Results of Proficiency Test
Biodiesel 100% FAME (B100)
October 2016

Organised by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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1 INTRODUCTION

Since 2001, the Institute for Interlaboratory Studies (iis) organizes a proficiency scheme for Fatty Acid Methyl Esters (FAME) every year. During the annual proficiency testing program of 2016-2017, it was decided to continue the October proficiency test on Biodiesel B100 in accordance with the latest applicable versions of the EN14214 and additional tests (e.g. ASTM D6751 specifications).
In this interlaboratory study 82 laboratories from 32 different countries have participated. See appendix 2 for a list of number of participants per country. In this report, the results of the 2016 October Biodiesel B100 proficiency test are presented and discussed. This report is also electronically available through the iis website 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 to an accredited laboratory. Apart for the regular sample, the sample for element analysis and the sample for total contamination, it was decided to send an extra sample together with the regular sample for glyceride analysis and an extra sample especially for Cetane number. In this proficiency test, the participants received, depending on the registration, from two up to four different samples of Biodiesel B100, see table below.

Samples	Amount	Purpose	Spiked
#16190	1.5 L	For regular analysis	-
#16194	8 ml vial	For glyceride analysis	-
#16191	2 L	Cetane Number and DCN	-
#16192	0.1 L	Analysis of Phosphorus, Potassium, Sodium and Calcium & Magnesium	Phosphorus, Sodium, Calcium
#16193	0.85 L	Total Contamination	-

table 1: five different Biodiesel B100 samples used in iis16G05EN

Participants were requested to report rounded and unrounded test results.The unrounded test 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% confidentiality of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

The protocol followed in the organisation of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of April 2014 (iis-protocol, version 3.3). This protocol is electronically available through the iis website www.iisnl.com, from the FAQ page.

2.3 CONFIDENTIALITY STATEMENT

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

2.4 SAMPLES

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

Biodiesel B100 #16190 - regular sample

After fit-for-use testing and homogenisation, 100 amber glass bottles of 1L and 100 amber glass bottles of 0.5L were filled and both labelled #16190.The homogeneity of the subsamples #16190 was checked by the determination of Density in accordance with ASTM D4052 on 8 stratified randomly selected samples:

	Density at 15°C in kg/m^3
sample #16190-1	883.20
sample #16190-2	883.19
sample #16190-3	883.19
sample #16190-4	883.19
sample #16190-5	883.19
sample #16190-6	883.19
sample #16190-7	883.19
sample #16190-8	883.19

table 2: homogeneity test results of subsamples #16190

	Density at 15ºC in kg/m^3
r (observed)	0.01
reference test method	ISO12185:96
0.3 * R (ref. test method)	0.15

table 3: evaluation of the repeatability of subsamples #16190

The calculated repeatability was in agreement with 0.3 times the corresponding reproducibility of the target method. Therefore, the homogeneity of the subsamples was assumed.

Biodiesel B100 #16191 – Cetane Number and Derived Cetane Number

After fit-for-use testing and homogenisation, 122 amber glass bottles of 1L were filled and labelled #16191.The homogeneity of the subsamples #16191 was checked by the determination of Density in accordance with ASTM D4052 on 8 stratified randomly selected samples:

	Density at 15°C in kg/m^3
sample #16191-1	883.30
sample #16191-2	883.30
sample #16191-3	883.30
sample #16191-4	883.30
sample #16191-5	883.30
sample #16191-6	883.30
sample #16191-7	883.30
sample #16191-8	883.30

table 4: homogeneity test results of subsamples #16191

	Density at 15ºC in kg/m^3
r (observed)	0.00
reference test method	ISO12185:96
0.3 * R (ref. test method)	0.15

table 5: evaluation of the repeatability of subsamples #16191

The calculated repeatability was in agreement with 0.3 times the corresponding reproducibility of the target method. Therefore, the homogeneity of the subsamples was assumed.

Biodiesel B100 #16192 - Metals

For metals in Biodiesel B100, subsample #16192, a batch of approx. 6.2 kg was separated from the large batch and was spiked with Phosphorus (approx. 7 mg/kg) and Sodium (approx. 7 mg/kg).

After homogenisation, out of the batch 62 HDPE bottles of 0.1L were filled and labelled #16192. The homogeneity of the subsamples #16192 was checked by determination of Phosphorus and Sodium on 8 stratified randomly selected samples:

	Phosphorus in mg/kg	Sodium in mg/kg
sample #16192-1	7.2	6.6
sample #16192-2	7.2	6.9
sample #16192-3	7.3	7.1
sample #16192-4	7.4	7.1
sample #16192-5	7.3	7.0
sample #16192-6	7.4	7.1
sample #16192-7	7.3	7.3
sample #16192-8	7.5	7.4

table 6: homogeneity test results of subsamples #16192

	Phosphorus in mg/kg	Sodium in mg/kg
r (observed)	0.29	0.68
reference test method	EN14107:03	EN14214:12
0.3 * R test method	0.43	1.24

table 7: evaluation of repeatability of subsamples #16192

The calculated repeatability was in agreement with 0.3 times the corresponding reproducibility of the target method. Therefore, the homogeneity of the subsamples was assumed.

Biodiesel B100 #16193 – Total Contamination

For Total Contamination, out of the same batch of Biodiesel B100 as used for the regular sample (#16190), another 80 amber glass bottles of 1 litre with inner and outer caps were filled. It was decided not to spike the samples.

Biodiesel B100 #16194 – Extra sample for Glyceride Analyses

This sample was donated by a participating laboratory and it was decided to send it as an extra sample in addition of the regular Biodiesel B100 sample of #16190. The batch was homogenized and 100 vials of 8 ml were filled and labelled #16194.

Depending on the registration of the participant, one 1 litre bottle and 0.5 litre bottle both labelled #16190 and one 8 ml vial labelled #16194 and/or two 1 litre bottles labelled #16192 and/or one 0.1 litre bottle labelled #16192 and/or 1 litre bottle labelled #16193 were dispatched to each of the participating laboratories on September 14, 2016.

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+A1:2014.

Parameter	EN14214:12	Parameter	ASTM D6751:15ce1
Acid Value	EN14104	Acid Number	ASTM D664
Calorific Value	DIN51900		
		Carbon Residue on 100% FAME	ASTM D4530
CFPP	EN116		
Cloud Point	EN23015	Cloud Point	ASTM D2500
Copper Strip Corrosion	ISO2160	Copper Strip Corrosion	ASTM D130
Density at 15°C	ISO12185		
		Distillation	ASTM D1160
Flash Point (Recc)	ISO3679		
Flash Point (PMcc)	ISO2719	Flash Point	ASTM D93
Iodine Value	EN14111		

table 8a: requirements and test methods acc. to specifications EN14214:12+A1/AC:2014 and ASTM D6751:15ce1

Parameter	EN14214:12	Parameter	ASTM D6751:15ce1
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
Cetane Number	EN 5165	Cetane Number	ASTM D613
		Derived Cetane Number	ASTM D7668
Calcium + Magnesium	EN14538	Calcium + Magnesium	EN14538
Phosphorus	EN14107	Phosphorus	ASTM D4951
Potassium + Sodium	EN14108/14109	Potassium + Sodium	EN14538
Polyunsaturated esters	EN15779		
Methanol	EN14110	Methanol	EN14110
mono-, di-, tri-Glycerides	EN14105	Monoglyceride content	ASTM D6584
Free + Total Glycerol	EN14105	Free + Total Glycerol	ASTM D6584
Total ester content	EN14103		
Linolenic Acid	EN14103		
Total Contamination	EN12662		

table 8b: requirements and test methods acc. to specifications EN14214:12+A1/AC:2014 and ASTM D6751:15ce1 (cont.)

To get comparable results a detailed report form, on which the units were prescribed as well as the reference test methods and a letter of instructions were prepared and made available on the data entry portal www.kpmd.co.uk/sgs-iis/. The laboratories were also requested to confirm the sample receipt on the same data entry portal. A SDS was added to the sample package.

3 RESULTS

During five weeks after sample dispatch, the results of the individual laboratories were gathered via the data entry portal www.kpmd.co.uk/sgs-iis/. The reported test results are tabulated per determination in appendix 1 of this report. The laboratories are presented by their code numbers.
Directly after the deadline, a reminder was sent to the laboratories that had not reported test results at that moment. Shortly after the deadline, the available test results were screened for suspect data. A test result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the reported test results. Additional or corrected test results are used for data analysis and original results are placed under 'Remarks' in the result tables in appendix 1. Test results that came in after the deadline were not taken into account in this screening for suspect data and thus these participants were not requested for checks.

3.1 STATISTICS

The protocol followed in the organisation of this proficiency test was the one as described for proficiency testing in the report ‘iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation’ (iis-protocol, April 2014 version 3.3).

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

First, the normality of the distribution of the various data sets per determination was checked by means of the Lilliefors-test, a variant of the Kolmogorov-Smirnov test and by the calculation of skewness and kurtosis. Evaluation of the three normality indicators in combination with the visual evaluation of the graphic Kernel density plot, lead to judgment 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 the original results per determination were submitted subsequently to Dixon's, Grubbs' and Rosner's outlier tests. Outliers are marked by D(0.01) for the Dixon's test, by G(0.01) or DG(0.01) for the Grubbs' test and by R(0.01) for the Rosner's test. Stragglers are marked by D(0.05) for the Dixon's test, by G(0.05) or DG(0.05) for the Grubbs' test and by R(0.05) for the Rosner's test. Both outliers and stragglers were not included in the calculations of 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 on the X-axis.

The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected 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. 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:

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

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

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

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

4 EVALUATION

In this proficiency test some problems were encountered during the execution.
For the regular Biodiesel PT: three participants reported test results after the final reporting date and two participants did not report any test results at all.
For the Cetane Number in Biodiesel PT: all participants reported before the final reporting date, except two participants that did not report any test results at all.
For the Metals in Biodiesel PT: two participants reported the test results after the final reporting date and eight participants did not report any test results at all.
For the Total Contamination PT: two participants reported the test results after the final reporting date and eight participants did not report any test results at all.

Finally, the 79 participants reported in total 1369 numerical results. Observed were 41 outlying results, which is 3.0%. 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 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. The abbreviations, used in these tables, 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 #16190 – regular sample

Acid Value: (EN) This determination was not problematic. Four statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN14214:12+AC:14 and EN14104:03.

Acid Number: (ASTM) This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D664:11ae1 (method B).
Surprisingly, five laboratories used the method for Acid Value (EN14104) and reported the result as Acid Number instead of Acid Value.

Cloud Point: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN14214:12+AC:14 and EN23015:94.

CFPP: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of EN116:15, but not in agreement with the more strict requirements of EN14214:12+AC:14.

Carbon Residue: (on 100%) The consensus value was near or below the application limit of ISO10370 (<0.1%M/M). Therefore no significant conclusions were drawn.

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

Density at 15°C: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of EN14214:12+AC:14 and ISO12185:96.

Flash Point PMcc: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ISO2719C:16, but not in agreement with the more strict requirements of EN14214:12+AC:14.

Flash Point recc: 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 EN14214:12+AC:14 and ISO3679:15.

Iodine Number: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of EN14214:12+AC:14, EN14111:03 and EN16300:12.

Kin.Visco. at 40°C: The determination was problematic for a number of laboratories. Seven statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of EN14214:12+AC:14 and ISO3104:96.

Oxidation Stability: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of EN14214:12+AC:14, EN14112:16 and EN15751:14.

Pour Point: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of ISO3016:94.

Sulphated Ash: All reported test results, except one, were near or below the application limit of ISO3987:10 (0.005% M/M). Therefore no significant conclusions were drawn.

Sulphur: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN14214:12+AC:14 and ISO20846:11.

Water: 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 EN14214:12+AC:14, ISO12937:00 and D6304:16e1.

Calorific Value: Only four participants submitted a result for Gross Calorific Value at constant volume and only two participants for Net Calorific Value at constant volume. No participants reported a test result for Net Calorific Value at constant pressure.
The determination on Gross Calorific Value may be problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of DIN51900-1:00.

Methanol: 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 EN14110:03.

mono-Glycerides This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of EN14105:11.

di-Glycerides This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of EN14105:11.

tri-Glycerides This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of EN14105:11.

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

Total Glycerol This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN14105:11.

Total Ester content This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of EN14103:11.

Linolenic Acid Methyl Ester: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN14103:11.

Polyunsaturated Methyl Esters: All reported test results were near or below the lower application limit of EN15779:09 (0.6 – 1.5 %M/M). Therefore no significant conclusions were drawn.

For Biodiesel B100 sample #16191 – Cetane Number

Cetane Number: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of EN14214:12+AC:14 and ISO5165:98.

DCN (D7668): This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D7668:14a.

For Biodiesel B100 sample #16192 – Metals

Sum Ca + Mg This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of EN141538:06.

Phosphorus: This determination was very problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not at all in agreement with the requirements of EN14107:03. The samples were spiked with Phosphorus. The average recovery of Phosphorus (theoretical increment of 7.00 mg/kg) may be good: “less than 103%”. The actual blank concentration for Phosphorus is unknown.

Potassium: All reported results were near or below the lower application limit of EN15438. Therefore no significant conclusions were drawn.

Sodium: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility is in agreement with the requirements of EN14214:12+AC:14 and EN14108:03.
The samples were spiked with Sodium. The average recovery of Sodium (theoretical increment of 7.03 mg/kg) may be satisfactory: “less than 89%” The actual blank concentration for Sodium is unknown.

Sum K + Na This determination was problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of EN14538:06.

For Biodiesel B100 sample #16193 - Total Contamination

There has been some discussion about using method EN12662 version 2014 for total contamination in biodiesel (neat FAME or B100). The CEN/TC 19 working group published a letter in September 2015 (see lit. 16) about this issue. In short, for FAME blends (B100) either EN12662:1998 or EN12662:2008 should be used and not EN12662:14.

Surprisingly, still twenty of the fifty-one reporting laboratories used the 2014 version. Therefore, the test results of these laboratories were excluded in the statistical evaluation.

Total Contamination: This determination was very problematic. No statistical outliers were observed, but twenty test results had to be excluded. The calculated reproducibility after rejection of the suspect data is not at all in agreement with the requirements of EN12662:98 or EN12662:98. When the reported test results of the different method versions (1998, 2008 and 2014) are evaluated separately, none of the calculated reproducibilities is in agreement the requirements of the respective test methods.

For Biodiesel B100 sample #16194 - Glyceride only

mono-Glycerides	This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN14105:11.
di-Glycerides	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.
tri-Glycerides	This determination was not problematic. Four statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of EN14105:11.
Free Glycerol	This determination was not problematic. Two statistical outliers were observed and one test result was excluded, for zero is not a real value. The calculated reproducibility after rejection of the suspect data is in full agreement with the requirements of EN14105:11.
Total Glycerol	This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN14105:11.

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 (EN spec.)	mg KOH/g	45	0.29	0.05	0.06
Acid Number (ASTM spec.)	mg KOH/g	27	0.27	0.08	0.10
Cloud Point	°C	58	-6.8	4.3	4.0
Cold Filter Plugging Point	°C	55	-21.2	4.5	4.3
Carbon Residue on 100% FAME	%M/M	23	<0.1	n.a.	n.a.
Copper Strip Corrosion		47	1 (1A/1B)	n.a.	n.a.
Density @ 15°C	kg/m^3	69	883.25	0.25	0.50
Flash Point - PMcc (ISO2719)	°C	44	161.0	13.4	14.7
Flash Point- recc (ISO3679)	°C	18	173.1	14.9	15.0
Iodine Value	g I_2/100g	50	111.3	5.0	5.0
Kin. Viscosity @ 40°C	mm^2/s	53	4.524	0.033	0.045
Oxidation Stability	hours	49	6.3	1.4	1.9
Pour Point	°C	28	-36.3	4.6	6.0
Sulphated Ash	%M/M	41	<0.005	n.a.	n.a.
Sulphur (EN spec.)	mg/kg	48	2.8	1.2	1.4
Water	mg/kg	68	487	90	152
Calorific Value, Gross	kJ/kg	4	40019	500	400
Methanol	%M/M	40	0.032	0.011	0.010
mono-Glycerides	%M/M	38	0.514	0.151	0.161
di-Glycerides	%M/M	37	0.108	0.043	0.049
tri-Glycerides	%M/M	34	0.045	0.038	0.066
Free Glycerol	%M/M	28	0.002	0.005	0.007
Total Glycerol	%M/M	38	0.154	0.041	0.041
Total Ester Content	%M/M	48	97.9	2.3	4.2
Linolenic Acid Methyl Ester	%M/M	44	8.85	0.57	0.64
Polyunsat. Methyl Esters	%M/M	30	<0.6	n.a.	n.a.

table 9: comparison of the observed and target reproducibilities of Biodiesel B100 sample #16190

Parameter	unit	n	average	R (Calc.)	R (lit)
Cetane No.(ISO5165)		7	55.6	6.2	5.0
Derived Cetane No. (D7688)		6	55.7	0.8	1.6

table 10: comparison of the observed and target reproducibilities of Biodiesel B100 sample #16191

Parameter	unit	n	average	R (Calc.)	R (lit)
Calcium & Magnesium	mg/kg	31	11.1	3.4	2.8
Phosphorus	mg/kg	28	7.2	2.8	1.4
Potassium	mg/kg	26	<1.0	n.a.	n.a.
Sodium	mg/kg	25	6.3	3.2	4.0
Sum Potassium & Sodium	mg/kg	26	6.7	2.5	2.2

table 11: comparison of the observed and target reproducibilities of Biodiesel B100 sample #16192

Parameter	unit	n	average	R (Calc.)	R (lit)
Total Contamination	mg/kg	31	6.6	8.7	2.0

table 12: comparison of the observed and target reproducibilities of Biodiesel B100 sample #16193

Parameter	unit	n	average	R (Calc.)	R (lit)
mono-Glycerides	%M/M	34	0.301	0.099	0.122
di-Glycerides	%M/M	34	0.067	0.042	0.042
tri-Glycerides	%M/M	26	0.011	0.017	0.056
Free Glycerol	%M/M	27	0.004	0.004	0.007
Total Glycerol	%M/M	32	0.092	0.029	0.029

table 13: comparison of the observed and target reproducibilities of Biodiesel B100 sample #16194

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 OCTOBER 2016 WITH PREVIOUS PTS

	October 2016	May 2016	October 2015	April 2015	September 2014
Type of FAME	Rapeseed	Rapeseed	Rapeseed	Rapeseed	Rapeseed
Number of reporting labs	79	54	54	60	54
Number of results reported	1369	596	788	965	836
Number of statistical outliers	41	25	19	23	35
Percentage statistical outliers	3.0%	4.2%	2.4%	2.4%	4.2%

table 14: 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	October 2016	May 2016	October 2015	April 2015	September 2014
Acid Value (EN spec.)	+	n.e	+	+	+
Acid Number (ASTM spec.)	+	+	+	++	-
Cloud Point	+/-	+/-	+	+	-
Cold Filter Plugging Point	+/-	+	++	+/-	++
Carbon Residue on 100% FAME	n.e.	n.e	(-)	n.e.	(++)
Density at15°C	++	++	++	+/-	++
Flash Point PMcc	+	+/-	-	+	+
Flash Point (ISO3679)	+/-	n.e	++	+	+
Iodine Value	+/-	+/-	+	+/-	-
Kinematic Viscosity at 40°C	+	++	+/-	-	+
Oxidation Stability	+	+	++	++	+
Pour Point	+	n.e.	n.e.	n.e.	n.e.
Sulphated Ash	n.e.	n.e.	n.e.	(--)	(--)
Sulphur	+	+	+	+	+
Water	+	++	+	++	+

table 15a: comparison of group performances against the standard requirements

Determination	October 2016	May 2016	October 2015	April 2015	September 2014
Methanol	+/-	-	-	-	+/-
mono-Glycerides	+/-	++	+	+	+
di-Glycerides	+	++	+/-	+/-	+/-
tri-Glycerides	+	++	+	++	+
Free Glycerol	+	++	++	+	+/-
Total Glycerol	+/-	++	+	+	+
Total Ester content	+	n.e.	++	+	+
Linolenic Acid Methyl Ester	+	n.e.	+/-	-	+/-
Polyunsat. Methyl esters	n.e.	n.e.	(+)	(-)	(--)
Cetane Number	-	n.e.	n.e.	n.e.	n.e.
Derived Cetane Number	+	n.e.	n.e.	n.e.	n.e.
Sum of Calcium and Magnesium	-	+/-	+	-	-
Phosphorus	--	--	--	--	--
Potassium	n.e.	++	++	++	(-)
Sodium	+	+	++	+	+
Sum of Potassium and Sodium	-	--	n.e.	n.e.	n.e.
Total Contamination	--	--	--	-	--

table 15b: comparison of group performances against the standard requirements (continued)

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

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

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

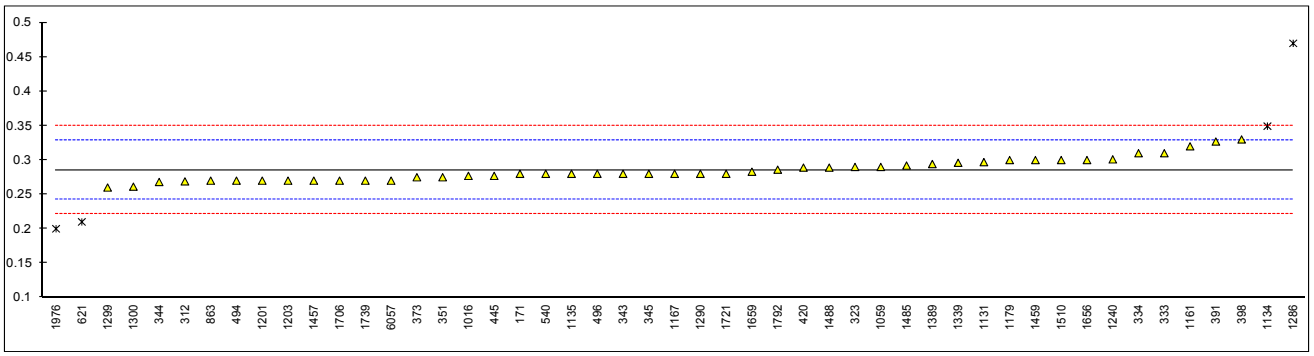
APPENDIX 1

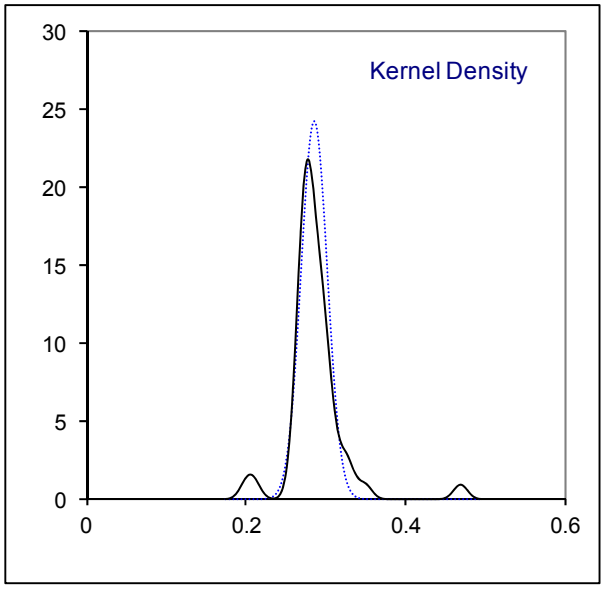
Determination of Acid Value conform EN spec. on sample #16190; results in mg KOH/g

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171	EN14104	0.28		-0.26	
311		-----		-----	
312	EN14104	0.269		-0.77	
323	EN14104	0.29		0.21	
333	EN14104	0.31		1.14	
334	EN14104	0.31		1.14	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN14104	0.28		-0.26	
344	EN14104	0.2681		-0.81	
345	EN14104	0.28		-0.26	
351	EN14104	0.275		-0.49	
370		-----		-----	
373	EN14104	0.275		-0.49	
391	EN14104	0.327		1.94	
398	EN14104	0.330	C	2.08	first reported: 0.382
420	EN14104	0.289		0.16	
445	EN14104	0.277		-0.40	
447		-----		-----	
494	EN14104	0.27		-0.72	
496	EN14104	0.28		-0.26	
511		-----		-----	
540	EN14104	0.28		-0.26	
556		-----		-----	
603		-----		-----	
621	EN14104	0.21	R(0.01)	-3.52	
631		-----		-----	
663		-----		-----	
863	EN14104	0.27		-0.72	
1016	EN14104	0.277		-0.40	
1033		-----		-----	
1059	EN14104	0.29		0.21	
1107		-----		-----	
1131	EN14104	0.297		0.54	
1134	EN14104	0.3493	R(0.05)	2.98	
1135	EN14104	0.28		-0.26	
1161	EN14104	0.32		1.61	
1167	EN14104	0.28	C	-0.26	first reported: 0.16
1179	EN14104	0.30		0.68	
1199		-----		-----	
1201	EN14104	0.27		-0.72	
1203	EN14104	0.27		-0.72	
1240	EN14104	0.301		0.72	
1286	EN14104	0.4698	R(0.01)	8.60	
1290	EN14104	0.28		-0.26	
1299	EN14104	0.26		-1.19	
1300	EN14104	0.2613		-1.13	
1316		-----		-----	
1339	EN14104	0.296		0.49	
1389	EN14104	0.2942		0.41	
1397		-----		-----	
1457	EN14104	0.270		-0.72	
1459	EN14104	0.30		0.68	
1485	EN14104	0.292		0.30	
1488	EN14104	0.289		0.16	
1491		-----		-----	
1494		-----		-----	
1510	EN14104	0.30		0.68	
1539		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1656	EN14104	0.30		0.68	
1659	EN14104	0.283		-0.12	
1706	EN14104	0.27		-0.72	
1712		-----		-----	
1721	EN14104	0.280		-0.26	
1739	EN14104	0.27		-0.72	
1744		-----		-----	
1769		-----		-----	

1792	EN14104	0.286		0.02	
1976	EN14104	0.200	C,R(0.01)	-3.99	first reported: 0.218
6057	EN14104	0.27		-0.72	

normality	OK	
n	45	
outliers	4	
mean (n)	0.2855	
st.dev. (n)	0.01650	
R(calc.)	0.0462	
R(EN14214:12+AC14)	0.0600	Compare R(EN14104:03) = 0.0600



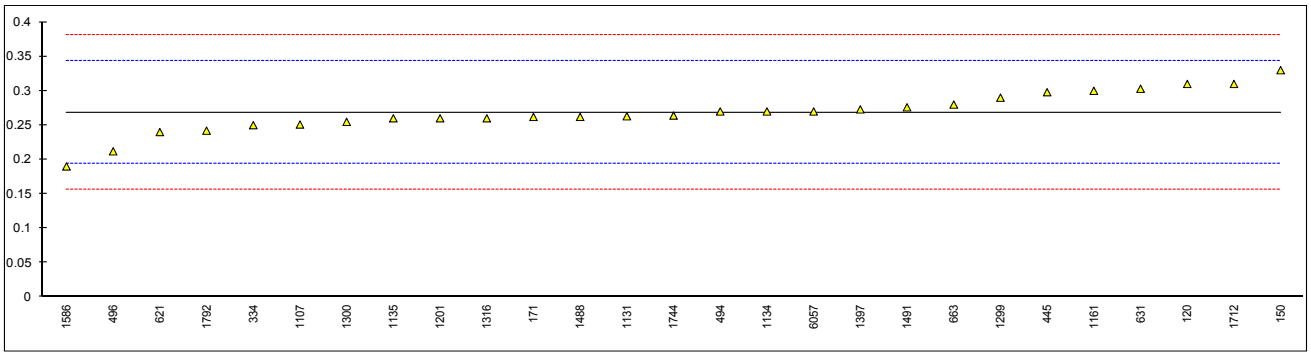


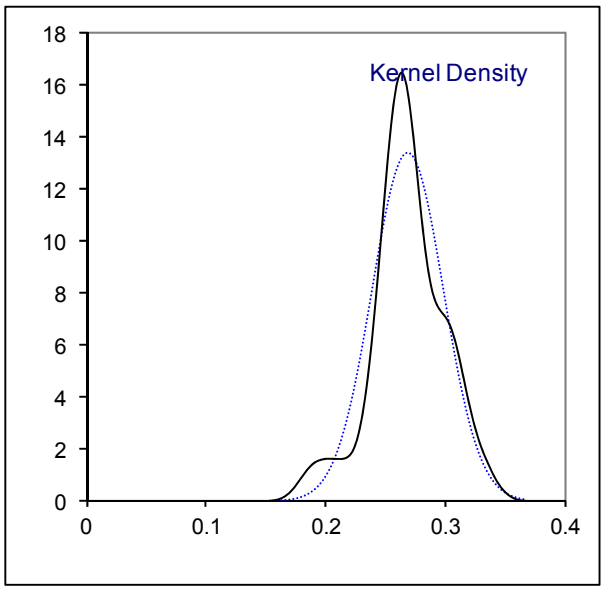
Determination of Acid Number conform ASTM spec. on sample #16190; results in mg KOH/g

lab	method	value	mark	z(targ)	remarks
120	D664-B	0.31		1.11	
150	D664-B	0.33		1.64	
171	D664-B	0.262	C	-0.18	first reported: 0.525
311		-----		-----	
312		-----		-----	
323		-----		-----	
333		-----		-----	
334	D664-B	0.25		-0.50	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343		-----		-----	
344		-----		-----	
345		-----		-----	
351		-----		-----	
370		-----		-----	
373		-----		-----	
391		-----		-----	
398		-----		-----	
420		-----		-----	
445	D664-B	0.298		0.79	
447		-----		-----	
494	D664-B	0.27		0.04	
496	D664-B	0.212		-1.51	
511		-----		-----	
540		-----		-----	
556		-----		-----	
603		-----		-----	
621	D664-B	0.24		-0.76	
631	D664-B	0.303		0.92	
663	D664-B	0.280		0.31	
863		-----		-----	
1016		-----		-----	
1033		-----		-----	
1059		-----		-----	
1107	D664-B	0.251		-0.47	
1131	D664-A	0.263		-0.15	
1134	EN14104	0.27		0.04	Acid value or Acid number?
1135	D664-B	0.26		-0.23	
1161	D664-B	0.3		0.84	
1167		-----		-----	
1179		-----		-----	
1199		-----		-----	
1201	EN14104	0.26		-0.23	Acid value or Acid number?
1203		-----		-----	
1240		-----		-----	
1286		-----		-----	
1290		-----		-----	
1299	D664-B	0.29		0.57	
1300	D664-B	0.2548		-0.37	
1316	D664-B	0.26		-0.23	
1339		-----		-----	
1389		-----		-----	
1397	EN14104	0.273		0.12	Acid value or Acid number?
1457		-----		-----	
1459		-----		-----	
1485		-----		-----	
1488	ISO6618	0.262		-0.18	
1491	D664-B	0.276		0.20	
1494		-----		-----	
1510		-----		-----	
1539		-----		-----	
1582		-----		-----	
1586	D664-B	0.19		-2.10	
1634		-----		-----	
1656		-----		-----	
1659		-----		-----	
1706		-----		-----	
1712	EN14104	0.310		1.11	Acid value or Acid number?
1721		-----		-----	
1739		-----		-----	
1744	D664-B	0.264		-0.12	
1769		-----		-----	
1792	D664-B	0.242		-0.71	

1976		-----	-----	
6057	EN14104	0.27	0.04	Acid value or Acid number?

normality	suspect
n	27
outliers	0
mean (n)	0.2685
st.dev. (n)	0.02975
R(calc.)	0.0833
R(D664B:11ae1)	0.1046

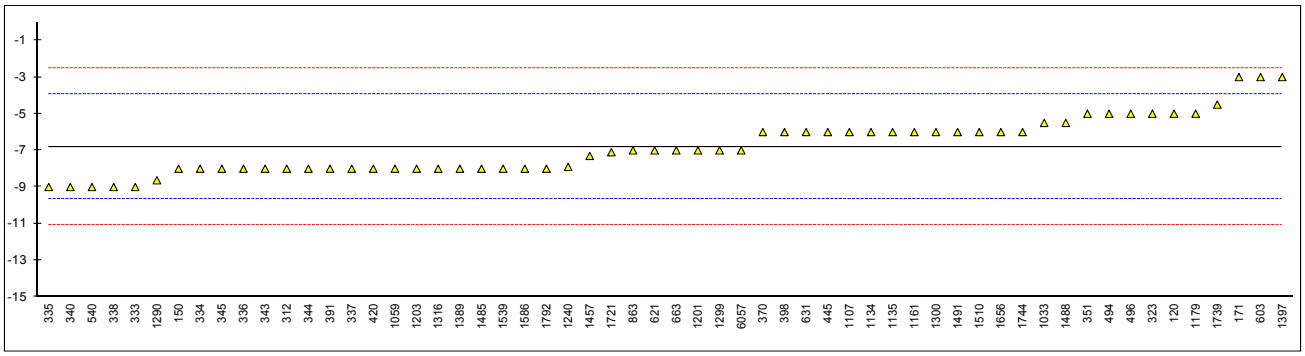


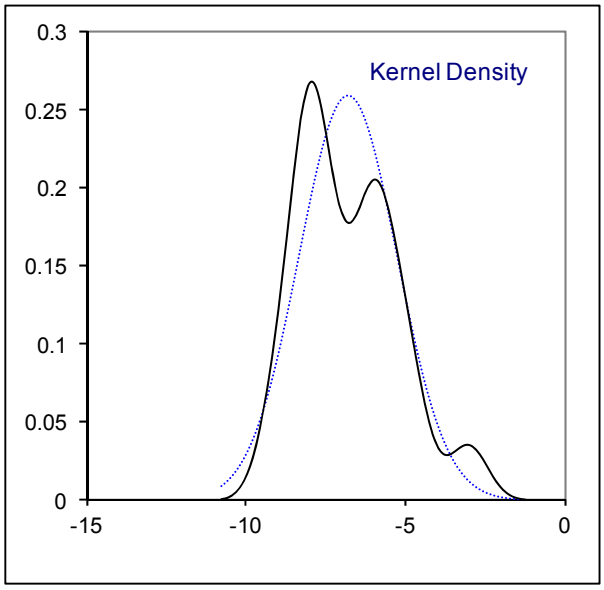


Determination of Cloud Point on sample #16190; results in °C

lab	method	value	mark	z(targ)	remarks
120	D2500	-5	C	1.26	first reported: 0
150	EN23015	-8		-0.84	
171	D2500	-3		2.66	
311		-----		-----	
312	D2500	-8		-0.84	
323	EN23015	-5		1.26	
333	EN23015	-9		-1.54	
334	EN23015	-8		-0.84	
335	EN23015	-9		-1.54	
336	EN23015	-8		-0.84	
337	EN23015	-8		-0.84	
338	EN23015	-9		-1.54	
340	EN23015	-9		-1.54	
343	D2500	-8		-0.84	
344	D2500	-8		-0.84	
345	D5771	-8		-0.84	
351	D7683	-5		1.26	
370	EN23015	-6		0.56	
373		-----		-----	
391	EN23015	-8		-0.84	
398	EN23015	-6		0.56	
420	EN23015	-8		-0.84	
445	IP219	-6		0.56	
447		-----		-----	
494	EN23015	-5		1.26	
496	EN23015	-5.0		1.26	
511		-----		-----	
540	EN23015	-9		-1.54	
556		-----		-----	
603	ISO3015	-3		2.66	
621	D2500	-7.0		-0.14	
631	D2500	-6		0.56	
663	D2500	-7		-0.14	
863	D2500	-7		-0.14	
1016		-----		-----	
1033	D5772	-5.5		0.91	
1059	EN23015	-8		-0.84	
1107	EN23015	-6		0.56	
1131		-----		-----	
1134	IP219	-6		0.56	
1135	EN23015	-6		0.56	
1161	EN23015	-6		0.56	
1167		-----		-----	
1179	D2500	-5		1.26	
1199		-----		-----	
1201	EN23015	-7		-0.14	
1203	EN23015	-8		-0.84	
1240	EN23015	-7.9		-0.77	
1286		-----		-----	
1290	D2500	-8.63		-1.28	
1299	D2500	-7		-0.14	
1300	EN23015	-6		0.56	
1316	EN23015	-8.0		-0.84	
1339		-----		-----	
1389	D2500	-8		-0.84	
1397	D5771	-3		2.66	
1457	EN23015	-7.3		-0.35	
1459		-----		-----	
1485	D2500	-8.0		-0.84	
1488	EN23015	-5.5		0.91	
1491	D2500	-6		0.56	
1494		-----		-----	
1510	D2500	-6		0.56	
1539	ISO3015	-8		-0.84	
1582		-----		-----	
1586	D5771	-8		-0.84	
1634		-----		-----	
1656	IP219	-6		0.56	
1659		-----		-----	
1706		-----		-----	
1712		-----		-----	
1721	D2500	-7.1		-0.21	
1739	EN23015	-4.5		1.61	
1744	D2500	-6		0.56	
1769		-----		-----	
1792	D2500	-8		-0.84	

1976		-----	-----
6057	EN23015	-7.0	-0.14
	normality	OK	
	n	58	
	outliers	0	
	mean (n)	-6.80	
	st.dev. (n)	1.539	
	R(calc.)	4.31	
	R(EN14214:12+AC14)	4.00	Compare R(EN23015:94) = 6.00





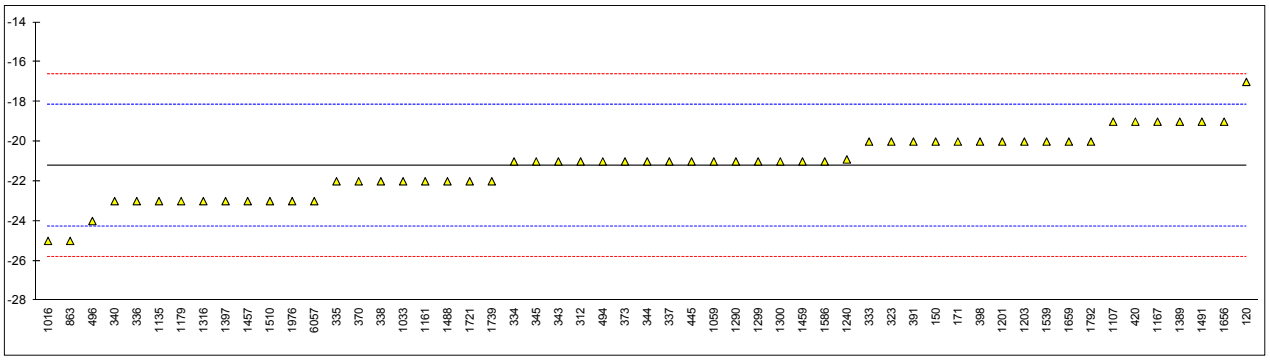
Determination of Cold Filter Plugging Point on sample #16190; results in °C

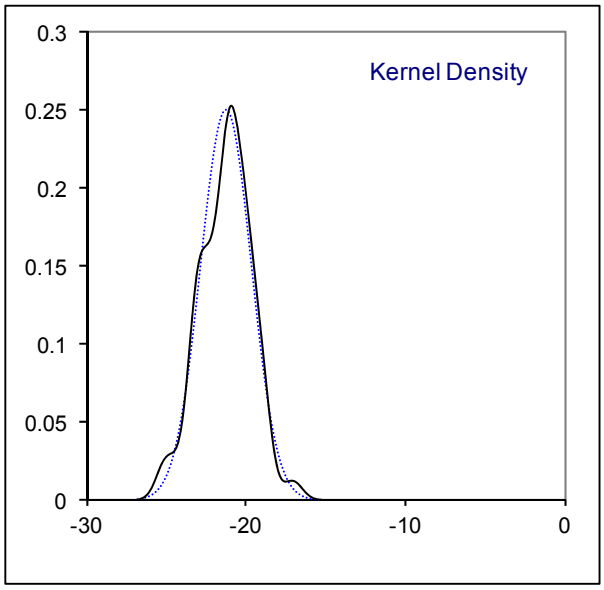
lab	method	value	mark	z(targ)	remarks
120	EN116	-17	C	2.76	first reported: -16
150	EN116	-20		0.80	
171	EN116	-20		0.80	
311		-----		-----	
312	EN116	-21		0.14	
323	EN116	-20		0.80	
333	EN116	-20		0.80	
334	EN116	-21		0.14	
335	EN116	-22		-0.51	
336	EN116	-23		-1.17	
337	EN116	-21		0.14	
338	EN116	-22		-0.51	
340	EN116	-23		-1.17	
343	EN116	-21		0.14	
344	EN116	-21		0.14	
345	EN116	-21		0.14	
351		-----		-----	
370	EN116	-22		-0.51	
373	EN116	-21		0.14	
391	EN116	-20		0.80	
398	EN116	-20		0.80	
420	EN116	-19		1.45	
445	IP309	-21.0		0.14	
447		-----		-----	
494	EN116	-21		0.14	
496	EN116	-24.0		-1.82	
511		-----		-----	
540	EN116	<-20		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
631		-----		-----	
663		-----		-----	
863	IP309	-25		-2.48	
1016	EN116	-25		-2.48	
1033	IP309	-22		-0.51	
1059	EN116	-21		0.14	
1107	EN116	-19		1.45	
1131		-----		-----	
1134		-----		-----	
1135	EN116	-23		-1.17	
1161	EN116	-22		-0.51	
1167	EN116	-19		1.45	
1179	EN116	-23		-1.17	
1199		-----		-----	
1201	EN116	-20		0.80	
1203	EN116	-20		0.80	
1240	EN116	-20.9		0.21	
1286		-----		-----	
1290	EN116	-21		0.14	
1299	EN116	-21		0.14	
1300	EN116	-21		0.14	
1316	EN116	-23.0		-1.17	
1339		-----		-----	
1389	EN116	-19		1.45	
1397	EN116	-23		-1.17	
1457	EN116	-23		-1.17	
1459	EN116	-21		0.14	
1485		-----		-----	
1488	EN116	-22.0		-0.51	
1491	EN116	-19		1.45	
1494		-----		-----	
1510	IP309	-23		-1.17	
1539	EN116	-20		0.80	
1582		-----		-----	
1586	EN116	-21		0.14	
1634		-----		-----	
1656	IP309	-19		1.45	
1659	EN116	-20.0		0.80	
1706		-----		-----	
1712		-----		-----	
1721	EN116	-22		-0.51	
1739	EN116	-22		-0.51	
1744		-----		-----	
1769		-----		-----	
1792	EN116	-20		0.80	

1976	EN116	-23	-1.17
6057	EN116	-23	-1.17

normality	OK
n	55
outliers	0
mean (n)	-21.22
st.dev. (n)	1.595
R(calc.)	4.47
R(EN116:15)	4.27

Compare R(EN116:97) = 4.760
Compare R(EN14214:12+AC14) = 2.94





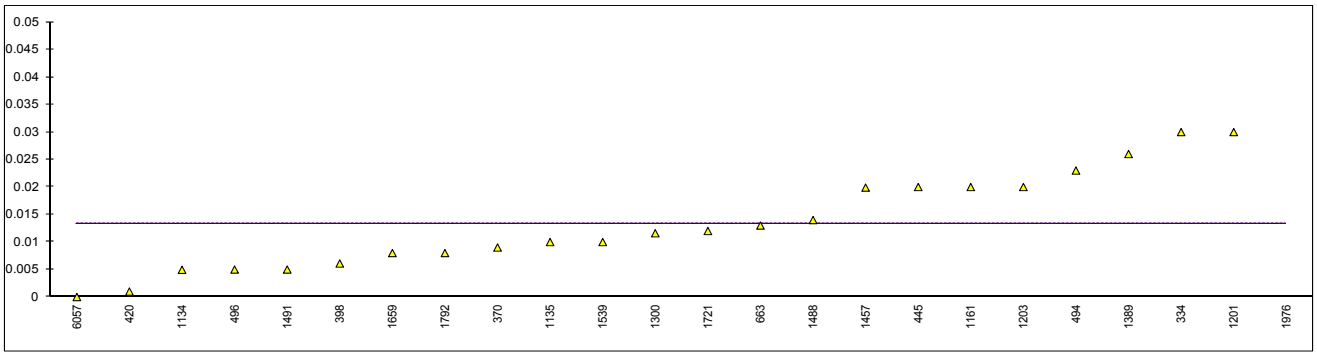
Determination of Carbon Residue on 100% FAME on sample #16190; results in %M/M

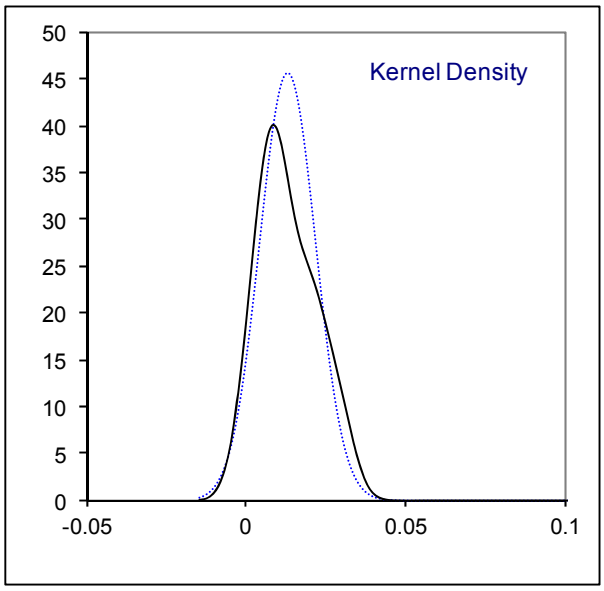
lab	method	value	mark	z(targ)	remarks
120	D4530	<0.01		-----	
150	ISO10370	<0.10		-----	
171		-----		-----	
311		-----		-----	
312		-----		-----	
323	ISO10370	<0.10		-----	
333		-----		-----	
334	ISO10370	0.03		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340	ISO10370	<0.10		-----	
343		-----		-----	
344		-----		-----	
345		-----		-----	
351		-----		-----	
370	ISO10370	0.009		-----	
373		-----		-----	
391		-----		-----	
398	ISO10370	0.0061		-----	
420		0.001		-----	
445	ISO10370	0.02		-----	
447		-----		-----	
494	ISO10370	0.023		-----	
496	ISO10370	0.005		-----	
511		-----		-----	
540		-----		-----	
556		-----		-----	
603	ISO10370	< 0.10		-----	
621	ISO10370	< 0.1		-----	
631	D4530	<0.01		-----	
663	D4530	0.013		-----	
863	D4530	<0.1		-----	
1016		-----		-----	
1033		-----		-----	
1059		-----		-----	
1107		-----		-----	
1131		-----		-----	
1134	D4530	0.00495		-----	
1135	ISO10370	0.01		-----	
1161	ISO10370	0.02		-----	
1167		-----		-----	
1179		-----		-----	
1199		-----		-----	
1201	ISO10370	0.03		-----	
1203	ISO10370	0.02		-----	
1240		-----		-----	
1286		-----		-----	
1290		-----		-----	
1299		-----		-----	
1300	ISO10370	0.0116		-----	
1316		-----		-----	
1339		-----		-----	
1389	D4530	0.026	C	-----	first reported: 0.066
1397		-----		-----	
1457	ISO10370	0.0199		-----	
1459		-----		-----	
1485		-----		-----	
1488	ISO6615	0.014		-----	
1491	ISO10370	0.005		-----	
1494		-----		-----	
1510	ISO10370	<0.01		-----	
1539	ISO10370	0.01	C	-----	first reported: 0.07
1582		-----		-----	
1586	ISO10370	<0.01		-----	
1634		-----		-----	
1656	ISO10370	<0.1		-----	
1659	ISO10370	0.008		-----	
1706		-----		-----	
1712		-----		-----	
1721	ISO10370	0.012		-----	
1739		-----		-----	
1744		-----		-----	
1769		-----		-----	
1792	ISO10370	0.008		-----	

1976	ISO10370	0.298	C,R(0.01)	-----	False positive test result?
6057	ISO10370	0.00		-----	

normality	OK
n	23
outliers	1
mean (n)	<0.1
st.dev. (n)	n.a.
R(calc.)	n.a.
R(ISO10370:14)	n.a.

Application range: 0.10 – 30 %M/M





Determination of Copper Strip Corrosion 3 hrs/50°C on sample #16190

lab	method	value	mark	z(targ)	remarks
120	D130	1A		-----	
150	D130	1a		-----	
171	D130	1a		-----	
311		-----		-----	
312		-----		-----	
323	ISO2160	1A		-----	
333		-----		-----	
334	D130	1a		-----	
335	D130	1b		-----	
336	D130	1		-----	
337	D130	1B		-----	
338		-----		-----	
340		-----		-----	
343	ISO2160	1a		-----	
344	D130	1a		-----	
345	D130	1A		-----	
351	ISO2160	1A		-----	
370	ISO2160	1a		-----	
373		-----		-----	
391	ISO2160	1a		-----	
398		-----		-----	
420	ISO2160	Class 1a		-----	
445	IP154	1a		-----	
447		-----		-----	
494	ISO2160	1a		-----	
496	D130	1A		-----	
511		-----		-----	
540	D130	1a		-----	
556		-----		-----	
603	ISO2160	1A		-----	
621	D130	1A		-----	
631	D130	1A		-----	
663	D130	1a		-----	
863	D130	1a		-----	
1016	ISO2160	1A		-----	
1033	IP154	1b		-----	
1059	ISO2160	1a		-----	
1107	D130	1A		-----	
1131		-----		-----	
1134	IP154	1a		-----	
1135	ISO2160	1A		-----	
1161	ISO2160	1a		-----	
1167	ISO2160	1a		-----	
1179	ISO2160	1A		-----	
1199		-----		-----	
1201	D130	1a		-----	
1203		1		-----	
1240		-----		-----	
1286		-----		-----	
1290		-----		-----	
1299	D130	1A		-----	
1300	ISO2160	1a		-----	
1316	D130	1a		-----	
1339	ISO2160	1a		-----	
1389	ISO2160	1A		-----	
1397	ISO2160	1		-----	
1457		-----		-----	
1459		-----		-----	
1485		-----		-----	
1488	ISO2160	1A		-----	
1491	ISO2160	1a		-----	
1494		-----		-----	
1510		1A		-----	
1539	ISO2160	1		-----	
1582		-----		-----	
1586	ISO2160	1A		-----	
1634	D130	1a		-----	
1656	ISO2160	1		-----	
1659	ISO2160	1A		-----	
1706		-----		-----	
1712		-----		-----	
1721	ISO2160	1		-----	
1739	ISO2160	1a		-----	
1744		-----		-----	
1769		-----		-----	
1792	D130	1a		-----	

1976		-----	-----
6057	ISO2160	1A	-----
	normality	n.a.	
	n	47	
	outliers	n.a.	
	mean (n)	1 (1A/1B)	
	st.dev. (n)	n.a.	
	R(calc.)	n.a.	
	R(ISO2160:98)	n.a.	

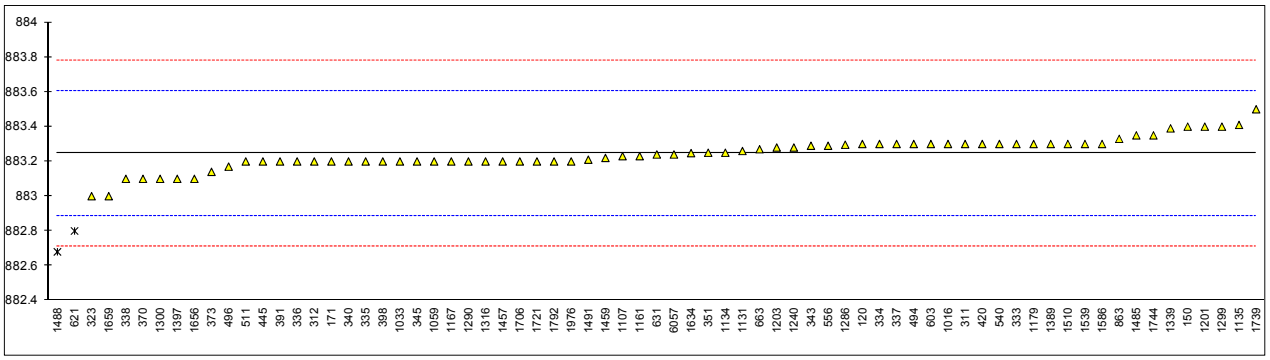
Determination of Density at 15°C conform EN spec. on sample #16190; results in kg/m^3

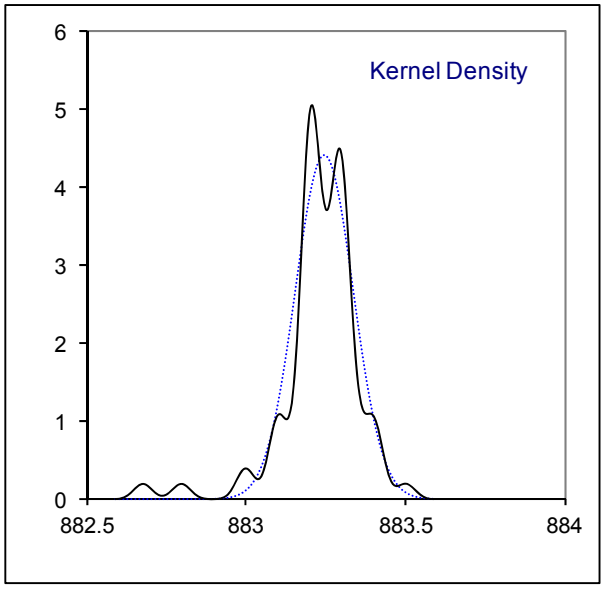
lab	method	value	mark	z(targ)	remarks
120	ISO12185	883.3		0.31	
150	ISO12185	883.4		0.87	
171	ISO12185	883.2		-0.25	
311	ISO12185	883.3		0.31	
312	ISO12185	883.2		-0.25	
323	ISO12185	883.0		-1.37	
333	ISO12185	883.3		0.31	
334	ISO12185	883.3		0.31	
335	ISO12185	883.2		-0.25	
336	ISO12185	883.2		-0.25	
337	ISO12185	883.3		0.31	
338	ISO12185	883.1		-0.81	
340	ISO12185	883.20		-0.25	
343	ISO12185	883.29		0.25	
344		-----		-----	
345	ISO12185	883.2		-0.25	
351	ISO12185	883.25		0.03	
370	ISO12185	883.1		-0.81	
373	ISO12185	883.14		-0.59	
391	ISO12185	883.2		-0.25	
398	ISO12185	883.2		-0.25	
420	ISO12185	883.3		0.31	
445	IP365	883.2		-0.25	
447		-----		-----	
494	ISO12185	883.3		0.31	
496	ISO12185	883.17		-0.42	
511	D4052	883.20		-0.25	
540	ISO12185	883.3		0.31	
556	D4052	883.29	C	0.25	reported: 0.88329
603	ISO12185	883.3		0.31	
621	D4052	882.8	R(0.01)	-2.49	
631	D4052	883.24		-0.03	
663	D4052	883.27		0.14	
863	D4052	883.33		0.47	
1016	ISO12185	883.3		0.31	
1033	IP365	883.2		-0.25	
1059	ISO12185	883.2		-0.25	
1107	D4052	883.23		-0.09	
1131	ISO12185	883.26		0.08	
1134	IP365	883.25		0.03	
1135	ISO12185	883.41		0.92	
1161	ISO12185	883.23		-0.09	
1167	ISO12185	883.2		-0.25	
1179	D4052	883.3		0.31	
1199		-----		-----	
1201	ISO12185	883.4		0.87	
1203	ISO12185	883.28		0.19	
1240	ISO12185	883.28		0.19	
1286	ISO12185	883.296		0.28	
1290	ISO12185	883.2		-0.25	
1299	ISO12185	883.4		0.87	
1300	ISO12185	883.1		-0.81	
1316	ISO12185	883.2		-0.25	
1339	ISO3675	883.39		0.81	
1389	D4052	883.3		0.31	
1397	ISO12185	883.1		-0.81	
1457	ISO12185	883.2		-0.25	
1459	ISO12185	883.22		-0.14	
1485	ISO12185	883.35		0.59	
1488	ISO3675	882.68	R(0.01)	-3.17	
1491	ISO12185	883.21		-0.20	
1494		-----		-----	
1510	IP365	883.3		0.31	
1539	ISO12185	883.3		0.31	
1582		-----		-----	
1586	ISO12185	883.3		0.31	
1634	ISO12185	883.2475		0.01	
1656	ISO12185	883.1		-0.81	
1659	ISO12185	883.0		-1.37	
1706	ISO12185	883.2		-0.25	
1712		-----		-----	
1721	ISO12185	883.2		-0.25	
1739	ISO3675	883.5		1.43	
1744	D4052	883.35		0.59	
1769		-----		-----	
1792	ISO12185	883.2		-0.25	

1976	ISO12185	883.2		-0.25	
6057	ISO12185	883.24	C	-0.03	first reported: 0.88324

	normality	suspect
	n	69
	outliers	2
	mean (n)	883.25
	st.dev. (n)	0.090
	R(calc.)	0.25
	R(EN14214:12+AC14)	0.50

Compare R(ISO12185:96) = 0.50





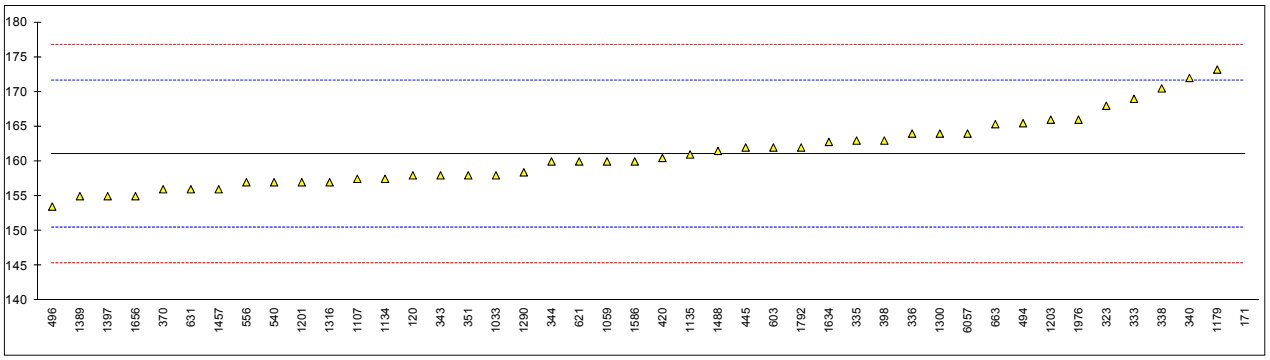
Determination of Flash Point, PMcc conform EN spec. on sample #16190; results in °C

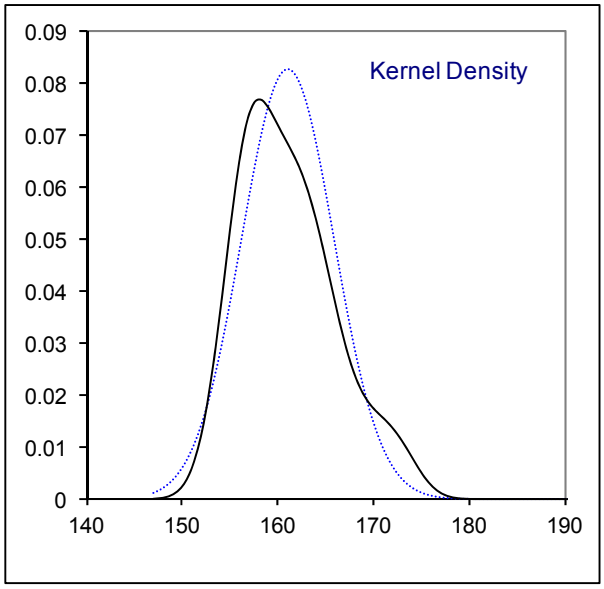
lab	method	value	mark	z(targ)	remarks
120	ISO2719	158		-0.58	
150	ISO2719	>130.0		-----	
171	D93	160	C	-0.20	first reported: 320°C
311		-----		-----	
312		-----		-----	
323	ISO2719	168.0		1.33	
333	ISO2719	169.0		1.52	
334		-----		-----	
335	ISO2719	163		0.38	
336	ISO2719	164.0		0.57	
337		-----		-----	
338	ISO2719	170.5		1.80	
340	ISO2719	172.0		2.09	
343	ISO2719	158		-0.58	
344	D93	160		-0.20	
345		-----		-----	
351	ISO2719	158.0		-0.58	
370	ISO2719	156.0		-0.96	
373		-----		-----	
391		-----		-----	
398	ISO2719	163		0.38	
420	ISO2719	160.5		-0.10	
445	IP34	162.0		0.18	
447		-----		-----	
494	ISO2719	165.5		0.85	
496	ISO2719	153.5		-1.43	
511		-----		-----	
540	ISO2719	157.0		-0.77	
556	NBR14598	157.0		-0.77	
603	ISO2719	162		0.18	
621	D93	160.0		-0.20	
631	D93	156.0		-0.96	
663	D93	165.35		0.82	
863		-----		-----	
1016		-----		-----	
1033	IP34	158.0		-0.58	
1059	ISO2719	160.0		-0.20	
1107	D93	157.5		-0.67	
1131		-----		-----	
1134	IP34	157.5		-0.67	
1135	ISO2719	161.0		-0.01	
1161		-----		-----	
1167		-----		-----	
1179	ISO2719	173.2		2.32	
1199		-----		-----	
1201	ISO2719	157.0		-0.77	
1203		166		0.95	
1240		-----		-----	
1286		-----		-----	
1290	ISO2719	158.43		-0.50	
1299		-----		-----	
1300	ISO2719	164.0		0.57	
1316	ISO2719	157.0		-0.77	
1339		-----		-----	
1389	D93	155.0		-1.15	
1397	ISO2719	155.0		-1.15	
1457	ISO2719	156.0		-0.96	
1459		-----		-----	
1485		-----		-----	
1488	ISO2719	161.51		0.09	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1539		-----		-----	
1582		-----		-----	
1586	D93	160.0		-0.20	
1634	ISO2719	162.8		0.34	
1656	ISO2719	155		-1.15	
1659		-----		-----	
1706		-----		-----	
1712		-----		-----	
1721		-----		-----	
1739		-----		-----	
1744		-----		-----	
1769		-----		-----	
1792	ISO2719	162.0		0.18	

1976	ISO2719	166		0.95	
6057	ISO2719	164	C	0.57	first reported: 145.0

	normality	OK
	n	44
	outliers	0
	mean (n)	161.03
	st.dev. (n)	4.772
	R(calc.)	13.36
	R(ISO2719C:16)	14.70

Compare R(EN14214:12+AC14) = 11.4
Compare R(ISO2719:02) = 11.44





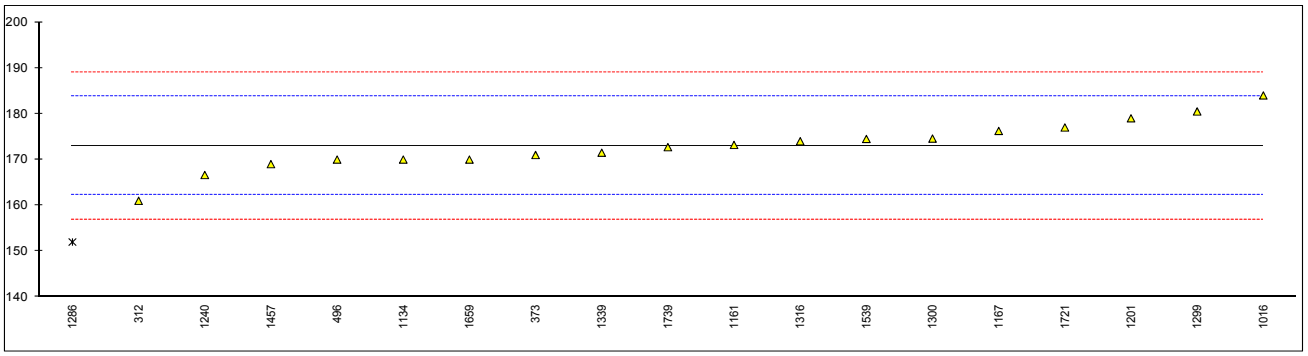
Determination of Flash Point, recc conform EN spec. on sample #16190; results in °C

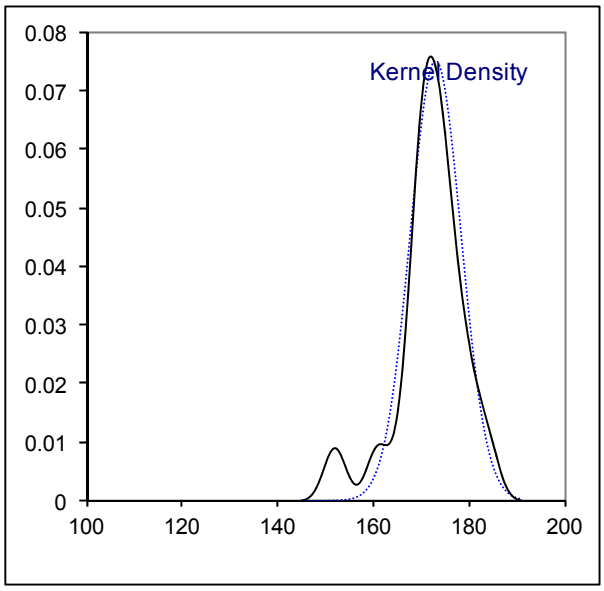
lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171		-----		-----	
311		-----		-----	
312	ISO3679	161.0		-2.25	
323		-----		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343		-----		-----	
344		-----		-----	
345		-----		-----	
351		-----		-----	
370		-----		-----	
373	ISO3679	171		-0.38	
391		-----		-----	
398		-----		-----	
420		-----		-----	
445		-----		-----	
447		-----		-----	
494		-----		-----	
496	ISO3679	170		-0.57	
511		-----		-----	
540		-----		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
631		-----		-----	
663		-----		-----	
863		-----		-----	
1016	ISO3679	184		2.04	
1033		-----		-----	
1059		-----		-----	
1107		-----		-----	
1131		-----		-----	
1134	IP523	170.0		-0.57	
1135		-----		-----	
1161	ISO3679	173.2		0.03	
1167	ISO3679	176.25		0.60	
1179		-----		-----	
1199		-----		-----	
1201	ISO3679	179.0		1.11	
1203		-----		-----	
1240	ISO3679	166.63		-1.20	
1286	ISO3679	152	G(0.05)	-3.93	
1290		-----		-----	
1299	ISO3679	180.5		1.39	
1300	ISO3679	174.58		0.29	
1316	ISO3679	174.0		0.18	
1339	ISO3679	171.5		-0.29	
1389		-----		-----	
1397		-----		-----	
1457	ISO3679	169.0		-0.76	
1459		-----		-----	
1485		-----		-----	
1488		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1539	ISO3679	174.5		0.27	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1656		-----		-----	
1659	ISO3679	170.0		-0.57	
1706		-----		-----	
1712		-----		-----	
1721	ISO3679	177.0		0.74	
1739	ISO3679	172.7		-0.06	
1744		-----		-----	
1769		-----		-----	
1792		-----		-----	

1976	-----	-----
6057	-----	-----

normality	OK
n	18
outliers	1
mean (n)	173.05
st.dev. (n)	5.311
R(calc.)	14.87
R(EN14214:12+AC14)	15.00

Compare R(ISO3679:15) = 15.00





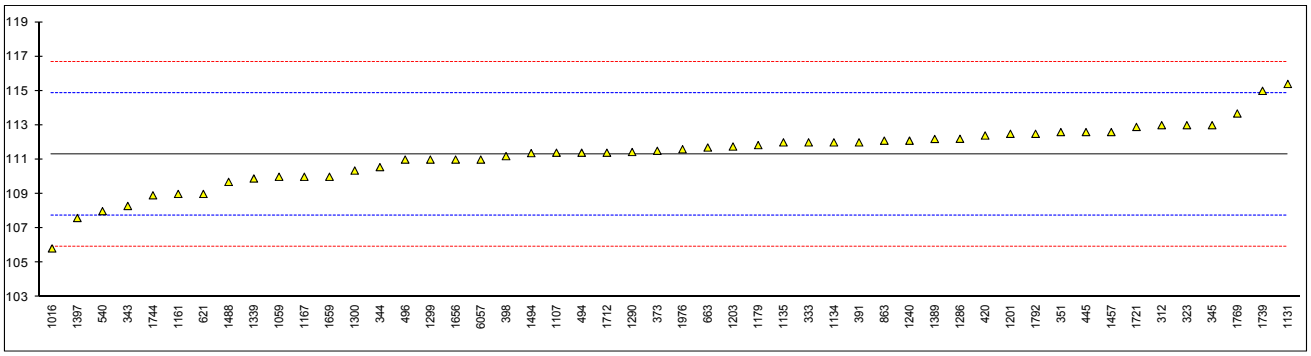
Determination of Iodine Value conform EN spec. on sample #16190; results in g I_2/100g

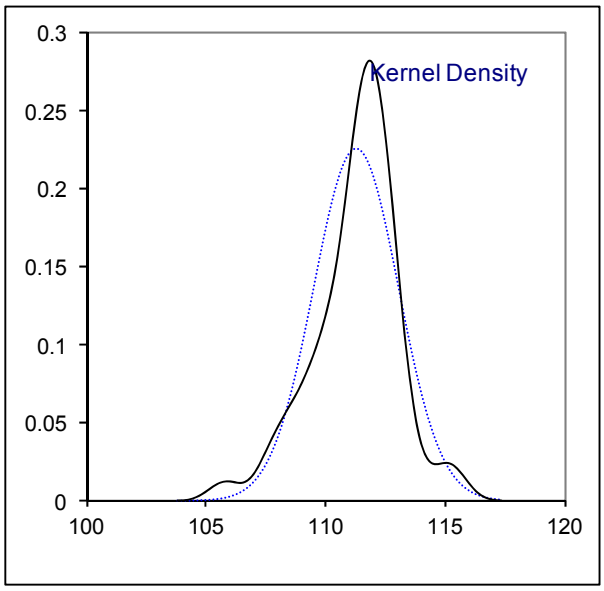
lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171		-----		-----	
311		-----		-----	
312	EN14111	113		0.95	
323	EN14111	113		0.95	
333	EN14111	112		0.39	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN16300	108.3		-1.69	
344	EN14111	110.56		-0.42	
345	EN14111	113		0.95	
351	EN14111	112.6		0.72	
370		-----		-----	
373	EN14111	111.51		0.11	
391	EN14111	112		0.39	
398	EN14111	111.2		-0.06	
420	EN14111	112.4		0.61	
445	EN14111	112.6		0.72	
447		-----		-----	
494	EN14111	111.4		0.05	
496	EN14111	111		-0.17	
511		-----		-----	
540	EN14111	108		-1.85	
556		-----		-----	
603		-----		-----	
621	EN14111	109.0		-1.29	
631		-----		-----	
663	EN14111	111.7		0.22	
863	EN14111	112.1		0.44	
1016	EN14111	105.83		-3.07	
1033		-----		-----	
1059	EN14111	110		-0.73	
1107	EN14111	111.4		0.05	
1131	EN14111	115.4		2.29	
1134	EN14111	112		0.39	
1135	EN16300	112		0.39	
1161	EN14111	109		-1.29	
1167	EN14111	110		-0.73	
1179	EN14111	111.84		0.30	
1199		-----		-----	
1201	EN14111	112.5		0.67	
1203	EN14111	111.76		0.25	
1240	EN16300	112.10		0.44	
1286	EN14111	112.21		0.50	
1290	EN14111	111.44		0.07	
1299	EN14111	111		-0.17	
1300	EN14111	110.36		-0.53	
1316		-----		-----	
1339	EN14111	109.9		-0.79	
1389	EN14111	112.2		0.50	
1397	EN16300	107.6		-2.08	
1457	EN14111	112.6		0.72	
1459		-----		-----	
1485		-----		-----	
1488	EN14111	109.7		-0.90	
1491		-----		-----	
1494	EN14111	111.374		0.03	
1510		-----		-----	
1539		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1656	EN14111	111		-0.17	
1659	EN14111	110.0		-0.73	
1706		-----		-----	
1712	EN14111	111.4		0.05	
1721	EN14111	112.9		0.89	
1739	EN14111	115		2.07	
1744	EN14111	108.92		-1.34	
1769	EN14111	113.683		1.33	
1792	EN14111	112.5		0.67	

1976	EN14111	111.6	0.16
6057	EN14111	111	-0.17

normality	suspect
n	50
outliers	0
mean (n)	111.31
st.dev. (n)	1.770
R(calc.)	4.95
R(EN14214:12+AC14)	5.00

Compare R(EN14111:03) = 5.00
Compare R(EN16300:12) = 7.02





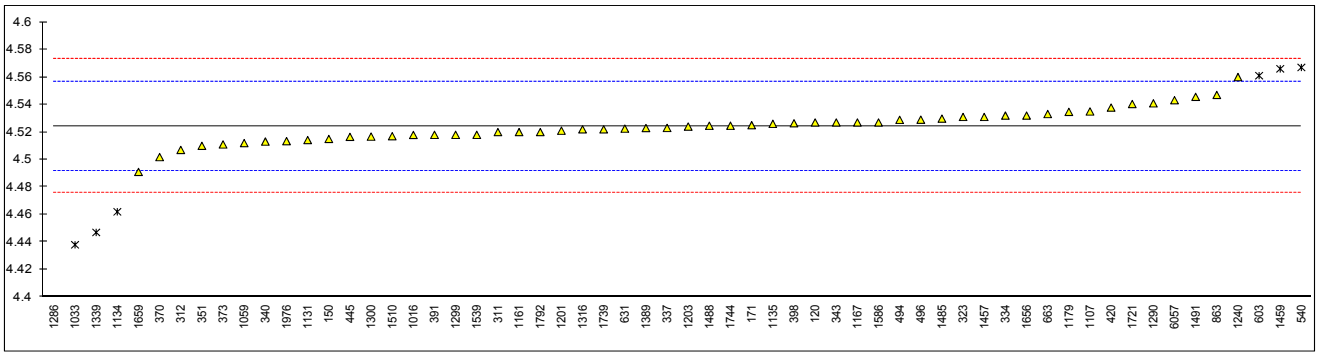
Determination of Kinematic Viscosity at 40°C on sample #16190; results in mm^2/s

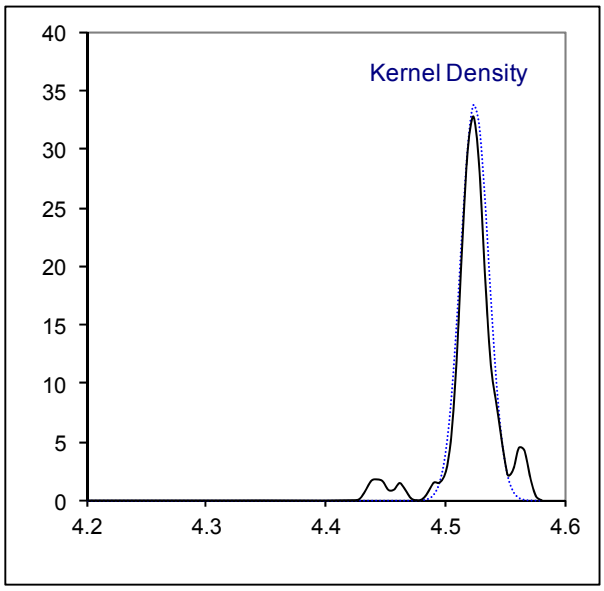
lab	method	value	mark	z(targ)	remarks
120	ISO3104	4.527		0.16	
150	ISO3104	4.515		-0.58	
171	D445	4.525		0.04	
311	ISO3104	4.520		-0.27	
312	ISO3104	4.507		-1.08	
323	ISO3104	4.531		0.41	
333		-----		-----	
334	ISO3104	4.532		0.47	
335		-----		-----	
336		-----		-----	
337	ISO3104	4.523		-0.09	
338		-----		-----	
340	ISO3104	4.5131		-0.70	
343	ISO3104	4.527		0.16	
344		-----		-----	
345		-----		-----	
351	ISO3104	4.510		-0.89	
370	ISO3104	4.5018		-1.40	
373	ISO3104	4.511		-0.83	
391	ISO3104	4.518		-0.40	
398	ISO3104	4.5264		0.12	
420	ISO3104	4.5378		0.83	
445	ISO3104	4.5165		-0.49	
447		-----		-----	
494	ISO3104	4.5289		0.28	
496	ISO3104	4.5290		0.28	
511		-----		-----	
540	ISO3104	4.567	R(0.01)	2.63	
556		-----		-----	
603	ISO3104	4.561	R(0.01)	2.26	
621		-----		-----	
631	D445	4.5225		-0.12	
663	D445	4.5331		0.54	
863	D445	4.547		1.40	
1016	ISO3104	4.5179		-0.40	
1033	IP71	4.438	R(0.01)	-5.34	
1059	ISO3104	4.512		-0.77	
1107	D445	4.535		0.65	
1131	D445	4.5142		-0.63	
1134	D445	4.462	C,R(0.01)	-3.86	first reported: 4.427
1135	ISO3104	4.526		0.10	
1161	ISO3104	4.520		-0.27	
1167	ISO3104	4.527		0.16	
1179	ISO3104	4.5347		0.64	
1199		-----		-----	
1201	ISO3104	4.521		-0.21	
1203	ISO3104	4.524		-0.03	
1240	ISO3104	4.560	C	2.20	first reported:4.404
1286	ISO3104	3.3828	R(0.01)	-70.56	
1290	D7042	4.5409		1.02	
1299	D445	4.518		-0.40	
1300	ISO3104	4.5167		-0.48	
1316	ISO3104	4.522		-0.15	
1339	ISO3104	4.4470	R(0.01)	-4.78	
1389	ISO3104	4.5229		-0.09	
1397		-----		-----	
1457	ISO3104	4.531		0.41	
1459	D7042	4.566	R(0.01)	2.57	
1485	D445	4.5298		0.33	
1488	ISO3104	4.52459		0.01	
1491	D7042	4.5456		1.31	
1494		-----		-----	
1510	ISO3104	4.517		-0.46	
1539	ISO3104	4.518		-0.40	
1582		-----		-----	
1586	ISO3104	4.527		0.16	
1634		-----		-----	
1656	ISO3104	4.532		0.47	
1659	ISO3104	4.491	C	-2.07	first reported: 4.411
1706		-----		-----	
1712		-----		-----	
1721	ISO3104	4.5404		0.99	
1739	ISO3104	4.522		-0.15	
1744	D445	4.5246		0.01	
1769		-----		-----	
1792	ISO3104	4.520		-0.27	

1976	ISO3104	4.5134	-0.68
6057	ISO3104	4.5432	1.16

normality	suspect
n	53
outliers	7
mean (n)	4.5244
st.dev. (n)	0.01179
R(calc.)	0.0330
R(EN14214:12+AC14)	0.0453

Compare R(ISO3104:96) = 0.0453





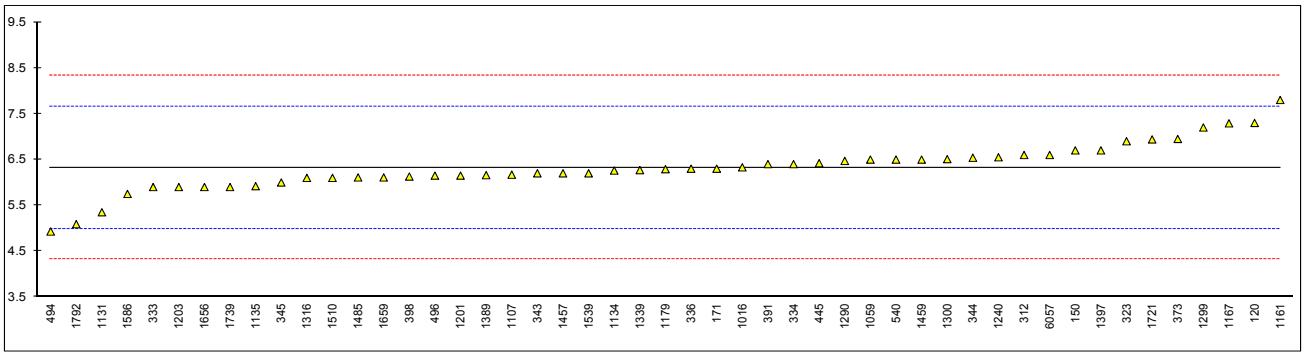
Determination of Oxidation Stability on sample #16190; results in hours

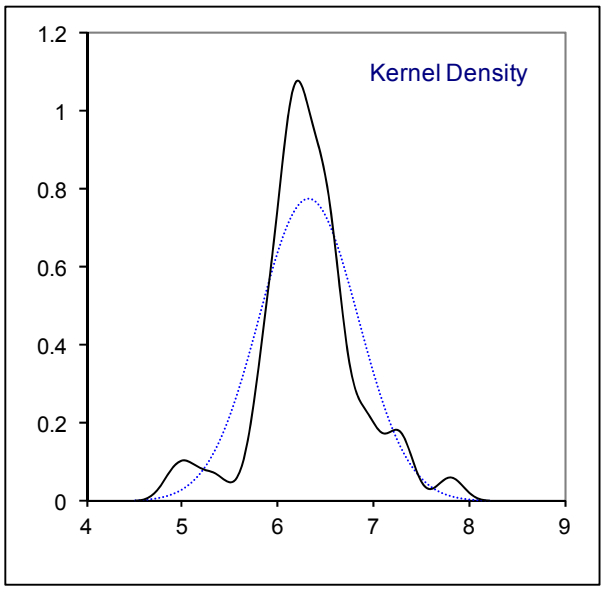
lab	method	value	mark	z(targ)	remarks
120	EN15751	7.3		1.46	
150	EN14112	6.7		0.56	
171	EN14112	6.3		-0.04	
311		-----		-----	
312	EN15751	6.6		0.41	
323	EN14112	6.9		0.86	
333	EN14112	5.9		-0.64	
334	EN14112	6.4		0.11	
335		-----		-----	
336	EN14112	6.3		-0.04	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN15751	6.2		-0.19	
344	EN14112	6.54		0.32	
345	EN14112	6.0		-0.49	
351		-----		-----	
370		-----		-----	
373	EN14112	6.95		0.93	
391	EN14112	6.4		0.11	
398	EN14112	6.13		-0.29	
420		-----		-----	
445	EN14112	6.42		0.14	
447		-----		-----	
494	EN14112	4.93		-2.08	
496	EN14112	6.15		-0.26	
511		-----		-----	
540	EN14112	6.5		0.26	
556		-----		-----	
603		-----		-----	
621		-----		-----	
631		-----		-----	
663		-----		-----	
863		-----		-----	
1016	EN14112	6.33		0.01	
1033		-----		-----	
1059	EN14112	6.5		0.26	
1107	EN14112	6.17		-0.23	
1131	EN14112	5.35		-1.46	
1134	EN14112	6.26		-0.10	
1135	EN14112	5.92		-0.61	
1161	EN14112	7.8		2.20	
1167	EN14112	7.29		1.44	
1179	EN14112	6.29		-0.05	
1199		-----		-----	
1201	EN14112	6.15		-0.26	
1203	EN14112	5.9		-0.64	
1240	EN15751	6.55		0.34	
1286		-----		-----	
1290	EN14112	6.47		0.22	
1299	EN14112	7.2		1.31	
1300	EN14112	6.51		0.28	
1316	EN14112	6.1		-0.34	
1339	EN14112	6.27		-0.08	
1389	EN14112	6.16		-0.25	
1397	EN15751	6.7		0.56	
1457	EN14112	6.20		-0.19	
1459	EN15751	6.5		0.26	
1485	EN14112	6.11		-0.32	
1488		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510	EN14112	6.1		-0.34	
1539	EN14112	6.2		-0.19	
1582		-----		-----	
1586	EN15751	5.75		-0.86	
1634		-----		-----	
1656	EN14112	5.9		-0.64	
1659	EN14112	6.11		-0.32	
1706		-----		-----	
1712		-----		-----	
1721	EN14112	6.94		0.92	
1739	EN14112	5.9		-0.64	
1744		-----		-----	
1769		-----		-----	
1792	EN15751	5.09		-1.85	

1976		-----	-----
6057	EN14112	6.60	0.41

normality	suspect
n	49
outliers	0
mean (n)	6.325
st.dev. (n)	0.5157
R(calc.)	1.444
R(EN14214:12+AC14)	1.875

Compare R(EN14112:16) = 1.875
Compare R(EN15751:14) = 1.577



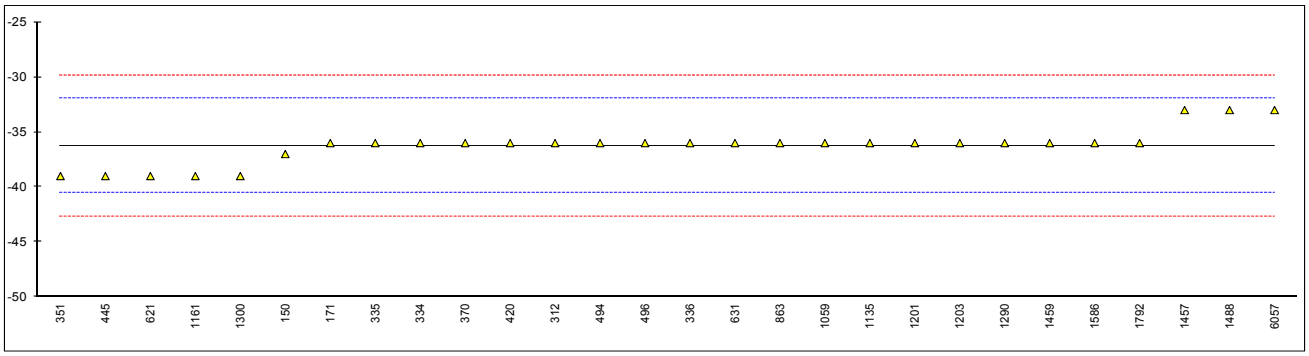


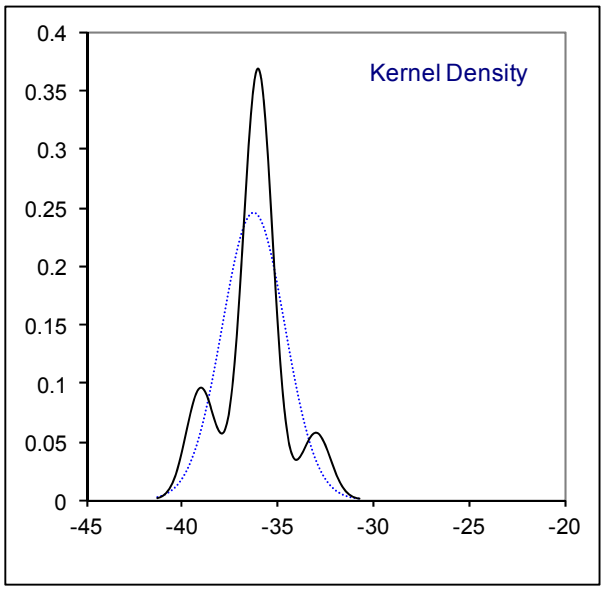
Determination of Pour Point on sample #16190; results in °C

lab	method	value	mark	z(targ)	remarks
120	ISO3016	<-27	C	-----	first reported: -27
150	ISO3016	-37		-0.35	
171		-36		0.12	
311		-----		-----	
312	ISO3016	-36		0.12	
323		-----		-----	
333		-----		-----	
334	ISO3016	-36		0.12	
335	ISO3016	-36		0.12	
336	ISO3016	-36		0.12	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343		-----		-----	
344		-----		-----	
345		-----		-----	
351	D6749	-39		-1.28	
370	ISO3016	-36		0.12	
373		-----		-----	
391		-----		-----	
398		-----		-----	
420	ISO3016	-36		0.12	
445	ISO3016	-39		-1.28	
447		-----		-----	
494	ISO3016	-36		0.12	
496	ISO3016	-36.0		0.12	
511		-----		-----	
540		-----		-----	
556		-----		-----	
603	ISO3016	< -33		-----	
621	ISO3016	-39.0		-1.28	
631	D97	-36		0.12	
663		-----		-----	
863	ISO3016	-36		0.12	
1016		-----		-----	
1033	IP15	<-39		-----	
1059	ISO3016	-36		0.12	
1107		-----		-----	
1131		-----		-----	
1134	ISO3016	<-30		-----	
1135	ISO3016	-36		0.12	
1161	ISO3016	-39		-1.28	
1167		-----		-----	
1179		-----		-----	
1199		-----		-----	
1201	ISO3016	-36		0.12	
1203	ISO3016	-36		0.12	
1240		-----		-----	
1286		-----		-----	
1290	ISO3016	-36		0.12	
1299		-----		-----	
1300	ISO3016	-39		-1.28	
1316		-----		-----	
1339		-----		-----	
1389	D97	<-21		-----	
1397		-----		-----	
1457	ISO3016	-33		1.52	
1459	ISO3016	-36.0		0.12	
1485		-----		-----	
1488	ISO3016	-33.0		1.52	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1539		-----		-----	
1582		-----		-----	
1586	ISO3016	-36		0.12	
1634		-----		-----	
1656		-----		-----	
1659		-----		-----	
1706		-----		-----	
1712		-----		-----	
1721		-----		-----	
1739		-----		-----	
1744		-----		-----	
1769		-----		-----	
1792	ISO3016	-36		0.12	

1976		-----	-----
6057	ISO3016	-33	1.52

normality	OK
n	28
outliers	0
mean (n)	-36.25
st.dev. (n)	1.624
R(calc.)	4.55
R(ISO3016:94)	6.00





Determination of Sulphated Ash on sample #16190; results in %M/M

lab	method	value	mark	z(targ)	remarks
120	ISO3987	<0.001		-----	
150	D874	<0.005		-----	
171	D874	<0.005		-----	
311		-----		-----	
312		-----		-----	
323	ISO3987	<0.005		-----	
333	ISO3987	<0.005		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	ISO3987	<0.005		-----	
344	D874	<0,005		-----	
345	ISO3987	<10		-----	Possible unit error?
351	ISO3987	0.0015		-----	
370	ISO3987	<0.001		-----	
373		-----		-----	
391		-----		-----	
398		-----		-----	
420	ISO3987	<0,005		-----	
445	D874	<0.001		-----	
447		-----		-----	
494	ISO3987	0.0005		-----	
496	ISO3987	0.0001		-----	
511		-----		-----	
540	ISO3987	<0.005		-----	
556		-----		-----	
603	ISO3987	< 0.005		-----	
621	D874	< 0.005		-----	
631	D874	0.0008		-----	
663	D874	0.0027		-----	
863	D874	<0.005		-----	
1016	ISO3987	0.002		-----	
1033		-----		-----	
1059	ISO3987	<0,005		-----	
1107		-----		-----	
1131		-----		-----	
1134	D874	0		-----	
1135	ISO3987	0.003		-----	
1161	ISO3987	0.00142		-----	
1167	ISO3987	0.00143		-----	
1179	ISO3987	0.010		-----	Possible false positive test result?
1199		-----		-----	
1201	ISO3987	<0.005		-----	
1203	ISO3987	<0.005		-----	
1240		-----		-----	
1286		-----		-----	
1290		-----		-----	
1299	ISO3987	<0.001		-----	
1300	ISO3987	0.00243	C	-----	first reported: 0.00657
1316	D874	0.0032		-----	
1339	ISO3987	0.0016		-----	
1389	ISO3987	<0.005		-----	
1397		-----		-----	
1457		-----		-----	
1459		-----		-----	
1485		-----		-----	
1488	ISO3987	0.0011		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1539	ISO3987	< 0,005		-----	
1582		-----		-----	
1586	D874	<0.001		-----	
1634		-----		-----	
1656	ISO3987	<0.01		-----	
1659	ISO3987	0.0035		-----	
1706		-----		-----	
1712		-----		-----	
1721	ISO3987	<0.005		-----	
1739	ISO3987	0.001		-----	reported also: [<LQ]
1744		-----		-----	
1769		-----		-----	
1792	ISO3987	0.0001		-----	

1976		-----	-----
6057	ISO3987	0.002	-----
	n	41	
	mean (n)	<0.0050	

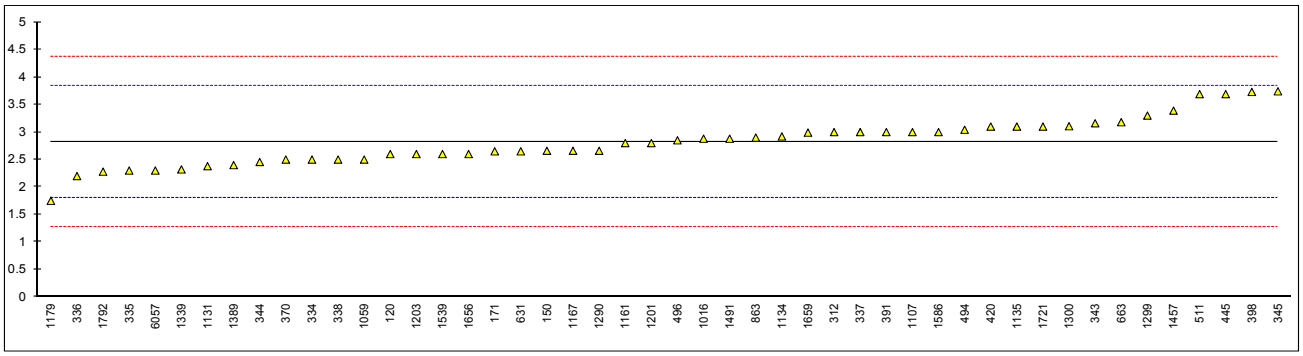
Determination of Sulphur conform EN spec. on sample #16190; results in mg/kg

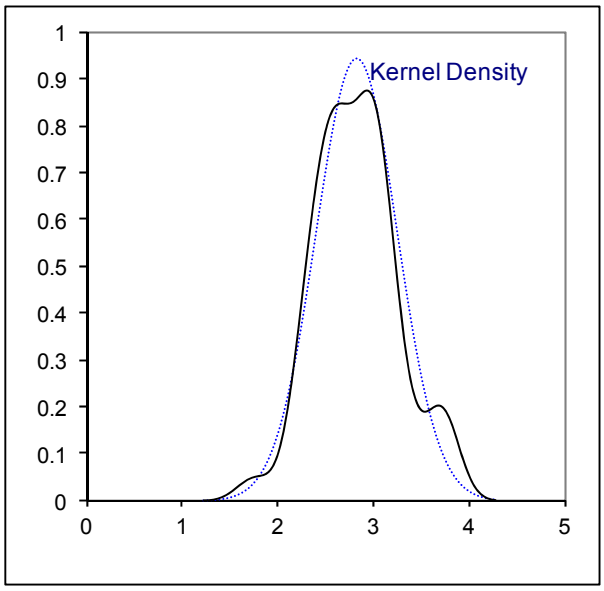
lab	method	value	mark	z(targ)	remarks
120	ISO20846	2.6		-0.43	
150	ISO20846	2.66		-0.31	
171	D2622	2.65		-0.33	
311	ISO20846	<3		-----	
312	ISO20846	3.0		0.35	
323	ISO20846	<3.0		-----	
333	ISO20846	<3.0		-----	
334	ISO20846	2.5		-0.63	
335	ISO20846	2.3		-1.02	
336	ISO20846	2.2		-1.21	
337	ISO20846	3.0		0.35	
338	ISO20846	2.5		-0.63	
340	ISO20846	<3		-----	
343	ISO20846	3.16		0.66	
344	ISO20846	2.456		-0.71	
345	ISO20846	3.741		1.79	
351		-----		-----	
370	ISO20846	2.5		-0.63	
373		-----		-----	
391	ISO20846	3.0		0.35	
398	ISO20846	3.73		1.77	
420	ISO20846	3.1		0.54	
445	D5453	3.69		1.69	
447		-----		-----	
494	ISO20846	3.042		0.43	
496	ISO20846	2.85		0.06	
511	D5453	3.69		1.69	
540		-----		-----	
556		-----		-----	
603		-----		-----	
621	D4294	< 20		-----	
631	D5453	2.65		-0.33	
663	D5453	3.18		0.70	
863	D5453	2.90		0.15	
1016	ISO20846	2.88		0.11	
1033		-----		-----	
1059	ISO20846	2.5		-0.63	
1107	D5453	3.0		0.35	
1131	ISO20846	2.38		-0.86	
1134	IP490	2.92		0.19	
1135	ISO20846	3.1		0.54	
1161	ISO20846	2.8		-0.04	
1167	ISO20846	2.66		-0.31	
1179	ISO20846	1.75		-2.09	
1199		-----		-----	
1201	ISO20846	2.8		-0.04	
1203	ISO20846	2.60		-0.43	
1240		-----		-----	
1286		-----		-----	
1290	EN14107	2.66		-0.31	
1299	ISO20846	3.3		0.93	
1300	ISO20846	3.106		0.56	
1316		-----		-----	
1339	ISO20884	2.32		-0.98	
1389	ISO20846	2.4		-0.82	
1397	ISO20846	<3		-----	
1457	ISO20846	3.39		1.11	
1459		-----		-----	
1485		-----		-----	
1488		-----		-----	
1491	ISO20846	2.88		0.11	
1494		-----		-----	
1510		-----		-----	
1539	ISO20846	2.6		-0.43	
1582		-----		-----	
1586	ISO20846	3		0.35	
1634		-----		-----	
1656	ISO20846	2.6		-0.43	
1659	ISO20846	2.99		0.33	
1706		-----		-----	
1712		-----		-----	
1721	ISO20846	3.1		0.54	
1739		-----		-----	
1744		-----		-----	
1769		-----		-----	
1792	D7220	2.28		-1.06	

1976		-----	-----
6057	ISO20846	2.3	-1.02

normality	OK
n	48
outliers	0
mean (n)	2.821
st.dev. (n)	0.4234
R(calc.)	1.185
R(EN14214:12+AC14)	1.436

Compare R(ISO20846:11) = 1.436
Compare R(ISO20884:11) = 2.239





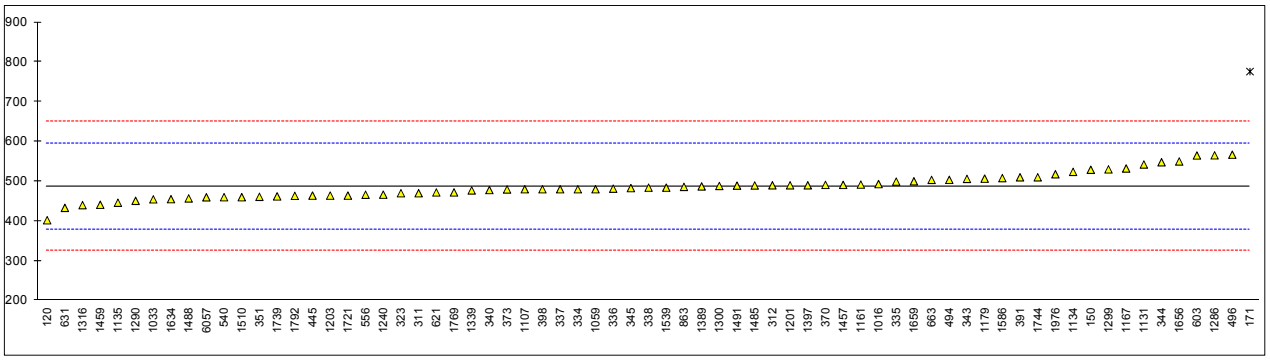
Determination of Water content by KF on sample #16190; results in mg/kg

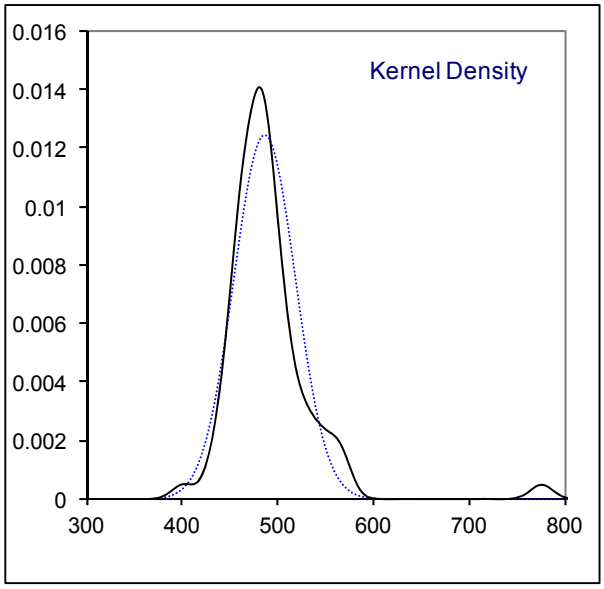
lab	method	value	mark	z(targ)	remarks
120	ISO12937	402	C	-1.57	first reported: 302
150	ISO12937	529		0.78	
171	ISO12937	776	R(0.01)	5.33	
311	ISO12937	470		-0.31	
312	ISO12937	490		0.06	
323	ISO12937	470		-0.31	
333		-----		-----	
334	ISO12937	480		-0.13	
335	ISO12937	499.2		0.23	
336	ISO12937	481.5		-0.10	
337	ISO12937	480		-0.13	
338	ISO12937	483.99		-0.06	
340	ISO12937	478		-0.17	
343	ISO12937	506		0.35	
344	ISO12937	548		1.13	
345	ISO12937	482.90		-0.08	
351	ISO12937	461		-0.48	
370	ISO12937	491		0.07	
373	ISO12937	479.5		-0.14	
391	ISO12937	510		0.42	
398	ISO12937	480		-0.13	
420		-----		-----	
445	IP439	464		-0.42	
447		-----		-----	
494	ISO12937	503.8		0.31	
496	ISO12937	567		1.48	
511		-----		-----	
540	ISO12937	460		-0.50	
556	D6304	466.12		-0.39	
603	ISO12937	565		1.44	
621	D6304	472		-0.28	
631	D6304	433.1		-0.99	
663	E203	503.5		0.30	
863	E203	486		-0.02	
1016	ISO12937	493.0		0.11	
1033	IP438	454.61		-0.60	
1059	ISO12937	480		-0.13	
1107	ISO12937	480		-0.13	
1131	ISO12937	542.2		1.02	
1134	IP438	523.7		0.68	
1135	ISO12937	446		-0.76	
1161	ISO12937	491.724		0.09	
1167	ISO12937	532.2		0.83	
1179	ISO12937	506.7		0.36	
1199		-----		-----	
1201	ISO12937	490		0.06	
1203	ISO12937	464		-0.42	
1240	ISO12937	466.377		-0.38	
1286	ISO12937	565.4		1.45	
1290	ISO12937	450.90		-0.67	
1299	ISO12937	530		0.79	
1300	ISO12937	488.2		0.02	
1316	D6304	440		-0.87	
1339	ISO12937	477		-0.18	
1389	ISO12937	487.1		0.00	
1397	ISO12937	490		0.06	
1457	ISO12937	491		0.07	
1459	ISO12937	441		-0.85	
1485	ISO12937	489.6		0.05	
1488	ISO12937	456.9		-0.56	
1491	ISO12937	489		0.04	
1494		-----		-----	
1510	ISO12937	460		-0.50	
1539	ISO12937	484		-0.06	
1582		-----		-----	
1586	ISO12937	508		0.39	
1634	ISO12937	455		-0.59	
1656	ISO12937	550		1.16	
1659	ISO12937	500.0		0.24	
1706		-----		-----	
1712		-----		-----	
1721	ISO12937	464		-0.42	
1739	ISO12937	462		-0.46	
1744	E203	510		0.42	
1769	ISO12937	472.031		-0.28	
1792	ISO12937	463.5		-0.43	

1976	ISO12937	517.60	0.56
6057	ISO12937	459.8	-0.50

normality	OK
n	68
outliers	1
mean (n)	486.987
st.dev. (n)	32.1030
R(calc.)	89.888
R(EN14214:12+AC14)	151.760

Compare R(ISO12937:00) = 151.760
Compare R(D6304:16e1) = 692.389





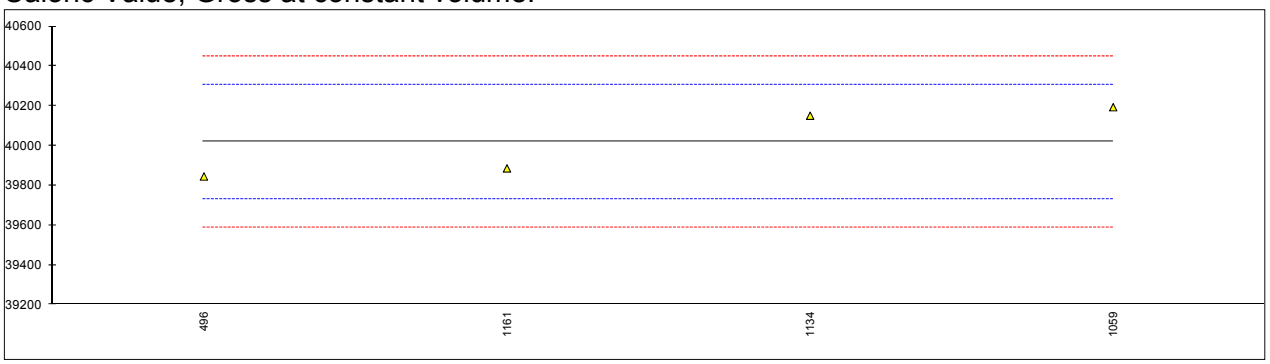
Determination of Calorific Value on sample #16190; results in kJ/kg

lab	method	Gross at constant vol.	mark	z(targ)	Net at constant vol.	mark	z(targ)	Net at constant press.
120		-----		-----	-----		-----	-----
150		-----		-----	-----		-----	-----
171		-----		-----	-----		-----	-----
311		-----		-----	-----		-----	-----
312		-----		-----	-----		-----	-----
323		-----		-----	-----		-----	-----
333		-----		-----	-----		-----	-----
334		-----		-----	-----		-----	-----
335		-----		-----	-----		-----	-----
336		-----		-----	-----		-----	-----
337		-----		-----	-----		-----	-----
338		-----		-----	-----		-----	-----
340		-----		-----	-----		-----	-----
343		-----		-----	-----		-----	-----
344		-----		-----	-----		-----	-----
345		-----		-----	-----		-----	-----
351		-----		-----	-----		-----	-----
370		-----		-----	-----		-----	-----
373		-----		-----	-----		-----	-----
391		-----		-----	-----		-----	-----
398		-----		-----	-----		-----	-----
420		-----		-----	-----		-----	-----
445		-----		-----	-----		-----	-----
447		-----		-----	-----		-----	-----
494		-----		-----	-----		-----	-----
496	DIN51900-3	39845.5		-1.22	37260.5		-----	-----
511		-----		-----	-----		-----	-----
540		-----		-----	-----		-----	-----
556		-----		-----	-----		-----	-----
603		-----		-----	-----		-----	-----
621		-----		-----	-----		-----	-----
631		-----		-----	-----		-----	-----
663		-----		-----	-----		-----	-----
863		-----		-----	-----		-----	-----
1016		-----		-----	-----		-----	-----
1033		-----		-----	-----		-----	-----
1059	DIN51900-1	40194		1.22	-----		-----	-----
1107		-----		-----	-----		-----	-----
1131		-----		-----	-----		-----	-----
1134	DIN51900-1	40150.9		0.92	-----		-----	-----
1135		-----		-----	-----		-----	-----
1161	DIN51900-2	39886		-0.93	37352		-----	-----
1167		-----		-----	-----		-----	-----
1179		-----		-----	-----		-----	-----
1199		-----		-----	-----		-----	-----
1201		-----		-----	-----		-----	-----
1203		-----		-----	-----		-----	-----
1240		-----		-----	-----		-----	-----
1286		-----		-----	-----		-----	-----
1290		-----		-----	-----		-----	-----
1299		-----		-----	-----		-----	-----
1300		-----		-----	-----		-----	-----
1316		-----		-----	-----		-----	-----
1339		-----		-----	-----		-----	-----
1389		-----		-----	-----		-----	-----
1397		-----		-----	-----		-----	-----
1457		-----		-----	-----		-----	-----
1459		-----		-----	-----		-----	-----
1485		-----		-----	-----		-----	-----
1488		-----		-----	-----		-----	-----
1491		-----		-----	-----		-----	-----
1494		-----		-----	-----		-----	-----
1510		-----		-----	-----		-----	-----
1539		-----		-----	-----		-----	-----
1582		-----		-----	-----		-----	-----
1586		-----		-----	-----		-----	-----
1634		-----		-----	-----		-----	-----
1656		-----		-----	-----		-----	-----
1659		-----		-----	-----		-----	-----
1706		-----		-----	-----		-----	-----
1712		-----		-----	-----		-----	-----
1721		-----		-----	-----		-----	-----
1739		-----		-----	-----		-----	-----
1744		-----		-----	-----		-----	-----
1769		-----		-----	-----		-----	-----
1792		-----		-----	-----		-----	-----

1976	-----	-----	-----	-----	-----	
6057	-----	-----	-----	-----	-----	

normality	unknown	unknown
n	4	2
outliers	0	n.a.
mean (n)	40019.1	37306.3
st.dev. (n)	178.71	n.a
R(calc.)	500.4	n.a.
R(DIN51900-1:00)	400.0	n.a.

Caloric Value, Gross at constant volume:

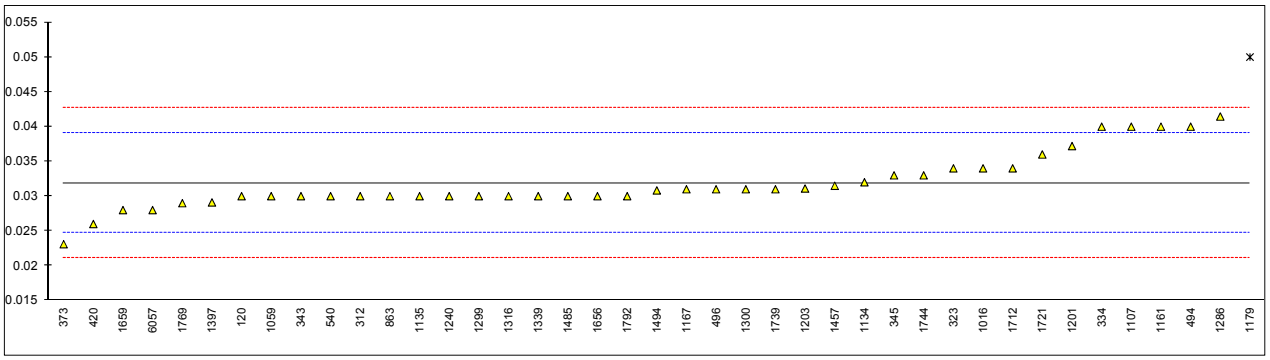


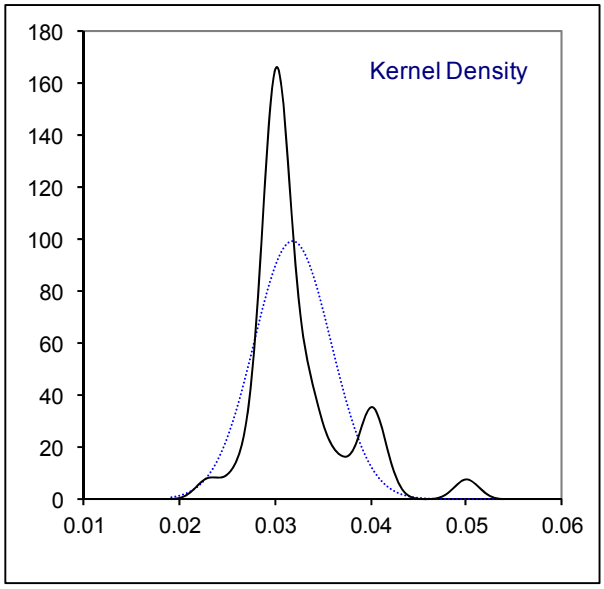
Determination of Methanol on sample #16190; results in %M/M

lab	method	value	mark	z(targ)	remarks
120	EN14110	0.03		-0.52	
150		-----		-----	
171		-----		-----	
311		-----		-----	
312	EN14110	0.03		-0.52	
323	EN14110	0.034		0.59	
333		-----		-----	
334	EN14110	0.04		2.26	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN14110	0.03		-0.52	
344		-----		-----	
345	EN14110	0.033	C	0.31	first reported: 0.02
351		-----		-----	
370		-----		-----	
373	EN14110	0.0231		-2.45	
391		-----		-----	
398		-----		-----	
420	EN14110	0.026		-1.64	
445		-----		-----	
447		-----		-----	
494	EN14110	0.04		2.26	
496	EN14110	0.031		-0.25	
511		-----		-----	
540	EN14110	0.03		-0.52	
556		-----		-----	
603		-----		-----	
621		-----		-----	
631		-----		-----	
663		-----		-----	
863	EN14110	0.03		-0.52	
1016	EN14110	0.034		0.59	
1033		-----		-----	
1059	EN14110	0.03		-0.52	
1107	EN14110	0.04		2.26	
1131		-----		-----	
1134	EN14110	0.032		0.03	
1135	EN14110	0.03		-0.52	
1161	EN14110	0.04		2.26	
1167	EN14110	0.031		-0.25	
1179	EN14110	0.050	R(0.01)	5.05	
1199		-----		-----	
1201	EN14110	0.0372		1.48	
1203	EN14110	0.0311		-0.22	
1240	EN14110	0.03	C	-0.52	first reported: 0.02
1286	EN14110	0.041452		2.67	
1290		-----		-----	
1299	EN14110	0.03		-0.52	
1300	EN14110	0.031		-0.25	
1316	EN14110	0.03		-0.52	
1339	EN14110	0.030		-0.52	
1389		-----		-----	
1397	EN14110	0.0291		-0.78	
1457	EN14110	0.0315		-0.11	
1459		-----		-----	
1485	EN14110	0.030		-0.52	
1488		-----		-----	
1491		-----		-----	
1494	EN14110	0.03083		-0.29	
1510		-----		-----	
1539		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1656	EN14110	0.03		-0.52	
1659	EN14110	0.028		-1.08	
1706		-----		-----	
1712	EN14110	0.034		0.59	
1721	EN14110	0.036		1.15	
1739	EN14110	0.031		-0.25	
1744	EN14110	0.033		0.31	
1769	EN14110	0.0290		-0.80	
1792	EN14110	0.030		-0.52	

1976		-----	-----
6057	EN14110	0.028	-1.08

normality	OK
n	40
outliers	1
mean (n)	0.0319
st.dev. (n)	0.00402
R(calc.)	0.0112
R(EN14110:03)	0.0100



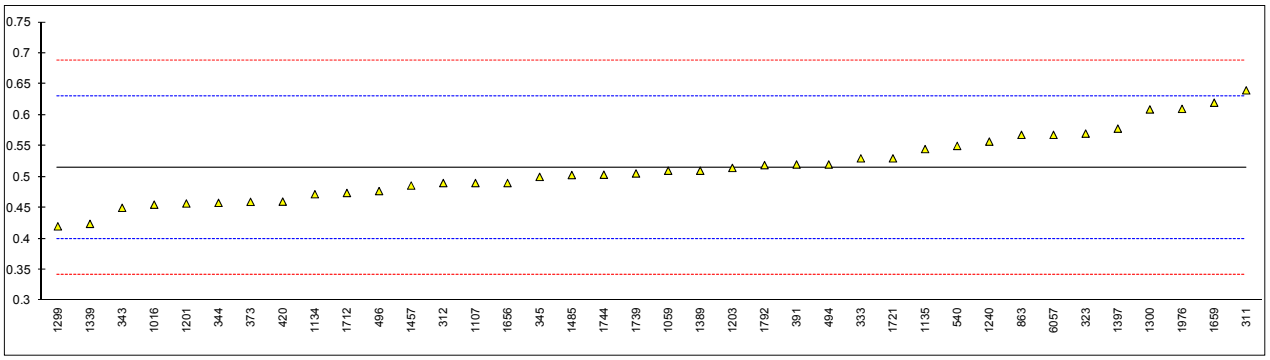


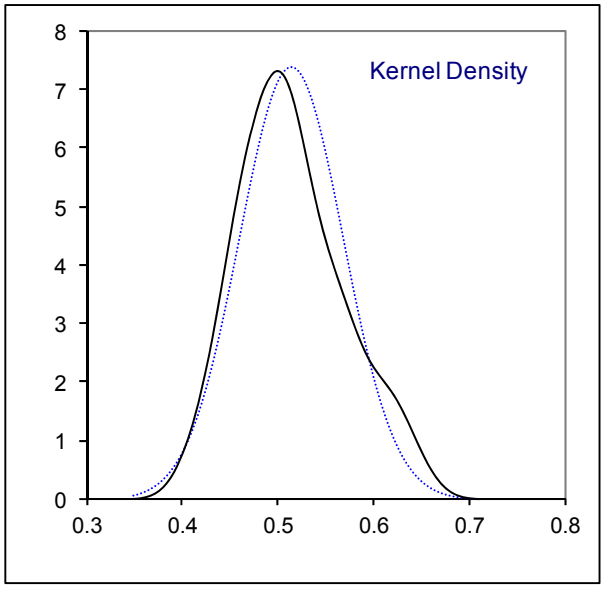
Determination of mono-Glycerides on sample #16190; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171		-----		-----	
311	EN14105	0.64		2.18	
312	EN14105	0.49		-0.42	
323	EN14105	0.57		0.97	
333	EN14105	0.53		0.27	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN14105	0.45		-1.12	
344	EN14105	0.458		-0.98	
345	EN14105	0.50		-0.25	
351		-----		-----	
370		-----		-----	
373	D6584	0.4596		-0.95	
391	EN14105	0.52		0.10	
398		-----		-----	
420	EN14105	0.46		-0.94	
445		-----		-----	
447		-----		-----	
494	EN14105	0.52		0.10	
496	EN14105	0.477		-0.65	
511		-----		-----	
540	EN14105	0.55		0.62	
556		-----		-----	
603		-----		-----	
621		-----		-----	
631		-----		-----	
663		-----		-----	
863	EN14105	0.568		0.93	
1016	EN14105	0.455		-1.03	
1033		-----		-----	
1059	EN14105	0.51		-0.07	
1107	EN14105	0.49		-0.42	
1131		-----		-----	
1134	EN14105	0.472		-0.73	
1135	EN14105	0.545		0.53	
1161		-----		-----	
1167		-----		-----	
1179		-----		-----	
1199		-----		-----	
1201	EN14105	0.457		-0.99	
1203	EN14105	0.5145		0.00	
1240	EN14105	0.557		0.74	
1286		-----		-----	
1290		-----		-----	
1299	EN14105	0.42		-1.64	
1300	EN14105	0.6091		1.64	
1316		-----		-----	
1339	EN14105	0.424		-1.57	
1389	EN14105	0.51		-0.07	
1397	EN14105	0.578		1.10	
1457	EN14105	0.486		-0.49	
1459		-----		-----	
1485	EN14105	0.503		-0.20	
1488		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1539		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1656	EN14105	0.49		-0.42	
1659	EN14105	0.620		1.83	
1706		-----		-----	
1712	EN14105	0.474		-0.70	
1721	EN14105	0.53		0.27	
1739	EN14105	0.5056		-0.15	
1744	D6584	0.5035		-0.19	
1769		-----		-----	
1792	EN14105	0.519		0.08	

1976	EN14105	0.61	1.66
6057	EN14105	0.568	0.93

normality	OK
n	38
outliers	0
mean (n)	0.5143
st.dev. (n)	0.05395
R(calc.)	0.1511
R(EN14105:11)	0.1614



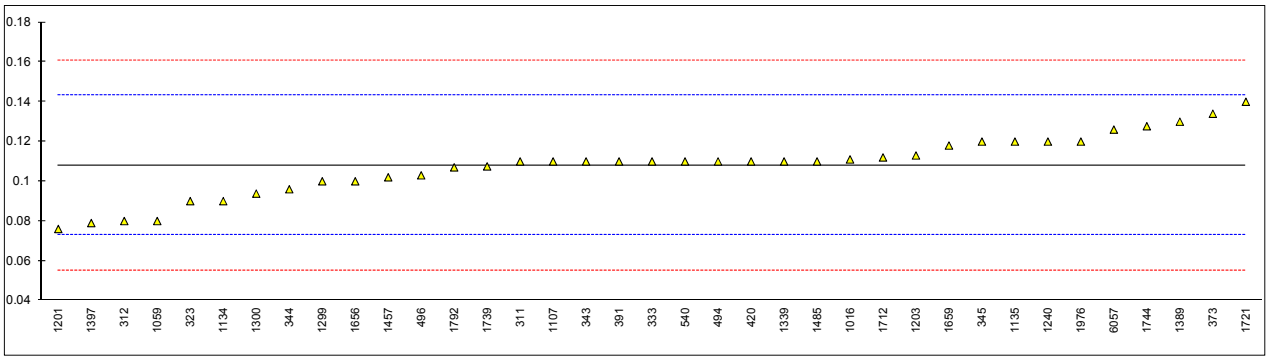


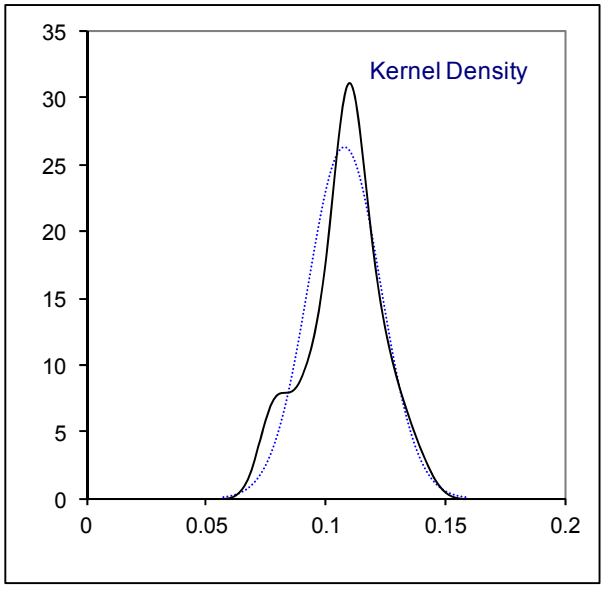
Determination of di-Glycerides on sample #16190; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171		-----		-----	
311	EN14105	0.11		0.11	
312	EN14105	0.08		-1.59	
323	EN14105	0.09		-1.02	
333	EN14105	0.11		0.11	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN14105	0.11		0.11	
344	EN14105	0.096		-0.68	
345	EN14105	0.12		0.68	
351		-----		-----	
370		-----		-----	
373	EN14105	0.134		1.48	
391	EN14105	0.11		0.11	
398		-----		-----	
420	EN14105	0.11		0.11	
445		-----		-----	
447		-----		-----	
494	EN14105	0.11		0.11	
496	EN14105	0.103		-0.28	
511		-----		-----	
540	EN14105	0.11		0.11	
556		-----		-----	
603		-----		-----	
621		-----		-----	
631		-----		-----	
663		-----		-----	
863	EN14105	<0.10		-----	
1016	EN14105	0.111		0.17	
1033		-----		-----	
1059	EN14105	0.08		-1.59	
1107	EN14105	0.11		0.11	
1131		-----		-----	
1134	EN14105	0.090		-1.02	
1135	EN14105	0.120		0.68	
1161		-----		-----	
1167		-----		-----	
1179		-----		-----	
1199		-----		-----	
1201	EN14105	0.076		-1.82	
1203	EN14105	0.1130		0.28	
1240	EN14105	0.120		0.68	
1286		-----		-----	
1290		-----		-----	
1299	EN14105	0.10		-0.45	
1300	EN14105	0.0938		-0.81	
1316		-----		-----	
1339	EN14105	0.110		0.11	
1389	EN14105	0.13		1.25	
1397	EN14105	0.079		-1.65	
1457	EN14105	0.102		-0.34	
1459		-----		-----	
1485	EN14105	0.110		0.11	
1488		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1539		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1656	EN14105	0.10		-0.45	
1659	EN14105	0.118		0.57	
1706		-----		-----	
1712	EN14105	0.112		0.23	
1721	EN14105	0.14		1.82	
1739	EN14105	0.1075		-0.03	
1744	D6584	0.1277		1.12	
1769		-----		-----	
1792	EN14105	0.107		-0.06	

1976	EN14105	0.12	0.68
6057	EN14105	0.126	1.02

normality	OK
n	37
outliers	0
mean (n)	0.1080
st.dev. (n)	0.01516
R(calc.)	0.0425
R(EN14105:11)	0.0493



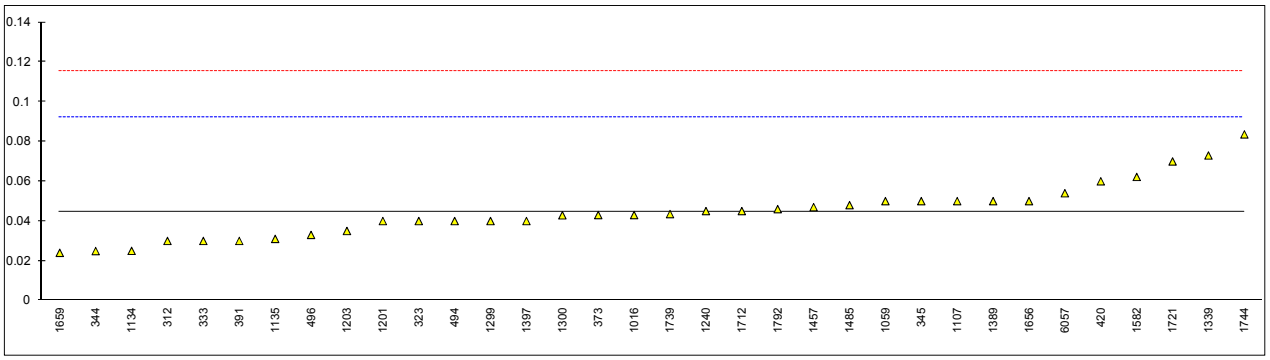


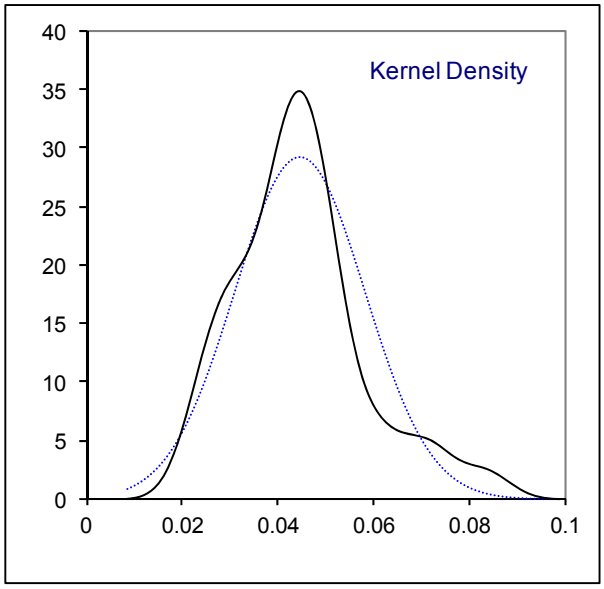
Determination of tri-Glycerides on sample #16190; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171		-----		-----	
311	EN14105	<0.05		-----	
312	EN14105	0.03		-0.62	
323	EN14105	0.04		-0.20	
333	EN14105	0.03		-0.62	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN14105	<0.05		-----	
344	EN14105	0.0249		-0.84	
345	EN14105	0.05		0.23	
351		-----		-----	
370		-----		-----	
373	EN14105	0.043		-0.07	
391	EN14105	0.03		-0.62	
398		-----		-----	
420	EN14105	0.06		0.65	
445		-----		-----	
447		-----		-----	
494	EN14105	0.04		-0.20	
496	EN14105	0.033		-0.49	
511		-----		-----	
540	EN14105	<0.05		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
631		-----		-----	
663		-----		-----	
863	EN14105	<0.10		-----	
1016	EN14105	0.043		-0.07	
1033		-----		-----	
1059	EN14105	0.05		0.23	
1107	EN14105	0.05		0.23	
1131		-----		-----	
1134	EN14105	0.025		-0.83	
1135	EN14105	0.031		-0.58	
1161		-----		-----	
1167		-----		-----	
1179		-----		-----	
1199		-----		-----	
1201	EN14105	0.04		-0.20	
1203	EN14105	0.0350		-0.41	
1240	EN14105	0.045		0.01	
1286		-----		-----	
1290		-----		-----	
1299	EN14105	0.04		-0.20	
1300	EN14105	0.0429		-0.08	
1316		-----		-----	
1339	EN14105	0.073		1.20	
1389	EN14105	0.05		0.23	
1397	EN14105	0.040		-0.20	
1457	EN14105	0.047		0.10	
1459		-----		-----	
1485	EN14105	0.048		0.14	
1488		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1539		-----		-----	
1582	D6584	0.0622	C	0.74	first reported: 0.0721 as #16194
1586		-----		-----	
1634		-----		-----	
1656	EN14105	0.05		0.23	
1659	EN14105	0.024		-0.87	
1706		-----		-----	
1712	EN14105	0.045		0.01	
1721	EN14105	0.07		1.07	
1739	EN14105	0.0435		-0.05	
1744	D6584	0.0836		1.65	
1769		-----		-----	
1792	EN14105	0.046		0.06	

1976	EN14105	<0,10	-----
6057	EN14105	0.054	0.39

normality	suspect
n	34
outliers	0
mean (n)	0.0447
st.dev. (n)	0.01364
R(calc.)	0.0382
R(EN14105:11)	0.0662



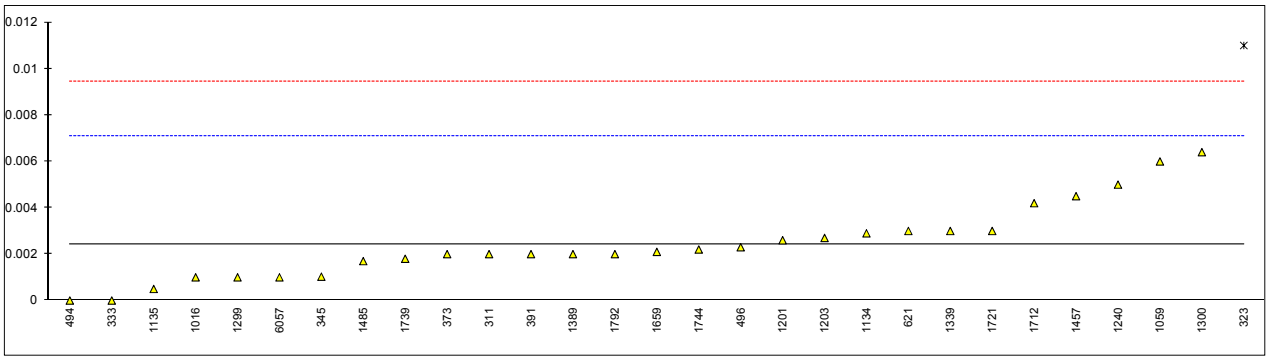


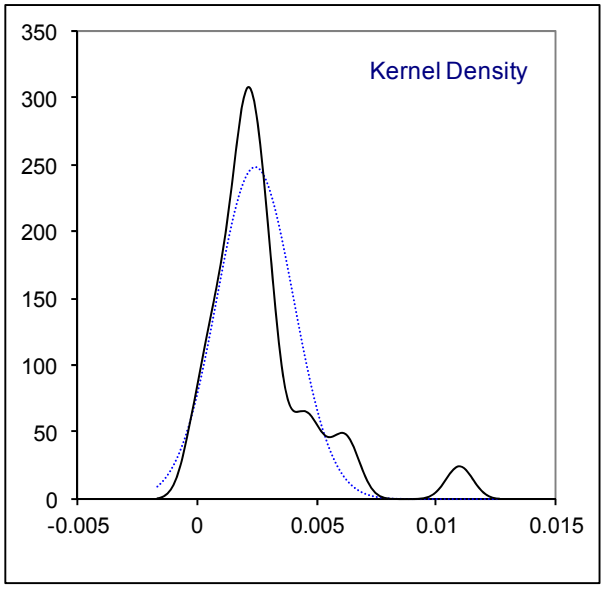
Determination of Free Glycerol on sample #16190; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171		-----		-----	
311	EN14105	0.002		-0.18	
312	EN14105	<0.001		-----	
323	EN14105	0.011	C,R(0.01)	3.67	first reported: 0.104
333	EN14105	0.0		-1.04	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN14105	<0.005		-----	
344	EN14105	<0,05		-----	
345	EN14105	0.00103		-0.60	
351		-----		-----	
370		-----		-----	
373	EN14105	0.002		-0.18	
391	EN14105	0.002		-0.18	
398		-----		-----	
420	EN14105	<0,005		-----	
445		-----		-----	
447		-----		-----	
494	EN14105	0.00		-1.04	
496	EN14105	0.0023		-0.05	
511		-----		-----	
540	EN14105	<0.005		-----	
556		-----		-----	
603		-----		-----	
621	EN14105	0.003		0.25	
631		-----		-----	
663		-----		-----	
863	EN14105	<0.001		-----	
1016	EN14105	0.001		-0.61	
1033		-----		-----	
1059	EN14105	0.006		1.53	
1107	EN14105	<0.001		-----	
1131		-----		-----	
1134	EN14105	0.0029		0.20	
1135	EN14105	0.0005		-0.82	
1161		-----		-----	
1167		-----		-----	
1179		-----		-----	
1199		-----		-----	
1201	EN14105	0.0026		0.07	
1203	EN14105	0.0027		0.12	
1240	EN14105	0.005		1.10	
1286		-----		-----	
1290		-----		-----	
1299	EN14105	0.001		-0.61	
1300	EN14105	0.0064		1.70	
1316		-----		-----	
1339	EN14105	0.0030		0.25	
1389	EN14105	0.002		-0.18	
1397	EN14105	<0,005		-----	
1457	EN14105	0.0045		0.89	
1459		-----		-----	
1485	EN14105	0.0017		-0.31	
1488		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1539		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1656	EN14105	<0.01		-----	
1659	EN14105	0.0021		-0.14	
1706		-----		-----	
1712	EN14105	0.0042		0.76	
1721	EN14105	0.003		0.25	
1739	EN14105	0.0018		-0.27	
1744	D6584	0.0022		-0.10	
1769		-----		-----	
1792	EN14105	0.002		-0.18	

1976	EN14105	<0,005	-----
6057	EN14105	0.001	-0.61

normality	OK
n	28
outliers	1
mean (n)	0.0024
st.dev. (n)	0.00160
R(calc.)	0.0045
R(EN14105:11)	0.0066



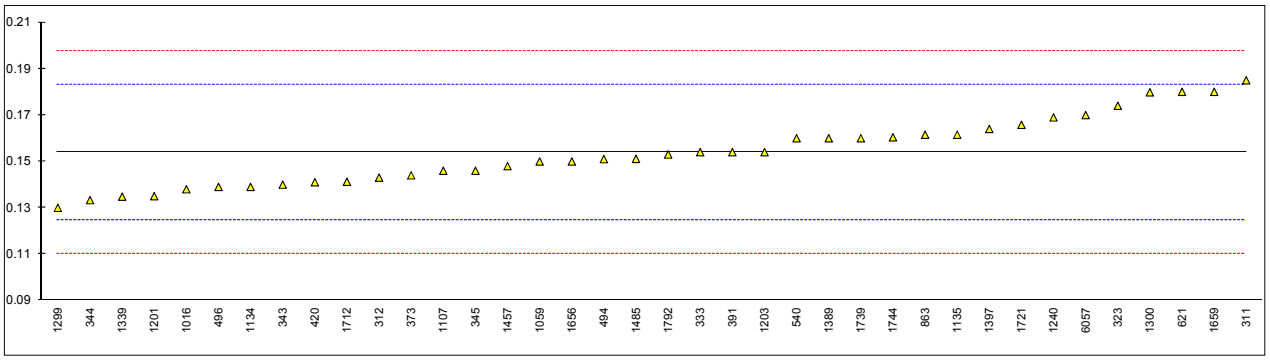


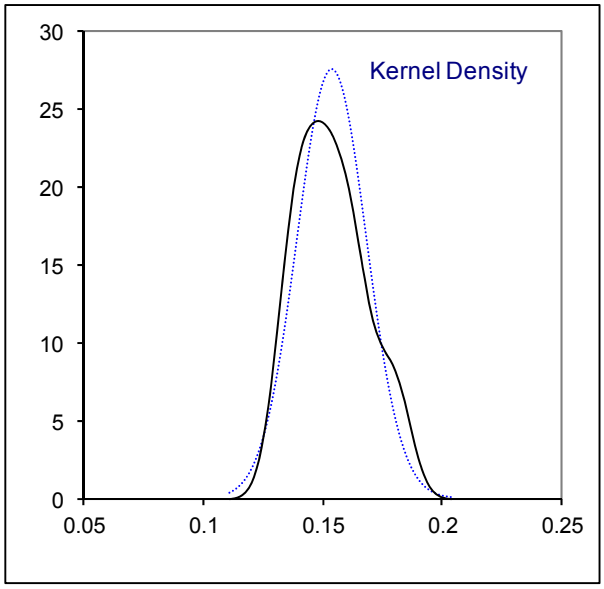
Determination of Total Glycerol on sample #16190; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171		-----		-----	
311	EN14105	0.185		2.14	
312	EN14105	0.143		-0.75	
323	EN14105	0.174	C	1.38	first reported: 0.267
333	EN14105	0.154		0.01	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN14105	0.14		-0.95	
344	EN14105	0.1333		-1.41	
345	EN14105	0.146		-0.54	
351		-----		-----	
370		-----		-----	
373	EN14105	0.144		-0.68	
391	EN14105	0.154		0.01	
398		-----		-----	
420	EN14105	0.141		-0.88	
445		-----		-----	
447		-----		-----	
494	EN14105	0.151		-0.20	
496	EN14105	0.1390		-1.02	
511		-----		-----	
540	EN14105	0.16		0.42	
556		-----		-----	
603		-----		-----	
621	EN14105	0.18		1.80	
631		-----		-----	
663		-----		-----	
863	EN14105	0.1615		0.53	
1016	EN14105	0.138		-1.09	
1033		-----		-----	
1059	EN14105	0.150		-0.26	
1107	EN14105	0.146		-0.54	
1131		-----		-----	
1134	EN14105	0.1390		-1.02	
1135	EN14105	0.1615		0.53	
1161		-----		-----	
1167		-----		-----	
1179		-----		-----	
1199		-----		-----	
1201	EN14105	0.135		-1.29	
1203	EN14105	0.1540		0.01	
1240	EN14105	0.169		1.04	
1286		-----		-----	
1290		-----		-----	
1299	EN14105	0.13		-1.64	
1300	EN14105	0.1798		1.78	
1316		-----		-----	
1339	EN14105	0.1348		-1.31	
1389	EN14105	0.16		0.42	
1397	EN14105	0.164		0.70	
1457	EN14105	0.148		-0.40	
1459		-----		-----	
1485	EN14105	0.1511		-0.19	
1488		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1539		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1656	EN14105	0.15		-0.26	
1659	EN14105	0.180		1.80	
1706		-----		-----	
1712	EN14105	0.1412		-0.87	
1721	EN14105	0.1658		0.82	
1739	EN14105	0.160		0.42	
1744	D6584	0.1604		0.45	
1769		-----		-----	
1792	EN14105	0.153		-0.06	

1976	EN14105	<0,05	<-7.13	possible false negative test result?
6057	EN14105	0.170	1.11	

normality	OK
n	38
outliers	0
mean (n)	0.1539
st.dev. (n)	0.01449
R(calc.)	0.0406
R(EN14105:11)	0.0408



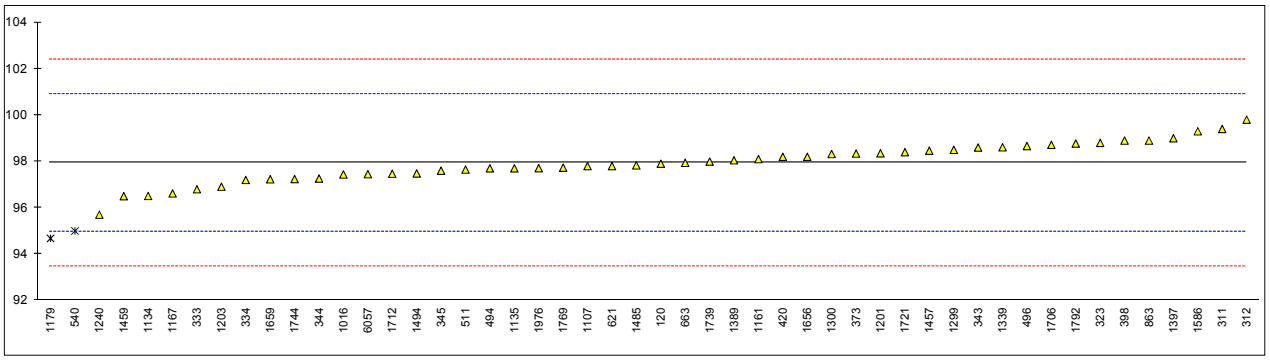


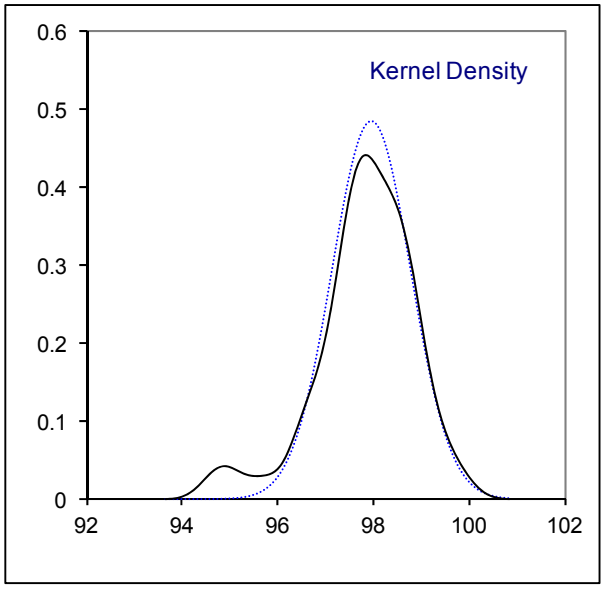
Determination of Total Ester content on sample #16190; results in %M/M

lab	method	value	mark	z(targ)	remarks
120	EN14103	97.9		-0.03	
150		-----		-----	
171		-----		-----	
311	EN14103	99.4		0.98	
312	EN14103	99.8		1.25	
323	EN14103	98.8		0.57	
333	EN14103	96.8		-0.77	
334	EN14103	97.2		-0.50	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN14103	98.6		0.44	
344	EN14103	97.26		-0.46	
345	EN14103	97.6		-0.23	
351		-----		-----	
370		-----		-----	
373	EN14103	98.34		0.26	
391		-----		-----	
398	EN14103	98.9		0.64	
420	EN14103	98.2		0.17	
445		-----		-----	
447		-----		-----	
494	EN14103	97.7		-0.17	
496	EN14103	98.66		0.48	
511	EN14103	97.65		-0.20	
540	EN14103	95.0	R(0.05)	-1.98	
556		-----		-----	
603		-----		-----	
621	EN14103	97.8		-0.10	
631		-----		-----	
663	EN14103	97.94		-0.01	
863	EN14103	98.90		0.64	
1016	EN14103	97.437		-0.34	
1033		-----		-----	
1059		-----		-----	
1107	EN14103	97.8		-0.10	
1131		-----		-----	
1134	EN14103	96.51		-0.97	
1135	EN14103	97.7		-0.17	
1161	EN14103	98.1		0.10	
1167	EN14103	96.62		-0.89	
1179	EN14103	94.68	R(0.05)	-2.20	
1199		-----		-----	
1201	EN14103	98.35		0.27	
1203	EN14103	96.911		-0.70	
1240	EN14103	95.704		-1.51	
1286		-----		-----	
1290		-----		-----	
1299	EN14103	98.5		0.37	
1300	EN14103	98.32		0.25	
1316		-----		-----	
1339	EN14103	98.61		0.45	
1389	EN14103	98.05		0.07	
1397	EN14103	99.0		0.71	
1457	EN14103	98.46		0.34	
1459	EN14103	96.5		-0.98	
1485	EN14103	97.83		-0.08	
1488		-----		-----	
1491		-----		-----	
1494	EN14103	97.4827		-0.31	
1510		-----		-----	
1539		-----		-----	
1582		-----		-----	
1586	EN14103	99.3		0.91	
1634		-----		-----	
1656	EN14103	98.2		0.17	
1659	EN14103	97.23		-0.48	
1706	EN14103	98.717		0.52	
1712	EN14103	97.47		-0.32	
1721	EN14103	98.4		0.30	
1739	EN14103	97.99		0.03	
1744	EN14103	97.24		-0.48	
1769	EN14103	97.731		-0.15	
1792	EN14103	98.77		0.55	

1976	EN14103	97.71	-0.16
6057	EN14103	97.45	-0.34

normality	OK
n	48
outliers	2
mean (n)	97.949
st.dev. (n)	0.8238
R(calc.)	2.307
R(EN14103:11)	4.160



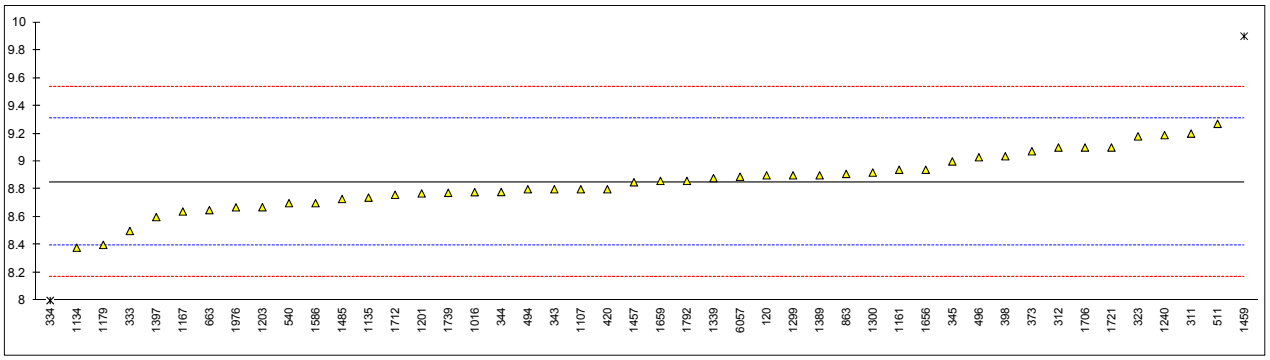


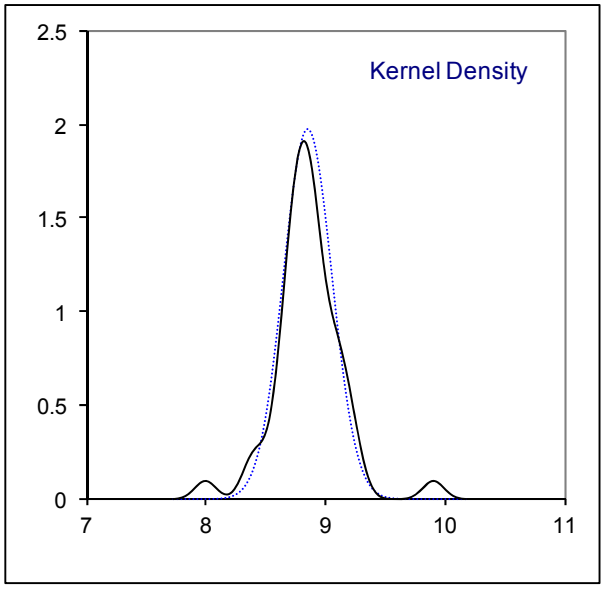
Determination of Linolenic Acid Methyl Ester content on sample #16190; results in %M/M

lab	method	value	mark	z(targ)	remarks
120	EN14103	8.9		0.21	
150		-----		-----	
171		-----		-----	
311	EN14103	9.2		1.53	
312	EN14103	9.1		1.09	
323	EN14103	9.18		1.44	
333	EN14103	8.5		-1.54	
334	EN14103	8.0	R(0.01)	-3.73	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN14103	8.8		-0.23	
344	EN14103	8.78		-0.31	
345	EN14103	9.0		0.65	
351		-----		-----	
370		-----		-----	
373	EN14103	9.073		0.97	
391		-----		-----	
398	EN14103	9.037		0.81	
420	EN14103	8.8		-0.23	
445		-----		-----	
447		-----		-----	
494	EN14103	8.8		-0.23	
496	EN14103	9.03		0.78	
511	EN14103	9.27		1.83	
540	EN14103	8.7		-0.66	
556		-----		-----	
603		-----		-----	
621		-----		-----	
631		-----		-----	
663	EN14103	8.65		-0.88	
863	EN14103	8.91		0.26	
1016	EN14103	8.779		-0.32	
1033		-----		-----	
1059		-----		-----	
1107	EN14103	8.8		-0.23	
1131		-----		-----	
1134	EN14103	8.38		-2.07	
1135	EN14103	8.74		-0.49	
1161	EN14103	8.94		0.39	
1167	EN14103	8.64		-0.93	
1179	EN14103	8.40		-1.98	
1199		-----		-----	
1201	EN14103	8.77		-0.36	
1203	EN14103	8.671		-0.79	
1240	EN14103	9.189		1.48	
1286		-----		-----	
1290		-----		-----	
1299	EN14103	8.9		0.21	
1300	EN14103	8.92		0.30	
1316		-----		-----	
1339	EN14103	8.88		0.12	
1389	EN14103	8.90		0.21	
1397	EN14103	8.6		-1.10	
1457	EN14103	8.85		-0.01	
1459	EN14103	9.9	R(0.01)	4.59	
1485	EN14103	8.73		-0.53	
1488		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1539		-----		-----	
1582		-----		-----	
1586	EN14103	8.7		-0.66	
1634		-----		-----	
1656	EN14103	8.94		0.39	
1659	EN14103	8.86		0.04	
1706	EN14103	9.1		1.09	
1712	EN14103	8.76		-0.40	
1721	EN14103	9.1		1.09	
1739	EN14103	8.7741		-0.34	
1744		-----		-----	
1769		-----		-----	
1792	EN14103	8.86		0.04	

1976	EN14103	8.67	-0.80
6057	EN14103	8.89	0.17

normality	OK
n	44
outliers	2
mean (n)	8.852
st.dev. (n)	0.2019
R(calc.)	0.565
R(EN14103:11)	0.639





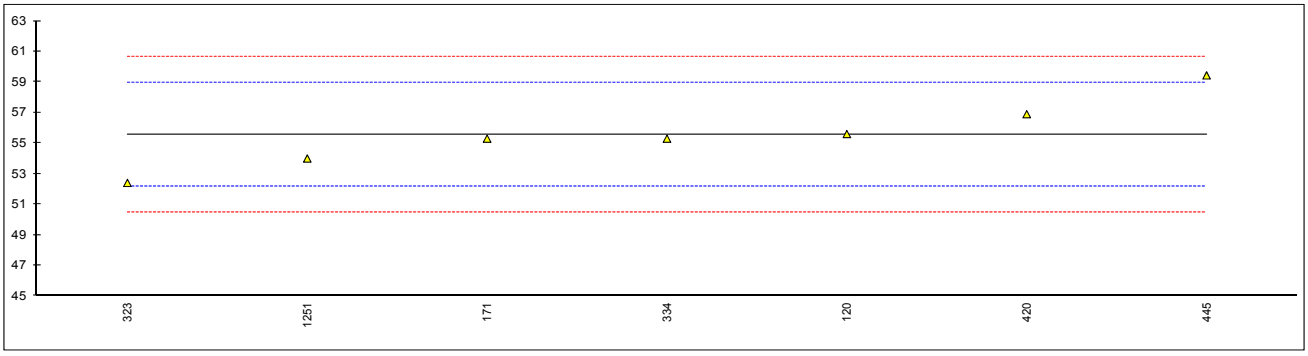
Determination of Polyunsaturated Methyl Esters content on sample #16190; results in %M/M

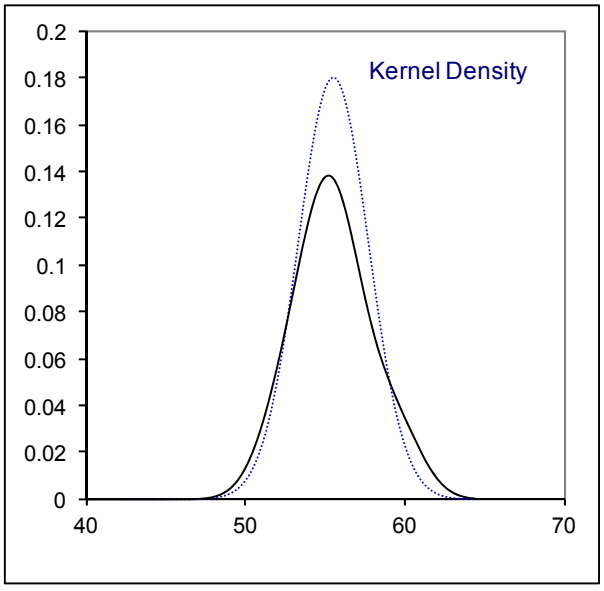
lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171		-----		-----	
311		-----		-----	
312	EN15779	<0.6	C	-----	first reported: 0.6
323		-----		-----	
333	EN15779	<0.6		-----	
334	EN15779	0.5		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343	EN15779	<0.30		-----	
344	EN15779	0.443		-----	
345		-----		-----	
351		-----		-----	
370		-----		-----	
373		< 0.6		-----	
391		-----		-----	
398	EN15779	0.061		-----	
420	EN15779	<0,1		-----	
445		-----		-----	
447		-----		-----	
494	EN15779	0.0		-----	
496	EN15779	<0.1		-----	
511		-----		-----	
540		-----		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
631		-----		-----	
663		-----		-----	
863		-----		-----	
1016	EN15779	0.060		-----	
1033		-----		-----	
1059	EN15779	<0,3		-----	
1107		-----		-----	
1131		-----		-----	
1134	EN15779	0.013		-----	
1135	EN15779	0.11		-----	
1161	EN15779	0.15		-----	
1167	EN15779	0.199		-----	
1179	EN15779	0		-----	
1199		-----		-----	
1201	EN15779	0.455		-----	
1203	EN15779	<0.1		-----	
1240		-----		-----	
1286		-----		-----	
1290		-----		-----	
1299	EN15779	0.13		-----	
1300	EN15779	0.2995		-----	
1316		-----		-----	
1339		-----		-----	
1389	EN15779	0.12		-----	
1397		-----		-----	
1457	EN15779	0.140		-----	
1459		-----		-----	
1485		-----		-----	
1488		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1539		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1656		-----		-----	
1659	EN15779	0.51	C	-----	first reported: 0.56
1706		-----		-----	
1712	EN15779	<0,300		-----	
1721	EN15779	0.16		-----	
1739	EN15779	0.23		-----	also reported: <LQ
1744		-----		-----	
1769		-----		-----	
1792	EN15779	0.15		-----	

1976	EN15779	0.048	-----
6057	EN15779	0.12	-----
	n	30	
	mean (n)	<0.6	

Determination of Cetane Number (ISO5165) of sample #16191

lab	method	value	mark	z(targ)	remarks
120	D613	55.6		0.02	
150		-----		-----	
171	ISO5165	55.3		-0.15	
323	ISO5165	52.4		-1.77	
334	ISO5165	55.3		-0.15	
336		-----		-----	
420	ISO5165	56.9		0.75	
445	D613	59.44		2.17	
447		-----		-----	
494		-----		-----	
1059		-----		-----	
1107		-----		-----	
1135		-----		-----	
1167		-----		-----	
1201		-----		-----	
1251	ISO5165	54.0		-0.88	
	normality	unknown			
	n	7			
	outliers	0			
	mean (n)	55.563			
	st.dev. (n)	2.2138			
	R(calc.)	6.199			Compare R(ISO5165:98) = 4.800
	R(EN14214:12+A1:14)	5.000			Compare R(D613:16a) = 4.800

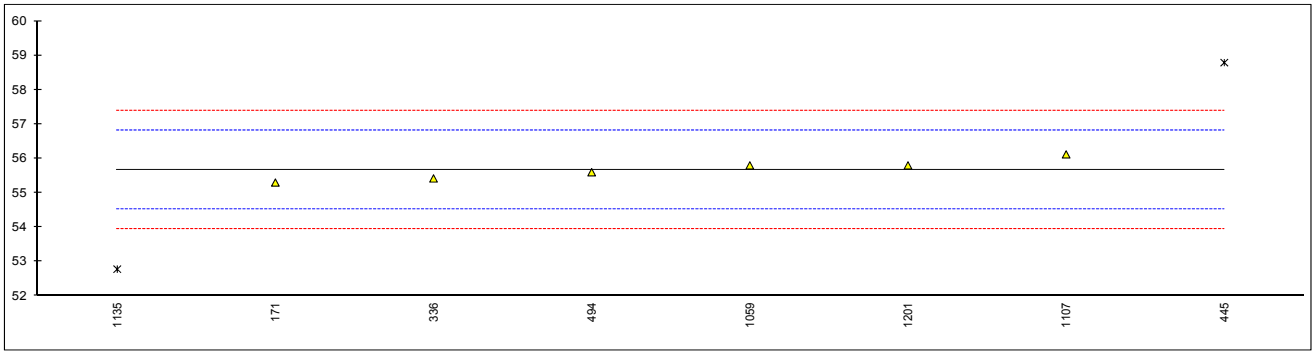


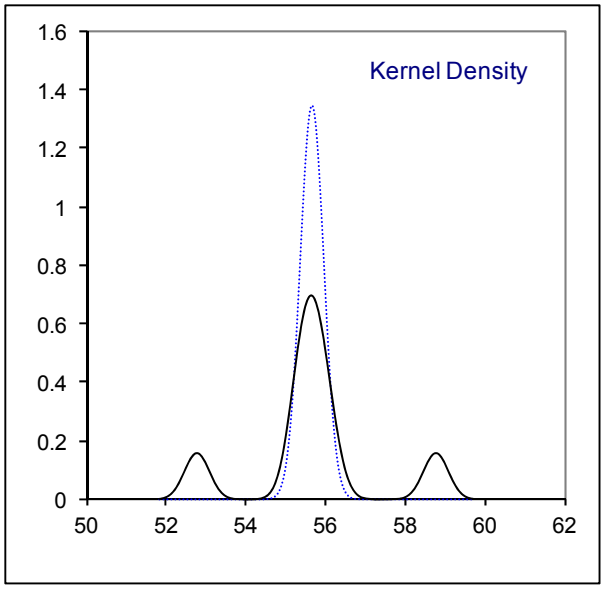


Determination of Derived Cetane Number (D7668) of sample #16191

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171	D7170	55.3		-0.65	
323		-----		-----	
334		-----		-----	
336	D7668	55.42		-0.44	
420		-----		-----	
445	IP498	58.79	D(0.01)	5.44	
447		-----		-----	
494	D7668	55.60		-0.13	
1059	D7668	55.8		0.22	
1107	D7668	56.12		0.78	
1135	D7668	52.78	C,D(0.01)	-5.05	First reported 50.78
1167		-----	W	-----	Result withdrawn, reported 60.59 (EN15195)
1201	D7668	55.80		0.22	
1251		-----		-----	

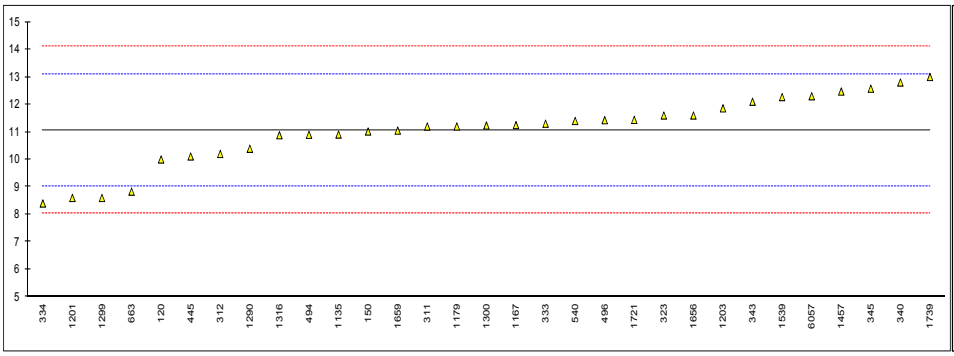
normality	unknown
n	6
outliers	2
mean (n)	55.673
st.dev. (n)	0.2968
R(calc.)	0.831
R(D7668:14a)	1.605

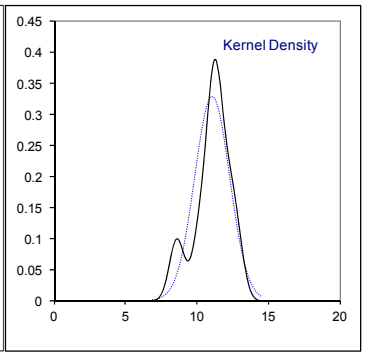




Determination of sum of Calcium and Magnesium on sample #16192; results in mg/kg

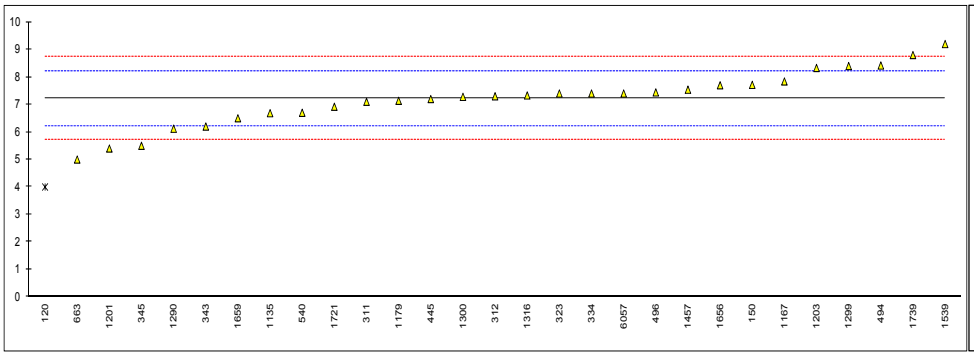
lab	method	value	mark	z(targ)	remarks
120	EN14538	10		-1.05	
150	EN14538	11.017		-0.04	
171		-----		-----	
311	EN14538	11.2		0.14	
312	EN14538	10.2		-0.85	
323	EN14538	11.6		0.53	
333	EN14538	11.3		0.24	
334	EN14538	8.4		-2.63	
340	EN14538	12.8		1.72	
343	EN14538	12.1		1.03	
345	EN14538	12.575		1.49	
391		-----		-----	
398		-----		-----	
445	EN14538	10.11		-0.94	
494	EN14538	10.9		-0.16	
496	EN14538	11.43		0.36	
540	EN14538	11.4		0.33	
663	EN14538	8.83		-2.20	
863		-----		-----	
1016		-----		-----	
1134		-----		-----	
1135	EN14538	10.907		-0.15	
1167	EN14538	11.25		0.19	
1179		11.202		0.14	
1201	EN14538	8.6		-2.43	
1203	EN14538	11.86		0.79	
1240		-----		-----	
1290	EN14538	10.39		-0.66	
1299	EN14538	8.6		-2.43	
1300	EN14538	11.235		0.17	
1316	In house	10.88		-0.18	
1389		-----		-----	
1457	EN14538	12.47	C	1.39	first reported: 14.79
1539	EN14538	12.27		1.19	
1656	EN14538	11.6		0.53	
1659	EN14538	11.05		-0.01	
1721	EN14538	11.44		0.37	
1739	EN14538	13.0		1.91	
1792		-----		-----	
6057	EN14538	12.3		1.22	
	normality	OK			
	n	31			
	outliers	0			
	mean (n)	11.062			
	st.dev. (n)	1.2164			
	R(calc.)	3.406			
	R(EN14538:06)	2.834			

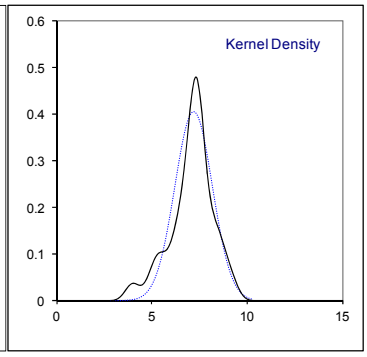




Determination of Phosphorus on sample #16192; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120	EN14107	4.0	C,R(0.05)	-6.38	first reported :5
150	EN14107	7.716		1.00	
171		-----		-----	
311	EN14107	7.1		-0.22	
312	EN14107	7.3		0.17	
323	EN14107	7.4		0.37	
333		-----		-----	
334	EN14107	7.4		0.37	
340		-----		-----	
343	EN14107	6.2		-2.01	
345	EN14107	5.5	C	-3.40	first reported: 4.47
391		-----		-----	
398		-----		-----	
445	EN14107	7.2		-0.03	
494	EN14107	8.42		2.40	
496	EN14107	7.44		0.45	
540	EN14107	6.7		-1.02	
663	D4951	5.000		-4.39	
863		-----		-----	
1016		-----		-----	
1134		-----		-----	
1135	EN14107	6.686		-1.05	
1167	EN14107	7.84		1.25	
1179		7.136		-0.15	
1201	EN14107	5.4		-3.60	
1203	EN14107	8.33		2.22	
1240		-----		-----	
1290	EN14107	6.12		-2.17	
1299	EN14107	8.4		2.36	
1300	EN14107	7.279		0.13	
1316	In house	7.33		0.23	
1389		-----	W	-----	result withdrawn, reported: 14 (IP500Mod)
1457	EN14107	7.54		0.65	
1539	EN14107	9.20		3.95	
1656	EN14107	7.7	C	0.97	first reported: 10.6
1659	EN14107	6.50		-1.42	
1721	EN14107	6.92		-0.58	
1739	EN14107	8.8		3.15	
1792		-----		-----	
6057	EN14107	7.4		0.37	
	normality	OK			
	n	28			
	outliers	1	Spike:		
	mean (n)	7.213	7.00		Recovery <103%
	st.dev. (n)	0.9859			
	R(calc.)	2.761			
	R(EN14107:03)	1.410			



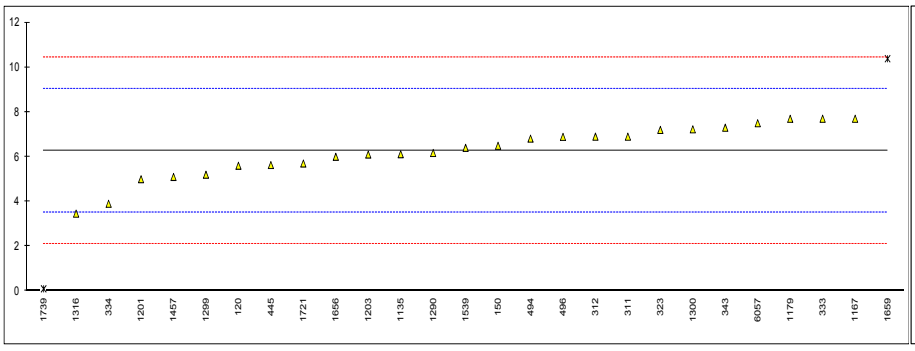


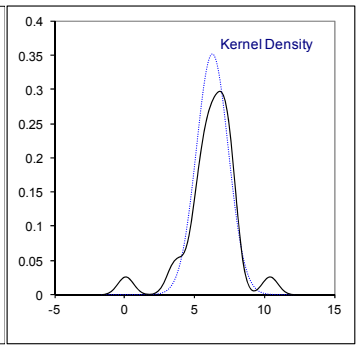
Determination of Potassium on sample #16192; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120	EN14109	0.3		-----	
150	EN14538	<1.0		-----	
171		-----		-----	
311	EN14109	<1.0		-----	
312	EN14109	<0.1		-----	
323	EN14109	<1.0		-----	
333	EN14538	<1.0		-----	
334	EN14538	0.2		-----	
340		-----		-----	
343	EN14538	<1		-----	
345		-----		-----	
391		-----		-----	
398		-----		-----	
445	EN14538	<0.1		-----	
494	EN14538	0.02		-----	
496	EN14538	<0.1		-----	
540		-----		-----	
663		-----		-----	
863		-----		-----	
1016		-----		-----	
1134		-----		-----	
1135	EN14538	0.107		-----	
1167	EN14109	0.06		-----	
1179		0.41		-----	
1201	EN14538	<0.5		-----	
1203	EN14109	0.96		-----	
1240		-----		-----	
1290	EN14538	<0,1		-----	
1299	EN14538	<0.5		-----	
1300	EN14538	0.513		-----	
1316	In house	<0,50		-----	
1389		-----		-----	
1457	EN14538	0.69		-----	
1539	EN14538	<1,0		-----	
1656	EN14109	0.2	C	-----	first reported: 1.6
1659	EN14538	<1		-----	
1721	EN14109	<1.0		-----	
1739	EN14538	8.1	C	-----	first reported: 8.2, possibly mixed up with Sodium result?
1792		-----		-----	
6057	EN14109	0.1		-----	
	n	26			
	mean (n)	<1.0			

Determination of Sodium on sample #16192; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120	EN14108	5.6		-0.48	
150	EN14538	6.491		0.16	
171		-----		-----	
311	EN14108	6.9		0.45	
312	EN14108	6.9		0.45	
323	EN14108	7.2		0.67	
333	EN14538	7.7		1.03	
334	EN14538	3.9		-1.70	
340		-----		-----	
343	EN14538	7.3		0.74	
345		-----		-----	
391		-----		-----	
398		-----		-----	
445	EN14538	5.63		-0.46	
494	EN14538	6.81		0.39	
496	EN14538	6.89		0.45	
540		-----		-----	
663		-----		-----	
863		-----		-----	
1016		-----		-----	
1134		-----		-----	
1135	EN14538	6.116		-0.11	
1167	EN14108	7.7		1.03	
1179		7.697		1.03	
1201	EN14538	5.0		-0.91	
1203	EN14108	6.10		-0.12	
1240		-----		-----	
1290	EN14538	6.17		-0.07	
1299	EN14538	5.2		-0.77	
1300	EN14538	7.227		0.69	
1316	In house	3.46		-2.02	
1389		-----		-----	
1457	EN14538	5.10		-0.84	
1539	EN14538	6.40		0.10	
1656	EN14108	6.0	C	-0.19	first reported: 14.9
1659	EN14538	10.38	R(0.05)	2.96	
1721	EN14108	5.7		-0.41	
1739	EN14538	0.1	R(0.01)	-4.44	possibly mixed up with Potassium result?
1792		-----		-----	
6057	EN14108	7.5		0.89	
	normality	OK			
	n	25			
	outliers	2	Spike:		
	mean (n)	6.268	7.03		Recovery <89%
	st.dev. (n)	1.1361			
	R(calc.)	3.181			
	R(EN14214:12+AC14)	3.960			Compare R(EN14108:03) = 3.003

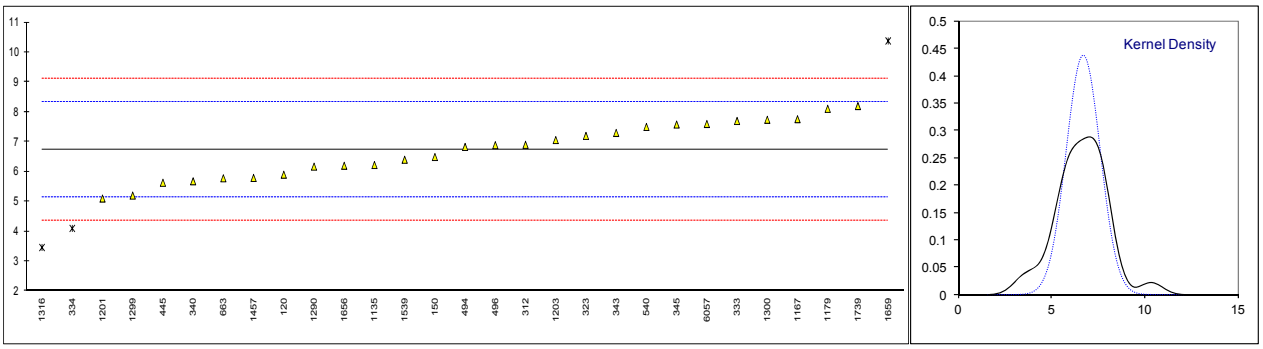




Determination of Sum of Potassium and Sodium on sample #16192; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120	EN14538	5.9		-1.04	
150	EN14538	6.491		-0.30	
171		-----		-----	
311	EN14538	<7.4		-----	
312	EN14538	6.9		0.22	
323	EN14538	7.2		0.59	
333	EN14538	7.7		1.22	
334	EN14538	4.1	R(0.05)	-3.31	
340	EN14538	5.68		-1.32	
343	EN14538	7.3		0.72	
345	EN14538	7.58		1.07	
391		-----		-----	
398		-----		-----	
445	EN14538	5.63		-1.38	
494	EN14538	6.83		0.13	
496	EN14538	6.89		0.20	
540	EN14538	7.5		0.97	
663	EN14538	5.78		-1.19	
863		-----		-----	
1016		-----		-----	
1134		-----		-----	
1135	EN14538	6.223		-0.64	
1167	EN14538	7.76		1.30	
1179		8.107		1.73	
1201	EN14538	5.1		-2.05	
1203	EN14538	7.06		0.42	
1240		-----		-----	
1290	EN14538	6.17		-0.70	
1299	EN14538	5.2		-1.92	
1300	EN14538	7.74		1.27	
1316	In house	3.46	R(0.05)	-4.11	
1389		-----		-----	
1457	EN14538	5.79		-1.18	
1539	EN14538	6.40		-0.41	
1656	EN14108/EN14109	6.2	C	-0.66	first reported: 16.5
1659	EN14538	10.38	R(0.05)	4.59	
1721		-----		-----	
1739	EN14538	8.2		1.85	
1792		-----		-----	
6057	EN14538	7.6		1.10	

normality	OK
n	26
outliers	3
mean (n)	6.728
st.dev. (n)	0.9094
R(calc.)	2.546
R(EN14538:06)	2.226



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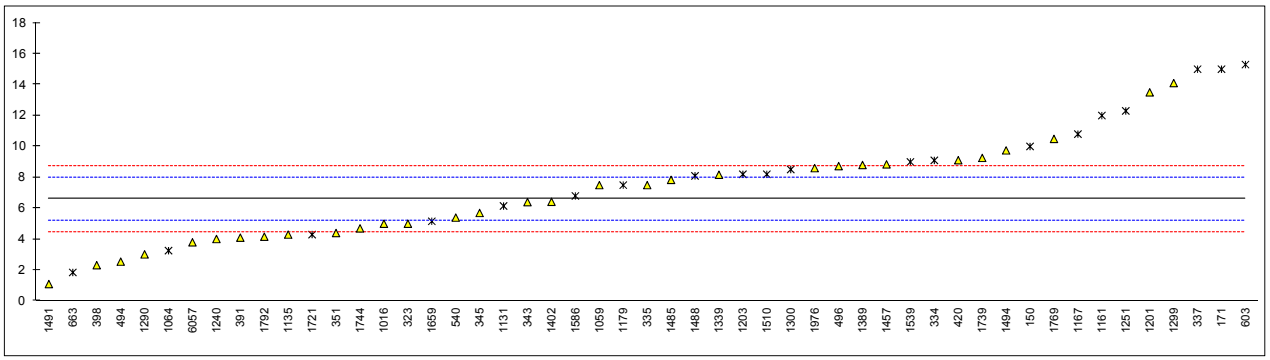
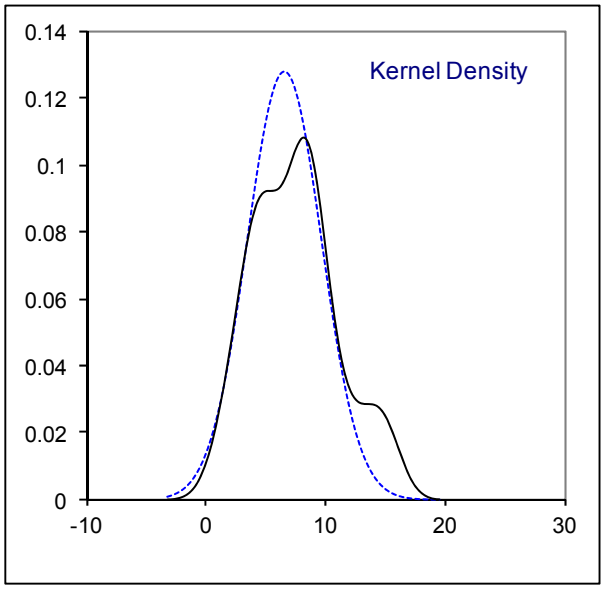
Determination of Total Contamination on sample #16193; results in mg/kg

lab	method	value	mark	z(targ)	remarks
150	EN12662:2014	10.0	ex	4.81	*) , also see §4.1
171	EN12662:2014	15.0	ex	11.88	*) , also see §4.1
311		-----		-----	
312	EN12662:2014	<12	ex	-----	*) , also see §4.1
323	EN12662:1998	5		-2.26	
334	EN12662:2014	9.1	ex	3.54	*) , also see §4.1
335	EN12662:1998	7.5	C	1.27	first reported: 25.5
337	EN12662:2014	15.0	ex,C	11.88	*) , also see §4.1, first reported: 23.0
343	EN12662:1998	6.4		-0.28	
345	EN12662:1998	5.7		-1.27	
351	EN12662:1998	4.4		-3.11	
391	EN12662:2008	4.1		-3.53	
398	EN12662:2008	2.32		-6.05	
420	EN12662:1998	9.11		3.55	
445	IP440	<12		-----	
447		-----		-----	
494	EN12662:1998	2.55		-5.73	
496	EN12662:1998	8.73		3.01	
540	EN12662:1998	5.4		-1.70	
603	EN12662:2012	15.3	ex	12.31	*) , also see §4.1
621		-----		-----	
663	EN12662:2014	1.85	ex	-6.72	*) , also see §4.1
1016	EN12662:1998	5		-2.26	
1033		-----		-----	
1059	EN12662:1998	7.5		1.27	
1064	EN12662:2014	3.26	ex	-4.72	*) , also see §4.1
1131	EN12662:2014	6.15	ex	-0.64	*) , also see §4.1
1134		-----		-----	
1135	EN12662:1998	4.3		-3.25	
1161	EN12662:2014	12	ex	7.64	*) , also see §4.1
1167	EN12662:2014	10.8	ex	5.94	*) , also see §4.1
1179	EN12662:2014	7.5	ex	1.27	*) , also see §4.1
1201	EN12662:1998	13.5		9.76	
1203	EN12662:2014	8.2	ex	2.26	*) , also see §4.1
1240	EN12662:2008	4.014		-3.66	
1251	EN12662:2014	12.3	ex	8.06	*) , also see §4.1
1290	EN12662:1998	3.02		-5.06	
1299	EN12662:2008	14.1		10.61	
1300	EN12662:2014	8.51	ex	2.70	*) , also see §4.1
1339	EN12662:1998	8.17		2.22	
1389	EN12662:1998	8.8		3.11	
1397		-----		-----	
1402	EN12662:1998	6.42		-0.25	
1457	EN12662:1998	8.84		3.17	
1485	EN12662:1998	7.84		1.76	
1488	EN12662:2014	8.1	ex	2.12	*) , also see §4.1
1491	EN12662:1998	1.1		-7.78	
1494	EN12662:2008	9.7471		4.45	
1510	EN12662:2014	8.2	ex	2.26	*) , also see §4.1
1539	EN12662:2012	9.0	ex	3.40	*) , also see §4.1
1582		-----		-----	
1586	EN12662:2014	6.8	ex	0.28	*) , also see §4.1
1659	EN12662:2014	5.16	ex	-2.04	*) , also see §4.1
1721	EN12662:2014	4.3	ex	-3.25	*) , also see §4.1
1739	EN12662:1998	9.26		3.76	
1744	EN12662:2008	4.699		-2.69	
1769	EN12662:2008	10.490		5.50	
1792	EN12662:1998	4.16		-3.45	
1976	EN12662:1998	8.60		2.83	
6057	EN12662:1998	3.8		-3.96	
6069		-----		-----	

			Only 1998:	Only 2008:	Only 2014:
	normality	OK	OK	unknown	OK
	n	31	24	7	20
	outliers	0 (+20ex)	0	0	0
	mean (n)	6.599	6.463	7.067	8.827
	st.dev. (n)	3.1198	2.7614	4.3709	3.7953
	R(calc.)	8.735	7.732	12.239	10.627
	R(EN12662:1998)	1.980	1.939	-----	-----
Comp	R(EN12662:2008)	1.980	-----	2.120	-----
	R(EN12662:2014)	5.196	-----	-----	5.562

*) EN12662:2014 is not applicable to FAME (B100) according to CEN/TC 19 Committee, instead either method EN12662:1998 or EN12662:2008 should be used.


18
16
14
12
10
8
6
4
2
0
1491 663 398 494 1290 1064 6057 1240 391 1792 1135 1721 351 1744 1016 323 1659 540 345 1131 343 1402 1586 1059 1179 335 1485 1488 1339 1203 1510 1300 1976 496 1389 1457 1539 334 420 1739 1494 150 1769 1167 1161 1251 1201 1299 337 171 603

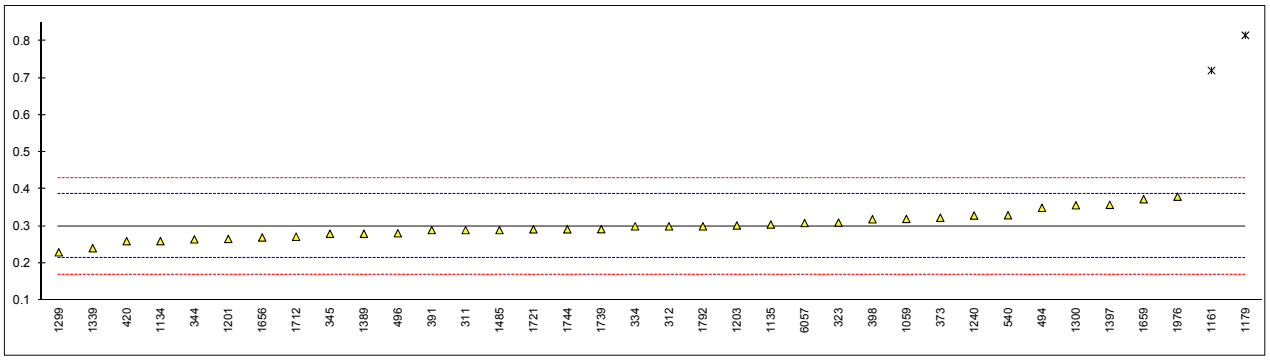

Kernel Density
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
-10
0
10
20
30

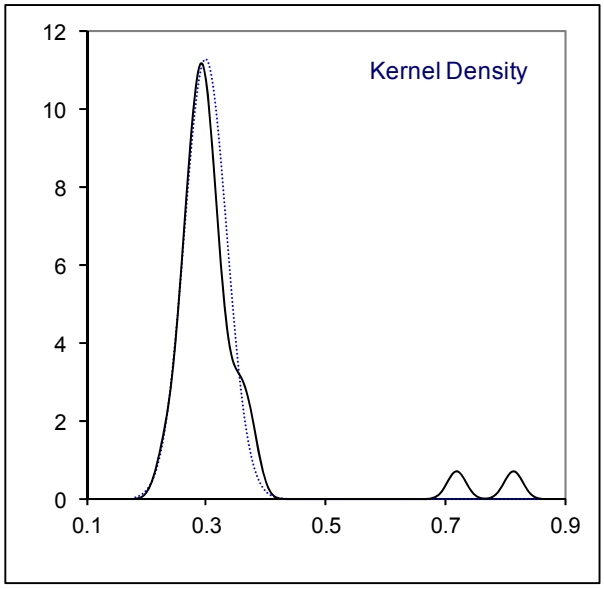
Determination of mono-Glycerides on sample #16194; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171		-----		-----	
311	EN14105	0.29		-0.24	
312	EN14105	0.30		-0.01	
323	EN14105	0.31		0.22	
333		-----		-----	
334	EN14105	0.30		-0.01	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343		-----		-----	
344	EN14105	0.265		-0.82	
345	EN14105	0.28		-0.47	
351		-----		-----	
370		-----		-----	
373	EN14105	0.323		0.52	
391	EN14105	0.29		-0.24	
398	EN14105	0.319		0.43	
420	EN14105	0.26		-0.93	
445		-----		-----	
447		-----		-----	
494	EN14105	0.35		1.14	
496	EN14105	0.2814		-0.44	
511		-----		-----	
540	EN14105	0.33		0.68	
556		-----		-----	
603		-----		-----	
621		-----		-----	
631		-----		-----	
663		-----		-----	
863		-----		-----	
1016		-----		-----	
1033		-----		-----	
1059	EN14105	0.32		0.45	
1107		-----		-----	
1131		-----		-----	
1134	EN14105	0.260		-0.93	
1135	EN14105	0.305		0.10	
1161	EN14105	0.72	C,R(0.01)	9.67	first reported: 0.56
1167		-----		-----	
1179	EN14105	0.815	R(0.01)	11.86	
1199		-----		-----	
1201	EN14105	0.266		-0.80	
1203	EN14105	0.3024		0.04	
1240	EN14105	0.329		0.66	
1286		-----		-----	
1290		-----		-----	
1299	EN14105	0.23		-1.62	
1300	EN14105	0.3569		1.30	
1316		-----		-----	
1339	EN14105	0.241		-1.37	
1389	EN14105	0.28		-0.47	
1397	EN14105	0.358		1.32	
1457		-----		-----	
1459		-----		-----	
1485	EN14105	0.290		-0.24	
1488		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1539		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1656	EN14105	0.27		-0.70	
1659	EN14105	0.373		1.67	
1706		-----		-----	
1712	EN14105	0.272		-0.66	
1721	EN14105	0.292		-0.20	
1739	EN14105	0.2924		-0.19	
1744	D6584	0.2921		-0.19	
1769		-----		-----	
1792	EN14105	0.300		-0.01	

1976	EN14105	0.38	C	1.83	first reported: 0.48
6057	EN14105	0.309		0.20	

normality	OK
n	34
outliers	2
mean (n)	0.3005
st.dev. (n)	0.03539
R(calc.)	0.0991
R(EN14105:11)	0.1215



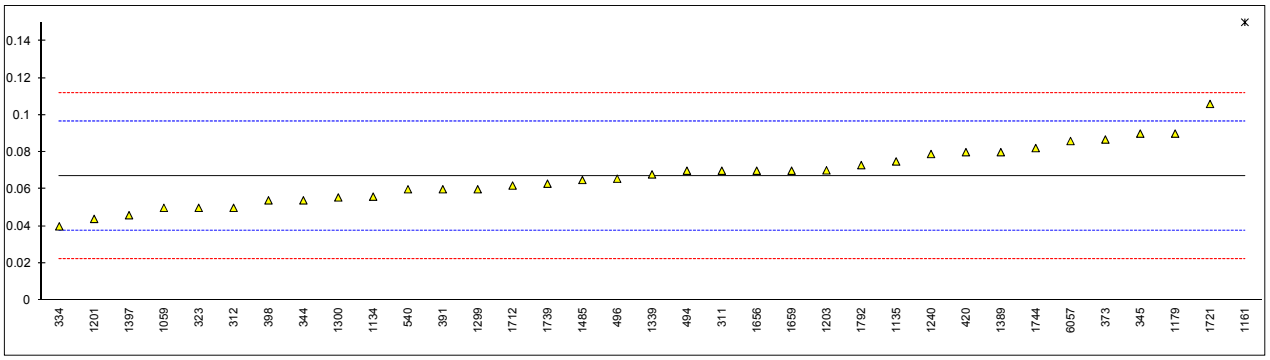


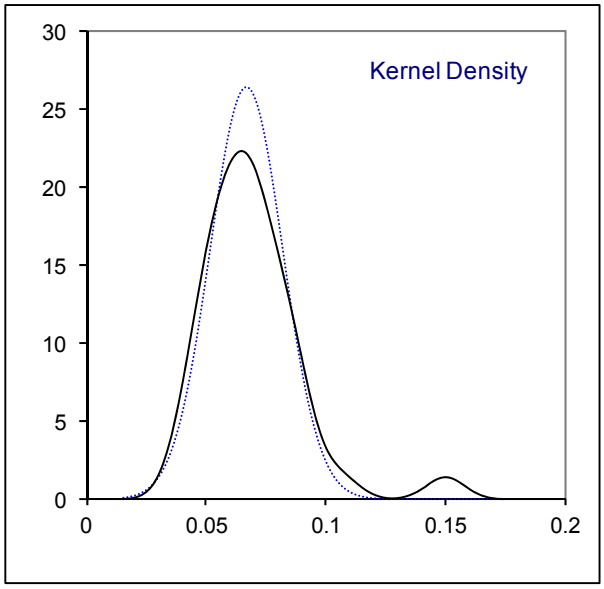
Determination of di-Glycerides on sample #16194; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171		-----		-----	
311	EN14105	0.07		0.20	
312	EN14105	0.050		-1.15	
323	EN14105	0.05		-1.15	
333		-----		-----	
334	EN14105	0.04		-1.83	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343		-----		-----	
344	EN14105	0.054		-0.88	
345	EN14105	0.09		1.54	
351		-----		-----	
370		-----		-----	
373	EN14105	0.0868		1.33	
391	EN14105	0.06		-0.48	
398	EN14105	0.054		-0.88	
420	EN14105	0.08		0.87	
445		-----		-----	
447		-----		-----	
494	EN14105	0.07		0.20	
496	EN14105	0.0657		-0.09	
511		-----		-----	
540	EN14105	0.06		-0.48	
556		-----		-----	
603		-----		-----	
621		-----		-----	
631		-----		-----	
663		-----		-----	
863		-----		-----	
1016		-----		-----	
1033		-----		-----	
1059	EN14105	0.05		-1.15	
1107		-----		-----	
1131		-----		-----	
1134	EN14105	0.056		-0.75	
1135	EN14105	0.075		0.53	
1161	EN14105	0.15	C,R(0.01)	5.59	first reported: 0.13
1167		-----		-----	
1179	EN14105	0.090		1.54	
1199		-----		-----	
1201	EN14105	0.044		-1.56	
1203	EN14105	0.0702		0.21	
1240	EN14105	0.079		0.80	
1286		-----		-----	
1290		-----		-----	
1299	EN14105	0.06		-0.48	
1300	EN14105	0.0556		-0.78	
1316		-----		-----	
1339	EN14105	0.068		0.06	
1389	EN14105	0.08		0.87	
1397	EN14105	0.046		-1.42	
1457		-----		-----	
1459		-----		-----	
1485	EN14105	0.065		-0.14	
1488		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1539		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1656	EN14105	0.07		0.20	
1659	EN14105	0.070		0.20	
1706		-----		-----	
1712	EN14105	0.062		-0.34	
1721	EN14105	0.106		2.62	
1739	EN14105	0.063		-0.28	
1744	D6584	0.0822		1.02	
1769		-----		-----	
1792	EN14105	0.073		0.40	

1976	EN14105	<0,10	-----
6057	EN14105	0.086	1.27

normality	OK
n	34
outliers	1
mean (n)	0.0671
st.dev. (n)	0.01512
R(calc.)	0.0423
R(EN14105:11)	0.0415



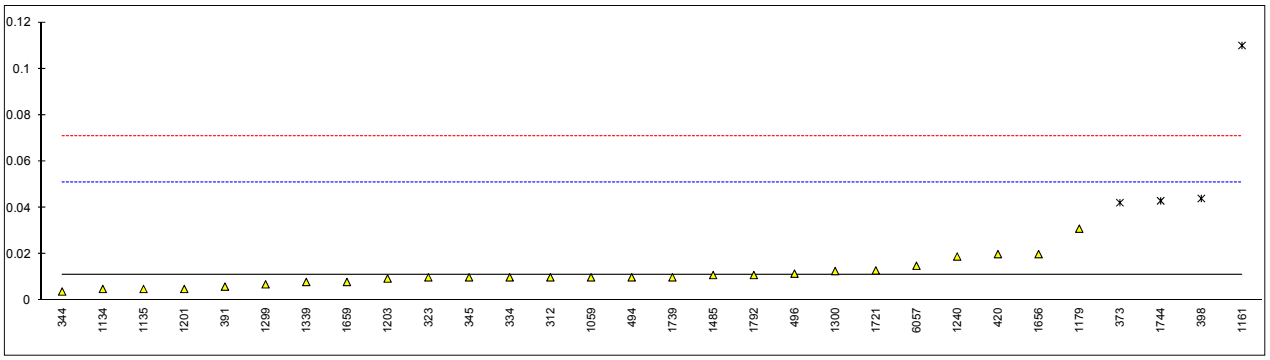


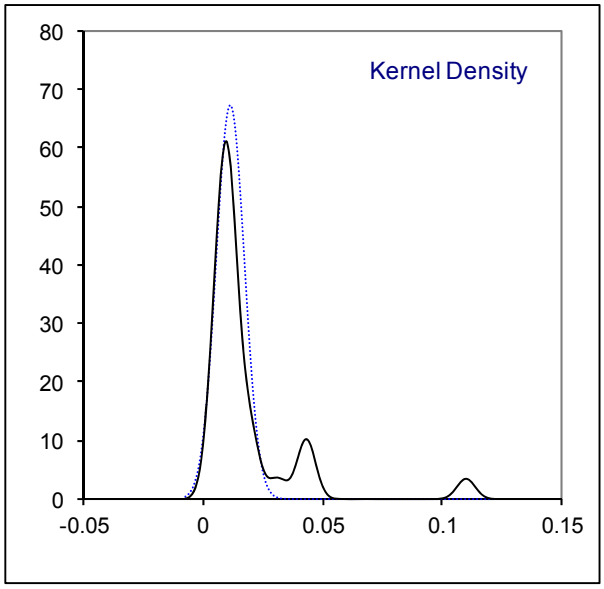
Determination of tri-Glycerides on sample #16194; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171		-----		-----	
311	EN14105	<0.05		-----	
312	EN14105	0.01		-0.06	
323	EN14105	0.01		-0.06	
333		-----		-----	
334	EN14105	0.01		-0.06	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343		-----		-----	
344	EN14105	0.0039		-0.37	
345	EN14105	0.01		-0.06	
351		-----		-----	
370		-----		-----	
373	EN14105	0.0422	R(0.01)	1.56	
391	EN14105	0.006		-0.26	
398	EN14105	0.044	R(0.01)	1.65	
420	EN14105	0.02		0.44	
445		-----		-----	
447		-----		-----	
494	EN14105	0.01		-0.06	
496	EN14105	0.0116		0.02	
511		-----		-----	
540	EN14105	<0.05		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
631		-----		-----	
663		-----		-----	
863		-----		-----	
1016		-----		-----	
1033		-----		-----	
1059	EN14105	0.01		-0.06	
1107		-----		-----	
1131		-----		-----	
1134	EN14105	0.005		-0.31	
1135	EN14105	0.005		-0.31	
1161	EN14105	0.11	C,R(0.01)	4.98	first reported: 0.097
1167		-----		-----	
1179	EN14105	0.031		1.00	
1199		-----		-----	
1201	EN14105	0.005		-0.31	
1203	EN14105	0.0095		-0.09	
1240	EN14105	0.019		0.39	
1286		-----		-----	
1290		-----		-----	
1299	EN14105	0.007		-0.21	
1300	EN14105	0.0127		0.07	
1316		-----		-----	
1339	EN14105	0.008		-0.16	
1389	EN14105	<0.05		-----	
1397	EN14105	<0,01		-----	
1457		-----		-----	
1459		-----		-----	
1485	EN14105	0.011		-0.01	
1488		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1539		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1656	EN14105	0.02		0.44	
1659	EN14105	0.008		-0.16	
1706		-----		-----	
1712	EN14105	<0,050		-----	
1721	EN14105	0.013		0.09	
1739	EN14105	0.01		-0.06	
1744	D6584	0.0430	R(0.01)	1.60	
1769		-----		-----	
1792	EN14105	0.011		-0.01	

1976	EN14105	<0,10	-----
6057	EN14105	0.015	0.19

normality	not OK
n	26
outliers	4
mean (n)	0.0112
st.dev. (n)	0.00591
R(calc.)	0.0166
R(EN14105:11)	0.0556



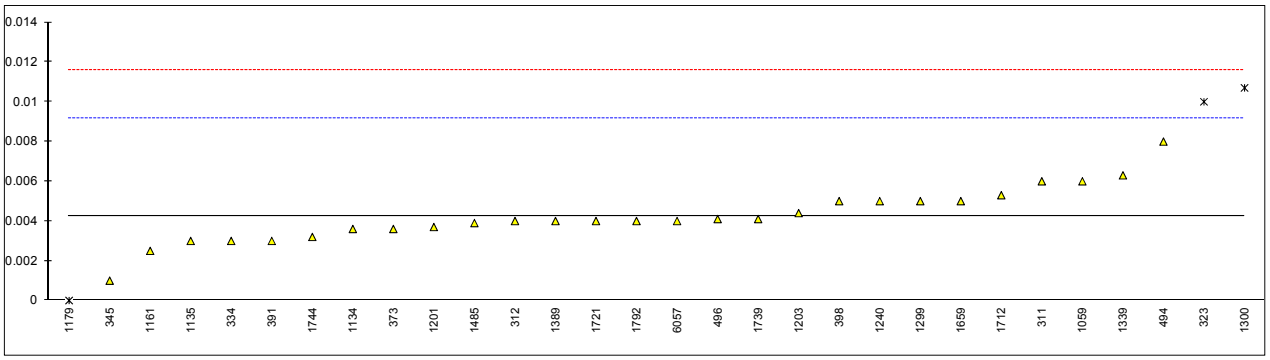


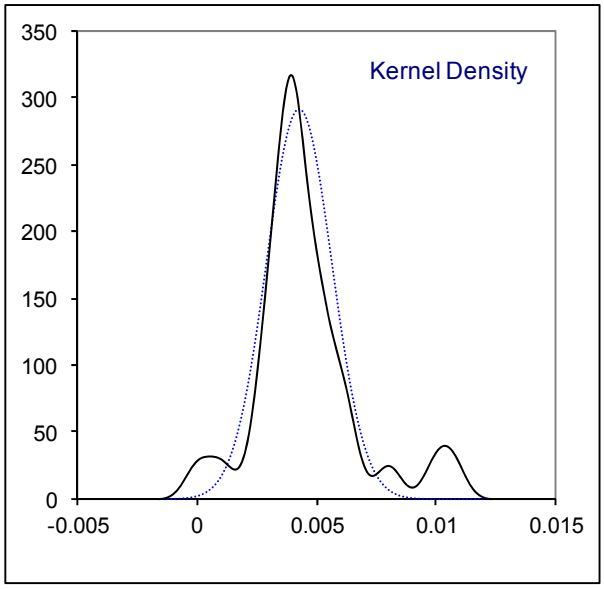
Determination of Free Glycerol on sample #16194; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171		-----		-----	
311	EN14105	0.006		0.71	
312	EN14105	0.004		-0.10	
323	EN14105	0.010	R(0.01)	2.34	
333		-----		-----	
334	EN14105	0.003		-0.51	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343		-----		-----	
344	EN14105	<0,05		-----	
345	EN14105	0.001		-1.32	
351		-----		-----	
370		-----		-----	
373	EN14105	0.0036		-0.26	
391	EN14105	0.003		-0.51	
398	EN14105	0.005		0.31	
420	EN14105	<0,005		-----	
445		-----		-----	
447		-----		-----	
494	EN14105	0.008		1.53	
496	EN14105	0.0041		-0.06	
511		-----		-----	
540	EN14105	<0.005		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
631		-----		-----	
663		-----		-----	
863		-----		-----	
1016		-----		-----	
1033		-----		-----	
1059	EN14105	0.006		0.71	
1107		-----		-----	
1131		-----		-----	
1134	EN14105	0.0036		-0.26	
1135	EN14105	0.003		-0.51	
1161	EN14105	0.0025		-0.71	
1167		-----		-----	
1179	EN14105	0	ex	-1.73	excluded, for zero is not a real value
1199		-----		-----	
1201	EN14105	0.0037		-0.22	
1203	EN14105	0.0044		0.06	
1240	EN14105	0.005		0.31	
1286		-----		-----	
1290		-----		-----	
1299	EN14105	0.005		0.31	
1300	EN14105	0.0107	R(0.01)	2.63	
1316		-----		-----	
1339	EN14105	0.0063		0.84	
1389	EN14105	0.004		-0.10	
1397	EN14105	<0,005		-----	
1457		-----		-----	
1459		-----		-----	
1485	EN14105	0.0039		-0.14	
1488		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1539		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1656	EN14105	<0.01		-----	
1659	EN14105	0.0050		0.31	
1706		-----		-----	
1712	EN14105	0.0053		0.43	
1721	EN14105	0.004		-0.10	
1739	EN14105	0.0041		-0.06	
1744	D6584	0.0032	C	-0.43	first reported: 0.032
1769		-----		-----	
1792	EN14105	0.004		-0.10	

1976	EN14105	<0,005	-----
6057	EN14105	0.004	-0.10

normality	suspect
n	27
outliers	2 (+1ex)
mean (n)	0.0042
st.dev. (n)	0.00137
R(calc.)	0.0038
R(EN14105:11)	0.0069



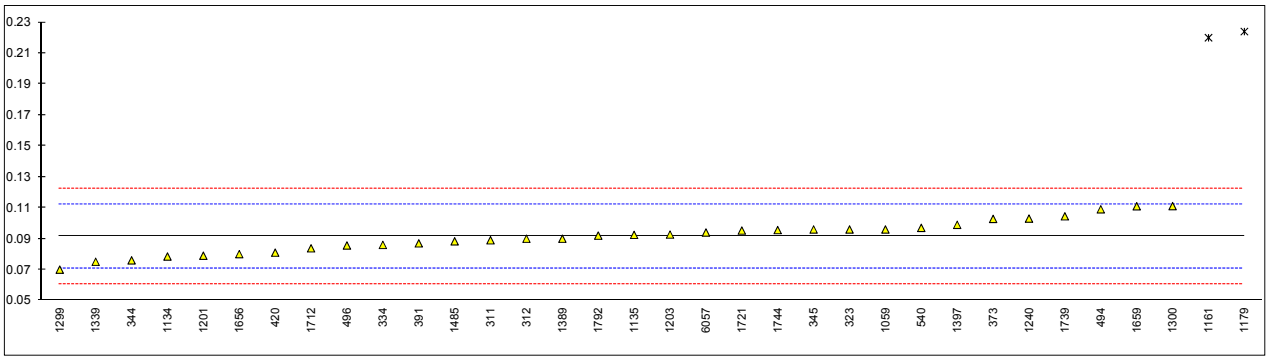


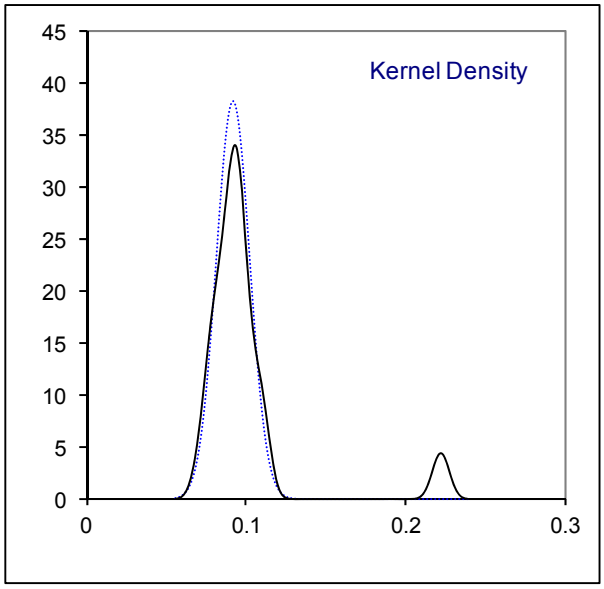
Determination of Total Glycerol on sample #16194; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
150		-----		-----	
171		-----		-----	
311	EN14105	0.089		-0.24	
312	EN14105	0.090		-0.14	
323	EN14105	0.096		0.44	
333		-----		-----	
334	EN14105	0.086		-0.53	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
340		-----		-----	
343		-----		-----	
344	EN14105	0.076		-1.50	
345	EN14105	0.096		0.44	
351		-----		-----	
370		-----		-----	
373	EN14105	0.1028		1.10	
391	EN14105	0.087		-0.43	
398		-----		-----	
420	EN14105	0.081		-1.01	
445		-----		-----	
447		-----		-----	
494	EN14105	0.109		1.70	
496	EN14105	0.0856		-0.57	
511		-----		-----	
540	EN14105	0.097		0.54	
556		-----		-----	
603		-----		-----	
621		-----		-----	
631		-----		-----	
663		-----		-----	
863		-----		-----	
1016		-----		-----	
1033		-----		-----	
1059	EN14105	0.096		0.44	
1107		-----		-----	
1131		-----		-----	
1134	EN14105	0.0785		-1.26	
1135	EN14105	0.0925		0.10	
1161	EN14105	0.22	C,R(0.01)	12.46	first reported: 0.174
1167		-----		-----	
1179	EN14105	0.224	R(0.01)	12.84	
1199		-----		-----	
1201	EN14105	0.079		-1.21	
1203	EN14105	0.0927		0.12	
1240	EN14105	0.103		1.12	
1286		-----		-----	
1290		-----		-----	
1299	EN14105	0.07		-2.08	
1300	EN14105	0.1111		1.90	
1316		-----		-----	
1339	EN14105	0.0751		-1.59	
1389	EN14105	0.09		-0.14	
1397	EN14105	0.099		0.73	
1457		-----		-----	
1459		-----		-----	
1485	EN14105	0.0883		-0.31	
1488		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1539		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1656	EN14105	0.08		-1.11	
1659	EN14105	0.111		1.89	
1706		-----		-----	
1712	EN14105	0.0838		-0.74	
1721	EN14105	0.0953		0.37	
1739	EN14105	0.1045		1.26	
1744	D6584	0.0956		0.40	
1769		-----		-----	
1792	EN14105	0.092		0.05	

1976	EN14105	<0,05	<-4.02	possible false negative test result?
6057	EN14105	0.094	0.25	

normality	OK
n	32
outliers	2
mean (n)	0.0915
st.dev. (n)	0.01046
R(calc.)	0.0293
R(EN14105:11)	0.0289





APPENDIX 2

Number of participants per country

2 labs in	ARGENTINA
2 labs in	AUSTRIA
3 labs in	BELGIUM
1 lab in	BRAZIL
1 lab in	BULGARIA
1 lab in	CHINA, People's Republic
5 labs in	COLOMBIA
1 lab in	CROATIA
1 lab in	CZECH REPUBLIC
1 lab in	ESTONIA
8 labs in	FRANCE
4 labs in	GERMANY
1 lab in	HONG KONG
1 lab in	HUNGARY
1 lab in	INDONESIA
2 labs in	ITALY
1 lab in	LATVIA
3 labs in	LITHUANIA
1 lab in	MALAYSIA
1 lab in	MALTA
7 labs in	NETHERLANDS
1 lab in	PERU
1 lab in	PHILIPPINES
3 labs in	POLAND
5 labs in	PORTUGAL
1 lab in	SLOVENIA
9 labs in	SPAIN
1 lab in	SWEDEN
1 lab in	THAILAND
2 labs in	TURKEY
7 labs in	UNITED KINGDOM
3 labs in	UNITED STATES OF AMERICA

APPENDIX 3

Abbreviations:

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

Literature:

1 iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, April 2014

2 ASTM E178-02

3 ASTM E1301-03

4 ISO13528-05

5 ISO 5725-86

6 ISO 5725, parts 1-6, 1994

7 M. Thompson and R. Wood, J. AOAC Int, 76, 926, (1993)

8 W.J. Youden and E.H. Steiner, Statistical Manual of the AOAC, (1975)

9 IP 367/84

10 DIN 38402 T41/42

11 P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)

12 J.N. Miller, Analyst, 118, 455, (1993)

13 Analytical Methods Committee Technical Brief, No4 January 2001

14 The Royal Society of Chemistry 2002, Analyst 2002, 127 page1359-1364, P.J. Lowthian and M. Thompson. (see http://www.rsc.org/suppdata/an/b2/b205600n/)

15 Bernard Rosner, Percentage Points for a Generalized ESD Many-Outlier Procedure, *Technometrics*, 25(2), pp. 165-172, (1983).

16 Letter of CEN: CEN/TC 19 explanation on total contamination test result and applicability for FAME, dated 16-9-2015 and issued by Ortwin Costenoble on behalf of Liesbeth Jansen (CEN/TC 19 Chairman) and Nigel Elliot (CEN/TC 19/WG 24 Convenor)