Results of Proficiency Test
Biodiesel B100 (100% FAME)
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Organised by: Institute for Interlaboratory Studies
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CONTENTS

1 INTRODUCTION

Since 1991 the Institute for Interlaboratory Studies organizes proficiency tests (PT) for Fatty Acid Methyl Esters (FAME) used as Biodiesel B100 every year. Since 2008 per year two PTs are organized for Biodiesel 100% FAME (B100). During the annual proficiency testing program of 2019/2020, it was decided to continue with the proficiency tests on Biodiesel B100 in accordance with the latest applicable version of ASTM D6751 and EN14214:12+A2:2019.
The number of participants per proficiency test of Biodiesel B100 are: 69 laboratories in 29 different countries for the main round (iis19G06), 24 laboratories in 11 different countries for the Cetane Number & DCN (iis19G06CN), 36 laboratories in 18 different countries for the Metals in Biodiesel (iis19G06M) and 50 laboratories in 25 different countries for the Total Contamination (iis19G06TC).
In this interlaboratory study in total 70 laboratories from 29 different countries registered for participation. See appendix 2 for a list of number of participants per country.
In this report the results of the 2019 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 ISO/IEC17025 accredited laboratory. In this proficiency test, the participants received, depending on the registration, from one up to five different samples of Biodiesel B100, see table below.

Samples	Amount in L	Purpose	Remarks
#19185	1.5	For regular analyzes	none
#19186	2	Cetane Number & DCN	none
#19187	0.1	Analysis of metals	Sodium, Phosphorus, Potassium
#19188	1	Total Contamination	Arizona dust (fine)
#19189	0.1	GC analyzes	B100 Soy Bean Oil

Table 1: five different Biodiesel B100 samples used in iis19G06

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

2.1 ACCREDITATION

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, is accredited in agreement with ISO/IEC17043:2010 (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This PT falls under the accredited scope. This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentiality of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

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

2.3 CONFIDENTIALITY STATEMENT

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

2.4 SAMPLES

The necessary bulk material of approximately 400L of Biodiesel B100 Rapeseed was obtained from a European producer. This material was used for samples #19185, #19186, #19187 and #19188.

Regular round: samples #19185 and #19189
After homogenization, 104 amber glass bottles of 1L and 104 amber glass bottles of 0.5L for the main round were filled and labelled #19185. The homogeneity of the subsamples #19185 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 #19185-1	882.99
sample #19185-2	882.99
sample #19185-3	883.01
sample #19185-4	883.01
sample #19185-5	883.01
sample #19185-6	883.02
sample #19185-7	883.01
sample #19185-8	883.01

Table 2: homogeneity test results of subsamples #19185

From the above test results the repeatability was calculated and compared with 0.3 times the corresponding reproducibility of the reference test method in agreement with the procedure of ISO13528, Annex B2 in the next table.

	Density at 15°C in kg/m^3
r (observed)	0.03
reference test method	ISO12185:96
0.3 x R (ref. test method)	0.15

Table 3: evaluation of the repeatability of subsamples #19185

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

The batch of about 40 liters of B100 Soy Bean Oil for an extra GC sample was obtained from a participating laboratory. After homogenization 208 amber glass bottles of 100mL were filled and labelled #19189.
The homogeneity of the subsamples #19189 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 #19189-1	885.58
sample #19189-2	885.58
sample #19189-3	885.57
sample #19189-4	885.58
sample #19189-5	885.58
sample #19189-6	885.57
sample #19189-7	885.57
sample #19189-8	885.57

Table 4: homogeneity test results of subsamples #19189

From the above test results the repeatability was calculated and compared with 0.3 times the corresponding reproducibility of the reference test method in agreement with the procedure of ISO13528, Annex B2 in the next table.

	Density at 15°C in kg/m^3
r (observed)	0.02
reference test method	ISO12185:96
0.3 x R (ref. test method)	0.15

Table 5: evaluation of the repeatability of subsamples #19189

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

Cetane Number and Derived Cetane Number: sample #19186

After homogenization 90 amber glass bottles of 1L were filled and labelled #19186.The homogeneity of the subsamples #19186 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 #19186-1	882.97
sample #19186-2	882.99
sample #19186-3	882.99
sample #19186-4	882.98
sample #19186-5	882.98
sample #19186-6	882.92
sample #19186-7	882.96
sample #19186-8	882.99

Table 6: homogeneity test results of subsamples #19186

From the above test results the repeatability was calculated and compared with 0.3 times the corresponding reproducibility of the reference test method in agreement with the procedure of ISO13528, Annex B2 in the next table.

	Density at 15°C in kg/m^3
r (observed)	0.07
reference test method	ISO12185:96
0.3 x R (ref. test method)	0.15

Table 7: evaluation of the repeatability of subsamples #19186

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

Metals: sample #19187

From the remaining material approximately 6 kg was taken and spiked with Phosphorus, Sodium and Potassium. After homogenization 71 PE bottles of 0.1L were filled and labelled #19187. The homogeneity of the subsamples of #19187 was checked by the determination of Phosphorus in accordance with EN14107 and Sodium in accordance with EN14538 on 8 stratified randomly selected samples.

	Phosphorus in mg/kg	Sodium in mg/kg
sample #19187-1	7.5	6.8
sample #19187-2	7.5	7.0
sample #19187-3	7.5	6.9
sample #19187-4	7.5	7.0

	Phosphorus in mg/kg	Sodium in mg/kg
sample #19187-5	7.4	6.9
sample #19187-6	7.4	6.9
sample #19187-7	7.4	7.0
sample #19187-8	7.4	7.0

Table 8: homogeneity test results of subsamples #19187

From the above test results the repeatabilities were calculated and compared with 0.3 times the corresponding reproducibility of the reference test methods in agreement with the procedure of ISO13528, Annex B2 in the next table.

	Phosphorus in mg/kg	Sodium in mg/kg
r (observed)	0.15	0.21
reference test method	EN14107:03	EN14108:03
0.3 x R (ref. test method)	0.44	0.95

Table 9: evaluation of repeatability of subsamples #19187

The calculated repeatabilities were in agreement with 0.3 times the corresponding reproducibility of the reference test methods. Therefore, the homogeneity of the subsamples was assumed.

Total Contamination: sample #19188
Into 70 amber glass bottles, 1 ml of a freshly prepared and ultrasonically homogenized 15 g/kg Arizona Dust (fine) in oil suspension was pipetted. The addition was checked by weighing each bottle before and after the addition of the oil suspension. Subsequently, each bottle was filled with one liter Biodiesel B100. The bottles were labelled #19188.

Depending on the registration of the participant, one 1L bottle and one 0.5L bottle both labelled #19185, one 100mL bottle labelled #19189, two 1L bottles labelled #19187, one 100mL bottle labelled #19187 and/or one 1L bottle labelled #19188, were dispatched to each of the participating laboratories on September 11, 2019. An SDS was added to the sample package.

2.5 STABILITY OF THE SAMPLES

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

2.6 ANALYSES

The requested analyses for the Biodiesel B100 samples are in accordance with the requirements of EN14214:12+A2:19 and/or ASTM D6751:19.

Parameter	EN14214:12+A2:19	Parameter	ASTM D6751:19
Acid Value	EN14104	Acid Number	ASTM D664
Calorific Value	DIN51900		
		Carb. Res. 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		
Kin. Viscosity at 40°C	ISO3104	Kin. Viscosity at 40°C	ASTM D445
Oxidation Stability	EN14112	Oxidation Stability	EN15751
Sulfated Ash	ISO3987	Sulfated Ash	ASTM D874
Sulfur	ISO20846	Sulfur	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 10: requirements and test methods acc. to specifications EN14214:12+A2:19 and/or ASTM D6751:19.

It was explicitly requested to treat the samples as if they were routine samples and to report the test results using the indicated units on the report form and not to round the test results but report as much significant figures as possible. It was also requested not to report ‘less than’ test results, which are above the detection limit, because such test results cannot be used for meaningful statistical calculations.

To get comparable test results, a detailed report form and a letter of instructions are prepared. On the report form the reporting units are given as well as the reference test methods that will be used during the evaluation. The detailed report form and the letter of instructions are both made available on the data entry portal www.kpmd.co.uk/sgs-iis/. The participating laboratories are also requested to confirm the sample receipt on this data entry portal. The letter of instructions can also be downloaded from the iis website www.iisnl.com.

3 RESULTS

During five weeks after sample dispatch, the test results of the individual laboratories were gathered via the data entry portal www.kpmd.co.uk/sgs-iis/. The reported test results are tabulated per determination in appendix 1 of this report. The laboratories are presented by their code numbers.
Directly after the deadline, a reminder was sent to those laboratories that had not reported test results at that moment. Shortly after the deadline, the available test results were screened for suspect data. A test result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the reported test results (no reanalyzes). Additional or corrected test results are used for data analysis and the original test results are placed under ‘Remarks’ in the test result tables in appendix 1. Test results that came in after the deadline were not taken into account in this screening for suspect data and thus these participants were not requested for checks.

3.1 STATISTICS

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report ‘iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation’ of June 2018 (iis-protocol, version 3.5).
For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as ‘<…’ or ‘>…’ were not used in the statistical evaluation.

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

According to ISO5725 the original test results per determination were submitted to Dixon’s, Grubbs' and/or Rosner’s outlier tests. Outliers are marked by D(0.01) for the Dixon’s test, by G(0.01) or DG(0.01) for the Grubbs’ test and by R(0.01) for the Rosner’s test. Stragglers are marked by D(0.05) for the Dixon’s test, by G(0.05) or DG(0.05) for the Grubbs’ test and by R(0.05) for the Rosner’s test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

For each assigned value, the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirement based on the target reproducibility in accordance with ISO13528. In this PT, the criterion of ISO13528, paragraph 9.2.1, was met for all evaluated tests, therefore, the uncertainty of all assigned values may be negligible and need not be included in the PT report.

Finally, the reproducibilities were calculated from the standard deviations by multiplying 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 test results are plotted. The corresponding laboratory numbers are on the X-axis. The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected reference test method. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle.

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

3.3 Z-SCORES

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

The target standard deviation was calculated from the literature reproducibility by division with 2.8. In case no literature reproducibility was available, other target values were used. In some cases, a reproducibility based on former iis proficiency tests could be used.

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

The z-scores were calculated according to:

$z_{(target)}$ = (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.
The usual interpretation of z-scores is as follows:

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

4 EVALUATION

In this proficiency test some problems were encountered during the dispatch of the PT samples.
For the regular Biodiesel PT: three participants did not report any test results at all and five participants reported the test results after the final reporting date.
For the Cetane Number & DCN in Biodiesel PT: five participants did not report any test results at all and two participants reported the test results after the final reporting date.
For the Metals in Biodiesel PT: six participants did not report any test results at all and three participants reported the test results after the final reporting date.
For the Total Contamination PT: ten participants did not report any test results at all and two participants reported the test results after the final reporting date.
Finally, in total 67 participants reported in total 1389 numerical results. Observed were 40 outlying results, which is 2.9%. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

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

4.1 EVALUATION PER SAMPLE AND PER TEST

In this section the results are discussed per sample and per test. The test methods, which were used by the laboratories were taken into account for explaining the observed differences when possible and applicable. These test methods are also in the tables together with the reported data. The abbreviations used in these tables are explained in appendix 3.

In the iis PT reports, ASTM test methods are referred to with a number (e.g. D874) and an added designation for the year that the test method was adopted or revised (e.g. D874:13a). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D874:13a (2018)). In the test results tables of appendix 1 only the test method number and year of adoption will be used.

Sample #19185

Acid Value: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of EN14104:03 and EN14214:12+A2:19.

Acid Number (total): This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of ASTM D664:18e2 method B.

Cloud Point: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D2500:17a and EN14214:12+A2:19.

CFPP: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN116:15 or EN14214:12+A2:19.

Carbon Residue (on 100%): Almost all reported results were near or below the applicable lower limit of ASTM D4530:15 or ISO10370:14 (0.1%M/M). Therefore, no z-scores were calculated.

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

Density at 15°C: 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 ISO12185:96.

Flash Point PMcc: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ASTM D93-C:18 and ISO2719-C:16.

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 ISO3679:15.

Iodine Value: This determination may be problematic dependent on test method used. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of EN14111:03 but it is with EN16300:12.

Kinematic Viscosity at 40°C: The determination was not problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of ISO3104:94 and ASTM D445:19.

Oxidation Stability: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN15751:14.

Pour Point: 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 ISO3016:19.

Sulfated Ash: All reported test results were near or below the application limit of ASTM D874:13a(2018). Therefore, no z-scores were calculated.

Sulfur: This determination may be problematic dependent on test method used. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ISO20846:19 but it is not with ASTM D5453:19a.

Water: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of ISO12937:00.

Water and Sediment: All reported test results were near or below the application limit of ASTM D2709:16. Therefore, no z-scores were calculated.

Calorific Value: Six participants submitted a test result for Gross Calorific Value at constant volume and 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 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 D240:19. Therefore, no z-scores were calculated.

Distillation at 10 mmHg: This determination was not problematic for 80% and 90% recovered but problematic for 95% recovered. In total one statistical outlier was observed. The calculated reproducibilities after rejection of the statistical outlier are in agreement with the requirements of ASTM D1160:18 for 80% and 90% recovered but not for 95% recovered.

Methanol: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of EN14110:19.

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

Diglycerides: 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.

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

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

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

Total Ester content (FAME): This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN14103:11.

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

Polyunsaturated Methyl Esters: All reported test results were near or below the application limit of EN15779:09+A1:13. Therefore, no z-scores were calculated.

Sample #19189

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

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

Triglycerides: 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.

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

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

Total Ester content (FAME): 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.

Linolenic Acid Methyl Ester: 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 EN14103:11.

Sample #19186

Cetane Number: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of ASTM D613:18a and EN14214:12+A2:19.

DCN (D7668): This determination was problematic. In total three statistical outliers were observed. All three calculated reproducibilities (Derived Cetane Number, Ignition Delay and Combustion Delay) after rejection of the statistical outliers are not in agreement with the requirements of ASTM D7668:17.

Sample #19187

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

Phosphorus: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of EN14107:03.

Potassium: 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 EN14109:03.

Sodium: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN14108:03.

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

Sample #19188

Some years ago, there was some discussion about method EN12662 version 2014 for determining Total Contamination in Biodiesel (neat FAME or B100). The CEN/TC 19 working group published a letter in September 2015 (see lit. 17) about this issue. In short, for FAME blends (B100) either EN12662:1998 or EN12662:2008 should be used and not EN12662:14. Also, the latest version of EN14214:12+A2:19 (February 2019) states that EN12662 version 2008 should be used or EN12662:1998 as alternative. The method EN12662:14 is not mentioned anymore in the specification (see also iis Memo 1903, lit 18). It was therefore decided to exclude the test results which were determined according EN12662:14.

Particulate Contamination: Three laboratories reported a test result. Due to the low number of test results no significant conclusions were drawn.

Total Contamination: This determination was problematic. A known concentration of dust was added to the subsamples (see §2.4) and therefore the minimum of total contamination to be determined was known (10.5 mg/kg =15 mg/kg – 4.5 mg/kg (R EN14214:12+A2:19)). However, 3 laboratories reported a concentration lower than 10.5 mg/kg and these test results were excluded prior to statistical analysis. Another twelve test results were excluded as explained above. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the suspect data is still not in agreement with the requirements of EN12662:98 (or :08).
When the test results from EN12662:98 and EN12662:08 were evaluated separately, the calculated reproducibility is still not in agreement with the requirements of the respective test methods.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the relevant reference test method and the reproducibility as found for the group of participating laboratories. The number of significant test results, the average result, the calculated reproducibility (2.8 * standard deviation) and the target reproducibility derived from literature reference test methods (e.g. ASTM, EN and ISO test methods) are presented in the next tables.

Parameter	unit	n	average	2.8 * sd	R (lit)
Acid Value	mg KOH/g	42	0.43	0.06	0.06
Acid Number (total)	mg KOH/g	25	0.41	0.13	0.12
Cloud Point	°C	55	-7.3	3.2	5
Cold Filter Plugging Point (CFPP)	°C	56	-19.1	2.8	4.2
Carbon Residue (100% FAME)	%M/M	24	<0.1	n.a.	n.a.
Copper Corrosion, 3hrs at 50°C		46	1 (1A,1B)	n.a.	n.a.
Density at 15°C	kg/m^3	64	883.1	0.2	0.5
Flash Point - PMcc	°C	38	143.9	13.1	14.7
Flash Point - recc	°C	11	167.5	8.9	15
Iodine Value	g I_2/100g	44	110.7	7.5	5
Kinematic Viscosity at 40°C	mm^2/s	53	4.509	0.040	0.045
Oxidation Stability Induction period	hours	34	1.1	0.4	0.6
Pour Point	°C	35	-37.7	5.5	9.0
Sulfated Ash	%M/M	32	<0.005	n.a.	n.a.
Sulfur	mg/kg	42	2.3	1.4	1.4
Water	mg/kg	56	530	89	158
Water and Sediment	%V/V	9	<0.05	n.a.	n.a.
Calorific Value, Gross	kJ/kg	5	38957	15404	(400)
80% recovered, as AET	°C	5	354.0	3.5	4.6
90% recovered, as AET	°C	5	356.8	2.2	4.6

Parameter	unit	n	average	2.8 * sd	R (lit)
95% recovered, as AET	°C	4	361.6	8.5	4.6
Methanol	%M/M	37	0.041	0.018	0.012
Monoglycerides	%M/M	36	0.346	0.097	0.130
Diglycerides	%M/M	36	0.099	0.043	0.048
Triglycerides	%M/M	34	0.047	0.035	0.067
Free Glycerol	%M/M	30	0.003	0.005	0.007
Total Glycerol	%M/M	35	0.111	0.033	0.033
Total Ester content	%M/M	45	97.5	3.3	4.2
Linolenic Acid Methyl Ester	%M/M	40	8.07	0.57	0.62
Polyunsaturated Methyl Esters	%M/M	26	<0.6	n.a.	n.a.

Table 11: reproducibilities of tests on sample #19185

Parameter	unit	n	average	2.8 * sd	R (lit)
Monoglycerides	%M/M	32	0.554	0.219	0.169
Diglycerides	%M/M	31	0.155	0.102	0.058
Triglycerides	%M/M	31	0.146	0.100	0.098
Free Glycerol	%M/M	29	0.008	0.008	0.008
Total Glycerol	%M/M	30	0.185	0.058	0.047
Total Ester content	%M/M	39	98.2	2.3	4.2
Linolenic Acid Methyl Ester	%M/M	39	7.07	0.41	0.59

Table 12: reproducibilities of tests on sample #19189

Parameter	unit	n	average	2.8 * sd	R (lit)
Cetane Number (D613)		9	57.3	6.2	4.8
Derived Cetane Number (D7688)		11	57.4	3.4	1.7
Ignition Delay		8	3.0	0.4	0.2
Combustion Delay		7	4.2	0.2	0.1

Table 13: reproducibilities of tests on sample #19186

Parameter	unit	n	average	2.8 * sd	R (lit)
Sum Calcium and Magnesium	mg/kg	27	9.4	2.4	2.6
Phosphorus	mg/kg	26	7.3	1.7	1.4
Potassium	mg/kg	27	6.2	3.0	3.7
Sodium	mg/kg	27	6.9	2.4	3.2
Sum Potassium and Sodium	mg/kg	22	13.2	5.3	3.5

Table 14: reproducibilities of tests on sample #19187

Parameter	unit	n	average	2.8 * sd	R (lit)
Particulate Contamination (D7321)	mg/L	3	n.a.	n.a.	n.a.
Total Contamination (EN12662)	mg/kg	22	18.3	11.6	5.5

Table 15: reproducibilities of tests on sample #19188

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

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

	October 2019*)	May 2019	October 2018	May 2018	October 2017
Type of FAME	Rapeseed	Rapeseed	Rapeseed	Rapeseed	Offal-ME
Number of reporting laboratories	67	45	83	39	70
Number of results reported	1389	753	1332	563	1054
Number of statistical outliers	40	30	33	22	24
Percentage statistical outliers	2.9%	4.0%	2.5%	3.9%	2.3%

Table 16: comparison with previous proficiency tests
*) Sample #19189 is a Soy Bean FAME

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 reference test methods. The conclusions are given the following table.

Parameter	October 2019	May 2019	October 2018	May 2018	October 2017
Acid Value	+/-	-	-	-	+/-
Acid Number (total)	+/-	+	+	+	+
Cloud Point	+	++	+	+	++
Cold Filter Plugging Point (CFPP)	+	+	-	+	-
Carbon Residue (100% FAME)	n.e.	n.e.	n.e.	n.e.	n.e.
Density at 15°C	++	+/-	++	+	++
Flash Point - PMcc	+	+/-	-	-	-
Flash Point - recc.	+	+	+	++	++
Iodine Value	-	+	+/-	-	-
Kinematic Viscosity at 40°C	+	-	-	-	-
Oxidation Stability Induction period	+	+	+	++	--
Pour Point	+	+	+	+	+
Sulfated Ash	n.e.	n.e.	n.e.	n.e.	n.e.
Sulfur	+/-	+/-	+	+	+/-
Water	+	+	+	+	+
Calorific Value, Gross	(--)	--	+	+	+
Distillation at 10 mmHg	+	+	-	-	n.e.
Methanol	-	+/-	-	-	n.e.
Monoglycerides	+	+	-	+	n.e.
Diglycerides	+	+/-	+	+	n.e.
Triglycerides	+	++	++	++	n.e.

Parameter	October 2019	May 2019	October 2018	May 2018	October 2017
Free Glycerol	+	+	++	+	+
Total Glycerol	+/-	+/-	-	+	--
Total Ester content	+	+	+	+	-
Linolenic Acid Methyl Ester	+/-	+	+	+	+
Polyunsaturated Methyl Esters	n.e.	+	+/-	-	+/-
Cetane Number	-	n.e.	+/-	n.e.	+
Derived Cetane Number	--	n.e.	--	n.e.	-
Sum of Calcium and Magnesium	+	--	-	-	--
Phosphorus	-	-	-	-	-
Potassium	+	-	+/-	+	-
Sodium	+	--	-	-	+
Sum of Potassium and Sodium	-	--	--	-	-
Particle Contamination (D7321)	n.e.	n.e.	n.e.	n.e.	n.e.
Total Contamination ((EN12662)	--	--	-	--	--

Table 17: comparison of group performances against the reference test methods of all samples
Sign between brackets the calculated reproducibility is much higher than the reference test method.
NB Sample #19189 is not taken into account for this analysis

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

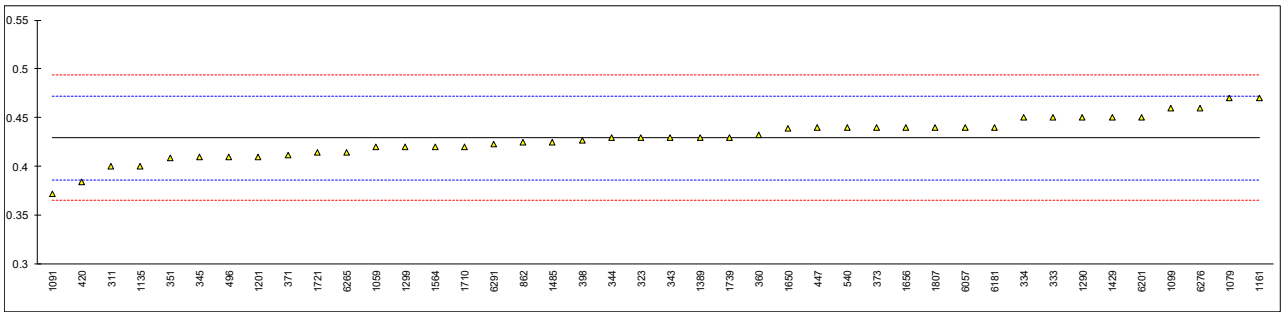
++: group performed much better than the reference test method
+ : group performed better than the reference test method
+/-: group performance equals the reference test method
- : group performed worse than the reference test method
-- : group performed much worse than the reference test method
n.e.: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

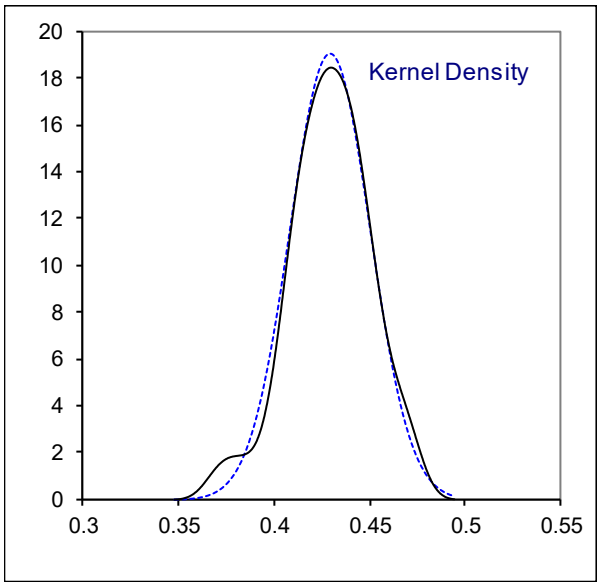
APPENDIX 1

Determination of Acid Value on sample #19185; results in mg KOH/g

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14104	0.40		-1.36	
312		-----		-----	
323	EN14104	0.43		0.04	
333	EN14104	0.45		0.97	
334	EN14104	0.45		0.97	
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	EN14104	0.43		0.04	
344	EN14104	0.43		0.04	
345	EN14104	0.41		-0.90	
351	EN14104	0.409		-0.94	
356		-----		-----	
360	EN14104	0.432		0.13	
370		-----		-----	
371	EN14104	0.412		-0.80	
373	EN14104	0.44		0.50	
391		-----		-----	
398	EN14104	0.427		-0.10	
420	EN14104	0.384		-2.11	
447	EN14104	0.44	C	0.50	first reported 0.044
463		-----		-----	
496	EN14104	0.41		-0.90	
511		-----		-----	
540	EN14104	0.440		0.50	
663		-----		-----	
862	EN14104	0.425		-0.20	
1059	EN14104	0.42		-0.43	
1079	EN14104	0.47		1.90	
1082		-----		-----	
1091	EN14104	0.372		-2.67	
1099	EN14104	0.46		1.44	
1135	EN14104	0.40		-1.36	
1161	EN14104	0.47		1.90	
1201	EN14104	0.41		-0.90	
1213		-----		-----	
1290	EN14104	0.45		0.97	
1299	EN14104	0.42		-0.43	
1316		-----		-----	
1389	EN14104	0.43		0.04	
1397		-----	W	-----	Test result withdrawn. First reported 0.51
1429	EN14104	0.45		0.97	
1459		-----		-----	
1485	EN14104	0.425		-0.20	
1564	EN14104	0.42		-0.43	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1650	EN14104	0.439		0.46	
1656	EN14104	0.44		0.50	
1706		-----		-----	
1710	EN14104	0.42		-0.43	
1721	EN14104	0.414		-0.71	
1739	EN14104	0.430		0.04	
1744		-----		-----	
1769		-----		-----	
1807	EN14104	0.44		0.50	
1989		-----		-----	
6057	EN14104	0.44		0.50	
6181	EN14104	0.44	C	0.50	first reported 4.41
6201	EN14104	0.45		0.97	
6259		-----		-----	
6262		-----		-----	
6265	EN14104	0.4149		-0.67	
6276	EN14104	0.46		1.44	
6288		-----		-----	
6291	EN14104	0.423		-0.29	

normality	OK
n	42
outliers	0
mean (n)	0.4292
st.dev. (n)	0.02095
R(calc.)	0.0587
st.dev.(EN14104:03)	0.02143
R(EN14104:03)	0.06
Compare	
R(EN14214:12+A2:19	0.06

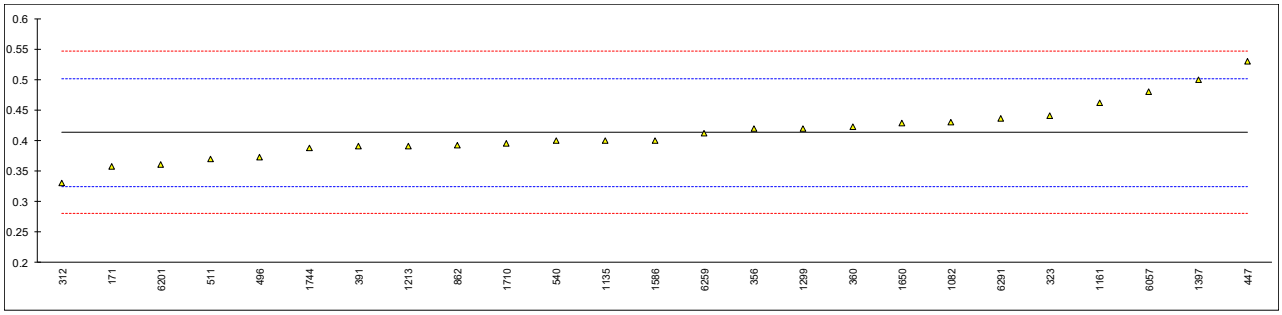


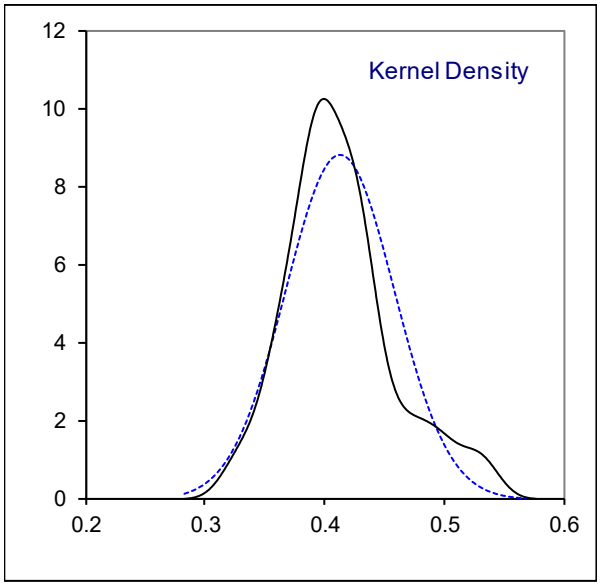


Determination of Acid Number (total) on sample #19185; results in mg KOH/g

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171	D664-B	0.357		-1.26	
311		-----		-----	
312	D664-B	0.33		-1.87	
323	D664-B	0.44		0.61	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
343		-----		-----	
344		-----		-----	
345		-----		-----	
351		-----		-----	
356	D664-B	0.42		0.16	
360	D664-B	0.422		0.20	
370		-----		-----	
371		-----		-----	
373		-----		-----	
391	D664-B	0.39		-0.52	
398		-----		-----	
420		-----		-----	
447	D664-B	0.53		2.64	
463		-----		-----	
496	D664-B	0.3725		-0.91	
511	D664-B	0.37		-0.97	
540	D664-B	0.400		-0.29	
663		-----		-----	
862	D664	0.392		-0.47	
1059		-----		-----	
1079		-----		-----	
1082	ISO6619	0.43		0.38	
1091		-----		-----	
1099		-----		-----	
1135	D664-B	0.40		-0.29	
1161	D664-B	0.462		1.10	
1201		-----		-----	
1213	D664-B	0.39		-0.52	
1290		-----		-----	
1299	D664-B	0.42		0.16	
1316		-----		-----	
1389		-----		-----	
1397	D664-B	0.50		1.96	
1429		-----		-----	
1459		-----		-----	
1485		-----		-----	
1564		-----		-----	
1582		-----		-----	
1586	D664-B	0.40		-0.29	
1634		-----		-----	
1650	D664-B	0.429		0.36	
1656		-----		-----	
1706		-----		-----	
1710	D664-B	0.395		-0.41	
1721		-----		-----	
1739		-----		-----	
1744	D664-B	0.387		-0.59	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
6057	D664-B	0.48		1.51	
6181		-----		-----	
6201	D664-B	0.36		-1.19	
6259	D664-B	0.4125		-0.01	
6262		-----		-----	
6265		-----		-----	
6276		-----		-----	
6288		-----		-----	
6291	D664-B	0.436		0.52	

normality	OK
n	25
outliers	0
mean (n)	0.4130
st.dev. (n)	0.04540
R(calc.)	0.1271
st.dev.(D664-B:18e2)	0.04438
R(D664-B:18e2)	0.1243

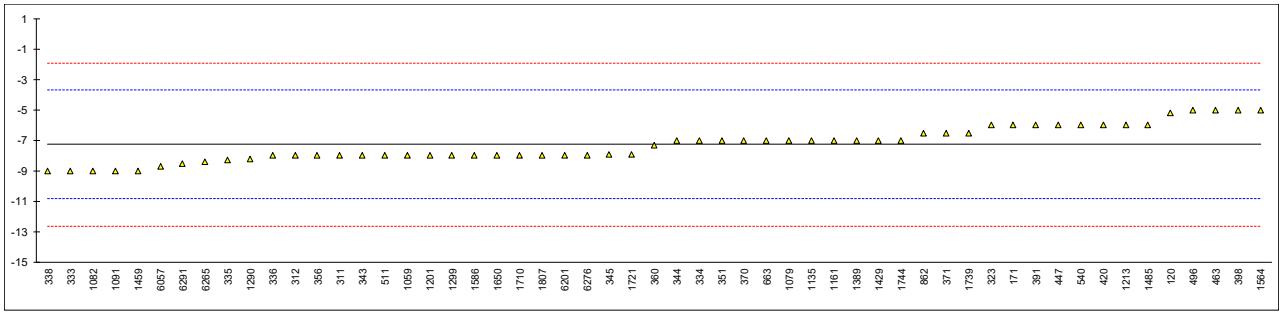


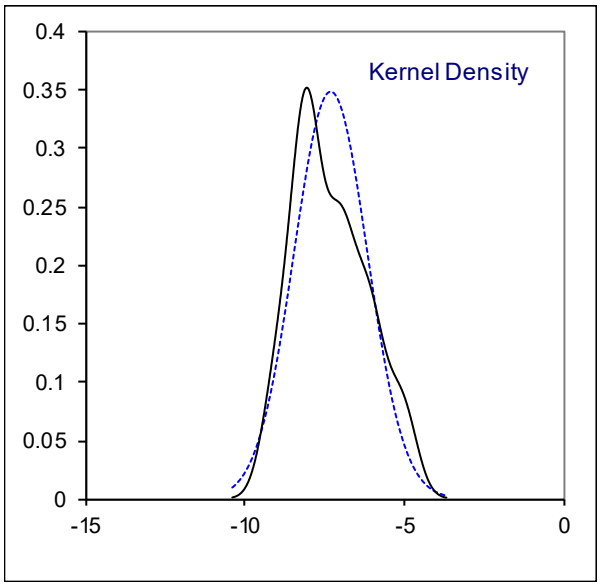


Determination of Cloud Point on sample #19185; results in °C

lab	method	value	mark	z(targ)	remarks
120	D2500	-5.2		1.16	
171	D2500	-6		0.71	
311	D2500	-8		-0.41	
312	D2500	-8		-0.41	
323	D2500	-6		0.71	
333	EN23015	-9		-0.97	
334	D2500	-7		0.15	
335	ISO3015	-8.3		-0.58	
336	D2500	-8		-0.41	
338	D2500	-9		-0.97	
343	D2500	-8		-0.41	
344	D2500	-7		0.15	
345	D5771	-7.9		-0.35	
351	D7683	-7.00		0.15	
356	D2500	-8		-0.41	
360	ISO3015	-7.3		-0.02	
370	ISO3015	-7		0.15	
371	EN23015	-6.5		0.43	
373		-----		-----	
391	D2500	-6		0.71	
398	ISO3015	-5		1.27	
420	EN23015	-6		0.71	
447	D2500	-6		0.71	
463	D2500	-5		1.27	
496	D2500	-5		1.27	
511	D2500	-8		-0.41	
540	D2500	-6		0.71	
663	D2500	-7		0.15	
862	D2500	-6.5		0.43	
1059	ISO3015	-8		-0.41	
1079	D2500	-7		0.15	
1082	D5771	-9		-0.97	
1091	D2500	-9		-0.97	
1099		-----		-----	
1135	EN23015	-7		0.15	
1161	D2500	-7		0.15	
1201	EN23015	-8		-0.41	
1213	D2500	-6	C	0.71	first reported 6
1290	D2500	-8.22		-0.53	
1299	D2500	-8		-0.41	
1316		-----		-----	
1389	D2500	-7		0.15	
1397		-----		-----	
1429	D2500	-7.0		0.15	
1459	EN23015	-9.0		-0.97	
1485	D2500	-6.0		0.71	
1564	D5772	-5.0		1.27	
1582		-----		-----	
1586	D2500	-8		-0.41	
1634		-----		-----	
1650	D5771	-8		-0.41	
1656		-----		-----	
1706		-----		-----	
1710	EN23015	-8		-0.41	
1721	D2500	-7.9		-0.35	
1739	EN23015	-6.5		0.43	
1744	D2500	-7		0.15	
1769		-----		-----	
1807	D2500	-8		-0.41	
1989		-----		-----	
6057	D2500	-8.7		-0.80	
6181		-----		-----	
6201	D2500	-8		-0.41	
6259		-----		-----	
6262		-----		-----	
6265	ISO3015	-8.4		-0.63	
6276	ISO3015	-8	C	-0.41	first reported -17.0
6288		-----		-----	
6291	D2500	-8.5		-0.69	

	normality	OK
	n	55
	outliers	0
	mean (n)	-7.27
	st.dev. (n)	1.146
	R(calc.)	3.21
	st.dev.(D2500:17a)	1.786
	R(D2500:17a)	5
Compare		
	R(EN14214:12+A2:19)	4

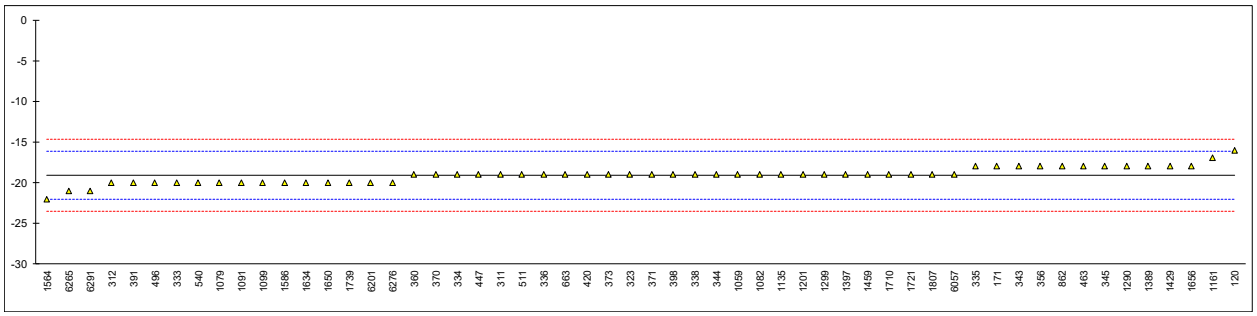


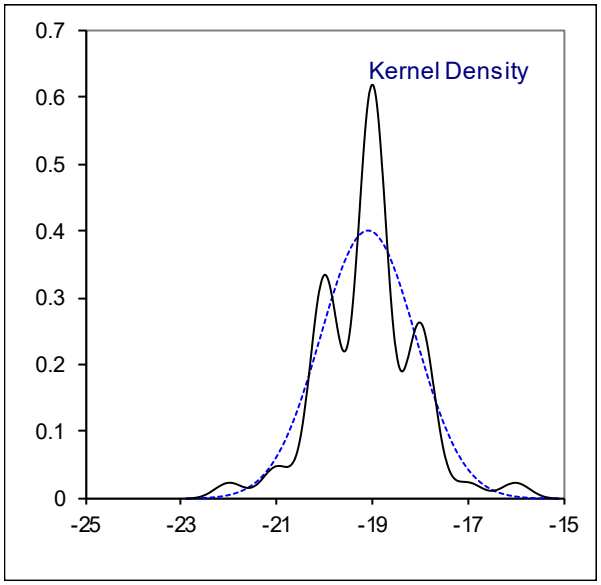


Determination of Cold Filter Plugging Point (CFPP) on sample #19185; results in °C

lab	method	value	mark	z(targ)	remarks
120	D6371	-16		2.09	
171	D6371	-18		0.74	
311	EN116	-19		0.06	
312	EN116	-20		-0.62	
323	EN116	-19		0.06	
333	EN116	-20		-0.62	
334	EN116	-19		0.06	
335	EN116	-18		0.74	
336	EN116	-19		0.06	
338	EN116	-19		0.06	
343	EN116	-18		0.74	
344	EN116	-19		0.06	
345	EN116	-18		0.74	
351		-----		-----	
356	EN116	-18		0.74	
360	EN116	-19		0.06	
370	EN116	-19		0.06	
371	EN116	-19		0.06	
373	EN116	-19		0.06	
391	EN116	-20		-0.62	
398	EN116	-19		0.06	
420	EN116	-19		0.06	
447	IP309	-19		0.06	
463	EN116	-18		0.74	
496	EN116	-20		-0.62	
511	D6371	-19		0.06	
540	D6371	-20		-0.62	
663	EN116	-19		0.06	
862	EN116	-18		0.74	
1059	EN116	-19		0.06	
1079	EN116	-20		-0.62	
1082	EN116	-19		0.06	
1091	EN116	-20		-0.62	
1099	EN116	-20		-0.62	
1135	EN116	-19		0.06	
1161	EN116	-17		1.41	
1201	EN116	-19		0.06	
1213		-----		-----	
1290	EN116	-18		0.74	
1299	EN116	-19		0.06	
1316		-----		-----	
1389	EN116	-18		0.74	
1397	EN116	-19		0.06	
1429	EN116	-18.0		0.74	
1459	EN116	-19.0		0.06	
1485		-----		-----	
1564	EN116	-22		-1.97	
1582		-----		-----	
1586	D6371	-20		-0.62	
1634	EN116	-20		-0.62	
1650	EN116	-20		-0.62	
1656	EN116	-18		0.74	
1706		-----		-----	
1710	EN116	-19		0.06	
1721	EN116	-19		0.06	
1739	EN116	-20.0		-0.62	
1744		-----		-----	
1769		-----		-----	
1807	EN116	-19		0.06	
1989		-----		-----	
6057	EN116	-19		0.06	
6181		-----		-----	
6201	EN116	-20		-0.62	
6259		-----		-----	
6262		-----		-----	
6265	EN116	-21		-1.29	
6276	EN116	-20	C	-0.62	first reported -8.0
6288		-----		-----	
6291	EN116	-21		-1.29	

	normality	suspect
	n	56
	outliers	0
	mean (n)	-19.09
	st.dev. (n)	0.996
	R(calc.)	2.79
	st.dev.(EN116:15)	1.480
	R(EN116:15)	4.15
Compare		
	R(EN14214:12+A2:19)	4.15





Determination of Carbon Residue on 100% FAME on sample #19185; results in %M/M

lab	method	value	mark	z(targ)	remarks
120	D4530	0.00		-----	
171		-----		-----	
311		-----		-----	
312		-----		-----	
323	D4530	< 0.10		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
343		-----		-----	
344		-----		-----	
345		-----		-----	
351	ISO10370	<0.10		-----	
356	ISO10370	0.02		-----	
360	ISO10370	0.018		-----	
370	ISO10370	0.007		-----	
371		-----		-----	
373		-----		-----	
391		-----		-----	
398		-----		-----	
420	ISO6615	0.01		-----	
447	ISO10370	0.33		-----	Possibly a false positive test result?
463	D4530	0.0056		-----	
496	D4530	0.0133		-----	
511		-----		-----	
540	D4530	<0.10		-----	
663		-----		-----	
862	D4530	<0.1		-----	
1059	ISO10370	0.02		-----	
1079	D4530	0.012		-----	
1082		-----		-----	
1091		-----		-----	
1099		-----		-----	
1135	ISO10370	0.013		-----	
1161	D4530	0.02		-----	
1201	D4530	0		-----	
1213	D4530	<0.1		-----	
1290		-----		-----	
1299		-----		-----	
1316		-----		-----	
1389	D4530	<0.10		-----	
1397		-----		-----	
1429	D4530	< 0.01		-----	
1459		-----		-----	
1485		-----		-----	
1564		-----		-----	
1582		-----		-----	
1586	D189	0.02		-----	
1634		-----		-----	
1650		-----		-----	
1656	ISO10370	<0.1		-----	
1706		-----		-----	
1710	EN10370	0.032		-----	
1721	D4530	<0,1		-----	
1739		-----		-----	
1744		-----		-----	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
6057		-----		-----	
6181		-----		-----	
6201	D4530	0.01		-----	
6259		-----		-----	
6262		-----		-----	
6265		-----		-----	
6276		-----		-----	
6288		-----		-----	
6291		-----		-----	
	n	24			Application range D4530:15 0.1 – 0.3 %M/M
	mean (n)	<0.1			Application range ISO10370:14 0.10 – 30.0 %M/M

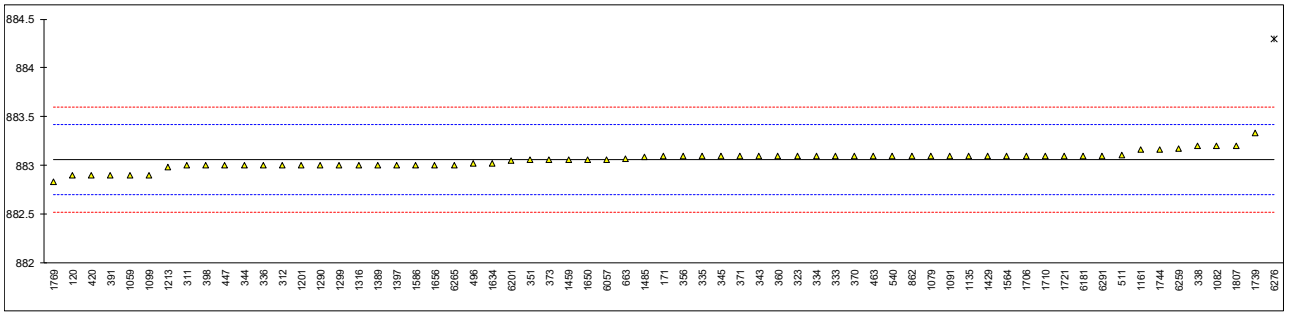
Determination of Copper Corrosion 3 hrs at 50°C on sample #19185

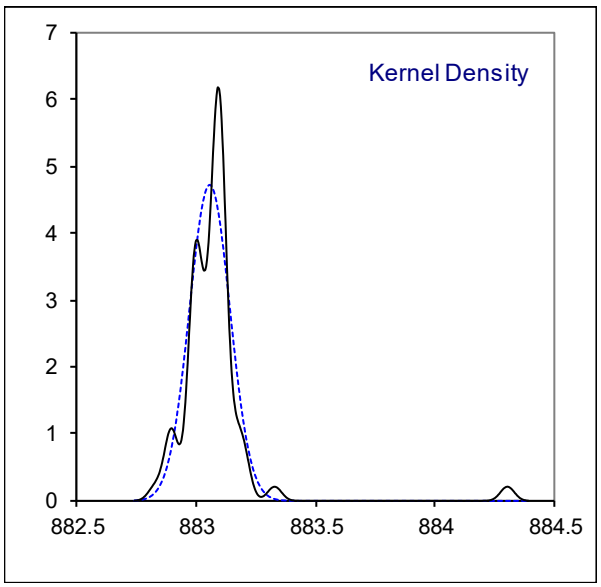
lab	method	value	mark	z(targ)	remarks
120	D130	1A		-----	
171	D130	1a		-----	
311	D130	1B		-----	
312	D130	1A		-----	
323	ISO2160	1B		-----	
333		-----		-----	
334	D130	1A		-----	
335		-----		-----	
336	D130	1		-----	
338		-----		-----	
343	ISO2160	1A		-----	
344	D130	1a		-----	
345	ISO2160	1a		-----	
351	ISO2160	1A		-----	
356	D130	1A		-----	
360	ISO2160	1A		-----	
370	ISO2160	1A		-----	
371	ISO2160	1a		-----	
373		-----		-----	
391		-----		-----	
398		-----		-----	
420	ISO2160	class1		-----	
447	D130	1a		-----	
463	D130	1A		-----	
496	ISO2160	1a		-----	
511	D130	1a		-----	
540	D130	1a		-----	
663	D130	1a		-----	
862	D130	1a		-----	
1059	ISO2160	1a		-----	
1079	ISO2160	1A		-----	
1082		-----		-----	
1091		-----		-----	
1099	ISO2160	1		-----	
1135	ISO2160	1A		-----	
1161	ISO2160	1a		-----	
1201	ISO2160	1A		-----	
1213	D130	1a		-----	
1290		-----		-----	
1299	D130	1A		-----	
1316	D130	1a		-----	
1389	ISO2160	1A		-----	
1397	ISO2160	1		-----	
1429	D130	1A		-----	
1459		-----		-----	
1485		-----		-----	
1564		-----		-----	
1582		-----		-----	
1586	D130	1b		-----	
1634	D130	1a		-----	
1650	D130	1a		-----	
1656	ISO2160	1		-----	
1706		-----		-----	
1710	ISO2160	1A		-----	
1721	ISO2160	1		-----	
1739	ISO2160	1a		-----	
1744		-----		-----	
1769		-----		-----	
1807	D130	1a		-----	
1989		-----		-----	
6057	ISO2160	1A		-----	
6181		-----		-----	
6201	D130	1A		-----	
6259		-----		-----	
6262		-----		-----	
6265		-----		-----	
6276		-----		-----	
6288		-----		-----	
6291	D130	1A		-----	
	n	46			
	mean (n)	1(1A,1B)			

Determination of Density at 15°C on sample #19185; results in kg/m^3

lab	method	value	mark	z(targ)	remarks
120	D4052	882.9		-0.89	
171	D4052	883.1		0.23	
311	ISO12185	883.0		-0.33	
312	ISO12185	883.0		-0.33	
323	ISO12185	883.1		0.23	
333	ISO12185	883.1		0.23	
334	ISO12185	883.1		0.23	
335	ISO12185	883.1		0.23	
336	ISO12185	883.0		-0.33	
338	ISO12185	883.2		0.79	
343	ISO12185	883.1		0.23	
344	D4052	883.0		-0.33	
345	ISO12185	883.1		0.23	
351	ISO12185	883.06		0.00	
356	ISO12185	883.1		0.23	
360	D4052	883.1		0.23	
370	ISO12185	883.1		0.23	
371	ISO12185	883.1		0.23	
373	ISO12185	883.06		0.00	
391	ISO12185	882.9		-0.89	
398	ISO12185	883.0		-0.33	
420	ISO12185	882.9		-0.89	
447	D4052	883.0		-0.33	
463	ISO12185	883.10		0.23	
496	ISO12185	883.02		-0.22	
511	D4052	883.11		0.28	
540	D4052	883.10		0.23	
663	D4052	883.07		0.06	
862	ISO12185	883.1		0.23	
1059	ISO12185	882.9		-0.89	
1079	ISO12185	883.1		0.23	
1082	ISO12185	883.2		0.79	
1091	D4052	883.1		0.23	
1099	ISO12185	882.9		-0.89	
1135	ISO12185	883.1		0.23	
1161	ISO12185	883.16		0.56	
1201	ISO12185	883.0		-0.33	
1213	D4052	882.98		-0.45	
1290	ISO12185	883.0		-0.33	
1299	D4052	883.0		-0.33	
1316	D4052	883.0		-0.33	
1389	ISO12185	883.0		-0.33	
1397	ISO12185	883.0		-0.33	
1429	ISO12185	883.1		0.23	
1459	ISO1285	883.06		0.00	
1485	ISO12185	883.09		0.17	
1564	ISO12185	883.1		0.23	
1582		-----		-----	
1586	D4052	883.0		-0.33	
1634	ISO12185	883.026		-0.19	
1650	ISO12185	883.06		0.00	
1656	ISO12185	883.0		-0.33	
1706	ISO12185	883.1		0.23	
1710	ISO12185	883.1		0.23	
1721	ISO12185	883.1		0.23	
1739	ISO3675	883.33		1.51	
1744	D4052	883.16		0.56	
1769	D4052	882.833		-1.27	
1807	ISO12185	883.2		0.79	
1989		-----		-----	
6057	ISO12185	883.06		0.00	
6181	ISO12185	883.1		0.23	
6201	ISO12185	883.05	C	-0.05	first reported 0.88305 kg/m^3
6259	D4052	883.17		0.62	
6262		-----		-----	
6265	ISO12185	883.0		-0.33	
6276	ISO12185	884.3	R(0.01)	6.95	
6288		-----		-----	
6291	ISO12185	883.1		0.23	

normality	suspect
n	64
outliers	1
mean (n)	883.06
st.dev. (n)	0.084
R(calc.)	0.24
st.dev.(ISO12185:96)	0.179
R(ISO12185:96)	0.5

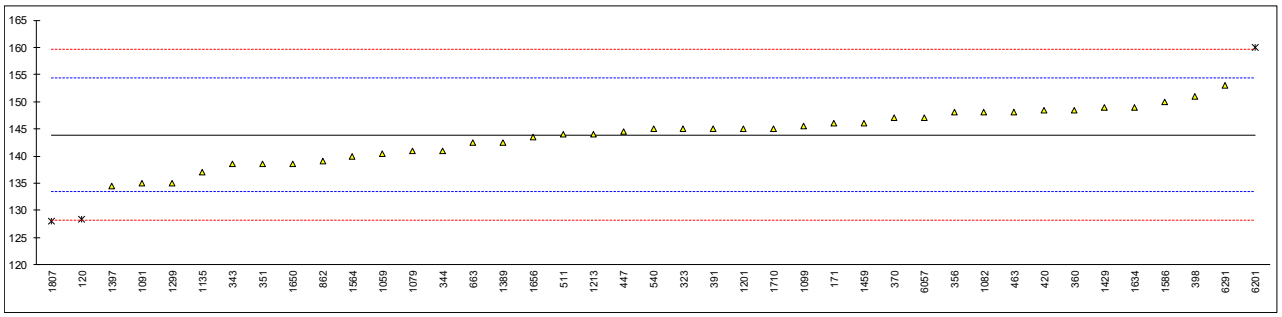


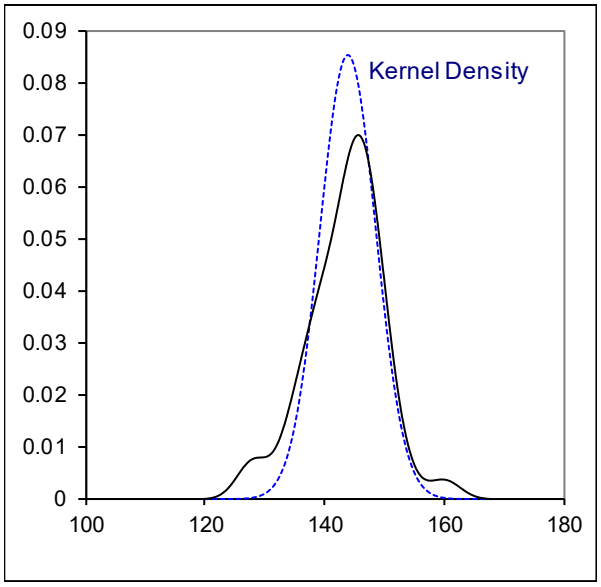


Determination of Flash Point, PMcc on sample #19185; results in °C

lab	method	value	mark	z(targ)	remarks
120	D93-C	128.3	R(0.05)	-2.98	
171	D93-C	146		0.40	
311		-----		-----	
312		-----		-----	
323	D93-C	145	C	0.21	first reported 165.0
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	ISO2719-A	138.5		-1.03	
344	D93-A	141		-0.56	
345		-----		-----	
351	ISO2719-C	138.50		-1.03	
356	D93-A	148.0		0.78	
360	ISO2719-C	148.5		0.87	
370	D93-C	147.0		0.59	
371		-----		-----	
373		-----		-----	
391	D93-C	145		0.21	
398	ISO2719-C	151		1.35	
420	ISO2719-C	148.5		0.87	
447	D93-C	144.5		0.11	
463	D93-C	148.0		0.78	
496		-----		-----	
511	D93-C	144		0.02	
540	D93-C	145.00		0.21	
663	D93-C	142.42		-0.29	
862	D93-C	139.0		-0.94	
1059	ISO2719-C	140.5		-0.65	
1079	D93-C	141.0		-0.56	
1082	ISO2719-C	148	C	0.78	first reported 165
1091	D93-C	135.0		-1.70	
1099	ISO2719-C	145.5		0.30	
1135	ISO2719-C	137.0		-1.32	
1161		-----		-----	
1201	D93-C	145.0		0.21	
1213	D93-C	144		0.02	
1290		-----		-----	
1299	D93-C	135.0		-1.70	
1316		-----		-----	
1389	D93-C	142.5		-0.27	
1397	ISO2719-C	134.5		-1.79	
1429	D93-C	149.0		0.97	
1459	ISO2719-A	146.0		0.40	
1485		-----		-----	
1564	D93-C	140		-0.75	
1582		-----		-----	
1586	D93-C	150.0		1.16	
1634	D93-C	149.0		0.97	
1650	D93-C	138.5		-1.03	
1656	ISO2719-C	143.5		-0.08	
1706		-----		-----	
1710	ISO2719-C	145		0.21	
1721		-----		-----	
1739		-----		-----	
1744		-----		-----	
1769		-----		-----	
1807	ISO2719-C	128.0	R(0.05)	-3.03	
1989		-----		-----	
6057	D93-C	147.0		0.59	
6181		-----		-----	
6201	D93-C	160	R(0.05)	3.06	
6259		-----		-----	
6262		-----		-----	
6265		-----		-----	
6276		-----		-----	
6288		-----		-----	
6291	D93-C	153.0		1.73	

normality	OK
n	38
outliers	3
mean (n)	143.92
st.dev. (n)	4.667
R(calc.)	13.07
st.dev.(D93-C:18)	5.250
R(D93-C:18)	14.7
Compare	
R(ISO2719-C:16)	14.7

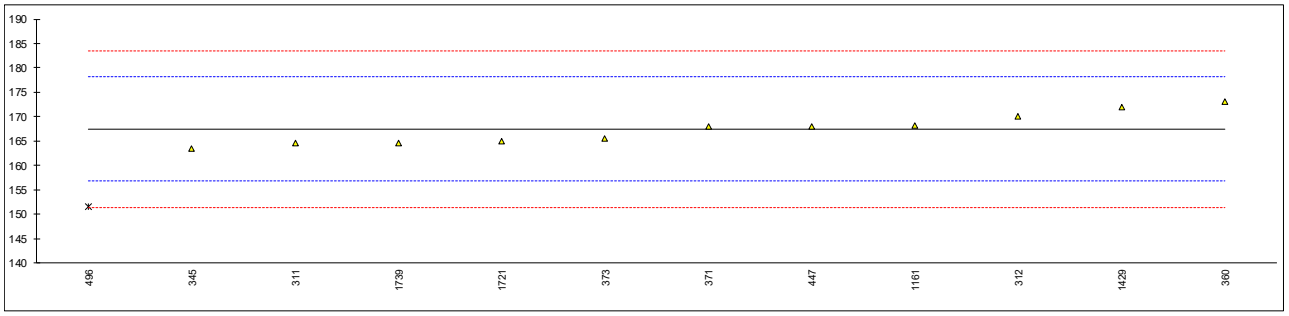


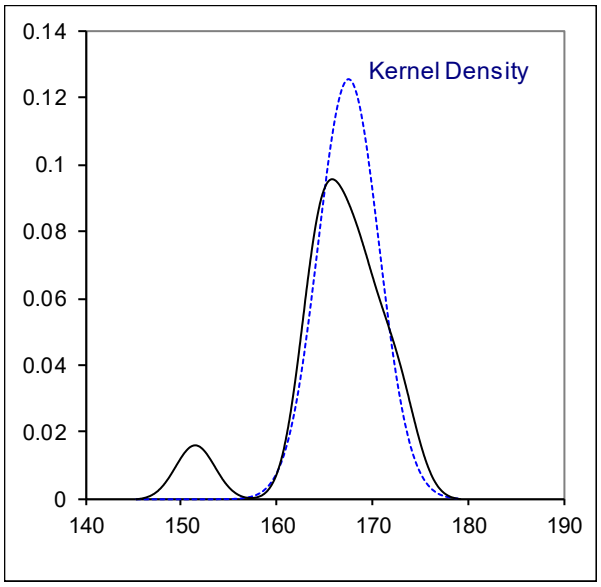


Determination of Flash Point, recc on sample #19185; results in °C

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	ISO3679	164.5		-0.56	
312	ISO3679	170	C	0.47	first reported 180
323		-----		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
343		-----		-----	
344		-----		-----	
345	ISO3679	163.5		-0.74	
351		-----		-----	
356		-----		-----	
360	ISO3679	173.0		1.03	
370		-----		-----	
371	ISO3679	168.0		0.10	
373	ISO3679	165.5		-0.37	
391		-----		-----	
398		-----		-----	
420		-----		-----	
447	IP523	168.0		0.10	
463		-----		-----	
496	ISO3679	151.5	D(0.01)	-2.98	
511		-----		-----	
540		-----		-----	
663		-----		-----	
862		-----		-----	
1059		-----		-----	
1079		-----		-----	
1082		-----		-----	
1091		-----		-----	
1099		-----		-----	
1135		-----		-----	
1161	ISO3679	168.2		0.13	
1201		-----		-----	
1213		-----		-----	
1290		-----		-----	
1299		-----		-----	
1316		-----		-----	
1389		-----		-----	
1397		-----		-----	
1429	ISO3679	172.0		0.84	
1459		-----		-----	
1485		-----		-----	
1564		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1650		-----		-----	
1656		-----		-----	
1706		-----		-----	
1710		-----		-----	
1721	ISO3679	165.0		-0.46	
1739	ISO3679	164.65		-0.53	
1744		-----		-----	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
6057		-----		-----	
6181		-----		-----	
6201		-----		-----	
6259		-----		-----	
6262		-----		-----	
6265		-----		-----	
6276		-----		-----	
6288		-----		-----	
6291		-----		-----	

normality	OK
n	11
outliers	1
mean (n)	167.49
st.dev. (n)	3.180
R(calc.)	8.90
st.dev.(ISO3679:15)	5.357
R(ISO3679:15)	15

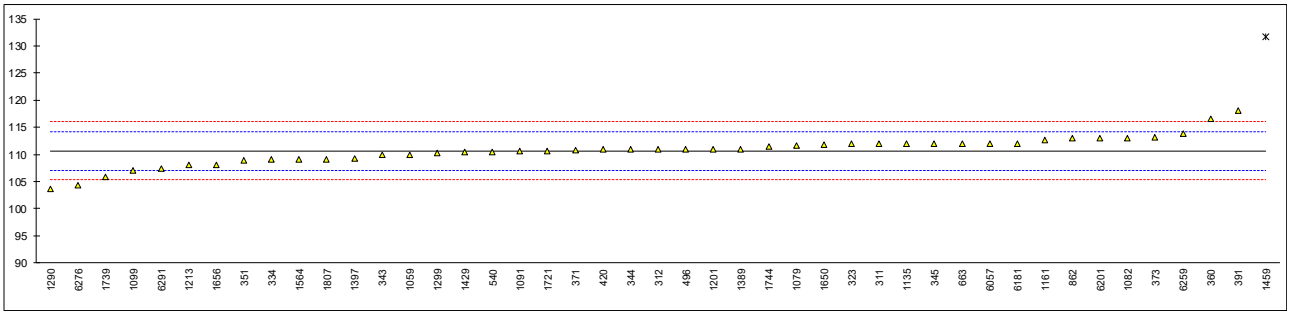


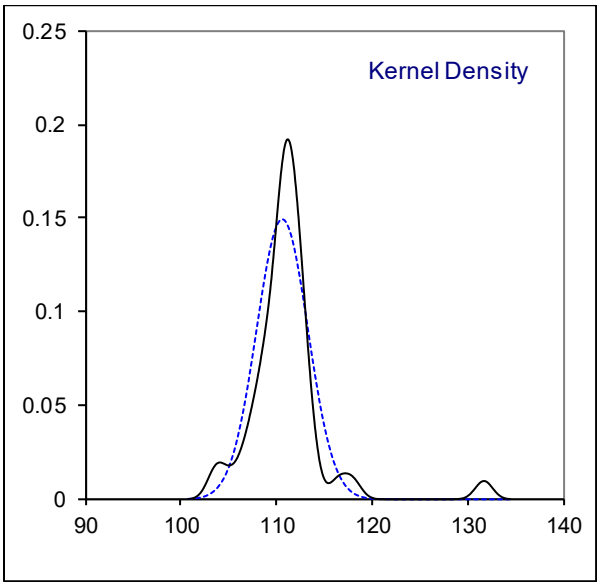


Determination of Iodine Value conform on sample #19185; results in g I_2/100g

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14111	112		0.74	
312	EN14111	111.0		0.18	
323	EN14111	112		0.74	
333		-----		-----	
334	EN14111	109	C	-0.94	first reported 98
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	EN14111	110.0		-0.38	
344	EN14111	111		0.18	
345	EN14111	112		0.74	
351	EN14111	108.9	C	-1.00	first reported 103.7
356		-----		-----	
360	EN14111	116.5		3.26	
370		-----		-----	
371	EN14111	110.8		0.07	
373	EN14111	113.2		1.41	
391	EN14111	118		4.10	
398		-----		-----	
420	EN14111	110.9		0.12	
447		-----		-----	
463		-----		-----	
496	EN14111	111		0.18	
511		-----		-----	
540	EN14111	110.5		-0.10	
663	EN14111	112.0		0.74	
862	EN14111	113		1.30	
1059	EN14111	110		-0.38	
1079	EN14111	111.55		0.49	
1082	ISO3961	113.05		1.33	
1091	EN14111	110.6		-0.05	
1099	EN14111	107		-2.06	
1135	EN14111	112		0.74	
1161	EN14111	112.6		1.07	
1201	EN14111	111		0.18	
1213	EN14111	108		-1.50	
1290	EN14111	103.59		-3.97	
1299	EN14111	110.2		-0.27	
1316		-----		-----	
1389	EN14111	111		0.18	
1397	EN16300	109.2		-0.83	
1429	EN14111	110.4		-0.16	
1459	EN16300	131.7	R(0.01)	11.77	
1485		-----		-----	
1564	EN14111	109		-0.94	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1650	EN14111	111.8	C	0.63	first reported 103.47
1656	EN14111	108		-1.50	
1706		-----		-----	
1710		-----		-----	
1721	EN14111	110.6		-0.05	
1739	EN14111	105.8		-2.73	
1744	EN14111	111.385		0.39	
1769		-----		-----	
1807	EN16300	109	C	-0.94	first reported 97
1989		-----		-----	
6057	EN14111	112		0.74	
6181	EN14111	112		0.74	
6201	EN14111	113		1.30	
6259	EN14111	113.84		1.77	
6262		-----		-----	
6265		-----		-----	
6276	EN14111	104.3	C	-3.57	first reported 104.2
6288		-----		-----	
6291	EN16300	107.3		-1.89	

normality	suspect
n	44
outliers	1
mean (n)	110.68
st.dev. (n)	2.678
R(calc.)	7.50
st.dev.(EN14111:03)	1.786
R(EN14111:03)	5
Compare	
R(EN16300:12)	6.99

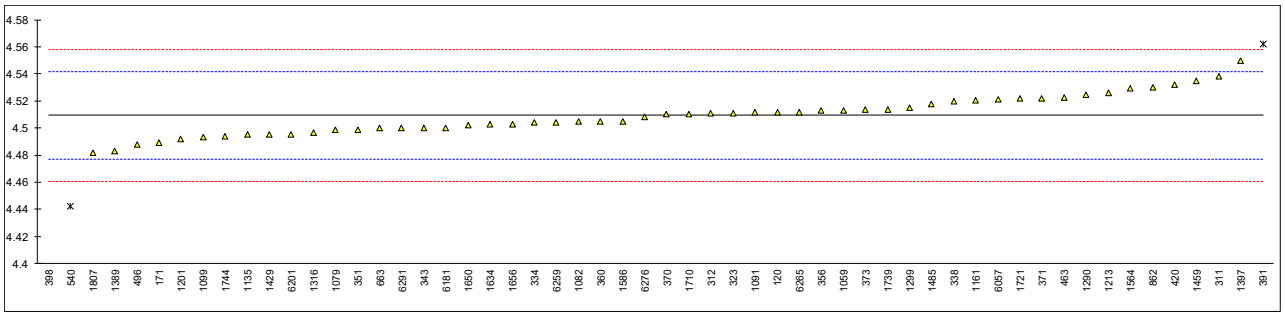


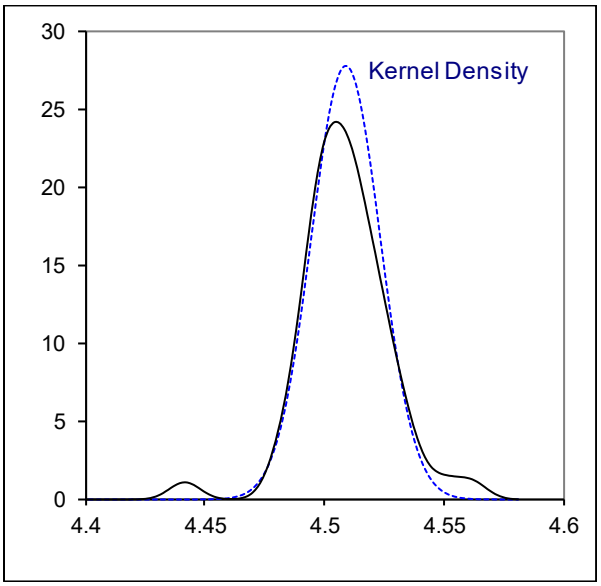


Determination of Kinematic Viscosity at 40°C on sample #19185; results in mm^2/s

lab	method	value	mark	z(targ)	remarks
120	D445	4.5115		0.13	
171	D445	4.489		-1.26	
311	ISO3104	4.538		1.78	
312	ISO3104	4.511		0.10	
323	ISO3104	4.511		0.10	
333		-----		-----	
334	ISO3104	4.504		-0.33	
335		-----		-----	
336		-----		-----	
338	ISO3104	4.520	C	0.66	first reported 4.431
343	ISO3104	4.500		-0.58	
344		-----		-----	
345		-----		-----	
351	ISO3104	4.4990		-0.64	
356	ISO3104	4.513		0.23	
360	D445	4.5050		-0.27	
370	ISO3104	4.510		0.04	
371	ISO3104	4.5221		0.79	
373	ISO3104	4.5138		0.28	
391	D445	4.562	R(0.01)	3.26	
398	ISO3104	4.05608	C,R(0.01)	-28.09	first reported 4.5608
420	ISO3104	4.53206		1.41	
447		-----		-----	
463	D7042	4.5225		0.81	
496	ISO3104	4.488		-1.32	
511		-----		-----	
540	ISO3104	4.4420	R(0.01)	-4.17	
663	D445	4.4998		-0.59	
862	ISO3016	4.530		1.28	
1059	ISO3104	4.513		0.23	
1079	ISO3104	4.499		-0.64	
1082	ISO3104	4.5046		-0.29	
1091	ISO3104	4.5114		0.13	
1099	ISO3104	4.493		-1.01	
1135	ISO3104	4.495		-0.89	
1161	ISO3104	4.5208		0.71	
1201	ISO3104	4.492		-1.08	
1213	D445	4.526		1.03	
1290	D7042	4.5249		0.96	
1299	D445	4.515		0.35	
1316	ISO3104	4.497		-0.77	
1389	D445	4.483		-1.63	
1397	D7042	4.550		2.52	
1429	ISO3104	4.495		-0.89	
1459	D7042	4.535		1.59	
1485	D445	4.5180		0.54	
1564	EN16896	4.529	C	1.22	first reported 4.602
1582		-----		-----	
1586	D445	4.505		-0.27	
1634	ISO3104	4.503		-0.39	
1650	D445	4.5024		-0.43	
1656	ISO3104	4.503		-0.39	
1706		-----		-----	
1710	ISO3104	4.510		0.04	
1721	ISO3104	4.5217		0.76	
1739	ISO3104	4.5139		0.28	
1744	D445	4.4942		-0.94	
1769		-----		-----	
1807	ISO3104	4.482		-1.70	
1989		-----		-----	
6057	ISO3104	4.521		0.72	
6181	ISO3104	4.50		-0.58	
6201	ISO3104	4.495		-0.89	
6259	D445	4.504		-0.33	
6262		-----		-----	
6265	EN16896	4.5115		0.13	
6276		4.508		-0.08	
6288		-----		-----	
6291	ISO3104	4.4998		-0.59	

		Only ISO3104	Only D445
normality	OK	OK	OK
n	53	33	12
outliers	3	2	1
mean (n)	4.5094	4.5070	4.5044
st.dev. (n)	0.01437	0.01261	0.01221
R(calc.)	0.0402	0.0353	0.0342
st.dev.(ISO3104:94)	0.01613	0.01613	0.01613
R(ISO3104:94)	0.0452	0.0452	---
Compare			
R(D445:19)	0.0550	---	0.0550

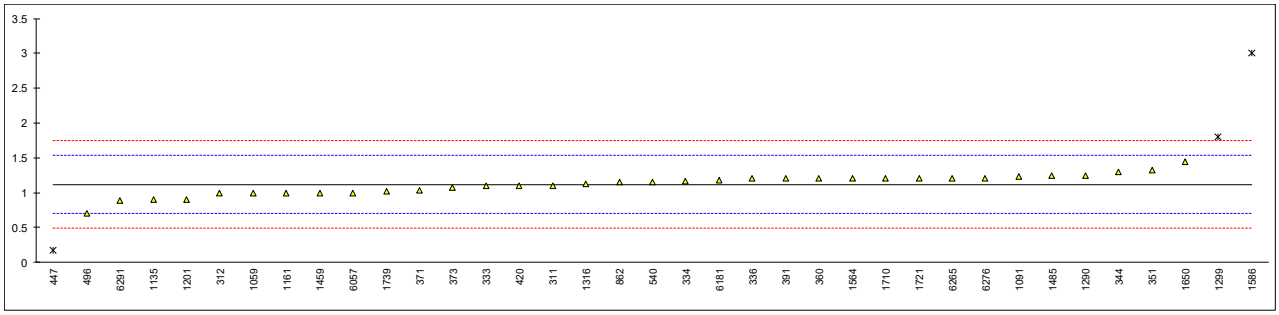


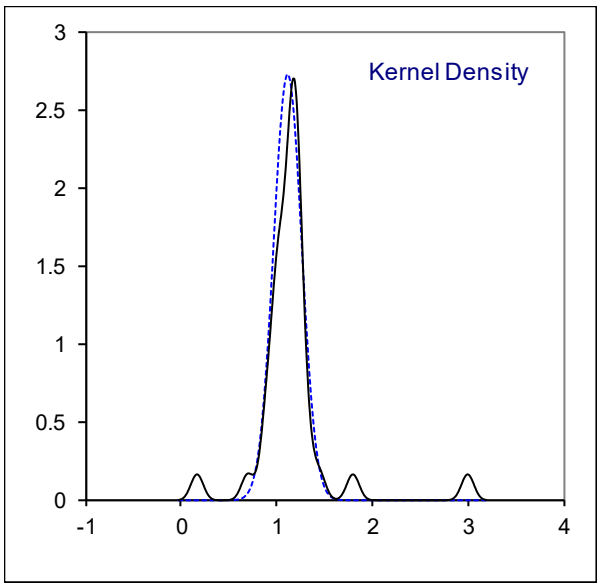


Determination of Oxidation Stability Induction period on sample #19185; results in hours

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN15751	1.1		-0.08	
312	EN15751	1.0		-0.56	
323		-----		-----	
333	EN15751	1.1		-0.08	
334	EN14112	1.16		0.20	
335		-----		-----	
336	EN15751	1.2		0.39	
338		-----		-----	
343	EN15751	<1.0		-----	
344	EN14112	1.3		0.87	
345		-----		-----	
351	EN15751	1.33		1.02	
356		-----		-----	
360	EN14112	1.2		0.39	
370		-----		-----	
371	EN14112	1.04		-0.37	
373	EN14112	1.08		-0.18	
391	EN14112	1.2		0.39	
398		-----		-----	
420	EN15751	1.1		-0.08	
447	EN15751	0.17	R(0.01)	-4.53	
463		-----		-----	
496	EN15751	0.7		-2.00	
511		-----		-----	
540	EN14112	1.15		0.16	
663		-----		-----	
862	EN14112	1.15		0.16	
1059	EN15751	1.0		-0.56	
1079		-----		-----	
1082		-----		-----	
1091	EN14112	1.23		0.54	
1099		-----		-----	
1135	EN14112	0.9		-1.04	
1161	EN14112	1.0		-0.56	
1201	EN15751	0.9		-1.04	
1213		-----		-----	
1290	EN14112	1.25		0.63	
1299	EN15751	1.8	R(0.01)	3.26	
1316	EN14112	1.13		0.06	
1389		-----		-----	
1397		-----		-----	
1429		-----		-----	
1459	EN15751	1		-0.56	
1485	EN14112	1.24		0.59	
1564	EN14112	1.2		0.39	
1582		-----		-----	
1586	EN15751	3.0	R(0.01)	9.00	
1634		-----		-----	
1650	EN15751	1.45		1.59	
1656	EN14112	<1		-----	
1706		-----		-----	
1710	EN15751	1.2		0.39	
1721	EN14112	1.2	C	0.39	first reported 0.6
1739	EN14112	1.02		-0.47	
1744		-----		-----	
1769		-----		-----	
1807	EN15751	<0.1		<-4.87	Possibly a false negative test result?
1989		-----		-----	
6057	EN14112	1.0		-0.56	
6181	EN15751	1.175		0.28	
6201		-----		-----	
6259		-----		-----	
6262		-----		-----	
6265	EN15751	1.2		0.39	
6276	EN15751	1.2		0.39	
6288		-----		-----	
6291	EN15751	0.89		-1.09	

normality	suspect
n	34
outliers	3
mean (n)	1.118
st.dev. (n)	0.1460
R(calc.)	0.409
st.dev.(EN15751:14)	0.2091
R(EN15751:14)	0.585

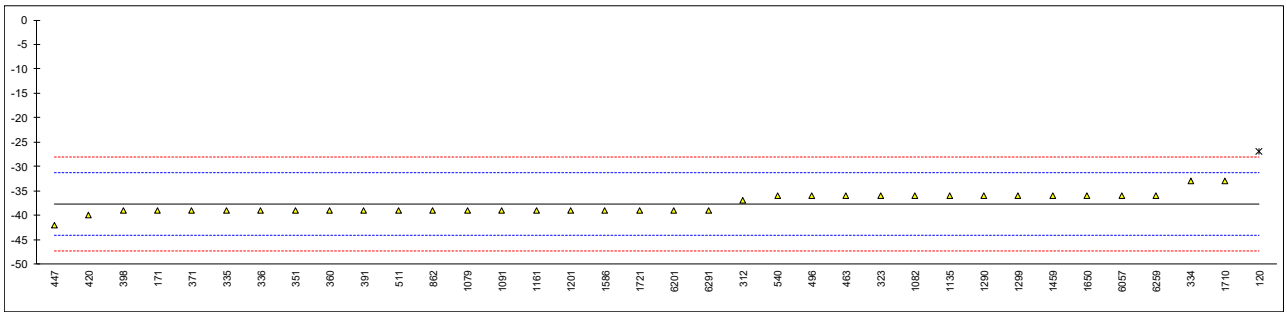


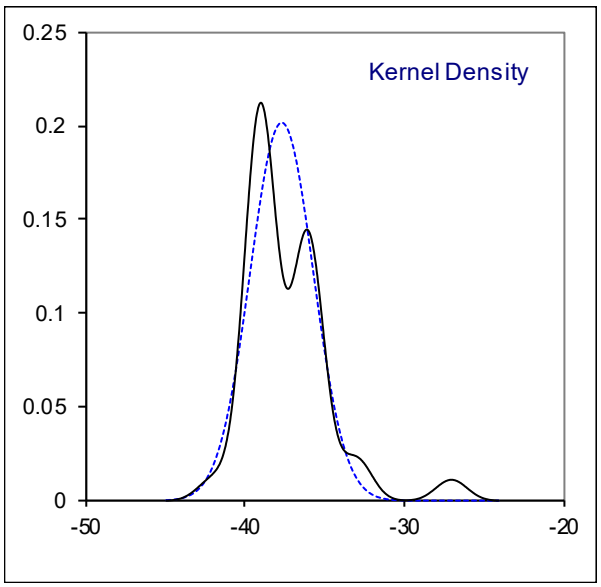


Determination of Pour Point on sample #19185; results in °C

lab	method	value	mark	z(targ)	remarks
120	D97	-27	C,R(0.01)	3.32	first reported -15
171	D5950	-39		-0.41	
311		-----		-----	
312	ISO3016	-37		0.21	
323	ISO3016	-36		0.52	
333		-----		-----	
334	ISO3016	-33		1.46	
335	ISO3016	-39		-0.41	
336	ISO3016	-39		-0.41	
338		-----		-----	
343		-----		-----	
344		-----		-----	
345		-----		-----	
351	D6749	-39.0		-0.41	
356	ISO3016	Below -39		-----	
360	ISO3016	-39		-0.41	
370		-----		-----	
371	ISO3016	-39		-0.41	
373		-----		-----	
391	D97	-39		-0.41	
398	ISO3016	-39		-0.41	
420	ISO3016	-40		-0.72	
447	IP15	-42		-1.34	
463	ISO3016	-36		0.52	
496	ISO3016	-36		0.52	
511	D97	-39		-0.41	
540	D5950	-36		0.52	
663	D97	<-36		-----	
862	ISO3016	-39		-0.41	
1059		-----		-----	
1079	D5950	-39		-0.41	
1082	D5950	-36		0.52	
1091	ISO3016	-39		-0.41	
1099		-----		-----	
1135	ISO3016	-36		0.52	
1161	ISO3016	-39		-0.41	
1201	ISO3016	-39		-0.41	
1213	D97	<-42		-----	
1290	ISO3016	-36		0.52	
1299	D97	-36		0.52	
1316		-----		-----	
1389	D97	<-21		-----	
1397		-----		-----	
1429	ISO3016	< -30		-----	
1459	In house	-36		0.52	
1485		-----		-----	
1564		-----		-----	
1582		-----		-----	
1586	D97	-39		-0.41	
1634		-----		-----	
1650	D5950	-36		0.52	
1656		-----		-----	
1706		-----		-----	
1710	ISO3016	-33		1.46	
1721	D5950	-39		-0.41	
1739		-----		-----	
1744		-----		-----	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
6057	ISO3016	-36		0.52	
6181		-----		-----	
6201	ISO3016	-39		-0.41	
6259	D5950	-36		0.52	
6262		-----		-----	
6265		-----		-----	
6276		-----		-----	
6288		-----		-----	
6291	ISO3016	-39		-0.41	

normality	OK
n	35
outliers	1
mean (n)	-37.7
st.dev. (n)	1.98
R(calc.)	5.5
st.dev.(ISO3016:19)	3.21
R(ISO3016:19)	9.0





Determination of Sulfated Ash on sample #19185; results in %M/M

lab	method	value	mark	z(targ)	remarks
120	D874	0.000		-----	
171		-----		-----	
311		-----		-----	
312		-----		-----	
323	D874	< 0.005		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	ISO3987	<0.005		-----	
344	D874	<0.05		-----	
345	ISO3987	<0.005		-----	
351	ISO6245	0.0027		-----	
356		-----		-----	
360	ISO3987	0.001		-----	
370	ISO3987	less than 0.001		-----	
371	ISO3987	0.0005		-----	
373		-----		-----	
391		-----		-----	
398		-----		-----	
420	ISO3987	<0,005		-----	
447	D874	0.001		-----	
463		-----		-----	
496	D874	0.000		-----	
511	D874	<0.005		-----	
540	ISO3987	<0.005		-----	
663	D874	0.001		-----	
862	D874	<0.005		-----	
1059		-----		-----	
1079	D874	0.0014		-----	
1082	D874	0.00136		-----	
1091		-----		-----	
1099		-----		-----	
1135	ISO3987	<0.005		-----	
1161	ISO3987	0.00017		-----	
1201	ISO3987	0		-----	
1213		-----		-----	
1290		-----		-----	
1299	ISO3987	<0.005		-----	
1316		-----		-----	
1389	ISO3987	<0.005		-----	
1397		-----		-----	
1429	D874	0.004		-----	
1459	ISO3987	<0.001		-----	
1485		-----		-----	
1564		-----		-----	
1582		-----		-----	
1586	D874	<0.005		-----	
1634		-----		-----	
1650	D874	0.0004		-----	
1656	ISO3987	<0.01		-----	
1706		-----		-----	
1710	ISO3987	0.001		-----	
1721	ISO3987	<0,005		-----	
1739	ISO3987	0,000 [<LQ]		-----	
1744		-----		-----	
1769		-----		-----	
1807	ISO3987	<0.005		-----	
1989		-----		-----	
6057		-----		-----	
6181	ISO3987	0		-----	
6201	D874	<0.001		-----	
6259		-----		-----	
6262		-----		-----	
6265		-----		-----	
6276		-----		-----	
6288		-----		-----	
6291		-----		-----	
	n	32			
	mean (n)	<0.005			Application range ASTM D874:13a >0.005%M/M

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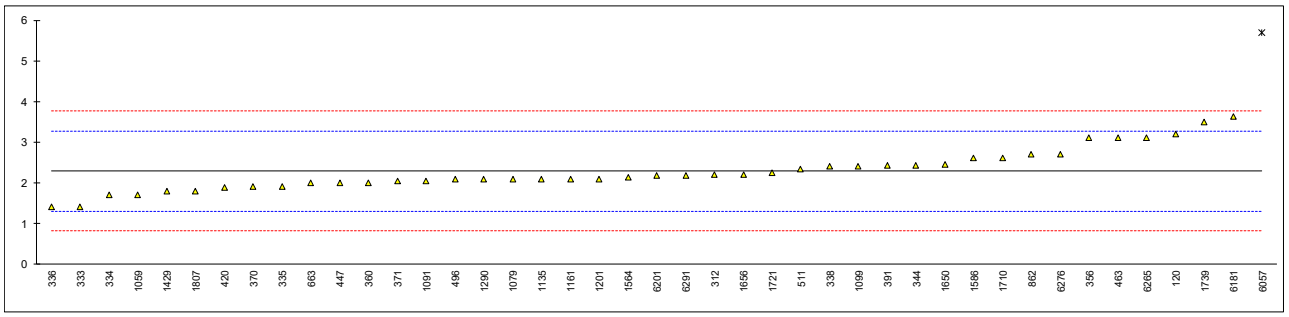
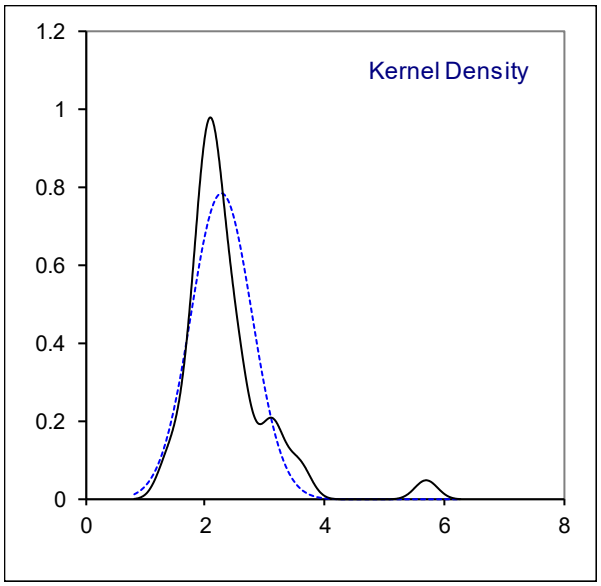
Determination of Sulfur on sample #19185; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120	D5453	3.2		1.86	
171		-----		-----	
311	ISO20846	<3		-----	
312	ISO20846	2.2		-0.17	
323		-----		-----	
333	ISO20846	1.4		-1.80	
334	ISO20846	1.7		-1.19	
335	ISO20846	1.9		-0.78	
336	ISO20846	1.4		-1.80	
338	ISO20846	2.4		0.23	
343	ISO20846	<3.0		-----	
344	ISO20846	2.43		0.29	
345	ISO20846	<3		-----	
351		-----		-----	
356	ISO20846	3.1		1.66	
360	D5453	2.0		-0.58	
370	ISO20846	1.9		-0.78	
371	ISO20846	2.05		-0.48	
373		-----		-----	
391	ISO20846	2.42		0.27	
398	ISO20846	<3		-----	
420	ISO20846	1.89		-0.80	
447	D5453	2.0		-0.58	
463	D5453	3.10		1.66	
496	ISO20846	2.08		-0.42	
511	D5453	2.335		0.10	
540	ISO20846	<3.0		-----	
663	D5453	2.00		-0.58	
862	ISO20846	2.7		0.84	
1059	ISO20846	1.7		-1.19	
1079	ISO20846	2.1		-0.38	
1082		-----		-----	
1091	D5453	2.05		-0.48	
1099	ISO20846	2.4		0.23	
1135	ISO20846	2.1		-0.38	
1161	ISO20846	2.1		-0.38	
1201	ISO20846	2.1		-0.38	
1213		-----		-----	
1290	EN14538	2.08		-0.42	
1299		-----		-----	
1316		-----		-----	
1389	ISO20846	<3		-----	
1397	ISO20846	<3,0		-----	
1429	ISO20846	1.80		-0.99	
1459	ISO20884	<5		-----	
1485		-----		-----	
1564	ISO20846	2.14		-0.30	
1582		-----		-----	
1586	D5453	2.6		0.64	
1634		-----		-----	
1650	ISO20846	2.46		0.36	
1656	ISO20846	2.2		-0.17	
1706		-----		-----	
1710	ISO20846	2.6		0.64	
1721	ISO20846	2.25		-0.07	
1739	ISO13032	3.5	C	2.47	first reported 4.8
1744		-----		-----	
1769		-----		-----	
1807	ISO20846	1.8		-0.99	
1989		-----		-----	
6057	ISO20846	5.7	R(0.01)	6.95	
6181	ISO20846	3.635		2.75	
6201	ISO20846	2.17		-0.23	
6259		-----		-----	
6262		-----		-----	
6265	ISO13032	3.1		1.66	
6276	ISO20846	2.7	C	0.84	first reported 3.69
6288		-----		-----	
6291	ISO20846	2.184		-0.21	

normality	OK	
n	42	
outliers	1	
mean (n)	2.285	
st.dev. (n)	0.5080	
R(calc.)	1.422	
st.dev.(ISO20846:19)	0.4914	
R(ISO20846:19)	1.376	Application range: 3 – 500 mg.kg
Compare		
R(D5453:19a)	1.077	Application range: 1 – 8000 mg/kg

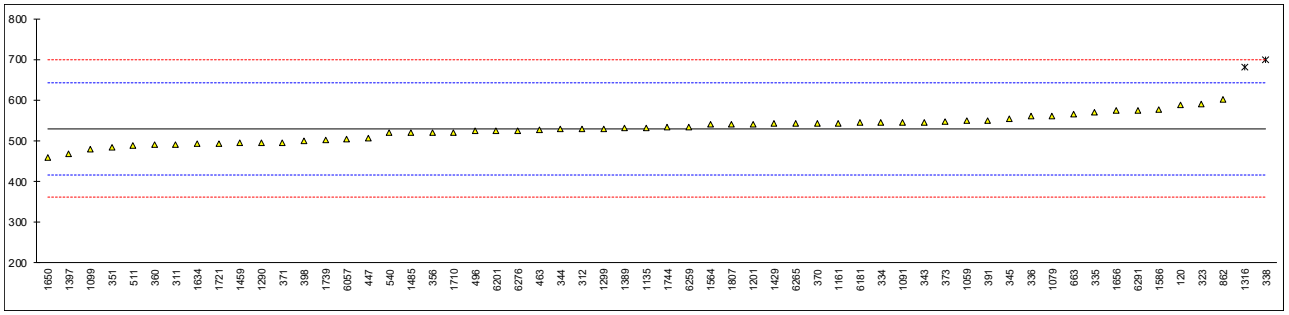


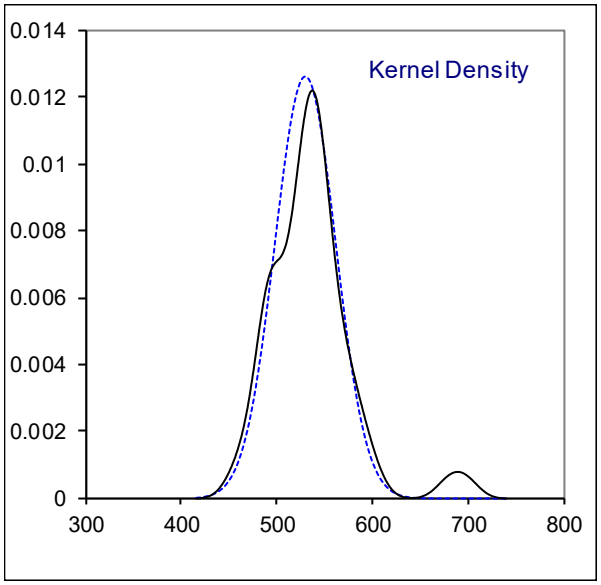


Determination of Water on sample #19185; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120	E1064	587.5		1.02	
171		-----		-----	
311	ISO12937	490		-0.71	
312	ISO12937	530		0.00	
323	ISO12937	590		1.06	
333		-----		-----	
334	ISO12937	545		0.27	
335	ISO12937	570		0.71	
336	ISO12937	560		0.53	
338	ISO12937	698	R(0.01)	2.97	
343	ISO12937	546		0.28	
344	ISO12937	530		0.00	
345	ISO12937	553		0.41	
351	ISO12937	483.0		-0.83	
356	ISO12937	520		-0.18	
360	ISO12937	489.8		-0.71	
370	ISO12937	543		0.23	
371	ISO12937	494.7		-0.62	
373	ISO12937	547		0.30	
391	ISO12937	550		0.35	
398	ISO12937	500		-0.53	
420		-----		-----	
447	IP438	507		-0.41	
463	ISO12937	527		-0.05	
496	D6304-A	525		-0.09	
511	D6304-A	488.9		-0.73	
540	ISO12937	519.5		-0.18	
663	ISO12937	566.3		0.64	
862	ISO12937	601		1.26	
1059	ISO12937	550		0.35	
1079	ISO12937	561.1		0.55	
1082		-----		-----	
1091	ISO12937	546		0.28	
1099	ISO12937	480		-0.88	
1135	ISO12937	532		0.04	
1161	ISO12937	543.644		0.24	
1201	ISO12937	541		0.20	
1213		-----		-----	
1290	ISO12937	494.49		-0.63	
1299	ISO12937	530		0.00	
1316	ISO12937	680	R(0.01)	2.65	
1389	ISO12937	531	C	0.02	first reported 331
1397	ISO12937	467		-1.11	
1429	ISO12937	542		0.21	
1459	ISO12937	494		-0.64	
1485	ISO12937	519.8		-0.18	
1564	ISO12937	540		0.18	
1582		-----		-----	
1586	ISO12937	577		0.83	
1634	ISO12937	493.1		-0.65	
1650	ISO12937	458.0		-1.27	
1656	ISO12937	574		0.78	
1706		-----		-----	
1710	ISO12937	521		-0.16	
1721	ISO12937	493.1		-0.65	
1739	ISO12937	500.9		-0.51	
1744	E203	533		0.05	
1769		-----		-----	
1807	ISO12937	540		0.18	
1989		-----		-----	
6057	ISO12937	504		-0.46	
6181	ISO12937	544.4		0.26	
6201	ISO12937	525		-0.09	
6259	ISO12937	534.472		0.08	
6262		-----		-----	
6265	ISO12937	542.5		0.22	
6276	ISO12937	525.61		-0.08	
6288		-----		-----	
6291	ISO12937	575		0.80	

normality	OK
n	56
outliers	2
mean (n)	529.94
st.dev. (n)	31.678
R(calc.)	88.70
st.dev.(ISO12937:00)	56.540
R(ISO12937:00)	158.31





Determination of Water and Sediment on sample #19185; results in %V/V

lab	method	value	mark	z(targ)	remarks
120	D2709	<0.01		-----	
171		-----		-----	
311		-----		-----	
312		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
343		-----		-----	
344		-----		-----	
345		-----		-----	
351		-----		-----	
356	D2709	Below 0.05		-----	
360		-----		-----	
370		-----		-----	
371		-----		-----	
373		-----		-----	
391		-----		-----	
398		-----		-----	
420		-----		-----	
447		-----		-----	
463	D2709	<0,005		-----	
496		-----		-----	
511		-----		-----	
540	D2709	<0.05		-----	
663	D2709	<0.01		-----	
862		-----		-----	
1059	D2709	<0,05		-----	
1079		-----		-----	
1082		-----		-----	
1091		-----		-----	
1099		-----		-----	
1135		-----		-----	
1161		-----		-----	
1201		-----		-----	
1213		-----		-----	
1290		-----		-----	
1299		-----		-----	
1316		-----		-----	
1389	D2709	<0.025		-----	
1397		-----		-----	
1429		-----		-----	
1459		-----		-----	
1485		-----		-----	
1564		-----		-----	
1582		-----		-----	
1586	D2709	0.01		-----	
1634		-----		-----	
1650		-----		-----	
1656		-----		-----	
1706		-----		-----	
1710		-----		-----	
1721		-----		-----	
1739		-----		-----	
1744		-----		-----	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
6057		-----		-----	
6181		-----		-----	
6201	D2709	<0.1		-----	
6259		-----		-----	
6262		-----		-----	
6265		-----		-----	
6276		-----		-----	
6288		-----		-----	
6291	D2709	0		-----	
	n	9			
	mean (n)	<0.05			

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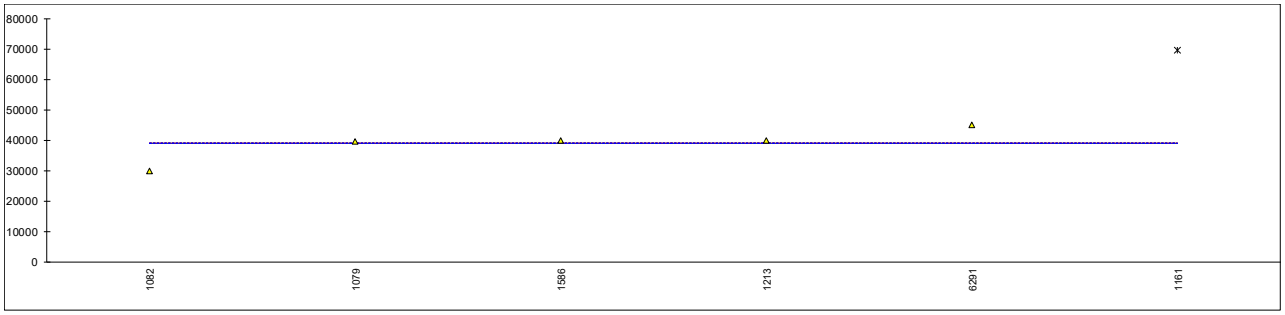
Determination of Calorific Value on sample #19185; results in kJ/kg

lab	method	Gross at const, vol.	mark	z(targ)	Net at const. vol.	Net at const. press
120		-----		-----	-----	-----
171		-----		-----	-----	-----
311		-----		-----	-----	-----
312		-----		-----	-----	-----
323		-----		-----	-----	-----
333		-----		-----	-----	-----
334		-----		-----	-----	-----
335		-----		-----	-----	-----
336		-----		-----	-----	-----
338		-----		-----	-----	-----
343		-----		-----	-----	-----
344		-----		-----	-----	-----
345		-----		-----	-----	-----
351		-----		-----	-----	-----
356		-----		-----	-----	-----
360		-----		-----	-----	-----
370		-----		-----	-----	-----
371		-----		-----	-----	-----
373		-----		-----	-----	-----
391		-----		-----	-----	-----
398		-----		-----	-----	-----
420		-----		-----	-----	-----
447		-----		-----	-----	-----
463		-----		-----	-----	-----
496		-----		-----	-----	-----
511		-----		-----	-----	-----
540		-----		-----	-----	-----
663		-----		-----	-----	-----
862		-----		-----	-----	-----
1059		-----		-----	-----	-----
1079	D240	39765.5		-----	37185	-----
1082	D240	29960.6	C	-----	-----	-----
1091		-----		-----	-----	-----
1099		-----		-----	-----	-----
1135		-----		-----	-----	-----
1161	DIN51900-2	69500	G(0.05)	-----	67080	-----
1201		-----		-----	-----	-----
1213	D240	40005	C	-----	-----	-----
1290		-----		-----	-----	-----
1299		-----		-----	-----	-----
1316		-----		-----	-----	-----
1389		-----		-----	-----	-----
1397		-----		-----	-----	-----
1429		-----		-----	-----	-----
1459		-----		-----	-----	-----
1485		-----		-----	-----	-----
1564		-----		-----	-----	-----
1582		-----		-----	-----	-----
1586	DIN51900-1	39987		-----	-----	-----
1634		-----		-----	-----	-----
1650		-----		-----	-----	-----
1656		-----		-----	-----	-----
1706		-----		-----	-----	-----
1710		-----		-----	-----	-----
1721		-----		-----	-----	-----
1739		-----		-----	-----	-----
1744		-----		-----	-----	-----
1769		-----		-----	-----	-----
1807		-----		-----	-----	-----
1989		-----		-----	-----	-----
6057		-----		-----	-----	-----
6181		-----		-----	-----	-----
6201		-----		-----	-----	-----
6259		-----		-----	-----	-----
6262		-----		-----	-----	-----
6265		-----		-----	-----	-----
6276		-----		-----	-----	-----
6288		-----		-----	-----	-----
6291		45065		-----	-----	-----

normality	unknown
n	5
outliers	1
mean (n)	38957
st.dev. (n)	5501
R(calc.)	15404
st.dev.(D240:19)	(143)
R(D240:19)	(400)

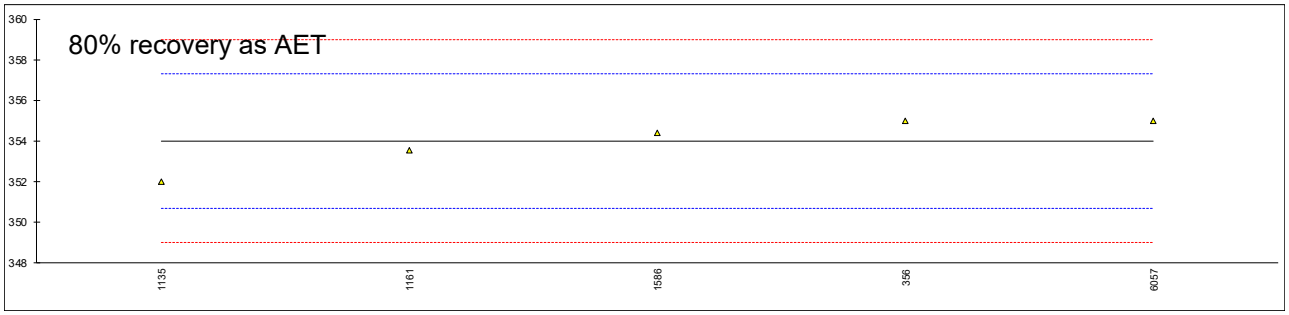
Lab 1082 first reported 39.9606 kJ/kg
Lab 1213 first reported 40.005 kJ/kg
Lab 6291 possibly a unit error, reported 45.065

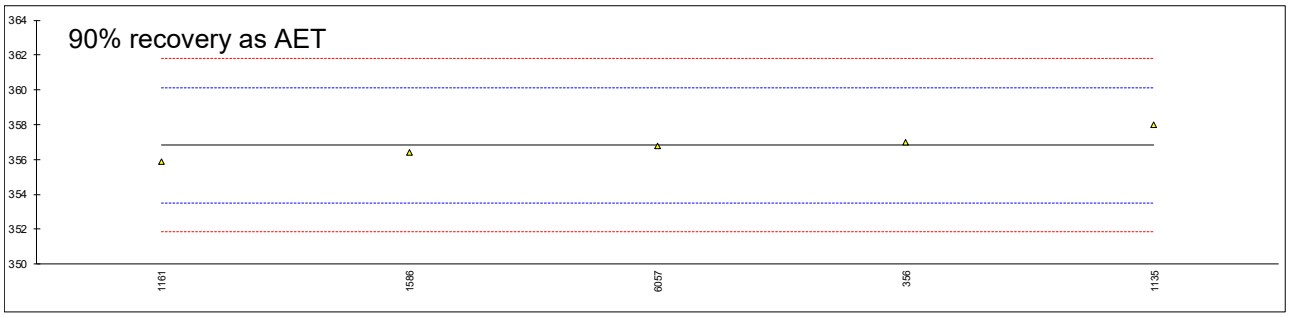


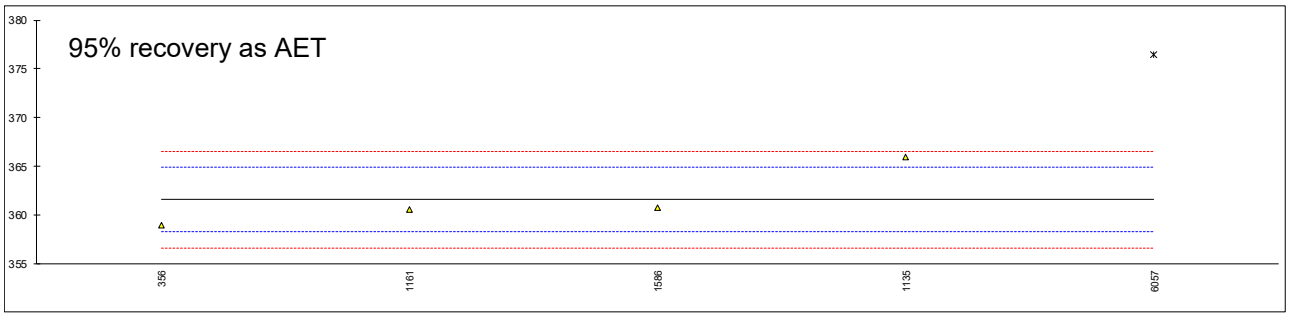
Determination of Distillation at 10 mmHg, % recovered as AET on sample #19185; results in °C

lab	method	80%rec.	mark	z(targ)	90%rec.	mark	z(targ)	95%rec.	mark	z(targ)
120		-----		-----	-----		-----	-----		-----
171		-----		-----	-----		-----	-----		-----
311		-----		-----	-----		-----	-----		-----
312		-----		-----	-----		-----	-----		-----
323		-----		-----	-----		-----	-----		-----
333		-----		-----	-----		-----	-----		-----
334		-----		-----	-----		-----	-----		-----
335		-----		-----	-----		-----	-----		-----
336		-----		-----	-----		-----	-----		-----
338		-----		-----	-----		-----	-----		-----
343		-----		-----	-----		-----	-----		-----
344		-----		-----	-----		-----	-----		-----
345		-----		-----	-----		-----	-----		-----
351		-----		-----	-----		-----	-----		-----
356		355		0.61	357		0.11	359		-1.57
360		-----		-----	-----		-----	-----		-----
370		-----		-----	-----		-----	-----		-----
371		-----		-----	-----		-----	-----		-----
373		-----		-----	-----		-----	-----		-----
391		-----		-----	-----		-----	-----		-----
398		-----		-----	-----		-----	-----		-----
420		-----		-----	-----		-----	-----		-----
447		-----		-----	-----		-----	-----		-----
463		-----		-----	-----		-----	-----		-----
496		-----		-----	-----		-----	-----		-----
511		-----		-----	-----		-----	-----		-----
540		-----		-----	-----		-----	-----		-----
663		-----		-----	-----		-----	-----		-----
862		-----		-----	-----		-----	-----		-----
1059		-----		-----	-----		-----	-----		-----
1079		-----		-----	-----		-----	-----		-----
1082		-----		-----	-----		-----	-----		-----
1091		-----		-----	-----		-----	-----		-----
1099		-----		-----	-----		-----	-----		-----
1135		352		-1.20	358		0.72	366		2.66
1161		353.53		-0.28	355.87		-0.57	360.59		-0.61
1201		-----		-----	-----		-----	-----		-----
1213		-----		-----	-----		-----	-----		-----
1290		-----		-----	-----		-----	-----		-----
1299		-----		-----	-----		-----	-----		-----
1316		-----		-----	-----		-----	-----		-----
1389		-----		-----	-----		-----	-----		-----
1397		-----		-----	-----		-----	-----		-----
1429		-----		-----	-----		-----	-----		-----
1459		-----		-----	-----		-----	-----		-----
1485		-----		-----	-----		-----	-----		-----
1564		-----		-----	-----		-----	-----		-----
1582		-----		-----	-----		-----	-----		-----
1586		354.4		0.25	356.4		-0.25	360.8		-0.48
1634		-----		-----	-----		-----	-----		-----
1650		-----		-----	-----		-----	-----		-----
1656		-----		-----	-----		-----	-----		-----
1706		-----		-----	-----		-----	-----		-----
1710		-----		-----	-----		-----	-----		-----
1721		-----		-----	-----		-----	-----		-----
1739		-----		-----	-----		-----	-----		-----
1744		-----		-----	-----		-----	-----		-----
1769		-----		-----	-----		-----	-----		-----
1807		-----		-----	-----		-----	-----		-----
1989		-----		-----	-----		-----	-----		-----
6057		355.0		0.61	356.8		-0.01	376.5	D(0.01)	8.99
6181		-----		-----	-----		-----	-----		-----
6201		-----		-----	-----		-----	-----		-----
6259		-----		-----	-----		-----	-----		-----
6262		-----		-----	-----		-----	-----		-----
6265		-----		-----	-----		-----	-----		-----
6276		-----		-----	-----		-----	-----		-----
6288		-----		-----	-----		-----	-----		-----
6291		-----		-----	-----		-----	-----		-----

normality	unknown	unknown	unknown
n	5	5	4
outliers	0	0	1
mean (n)	353.99	356.81	361.60
st.dev. (n)	1.263	0.791	3.043
R(calc.)	3.54	2.22	8.52
st.dev.(D1160:18)	1.657	1.657	1.657
R(D1160:18)	4.64	4.64	4.64



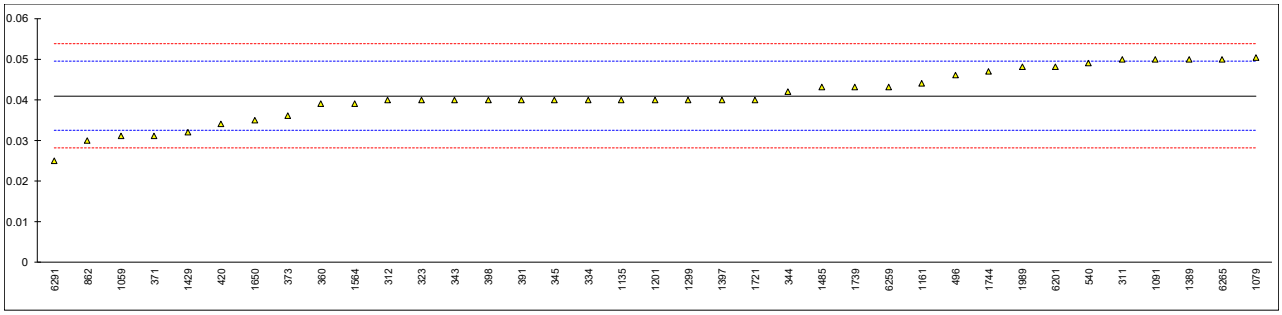


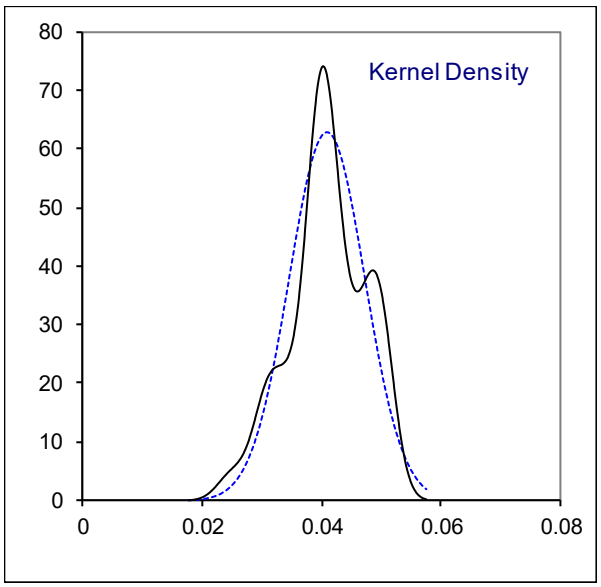


Determination of Methanol on sample #19185; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14110	0.05		2.10	
312	EN14110	0.04		-0.22	
323	EN14110	0.04		-0.22	
333		-----		-----	
334	EN14110	0.04		-0.22	
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	EN14110	0.04		-0.22	
344	EN14110	0.042		0.24	
345	EN14110	0.04		-0.22	
351		-----		-----	
356		-----		-----	
360	EN14110	0.039		-0.45	
370		-----		-----	
371	EN14110	0.031		-2.31	
373	EN14110	0.036		-1.15	
391	EN14110	0.04		-0.22	
398	EN14110	0.04		-0.22	
420	EN14110	0.034		-1.62	
447		-----		-----	
463		-----		-----	
496	EN14110	0.046		1.17	
511		-----		-----	
540	EN14110	0.049		1.87	
663		-----		-----	
862	EN14110	0.03		-2.55	
1059	EN14110	0.031		-2.31	
1079	EN14110	0.0503		2.17	
1082		-----		-----	
1091	EN14110	0.050		2.10	
1099		-----		-----	
1135	EN14110	0.04		-0.22	
1161	EN14110	0.044		0.71	
1201	EN14110	0.04		-0.22	
1213		-----		-----	
1290		-----		-----	
1299	EN14110	0.04		-0.22	
1316		-----		-----	
1389	EN14110	0.05		2.10	
1397	EN14110	0.04		-0.22	
1429	EN14110	0.032		-2.08	
1459		-----		-----	
1485	EN14110	0.043		0.48	
1564	EN14110	0.039		-0.45	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1650	EN14110	0.035		-1.38	
1656	EN14110	<0.01	C	-----	first reported 0.06
1706		-----		-----	
1710		-----		-----	
1721	EN14110	0.04		-0.22	
1739	EN14110	0.043		0.48	
1744	EN14110	0.047		1.40	
1769		-----		-----	
1807		-----		-----	
1989	EN14110	0.048		1.64	
6057		-----		-----	
6181		-----		-----	
6201	EN14110	0.048		1.64	
6259	EN14110	0.043		0.48	
6262		-----		-----	
6265	EN14110	0.05		2.10	
6276		-----		-----	
6288		-----		-----	
6291	EN14110	0.025		-3.71	

normality	OK
n	37
outliers	0
mean (n)	0.0410
st.dev. (n)	0.00633
R(calc.)	0.0177
st.dev.(EN14110:19)	0.00430
R(EN14110:19)	0.0121

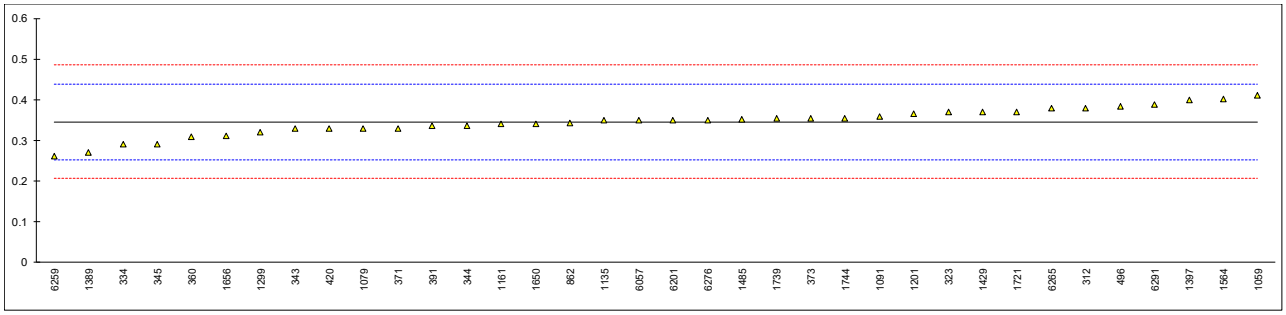


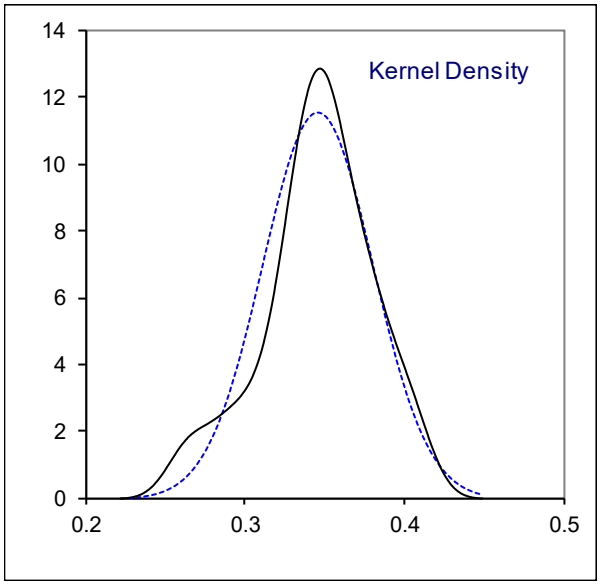


Determination of Monoglycerides on sample #19185; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311		-----		-----	
312	EN14105	0.38		0.74	
323	EN14105	0.37		0.52	
333		-----		-----	
334	EN14105	0.29	C	-1.20	first reported 0.39
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	EN14105	0.33		-0.34	
344	EN14105	0.336		-0.21	
345	EN14105	0.29		-1.20	
351		-----		-----	
356		-----		-----	
360	EN14105	0.308		-0.82	
370		-----		-----	
371	EN14105	0.33		-0.34	
373	EN14105	0.3538		0.17	
391	EN14105	0.336		-0.21	
398		-----		-----	
420	EN14105	0.33		-0.34	
447		-----		-----	
463		-----		-----	
496	EN14105	0.383		0.80	
511		-----		-----	
540	EN14105	<0.25		-----	
663		-----		-----	
862	EN14105	0.342		-0.08	
1059	EN14105	0.41		1.38	
1079	EN14105	0.330		-0.34	
1082		-----		-----	
1091	EN14105	0.358		0.26	
1099		-----		-----	
1135	EN14105	0.35		0.09	
1161	EN14105	0.34		-0.13	
1201	EN14105	0.366		0.43	
1213		-----		-----	
1290		-----		-----	
1299	EN14105	0.32		-0.56	
1316		-----		-----	
1389	EN14105	0.27		-1.63	
1397	EN14105	0.4		1.17	
1429	EN14105	0.37		0.52	
1459		-----		-----	
1485	EN14105	0.351		0.11	
1564	EN14105	0.401	C	1.19	first reported 0.507
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1650	EN14105	0.34		-0.13	
1656	EN14105	0.31		-0.77	
1706		-----		-----	
1710		-----		-----	
1721	EN14105	0.37		0.52	
1739	EN14105	0.353		0.15	
1744	D6584	0.3547		0.19	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
6057	EN14105	0.35		0.09	
6181		-----		-----	
6201	EN14105	0.35		0.09	
6259	D6584	0.261	C	-1.83	first reported 0.462
6262		-----		-----	
6265	EN14105	0.3786		0.71	
6276	EN14105	0.35		0.09	
6288		-----		-----	
6291	EN14105	0.389		0.93	

normality	OK
n	36
outliers	0
mean (n)	0.3459
st.dev. (n)	0.03465
R(calc.)	0.0970
st.dev.(EN14105:11)	0.04642
R(EN14105:11)	0.1300

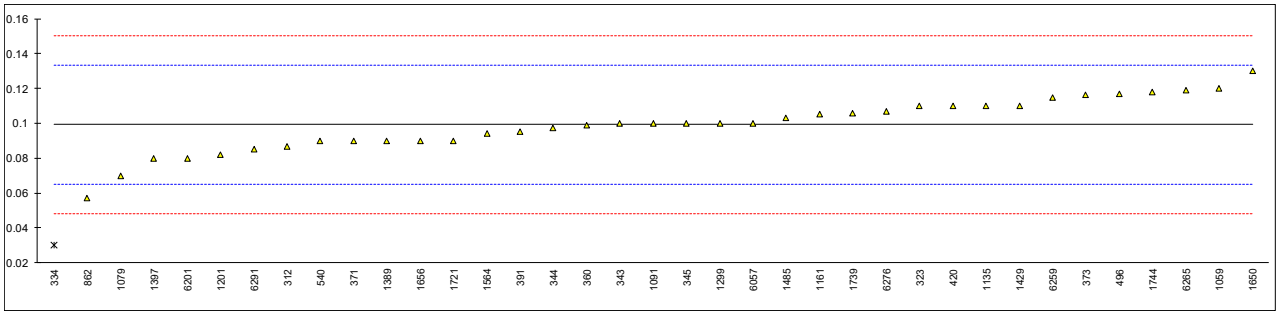


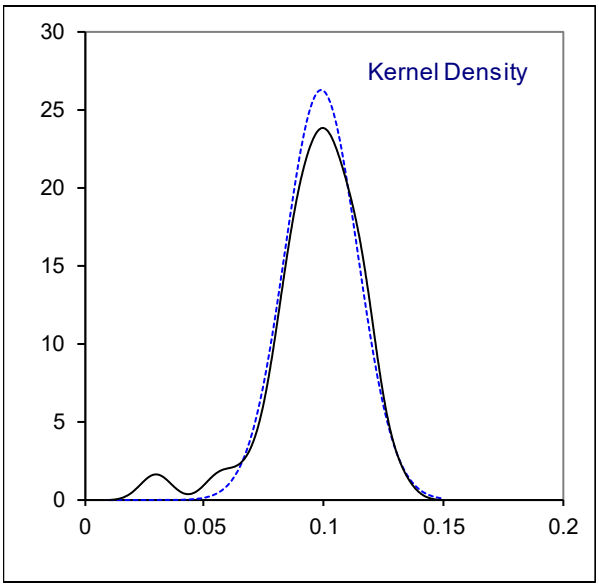


Determination of Diglycerides on sample #19185; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311		-----		-----	
312	EN14105	0.087		-0.72	
323	EN14105	0.11		0.63	
333		-----		-----	
334	EN14105	0.03	C,R(0.01)	-4.07	first reported 0.06
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	EN14105	0.10		0.05	
344	EN14105	0.0973		-0.11	
345	EN14105	0.10		0.05	
351		-----		-----	
356		-----		-----	
360	EN14105	0.099		-0.01	
370		-----		-----	
371	EN14105	0.09		-0.54	
373	EN14105	0.1163		1.00	
391	EN14105	0.095		-0.25	
398		-----		-----	
420	EN14105	0.11		0.63	
447		-----		-----	
463		-----		-----	
496	EN14105	0.117		1.04	
511		-----		-----	
540	EN14105	0.090		-0.54	
663		-----		-----	
862	EN14105	0.057		-2.48	
1059	EN14105	0.12		1.22	
1079	EN14105	0.070		-1.72	
1082		-----		-----	
1091	EN14105	0.100		0.05	
1099		-----		-----	
1135	EN14105	0.11		0.63	
1161	EN14105	0.105		0.34	
1201	EN14105	0.082		-1.01	
1213		-----		-----	
1290		-----		-----	
1299	EN14105	0.10		0.05	
1316		-----		-----	
1389	EN14105	0.09		-0.54	
1397	EN14105	0.08		-1.13	
1429	EN14105	0.11		0.63	
1459		-----		-----	
1485	EN14105	0.103		0.22	
1564	EN14105	0.094		-0.31	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1650	EN14105	0.13		1.81	
1656	EN14105	0.09		-0.54	
1706		-----		-----	
1710		-----		-----	
1721	EN14105	0.09		-0.54	
1739	EN14105	0.106		0.40	
1744	D6584	0.1180		1.10	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
6057	EN14105	0.10		0.05	
6181		-----		-----	
6201	EN14105	0.08		-1.13	
6259	D6584	0.115		0.93	
6262		-----		-----	
6265	EN14105	0.1188		1.15	
6276	EN14105	0.107		0.46	
6288		-----		-----	
6291	EN14105	0.085		-0.84	

normality	OK
n	36
outliers	1
mean (n)	0.0992
st.dev. (n)	0.01520
R(calc.)	0.0426
st.dev.(EN14105:11)	0.01700
R(EN14105:11)	0.0476

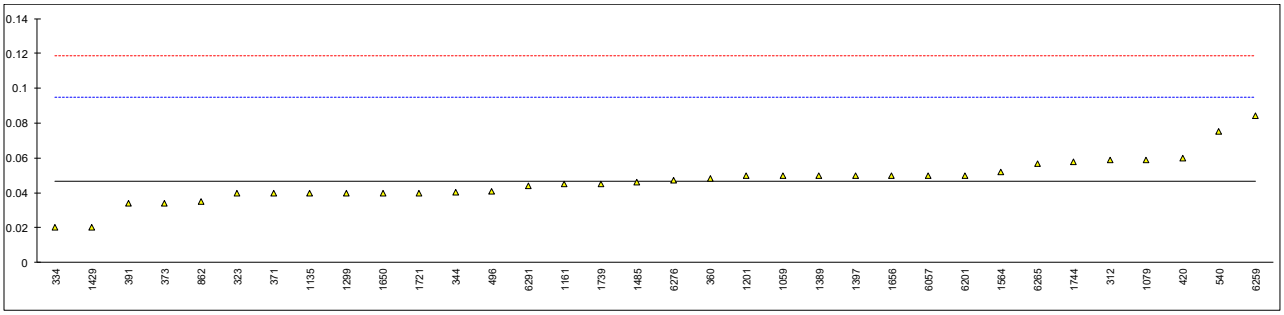


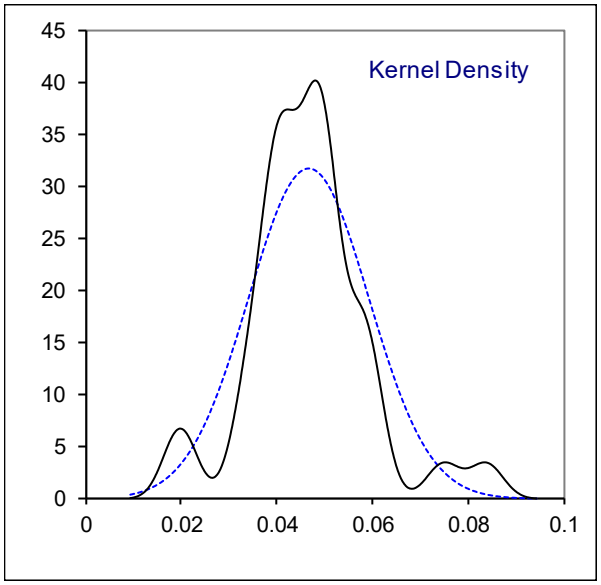


Determination of Triglycerides on sample #19185; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311		-----		-----	
312	EN14105	0.059		0.51	
323	EN14105	0.04		-0.29	
333		-----		-----	
334	EN14105	0.02	C	-1.12	first reported 0.21
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	EN14105	<0.05		-----	
344	EN14105	0.0404		-0.27	
345	EN14105	<0.1		-----	
351		-----		-----	
356		-----		-----	
360	EN14105	0.048		0.05	
370		-----		-----	
371	EN14105	0.04		-0.29	
373	EN14105	0.034		-0.54	
391	EN14105	0.034		-0.54	
398		-----		-----	
420	EN14105	0.06		0.55	
447		-----		-----	
463		-----		-----	
496	EN14105	0.041		-0.24	
511		-----		-----	
540	EN14105	0.075		1.18	
663		-----		-----	
862	EN14105	0.035		-0.50	
1059	EN14105	0.05		0.13	
1079	EN14105	0.059		0.51	
1082		-----		-----	
1091	EN14105	<0.10		-----	
1099		-----		-----	
1135	EN14105	0.04		-0.29	
1161	EN14105	0.045		-0.08	
1201	EN14105	0.050		0.13	
1213		-----		-----	
1290		-----		-----	
1299	EN14105	0.04		-0.29	
1316		-----		-----	
1389	EN14105	0.05		0.13	
1397	EN14105	0.05		0.13	
1429	EN14105	0.02		-1.12	
1459		-----		-----	
1485	EN14105	0.046		-0.04	
1564	EN14105	0.052		0.22	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1650	EN14105	0.04		-0.29	
1656	EN14105	0.05		0.13	
1706		-----		-----	
1710		-----		-----	
1721	EN14105	0.04		-0.29	
1739	EN14105	0.045		-0.08	
1744	D6584	0.0580		0.47	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
6057	EN14105	0.05		0.13	
6181		-----		-----	
6201	EN14105	0.05		0.13	
6259	D6584	0.084		1.55	
6262		-----		-----	
6265	EN14105	0.0565		0.40	
6276	EN14105	0.047		0.01	
6288		-----		-----	
6291	EN14105	0.044		-0.12	

normality	not OK
n	34
outliers	0
mean (n)	0.0468
st.dev. (n)	0.01260
R(calc.)	0.0353
st.dev.(EN14105:11)	0.02389
R(EN14105:11)	0.0669

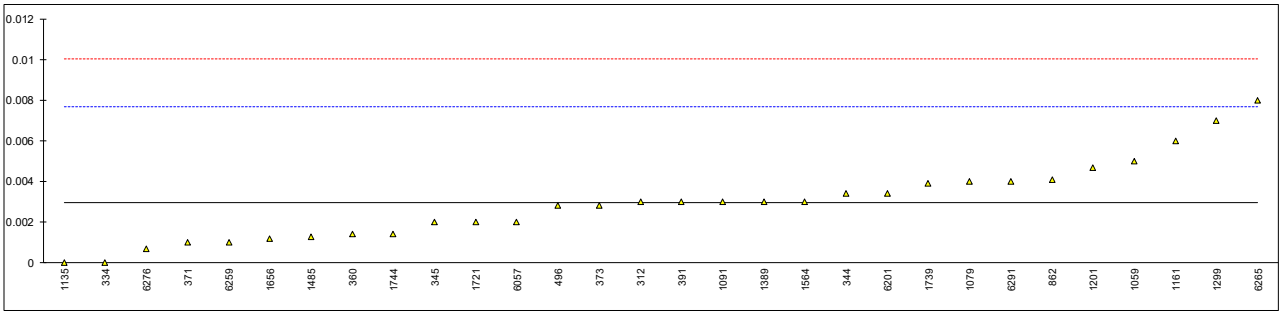


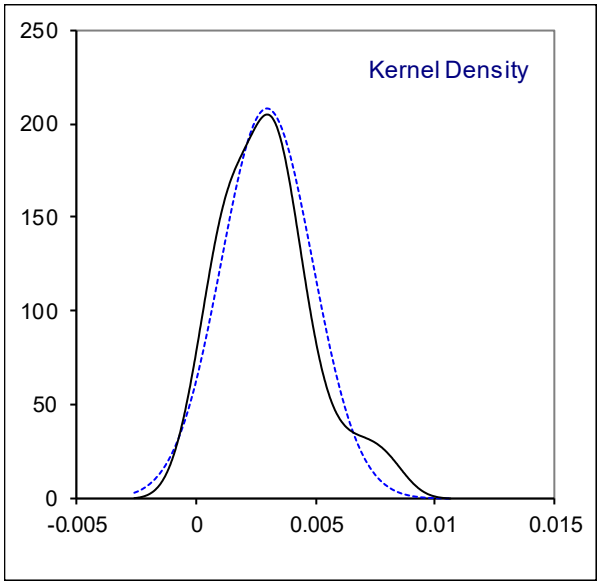


Determination of Free Glycerol on sample #19185; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311		-----		-----	
312	EN14105	0.003		0.03	
323	EN14105	< 0.001		-----	
333		-----		-----	
334	EN14105	0	C	-1.24	first reported 0.025
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	EN14105	<0.005		-----	
344	EN14105	0.0034		0.20	
345	EN14105	0.002		-0.40	
351		-----		-----	
356		-----		-----	
360	EN14105	0.0014		-0.65	
370		-----		-----	
371	EN14105	0.001		-0.82	
373	EN14105	0.0028		-0.06	
391	EN14105	0.003		0.03	
398		-----		-----	
420	EN14105	<0,005		-----	
447		-----		-----	
463		-----		-----	
496	EN14105	0.0028		-0.06	
511		-----		-----	
540	EN14105	<0.01		-----	
663		-----		-----	
862	EN14105	0.0041		0.49	
1059	EN14105	0.005		0.87	
1079	EN14105	0.004	C	0.45	first reported 0.044
1082		-----		-----	
1091	EN14105	0.003		0.03	
1099		-----		-----	
1135	EN14105	0.000		-1.24	
1161	EN14105	0.006		1.29	
1201	EN14105	0.0047		0.74	
1213		-----		-----	
1290		-----		-----	
1299	EN14105	0.007		1.71	
1316		-----		-----	
1389	EN14105	0.003		0.03	
1397	EN14105	<0,005		-----	
1429	EN14105	< 0.01		-----	
1459		-----		-----	
1485	EN14105	0.0013		-0.69	
1564	EN14105	0.003		0.03	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1650		-----		-----	
1656	EN14105	0.0012		-0.73	
1706		-----		-----	
1710		-----		-----	
1721	EN14105	0.002		-0.40	
1739	EN14105	0.0039		0.41	
1744	D6584	0.0014		-0.65	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
6057	EN14105	0.002		-0.40	
6181		-----		-----	
6201	EN14105	0.0034		0.20	
6259	D6584	0.001		-0.82	
6262		-----		-----	
6265	EN14105	0.008		2.14	
6276	EN14105	0.0007		-0.94	
6288		-----		-----	
6291	EN14105	0.004		0.45	

normality	OK
n	30
outliers	0
mean (n)	0.0029
st.dev. (n)	0.00192
R(calc.)	0.0054
st.dev.(EN14105:11)	0.00237
R(EN14105:11)	0.0066

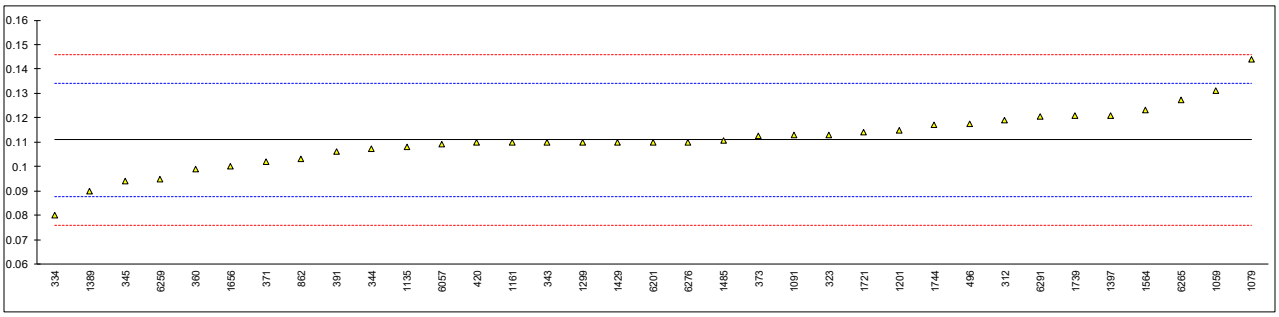


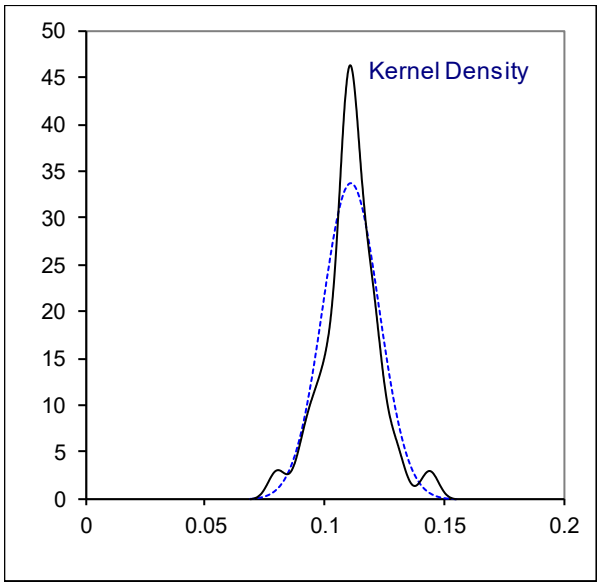


Determination of Total Glycerol on sample #19185; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311		-----		-----	
312	EN14105	0.119		0.69	
323	EN14105	0.113		0.18	
333		-----		-----	
334	EN14105	0.080	C	-2.66	first reported 0.155
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	EN14105	0.11		-0.08	
344	EN14105	0.1074		-0.30	
345	EN14105	0.094		-1.46	
351		-----		-----	
356		-----		-----	
360	EN14105	0.099		-1.03	
370		-----		-----	
371	EN14105	0.102		-0.77	
373	EN14105	0.1126		0.14	
391	EN14105	0.106		-0.42	
398		-----		-----	
420	EN14105	0.110		-0.08	
447		-----		-----	
463		-----		-----	
496	EN14105	0.1174		0.55	
511		-----		-----	
540	EN14105	<0.08		-----	
663		-----		-----	
862	EN14105	0.1032		-0.67	
1059	EN14105	0.131		1.72	
1079	EN14105	0.144		2.84	
1082		-----		-----	
1091	EN14105	0.113		0.18	
1099		-----		-----	
1135	EN14105	0.108		-0.25	
1161	EN14105	0.11		-0.08	
1201	EN14105	0.115		0.35	
1213		-----		-----	
1290		-----		-----	
1299	EN14105	0.110		-0.08	
1316		-----		-----	
1389	EN14105	0.090		-1.80	
1397	EN14105	0.121		0.86	
1429	EN14105	0.11		-0.08	
1459		-----		-----	
1485	EN14105	0.1107		-0.02	
1564	EN14105	0.123	C	1.04	first reported 0.152
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1650		-----		-----	
1656	EN14105	0.10		-0.94	
1706		-----		-----	
1710		-----		-----	
1721	EN14105	0.114		0.26	
1739	EN14105	0.1208		0.85	
1744	D6584	0.1170		0.52	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
6057	EN14105	0.109		-0.17	
6181		-----		-----	
6201	EN14105	0.110		-0.08	
6259	D6584	0.095	C	-1.37	first reported 0.147
6262		-----		-----	
6265	EN14105	0.1275		1.42	
6276	EN14105	0.11		-0.08	
6288		-----		-----	
6291	EN14105	0.1204		0.81	

normality	suspect
n	35
outliers	0
mean (n)	0.1109
st.dev. (n)	0.01185
R(calc.)	0.0332
st.dev.(EN14105:11)	0.01164
R(EN14105:11)	0.0326

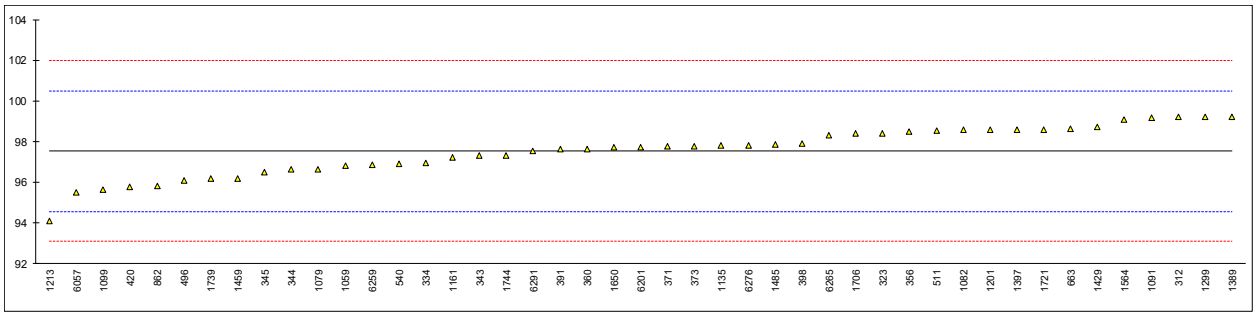


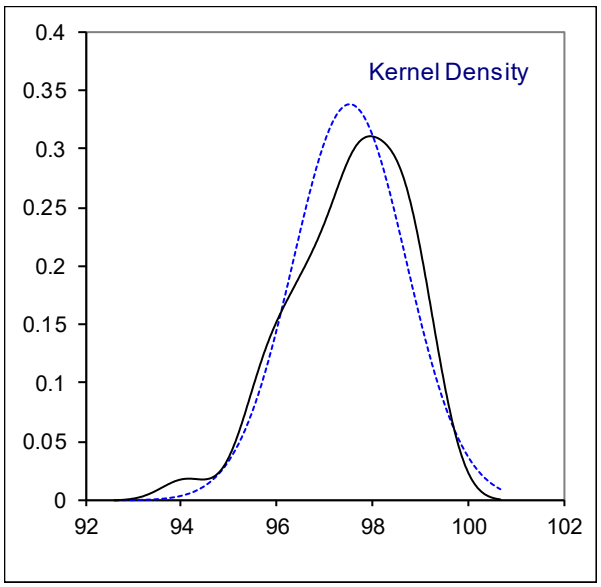


Determination of Total Ester content (FAME) on sample #19185; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311		-----		-----	
312	EN14103	99.2		1.12	
323	EN14103	98.4		0.58	
333		-----		-----	
334	EN14103	96.97		-0.38	
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	EN14103	97.3		-0.16	
344	EN14103	96.62		-0.62	
345	EN14103	96.5		-0.70	
351		-----		-----	
356	EN14103	98.5		0.65	
360	EN14103	97.65		0.08	
370		-----		-----	
371	EN14103	97.745		0.14	
373	EN14103	97.785		0.17	
391	EN14103	97.64		0.07	
398	EN14103	97.88		0.23	
420	EN14103	95.77		-1.19	
447		-----		-----	
463		-----		-----	
496	EN14103	96.07		-0.99	
511	EN14103	98.52		0.66	
540	EN14103	96.90		-0.43	
663	EN14103	98.64		0.74	
862	EN14103	95.81		-1.16	
1059	EN14103	96.8		-0.50	
1079	EN14103	96.64		-0.60	
1082	EN14103	98.578		0.70	
1091	EN14103	99.15		1.09	
1099	EN14103	95.63		-1.28	
1135	EN14103	97.8		0.18	
1161	EN14103	97.2		-0.23	
1201	EN14103	98.59		0.71	
1213	EN14103	94.1		-2.31	
1290		-----		-----	
1299	EN14103	99.2		1.12	
1316		-----		-----	
1389	EN14103	99.2		1.12	
1397	EN14103	98.6		0.72	
1429	EN14103	98.70		0.78	
1459	EN14103	96.2		-0.90	
1485	EN14103	97.87		0.22	
1564	EN14103	99.1		1.05	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1650	EN14103	97.7		0.11	
1656	EN14103	>99.0		-----	
1706	EN14103	98.381		0.57	
1710		-----		-----	
1721	EN14103	98.6		0.72	
1739	EN14103	96.19		-0.91	
1744	EN14103	97.30		-0.16	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
6057	EN14103	95.5		-1.37	
6181		-----		-----	
6201	EN14103	97.7		0.11	
6259	EN14103	96.85		-0.46	
6262		-----		-----	
6265	EN14103	98.3		0.51	
6276	EN14103	97.8		0.18	
6288		-----		-----	
6291	EN14103	97.56		0.02	

normality	OK
n	45
outliers	0
mean (n)	97.5364
st.dev. (n)	1.17736
R(calc.)	3.2966
st.dev.(EN14103:11)	1.48571
R(EN14103:11)	4.16

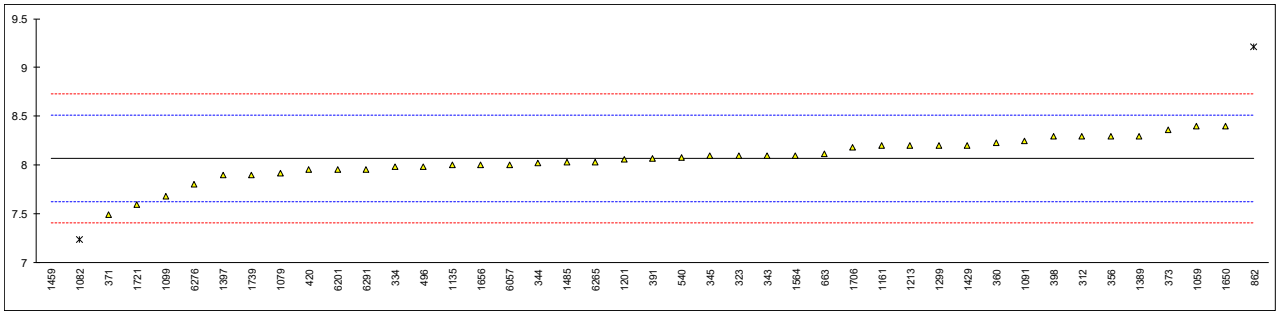


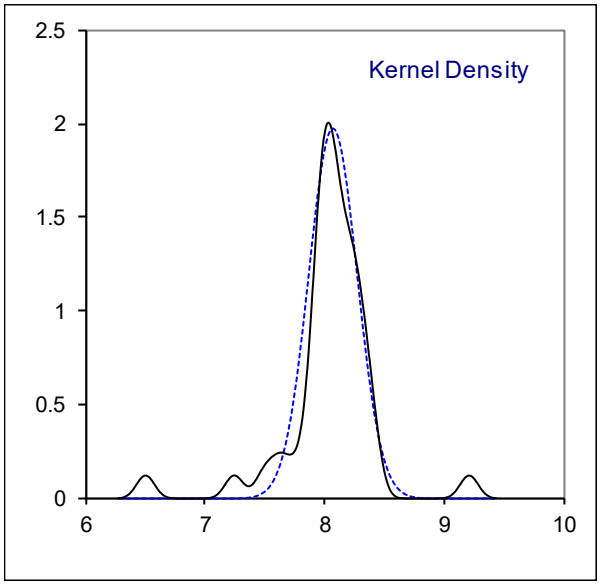


Determination of Linolenic Acid Methyl Ester content on sample #19185; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311		-----		-----	
312	EN14103	8.3		1.05	
323	EN14103	8.1		0.14	
333		-----		-----	
334	EN14103	7.98		-0.40	
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	EN14103	8.10		0.14	
344	EN14103	8.02		-0.22	
345	EN14103	8.1		0.14	
351		-----		-----	
356	EN14103	8.3		1.05	
360	EN14103	8.23		0.73	
370		-----		-----	
371	EN14103	7.49		-2.63	
373	EN14103	8.365		1.34	
391	EN14103	8.07		0.00	
398	EN14103	8.3		1.05	
420	EN14103	7.96		-0.50	
447		-----		-----	
463		-----		-----	
496	EN14103	7.98		-0.40	
511		-----		-----	
540	EN14103	8.08		0.05	
663	EN14103	8.12		0.23	
862	EN14103	9.21	R(0.01)	5.18	
1059	EN14103	8.4		1.50	
1079	EN14103	7.92		-0.68	
1082	EN14103	7.242	R(0.05)	-3.75	
1091	EN14103	8.25		0.82	
1099	EN14103	7.68		-1.77	
1135	EN14103	8.0		-0.31	
1161	EN14103	8.20		0.59	
1201	EN14103	8.06		-0.04	
1213	EN14103	8.2		0.59	
1290		-----		-----	
1299	EN14103	8.2		0.59	
1316		-----		-----	
1389	EN14103	8.3		1.05	
1397	EN14103	7.9		-0.77	
1429	EN14103	8.2		0.59	
1459	EN14103	6.5	R(0.01)	-7.12	
1485	EN14103	8.03		-0.18	
1564	EN14103	8.1		0.14	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1650	EN14103	8.4		1.50	
1656	EN14103	8.0		-0.31	
1706	EN14103	8.183		0.52	
1710		-----		-----	
1721	EN14103	7.6		-2.13	
1739	EN14103	7.90		-0.77	
1744		-----		-----	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
6057	EN14103	8.0		-0.31	
6181		-----		-----	
6201	EN14103	7.96		-0.50	
6259		-----		-----	
6262		-----		-----	
6265	EN14103	8.03		-0.18	
6276	EN14103	7.8	C	-1.22	first reported 104.8
6288		-----		-----	
6291	EN14103	7.96		-0.50	

normality	suspect
n	40
outliers	3
mean (n)	8.069
st.dev. (n)	0.2023
R(calc.)	0.567
st.dev.(EN14103:11)	0.2204
R(EN14103:11)	0.617





Determination of Polyunsaturated Methyl Esters content on sample #19185; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311		-----		-----	
312	EN15779	< 0.6		-----	
323	EN15779	< 0.6		-----	
333	EN15779	0.42		-----	
334	EN15779	0.40		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	EN15779	<0.30		-----	
344	EN15779	<0,5		-----	
345	EN15779	0.36		-----	
351		-----		-----	
356		-----		-----	
360	EN15779	0.202		-----	
370		-----		-----	
371		-----		-----	
373	EN15779	0.166		-----	
391		-----		-----	
398	EN15779	<0,1		-----	
420	EN15779	<0,10		-----	
447		-----		-----	
463		-----		-----	
496	EN15779	0.026		-----	
511		-----		-----	
540		-----		-----	
663		-----		-----	
862		-----		-----	
1059	EN15779	<0,3		-----	
1079	EN15779	0.26		-----	
1082		-----		-----	
1091		-----		-----	
1099		< 0,1		-----	
1135	EN15779	<0.60		-----	
1161	EN15779	0.2		-----	
1201	EN15779	0.38		-----	
1213		-----		-----	
1290		-----		-----	
1299	EN15779	0.05		-----	
1316		-----		-----	
1389	EN15779	0.13		-----	
1397		-----		-----	
1429		-----		-----	
1459		-----		-----	
1485		-----		-----	
1564		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1650		-----		-----	
1656	EN15779	<0.5		-----	
1706		-----		-----	
1710		-----		-----	
1721	EN15779	0.10		-----	
1739	EN15779	0.029		-----	
1744		-----		-----	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
6057	EN15779	0.39		-----	
6181		-----		-----	
6201	EN15779	0.42		-----	
6259		-----		-----	
6262		-----		-----	
6265		-----		-----	
6276		-----		-----	
6288		-----		-----	
6291	EN15779	0.05		-----	
	n	26			
	mean (n)	<0.6			Application range EN15779:13 is 0.6 – 1.5%M/M

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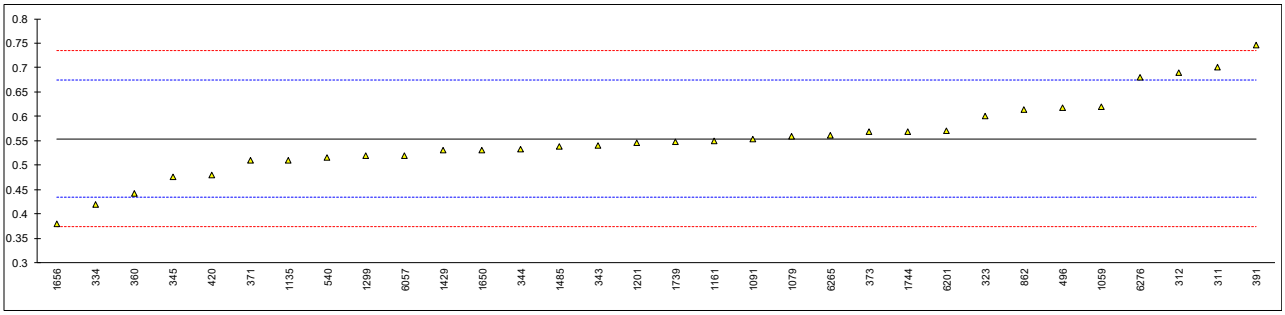
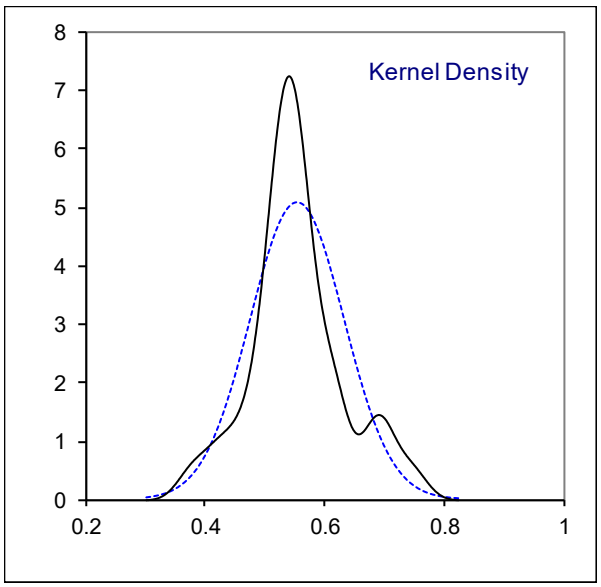
Determination of Monoglycerides on sample #19189; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14105	0.70		2.42	
312	EN14105	0.69		2.25	
323	EN14105	0.60		0.76	
333		-----		-----	
334	EN14105	0.42	C	-2.23	first reported 0.54
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	EN14105	0.54		-0.24	
344	EN14105	0.5328		-0.36	
345	EN14105	0.476		-1.30	
351		-----		-----	
356		-----		-----	
360	EN14105	0.442		-1.86	
370		-----		-----	
371	EN14105	0.51		-0.73	
373	EN14105	0.5687		0.24	
391	EN14105	0.746		3.18	
398		-----		-----	
420	EN14105	0.48		-1.23	
447		-----		-----	
463		-----		-----	
496	EN14105	0.617		1.04	
511		-----		-----	
540	EN14105	0.515		-0.65	
663		-----		-----	
862	EN14105	0.613		0.97	
1059	EN14105	0.62		1.09	
1079	EN14105	0.560		0.10	
1082		-----		-----	
1091	EN14105	0.553		-0.02	
1099		-----		-----	
1135	EN14105	0.51	C	-0.73	first reported 0.008
1161	EN14105	0.55		-0.07	
1201	EN14105	0.545		-0.15	
1213		-----		-----	
1290		-----		-----	
1299	EN14105	0.52		-0.57	
1316		-----		-----	
1389		-----		-----	
1397		-----		-----	
1429	EN14105	0.53		-0.40	
1459		-----		-----	
1485	EN14105	0.539		-0.25	
1564		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1650	EN14105	0.53		-0.40	
1656	EN14105	0.38		-2.89	
1706		-----		-----	
1710		-----		-----	
1721		-----		-----	
1739	EN14105	0.548		-0.10	
1744	D6584	0.5688		0.24	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
6057	EN14105	0.52		-0.57	
6181		-----		-----	
6201	EN14105	0.57		0.26	
6259		-----		-----	
6262		-----		-----	
6265	EN14105	0.5615	C	0.12	first reported 0.010
6276	EN14105	0.68		2.09	
6288		-----		-----	
6291		-----		-----	

normality	OK
n	32
outliers	0
mean (n)	0.5542
st.dev. (n)	0.07818
R(calc.)	0.2189
st.dev.(EN14105:11)	0.06031
R(EN14105:11)	0.1689

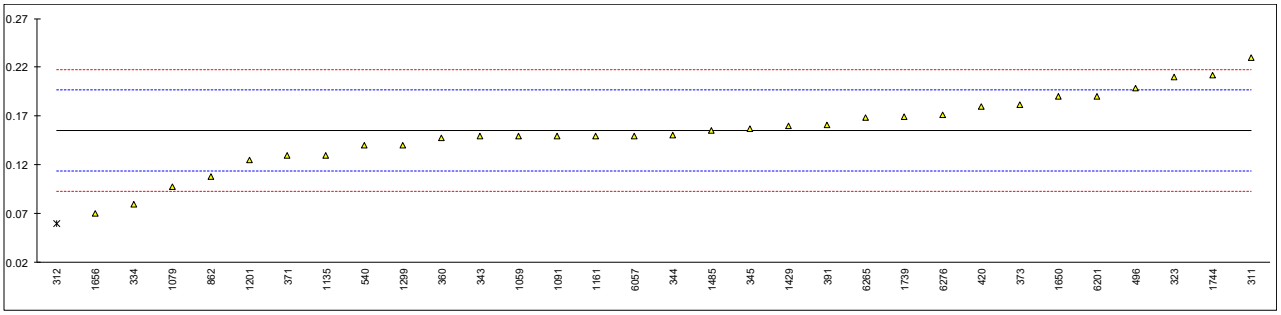


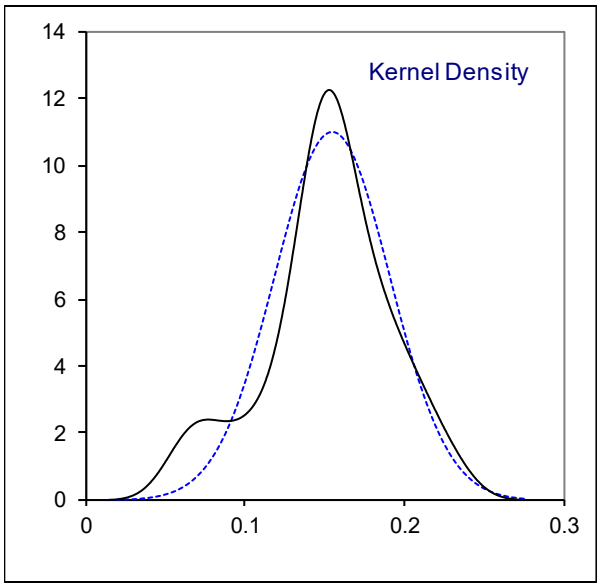


Determination of Diglycerides on sample #19189; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14105	0.23		3.62	
312	EN14105	0.06	R(0.01)	-4.58	
323	EN14105	0.21		2.65	
333		-----		-----	
334	EN14105	0.08	C	-3.61	first reported 0.09
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	EN14105	0.15		-0.24	
344	EN14105	0.1501		-0.23	
345	EN14105	0.157		0.10	
351		-----		-----	
356		-----		-----	
360	EN14105	0.148		-0.33	
370		-----		-----	
371	EN14105	0.13		-1.20	
373	EN14105	0.182		1.30	
391	EN14105	0.161		0.29	
398		-----		-----	
420	EN14105	0.18		1.21	
447		-----		-----	
463		-----		-----	
496	EN14105	0.199		2.12	
511		-----		-----	
540	EN14105	0.14		-0.72	
663		-----		-----	
862	EN14105	0.108		-2.26	
1059	EN14105	0.15		-0.24	
1079	EN14105	0.098		-2.74	
1082		-----		-----	
1091	EN14105	0.150		-0.24	
1099		-----		-----	
1135	EN14105	0.13	C	-1.20	first reported 0.51
1161	EN14105	0.15		-0.24	
1201	EN14105	0.125		-1.44	
1213		-----		-----	
1290		-----		-----	
1299	EN14105	0.14		-0.72	
1316		-----		-----	
1389		-----		-----	
1397		-----		-----	
1429	EN14105	0.16		0.24	
1459		-----		-----	
1485	EN14105	0.155		0.00	
1564		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1650	EN14105	0.19		1.69	
1656	EN14105	0.07		-4.09	
1706		-----		-----	
1710		-----		-----	
1721		-----		-----	
1739	EN14105	0.169		0.68	
1744	D6584	0.2119		2.74	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
6057	EN14105	0.15		-0.24	
6181		-----		-----	
6201	EN14105	0.19		1.69	
6259		-----		-----	
6262		-----		-----	
6265	EN14105	0.1685	C	0.65	first reported 0.5615
6276	EN14105	0.171		0.77	
6288		-----		-----	
6291		-----		-----	

normality	OK
n	31
outliers	1
mean (n)	0.1550
st.dev. (n)	0.03626
R(calc.)	0.1015
st.dev.(EN14105:11)	0.02075
R(EN14105:11)	0.0581

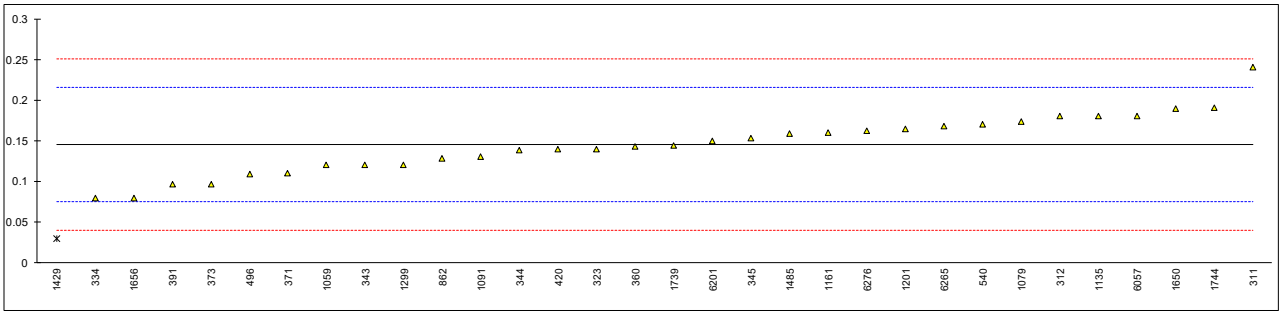


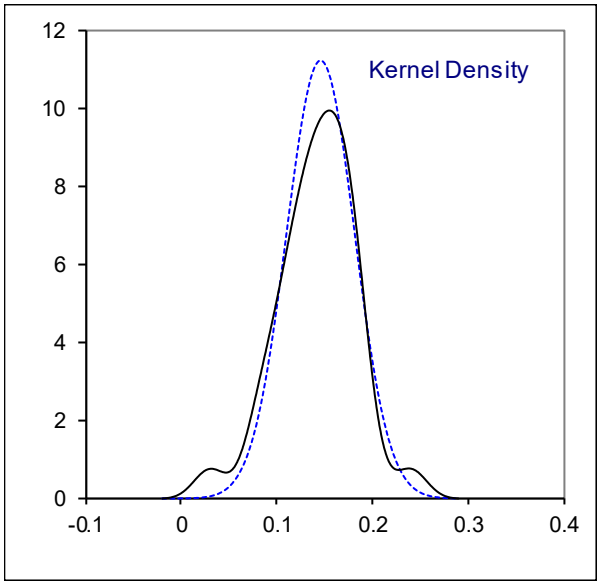


Determination of Triglycerides on sample #19189; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14105	0.24		2.68	
312	EN14105	0.18		0.98	
323	EN14105	0.14		-0.16	
333		-----		-----	
334	EN14105	0.08		-1.87	
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	EN14105	0.12		-0.73	
344	EN14105	0.1384		-0.21	
345	EN14105	0.153		0.21	
351		-----		-----	
356		-----		-----	
360	EN14105	0.143		-0.08	
370		-----		-----	
371	EN14105	0.11		-1.02	
373	EN14105	0.097		-1.39	
391	EN14105	0.097		-1.39	
398		-----		-----	
420	EN14105	0.14		-0.16	
447		-----		-----	
463		-----		-----	
496	EN14105	0.109		-1.05	
511		-----		-----	
540	EN14105	0.17		0.69	
663		-----		-----	
862	EN14105	0.128		-0.50	
1059	EN14105	0.12		-0.73	
1079	EN14105	0.174		0.81	
1082		-----		-----	
1091	EN14105	0.130		-0.45	
1099		-----		-----	
1135	EN14105	0.18		0.98	
1161	EN14105	0.16		0.41	
1201	EN14105	0.164		0.52	
1213		-----		-----	
1290		-----		-----	
1299	EN14105	0.12		-0.73	
1316		-----		-----	
1389		-----		-----	
1397		-----		-----	
1429	EN14105	0.03	R(0.01)	-3.29	
1459		-----		-----	
1485	EN14105	0.159		0.38	
1564		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1650	EN14105	0.19		1.26	
1656	EN14105	0.08		-1.87	
1706		-----		-----	
1710		-----		-----	
1721		-----		-----	
1739	EN14105	0.144		-0.05	
1744	D6584	0.1910		1.29	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
6057	EN14105	0.18		0.98	
6181		-----		-----	
6201	EN14105	0.15		0.12	
6259		-----		-----	
6262		-----		-----	
6265	EN14105	0.1680	C	0.63	first reported 0.1685
6276	EN14105	0.162		0.46	
6288		-----		-----	
6291		-----		-----	

normality	OK
n	31
outliers	1
mean (n)	0.1457
st.dev. (n)	0.03561
R(calc.)	0.0997
st.dev.(EN14105:11)	0.03512
R(EN14105:11)	0.0983

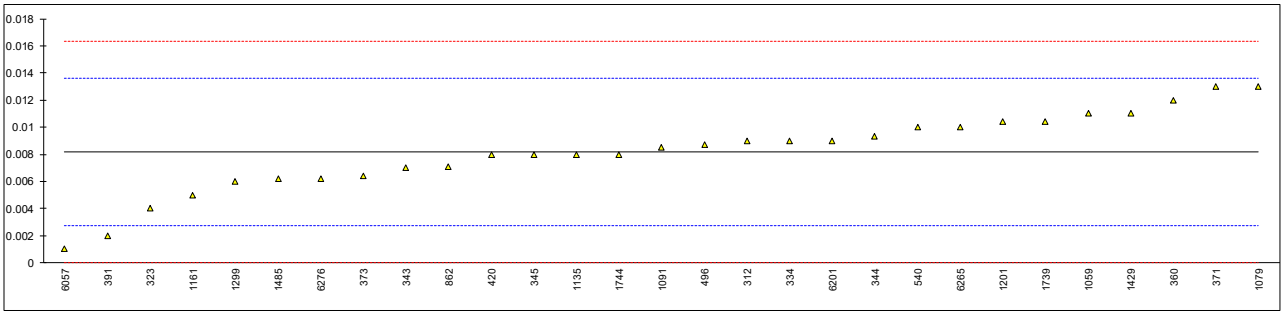


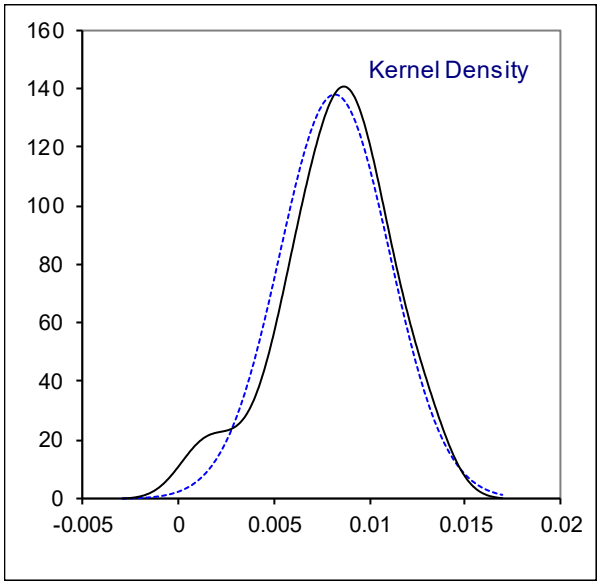


Determination of Free Glycerol on sample #19185; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14105	<0.01		-----	
312	EN14105	0.009		0.30	
323	EN14105	0.004		-1.54	
333		-----		-----	
334	EN14105	0.009	C	0.30	first reported 0.118
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	EN14105	0.007		-0.43	
344	EN14105	0.0093		0.41	
345	EN14105	0.008		-0.07	
351		-----		-----	
356		-----		-----	
360	EN14105	0.0120		1.41	
370		-----		-----	
371	EN14105	0.013		1.78	
373	EN14105	0.0064		-0.66	
391	EN14105	0.002		-2.28	
398		-----		-----	
420	EN14105	0.008		-0.07	
447		-----		-----	
463		-----		-----	
496	EN14105	0.0087		0.19	
511		-----		-----	
540	EN14105	0.010		0.67	
663		-----		-----	
862	EN14105	0.0071		-0.40	
1059	EN14105	0.011		1.04	
1079	EN14105	0.013		1.78	
1082		-----		-----	
1091	EN14105	0.0085		0.12	
1099		-----		-----	
1135	EN14105	0.008	C	-0.07	first reported 0.13
1161	EN14105	0.005		-1.17	
1201	EN14105	0.0104	C	0.82	first reported 0.184
1213		-----		-----	
1290		-----		-----	
1299	EN14105	0.006		-0.80	
1316		-----		-----	
1389		-----		-----	
1397		-----		-----	
1429	EN14105	0.011		1.04	
1459		-----		-----	
1485	EN14105	0.0062		-0.73	
1564		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1650		-----		-----	
1656	EN14105	<0.01		-----	
1706		-----		-----	
1710		-----		-----	
1721		-----		-----	
1739	EN14105	0.0104		0.82	
1744	D6584	0.008		-0.07	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
6057	EN14105	0.001		-2.65	
6181		-----		-----	
6201	EN14105	0.0090		0.30	
6259		-----		-----	
6262		-----		-----	
6265	EN14105	0.010	C	0.67	first reported 0.1680
6276	EN14105	0.0062		-0.73	
6288		-----		-----	
6291		-----		-----	

normality	OK
n	29
outliers	0
mean (n)	0.0082
st.dev. (n)	0.00288
R(calc.)	0.0081
st.dev.(EN14105:11)	0.00271
R(EN14105:11)	0.0076

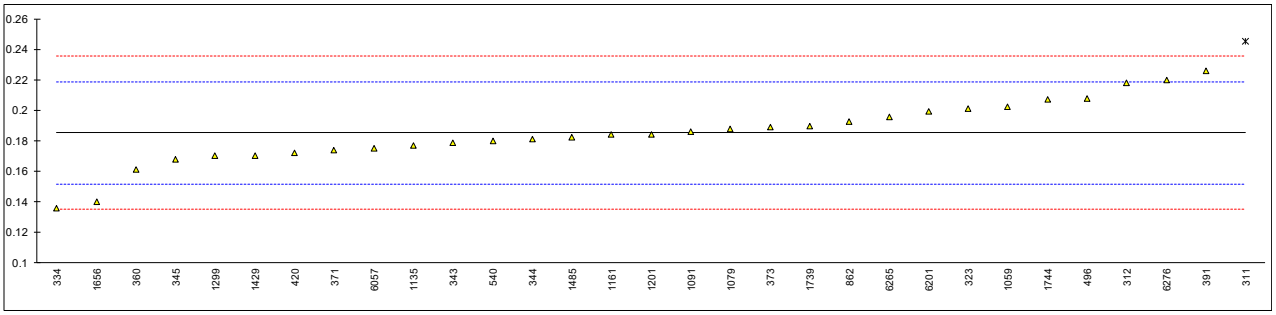


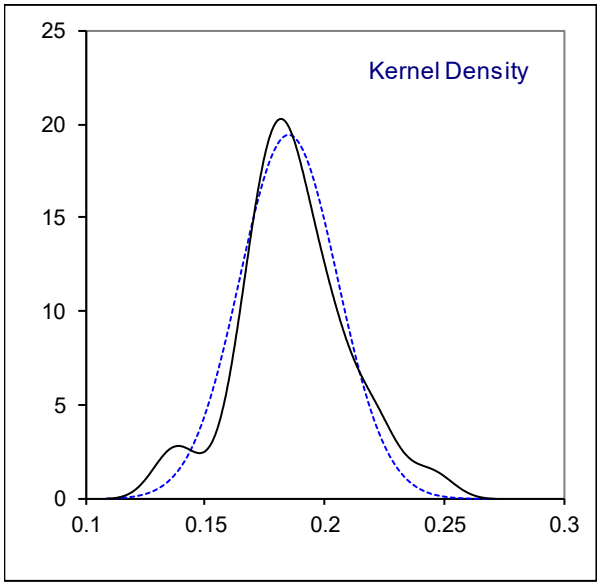


Determination of Total Glycerol on sample #19189; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14105	0.245	R(0.01)	3.59	
312	EN14105	0.218		1.97	
323	EN14105	0.201		0.95	
333		-----		-----	
334	EN14105	0.136	C	-2.95	first reported 0.277
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	EN14105	0.179		-0.37	
344	EN14105	0.1813		-0.23	
345	EN14105	0.168		-1.03	
351		-----		-----	
356		-----		-----	
360	EN14105	0.161		-1.45	
370		-----		-----	
371	EN14105	0.174		-0.67	
373	EN14105	0.1892		0.24	
391	EN14105	0.226		2.45	
398		-----		-----	
420	EN14105	0.172		-0.79	
447		-----		-----	
463		-----		-----	
496	EN14105	0.2076		1.34	
511		-----		-----	
540	EN14105	0.18		-0.31	
663		-----		-----	
862	EN14105	0.1924		0.43	
1059	EN14105	0.202		1.01	
1079	EN14105	0.188		0.17	
1082		-----		-----	
1091	EN14105	0.186		0.05	
1099		-----		-----	
1135	EN14105	0.177		-0.49	
1161	EN14105	0.184		-0.07	
1201	EN14105	0.184	C	-0.07	first reported 0.0104
1213		-----		-----	
1290		-----		-----	
1299	EN14105	0.170		-0.91	
1316		-----		-----	
1389		-----		-----	
1397		-----		-----	
1429	EN14105	0.17		-0.91	
1459		-----		-----	
1485	EN14105	0.1825		-0.16	
1564		-----		-----	
1582		-----		-----	
1586		-----		-----	
1634		-----		-----	
1650		-----		-----	
1656	EN14105	0.14	C	-2.71	first reported 0.12
1706		-----		-----	
1710		-----		-----	
1721		-----		-----	
1739	EN14105	0.1897		0.27	
1744	D6584	0.2069		1.30	
1769		-----		-----	
1807		-----		-----	
1989		-----		-----	
6057	EN14105	0.175		-0.61	
6181		-----		-----	
6201	EN14105	0.199		0.83	
6259		-----		-----	
6262		-----		-----	
6265	EN14105	0.1955		0.62	
6276	EN14105	0.22		2.09	
6288		-----		-----	
6291		-----		-----	

normality	OK
n	30
outliers	1
mean (n)	0.1852
st.dev. (n)	0.02053
R(calc.)	0.0575
st.dev.(EN14105:11)	0.01669
R(EN14105:11)	0.0467

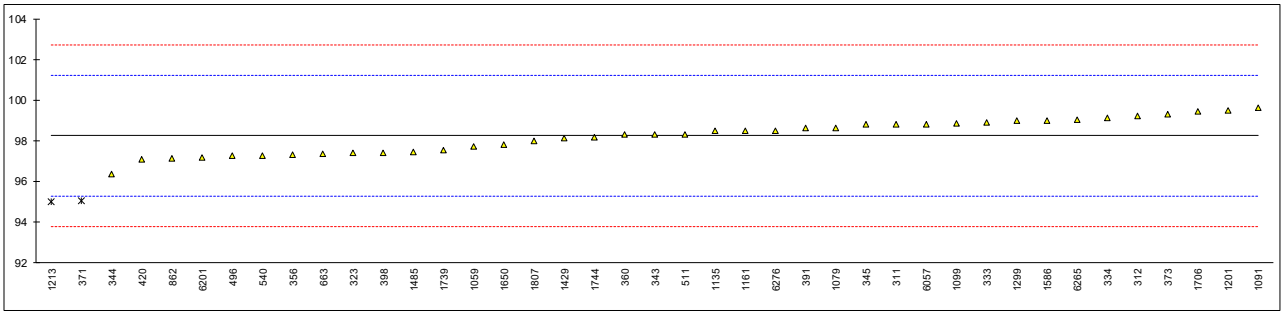


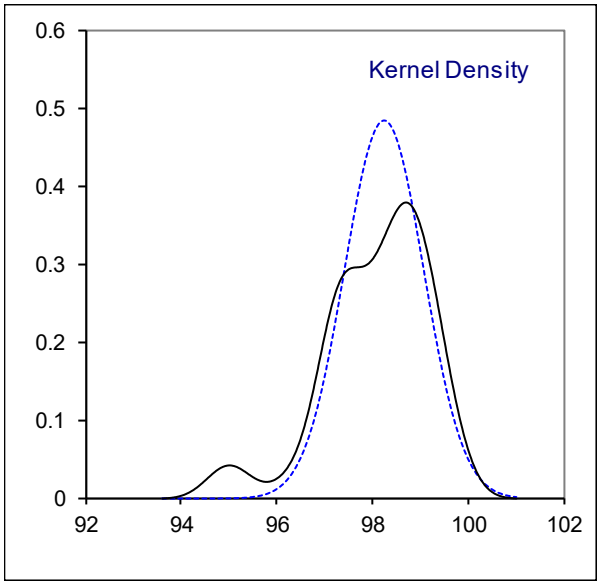


Determination of Total Ester content (FAME) on sample #19189; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14103	98.8		0.37	
312	EN14103	99.2		0.64	
323	EN14103	97.4		-0.57	
333	EN14103	98.9		0.44	
334	EN14103	99.13		0.59	
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	EN14103	98.3		0.04	
344	EN14103	96.35		-1.28	
345	EN14103	98.8		0.37	
351		-----		-----	
356	EN14103	97.3		-0.64	
360	EN14103	98.30		0.04	
370		-----		-----	
371	EN14103	95.039	R(0.05)	-2.16	
373	EN14103	99.29		0.70	
391	EN14103	98.61		0.24	
398	EN14103	97.42		-0.56	
420	EN14103	97.07		-0.79	
447		-----		-----	
463		-----		-----	
496	EN14103	97.25		-0.67	
511	EN14103	98.33		0.06	
540	EN14103	97.26		-0.66	
663	EN14103	97.36		-0.60	
862	EN14103	97.14		-0.74	
1059	EN14103	97.7		-0.37	
1079	EN14103	98.64		0.26	
1082		-----		-----	
1091	EN14103	99.63		0.93	
1099	EN14103	98.87		0.42	
1135	EN14103	98.5		0.17	
1161	EN14103	98.5		0.17	
1201	EN14103	99.5		0.84	
1213	EN14103	95.0	R(0.05)	-2.19	
1290		-----		-----	
1299	EN14103	99.0		0.51	
1316		-----		-----	
1389		-----		-----	
1397		-----		-----	
1429	EN14103	98.15		-0.07	
1459		-----		-----	
1485	EN14103	97.46		-0.53	
1564		-----		-----	
1582		-----		-----	
1586		99.0		0.51	
1634		-----		-----	
1650	EN14103	97.8		-0.30	
1656	EN14103	>99.0		-----	
1706	EN14103	99.424		0.79	
1710		-----		-----	
1721		-----		-----	
1739	EN14103	97.54		-0.48	
1744	EN14103	98.17		-0.05	
1769		-----		-----	
1807	EN14103	98.0		-0.17	
1989		-----		-----	
6057	EN14103	98.8		0.37	
6181		-----		-----	
6201	EN14103	97.18		-0.72	
6259		-----		-----	
6262		-----		-----	
6265	EN14103	99.05		0.54	
6276	EN14103	98.5		0.17	
6288		-----		-----	
6291		-----		-----	

normality	OK
n	39
outliers	2
mean (n)	98.2468
st.dev. (n)	0.82304
R(calc.)	2.3045
st.dev.(EN14103:11)	1.48571
R(EN14103:11)	4.16

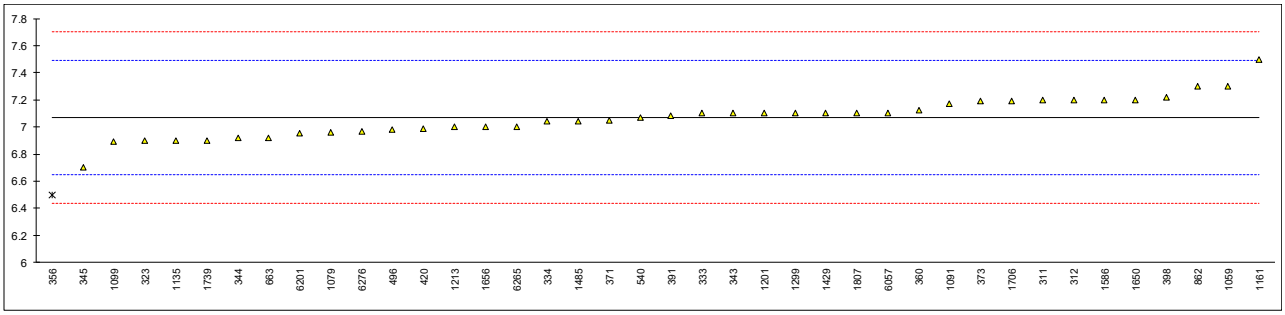


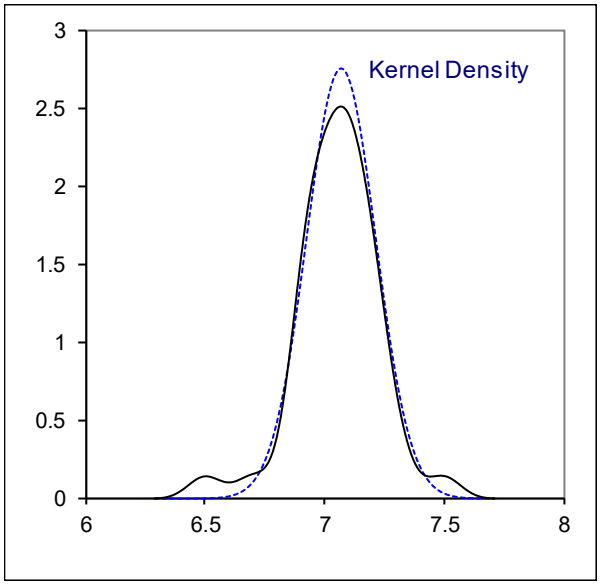


Determination of Linolenic Acid Methyl Ester content on sample #19189; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14103	7.2		0.62	
312	EN14103	7.2		0.62	
323	EN14103	6.9		-0.81	
333	EN14103	7.1		0.14	
334	EN14103	7.04		-0.15	
335		-----		-----	
336		-----		-----	
338		-----		-----	
343	EN14103	7.1		0.14	
344	EN14103	6.92		-0.72	
345	EN14103	6.7		-1.76	
351		-----		-----	
356	EN14103	6.5	R(0.05)	-2.71	
360	EN14103	7.12		0.24	
370		-----		-----	
371	EN14103	7.05		-0.10	
373	EN14103	7.188		0.56	
391	EN14103	7.08		0.05	
398	EN14103	7.22		0.71	
420	EN14103	6.99		-0.38	
447		-----		-----	
463		-----		-----	
496	EN14103	6.98		-0.43	
511		-----		-----	
540	EN14103	7.07		0.00	
663	EN14103	6.92		-0.72	
862	EN14103	7.30		1.09	
1059	EN14103	7.3		1.09	
1079	EN14103	6.96		-0.53	
1082		-----		-----	
1091	EN14103	7.17		0.47	
1099	EN14103	6.89		-0.86	
1135	EN14103	6.9		-0.81	
1161	EN14103	7.5		2.04	
1201	EN14103	7.1		0.14	
1213	EN14103	7.0		-0.34	
1290		-----		-----	
1299	EN14103	7.1		0.14	
1316		-----		-----	
1389		-----		-----	
1397		-----		-----	
1429	EN14103	7.1		0.14	
1459		-----		-----	
1485	EN14103	7.04		-0.15	
1564		-----		-----	
1582		-----		-----	
1586		7.2		0.62	
1634		-----		-----	
1650	EN14103	7.2		0.62	
1656	EN14103	7.0		-0.34	
1706	EN14103	7.193		0.58	
1710		-----		-----	
1721		-----		-----	
1739	EN14103	6.90		-0.81	
1744		-----		-----	
1769		-----		-----	
1807	EN14103	7.1		0.14	
1989		-----		-----	
6057	EN14103	7.1		0.14	
6181		-----		-----	
6201	EN14103	6.95		-0.57	
6259		-----		-----	
6262		-----		-----	
6265	EN14103	7.0		-0.34	
6276	EN14103	6.97		-0.48	
6288		-----		-----	
6291		-----		-----	

normality	suspect
n	39
outliers	1
mean (n)	7.071
st.dev. (n)	0.1449
R(calc.)	0.406
st.dev.(EN14103:11)	0.2103
R(EN14103:11)	0.589

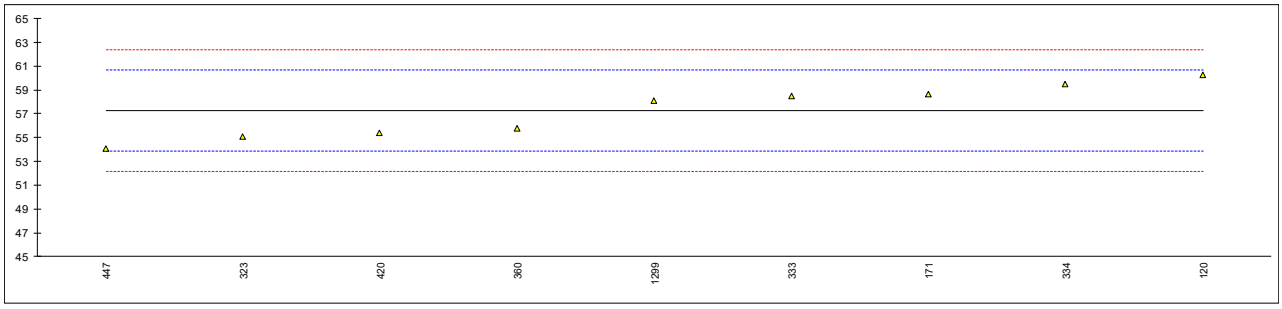


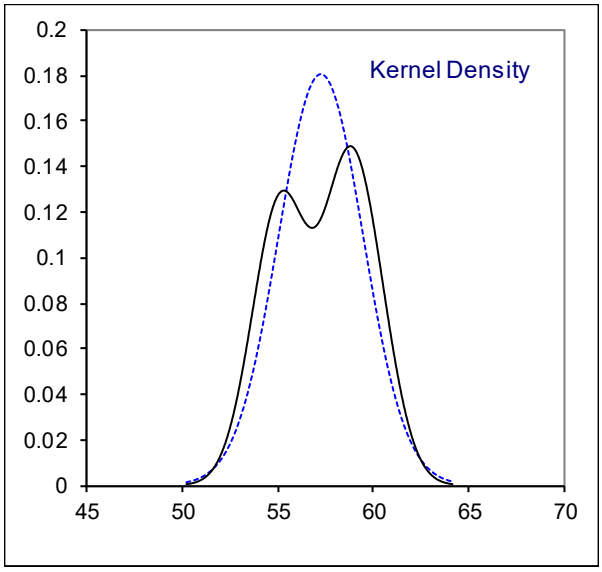


Determination of Cetane Number (D613) of sample #19186

lab	method	value	mark	z(targ)	remarks
120	D613	60.3		1.77	
171	D613	58.7		0.83	
311		-----		-----	
323	D613	55.1		-1.27	
333	D613	58.5		0.72	
334	ISO5165	59.5		1.30	
336		-----		-----	
343		-----		-----	
356		-----		-----	
360	ISO5165	55.76		-0.88	
420	ISO5165	55.4		-1.09	
447	IP41	54.1		-1.85	
496		-----		-----	
1135		-----		-----	
1161		-----		-----	
1201		-----		-----	
1299	D613	58.1		0.48	
1389		-----		-----	
1610		-----		-----	
1807		-----		-----	
6057		-----		-----	
6201		-----		-----	
6262		-----		-----	
6291		-----		-----	

	normality	OK
	n	9
	outliers	0
	mean (n)	57.273
	st.dev. (n)	2.2061
	R(calc.)	6.177
	st.dev.(D613:18a)	1.7143
	R(D613:18a)	4.8
Compare		
	R(EN14214:12+A2:19)	5.0

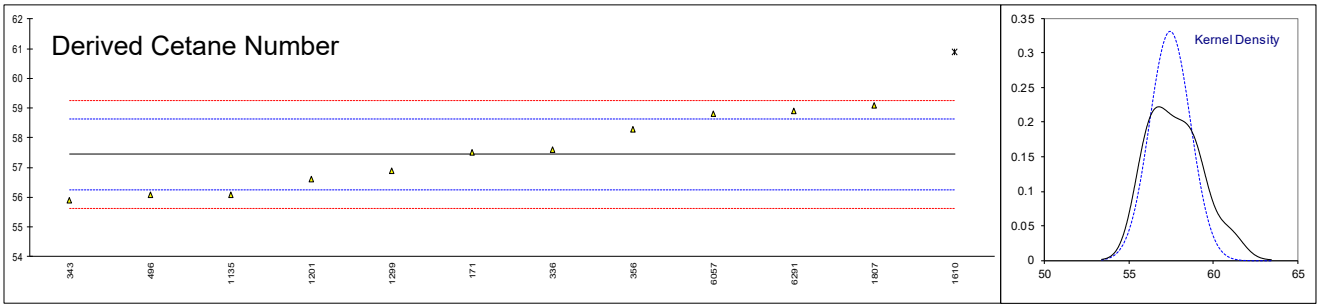


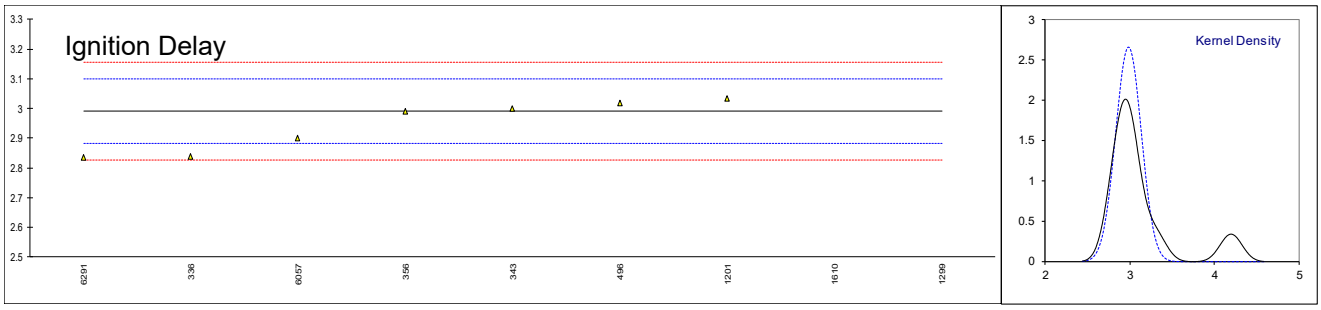


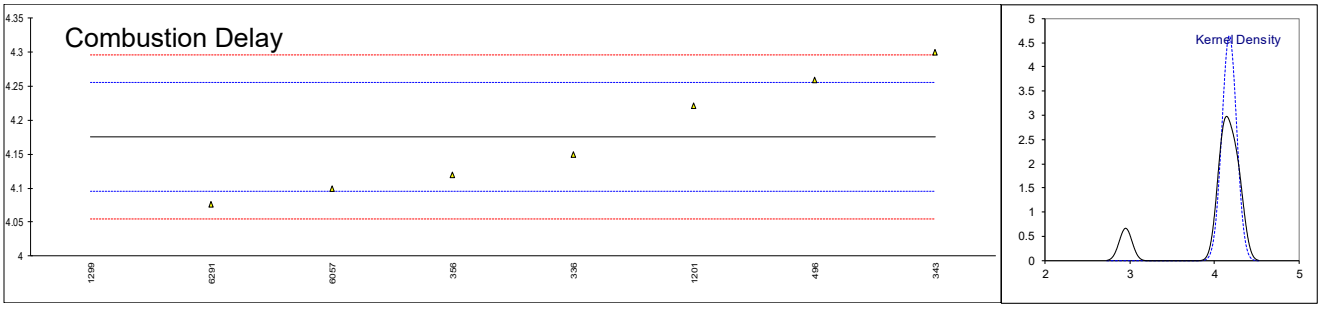
Determination of Derived Cetane Number (D7668) of sample #19186

lab	Method	DCN	mark	z(targ)	ID	mark	z(targ)	CD	mark	z(targ)	W.T.
120		-----		-----	-----		-----	-----		-----	-----
171	D7668	57.5		0.10	-----		-----	-----		-----	-----
311		-----		-----	-----		-----	-----		-----	-----
323		-----		-----	-----		-----	-----		-----	-----
333		-----		-----	-----		-----	-----		-----	-----
334		-----		-----	-----		-----	-----		-----	-----
336	D7668	57.6		0.27	2.84		-2.76	4.15		-0.63	604.9
343	D7668	55.9		-2.55	3.0		0.17	4.3		3.11	-----
356	D7668	58.3		1.43	2.99		-0.01	4.12		-1.38	600
360		-----		-----	-----		-----	-----		-----	-----
420		-----		-----	-----		-----	-----		-----	-----
447		-----		-----	-----		-----	-----		-----	-----
496	D7668	56.1		-2.22	3.02		0.54	4.26		2.11	589.0
1135	IP617	56.1		-2.22	-----	W	-----	-----		-----	579.6
1161		-----		-----	-----		-----	-----		-----	-----
1201	D7668	56.6		-1.39	3.034		0.80	4.221		1.14	595.88
1299	D7668	56.9		-0.89	4.20	D(0.05)	22.21	2.95	D(0.01)	-30.56	589
1389		-----		-----	-----		-----	-----		-----	-----
1610	EN15195	60.90	D(0.01)	5.75	3.306		5.79	-----		-----	549.1
1807		59.1		2.76	-----		-----	-----		-----	-----
6057	D7668	58.8		2.26	2.9		-1.66	4.1		-1.88	-----
6201		-----		-----	-----		-----	-----		-----	-----
6262		-----		-----	-----		-----	-----		-----	-----
6291	D7668	58.91		2.44	2.8343		-2.87	4.0759		-2.48	605.07
	normality	OK			not OK			unknown			
	n	11			8			7			
	outliers	1			1			1			
	mean (n)	57.437			2.991			4.175			
	st.dev. (n)	1.2039			0.1501			0.0857			
	R(calc.)	3.371			0.420			0.240			
	st.dev.(D7668:17)	0.6025			0.0545			0.0401			
	R(D7668:17)	1.687			0.152			0.112			

W.T. = Chamber Wall Temperature
Lab 1135 test result withdrawn. First reported 2.16



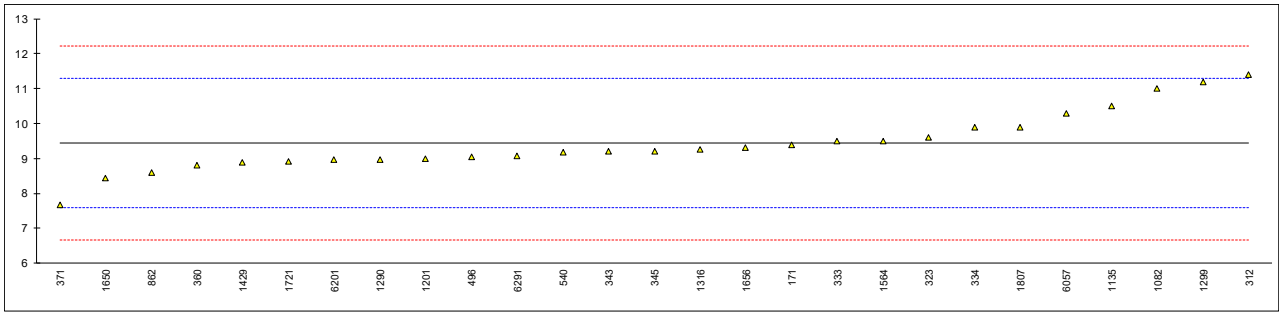


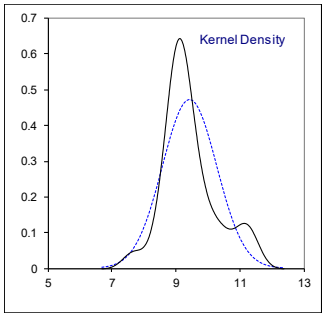


Determination of sum of Calcium and Magnesium as Ca + Mg on sample #19187; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171	EN14538	9.4		-0.04	
311	EN14538	>10		-----	
312	EN14538	11.4		2.12	
323	EN14538	9.6		0.18	
333	EN14538	9.5		0.07	
334	EN14538	9.9		0.50	
343	EN14538	9.2		-0.25	
345	EN14538	9.2	C	-0.25	first reported 12.34
360	EN14538	8.80		-0.69	
371	EN14538	7.68		-1.90	
391		-----		-----	
398		-----		-----	
463		-----		-----	
496	EN14538	9.056		-0.41	
540	EN14538	9.18		-0.28	
663		-----		-----	
862	EN14538	8.6		-0.90	
1082	D5185	11.0055		1.70	
1135	EN14538	10.5	C	1.15	first reported 140
1161		-----		-----	
1201	EN14538	9.0		-0.47	
1290	EN14538	8.976		-0.50	
1299	EN14538	11.2		1.91	
1316	In house	9.25		-0.20	
1429	EN14538	8.9		-0.58	
1564	EN14538	9.5		0.07	
1650	EN14538	8.44		-1.08	
1656	EN14538	9.3	C	-0.15	first reported 6.8
1721	EN14538	8.92		-0.56	
1807	EN14538	9.9		0.50	
6057	EN14538	10.3		0.93	
6201	EN14538	8.960		-0.51	
6262		-----		-----	
6276		-----		-----	
6291	EN14538	9.08		-0.38	

normality	OK
n	27
outliers	0
mean (n)	9.435
st.dev. (n)	0.8467
R(calc.)	2.371
st.dev.(EN14538:06)	0.9257
R(EN14538:06)	2.592

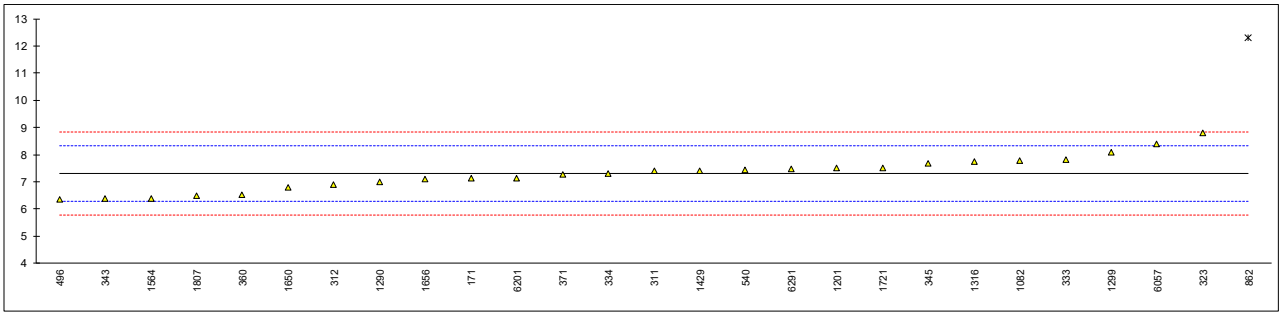


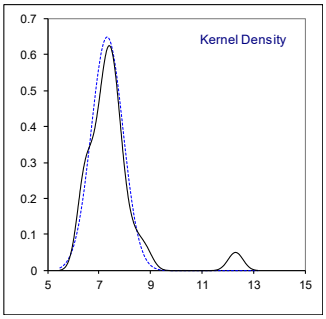


Determination of Phosphorus as P on sample #19187; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171	D5185	7.13		-0.34	
311	EN14107	7.4		0.19	
312	EN14107	6.9		-0.79	
323	EN14107	8.8		2.94	
333	EN14107	7.8		0.98	
334	EN14107	7.3		0.00	
343	EN14107	6.4		-1.77	
345	EN14107	7.67		0.72	
360	EN14107	6.52		-1.53	
371	EN14107	7.26		-0.08	
391		-----		-----	
398		-----		-----	
463		-----		-----	
496	EN14107	6.336		-1.89	
540	EN14107	7.45		0.29	
663		-----		-----	
862	EN14107	12.3	D(0.01)	9.81	
1082	D5185	7.7965		0.97	
1135	EN14107	<4		<-6.48	Possibly a false negative test result?
1161		-----		-----	
1201	EN14107	7.5	C	0.39	first reported 10.9
1290	EN14107	7.00		-0.59	
1299	EN14107	8.1		1.57	
1316	In house	7.74		0.86	
1429	EN14107	7.4		0.19	
1564	EN14107	6.4	C	-1.77	first reported 3.7
1650	EN14107	6.79		-1.00	
1656	EN14107	7.1	C	-0.39	first reported 4.1
1721	EN14107	7.51		0.41	
1807	EN16294	6.5		-1.57	
6057	EN14107	8.4		2.16	
6201	EN14107	7.143		-0.31	
6262		-----		-----	
6276		-----		-----	
6291	EN14107	7.48		0.35	

normality	OK
n	26
outliers	1
mean (n)	7.301
st.dev. (n)	0.6161
R(calc.)	1.725
st.dev.(EN14107:03)	0.5096
R(EN14107:03)	1.427

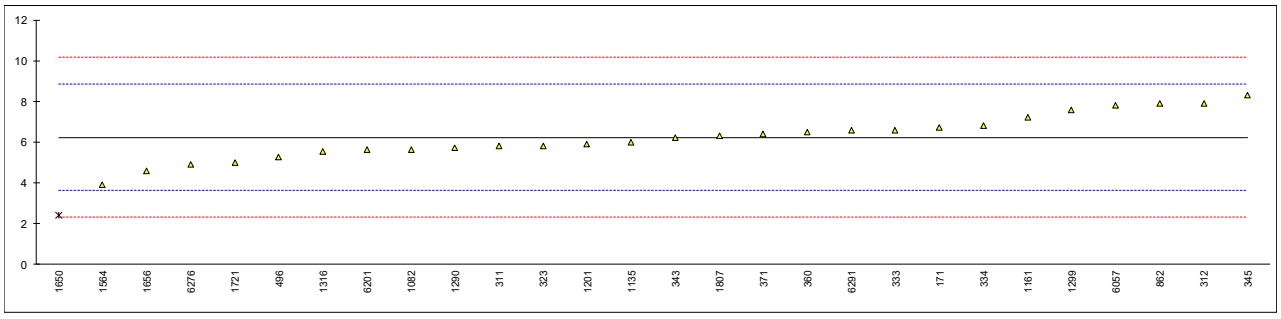


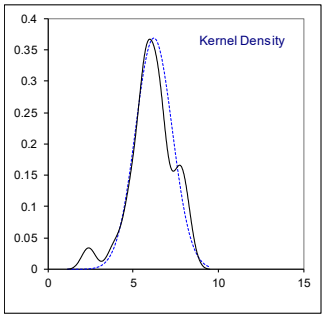


Determination of Potassium as K on sample #19187; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171	EN14538	6.7		0.35	
311	EN14538	5.8		-0.33	
312	EN14109	7.9		1.27	
323	EN14109	5.8		-0.33	
333	EN14538	6.6		0.28	
334	EN14538	6.8		0.43	
343	EN14538	6.2		-0.03	
345	EN14538	8.29		1.56	
360	EN14538	6.49		0.19	
371	EN14538	6.40		0.12	
391		-----		-----	
398		-----		-----	
463		-----		-----	
496	EN14538	5.249		-0.75	
540		-----		-----	
663		-----		-----	
862	EN14109	7.9		1.27	
1082	D5185	5.6520		-0.45	
1135	EN14109	6		-0.18	
1161	EN14109	7.216		0.75	
1201	EN14538	5.9		-0.26	
1290	EN14538	5.710		-0.40	
1299	EN14538	7.6		1.04	
1316	In house	5.56		-0.52	
1429		-----		-----	
1564	EN14538	3.9		-1.78	
1650	EN14109	2.39	R(0.05)	-2.93	
1656	EN14109	4.6		-1.25	
1721	EN14109	4.98		-0.96	
1807	EN14538	6.3		0.05	
6057	EN14109	7.8		1.19	
6201	EN14109	5.615		-0.47	
6262		-----		-----	
6276		4.90		-1.02	
6291	EN14538	6.56		0.25	

normality	OK
n	27
outliers	1
mean (n)	6.238
st.dev. (n)	1.0808
R(calc.)	3.026
st.dev.(EN14109:03)	1.3115
R(EN14109:03)	3.672

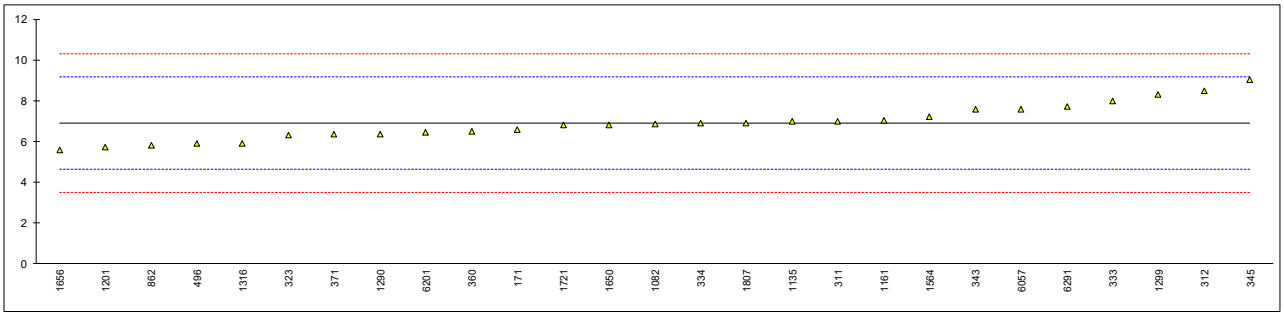


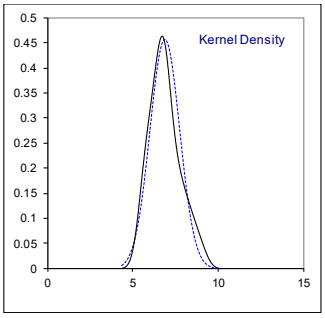


Determination of Sodium as Na on sample #19187; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171	EN14538	6.6		-0.28	
311	EN14538	7.0		0.08	
312	EN14108	8.5		1.40	
323	EN14108	6.3		-0.54	
333	EN14538	8.0		0.96	
334	EN14538	6.9		-0.01	
343	EN14538	7.6		0.61	
345	EN14538	9.01		1.85	
360	EN14538	6.49		-0.37	
371	EN14538	6.35		-0.50	
391		-----		-----	
398		-----		-----	
463		-----		-----	
496	EN14538	5.888		-0.90	
540		-----		-----	
663		-----		-----	
862	EN14108	5.8		-0.98	
1082	D5185	6.8720		-0.04	
1135	EN14108	7		0.08	
1161	EN14108	7.02		0.09	
1201	EN14538	5.7		-1.07	
1290	EN14538	6.359		-0.49	
1299	EN14538	8.3		1.22	
1316	In house	5.90		-0.89	
1429		-----		-----	
1564	EN14538	7.2	C	0.25	first reported 0
1650	EN14108	6.81		-0.09	
1656	EN14108	5.6		-1.16	
1721	EN14108	6.8		-0.10	
1807	EN14538	6.9		-0.01	
6057	EN14108	7.6		0.61	
6201	EN14108	6.4465		-0.41	
6262		-----		-----	
6276		-----		-----	
6291	EN14538	7.72		0.71	

normality	OK
n	27
outliers	0
mean (n)	6.914
st.dev. (n)	0.8717
R(calc.)	2.441
st.dev.(EN14108:03)	1.1333
R(EN14108:03)	3.173

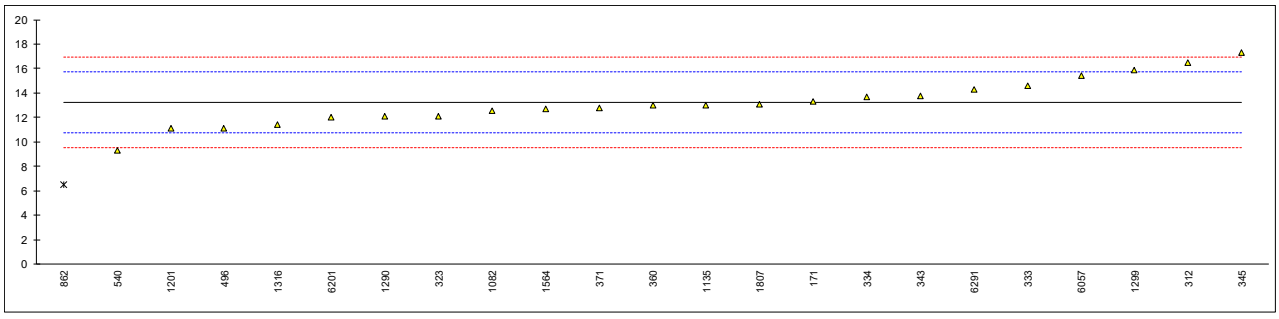


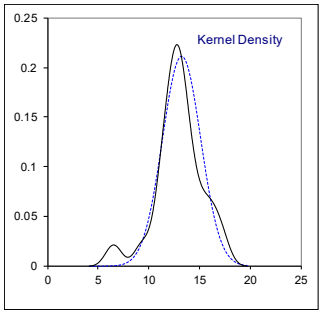


Determination of Sum of Potassium and Sodium as K + Na on sample #19187; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		13.3		0.06	
311	EN14538	>10		-----	
312	EN14538	16.5		2.64	
323	EN14538	12.1		-0.91	
333	EN14538	14.6		1.11	
334	EN14538	13.7		0.38	
343	EN14538	13.8		0.46	
345	EN14538	17.30		3.29	
360	EN14538	12.98		-0.20	
371	EN14538	12.75		-0.39	
391		-----		-----	
398		-----		-----	
463		-----		-----	
496	EN14538	11.137		-1.69	
540	EN14538	9.33		-3.15	
663		-----		-----	
862	EN14538	6.5	E,D(0.05)	-5.43	Calculation error, iis calculated 13.7
1082	D5185	12.5240		-0.57	
1135	EN14538	13		-0.18	
1161		-----		-----	
1201	EN14538	11.1		-1.72	
1290	EN14538	12.069		-0.94	
1299	EN14538	15.9		2.16	
1316	In house	11.46		-1.43	
1429		-----		-----	
1564	EN14538	12.7	E, C	-0.43	Calculation error, iis calculated 11.1. First reported 3.9
1650		-----		-----	
1656		-----		-----	
1721		-----		-----	
1807	EN14538	13.1		-0.10	
6057	EN14538	15.4		1.75	
6201	EN14538	12.0175		-0.98	
6262		-----		-----	
6276		-----		-----	
6291	EN14538	14.26		0.83	

normality	OK
n	22
outliers	1
mean (n)	13.229
st.dev. (n)	1.8908
R(calc.)	5.294
st.dev.(EN14538:06)	1.2384
R(EN14538:06)	3.468





Determination of Particulate Contamination on sample #19188; results in mg/L

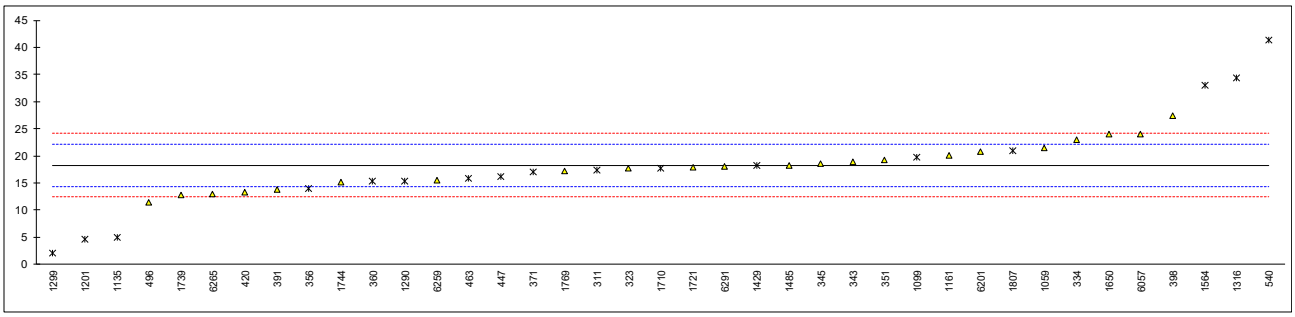
lab	method	value	mark	z(targ)	Vol. filtered	Number of filtrations	remarks
120		-----		-----	-----	-----	
171		-----		-----	-----	-----	
311		-----		-----	-----	-----	
312		-----		-----	-----	-----	
323	D7321	2.66		-----	378	-----	
334		-----		-----	-----	-----	
343		-----		-----	-----	-----	
345		-----		-----	-----	-----	
351		-----		-----	-----	-----	
356		-----		-----	-----	-----	
360		-----		-----	-----	-----	
371		-----		-----	-----	-----	
391		-----		-----	-----	-----	
398		-----		-----	-----	-----	
420		-----		-----	-----	-----	
447	D7321	13.8		-----	400	-----	
463		-----		-----	-----	-----	
496		-----		-----	-----	-----	
540		-----		-----	-----	-----	
663		-----		-----	-----	-----	
862		-----		-----	-----	-----	
1059		-----		-----	-----	-----	
1099		-----		-----	-----	-----	
1135		-----		-----	-----	-----	
1161		-----		-----	-----	-----	
1201		-----		-----	-----	-----	
1290		-----		-----	-----	-----	
1299		-----		-----	-----	-----	
1316		-----		-----	-----	-----	
1389		-----		-----	-----	-----	
1397		-----		-----	-----	-----	
1429		-----		-----	-----	-----	
1485		-----		-----	-----	-----	
1564		-----		-----	-----	-----	
1582		-----		-----	-----	-----	
1586	D7321	18.3		-----	400	-----	
1650		-----		-----	-----	-----	
1710		-----		-----	-----	-----	
1721		-----		-----	-----	-----	
1739		-----		-----	-----	-----	
1744		-----		-----	-----	-----	
1769		-----		-----	-----	-----	
1807		-----		-----	-----	-----	
6057		-----		-----	-----	-----	
6201		-----		-----	-----	-----	
6259		-----		-----	-----	-----	
6262		-----		-----	-----	-----	
6265		-----		-----	-----	-----	
6276		-----		-----	-----	-----	
6291		-----		-----	-----	-----	
	n	3					
	mean (n)	n.a.					

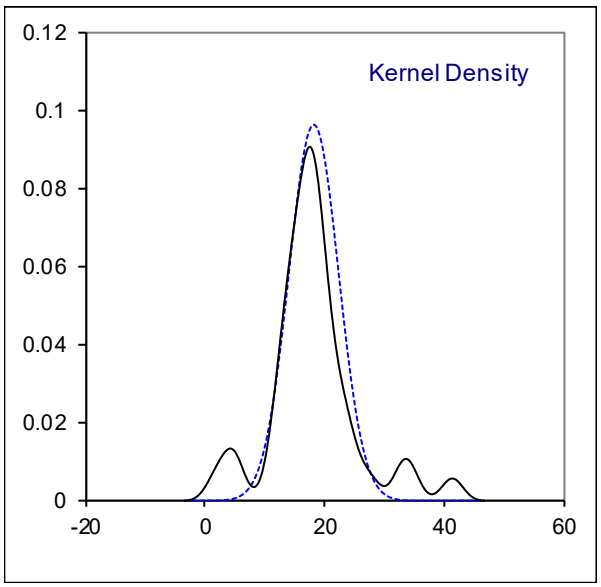
Determination of Total Contamination (EN12662) on sample #19188; results in mg/kg

lab	method	value	mark	z(targ)	Incomplete	Vol.filtered	stopped
120		-----		-----		-----	-----
171		-----		-----		-----	-----
311	EN12662:2014	17.4	ex	-0.44	YES	300	-----
312		-----		-----		-----	-----
323	EN12662:2008	17.7		-0.28		390	1
334	EN12662:1998	23.0		2.42	NO	-----	-----
343	EN12662:1998	18.9		0.33		-----	-----
345	EN12662:1998	18.5		0.12	NO	-----	-----
351	EN12662:1998	19.28		0.52	NO	-----	-----
356	EN12662:2014	14.0	ex	-2.18		300	-----
360	EN12662:2014	15.3	ex	-1.51	NO	-----	-----
371	EN12662:2014	17.06	ex	-0.61		-----	-----
391	EN12662:1998	13.8		-2.28	NO	-----	-----
398	EN12662:2008	27.46		4.70	NO	-----	-----
420	EN12662:1998	13.3		-2.53		-----	-----
447	EN12662:2014	16.1	ex	-1.10	NO	300	-----
463	EN12662:2014	15.8	ex	-1.26	NO	300	1.03
496	EN12662:1998	11.50		-3.45		-----	-----
540	EN12662:1998	41.39	D(0.05)	11.83	NO	150	90
663		-----		-----		-----	-----
862		-----		-----		-----	-----
1059	EN12662:1998	21.5		1.66	NO	-----	-----
1099	EN12662:2014	19.8	ex	0.79	NO	-----	-----
1135	EN12662:1998	5	ex	-6.78	NO	280	-----
1161	EN12662:2008	20.1		0.94		-----	-----
1201	EN12662:1998	4.7	ex	-6.93	NO	-----	-----
1290	EN12662:2014	15.33	ex	-1.50	NO	-----	-----
1299	EN12662:1998	2.0	ex	-8.31		300	-----
1316	EN12662:2008	34.3	D(0.05)	8.20	NO	800	-----
1389		-----	W	-----		-----	-----
1397		-----	W	-----	NO	-----	-----
1429	EN12662:2014	18.2	ex	-0.03		-----	-----
1485	EN12662:1998	18.25		0.00	NO	-----	-----
1564	EN12662:2014	33	ex	7.54		-----	-----
1582		-----		-----		-----	-----
1586		-----		-----	NO	-----	-----
1650	EN12662:2008	24.0		2.94		-----	-----
1710	EN12662:2014	17.7	ex	-0.28	NO	-----	-----
1721	EN12662:1998	17.93		-0.17		-----	13.5
1739	EN12662:1998	12.79		-2.79		-----	-----
1744	EN12662:2008	15.18		-1.57	NO	-----	-----
1769	EN12662:2008	17.15		-0.57		800	-----
1807	EN12662:2014	21.0	ex	1.40		-----	-----
6057	EN12662:1998	24		2.94	NO	-----	-----
6201	EN12662:1998	20.7		1.25		-----	-----
6259	EN12662:2008	15.50		-1.41		-----	-----
6262		-----		-----		-----	-----
6265	EN12662:1998	13.0		-2.69	NO	-----	-----
6276		-----		-----		-----	-----
6291	EN12662:2008	18.12		-0.07	NO	350	10
					Only 1998:	Only 2008:	
	normality	OK			OK	suspect	
	n	22			14	8	
	outliers	2+15ex	Spike:		1	1	
	mean (n)	18.257	15		17.604	19.401	
	st.dev. (n)	4.1456			4.0689	4.2966	
	R(calc.)	11.608			11.393	12.030	
	st.dev.(EN12662:08)	1.9561			1.9561	1.9561	
	R(EN12662:08)	5.477			---	5.820	
Compare							
	R(EN12662:98)	5.477			5.281	---	

Lab 1389 test result withdrawn. First reported 5
Lab 1397 test result withdrawn. First reported 116

ex = excluded from statistical analysis. Test result has been excluded because 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. See also iis MEMO 1903. Or the reported test result was below the expected lower value of 10.5 mg/kg (15 – 4.5)


45
40
35
30
25
20
15
10
5
0
1299
1201
1135
496
1739
6285
420
391
356
1744
360
1290
6259
463
447
371
1769
311
323
1710
1721
6291
1429
1485
345
343
351
1099
1161
6201
1807
1059
334
1650
6057
398
1564
1316
540


Kernel Density
0.12
0.1
0.08
0.06
0.04
0.02
0
-20
0
20
40
60

APPENDIX 2

Number of participants per country

2 labs in ARGENTINA
2 labs in AUSTRIA
5 labs in BELGIUM
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 FINLAND
6 labs in FRANCE
3 labs in GERMANY
1 lab in HUNGARY
2 labs in ITALY
2 labs in LATVIA
2 labs in LITHUANIA
1 lab in MACEDONIA
2 labs in MALTA
6 labs in NETHERLANDS
1 lab in PERU
1 lab in POLAND
4 labs in PORTUGAL
1 lab in SLOVENIA
7 labs in SPAIN
2 labs in SWEDEN
1 lab in THAILAND
1 lab in TURKEY
5 labs in UNITED KINGDOM
2 labs in UNITED STATES OF AMERICA
1 lab in VIETNAM

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
E = possibly an error in calculations
W = test result withdrawn on request of participant
ex = test result excluded from statistical evaluation
n.a. = not applicable
n.e. = not evaluated
n.d. = not detected
fr. = first reported
SDS = Safety Data Sheet

Literature:

1 iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, June 2018
2 ASTM E178:16
3 ASTM E1301:95(2003)
4 ISO 5725:86 (1994)
5 ISO 5725, parts 1-6, 1994
6 ISO 13528:05
7 M. Thompson and R. Wood, J. AOAC Int, 76, 926, (1993)
8 W.J. Youden and E.H. Steiner, Statistical Manual of the AOAC, (1975)
9 IP 367:84
10 DIN 38402 T41/42
11 P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
12 J.N. Miller, Analyst, 118, 455, (1993)
13 Analytical Methods Committee Technical Brief, No 4, January 2001
14 P.J. Lowthian and M. Thompson, The Royal Society of Chemistry, Analyst, 127, 1359-1364, (2002)
15 Bernard Rosner, Percentage Points for a Generalized ESD Many-Outlier Procedure, Technometrics, 25(2), 165-172, (1983)
16 Horwitz, W and Albert, R, J. AOAC Int, 79, 3, 589, (1996)
17 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).
18 iis Memo 1903, Biodiesel B100 (100% FAME) for Total Contamination EN12662.