----	
1227		----		----	
1238	in house	0.1		-0.73	
1251		----		----	
1254	D381	0.35		-0.41	
1257		----		----	
1300	D381	0.8		0.15	
1318		----		----	
1409	ISO6246	<1		----	
1426		----		----	
1501	D381	0.43		-0.31	
1520	D381	<0.1		----	
1528	D381	0.8		0.15	
1531		----		----	
1602		----		----	
1603		----		----	
1613	D381	1.0		0.41	
1631	D381	0.4		-0.35	
1634		----		----	
1635	D381	1.2		0.66	
1709		----		----	
1720	D381	3.2	DG(0.01)	3.18	false positive?
1724	D381	0.8		0.15	
1810	D381	1.2		0.66	
1811		----		----	
1833	D381	0.5		-0.22	
1842		----		----	
1849	D381	0.2358		-0.56	
1851		----		----	
1864	ISO6246	0.3		-0.48	
1936		----		----	
1937		----		----	
1938		----		----	
1939	D381	0.3	C	-0.48	First reported 3
1948	D381	1.2		0.66	
1952		----		----	
2129	D381	1.2		0.66	
2130		----		----	
2146		----		----	
	normality	OK			
	n	23			
	outliers	2			
	mean (n)	0.68			
	st.dev. (n)	0.376			
	R(calc.)	1.05			
	R(D381:04e1)	2.22			



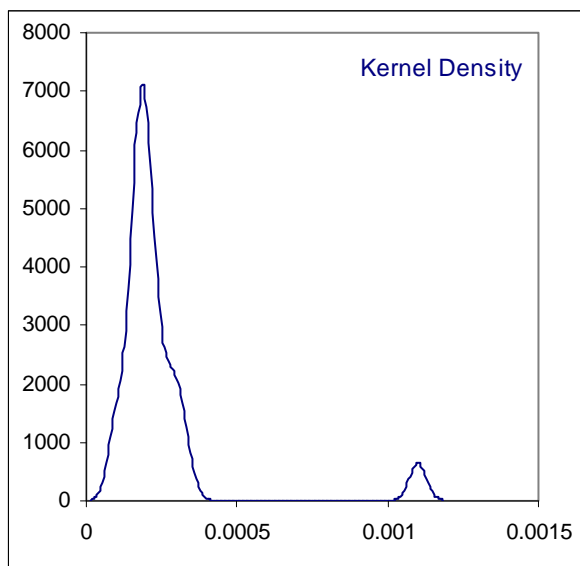
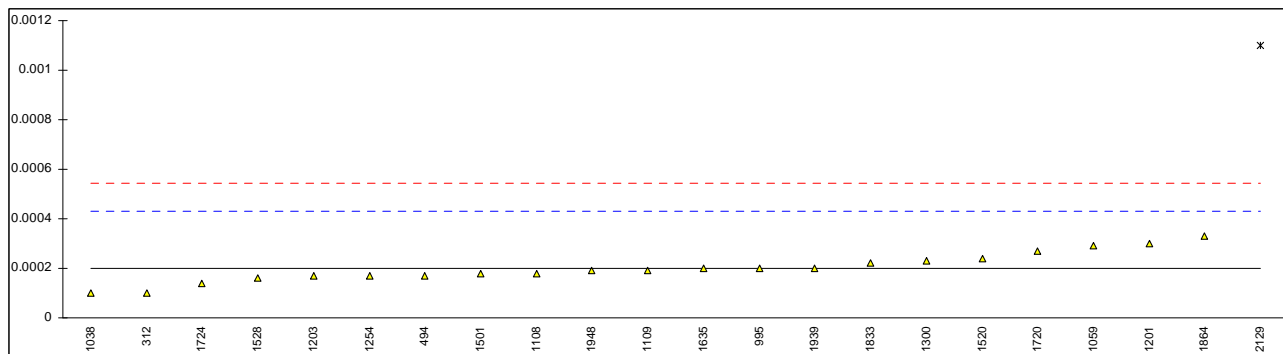
Determination of Lead as Pb on sample #0970; results in mg/L

lab	method	value	mark	z(targ)	remarks
225		----		----	
312		----		----	
317		----		----	
336		----		----	
353		----		----	
430		----		----	
440		----		----	
494	D3237	<2.5		----	
495	EN237	<2.5		----	
496		----		----	
497		----		----	
995	IP428	0.69		----	
1033		----		----	
1038		----		----	
1059	EN13723	<1.0		----	
1080		----		----	
1081	D5059-M	<1		----	
1108		----		----	
1109	D3237	<2.5		----	
1126		----		----	
1138		----		----	
1140		----		----	
1161	EN237	0.2515		----	
1186		----		----	
1194		----		----	
1201	D3237	<5		----	
1203	EN237	<1		----	
1205		----		----	
1218		----		----	
1227		----		----	
1238		----		----	
1251		----		----	
1254	D3237	0.6		----	
1257		----		----	
1300	D3237	0.161		----	
1318		----		----	
1409	EN237	<2.5		----	
1426		----		----	
1501	D3237	0.15		----	
1520	D3237	<2.5		----	
1528	D3237	1.8	G(0.05)	----	
1531		----		----	
1602	EN237	<1		----	
1603		----		----	
1613		----		----	
1631		----		----	
1634		----		----	
1635	D3237	0		----	
1709	D3237	<5.3		----	
1720	D3237	0.137		----	
1724	EN237	<2.5		----	
1810		----		----	
1811		----		----	
1833		----		----	
1842		----		----	
1849	D3237	1		----	
1851		----		----	
1864		----		----	
1936		----		----	
1937		----		----	
1938		----		----	
1939	ICP	0.003		----	
1948	D3237	0.247		----	
1952		----		----	
2129	D3237	LT 1		----	
2130		----		----	
2146		----		----	
	normality	not OK			
	n	10			
	outliers	1			
	mean (n)	0.32			
	st.dev. (n)	0.330			
	R(calc.)	0.92			
	R(D3237:06e1)	n.a.			



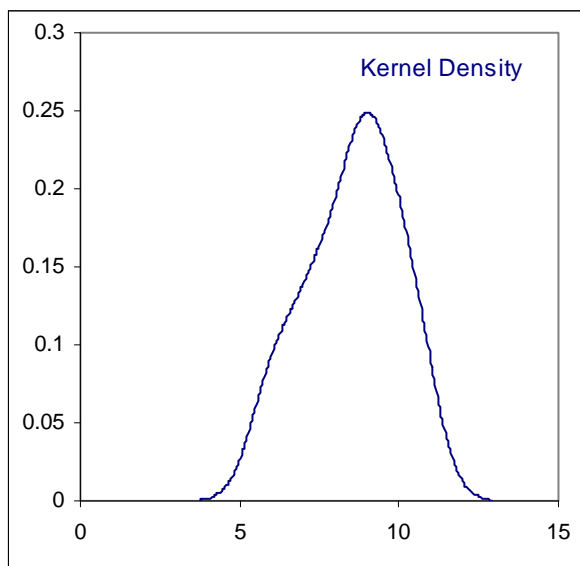
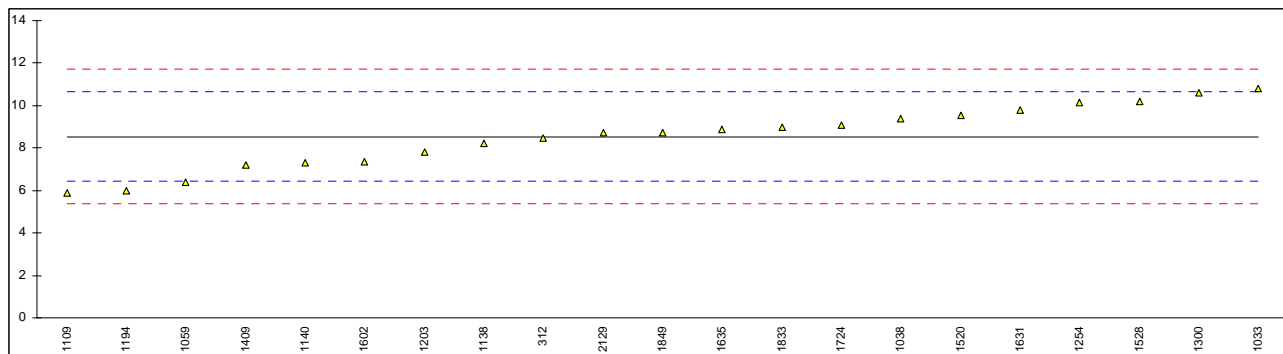
Determination of Mercaptans as S on sample #0970; results in %M/M

lab	method	value	mark	z(targ)	remarks
225		----		----	
312	D3227	0.0001		-0.89	
317	D3227	<0.0003		----	
336		----		----	
353		----		----	
430		----		----	
440		----		----	
494	D3227	0.00017		-0.28	
495	D3227	<0.0003		----	
496		----		----	
497		----		----	
995	D3227	0.0002		-0.01	
1033		----		----	
1038	D3227	0.0001		-0.89	
1059	D3227	0.00029		0.78	
1080		----		----	
1081	D3227	<0.0001		----	
1108	D3227	0.00018		-0.19	
1109	D3227	0.00019		-0.10	
1126		----		----	
1138		----		----	
1140	D3227	<0.0003		----	
1161		----		----	
1186		----		----	
1194		----		----	
1201	D3227	0.0003		0.87	
1203	UOP163	0.00017		-0.28	
1205		----		----	
1218		----		----	
1227		----		----	
1238		----		----	
1251		----		----	
1254	D3227	0.00017		-0.28	
1257		----		----	
1300	D3227	0.000229		0.24	
1318		----		----	
1409		----		----	
1426		----		----	
1501	D3227	0.00018		-0.19	
1520	D3227	0.00024		0.34	
1528	D3227	0.00016		-0.36	
1531		----		----	
1602		----		----	
1603		----		----	
1613		----		----	
1631		----		----	
1634		----		----	
1635	D3227	0.0002		-0.01	
1709		----		----	
1720	D3227	0.00027		0.60	
1724	D3227	0.00014		-0.54	
1810		----		----	
1811		----		----	
1833	D3227	0.00022		0.16	
1842		----		----	
1849		----		----	
1851		----		----	
1864	D3227	0.00033		1.13	
1936		----		----	
1937		----		----	
1938		----		----	
1939	D3227	0.0002		-0.01	
1948	D3227	0.00019		-0.10	
1952		----		----	
2129	D3227	0.0011	G(0.01)	7.90	
2130		----		----	
2146		----		----	
	normality	OK			
	n	21			
	outliers	1			
	mean (n)	0.00020			
	st.dev. (n)	0.000060			
	R(calc.)	0.00017			
	R(D3227:04a)	0.00032			



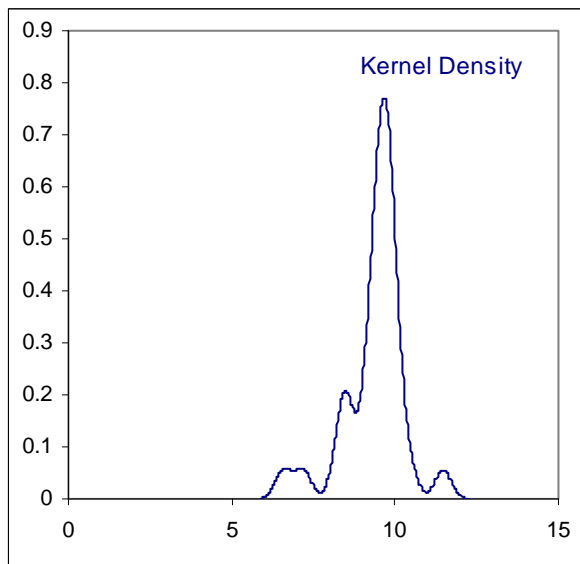
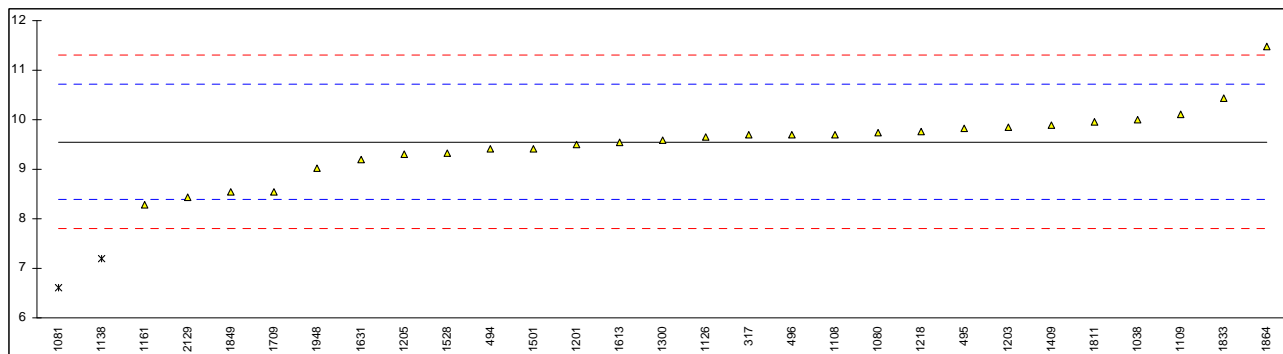
Determination of Olefins by FIA on sample #0970; results in %V/V

lab method	value	mark	z(targ)	remarks
225	----		----	
312 D1319	8.47		-0.07	
317	----		----	
336	----		----	
353	----		----	
430	----		----	
440	----		----	
494	----		----	
495	----		----	
496	----		----	
497	----		----	
995	----		----	
1033 IP156	10.8		2.13	
1038 D1319	9.4		0.81	
1059 D1319	6.4		-2.02	
1080	----		----	
1081	----		----	
1108	----		----	
1109 D1319	5.89		-2.50	
1126	----		----	
1138 D1319	8.2		-0.33	
1140 D1319	7.3		-1.17	
1161	----		----	
1186	----		----	
1194 in house	6.0		-2.40	
1201	----		----	
1203 D1319	7.8		-0.70	
1205	----		----	
1218	----		----	
1227	----		----	
1238	----		----	
1251	----		----	
1254 D1319	10.14		1.50	
1257	----		----	
1300 D1319	10.602		1.94	
1318	----		----	
1409 D1319	7.2		-1.27	
1426	----		----	
1501	----		----	
1520 D1319	9.54		0.94	
1528 D1319	10.2		1.56	
1531	----		----	
1602 EN15553	7.33		-1.15	
1603	----		----	
1613	----		----	
1631 D1319	9.77		1.15	
1634	----		----	
1635 D1319	8.90		0.33	
1709	----		----	
1720	----		----	
1724 D1319	9.08		0.50	
1810	----		----	
1811	----		----	
1833 D1319	9.0	C	0.43	
1842	----		----	
1849 D1319	8.7125	C	0.16	
1851	----		----	
1864	----		----	
1936	----		----	
1937	----		----	
1938	----		----	
1939	----		----	
1948	----	C	----	
1952	----		----	
2129 D1319	8.711		0.16	
2130	----		----	
2146	----		----	
normality	OK			
n	21			
outliers	0			
mean (n)	8.545			
st.dev. (n)	1.4515			
R(calc.)	4.064			
R(D1319:08)	2.971			



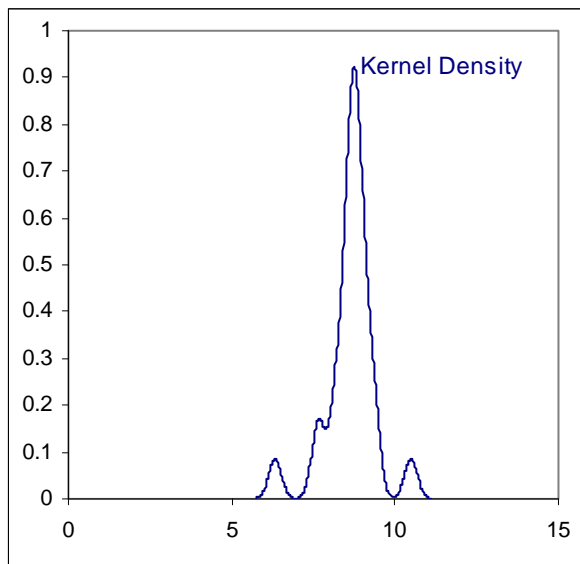
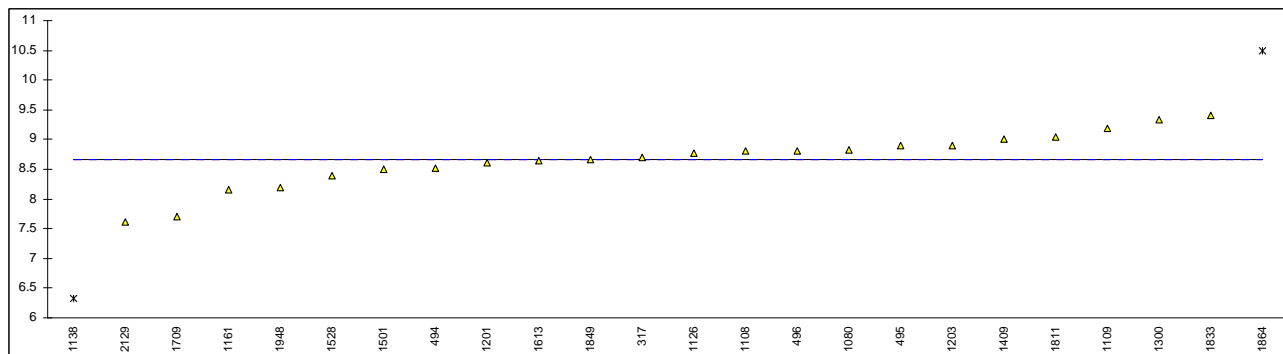
Determination of Olefins by GC on sample #0970; results in %V/V

lab method	value	mark	z(targ)	remarks
225	----		----	
312	----		----	
317 EN14517	9.7		0.25	
336	----		----	
353	----		----	
430	----		----	
440	----		----	
494 EN22854	9.41		-0.25	
495 EN22854	9.83		0.47	
496 ISO22854	9.70		0.25	
497	----		----	
995	----		----	
1033	----		----	
1038 D6839	10.0		0.77	
1059	----		----	
1080 EN14517	9.73		0.30	
1081 EN14517	6.6	G(0.05)	-5.06	
1108 EN14517	9.7		0.25	
1109 D6839	10.10		0.94	
1126 D6839	9.65		0.17	
1138 EN14517	7.19	G(0.05)	-4.05	
1140	----		----	
1161 EN14517	8.28		-2.18	
1186	----		----	
1194	----		----	
1201 EN14517	9.5		-0.09	
1203 EN14517	9.85		0.51	
1205 EN14517	9.3		-0.43	
1218 EN14517	9.77		0.37	
1227	----		----	
1238	----		----	
1251	----		----	
1254	----		----	
1257	----		----	
1300 EN14517	9.579		0.04	
1318	----		----	
1409 EN14517	9.9		0.59	
1426	----		----	
1501 EN14517	9.42		-0.23	
1520	----		----	
1528 EN14517	9.33		-0.38	
1531	----		----	
1602	----		----	
1603	----		----	
1613 D6839	9.54		-0.02	
1631 EN14517	9.20		-0.60	
1634	----		----	
1635	----		----	
1709 D6730	8.553		-1.71	
1720	----		----	
1724	----		----	
1810	----		----	
1811 EN14517	9.96		0.70	
1833 EN14517	10.44		1.52	
1842	----		----	
1849 EN14517	8.55		-1.72	
1851	----		----	
1864 D5134	11.483	C	3.30	
1936	----		----	
1937	----		----	
1938	----		----	
1939	----		----	
1948 EN14517	9.02		-0.91	
1952	----		----	
2129 EN14517	8.44		-1.91	
2130	----		----	
2146	----		----	
normality	OK			
n	27			
outliers	2			
mean (n)	9.553			
st.dev. (n)	0.6517			
R(calc.)	1.825			
R(EN14517:04)	1.635			



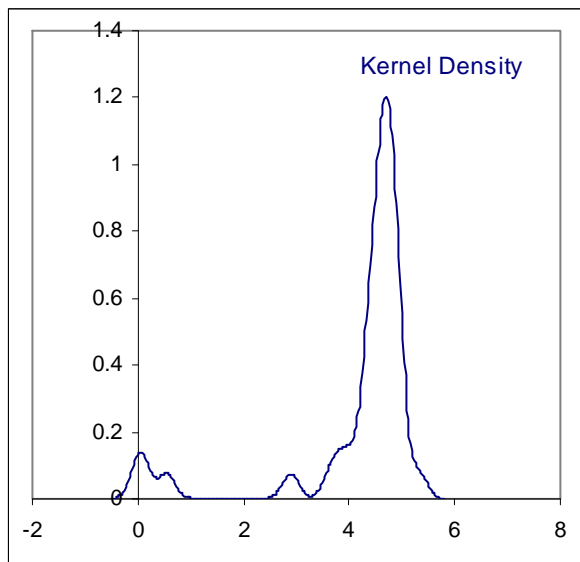
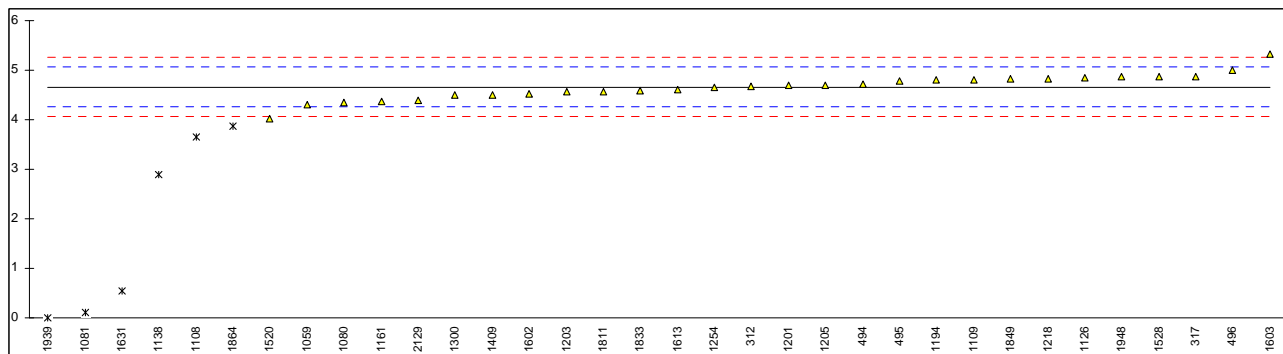
Determination of Olefins by GC on sample #0970; results in %M/M

lab	method	value	mark	z(targ)	remarks
225		----		----	
312		----		----	
317	EN14517	8.7		----	
336		----		----	
353		----		----	
430		----		----	
440		----		----	
494	EN22854	8.52		----	
495	EN22854	8.90		----	
496	ISO22854	8.81		----	
497		----		----	
995		----		----	
1033		----		----	
1038		----		----	
1059		----		----	
1080	EN14517	8.83		----	
1081		----		----	
1108	EN14517	8.8		----	
1109	D6839	9.19		----	
1126	D6839	8.77		----	
1138	EN14517	6.33	G(0.05)	----	
1140		----		----	
1161	EN14517	8.15		----	
1186		----		----	
1194		----		----	
1201	EN14517	8.6		----	
1203	EN14517	8.90		----	
1205		----		----	
1218		----		----	
1227		----		----	
1238		----		----	
1251		----		----	
1254		----		----	
1257		----		----	
1300	EN14517	9.325		----	
1318		----		----	
1409	EN14517	9		----	
1426		----		----	
1501	EN14517	8.50		----	
1520		----		----	
1528	EN14517	8.40		----	
1531		----		----	
1602		----		----	
1603		----		----	
1613	D6839	8.65		----	
1631		----		----	
1634		----		----	
1635		----		----	
1709	D6730	7.711		----	
1720		----		----	
1724		----		----	
1810		----		----	
1811	EN14517	9.04		----	
1833	EN14517	9.4		----	
1842		----		----	
1849	EN14517	8.668		----	
1851		----		----	
1864	D5134	10.496	CG(0.05)	----	
1936		----		----	
1937		----		----	
1938		----		----	
1939		----		----	
1948	EN14517	8.20		----	
1952		----		----	
2129	EN14517	7.61		----	
2130		----		----	
2146		----		----	
	normality	OK			
	n	22			
	outliers	2			
	mean (n)	8.667			
	st.dev. (n)	0.4536			
	R(calc.)	1.270			
	R(lit.)	unknown			



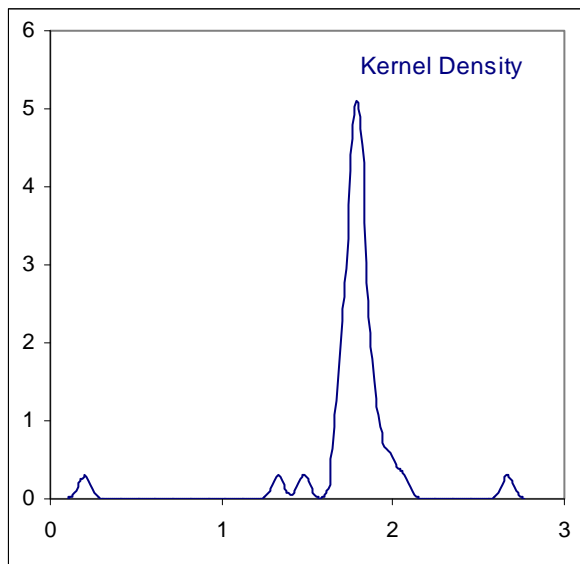
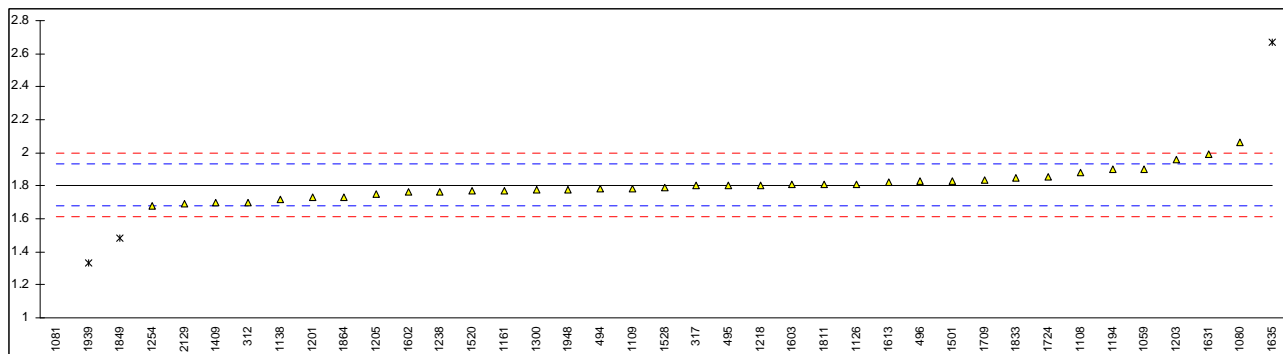
Determination of Ethanol on sample #0970; results in %V/V

lab	method	value	mark	z(targ)	remarks
225		----		----	
312	EN13132	4.68		0.09	
317	EN14517	4.87		1.06	
336		----		----	
353		----		----	
430		----		----	
440		----		----	
494	EN22854	4.72		0.30	
495	EN22854	4.78		0.60	
496	ISO22854	4.99		1.66	
497		----		----	
995		----		----	
1033		----		----	
1038		----		----	
1059	EN13132	4.3		-1.83	
1080	EN14517	4.34		-1.63	
1081	EN14517	0.1	G(0.01)	-23.09	
1108	EN14517	3.65	DG(0.05)	-5.12	
1109	D6839	4.81		0.75	
1126	D6839	4.85		0.95	
1138	EN14517	2.89	G(0.01)	-8.97	
1140		----		----	
1161	EN13132	4.37		-1.48	
1186		----		----	
1194	D5845	4.8		0.70	
1201	D4815	4.70		0.19	
1203	D4815	4.57		-0.46	
1205	EN14517	4.70		0.19	
1218	EN14517	4.82		0.80	
1227		----		----	
1238		----		----	
1251		----		----	
1254	D4815-04	4.647		-0.07	
1257		----		----	
1300	D4815	4.497		-0.83	
1318		----		----	
1409	EN13132	4.5		-0.82	
1426		----		----	
1501		----		----	
1520	EN13132	4.02		-3.25	
1528	EN14517	4.87		1.06	
1531		----		----	
1602	EN13132	4.52		-0.72	
1603	in house	5.325		3.36	
1613	D6839	4.60		-0.31	
1631	EN14517	0.55	G(0.01)	-20.81	
1634		----		----	
1635		----		----	
1709		----		----	
1720		----		----	
1724		----		----	
1810		----		----	
1811	D4815	4.57		-0.46	
1833	D4815	4.594		-0.34	
1842		----		----	
1849	D4815	4.819		0.80	
1851		----		----	
1864	D4815	3.87	DG(0.05)	-4.01	
1936		----		----	
1937		----		----	
1938		----		----	
1939	Lowox	0.0036	G(0.05)	-23.58	
1948	D4815	4.86		1.00	
1952		----		----	
2129	D6730	4.40		-1.32	
2130		----		----	
2146		----		----	
	normality	OK			
	n	28			
	outliers	6			
	mean (n)	4.662			
	st.dev. (n)	0.2523			
	R(calc.)	0.707			
	R(D4815:04)	0.553			



Determination of MTBE on sample #0970; results in %V/V

lab	method	value	mark	z(targ)	remarks		
225		----		----			
312	EN13132	1.7		-1.66			
317	EN14517	1.80		-0.09			
336		----		----			
353		----		----			
430		----		----			
440		----		----			
494	EN22854	1.78		-0.40			
495	EN22854	1.80		-0.09			
496	ISO22854	1.83		0.39			
497		----		----			
995		----		----			
1033		----		----			
1038		----		----			
1059	EN13132	1.9		1.49			
1080	EN14517	2.06		4.00			
1081	EN14517	0.2	G(0.01)	-25.21			
1108	EN14517	1.88		1.17			
1109	D6839	1.78		-0.40			
1126	D6839	1.81		0.07			
1138	EN14517	1.72		-1.34			
1140		----		----			
1161	EN13132	1.77		-0.56			
1186		----		----			
1194	D5845	1.9		1.49			
1201	D4815	1.73		-1.18			
1203	D4815	1.96		2.43			
1205	EN14517	1.75		-0.87			
1218	EN14517	1.80		-0.09			
1227		----		----			
1238	D4815	1.763		-0.67			
1251		----		----			
1254	D4815-04	1.677	C	-2.02	First reported 2.248		
1257		----		----			
1300	D4815	1.773		-0.51			
1318		----		----			
1409	EN13132	1.7		-1.66			
1426		----		----			
1501	D6293	1.83		0.39			
1520	EN13132	1.77		-0.56			
1528	EN14517	1.79		-0.24			
1531		----		----			
1602	EN13132	1.76		-0.71			
1603	in house	1.807		0.02			
1613	D6839	1.82		0.23			
1631	EN14517	1.99		2.90			
1634		----		----			
1635	D4815	2.67	G(0.01)	13.58			
1709	D4815	1.834		0.45			
1720		----		----			
1724	EN13132	1.8556		0.79			
1810		----		----			
1811	D4815	1.81		0.07			
1833	D4815	1.845		0.62			
1842		----		----			
1849	D4815	1.481	G(0.05)	-5.10			
1851		----		----			
1864	D4815	1.73		-1.18			
1936		----		----			
1937		----		----			
1938		----		----			
1939	Lowox	1.33	G(0.01)	-7.47			
1948	D4815	1.775		-0.48			
1952		----		----			
2129	D6730	1.69		-1.81			
2130		----		----			
2146		----		----			
				<u>Only D4815</u>	<u>Only EN14517</u>	<u>Only EN13132</u>	<u>Only D6839</u>
	normality	OK		OK	OK	OK	n.a.
	n	35		12	9	7	3
	outliers	4		2	1	0	0
	mean (n)	1.805		1.790	1.849	1.779	1.803
	st.dev. (n)	0.0834		0.0785	0.1196	0.0747	0.0208
	R(calc.)	0.233		0.220	0.335	0.209	0.058
	R(D4815:04)	0.178		0.177	0.398	0.300	0.063



Determination of DiPE, ETBE, i-Butanol and TAME on sample #0970; results in %V/V

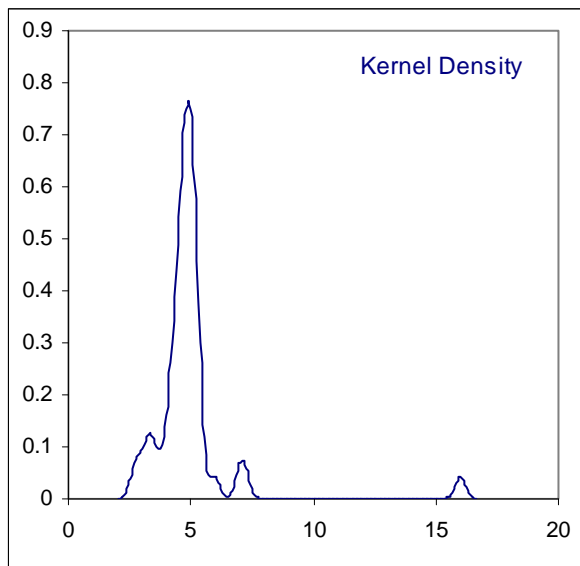
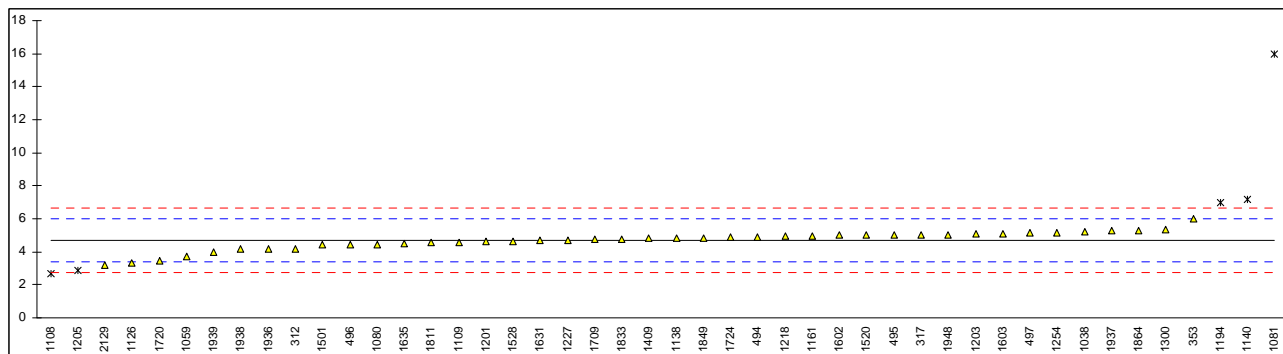
lab	method	DiPE	mark	z(targ)	ETBE	mark	z(targ)	i-but.	mark	z(targ)	TAME	mark	z(targ)
225		----		----	----		----	----		----	----		----
312		----		----	<0.2		----	----		----	----		----
317	EN14517	<0.01		----	<0.01		----	<0.01		----	<0.01		----
336		----		----	----		----	----		----	----		----
353		----		----	----		----	----		----	----		----
430		----		----	----		----	----		----	----		----
440		----		----	----		----	----		----	----		----
494	EN22854	<0.10		----	<0.10		----	<0.10		----	<0.10		----
495	EN22854	<0.01		----	<0.01		----	<0.01		----	<0.01		----
496	ISO22854	<0.01		----	<0.01		----	<0.01		----	<0.01		----
497		----		----	----		----	----		----	----		----
995		----		----	----		----	----		----	----		----
1033		----		----	----		----	----		----	----		----
1038		----		----	----		----	----		----	----		----
1059		----		----	<0.2		----	<0.2		----	----		----
1080	EN14517	<0.01		----	0.01		----	<0.01		----	<0.01		----
1081		----		----	4.9	false +?	----	----		----	----		----
1108		----		----	----		----	----		----	----		----
1109	D6839	<0.01		----	<0.01		----	<0.01		----	<0.01		----
1126		----		----	----		----	----		----	----		----
1138	EN14517	<0.01		----	0.11		----	<0.01		----	<0.01		----
1140		----		----	----		----	----		----	----		----
1161	EN13132	2.89	false +?	----	<0.1		----	<0.1		----	0.245		----
1186		----		----	----		----	----		----	----		----
1194	D5845	0.6		----	0		----	----		----	0.2		----
1201	D4815	<0.1		----	<0.1		----	<0.1		----	<0.1		----
1203		----		----	----		----	----		----	----		----
1205	EN14517	nd		----	nd		----	n.d		----	n.d.		----
1218		----		----	----		----	----		----	----		----
1227		----		----	----		----	----		----	----		----
1238		----		----	----		----	----		----	----		----
1251		----		----	----		----	----		----	----		----
1254	D4815-04	nd		----	nd		----	nd		----	n.d.		----
1257		----		----	----		----	----		----	----		----
1300	D4815	0.2031		----	0.106		----	0.0747		----	0.1379	Fr 0.356	----
1318		----		----	----		----	----		----	----		----
1409		----		----	<0.2		----	<0.2		----	<0.2		----
1426		----		----	----		----	----		----	----		----
1501		----		----	----		----	----		----	----		----
1520	EN13132	<0.1		----	<0.1		----	<0.1		----	0.20		----
1528		----		----	----		----	----		----	----		----
1531		----		----	----		----	----		----	----		----
1602		----		----	<0.17		----	<0.17		----	<0.17		----
1603		----		----	----		----	----		----	----		----
1613		----		----	0.00		----	----		----	----		----
1631	EN14517	<0.8		----	<0.8		----	<0.8		----	<0.8		----
1634		----		----	----		----	----		----	----		----
1635		----		----	----		----	----		----	----		----
1709	D4815	nd		----	nd		----	ND		----	ND		----
1720		----		----	----		----	----		----	----		----
1724		----		----	0.8784		----	----		----	----		----
1810		----		----	----		----	----		----	----		----
1811		----		----	----		----	----		----	----		----
1833	D4815	0.0		----	0.0		----	----		----	0.006		----
1842		----		----	----		----	----		----	----		----
1849	D4815	0.0		----	0.1329		----	0.0		----	0.92	in wt%	----
1851		----		----	----		----	----		----	----		----
1864	D4815	<0.2		----	<0.2		----	<0.2		----	<0.2		----
1936		----		----	----		----	----		----	----		----
1937		----		----	----		----	----		----	----		----
1938		----		----	----		----	----		----	----		----
1939	Lowox	<0.0001		----	<0.0001		----	0.0008		----	N.D.		----
1948	D4815	0.0058		----	1.22		----	0.0418		----	0.588		----
1952		----		----	----		----	----		----	----		----
2129	D6730	<0.1		----	<0.1		----	<0.1		----	<0.1		----
2130		----		----	----		----	----		----	----		----
2146		----		----	----		----	----		----	----		----

Determination of Oxidation Stability on sample #0970; results in minutes

lab	method	value	mark	z(targ)	remarks
225		----		----	
312		----		----	
317		----		----	
336		----		----	
353		----		----	
430		----		----	
440		----		----	
494	D525	>900		----	
495	D525	>900		----	
496	D525	>900		----	
497		----		----	
995		----		----	
1033		----		----	
1038		----		----	
1059	ISO7536	>960		----	
1080		----		----	
1081	D525	>900		----	
1108	D525	720		----	
1109		----		----	
1126		----		----	
1138		----		----	
1140		----		----	
1161	ISO7536	>900		----	
1186		----		----	
1194		----		----	
1201		----		----	
1203	ISO7536	1020		----	
1205		----		----	
1218		----		----	
1227		----		----	
1238	in house	>900		----	
1251		----		----	
1254		----		----	
1257		----		----	
1300	D525	>900		----	
1318		----		----	
1409	D525	>360		----	
1426		----		----	
1501	D525	>900		----	
1520	D525	>900		----	
1528	D525	>900		----	
1531		----		----	
1602	ISO7536	>900		----	
1603		----		----	
1613	D525	561		----	
1631		----		----	
1634		----		----	
1635	D525	>750		----	
1709		----		----	
1720		----		----	
1724	D525	>900		----	
1810		----		----	
1811		----		----	
1833	D525	120		----	
1842		----		----	
1849	D525	300		----	
1851		----		----	
1864	ISO7536	310		----	
1936		----		----	
1937		----		----	
1938		----		----	
1939		----		----	
1948	D525	250		----	
1952		----		----	
2129	D525	>900		----	
2130		----		----	
2146		----		----	
	normality	OK			
	n	7			
	outliers	0			
	mean (n)	n.a.			
	st.dev. (n)	n.a.			
	R(calc.)	n.a.			
	R(D525:05)	n.a.			

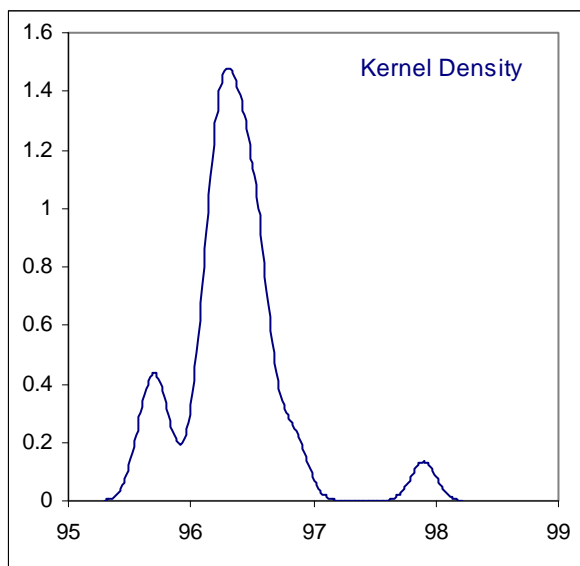
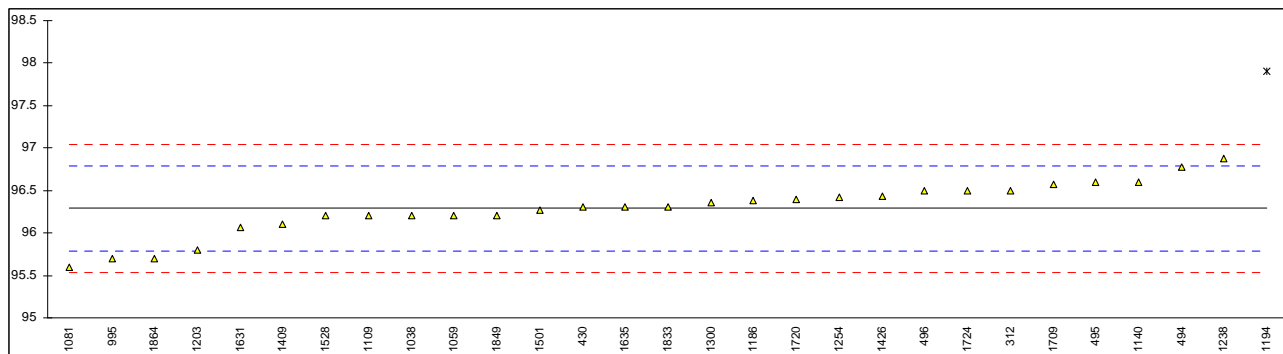
Determination of Sulphur on sample #0970; results in mg/kg

lab	method	value	mark	z(targ)	remarks
225		----		----	
312	D5453	4.2		-0.74	
317	ISO20884	5.0		0.48	
336		----		----	
353	IP531	5.97		1.95	
430		----		----	
440		----		----	
494	D5453	4.90		0.33	
495	D5453	5.0		0.48	
496	D5453	4.42		-0.40	
497	D5453	5.14		0.69	
995		----		----	
1033		----		----	
1038	D2622	5.24		0.84	
1059	ISO20846	3.7		-1.49	
1080	D5453	4.44		-0.37	
1081	D2622	16	G(0.01)	17.16	
1108	D5453	2.7	DG(0.05)	-3.01	
1109	D5453	4.59		-0.14	
1126	EN ISO20846	3.3		-2.10	
1138	D5453	4.8		0.17	
1140	D2622	7.2	DG(0.05)	3.81	
1161	ISO20846	4.95		0.40	
1186		----		----	
1194	D7220	7.0	DG(0.05)	3.51	
1201	D5453	4.6		-0.13	
1203	ISO20846	5.1		0.63	
1205	D5453	2.9	DG(0.05)	-2.71	
1218	ISO20884	4.95		0.40	
1227	D5453	4.7		0.02	
1238		----		----	
1251		----		----	
1254	D5453	5.17		0.74	
1257		----		----	
1300	ISO20846	5.329		0.98	
1318		----		----	
1409	ISO20846	4.8		0.17	
1426		----		----	
1501	D5453	4.41		-0.42	
1520	D5453	4.99		0.46	
1528	D5453	4.6		-0.13	
1531		----		----	
1602	D5453	4.99		0.46	
1603	in house	5.1		0.63	
1613		----		----	
1631	D5453	4.7		0.02	
1634		----		----	
1635	D5453	4.5		-0.28	
1709	D5453	4.74		0.08	
1720	D5453	3.45		-1.87	
1724	D5453	4.88		0.30	
1810		----		----	
1811	D5453	4.59		-0.14	
1833	D5453	4.76		0.11	
1842		----		----	
1849	D5453	4.83		0.22	
1851		----		----	
1864	ISO20846	5.295		0.92	
1936	EN20846	4.2		-0.74	
1937	ISO20846	5.29		0.92	
1938	D5453	4.2		-0.74	
1939	D5453	4		-1.04	
1948	D5453	5.05		0.55	
1952		----		----	
2129	D5453	3.22		-2.22	
2130		----		----	
2146		----		----	
	normality	not OK			
	n	41			
	outliers	5			
	mean (n)	4.685			
	st.dev. (n)	0.5636			
	R(calc.)	1.578			
	R(D5453:08b)	1.846			



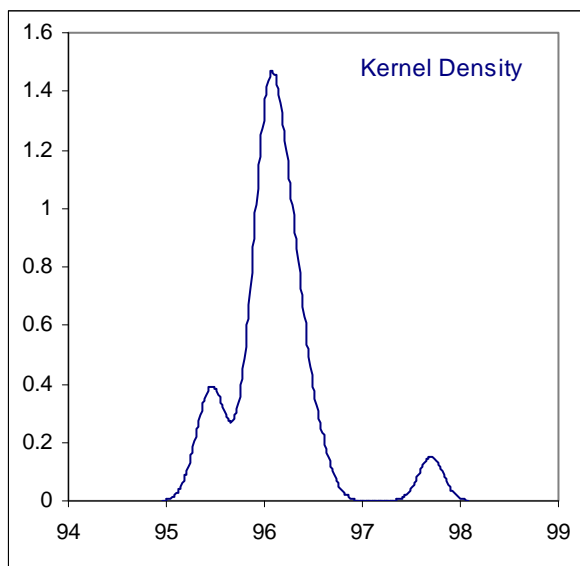
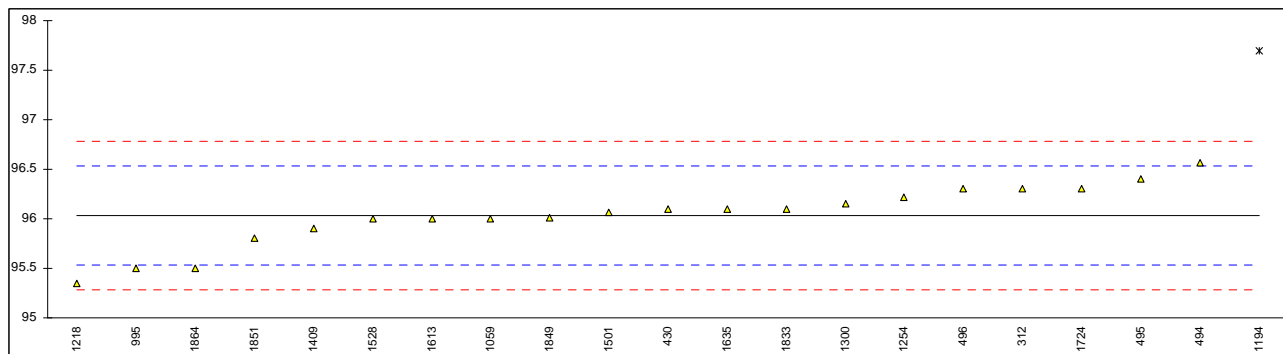
Determination of RONm (before correction) on sample #0970;

lab	method	value	mark	z(targ)	remarks
225		----		----	
312	D2699-	96.50		0.85	
317		----		----	
336		----		----	
353		----		----	
430	D2699-	96.3		0.05	
440		----		----	
494	D2699-08	96.77		1.93	
495	D2699-08	96.6		1.25	
496	D2699-2008	96.5		0.85	
497		----		----	
995	D2699-	95.7	C	-2.35	First reported 97.7
1033		----		----	
1038	D2699-	96.2		-0.35	
1059	EN25164	96.2		-0.35	
1080		----		----	
1081	D2699-03	95.6		-2.75	
1108		----		----	
1109	D2699-08	96.2		-0.35	
1126		----		----	
1138		----		----	
1140	D2699-	96.6		1.25	
1161		----		----	
1186	D2699-2008	96.381		0.37	
1194	in house	97.9	G(0.01)	6.45	
1201		----		----	
1203	ISO5164	95.8		-1.95	
1205		----		----	
1218		----		----	
1227		----		----	
1238	in house	96.88	C	2.37	First reported 97.5
1251		----		----	
1254	D2699-08	96.42		0.53	
1257		----		----	
1300	D2699-04	96.352		0.26	
1318		----		----	
1409	ISO5164	96.1		-0.75	
1426	D2699-	96.43		0.57	
1501	D2699-	96.27		-0.07	
1520		----		----	
1528	D2699-	96.2		-0.35	
1531		----		----	
1602		----		----	
1603		----		----	
1613		----		----	
1631	D2699-	96.06		-0.91	
1634		----		----	
1635	D2699-	96.3		0.05	
1709	D2699-	96.57		1.13	
1720	D2699-	96.4		0.45	
1724	D2699-	96.5		0.85	
1810		----		----	
1811		----		----	
1833	D2699-	96.3		0.05	
1842		----		----	
1849	D2699-	96.21		-0.31	
1851		----		----	
1864	D2699-08	95.7		-2.35	
1936		----		----	
1937		----		----	
1938		----		----	
1939		----		----	
1948		----		----	
1952		----		----	
2129		----		----	
2130		----		----	
2146		----		----	
					<u>Selected results of labs that reported both RONm and RON:</u>
	normality	not OK			OK
	n	28			17
	outliers	1			1
	mean (n)	96.287			96.290
	st.dev. (n)	0.3093			0.2778
	R(calc.)	0.866			0.778
	R(D2699:08)	0.700			0.700



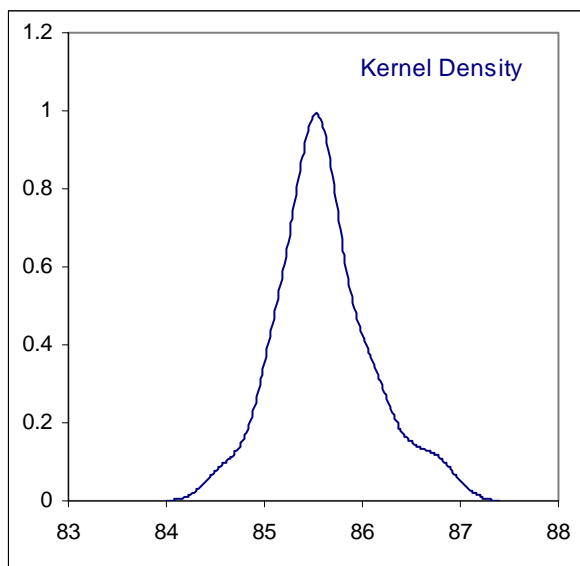
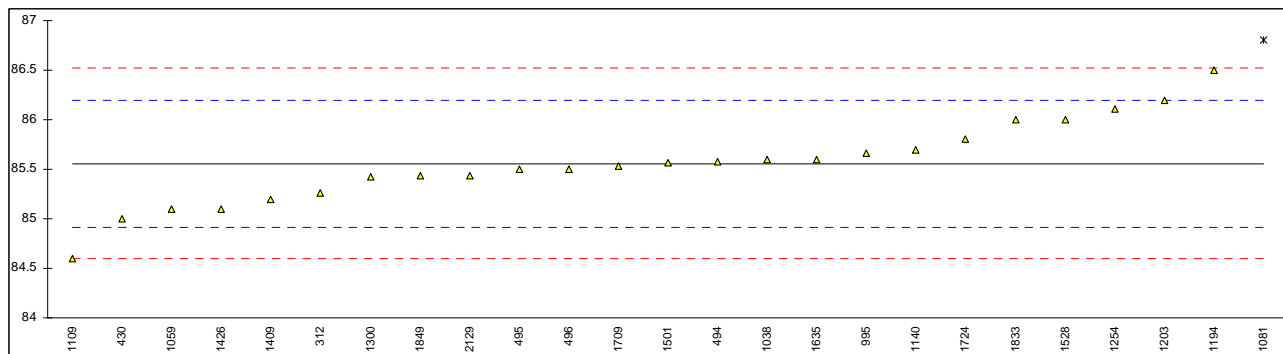
Determination of RON (after correction) on sample #0970;

lab	method	value	mark	z(targ)	remarks
225		----		----	
312	D2699-	96.30		1.07	
317		----		----	
336		----		----	
353		----		----	
430	D2699-	96.1		0.27	
440		----		----	
494	D2699-08	96.57		2.15	
495	D2699-08	96.4		1.47	
496	D2699-2008	96.3		1.07	
497		----		----	
995	D2699-	95.5	C	-2.13	First reported 97.5
1033		----		----	
1038		----		----	
1059	EN25164	96.0		-0.13	
1080		----		----	
1081		----		----	
1108		----		----	
1109		----		----	
1126		----		----	
1138		----		----	
1140		----		----	
1161		----		----	
1186		----		----	
1194	in house	97.7	G(0.01)	6.67	
1201		----		----	
1203		----		----	
1205		----		----	
1218	FTNIR	95.35		-2.73	
1227		----		----	
1238		----		----	
1251		----		----	
1254	D2699-08	96.22		0.75	
1257		----		----	
1300	D2699-04	96.152		0.47	
1318		----		----	
1409	ISO5164	95.9		-0.53	
1426		----		----	
1501	D2699-	96.07		0.15	
1520		----		----	
1528	D2699-	96.0		-0.13	
1531		----		----	
1602		----		----	
1603		----		----	
1613	D2699-	96.0		-0.13	
1631		----		----	
1634		----		----	
1635	D2699-	96.1		0.27	
1709		----		----	
1720		----		----	
1724	D2699-	96.3		1.07	
1810		----		----	
1811		----		----	
1833	D2699-	96.1		0.27	
1842		----		----	
1849	D2699-	96.01		-0.09	
1851	D2699-	95.8		-0.93	
1864	D2699-08	95.5		-2.13	
1936		----		----	
1937		----		----	
1938		----		----	
1939		----		----	
1948		----		----	
1952		----		----	
2129		----		----	
2130		----		----	
2146		----		----	
					<u>Selected results of labs that reported both RONm and RON:</u>
	normality	not OK			OK
	n	20			17
	outliers	1			1
	mean (n)	96.034			96.090
	st.dev. (n)	0.3088			0.2778
	R(calc.)	0.865			0.778
	R(D2699:08)	0.700			0.700



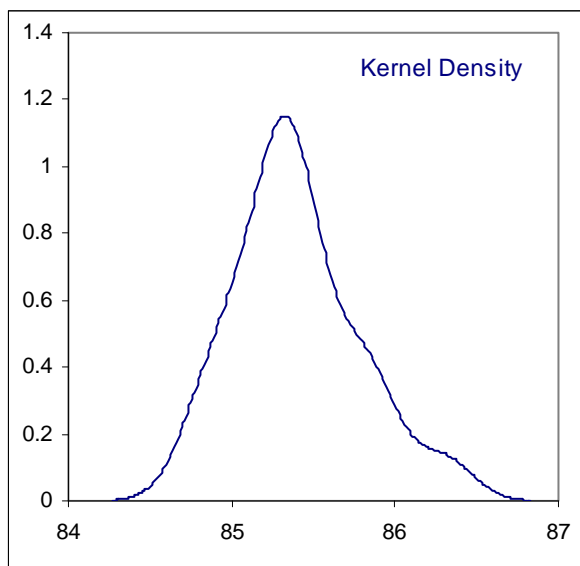
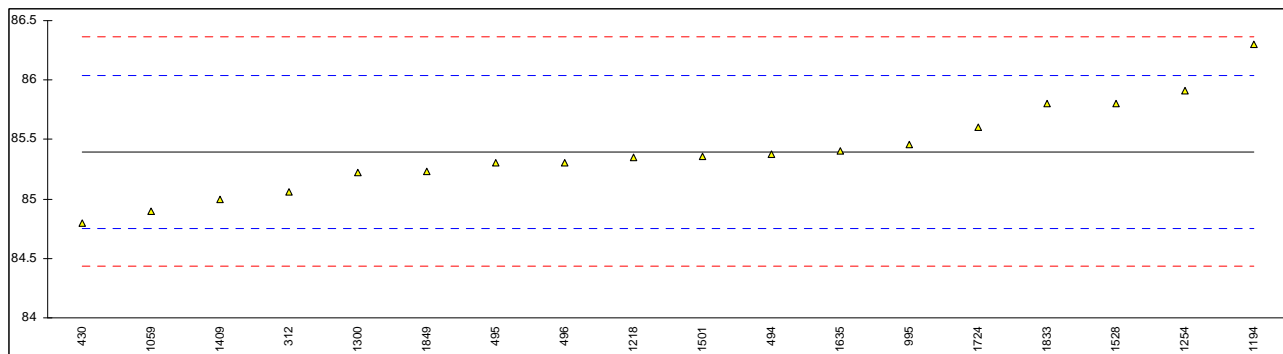
Determination of MONm (before correction) on sample #0970;

lab	method	value	mark	z(targ)	remarks
225		----		----	
312	D2700-	85.26		-0.93	
317		----		----	
336		----		----	
353		----		----	
430	D2700-	85.0		-1.73	
440		----		----	
494	D2700-08	85.58		0.07	
495	D2700-08	85.5		-0.18	
496	D2700-2008	85.5		-0.18	
497		----		----	
995	D2700-	85.66	C	0.32	First reported 86.7
1033		----		----	
1038	D2700-	85.6		0.13	
1059	EN25163	85.1		-1.42	
1080		----		----	
1081	D2700-03	86.8	G(0.05)	3.87	
1108		----		----	
1109	D2700-08	84.6		-2.98	
1126		----		----	
1138		----		----	
1140	D2700-	85.7		0.44	
1161		----		----	
1186		----		----	
1194	in house	86.5		2.93	
1201		----		----	
1203	ISO5163	86.2		2.00	
1205		----		----	
1218		----		----	
1227		----		----	
1238		----		----	
1251		----		----	
1254	D2700-08	86.11		1.72	
1257		----		----	
1300	D2700-04	85.419		-0.43	
1318		----		----	
1409	ISO5163	85.2		-1.11	
1426	D2700-	85.1		-1.42	
1501	D2700-	85.56		0.01	
1520		----		----	
1528	D2700-	86.0		1.38	
1531		----		----	
1602		----		----	
1603		----		----	
1613		----		----	
1631		----		----	
1634		----		----	
1635	D2700-	85.6		0.13	
1709	D2700	85.53		-0.09	
1720		----		----	
1724	D2700-	85.8		0.75	
1810		----		----	
1811		----		----	
1833	D2700-	86.0		1.38	
1842		----		----	
1849	D2700-	85.43		-0.40	
1851		----		----	
1864		----		----	
1936		----		----	
1937		----		----	
1938		----		----	
1939		----		----	
1948		----		----	
1952		----		----	
2129	D2700-	85.43		-0.40	
2130		----		----	
2146		----		----	
					<u>Selected results of labs that reported both MONm and MON:</u>
	normality	OK			OK
	n	24			17
	outliers	1			0
	mean (n)	85.557			85.601
	st.dev. (n)	0.4177			0.3875
	R(calc.)	1.170			1.085
	R(D2700:08)	0.900			0.900



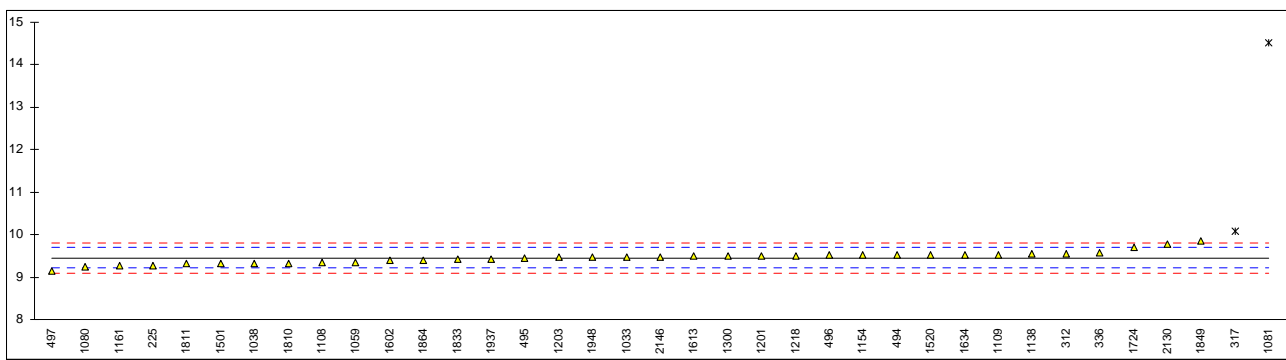
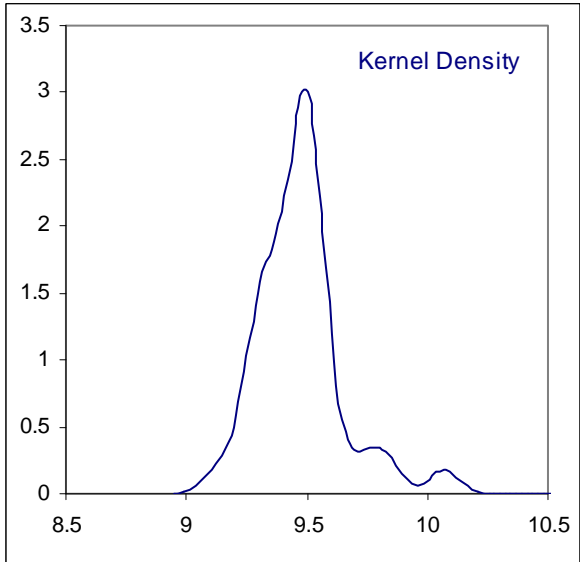
Determination of MON (after correction) on sample #0970;

lab	method	value	mark	z(targ)	remarks
225		----		----	
312	D2700-	85.06		-1.05	
317		----		----	
336		----		----	
353		----		----	
430	D2700-	84.8		-1.86	
440		----		----	
494	D2700-08	85.38		-0.06	
495	D2700-08	85.3		-0.31	
496	D2700-2008	85.3		-0.31	
497		----		----	
995	D2700-	85.46	C	0.19	First reported 86.5
1033		----		----	
1038		----		----	
1059	EN25163	84.9		-1.55	
1080		----		----	
1081		----		----	
1108		----		----	
1109		----		----	
1126		----		----	
1138		----		----	
1140		----		----	
1161		----		----	
1186		----		----	
1194	in house	86.3		2.81	
1201		----		----	
1203		----		----	
1205		----		----	
1218	FTNIR	85.35		-0.15	
1227		----		----	
1238		----		----	
1251		----		----	
1254	D2700-08	85.91		1.59	
1257		----		----	
1300	D2700-04	85.219		-0.56	
1318		----		----	
1409	ISO5163	85.0		-1.24	
1426		----		----	
1501	D2700-	85.36		-0.12	
1520		----		----	
1528	D2700-	85.8		1.25	
1531		----		----	
1602		----		----	
1603		----		----	
1613		----		----	
1631		----		----	
1634		----		----	
1635	D2700-	85.4		0.01	
1709		----		----	
1720		----		----	
1724	D2700-	85.6		0.63	
1810		----		----	
1811		----		----	
1833	D2700-	85.8		1.25	
1842		----		----	
1849	D2700-	85.23		-0.52	
1851		----		----	
1864		----		----	
1936		----		----	
1937		----		----	
1938		----		----	
1939		----		----	
1948		----		----	
1952		----		----	
2129		----		----	
2130		----		----	
2146		----		----	
					<u>Selected results of labs that reported both MONm and MON:</u>
	normality	OK			OK
	n	18			17
	outliers	0			0
	mean (n)	85.398			85.401
	st.dev. (n)	0.3762			0.3875
	R(calc.)	1.053			1.085
	R(D2700:08)	0.900			0.900



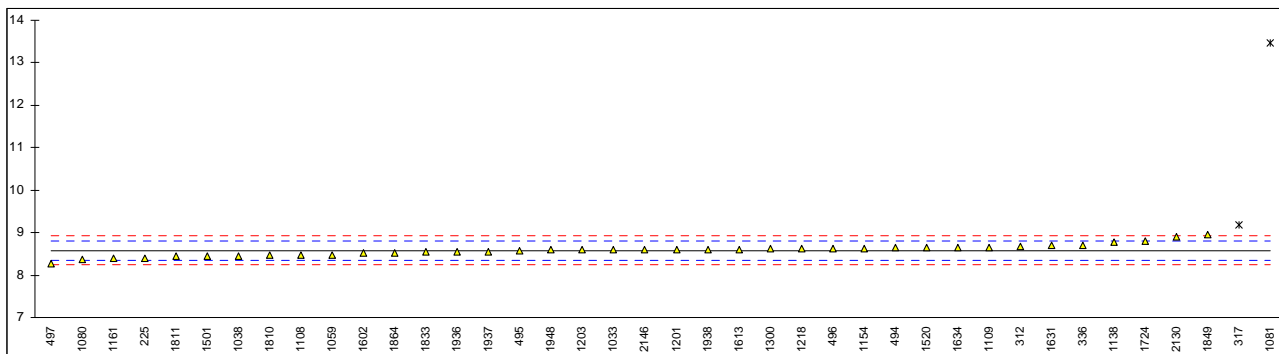
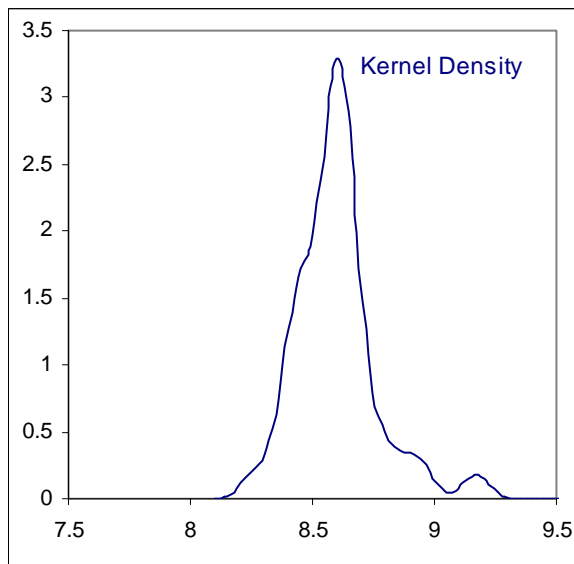
Determination of Total Vapour Pressure on sample #0971; results in psi

lab	method	value	mark	z(targ)	remarks
225	D5191	9.27		-1.57	
312	D5191	9.558		0.86	
317	D5191	10.07	G(0.01)	5.19	
336	D5191	9.58		1.05	
494	D5191	9.52		0.54	
495	D5191	9.44		-0.13	
496	D5191	9.51		0.46	
497	D5191	9.13		-2.75	
1033	D5191	9.471	C	0.13	
1038	D5191	9.326		-1.10	
1059	D5191	9.342		-0.96	
1080	D5191	9.25		-1.74	
1081	D5191	14.52	G(0.01)	42.82	
1108	D5191	9.34		-0.98	
1109	D5191	9.533		0.65	
1138	D5191	9.54		0.71	
1154	EN13016-1	9.514		0.49	
1161	EN13016	9.260		-1.66	
1201	D5191	9.5		0.37	
1203	EN13016-1	9.469		0.11	
1218	EN13016	9.5000		0.37	
1251		-----		-----	
1300	D5191	9.5000		0.37	
1501	D6378	9.324		-1.11	
1520	D5191	9.525		0.59	
1602	EN13016-1	9.396		-0.51	
1613	D5191	9.4854		0.25	
1631		-----		-----	
1634	EN13016-1	9.526		0.59	
1724	D5191	9.69		1.98	
1810	D5191	9.33		-1.06	
1811	D5191	9.31		-1.23	
1833	D5191	9.41		-0.39	
1849	D5191	9.84		3.25	
1864	EN13016	9.406		-0.42	
1936		-----		-----	
1937	D5191	9.427		-0.24	
1938		-----		-----	
1948	D5191	9.47		0.12	
2130	D5191	9.78		2.74	
2146	EN13016-1	9.479		0.20	
	normality	OK			
	n	35			
	outliers	2			
	mean (n)	9.456			
	st.dev. (n)	0.1438			
	R(calc.)	0.403			
	R(D5191:07)	0.331			



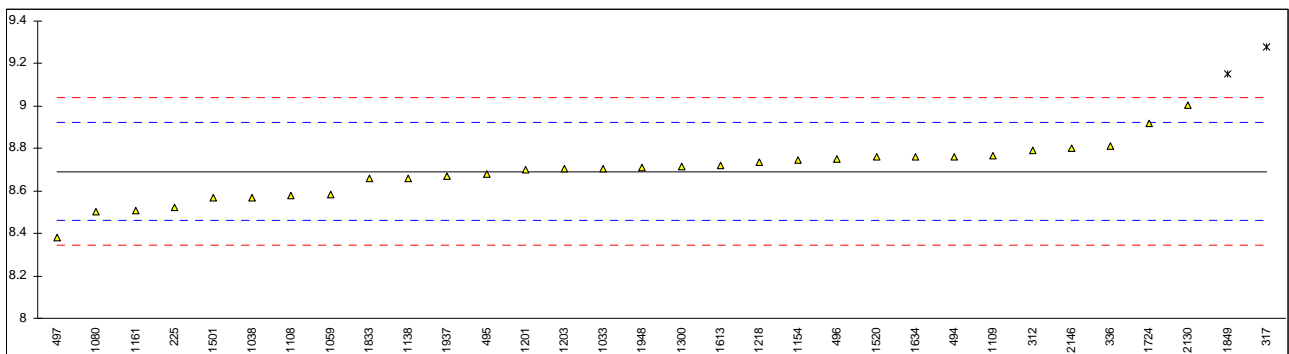
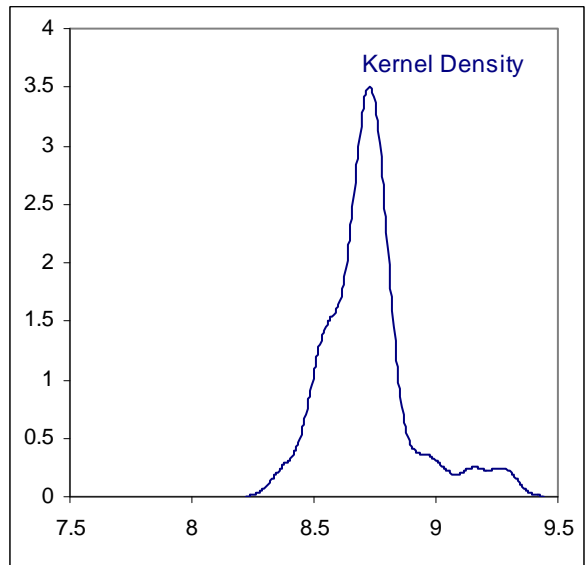
Determination of DVPE (ASTM D5191 calculation) on sample #0971; results in psi

lab	method	value	mark	z(targ)	remarks
225	D5191	8.40		-1.59	
312	D5191	8.676		0.81	
317	D5191	9.17	G(0.01)	5.10	
336	D5191	8.70		1.02	
494	D5191	8.64		0.50	
495	D5191	8.56		-0.20	
496	D5191	8.63		0.41	
497	D5191	8.26		-2.81	
1033	D5191	8.592	C	0.08	
1038	D5191	8.452		-1.14	
1059	D5191	8.467		-1.01	
1080	D5191	8.38		-1.76	
1081	D5191	13.46	G(0.01)	42.37	
1108	D5191	8.46		-1.07	
1109	D5191	8.651		0.59	
1138	D5191	8.77	E	1.63	probably mixed up with DVPE (EPA calculation)
1154	EN13016-1	8.633		0.44	
1161	EN13016	8.388		-1.69	
1201	D5191	8.6		0.15	
1203	EN13016-1	8.590		0.06	
1218	EN13016	8.6192		0.32	
1251		-----		-----	
1300	D5191	8.6153		0.28	
1501	D6378	8.45		-1.15	
1520	D5191	8.644		0.53	
1602	EN13016-1	8.526		-0.49	
1613	D5191	8.6050		0.19	
1631	D5191	8.69		0.93	
1634	EN13016-1	8.644		0.53	
1724	D5191	8.80		1.89	
1810	D5191	8.46		-1.07	
1811	D5191	8.44		-1.24	
1833	D5191	8.54		-0.37	
1849	D5191	8.952		3.21	
1864	EN13016	8.528		-0.48	
1936	EN13016,1	8.55		-0.29	
1937	D5191	8.557		-0.22	
1938	D5191	8.60		0.15	
1948	D5191	8.59		0.06	
2130	D5191	8.890		2.67	
2146	EN13016-1	8.599		0.14	
	normality	OK			
	n	38			
	outliers	2			
	mean (n)	8.583			
	st.dev. (n)	0.1372			
	R(calc.)	0.384			
	R(D5191:07)	0.322			



Determination of DVPE (EPA calculation) on sample #0971; results in psi

lab	method	value	mark	z(targ)	remarks
225	D5191	8.52		-1.48	
312	D5191	8.791		0.86	
317	D5191	9.28	G(0.05)	5.10	
336	D5191	8.81		1.03	
494	D5191	8.76		0.60	
495	D5191	8.68		-0.10	
496	D5191	8.75		0.51	
497	D5191	8.38		-2.69	
1033	D5191	8.707	C	0.14	
1038	D5191	8.569		-1.06	
1059	D5191	8.584		-0.93	
1080	D5191	8.5		-1.66	
1081		-----		-----	
1108	D5191	8.58		-0.96	
1109	D5191	8.766		0.65	
1138	D5191	8.66	E	-0.27	probably mixed up with DVPE (D5191 calculation)
1154	EN13016-1	8.748		0.49	
1161	EN13016	8.506		-1.60	
1201	D5191	8.7		0.08	
1203	EN13016-1	8.705		0.12	
1218	EN13016	8.7353		0.38	
1251		-----		-----	
1300	D5191	8.7168		0.22	
1501	D6378	8.567		-1.08	
1520	D5191	8.759		0.59	
1602		-----		-----	
1613	D5191	8.7206		0.25	
1631		-----		-----	
1634	D5191	8.760		0.60	
1724	D5191	8.92		1.98	
1810		-----		-----	
1811		-----		-----	
1833	D5191	8.66		-0.27	
1849	D5191	9.15	G(0.05)	3.97	
1864		-----		-----	
1936		-----		-----	
1937	D5191	8.668		-0.20	
1938		-----		-----	
1948	D5191	8.71		0.16	
2130	D5191	9.003		2.70	
2146	EN13016-1	8.800		0.94	
	normality	OK			
	n	30			
	outliers	2			
	mean (n)	8.691			
	st.dev. (n)	0.1273			
	R(calc.)	0.356			
	R(D5191:07)	0.323			



APPENDIX 2

z-scores distillation ASTM D86

lab	IBP	10% evap.	50% evap.	90% evap.	FBP	10% rec.	50% rec.	90% rec.
225	0.26	----	----	----	0.43	0.23	-0.28	-0.88
312	0.46	0.30	0.33	-0.11	0.72	----	----	----
317	-1.16	-0.07	-0.23	-0.48	-0.37	-0.24	-0.39	-0.80
336	0.59	-0.07	-0.19	-0.85	-1.73	----	----	----
353	-0.27	-0.35	0.22	0.26	0.11	-0.28	0.92	1.56
430	----	----	----	----	----	----	----	----
440	-0.40	0.12	0.15	0.05	0.56	-0.05	-0.11	-0.30
494	-0.60	0.16	-0.12	-0.23	-1.06	-0.05	-0.11	-0.59
495	-0.40	-0.26	-0.12	0.05	-1.04	-0.10	0.37	0.85
496	1.05	0.07	-0.36	-0.32	0.64	0.13	0.06	0.69
497	0.33	0.02	0.12	0.26	0.91	0.23	0.82	0.07
995	0.10	0.38	-0.67	-0.52	-0.56	0.23	-0.90	-0.80
1033	-0.13	0.16	-0.02	0.22	0.80	0.18	0.16	0.44
1038	0.33	0.02	0.12	-0.89	0.96	----	----	----
1059	-0.04	-0.40	0.43	0.18	-0.21	-0.89	0.20	-0.14
1080	-0.56	-0.73	-0.54	-0.19	-0.48	-0.51	0.03	0.07
1081	-3.56	-3.72	0.43	2.31	-2.50	----	----	----
1108	-0.13	0.54	0.43	0.50	1.52	0.50	0.47	0.48
1109	0.43	-0.16	0.19	0.05	1.04	-0.19	0.65	0.65
1126	0.39	----	----	----	-1.12	-2.37	3.29	-1.37
1138	-0.53	0.30	0.33	0.01	0.43	0.23	0.34	-0.14
1140	-1.02	0.02	0.02	-0.19	-0.10	0.00	0.10	-0.14
1161	-0.26	-1.27	-1.46	-1.79	1.38	0.49	-0.33	0.11
1186	----	----	----	----	----	----	----	----
1194	-1.12	----	----	----	-1.62	0.09	-1.45	0.44
1201	-0.53	0.02	-0.33	-0.07	-0.98	-0.05	-0.45	-0.26
1203	0.26	0.35	0.36	0.67	0.96	----	----	----
1205	----	----	----	----	----	----	----	----
1218	0.46	-1.19	-0.74	-0.85	0.03	----	----	----
1227	0.72	0.26	-0.23	0.46	-0.61	0.37	-0.18	0.19
1238	----	0.02	-0.43	-0.15	----	----	----	----
1251	----	----	----	----	----	----	----	----
1254	-0.66	-0.30	-0.30	-0.60	-0.61	-0.24	-0.08	-0.05
1257	----	----	----	----	----	----	----	----
1300	0.65	1.45	0.97	1.49	1.71	0.55	0.14	0.47
1318	0.33	0.02	0.29	0.18	0.19	----	----	----
1409	0.13	-0.07	0.22	0.18	-0.34	-0.10	0.27	0.15
1426	0.46	0.12	0.19	0.01	0.16	----	----	----
1501	-0.09	-0.12	-0.16	-0.07	0.40	-0.05	0.03	0.10
1520	0.26	-0.68	-0.19	0.01	0.16	-0.47	-0.28	0.36
1528	-0.10	-0.12	-0.19	0.05	0.48	0.13	0.51	0.61
1531	-0.33	0.26	0.36	-0.19	0.88	0.18	0.27	-1.00
1602	0.33	-0.01	0.09	0.06	0.97	----	----	----
1603	-0.20	0.35	0.57	1.04	-0.05	----	----	----
1613	-0.50	0.02	-0.12	-0.03	-0.96	0.04	0.13	0.19
1631	0.00	0.16	-0.19	0.18	-1.14	----	----	----
1634	0.13	0.02	0.29	-0.23	0.94	-0.14	0.13	-0.51
1635	-2.04	-0.49	2.81	3.66	-2.24	----	----	----
1709	----	----	----	----	----	----	----	----
1720	0.46	0.96	-0.67	-0.15	-0.21	0.78	-0.94	-0.34
1724	0.56	0.30	0.36	0.18	1.42	0.13	0.20	-0.05
1810	-0.63	-0.02	0.12	0.38	0.19	----	----	----
1811	0.13	----	----	----	0.22	-0.14	0.13	-0.47
1833	1.45	0.82	0.57	0.71	1.82	----	----	----
1842	----	----	----	----	----	----	----	----
1849	0.66	-0.12	-0.64	-0.03	0.06	----	----	----
1851	----	----	----	----	----	----	----	----
1864	-0.96	0.07	0.05	0.42	-0.18	-0.05	0.20	0.44
1936	-0.60	-0.02	-0.23	0.05	-0.72	----	----	----
1937	-0.50	----	----	----	-0.45	-0.38	-0.59	-0.38
1938	-0.33	0.44	-0.33	-0.11	-0.96	----	----	----
1939	0.69	----	----	----	1.34	0.41	0.47	0.81
1948	0.16	0.30	0.81	1.49	-0.45	----	----	----
1952	----	----	----	----	----	----	----	----
2129	0.00	0.12	-0.05	0.13	0.30	0.00	-0.08	0.03
2130	----	----	----	----	----	----	----	----
2146	0.26	-0.26	0.02	0.30	-1.09	-0.42	-0.28	-0.05

APPENDIX 3**List of participants per country**

2 laboratories in AUSTRALIA
1 laboratory in AUSTRIA
2 laboratories in BELGIUM
1 laboratory in COSTA RICA
1 laboratory in CÔTE D'IVOIRE
1 laboratory in CROATIA
1 laboratory in CYPRUS
2 laboratories in CZECH REPUBLIC
2 laboratories in ESTONIA
1 laboratory in FINLAND
1 laboratory in FRANCE
1 laboratory in GEORGIA
5 laboratories in GERMANY
3 laboratories in GREECE
2 laboratories in HUNGARY
1 laboratory in INDIA
2 laboratories in IRELAND
1 laboratory in ISRAEL
1 laboratory in JORDAN
1 laboratory in KOREA
1 laboratory in LATVIA
1 laboratory in LITHUANIA
1 laboratory in NORTHERN IRELAND
1 laboratory in NORWAY
1 laboratory in POLAND
1 laboratory in PORTUGAL
1 laboratory in ROMANIA
1 laboratory in SLOVENIA
1 laboratory in SUDAN
2 laboratories in TAIWAN R.O.C.
6 laboratories in THE NETHERLANDS
10 laboratories in TURKEY
1 laboratory in U.A.E.
6 laboratories in UNITED KINGDOM

APPENDIX 4

Abbreviations:

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

Literature:

- 1 iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, November 2008
- 2 ASTM E178-02
- 3 ASTM E1301-03
- 4 ISO15328-05
- 5 ISO 5725-86
- 6 ISO 5725, parts 1-6, 1994
- 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 367/96
- 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, No4 January 2001.
- 14 The Royal Society of Chemistry 2002, Analyst 2002, 127 page 1359-1364, P.J. Lowthian and M. Thompson (see <http://www.rsc.org/suppdata/an/b2/b205600n/>).
- 15 H. Verplaetse and M. Lacourt, Accred Qual Assur (2006) 11:521-522