Results of Proficiency Test Biodiesel 100% FAME (B100) April 2015

Organised by: Institute for Interlaboratory Studies
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1 INTRODUCTION

Since 2001, a proficiency test for Fatty Acid Methyl Esters (FAME) used as Biodiesel B100 is organised at least once a year by the Institute for Interlaboratory Studies (iis).
In this interlaboratory study 62 laboratories from 28 different countries have participated. See appendix 2 for a list of number of participants per country. In this report the results of the 2015 Biodiesel B100 proficiency test are presented and discussed. This report is also electronically available through the iis internet site www.iisnl.com.

2 SET UP

In this proficiency test on Biodiesel B100, a sample of Rapeseed methyl ester 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 L	Purpose	Spiked
#15045	1.5	For regular analysis	-
#15046	0.1	Analysis of Phosphorus, Potassium, Sodium and Calcium & Magnesium	Phosphorus, Sodium, Calcium
#15047	0.85	Total Contamination test	Quartz material
#15048	0.5	Cold Soak Test / Filter Blocking	

table 1: three different Biodiesel B100 samples used in iis14G05

The test scope was set up according to both EN14214:2012+A1:2014/AC:2014 and ASTM D6751:15 specifications. Participants were requested to report the analytical results as “rounded and unrounded results”.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 ISO/IEC17043:2010 (R007). This ensures strict adherence to protocols for sample preparation and statistical evaluation and 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 organisation of this proficiency test was the one as described for proficiency testing in the report ‘iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation’ of April 2014 (iis-protocol, version 3.3). This protocol is electronically available through the iis internet site www.iisnl.com, from the FAQ page.

2.3 CONFIDENTIALITY STATEMENT

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

2.4 SAMPLES

The necessary bulk material of Biodiesel B100 for this PT was obtained from an European producer.

Biodiesel B100 #15045

After fit-for-use testing and homogenisation in a precleaned metal drum, the B100 was divided over 90 amber glass bottles of 1L and 90 amber glass bottles of 500 ml and both labelled #15045.The homogeneity of the subsamples #15045 was checked by the determination of Density in accordance with ASTM D4052 on 8 stratified randomly selected samples:

	Density at 15ºC in kg/m^3
sample 1 #15045-1	882.92
sample 2 #15045-2	882.92
sample 3 #15045-3	882.92
sample 4 #15045-4	882.92
sample 5 #15045-5	882.92
sample 6 #15045-6	882.92
sample 7 #15045-7	882.92
sample 8 #15045-8	882.92

table 2: homogeneity test of subsamples #15045

	Density at 15ºC in kg/m^3
r (sample #15045)	0.00
reference test	ISO12185:96
$0.3*R_{(reference\ test)}$	0.15

table 3: repeatability of subsamples #15045

Metals in Biodiesel B100 #15046

For subsample #15046, metals in Biodiesel only, a batch of approx. 6.5 kg B100 was spiked with Calcium (approx. 5 mg/kg), Phosphorus (approx. 7 mg/kg) and Sodium (approx. 7 mg/kg). After homogenisation, the material was subsequently divided over 58 HDPE bottles of 0.1L and labelled #15046. The homogeneity of the subsamples #15046 was checked by determination of Phosphorus on 8 stratified randomly selected samples:

	Phosphorus in mg/kg
sample 1 #15046-1	6.0
sample 2 #15046-2	6.3
sample 3 #15046-3	6.5
sample 4 #15046-4	6.4
sample 5 #15046-5	6.3
sample 6 #15046-6	6.1
sample 7 #15046-7	6.2
sample 8 #15046-8	6.4

table 4: homogeneity test of subsamples #15046

	Phosphorus in mg/kg
r (sample #15046)	0.47
reference test	EN14107:03
$r_{(reference\ test)}$	0.60

table 5: repeatability of subsamples #15046

Total Contamination #15047

For Total Contamination, out of the same batch of Biodiesel B100, another 60 amber glass bottles of 1 litre with inner and outer caps were filled.
Each sample bottle was spiked (approx. 12 mg/kg) with a fresh prepared and well shaken particulate quartz material BCR-067 (∅ 2.4 – 32.0 µm) in oil suspension.
Therefore, an amount of the quartz suspension was weighed in the bottle. This bottle was filled up to 850 mL and subsequently labelled #15047.
After homogenization, a random sample was taken to check the Total Contamination.

Cold Soak Test / Filter Blocking Tendency #15048

For the “Cold Soak Test” determination 25 bottles of 1 litre with regular Biodiesel B100 were filled and labelled #15048. The homogeneity of the subsamples was checked by the determination of density in accordance with ISO12185.

The calculated repeatability for sample #15045 was less than 0.3 times the corresponding reproducibility of the respective reference method and for sample #15046 the calculated repeatability was less than repeatability of the respective reference method. Therefore, homogeneity of the subsamples was assumed.

Depending on the registration of the participant, one 1 litre bottle and 0.5 litre bottle both labelled #15045, and/or one 0.1 litre bottle labelled #15046, and/or 1 litre bottle labelled #15047 and/or 1 litre bottle labelled #15048, were dispatched to each of the participating laboratories on April 1, 2015.

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+A1:14/AC:14 and/or ASTM D6751:15, i.e.:

Parameter	EN14214:12	Parameter	ASTM D6751:15
Acid Value	EN14104	Acid Number	ASTM D664
		Carbon Residue on 100% FAME	ASTM D4530
CFPP	EN116		
		Cloud Point	ASTM D2500
Copper Strip Corrosion	ISO2160	Copper Strip Corrosion	ASTM D130
Density at 15°C	ISO12185		
Flash Point (Recc)	ISO3679	Flash Point	ASTM D93
Flash Point (PMcc)	ISO2719		
Iodine Value	EN14111		
Kin. Visc. at 40°C	ISO3104	Kin. Visc. at 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 Glycerin	ASTM D6584
FAME content	EN14103		
Linolenic Acid	EN14103		
Total Contamination	EN12662		
		Cold Soak Filterability	ASTM D7501

table 6: requirements and test methods acc. to specifications EN14214:12+A1:14/AC:14 and ASTM D6751:15

To get comparable results a detailed report form, on which the units were prescribed as well as the required standards and a letter of instructions were prepared and made available on the data entry portal www.kpmd.co.uk/sgs-iis/. The detailed report form was also made available for download on the iis website www.iisnl.com.
A SDS and a form to confirm receipt of the samples were added to the sample package.

3 RESULTS

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

Directly after the deadline, a reminder fax was sent to the laboratories that had not reported results at that moment. Shortly after the deadline, the available results were screened for suspect data. A result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data

were asked to check the results. Additional or corrected results are used for data analysis and original results are placed under 'Remarks' in the result tables in appendix 1.

3.1 STATISTICS

Statistical calculations were performed as described in the report ‘iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation’ (iis-protocol, April 2014 version 3.3). For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded results. Results reported as ‘<…’ or ‘>…’ were not used in the statistical evaluation.

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

In accordance to ISO 5725 (1986 and 1994) the original results per determination were submitted subsequently to Dixon, Grubbs and Rosner 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 and by R(0.01) for the Rosner General ESD test (see appendix 3, no.15). Stragglers are marked by D(0.05) for the Dixon test, by G(0.05) or DG(0.05) for the Grubbs test and by R(0.05). Both outliers and stragglers were not included in the calculations of the averages and the 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 visualize the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported analysis results are plotted. The corresponding laboratory numbers are 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 “x”. 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; Nos.13 and 14). Also a normal Gauss curve was projected over the Kernel Density Graph.

3.3 Z-SCORES

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

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

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

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 maybe as follows:

$\lvert z\rvert < 1$	good
$1 < \lvert z\rvert < 2$	satisfactory
$2 < \lvert z\rvert < 3$	questionable
$3 < \lvert z\rvert$	unsatisfactory

4 EVALUATION

In this proficiency test some problems were encountered during the execution.
For the regular Biodiesel PT: 8 participants reported test results after the final reporting date and 2 participants did not report any test results at all.
For the Total Contamination PT: 3 participants reported the test results after the final reporting date and 11 participants did not report any test results at all.
For the Metals in Biodiesel PT: 6 participants reported the test results after the final reporting date and 2 participants did not report any test results at all.
For the Filter Blocking PT: none of the participants reported a result after the final reporting date, however 5 participants did not report any test result at all.

Finally, 60 participants reported in total 965 numerical results. Observed were 23 outlying results, which is 2.4%. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

4.1 EVALUATION PER TEST

In this section, the results are discussed per sample and per test. The specified test methods and requirements acc. to EN14214:12+A1:2014/AC:2014 and ASTM D6751:15 were taken into account for explaining the observed differences when possible and applicable. These methods are also in the tables together with the reported data. When the reproducibility, mentioned in EN14214, is different than that of the actual method, the reproducibility of EN14214 is used. The abbreviations, used in the tables of Appendix 1, are listed in appendix 3.

Not all original data sets proved to have a normal Gaussian distribution. These are referred to as “not OK” or “suspect”. The statistical evaluation of these data sets should be used with due care, see also paragraph 3.1.

For Biodiesel B100 sample #15045

Acid Value: (EN) This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN14104:03.

Acid Number: (ASTM) This determination was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of ASTM D664:11a (method B).

Cloud Point: 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 ASTM D2500:11.

CFPP: This determination was not problematic. No statistical outliers were observed and the calculated reproducibility is in agreement with the requirements of EN14214:12+A1:2014/AC:2014.

Carbon Residue on 100%: All reported results were near or below the applicable lower limit of D4530:11 (0.1%M/M). Therefore no significant conclusions were drawn.

Copper Strip Corrosion: No problems have been observed. All participants agreed on a result of 1 (1A).

Density at 15°C This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO12185:96.
Note: API /ASTM tables do not apply to FAME that falls within EN14214:12+A1:2014. See Annex B of EN14214:12+A1:2014 for calculation of conversion factor.

Flash Point PMcc: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D93C:15. However, when compared against ISO2719A:02, the calculated reproducibility is not in agreement with the requirements.

Flash Point recc: This determination was not problematic. No statistical outliers were observed and the calculated reproducibility is in agreement with the requirements of ISO3679:15.

Iodine Value: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN14111:03.

Kin.Visco. at 40°C: The determination was problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of EN14214:12+A1:2014/AC:2014. However, the calculated reproducibility is in agreement with the less strict requirements of ASTM D445:15. No reproducibility for FAME is published in ISO3104:94.

Oxidation Stability: This determination was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of EN14112:03.

Sulphated Ash: All reported results, except one, were near or below the applicable lower limit of ASTM D874:13a and/or ISO3987:10 (0.005% M/M). Therefore no significant conclusions were drawn.

Sulphur: This determination was not problematic. No statistical outliers were observed and the calculated reproducibility is in agreement with the requirements of ISO20846:11 and of ASTM D5453:12.

Water: This determination was not problematic. Three statistical outliers were observed. However the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ISO12937:00. Remarkably seven laboratories probably made a unit error in the reported result and three of these laboratories corrected the originally reported unit.

Methanol: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of EN14110:03.

mono-Glycerides: 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 EN14105:11 and in full agreement with the less strict requirements of ASTM D6584:13.

di-Glycerides: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN14105:11 and in full agreement with the less strict requirements of ASTM D6584:13.

tri-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 and ASTM D6584:13.

Free Glycerol: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of statistical outlier is in agreement with the requirements of EN14105:11 and ASTM D6584:13.

Total Glycerol: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of EN14105:11 and in full agreement with the less strict requirements of ASTM D6584:13.

FAME content: This determination was not problematic. One statistical outlier was observed. However, the calculated reproducibility is in agreement with the requirements of EN14103:11.

Linolenic Acid Methyl Ester: This determination was problematic. No statistical outlier was observed. However, the calculated reproducibility is not in agreement with the requirements of EN14103:11.

Polyunsaturated Methyl esters: All reported results were near or below the lower application limit of EN15779:09 (0.6 %M/M). Therefore no significant conclusions were drawn.

For Biodiesel B100 sample #15046

Calcium and Magnesium: This determination was problematic. One statistical outlier was observed. The calculated reproducibility, after rejection of the statistical outlier is not in agreement with the requirements of EN14538:06. The samples were spiked with Calcium (theoretical increment of 4.65 mg/kg), but since a summation with Magnesium is used, a recovery

cannot be calculated. The actual blank concentration for the sum of Calcium and Magnesium is not known.

Phosphorus This determination was very problematic. No statistical outliers were observed. However, the calculated reproducibility is not at all in agreement with the requirements of EN14107:03.
The samples were spiked with Phosphorus. The average recovery of Phosphorus (theoretical increment of 7.05 mg/kg) may be satisfactory: “less than 96%”. The actual blank concentration for Phosphorus is unknown.

Potassium This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of EN14214:12+A1:2014/AC:2014. All reported results, except one, were near or below the lower application limit of EN14109:03 (0.5 mg/kg) and EN14538:06 (1.0 mg/kg).

Sodium This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN14214:12+A1:2014/AC:2014.
The samples were spiked with Sodium. The average recovery of Sodium (theoretical increment of 6.99 mg/kg) may be satisfactory: “less than 84%”. The actual blank concentration for Sodium is unknown.

For Biodiesel B100 sample #15047

Total Contamination: This determination was problematic. No statistical outliers were observed, but three test results were excluded. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of EN12662:14. Please note that the test conditions of the versions of this method of 1998, 2008 and 2014 have significant differences.
Sample #15047 was spiked to a measurable concentration level of 11.93 mg/kg. Therefore, the minimum Total Contamination to be found was known. The laboratories should be able to find at least 5.86 mg/kg [11.93 $mg/kg_{(added\ amount)}$ – 6.07 $mg/kg_{(R\ EN12662)}$]. Three laboratories reported a test result below this minimum concentration of 5.86 and these test results were excluded.

For Biodiesel B100 sample #15048

Filter Blocking Potential by Cold Soak test: Only five participants reported a test result. The test results varied from 10.05 to 138. Therefore no significant conclusions were drawn.

Filter Blocking Tendency: Only five participants reported a test result. The test results varied from 1.02 to 15.03. Therefore no significant conclusions were drawn.

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	34	0.17	0.04	0.06
Acid Number (D664-B)	mg KOH/g	26	0.15	0.04	0.08
Cloud Point	°C	47	-5.1	2.8	3.0
Cold Filter Plugging Point	°C	45	-15.0	3.5	3.3
Carbon Residue on 100% FAME	%M/M	15	<0.10	n.a.	(0.14)
Copper Strip Corrosion		43	1 (1A)	n.a.	n.a.
Density at 15°C	kg/m^3	52	882.94	0.48	0.50
Flash Point (PMcc) ASTM	°C	34	165.2	13.7	14.7
Flash Point (recc) EN	°C	18	175.4	13.2	15.0
Iodine Value	g I_2/100g	36	110.8	5.2	5.0
Kin. Viscosity at 40°C	mm^2/s	45	4.460	0.060	0.045
Oxidation Stability EN14112	hours	41	7.7	1.2	2.2
Sulphated Ash	%M/M	33	<0.005	0.003	(0.001)
Sulphur	mg/kg	37	4.0	1.5	1.6
Water	%M/M	51	0.024	0.005	0.011
Methanol	%M/M	36	0.025	0.011	0.009
mono-Glycerides	%M/M	32	0.57	0.17	0.17
di-Glycerides	%M/M	32	0.11	0.05	0.05
tri-Glycerides	%M/M	28	0.07	0.04	0.08
Free Glycerol	%M/M	24	0.002	0.005	0.007
Total Glycerol	%M/M	32	0.170	0.039	0.044
FAME Content	%M/M	38	97.9	3.2	4.2
Linolenic Acid Methyl Ester	%M/M	34	8.9	0.7	0.6
Polyunsat. Methyl esters	%M/M	14	0.22	0.39	(0.27)

table 7: comparison of the observed and target reproducibilities of Biodiesel B100 sample #15045

Parameter	unit	n	average	R (Calc.)	R (lit)
Calcium and Magnesium	mg/kg	23	11.5	3.3	2.9
Phosphorus	mg/kg	23	6.8	2.7	1.3
Potassium	mg/kg	15	0.4	1.1	2.1
Sodium	mg/kg	24	5.9	3.3	3.8

table 8: comparison of the observed and target reproducibilities of Biodiesel B100 sample #15046

Parameter	unit	n	average	R (Calc.)	R (lit)
Total Contamination	mg/kg	36	16.9	9.5	6.9

table 9: comparison of the observed and target reproducibilities of Biodiesel B100 sample #15047

* 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

Parameter	unit	n	average	R (Calc.)	R (lit)
Filter Blocking Potential by CST	s	5	84.3	129	(21)
Filter Blocking Tendency		5	5.1	15.9	(1.6)

table 10: comparison of the observed and target reproducibilities of Biodiesel B100 sample #15048

Without further statistical calculations it can be concluded that for many tests there is 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 APRL 2015 WITH PREVIOUS PTS

	April 2015	September 2014	April 2014	October 2013
Type of FAME	Rapeseed	Rapeseed	Rapeseed	Fat of Offal
Number of reporting labs	60	54	68	58
Number of results reported	965	836	1093	768
Number of statistical outliers	23	35	54	44
Percentage statistical outliers	2.4%	4.2%	5.2%	5.7%

table 11: comparison with previous proficiency tests

In proficiency tests, outlier percentages of 3% - 7.5% are quite normal.
The performance of the determinations of the proficiency tests was compared against the requirements of the respective standards. The conclusions are given the following table:

Determination	April 2015	September 2014	April 2014	October 2013
Acid Value (EN14104)	+	+	+	--
Acid Number (D664-B)	++	-	+	--
Cloud Point	+	-	+	+
Cold Filter Plugging Point	+/-	++	+	--
Carbon Residue on 100% FAME	n.e.	(++)	(++)	n.e.
Density at15°C	+/-	++	+	++
Flash Point PMcc ASTM	+	+	+/-	+/-
Flash Point EN spec.	+	+	+/-	++
Iodine Value	+/-	-	+	--
Kin. Viscosity at 40°C	-	+	+/-	--
Oxidation Stability	++	+	+	--
Sulphated Ash	(--)	(--)	(--)	(-)
Sulphur	+	+	+/-	--
Water	++	+	+	+
Methanol	-	+/-	+/-	n.e.
mono-Glycerides	+	+	+	(-)
di-Glycerides	+/-	+/-	+/-	(-)
tri-Glycerides	++	+	+	(+)
Free Glycerol	+	+/-	+/-	+
Total Glycerol	+	+	+	--
FAME content	+	+	+	--
Linolenic Acid Methyl Ester	-	+/-	+/-	--
Polyunsat. Methyl esters	(-)	(--)	(-)	--

table 12 : comparison of group performances against the standard requirements

Determination	April 2015	September 2014	April 2014	October 2013
Sum of Calcium and Magnesium	-	-	(--)	(--)
Phosphorus	--	--	--	--
Potassium	++	(++)	(++)	+/-
Sodium	+	-	-	+/-
Total Contamination	-	--	--	--
Filter Blocking Potential by CST	n.e.	n.e.	(--)	n.e.
Filter Blocking Tendency	n.e.	n.e.	(--)	n.e.

Table 13 : 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

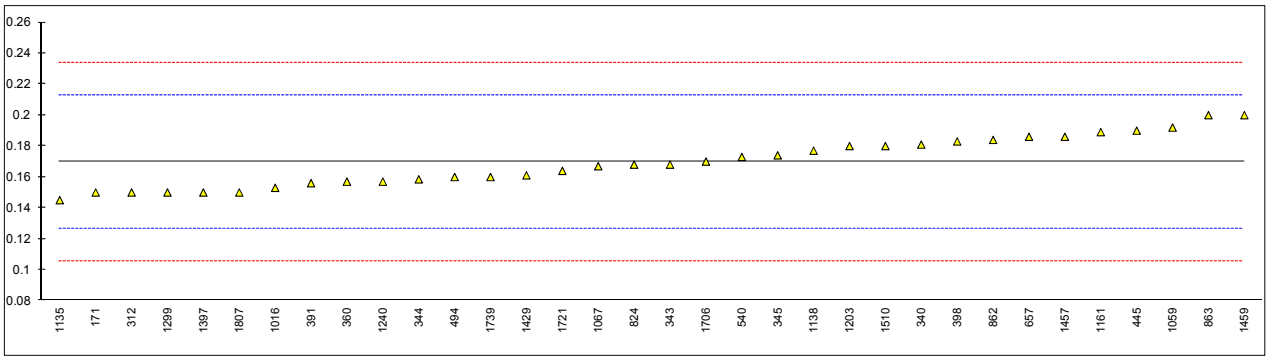
Some improvement is visible for a number of tests, but several tests (e.g. metals) are still problematic.

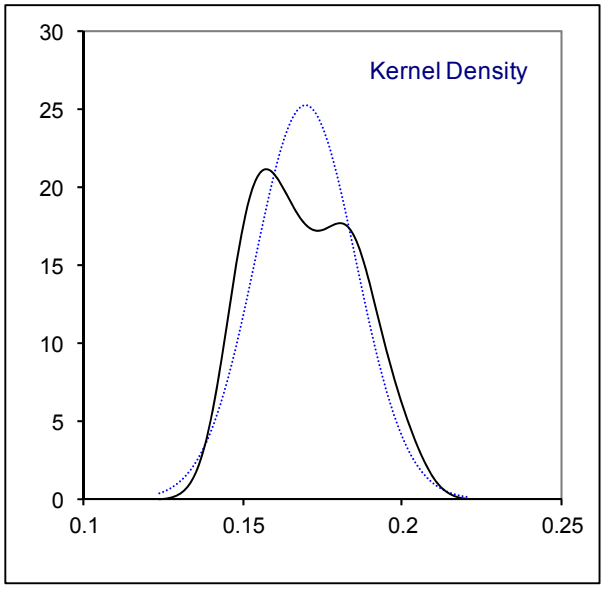
APPENDIX 1

Determination of Acid Value conform EN spec. on sample #15045; results in mg KOH/g

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171	EN14104	0.15		-0.92	
312	EN14104	0.15		-0.92	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340	EN14104	0.181		0.53	
343	EN14104	0.168		-0.08	
344	EN14104	0.1585		-0.52	
345	EN14104	0.174		0.20	
360	EN14104	0.157		-0.59	
391	EN14104	0.156		-0.64	
398	EN14104	0.183		0.62	
445	EN14104	0.190		0.95	
447		-----		-----	
494	EN14104	0.16		-0.45	
529		-----		-----	
540	EN14104	0.173		0.15	
551		-----		-----	
621		-----		-----	
657	EN14104	0.186		0.76	
824	EN14104	0.168		-0.08	
862	EN14104	0.184		0.67	
863	EN14104	0.20		1.41	
1016	EN14104	0.153		-0.78	
1033		-----		-----	
1059	EN14104	0.192		1.04	
1067	EN14104	0.167		-0.13	
1135	EN14104	0.145		-1.15	
1138	EN14104	0.177		0.34	
1161	EN14104	0.189		0.90	
1162		-----		-----	
1199		-----		-----	
1201		-----		-----	
1203	EN14104	0.180		0.48	
1227		-----		-----	
1240	EN14104	0.157		-0.59	
1299	EN14104	0.15		-0.92	
1316		-----		-----	
1397	EN14104	0.15		-0.92	
1402		-----		-----	
1429	EN14104	0.1611		-0.40	
1457	EN14104	0.186		0.76	
1459	EN14104	0.20		1.41	
1494		-----		-----	
1510	EN14104	0.18		0.48	
1586		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1706	EN14104	0.17		0.01	
1721	EN14104	0.164		-0.27	
1739	EN14104	0.160		-0.45	
1744		-----		-----	
1769		-----		-----	
1807	EN14104	0.15		-0.92	
1989		-----		-----	
1991		-----		-----	
1994		-----		-----	

normality	OK
n	34
outliers	0
mean (n)	0.1697
st.dev. (n)	0.01579
R(calc.)	0.0442
R(EN14104:03)	0.0600

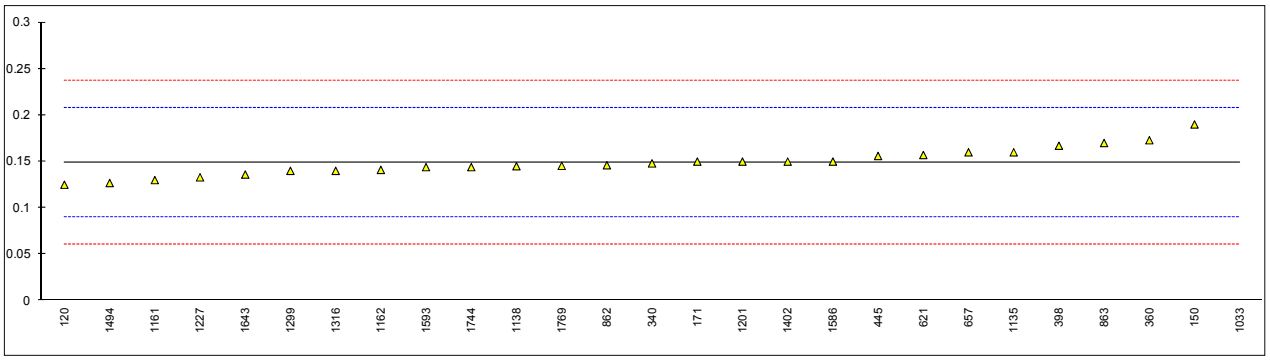

0.26
0.24
0.22
0.2
0.18
0.16
0.14
0.12
0.1
0.08
1135
171
312
1299
1397
1807
1016
391
360
1240
344
494
1739
1429
1721
1067
824
343
1706
540
345
1138
1203
1510
340
398
862
657
1457
1161
445
1059
863
1459

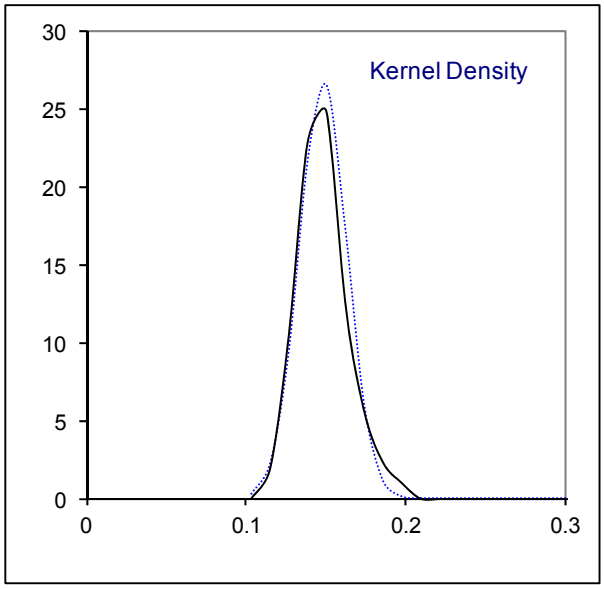

Kernel Density
30
25
20
15
10
5
0
0.1
0.15
0.2
0.25

Determination of Acid Number conform ASTM spec. on sample #15045; results in mg KOH/g

lab	method	value	mark	z(targ)	remarks
120	D664	0.125		-0.82	
150	D664	0.19		1.38	
171	D664	0.15		0.03	
312		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340	D664	0.148		-0.04	
343		-----		-----	
344		-----		-----	
345		-----		-----	
360	D664	0.173		0.81	
391		-----		-----	
398	D664	0.167		0.61	
445	D664	0.156		0.23	
447		-----		-----	
494		-----		-----	
529		-----		-----	
540		-----		-----	
551		-----		-----	
621	D664	0.157		0.27	
657	D664	0.160		0.37	
824		-----		-----	
862	D664	0.146		-0.11	
863	D664	0.17		0.71	
1016		-----		-----	
1033	D664	3.085	R(0.01)	99.43	
1059		-----		-----	
1067		-----		-----	
1135	D664	0.160		0.37	
1138	D664	0.145		-0.14	
1161	D664	0.130		-0.65	
1162	D664	0.141		-0.28	
1199		-----		-----	
1201	D664	0.15		0.03	
1203		-----		-----	
1227	D664	0.133		-0.55	
1240		-----		-----	
1299	D664	0.14		-0.31	
1316	D664	0.14		-0.31	
1397		-----		-----	
1402	D664	0.15		0.03	
1429		-----		-----	
1457		-----		-----	
1459		-----		-----	
1494	D664	0.12684		-0.75	
1510		-----		-----	
1586	D664	0.15		0.03	
1593	D664	0.144		-0.17	
1634		-----		-----	
1643	D664	0.136		-0.44	
1706		-----		-----	
1721		-----		-----	
1739		-----		-----	
1744	D664	0.144		-0.17	
1769	D664	0.14540		-0.13	
1807		-----		-----	
1989		-----		-----	
1991		-----		-----	
1994		-----		-----	

normality	suspect
n	26
outliers	1
mean (n)	0.1491
st.dev. (n)	0.01490
R(calc.)	0.0417
R(D664B:11a)	0.0827

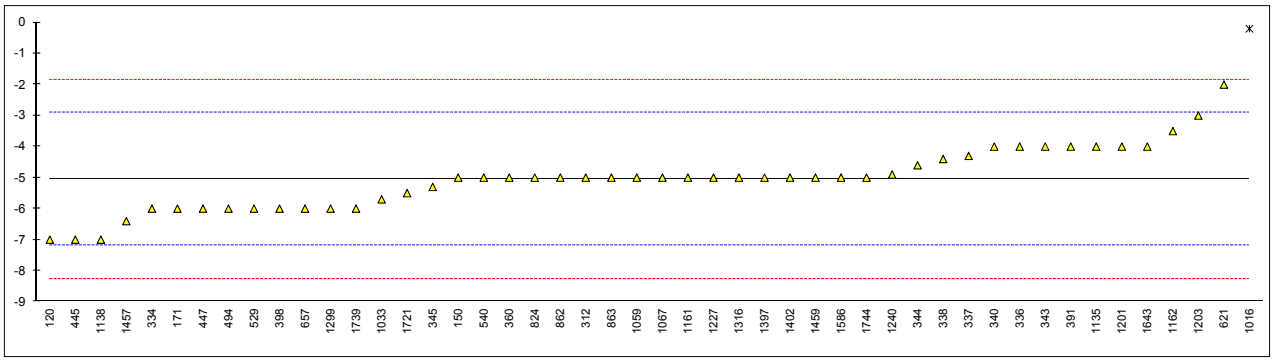

0.3
0.25
0.2
0.15
0.1
0.05
0
120
1494
1161
1227
1643
1299
1316
1162
1593
1744
1138
1769
862
340
171
1201
1402
1586
445
621
657
1135
398
863
360
150
1033

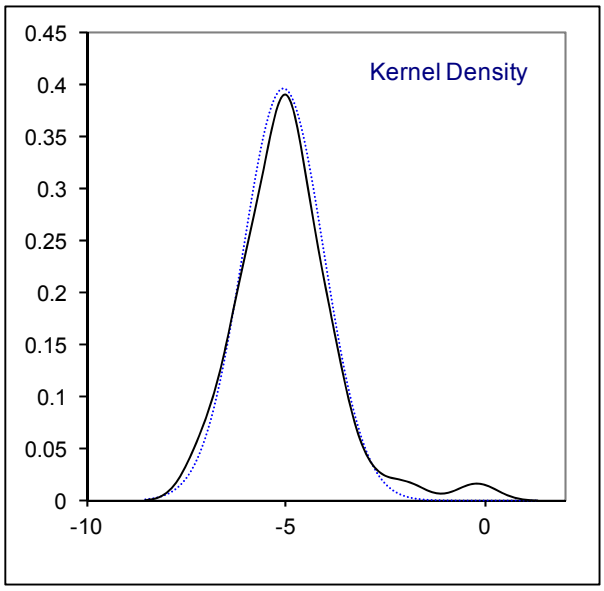

Kernel Density
30
25
20
15
10
5
0
0
0.1
0.2
0.3

Determination of Cloud Point on sample #15045; results in °C

lab	method	value	mark	z(targ)	remarks
120	D2500	-7		-1.82	
150	D2500	-5		0.05	
171	D2500	-6		-0.88	
312	D2500	-5		0.05	
334	D2500	-6		-0.88	
335		-----		-----	
336	EN23015	-4		0.98	
337	EN23015	-4.3		0.70	
338	EN23015	-4.4		0.61	
340	D2500	-4		0.98	
343	D2500	-4		0.98	
344	D2500	-4.6		0.42	
345	D5771	-5.3		-0.23	
360	D2500	-5		0.05	
391	D2500	-4		0.98	
398	D2500	-6		-0.88	
445	D2500	-7		-1.82	
447	D2500	-6		-0.88	
494	D2500	-6		-0.88	
529	D2500	-6		-0.88	
540	D5771	-5		0.05	
551		-----		-----	
621	D2500	-2.0		2.85	
657	D2500	-6		-0.88	
824	D2500	-5		0.05	
862	D2500	-5		0.05	
863	D2500	-5		0.05	
1016	ISO3015	-0.2	R(0.01)	4.53	
1033	D5771	-5.7		-0.60	
1059	EN23015	-5		0.05	
1067	D5771	-5		0.05	
1135	EN23015	-4		0.98	
1138	D2500	-7		-1.82	
1161	ISO3015	-5.0		0.05	
1162	D2500	-3.5		1.45	
1199		-----		-----	
1201	D2500	-4		0.98	
1203	EN23015	-3		1.92	
1227	D2500	-5.0		0.05	
1240	EN23015	-4.9	C	0.14	first reported: 6.9
1299	D2500	-6.0		-0.88	
1316	D5771	-5.0		0.05	
1397	D5771	-5		0.05	
1402	D2500	-5		0.05	
1429		-----		-----	
1457	D2500	-6.4		-1.26	
1459	ISO3015	-5		0.05	
1494		-----		-----	
1510		-----		-----	
1586	D2500	-5		0.05	
1593		-----		-----	
1634		-----		-----	
1643	D2500	-4		0.98	
1706		-----		-----	
1721	D2500	-5.5		-0.42	
1739	EN23015	-6		-0.88	
1744	D2500	-5		0.05	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
1991		-----		-----	
1994		-----		-----	

	normality	OK	
	n	47	
	outliers	1	
	mean (n)	-5.06	
	st.dev. (n)	1.010	
	R(calc.)	2.83	
	R(D2500:11)	3.00	Compare R(EN23015/ISO3015) = 4.00


0
-1
-2
-3
-4
-5
-6
-7
-8
-9
120 445 1138 1457 334 171 447 494 529 398 657 1299 1739 1033 1721 345 150 540 360 824 862 312 863 1059 1067 1161 1227 1316 1397 1402 1459 1586 1744 1240 344 338 337 340 336 343 391 1135 1201 1643 1162 1203 621 1016

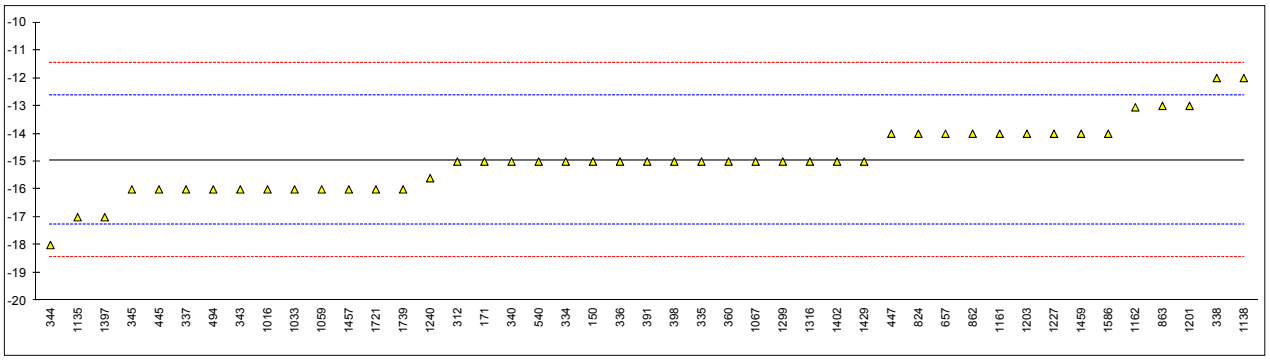

Kernel Density
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
-10
-5
0

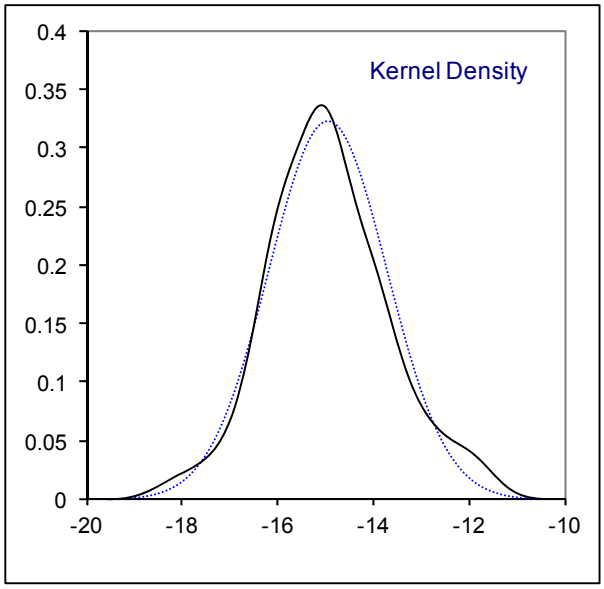
Determination of Cold Filter Plugging Point on sample #15045; results in °C

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150	EN116	-15		-0.05	
171	EN116	-15		-0.05	
312	EN116	-15		-0.05	
334	EN116	-15		-0.05	
335	EN116	-15		-0.05	
336	EN116	-15		-0.05	
337	EN116	-16		-0.91	
338	EN116	-12	C	2.54	First reported: -9°C
340	EN116	-15		-0.05	
343	EN116	-16		-0.91	
344	EN116	-18		-2.63	
345	EN116	-16		-0.91	
360	EN116	-15		-0.05	
391	EN116	-15		-0.05	
398	EN116	-15		-0.05	
445	EN116	-16		-0.91	
447	IP309	-14		0.82	
494	EN116	-16		-0.91	
529		-----		-----	
540	D6371	-15		-0.05	
551		-----		-----	
621		-----		-----	
657	IP309	-14		0.82	
824	EN116	-14		0.82	
862	EN116	-14		0.82	
863	IP309	-13		1.68	
1016	EN116	-16		-0.91	
1033	IP309	-16		-0.91	
1059	EN116	-16		-0.91	
1067	EN116	-15		-0.05	
1135	EN116	-17		-1.77	
1138	EN116	-12		2.54	
1161	EN116	-14.0		0.82	
1162	D6371	-13.05		1.64	
1199		-----		-----	
1201	EN116	-13		1.68	
1203	EN116	-14		0.82	
1227	EN116	-14		0.82	
1240	EN116	-15.6		-0.56	
1299	EN116	-15		-0.05	
1316	EN116	-15		-0.05	
1397	EN116	-17		-1.77	
1402	EN116	-15		-0.05	
1429	EN116	-15		-0.05	
1457	EN116	-16		-0.91	
1459	EN116	-14		0.82	
1494		-----		-----	
1510		-----		-----	
1586	D6371	-14		0.82	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1706		-----		-----	
1721	EN116	-16		-0.91	
1739	EN116	-16		-0.91	
1744		-----		-----	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
1991		-----		-----	
1994		-----		-----	

normality	OK
n	45
outliers	0
mean (n)	-14.95
st.dev. (n)	1.234
R(calc.)	3.46
R(EN14214:12)	3.25

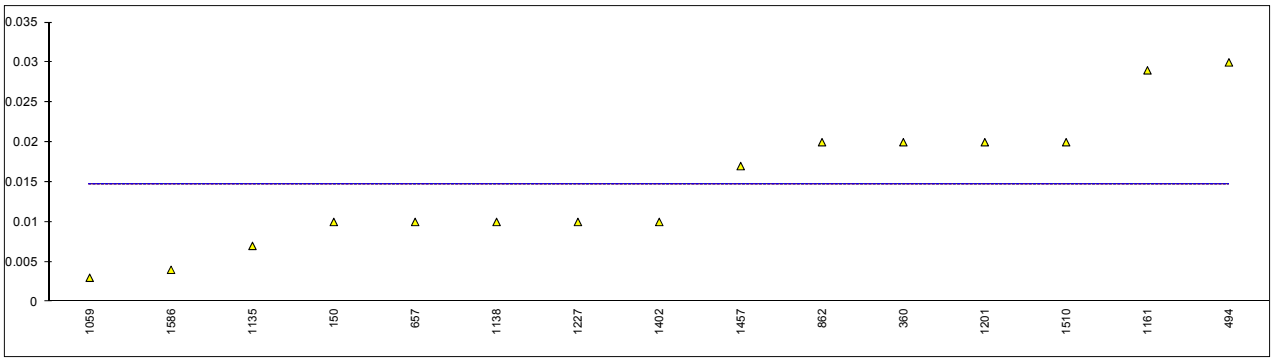
Compare R(EN116:97) = 4.11

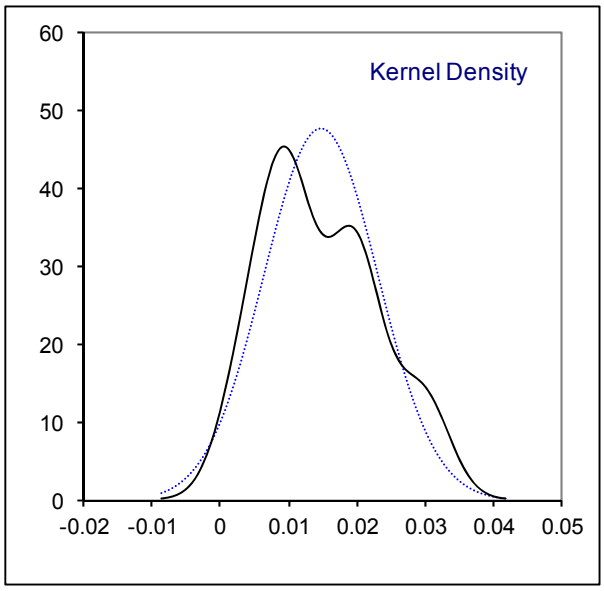

-10
-11
-12
-13
-14
-15
-16
-17
-18
-19
-20
344
1135
1397
345
445
337
494
343
1016
1033
1059
1457
1721
1739
1240
312
171
340
540
334
150
336
391
398
335
360
1067
1299
1316
1402
1429
447
824
657
862
1161
1203
1227
1459
1586
1162
863
1201
338
1138


Kernel Density
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
-20
-18
-16
-14
-12
-10

Determination of Carbon Residue on 100% FAME on sample #15045; results in %M/M

lab	method	value	mark	z(targ)	remarks
120	D4530	<0.01		-----	
150	D4530	0.01		-----	
171	D4530	<0.10		-----	
312		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340	D4530	<0.10		-----	
343		-----		-----	
344		-----		-----	
345		-----		-----	
360	D4530	0.02		-----	
391		-----		-----	
398		-----		-----	
445	D4530	<0.01		-----	
447		-----		-----	
494	D4530	0.03		-----	
529		-----		-----	
540		-----		-----	
551		-----		-----	
621		-----		-----	
657	D4530	0.01		-----	
824		-----		-----	
862	D4530	0.02		-----	
863	D4530	<0.01		-----	
1016		-----		-----	
1033		-----		-----	
1059	EN10370	0.003		-----	
1067	D4530	<0.01		-----	
1135	D4530	0.007		-----	
1138	D4530	0.01		-----	
1161	D4530	0.029		-----	
1162		-----		-----	
1199		-----		-----	
1201	D4530	0.02		-----	
1203	EN10370	<0.001		-----	
1227	D4530	0.01		-----	
1240		-----		-----	
1299		-----		-----	
1316	D4530	<0.01		-----	
1397		-----		-----	
1402	D4530	0.01		-----	
1429		-----		-----	
1457	D4530	0.017		-----	
1459		-----		-----	
1494		-----		-----	
1510	D4530	0.02		-----	
1586	D4530	0.004		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1706		-----		-----	
1721	D4530	<0.02		-----	
1739		-----		-----	
1744		-----		-----	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
1991		-----		-----	
1994		-----		-----	
	normality	OK			
	n	15			
	outliers	0			
	mean (n)	<0.10			
	st.dev. (n)	n.a.			
	R(calc.)	n.a.			
	R(D4530:11)	(0.141)			application range: 0.10 – 0.30 %M/M


0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
1059
1586
1135
150
657
1138
1227
1402
1457
862
360
1201
1510
1161
494


Kernel Density
60
50
40
30
20
10
0
-0.02
-0.01
0
0.01
0.02
0.03
0.04
0.05

Determination of Copper Strip Corrosion 3 hrs/50°C on sample #15045

lab	method	value	mark	z(targ)	remarks
120	D130	1A		-----	
150	D130	1A		-----	
171	D130	1B		-----	
312		1A		-----	
334		-----		-----	
335		-----		-----	
336	ISO2160	1		-----	
337		-----		-----	
338		-----		-----	
340	D130	1A		-----	
343	ISO2160	1A		-----	
344	D130	1A		-----	
345	ISO2160	1A		-----	
360	ISO2160	1A		-----	
391	ISO2160	1A		-----	
398	D130	1		-----	
445	IP154	1A		-----	
447	D130	1A		-----	
494	D130	1A		-----	
529	D130	1A		-----	
540	D130	1A		-----	
551		-----		-----	
621	D130	1A		-----	
657	D130	1A		-----	
824	D130	1A		-----	
862	D130	1A		-----	
863	D130	1A		-----	
1016	ISO2160	1A		-----	
1033		-----		-----	
1059	ISO2160	1A		-----	
1067	D130	1A		-----	
1135	ISO2160	1A		-----	
1138	D130	1A		-----	
1161	ISO2160	1		-----	
1162	D130	1A		-----	
1199		-----		-----	
1201	D130	1A		-----	
1203	ISO2160	1		-----	
1227	D130	1A		-----	
1240		-----		-----	
1299	D130	1A		-----	
1316	D130	1A		-----	
1397	ISO2160	1		-----	
1402	D130	1A		-----	
1429	D130	1A		-----	
1457	ISO2160	1A		-----	
1459		-----		-----	
1494		-----		-----	
1510		1A		-----	
1586	D130	1A		-----	
1593		-----		-----	
1634	D130	1A		-----	
1643		-----		-----	
1706		-----		-----	
1721		1		-----	
1739	ISO2160	1A		-----	
1744		-----		-----	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
1991		-----		-----	
1994		-----		-----	

normality	n.a.
n	43
outliers	n.a.
mean (n)	1 (1A)
st.dev. (n)	n.a.
R(calc.)	n.a.
R(lit)	unknown

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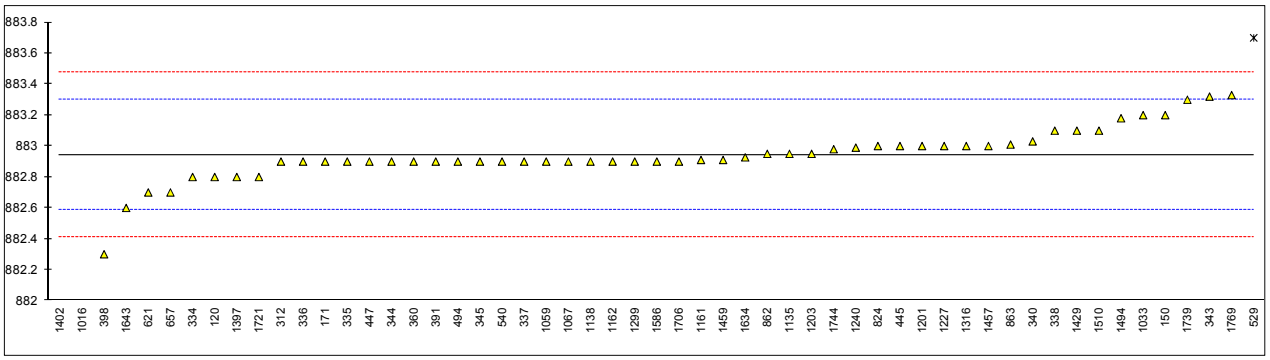
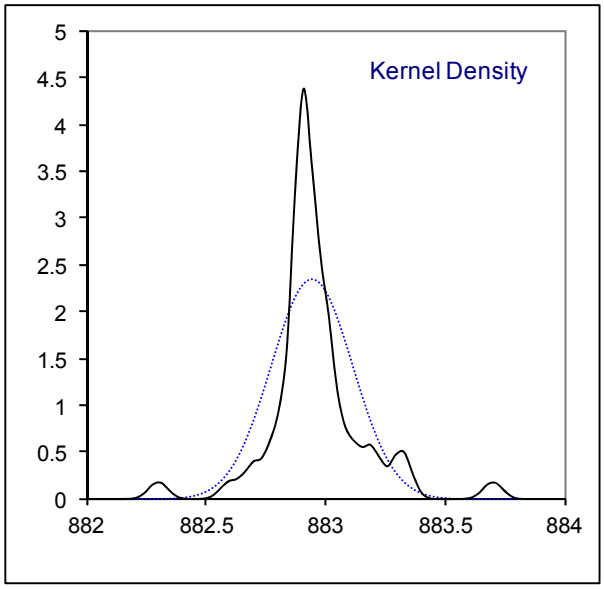
Determination of Density at 15°C conform EN spec. on sample #15045; results in kg/m^3

lab	method	value	mark	z(targ)	remarks
120	D4052	882.8		-0.80	
150	ISO12185	883.2		1.44	
171	D4052	882.9		-0.24	
312	ISO12185	882.9		-0.24	
334	ISO12185	882.8		-0.80	
335	ISO12185	882.9		-0.24	
336	ISO12185	882.9		-0.24	
337	ISO12185	882.9		-0.24	
338	ISO12185	883.1		0.88	
340	ISO12185	883.03		0.49	
343	ISO12185	883.32		2.11	
344	ISO12185	882.9		-0.24	
345	ISO12185	882.9		-0.24	
360	ISO12185	882.9		-0.24	
391	ISO12185	882.9		-0.24	
398	ISO12185	882.3		-3.60	
445	ISO12185	883.0		0.32	
447	D4052	882.9		-0.24	
494	ISO12185	882.9		-0.24	
529	D4052	883.7	R(0.01)	4.24	
540	ISO12185	882.9		-0.24	
551		-----		-----	
621	D4052	882.7		-1.36	
657	D4052	882.7		-1.36	
824	ISO12185	883.0		0.32	
862	D4052	882.95		0.04	
863	ISO12185	883.01		0.37	
1016	ISO12185	879.9	R(0.01)	-17.04	
1033	IP365	883.2		1.44	
1059	ISO12185	882.9		-0.24	
1067	ISO12185	882.9		-0.24	
1135	ISO12185	882.95		0.04	
1138	ISO12185	882.9		-0.24	
1161	ISO12185	882.91		-0.19	
1162	D4052	882.90		-0.24	
1199		-----		-----	
1201	D4052	883.0		0.32	reported: 0.8830 kg/L
1203	ISO12185	882.95		0.04	
1227	D4052	883.0		0.32	
1240	ISO12185	882.99		0.26	
1299	ISO12185	882.9		-0.24	
1316	ISO12185	883.0		0.32	
1397	ISO12185	882.8		-0.80	
1402	ISO12185	875.0	R(0.01)	-44.48	
1429	ISO12185	883.1		0.88	
1457	ISO12185	883.0		0.32	
1459	ISO12185	882.91		-0.19	
1494	D4052	883.18	C	1.33	first reported: 882.41
1510	ISO12185	883.1		0.88	
1586	D4052	882.9		-0.24	
1593		-----		-----	
1634	ISO12185	882.927		-0.09	
1643	D4052	882.6		-1.92	
1706	ISO12185	882.9		-0.24	
1721	ISO12185	882.8		-0.80	
1739	ISO3675	883.30		2.00	
1744	D4052	882.98		0.21	
1769	D4052	883.330		2.17	
1807		-----		-----	
1989		-----		-----	
1991		-----		-----	
1994		-----		-----	

normality	not OK
n	52
outliers	3
mean (n)	882.943
st.dev. (n)	0.1707
R(calc.)	0.478
R(ISO12185:96)	0.500

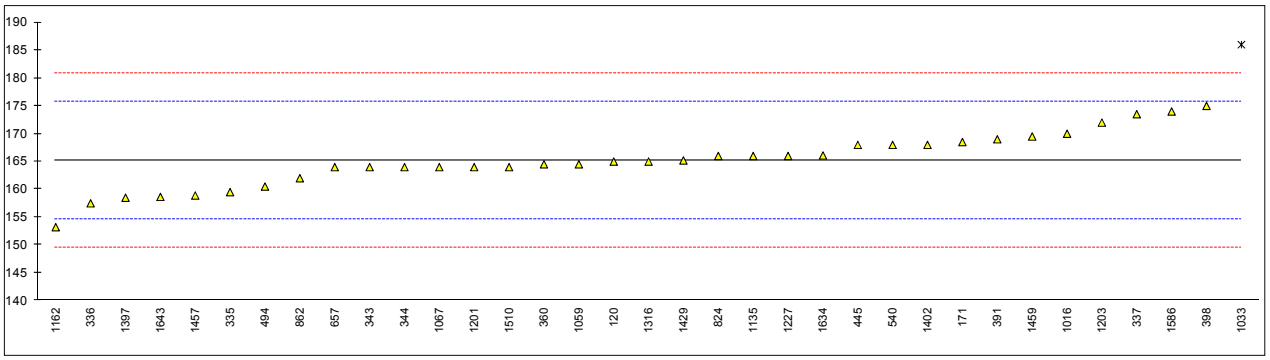

883.8
883.6
883.4
883.2
883
882.8
882.6
882.4
882.2
882
1402 1016 398 1643 621 657 334 120 1397 1721 312 336 171 335 447 344 360 391 494 345 540 337 1059 1067 1138 1162 1299 1586 1706 1161 1459 1634 862 1135 1203 1744 1240 824 445 1201 1227 1316 1457 863 340 338 1429 1510 1494 1033 150 1739 343 1769 529

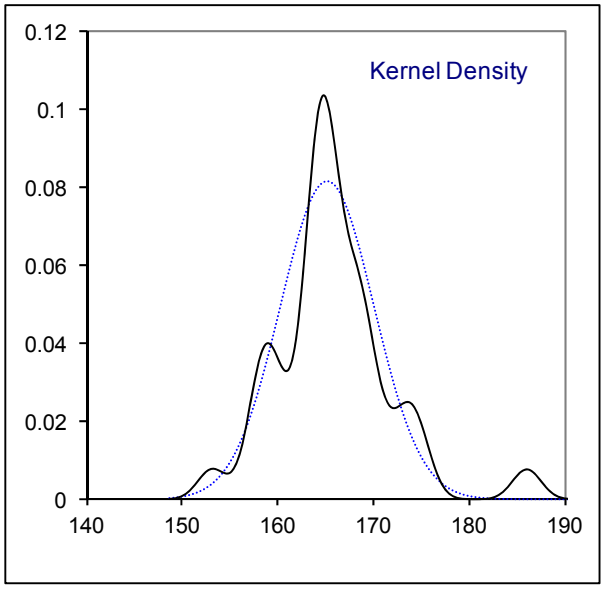

Kernel Density
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
882
882.5
883
883.5
884

Determination of Flash Point (PMcc) conform ASTM spec. on sample #15045; results in °C

lab	method	value	mark	z(targ)	remarks
120	D93-C	165		-0.04	
150	D93-A	>130		-----	
171	D93-C	168.5		0.63	
312		-----		-----	
334		-----		-----	
335	D93	159.5		-1.08	
336	ISO2719	157.5		-1.47	
337	ISO2719	173.5		1.58	
338		-----		-----	
340		-----		-----	
343	D93-A	164		-0.23	
344	D93	164.0		-0.23	
345		-----		-----	
360	D93-C	164.5		-0.13	
391	ISO2719	169		0.73	
398	D93-A	175		1.87	
445	D93-A	168.0		0.53	
447		-----		-----	
494	D93	160.5		-0.89	
529		-----		-----	
540	D93-C	168.0		0.53	
551		-----		-----	
621		-----		-----	
657	D93-C	164.0		-0.23	
824	D93-C	166.0		0.15	
862	D93	162.0		-0.61	
863		-----		-----	
1016	ISO2719	170.0		0.92	
1033	IP34	186.0	R(0.01)	3.96	
1059	ISO2719	164.5		-0.13	
1067	ISO2719	164.0		-0.23	
1135	ISO2719	166.0		0.15	
1138		-----		-----	
1161		-----		-----	
1162	D93	153.2		-2.28	
1199		-----		-----	
1201	D93	164.0		-0.23	
1203	ISO2719	172		1.30	
1227	D93	166.0		0.15	
1240		-----		-----	
1299		-----		-----	
1316	D93	165.0		-0.04	
1397	D93	158.5		-1.27	
1402	D93-A	168.0		0.53	
1429	D93	165.2		0.00	
1457	D93-A	158.9		-1.20	
1459	ISO2719	169.5		0.82	
1494		-----		-----	
1510	D93	164.0		-0.23	
1586	D93-A	174.0		1.68	
1593		-----		-----	
1634	D93-C	166.1		0.17	
1643	D93-C	158.65		-1.25	
1706		-----		-----	
1721		-----		-----	
1739		-----		-----	
1744		-----		-----	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
1991		-----		-----	
1994		-----		-----	

	normality	OK	
	n	34	
	outliers	1	
	mean (n)	165.19	
	st.dev. (n)	4.884	
	R(calc.)	13.67	
	R(D93C:15)	14.70	Compare R(ISO2719A:02) = 11.73

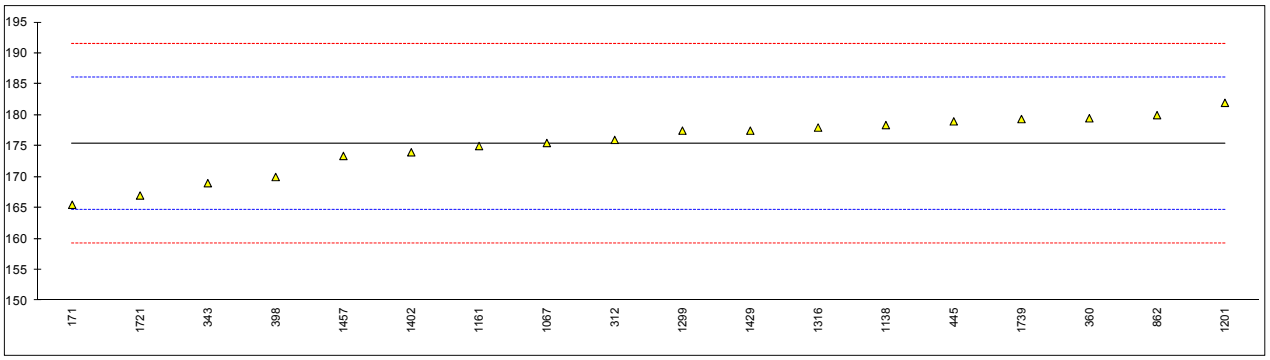

190
185
180
175
170
165
160
155
150
145
140
1162
336
1397
1643
1457
335
494
862
657
343
344
1067
1201
1510
360
1059
120
1316
1429
824
1135
1227
1634
445
540
1402
171
391
1459
1016
1203
337
1586
398
1033

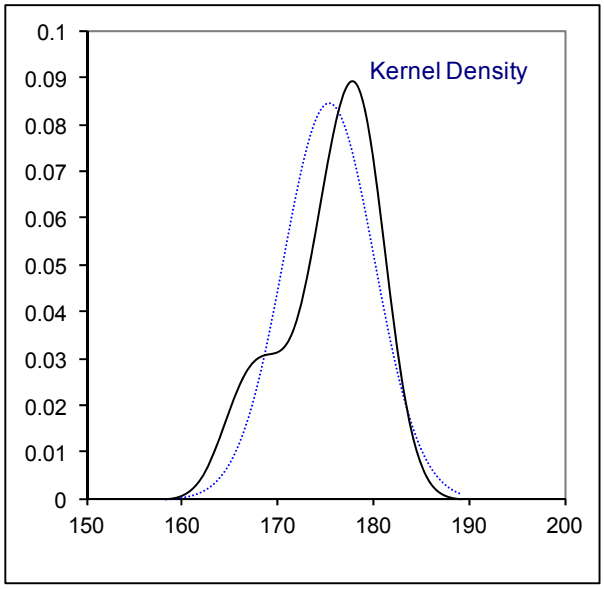

Kernel Density
0.12
0.1
0.08
0.06
0.04
0.02
0
140
150
160
170
180
190

Determination of Flash Point (recc) conform ISO spec. on sample #15045; results in °C

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171	ISO3679	165.5		-1.84	
312	ISO3679	176		0.12	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	ISO3679	169		-1.19	
344		-----		-----	
345		-----		-----	
360	ISO3679	179.5		0.77	
391		-----		-----	
398	ISO3679	170		-1.00	
445	IP523	179.0		0.68	
447		-----		-----	
494		-----		-----	
529		-----		-----	
540		-----		-----	
551		-----		-----	
621		-----		-----	
657		-----		-----	
824		-----		-----	
862	ISO3679	180.0		0.86	
863		-----		-----	
1016		-----		-----	
1033		-----		-----	
1059		-----		-----	
1067	ISO3679	175.5		0.02	
1135		-----		-----	
1138	ISO3679	178.4		0.57	
1161	ISO3679	175.0		-0.07	
1162		-----		-----	
1199		-----		-----	
1201	ISO3679	182.0		1.24	
1203		-----		-----	
1227		-----		-----	
1240		-----		-----	
1299	ISO3679	177.5		0.40	
1316	ISO3679	178		0.49	
1397		-----		-----	
1402	IP523	174.0		-0.26	
1429	ISO3679	177.5		0.40	
1457	ISO3679	173.4		-0.37	
1459		-----		-----	
1494		-----		-----	
1510		-----		-----	
1586		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1706		-----		-----	
1721	ISO3679	167		-1.56	
1739	ISO3679	179.37		0.75	
1744		-----		-----	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
1991		-----		-----	
1994		-----		-----	

normality	OK
n	18
outliers	0
mean (n)	175.37
st.dev. (n)	4.728
R(calc.)	13.24
R(ISO3679:15)	15.00

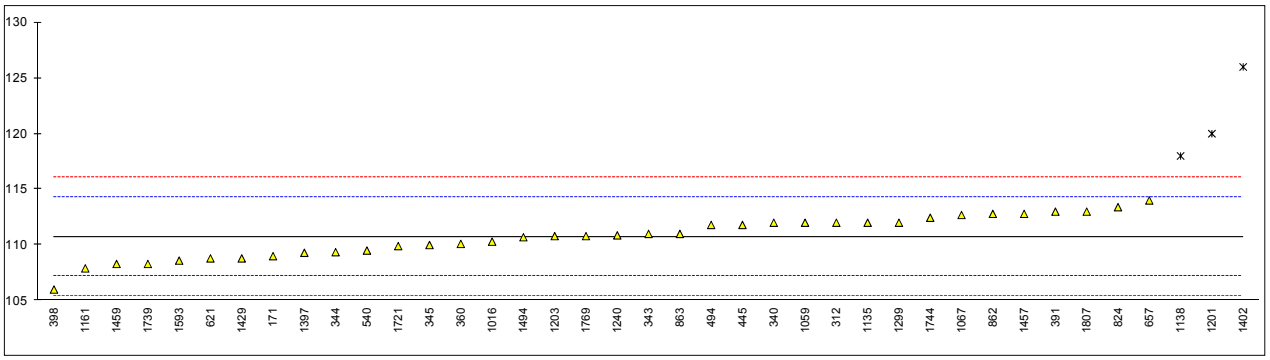

195
190
185
180
175
170
165
160
155
150
171
1721
343
398
1457
1402
1161
1067
312
1299
1429
1316
1138
445
1739
360
862
1201

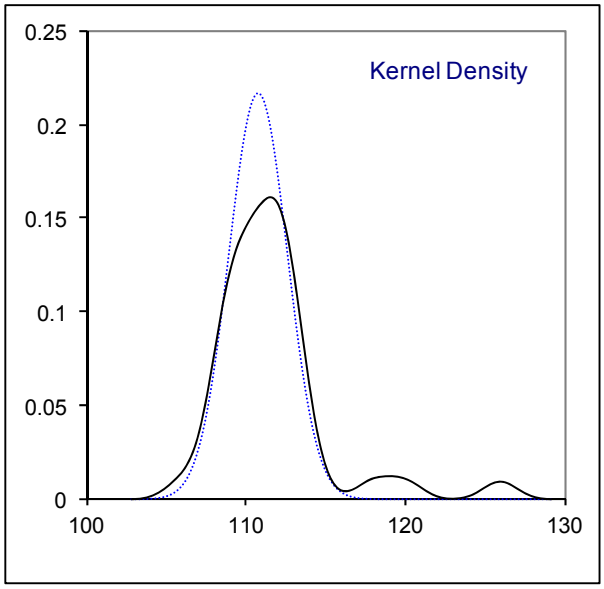

Kernel Density
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
150
160
170
180
190
200

Determination of Iodine Value conform EN spec. on sample #15045; results in g I_2/100g

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171	EN14111	109		-0.98	
312	EN14111	112		0.70	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340	EN14111	112		0.70	
343	EN14111	111		0.14	
344	EN14111	109.36		-0.78	
345	EN14111	110		-0.42	
360	EN14111	110.1		-0.37	
391	EN14111	113		1.26	
398	EN16300	106		-2.66	
445	EN14111	111.8		0.59	
447		-----		-----	
494	EN14111	111.8		0.59	
529		-----		-----	
540	EN14111	109.5		-0.70	
551		-----		-----	
621	INH-25	108.8		-1.09	
657	EN14111	114		1.82	
824	EN14111	113.4		1.48	
862	EN14111	112.8		1.15	
863	EN14111	111.0		0.14	
1016	EN14111	110.3		-0.25	
1033		-----		-----	
1059	EN14111	112		0.70	
1067	EN14111	112.7		1.09	
1135	EN14111	112		0.70	
1138	EN14111	118	R(0.05)	4.06	
1161	EN14111	107.9		-1.60	
1162		-----		-----	
1199		-----		-----	
1201	EN14111	120	R(0.01)	5.18	
1203	EN14111	110.8		0.03	
1227		-----		-----	
1240	EN16300	110.87		0.07	
1299	EN14111	112		0.70	
1316		-----		-----	
1397	EN16300	109.3		-0.81	
1402	EN14111	126	R(0.01)	8.54	
1429	EN14111	108.8		-1.09	
1457	EN14111	112.8		1.15	
1459	EN16300	108.3		-1.37	
1494	EN14111	110.699		-0.03	
1510		-----		-----	
1586		-----		-----	
1593	EN14111	108.6		-1.21	
1634		-----		-----	
1643		-----		-----	
1706		-----		-----	
1721	EN14111	109.9		-0.48	
1739	EN14111	108.3		-1.37	
1744	EN14111	112.45		0.95	
1769	EN14111	110.800		0.03	
1807	EN14111	113		1.26	
1989		-----		-----	
1991		-----		-----	
1994		-----		-----	

normality	OK
n	36
outliers	3
mean (n)	110.75
st.dev. (n)	1.840
R(calc.)	5.15
R(EN14111:03)	5.00


130
125
120
115
110
105
398
1161
1459
1739
1593
621
1429
171
1397
344
540
1721
345
360
1016
1494
1203
1769
1240
343
863
494
445
340
1059
312
1135
1299
1744
1067
862
1457
391
1807
824
657
1138
1201
1402

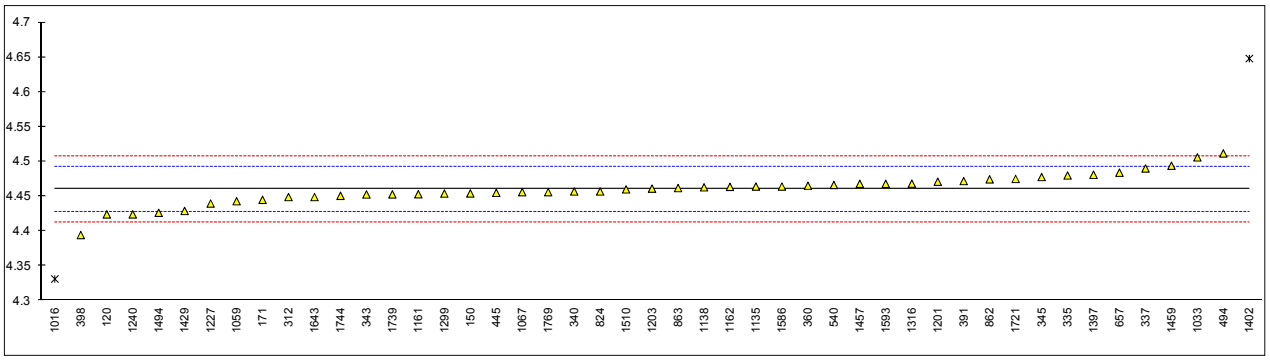

Kernel Density
0.25
0.2
0.15
0.1
0.05
0
100
110
120
130

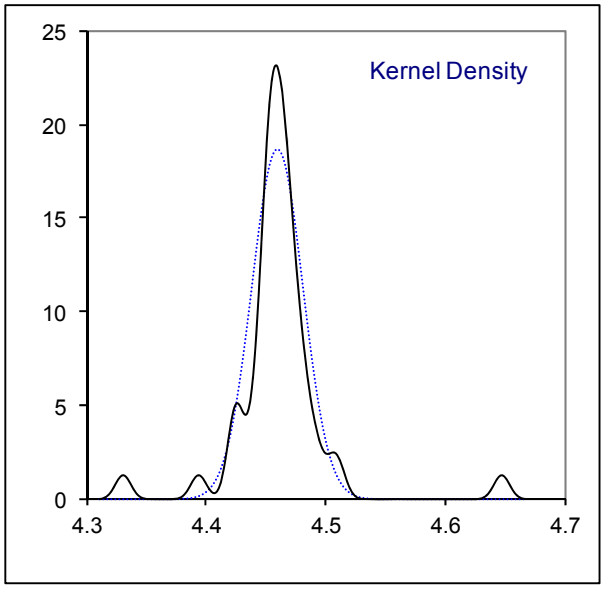
Determination of Kinematic Viscosity at 40°C on sample #15045; results in mm^2/s

lab	method	value	mark	z(targ)	remarks
120	D445	4.424		-2.27	
150	ISO3104	4.4542		-0.38	
171	D445	4.445		-0.95	
312	ISO3104	4.449		-0.70	
334		-----		-----	
335	ISO3104	4.480		1.23	
336		-----		-----	
337	ISO3104	4.490		1.86	
338		-----		-----	
340	ISO3104	4.4570		-0.20	
343	ISO3104	4.4527		-0.47	
344		-----		-----	
345	ISO3104	4.4777		1.09	
360	ISO3104	4.4653		0.31	
391	ISO3104	4.472		0.73	
398	ISO3104	4.3944		-4.12	
445	D445	4.455		-0.33	
447		-----		-----	
494	ISO3104	4.5117		3.22	
529		-----		-----	
540	ISO3104	4.4664		0.38	
551		-----		-----	
621		-----		-----	
657	ISO3104	4.484	C	1.48	first reported: 4.286
824	ISO3104	4.457		-0.20	
862	ISO3104	4.4744		0.88	
863	ISO3104	4.4619		0.10	
1016	ISO3104	4.3312	R(0.01)	-8.07	
1033	IP71	4.506		2.86	
1059	ISO3104	4.443		-1.08	
1067	D445	4.456		-0.27	
1135	ISO3104	4.464		0.23	
1138	ISO3104	4.463		0.17	
1161	ISO3104	4.453		-0.45	
1162	D445	4.4636		0.21	
1199		-----		-----	
1201	D445	4.471		0.67	
1203	ISO3104	4.461		0.05	
1227	D445	4.4397		-1.29	
1240	ISO3104	4.424		-2.27	
1299	D445	4.454		-0.39	
1316	ISO3104	4.4682		0.50	
1397	ISO3104	4.481		1.30	
1402	ISO3104	4.648	R(0.01)	11.74	
1429	D445	4.429		-1.96	
1457	ISO3104	4.468		0.48	
1459	D7042	4.494		2.11	
1494	D445	4.4262700		-2.13	
1510	ISO3104	4.460		-0.02	
1586	D445	4.464		0.23	
1593	D445	4.468	C	0.48	first reported: 4.530
1634		-----		-----	
1643	D445	4.449		-0.70	
1706		-----		-----	
1721	ISO3104	4.475		0.92	
1739	ISO3104	4.4528		-0.47	
1744	D445	4.4507		-0.60	
1769	D445	4.45600		-0.27	
1807		-----		-----	
1989		-----		-----	
1991		-----		-----	
1994		-----		-----	

normality	suspect
n	45
outliers	2
mean (n)	4.4603
st.dev. (n)	0.02139
R(calc.)	0.0599
R(EN14214:12)	0.0448

compare R(D445:15) = 0.0999, no R published for FAME in ISO3104:94

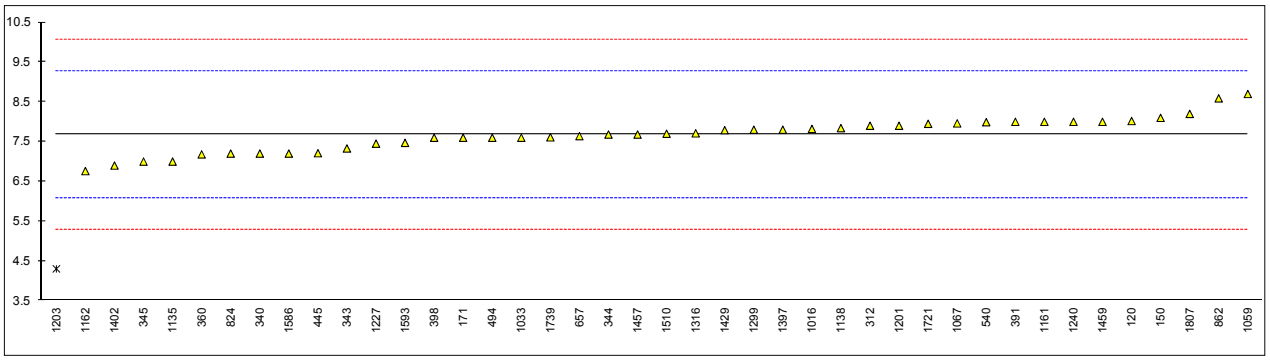

4.7
4.65
4.6
4.55
4.5
4.45
4.4
4.35
4.3
1016 398 120 1240 1494 1429 1227 1059 171 312 1643 1744 343 1739 1161 1299 150 445 1067 1769 340 824 1510 1203 863 1138 1162 1135 1586 360 540 1457 1593 1316 1201 391 862 1721 345 335 1397 657 337 1459 1033 494 1402

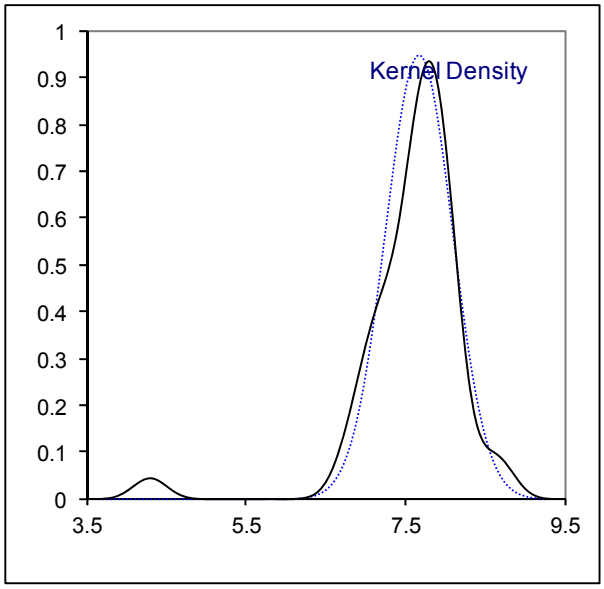

Kernel Density
25
20
15
10
5
0
4.3
4.4
4.5
4.6
4.7

Determination of Oxidation Stability on sample #15045; results in hours

lab	method	value	mark	z(targ)	remarks
120	EN15751	8.02		0.43	
150	EN14112	8.1		0.53	
171	EN15751	7.6		-0.09	
312	EN14112	7.9		0.28	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340	EN14112	7.2		-0.60	
343	EN14112	7.33		-0.43	
344	EN14112	7.68		0.01	
345	EN14112	7.0		-0.85	
360	EN14112	7.18		-0.62	
391	EN14112	8.0		0.41	
398	EN14112	7.6		-0.09	
445	EN14112	7.21		-0.59	
447		-----		-----	
494	EN14112	7.6		-0.09	
529		-----		-----	
540	EN14112	7.99		0.40	
551		-----		-----	
621		-----		-----	
657	EN14112	7.64		-0.04	
824	EN14112	7.2		-0.60	
862	EN14112	8.59		1.15	
863		-----		-----	
1016	EN14112	7.82		0.18	
1033	EN14112	7.60		-0.09	
1059	EN14112	8.70		1.29	
1067	EN14112	7.96		0.36	
1135	EN14112	7.0		-0.85	
1138	EN14112	7.84		0.21	
1161	EN14112	8.0		0.41	
1162	EN14112	6.76		-1.15	
1199		-----		-----	
1201	EN14112	7.9		0.28	
1203	EN15751	4.3	R(0.01)	-4.25	
1227	EN14112	7.45		-0.28	
1240	EN15751	8.00		0.41	
1299	EN14112	7.8		0.16	
1316	EN14112	7.71		0.04	
1397	EN14112	7.8		0.16	
1402	EN14112	6.9		-0.98	
1429	EN14112	7.79		0.14	
1457	EN14112	7.68		0.01	
1459	EN15751	8.0		0.41	
1494		-----		-----	
1510	EN14112	7.7		0.03	
1586	EN14112	7.2		-0.60	
1593	EN14112	7.47		-0.26	
1634		-----		-----	
1643		-----		-----	
1706		-----		-----	
1721	EN14112	7.95		0.35	
1739	EN14112	7.61		-0.08	
1744		-----		-----	
1769		-----		-----	
1807	EN15751	8.2		0.66	
1989		-----		-----	
1991		-----		-----	
1994		-----		-----	

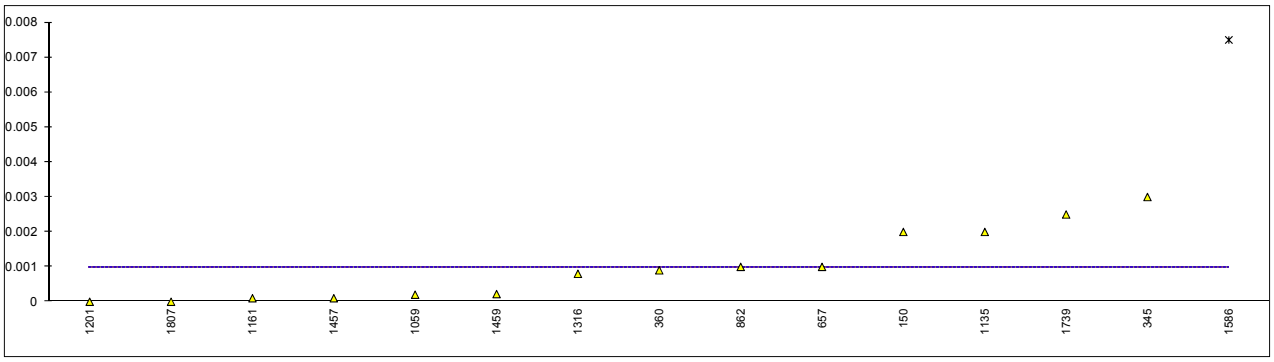
normality	OK
n	41
outliers	1
mean (n)	7.675
st.dev. (n)	0.4203
R(calc.)	1.177
R(EN14112:03)	2.226

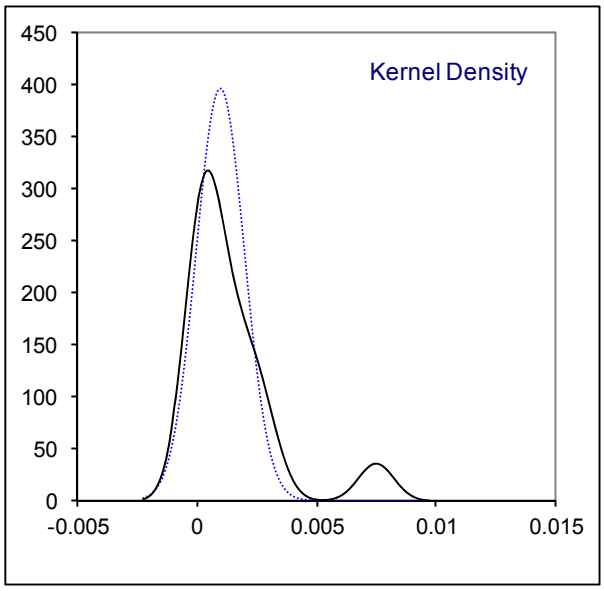

10.5
9.5
8.5
7.5
6.5
5.5
4.5
3.5
1203 1162 1402 345 1135 360 824 340 1586 445 343 1227 1593 398 171 494 1033 1739 657 344 1457 1510 1316 1429 1299 1397 1016 1138 312 1201 1721 1067 540 391 1161 1240 1459 120 150 1807 862 1059


Kernel Density
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
3.5
5.5
7.5
9.5

Determination of Sulphated Ash on sample #15045; results in %M/M

lab	method	value	mark	z(targ)	remarks
120	D874	<0.001		-----	
150	D874	0.002		-----	
171	D874	<0.005		-----	
312		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340	D874	<0.005		-----	
343	ISO3987	<0.005		-----	
344	ISO3987	<0.005		-----	
345	ISO3987	0.003		-----	
360	D874	0.0009		-----	
391		-----		-----	
398	ISO3987	<0.005		-----	
445	D874	<0.001		-----	
447		-----		-----	
494	D874	<0.005		-----	
529		-----		-----	
540	D874	<0.005		-----	
551		-----		-----	
621		-----		-----	
657	D874	0.001		-----	
824		-----		-----	
862	D874	0.0010		-----	
863	D874	<0.005		-----	
1016	ISO3987	<0.005		-----	
1033		-----		-----	
1059	ISO3987	0.0002		-----	
1067	D874	<0.005		-----	
1135	ISO3987	0.002		-----	
1138	D874	<0.001		-----	
1161	D874	0.0001		-----	
1162		-----		-----	
1199		-----		-----	
1201	ISO3987	0		-----	
1203	ISO3987	<0.005		-----	
1227		-----		-----	
1240		-----		-----	
1299	ISO3987	<0.001		-----	
1316	D874	0.0008	C	-----	first reported: 0.008
1397	D874	<0.005		-----	
1402	D874	<0.005		-----	
1429	IP163	<0.001		-----	
1457	ISO3987	0.0001		-----	
1459	ISO3987	0.00022		-----	
1494		-----		-----	
1510		-----		-----	
1586	D874	0.0075	G(0.01)	-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1706		-----		-----	
1721	D874	<0.005		-----	
1739	ISO3987	0.0025		-----	
1744		-----		-----	
1769		-----		-----	
1807	ISO3987	0		-----	
1989		-----		-----	
1991		-----		-----	
1994		-----		-----	
	normality	OK			
	n	33			
	outliers	1			
	mean (n)	<0.005			
	st.dev. (n)	0.001006			
	R(calc.)	0.00282			application range : 0.005 – 0.100 %M/M
	R(D874:13a)	(0.00053)			compare R(ISO3987:10) = 0.00053

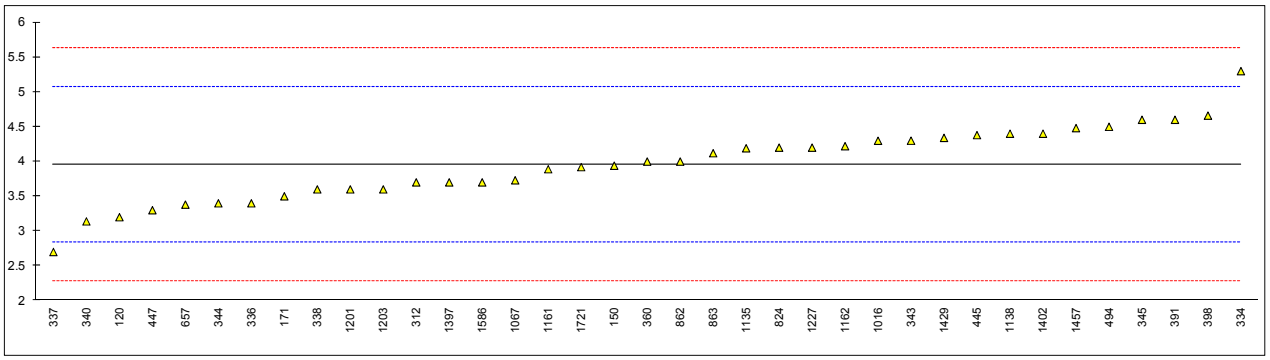

0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
1201
1807
1161
1457
1059
1459
1316
360
862
657
150
1135
1739
345
1586

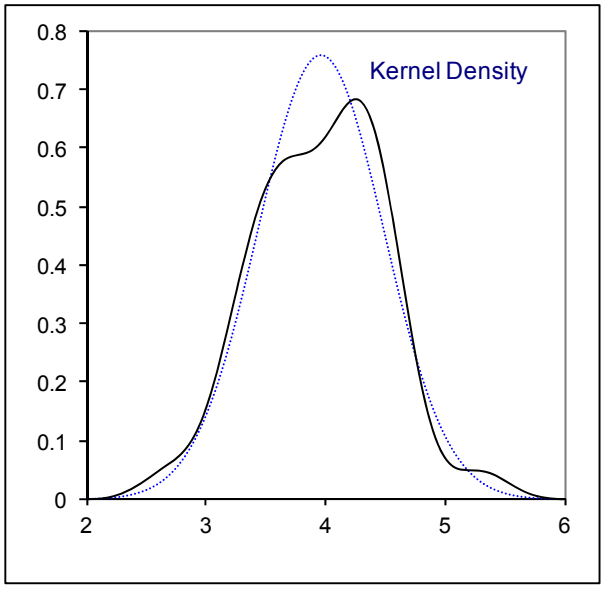

Kernel Density
450
400
350
300
250
200
150
100
50
0
-0.005
0
0.005
0.01
0.015

Determination of Sulphur on sample #15045; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120	D7039	3.2		-1.36	
150	ISO20846	3.94		-0.04	
171	D7039	3.5		-0.83	
312	ISO20846	3.7		-0.47	
334	ISO20746	5.3		2.40	
335		-----		-----	
336	ISO20846	3.4		-1.01	
337	ISO20846	2.7		-2.26	
338	ISO20846	3.60		-0.65	
340	ISO20846	3.14		-1.47	
343	ISO20846	4.30		0.61	
344	ISO20846	3.4		-1.01	
345	ISO20846	4.6		1.14	
360	ISO20846	4.00		0.07	
391	ISO20846	4.6		1.14	
398	ISO20846	4.66		1.25	
445	ISO20846	4.38		0.75	
447	D5453	3.3		-1.19	
494	ISO20846	4.5		0.96	
529		-----		-----	
540		-----		-----	
551		-----		-----	
621		-----		-----	
657	D5453	3.38		-1.04	
824	D5453	4.2		0.43	
862	D5453	4.0		0.07	
863	ISO20846	4.12		0.28	
1016	ISO20846	4.298		0.60	
1033		-----		-----	
1059	ISO20884	<5.0		-----	
1067	ISO20846	3.73		-0.42	
1135	ISO20846	4.19		0.41	
1138	IP490	4.4		0.78	
1161	ISO20846	3.89		-0.13	
1162	D5453	4.22		0.46	
1199	ISO20884	< 5.0		-----	
1201	D5453	3.6		-0.65	
1203	ISO20846	3.60		-0.65	
1227	D5453	4.2		0.43	
1240		-----		-----	
1299	ISO20846	<5		-----	
1316		-----		-----	
1397	ISO20846	3.7		-0.47	
1402	ISO20846	4.4		0.78	
1429	ISO20846	4.34		0.68	
1457	ISO20846	4.48		0.93	
1459		-----		-----	
1494		-----		-----	
1510		-----		-----	
1586	D5453	3.7		-0.47	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1706		-----		-----	
1721	ISO20846	3.92		-0.07	
1739		-----		-----	
1744		-----		-----	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
1991		-----		-----	
1994		-----		-----	

		ISO20846 only	D5453 only	
normality	OK	OK	unknown	
n	37	27	8	
outliers	0	0	0	
mean (n)	3.962	4.048	3.825	
st.dev. (n)	0.5262	0.5484	0.3794	
R(calc.)	1.473	1.535	1.062	
R(ISO20846:11)	1.564	1.573		application range : 3-500 mg/kg
R(D5453:12)	(1.628)		1.586	application range: 1-8000 mg/kg

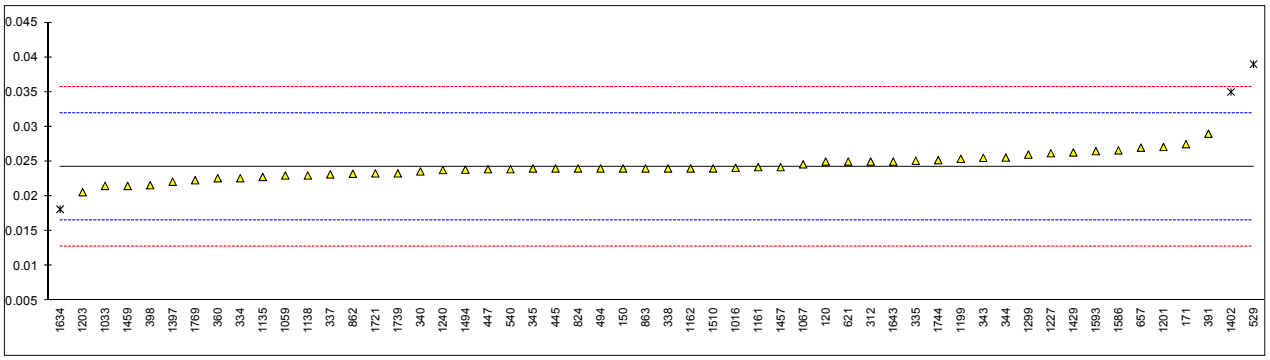

6
5.5
5
4.5
4
3.5
3
2.5
2
337
340
120
447
657
344
336
171
338
1201
1203
312
1397
1586
1067
1161
1721
150
360
862
863
1135
824
1227
1162
1016
343
1429
445
1138
1402
1457
494
345
391
398
334

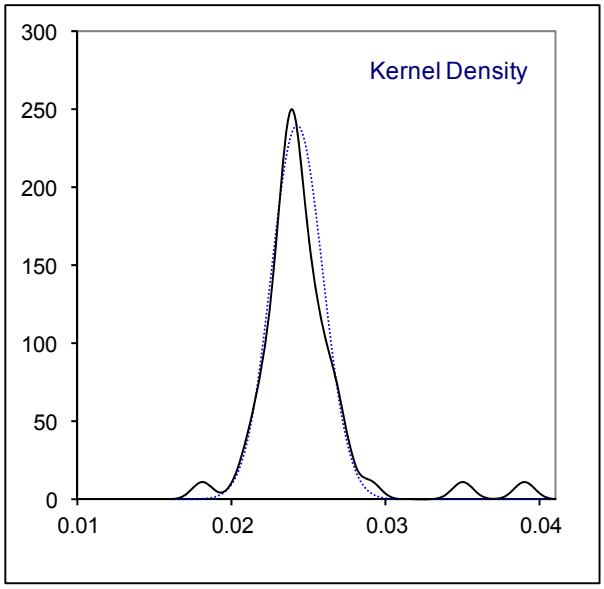

Kernel Density
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
2
3
4
5
6

Determination of Water on sample #15045; results in %M/M

lab	method	value	mark	z(targ)	remarks
120	E203	0.025		0.19	
150	E1064	0.024	C	-0.07	first reported: 0.024 mg/kg
171	D6304	0.0275		0.84	
312	ISO12937	0.025		0.19	
334	ISO12937	0.0226	C	-0.44	first reported: 226 mg/kg
335	ISO12937	0.0251	U	0.22	probably a unit error, reported: 251 %M/M
336		-----		-----	
337	ISO12937	0.02316		-0.29	
338	ISO12937	0.0240		-0.07	
340	ISO12937	0.02358		-0.18	
343	ISO12937	0.02554		0.33	
344	ISO12937	0.02558		0.34	
345	ISO12937	0.0240		-0.07	
360	ISO12937	0.0226		-0.44	
391	ISO12937	0.0290		1.23	
398	ISO12937	0.0216		-0.70	
445	ISO12937	0.0240		-0.07	
447	IP438	0.0239		-0.10	
494	ISO12937	0.024		-0.07	
529	E1064	0.039	R(0.01)	3.84	
540	ISO12937	0.0239		-0.10	
551		-----		-----	
621	D6304	0.025		0.19	
657	ISO12937	0.027		0.71	
824	ISO12937	0.024		-0.07	
862	D6304A	0.02324	U	-0.27	probably a unit error, reported: 232.4 %M/M
863	ISO12937	0.024		-0.07	
1016	ISO12937	0.02411		-0.04	
1033	IP438	0.0215		-0.72	
1059	ISO12937	0.0230		-0.33	
1067	ISO12937	0.0246		0.09	
1135	ISO12937	0.02279		-0.39	
1138	IP438	0.0230	U	-0.33	probably a unit error, reported: 230 %M/M
1161	ISO12937	0.0242		-0.02	
1162	D6304	0.024		-0.07	
1199	ISO12937	0.0254		0.29	
1201	ISO12937	0.0271		0.74	
1203	ISO12937	0.0206		-0.96	
1227	D6304	0.0262		0.50	
1240	ISO12937	0.0237825	C	-0.13	first reported: 237.825 %M/M
1299	ISO12937	0.0260		0.45	
1316		-----		-----	
1397	ISO12937	0.0221		-0.57	
1402	ISO12937	0.0350	R(0.01)	2.80	
1429	ISO12937	0.0263		0.53	
1457	ISO12937	0.0242		-0.02	
1459	ISO12937	0.0215		-0.72	
1494	E203	0.023836		-0.11	
1510	ISO12937	0.0240	U	-0.07	probably a unit error, reported: 240 %M/M
1586	ISO12937	0.0266		0.61	
1593	E203	0.0265		0.58	
1634	ISO12937	0.01814	R(0.05)	-1.60	
1643	ISO6296	0.025		0.19	
1706		-----		-----	
1721	ISO12937	0.0233		-0.25	
1739	ISO12937	0.02330		-0.25	
1744	E203	0.0252		0.24	
1769	ISO12937	0.0223185		-0.51	
1807		-----		-----	
1989		-----		-----	
1991		-----		-----	
1994		-----		-----	

normality	OK
n	51
outliers	3
mean (n)	0.02427
st.dev. (n)	0.001670
R(calc.)	0.00468
R(ISO12937:00)	0.01073

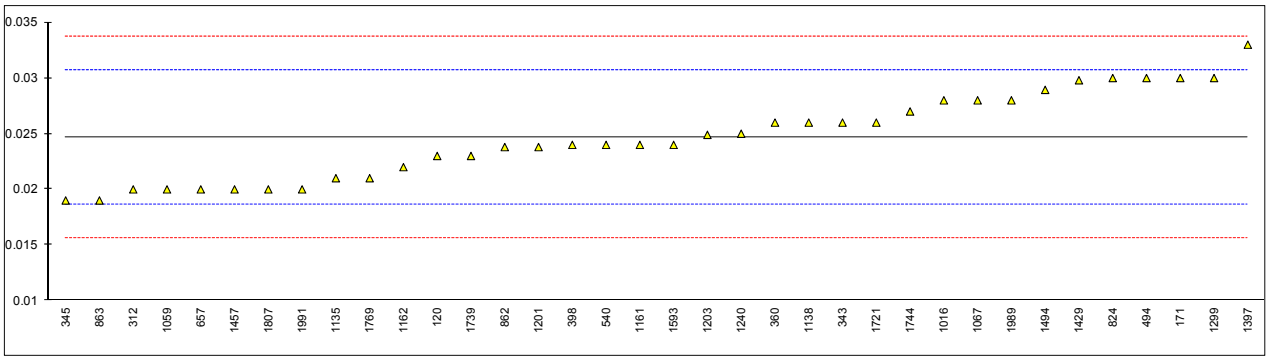

0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
1634 1203 1033 1459 398 1397 1769 360 334 1135 1059 1138 337 862 1721 1739 340 1240 1494 447 540 345 445 824 494 150 863 338 1162 1510 1016 1161 1457 1067 120 621 312 1643 335 1744 1199 343 344 1299 1227 1429 1593 1586 657 1201 171 391 1402 529


Kernel Density
300
250
200
150
100
50
0
0.01
0.02
0.03
0.04

Determination of Methanol on sample #15045; results in %M/M

lab	method	value	mark	z(targ)	remarks
120	EN14110	0.023		-0.55	
150		-----		-----	
171	EN14110	0.03		1.76	
312	EN14110	0.02		-1.55	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN14110	0.026		0.44	
344		-----		-----	
345	EN14110	0.019		-1.88	
360	EN14110	0.026		0.44	
391		-----		-----	
398	EN14110	0.024		-0.22	
445		-----		-----	
447		-----		-----	
494	EN14110	0.03		1.76	
529		-----		-----	
540	EN14110	0.024		-0.22	
551		-----		-----	
621		-----		-----	
657	EN14110	0.02		-1.55	
824	EN14110	0.03		1.76	
862	EN14110	0.0238		-0.29	
863	EN14110	0.019		-1.88	
1016	EN14110	0.028		1.10	
1033		-----		-----	
1059	EN14110	0.02		-1.55	
1067	EN14110	0.028		1.10	
1135	EN14110	0.021		-1.22	
1138	EN14110	0.026		0.44	
1161	EN14110	0.024		-0.22	
1162	EN14110	0.022		-0.89	
1199		-----		-----	
1201	EN14110	0.0238		-0.29	
1203	EN14110	0.0249		0.08	
1227		-----		-----	
1240	EN14110	0.025		0.11	
1299	EN14110	0.03		1.76	
1316		-----		-----	
1397	EN14110	0.033		2.76	
1402		-----		-----	
1429	EN14110	0.0298		1.70	
1457	EN14110	0.020		-1.55	
1459		-----		-----	
1494	EN14110	0.02894		1.41	
1510		-----		-----	
1586		-----		-----	
1593	EN14110	0.024		-0.22	
1634		-----		-----	
1643		-----		-----	
1706		-----		-----	
1721	EN14110	0.026		0.44	
1739	EN14110	0.023		-0.55	
1744	EN14110	0.027		0.77	
1769	EN14110	0.0210		-1.22	
1807	EN14110	0.02		-1.55	
1989	EN14104	0.028		1.10	
1991	EN14110	0.020		-1.55	
1994		-----		-----	

normality	OK
n	36
outliers	0
mean (n)	0.0247
st.dev. (n)	0.00382
R(calc.)	0.0107
R(EN14110:03)	0.0085


0.035
0.03
0.025
0.02
0.015
0.01
345
863
312
1059
657
1457
1807
1991
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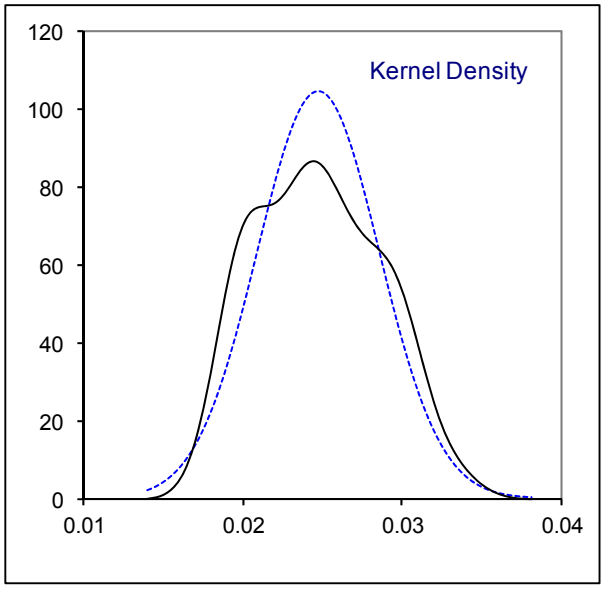
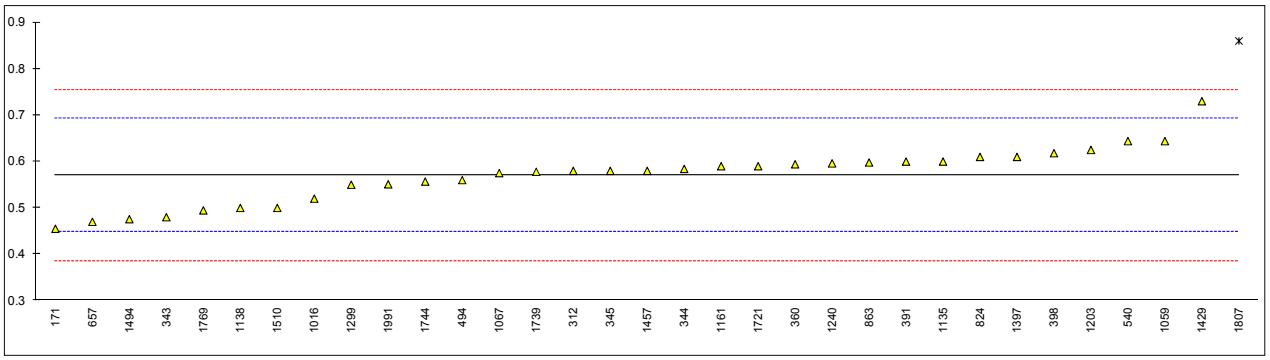
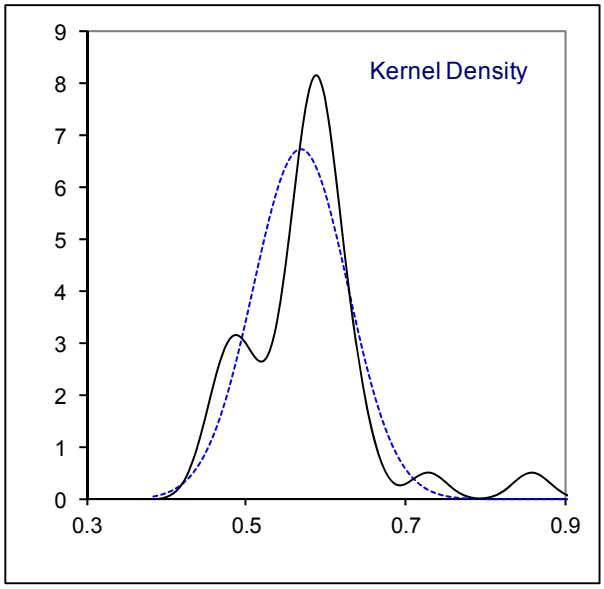
1769
1162
120
1739
862
1201
398
540
1161
1593
1203
1240
360
1138
343
1721
1744
1016
1067
1989
1494
1429
824
494
171
1299
1397


Kernel Density
120
100
80
60
40
20
0
0.01
0.02
0.03
0.04

Determination of mono-Glycerides on sample #15045; results in %M/M

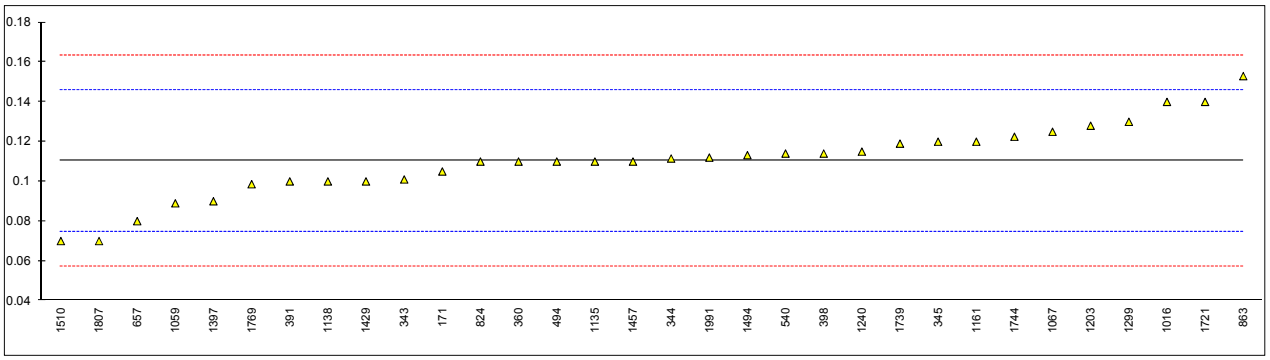
lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171	D6584	0.455		-1.87	
312	EN14105	0.58		0.16	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN14105	0.48		-1.47	
344	EN14105	0.584		0.23	
345	EN14105	0.58		0.16	
360	EN14105	0.594		0.39	
391	EN14105	0.60		0.49	
398	EN14105	0.618		0.78	
445		-----		-----	
447		-----		-----	
494	EN14105	0.56		-0.16	
529		-----		-----	
540	EN14105	0.644		1.21	
551		-----		-----	
621		-----		-----	
657	EN14105	0.47		-1.63	
824	EN14105	0.61		0.65	
862		-----		-----	
863	EN14105	0.598		0.46	
1016	EN14105	0.52		-0.81	
1033		-----		-----	
1059	EN14105	0.644		1.21	
1067	EN14105	0.575		0.08	
1135	EN14105	0.60		0.49	
1138	EN14105	0.50		-1.14	
1161	EN14105	0.59		0.33	
1162		-----		-----	
1199		-----		-----	
1201		-----		-----	
1203	EN14105	0.625		0.90	
1227		-----		-----	
1240	EN14105	0.596		0.42	
1299	EN14105	0.55		-0.33	
1316		-----		-----	
1397	EN14105	0.61		0.65	
1402		-----		-----	
1429	EN14105	0.73		2.61	
1457	EN14105	0.58		0.16	
1459		-----		-----	
1494	D6584	0.4756		-1.54	
1510	EN14105	0.50		-1.14	
1586		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1706		-----		-----	
1721	EN14105	0.59		0.33	
1739	EN14105	0.578		0.13	
1744	D6584	0.5568		-0.21	
1769	D6584	0.4947		-1.23	
1807	EN14105	0.86	R(0.01)	4.73	
1989		-----		-----	
1991	EN14105	0.551		-0.31	
1994		-----		-----	
	normality	OK			
	n	32			
	outliers	1			
	mean (n)	0.5700			
	st.dev. (n)	0.05944			
	R(calc.)	0.1664			
	R(EN14105:11)	0.1718			Compare R(D6584:13) = 0.3246

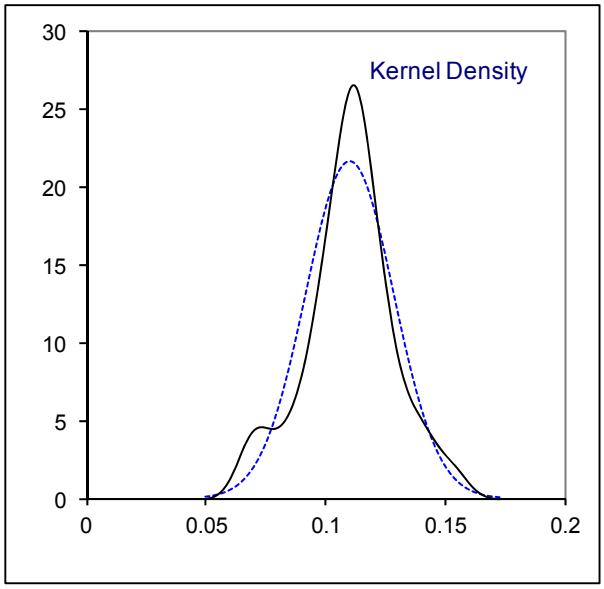

0.9
0.8
0.7
0.6
0.5
0.4
0.3
171
657
1494
343
1769
1138
1510
1016
1299
1991
1744
494
1067
1739
312
345
1457
344
1161
1721
360
1240
863
391
1135
824
1397
398
1203
540
1059
1429
1807


Kernel Density
9
8
7
6
5
4
3
2
1
0
0.3
0.5
0.7
0.9

Determination of di-Glycerides on sample #15045; results in %M/M

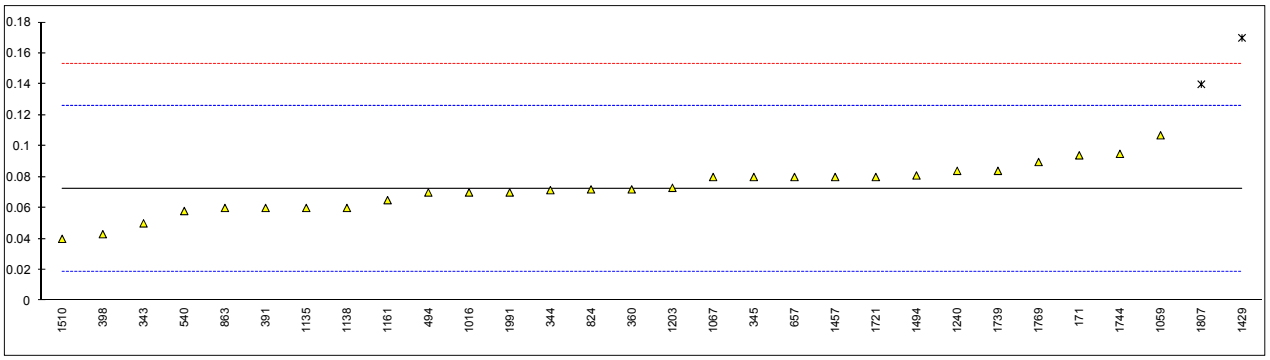
lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171	D6584	0.105		-0.30	
312	EN14105	<0.10		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN14105	0.101		-0.53	
344	EN14105	0.1115		0.07	
345	EN14105	0.12		0.54	
360	EN14105	0.110		-0.02	
391	EN14105	0.10		-0.58	
398	EN14105	0.114		0.21	
445		-----		-----	
447		-----		-----	
494	EN14105	0.11		-0.02	
529		-----		-----	
540	EN14105	0.114		0.21	
551		-----		-----	
621		-----		-----	
657	EN14105	0.08		-1.71	
824	EN14105	0.11		-0.02	
862		-----		-----	
863	EN14105	0.153		2.40	
1016	EN14105	0.14		1.67	
1033		-----		-----	
1059	EN14105	0.089		-1.20	
1067	EN14105	0.125		0.83	
1135	EN14105	0.11		-0.02	
1138	EN14105	0.10		-0.58	
1161	EN14105	0.12		0.54	
1162		-----		-----	
1199		-----		-----	
1201		-----		-----	
1203	EN14105	0.128		1.00	
1227		-----		-----	
1240	EN14105	0.115		0.26	
1299	EN14105	0.13		1.11	
1316		-----		-----	
1397	EN14105	0.09		-1.15	
1402		-----		-----	
1429	EN14105	0.10	C	-0.58	first reported: 0.21
1457	EN14105	0.11		-0.02	
1459		-----		-----	
1494	D6584	0.1132		0.16	
1510	EN14105	0.07		-2.27	
1586		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1706		-----		-----	
1721	EN14105	0.14		1.67	
1739	EN14105	0.119		0.49	
1744	D6584	0.1225		0.69	
1769	D6584	0.0986		-0.66	
1807	EN14105	0.07		-2.27	
1989		-----		-----	
1991	EN14105	0.112		0.09	
1994		-----		-----	
	normality	OK			
	n	32			
	outliers	0			
	mean (n)	0.1103			
	st.dev. (n)	0.01848			
	R(calc.)	0.0517			
	R(EN14105:11)	0.0497			Compare R(D6584:13) = 0.1009

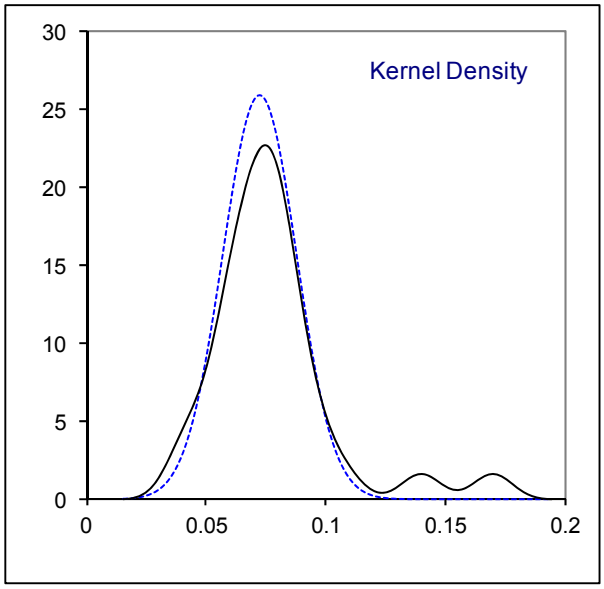

0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
1510
1807
657
1059
1397
1769
391
1138
1429
343
171
824
360
494
1135
1457
344
1991
1494
540
398
1240
1739
345
1161
1744
1067
1203
1299
1016
1721
863


Kernel Density
30
25
20
15
10
5
0
0
0.05
0.1
0.15
0.2

Determination of tri-Glycerides on sample #15045; results in %M/M

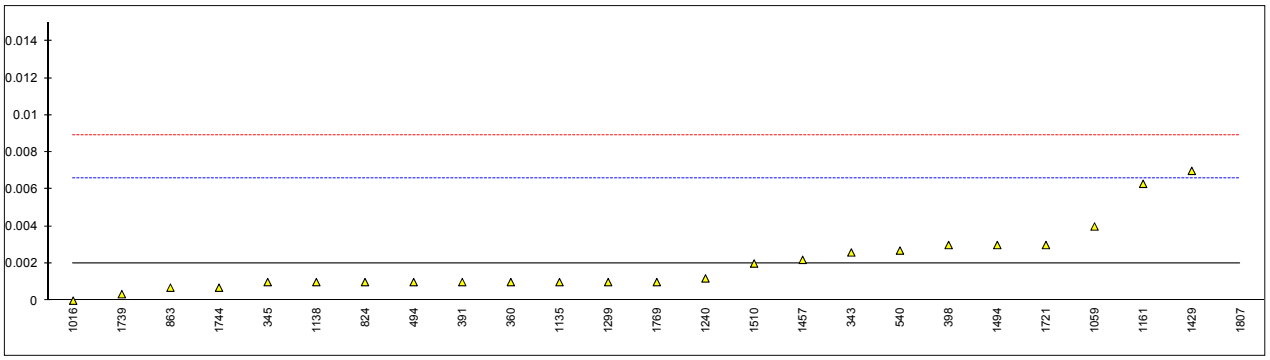
lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171	D6584	0.094		0.80	
312	EN14105	<0.10		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN14105	0.05		-0.84	
344	EN14105	0.0715		-0.04	
345	EN14105	0.08		0.28	
360	EN14105	0.072		-0.02	
391	EN14105	0.06		-0.47	
398	EN14105	0.043		-1.10	
445		-----		-----	
447		-----		-----	
494	EN14105	0.07		-0.09	
529		-----		-----	
540	EN14105	0.058		-0.54	
551		-----		-----	
621		-----		-----	
657	EN14105	0.08		0.28	
824	EN14105	0.072		-0.02	
862		-----		-----	
863	EN14105	0.06		-0.47	
1016	EN14105	0.07		-0.09	
1033		-----		-----	
1059	EN14105	0.107		1.29	
1067	EN14105	0.080		0.28	
1135	EN14105	0.06		-0.47	
1138	EN14105	0.06		-0.47	
1161	EN14105	0.065		-0.28	
1162		-----		-----	
1199		-----		-----	
1201		-----		-----	
1203	EN14105	0.073		0.02	
1227		-----		-----	
1240	EN14105	0.084		0.43	
1299	EN14105	<0.10		-----	
1316		-----		-----	
1397	EN14105	<0.01		<-2.33	
1402		-----		-----	
1429	EN14105	0.17	R(0.01)	3.64	
1457	EN14105	0.08		0.28	
1459		-----		-----	
1494	D6584	0.0810		0.32	
1510	EN14105	0.04		-1.21	
1586		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1706		-----		-----	
1721	EN14105	0.08		0.28	
1739	EN14105	0.084		0.43	
1744	D6584	0.0950		0.84	
1769	D6584	0.0897		0.64	
1807	EN14105	0.14	R(0.01)	2.52	
1989		-----		-----	
1991	EN14105	0.070		-0.09	
1994		-----		-----	
	normality	OK			
	n	28			
	outliers	2			
	mean (n)	0.0725			
	st.dev. (n)	0.01542			
	R(calc.)	0.0432			
	R(EN14105:11)	0.0750			Compare R(D6584:13) = 0.1780

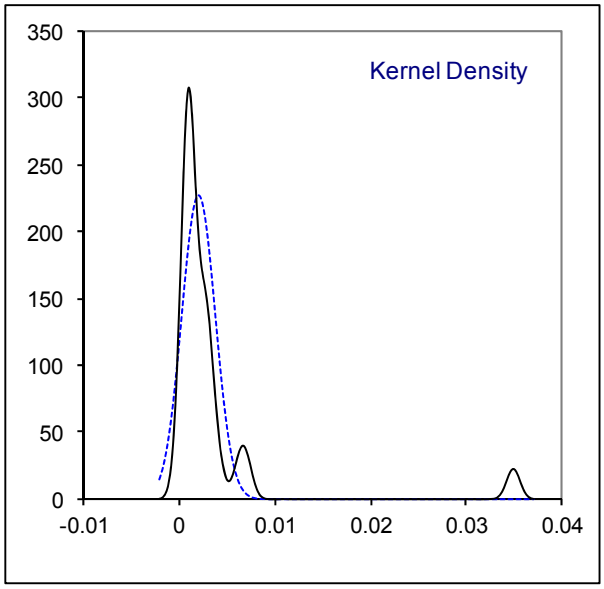

0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
1510
398
343
540
863
391
1135
1138
1161
494
1016
1991
344
824
360
1203
1067
345
657
1457
1721
1494
1240
1739
1769
171
1744
1059
1807
1429


Kernel Density
30
25
20
15
10
5
0
0
0.05
0.1
0.15
0.2

Determination of Free Glycerol on sample #15045; results in %M/M

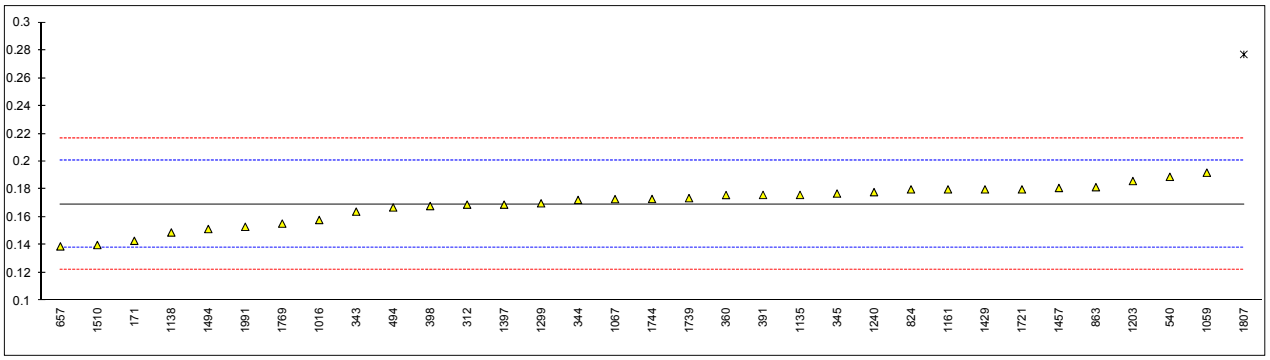
lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171	D6584	<0.005		-----	
312	EN14105	<0.001		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN14105	0.0026		0.26	
344	EN14105	<0.05		-----	
345	EN14105	0.001		-0.43	
360	EN14105	0.0010		-0.43	
391	EN14105	0.001		-0.43	
398	EN14105	0.003		0.44	
445		-----		-----	
447		-----		-----	
494	EN14105	0.001		-0.43	
529		-----		-----	
540	EN14105	0.0027		0.31	
551		-----		-----	
621		-----		-----	
657	EN14105	<0.001		-----	
824	EN14105	0.001		-0.43	
862		-----		-----	
863	EN14105	0.0007		-0.56	
1016	EN14105	0.000		-0.86	
1033		-----		-----	
1059	EN14105	0.004		0.87	
1067	EN14105	< 0.01		-----	
1135	EN14105	0.001		-0.43	
1138	EN14105	0.001		-0.43	
1161	EN14105	0.0063		1.87	
1162		-----		-----	
1199		-----		-----	
1201		-----		-----	
1203	EN14105	<0.005		-----	
1227		-----		-----	
1240	EN14105	0.0012		-0.34	
1299	EN14105	0.001		-0.43	
1316		-----		-----	
1397	EN14105	<0.005		-----	
1402		-----		-----	
1429	EN14105	0.007		2.17	
1457	EN14105	0.0022	C	0.09	first reported: 0.010
1459		-----		-----	
1494	D6584	0.0030		0.44	
1510	EN14105	0.002		0.00	
1586		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1706		-----		-----	
1721	EN14105	0.003		0.44	
1739	EN14105	0.00035		-0.71	
1744	D6584	0.0007		-0.56	
1769	D6584	0.0010		-0.43	
1807	EN14105	0.035	R(0.01)	14.30	
1989		-----		-----	
1991	EN14105	<0.005		-----	
1994		-----		-----	
	normality	not OK			
	n	24			
	outliers	1			
	mean (n)	0.0020			
	st.dev. (n)	0.00176			
	R(calc.)	0.0049			
	R(EN14105:11)	0.0065			Compare R(D6584:13) = 0.0050

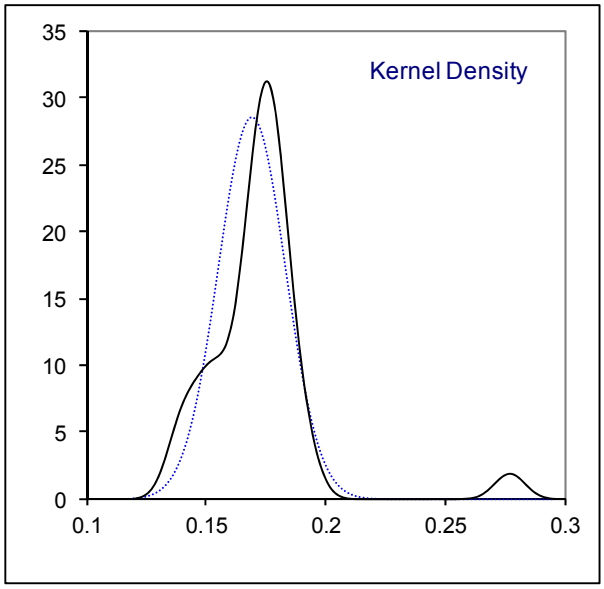

0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
1016
1739
863
1744
345
1138
824
494
391
360
1135
1299
1769
1240
1510
1457
343
540
398
1494
1721
1059
1161
1429
1807


Kernel Density
350
300
250
200
150
100
50
0
-0.01
0
0.01
0.02
0.03
0.04

Determination of Total Glycerol on sample #15045; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171	D6584	0.143		-1.69	
312	EN14105	0.169		-0.03	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN14105	0.164		-0.35	
344	EN14105	0.1724		0.19	
345	EN14105	0.177		0.49	
360	EN14105	0.1759		0.42	
391	EN14105	0.176		0.42	
398	EN14105	0.168		-0.09	
445		-----		-----	
447		-----		-----	
494	EN14105	0.167		-0.15	
529		-----		-----	
540	EN14105	0.189		1.26	
551		-----		-----	
621		-----		-----	
657	EN14105	0.139		-1.95	
824	EN14105	0.180		0.68	
862		-----		-----	
863	EN14105	0.1816		0.78	
1016	EN14105	0.158		-0.73	
1033		-----		-----	
1059	EN14105	0.192		1.45	
1067	EN14105	0.173		0.23	
1135	EN14105	0.176		0.42	
1138	EN14105	0.149		-1.31	
1161	EN14105	0.18		0.68	
1162		-----		-----	
1199		-----		-----	
1201		-----		-----	
1203	EN14105	0.186		1.06	
1227		-----		-----	
1240	EN14105	0.178		0.55	
1299	EN14105	0.17		0.04	
1316		-----		-----	
1397	EN14105	0.169		-0.03	
1402		-----		-----	
1429	EN14105	0.18	C	0.68	first reported: 0.24
1457	EN14105	0.181		0.74	
1459		-----		-----	
1494	D6584	0.1515		-1.15	
1510	EN14105	0.14		-1.88	
1586		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1706		-----		-----	
1721	EN14105	0.18		0.68	
1739	EN14105	0.1737		0.28	
1744	D6584	0.1731		0.24	
1769	D6584	0.1554		-0.90	
1807	EN14105	0.277	R(0.01)	6.89	
1989		-----		-----	
1991	EN14105	0.1531		-1.04	
1994		-----		-----	
	normality	OK			
	n	32			
	outliers	1			
	mean (n)	0.1694			
	st.dev. (n)	0.01399			
	R(calc.)	0.0392			
	R(EN14105:11)	0.0437			Compare R(D6584:13) = 0.079

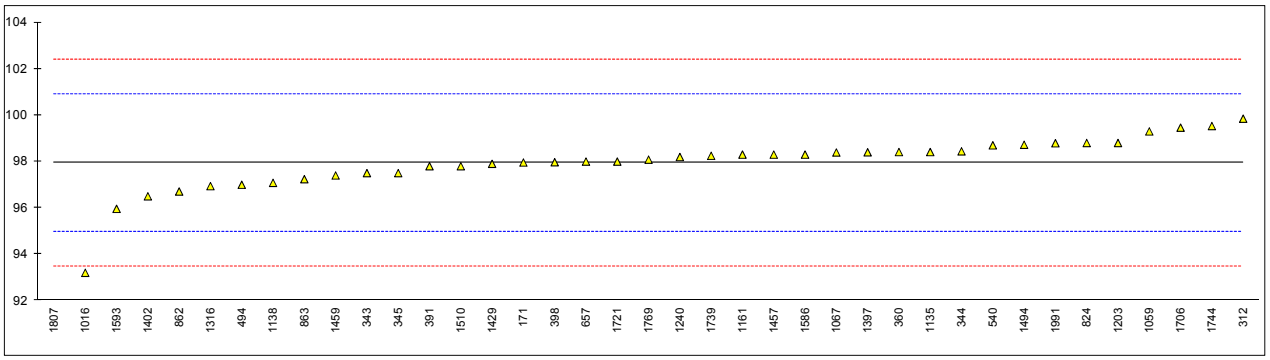

0.3
0.28
0.26
0.24
0.22
0.2
0.18
0.16
0.14
0.12
0.1
657
1510
171
1138
1494
1991
1769
1016
343
494
398
312
1397
1299
344
1067
1744
1739
360
391
1135
345
1240
824
1161
1429
1721
1457
863
1203
540
1059
1807


Kernel Density
35
30
25
20
15
10
5
0
0.1
0.15
0.2
0.25
0.3

Determination of FAME content on sample #15045; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171	EN14103	97.96		0.01	
312	EN14103	99.85		1.28	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN14103	97.5		-0.30	
344	EN14103	98.44		0.33	
345	EN14103	97.5		-0.30	
360	EN14103	98.41		0.31	
391	EN14103	97.8		-0.10	
398	EN14103	97.97		0.02	
445		-----		-----	
447		-----		-----	
494	EN14103	97.0		-0.64	
529		-----		-----	
540	EN14103	98.7		0.51	
551		-----		-----	
621		-----		-----	
657	EN14103	98.0		0.04	
824	EN14103	98.8		0.58	
862	EN14103	96.708		-0.83	
863	EN14103	97.24		-0.47	
1016	EN14103	93.2		-3.19	
1033		-----		-----	
1059	EN14103	99.3		0.91	
1067	EN14103	98.39		0.30	
1135	EN14103	98.41		0.31	
1138	EN14103	97.08		-0.58	
1161	EN14103	98.30		0.24	
1162		-----		-----	
1199		-----		-----	
1201		-----		-----	
1203	EN14103	98.80		0.58	
1227		-----		-----	
1240	EN14103	98.196		0.17	
1299		-----		-----	
1316	EN14103	96.94		-0.68	
1397	EN14103	98.4		0.31	
1402	EN14103	96.501		-0.97	
1429	EN14103	97.9		-0.03	
1457	EN14103	98.3		0.24	
1459	EN14103	97.4		-0.37	
1494	EN14103	98.7230		0.52	
1510	EN14103	97.8		-0.10	
1586	EN14103	98.3		0.24	
1593	EN14103	95.96		-1.34	
1634		-----		-----	
1643		-----		-----	
1706	EN14103	99.460		1.02	
1721	EN14103	98.0		0.04	
1739	EN14103	98.25		0.21	
1744	EN14103	99.53		1.07	
1769	EN14103	98.081		0.09	
1807	EN14103	8.6	R(0.01)	-60.14	
1989		-----		-----	
1991	EN14103	98.79		0.57	
1994		-----		-----	

normality	not OK
n	38
outliers	1
mean (n)	97.944
st.dev. (n)	1.15340
R(calc.)	3.230
R(EN14103:11)	4.160


104
102
100
98
96
94
92
1807
1016
1593
1402
862
1316
494
1138
863
1459
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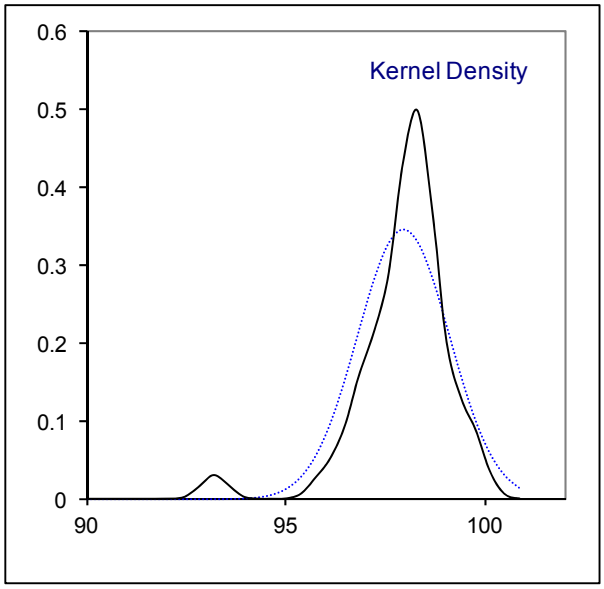
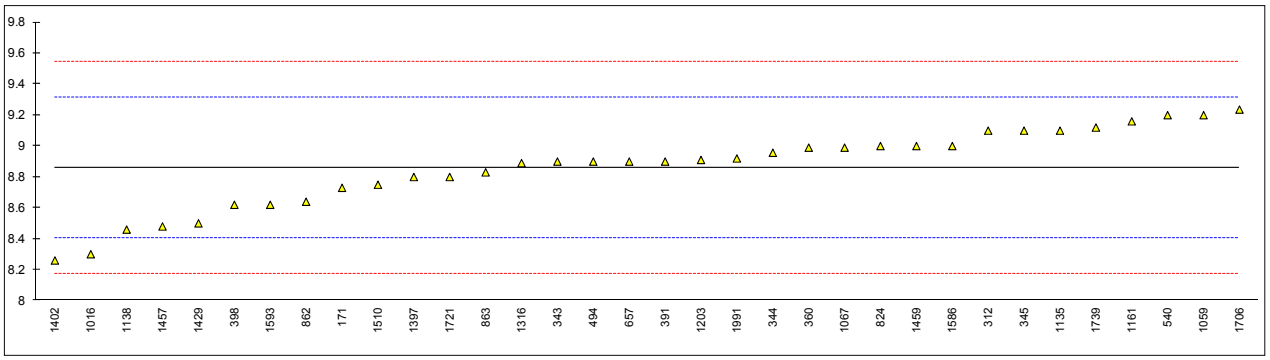
391
1510
1429
171
398
657
1721
1769
1240
1739
1161
1457
1586
1067
1397
360
1135
344
540
1494
1991
824
1203
1059
1706
1744
312

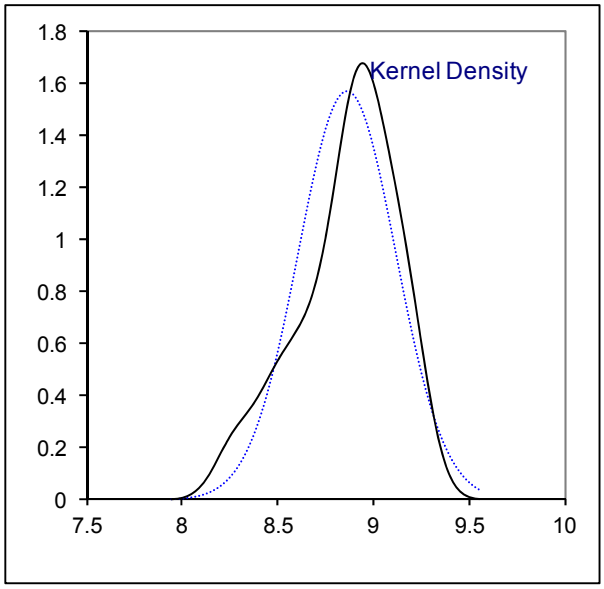

Kernel Density
0.6
0.5
0.4
0.3
0.2
0.1
0
90
95
100

Determination of Linolenic Acid Methyl Ester content on sample #15045; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171	EN14103	8.73		-0.57	
312	EN14103	9.1		1.05	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN14103	8.9		0.17	
344	EN14103	8.957		0.42	
345	EN14103	9.1		1.05	
360	EN14103	8.99		0.57	
391	EN14103	8.9		0.17	
398	EN14103	8.62		-1.05	
445		-----		-----	
447		-----		-----	
494	EN14103	8.9		0.17	
529		-----		-----	
540	EN14103	9.2		1.49	
551		-----		-----	
621		-----		-----	
657	EN14103	8.9		0.17	
824	EN14103	9.0		0.61	
862	EN14103	8.640		-0.97	
863	EN14103	8.83		-0.13	
1016	EN14103	8.3		-2.45	
1033		-----		-----	
1059	EN14103	9.2		1.49	
1067	EN14103	8.99		0.57	
1135	EN14103	9.1		1.05	
1138	EN14103	8.46		-1.75	
1161	EN14103	9.16		1.31	
1162		-----		-----	
1199		-----		-----	
1201		-----		-----	
1203	EN14103	8.91		0.22	
1227		-----		-----	
1240		-----		-----	
1299		-----		-----	
1316	EN14103	8.89		0.13	
1397	EN14103	8.8		-0.27	
1402	EN14103	8.260		-2.63	
1429	EN14103	8.5		-1.58	
1457	EN14103	8.48		-1.67	
1459	EN14103	9.0		0.61	
1494		-----		-----	
1510	EN14103	8.75		-0.48	
1586	EN14103	9.0		0.61	
1593	EN14103	8.62		-1.05	
1634		-----		-----	
1643		-----		-----	
1706	EN14103	9.236		1.64	
1721	EN14103	8.80		-0.27	
1739	EN14103	9.12		1.14	
1744		-----		-----	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
1991	EN14103	8.92	C	0.26	first reported: 9.74
1994		-----		-----	

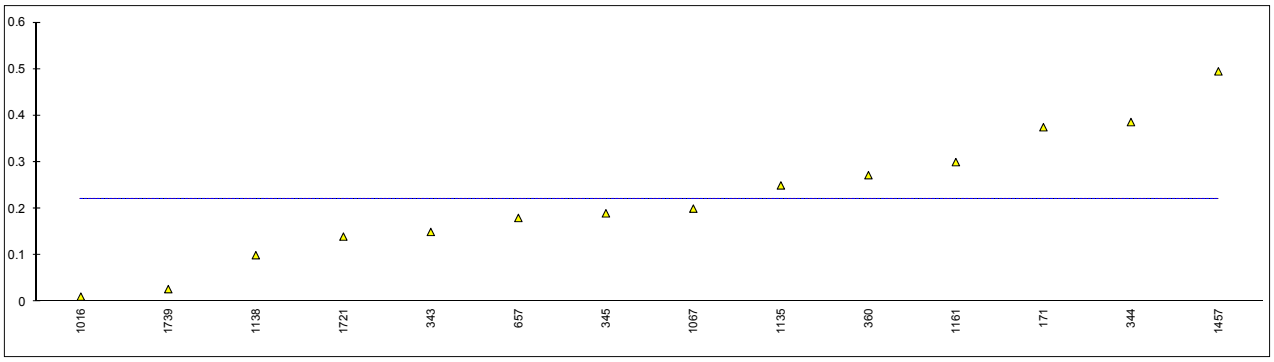
normality	OK
n	34
outliers	0
mean (n)	8.861
st.dev. (n)	0.2539
R(calc.)	0.711
R(EN14103:11)	0.640

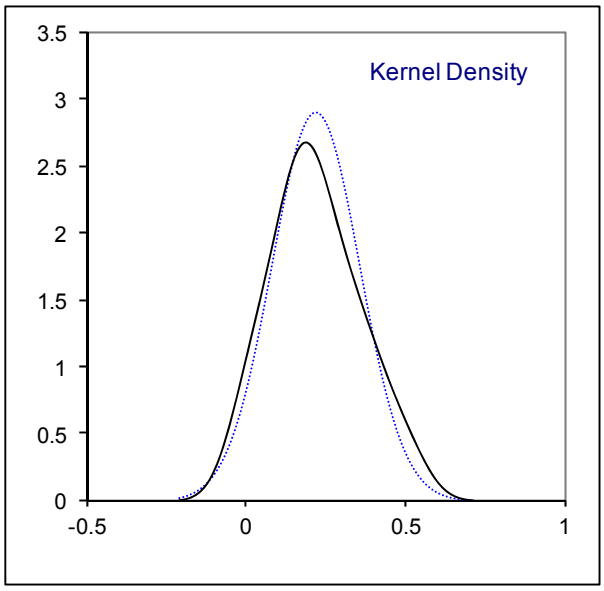

9.8
9.6
9.4
9.2
9
8.8
8.6
8.4
8.2
8
1402
1016
1138
1457
1429
398
1593
862
171
1510
1397
1721
863
1316
343
494
657
391
1203
1991
344
360
1067
824
1459
1586
312
345
1135
1739
1161
540
1059
1706


Kernel Density
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
7.5
8
8.5
9
9.5
10

Determination of Polyunsaturated Methyl Esters content on sample #15045; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171	EN15779	0.375		-----	
312	EN15779	<0.6		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN15779	0.15		-----	
344	EN15779	0.386		-----	
345	EN15779	0.19		-----	
360	EN15779	0.272		-----	
391		-----		-----	
398	EN15779	<0.1		-----	
445		-----		-----	
447		-----		-----	
494	INH-10	<1		-----	
529		-----		-----	
540		-----		-----	
551		-----		-----	
621		-----		-----	
657	EN15779	0.18		-----	
824		-----		-----	
862		-----		-----	
863		-----		-----	
1016	EN15779	0.011		-----	
1033		-----		-----	
1059	EN15779	<0.3		-----	
1067	EN15779	0.20		-----	
1135	EN15779	0.25		-----	
1138	EN14103	0.10		-----	
1161	EN15779	0.3		-----	
1162		-----		-----	
1199		-----		-----	
1201		-----		-----	
1203	EN15779	<0.01		-----	false negative?
1227		-----		-----	
1240		-----		-----	
1299		-----		-----	
1316		-----		-----	
1397		-----		-----	
1402		-----		-----	
1429		-----		-----	
1457	EN15779	0.495		-----	
1459		-----		-----	
1494		-----		-----	
1510		-----		-----	
1586		-----		-----	
1593		-----		-----	
1634		-----		-----	
1643		-----		-----	
1706		-----		-----	
1721	EN15779	0.14		-----	
1739	EN15779	0.027		-----	
1744		-----		-----	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
1991		-----		-----	
1994		-----		-----	
	normality	OK			
	n	14			
	outliers	0			
	mean (n)	0.220			
	st.dev. (n)	0.1378			
	R(calc.)	0.386			
	R(EN15779:09)	(0.270)			Application range: 0.6-1.5%M/M

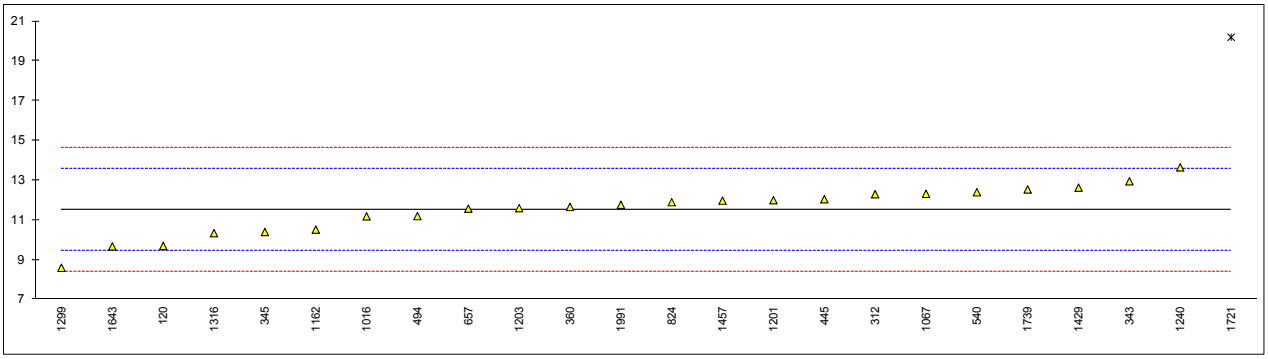

0.6
0.5
0.4
0.3
0.2
0.1
0
1016
1739
1138
1721
343
657
345
1067
1135
360
1161
171
344
1457

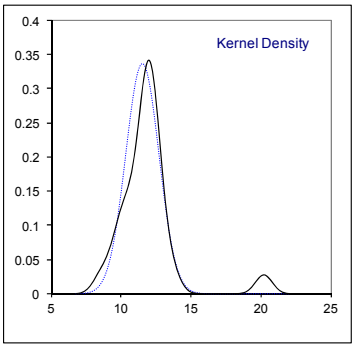

Kernel Density
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
0
0.5
1

Determination of sum of Calcium and Magnesium on sample #15046; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120	EN14538	9.7		-1.76	
171		-----		-----	
312	EN14538	12.3		0.75	
343	EN14538	12.95		1.38	
345	EN14538	10.40		-1.08	
360	EN14538	11.66		0.14	
391		-----		-----	
398		-----		-----	
445	EN14538	12.05		0.51	
494	EN14538	11.2		-0.31	
540	EN14538	12.4		0.85	
551		-----		-----	
657	EN14538	11.575		0.05	
824	EN14538	11.9		0.37	
863		-----		-----	
1016	EN14538	11.187		-0.32	
1067	EN14538	12.32		0.77	
1138		-----		-----	
1161	EN14538	<1.0		<-10.15	false negative result?
1162	EN14538	10.52		-0.96	
1201	EN14538	12		0.46	
1203	EN14538	11.60		0.08	
1240	EN14538	13.65		2.06	
1268		-----		-----	
1299	EN14538	8.6		-2.82	
1316	D7111	10.34		-1.14	
1402		-----		-----	
1429	EN14538	12.63		1.07	
1457	EN14538	11.98		0.44	
1510		-----		-----	
1586		-----		-----	
1643	D5185	9.674		-1.78	
1721	EN14538	20.2	C,R(0.01)	8.37	first reported: 15.0
1739	EN14538	12.54	C	0.98	first reported: 1.46
1991	EN14538	11.77		0.24	

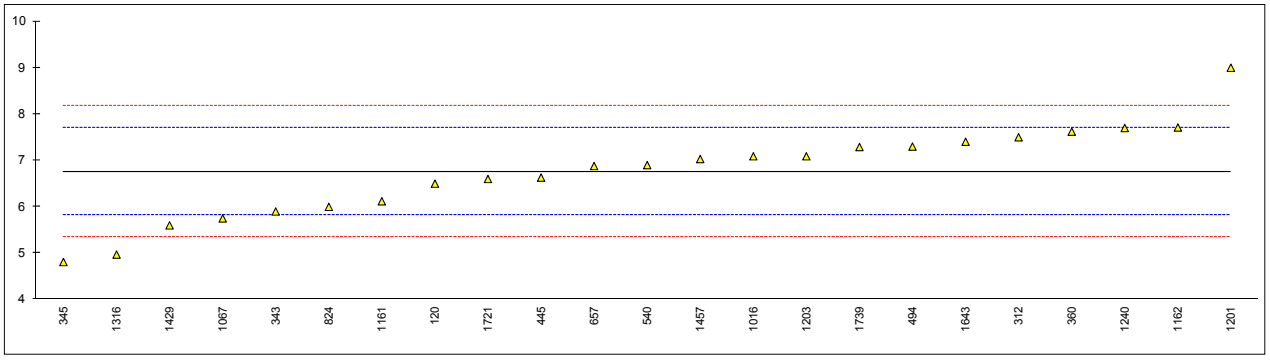
	normality	OK	
	n	23	
	outliers	1	Spike (Calcium only):
	mean (n)	11.519	4.65
	st.dev. (n)	1.1860	
	R(calc.)	3.321	
	R(EN14538:06)	2.902	Application range (for each element): 1 – 10 mg/kg

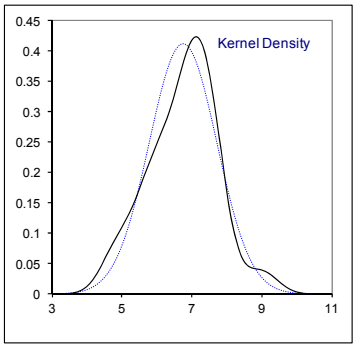




Determination of Phosphorus on sample #15046; results in mg/kg

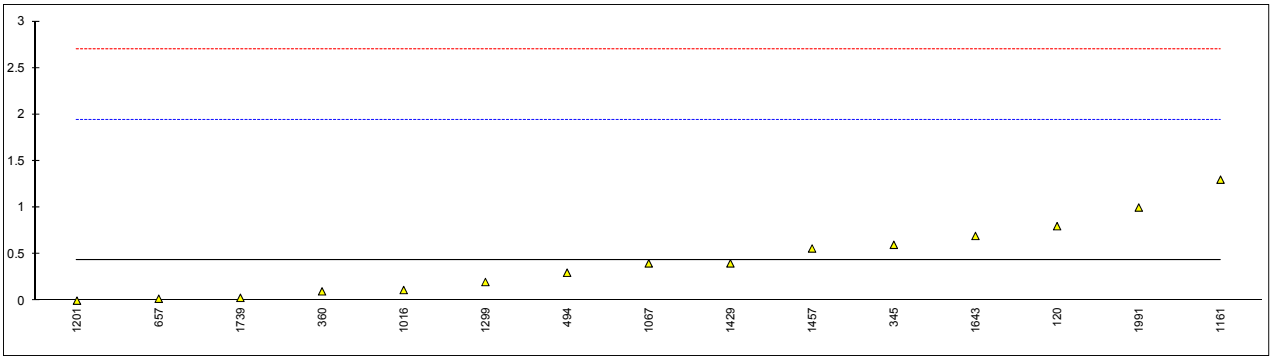
lab	method	value	mark	z(targ)	remarks
120	EN14107	6.5		-0.54	
171		-----		-----	
312	EN14107	7.5		1.58	
343	EN14107	5.9		-1.81	
345	EN14107	4.81		-4.12	
360	EN14107	7.62		1.83	
391		-----		-----	
398		-----		-----	
445	EN14107	6.63		-0.27	
494	EN14107	7.3		1.15	
540	EN14107	6.9		0.30	
551		-----		-----	
657	EN14107	6.88		0.26	
824	EN14107	6.0		-1.60	
863		-----		-----	
1016	EN14107	7.090		0.71	
1067	EN14107	5.75		-2.13	
1138		-----		-----	
1161	EN14538	6.12	C	-1.35	first reported: 1.02
1162	D7111	7.71		2.02	
1201	EN14107	9		4.75	
1203	EN14107	7.09		0.71	
1240	EN16294	7.70		2.00	
1268		-----		-----	
1299		-----		-----	
1316	D7111	4.97		-3.78	
1402		-----		-----	
1429	EN14107	5.6	C	-2.45	first reported: 48.60
1457	EN14107	7.03		0.58	
1510		-----		-----	
1586		-----		-----	
1643	D5185	7.403		1.37	
1721	EN14107	6.6		-0.33	
1739	EN14107	7.29		1.13	
1991		-----		-----	
	normality	OK			
	n	23			
	outliers	0		Spike:	
	mean (n)	6.756		7.05	recovery: <96%
	st.dev. (n)	0.9679			
	R(calc.)	2.710			
	R(EN14107:03)	1.322			Application range: 4 – 20 mg/kg

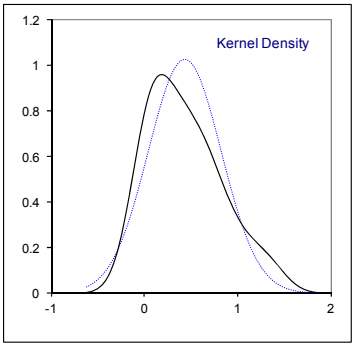




Determination of Potassium on sample #15046; results in mg/kg

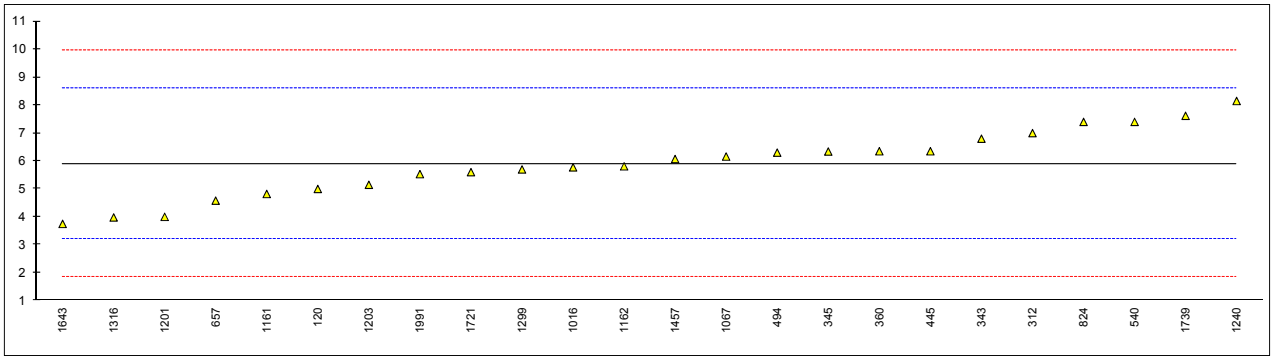
lab	method	value	mark	z(targ)	remarks
120	EN14109	0.8		0.48	
171		-----		-----	
312	EN14109	<0.1		-----	
343	EN14538	<1		-----	
345	EN14538	0.60		0.22	
360	EN14538	0.10		-0.44	
391		-----		-----	
398		-----		-----	
445	EN14538	<0.1		-----	
494	EN14109	0.3		-0.18	
540	EN14538	<0.5		-----	
551		-----		-----	
657	EN14109	0.02		-0.55	
824	EN14538	<1.0		-----	
863		-----		-----	
1016	EN14538	0.114		-0.42	
1067	EN14538	0.4		-0.05	
1138		-----		-----	
1161	EN14538	1.30		1.15	
1162		-----		-----	
1201	EN14538	0	C	-0.58	first reported: 5
1203	EN14538	<0.5		-----	
1240	EN14538	<1.0		-----	
1268		-----		-----	
1299	EN14538	0.2		-0.31	
1316	D7111	<0.50		-----	
1402		-----		-----	
1429	EN14109	0.4	C	-0.05	first reported: 5.36
1457	EN14538	0.56		0.17	
1510		-----		-----	
1586		-----		-----	
1643	D5185	0.695		0.35	
1721	EN14109	<1		-----	
1739	EN14538	0.03		-0.54	
1991	EN14538	1.00		0.75	
	normality	OK			
	n	15			
	outliers	0			
	mean (n)	0.435			
	st.dev. (n)	0.3899			
	R(calc.)	1.092			Application range: ≥0.5 mg/kg
	R(EN14214:12)	2.113			Compare R(EN14109:03) = 0.741

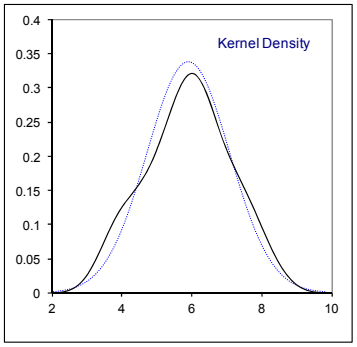




Determination of Sodium on sample #15046; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120	EN14108	5.0		-0.67	
171		-----		-----	
312	EN14108	7.0		0.81	
343	EN14538	6.8		0.67	
345	EN14538	6.34		0.32	
360	EN14538	6.35		0.33	
391		-----		-----	
398		-----		-----	
445	EN14538	6.35		0.33	
494	EN14108	6.3		0.30	
540	EN14538	7.4		1.11	
551		-----		-----	
657	EN14108	4.58		-0.98	
824	EN14538	7.4		1.11	
863		-----		-----	
1016	EN14538	5.773		-0.10	
1067	EN14538	6.16		0.19	
1138		-----		-----	
1161	EN14538	4.82	C	-0.80	first reported: 1.07
1162	EN14538	5.81		-0.07	
1201	EN14538	4		-1.41	
1203	EN14538	5.15		-0.56	
1240	EN14538	8.15		1.67	
1268		-----		-----	
1299	EN14538	5.7		-0.15	
1316	D7111	3.98		-1.42	
1402		-----		-----	
1429		-----		-----	
1457	EN14538	6.07		0.12	
1510		-----		-----	
1586		-----		-----	
1643	D5185	3.748		-1.60	
1721	EN14108	5.6		-0.22	
1739	EN14538	7.62		1.27	
1991	EN14538	5.53		-0.28	
	normality	OK			
	n	24			
	outliers	0		Spike	
	mean (n)	5.901		6.99	recovery: <84%
	st.dev. (n)	1.1776			
	R(calc.)	3.297			Application range: ≥1 mg/kg
	R(EN14214:12)	3.780			R(EN14108:03) = 2.907

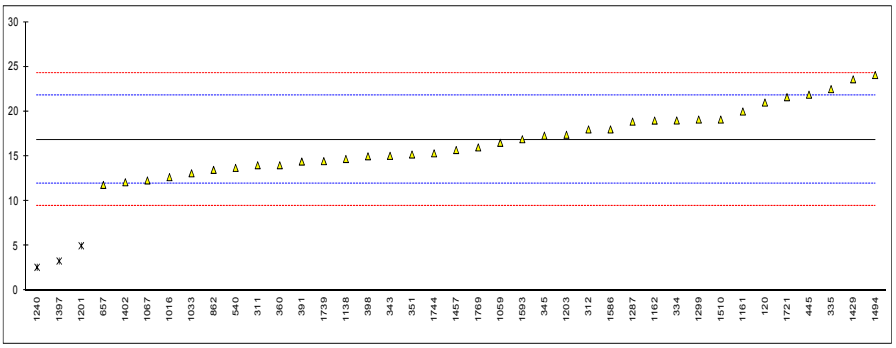


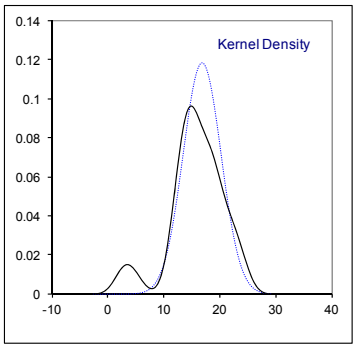


Determination of Total Contamination on sample #15047; results in mg/kg

lab	method	value	mark	z(targ)	version	vol. used	remarks
120	EN12662	21		1.69	2014	500	volume used not according to method version
171		-----		-----	-----	-----	
311	EN12662	14.0		-1.16	2008	800	
312	EN12662	18		0.47	2014	300	
334	EN12662	19.0		0.87	2014	326	
335	EN12662	22.5		2.30	-----	263	
343	EN12662	15.05		-0.73	1999	300	
345	EN12662	17.3		0.18	1998	500	
351	EN12662	15.20		-0.67	2014	300	
360	EN12662	14.0		-1.16	2014	300	
391	EN12662	14.41		-0.99	2014	300	
398	EN12662	15.0		-0.75	2008	800	
445	IP440	21.88		2.04	1998	300	
540	EN12662	13.7		-1.28	1998	400	
551		-----		-----	-----	-----	
657	EN12662	11.80	C	-2.06	2008	800	first reported: 4.08
862	EN12662	13.48		-1.37	2014	322	
1016	EN12662	12.67		-1.70	1998	307	
1033	IP440	13.1		-1.53	2008	479.91	volume used not according to method version
1059	EN12662	16.5		-0.14	1998	316.5	
1067	EN12662	12.3		-1.85	1998	300	
1138	EN12662	14.7		-0.88	1998	800	volume used not according to method version
1161	EN12662	20.0		1.28	2014	300	
1162	EN12662	18.99		0.87	-----	800	
1201	EN12662	5.0	ex,C	-4.82	2008	800	excluded, see §4.1, first reported: 5.5
1203	EN12662	17.4		0.22	2014	300	
1240	EN12662	2.6	ex	-5.80	2008	800	excluded, see §4.1
1287	EN12662	18.87		0.82	2008	800	
1299	EN12662	19.1		0.91	2008	800	
1397	EN12662	3.3	ex	-5.52	1998	-----	excluded, see §4.1
1402	IP440	12.1		-1.93	1998	-----	
1429	EN12662	23.6		2.74	1998	250	
1457	EN12662	15.7		-0.47	1998	477	
1494	EN12662	24.07		2.94	2008	800	
1510	EN12662	19.1		0.91	1998	-----	
1586	EN12662	18.0		0.47	1998	347.20	
1593	EN12662	16.9		0.02	-----	800	
1721	EN12662	21.6		1.93	2009	800	
1739	EN12662	14.46		-0.97	1998	250	
1744	EN12662	15.33		-0.62	2014	300	
1769	EN12662	15.99		-0.35	2008	800	

	normality	OK		
	n	36		
	outliers	0 (+3ex)	spike:	
	mean (n)	16.86	11.93	recovery: <141%
	st.dev. (n)	3.377		
	R(calc.)	9.46		
	R(EN12662:14)	6.88		Compare R(EN12662:98) and R(EN12662:08) = 5.06

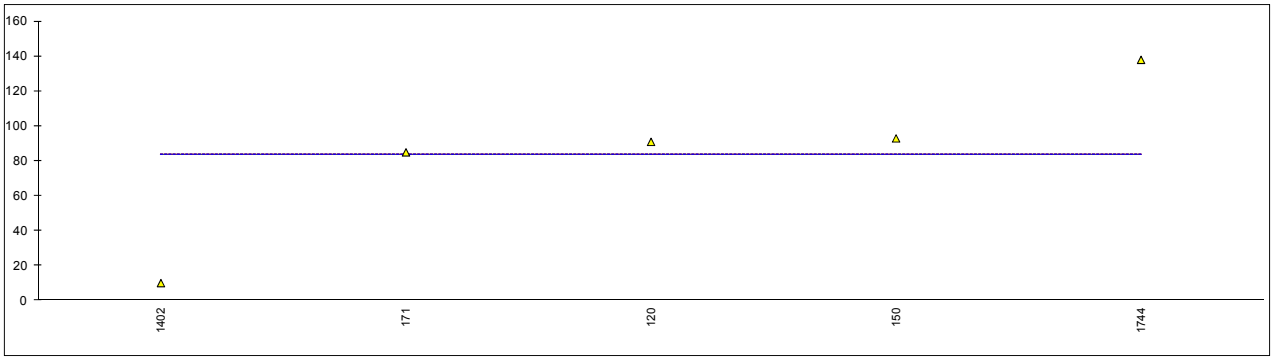




Determination of Filter Blocking Potential by Cold Soak Filter Test on sample #15048; results in s

lab	method	value	mark	z(targ)	remarks
120	D7501	91		-----	
150	D7501	93	C	-----	first reported: 366
171	D7501	85		-----	
398		-----		-----	
494		-----		-----	
657		-----		-----	
1033		-----		-----	
1059		-----		-----	
1067		-----		-----	
1138		-----		-----	
1287		-----		-----	
1402	IP PM-EA	10.05		-----	
1429		-----		-----	
1744	D7501	138		-----	
1769		-----		-----	

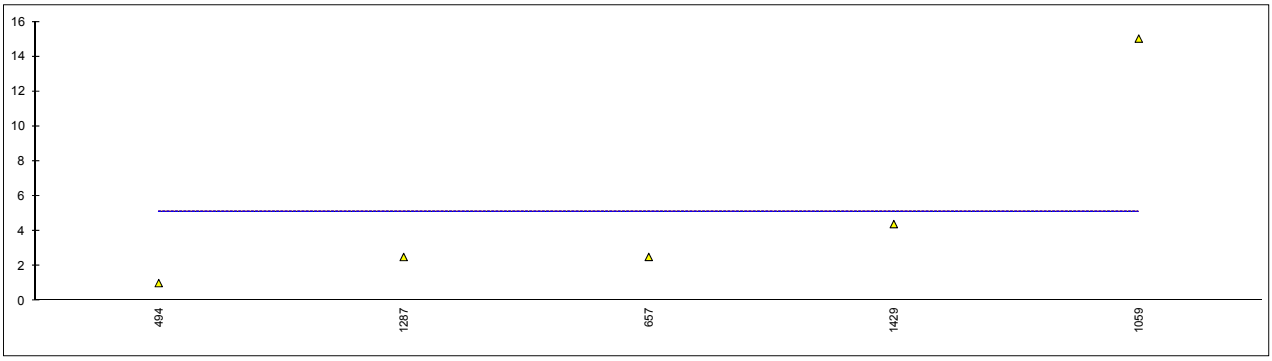
normality	unknown
n	5
outliers	0
mean (n)	83.4
st.dev. (n)	46.14
R(calc.)	129.2
R(D7501:12a)	(20.7)



Determination of Filter Blocking Tendency on sample #15048

lab	method	value	mark	z(targ)	filter blocked after (ml)	remarks
120		-----		-----	-----	
150		-----		-----	-----	
171		-----		-----	-----	
398		-----		-----	-----	
494	IP387-B	1.02		-----	300	
657	IP387-B	2.52		-----	130	
1033		-----		-----	-----	
1059	D2068	15.03		-----	20	
1067		-----		-----	-----	
1138		-----		-----	-----	
1287	IP387-B	2.515		-----	130	
1402		-----		-----	-----	
1429	IP387-B	4.40		-----	70	
1744		-----		-----	-----	
1769		-----		-----	-----	

normality	unknown
n	5
outliers	0
mean (n)	5.10
st.dev. (n)	5.681
R(calc.)	15.91
R(IP387B:14)	(1.60)



APPENDIX 2

Number of participants per country

1 lab in ARGENTINA
1 lab in AUSTRIA
1 lab in BELGIUM
1 lab in BRAZIL
1 lab in BULGARIA
3 labs in CHINA, People's Republic
4 labs in COLOMBIA
1 lab in CROATIA
7 labs in FRANCE
1 lab in GERMANY
1 lab in GREECE
1 lab in HONG KONG
1 lab in HUNGARY
1 lab in INDONESIA
2 labs in ITALY
1 lab in LATVIA
1 lab in MALTA
1 lab in MEXICO
5 labs in NETHERLANDS
4 labs in PORTUGAL
1 lab in SINGAPORE
1 lab in SLOVENIA
1 lab in SOUTH KOREA
6 labs in SPAIN
2 labs in SWEDEN
1 lab in TURKEY
8 labs in UNITED KINGDOM
3 labs in UNITED STATES OF AMERICA

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
R(0.01)	= outlier in Rosner outlier test
R(0.05)	= straggler in Rosner 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:

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