Results of Proficiency Test
Biodiesel 100% FAME (B100)
April 2013

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CONTENTS

Appendices:

1   INTRODUCTION

Since 2001, a proficiency test for Fatty Acid Methyl Esters (FAME) used as Biodiesel B100
is organised every year by the Institute for Interlaboratory Studies (iis).
In this interlaboratory study 78 laboratories from 37 different countries have participated.
See appendix 2 for a list of number of participants per country. In this report the results of
the Biodiesel B100 proficiency test are presented and discussed.

2   SET UP

In this proficiency test Biodiesel B100, a mix of different types of Rapeseed Methylesters
was used. Sample analyses for fit-for-use and homogeneity testing were subcontracted. In
this proficiency test, the participants received, depending on the registration, from one up
to four different samples of Biodiesel B100, see table below.

Samples	Amount in mL	Purpose	Spiked
#13053	1000	For regular analysis	-
#13054	1000	Total Contamination test	Quartz material
#13055	1000	Cold SoakTest and/or Filter Blocking Tendency	-
#13056	100	Analysis of Phosphoros, Potassium, Sodium and Calcium & Magnesium	Sodium, Phosporus and Calcium & Magnesium

table 1: four different Biodiesel B100 samples used in iis13G02

The test scopes were set up according to both EN14214:12 and ASTM D6751:12
specifications. Participants were requested to report the analytical results as "rounded and
unrounded results" and to use the indicated units on the report form(s). The unrounded
results were preferably used for statistical evaluation.

2.1   QUALITY SYSTEM

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, has implemented
a quality system based on ILAC-G13:2007 and ISO/IEC 17043:2010.
This ensures 100% confidentially of participant's data. Also customer's satisfaction is
measured on regular basis by the distribution of questionnaires.

2.2   PROTOCOL

The protocol followed in the organization of this proficiency test was the one as described
for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the
Organization, Statistics and Evaluation' of January 2010 (iis-protocol, version 3.2), which
can be downloaded from www.iisnl.com.

2.3   CONFIDENTIALITY STATEMENT

All data presented in this report must be regarded as confidential and for use by the
participating companies only. Disclosure of the information in this report is only allowed by
means of the entire report. Use of the contents of this report for third parties is only

allowed by written permission of the Institute for Interlaboratory Studies. Disclosure of the identity of one or more of the participating companies will be done only after receipt of a written agreement of the companies involved.

2.4 SAMPLES

The necessary bulk material of Biodiesel B100 was purchased from a European producer. After fit-for-use testing and homogenisation in a precleaned metal drum, the B100 was transferred to 104 brown glass bottles of 1 litre and labelled #13053.
The homogeneity of the subsamples #13053 was checked by the determination of Water in accordance with ISO12937:00 and Density in accordance with ISO12185:96 on 8 stratified randomly selected samples:

	Water in %M/M	Density at 15ºC in kg/m^3
sample 1 #13053-1	0.0430	882.37
sample 2 #13053-2	0.0430	882.38
sample 3 #13053-3	0.0410	882.39
sample 4 #13053-4	0.0420	882.38
sample 5 #13053-5	0.0410	882.37
sample 6 #13053-6	0.0400	882.36
sample 7 #13053-7	0.0390	882.38
sample 8 #13053-8	0.0390	882.37

table 2: homogeneity test of subsamples #13053

	Water in %M/M	Density at 15ºC in kg/m^3
r (sample #13053)	0.0045	0.03
reference test	ISO12937:00	ISO12185:96
0.3*R$_{(reference\ test)}$	0.0042	0.15

table 3: repeatabilities of subsamples #13053

For Total Contamination, out of the same batch of Biodiesel B100, another 59 amber glass bottles of 1 litre with inner and outer caps were filled.
Each sample bottle was spiked (approx 15 mg/kg) with a fresh prepared and well shaken particulate quartz material BCR-067 ($\varnothing$ 2.4-3.2 µm) in oil suspension.
Therefore, an amount of the quartz suspension was weighed in the bottle, filled up to 850 mL and subsequently labelled #13054.
After homogenization, a random sample was taken to check the Total Contamination.

For "Cold Soak Test" determination 30 bottles of 1 litre with regular Biodiesel B100 were filled and labelled #13055. The homogeneity of the subsamples was checked by the determination of density in accordance with ISO12185:96.

	Density at 15ºC in kg/m^3
sample 1 #13055-1	879.28
sample 2 #13055-2	879.28
sample 3 #13055-3	879.28
sample 4 #13055-4	879.28
sample 5 #13055-5	879.28
sample 6 #13055-6	879.27
sample 7 #13055-7	879.28

table 4: homogeneity test of subsamples #13055

	Density at 15ºC in kg/m^3
r (sample #13055)	0.01
reference test	ISO12185:96
0.3*R$_{(reference\ test)}$	0.15

table 5: repeatabilities of subsamples #13055

For Subsample #13056, 15 litre Biodiesel was spiked with Sodium (approx 10 mg/kg), Phosphorus (approx 10 mg/kg) and Calcium & Magnesium (approx 30 mg/kg). After homogenization the material was subsequently divided over 100 glass bottles of 0.1L and labelled #13056. The homogeneity of the subsamples #13056 was checked by determination of Phosphorus on 8 stratified randomly selected samples:.

	Phosphorus in mg/kg
sample 1 #13056-1	9.6
sample 2 #13056-2	9.7
sample 3 #13056-3	9.6
sample 4 #13056-4	9.6
sample 5 #13056-5	9.6
sample 6 #13056-6	9.4
sample 7 #13056-7	9.6
sample 7 #13056-8	9.6

table 6: homogeneity test of subsamples #13056

	Phosphorus in mg/kg
r (sample #13056)	0.23
reference test	EN14107:03
0.3*R$_{(reference\ test)}$	0.56

table 7: repeatabilities of subsamples #13056

Each calculated repeatability for samples #13053, #13055 and #13056 was equal or less than 0.3 times the corresponding reproducibility of the respective reference method. Therefore, homogeneity of the subsamples was assumed.

Depending on the registration of the participant, one bottle labelled #13053 (1x1 L), and/or one 1 litre bottle labelled #13054, and/or one 1 litre bottle labelled #13055, and/or one 0.1 litre bottle labelled #13056 were dispatched to each of the participating laboratories on April 17, 2013.

2.5 STABILITY OF THE SAMPLES

The stability of the Biodiesel B100, packed in the brown glass bottles, was checked. The material was found sufficiently stable for the period of the proficiency test.

2.6 ANALYSES

The tests methods to be used by the participating laboratories should be in accordance with the requirements of EN14214:12 and/or ASTM D6751:12, e.g.:

Parameter	EN14214:12	Parameter	ASTM
Acid Value	EN14104	Acid Number	ASTM D664
Carbon Residue on 10% dist.	ISO10370*		
		Carbon Residue on 100% mat.	ASTM D4530
CFPP	EN116*		
Copper Strip Corrosion	ISO2160	Copper Strip Corrosion	ASTM D130
		Cloud Point	ASTM D2500
Total Contamination	EN12662		
Density @ 15°C	ISO12185		
Flash Point	ISO3679	Flash Point	ASTM D93-C
Flash Point (PMcc)	ISO2719	Flash Point	ASTM D93
Iodine Value	EN14111		
Kin. Visc. @ 40°C	ISO3104	Kin. Visc. @ 40°C	ASTM D445
Oxidation Stability	EN14112	Oxidation Stability	EN15751
Sulphated Ash	ISO3987	Sulphated Ash	ASTM D874
Sulphur	ISO20846	Sulphur	ASTM D5453
Water	ISO12937	Water and Sediment	ASTM D2709
Calcium + Magnesium	EN14538	Calcium + Magnesium	EN14538
Phosphorus	EN14107	Phosphorus	ASTM D4951
Polyunsaturated esters	EN15779		
Potassium + Sodium	EN14108/14109	Potassium + Sodium	EN14538
Methanol	EN14110	Methanol	EN14110
mono-, di-, tri-Glycerides	EN14105		
Free + Total Glycerol	EN14105	Free + Total Glycerol	ASTM D6584
Total ester content	EN14103		
Linolenic Acid	EN14103		
Total Contamination	EN12662		
		Cold Soak Filterability	ASTM D7501

table 8: requirements and test methods acc. to specifications EN14214:12 and ASTM D6751:12
* = not applicable for B100 according to EN14214:12

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

3   RESULTS

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

Directly after deadline, a reminder fax was sent to those laboratories that had not yet reported. 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 (raw data of the) reported results. Additional or corrected results have been used for data analysis and the 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 Organization, Statistics and Evaluation' of January 2010 (iis-protocol, version 3.2).

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 conclusions of statistical evaluation should be used with due care.

In accordance with 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.

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

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

3.2   GRAPHICS

In order to visualise the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported analysis results are plotted. The corresponding laboratory numbers are under the X-axis.
The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected standard. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle.
Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms (see appendix 3, nr.12-13).

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. En, ISO, ASTM reproducibilities, the z-scores were calculated using a target standard deviation. The target standard deviation was calculated from the literature reproducibility by division with 2.8.

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

The z-scores were calculated according to:

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

The $z_{(target)}$ scores are listed in the result tables in appendix 1.
Absolute values for z<2 are very common and absolute values for z>3 are very rare.
Therefore the usual interpretation of z-scores is as follows:

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

4 EVALUATION

In this proficiency test some problems with couriers and/or custom clearance were encountered during the execution. Four laboratories had trouble receiving the samples on time. In total 11 laboratories reported after the deadline. All laboratories except 3 reported test results, but not all laboratories were able to perform all analyses requested. From 75 participants, 1010 numerical results were received. Observed were 67 outlying results, which is 6.6% of the numerical results. In proficiency studies outlier percentages of 3% - 7.5% are quite normal.

Not all original data sets proved to have a normal distribution. Not Gaussian distributions were found for the following determinations: Acid Value, Cold Filter Plugging Point, Cloud Point, Density, Sulphated Ash, Water, Phosphorus, Potassium, tri-Glyceriden and Total Contamination. In these cases the results of the statistical evaluations should be used with care.

4.1 EVALUATION PER TEST

In this section, the results are discussed per test. The specified test methods and requirements acc. to EN14214:12 and ASTM D6751:11b were taken into account for explaining the observed differences when possible and applicable. These methods are also in the tables together with the original data in appendix 1. The abbreviations, used in these tables, are listed in appendix 3.

The specification EN14214:12 refers for the determinations on mono-Glycerides, di-Glycerides, tri-Glycerides, Free Glycerol, Total Glycerol, to EN14105:**11** and for Total Ester Content and Linolenic Acid Methyl Ester to EN14103:**11** .

For Biodiesel B100 sample #13053

Acid Value (EN)	This determination was not problematic. Only one statistical outlier was observed. The calculated reproducibility, after rejection of the statistical outlier is in full agreement with the requirements of EN14104:03.
Acid Number (ASTM)	This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility, after rejection of the statistical outliers, is in full agreement with the requirements of ASTM D664b:11.
Carbon Residue on 10% distillation residue	This determination was very problematic. Two statistical outliers were observed. The calculated reproducibility, after rejection of the statistical outliers, is not at all in agreement with the requirements of ISO10370:95. In the latest version (2012) of EN14214, Conradson Carbon Residue is not mentioned.

Carbon Residue on 100% material	This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility, after rejection of the statistical outliers, is in full agreement with the requirements of D4530:11
CFPP	This determination was not problematic. Only one statistical outlier was detected. The calculated reproducibility after rejection of the statistical outlier, is in full agreement with the requirements of EN116:97. Nevertheless, it must be noted that according to EN14214:12, no reproducibility requirements are available for the EN116:97 method applied on Biodiesel B100.
Cloud Point	This determination was not problematic. Only one statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of ASTM D2500:11.
Copper Corrosion D130 / ISO2160	No problems have been observed. In this determination all participants agreed on a result of 1 or 1A, except for one. This participant reported the copper corrosion result as 1B.
Density @15°C	This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility, after rejection of the statistical outliers, is in good agreement with the requirements of ISO12185:96.
Flash Point conform EN spec.	This determination was somewhat problematic. One statistical outlier observed. However, the calculated reproducibility is not in full agreement with the requirements of EN14214:12 (Annex A)
Flash Point PMcc ISO2719 / D93	This determination was problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the outliers, is not in agreement with the requirements of ASTM D93c:11. One laboratory used ASTM D7094, a method that is not technically equivalent to ASTM D93c:11. Therefore this test result was excluded prior to the statistical calculations.
Iodine Number	This determination was not problematic. One statistical outlier was observed. However, the calculated reproducibility, after rejection of the statistical outlier, is in agreement with the requirements of EN14111:03.
Kin.Visco. @ 40°C ISO3104 / D445	This determination was problematic. Four statistical outliers were observed. The calculated reproducibility, after rejection of the statistical outliers, is not in agreement with both requirements ISO 3104:96 and ASTM D445:12.

Oxidation Stability	This determination was not problematic. Only one statistical outlier was observed. The calculated reproducibility, after rejection of the statistical outlier, is in good agreement with the requirements of EN14112:03.
Sulphated Ash	All reported results were near or below the applicable lower limit of ASTM D874:07 and ISO3987:10 (0.005% M/M). Therefore no conclusions were drawn.
Sulphur ISO20846	This determination was not problematic. No statistical outlier was observed. The concentration level is below the application range of the method. However, the calculated reproducibility is in good agreement with the requirements of ISO20846:11. One laboratory used ASTM D4294, a method that is not applicable at this low level. Therefore this test result was excluded prior to the statistical calculations.
Sulphur ASTM D5453	This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility, after rejection of the statistical outliers, is in good agreement with the requirements of ASTM D5453:12.
Water	This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of ISO12937:00.
Methanol	This determination was very problematic. Only one statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is not all in agreement with the requirements of EN14110:03. In this standard procedures A and B are mentioned. Thirteen participants used procedure A, twenty two used procedure B and seven participants did not mention which procedure was used. No significant differences between the results of the two procedures are observed.
mono-Glycerides	This determination was not problematic. Four statistical outliers were observed. However, the calculated reproducibility is in full agreement with the requirements of EN14105:11.
di-Glycerides	This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility, after rejection of the statistical outliers, is in full agreement with the requirements of EN14105:11.

tri-Glycerides | This determination was not problematic. Only one statistical outlier was observed. The calculated reproducibility, after rejection of the statistical outlier, is in full agreement with the requirements of EN14105:11.

Free Glycerol | This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility is in full agreement with the requirements of EN14105:11.

Total Glycerol | This determination was not problematic. Four statistical outliers were observed. However, the calculated reproducibility, after rejection of the statistical outliers, is in full agreement with the requirements of EN14105:11.

Total Ester content | This determination was not problematic. No statistical outliers were observed and the calculated reproducibility is in good agreement with the requirements of EN14103:11.

Linolenic Acid Methyl Ester | This determination was 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 EN14103:11.

Polyunsaturated Methyl Esters | All reported results were near or below the lower application range of EN15779:09 (0.3 %M/M). Therefore no conclusions were drawn.

For Biodiesel B100 sample #13054

Total Contamination | This determination was problematic.
The samples were spiked with particulate quartz material BCR. Therefore the minimum contamination concentration to be found was known (added amount = 14.81 mg/kg). The laboratories should be able to find at least 9.46 mg/kg [14.81 mg/kg$_{(added\ amount)}$ – 5.35 mg/kg$_{(R\ EN12662:08)}$]. Six laboratories reported lower amounts than 9.46 mg/kg and were excluded prior to data analysis. After removing of the excluded data, one statistical outlier was observed.
The calculated reproducibility, after rejection of seven suspected test results, is not at all in agreement with the requirements of EN12662:08

For Biodiesel B100 sample #13055

Cold Soak test

This determination was very problematic. No statistical outliers were observed. However, the calculated reproducibility is not at all in agreement with the extrapolated target reproducibility, derived from the equation described in §13.1.2 of ASTM D7501:12a.

A possible explanation of the large spread may be that some steps described in the procedure of D7501:12a were not strictly enough followed. Important aspects such the sample conditioning and test procedures are very critical to attain comparable results. For instance, samples that might have been cooled to temperatures below 20°C during transit, should to be heated to 40°C for at least 3 h under an inert atmosphere.

Also a refrigerator is not suitable to cool down the samples at 4.5 ± 0.5°C, see §11.1 of ASTM D7501:12a.

Filter Blocking Tendency

This determination was very problematic. No statistical outliers were observed. However, the calculated reproducibility is not at all in agreement with the requirements of IP387b:11.

A possible explanation of the large spread is the fact that the filter blocking tendencies can be calculated with two different formulas described in IP387:11.

Equation [1] applies when 300 mL of biodiesel have passed through the filter medium at a pressure below 105 kPa, and equation [2] applies when the test has been discontinued when the pressure reached 105 kPa.

For Biodiesel B100 sample #13056

Calcium and Magnesium	All reported results were far above the application range of EN14538:06 (1 – 10 mg/kg). Therefore no conclusions were drawn.

Phosphorus — This determination was very problematic. Three statistical outliers and four false negative test results were observed.
The samples were spiked with Phosphorus. The average recovery of 102% Phosphorus (theoretical increment of 10 mg/kg) can be considered as good. The minimal Phosphorus concentration of sample #13056 to be found was known (added amount (#13056) = 10 mg/kg). The laboratories should be able to find at least 8.1 mg/kg   [10 mg/kg$_{(added amount)}$ – 1.9 mg/kg$_{(R\ EN14107:03)}$].
Therefore, after removal of the statistical outliers, five reported test results below 8.1 mg/kg were rejected prior to data analysis.
The calculated reproducibility, after rejection of eight suspected test results, is not at all in agreement with the requirements of EN14107:03.

Potassium — All reported results were near or below the lower application limit of EN14109:03 (0.5 mg/kg). Therefore no conclusions were drawn.

Sodium — This determination may be problematic for a number of laboratories. Three statistical outliers and three false negative test results were observed.
The samples were spiked with Sodium. The average recovery of <94% Sodium (theoretical increment of 10 mg/kg) can be considered as satisfactory. The minimal Sodium concentration of sample #13056 to be found was known (added amount (#13056) = 10 mg/kg).
The laboratories should be able to find at least 6.2 mg/kg, being [10 mg/kg$_{(added amount)}$ – 3.8 mg/kg$_{(R\ EN14108:03)}$].
Therefore, after removal of three observed statistical outliers, two reported test results below 6.2 mg/kg were rejected prior to data analysis.
The calculated reproducibility, after rejection of five suspected test results is nearly in agreement with the requirements of EN14108:03.

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 laboratories that participated. The reproducibilities derived from literature standards (in casu the ASTM, EN, ISO and IP standards) and the calculated reproducibilities of the samples (see appendix 1) are compared in the next table.

Parameter	unit	n	average	R (Calc.)	R (lit)
Acid Value (EN14104)	mg KOH/g	43	0.150	0.058	0.060
Acid Number (D664-B)	mg KOH/g	29	0.135	0.055	0.079
Carbon Residue on 10% dist.	%M/M	19	0.16	0.16	0.07
Carbon Residue on 100% mat.	%M/M	6	0.02	0.022	0.141
Cold Filter Plugging Point	°C	53	-15.9	3.9	4.2
Cloud Point	°C	53	-5.5	2.5	3.0
Copper Strip Corrosion		50	1 (1A)	n.a.	n.a.
Density @ 15°C	kg/m^3	67	882.32	0.38	0.50
Flash Point EN spec.	°C	19	161.2	12.7	11.4
Flash Point (PMcc) ISO/ASTM	°C	36	146.4	14.0	10.4
Iodine Value	g I$_2$/100g	55	111.8	5.4	5.0
Kin. Viscosity @ 40°C	mm^2/s	55	4.441	0.0564	0.034
Oxidation Stability	hours	55	7.03	1.16	2.06
Sulphated Ash	%M/M	25	0.0010	0.0023	(0.0005)
Sulphur (ISO20846)	mg/kg	30	2.17	1.05	1.36
Sulphur (D5453)	mg/kg	21	2.07	0.89	1.00
Water	%M/M	65	0.0425	0.0077	0.014
Methanol	%M/M	42	0.017	0.015	0.007
mono-Glycerides	%M/M	37	0.563	0.151	0.170
di-Glycerides	%M/M	39	0.120	0.043	0.052
tri-Glycerides	%M/M	38	0.080	0.063	0.078
Free Glycerol	%M/M	33	0.010	0.007	0.008
Total Glycerol	%M/M	37	0.179	0.044	0.046
Total Ester Content	%M/M	53	97.58	2.81	4.16
Linolenic Acid Methyl Ester	%M/M	48	9.70	0.92	0.66
Polyunsat. Methyl esters	%M/M	14	0.16	0.32	(0.27)

table 9: comparison of the observed and target reproducibilities of Biodiesel B100 sample #13053

Parameter	unit	n	average	R (Calc.)	R (lit)
Total Contamination	mg/kg	32	17.8	8.4	5.4

table 10: comparison of the observed and target reproducibilities of Biodiesel B100 sample #13054

Parameter	unit	n	average	R (Calc.)	R (lit)
Cold Soak Filter Test	s	5	287.6	689.4	(130.7)
Filter Blocking Tendency		8	3.19	6.55	(0.63)

table 11: comparison of the observed and target reproducibilities of Biodiesel B100 sample #13055

Parameter	unit	n	average	R (Calc.)	R (lit)
Calcium & Magnesium	mg/kg	32	34.13	10.09	(6.27)
Phosphorus	mg/kg	27	10.17	2.67	1.90
Potassium	mg/kg	13	0.21	0.50	(0.52)
Sodium	mg/kg	32	9.37	4.10	3.82

table 12: comparison of the observed and target reproducibilities of Biodiesel B100 sample #13056

* Values between brackets were below the application range of the respective reference test method, therefore results
  should be used with care

Without further statistical calculations it can be concluded that for many tests there is not a good compliance of the group of participating laboratories with the relevant standards. The problematic tests have been discussed in paragraph 4.1.

4.3   COMPARISON OF THE PROFICIENCY TEST OF APRIL 2013 WITH PREVIOUS PTS

	April 2013	April 2012	April 2011	October 2010	May 2010
Type of FAME	Rapeseed	Mix of FAME	Rapeseed	Rapeseed	Rapeseed
Number of reporting labs	75	71	53	50	35
Number of results reported	1010	1079	815	744	519
Number of statistical outliers	67	45	52	38	33
Percentage statistical	6.6%	4.2%	6.4%	5.1%	6.4%

table 13: 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	April 2013	April 2012	April 2011	October 2010	May 2010
Acid Value (EN14104)	+	+	++	++	+
Acid Number (D664-B)	+	+	--	--	--
Carbon Residue on 10% dist.	--	--	--	--	--
Carbon Residue on 100% mat.	++	n.e.	n.e.	n.e.	n.e.
Cold Filter Plugging Point	+	++	+	++	++
Cloud Point	+	+/-	+/-	+/-	++
Density @15°C	++	++	++	++	++
Flash Point EN spec.	-	-	--	++	+/-
Flash Point PMcc ISO/ASTM	-	-	--	++	--
Iodine Value	+/-	+/-	--	++	-
Kin. Viscosity @ 40°C	-	+	++	-	++
Oxidation Stability	++	+	++	++	++
Sulphated Ash	(--)	(--)	(--)	(--)	(--)
Sulphur (EN spec.	-	++	(+)	(+)	(++)
Sulphur (D5453)	+	++	++	--	++
Water	++	++	++	++	++
Methanol	--	--	-	--	--
mono-Glycerides	+	-	++	+/-	++
di-Glycerides	+	-	--	--	+/-
tri-Glycerides	+	+/-	--	-	+/-
Free Glycerol	+	-	--	--	+/-
Total Glycerol	+/-	-	--	--	++
Total Ester content	++	-	++	-	++
Linolenic Acid Methyl Ester	-	++	+/-	++	-
Polyunsat. Methyl esters	(--)	(--)	--	n.e.	n.e.
Total Contamination	--	--	--	(--)	-
Cold Soak Filter Test	(--)	--	--	--	n.e.
Filter Blocking Tendency	(--)	n.e.	--	--	n.e.
Calcium and Magnesium	(--)	(++)	(++)	(++)	++
Phosphorus	--	(--)	(--)	(--)	(--)
Potassium	+/-	(++)	(++)	(++)	(++)
Sodium	+/-				

table 14: comparison of group performances against the standard requirements

* Signs between brackets are for assigned values below the application range of the respective reference test method and therefore should be used with due care

The performance of the determinations against the requirements of the respective standards is listed in the above table. The following performance categories were used:
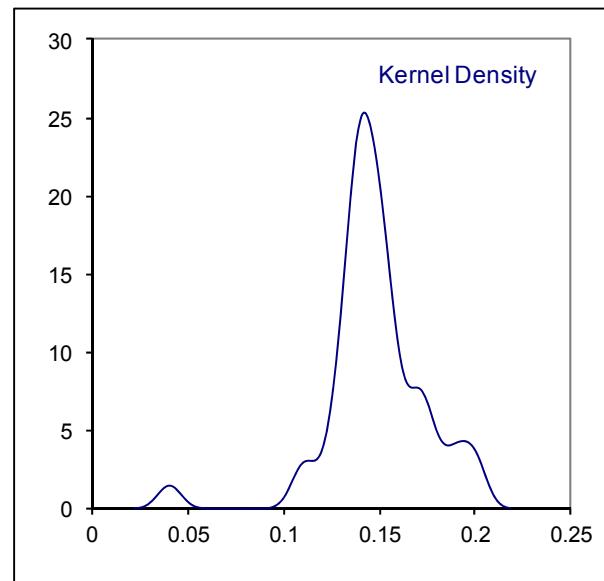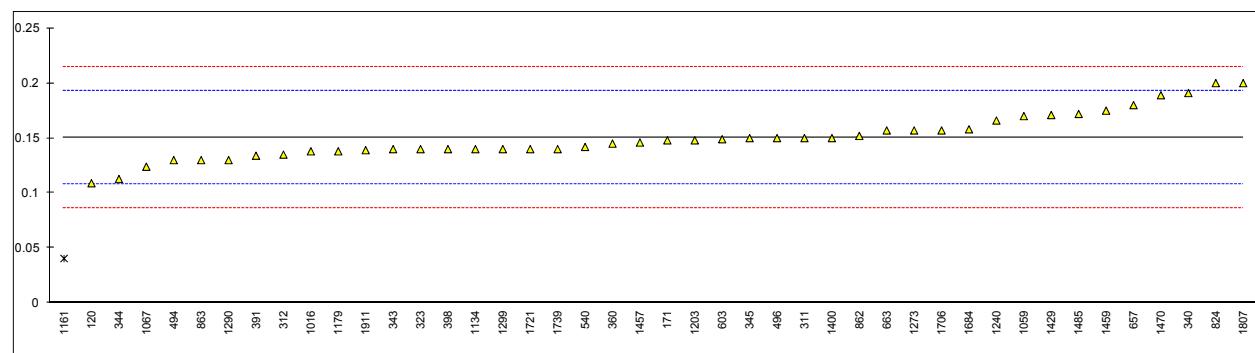
        ++:   group performed much better than the standard
        + :   group performed better than the standard
        +/-:   group performance equals the standard
        - :   group performed worse than the standard
        -- :   group performed much worse than the standard
        n.e.:   not evaluated

APPENDIX 1

Determination of Acid Value conform EN spec. on sample #13053; results in mg KOH/g

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	EN14104	0.109		-1.94	
150		-----		-----	
171	EN14104	0.148		-0.12	
311	EN14104	0.15		-0.02	
312	EN14104	0.135		-0.72	
323	EN14104	0.14		-0.49	
334		-----		-----	
340	EN14104	0.191		1.89	
343	EN14104	0.14		-0.49	
344	EN14104	0.1128		-1.76	
345	EN14104	0.15		-0.02	
360	EN14104	0.145		-0.26	
391	EN14104	0.134		-0.77	
398	EN14104	0.140		-0.49	
494	EN14104	0.13		-0.96	
496	EN14104	0.150		-0.02	
511		-----		-----	
540	EN14104	0.142		-0.40	
551		-----		-----	
554		-----		-----	
603	EN14104	0.149		-0.07	
631		-----		-----	
657	EN14104	0.18		1.38	
663	EN14104	0.157		0.30	
824	EN14104	0.20		2.31	
862	EN14104	0.152		0.07	
863	EN14104	0.130		-0.96	
902		-----		-----	
1016	EN14104	0.138		-0.58	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059	EN14104	0.17		0.91	
1067	EN14104	0.124		-1.24	
1134	EN14104	0.14		-0.49	
1161	EN14104	0.0405	G(0.01)	-5.13	
1179	EN14104	0.138		-0.58	
1199		-----		-----	
1203	EN14104	0.148		-0.12	
1213		-----		-----	
1227		-----		-----	
1231		-----		-----	
1240	EN14104	0.166		0.72	
1273	EN14104	0.157		0.30	
1286		-----		-----	
1290	EN14104	0.13		-0.96	
1299	EN14104	0.14		-0.49	
1316		-----		-----	
1378		-----		-----	
1395		-----		-----	
1397		-----		-----	
1400	EN14104	0.15		-0.02	
1402		-----		-----	
1409	EN14104	0..16		-----	
1419		-----		-----	
1429	EN14104	0.171		0.96	
1457	EN14104	0.146		-0.21	
1459	EN14104	0.175		1.14	
1470	EN14104	0.189		1.80	
1485	EN14104	0.172		1.00	
1494		-----		-----	
1536		-----		-----	
1564		-----		-----	
1566		-----		-----	
1582		-----		-----	
1586		-----		-----	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684	EN14104	0.158		0.35	
1706	EN14104	0.157		0.30	
1721	EN14104	0.14		-0.49	
1739	EN14104	0.14		-0.49	

1807	EN14104	0.20	2.31
1911	EN14104	0.139	-0.54

normality	not OK
n	43
outliers	1
mean (n)	0.1505
st.dev. (n)	0.02079
R(calc.)	0.0582
R(EN14104:03)	0.0600

Kernel Density
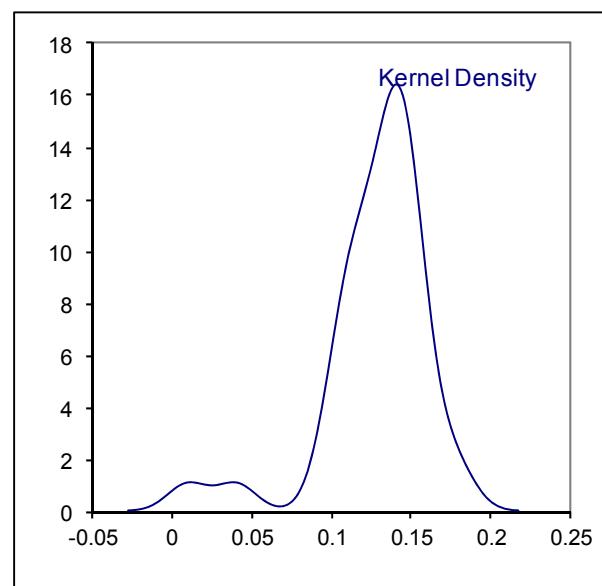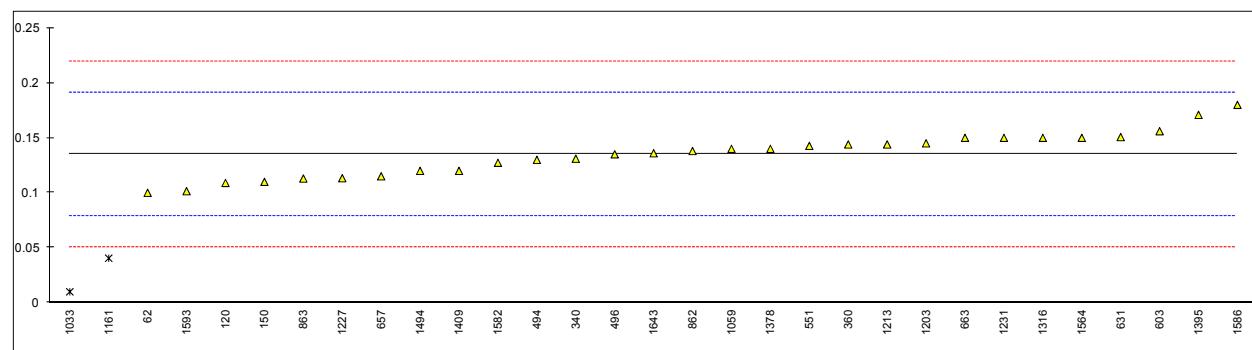
Determination of Acid Number conform ASTM spec. on sample #13053; results in mg KOH/g

lab	method	value	mark	z(targ)	remarks
62	D664-B	0.1	C	-1.24	first reported 0.45
120	D664-B	0.109		-0.92	
150	D664-B	0.11		-0.89	
171		-----		-----	
311		-----		-----	
312		-----		-----	
323		-----		-----	
334		-----		-----	
340	D664-B	0.131		-0.14	
343		-----		-----	
344		-----		-----	
345		-----		-----	
360	D664-B	0.144		0.32	
391		-----		-----	
398		-----		-----	
494	D664-B	0.13		-0.18	
496	D664-B	0.135		0.00	
511		-----		-----	
540		-----		-----	
551	D664-B	0.1427		0.28	
554		-----		-----	
603	D664-B	0.156		0.75	
631	D974	0.1507		0.56	
657	D664-B	0.115		-0.71	
663	D664-B	0.15		0.54	
824		-----		-----	
862	D664-B	0.138		0.11	
863	D664-B	0.113		-0.78	
902		-----		-----	
1016		-----		-----	
1017		-----		-----	
1033	D664-B	0.01	G(0.01)	-4.45	
1047		-----		-----	
1059	ISO6619	0.14		0.18	
1067		-----		-----	
1134		-----		-----	
1161	D664-B	0.0405	G(0.01)	-3.37	
1179		-----		-----	
1199		-----		-----	
1203	D664-B	0.145		0.36	
1213	D664	0.144		0.32	
1227	D664	0.1133		-0.77	
1231	D664	0.15		0.54	
1240		-----		-----	
1273		-----		-----	
1286		-----		-----	
1290		-----		-----	
1299		-----		-----	
1316	D664-B	0.15		0.54	
1378	D664-B	0.14		0.18	
1395	D664-B	0.1709		1.28	
1397		-----		-----	
1400		-----		-----	
1402		-----		-----	
1409	D664-B	0.12		-0.53	
1419		-----		-----	
1429		-----		-----	
1457		-----		-----	
1459		-----		-----	
1470		-----		-----	
1485		-----		-----	
1494	D664-B	0.11995		-0.53	
1536		-----		-----	
1564	D974	0.15		0.54	
1566		-----		-----	
1582	D664-B	0.1273		-0.27	
1586	D664-B	0.18		1.61	
1588		-----		-----	
1593	D664-B	0.1015		-1.19	
1634		-----		-----	
1643	D664-B	0.136		0.04	
1654		-----		-----	
1684		-----		-----	
1706		-----		-----	
1721		-----		-----	
1739		-----		-----	

| 1807 | ----- | ----- |
| 1911 | ----- | ----- |
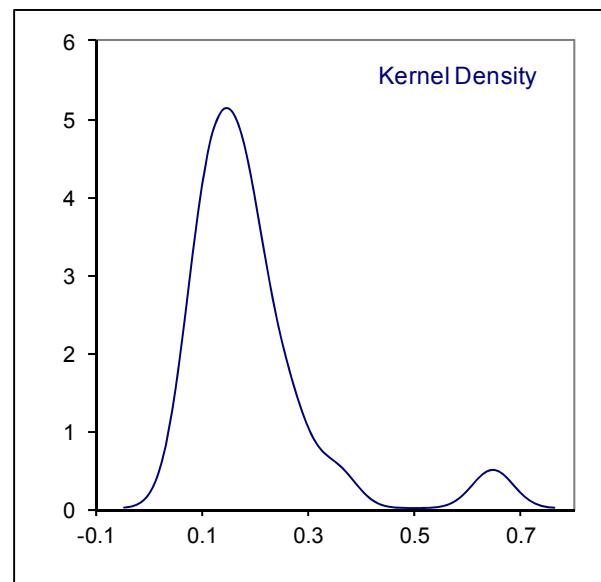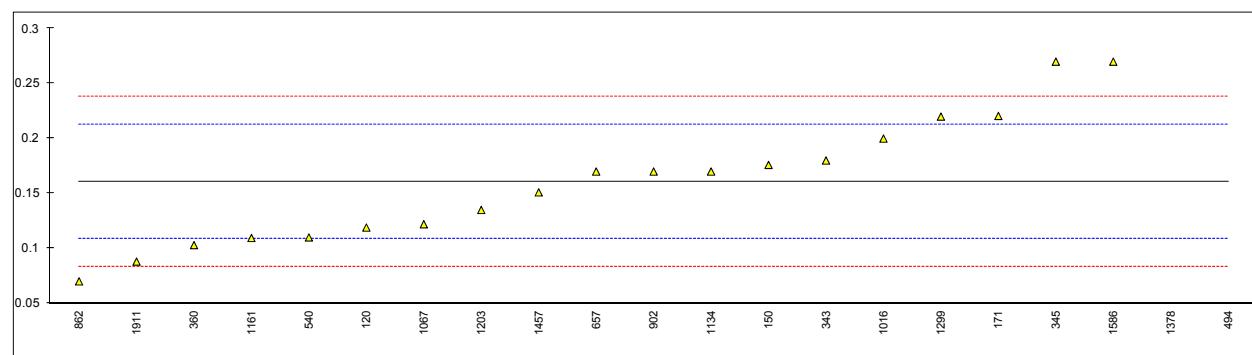
normality	OK
n	29
outliers	2
mean (n)	0.1349
st.dev. (n)	0.01967
R(calc.)	0.0551
R(D664b:11)	0.0794

Kernel Density

Determination of Carbon Residue on 10% distillation residue on sample #13053; results in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	ISO10370	0.119		-1.61	
150	ISO10370	0.176		0.59	
171	D4530	0.2206		2.31	
311		-----		-----	
312		-----		-----	
323		-----		-----	
334		-----		-----	
340		-----		-----	
343	ISO10370	0.18		0.74	
344		-----		-----	
345	ISO10370	0.27		4.22	
360	ISO10370	0.103		-2.23	
391		-----		-----	
398		-----		-----	
494	ISO10370	0.650	G(0.01)	18.91	
496		-----		-----	
511		-----		-----	
540	ISO10370	0.11		-1.96	
551		-----		-----	
554		-----		-----	
603		-----		-----	
631		-----		-----	
657	ISO10370	0.17		0.36	
663		-----		-----	
824		-----		-----	
862	ISO10370	0.07		-3.51	
863		-----		-----	
902	ISO10370	0.170		0.36	
1016	ISO10370	0.200		1.52	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059		-----		-----	
1067	ISO10370	0.122		-1.50	
1134	ISO6615	0.17		0.36	
1161	ISO10370	0.1095		-1.98	
1179		-----		-----	
1199		-----		-----	
1203	ISO10370	0.135		-0.99	
1213		-----		-----	
1227		-----		-----	
1231		-----		-----	
1240		-----		-----	
1273		-----		-----	
1286		-----		-----	
1290		-----		-----	
1299	ISO10370	0.22		2.29	
1316		-----		-----	
1378	ISO10370	0.354	G(0.05)	7.47	
1395		-----		-----	
1397		-----		-----	
1400		-----		-----	
1402		-----		-----	
1409		-----		-----	
1419		-----		-----	
1429		-----		-----	
1457	ISO10370	0.151		-0.38	
1459		-----		-----	
1470		-----		-----	
1485		-----		-----	
1494		-----		-----	
1536		-----		-----	
1564		-----		-----	
1566		-----		-----	
1582		-----		-----	
1586	ISO10370	0.27		4.22	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684		-----		-----	
1706		-----		-----	
1721	ISO10370	<0.1		-----	
1739		-----		-----	
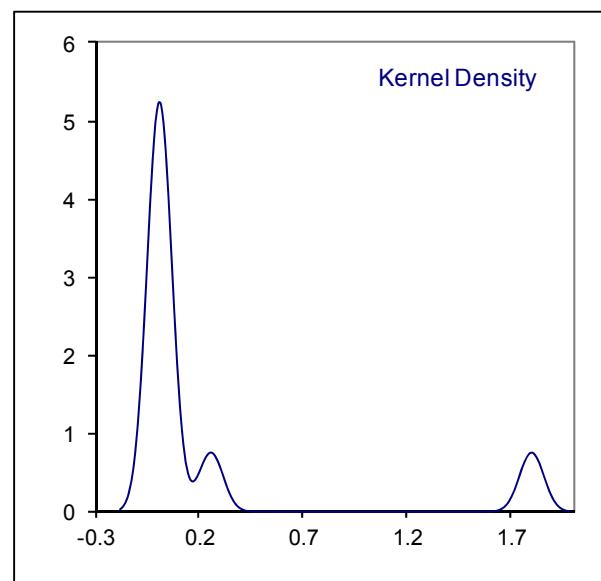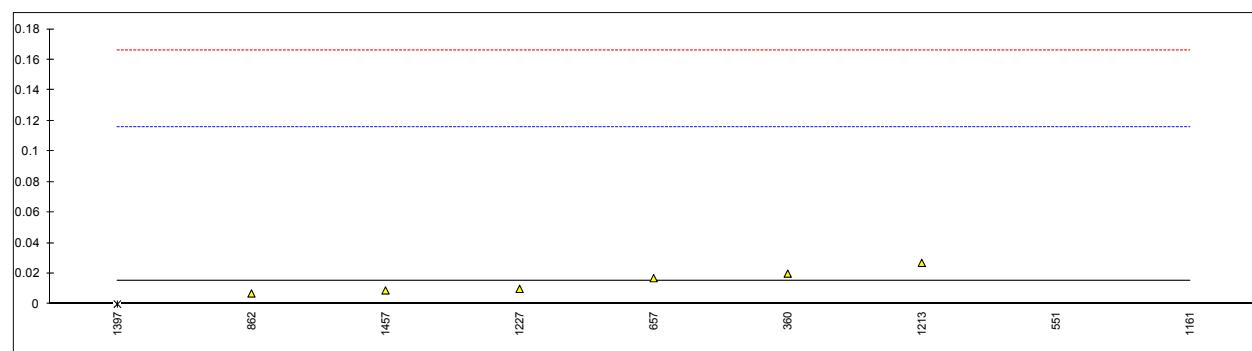
| 1807 | | ----- | | ----- |
| 1911 | ISO10370 | 0.088 | | -2.81 |

	normality	OK
	n	19
	outliers	2
	mean (n)	0.161
	st.dev. (n)	0.0575
	R(calc.)	0.161
	R(ISO10370:95)	0.072

Determination of Carbon Residue (Micro Method) on 100% material on sample #13053; results in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
150	D4530	<0.01		-----	
171		-----		-----	
311		-----		-----	
312		-----		-----	
323		-----		-----	
334		-----		-----	
340		-----		-----	
343		-----		-----	
344		-----		-----	
345		-----		-----	
360	D4530	0.020		0.10	
391		-----		-----	
398		-----		-----	
494		-----		-----	
496		-----		-----	
511		-----		-----	
540		-----		-----	
551	D4530	0.260	C, G(0.01)	4.86	first reported 0.415
554		-----		-----	
603		-----		-----	
631	D4530	<0.1		-----	
657	D4530	0.017		0.04	
663		-----		-----	
824		-----		-----	
862	D4530	0.007		-0.16	
863		-----		-----	
902		-----		-----	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059		-----		-----	
1067		-----		-----	
1134		-----		-----	
1161	D4530	1.80	G(0.01)	35.41	
1179		-----		-----	
1199		-----		-----	
1203		-----		-----	
1213	D4530	0.027		0.24	
1227	D4530	0.01		-0.10	
1231		-----		-----	
1240		-----		-----	
1273		-----		-----	
1286		-----		-----	
1290		-----		-----	
1299		-----		-----	
1316		-----		-----	
1378		-----		-----	
1395		-----		-----	
1397	D4530	0	ex	-0.30	zero is not a real value
1400		-----		-----	
1402		-----		-----	
1409		-----		-----	
1419		-----		-----	
1429		-----		-----	
1457	D4530	0.009		-0.12	
1459		-----		-----	
1470		-----		-----	
1485		-----		-----	
1494		-----		-----	
1536		-----		-----	
1564		-----		-----	
1566		-----		-----	
1582		-----		-----	
1586		-----		-----	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684		-----		-----	
1706		-----		-----	
1721		-----		-----	

1739	-----	-----
1807	-----	-----
1911	-----	-----

normality	OK
n	6
outliers	2 (+1 ex)
mean (n)	0.015
st.dev. (n)	0.0077
R(calc.)	0.022
R(D4530:11)	0.141

Kernel Density
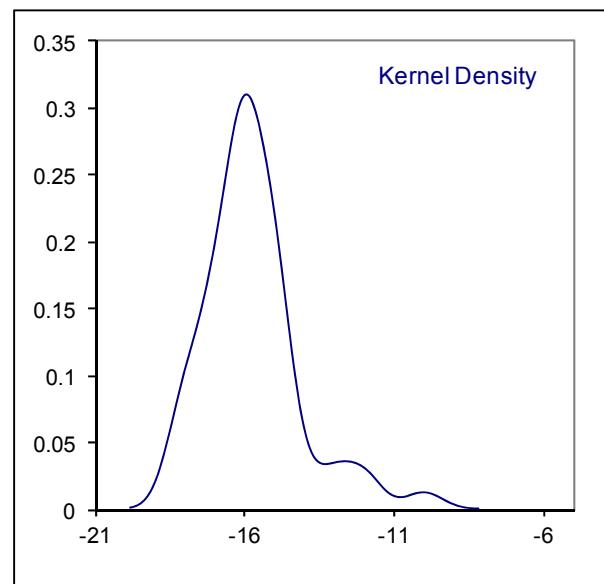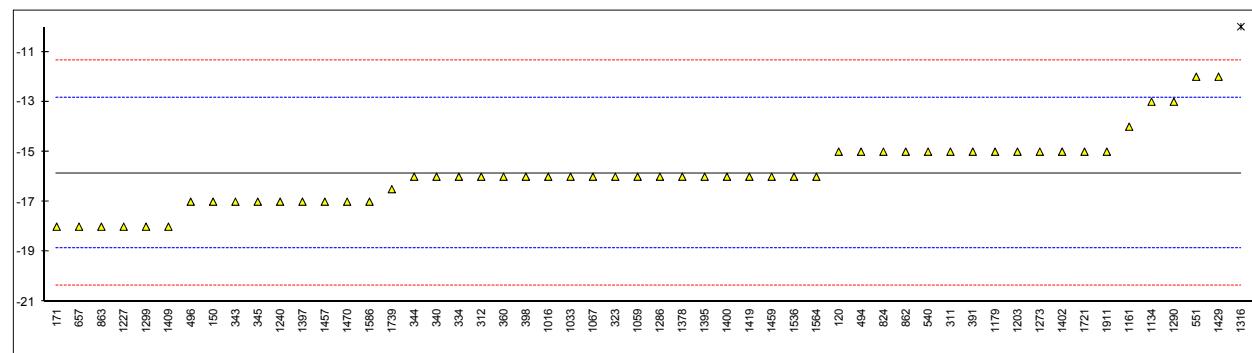
Determination of Cold Filter Plugging Point on sample #13053; results in °C

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	EN116	-15		0.57	
150	EN116	-17.0		-0.76	
171	EN116	-18		-1.43	
311	EN116	-15		0.57	
312	EN116	-16		-0.09	
323	EN116	-16		-0.09	
334	EN116	-16		-0.09	
340	EN116	-16		-0.09	
343	EN116	-17		-0.76	
344	EN116	-16		-0.09	
345	EN116	-17		-0.76	
360	EN116	-16		-0.09	
391	EN116	-15		0.57	
398	EN116	-16		-0.09	
494	EN116	-15		0.57	
496	EN116	-17.0		-0.76	
511		-----		-----	
540	D6371	-15		0.57	
551	D6371	-12		2.57	
554		-----		-----	
603		-----		-----	
631		-----		-----	
657	EN116	-18		-1.43	
663		-----		-----	
824	EN116	-15		0.57	
862	EN116	-15		0.57	
863	IP309	-18		-1.43	
902		-----		-----	
1016	EN116	-16		-0.09	
1017		-----		-----	
1033	IP309	-16		-0.09	
1047		-----		-----	
1059	EN116	-16		-0.09	
1067	EN116	-16.0		-0.09	
1134	EN116	-13		1.90	
1161	EN116	-14		1.24	
1179	EN116	-15		0.57	
1199		-----		-----	
1203	EN116	-15		0.57	
1213		-----		-----	
1227	EN116	-18		-1.43	
1231		-----		-----	
1240	EN116	-17		-0.76	
1273	EN116	-15		0.57	
1286	EN116	-16.0		-0.09	
1290	EN116	-13		1.90	
1299	EN116	-18		-1.43	
1316	EN116	-10.0	G(0.01)	3.90	
1378	EN116	-16		-0.09	
1395	EN116	-16		-0.09	
1397	EN116	-17		-0.76	
1400	EN116	-16		-0.09	
1402	EN116	-15		0.57	
1409	EN116	-18		-1.43	
1419	EN116	-16		-0.09	
1429	EN116	-12		2.57	
1457	EN116	-17		-0.76	
1459	EN116	-16		-0.09	
1470	EN116	-17		-0.76	
1485		-----		-----	
1494		-----		-----	
1536	EN116	-16		-0.09	
1564	EN116	-16		-0.09	
1566		-----		-----	
1582		-----		-----	
1586	EN116	-17		-0.76	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684		-----		-----	
1706		-----		-----	
1721	EN116	-15		0.57	
1739	EN116	-16.5		-0.43	

| 1807 | | ----- | ----- |
| 1911 | EN116 | -15.0 | 0.57 |

	normality	not OK	
	n	53	
	outliers	1	
	mean (n)	-15.86	
	st.dev. (n)	1.381	
	R(calc.)	3.87	
	R(EN116:97)	4.20	*reproducibility not available for B100 according to EN14214:12
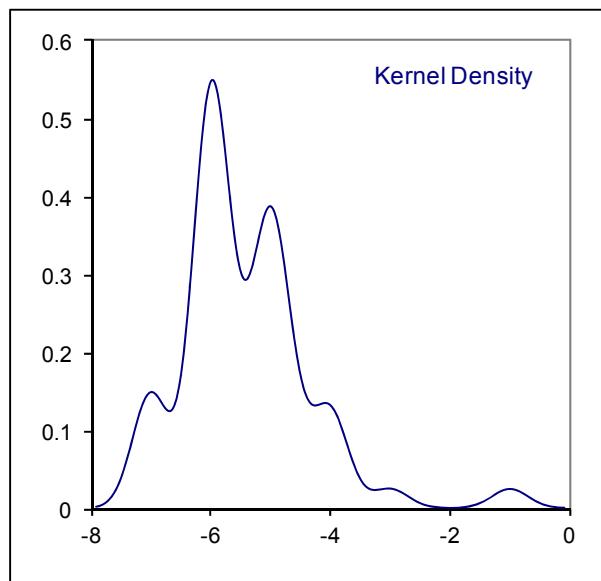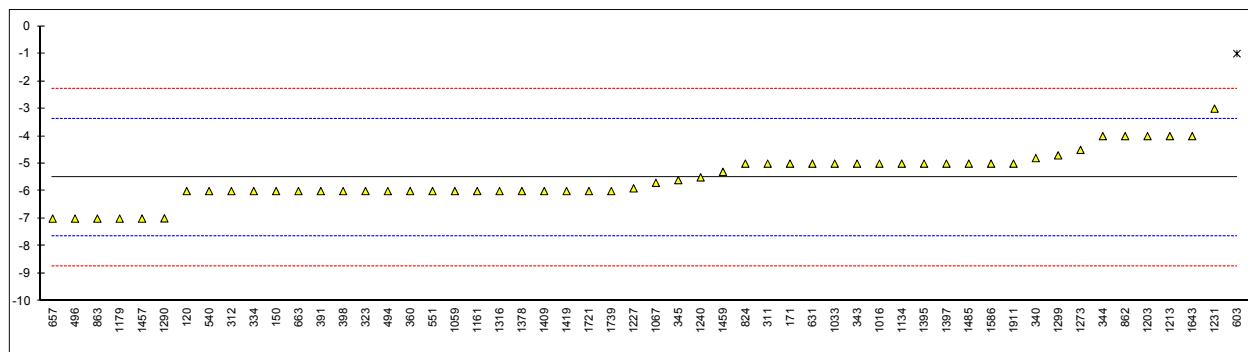
Kernel Density

Determination of Cloud Point on sample #13053; results in °C

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D2500	-6		-0.46	
150	D5771	-6.0		-0.46	
171	D2500	-5		0.48	
311	D2500	-5		0.48	
312	D2500	-6		-0.46	
323	D2500	-6		-0.46	
334	EN23015	-6		-0.46	
340	EN23015	-4.8		0.66	
343	D2500	-5		0.48	
344	D2500	-4		1.41	
345	D5771	-5.6		-0.08	
360	D2500	-6		-0.46	
391	D2500	-6		-0.46	
398	EN23015	-6		-0.46	
494	EN23015	-6		-0.46	
496	EN23015	-7.0		-1.39	
511		-----		-----	
540	D2500	-6		-0.46	
551	D2500	-6		-0.46	
554		-----		-----	
603	D2500	-1	G(0.01)	4.21	
631	D2500	-5		0.48	
657	D2500	-7		-1.39	
663	D2500	-6		-0.46	
824	D2500	-5		0.48	
862	D2500	-4		1.41	
863	D2500	-7		-1.39	
902		-----		-----	
1016	D2500	-5.0		0.48	
1017		-----		-----	
1033	IP219	-5		0.48	
1047		-----		-----	
1059	EN23015	-6		-0.46	
1067	D5771	-5.7		-0.18	
1134	IP219	-5		0.48	
1161	D2500	-6		-0.46	
1179	D2500	-7		-1.39	
1199		-----		-----	
1203	D2500	-4		1.41	
1213	D2500	-4		1.41	
1227	D2500	-5.9		-0.36	
1231	D2500	-3		2.34	
1240	EN23015	-5.5		0.01	
1273	D2500	-4.5		0.94	
1286		-----		-----	
1290	D2500	-6.99		-1.38	
1299	D2500	-4.7		0.76	
1316	EN23015	-6.0		-0.46	
1378	D2500	-6		-0.46	
1395	D2500	-5		0.48	
1397	D2500	-5		0.48	
1400		-----		-----	
1402		-----		-----	
1409	D2500	-6		-0.46	
1419	D5773	-6		-0.46	
1429		-----		-----	
1457	D2500	-7		-1.39	
1459	EN23015	-5.3		0.20	
1470		-----		-----	
1485	D2500	-5.0		0.48	
1494		-----		-----	
1536		-----		-----	
1564		-----		-----	
1566		-----		-----	
1582		-----		-----	
1586	D2500	-5		0.48	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643	D2500	-4		1.41	
1654		-----		-----	
1684		-----		-----	
1706		-----		-----	
1721	D2500	-6.0		-0.46	
1739	EN23015	-6		-0.46	

1807		-----	-----
1911	EN23015	-5.0	0.48

normality	not OK
n	53
outliers	1
mean (n)	-5.51
st.dev. (n)	0.89
R(calc.)	2.50
R(D2500:11)	3.00

Kernel Density

Determination of Copper Strip Corrosion 3 hrs/50°C on sample #13053
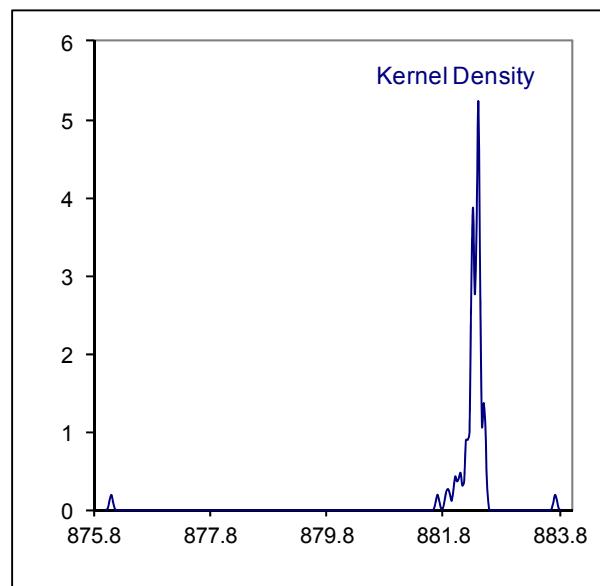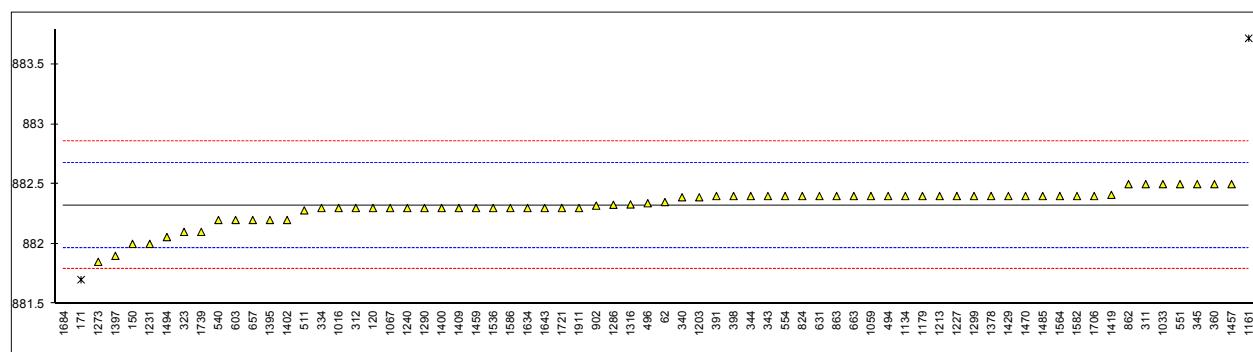
lab	method	value	mark	z(targ)	remarks
62	D130	1B		-----	
120	D130	1A		-----	
150	D130	1A		-----	
171	D130	1A		-----	
311	ISO2160	1A		-----	
312	D130	1A		-----	
323	D130	1A		-----	
334		-----		-----	
340		-----		-----	
343	D130	1A		-----	
344	D130	1A		-----	
345	ISO2160	1A		-----	
360	ISO2160	1A		-----	
391	D130	1A		-----	
398	ISO2160	1A		-----	
494	ISO2160	1A		-----	
496	ISO2160	1A		-----	
511	D130	1A		-----	
540	ISO2160	1		-----	
551	D130	1A		-----	
554		-----		-----	
603	D130	1A		-----	
631	D130	1A		-----	
657	D130	1		-----	
663	D130	1A		-----	
824	D130	1A		-----	
862	D130	1A		-----	
863	D130	1A		-----	
902		-----		-----	
1016	D130	1A		-----	
1017		-----		-----	
1033	IP154	1A		-----	
1047		-----		-----	
1059	ISO2160	1A		-----	
1067	D130	1A		-----	
1134	IP154	1A		-----	
1161	D130	1A		-----	
1179	ISO2160	1A		-----	
1199		-----		-----	
1203	D130	1		-----	
1213	D130	1A		-----	
1227	D130	1A		-----	
1231	D130	1A		-----	
1240		-----		-----	
1273		-----		-----	
1286		-----		-----	
1290		-----		-----	
1299	D130	1A		-----	
1316	D130	1A		-----	
1378		-----		-----	
1395	D130	1A		-----	
1397	D130	1		-----	
1400		-----		-----	
1402	ISO2160	1A		-----	
1409	D130	1A		-----	
1419		-----		-----	
1429	D130	1A		-----	
1457	ISO2160	1A		-----	
1459		-----		-----	
1470		-----		-----	
1485		-----		-----	
1494		-----		-----	
1536		-----		-----	
1564	D130	1A		-----	
1566		-----		-----	
1582		-----		-----	
1586	D130	1A		-----	
1588		-----		-----	
1593		-----		-----	
1634	D130	1A		-----	
1643		-----		-----	
1654		-----		-----	
1684	ISO3675	1B		-----	
1706		-----		-----	
1721	D130	1A		-----	
1739	ISO2160	1A		-----	

1807		-----		-----
1911	ISO2160	1A	-----

normality	n.a.
n	50
outliers	n.a.
mean (n)	1 (1A)
st.dev. (n)	n.a.
R(calc.)	n.a.
R(D130:12)	n.a.

Determination of Density @ 15°C conform EN spec. on sample #13053; results in kg/m^3

lab	method	value	mark	z(targ)	remarks
62	D4052	882.35		0.15	
120	ISO12185	882.3		-0.13	
150	D4052	882.0		-1.81	
171	ISO12185	881.7	G(0.01)	-3.49	
311	ISO12185	882.5	C	0.99	first reported 885.2
312	D4052	882.3		-0.13	
323	ISO12185	882.1		-1.25	
334	ISO12185	882.3		-0.13	
340	ISO12185	882.39		0.38	
343	ISO12185	882.4		0.43	
344	ISO12185	882.4		0.43	
345	ISO12185	882.5		0.99	
360	ISO12185	882.5		0.99	
391	ISO12185	882.4		0.43	
398	ISO12185	882.4		0.43	
494	ISO12185	882.4		0.43	
496	ISO12185	882.34		0.10	
511	D4052	882.28		-0.24	
540	ISO12185	882.2		-0.69	
551	D4052	882.5		0.99	
554	ISO12185	882.4		0.43	
603	ISO12185	882.2		-0.69	
631	D4052	882.4		0.43	
657	ISO12185	882.2		-0.69	
663	D4052	882.4		0.43	
824	ISO12185	882.4		0.43	
862	ISO12185	882.5		0.99	
863	ISO12185	882.40		0.43	
902	ISO12185	882.32		-0.02	
1016	ISO12185	882.3	C	-0.13	reported 0.8823; converted by *iis*
1017		-----		-----	
1033	IP365	882.50		0.99	
1047		-----		-----	
1059	ISO12185	882.4		0.43	
1067	ISO12185	882.3		-0.13	
1134	IP365	882.4		0.43	
1161	ISO12185	883.72	G(0.01)	7.82	
1179	ISO12185	882.4		0.43	
1199		-----		-----	
1203	ISO12185	882.39		0.38	
1213	D4052	882.4	C	0.43	first reported 0.8824
1227	D4052	882.4		0.43	
1231	D4052	882.0		-1.81	
1240	ISO12185	882.3		-0.13	
1273	D7042	881.85		-2.65	
1286	ISO12185	882.327		0.02	
1290	ISO12185	882.3		-0.13	
1299	ISO12185	882.4		0.43	
1316	ISO12185	882.33		0.04	
1378	ISO12185	882.4	C	0.43	first reported 0.8824
1395	ISO12185	882.2		-0.69	
1397	ISO12185	881.9		-2.37	
1400	ISO12185	882.3		-0.13	
1402	ISO12185	882.2		-0.69	
1409	ISO12185	882.3		-0.13	
1419	ISO12185	882.41		0.49	
1429	ISO12185	882.4	C	0.43	first reported 890.6
1457	ISO12185	882.5		0.99	
1459	ISO12185	882.3		-0.13	
1470	ISO12185	882.4		0.43	
1485	ISO12185	882.40		0.43	
1494	D4052	882.057		-1.49	
1536	ISO12185	882.3		-0.13	
1564	D4052	882.4		0.43	
1566		-----		-----	
1582	D4052	882.40	C	0.43	first reported 0.88240
1586	ISO12185	882.3		-0.13	
1588		-----		-----	
1593		-----		-----	
1634	ISO12185	882.3		-0.13	
1643	ISO12185/D4052	882.3		-0.13	
1654		-----		-----	
1684	ISO3675	876.1	C, G(0.01)	-34.85	first reported 876
1706	ISO12185	882.4		0.43	
1721	ISO12185	882.3		-0.13	
1739	ISO3675	882.1		-1.25	

| 1807 | | ----- | ----- |
| 1911 | ISO12185 | 882.30 | -0.13 |

	normality	not OK
	n	67
	outliers	3
	mean (n)	882.323
	st.dev. (n)	0.1371
	R(calc.)	0.384
	R(ISO12185:96)	0.500

Determination of Flash Point conform EN spec. on sample #13053; results in °C
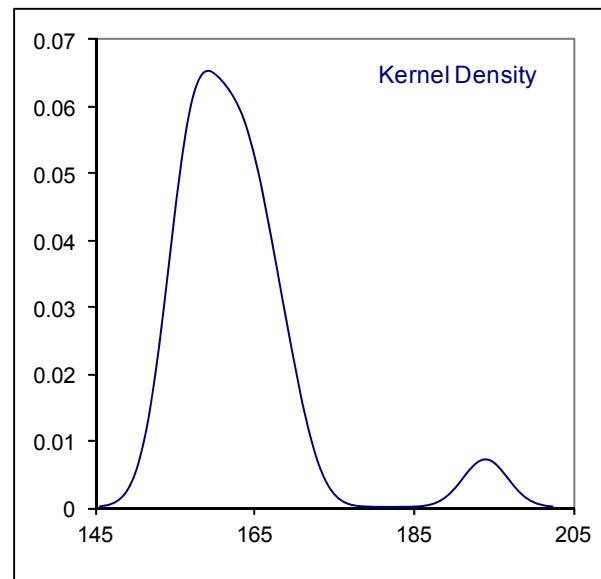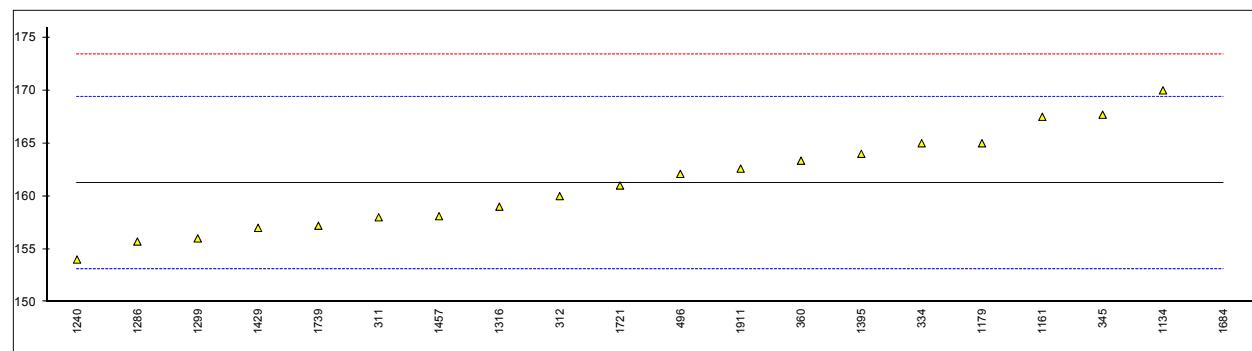
lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
150		-----		-----	
171		-----		-----	
311	ISO3679	158.0		-0.79	
312	ISO3679	160.0		-0.30	
323		-----		-----	
334	ISO3679	165		0.93	
340		-----		-----	
343		-----		-----	
344		-----		-----	
345	ISO3679	167.7		1.59	
360	ISO3679	163.35		0.52	
391		-----		-----	
398		-----		-----	
494		-----		-----	
496	ISO3679	162.1		0.22	
511		-----		-----	
540		-----		-----	
551		-----		-----	
554		-----		-----	
603		-----		-----	
631		-----		-----	
657		-----		-----	
663		-----		-----	
824		-----		-----	
862		-----		-----	
863		-----		-----	
902		-----		-----	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059		-----		-----	
1067		-----		-----	
1134	ISO3679	170.0		2.16	
1161	ISO3679	167.5		1.54	
1179	ISO3679	165.0		0.93	
1199		-----		-----	
1203		-----		-----	
1213		-----		-----	
1227		-----		-----	
1231		-----		-----	
1240	ISO3679	154		-1.77	
1273		-----		-----	
1286	ISO3679	155.7		-1.36	
1290		-----		-----	
1299	ISO3679	156.0		-1.28	
1316	ISO3679	159		-0.55	
1378		-----		-----	
1395	ISO3679	164.0		0.68	
1397		-----		-----	
1400		-----		-----	
1402		-----		-----	
1409		-----		-----	
1419		-----		-----	
1429	ISO3679	157.0		-1.04	
1457	ISO3679	158.1		-0.77	
1459		-----		-----	
1470		-----		-----	
1485		-----		-----	
1494		-----		-----	
1536		-----		-----	
1564		-----		-----	
1566		-----		-----	
1582		-----		-----	
1586		-----		-----	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684	ISO3679	194	C, G(0.01)	8.05	first reported 144
1706		-----		-----	
1721	ISO3679	161		-0.05	
1739	ISO3679	157.2		-0.99	

1807		-----		-----
1911	ISO3679	162.60		0.34

normality	OK
n	19
outliers	1
mean (n)	161.22
st.dev. (n)	4.549
R(calc.)	12.74
R(EN14214:12)	11.40

compare R(ISO3679:04) = 8.05
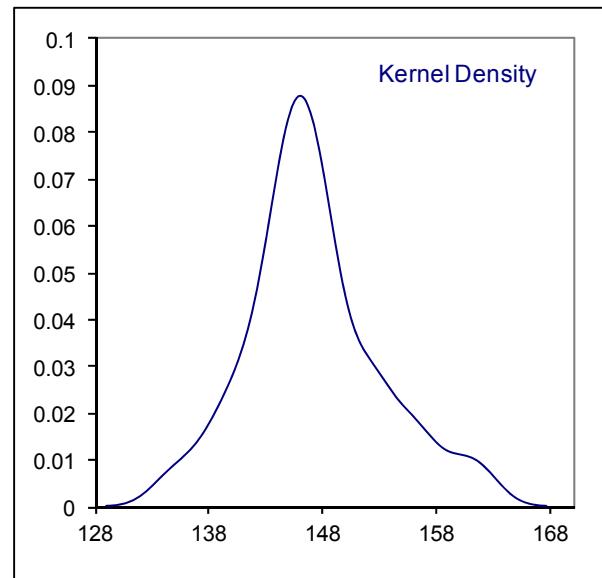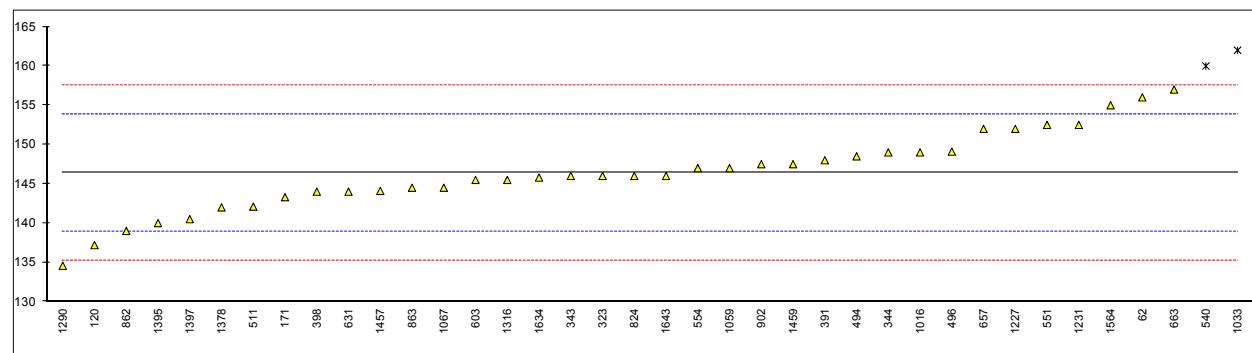
Determination of Flash Point (PMcc) conform ISO/ASTM spec. on sample #13053; results in °C

lab	method	value	mark	z(targ)	remarks
62	D93	156		2.59	
120	D93	137.2		-2.48	
150	D93	>130		-----	
171	D93	143.3		-0.83	
311		-----		-----	
312		-----		-----	
323	D93	146.0		-0.11	
334		-----		-----	
340		-----		-----	
343	D93	146.0		-0.11	
344	D93	149.0		0.70	
345		-----		-----	
360		-----		-----	
391	D93	148.0		0.43	
398	ISO2719	144.0		-0.64	
494	ISO2719	148.5		0.57	
496	ISO2719	149.1		0.73	
511	D93	142.1		-1.16	
540	D7094	160.0	ex	3.67	Test method is not technically equivalent with test method D93c.
551	D93	152.5		1.64	
554	D93	147.0		0.16	
603	D93	145.5		-0.24	
631	D93	144.0		-0.64	
657	D93	152		1.51	
663	D93	157.0		2.86	
824	D93	146.0		-0.11	
862	D93	139.0		-1.99	
863	D93	144.5		-0.51	
902	D93	147.5		0.30	
1016	D93	149		0.70	
1017		-----		-----	
1033	IP34	162	G(0.05)	4.20	
1047		-----		-----	
1059	ISO2719	147.0		0.16	
1067	D93	144.5		-0.51	
1134		-----		-----	
1161		-----		-----	
1179		-----		-----	
1199		-----		-----	
1203		-----		-----	
1213		-----		-----	
1227	D93	152		1.51	
1231	D93	152.5		1.64	
1240		-----		-----	
1273		-----		-----	
1286		-----		-----	
1290	ISO2719	134.57		-3.19	
1299		-----		-----	
1316	D93	145.5		-0.24	
1378	D93	142		-1.18	
1395	D93	140.0		-1.72	
1397	D93	140.5		-1.59	
1400		-----		-----	
1402		-----		-----	
1409		-----		-----	
1419		-----		-----	
1429	D93	>140		-----	
1457	ISO2719	144.1		-0.62	
1459	ISO2719	147.5		0.30	
1470		-----		-----	
1485		-----		-----	
1494		-----		-----	
1536		-----		-----	
1564	D93	155.0		2.32	
1566		-----		-----	
1582		-----		-----	
1586		-----		-----	
1588		-----		-----	
1593		-----		-----	
1634	D93	145.8		-0.16	
1643	D93	146.0		-0.11	
1654		-----		-----	
1684		-----		-----	
1706		-----		-----	
1721		-----		-----	
1739		-----		-----	

| 1807 | ----- | ----- |
| 1911 | ----- | ----- |

	normality	OK
	n	36
	outliers	2 (+1 ex)
	mean (n)	146.39
	st.dev. (n)	5.002
	R(calc.)	14.01
	R(D93:12c)	10.39
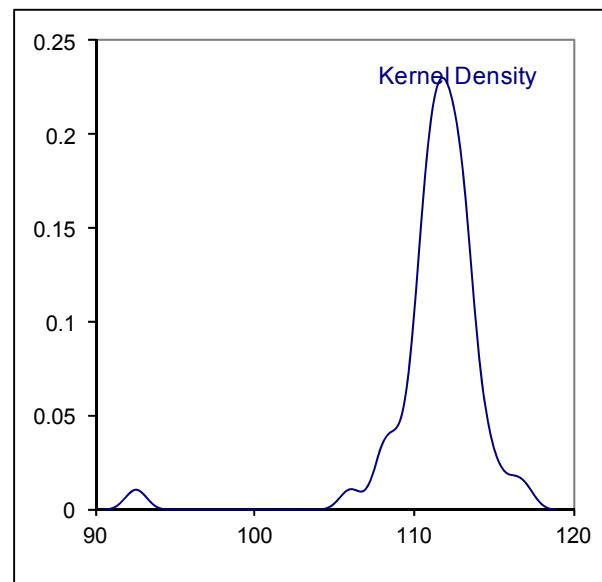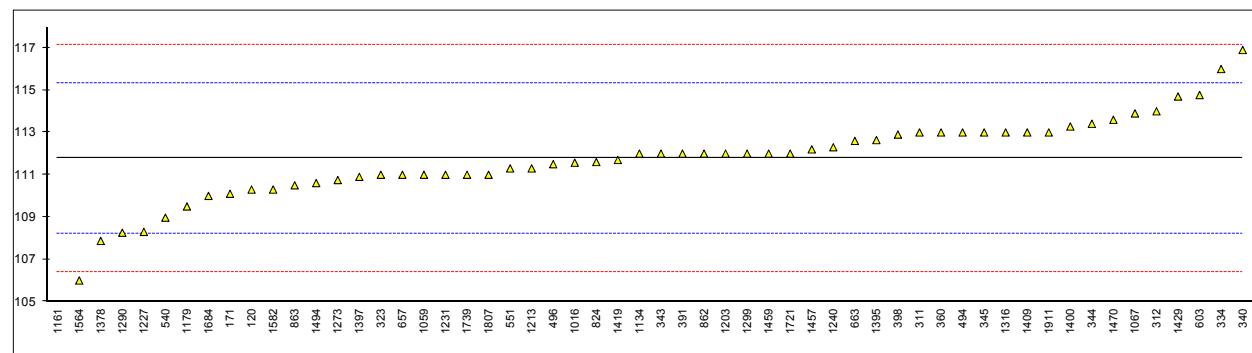
Determination of Iodine Value conform EN spec. on sample #13053; results in g I_2/100g

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	EN14111	110.3		-0.82	
150		-----		-----	
171	EN14111	110.1		-0.94	
311	EN14111	113		0.69	
312	EN14111	114.0		1.25	
323	EN14111	111		-0.43	
334	EN14111	116		2.37	
340	EN14111	116.9		2.87	
343	EN14111	112		0.13	
344	EN14111	113.41		0.92	
345	EN14111	113		0.69	
360	EN14111	113		0.69	
391	EN14111	112		0.13	
398	EN16300	112.9		0.63	
494	EN14111	113.0		0.69	
496	EN14111	111.5		-0.15	
511		-----		-----	
540	EN14111	108.97		-1.57	
551	EN14111	111.3	C	-0.26	first reported 106,7
554		-----		-----	
603	EN14111	114.77		1.68	
631		-----		-----	
657	EN14111	111		-0.43	
663	EN14111	112.6		0.46	
824	EN14111	111.6		-0.10	
862	EN14111	112.0		0.13	
863	EN14111	110.5	C	-0.71	first reported 103.5
902		-----		-----	
1016	EN14111	111.57		-0.11	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059	EN14111	111		-0.43	
1067	EN14111	113.9		1.19	
1134	EN14111	112		0.13	
1161	EN14111	92.568	G(0.01)	-10.75	
1179	EN14111	109.5		-1.27	
1199		-----		-----	
1203	EN14111	112		0.13	
1213	EN14111	111.3		-0.26	
1227	EN14111	108.3		-1.94	
1231	EN14111	111		-0.43	
1240	EN16300	112.3		0.30	
1273	EN14111	110.75		-0.57	
1286		-----		-----	
1290	EN14111	108.26		-1.97	
1299	EN14111	112.0		0.13	
1316	EN14111	113		0.69	
1378	EN14111	107.87		-2.19	
1395	EN14111	112.64		0.49	
1397	EN14111	110.9		-0.49	
1400	EN14111	113.28		0.84	
1402		-----		-----	
1409	EN14111	113		0.69	
1419	EN14111	111.7		-0.04	
1429	EN14111	114.7		1.64	
1457	EN14111	112.2		0.24	
1459	EN16300	112.0		0.13	
1470	EN14214	113.6		1.02	
1485		-----		-----	
1494	EN14111	110.6050	C	-0.65	first reported 107.2213
1536		-----		-----	
1564	EN14111	106		-3.23	
1566		-----		-----	
1582	EN14111	110.30		-0.82	
1586		-----		-----	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684	EN14111	110		-0.99	
1706		-----		-----	
1721	EN14111	112		0.13	
1739	EN14111	111		-0.43	

| 1807 | EN14111 | 111 | -0.43 |
| 1911 | EN14111 | 113.0 | 0.69 |

	normality	OK
	n	55
	outliers	1
	mean (n)	111.77
	st.dev. (n)	1.919
	R(calc.)	5.37
	R(EN14111:03)	5.00
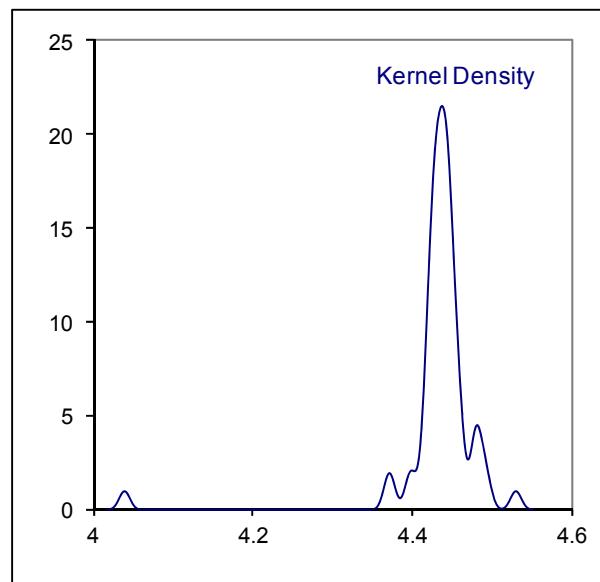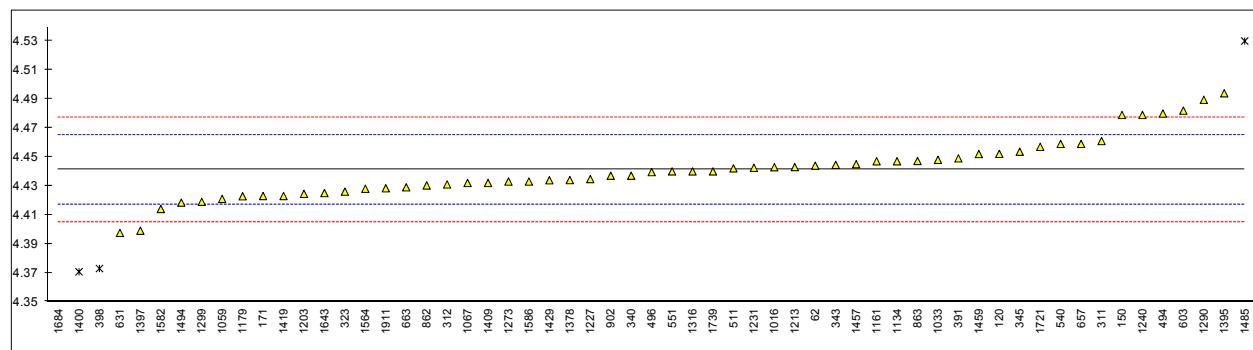
Determination of Kinematic Viscosity @ 40°C on sample #13053; results in mm^2/s

lab	method	value	mark	z(targ)	remarks
62	D445	4.444		0.23	
120	D445	4.4521		0.91	
150	D445	4.479		3.14	
171	D445	4.423		-1.51	
311	ISO3104	4.461		1.64	
312	D445	4.431		-0.85	
323	D445	4.426		-1.26	
334		-----		-----	
340	ISO3104	4.4370		-0.35	
343	D445	4.4445		0.27	
344		-----		-----	
345	ISO3104	4.4536		1.03	
360		-----		-----	
391	D445	4.449		0.65	
398	ISO3104	4.3729	DG(0.05)	-5.67	
494	ISO3104	4.480		3.22	
496	ISO3104	4.4395		-0.14	
511	D445	4.4421		0.08	
540	D445	4.459		1.48	
551	D445	4.440	C	-0.10	first reported 4.550
554		-----		-----	
603	D445	4.482		3.39	
631	D445	4.3975		-3.62	
657	D445	4.459		1.48	
663	D445	4.429		-1.01	
824		-----		-----	
862	D445	4.4303		-0.90	
863	D445	4.4472		0.50	
902	D445	4.437		-0.35	
1016	D445	4.4429		0.14	
1017		-----		-----	
1033	IP71	4.448		0.57	
1047		-----		-----	
1059	ISO3104	4.421		-1.67	
1067	D445	4.432		-0.76	
1134	ISO3104	4.447		0.48	
1161	D445	4.447		0.48	
1179	ISO3104	4.4228		-1.53	
1199		-----		-----	
1203	D445	4.4245		-1.38	
1213	D445	4.443		0.15	
1227	D445	4.4347		-0.54	
1231	D445	4.4425		0.11	
1240	ISO3104	4.479		3.14	
1273	D7042	4.433		-0.68	
1286		-----		-----	
1290	D7042	4.4895		4.01	
1299	D445	4.419		-1.84	
1316	ISO3104	4.440		-0.10	
1378	D445	4.434		-0.60	
1395	D445	4.494		4.38	
1397	D445	4.399		-3.50	
1400	ISO3104	4.3706	DG(0.05)	-5.86	
1402		-----		-----	
1409	D445	4.432		-0.76	
1419	ISO3104	4.423		-1.51	
1429	IP71	4.4339		-0.60	
1457	ISO3104	4.445		0.32	
1459	D7042	4.452		0.90	
1470		-----		-----	
1485	D445	4.5301	C, G(0.05)	7.38	first reported 4.53009
1494	D445	4.41843		-1.89	
1536		-----		-----	
1564	D445	4.428		-1.09	
1566		-----		-----	
1582	D445	4.4140		-2.26	
1586	D445	4.433		-0.68	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643	D445	4.425		-1.34	
1654		-----		-----	
1684	ISO3104	4.04	C, G(0.01)	-33.28	first reported 4.60
1706		-----		-----	
1721	D445	4.457		1.31	
1739	D445	4.440		-0.10	

1807		-----		-----
1911	ISO3104	4.42837		-1.06

	normality	OK
	n	55
	outliers	4
	mean (n)	4.4412
	st.dev. (n)	0.02013
	R(calc.)	0.0564
	R(ISO3104:96)	0.0338	compare R(D445:12) = 0.0338
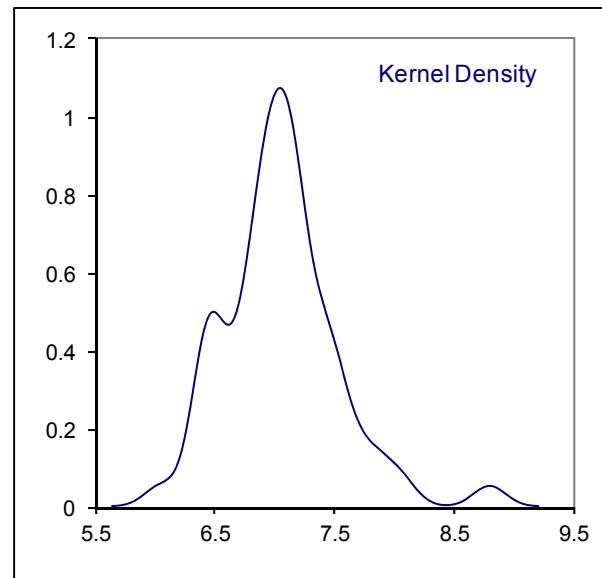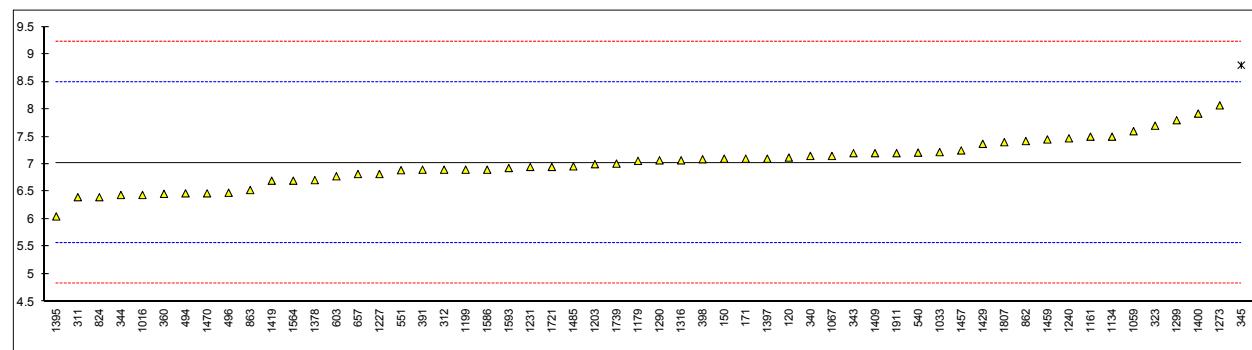
Determination of Oxidation Stability on sample #13053; results in hours

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	EN15751	7.12		0.13	
150	EN14112	7.1		0.10	
171	EN14112	7.1		0.10	
311	EN14112	6.4		-0.85	
312	EN14112	6.9		-0.17	
323	EN15751	7.7		0.92	
334		-----		-----	
340	EN14112	7.15		0.17	
343	EN14112	7.2		0.24	
344	EN14112	6.44		-0.80	
345	EN14112	8.8	G(0.01)	2.41	
360	EN14112	6.46		-0.77	
391	EN14112	6.9		-0.17	
398	EN14112	7.09		0.09	
494	EN14112	6.47		-0.76	
496	EN14112	6.48		-0.74	
511		-----		-----	
540	EN14112	7.21		0.25	
551	EN14112	6.89		-0.19	
554		-----		-----	
603	EN14112	6.78		-0.34	
631		-----		-----	
657	EN14112	6.82		-0.28	
663		-----		-----	
824	EN14112	6.4		-0.85	
862	EN14112	7.42		0.54	
863	EN14112	6.53		-0.68	
902		-----		-----	
1016	EN14112	6.44		-0.80	
1017		-----		-----	
1033	EN14112	7.22		0.26	
1047		-----		-----	
1059	EN14112	7.6		0.78	
1067	EN14112	7.15		0.17	
1134	EN14112	7.5		0.64	
1161	EN14112	7.5		0.64	
1179	EN14112	7.06		0.05	
1199	EN14112	6.90		-0.17	
1203	EN14112	7.0		-0.04	
1213		-----		-----	
1227	EN14112	6.82		-0.28	
1231	EN14112	6.95		-0.10	
1240	EN15751	7.47		0.60	
1273	EN14112	8.07		1.42	
1286		-----		-----	
1290	EN14112	7.07		0.06	
1299	EN14112	7.8		1.05	
1316	EN14112	7.07		0.06	
1378	EN14112	6.71		-0.43	
1395	EN14112	6.05		-1.33	
1397	EN14112	7.1		0.10	
1400	EN14112	7.92		1.22	
1402		-----		-----	
1409	EN14112	7.2		0.24	
1419	EN14112	6.7		-0.44	
1429	EN14112	7.37		0.47	
1457	EN14112	7.25		0.30	
1459	EN15751	7.45		0.58	
1470	EN14112	6.47		-0.76	
1485	EN14112	6.96		-0.09	
1494		-----		-----	
1536		-----		-----	
1564	EN14112	6.7		-0.44	
1566		-----		-----	
1582		-----		-----	
1586	EN14112	6.9		-0.17	
1588		-----		-----	
1593	EN14112	6.93		-0.13	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684		-----		-----	
1706		-----		-----	
1721	EN14112	6.95		-0.10	
1739	EN14112	7.01		-0.02	

| 1807 | EN15751 | 7.4 | | 0.51 |
| 1911 | EN14112 | 7.20 | | 0.24 |
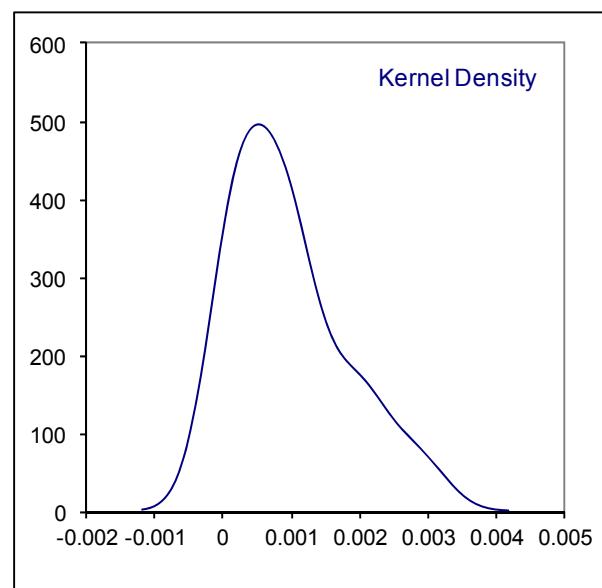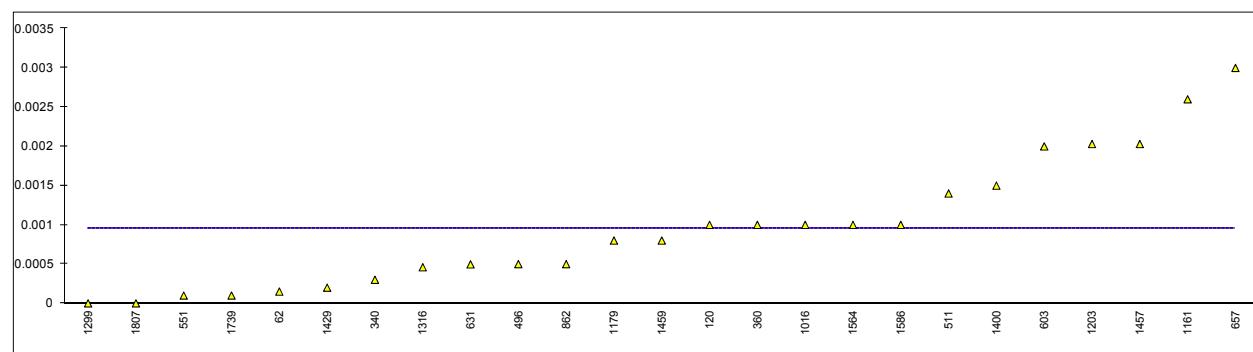
	normality	OK
	n	55
	outliers	1
	mean (n)	7.026
	st.dev. (n)	0.4141
	R(calc.)	1.160
	R(EN14112:03)	2.057

Kernel Density

Determination of Sulphated Ash on sample #13053; results in %M/M

lab	method	value	mark	z(targ)	remarks
62	D874	0.00015	C	-----	first reported 0.015
120	D874	0.001		-----	
150	D874	<0.001		-----	
171	D874	<0.005		-----	
311	ISO3987	<0.005		-----	
312		-----		-----	
323	ISO3987	<0.01		-----	
334		-----		-----	
340	D874	0.0003		-----	
343	D874	<0.005		-----	
344	ISO3987	<0.005		-----	
345	ISO3987	<0.005		-----	
360	ISO3987	0.001		-----	
391		-----		-----	
398		-----		-----	
494	ISO3987	<0.005		-----	
496	ISO3987	0.0005		-----	
511	D874	0.0014		-----	
540	ISO3987	<0.02		-----	
551	D874	0.0001		-----	
554		-----		-----	
603	D874	0.002		-----	
631	D874	0.000497		-----	
657	D874	0.003		-----	
663	D874	<0.005		-----	
824		-----		-----	
862	D874	0.0005		-----	
863	D874	<0.001		-----	
902		-----		-----	
1016	D874	0.0010		-----	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059	ISO3987	<0.005		-----	
1067		-----		-----	
1134	ISO3987	<0.001		-----	
1161	D874	0.0026		-----	
1179	ISO3987	0.0008	C	-----	first reported 0.008
1199		-----		-----	
1203	D874	0.00203		-----	
1213	D874	<0.001		-----	
1227		-----		-----	
1231		-----		-----	
1240		-----		-----	
1273		-----		-----	
1286		-----		-----	
1290		-----		-----	
1299	D874	0.000		-----	
1316	D874	0.00046		-----	
1378		-----		-----	
1395		-----		-----	
1397		-----		-----	
1400	ISO3987	0.0015		-----	
1402		-----		-----	
1409	D874	<0.001		-----	
1419		-----		-----	
1429	D874	0.0002		-----	
1457	ISO3987	0.00203		-----	
1459	ISO3987	0.0008		-----	
1470		-----		-----	
1485		-----		-----	
1494		-----		-----	
1536		-----		-----	
1564	D874	0.001		-----	
1566		-----		-----	
1582		-----		-----	
1586	D874	0.001		-----	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684	ISO3987	<0.005		-----	
1706		-----		-----	
1721	D874	<0.005		-----	
1739	ISO3987	0.0001		-----	
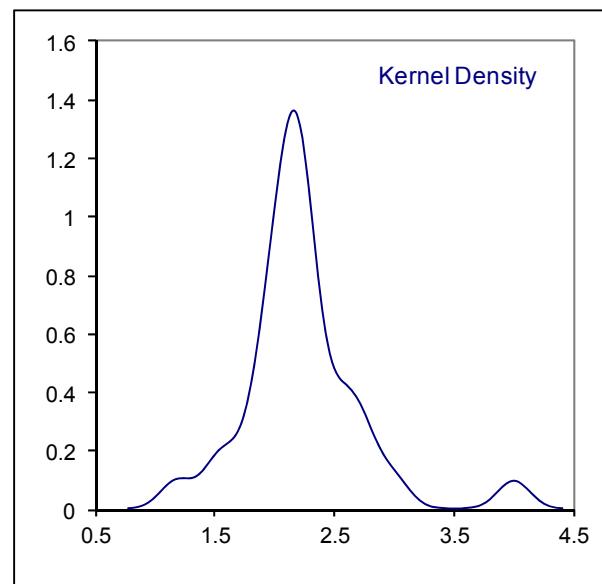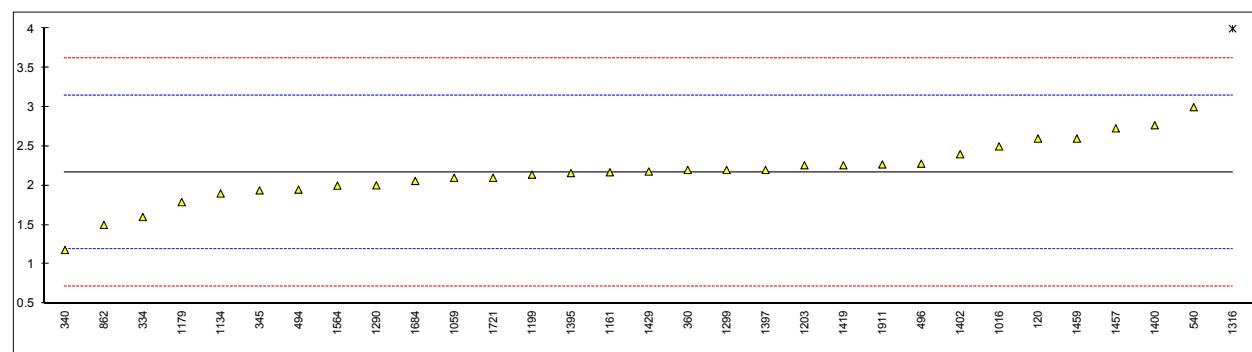
| 1807 | ISO3987 | 0.000 | ----- |
| 1911 | | ----- | ----- |

normality	not OK	
n	25	
outliers	0	
mean (n)	0.00096	
st.dev. (n)	0.000833	
R(calc.)	0.00233	compare R(ISO3987:10) = 0.00013
R(D874:07)	(0.00051)	applicable lower limit of 0.005 %M/M

Determination of Sulphur (EN spec.) on sample #13053; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	ISO20846	2.6		0.89	
150		-----		-----	
171		-----		-----	
311	ISO20846	<3		-----	
312		-----		-----	
323	ISO20846	<3.0		-----	
334	ISO20846	1.6		-1.17	
340	ISO20846	1.18		-2.03	
343	ISO20846	<3	C	-----	first reported 3.6
344		-----		-----	
345	ISO20846	1.94		-0.47	
360	ISO20846	2.2		0.07	
391	ISO20846	<3		-----	
398		-----		-----	
494	ISO20846	1.95		-0.45	
496	ISO20846	2.28		0.23	
511		-----		-----	
540	ISO20846	3		1.71	
551		-----		-----	
554		-----		-----	
603		-----		-----	
631		-----		-----	
657	ISO20846	<3		-----	
663		-----		-----	
824		-----		-----	
862	ISO20846	1.50		-1.37	
863		-----		-----	
902		-----		-----	
1016	ISO20846	2.50		0.68	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059	ISO20846	2.10		-0.14	
1067		-----		-----	
1134	ISO20846	1.9		-0.55	
1161	ISO20846	2.17		0.00	
1179	ISO20846	1.79		-0.78	
1199	ISO20884	2.14		-0.06	
1203	ISO20846	2.26		0.19	
1213		-----		-----	
1227		-----		-----	
1231		-----		-----	
1240		-----		-----	
1273		-----		-----	
1286		-----		-----	
1290	EN14538	2.004		-0.34	
1299	ISO20846	2.2		0.07	
1316	D4294	4.0	ex	3.76	test method not applicable at this low level
1378		-----		-----	
1395	ISO20846	2.16		-0.02	
1397	ISO20846	2.2		0.07	
1400	INH-16294	2.77		1.24	
1402	ISO20846	2.4		0.48	
1409	ISO20846	<3.0		-----	
1419	ISO20846	2.26		0.19	
1429	ISO20846	2.18		0.02	
1457	ISO20846	2.73		1.15	
1459	ISO13032	2.6		0.89	
1470		-----		-----	
1485		-----		-----	
1494		-----		-----	
1536		-----		-----	
1564	ISO20846	2		-0.35	
1566		-----		-----	
1582		-----		-----	
1586		-----		-----	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684	ISO20846	2.06		-0.22	
1706		-----		-----	
1721	ISO20846	2.1		-0.14	
1739		-----		-----	

| 1807 | | ----- | ----- |
| 1911 | ISO20846 | 2.27 | 0.21 |

normality	OK
n	30
outliers	0 (+1 ex)
mean (n)	2.168
st.dev. (n)	0.3754
R(calc.)	1.051
R(ISO20846:11)	1.363 application range 3 – 500 mg/kg
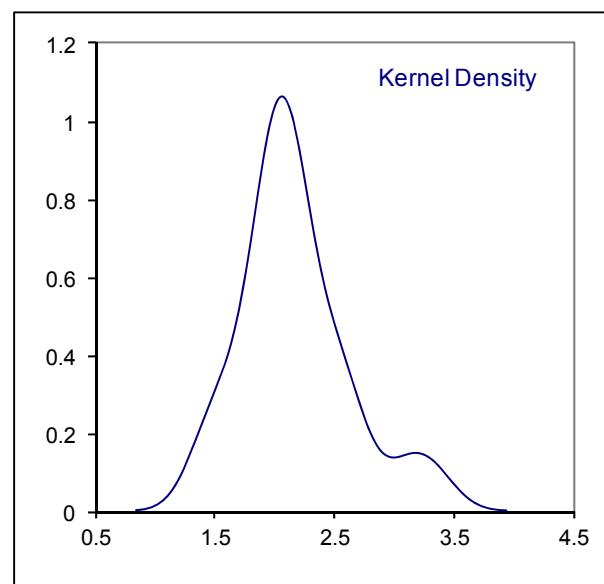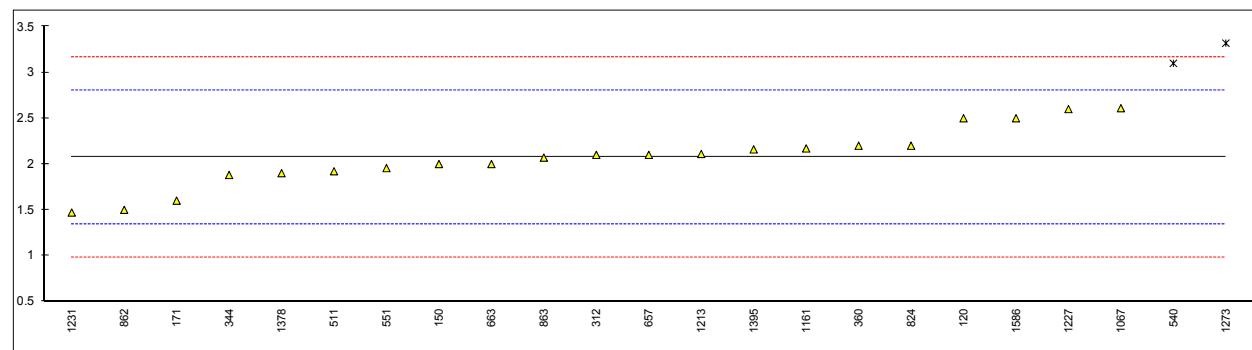
Determination of Sulphur (ASTM D5453) on sample #13053; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D5453	2.5		1.17	
150	D5453	2.0		-0.20	
171	D5453	1.6		-1.30	
311		-----		-----	
312	D5453	2.1		0.07	
323		-----		-----	
334		-----		-----	
340		-----		-----	
343		-----		-----	
344	D5453	1.88		-0.53	
345		-----		-----	
360	D5453	2.2		0.35	
391		-----		-----	
398		-----		-----	
494		-----		-----	
496		-----		-----	
511	D5453	1.921		-0.42	
540	D5453	3.1	DG(0.05)	2.81	
551	D5453	1.955		-0.32	
554		-----		-----	
603		-----		-----	
631		-----		-----	
657	D5453	2.1		0.07	
663	D5453	2.0		-0.20	
824	D5453	2.2		0.35	
862	D5453	1.50		-1.57	
863	D5453	2.07		-0.01	
902		-----		-----	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059		-----		-----	
1067	D5453	2.61		1.47	
1134		-----		-----	
1161	D5453	2.17		0.26	
1179		-----		-----	
1199		-----		-----	
1203		-----		-----	
1213	D5453	2.11		0.10	
1227	D5453	2.6		1.44	
1231	D5453	1.47		-1.65	
1240		-----		-----	
1273	in house	3.32	DG(0.05)	3.41	
1286		-----		-----	
1290		-----		-----	
1299		-----		-----	
1316		-----		-----	
1378	D5453	1.9		-0.48	
1395	D5453	2.16		0.24	
1397		-----		-----	
1400		-----		-----	
1402		-----		-----	
1409		-----		-----	
1419		-----		-----	
1429		-----		-----	
1457		-----		-----	
1459		-----		-----	
1470		-----		-----	
1485		-----		-----	
1494		-----		-----	
1536		-----		-----	
1564		-----		-----	
1566		-----		-----	
1582		-----		-----	
1586	D5453	2.5		1.17	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684		-----		-----	
1706		-----		-----	
1721		-----		-----	
1739		-----		-----	

| 1807 | ----- | ----- |
| 1911 | ----- | ----- |

|		
normality	OK	
n	21	
outliers	2	
mean (n)	2.074	
st.dev. (n)	0.3173	
R(calc.)	0.888	
R(D5453:12)	1.002	application range: 1 – 8000 mg/kg
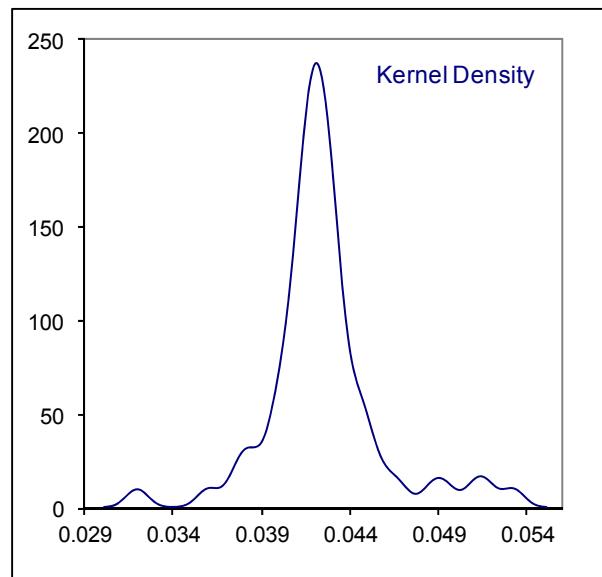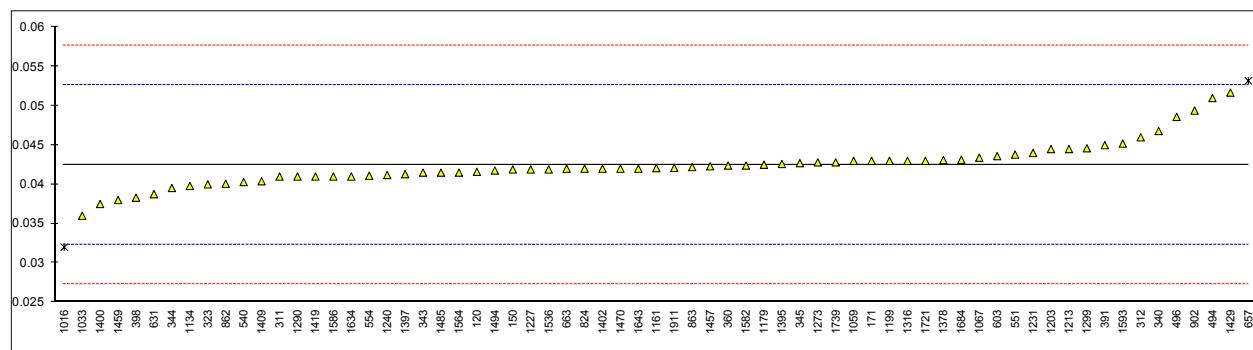
Determination of Water on sample #13053; results in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	ISO12937	0.0416		-0.17	
150	ISO12937	0.0419		-0.11	
171	ISO12937	0.0430		0.10	
311	ISO12937	0.041		-0.29	
312	ISO12937	0.046		0.69	
323	ISO12937	0.040		-0.49	
334		-----		-----	
340	ISO12937	0.0468		0.85	
343	ISO12937	0.0415		-0.19	
344	ISO12937	0.03954	C	-0.58	reported 395.4 %M/M ; converted by *iis*
345	ISO12937	0.0427		0.04	
360	ISO12937	0.0424		-0.02	
391	ISO12937	0.045		0.50	
398	ISO12937	0.0383		-0.82	
494	ISO12937	0.051	C	1.68	first reported 507.0
496	ISO12937	0.0486		1.20	
511		-----		-----	
540	ISO12937	0.0403	C	-0.43	reported 403 %M/M ; converted by *iis*
551	D6304	0.04379		0.26	
554	ISO12937	0.0411		-0.27	
603	ISO12937	0.0436		0.22	
631	D6304	0.03875		-0.73	
657	ISO12937	0.0532	G(0.05)	2.11	
663	ISO12937	0.042		-0.09	
824	ISO12937	0.042	C	-0.09	first reported 415
862	ISO12937	0.04008		-0.47	
863	ISO12937	0.0422		-0.05	
902	ISO12937	0.0494		1.36	
1016	ISO12937	0.03200	C, G(0.05)	-2.06	reported 320.0 %M/M ; converted by *iis*
1017		-----		-----	
1033	IP438	0.036		-1.27	
1047		-----		-----	
1059	ISO12937	0.043		0.10	
1067	ISO12937	0.0434		0.18	
1134	IP438	0.0398	C	-0.53	reported 398 %M/M ; converted by *iis*
1161	ISO12937	0.0420735	C	-0.08	reported 420.735 %M/M ; converted by *iis*
1179	ISO12937	0.0425	C	0.00	first reported 424.6
1199	ISO12937	0.0430	C	0.10	first reported 429.6
1203	ISO12937	0.0445		0.40	
1213	D6304	0.0445	C	0.40	first reported 445
1227	ISO12937	0.0419		-0.11	
1231	ISO12937	0.044		0.30	
1240	ISO12937	0.04119	C	-0.25	first reported 411.9
1273	ISO12937	0.0428	C	0.06	first reported 427.6
1286		-----		-----	
1290	ISO12937	0.041	C	-0.29	first reported 414.83
1299	ISO12937	0.0446		0.42	
1316	E1064	0.043	C	0.10	first reported 429.6
1378	ISO12937	0.0431		0.12	
1395	ISO12937	0.0426		0.02	
1397	ISO12937	0.0413		-0.23	
1400	ISO12937	0.0375	C	-0.98	first reported 374.7
1402	ISO12937	0.042	C	-0.09	reported 420 %M/M ; converted by *iis*
1409	ISO12937	0.0404	C	-0.41	first reported 404
1419	ISO12937	0.0410		-0.29	
1429	ISO12937	0.0517		1.81	
1457	ISO12937	0.0423		-0.03	
1459	ISO12937	0.038		-0.88	
1470	INH-13A	0.0420		-0.09	
1485	ISO12937	0.0415	C	-0.19	first reported 415.0
1494	E203	0.041769		-0.14	
1536	ISO12937	0.0419		-0.11	
1564	ISO12937	0.0415	C	-0.19	reported 415 mg/kg ; converted by *iis*
1566		-----		-----	
1582	ISO12937	0.0424	C	-0.02	first reported 424
1586	ISO12937	0.041	C	-0.29	first reported 408
1588		-----		-----	
1593	E203	0.0452		0.54	
1634	ISO12937	0.041		-0.29	
1643	D1744	0.042		-0.09	
1654		-----		-----	
1684	ISO12937	0.04314		0.13	
1706		-----		-----	
1721	ISO12937	0.043		0.10	
1739	ISO12937	0.0428		0.06	

| 1807 | | ----- | | ----- |
| 1911 | ISO12937 | 0.0421 | | -0.07 |

	normality	not OK
	n	65
	outliers	2
	mean (n)	0.04248
	st.dev. (n)	0.002758
	R(calc.)	0.00772
	R(ISO12937:00)	0.01423
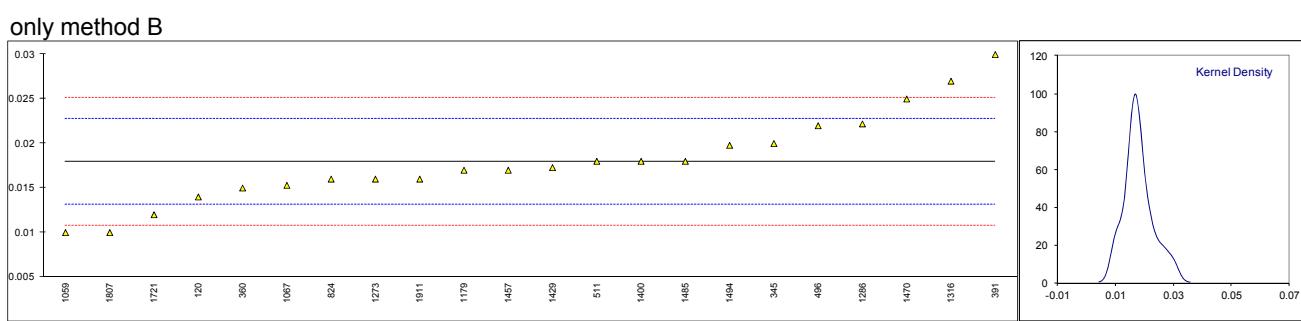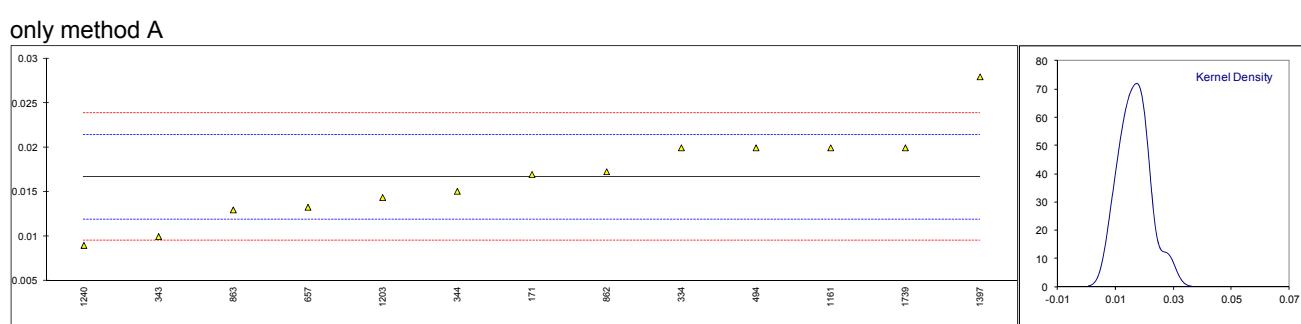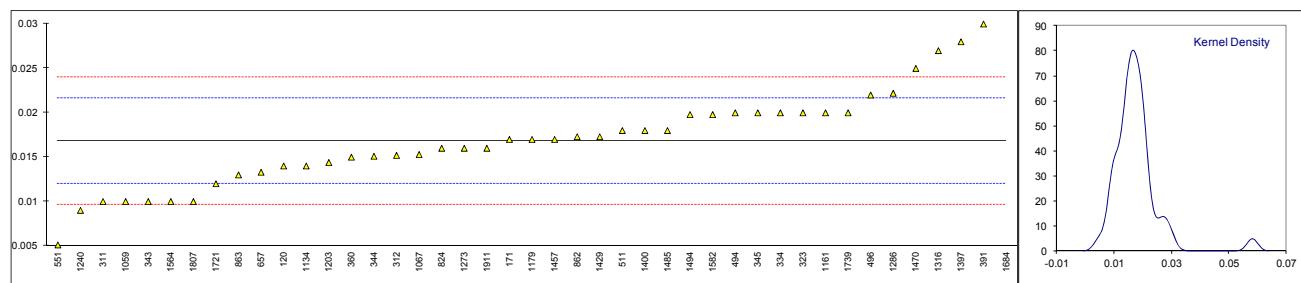
Determination of Methanol on sample #13053; results in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	EN14110-B	0.014		-1.18	
150		-----		-----	
171	EN14110-A	0.017		0.07	
311	EN14110-	0.01		-2.85	
312	EN14110-	0.0152		-0.68	
323	EN14110-	0.02		1.32	
334	EN14110-A	0.02		1.32	
340		-----		-----	
343	EN14110-A	0.01		-2.85	
344	EN14110-A	0.0151		-0.72	
345	EN14110-B	0.02		1.32	
360	EN14110-B	0.015		-0.76	
391	EN14110-B	0.03		5.49	
398		-----		-----	
494	EN14110-A	0.02		1.32	
496	EN14110-B	0.022		2.16	
511	EN14110-B	0.0180		0.49	
540		-----		-----	
551	NBR15343	0.0051		-4.89	
554		-----		-----	
603		-----		-----	
631		-----		-----	
657	EN14110-A	0.0133		-1.47	
663		-----		-----	
824	EN14110-B	0.016		-0.35	
862	EN14110-A	0.0173		0.20	
863	EN14110-A	0.013		-1.60	
902		-----		-----	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059	EN14110-B	0.01		-2.85	
1067	EN14110-B	0.0153		-0.64	
1134	EN14110-	0.014		-1.18	
1161	EN14110-A	0.02		1.32	
1179	EN14110-B	0.017		0.07	
1199		-----		-----	
1203	EN14110-A	0.0144		-1.01	
1213		-----		-----	
1227		-----		-----	
1231		-----		-----	
1240	EN14110-A	0.009		-3.26	
1273	EN14110-B	0.016		-0.35	
1286	EN14110-B	0.0222		2.24	
1290		-----		-----	
1299	EN14110-	0.02B		-----	
1316	EN14110-B	0.027		4.24	
1378		-----		-----	
1395		-----		-----	
1397	EN14110-A	0.028		4.66	
1400	EN14110-B	0.018		0.49	
1402		-----		-----	
1409		-----		-----	
1419		-----		-----	
1429	EN14110-B	0.0173		0.20	
1457	EN14110-B	0.017		0.07	
1459		-----		-----	
1470	EN14110-B	0.025		3.41	
1485	EN14110-B	0.018		0.49	
1494	EN14110-B	0.0198		1.24	
1536		-----		-----	
1564	EN14110-	0.01		-2.85	
1566		-----		-----	
1582	EN14110-	0.0198		1.24	
1586		-----		-----	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684	EN14110-	0.0584	C, G(0.01)	17.32	first reported 0.0544
1706		-----		-----	
1721	EN14110-B	0.012		-2.01	
1739	EN14110-A	0.02		1.32	

1807	EN14110-B	0.01		-2.85	
1911	EN14110-B	0.016		-0.35	

		Method A	Method B
normality	OK	OK	OK
n	42	13	22
outliers	1	0	0
mean (n)	0.0168	0.0167	0.0180
st.dev. (n)	0.00524	0.00507	0.00500
R(calc.)	0.0147	0.0142	0.0140
R(EN14110:03)	0.0067	0.0067	0.0067

only method A

only method B
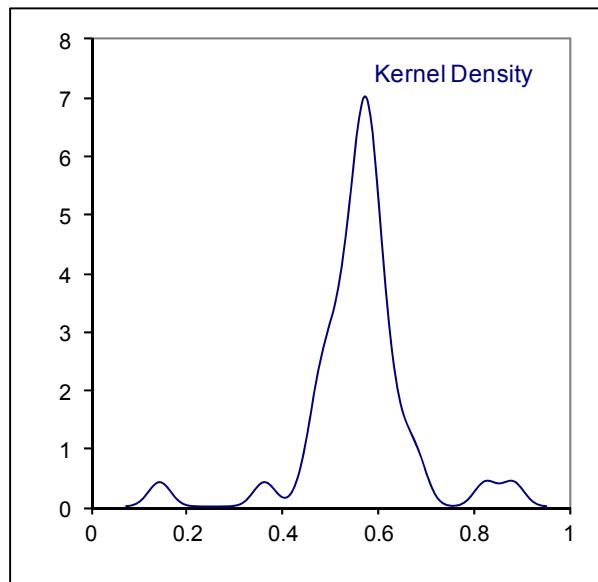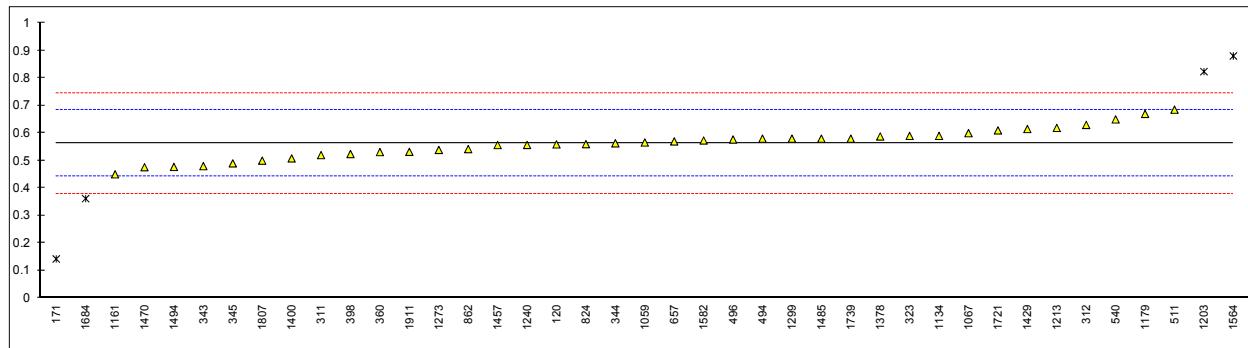
Determination of mono-Glycerides on sample #13053; results in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D6584	0.559		-0.06	
150		-----		-----	
171	EN14105	0.142	G(0.01)	-6.91	
311	EN14105	0.52		-0.70	
312	EN14105	0.63		1.11	
323	EN14105	0.59		0.45	
334		-----		-----	
340		-----		-----	
343	EN14105	0.48		-1.36	
344	EN14105	0.563		0.01	
345	EN14105	0.49		-1.19	
360	EN14105	0.531		-0.52	
391		-----		-----	
398	EN14105	0.524		-0.64	
494	EN14105	0.58		0.28	
496	EN14105	0.577		0.24	
511	D6584	0.6855		2.02	
540	EN14105	0.65		1.43	
551		-----		-----	
554		-----		-----	
603		-----		-----	
631		-----		-----	
657	EN14105	0.57		0.12	
663		-----		-----	
824	EN14105	0.56		-0.04	
862	EN14105	0.542		-0.34	
863		-----		-----	
902		-----		-----	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059	EN14105	0.566		0.05	
1067	EN14105	0.60		0.61	
1134	EN14105	0.59		0.45	
1161	EN14105	0.45		-1.85	
1179	EN14105	0.670		1.76	
1199		-----		-----	
1203	EN14105	0.824	G(0.01)	4.29	
1213	D6584	0.619		0.93	
1227		-----		-----	
1231		-----		-----	
1240	EN14105	0.557		-0.09	
1273	EN14105	0.539		-0.39	
1286		-----		-----	
1290		-----		-----	
1299	EN14105	0.58		0.28	
1316		-----		-----	
1378	EN14105	0.588		0.42	
1395		-----		-----	
1397		-----		-----	
1400	EN14105	0.508		-0.90	
1402		-----		-----	
1409		-----		-----	
1419		-----		-----	
1429	EN14105	0.615		0.86	
1457	EN14105	0.5568		-0.10	
1459		-----		-----	
1470	EN14105	0.476		-1.42	
1485	EN14105	0.580		0.28	
1494	D6584	0.4770		-1.41	
1536		-----		-----	
1564	EN14105	0.881	G(0.01)	5.23	
1566		-----		-----	
1582	D6584	0.5733		0.17	
1586		-----		-----	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684	EN14105	0.3615	C, G(0.05)	-3.30	first reported 0.316
1706		-----		-----	
1721	EN14105	0.61		0.78	
1739	EN14105	0.58		0.28	

| 1807 | EN14105 | 0.50 | -1.03 |
| 1911 | EN14105 | 0.532 | -0.50 |

|		
normality	OK	
n	37	
outliers	4	
mean (n)	0.5627	
st.dev. (n)	0.05399	
R(calc.)	0.1512	
R(EN14105:11)	0.1704	compare R(D6584:13) = 0.322

Kernel Density
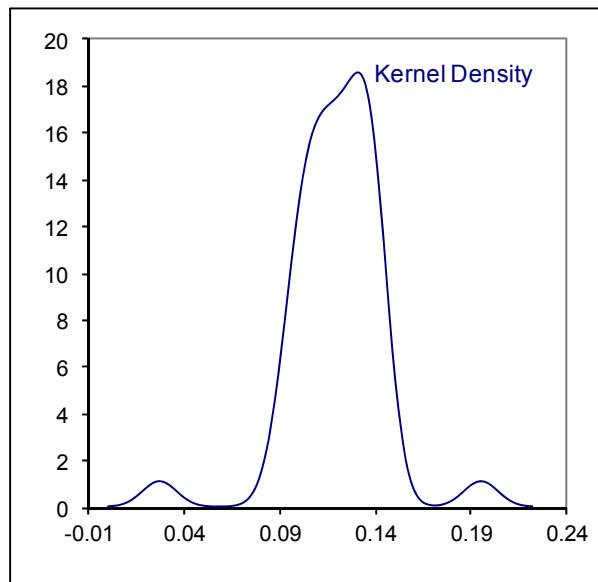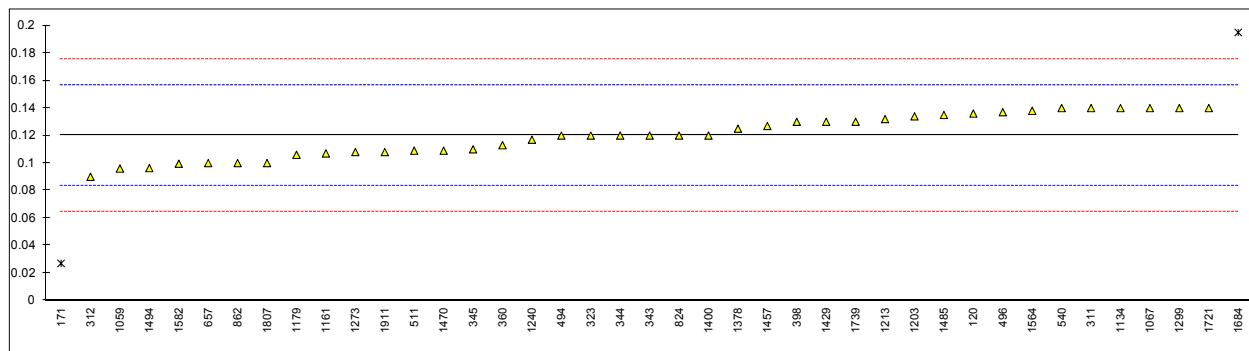
Determination of di-Glycerides on sample #13053; results in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D6584	0.136		0.87	
150		-----		-----	
171	EN14105	0.027	G(0.01)	-5.06	
311	EN14105	0.14		1.08	
312	EN14105	0.09		-1.63	
323	EN14105	0.12		0.00	
334		-----		-----	
340		-----		-----	
343	EN14105	0.12		0.00	
344	EN14105	0.120		0.00	
345	EN14105	0.11		-0.55	
360	EN14105	0.113		-0.38	
391		-----		-----	
398	EN14105	0.130		0.54	
494	EN14105	0.12		0.00	
496	EN14105	0.137		0.92	
511	D6584	0.1090		-0.60	
540	EN14105	0.14		1.08	
551		-----		-----	
554		-----		-----	
603		-----		-----	
631		-----		-----	
657	EN14105	0.10		-1.09	
663		-----		-----	
824	EN14105	0.12		0.00	
862	EN14105	0.100		-1.09	
863		-----		-----	
902		-----		-----	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059	EN14105	0.096		-1.31	
1067	EN14105	0.14		1.08	
1134	EN14105	0.14		1.08	
1161	EN14105	0.107		-0.71	
1179	EN14105	0.106		-0.76	
1199		-----		-----	
1203	EN14105	0.134		0.76	
1213	D6584	0.132		0.65	
1227		-----		-----	
1231		-----		-----	
1240	EN14105	0.117		-0.17	
1273	EN14105	0.108		-0.66	
1286		-----		-----	
1290		-----		-----	
1299	EN14105	0.14		1.08	
1316		-----		-----	
1378	EN14105	0.125		0.27	
1395		-----		-----	
1397		-----		-----	
1400	EN14105	0.120		0.00	
1402		-----		-----	
1409		-----		-----	
1419		-----		-----	
1429	EN14105	0.13		0.54	
1457	EN14105	0.1270		0.38	
1459		-----		-----	
1470	EN14105	0.109		-0.60	
1485	EN14105	0.135		0.81	
1494	D6584	0.0963		-1.29	
1536		-----		-----	
1564	EN14105	0.138		0.97	
1566		-----		-----	
1582	D6584	0.0995		-1.12	
1586		-----		-----	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684	EN14105	0.1950	C, G(0.05)	4.07	first reported 0.1883
1706		-----		-----	
1721	EN14105	0.14		1.08	
1739	EN14105	0.13		0.54	

| 1807 | EN14105 | 0.10 | -1.09 |
| 1911 | EN14105 | 0.108 | -0.66 |

normality	OK	
n	39	
outliers	2	
mean (n)	0.1201	
st.dev. (n)	0.01532	
R(calc.)	0.0429	
R(EN14105:11)	0.0515	compare R(D6584:13) = 0.109
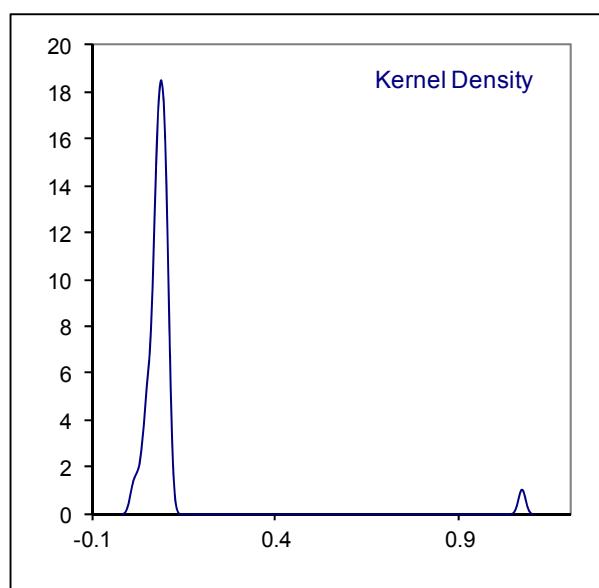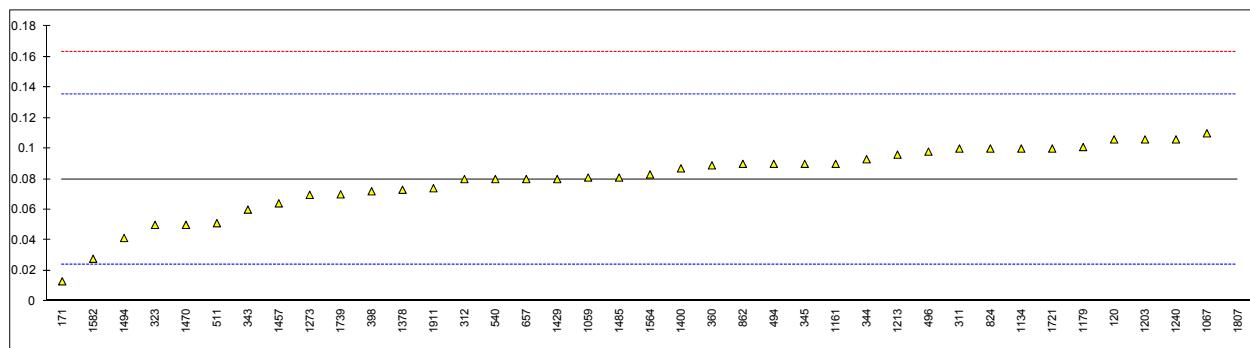
Kernel Density

Determination of tri-Glyceriden on sample #13053; results in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D6584	0.106		0.94	
150		-----		-----	
171	EN14105	0.013		-2.40	
311	EN14105	0.10		0.72	
312	EN14105	0.08		0.01	
323	EN14105	0.05		-1.07	
334		-----		-----	
340		-----		-----	
343	EN14105	0.06		-0.71	
344	EN14105	0.093		0.47	
345	EN14105	0.09		0.37	
360	EN14105	0.089		0.33	
391		-----		-----	
398	EN14105	0.072		-0.28	
494	EN14105	0.09		0.37	
496	EN14105	0.098		0.65	
511	D6584	0.0511		-1.03	
540	EN14105	0.08		0.01	
551		-----		-----	
554		-----		-----	
603		-----		-----	
631		-----		-----	
657	EN14105	0.08		0.01	
663		-----		-----	
824	EN14105	0.10		0.72	
862	EN14105	0.090		0.37	
863		-----		-----	
902		-----		-----	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059	EN14105	0.081		0.04	
1067	EN14105	0.11		1.08	
1134	EN14105	0.10		0.72	
1161	EN14105	0.09		0.37	
1179	EN14105	0.101		0.76	
1199		-----		-----	
1203	EN14105	0.106		0.94	
1213	D6584	0.096		0.58	
1227		-----		-----	
1231		-----		-----	
1240	EN14105	0.106		0.94	
1273	EN14105	0.0697		-0.36	
1286		-----		-----	
1290		-----		-----	
1299	EN14105	<0.10		-----	
1316		-----		-----	
1378	EN14105	0.073		-0.24	
1395		-----		-----	
1397		-----		-----	
1400	EN14105	0.087		0.26	
1402		-----		-----	
1409		-----		-----	
1419		-----		-----	
1429	EN14105	0.08		0.01	
1457	EN14105	0.0641		-0.56	
1459		-----		-----	
1470	EN14105	0.050		-1.07	
1485	EN14105	0.081		0.04	
1494	D6584	0.0414	C	-1.38	first reported 0.0214
1536		-----		-----	
1564	EN14105	0.083		0.11	
1566		-----		-----	
1582	D6584	0.0278		-1.87	
1586		-----		-----	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684		-----		-----	
1706		-----		-----	
1721	EN14105	0.10		0.72	
1739	EN14105	0.07		-0.35	

| 1807 | EN14105 | 1.07 | G(0.01) | 35.56 |
| 1911 | EN14105 | 0.074 | | -0.21 |

	normality	not OK
	n	38
	outliers	1
	mean (n)	0.0798
	st.dev. (n)	0.02242
	R(calc.)	0.0628
	R(EN14105:11)	0.0780

compare R(6584:13) = 0.190

Kernel Density
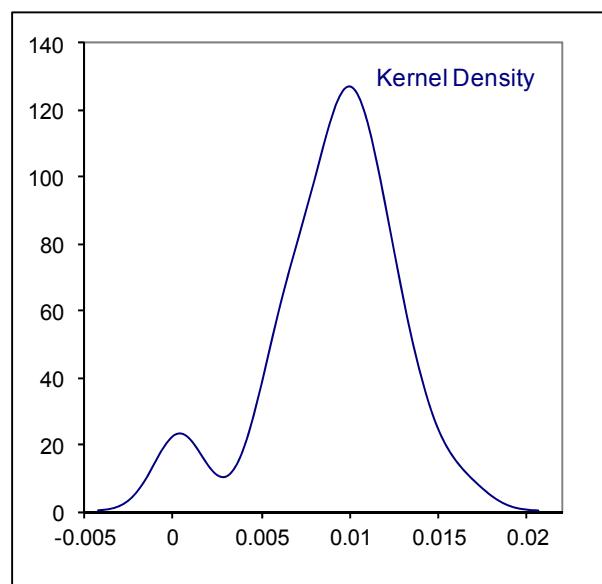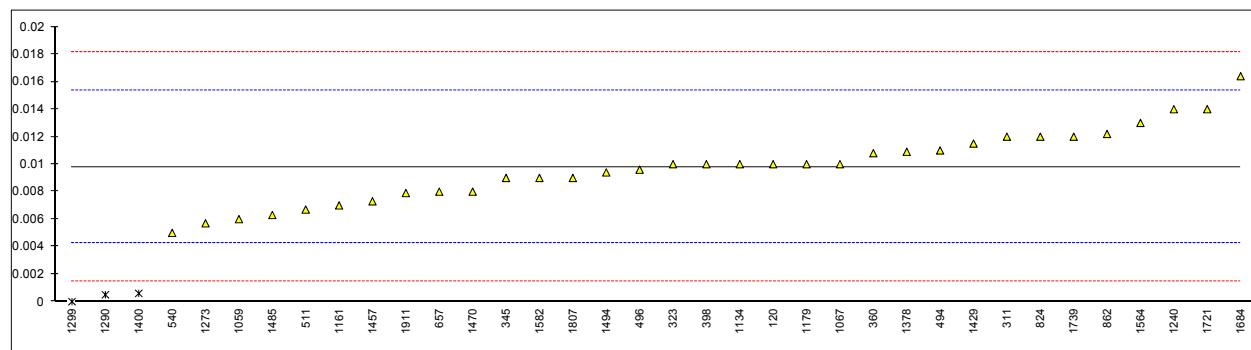
Determination of Free Glycerol on sample #13053; results in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D6584	0.01		0.07	
150		-----		-----	
171	EN14105	<0.001		-----	
311	EN14105	0.012		0.78	
312	EN14105	<0.001		-----	
323	EN14105	0.010		0.07	
334		-----		-----	
340		-----		-----	
343	EN14105	<0.05		-----	
344	EN14105	<0.001		-----	
345	EN14105	0.009		-0.29	
360	EN14105	0.0108		0.35	
391		-----		-----	
398	EN14105	0.010		0.07	
494	EN14105	0.011		0.42	
496	EN14105	0.0096		-0.07	
511	D6584	0.0067		-1.10	
540	EN14105	0.005		-1.70	
551		-----		-----	
554		-----		-----	
603		-----		-----	
631		-----		-----	
657	EN14105	0.008		-0.64	
663		-----		-----	
824	EN14105	0.012		0.78	
862	EN14105	0.0122		0.85	
863		-----		-----	
902		-----		-----	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059	EN14105	0.006		-1.35	
1067	EN14105	0.01		0.07	
1134	EN14105	0.010		0.07	
1161	EN14105	0.007		-1.00	
1179	EN14105	0.010		0.07	
1199		-----		-----	
1203	EN14105	<0.005		-----	
1213	D6584	<0.005		-----	
1227		-----		-----	
1231		-----		-----	
1240	EN14105	0.0140		1.49	
1273	EN14105	0.0057		-1.46	
1286		-----		-----	
1290	in house	0.0005	DG(0.05)	-3.30	
1299	EN14105	0.00	ex	-3.48	result excluded, zero is not a real value
1316		-----		-----	
1378	EN14105	0.0109		0.39	
1395		-----		-----	
1397		-----		-----	
1400	EN14105	0.0006	DG(0.05)	-3.26	
1402		-----		-----	
1409		-----		-----	
1419		-----		-----	
1429	EN14105	0.0115		0.60	
1457	EN14105	0.0073		-0.89	
1459		-----		-----	
1470	EN14105	0.008		-0.64	
1485	EN14105	0.0063		-1.24	
1494	D6584	0.0094		-0.15	
1536		-----		-----	
1564	EN14105	0.013		1.13	
1566		-----		-----	
1582	D6584	0.0090		-0.29	
1586		-----		-----	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684	EN14105	0.0164		2.34	
1706		-----		-----	
1721	EN14105	0.014		1.49	
1739	EN14105	0.012		0.78	

| 1807 | EN14105 | 0.009 | -0.29 |
| 1911 | EN14105 | 0.0079 | -0.68 |

	normality	OK
	n	33
	outliers	2 (+1 ex)
	mean (n)	0.0098
	st.dev. (n)	0.00261
	R(calc.)	0.0073
	R(EN14105:11)	0.0079	compare R(D6584:13) = 0.0071

Kernel Density
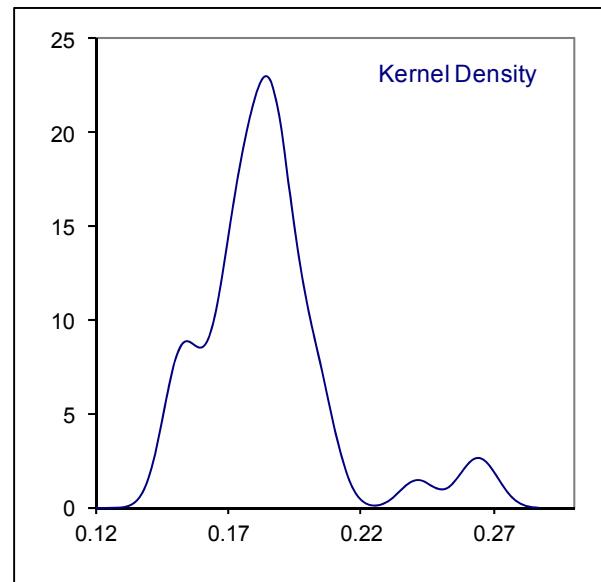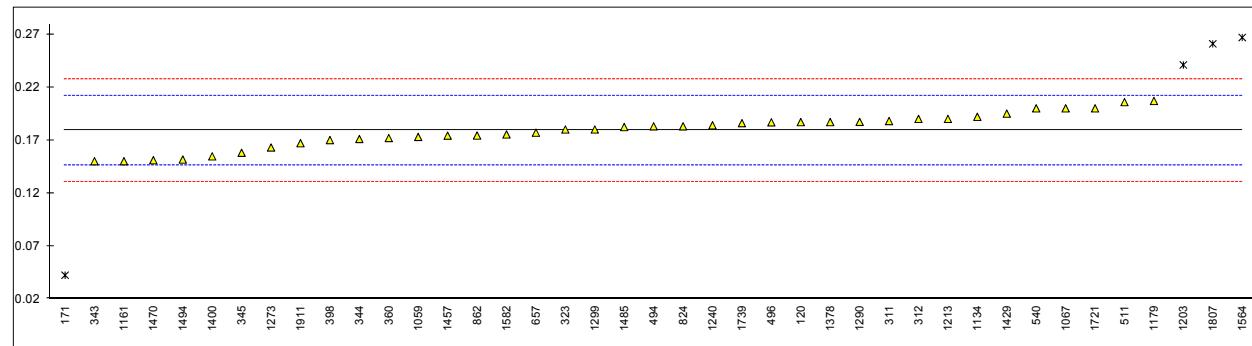
Determination of Total Glycerol on sample #13053; results in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	D6584	0.187		0.49	
150		-----		-----	
171	EN14105	0.0422	G(0.01)	-8.41	
311	EN14105	0.188		0.55	
312	EN14105	0.19		0.67	
323	EN14105	0.18		0.06	
334		-----		-----	
340		-----		-----	
343	EN14105	0.15		-1.79	
344	EN14105	0.1710		-0.50	
345	EN14105	0.158		-1.30	
360	EN14105	0.1719		-0.44	
391		-----		-----	
398	EN14105	0.170		-0.56	
494	EN14105	0.183		0.24	
496	EN14105	0.1868		0.47	
511	D6584	0.2059		1.65	
540	EN14105	0.20		1.29	
551		-----		-----	
554		-----		-----	
603		-----		-----	
631		-----		-----	
657	EN14105	0.177		-0.13	
663		-----		-----	
824	EN14105	0.183		0.24	
862	EN14105	0.1743		-0.29	
863		-----		-----	
902		-----		-----	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059	EN14105	0.173		-0.37	
1067	EN14105	0.20		1.29	
1134	EN14105	0.192		0.79	
1161	EN14105	0.15		-1.79	
1179	EN14105	0.207		1.72	
1199		-----		-----	
1203	EN14105	0.241	G(0.05)	3.81	
1213	D6584	0.190		0.67	
1227		-----		-----	
1231		-----		-----	
1240	EN14105	0.1840		0.30	
1273	EN14105	0.163		-0.99	
1286		-----		-----	
1290	in house	0.1872		0.50	
1299	EN14105	0.18		0.06	
1316		-----		-----	
1378	EN14105	0.187		0.49	
1395		-----		-----	
1397		-----		-----	
1400	EN14105	0.1546		-1.50	
1402		-----		-----	
1409		-----		-----	
1419		-----		-----	
1429	EN14105	0.195		0.98	
1457	EN14105	0.1742		-0.30	
1459		-----		-----	
1470	EN14105	0.151		-1.73	
1485	EN14105	0.1823		0.20	
1494	D6584	0.1516	C	-1.69	first reported 0.1495
1536		-----		-----	
1564	EN14105	0.267	G(0.05)	5.40	
1566		-----		-----	
1582	D6584	0.1753		-0.23	
1586		-----		-----	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684		-----		-----	
1706		-----		-----	
1721	EN14105	0.20		1.29	
1739	EN14105	0.186		0.43	

```
1807    EN14105         0.261         G(0.01)         5.03
1911    EN14105         0.1670                        -0.74

        normality       OK
        n               37
        outliers        4
        mean (n)        0.1791
        st.dev. (n)     0.01572
        R(calc.)        0.0440
        R(EN14105:11)   0.0456                compare R(D6584:13) = 0.083
```


Kernel Density
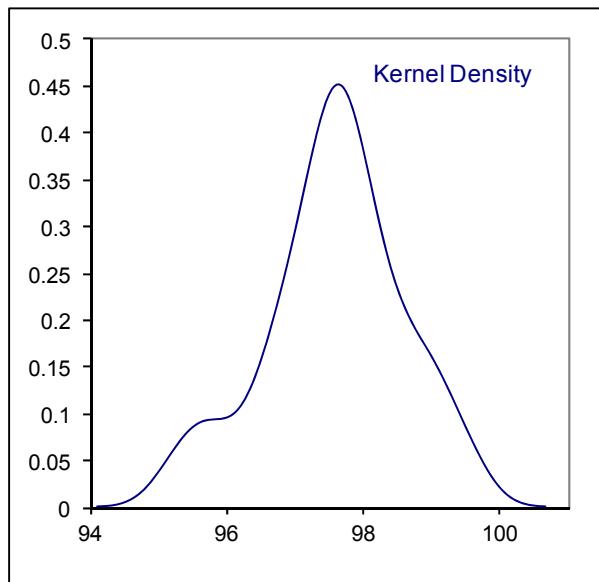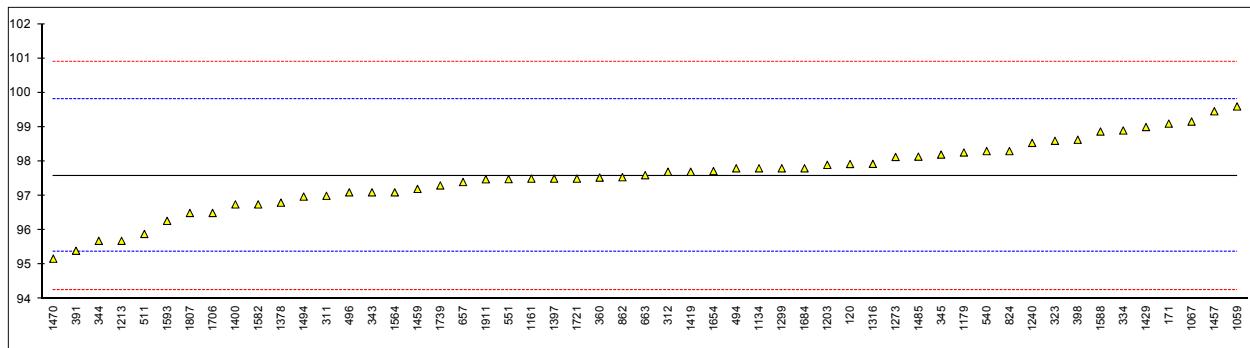
Determination of Total Ester content on sample #13053; results in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	EN14103	97.925		0.31	
150		-----		-----	
171	EN14103:03	99.1		1.37	
311	EN14103:11	97.0		-0.53	
312	EN14103:11	97.7		0.10	
323	EN14103:11	98.6		0.92	
334	EN14103:11	98.9		1.19	
340		-----		-----	
343	EN14103:11	97.1		-0.44	
344	EN14103:11	95.69		-1.71	
345	EN14103	98.2		0.56	
360	EN14103:11	97.53		-0.05	
391	EN14103:11	95.4		-1.97	
398	EN14103:11	98.63		0.94	
494	EN14103:11	97.8		0.19	
496	EN14103:03	97.100		-0.44	
511	EN14103:11	95.890	C	-1.53	first reported 92.490
540	EN14103:11	98.3		0.65	
551	NBR15764	97.4850	C	-0.09	first reported 94.7850
554		-----		-----	
603		-----		-----	
631		-----		-----	
657	EN14103:11	97.4		-0.17	
663	EN14103	97.6		0.01	
824	EN14103:11	98.3		0.65	
862	EN14103:11	97.54		-0.04	
863		-----		-----	
902		-----		-----	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059	EN14103:11	99.6		1.82	
1067	EN14103:11	99.16		1.42	
1134	EN14103:11	97.8		0.19	
1161	EN14103:11	97.5		-0.08	
1179	EN14103	98.26		0.61	
1199		-----		-----	
1203	EN14103:11	97.90		0.28	
1213	EN14103	95.69		-1.71	
1227		-----		-----	
1231		-----		-----	
1240	EN14103:11	98.54		0.86	
1273	EN14103:11	98.13		0.49	
1286		-----		-----	
1290		-----		-----	
1299	EN14103:03	97.8		0.19	
1316	EN14103:11	97.93		0.31	
1378	EN14103:11	96.8		-0.71	
1395		-----		-----	
1397	EN14103:11	97.5		-0.08	
1400	EN14103:03	96.75		-0.75	
1402		-----		-----	
1409		-----		-----	
1419	EN14103:11	97.70		0.10	
1429	EN14103	99.0		1.28	
1457	EN14103:11	99.46		1.69	
1459	EN14103:11	97.2		-0.35	
1470	EN14103:11	95.17		-2.18	
1485	EN14103:11	98.14		0.50	
1494	EN14103:03	96.9765		-0.55	
1536		-----		-----	
1564	EN14103	97.1		-0.44	
1566		-----		-----	
1582	EN14103:11	96.75		-0.75	
1586		-----		-----	
1588	EN14103:11	98.87		1.16	
1593	EN14103:11	96.27	C	-1.19	first reported 93.43
1634		-----		-----	
1643		-----		-----	
1654	EN14103:11	97.72		0.12	
1684	EN14103	97.8		0.19	
1706	EN14103:09	96.501		-0.98	
1721	EN14103:11	97.5		-0.08	
1739	EN14103:11	97.3		-0.26	

| 1807 | EN14103:11 | 96.5 | -0.98 |
| 1911 | EN14103:11 | 97.48 | -0.09 |

| | normality | OK |
	n	53
	outliers	0
	mean (n)	97.585
	st.dev. (n)	1.0027
	R(calc.)	2.807
	R(EN14103:11)	4.160	compare R(EN14103:03) = 3.1

Kernel Density
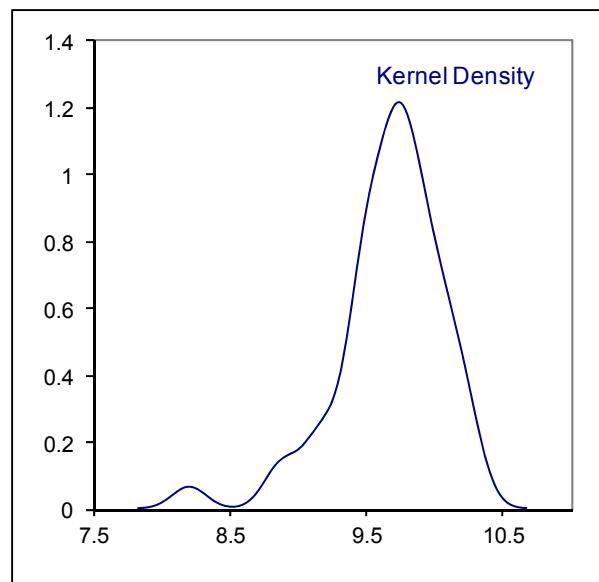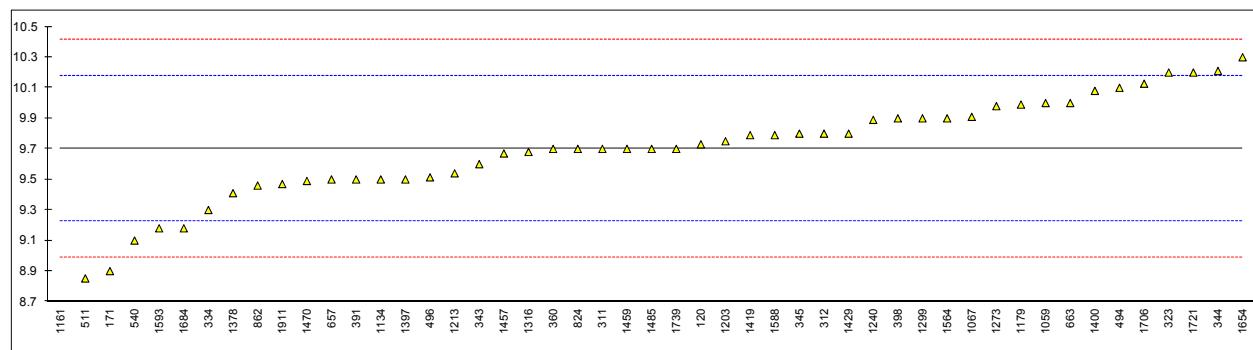
Determination of Linolenic Acid Methyl Ester content on sample #13053; results in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	EN14103	9.73		0.12	
150		-----		-----	
171	EN14103:03	8.9		-3.38	
311	EN14103:11	9.7		-0.01	
312	EN14103:11	9.8		0.41	
323	EN14103:11	10.2	C	2.10	first reported 11.2
334	EN14103:11	9.3		-1.70	
340		-----		-----	
343	EN14103:11	9.6		-0.43	
344	EN14103:11	10.21		2.14	
345	EN14103	9.8		0.41	
360	EN14103:11	9.70		-0.01	
391	EN14103:11	9.5		-0.85	
398	EN14103:11	9.90		0.84	
494	EN14103:11	10.1		1.68	
496	EN14103:03	9.514		-0.79	
511	EN14103:11	8.852		-3.59	
540	EN14103:11	9.1		-2.54	
551		-----		-----	
554		-----		-----	
603		-----		-----	
631		-----		-----	
657	EN14103:11	9.5		-0.85	
663	EN14103	10.0		1.26	
824	EN14103:11	9.7		-0.01	
862	EN14103:11	9.46		-1.02	
863		-----		-----	
902		-----		-----	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059	EN14103:11	10.0		1.26	
1067	EN14103:11	9.91		0.88	
1134	EN14103:11	9.5		-0.85	
1161	EN14103:11	8.2	G(0.01)	-6.34	
1179	EN14103	9.99		1.22	
1199		-----		-----	
1203	EN14103:11	9.75		0.20	
1213	EN14103	9.54		-0.68	
1227		-----		-----	
1231		-----		-----	
1240	EN14103:11	9.89		0.79	
1273	EN14103:11	9.98		1.17	
1286		-----		-----	
1290		-----		-----	
1299	EN14103:03	9.9		0.84	
1316	EN14103:11	9.68		-0.09	
1378	EN14103:11	9.41		-1.23	
1395		-----		-----	
1397	EN14103:11	9.5		-0.85	
1400	EN14103:03	10.08		1.59	
1402		-----		-----	
1409		-----		-----	
1419	EN14103:11	9.79		0.37	
1429	EN14103	9.8		0.41	
1457	EN14103:11	9.67		-0.13	
1459	EN14103:11	9.7		-0.01	
1470	EN14103:11	9.49		-0.89	
1485	EN14103:11	9.70		-0.01	
1494		-----		-----	
1536		-----		-----	
1564	EN14103	9.9		0.84	
1566		-----		-----	
1582		-----		-----	
1586		-----		-----	
1588	EN14103:11	9.79		0.37	
1593	EN14103:11	9.18		-2.20	
1634		-----		-----	
1643		-----		-----	
1654	EN14103:11	10.30		2.52	
1684	EN14103	9.18		-2.20	
1706	EN14103:09	10.127		1.79	
1721	EN14103:11	10.2		2.10	
1739	EN14103:11	9.7	C	-0.01	first reported 7.0

| 1807 | | ----- | ----- |
| 1911 | EN14103:11 | 9.47 | -0.98 |

	normality	OK
	n	48
	outliers	1
	mean (n)	9.702
	st.dev. (n)	0.3291
	R(calc.)	0.921
	R(EN14103:11)	0.664

compare R(EN14103:03) = 3.04

Kernel Density
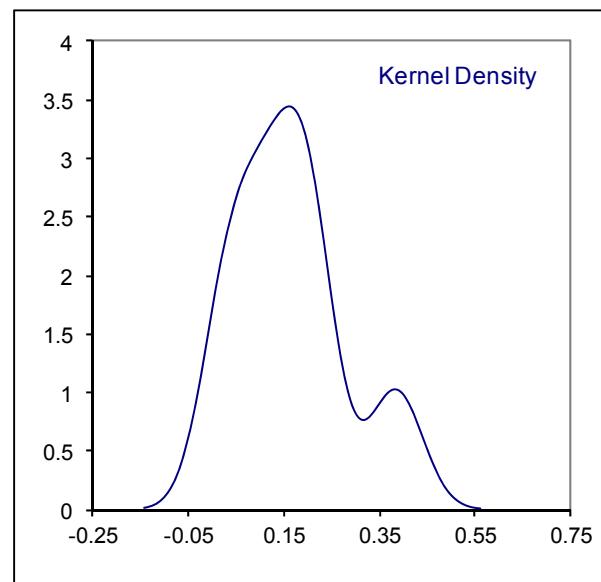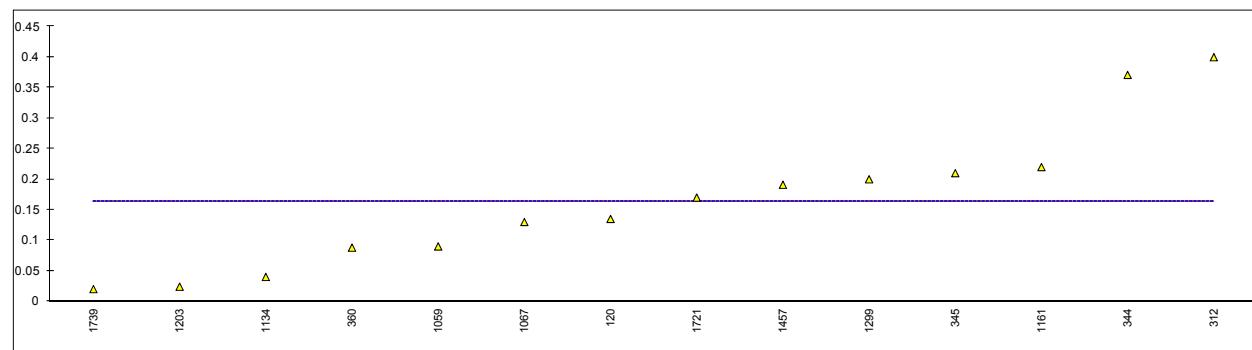
Determination of Polyunsaturated Methyl Esters content on sample #13053; results in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	EN15779	0.135		-----	
150		-----		-----	
171		-----		-----	
311		-----		-----	
312	EN15779	0.4		-----	
323		-----		-----	
334		-----		-----	
340		-----		-----	
343	EN15779	<0.3		-----	
344	EN15779	0.371		-----	
345	EN15779	0.21		-----	
360	EN15779	0.088		-----	
391		-----		-----	
398		-----		-----	
494		-----		-----	
496	EN15779	<0.60		-----	
511		-----		-----	
540		-----		-----	
551		-----		-----	
554		-----		-----	
603		-----		-----	
631		-----		-----	
657		-----		-----	
663		-----		-----	
824	EN15779	<0.6		-----	
862		-----		-----	
863		-----		-----	
902		-----		-----	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059	EN15779	0.09		-----	
1067	EN15779	0.13		-----	
1134	EN15779	0.04		-----	
1161	EN15779	0.22		-----	
1179	EN15779	<0.5		-----	
1199		-----		-----	
1203	EN15779	0.024		-----	
1213		-----		-----	
1227		-----		-----	
1231		-----		-----	
1240		-----		-----	
1273		-----		-----	
1286		-----		-----	
1290		-----		-----	
1299	EN15779	0.2		-----	
1316		-----		-----	
1378		-----		-----	
1395		-----		-----	
1397		-----		-----	
1400	EN15779	n.d.		-----	
1402		-----		-----	
1409		-----		-----	
1419		-----		-----	
1429		-----		-----	
1457	EN15779	0.191		-----	
1459		-----		-----	
1470		-----		-----	
1485		-----		-----	
1494		-----		-----	
1536		-----		-----	
1564		-----		-----	
1566		-----		-----	
1582		-----		-----	
1586		-----		-----	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684		-----		-----	
1706		-----		-----	
1721	EN15779	0.17		-----	
1739	EN15779	0.02		-1.49	

1807	-----	-----
1911	-----	-----
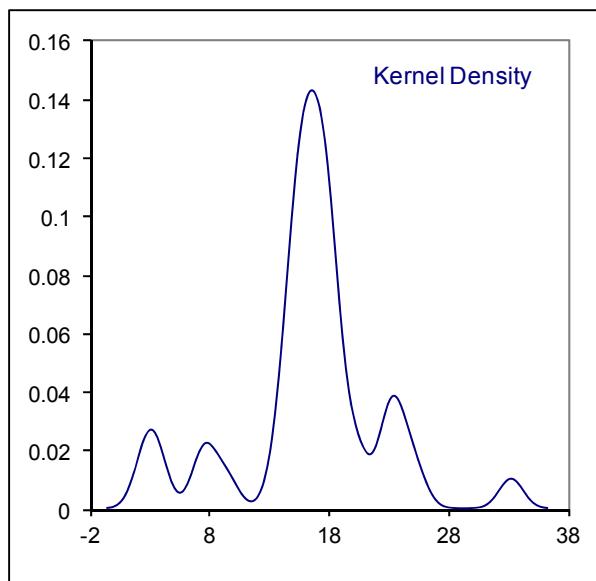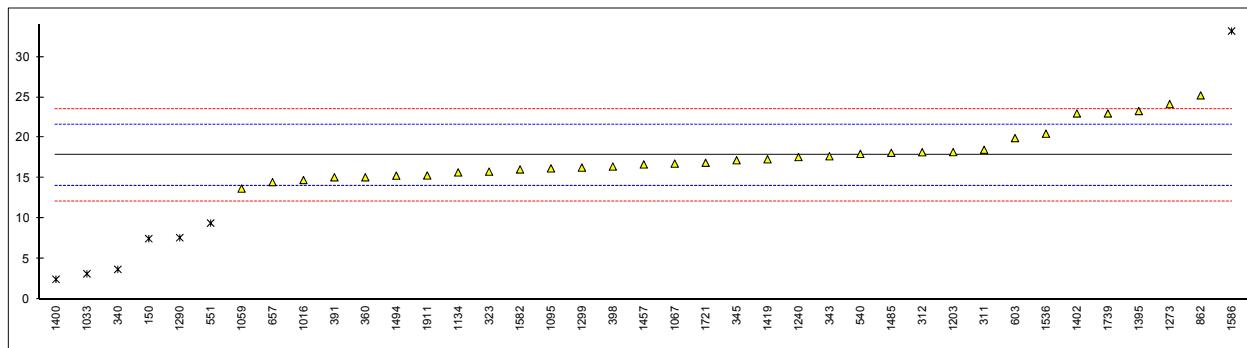
normality	OK
n	14
outliers	0
mean (n)	0.164
st.dev. (n)	0.1160
R(calc.)	0.325
R(EN15779:09)	(0.270)　　　　　　　　　application range 0.3 - 3.0 %M/M

Kernel Density
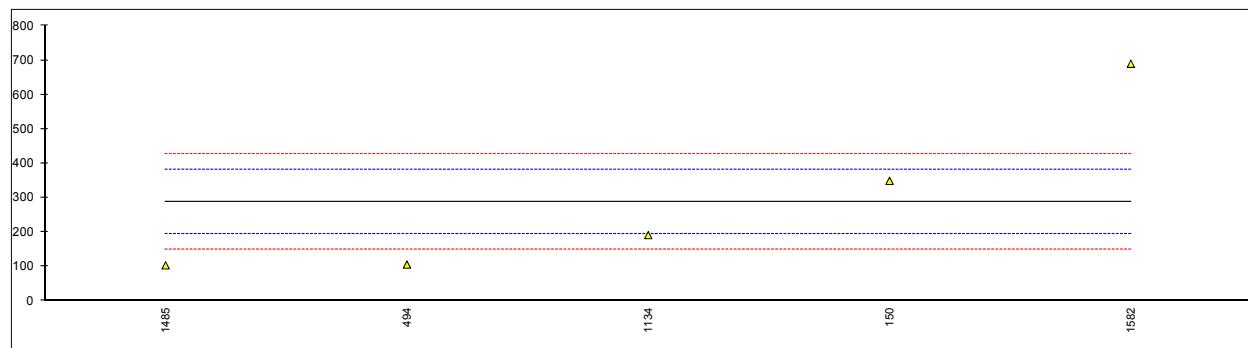
Determination of Total Contamination on sample #13054; results in mg/kg

lab	method	value	mark	z(targ)	remarks
150	EN12662	7.5	ex	-5.41	see §4.1
171		-----		-----	
311	EN12662:12	18.5		0.35	
312	EN12662	18.2		0.19	
323	EN12662:98	15.8		-1.06	
334	EN12662	filter damaged		-----	
340	EN12662	3.7	ex	-7.40	see §4.1
343	EN12662:98	17.7		-0.07	
345	EN12662:98	17.21		-0.33	
360	EN12662:08	15.1	C	-1.43	
391	EN12662:08	15.1		-1.43	
398	EN12662:98	16.43		-0.73	
540	EN12662:08	18.0		0.09	
551	EN12662:08	9.4255	ex	-4.40	see §4.1
603	EN12662	19.95		1.11	
657	EN12662:08	14.5		-1.74	
862	EN12662:08	25.24		3.88	
1016	EN12662:08	14.76		-1.61	
1017		-----		-----	
1033	IP440	3.15	ex	-7.68	see §4.1
1059	EN12662:08	13.7		-2.16	
1067	EN12662:08	16.79		-0.55	
1095	EN12662:98	16.2		-0.86	
1134	EN12662:08	15.7		-1.12	
1199		-----		-----	
1203	EN12662:08	18.22		0.20	
1240	EN12662:08	17.6		-0.12	
1273	EN12662:08	24.16		3.31	
1290	EN12662:98	7.62	ex, C	-5.35	see §4.1, first reported 7.56
1299	EN12662:08	16.3		-0.80	
1395	EN12662:08	23.3		2.86	
1400	EN12662:08	2.47	ex	-8.04	see §4.1
1402	EN12662	23		2.70	
1419	EN12662:08	17.33		-0.26	
1429	EN12662	failed		-----	
1457	EN12662:08	16.69		-0.60	
1485	EN12662:08	18.13		0.15	
1494	EN12662:08	15.30		-1.33	
1536	EN12662:09	20.5	C	1.40	
1582	EN12662:08	16.07		-0.92	
1586	EN12662	33.2	G(0.01)	8.04	
1721	EN12662:09	16.9		-0.49	
1739	EN12662:98	23		2.70	
1807		-----		-----	
1911	EN12662:08	15.32		-1.32	

|					
	normality	not OK			
	n	32			
	outliers	1 (+6 ex)			Spike
	mean (n)	17.83			14.81 mg/kg recovery: <120.4 %
	st.dev. (n)	2.998			
	R(calc.)	8.40			
	R(EN12662:08)	5.35			

Kernel Density
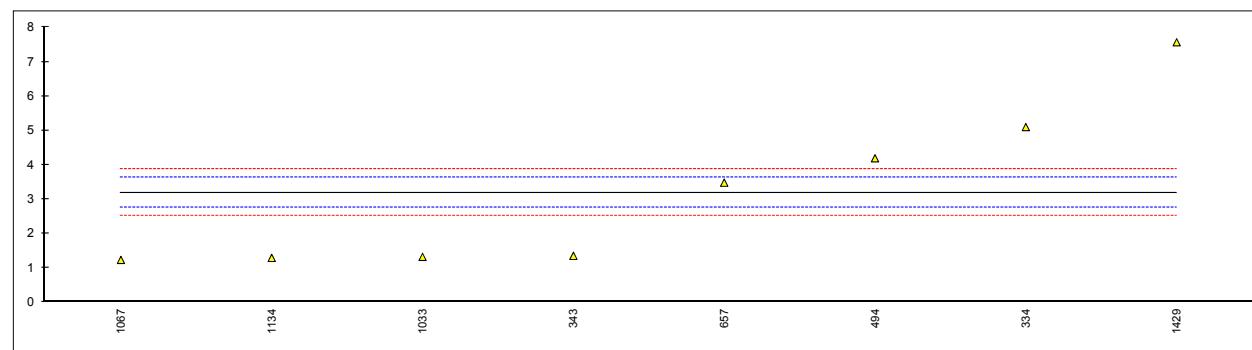
Determination of Cold Soak Filter Test on sample #13055; results in s

lab	method	value	mark	z(targ)	remarks
150	D7501	349		-----	
171		-----		-----	
311		-----		-----	
334		-----		-----	filter blocked after amount of 60 mL B100
343		-----		-----	
494	D7501	105.06		-----	
657	D7501	>720		-----	filter blocked after amount of 140 mL B100
1016		-----		-----	
1033		-----		-----	
1067		-----		-----	
1134	D7501	191.0		-----	
1429		-----		-----	
1485	D7501	102.9		-----	
1582	D7501	690		-----	

normality	unknown
n	5
outliers	0
mean (n)	287.6
st.dev. (n)	246.20
R(calc.)	689.4
R(D7501:12a)	(130.7)

Determination of Filter Blocking Tendency on sample #13055

lab	method	value	mark	z(targ)	remarks
150		-----		-----	
171		-----		-----	
311		-----		-----	
334	IP387	5.10		-----	
343	IP387-B	1.35		-----	
494	IP387-B	4.19		-----	
657	IP387-B	3.48		-----	
1016		-----		-----	
1033	IP387-B	1.32		-----	
1067	IPPM-EA/08	1.23		-----	
1134	IP387-B	1.29		-----	
1429	IP387-B	7.57		-----	
1485		-----		-----	
1582		-----		-----	

normality	OK
n	8
outliers	0
mean (n)	3.191
st.dev. (n)	2.3376
R(calc.)	6.545
R(IP387B:11)	(0.627)

Determination of sum of Calcium and Magnesium on sample #13056; results in mg/kg
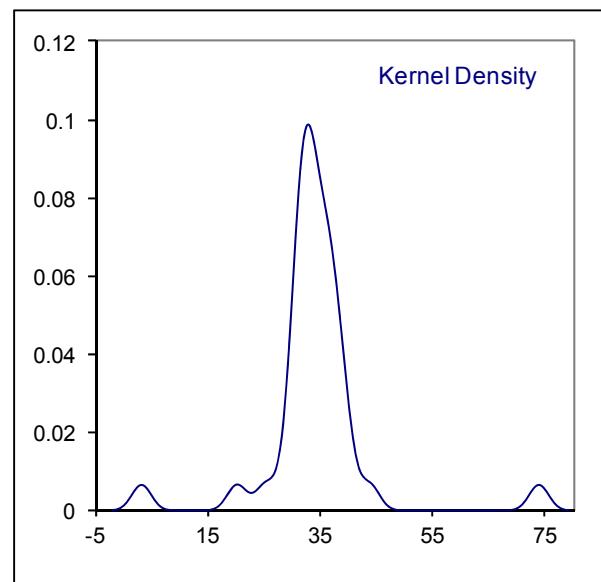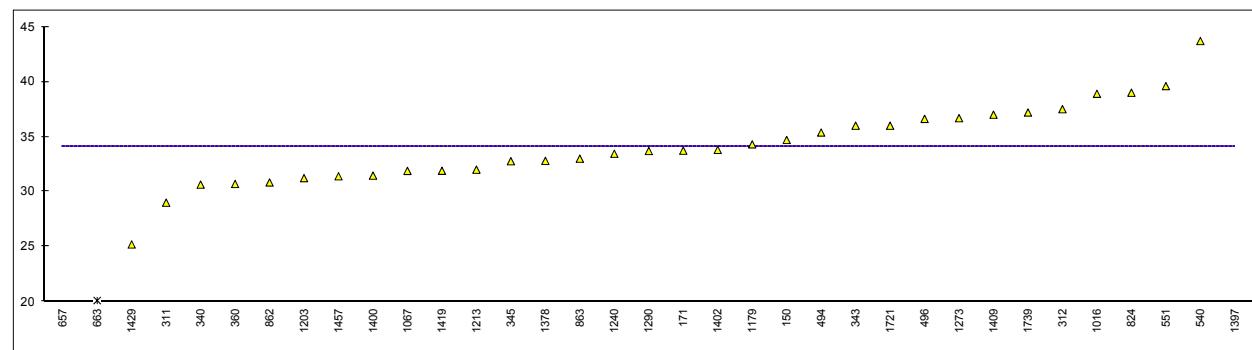
lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	EN14538	>10		-----	
150	EN14538	34.7		-----	
171	EN14538	33.73		-----	
311	EN14538	29		-----	
312	EN14538	37.5		-----	
323	EN14538	>10		-----	
334		-----		-----	
340	EN14538	30.64		-----	
343	EN14538	36		-----	
344		-----		-----	
345	EN14538	32.77	C	-----	first reported 70.38
360	EN14538	30.7		-----	
391		-----		-----	
398		-----		-----	
494	EN14538	35.38		-----	
496	EN14538	36.62		-----	
511		-----		-----	
540	EN14538	43.7		-----	
551	NBR15553	39.6		-----	
554		-----		-----	
603		-----		-----	
631		-----		-----	
657	EN14538	3.12	G(0.05)	-----	
663	EN14538	20.1	G(0.05)	-----	
824	EN14538	39.0		-----	
862	EN14538	30.84		-----	
863	INH-018	33.0		-----	
902		-----		-----	
1016	EN14107	38.9		-----	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059		-----		-----	
1067	EN14538	31.89		-----	
1134		-----		-----	
1161	EN14538	<1		-----	false negative?
1179	EN14538	34.3		-----	
1199		-----		-----	
1203	EN14538	31.23		-----	
1213	D3605	32		-----	
1227		-----		-----	
1231	D5185	nil		-----	false negative?
1240	EN14538	33.45		-----	
1273	EN14538	36.68		-----	
1286		-----		-----	
1290	EN14538	33.6987		-----	
1299		-----		-----	
1316	in house	>10		-----	
1378	EN14538	32.8		-----	
1395		-----		-----	
1397	EN11885	73.8	G(0.01)	-----	
1400	EN14538	31.46		-----	
1402	EN14538	33.8		-----	
1409	EN14538	37		-----	
1419	in house	31.9		-----	
1429	EN14538	25.2		-----	
1457	EN14538	31.4		-----	
1459		-----		-----	
1470		-----		-----	
1485		-----		-----	
1494		-----		-----	
1536		-----		-----	
1564		-----		-----	
1566		-----		-----	
1582		-----		-----	
1586		-----		-----	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684		-----		-----	
1706		-----		-----	
1721	EN14538	36.0	C	-----	first reported 48.5
1739	EN14538	37.2		-----	

| 1807 | ----- | ----- |
| 1911 | ----- | ----- |

normality	OK	
n	32	
outliers	3	Spike Ca & Mg
mean (n)	34.13	30 mg/kg recovery: <114 %
st.dev. (n)	3.605	
R(calc.)	10.09	
R(EN14538:06)	(6.27)	application range 1 – 10 mg/kg

Determination of Phosphorus on sample #13056; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	EN14107	11.22	C	1.55	first reported 14.22
150	EN14107	8.5		-2.46	
171	EN14107	3.14	G(0.01)	-10.37	
311	EN14107	9		-1.73	
312	EN14107	10.7		0.78	
323	EN14107	10.4		0.34	
334		-----		-----	
340	EN14107	10.27		0.15	
343	EN14107	8.4		-2.61	
344		-----		-----	
345	EN14107	10.80		0.93	
360	EN14107	10.3		0.19	
391		-----		-----	
398		-----		-----	
494	EN14107	9.72		-0.66	
496	EN14107	10.67		0.74	
511		-----		-----	
540	EN14107	10.3		0.19	
551	NBR15553	11.0		1.22	
554		-----		-----	
603		-----		-----	
631		-----		-----	
657	EN14107	1.48	G(0.01)	-12.81	
663	EN14107	9.6		-0.84	
824	EN14107	9.9		-0.40	
862	EN14107	9.21		-1.42	
863	INH-018	8.0	ex	-3.20	see §4.1
902		-----		-----	
1016	EN14107	10.66		0.72	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059	in house	10.4		0.34	
1067	EN14538	7.86	ex	-3.41	see §4.1
1134		-----		-----	
1161	EN14107	<1		<-12.98	false negative?
1179	EN14107	0.30	G(0.05)	-14.55	
1199		-----		-----	
1203	EN14107	10.49		0.47	
1213	D4851	<1		<-12.98	false negative?
1227		-----		-----	
1231	D4951	nil		-----	false negative?
1240	EN16294	8.00	ex	-3.20	see §4.1
1273	EN14107	10.67		0.74	
1286		-----		-----	
1290	EN14107	8.443		-2.55	
1299		-----		-----	
1316	in house	6.61	ex	-5.25	see §4.1
1378	EN14107	11.8		2.40	
1395		-----		-----	
1397	EN11885	7.3	ex	-4.23	see §4.1
1400	EN16294	9.76		-0.61	
1402		-----		-----	
1409	EN14107	11		1.22	
1419		-----		-----	
1429	EN14107	8.8		-2.02	
1457	EN14107	10.8		0.93	
1459		-----		-----	
1470		-----		-----	
1485		-----		-----	
1494		-----		-----	
1536		-----		-----	
1564		-----		-----	
1566		-----		-----	
1582		-----		-----	
1586		-----		-----	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684		-----		-----	
1706		-----		-----	
1721	EN14107	<1		<-12.98	false negative?
1739	EN14107	11.8		2.40	
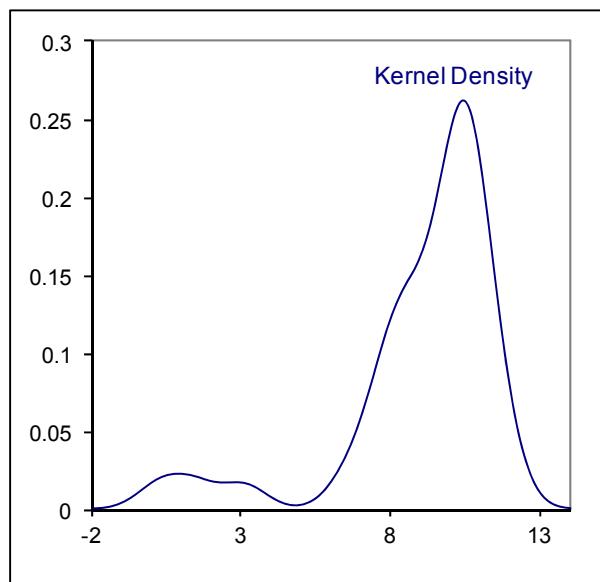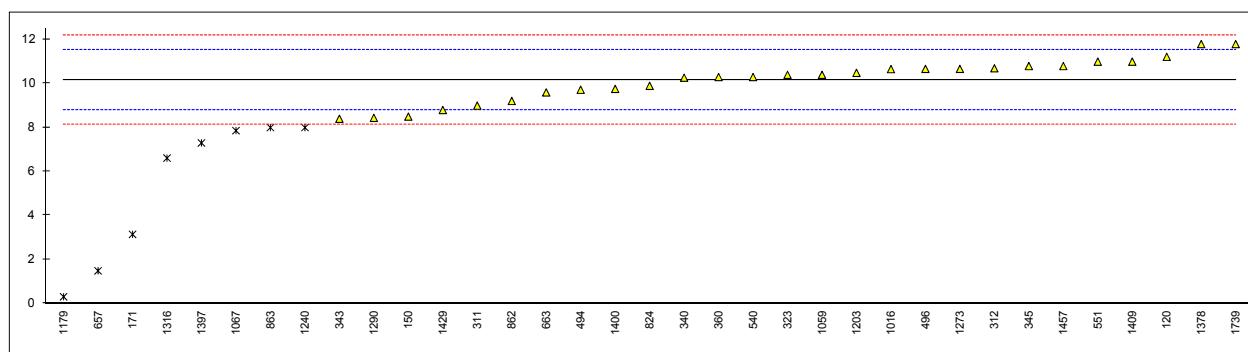
| 1807 | ----- | | ----- |
| 1911 | ----- | | ----- |

normality	not OK	
n	27	
outliers	3 (5 ex)	Spike
mean (n)	10.171	10 mg/kg recovery: <102 %
st.dev. (n)	0.9548	
R(calc.)	2.673	application range D4951:09: 500 – 1200 mg/kg
R(EN14107:03)	1.978	application range EN14107:03: 4 – 20 mg/kg

Determination of Potassium on sample #13056; results in mg/kg
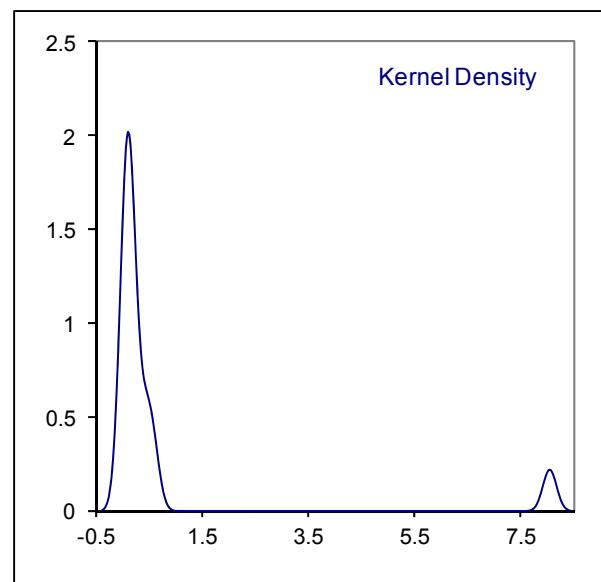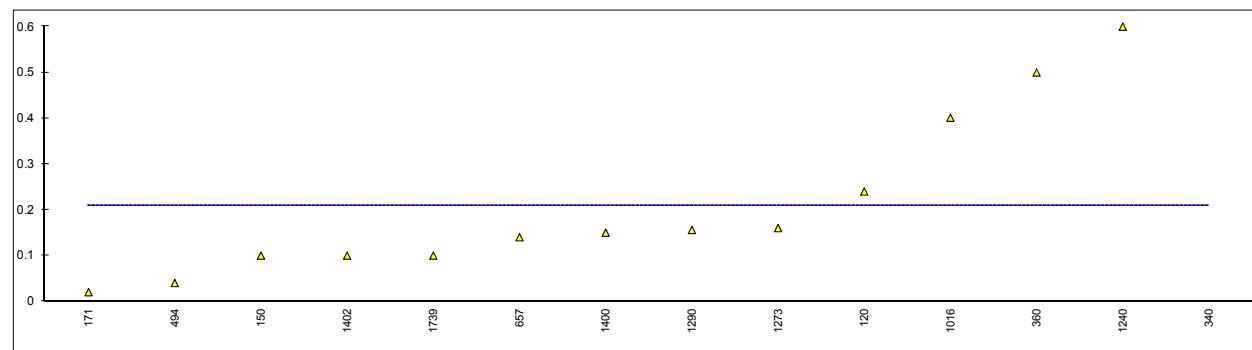
lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	EN14109	0.24		-----	
150	EN14109	0.1		-----	
171	EN14109	0.02		-----	
311	EN14538	<1		-----	
312	EN14109	<1.0		-----	
323	EN14538	<1.0		-----	
334		-----		-----	
340	EN14538	8.05	G(0.01)	-----	false positive?
343	EN14538	<1		-----	
344		-----		-----	
345	EN14109	<1		-----	
360	EN14538	0.5		-----	
391		-----		-----	
398		-----		-----	
494	EN14538	0.04		-----	
496	EN14538	<1		-----	
511		-----		-----	
540	EN14538	<0.5		-----	
551	NBR15553	<0.10		-----	
554		-----		-----	
603		-----		-----	
631		-----		-----	
657	EN14109	0.14		-----	
663		-----		-----	
824	EN14109	<0.5		-----	
862	EN14109	<0.5		-----	
863	INH-018	<1		-----	
902		-----		-----	
1016	EN14109	0.401		-----	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059		-----		-----	
1067	EN14538	<2.0		-----	
1134		-----		-----	
1161	EN14109	<1		-----	
1179	EN14109	<1		-----	
1199		-----		-----	
1203	EN14109	<1		-----	
1213	D3605	<1		-----	
1227		-----		-----	
1231	D5185	nil		-----	
1240	EN14538	0.60		-----	
1273	EN14538	0.16		-----	
1286		-----		-----	
1290	EN14538	0.1559		-----	
1299		-----		-----	
1316	in house	<0.02		-----	
1378		-----		-----	
1395		-----		-----	
1397	EN11885	<0.1		-----	
1400	EN14538	0.15		-----	
1402	EN14538	0.1		-----	
1409	EN14109	<1		-----	
1419	in house	<0.10		-----	
1429	EN14538	<0.1		-----	
1457	EN14538	<0.1		-----	
1459		-----		-----	
1470		-----		-----	
1485		-----		-----	
1494		-----		-----	
1536		-----		-----	
1564		-----		-----	
1566		-----		-----	
1582		-----		-----	
1586		-----		-----	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684	EN14109	<0.1	C	-----	first reported 0.45
1706		-----		-----	
1721	EN14109	<1		-----	
1739	EN14538	0.1		-----	

| 1807 | ----- | ----- |
| 1911 | ----- | ----- |

|		
normality	not OK	
n	13	
outliers	1	
mean (n)	0.208	
st.dev. (n)	0.1800	
R(calc.)	0.504	
R(EN14109:03)	(0.522)	application range: >0.5 mg/kg
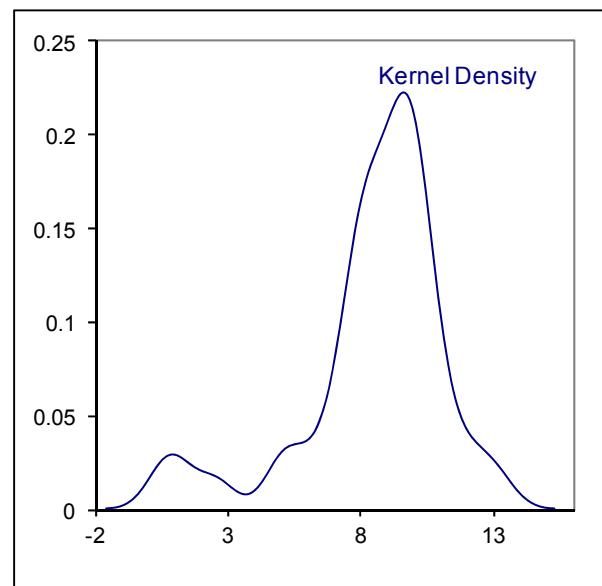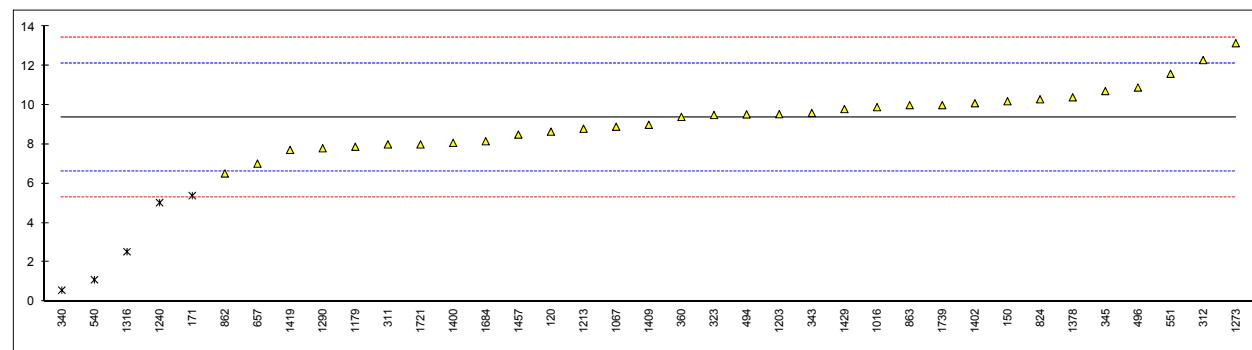
Determination of Sodium on sample #13056; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120	EN14108	8.65	C	-0.53	first reported 9.36
150	EN14108	10.2		0.61	
171	EN14108	5.39	ex	-2.92	see §4.1
311	EN14538	8		-1.01	
312	EN14108	12.3		2.14	
323	EN14538	9.5		0.09	
334		-----		-----	
340	EN14538	0.57	DG(0.01)	-6.45	
343	EN14538	9.6		0.17	
344		-----		-----	
345	EN14108	10.72		0.99	
360	EN14538	9.4		0.02	
391		-----		-----	
398		-----		-----	
494	EN14538	9.53		0.11	
496	EN14538	10.90		1.12	
511		-----		-----	
540	EN14538	1.1	DG(0.01)	-6.06	
551	NBR15553	11.6	C	1.63	first reported 15.6
554		-----		-----	
603		-----		-----	
631		-----		-----	
657	EN14108	7.02		-1.73	
663		-----		-----	
824	EN14108	10.3		0.68	
862	EN14108	6.52		-2.09	
863	INH-018	10.0		0.46	
902		-----		-----	
1016	EN14108	9.90		0.39	
1017		-----		-----	
1033		-----		-----	
1047		-----		-----	
1059		-----		-----	
1067	EN14538	8.90		-0.35	
1134		-----		-----	
1161	EN14108	<1		<-6.14	false negative?
1179	EN14108	7.88		-1.10	
1199		-----		-----	
1203	EN14108	9.54		0.12	
1213	D3605	8.8		-0.42	
1227		-----		-----	
1231	D5185	nil		-----	false negative?
1240	EN14538	5.03	ex	-3.18	see §4.1
1273	EN14538	13.16		2.77	
1286		-----		-----	
1290	EN14538	7.803		-1.15	
1299		-----		-----	
1316	in house	2.53	G(0.05)	-5.02	
1378	EN14108	10.4		0.75	
1395		-----		-----	
1397	EN11885	<0.069		<-6.82	false negative?
1400	EN14538	8.08		-0.95	
1402	EN14538	10.1		0.53	
1409	EN14108	9		-0.27	
1419	in house	7.72		-1.21	
1429	EN14108	9.8		0.31	
1457	EN14538	8.5		-0.64	
1459		-----		-----	
1470		-----		-----	
1485		-----		-----	
1494		-----		-----	
1536		-----		-----	
1564		-----		-----	
1566		-----		-----	
1582		-----		-----	
1586		-----		-----	
1588		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1654		-----		-----	
1684	EN14108	8.16	C	-0.89	first reported 0.45
1706		-----		-----	
1721	EN14108	8.0		-1.01	
1739	EN14538	10.0		0.46	

| 1807 | ----- | ----- |
| 1911 | ----- | ----- |

normality	OK		
n	32		
outliers	3 (+2 ex)	Spike	
mean (n)	9.37	10 mg/kg	recovery: <94 %
st.dev. (n)	1.465		
R(calc.)	4.10		
R(EN14108:03)	3.82	application range: ≥1 mg/kg	

Kernel Density

APPENDIX 2

Number of participants per country

  2 labs in ARGENTINA
  2 labs in AUSTRIA
  3 labs in BELGIUM
  2 labs in BRAZIL
   1 lab in BULGARIA
   1 lab in CANADA
  3 labs in COLOMBIA
   1 lab in CROATIA
   1 lab in CZECH REPUBLIC
  3 labs in FRANCE
  3 labs in GERMANY
  2 labs in GREECE
   1 lab in HONG KONG
   1 lab in HUNGARY
  2 labs in ITALY
   1 lab in KOREA
   1 lab in LATVIA
   1 lab in MALAYSIA
   1 lab in MALTA
   1 lab in NORWAY
  2 labs in P.R. of CHINA
   1 lab in PERU
   1 lab in PHILIPPINES
  3 labs in POLAND
  2 labs in PORTUGAL
   1 lab in ROMANIA
   1 lab in SINGAPORE
   1 lab in SLOVAKIA
   1 lab in SLOVENIA
10 labs in SPAIN
  2 labs in SWEDEN
  2 labs in THAILAND
  6 labs in THE NETHERLANDS
  3 labs in TURKEY
  4 labs in U.S.A.
  4 labs in UNITED KINGDOM
   1 lab in VIETNAM

APPENDIX 3

Abbreviations:

C	= final result after checking of first reported suspect result
D(0.01)	= outlier in Dixon's outlier test
D(0.05)	= straggler in Dixon's outlier test
G(0.01)	= outlier in Grubbs' outlier test
G(0.05)	= straggler in Grubbs' outlier test
DG(0.01)	= outlier in Double Grubbs' outlier test
DG(0.05)	= straggler in Double Grubbs' outlier test
ex	= excluded from calculations
S	= scope of the reported method is not applicable
U	= reported in different unit
n.a.	= not applicable
n.e.	= not evaluated
SDS	= Safety Data Sheet

Literature:

1   iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, January 2010
2   ASTM E178-02
3   ASTM E1301-03
4   ISO13528-05
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 367/84
10   DIN 38402 T41/42
11   P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
12   J.N. Miller, Analyst, 118, 455, (1993)
13   Analytical Methods Committee Technical Brief, No4 January 2001
14   The Royal Society of Chemistry 2002, Analyst 2002, 127 page1359-1364, P.J. Lowthian and M. Thompson. (see http://www.rsc.org/suppdata/an/b2/b205600n/)
15   EN14214:12