Results of Proficiency Test
Biodiesel 100% FAME (B100)
October 2018

Organised by: Institute for Interlaboratory Studies (iis)
Spijkenisse, the Netherlands

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Report no.: iis18G06

December 2018

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1 INTRODUCTION

Since 1991, the Institute for Interlaboratory Studies organises every year proficiency tests (PT) for Fatty Acid Methyl Esters (FAME) used as Biodiesel B100. Since 2008 two PTs are organised for Biodiesel 100% FAME (B100). In the annual proficiency testing program of 2017/2018, it was decided to continue with the proficiency tests on Biodiesel B100 in accordance with the latest applicable version of ASTM D6751 and EN14214:2012 + A1:2014/AC:2014.
The number of participants per Biodiesel B100 PT: 82 laboratories in 29 countries for the main round (iis18G06), 27 laboratories in 13 countries for the Cetane Number & DCN (iis18G06CN), 41 laboratories in 17 countries for the Metals in Biodiesel (iis18G06M) and 56 laboratories in 23 countries for the Total Contamination (iis18G06TC).
In this interlaboratory study in total 83 laboratories from 29 different countries registered for participation. See appendix 2 for a list of number of participants per country for sample #18180 (main sample). In this report, the results of the 2018 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/IEC 17025 accredited laboratory. In this proficiency test, the participants received, depending on the registration, from one up to four different samples of Biodiesel B100, see table below.

Samples	Amount in L	Purpose	Spiked
#18180	1.5	For regular analyses	-
#18181	2	Cetane Number & DCN	-
#18182	0.1	Analysis of metals	Sodium, Phosphorus, Potassium
#18183	1	Total Contamination	Arizona dust (medium)

Table 1: four different Biodiesel B100 samples used in iis18G06

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/IEC 17043:2010 (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 organisation of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of 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 approx. 400L (2 drums of 200L each) of Biodiesel B100 (RME) was obtained from an European producer.

Sample #18180 - main sample

Out of one of the drums, after homogenisation, 128 amber glass bottles of 1L and 104 amber glass bottles of 0.5L for the main round were filled and labelled #18180. The homogeneity of the subsamples #18180 was checked by the determination of Density in accordance with ISO 12185 on 8 stratified randomly selected samples:

	Density at 15°C in kg/m^3
sample #18180-1	882.98
sample #18180-2	882.97
sample #18180-3	882.97
sample #18180-4	882.97
sample #18180-5	882.97
sample #18180-6	882.97
sample #18180-7	882.96
sample #18180-8	882.96

Table 2: homogeneity test results of subsamples #18180

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

Table 3: evaluation of the repeatability of subsamples #18180

The calculated repeatability was in agreement with 0.3 times the corresponding reproducibility of the reference test method. Therefore, the homogeneity of the subsamples of #18180 was assumed.

Biodiesel B100 #18181 – Cetane Number and Derived Cetane Number

Out of the second drum, after homogenisation, 105 amber glass bottles of 1L were filled and labelled #18181.The homogeneity of the subsamples #18181 was checked by the determination of Density in accordance with ISO 12185 on 8 stratified randomly selected samples:

	Density at 15°C in kg/m^3
sample #18181-1	883.26
sample #18181-2	883.25
sample #18181-3	883.25
sample #18181-4	883.25
sample #18181-5	883.24
sample #18181-6	883.24
sample #18181-7	883.24
sample #18181-8	883.25

Table 4: homogeneity test results of subsamples #18181

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

Table 5: evaluation of the repeatability of subsamples #18181

The calculated repeatability was in agreement with 0.3 times the corresponding reproducibility of the reference test method. Therefore, the homogeneity of the subsamples of #18181 was assumed.

Biodiesel B100 #18182 - Metals

From the remaining material used for sample #18181, approx. 5.3 kg was separated from the large batch and was spiked with Phosphorus (approx. 15 mg/kg), Sodium (approx. 19 mg/kg) and Potassium (approx. 19 mg/kg). After homogenisation, out of the batch 58 HDPE bottles of 0.1L were filled and labelled #18182.

The homogeneity of the subsamples of #18182 was checked by determination of Phosphorus and Sodium on 6 stratified randomly selected samples:

	Phosphorus in mg/kg	Sodium in mg/kg
sample #18182-1	12.8	12.7
sample #18182-2	12.8	12.7
sample #18182-3	13.0	12.3
sample #18182-4	12.5	12.4
sample #18182-5	12.9	12.3
sample #18182-6	13.1	12.3

Table 6: homogeneity test results of subsamples #18182

	Phosphorus in mg/kg	Sodium in mg/kg
r (observed)	0.58	0.55
reference test method	EN14107:03	EN14108:03
0.3 * R (reference method)	0.75	1.39

Table 7: evaluation of repeatability of subsamples #18182

The calculated repeatabilities were in agreement with 0.3 times the corresponding reproducibilities of the reference test methods. Therefore, the homogeneity of the subsamples #18182 was assumed.

Biodiesel B100 #18183 – Total Contamination

Into 61 amber glass bottles, 1 ml of a freshly prepared and ultrasonically homogenized 18 g/kg Arizona Dust (medium) 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 litre Biodiesel B100. The bottles were labelled #18183.

Depending on the registration of the participant, one 1 litre bottle and one 0.5 litre bottle both labelled #18180, two 1 litre bottles labelled #18182, one 100mL bottle labelled #18182 and/or one 1 litre bottle labelled #18183, were dispatched to each of the participating laboratories on September 12, 2018. 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 HDPE bottles, was checked. The material was found sufficiently stable for the period of the proficiency test.

2.6 ANALYSES

The tests methods to be used by the participating laboratories should be in accordance with the requirements of EN14214:12+A1:14 and/or ASTM D6751:18.

Parameter	EN14214:12	Parameter	ASTM D6751:18
Acid Value	EN14104	Acid Number	ASTM D664
Calorific Value	DIN51900		
		Carbon Residue on 100% FAME	ASTM D4530
CFPP	EN116		
Cloud Point	EN23015	Cloud Point	ASTM D2500
Copper Strip Corrosion	ISO2160	Copper Strip Corrosion	ASTM D130
Density at 15°C	ISO12185		
		Distillation	ASTM D1160
Flash Point (Recc)	ISO3679		
Flash Point (PMcc)	ISO2719	Flash Point	ASTM D93
Iodine Value	EN14111		
Kin. Visc. At 40°C	ISO3104	Kin. Visc. at 40°C	ASTM D445
Oxidation Stability	EN14112	Oxidation Stability	EN15751
Sulphated Ash	ISO3987	Sulphated Ash	ASTM D874
Sulphur	ISO20846	Sulphur	ASTM D5453
Water	ISO12937	Water and Sediment	ASTM D2709
Cetane Number	EN 5165	Cetane Number	ASTM D613
		Derived Cetane Number	ASTM D7668

Parameter	EN14214:12	Parameter	ASTM D6751:18
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 8: requirements and test methods acc. to specifications EN14214:12+A1:14 and/or ASTM D6751:15ce1.

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 reanalyses). Additional or corrected test results are used for data analysis and original test results are placed under 'Remarks' in the result tables in appendix 1. Test results that came in after the deadline were not taken into account in this screening for suspect data and thus these participants were not requested for checks.

3.1 STATISTICS

The protocol followed in the 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 ISO 5725 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. ASTM reproducibilities, the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the variation of 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 test result tables in 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 execution.
For the regular Biodiesel PT: one participant reported test results after the final reporting date and two other participants did not report any test results at all.
For the Cetane Number & DCN in Biodiesel PT: three participants did not report any test results at all.
For the Metals in Biodiesel PT: two participants reported the test results after the final reporting date and ten (!) other participants did not report any test results at all.
For the Total Contamination PT: one participant reported the test results after the final reporting date and seven other participants did not report any test results at all.

Finally, in total 83 participants reported in total 1332 numerical results. Observed were 33 outlying results, which is 2.5%. 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 listed in appendix 3.

Sample #18180

Acid Value (EN): This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of EN14104:03 and EN14214:12+A1:14

Acid Number (ASTM): This determination was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D664:17a 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 is almost in agreement with the requirements of EN14214:12+A1:14.

CFPP: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of EN116:15 or EN14214:12+A1:14.

Carbon Residue (on 100%): 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).

Density at 15°C: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO12185:96.

Flash Point PMcc: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in 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. However, the calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ISO3679:15.

Iodine Value: This determination was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of EN14111:03 and EN16300:12.

Kin.Visco. at 40°C: The determination was problematic depending on the test method used. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of ISO3104:94, but is in agreement with the requirements of ASTM D445:17a.

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

Pour Point: 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 ISO3016:94.

Sulphated Ash: All reported test results were near or below the application limit of ASTM D874:13a(2018) (0.005% M/M). Therefore, no z-scores were calculated.

Sulphur: This determination was not problematic. Five statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO20846:11 or ASTM D5453:16e1.

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

Water and Sediment: All reported test results were near or below the application limit of ASTM D2709:16 (0.05% V/V). Therefore, no z-scores were calculated.

Calorific Value: Only five participants submitted a 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 not be problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of DIN51900-1:00.

Distillation at 10mm Hg: This determination was not problematic for 80% and 90% recovered. No statistical outliers were observed, but one test result was excluded. The calculated reproducibilities are in agreement with the requirements of ASTM D1160:18. For 95% recovered no z-scores were calculated as the number of reported test results was small and vary widely.

Methanol: This determination was problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of EN14110:03.

mono-Glycerides 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.

di-Glycerides: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN14105:11.

tri-Glycerides: This determination was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of EN14105:11.

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

Total Glycerol: This determination was problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of 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. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN14103:11.

Polyunsaturated Methyl Esters: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of EN15779:09+A1:13.

Sample #18181

Cetane Number: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of EN14214:12+A1:14. However, the calculated reproducibility is not in agreement with the requirements of ISO5165:98 and ASTM D613:18.

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

Sample #18182

Sum Ca + Mg 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 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.
The samples were spiked with Phosphorus. The average recovery of Phosphorus (theoretical increment of 15.31 mg/kg) may be good: “less than 100%”. The actual blank concentration for Phosphorus is unknown.

Potassium: This determination was not problematic. No statistical outliers were observed but one test result is excluded. The calculated reproducibility after rejection of the suspect data is in agreement with the requirements of EN14109:03.
The samples were spiked with Potassium. The average recovery of Potassium (theoretical increment of 19.17 mg/kg) may be sufficient: “less than 73%”. The actual blank concentration for Potassium is unknown.

Sodium: 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 EN14108:03. The samples were spiked with Sodium. The average recovery of Sodium (theoretical increment of 18.56 mg/kg) may be sufficient: “less than 78%”. The actual blank concentration for Sodium is unknown.

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 #18183

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. Ten laboratories reported to use the 2014 version. Therefore, the test result of these laboratories was excluded from the statistical evaluation.

Particulate Contamination: Only one laboratory reported a test result, therefore 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 (11.0 mg/kg =18.1 mg/kg – 7.1 mg/kg $_{(R\ EN14214:12+A1:14)}$). However, 5 of the 47 laboratories reported a concentration lower than 11.0 mg/kg and these test results were excluded prior to statistical analysis.

Furthermore, EN12662:2014 is not applicable to FAME (B100) according to CEN/TC 19 Committee, instead either method EN12662:1998 or 12662:2008 should be used. Therefore another nine test results were excluded.
No statistical outliers were observed, but fourteen test results were excluded.
Unfortunately, the calculated reproducibility after rejection of the suspect data is still not in agreement with the requirements of EN14214:12+A1:14 or EN12662:98 (or :08).

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 or as declared by the estimated target reproducibility using the Horwitz equation and the reproducibility as found for the group of participating laboratories. The reproducibilities derived from literature reference test methods (e.g. ASTM, EN, ISO and IP test methods) and the calculated reproducibilities of the samples (see appendix 1) are compared in the next tables.

Parameter	unit	n	average	2.8 * sd	R (lit)
Acid Value (EN)	mg KOH/g	49	0.41	0.08	0.06
Acid Number, total (ASTM)	mg KOH/g	24	0.39	0.07	0.12
Cloud Point	°C	65	-6.2	4.5	5
Cold Filter Plugging Point	°C	65	-20.4	5.2	4.2
Carbon Residue (100% FAME)	%M/M	31	<0.1	n.a.	n.a.
Copper Corrosion, 3hrs/50°C		55	1 (1A)	n.a.	n.a.
Density at 15°C	kg/m^3	71	883.0	0.3	0.5
Flash Point - PMcc	°C	49	157.6	19.4	14.7
Flash Point - recc (ISO3679)	°C	21	170.3	9.6	15
Iodine Value	g I_2/100g	51	112.8	5.0	5
Kinematic Viscosity at 40°C	mm^2/s	29	4.482	0.055	0.045
Oxidation Stability (EN15751)	hours	51	4.8	0.9	1.3
Pour Point	°C	34	-39.0	4.2	6.0
Sulphated Ash	%M/M	33	<0.005	n.a.	n.a.
Sulphur	mg/kg	44	1.6	0.9	1.3
Water	mg/kg	69	381	96	134
Water and sediment	%V/V	11	<0.05	n.a.	n.a.
Calorific Value, Gross	kJ/kg	4	39988	271	400
80% recovered, as AET	°C	6	353.6	4.4	4.6
90% recovered, as AET	°C	6	356.2	4.3	4.6
95% recovered, as AET	°C	4	364.4	28.1	(4.6)
Methanol	%M/M	48	0.031	0.013	0.010
mono-Glycerides	%M/M	45	0.242	0.141	0.111
di-Glycerides	%M/M	41	0.085	0.039	0.045
tri-Glycerides	%M/M	41	0.045	0.031	0.066
Free Glycerol	%M/M	35	0.002	0.003	0.007
Total Glycerol	%M/M	44	0.081	0.039	0.027
Total Ester Content	%M/M	54	98.0	3.0	4.2
Linolenic Acid Methyl Ester	%M/M	50	8.82	0.46	0.64
Polyunsaturated Methyl Esters	%M/M	16	0.16	0.28	0.27

Table 9: reproducibilities of tests on sample #18180

Parameter	unit	n	average	2.8 * sd	R (lit)
Cetane No.(ISO5165)		15	54.6	5.3	5.0
Derived Cetane No. (D7688)		10	55.2	3.5	1.6
Ignition Delay		8	3.1	0.3	0.2
Combustion Delay		8	4.4	0.2	0.1

Table 10: reproducibilities of tests on sample #18181

Parameter	unit	n	average	2.8 * sd	R (lit)
Sum Calcium & Magnesium	mg/kg	26	21.7	6.1	4.4
Phosphorus	mg/kg	28	15.3	4.7	3.0
Potassium	mg/kg	21	14.1	7.3	7.6
Sodium	mg/kg	21	14.5	6.0	5.2
Sum Potassium & Sodium	mg/kg	22	28.4	12.1	6.4

Table 11: reproducibilities of tests on sample #18182

Parameter	unit	n	average	2.8 * sd	R (lit)
Particulate Contamination (D7321)	mg/L	1	n.a.	n.a.	n.a.
Total Contamination (EN12662)	mg/kg	33	18.0	10.4	7.1

Table 12: reproducibilities of tests on sample #18183

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 2018 WITH PREVIOUS PTS

	October 2018	May 2018	October 2017	May 2017	October 2016
Type of FAME	Rapeseed	Rapeseed	Offal-ME	Rapeseed	Rapeseed
Number of reporting labs	83	39	70	38	79
Number of results reported	1332	563	1054	449	1369
Number of statistical outliers	33	22	24	11	41
Percentage statistical outliers	2.5%	3.9%	2.3%	2.5%	3.0%

Table 13: comparison with previous proficiency tests

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

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

Parameter	October 2018	May 2018	October 2017	May 2017	October 2016
Acid Value (EN)	-	-	+/-	n.e.	+
Acid Number, total (ASTM)	+	+	+	+/-	+
Cloud Point	+	+	++	+/-	+/-
Cold Filter Plugging Point	-	+	-	+	+/-
Carbon Residue (100% FAME)	n.e.	n.e.	n.e.	n.e.	n.e.
Density at 15°C	++	+	++	+	++
Flash Point - PMcc	-	-	-	+/-	+
Flash Point - recc.(ISO3679)	+	++	++	n.e.	+/-
Iodine Value	+/-	-	-	-	+/-
Kinematic Viscosity at 40°C	-	-	-	++	+
Oxidation Stability (EN15751)	+	++	--	+	+
Pour Point	+	+	+	n.e.	+
Sulphated Ash	n.e.	n.e.	n.e.	n.e.	n.e.
Sulphur	+	+	+/-	-	+
Water	+	+	+	++	+
Calorific Value, Gross	+	+	+	n.e.	-
Distillation at 10mm Hg	-	-	n.e.	(+)	n.e.
Methanol	-	-	n.e.	++	+/-
mono-Glycerides	-	+	n.e.	++	+/-
di-Glycerides	+	+	n.e.	++	+
tri-Glycerides	++	++	n.e.	++	+
Free Glycerol	++	+	+	+	+
Total Glycerol	-	+	--	+	+/-
Total Ester Content	+	+	-	n.e.	+
Linolenic Acid Methyl Ester	+	+	+	n.e.	+
Polyunsaturated Methyl Esters	+/-	-	+/-	n.e.	n.e.
Cetane Number	+/-	n.e.	+	n.e.	-
Derived Cetane Number	--	n.e.	-	n.e.	+
Sum of Calcium and Magnesium	-	-	--	-	-
Phosphorus	-	-	-	-	--
Potassium	+/-	+	-	n.e.	n.e.
Sodium	-	-	+	+	+
Sum of Potassium and Sodium	--	-	-	-	-
Particle Contamination (D7321)	n.e.	n.e.	n.e.	--	n.e.
Total Contamination ((EN12662)	-	--	--	--	--

Table 14: comparison of group performances against the reference requirements of all samples
* Signs between brackets are for assigned values below the application range of the respective reference test method and therefore should be used with due care

The performance of the determinations against the requirements of the respective 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

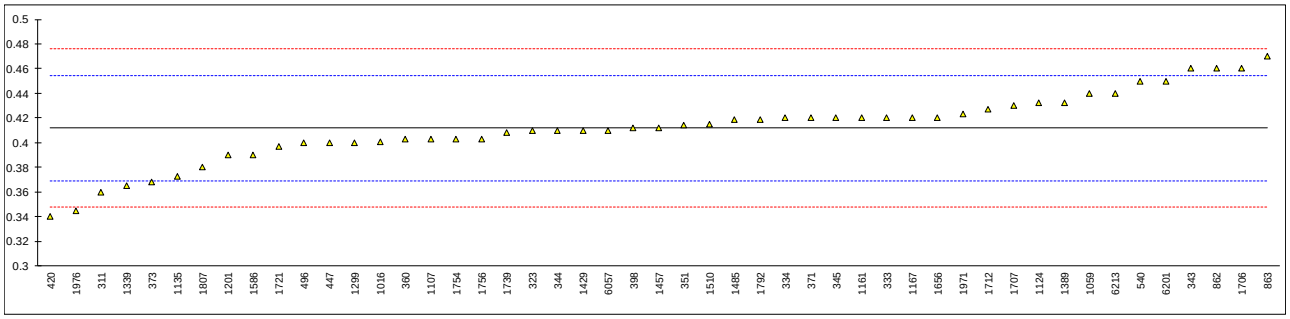
APPENDIX 1

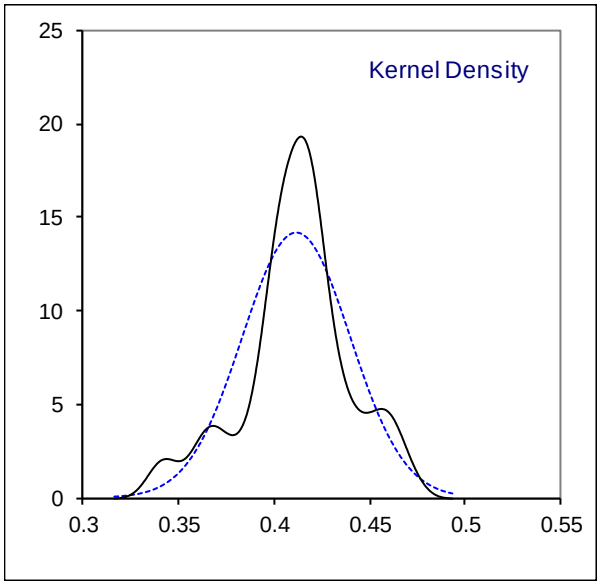
Determination of Acid Value on sample #18180; results in mg KOH/g

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14104	0.36		-2.41	
312		-----		-----	
323	EN14104	0.41		-0.08	
333	EN14104	0.42		0.39	
334	EN14104	0.42		0.39	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
343	EN14104	0.46		2.25	
344	EN14104	0.41		-0.08	
345	EN14104	0.42		0.39	
351	EN14104	0.414		0.11	
360	EN14104	0.403		-0.41	
370		-----		-----	
371	EN14104	0.42		0.39	
373	EN14104	0.368		-2.04	
391		-----		-----	
398	EN14104	0.412		0.01	
420	EN14104	0.34		-3.35	
447	EN14104	0.40		-0.55	
463		-----		-----	
496	EN14104	0.40		-0.55	
511		-----		-----	
540	EN14104	0.45		1.79	
603		-----		-----	
663		-----		-----	
862	EN14104	0.46		2.25	
863	EN14104	0.47	C	2.72	First reported 0.57
1016	EN14104	0.401		-0.50	
1033		-----		-----	
1059	EN14104	0.44		1.32	
1107	EN14104	0.403		-0.41	
1124	EN14104	0.432		0.95	
1134		-----		-----	
1135	EN14104	0.3727		-1.82	
1161	EN14104	0.42		0.39	
1167	EN14104	0.42		0.39	
1179		-----		-----	
1199		-----		-----	
1201	EN14104	0.39		-1.01	
1213		-----		-----	
1299	EN14104	0.40		-0.55	
1316		-----		-----	
1320		-----		-----	
1339	EN14104	0.365		-2.18	
1367		-----		-----	
1389	EN14104	0.432		0.95	
1397		-----		-----	
1429	EN14104	0.41		-0.08	
1457	EN14104	0.412		0.01	
1459		-----		-----	
1485	EN14104	0.419		0.34	
1491		-----		-----	
1494		-----		-----	
1510	EN14104	0.415		0.15	
1546		-----	W	-----	First reported 0.485
1564		-----		-----	
1586	EN14104	0.39		-1.01	
1634		-----		-----	
1656	EN14104	0.42		0.39	
1706	EN14104	0.460		2.25	
1707	EN14104	0.430		0.85	
1712	EN14104	0.427		0.71	
1721	EN14104	0.397		-0.69	
1739	EN14104	0.408		-0.17	
1744		-----		-----	
1754	EN14104	0.403		-0.41	
1756	EN14104	0.403		-0.41	
1769		-----		-----	
1792	EN14104	0.419		0.34	
1807	EN14104	0.38		-1.48	
1971	EN14104	0.423		0.53	
1976	EN14104	0.345		-3.11	

lab	method	value	mark	z(targ)	remarks
6057	EN14104	0.41		-0.08	
6069		-----		-----	
6179		-----		-----	
6191		-----		-----	
6201	EN14104	0.45		1.79	
6213	EN14104	0.44		1.32	

	normality	OK
	n	49
	outliers	0
	mean (n)	0.4117
	st.dev. (n)	0.02812
	R(calc.)	0.0787
	st.dev.(EN14104:03)	0.02143
	R(EN14104:03)	0.06
Compare		
	R(EN14214:12+A1:14)	0.06



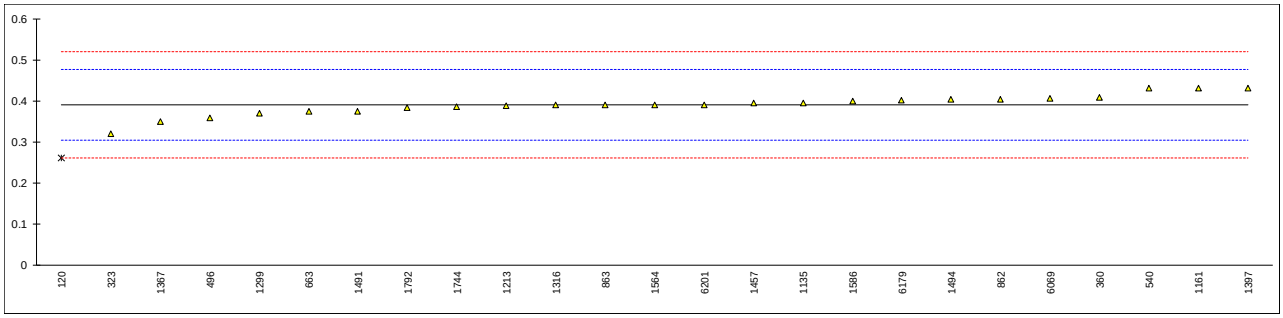


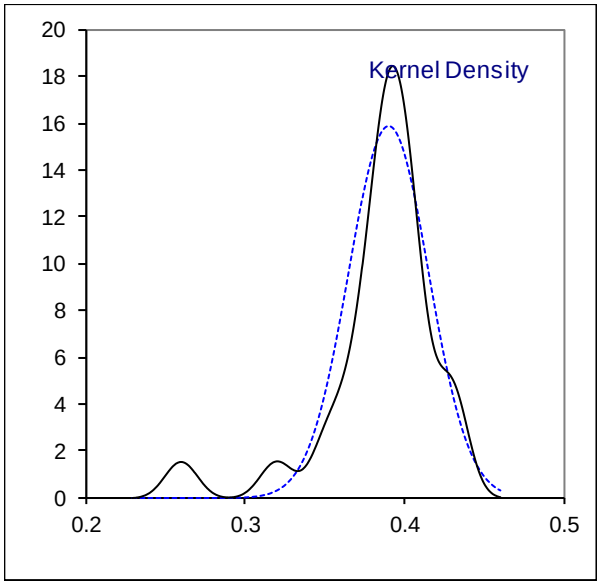
Determination of Acid Number (total) on sample #18180; results in mg KOH/g

lab	method	value	mark	z(targ)	remarks
120	D664-B	0.26	R(0.01)	-3.01	
171		-----		-----	
311		-----		-----	
312		-----		-----	
323	D664-B	0.32		-1.62	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
343		-----		-----	
344		-----		-----	
345		-----		-----	
351		-----		-----	
360	D664-B	0.408		0.41	
370		-----		-----	
371		-----		-----	
373		-----		-----	
391		-----		-----	
398		-----		-----	
420		-----		-----	
447		-----		-----	
463		-----		-----	
496	D664-B	0.358		-0.75	
511		-----		-----	
540	D664-B	0.43		0.91	
603		-----		-----	
663	D664-B	0.375		-0.36	
862	D664	0.405		0.34	
863	D664-B	0.39		-0.01	
1016		-----		-----	
1033		-----		-----	
1059		-----		-----	
1107		-----		-----	
1124		-----		-----	
1134		-----		-----	
1135	D664-B	0.3959		0.13	
1161	D664-B	0.43		0.91	
1167		-----		-----	
1179		-----		-----	
1199		-----		-----	
1201		-----		-----	
1213	D664-B	0.387		-0.08	
1299	D664-B	0.37		-0.47	
1316	D664-B	0.39		-0.01	
1320		-----		-----	
1339		-----		-----	
1367	D664-B	0.35		-0.93	
1389		-----		-----	
1397	D664-B	0.43		0.91	
1429		-----		-----	
1457	D974	0.394		0.08	
1459		-----		-----	
1485		-----		-----	
1491	D664-B	0.3753		-0.35	
1494	D664-B	0.4033		0.30	
1510		-----		-----	
1546		-----		-----	
1564	D664-B	0.39		-0.01	
1586	D664-B	0.40		0.22	
1634		-----		-----	
1656		-----		-----	
1706		-----		-----	
1707		-----		-----	
1712		-----		-----	
1721		-----		-----	
1739		-----		-----	
1744	D664-B	0.385		-0.12	
1754		-----		-----	
1756		-----		-----	
1769		-----		-----	
1792	D664-B	0.384		-0.15	
1807		-----		-----	
1971		-----		-----	
1976		-----		-----	

lab	method	value	mark	z(targ)	remarks
6057		-----		-----	
6069	D664-B	0.407		0.38	
6179	D664-B	0.4026		0.28	
6191		-----		-----	
6201	D664-B	0.39		-0.01	
6213		-----		-----	

normality	suspect
n	24
outliers	1
mean (n)	0.3904
st.dev. (n)	0.02516
R(calc.)	0.0704
st.dev.(D664-B:17a)	0.04339
R(D664-B:17a)	0.1215



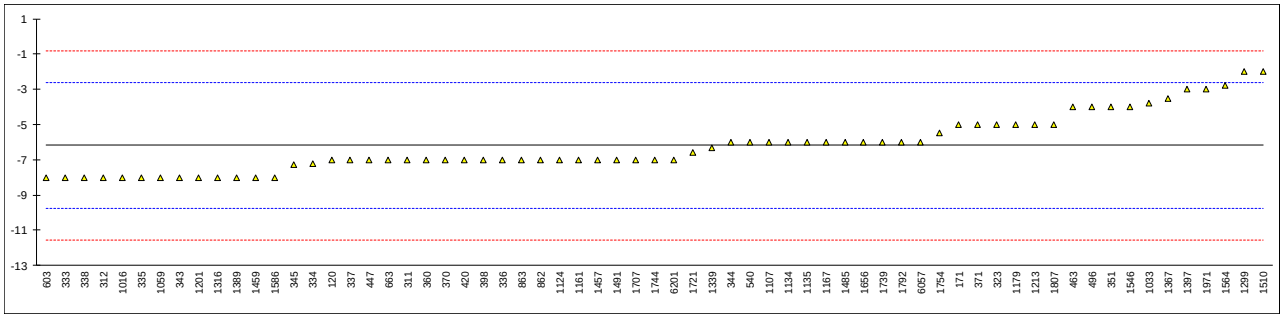


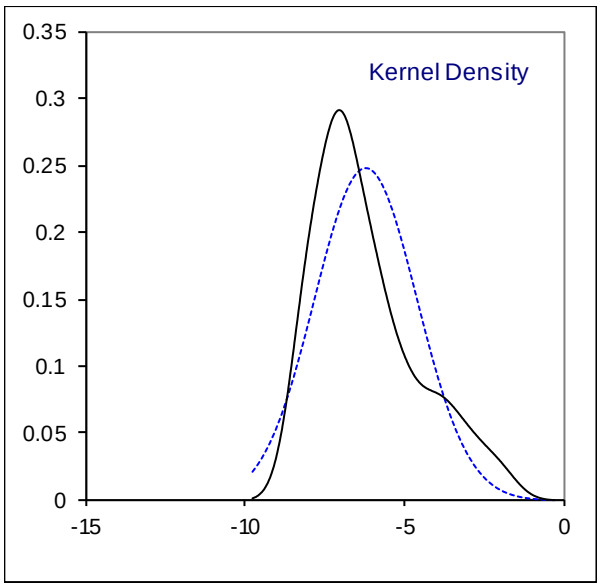
Determination of Cloud Point on sample #18180; results in °C

lab	method	value	mark	z(targ)	remarks
120	D2500	-7		-0.46	
171	D2500	-5	C	0.66	First reported 4
311	D2500	-7		-0.46	
312	D2500	-8		-1.02	
323	D2500	-5		0.66	
333	D2500	-8		-1.02	
334	EN23015	-7.2		-0.57	
335	ISO3015	-8		-1.02	
336	EN23015	-7		-0.46	
337	EN23015	-7		-0.46	
338	EN23015	-8.0		-1.02	
343	D2500	-8		-1.02	
344	D2500	-6.0		0.10	
345	D5771	-7.3		-0.62	
351	D7683	-4.00		1.22	
360	D2500	-7		-0.46	
370	EN23015	-7		-0.46	
371	EN23015	-5		0.66	
373		-----		-----	
391		-----		-----	
398	EN23015	-7		-0.46	
420	EN23015	-7		-0.46	
447	D2500	-7		-0.46	
463	D2500	-4		1.22	
496	D2500	-4		1.22	
511		-----		-----	
540	D2500	-6		0.10	
603	D2500	-8		-1.02	
663	D2500	-7		-0.46	
862	D2500	-7		-0.46	
863	D2500	-7		-0.46	
1016	ISO3015	-8	C	-1.02	First reported 0.4
1033	D7689	-3.8		1.34	
1059	EN23015	-8		-1.02	
1107	D2500	-6		0.10	
1124	ISO3015	-7		-0.46	
1134	D2500	-6		0.10	
1135	EN23015	-6		0.10	
1161	D2500	-7		-0.46	
1167	EN23015	-6.0		0.10	
1179	D2500	-5		0.66	
1199		-----		-----	
1201	D2500	-8		-1.02	
1213	D2500	-5		0.66	
1299	D2500	-2		2.34	
1316	EN23015	-8.0		-1.02	
1320		-----		-----	
1339	D2500	-6.3		-0.06	
1367	D2500	-3.5		1.50	
1389	D2500	-8		-1.02	
1397	EN23015	-3		1.78	
1429		-----		-----	
1457	D2500	-7.0		-0.46	
1459	EN23015	-8.0		-1.02	
1485	D2500	-6.0		0.10	
1491	D2500	-7		-0.46	
1494		-----		-----	
1510	D2500	-2		2.34	
1546	EN23015	-4		1.22	
1564	D5772	-2.8		1.90	
1586	D2500	-8.0		-1.02	
1634		-----		-----	
1656	IP219	-6		0.10	
1706		-----		-----	
1707	EN23015	-7		-0.46	
1712		-----		-----	
1721	D2500	-6.6		-0.23	
1739	EN23015	-6.0		0.10	
1744	D2500	-7		-0.46	
1754	EN23015	-5.5		0.38	
1756		-----		-----	
1769		-----		-----	
1792	D2500	-6		0.10	
1807	D2500	-5		0.66	
1971	ISO3015	-3		1.78	
1976		-----		-----	

lab	method	value	mark	z(targ)	remarks
6057	ISO3015	-6		0.10	
6069		-----		-----	
6179		-----		-----	
6191		-----		-----	
6201	D2500	-7		-0.46	
6213		-----		-----	

	normality	OK
	n	65
	outliers	0
	mean (n)	-6.18
	st.dev. (n)	1.610
	R(calc.)	4.51
	st.dev.(D2500:17a)	1.78571
	R(D2500:17a)	5
Compare		
	R(EN14214:12+A1:14)	4

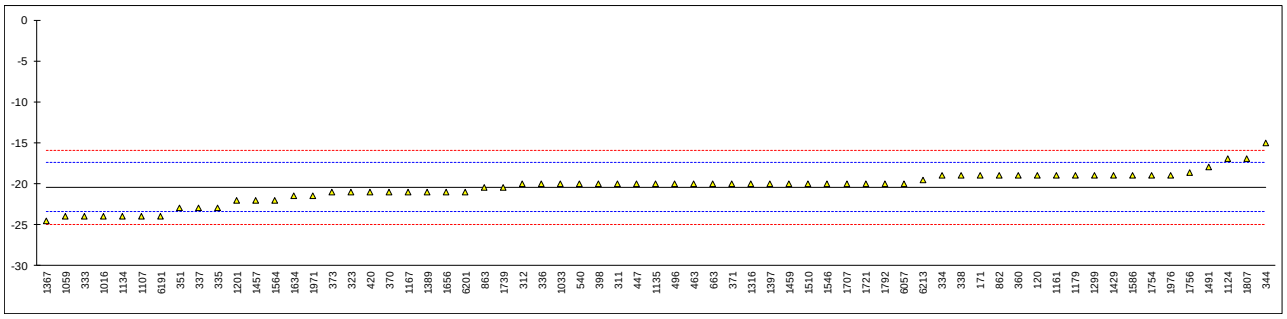


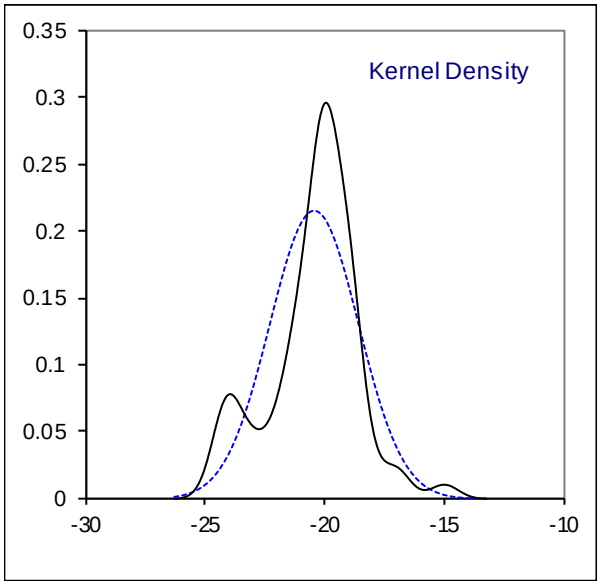


Determination of Cold Filter Plugging Point (CFPP) on sample #18180; results in °C

lab	method	value	mark	z(targ)	remarks
120	D6371	-19		0.94	
171	D6371	-19		0.94	
311	EN116	-20		0.28	
312	EN116	-20		0.28	
323	EN116	-21		-0.38	
333	EN116	-24		-2.37	
334	EN116	-19		0.94	
335	EN116	-23		-1.71	
336	EN116	-20		0.28	
337	EN116	-23		-1.71	
338	EN116	-19.0		0.94	
343		-----		-----	
344	EN116	-15.0		3.59	
345		-----		-----	
351	EN116	-23.0		-1.71	
360	EN116	-19		0.94	
370	EN116	-21		-0.38	
371	EN116	-20		0.28	
373	EN116	-21		-0.38	
391		-----		-----	
398	EN116	-20		0.28	
420	EN116	-21		-0.38	
447	IP309	-20		0.28	
463	EN116	-20		0.28	
496	EN116	-20		0.28	
511		-----		-----	
540	D6371	-20		0.28	
603		-----		-----	
663	EN116	-20		0.28	
862	EN116	-19		0.94	
863	EN116	-20.5		-0.05	
1016	EN116	-24		-2.37	
1033	IP309	-20		0.28	
1059	EN116	-24		-2.37	
1107	EN116	-24		-2.37	
1124	EN116	-17		2.27	
1134	EN116	-24	C	-2.37	First reported -25
1135	EN116	-20		0.28	
1161	EN116	-19		0.94	
1167	EN116	-21		-0.38	
1179	EN116	-19		0.94	
1199		-----		-----	
1201	EN116	-22		-1.04	
1213		-----		-----	
1299	EN116	-19		0.94	
1316	EN116	-20.0		0.28	
1320		-----		-----	
1339		-----		-----	
1367	D6371	-24.5		-2.70	
1389	EN116	-21		-0.38	
1397	EN116	-20		0.28	
1429	EN116	-19.0		0.94	
1457	EN116	-22		-1.04	
1459	EN116	-20.0		0.28	
1485		-----		-----	
1491	EN116	-18		1.61	
1494		-----		-----	
1510	EN116	-20		0.28	
1546	EN116	-20		0.28	
1564	EN116	-22		-1.04	
1586	EN116	-19.0		0.94	
1634	EN116	-21.5		-0.71	
1656	IP309	-21		-0.38	
1706		-----		-----	
1707	EN116	-20		0.28	
1712		-----		-----	
1721	EN116	-20		0.28	
1739	EN116	-20.5		-0.05	
1744		-----		-----	
1754	EN116	-19.0		0.94	
1756	EN116	-18.6		1.21	
1769		-----		-----	
1792	EN116	-20		0.28	
1807	EN116	-17		2.27	
1971	EN116	-21.5		-0.71	
1976	EN116	-19		0.94	

lab	method	value	mark	z(targ)	remarks
6057	EN116	-20		0.28	
6069		-----		-----	
6179		-----		-----	
6191	EN116	-24	C	-2.37	First reported -25
6201	EN116	-21		-0.38	
6213	EN116	-19.5		0.61	
	normality	OK			
	n	65			
	outliers	0			
	mean (n)	-20.42			
	st.dev. (n)	1.849			
	R(calc.)	5.18			
	st.dev.(EN116:15)	1.509			
	R(EN116:15)	4.23			
Compare					
	R(EN14214:12+A1:14)	2.98			
	R(EN116:97)	4.68			





Determination of Carbon Residue on 100% FAME on sample #18180; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171	D4530	<0.10		-----	
311		-----		-----	
312		-----		-----	
323	D4530	0.01		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
343		-----		-----	
344		-----		-----	
345		-----		-----	
351	ISO10370	<0,10		-----	
360	D4530	0.019		-----	
370	EN10370	0.007		-----	
371		-----		-----	
373		-----		-----	
391		-----		-----	
398		-----		-----	
420	ISO6615	<0,01		-----	
447		-----		-----	
463	D4530	0.0099		-----	
496		-----		-----	
511	D189	0.029		-----	
540	D4530	<0.10		-----	
603	D4530	<0.10		-----	
663		-----		-----	
862	D4530	<0.1		-----	
863	ISO10370	<0.1		-----	
1016	ISO10370	0.044		-----	
1033		-----		-----	
1059	ISO10370	0.01		-----	
1107		-----		-----	
1124	EN10370	< 0.10		-----	
1134		-----		-----	
1135	EN10370	0.01002		-----	
1161	D4530	0.02		-----	
1167		-----		-----	
1179		-----		-----	
1199		-----		-----	
1201		-----		-----	
1213	D4530	<0.1		-----	
1299		-----		-----	
1316		-----		-----	
1320		-----		-----	
1339		-----		-----	
1367	D4530	0.01		-----	
1389	D4530	0.013		-----	
1397	EN10370	<0,01		-----	
1429		-----		-----	
1457	D4530	0.006		-----	
1459		-----		-----	
1485		-----		-----	
1491	ISO10370	0.006	C	-----	First reported 0.299
1494		-----		-----	
1510	D4530	0.012		-----	
1546		-----		-----	
1564		-----		-----	
1586	D4530	0.01		-----	
1634		-----		-----	
1656	ISO10370	<0.1		-----	
1706		-----		-----	
1707		-----		-----	
1712		-----		-----	
1721	D4530	0.011		-----	
1739		-----		-----	
1744		-----		-----	
1754		-----		-----	
1756	EN10370	0.016		-----	
1769		-----		-----	
1792	D4530	0.01		-----	
1807		-----		-----	
1971	EN10370	<0,10		-----	
1976		-----		-----	

lab	method	value	mark	z(targ)	remarks
6057		-----		-----	
6069		-----		-----	
6179		-----		-----	
6191		-----		-----	
6201	D4530	<0.1		-----	
6213		-----		-----	
	n	31			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/50°C on sample #18180

lab	method	value	mark	z(targ)	remarks
120	D130	1A		-----	
171	D130	1a		-----	
311	ISO2160	1A		-----	
312		-----		-----	
323	D130	1A		-----	
333		-----		-----	
334	D130	1a		-----	
335		-----		-----	
336	D130	1		-----	
337		-----		-----	
338		-----		-----	
343	ISO2160	1a		-----	
344	D130	1a		-----	
345	ISO2160	1a		-----	
351	ISO2160	1a		-----	
360	D130	1A		-----	
370	ISO2160	1a		-----	
371	ISO2160	1a		-----	
373		-----		-----	
391		-----		-----	
398	ISO2160	1a		-----	
420	ISO2160	class1		-----	
447	D130	1		-----	
463	ISO2160	1A		-----	
496	ISO2160	1a		-----	
511	D130	1A		-----	
540	D130	1a		-----	
603	D130	1A		-----	
663	D130	1a		-----	
862	D130	1A		-----	
863	D130	1a		-----	
1016	ISO2160	1A		-----	
1033	IP154	1a		-----	
1059	ISO2160	1a		-----	
1107		-----		-----	
1124	ISO2160	1A		-----	
1134		-----		-----	
1135	ISO2160	1A		-----	
1161	ISO2160	1a		-----	
1167	ISO2160	1a		-----	
1179		-----		-----	
1199		-----		-----	
1201	D130	1A		-----	
1213	D130	1a		-----	
1299		1A		-----	
1316	D130	1a		-----	
1320		-----		-----	
1339	ISO2160	1a		-----	
1367		-----		-----	
1389	ISO2160	1A		-----	
1397	ISO2160	1		-----	
1429	D130	1a		-----	
1457	D130	1A		-----	
1459		-----		-----	
1485		-----		-----	
1491	ISO2160	1a		-----	
1494		-----		-----	
1510	IP154	1a		-----	
1546	ISO2160	1		-----	
1564		-----		-----	
1586	D130	1a		-----	
1634	D130	1a		-----	
1656	ISO2160	1		-----	
1706		-----		-----	
1707	ISO2160	1A		-----	
1712		-----		-----	
1721	ISO2160	1a		-----	
1739	ISO2160	1a		-----	
1744		-----		-----	
1754		-----		-----	
1756	ISO2160	1		-----	
1769		-----		-----	
1792	ISO2160	1a		-----	
1807	D130	1a		-----	
1971	D130	1		-----	
1976		-----		-----	

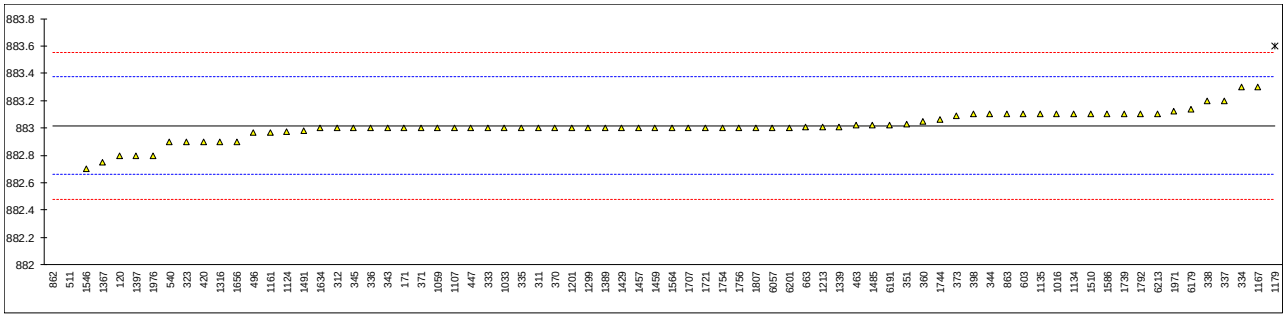
lab	method	value	mark	z(targ)	remarks
6057	ISO2160	1A		-----	
6069		-----		-----	
6179		-----		-----	
6191		-----		-----	
6201	D130	1a		-----	
6213		-----		-----	
	n	55			
	mean (n)	1A			

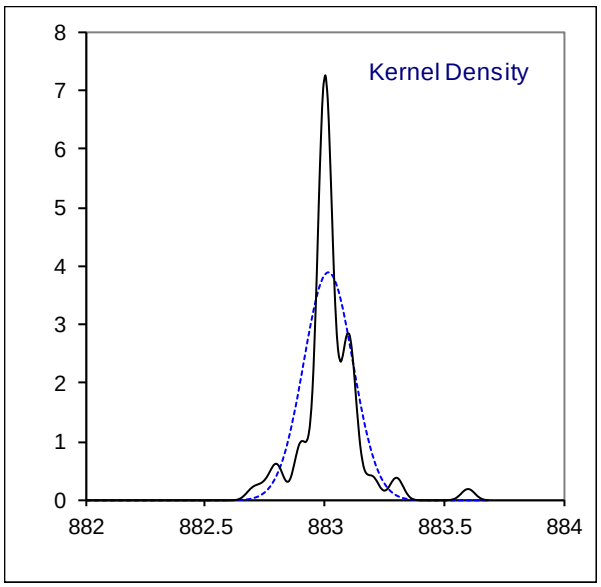
Determination of Density at 15°C on sample #18180; results in kg/m^3

lab	method	value	mark	z(targ)	remarks
120	D4052	882.8		-1.20	
171	D4052	883.0		-0.08	
311	ISO12185	883.0		-0.08	
312	ISO12185	883.0		-0.08	
323	ISO12185	882.9		-0.64	
333	ISO12185	883.0		-0.08	
334	ISO12185	883.3		1.60	
335	ISO12185	883.0		-0.08	
336	ISO12185	883.0		-0.08	
337	ISO12185	883.2		1.04	
338	ISO12185	883.2		1.04	
343	ISO12185	883.0		-0.08	
344	D1298	883.1		0.48	
345	ISO12185	883.0		-0.08	
351	ISO12185	883.03		0.09	
360	ISO12185	883.05		0.20	
370	ISO12185	883.0		-0.08	
371	ISO12185	883.0		-0.08	
373	ISO12185	883.09		0.42	
391		-----		-----	
398	ISO12185	883.1		0.48	
420	ISO12185	882.9		-0.64	
447	D4052	883.0		-0.08	
463	ISO12185	883.02		0.03	
496	ISO12185	882.97		-0.25	
511	D4052	881.45	C,R(0.01)	-8.76	Reported 0.88145 kg/m^3
540	D4052	882.9		-0.64	
603	D4052	883.1	C	0.48	First reported 0.8831 kg/m^3
663	D4052	883.01		-0.03	
862	ISO12185	833.06	R(0.01)	-279.75	
863	ISO12185	883.1		0.48	
1016	ISO12185	883.1		0.48	
1033	IP365	883.0		-0.08	
1059	ISO12185	883.0		-0.08	
1107	D4052	883.0		-0.08	
1124	ISO12185	882.976		-0.22	
1134	IP365	883.1		0.48	
1135	ISO12185	883.1		0.48	
1161	ISO12185	882.97		-0.25	
1167	ISO12185	883.3		1.60	
1179	D4052	883.6	R(0.01)	3.28	
1199		-----		-----	
1201	ISO12185	883.0	C	-0.08	First reported 883.0 kg/L
1213	D4052	883.01		-0.03	
1299	D4052	883.0		-0.08	
1316	ISO12185	882.9		-0.64	
1320		-----		-----	
1339	ISO3675	883.01		-0.03	
1367	ISO12185	882.75		-1.48	
1389	ISO12185	883.0		-0.08	
1397	ISO12185	882.8		-1.20	
1429	ISO12185	883.0		-0.08	
1457	ISO12185	883.0		-0.08	
1459	ISO12185	883.0		-0.08	
1485	ISO12185	883.02		0.03	
1491	ISO12185	882.98		-0.19	
1494		-----		-----	
1510	ISO12185	883.1		0.48	
1546	ISO12185	882.7		-1.76	
1564	D4052	883.0		-0.08	
1586	ISO12185	883.1		0.48	
1634	ISO12185	882.999		-0.09	
1656	ISO12185	882.9		-0.64	
1706		-----		-----	
1707	ISO12185	883.0		-0.08	
1712		-----		-----	
1721	ISO12185	883.0		-0.08	
1739	ISO3675	883.1	C	0.48	First reported 883.81
1744	D4052	883.06		0.25	
1754	ISO3675	883.0		-0.08	
1756	ISO12185	883.0		-0.08	
1769		-----		-----	
1792	ISO12185	883.1		0.48	
1807	ISO12185	883.0		-0.08	
1971	ISO12185	883.12		0.59	
1976	ISO12185	882.8		-1.20	

lab	method	value	mark	z(targ)	remarks
6057	ISO12185	883.0		-0.08	
6069		-----		-----	
6179	D4052	883.14		0.70	
6191	ISO12185	883.02		0.03	
6201	ISO12185	883.0		-0.08	
6213	ISO12185	883.1		0.48	

normality	not OK
n	71
outliers	3
mean (n)	883.01
st.dev. (n)	0.103
R(calc.)	0.29
st.dev.(ISO12185:96)	0.179
R(ISO12185:96)	0.5

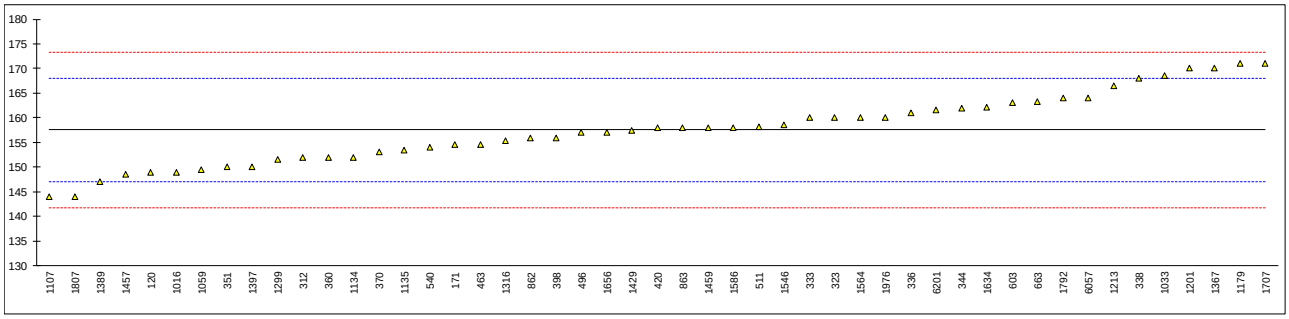


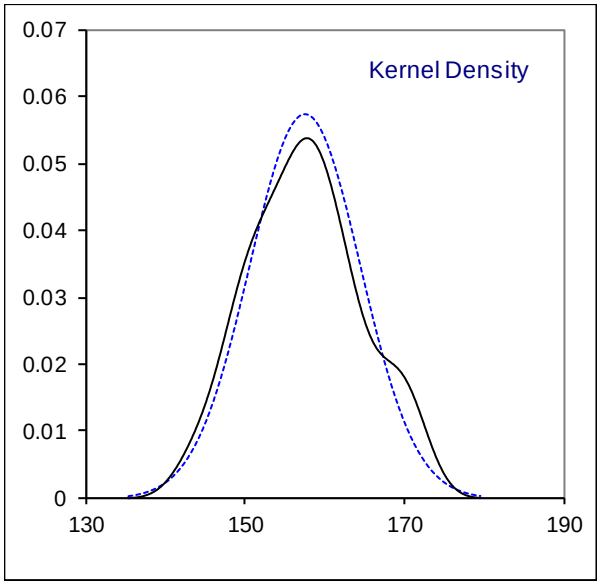


Determination of Flash Point, PMcc on sample #18180; results in °C

lab	method	value	mark	z(targ)	remarks
120	D93-C	149		-1.63	
171	D93-C	154.5		-0.59	
311		-----		-----	
312	D93-C	152.0		-1.06	
323	D93-C	160.0		0.46	
333	D93-C	160.0		0.46	
334		-----		-----	
335		-----		-----	
336	ISO2719-C	161.0		0.65	
337		-----		-----	
338	ISO2719-A	168.0		1.99	
343		-----		-----	
344	D93-A	162.0		0.84	
345		-----		-----	
351	ISO2719-C	150.0		-1.44	
360	D93-C	152.0		-1.06	
370	ISO2719-C	153.0		-0.87	
371		-----		-----	
373		-----		-----	
391		-----		-----	
398	ISO2719-C	156.0		-0.30	
420	ISO2719-C	158		0.08	
447		-----		-----	
463	D93-C	154.5		-0.59	
496	ISO2719-C	157		-0.11	
511	D93-C	158.1		0.10	
540	D93-C	154.00		-0.68	
603	D93-C	163.0		1.03	
663	D93-C	163.3		1.09	
862	D93-C	156.0		-0.30	
863	ISO2719-C	158.0		0.08	
1016	ISO2719-C	149		-1.63	
1033	D93-A	168.5		2.08	
1059	ISO2719-C	149.5		-1.54	
1107	D93-C	144.0		-2.59	
1124		-----		-----	
1134	D93-C	152		-1.06	
1135	ISO2719-A	153.5		-0.78	
1161		-----		-----	
1167		-----		-----	
1179	D93-C	171		2.56	
1199		-----		-----	
1201	D93-C	170		2.37	
1213	D93-C	166.5		1.70	
1299	D93-C	151.5		-1.16	
1316	D93-A	155.3		-0.43	
1320		-----		-----	
1339		-----		-----	
1367	D93-C	170		2.37	
1389	D93-C	147.0		-2.01	
1397	D93-C	150.0		-1.44	
1429	D93-C	157.5		-0.01	
1457	D93-C	148.5		-1.73	
1459	ISO2719-A	158.0		0.08	
1485		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1546	ISO2719-A	158.5		0.18	
1564	D93-C	160		0.46	
1586	D93-C	158.0		0.08	
1634	D93-C	162.1		0.86	
1656	ISO2719-C	157		-0.11	
1706		-----		-----	
1707	D93-C	171		2.56	
1712		-----		-----	
1721		-----		-----	
1739		-----		-----	
1744		-----		-----	
1754		-----		-----	
1756		-----		-----	
1769		-----		-----	
1792	ISO2719-C	164.0		1.22	
1807	ISO2719-C	144.0	C	-2.59	First reported 101.6
1971		-----		-----	
1976	ISO2719-A	160		0.46	

lab	method	value	mark	z(targ)	remarks
6057	D93-C	164.0		1.22	
6069		-----		-----	
6179		-----		-----	
6191		-----		-----	
6201	D93-C	161.5		0.75	
6213		-----		-----	
					Only method C
	normality	OK			OK
	n	49			41
	outliers	0			0
	mean (n)	157.58			157.01
	st.dev. (n)	6.944			7.115
	R(calc.)	19.44			19.92
	st.dev.(D93-C:18)	5.250			5.250
	R(D93-C:18)	14.7			14.7
Compare					
	R(ISO2719-C:16)	14.7			



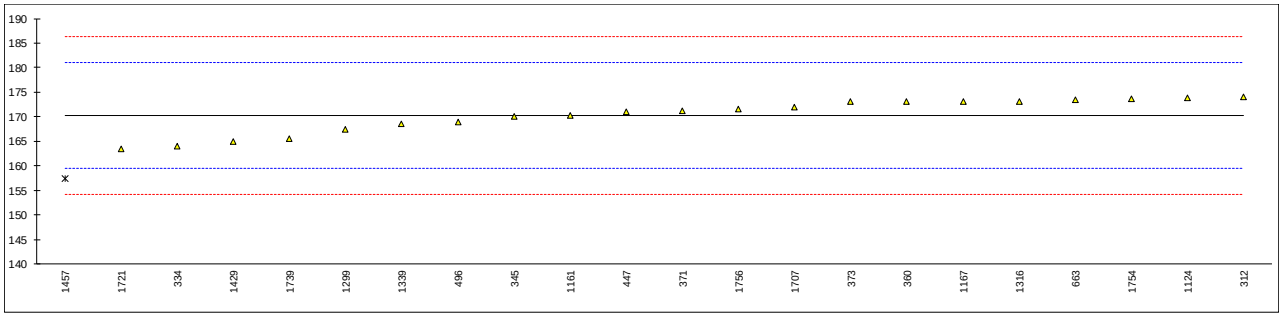


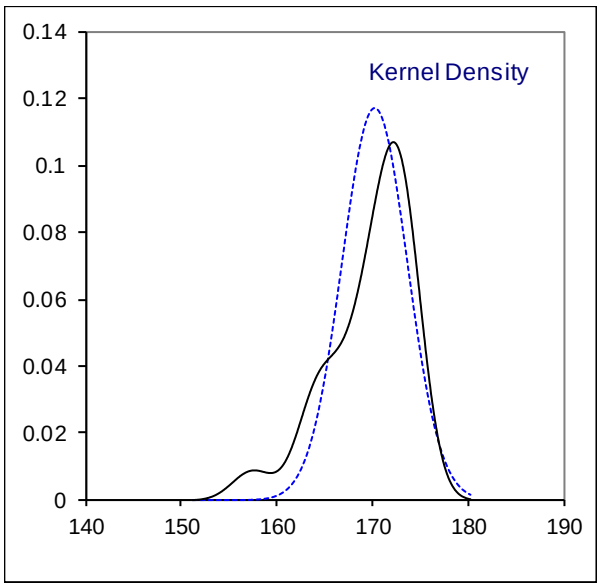
Determination of Flash Point, recc on sample #18180; results in °C

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	ISO3679	>160		-----	
312	ISO3679	174.0		0.70	
323		-----		-----	
333		-----		-----	
334	ISO3679	164.0		-1.17	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
343		-----		-----	
344		-----		-----	
345	ISO3679	170.1		-0.03	
351		-----		-----	
360	ISO3679	173.0		0.51	
370		-----		-----	
371	ISO3679	171.2		0.17	
373	ISO3679	173		0.51	
391		-----		-----	
398		-----		-----	
420		-----		-----	
447	IP523	171.0		0.14	
463		-----		-----	
496	ISO3679	168.9		-0.26	
511		-----		-----	
540		-----		-----	
603		-----		-----	
663	D3828-B	173.4		0.58	
862		-----		-----	
863		-----		-----	
1016		-----		-----	
1033		-----		-----	
1059		-----		-----	
1107		-----		-----	
1124	ISO3679	173.8		0.66	
1134		-----		-----	
1135		-----		-----	
1161	ISO3679	170.2		-0.01	
1167	ISO3679	173.0		0.51	
1179		-----		-----	
1199		-----		-----	
1201		-----		-----	
1213		-----		-----	
1299	ISO3679	167.5		-0.52	
1316	ISO3679	173.0		0.51	
1320		-----		-----	
1339	ISO3679	168.5		-0.33	
1367		-----		-----	
1389		-----		-----	
1397		-----		-----	
1429	ISO3679	164.9		-1.00	
1457	ISO3679	157.5	C,R(0.05)	-2.38	First reported 147.5
1459		-----		-----	
1485		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1546	ISO3679	>130		-----	
1564		-----		-----	
1586		-----		-----	
1634		-----		-----	
1656		-----		-----	
1706		-----		-----	
1707	ISO3679	172		0.32	
1712		-----		-----	
1721	ISO3679	163.5		-1.26	
1739	ISO3679	165.49		-0.89	
1744		-----		-----	
1754	ISO3679	173.63		0.63	
1756	ISO3679	171.5		0.23	
1769		-----		-----	
1792		-----		-----	
1807		-----		-----	
1971		-----		-----	
1976		-----		-----	

lab	method	value	mark	z(targ)	remarks
6057		-----		-----	
6069		-----		-----	
6179		-----		-----	
6191		-----		-----	
6201		-----		-----	
6213		-----		-----	

normality	OK
n	21
outliers	1
mean (n)	170.27
st.dev. (n)	3.411
R(calc.)	9.55
st.dev.(ISO3679:15)	5.357
R(ISO3679:15)	15



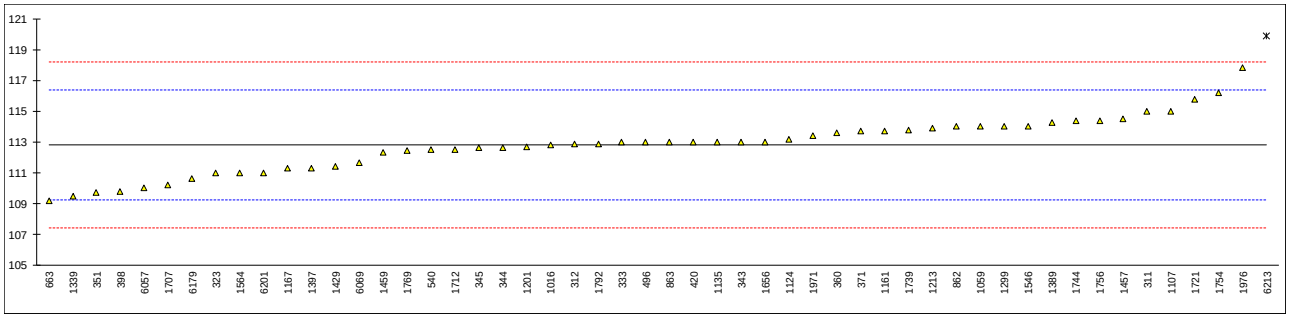


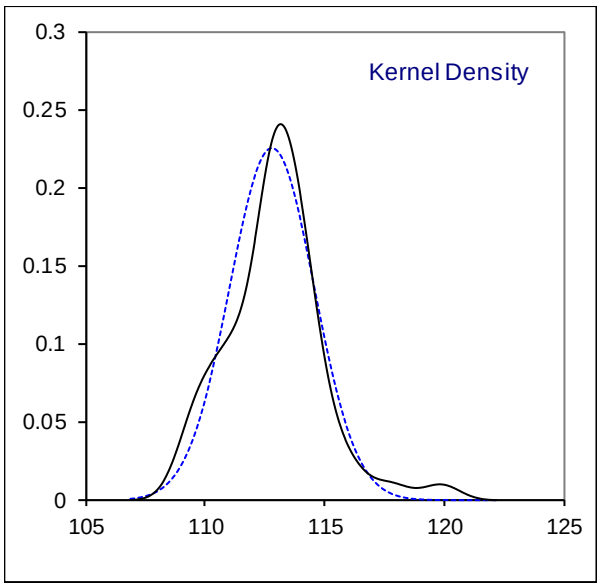
Determination of Iodine Value conform on sample #18180; results in g I_2/100g

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14111	115		1.22	
312	EN14111	112.9		0.05	
323	EN14111	111		-1.02	
333	EN14111	113	C	0.10	First reported 105
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
343	EN14111	113	C	0.10	First reported 101
344	EN14111	112.6		-0.12	
345	EN14111	112.6		-0.12	
351	EN14111	109.7		-1.74	
360	EN14111	113.6		0.44	
370		-----		-----	
371	EN14111	113.7		0.50	
373		-----		-----	
391		-----		-----	
398	EN14111	109.8		-1.69	
420	EN14111	113		0.10	
447		-----		-----	
463		-----		-----	
496	EN14111	113		0.10	
511		-----		-----	
540	EN14111	112.5		-0.18	
603		-----		-----	
663	EN14111	109.2		-2.02	
862	EN14111	114		0.66	
863	EN14111	113		0.10	
1016	EN14111	112.81		0.00	
1033		-----		-----	
1059	EN14111	114		0.66	
1107	EN14111	115		1.22	
1124	EN14111	113.2		0.22	
1134		-----		-----	
1135	EN14111	113		0.10	
1161	EN14111	113.7		0.50	
1167	EN14111	111.3		-0.85	
1179		-----		-----	
1199		-----		-----	
1201	EN14111	112.7		-0.06	
1213	EN14111	113.9		0.61	
1299	EN14111	114		0.66	
1316		-----		-----	
1320		-----		-----	
1339	EN14111	109.5		-1.86	
1367		-----		-----	
1389	EN14111	114.24		0.80	
1397	EN16300	111.3		-0.85	
1429	EN14111	111.4		-0.79	
1457	EN14111	114.5		0.94	
1459	EN16300	112.3		-0.29	
1485		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1546	EN14111	114		0.66	
1564	EN14111	111	C	-1.02	First reported 95
1586		-----		-----	
1634		-----		-----	
1656	EN14111	113		0.10	
1706		-----		-----	
1707	EN14111	110.2		-1.46	
1712	EN14111	112.5		-0.18	
1721	EN14111	115.8		1.67	
1739	EN14111	113.8		0.55	
1744	EN14111	114.38	C	0.88	First reported 106.34
1754	EN14111	116.2		1.90	
1756	EN14111	114.4		0.89	
1769	EN14111	112.474		-0.19	
1792	EN14111	112.9		0.05	
1807		-----		-----	
1971	EN14111	113.4		0.33	
1976	EN14111	117.8		2.79	

lab	method	value	mark	z(targ)	remarks
6057	EN16300	110		-1.58	
6069	EN14111	111.68		-0.64	
6179	EN14111	110.606		-1.24	
6191		-----		-----	
6201	EN14111	111.0		-1.02	
6213	EN14111	119.9	C,R(0.05)	3.97	First reported 120

	normality	OK
	n	51
	outliers	1
	mean (n)	112.82
	st.dev. (n)	1.768
	R(calc.)	4.95
	st.dev.(EN14111:03)	1.786
	R(EN14111:03)	5
Compare		
	R(EN16300:12)	7.10



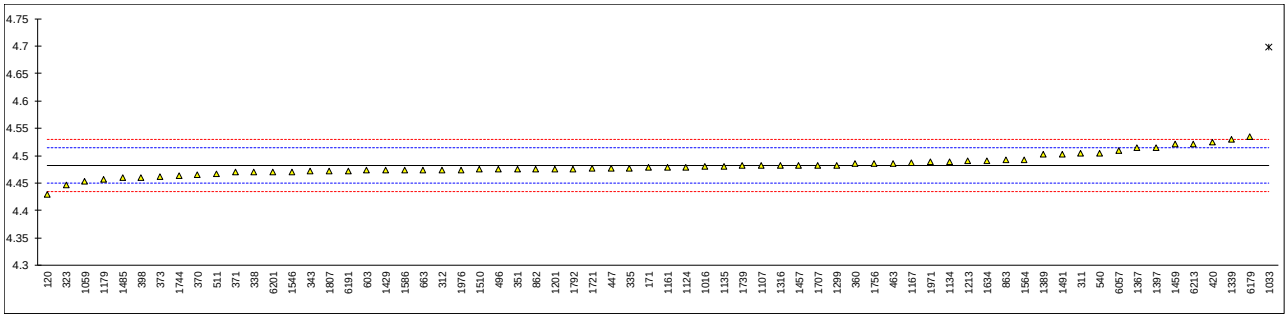


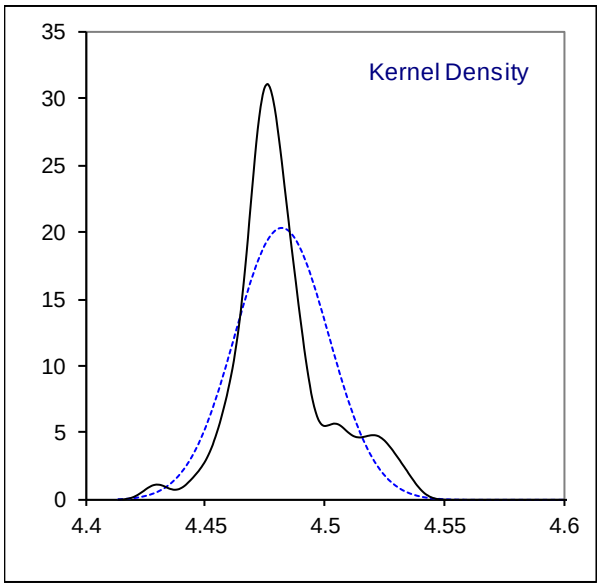
Determination of Kinematic Viscosity at 40°C on sample #18180; results in mm^2/s

lab	method	value	mark	z(targ)	remarks
120	D445	4.43		-3.25	
171	D445	4.478		-0.26	
311	ISO3104	4.505		1.42	
312	ISO3104	4.474		-0.51	
323	ISO3104	4.446		-2.26	
333		-----		-----	
334		-----		-----	
335	ISO3104	4.477		-0.33	
336		-----		-----	
337		-----		-----	
338	ISO3104	4.470		-0.76	
343	ISO3104	4.472		-0.64	
344		-----		-----	
345		-----		-----	
351	ISO3104	4.476		-0.39	
360	ISO3104	4.4850		0.17	
370	ISO3104	4.4651		-1.07	
371	ISO3104	4.470		-0.76	
373	ISO3104	4.4624		-1.24	
391		-----		-----	
398	ISO3104	4.4603		-1.37	
420	D7042	4.52485		2.65	
447	D445	4.477		-0.33	
463	ISO3104	4.4860		0.23	
496	ISO3104	4.476		-0.39	
511	D445	4.46625		-1.00	
540	D445	4.5051		1.42	
603	D445	4.473	C	-0.58	First reported 4.554
663	D445	4.4731		-0.57	
862	ISO3104	4.476		-0.39	
863	ISO3104	4.492		0.61	
1016	ISO3104	4.4798		-0.15	
1033	IP71	4.698	R(0.01)	13.44	
1059	ISO3104	4.453		-1.82	
1107	ISO3104	4.482		-0.02	
1124	ISO3104	4.4784		-0.24	
1134	D445	4.489		0.42	
1135	ISO3104	4.481		-0.08	
1161	ISO3104	4.478		-0.26	
1167	ISO3104	4.487		0.30	
1179	D7042	4.4572		-1.56	
1199		-----		-----	
1201	ISO3104	4.476		-0.39	
1213	D445	4.490		0.48	
1299	ISO3104	4.483		0.05	
1316	ISO3104	4.482		-0.02	
1320		-----		-----	
1339	ISO3104	4.52925		2.93	
1367	D7279	4.515		2.04	
1389	ISO3104	4.5020		1.23	
1397	D7042	4.515		2.04	
1429	ISO3104	4.473		-0.58	
1457	ISO3104	4.482		-0.02	
1459	D7042	4.5213		2.43	
1485	D445	4.4598		-1.40	
1491	D7042	4.5021		1.24	
1494		-----		-----	
1510	ISO3104	4.4754		-0.43	
1546	ISO3104	4.4706		-0.73	
1564	D7042	4.492	C	0.61	First reported 4.578
1586	ISO3104	4.473		-0.58	
1634	ISO3104	4.4915		0.58	
1656		-----		-----	
1706		-----		-----	
1707	ISO3104	4.482		-0.02	
1712		-----		-----	
1721	ISO3104	4.4767		-0.35	
1739	ISO3104	4.4817		-0.03	
1744	D445	4.4641		-1.13	
1754		-----		-----	
1756	ISO3104	4.4854		0.20	
1769		-----		-----	
1792	ISO3104	4.476		-0.39	
1807	ISO3104	4.472		-0.64	
1971	ISO3104	4.4882		0.37	
1976	ISO3104	4.4743		-0.50	

lab	method	value	mark	z(targ)	remarks
6057	ISO3104	4.509		1.67	
6069		-----		-----	
6179	D445	4.5344		3.25	
6191	ISO3104	4.472		-0.64	
6201	D445	4.470		-0.76	
6213	ISO3104	4.522		2.48	

			Only ISO3104	Only D445
	normality	OK	Not OK	Not OK
	n	65	45	13
	outliers	1	0	0
	mean (n)	4.4822	4.4802	4.4777
	st.dev. (n)	0.01959	0.01525	0.02460
	R(calc.)	0.0548	0.0427	0.0689
	st.dev.(ISO3104:94)	0.01606	0.01606	0.01606
	R(ISO3104:94)	0.0450	0.0449	---
Compare				
	Compare R(D445:17a)	0.0547	---	0.0546



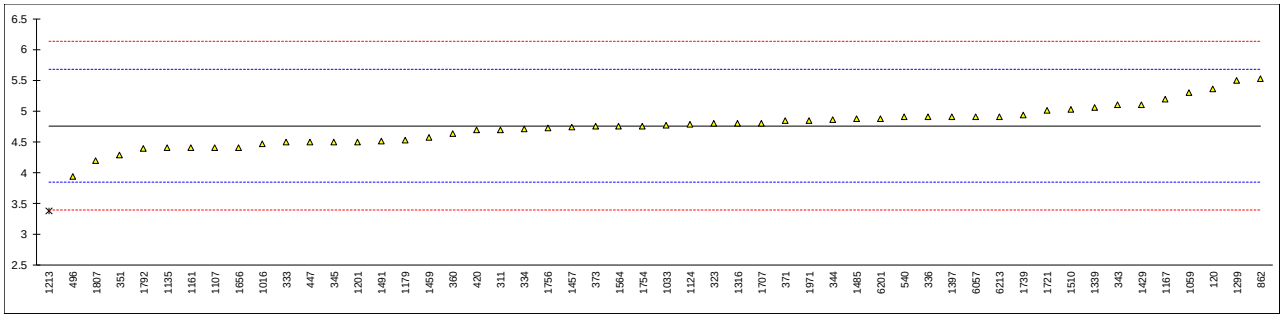


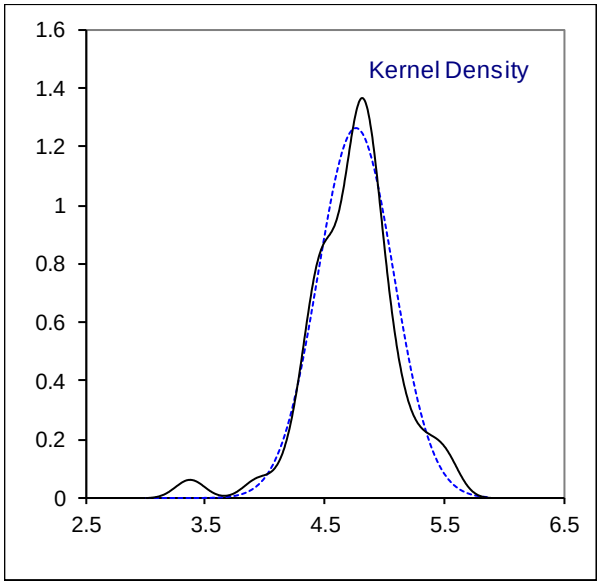
Determination of Oxidation Stability Induction period on sample #18180; results in hours

lab	method	value	mark	z(targ)	remarks
120	EN15751	5.36		1.31	
171		-----		-----	
311	EN15751	4.7		-0.14	
312		-----		-----	
323	EN15751	4.8		0.08	
333	EN15751	4.5		-0.57	
334	EN14112	4.71		-0.11	
335		-----		-----	
336	EN15751	4.9		0.30	
337		-----		-----	
338		-----		-----	
343	EN15751	5.1		0.74	
344	EN14112	4.86		0.22	
345	EN14112	4.5		-0.57	
351	EN15751	4.28		-1.05	
360	EN14112	4.63		-0.29	
370		-----		-----	
371	EN14112	4.84		0.17	
373	EN14112	4.75		-0.03	
391		-----		-----	
398		-----		-----	
420	EN15751	4.7		-0.14	
447	EN15751	4.5		-0.57	
463		-----		-----	
496	EN15751	3.945		-1.79	
511		-----		-----	
540	EN14112	4.9		0.30	
603		-----		-----	
663		-----		-----	
862	EN14112	5.52		1.66	
863		-----		-----	
1016	EN14112	4.47		-0.64	
1033	EN15751	4.77		0.02	
1059	EN14112	5.3		1.18	
1107	EN14112	4.4		-0.79	
1124	EN14112	4.79		0.06	
1134		-----		-----	
1135	EN14112	4.4		-0.79	
1161	EN15751	4.40		-0.79	
1167	EN14112	5.2		0.96	
1179	EN14112	4.53		-0.51	
1199		-----		-----	
1201	EN15751	4.5		-0.57	
1213	EN14112	3.376	R(0.01)	-3.03	
1299	EN15751	5.5		1.62	
1316	EN14112	4.8		0.08	
1320		-----		-----	
1339	EN14112	5.05		0.63	
1367		-----		-----	
1389		-----		-----	
1397	EN15751	4.9		0.30	
1429	EN15751	5.1		0.74	
1457	EN14112	4.745		-0.04	
1459	EN15751	4.57	C	-0.42	First reported 0.03
1485	EN14112	4.88		0.26	
1491	EN14112	4.52		-0.53	
1494		-----		-----	
1510	EN14112	5.03		0.59	
1546		-----		-----	
1564	EN14112	4.75		-0.03	
1586		-----		-----	
1634		-----		-----	
1656	EN14112	4.4		-0.79	
1706		-----		-----	
1707	EN14112	4.8		0.08	
1712		-----		-----	
1721	EN15751	5.01		0.54	
1739	EN14112	4.94		0.39	
1744		-----		-----	
1754	EN14112	4.76		0.00	
1756	EN14112	4.72		-0.09	
1769		-----		-----	
1792	EN15751	4.39		-0.81	
1807	EN15751	4.2		-1.23	
1971	EN14112	4.85		0.19	
1976		-----		-----	

lab	method	value	mark	z(targ)	remarks
6057	EN14112	4.9		0.30	
6069		-----		-----	
6179		-----		-----	
6191		-----		-----	
6201	EN14112	4.88		0.26	
6213	EN14112	4.9		0.30	

normality	OK
n	51
outliers	1
mean (n)	4.762
st.dev. (n)	0.3163
R(calc.)	0.886
st.dev.(EN15751:14)	0.4569
R(EN15751:14)	1.279



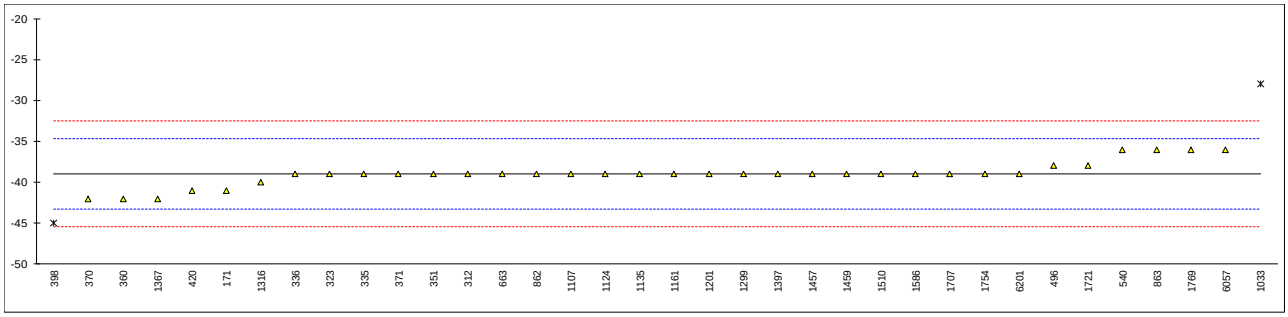


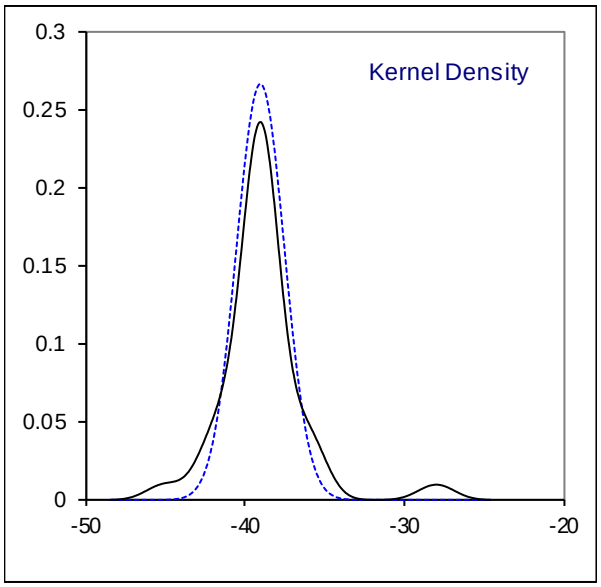
Determination of Pour Point on sample #18180; results in °C

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171	D5950	-41		-0.93	
311		-----		-----	
312	ISO3016	-39		0.00	
323	ISO3016	-39		0.00	
333		-----		-----	
334		-----		-----	
335	ISO3016	-39		0.00	
336	ISO3016	-39		0.00	
337		-----		-----	
338		-----		-----	
343		-----		-----	
344		-----		-----	
345		-----		-----	
351	D6749	-39.0		0.00	
360	ISO3016	-42		-1.40	
370	ISO3016	-42		-1.40	
371	ISO3016	-39		0.00	
373		-----		-----	
391		-----		-----	
398	ISO3016	-45	R(0.05)	-2.80	
420	ISO3016	-41		-0.93	
447		-----		-----	
463	ISO3016	<-36		-----	
496	D97	-38		0.47	
511		-----		-----	
540	D5950	-36		1.40	
603	D97	<-42		-----	
663	D97	-39		0.00	
862	ISO3016	-39		0.00	
863	ISO3016	-36		1.40	
1016		-----		-----	
1033	D7346	-28	R(0.01)	5.13	
1059		-----		-----	
1107	ISO3016	-39		0.00	
1124	ISO3016	-39		0.00	
1134	IP15	<-33		-----	
1135	ISO3016	-39		0.00	
1161	ISO3016	-39		0.00	
1167		-----		-----	
1179		-----		-----	
1199		-----		-----	
1201	ISO3016	-39		0.00	
1213	D97	<-27		-----	
1299	D97	-39		0.00	
1316	D5950	-40.0		-0.47	
1320		-----		-----	
1339		-----		-----	
1367	ISO3016	-42		-1.40	
1389	D97	<-21		-----	
1397	D5950	-39		0.00	
1429	ISO3016	<-27.0		-----	
1457	ISO3016	-39		0.00	
1459	ISO3016	-39.0		0.00	
1485		-----		-----	
1491	ISO3016	<-36		-----	
1494		-----		-----	
1510	D5950	-39		0.00	
1546		-----		-----	
1564		-----		-----	
1586	ISO3016	-39.0		0.00	
1634		-----		-----	
1656		-----		-----	
1706		-----		-----	
1707	ISO3016	-39		0.00	
1712		-----		-----	
1721	D5950	-38		0.47	
1739		-----		-----	
1744		-----		-----	
1754	ISO3016	-39.0		0.00	
1756		-----		-----	
1769	D5950	-36		1.40	
1792	ISO3016	<-39		-----	
1807		-----		-----	
1971		-----		-----	
1976		-----		-----	

lab	method	value	mark	z(targ)	remarks
6057	ISO3016	-36		1.40	
6069		-----		-----	
6179		-----		-----	
6191		-----		-----	
6201	D5950	-39		0.00	
6213		-----		-----	

normality	suspect
n	34
outliers	2
mean (n)	-39.0
st.dev. (n)	1.50
R(calc.)	4.2
st.dev.(ISO3016:94)	2.14
R(ISO3016:94)	6.0





Determination of Sulphated Ash on sample #18180; results in %M/M

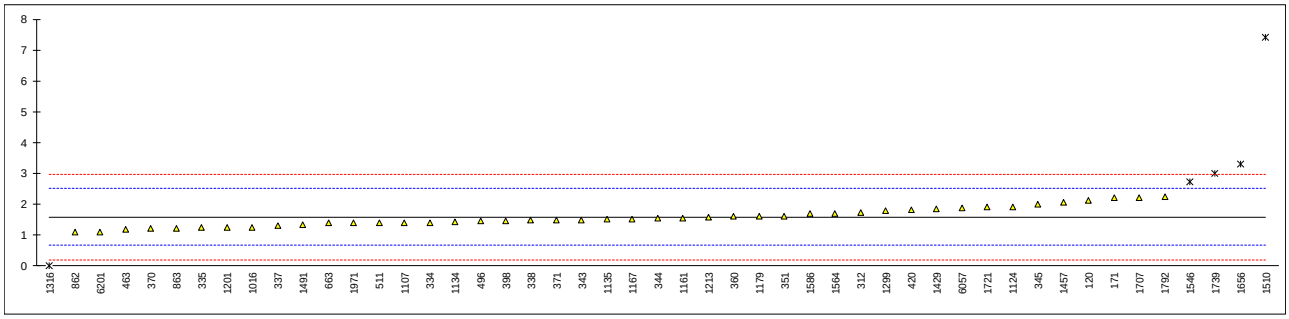
lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171	D874	<0.005		-----	
311		-----		-----	
312		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
343	ISO3987	<0,005		-----	
344	D874	<0.01		-----	
345	ISO3987	<0.005		-----	
351	ISO3987	0.001		-----	
360	D874	0.001		-----	
370	ISO3987	<0.001		-----	
371	ISO3987	0.0003		-----	
373		-----		-----	
391		-----		-----	
398		-----		-----	
420	ISO3987	<0,005		-----	
447		-----		-----	
463		-----		-----	
496	D874	<0.01		-----	
511		-----		-----	
540	ISO3987	<0.005		-----	
603	D874	<0.05		-----	
663		-----		-----	
862	D874	<0.005		-----	
863	ISO3987	<0.005		-----	
1016	D874	<0.001		-----	
1033		-----		-----	
1059	ISO3987	<0,005		-----	
1107		-----		-----	
1124	ISO3987	<0.005		-----	
1134		-----		-----	
1135	ISO3987	0.00001		-----	
1161	ISO3987	0.0037	C	-----	First reported 0.011
1167	ISO3987	0.0015		-----	
1179		-----		-----	
1199		-----		-----	
1201	D874	0.0002		-----	
1213	D874	<0.005		-----	
1299	ISO3987	<0.0005		-----	
1316		-----		-----	
1320		-----		-----	
1339	ISO3987	<0.005		-----	
1367		-----		-----	
1389	ISO3987	<0.005		-----	
1397		-----		-----	
1429	D874	<0.001		-----	
1457	ISO3987	<0.02		-----	
1459	In house	0.0		-----	
1485		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1546		-----		-----	
1564		-----		-----	
1586	D874	0.001		-----	
1634		-----		-----	
1656	ISO3987	<0.01		-----	
1706		-----		-----	
1707	ISO3987	0.0014		-----	
1712		-----		-----	
1721	ISO3987	<0,005		-----	
1739	ISO3987	<0.001 [LQ]		-----	
1744		-----		-----	
1754		-----		-----	
1756	ISO3987	0.00089	C	-----	First reported 0.0089
1769		-----		-----	
1792	ISO3987	0.0001		-----	
1807	D874	<0.005		-----	
1971	ISO3987	<0,005		-----	
1976		-----		-----	

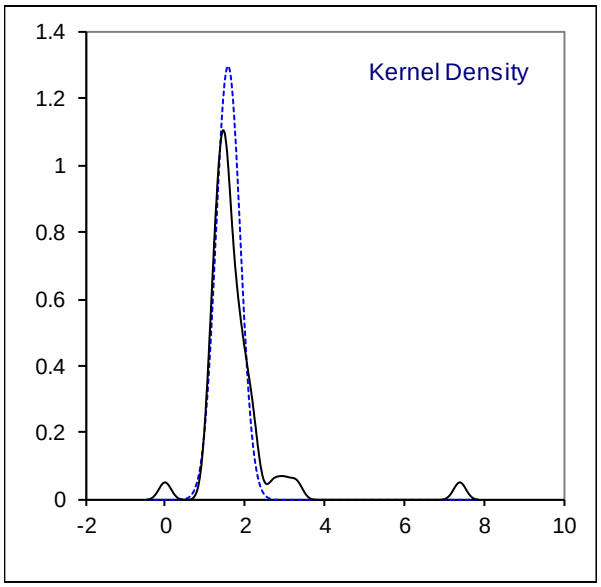
lab	method	value	mark	z(targ)	remarks
6057		-----		-----	
6069		-----		-----	
6179		-----		-----	
6191		-----		-----	
6201	D874	0		-----	
6213		-----		-----	
	n	33			
	mean (n)	<0.005			Application range ASTM D874:13a >0.005%M/M

Determination of Sulphur on sample #18180; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120	D5453	2.107		1.13	
171	D5453	2.2		1.33	
311	ISO20846	<3		-----	
312	ISO20884	1.74		0.34	
323		-----		-----	
333	ISO20846	< 3		-----	
334	ISO20846	1.4		-0.40	
335	ISO20846	1.23		-0.76	
336	ISO20846	<3		-----	
337	ISO20846	1.3		-0.61	
338	ISO20846	1.49		-0.20	
343	ISO20846	1.5		-0.18	
344	ISO20846	1.55		-0.07	
345	ISO20846	2.0		0.90	
351	ISO20846	1.62		0.08	
360	ISO20846	1.6		0.04	
370	ISO20846	1.2		-0.83	
371	ISO20846	1.5		-0.18	
373		-----		-----	
391		-----		-----	
398	ISO20846	1.47		-0.24	
420	ISO20846	1.81		0.49	
447	D5453	<3.0		-----	
463	D5453	1.19		-0.85	
496	D5453	1.45		-0.29	
511	D5453	1.40		-0.40	
540	ISO20846	<3.0		-----	
603		-----		-----	
663	D5453	1.39		-0.42	
862	ISO20846	1.1		-1.04	
863	ISO20846	1.2		-0.83	
1016	ISO20846	1.26		-0.70	
1033		-----		-----	
1059	ISO20846	<3,0		-----	
1107	D5453	1.4		-0.40	
1124	ISO20846	1.92		0.73	
1134	IP490	1.44		-0.31	
1135	ISO20846	1.51		-0.16	
1161	ISO20846	1.55		-0.07	
1167	ISO20846	1.51		-0.16	
1179	ISO20846	1.6		0.04	
1199		-----		-----	
1201	ISO20846	1.25		-0.72	
1213	D5453	1.58		-0.01	
1299	ISO20846	1.8		0.47	
1316	ISO13032	0	R(0.01)	-3.42	
1320		-----		-----	
1339	ISO20884	<2.0		-----	
1367		-----		-----	
1389	ISO20846	<3.0		-----	
1397		-----	W	-----	First reported 3.2
1429	ISO20846	1.85		0.58	
1457	ISO20846	2.06		1.03	
1459	ISO20884	<5		-----	
1485		-----		-----	
1491	ISO20846	1.34		-0.52	
1494		-----		-----	
1510	D4294	7.4	R(0.01)	12.55	
1546	ISO20846	2.72	R(0.05)	2.45	
1564	ISO20846	1.71		0.27	
1586	ISO20846	1.7		0.25	
1634		-----		-----	
1656	ISO20846	3.3	C,R(0.01)	3.71	First reported 4.8
1706		-----		-----	
1707	ISO20846	2.2		1.33	
1712		-----		-----	
1721	ISO20846	1.9		0.68	
1739	ISO13032	3.0	R(0.05)	3.06	
1744		-----		-----	
1754		-----		-----	
1756		-----		-----	
1769		-----		-----	
1792	ISO13032	2.25		1.44	
1807	ISO20846	<3		-----	
1971	ISO20846	1.39		-0.42	
1976		-----		-----	

lab	method	value	mark	z(targ)	remarks
6057	ISO20846	1.89		0.66	
6069		-----		-----	
6179		-----		-----	
6191		-----		-----	
6201	ISO20846	1.1		-1.04	
6213		-----		-----	
	normality	OK			
	n	44			
	outliers	5			
	mean (n)	1.583			
	st.dev. (n)	0.3077			
	R(calc.)	0.862			
	st.dev.(ISO20846:11)	0.4633			
	R(ISO20846:11)	1.297			Application range: 3 – 500 mg/kg
Compare					
	R(D5453:16e1)	0.818			Application range: 1 – 8000 mg/kg



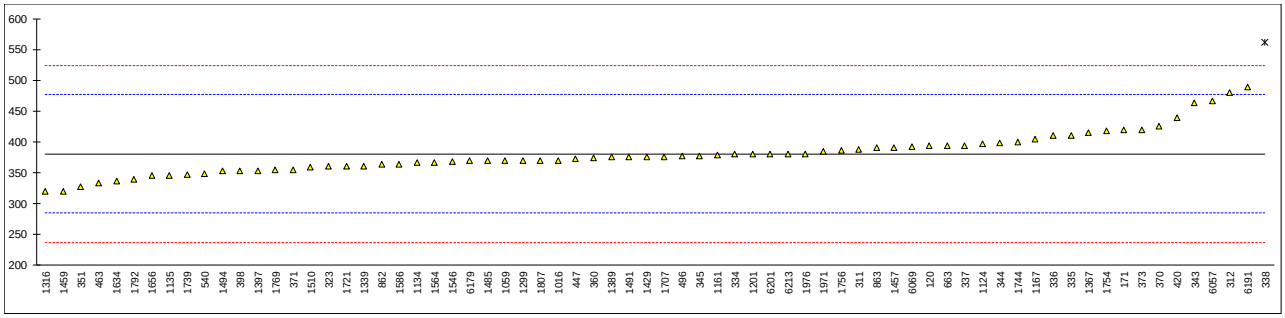


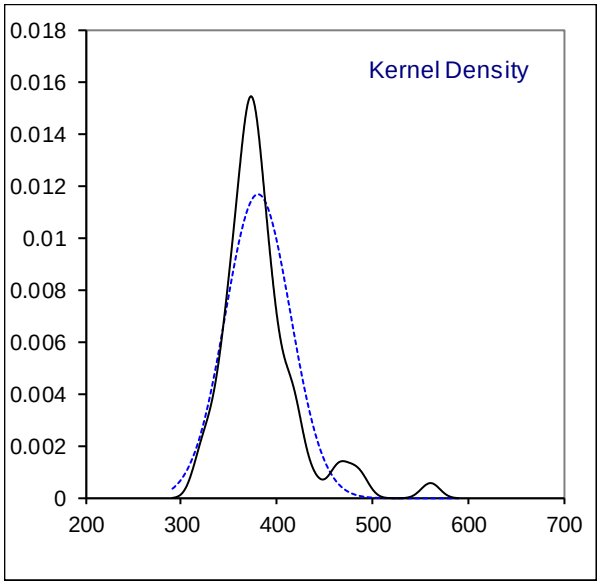
Determination of Water content by KF on sample #18180; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120	D6304-A	393		0.26	
171	D6304-A	419		0.80	
311	ISO12937	387		0.14	
312	ISO12937	480		2.08	
323	ISO12937	360		-0.43	
333		-----		-----	
334	ISO12937	379.7		-0.02	
335	ISO12937	410		0.62	
336	ISO12937	410		0.62	
337	ISO12937	393.0		0.26	
338	ISO12937	561.33	R(0.01)	3.77	
343	ISO12937	463		1.72	
344	ISO12937	398		0.37	
345	ISO12937	377		-0.07	
351	ISO12937	327.0		-1.12	
360	ISO12937	373.4		-0.15	
370	ISO12937	425		0.93	
371	ISO12937	354.25		-0.55	
373	ISO12937	419.8		0.82	
391		-----		-----	
398	ISO12937	353		-0.57	
420	ISO12937	438.81		1.22	
447	IP438	372	C	-0.18	First reported as Water & Sediment
463	D6304-A	333.0		-0.99	
496	D6304-A	377		-0.07	
511		-----		-----	
540	ISO12937	348.0		-0.68	
603		-----		-----	
663	E1064	393		0.26	
862	ISO12937	363		-0.37	
863	ISO12937	390		0.20	
1016	ISO12937	370.3		-0.21	
1033		-----		-----	
1059	ISO12937	370		-0.22	
1107		-----		-----	
1124	ISO12937	397.5		0.35	
1134	IP438	366		-0.30	
1135	ISO12937	345.4		-0.73	
1161	ISO12937	377.954		-0.05	
1167	ISO12937	405		0.51	
1179		-----		-----	
1199		-----		-----	
1201	ISO12937	380		-0.01	
1213		-----		-----	
1299	ISO12937	370		-0.22	
1316	D6304-C	320		-1.26	
1320		-----		-----	
1339	ISO12937	361		-0.41	
1367	D6304-C	415.15		0.72	
1389	ISO12937	375		-0.11	
1397	ISO12937	353		-0.57	
1429	ISO12937	376		-0.09	
1457	ISO12937	390		0.20	
1459	ISO12937	320		-1.26	
1485	ISO12937	369.2		-0.24	
1491	ISO12937	375		-0.11	
1494	E203	352.83		-0.58	
1510	ISO12937	358.9		-0.45	
1546	ISO12937	368.1		-0.26	
1564	ISO12937	366		-0.30	
1586	ISO12937	363		-0.37	
1634	ISO12937	336.9		-0.91	
1656	ISO12937	345		-0.74	
1706		-----		-----	
1707	ISO12937	376		-0.09	
1712		-----		-----	
1721	ISO12937	360.2		-0.42	
1739	ISO12937	346.5		-0.71	
1744	E203	400		0.41	
1754	ISO12937	417.31		0.77	
1756	ISO12937	386.7		0.13	
1769	ISO12937	353.94		-0.55	
1792	ISO12937	339.5		-0.86	
1807	ISO12937	370		-0.22	
1971	ISO12937	384.2		0.08	
1976	ISO12937	380.03		-0.01	

lab	method	value	mark	z(targ)	remarks
6057	ISO12937	466		1.78	
6069	ISO12937	392.03		0.24	
6179	ISO12937	369.0		-0.24	
6191	ISO12937	488.8		2.26	
6201	ISO12937	380		-0.01	
6213	ISO12937	380		-0.01	

normality	not OK
n	69
outliers	1
mean (n)	380.50
st.dev. (n)	34.110
R(calc.)	95.51
st.dev.(ISO12937:00)	47.909
R(ISO12937:00)	134.15





Determination of Water and Sediment on sample #18180; results in %V/V

lab	method	value	mark	z(targ)	remarks
120	D2709	0.0		-----	
171	D2709	<0.01		-----	
311		-----		-----	
312		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
343		-----		-----	
344		-----		-----	
345		-----		-----	
351		-----		-----	
360		-----		-----	
370		-----		-----	
371		-----		-----	
373		-----		-----	
391		-----		-----	
398		-----		-----	
420		-----		-----	
447		-----		-----	
463		-----		-----	
496		-----		-----	
511	D2709	0.0		-----	
540	D2709	<0.05		-----	
603	D2709	<0.05		-----	
663	D2709	0		-----	
862	D2709	<0.05		-----	
863		-----		-----	
1016		-----		-----	
1033		-----		-----	
1059	D2709	<0,05		-----	
1107		-----		-----	
1124		-----		-----	
1134		-----		-----	
1135		-----		-----	
1161		-----		-----	
1167		-----		-----	
1179		-----		-----	
1199		-----		-----	
1201	D2709	NFW		-----	
1213		-----		-----	
1299	D2709	<0.01		-----	
1316		-----		-----	
1320		-----		-----	
1339		-----		-----	
1367		-----		-----	
1389		-----		-----	
1397		-----		-----	
1429		-----		-----	
1457		-----		-----	
1459		-----		-----	
1485		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1546		-----		-----	
1564		-----		-----	
1586	D2709	0.01		-----	
1634		-----		-----	
1656		-----		-----	
1706		-----		-----	
1707		-----		-----	
1712		-----		-----	
1721		-----		-----	
1739		-----		-----	
1744		-----		-----	
1754		-----		-----	
1756		-----		-----	
1769		-----		-----	
1792	D2709	0.005		-----	
1807		-----		-----	
1971		-----		-----	
1976		-----		-----	

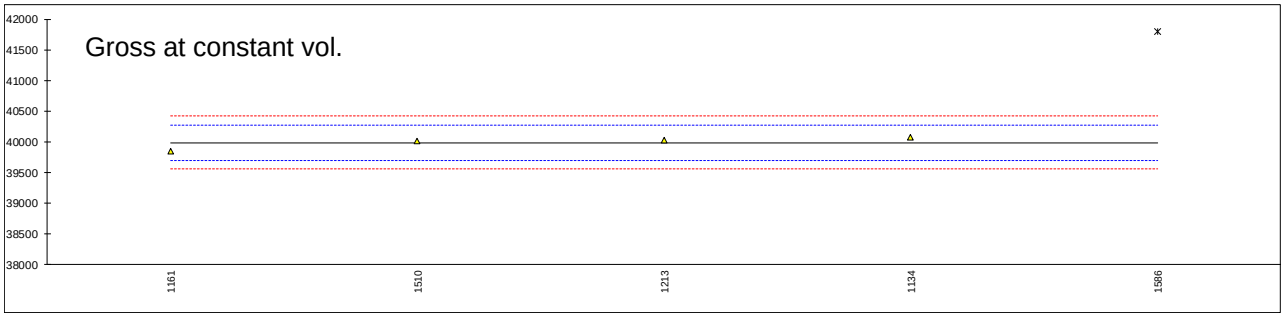
lab	method	value	mark	z(targ)	remarks
6057		-----		-----	
6069		-----		-----	
6179		-----		-----	
6191		-----		-----	
6201		-----		-----	
6213		-----		-----	
	n	11			
	mean (n)	<0.05			

Determination of Calorific Value on sample #18180; 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		-----		-----	-----	-----
337		-----		-----	-----	-----
338		-----		-----	-----	-----
343		-----		-----	-----	-----
344		-----		-----	-----	-----
345		-----		-----	-----	-----
351		-----		-----	-----	-----
360		-----		-----	-----	-----
370		-----		-----	-----	-----
371		-----		-----	-----	-----
373		-----		-----	-----	-----
391		-----		-----	-----	-----
398		-----		-----	-----	-----
420		-----		-----	-----	-----
447		-----		-----	-----	-----
463		-----		-----	-----	-----
496		-----		-----	-----	-----
511		-----		-----	-----	-----
540		-----		-----	-----	-----
603		-----		-----	-----	-----
663		-----		-----	-----	-----
862		-----		-----	-----	-----
863		-----		-----	-----	-----
1016		-----		-----	-----	-----
1033		-----		-----	-----	-----
1059		-----		-----	-----	-----
1107		-----		-----	-----	-----
1124		-----		-----	-----	-----
1134	DIN51900-1	40067.6		0.56	-----	-----
1135		-----		-----	-----	-----
1161	DIN51900-2	39848		-0.98	37450	-----
1167		-----		-----	-----	-----
1179		-----		-----	-----	-----
1199		-----		-----	-----	-----
1201		-----		-----	-----	-----
1213	D240	40030		0.29	-----	-----
1299		-----		-----	-----	-----
1316		-----		-----	-----	-----
1320		-----		-----	-----	-----
1339		-----		-----	-----	-----
1367		-----		-----	-----	-----
1389		-----		-----	-----	-----
1397		-----		-----	-----	-----
1429		-----		-----	-----	-----
1457		-----		-----	-----	-----
1459		-----		-----	-----	-----
1485		-----		-----	-----	-----
1491		-----		-----	-----	-----
1494		-----		-----	-----	-----
1510	IP12	40007.5		0.13	37611.00	-----
1546		-----		-----	-----	-----
1564		-----		-----	-----	-----
1586	DIN51900-1	41803	C,D(0.01)	12.70	-----	-----
1634		-----		-----	-----	-----
1656		-----		-----	-----	-----
1706		-----		-----	-----	-----
1707		-----		-----	-----	-----
1712		-----		-----	-----	-----
1721		-----		-----	-----	-----
1739		-----		-----	-----	-----
1744		-----		-----	-----	-----
1754		-----		-----	-----	-----
1756		-----		-----	-----	-----
1769		-----		-----	-----	-----
1792		-----		-----	-----	-----
1807		-----		-----	-----	-----
1971		-----		-----	-----	-----
1976		-----		-----	-----	-----

lab	method	Gross at const, vol.	mark	z(targ)	Net at const. vol.	Net at const. press
6057		-----		-----	-----	-----
6069		-----		-----	-----	-----
6179		-----		-----	-----	-----
6191		-----		-----	-----	-----
6201		-----		-----	-----	-----
6213		-----		-----	-----	-----
	normality	unknown			unknown	unknown
	n	4			2	0
	outliers	1			n.a.	n.a.
	mean (n)	39988.3			n.a.	n.a.
	st.dev. (n)	96.75			n.a.	n.a.
	R(calc.)	270.9			n.a.	n.a.
	st.dev.(DIN51900-1:00)	142.86			n.a.	n.a.
	R(DIN51900-1:00)	400			n.a.	n.a.

lab 1586 probably unit error. Reported 41.803 kJ/kg

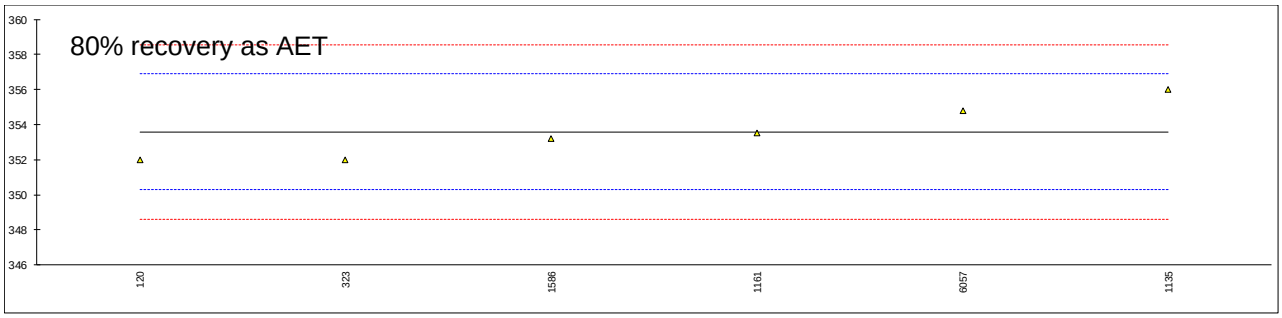


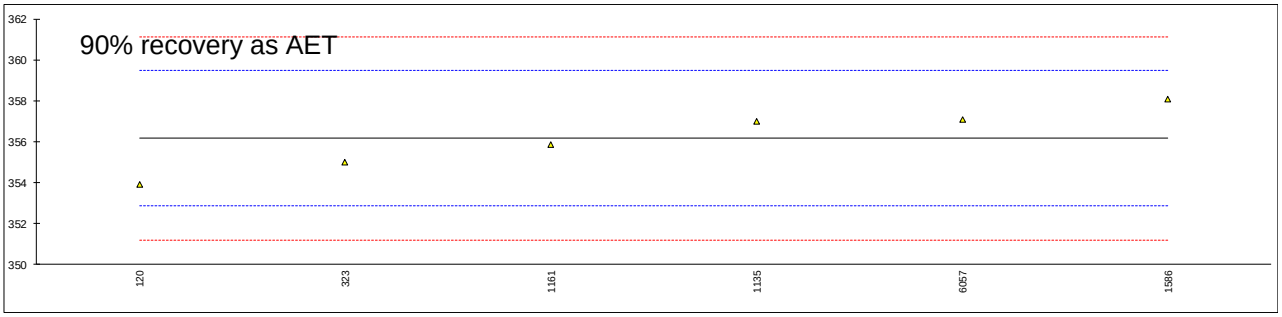
Determination of Distillation at 10 mm Hg, % recovered as AET on sample #18180; results in °C

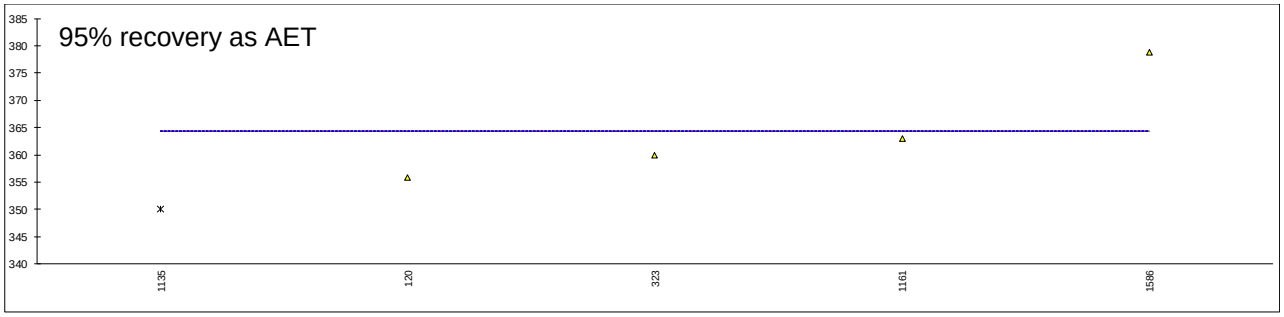
lab	method	80%rec.	mark	z(targ)	90%rec.	mark	z(targ)	95%rec.	mark	z(targ)
120		352.0		-0.96	353.9		-1.36	355.8		-----
171		-----		-----	-----		-----	-----		-----
311		-----		-----	-----		-----	-----		-----
312		-----		-----	-----		-----	-----		-----
323		352		-0.96	355		-0.70	360		-----
333		-----		-----	-----		-----	-----		-----
334		-----		-----	-----		-----	-----		-----
335		-----		-----	-----		-----	-----		-----
336		-----		-----	-----		-----	-----		-----
337		-----		-----	-----		-----	-----		-----
338		-----		-----	-----		-----	-----		-----
343		-----		-----	-----		-----	-----		-----
344		-----		-----	-----		-----	-----		-----
345		-----		-----	-----		-----	-----		-----
351		-----		-----	-----		-----	-----		-----
360		-----		-----	-----		-----	-----		-----
370		-----		-----	-----		-----	-----		-----
371		-----		-----	-----		-----	-----		-----
373		-----		-----	-----		-----	-----		-----
391		-----		-----	-----		-----	-----		-----
398		-----		-----	-----		-----	-----		-----
420		-----		-----	-----		-----	-----		-----
447		-----		-----	-----		-----	-----		-----
463		-----		-----	-----		-----	-----		-----
496		-----		-----	-----		-----	-----		-----
511		-----		-----	-----		-----	-----		-----
540		-----		-----	-----		-----	-----		-----
603		-----		-----	-----		-----	-----		-----
663		-----		-----	-----		-----	-----		-----
862		-----		-----	-----		-----	-----		-----
863		-----		-----	-----		-----	-----		-----
1016		-----		-----	-----		-----	-----		-----
1033		-----		-----	-----		-----	-----		-----
1059		-----		-----	-----		-----	-----		-----
1107		-----		-----	-----		-----	-----		-----
1124		-----		-----	-----		-----	-----		-----
1134		-----		-----	-----		-----	-----		-----
1135		356	C	1.46	357	C	0.51	350	ex	-----
1161		353.53		-0.04	355.87		-0.18	362.94		-----
1167		-----		-----	-----		-----	-----		-----
1179		-----		-----	-----		-----	-----		-----
1199		-----		-----	-----		-----	-----		-----
1201		-----		-----	-----		-----	-----		-----
1213		-----		-----	-----		-----	-----		-----
1299		-----		-----	-----		-----	-----		-----
1316		-----		-----	-----		-----	-----		-----
1320		-----		-----	-----		-----	-----		-----
1339		-----		-----	-----		-----	-----		-----
1367		-----		-----	-----		-----	-----		-----
1389		-----		-----	-----		-----	-----		-----
1397		-----		-----	-----		-----	-----		-----
1429		-----		-----	-----		-----	-----		-----
1457		-----		-----	-----		-----	-----		-----
1459		-----		-----	-----		-----	-----		-----
1485		-----		-----	-----		-----	-----		-----
1491		-----		-----	-----		-----	-----		-----
1494		-----		-----	-----		-----	-----		-----
1510		-----		-----	-----		-----	-----		-----
1546		-----		-----	-----		-----	-----		-----
1564		-----		-----	-----		-----	-----		-----
1586		353.2		-0.23	358.1		1.17	378.8		-----
1634		-----		-----	-----		-----	-----		-----
1656		-----		-----	-----		-----	-----		-----
1706		-----		-----	-----		-----	-----		-----
1707		-----		-----	-----		-----	-----		-----
1712		-----		-----	-----		-----	-----		-----
1721		-----		-----	-----		-----	-----		-----
1739		-----		-----	-----		-----	-----		-----
1744		-----		-----	-----		-----	-----		-----
1754		-----		-----	-----		-----	-----		-----
1756		-----		-----	-----		-----	-----		-----
1769		-----		-----	-----		-----	-----		-----
1792		-----		-----	-----		-----	-----		-----
1807		-----		-----	-----		-----	-----		-----
1971		-----		-----	-----		-----	-----		-----
1976		-----		-----	-----		-----	-----		-----

lab	method	80%rec.	mark	z(targ)	90%rec.	mark	z(targ)	95%rec.	mark	z(targ)
6057		354.8		0.73	357.1		0.57	-----		-----
6069		-----		-----	-----		-----	-----		-----
6179		-----		-----	-----		-----	-----		-----
6191		-----		-----	-----		-----	-----		-----
6201		-----		-----	-----		-----	-----		-----
6213		-----		-----	-----		-----	-----		-----
	normality	unknown			unknown			unknown		
	n	6			6			4		
	outliers	0			0			0 +1ex		
	mean (n)	353.59			356.16			364.39		
	st.dev. (n)	1.580			1.542			10.047		
	R(calc.)	4.42			4.32			28.13		
	st.dev.(D1160:18)	1.657			1.657			(1.657)		
	R(D1160:18)	4.64			4.64			(4.64)		

lab 1135 first reported 342 for 80% rec. and 348 for 90% rec. Test result for 95% rec. excluded, as value is smaller than for 90% rec.





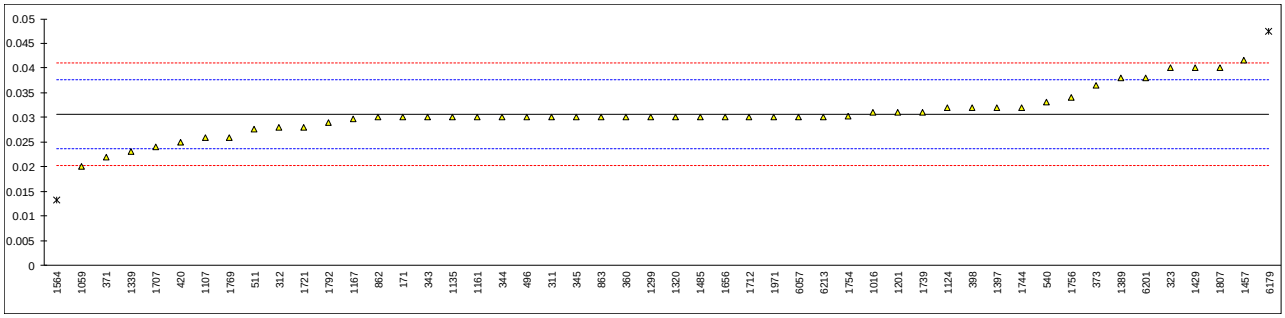


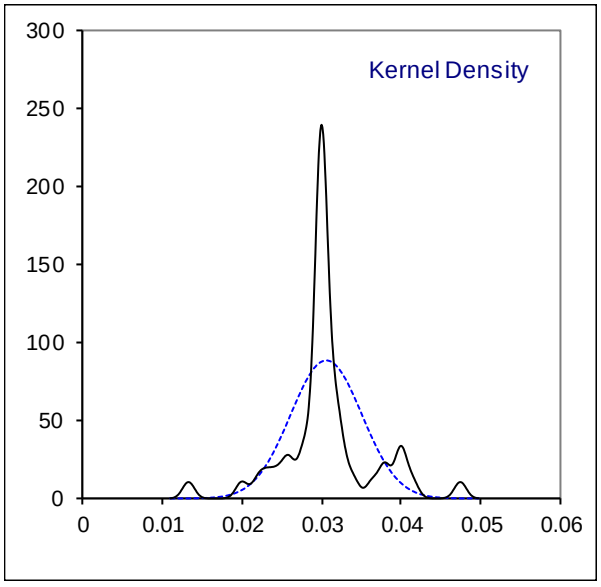
Determination of Methanol on sample #18180; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171	EN14110	0.03		-0.18	
311	EN14110	0.03		-0.18	
312	EN14110	0.028		-0.76	
323	EN14110	0.04		2.68	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
343	EN14110	0.03		-0.18	
344	EN14110	0.03		-0.18	
345	EN14110	0.03		-0.18	
351		-----		-----	
360	EN14110	0.030		-0.18	
370		-----		-----	
371	EN14110	0.022		-2.47	
373	EN14110	0.0364		1.65	
391		-----		-----	
398	EN14110	0.032		0.39	
420	EN14110	0.025		-1.61	
447		-----		-----	
463		-----		-----	
496	EN14110	0.030		-0.18	
511	EN14110	0.0276		-0.87	
540	EN14110	0.033		0.68	
603		-----		-----	
663		-----		-----	
862	EN14110	0.03		-0.18	
863	EN14110	0.03		-0.18	
1016	EN14110	0.031		0.10	
1033		-----		-----	
1059	EN14110	0.02		-3.05	
1107	EN14110	0.026		-1.33	
1124	EN14110	0.032		0.39	
1134		-----		-----	
1135	EN14110	0.03		-0.18	
1161	EN14110	0.030		-0.18	
1167	EN14110	0.0297		-0.27	
1179		-----		-----	
1199		-----		-----	
1201	EN14110	0.031		0.10	
1213		-----		-----	
1299	EN14110	0.03		-0.18	
1316		-----		-----	
1320	EN14110	0.030		-0.18	
1339	EN14110	0.023		-2.19	
1367		-----		-----	
1389	EN14110	0.038		2.11	
1397	EN14110	0.032		0.39	
1429	EN14110	0.04		2.68	
1457	EN14110	0.0415	C	3.11	First reported 0.0445
1459		-----		-----	
1485	EN14110	0.030		-0.18	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1546		-----		-----	
1564	EN14110	0.0133	C,R(0.05)	-4.97	First reported 0.01
1586		-----		-----	
1634		-----		-----	
1656	EN14110	0.03		-0.18	
1706		-----		-----	
1707	EN14110	0.024		-1.90	
1712	EN14110	0.03		-0.18	
1721	EN14110	0.028		-0.76	
1739	EN14110	0.031		0.10	
1744	EN14110	0.032		0.39	
1754	EN14110	0.0302		-0.12	
1756	EN14110	0.0341		0.99	
1769	EN14110	0.026		-1.33	
1792	EN14110	0.029		-0.47	
1807	EN14110	0.04		2.68	
1971	EN14110	0.03		-0.18	
1976		-----		-----	

lab	method	value	mark	z(targ)	remarks
6057	EN14110	0.03		-0.18	
6069		-----		-----	
6179	EN14110	0.0475	R(0.05)	4.83	
6191		-----		-----	
6201	EN14110	0.038		2.11	
6213	EN14110	0.03		-0.18	

normality	OK
n	48
outliers	2
mean (n)	0.0306
st.dev. (n)	0.00449
R(calc.)	0.0126
st.dev.(EN14110:03)	0.00349
R(EN14110:03)	0.0098



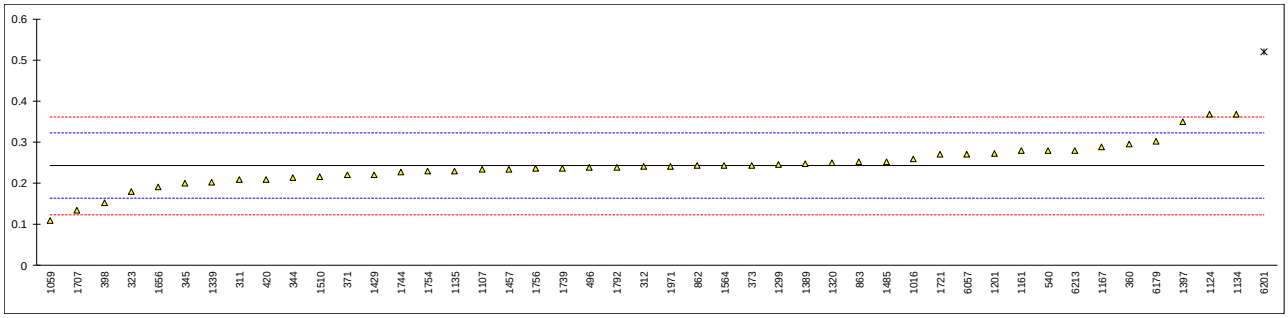


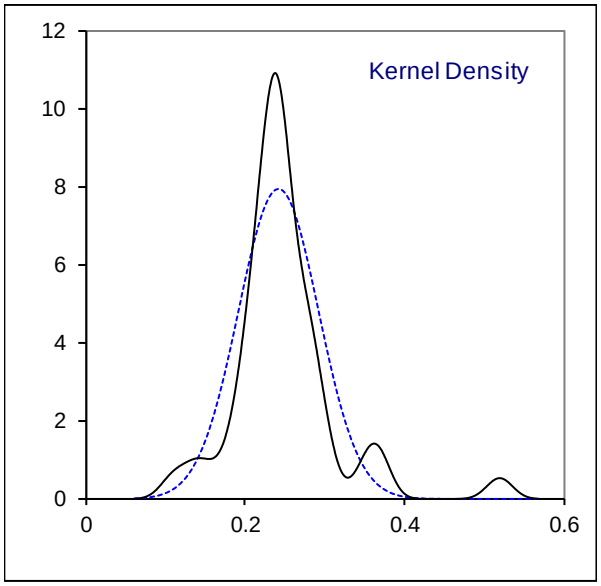
Determination of mono-Glycerides on sample #18180; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14105	0.21		-0.82	
312	EN14105	0.24		-0.06	
323	EN14105	0.18		-1.58	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
343	EN14105	<0,25		-----	
344	EN14105	0.214		-0.72	
345	EN14105	0.20		-1.07	
351		-----		-----	
360	EN14105	0.295		1.33	
370		-----		-----	
371	EN14105	0.22		-0.56	
373	EN14105	0.244		0.04	
391		-----		-----	
398	EN14105	0.152		-2.29	
420	EN14105	0.21		-0.82	
447		-----		-----	
463		-----		-----	
496	EN14105	0.238		-0.11	
511		-----		-----	
540	EN14105	0.28		0.95	
603		-----		-----	
663		-----		-----	
862	EN14105	0.243		0.02	
863	EN14105	0.253	C	0.27	First reported 0.47
1016	EN14105	0.259		0.42	
1033		-----		-----	
1059	EN14105	0.11		-3.35	
1107	EN14105	0.235		-0.18	
1124	EN14105	0.367		3.16	
1134	EN14105	0.3675		3.17	
1135	EN14105	0.23		-0.31	
1161	EN14105	0.28		0.95	
1167	EN14105	0.289		1.18	
1179		-----		-----	
1199		-----		-----	
1201	EN14105	0.273		0.78	
1213		-----		-----	
1299	EN14105	0.246		0.09	
1316		-----		-----	
1320	EN14105	0.2497		0.19	
1339	EN14105	0.203		-0.99	
1367		-----		-----	
1389	EN14105	0.2465		0.11	
1397	EN14105	0.35		2.73	
1429	EN14105	0.22		-0.56	
1457	EN14105	0.235		-0.18	
1459		-----		-----	
1485	EN14105	0.253		0.27	
1491		-----		-----	
1494		-----		-----	
1510	EN14105	0.215		-0.69	
1546		-----		-----	
1564	EN14105	0.243		0.02	
1586		-----		-----	
1634		-----		-----	
1656	EN14105	0.19		-1.32	
1706		-----		-----	
1707	EN14105	0.135		-2.72	
1712		-----		-----	
1721	EN14105	0.27		0.70	
1739	EN14105	0.236		-0.16	
1744	D6584	0.2261		-0.41	
1754	EN14105	0.229		-0.34	
1756	EN14105	0.2354		-0.17	
1769		-----		-----	
1792	EN14105	0.239		-0.08	
1807		-----		-----	
1971	EN14105	0.240		-0.06	
1976		-----		-----	

lab	method	value	mark	z(targ)	remarks
6057	EN14105	0.27		0.70	
6069		-----		-----	
6179	D6584	0.30269		1.53	
6191		-----		-----	
6201	EN14105	0.52	R(0.01)	7.03	
6213	EN14105	0.28		0.95	

normality	suspect
n	45
outliers	1
mean (n)	0.2423
st.dev. (n)	0.05030
R(calc.)	0.1409
st.dev.(EN14105:11)	0.03951
R(EN14105:11)	0.1106



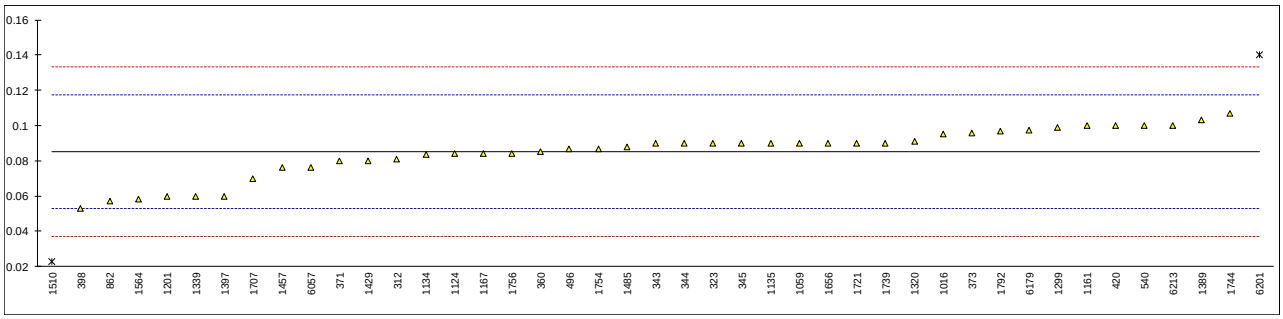


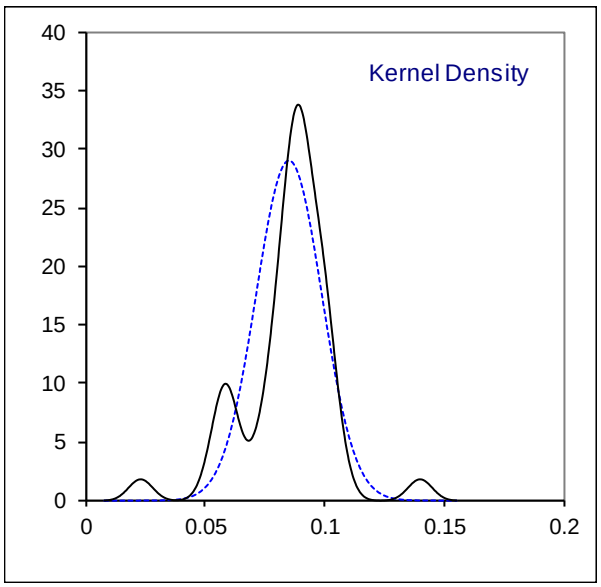
Determination of di-Glycerides on sample #18180; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14105	<0.10		-----	
312	EN14105	0.081		-0.26	
323	EN14105	0.09		0.31	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
343	EN14105	0.09		0.31	
344	EN14105	0.090		0.31	
345	EN14105	0.09		0.31	
351		-----		-----	
360	EN14105	0.085		-0.01	
370		-----		-----	
371	EN14105	0.08		-0.32	
373	EN14105	0.096		0.68	
391		-----		-----	
398	EN14105	0.053		-2.00	
420	EN14105	0.10		0.93	
447		-----		-----	
463		-----		-----	
496	EN14105	0.087		0.12	
511		-----		-----	
540	EN14105	0.10		0.93	
603		-----		-----	
663		-----		-----	
862	EN14105	0.057		-1.75	
863	EN14105	<0.10		-----	
1016	EN14105	0.095		0.62	
1033		-----		-----	
1059	EN14105	0.09		0.31	
1107	EN14105	<0.10		-----	
1124	EN14105	0.084		-0.07	
1134	EN14105	0.0835		-0.10	
1135	EN14105	0.09		0.31	
1161	EN14105	0.10		0.93	
1167	EN14105	0.084		-0.07	
1179		-----		-----	
1199		-----		-----	
1201	EN14105	0.06		-1.56	
1213		-----		-----	
1299	EN14105	0.099		0.87	
1316		-----		-----	
1320	EN14105	0.091		0.37	
1339	EN14105	0.060		-1.56	
1367		-----		-----	
1389	EN14105	0.103		1.12	
1397	EN14105	0.06		-1.56	
1429	EN14105	0.08		-0.32	
1457	EN14105	0.076		-0.57	
1459		-----		-----	
1485	EN14105	0.088		0.18	
1491		-----		-----	
1494		-----		-----	
1510	EN14105	0.023	R(0.05)	-3.87	
1546		-----		-----	
1564	EN14105	0.058		-1.69	
1586		-----		-----	
1634		-----		-----	
1656	EN14105	0.09		0.31	
1706		-----		-----	
1707	EN14105	0.07	C	-0.94	First reported 0.02
1712		-----		-----	
1721	EN14105	0.09		0.31	
1739	EN14105	0.09		0.31	
1744	D6584	0.1066		1.34	
1754	EN14105	0.087		0.12	
1756	EN14105	0.0843		-0.05	
1769		-----		-----	
1792	EN14105	0.097		0.74	
1807		-----		-----	
1971	EN14105	<0,10		-----	
1976		-----		-----	

lab	method	value	mark	z(targ)	remarks
6057	EN14105	0.076		-0.57	
6069		-----		-----	
6179	D6584	0.09751		0.77	
6191		-----		-----	
6201	EN14105	0.14	R(0.05)	3.42	
6213	EN14105	0.10		0.93	

normality	OK
n	41
outliers	2
mean (n)	0.0851
st.dev. (n)	0.01374
R(calc.)	0.0385
st.dev.(EN14105:11)	0.01605
R(EN14105:11)	0.0449



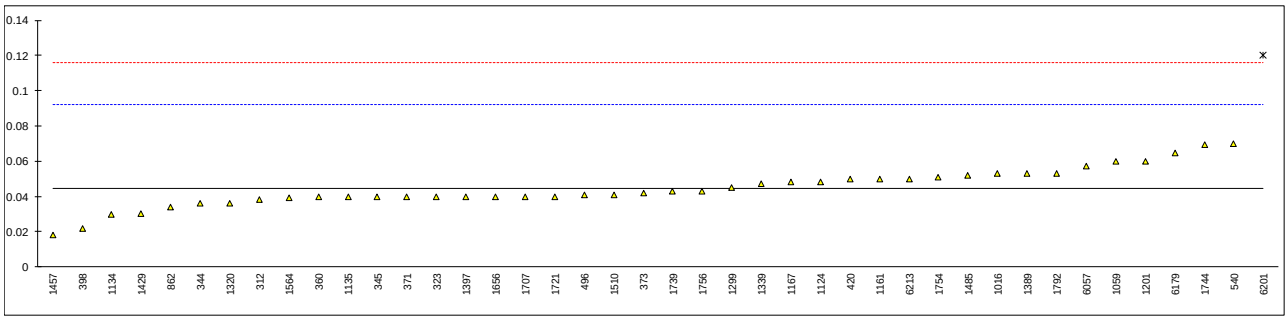


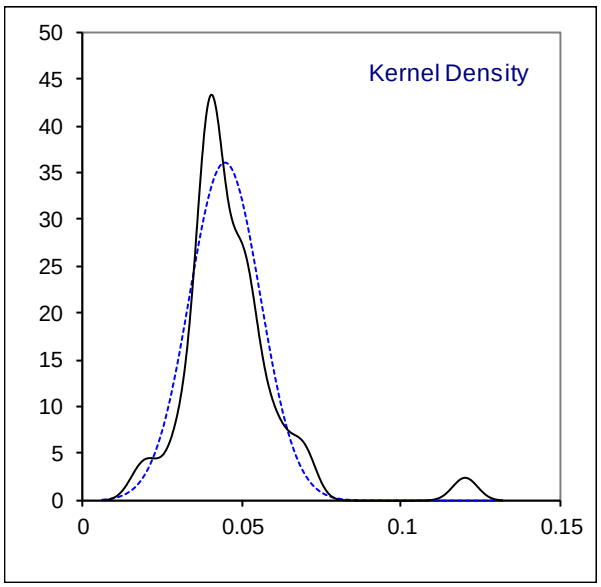
Determination of tri-Glycerides on sample #18180; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14105	<0.10		-----	
312	EN14105	0.038		-0.28	
323	EN14105	0.04		-0.20	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
343	EN14105	<0,05		-----	
344	EN14105	0.036		-0.37	
345	EN14105	0.04		-0.20	
351		-----		-----	
360	EN14105	0.040		-0.20	
370		-----		-----	
371	EN14105	0.04		-0.20	
373	EN14105	0.042		-0.12	
391		-----		-----	
398	EN14105	0.022		-0.96	
420	EN14105	0.05	C	0.22	First reported 0.14
447		-----		-----	
463		-----		-----	
496	EN14105	0.041		-0.16	
511		-----		-----	
540	EN14105	0.07		1.07	
603		-----		-----	
663		-----		-----	
862	EN14105	0.034		-0.45	
863	EN14105	<0.10		-----	
1016	EN14105	0.053		0.35	
1033		-----		-----	
1059	EN14105	0.06		0.65	
1107	EN14105	<0.10		-----	
1124	EN14105	0.048		0.14	
1134	EN14105	0.0298		-0.63	
1135	EN14105	0.04		-0.20	
1161	EN14105	0.05		0.22	
1167	EN14105	0.048		0.14	
1179		-----		-----	
1199		-----		-----	
1201	EN14105	0.06		0.65	
1213		-----		-----	
1299	EN14105	0.045		0.01	
1316		-----		-----	
1320	EN14105	0.036		-0.37	
1339	EN14105	0.047		0.10	
1367		-----		-----	
1389	EN14105	0.053		0.35	
1397	EN14105	0.04		-0.20	
1429	EN14105	0.03		-0.62	
1457	EN14105	0.018		-1.13	
1459		-----		-----	
1485	EN14105	0.052		0.31	
1491		-----		-----	
1494		-----		-----	
1510	EN14105	0.041		-0.16	
1546		-----		-----	
1564	EN14105	0.039		-0.24	
1586		-----		-----	
1634		-----		-----	
1656	EN14105	0.04		-0.20	
1706		-----		-----	
1707	EN14105	0.04		-0.20	
1712		-----		-----	
1721	EN14105	0.04		-0.20	
1739	EN14105	0.043		-0.07	
1744	D6584	0.0692		1.04	
1754	EN14105	0.051		0.27	
1756	EN14105	0.0431		-0.07	
1769		-----		-----	
1792	EN14105	0.053		0.35	
1807		-----		-----	
1971	EN14105	<0,10		-----	
1976		-----		-----	

lab	method	value	mark	z(targ)	remarks
6057	EN14105	0.057		0.52	
6069		-----		-----	
6179	D6584	0.06448		0.84	
6191		-----		-----	
6201	EN14105	0.12	R(0.01)	3.18	
6213	EN14105	0.05		0.22	

normality	OK
n	41
outliers	1
mean (n)	0.0447
st.dev. (n)	0.01108
R(calc.)	0.0310
st.dev.(EN14105:11)	0.02365
R(EN14105:11)	0.0662



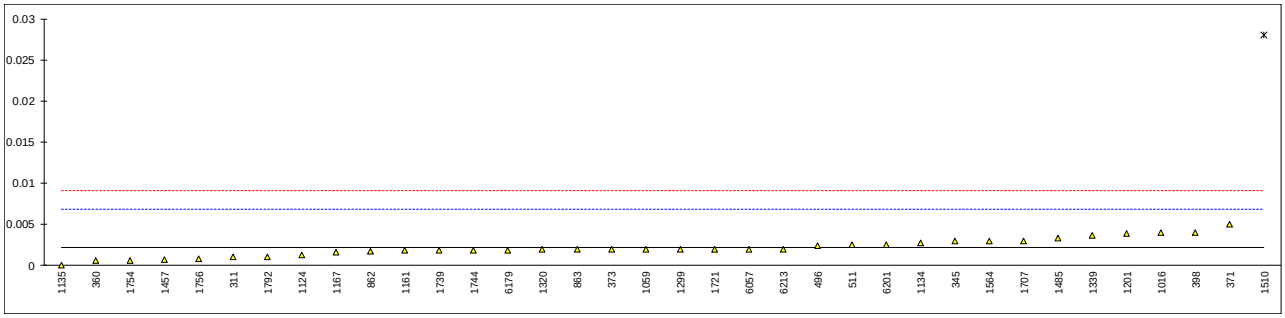


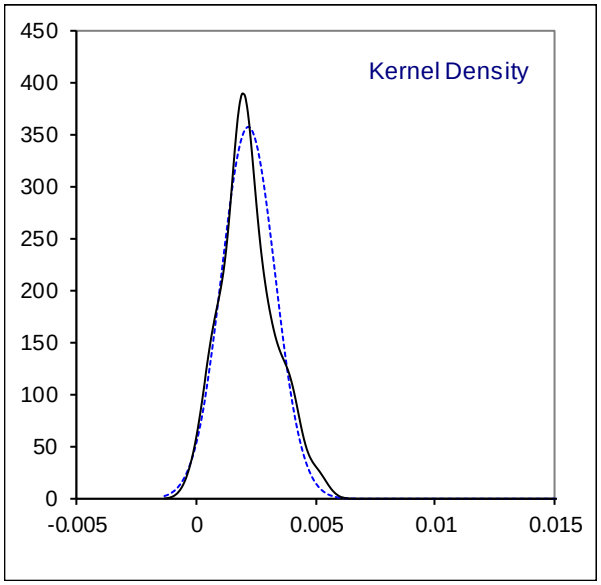
Determination of Free Glycerol on sample #18180; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14105	0.001		-0.50	
312	EN14105	<0.001		-----	
323	EN14105	< 0.001		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
343	EN14105	<0,005		-----	
344	EN14105	<0.05		-----	
345	EN14105	0.003		0.36	
351		-----		-----	
360	EN14105	0.0006		-0.67	
370		-----		-----	
371	EN14105	0.005		1.22	
373	EN14105	0.002		-0.07	
391		-----		-----	
398	EN14105	0.004	C	0.79	First reported 0.011
420	EN14105	<0,005		-----	
447		-----		-----	
463		-----		-----	
496	EN14105	0.00245		0.13	
511	EN14105	0.0025		0.15	
540	EN14105	<0.01		-----	
603		-----		-----	
663		-----		-----	
862	EN14105	0.0017		-0.20	
863	EN14105	0.002		-0.07	
1016	EN14105	0.004		0.79	
1033		-----		-----	
1059	EN14105	0.002		-0.07	
1107	EN14105	<0.001		-----	
1124	EN14105	0.0013		-0.37	
1134	EN14105	0.00278	C	0.27	First reported 0.11175
1135	EN14105	0.000		-0.93	
1161	EN14105	0.0018		-0.15	
1167	EN14105	0.0016		-0.24	
1179		-----		-----	
1199		-----		-----	
1201	EN14105	0.0039		0.75	
1213		-----		-----	
1299	EN14105	0.002		-0.07	
1316		-----		-----	
1320	EN14105	0.0019		-0.11	
1339	EN14105	0.0037		0.66	
1367		-----		-----	
1389	EN14105	<0.001		-----	
1397	EN14105	<0,005		-----	
1429	EN14105	<0.01		-----	
1457	EN14105	0.0007		-0.63	
1459		-----		-----	
1485	EN14105	0.0033		0.49	
1491		-----		-----	
1494		-----		-----	
1510	EN14105	0.028	R(0.01)	11.14	
1546		-----		-----	
1564	EN14105	0.003		0.36	
1586		-----		-----	
1634		-----		-----	
1656	EN14105	<0.01		-----	
1706		-----		-----	
1707	EN14105	0.003	C	0.36	First reported 0.0115
1712		-----		-----	
1721	EN14105	0.002		-0.07	
1739	EN14105	0.0018		-0.15	
1744	D6584	0.0018		-0.15	
1754	EN14105	0.0006		-0.67	
1756	EN14105	0.0008		-0.59	
1769		-----		-----	
1792	EN14105	0.001		-0.50	
1807		-----		-----	
1971	EN14105	<0,005		-----	
1976		-----		-----	

lab	method	value	mark	z(targ)	remarks
6057	EN14105	0.002		-0.07	
6069		-----		-----	
6179	D6584	0.00185		-0.13	
6191		-----		-----	
6201	EN14105	0.0025		0.15	
6213	EN14105	0.002		-0.07	

normality	OK
n	35
outliers	1
mean (n)	0.0022
st.dev. (n)	0.00112
R(calc.)	0.0031
st.dev.(EN14105:11)	0.00232
R(EN14105:11)	0.0065



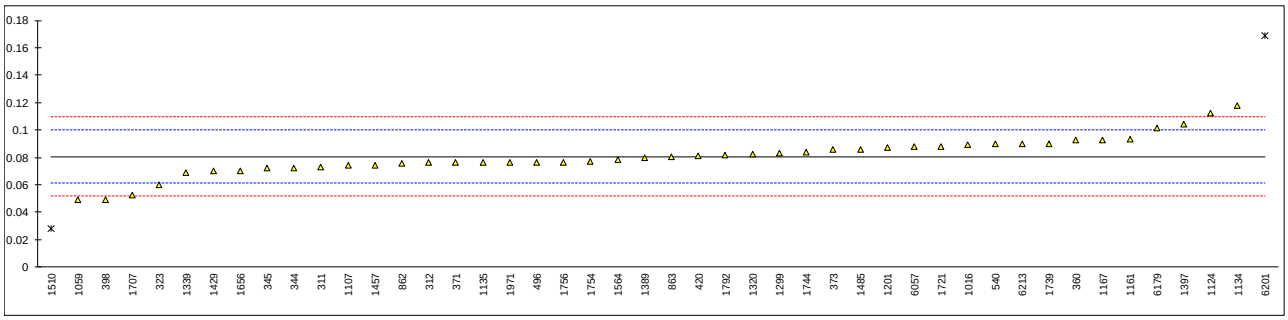


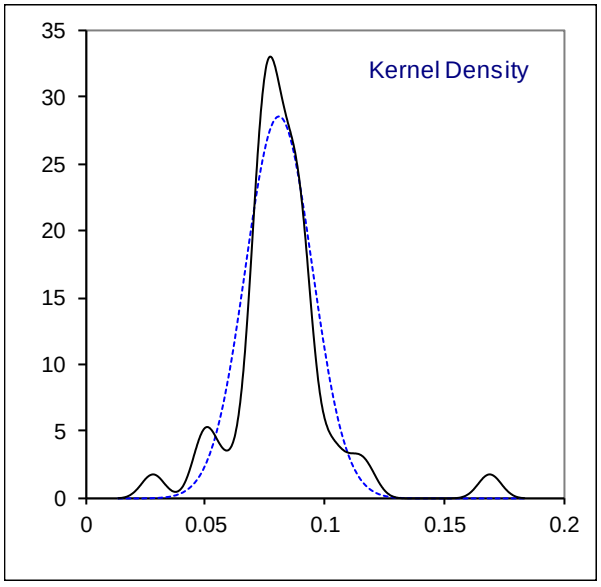
Determination of Total Glycerol on sample #18180; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14105	0.073		-0.80	
312	EN14105	0.076		-0.49	
323	EN14105	0.060		-2.16	
333		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
343	EN14105	<0,08		-----	
344	EN14105	0.072		-0.91	
345	EN14105	0.072		-0.91	
351		-----		-----	
360	EN14105	0.0924		1.22	
370		-----		-----	
371	EN14105	0.076		-0.49	
373	EN14105	0.086		0.55	
391		-----		-----	
398	EN14105	0.049		-3.31	
420	EN14105	0.081		0.03	
447		-----		-----	
463		-----		-----	
496	EN14105	0.0763		-0.46	
511		-----		-----	
540	EN14105	0.09		0.97	
603		-----		-----	
663		-----		-----	
862	EN14105	0.0754		-0.55	
863	EN14105	0.0803	C	-0.04	First reported 0.137
1016	EN14105	0.089		0.86	
1033		-----		-----	
1059	EN14105	0.049		-3.31	
1107	EN14105	0.074		-0.70	
1124	EN14105	0.1121		3.27	
1134	EN14105	0.1175	C	3.84	First reported as free Glycerol
1135	EN14105	0.076		-0.49	
1161	EN14105	0.093		1.28	
1167	EN14105	0.0927		1.25	
1179		-----		-----	
1199		-----		-----	
1201	EN14105	0.087		0.66	
1213		-----		-----	
1299	EN14105	0.083		0.24	
1316		-----		-----	
1320	EN14105	0.0825		0.19	
1339	EN14105	0.069		-1.22	
1367		-----		-----	
1389	EN14105	0.08		-0.07	
1397	EN14105	0.104		2.43	
1429	EN14105	0.07		-1.12	
1457	EN14105	0.074		-0.70	
1459		-----		-----	
1485	EN14105	0.0860		0.55	
1491		-----		-----	
1494		-----		-----	
1510	EN14105	0.028	R(0.05)	-5.50	
1546		-----		-----	
1564	EN14105	0.078		-0.28	
1586		-----		-----	
1634		-----		-----	
1656	EN14105	0.07		-1.12	
1706		-----		-----	
1707	EN14105	0.0525		-2.94	
1712		-----		-----	
1721	EN14105	0.08811		0.77	
1739	EN14105	0.0902		0.99	
1744	D6584	0.0835		0.29	
1754	EN14105	0.0770		-0.39	
1756	EN14105	0.0765		-0.44	
1769		-----		-----	
1792	EN14105	0.082		0.13	
1807		-----		-----	
1971	EN14105	0.076		-0.49	
1976		-----		-----	

lab	method	value	mark	z(targ)	remarks
6057	EN14105	0.088		0.76	
6069		-----		-----	
6179	D6584	0.10152		2.17	
6191		-----		-----	
6201	EN14105	0.169	R(0.01)	9.21	
6213	EN14105	0.09		0.97	

normality	suspect
n	44
outliers	2
mean (n)	0.0807
st.dev. (n)	0.01396
R(calc.)	0.0391
st.dev.(EN14105:11)	0.00959
R(EN14105:11)	0.0269



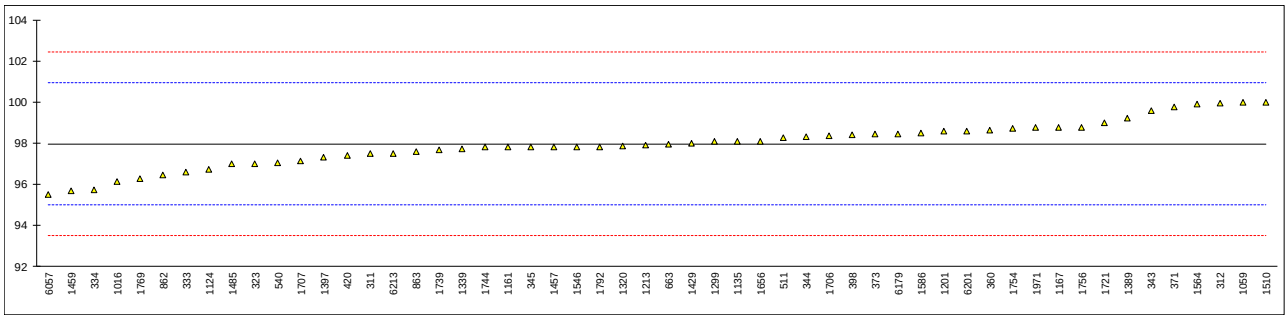


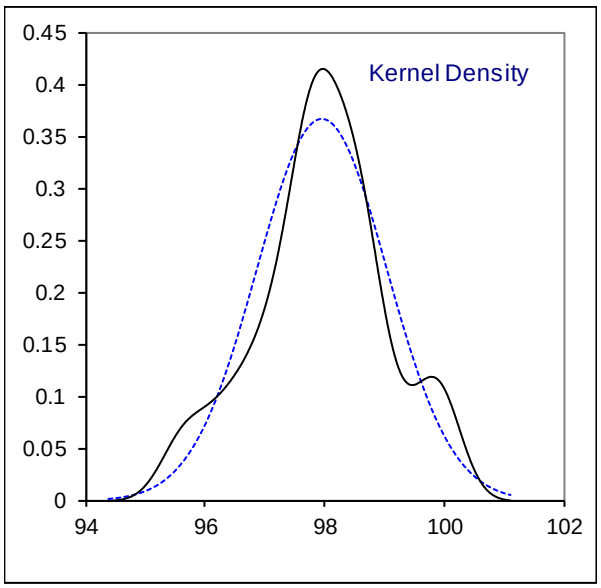
Determination of Total Ester content (FAME) on sample #18180; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14103	97.5		-0.31	
312	EN14103	99.93		1.33	
323	EN14103	97.0		-0.64	
333	EN14103	96.6		-0.91	
334	EN14103	95.72		-1.51	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
343	EN14103	99.6		1.11	
344	EN14103	98.3		0.23	
345	EN14103	97.8		-0.11	
351		-----		-----	
360	EN14103	98.61		0.44	
370		-----		-----	
371	EN14103	99.75		1.21	
373	EN14103	98.45		0.33	
391		-----		-----	
398	EN14103	98.41		0.30	
420	EN14103	97.4		-0.38	
447		-----		-----	
463		-----		-----	
496		-----		-----	
511	EN14103	98.245		0.19	
540	EN14103	97.05		-0.61	
603		-----		-----	
663	EN14103	97.96		0.00	
862	EN14103	96.45		-1.02	
863	EN14103	97.6		-0.24	
1016	EN14103	96.13		-1.23	
1033		-----		-----	
1059	EN14103	100.0		1.37	
1107		-----		-----	
1124	EN14103	96.72		-0.83	
1134		-----		-----	
1135	EN14103	98.1		0.10	
1161	EN14103	97.8		-0.11	
1167	EN14103	98.77		0.55	
1179		-----		-----	
1199		-----		-----	
1201	EN14103	98.6		0.43	
1213	EN14103	97.9		-0.04	
1299	EN14103	98.1		0.10	
1316		-----		-----	
1320	EN14103	97.85		-0.07	
1339	EN14103	97.73		-0.15	
1367		-----		-----	
1389	EN14103	99.23		0.86	
1397	EN14103	97.3		-0.44	
1429	EN14103	98.0		0.03	
1457	EN14103	97.8		-0.11	
1459	EN14103	95.7		-1.52	
1485	EN14103	96.99		-0.65	
1491		-----		-----	
1494		-----		-----	
1510	EN14103	100.00		1.37	
1546		97.8		-0.11	
1564	EN14103	99.9		1.31	
1586	EN14103	98.5		0.36	
1634		-----		-----	
1656	EN14103	98.1		0.10	
1706	EN14103	98.338		0.26	
1707	EN14103	97.15		-0.54	
1712		-----		-----	
1721	EN14103	99.0		0.70	
1739	EN14103	97.69		-0.18	
1744	EN14103	97.79		-0.11	
1754	EN14103	98.72		0.51	
1756	EN14103	98.78		0.55	
1769	EN14103	96.28		-1.13	
1792	EN14103	97.80		-0.11	
1807		-----		-----	
1971	EN14103	98.75		0.53	
1976		-----		-----	

lab	method	value	mark	z(targ)	remarks
6057	EN14103	95.5		-1.65	
6069		-----		-----	
6179	EN14103	98.45		0.33	
6191		-----		-----	
6201	EN14103	98.60		0.43	
6213	EN14103	97.5		-0.31	

normality	OK
n	54
outliers	0
mean (n)	97.9582
st.dev. (n)	1.08736
R(calc.)	3.0446
st.dev.(EN14103:11)	1.48571
R(EN14103:11)	4.16



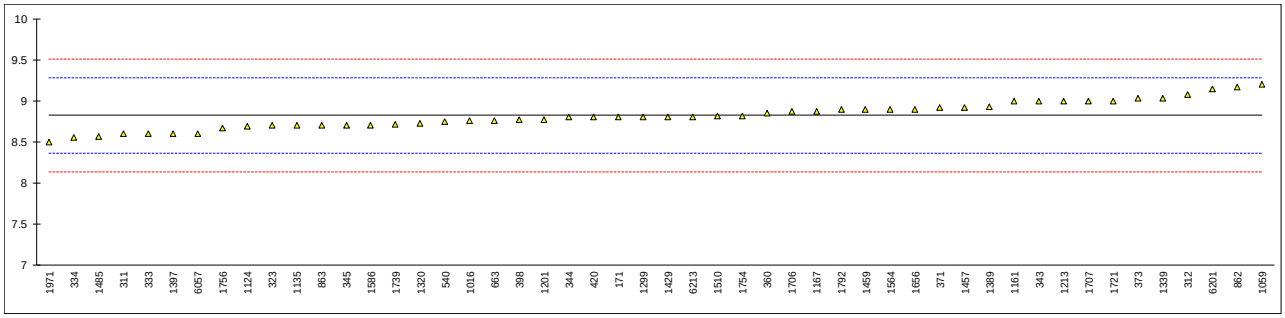


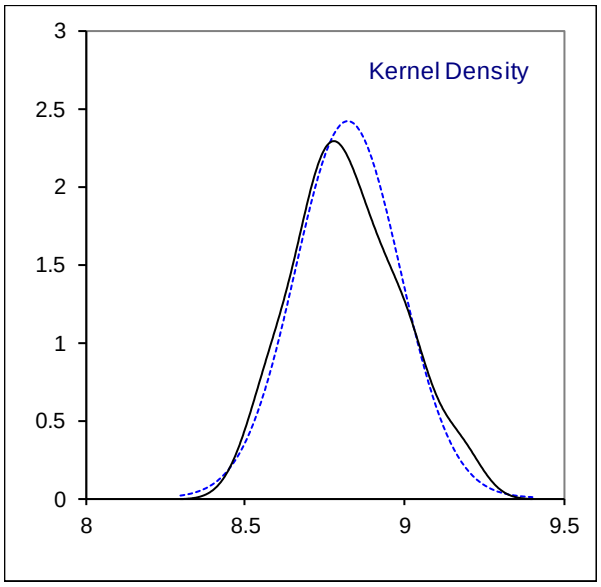
Determination of Linolenic Acid Methyl Ester content on sample #18180; results in %M/M

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171	EN14103	8.8		-0.10	
311	EN14103	8.6		-0.98	
312	EN14103	9.08		1.13	
323	EN14103	8.7		-0.54	
333	EN14103	8.6		-0.98	
334	EN14103	8.55		-1.20	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
343	EN14103	9.0		0.78	
344	EN14103	8.8		-0.10	
345	EN14103	8.7		-0.54	
351		-----		-----	
360	EN14103	8.85		0.12	
370		-----		-----	
371	EN14103	8.92		0.43	
373	EN14103	9.03		0.91	
391		-----		-----	
398	EN14103	8.77		-0.23	
420	EN14103	8.8		-0.10	
447		-----		-----	
463		-----		-----	
496		-----		-----	
511		-----		-----	
540	EN14103	8.75		-0.32	
603		-----		-----	
663	EN14103	8.76		-0.28	
862	EN14103	9.17		1.52	
863	EN14103	8.7		-0.54	
1016	EN14103	8.76		-0.28	
1033		-----		-----	
1059	EN14103	9.2		1.65	
1107		-----		-----	
1124	EN14103	8.69		-0.58	
1134		-----		-----	
1135	EN14103	8.70		-0.54	
1161	EN14103	9.0		0.78	
1167	EN14103	8.87		0.21	
1179		-----		-----	
1199		-----		-----	
1201	EN14103	8.77		-0.23	
1213	EN14103	9.0		0.78	
1299	EN14103	8.8		-0.10	
1316		-----		-----	
1320	EN14103	8.72		-0.45	
1339	EN14103	9.03		0.91	
1367		-----		-----	
1389	EN14103	8.93		0.47	
1397	EN14103	8.6		-0.98	
1429	EN14103	8.8		-0.10	
1457	EN14103	8.92		0.43	
1459	EN14103	8.9		0.34	
1485	EN14103	8.57		-1.11	
1491		-----		-----	
1494		-----		-----	
1510	EN14103	8.814		-0.04	
1546		-----		-----	
1564	EN14103	8.9	C	0.34	First reported 7.7
1586	EN14103	8.7		-0.54	
1634		-----		-----	
1656	EN14103	8.9		0.34	
1706	EN14103	8.867		0.19	
1707	EN14103	9.0		0.78	
1712		-----		-----	
1721	EN14103	9.0		0.78	
1739	EN14103	8.71		-0.50	
1744		-----		-----	
1754	EN14103	8.82		-0.01	
1756	EN14103	8.67		-0.67	
1769		-----		-----	
1792	EN14103	8.89		0.29	
1807		-----		-----	
1971	EN14103	8.5		-1.42	
1976		-----		-----	

lab	method	value	mark	z(targ)	remarks
6057	EN14103	8.6		-0.98	
6069		-----		-----	
6179		-----		-----	
6191		-----		-----	
6201	EN14103	9.14		1.39	
6213	EN14103	8.8		-0.10	

normality	OK
n	50
outliers	0
mean (n)	8.823
st.dev. (n)	0.1649
R(calc.)	0.462
st.dev.(EN14103:11)	0.2281
R(EN14103:11)	0.639





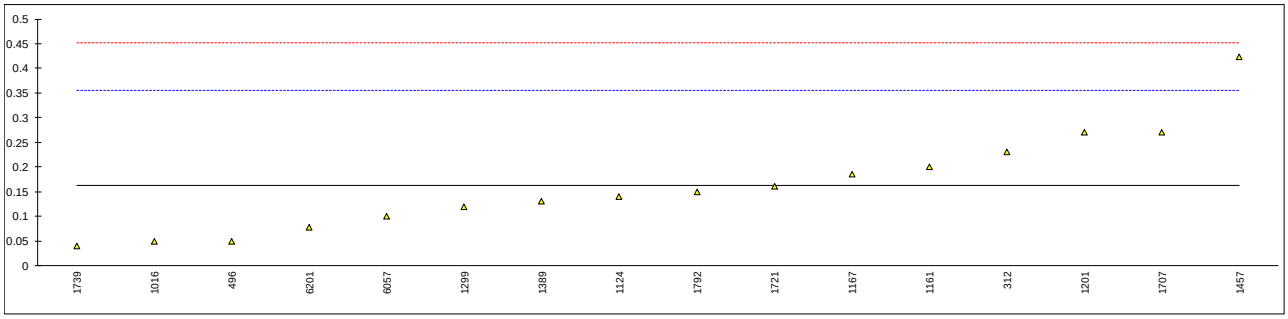
Determination of Polyunsaturated Methyl Esters content on sample #18180; results in %M/M

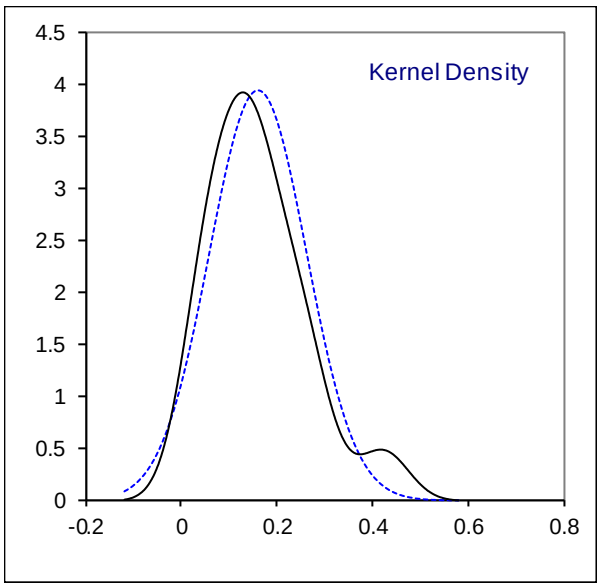
lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311		-----		-----	
312	EN15779	0.23		0.70	
323	EN15779	< 0.6		-----	
333	EN15779	<0.6		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
337		-----		-----	
338		-----		-----	
343	EN15779	<0,3		-----	
344	EN15779	<0.60		-----	
345	EN15779	<0.3		-----	
351		-----		-----	
360	EN15779	< 0.60		-----	
370		-----		-----	
371		-----		-----	
373	EN15779	<0,6		-----	
391		-----		-----	
398	EN15779	<0,1		-----	
420	EN15779	<0,10		-----	
447		-----		-----	
463		-----		-----	
496	EN15779	0.05		-1.16	
511		-----		-----	
540		-----		-----	
603		-----		-----	
663		-----		-----	
862		-----		-----	
863	EN15779	<0.60		-----	
1016	EN15779	0.049		-1.17	
1033		-----		-----	
1059	EN15779	<0,3		-----	
1107		-----		-----	
1124	EN15779	0.14		-0.23	
1134		-----		-----	
1135	EN15779	<0.60		-----	
1161	EN15779	0.2		0.39	
1167	EN15779	0.186		0.25	
1179		-----		-----	
1199		-----		-----	
1201	EN15779	0.27		1.12	
1213		-----		-----	
1299	EN15779	0.12		-0.44	
1316		-----		-----	
1320		-----		-----	
1339		-----		-----	
1367		-----		-----	
1389	EN15779	0.13		-0.33	
1397		-----		-----	
1429	EN15779	<0.6		-----	
1457	EN15779	0.424		2.71	
1459		-----		-----	
1485		-----		-----	
1491		-----		-----	
1494		-----		-----	
1510		-----		-----	
1546		-----		-----	
1564		-----		-----	
1586		-----		-----	
1634		-----		-----	
1656		-----		-----	
1706		-----		-----	
1707	EN15779	0.27	C	1.12	First reported 0.44
1712		-----		-----	
1721	EN15779	0.16		-0.02	
1739	EN15779	0.040		-1.27	
1744		-----		-----	
1754	EN15779	<0.60		-----	
1756		-----		-----	
1769		-----		-----	
1792	EN15779	0.15		-0.13	
1807	EN15779	<0.6		-----	
1971	EN15779	<0,60		-----	
1976		-----		-----	

lab	method	value	mark	z(targ)	remarks
6057	EN15779	0.10		-0.65	
6069		-----		-----	
6179		-----		-----	
6191		-----		-----	
6201	EN15779	0.077		-0.88	
6213		-----		-----	

	normality	not OK
	n	16
	outliers	0
	mean (n)	0.162
	st.dev. (n)	0.1011
	R(calc.)	0.283
	st.dev.(EN15779:09+A1(2013)	0.0964
	R(EN15779:09+A1(2013)	0.27

Application range: 0.3 – 3.0 %M/M

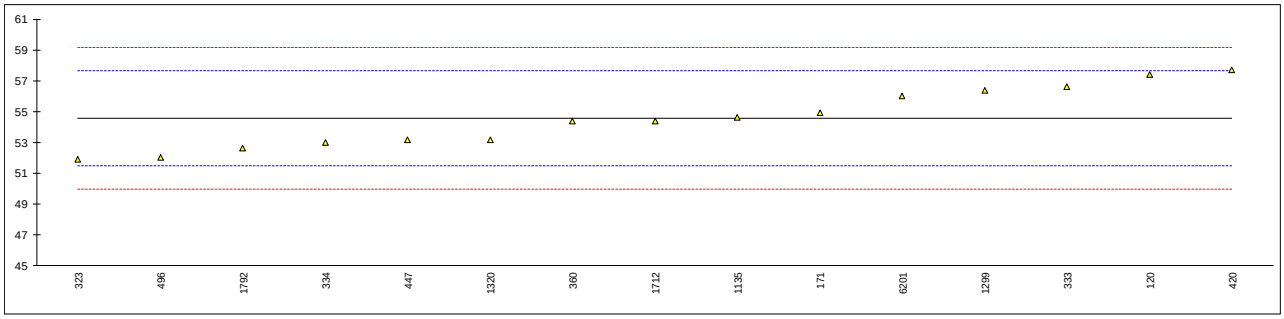


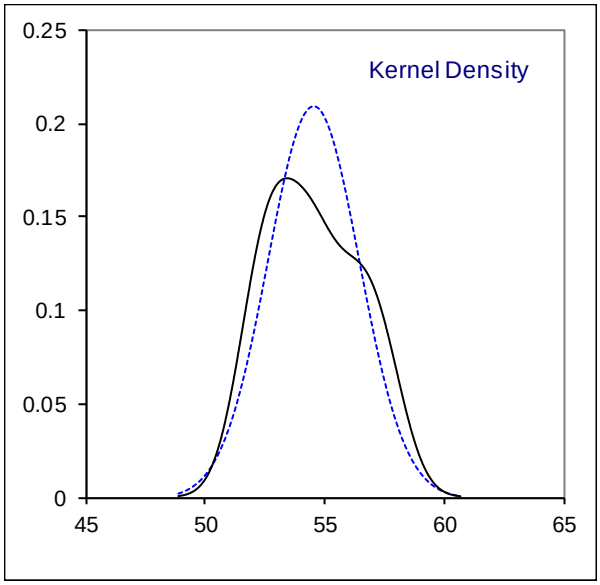


Determination of Cetane Number (ISO5165) of sample #18181

lab	method	value	mark	z(targ)	remarks
120	D613	57.4		1.59	
171	D613	54.9		0.19	
311		-----		-----	
323	D613	51.9		-1.49	
333	D613	56.6		1.14	
334	ISO5165	53.0		-0.87	
336		-----		-----	
343		-----		-----	
360	D613	54.40		-0.09	
420	ISO5165	57.7		1.76	
447	IP41	53.2		-0.76	
496	D613	52.05		-1.40	
1059		-----		-----	
1107		-----		-----	
1134		-----		-----	
1135	IP617	54.6		0.02	
1167		-----		-----	
1201		-----		-----	
1299	D613	56.4		1.03	
1320	ISO5165	53.2		-0.76	
1389		-----		-----	
1457		-----		-----	
1712	ISO5165	54.4		-0.09	
1792	ISO5165	52.6		-1.10	
1807		-----		-----	
6057		-----		-----	
6201	D613	56.0		0.81	

	normality	OK
	n	15
	outliers	0
	mean (n)	54.557
	st.dev. (n)	1.9098
	R(calc.)	5.348
	st.dev.((EN14214+A1:14)	1.7857
	R(EN14214+A1:14)	5.0
Compare		
	R(ISO5165:98)	4.8
	R(D613:18)	4

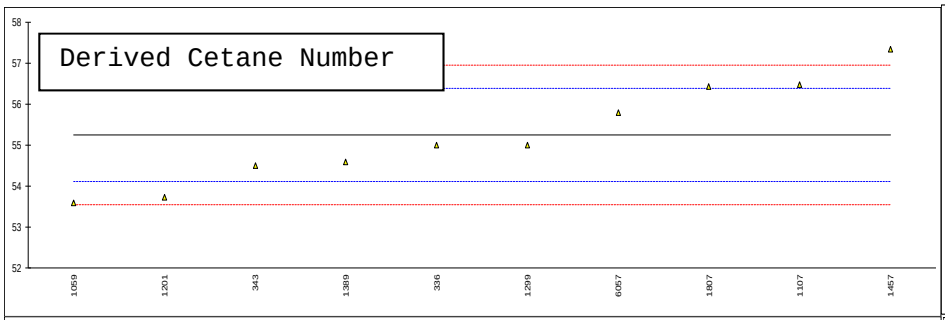


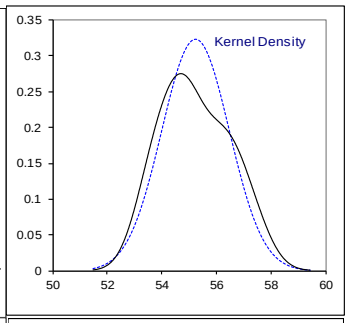


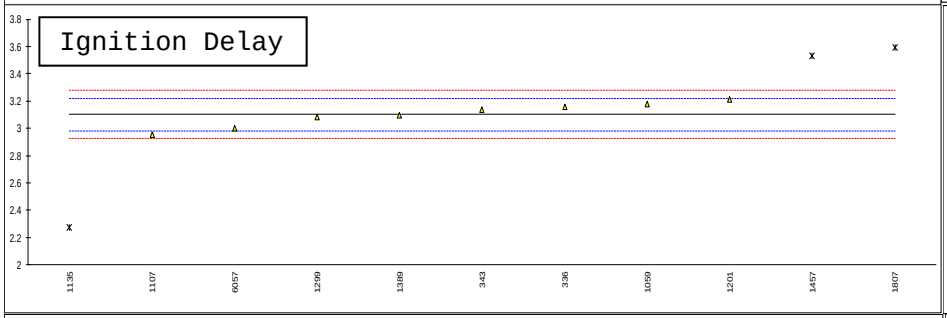
Determination of Derived Cetane Number (D7668) of sample #18181

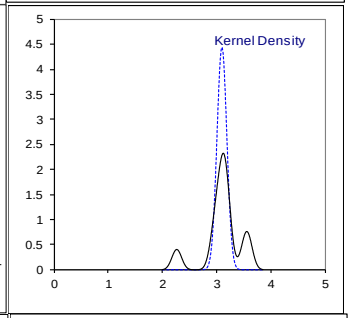
lab	method	DCN	mark	z(targ)	ID	mark	z(targ)	CD	mark	z(targ)	W.T.
120		-----		-----	-----		-----	-----		-----	-----
171		-----		-----	-----		-----	-----		-----	-----
311		-----		-----	-----		-----	-----		-----	-----
323		-----		-----	-----		-----	-----		-----	-----
333		-----		-----	-----		-----	-----		-----	-----
334		-----		-----	-----		-----	-----		-----	-----
336	D7668	55.0		-0.43	3.16		0.97	4.45		1.90	600.0
343	D7668	54.49	C	-1.33	3.1397		0.63	4.3743		0.17	-----
360		-----		-----	-----		-----	-----		-----	-----
420		-----		-----	-----		-----	-----		-----	-----
447		-----		-----	-----		-----	-----		-----	-----
496		-----		-----	-----		-----	-----		-----	-----
1059	D7668	53.6		-2.90	3.1748		1.22	4.4417		1.71	597.73
1107	D7668	56.48		2.18	2.9507		-2.53	4.2261		-3.21	608.37
1134		-----		-----	-----		-----	-----		-----	-----
1135		-----		-----	2.27	G(0.05)	-13.94	-----		-----	579.6
1167		-----		-----	-----		-----	-----		-----	-----
1201	D7668	53.73		-2.67	3.2151		1.90	4.4361		1.58	596
1299	D7668	55.0		-0.43	3.08		-0.37	4.34		-0.61	589.3
1320		-----		-----	-----		-----	-----		-----	-----
1389	D7668	54.58		-1.17	3.0954		-0.11	4.3662		-0.01	595.5
1457	EN15195	57.33		3.68	3.529	DG(0.05)	7.16	-----		-----	553.0
1712		-----		-----	-----		-----	-----		-----	-----
1792		-----		-----	-----		-----	-----		-----	-----
1807	EN15195	56.43		2.09	3.591	DG(0.05)	8.19	-----		-----	-----
6057	D7668	55.8		0.98	3.0		-1.71	4.3		-1.52	-----
6201		-----		-----	-----		-----	-----		-----	-----
	normality	OK			OK			unknown			
	n	10			8			8			
	outliers	0			3			0			
	mean (n)	55.244			3.102			4.367			
	st.dev. (n)	1.2346			0.0900			0.0778			
	R(calc.)	3.457			0.252			0.218			
	st.dev.(D7668:17)	0.5662			0.0597			0.0439			
	R(D7668:17)	1.585			0.167			0.123			

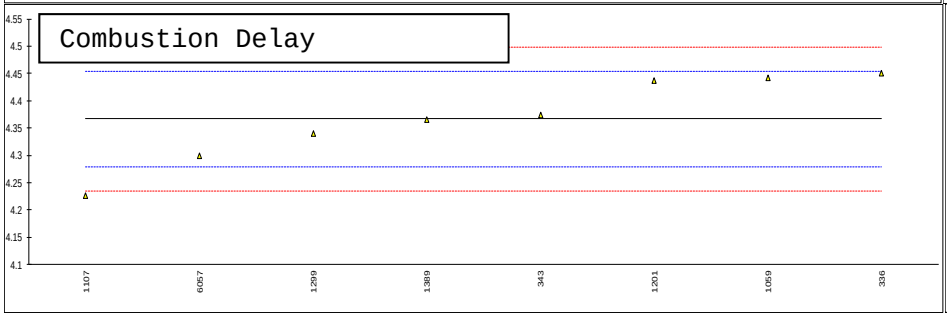
W.T. = Chamber Wall Temperature
Lab 343 first reported 48.8

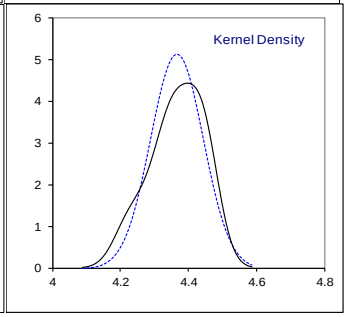








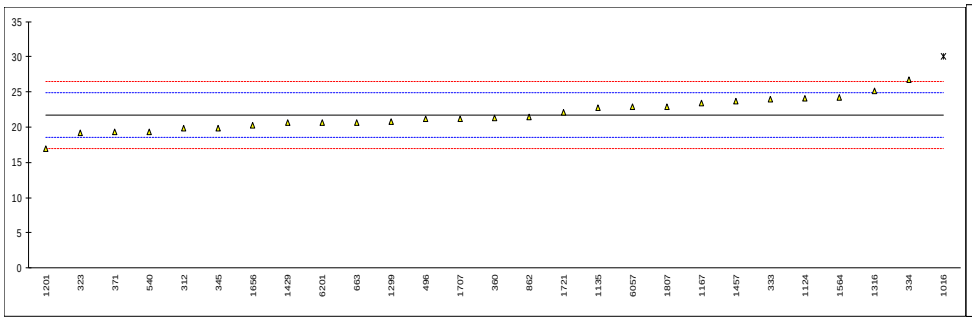


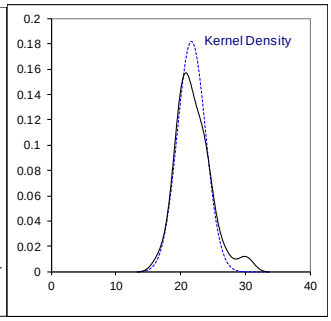


Determination of sum of Calcium and Magnesium as Ca + Mg on sample #18182; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14538	>10		-----	
312	EN14538	19.9		-1.15	
323	EN14538	19.2		-1.59	
333	EN14538	24		1.44	
334	EN14538	26.8		3.22	
343	EN14538	>20		-----	
345	EN14538	19.9		-1.15	
360	EN14538	21.27		-0.28	
371	EN14538	19.3		-1.53	
391		-----		-----	
398		-----		-----	
447		-----		-----	
463		-----		-----	
496	EN14538	21.237		-0.31	
540	EN14538	19.32		-1.52	
663	EN14538	20.71		-0.64	
862	EN14538	21.4		-0.20	
1016	EN14538	30.0585	R(0.05)	5.28	
1124	EN14538	24.03		1.46	
1134		-----		-----	
1135	EN14538	22.717		0.63	
1161		-----		-----	
1167	EN14538	23.41		1.07	
1201	EN14538	17		-2.99	
1299	EN14538	20.8		-0.58	
1316	In house	25.2		2.20	
1389		-----		-----	
1429	EN14538	20.6		-0.71	
1457	EN14538	23.73		1.27	
1564	EN14538	24.2		1.57	
1656	EN14538	20.2		-0.96	
1707	EN14538	21.24331		-0.30	
1721	EN14538	22.1		0.24	
1739		-----		-----	
1792		-----		-----	
1807	EN14538	22.92		0.76	
1971	EN14538	>10,0		-----	
6057	EN14538	22.9		0.75	
6201	EN14538	20.6		-0.71	

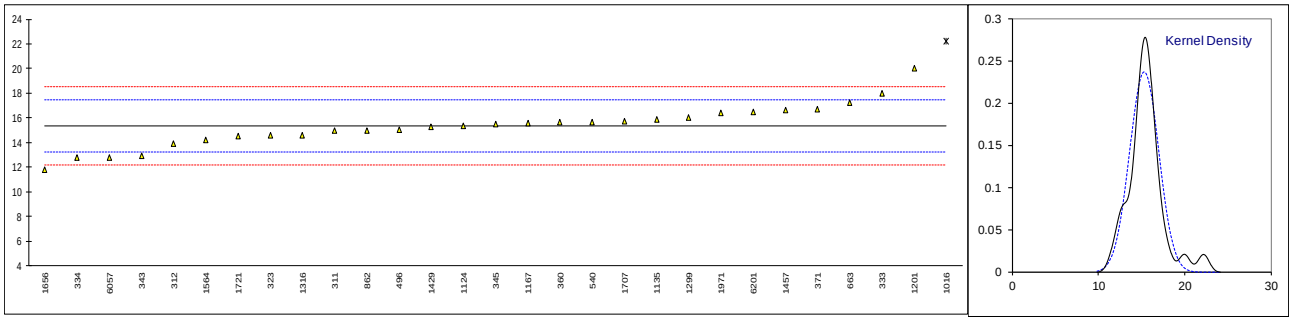
normality	OK
n	26
outliers	1
mean (n)	21.719
st.dev. (n)	2.18897
R(calc.)	6.129
st.dev.(EN14538:06)	1.57932
R(EN14538:06)	4.422





Determination of Phosphorus as P on sample #18182; results in mg/kg

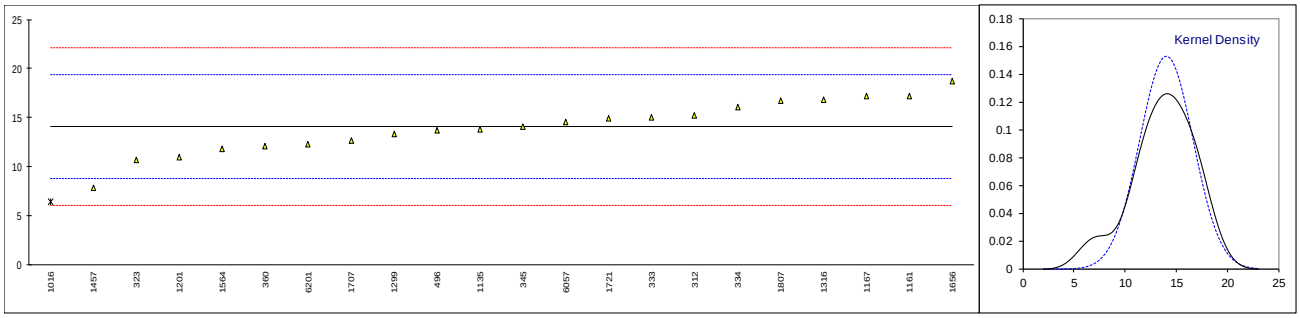
lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14107	15		-0.31	
312	EN14107	13.9		-1.35	
323	EN14107	14.6		-0.69	
333	EN14107	18.0		2.52	
334	EN14107	12.8		-2.39	
343	EN14107	12.9		-2.29	
345	EN14107	15.51		0.17	
360	EN14107	15.63		0.28	
371	EN14107	16.7		1.29	
391		-----		-----	
398		-----		-----	
447		-----		-----	
463		-----		-----	
496	EN14107	15.072		-0.24	
540	EN14107	15.65		0.30	
663	D4951	17.25		1.81	
862	EN14107	15		-0.31	
1016	EN14538	22.221	R(0.05)	6.50	
1124	EN14107	15.38		0.05	
1134		-----		-----	
1135	EN14107	15.847		0.49	
1161		-----		-----	
1167	EN14107	15.54		0.20	
1201	EN14107	20		4.41	
1299	EN14107	16.0		0.63	
1316	In house	14.6		-0.69	
1389		-----		-----	
1429	EN14107	15.3		-0.03	
1457	EN14107	16.64		1.24	
1564	EN14107	14.2		-1.07	
1656	EN14107	11.8		-3.33	
1707	EN14107	15.7097		0.36	
1721	EN14107	14.5		-0.78	
1739		-----		-----	
1792		-----		-----	
1807		-----		-----	
1971	EN14107	16.40		1.01	
6057	EN14107	12.8	C	-2.39	First reported 21.8
6201	EN14107	16.5		1.10	
	normality	suspect			
	n	28			
	outliers	1		Spike	
	mean (n)	15.330		15.31	Recovery < 100%
	st.dev. (n)	1.68206			
	R(calc.)	4.710			
	st.dev.(EN14107:03)	1.06010			
	R(EN14107:03)	2.968			



Determination of Potassium as K on sample #18182; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14538	>10		-----	
312	EN14538	15.2		0.41	
323	EN14109	10.7		-1.24	
333	EN14538	15		0.33	
334	EN14538	16.1		0.74	
343		-----		-----	
345	EN14538	14.10		0.00	
360	EN14538	12.12		-0.72	
371		-----		-----	
391		-----		-----	
398		-----		-----	
447		-----		-----	
463		-----		-----	
496	EN14538	13.69		-0.15	
540		-----		-----	
663		-----		-----	
862		-----		-----	
1016	EN14538	6.475	ex	-2.79	Outlier in K + Na determination
1124		-----		-----	
1134		-----		-----	
1135	EN14538	13.834		-0.09	
1161	EN1409	17.2		1.14	
1167	EN14109	17.19		1.14	
1201	EN14109	11		-1.13	
1299	EN14538	13.3		-0.29	
1316	In house	16.8		1.00	
1389		-----		-----	
1429		-----		-----	
1457	EN14538	7.87		-2.28	
1564	EN14538	11.8		-0.84	
1656	EN14109	18.7		1.69	
1707	EN14538	12.69355		-0.51	
1721	EN14109	14.9		0.30	
1739		-----		-----	
1792		-----		-----	
1807	EN14538	16.72		0.97	
1971		-----		-----	
6057	EN14109	14.6		0.19	
6201	EN14109	12.3		-0.66	

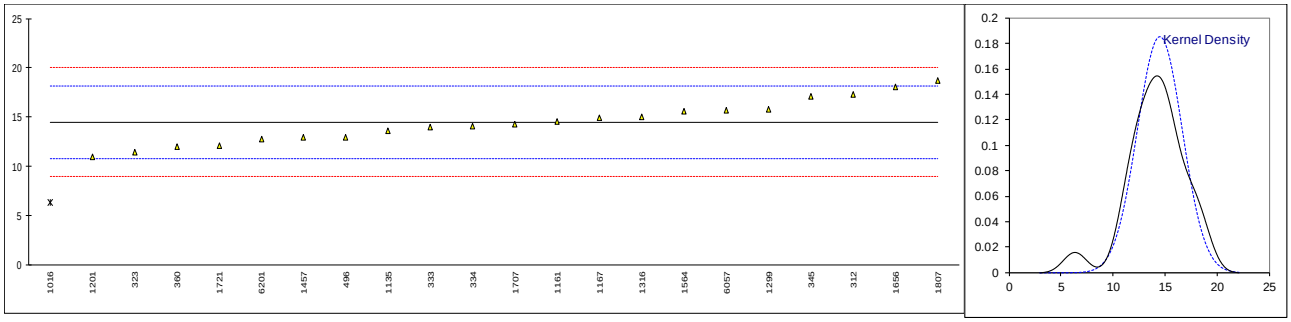
normality	OK		
n	21		
outliers	0 +1ex	Spike:	
mean (n)	14.087	19.17	Recovery < 73%
st.dev. (n)	2.614		
R(calc.)	7.319		
st.dev.(EN14109:03)	2.7270		
R(EN14109:03)	7.6357		



Determination of Sodium as Na on sample #18182; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14538	>10		-----	
312	EN14538	17.3		1.53	
323	EN14108	11.4		-1.67	
333	EN14538	14		-0.26	
334	EN14538	14.1		-0.20	
343		-----		-----	
345	EN14538	17.07		1.41	
360	EN14538	12.00		-1.34	
371		-----		-----	
391		-----		-----	
398		-----		-----	
447		-----		-----	
463		-----		-----	
496	EN14538	12.99		-0.81	
540		-----		-----	
663		-----		-----	
862		-----		-----	
1016	EN14538	6.340	R(0.05)	-4.41	
1124		-----		-----	
1134		-----		-----	
1135	EN14538	13.617		-0.47	
1161	EN1408	14.6		0.07	
1167	EN14108	14.94		0.25	
1201	EN14108	11		-1.89	
1299	EN14538	15.8		0.72	
1316	In house	15.0		0.28	
1389		-----		-----	
1429		-----		-----	
1457	EN14538	12.92		-0.84	
1564	EN14538	15.6		0.61	
1656	EN14108	18.1		1.96	
1707	EN14538	14.2890		-0.10	
1721	EN14108	12.1		-1.29	
1739		-----		-----	
1792		-----		-----	
1807	EN14538	18.71		2.30	
1971		-----		-----	
6057	EN14108	15.7		0.66	
6201	EN14108	12.8		-0.91	

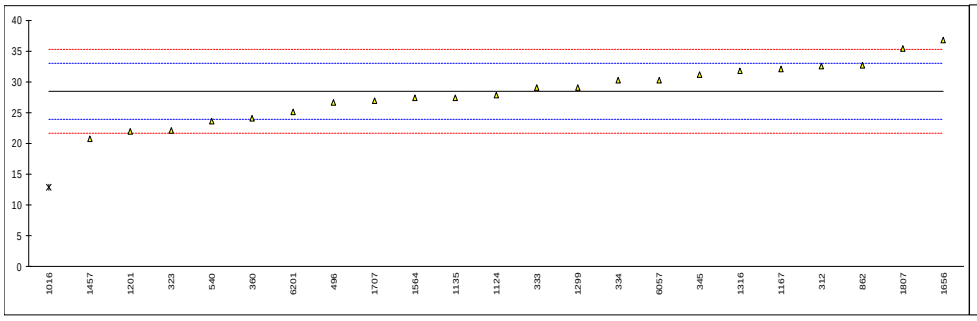
normality	OK		
n	21		
outliers	1	Spike:	
mean (n)	14.478	18.56	Recovery <78%
st.dev. (n)	2.15271		
R(calc.)	6.028		
st.dev.(EN14108:03)	1.84382		
R(EN14108:03)	5.163		

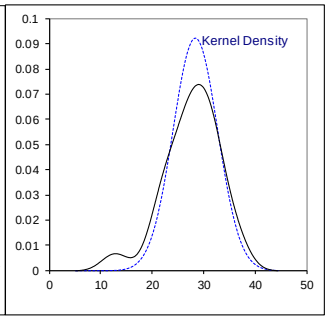


Determination of Sum of Potassium and Sodium as K + Na on sample #18182; results in mg/kg

lab	method	value	mark	z(targ)	remarks
120		-----		-----	
171		-----		-----	
311	EN14538	>10		-----	
312	EN14538	32.5		1.79	
323	EN14538	22.1		-2.78	
333	EN14538	29		0.25	
334	EN14538	30.2		0.78	
343	EN14538	>20		-----	
345	EN14538	31.17		1.21	
360	EN14538	24.12		-1.89	
371	EN14538	> 20.0		-----	
391		-----		-----	
398		-----		-----	
447		-----		-----	
463		-----		-----	
496	EN14538	26.68		-0.77	
540	EN14538	23.67		-2.09	
663		-----		-----	
862	EN14538	32.7		1.88	
1016	EN14538	12.815	R(0.05)	-6.86	
1124	EN14538	27.88		-0.24	
1134		-----		-----	
1135	EN14538	27.451		-0.43	
1161		-----		-----	
1167	EN14538	32.13		1.63	
1201	EN14538	22		-2.82	
1299	EN14538	29.1		0.30	
1316	In house	31.8		1.48	
1389		-----		-----	
1429		-----		-----	
1457	EN14538	20.79		-3.36	
1564	EN14538	27.4		-0.45	
1656	EN14538	36.8		3.68	
1707	EN14538	26.9826		-0.63	
1721		-----		-----	
1739		-----		-----	
1792		-----		-----	
1807	EN14538	35.43		3.08	
1971	EN14538	>20,0		-----	
6057	EN14538	30.3		0.83	
6201	EN14538	25.1		-1.46	

normality	OK
n	22
outliers	1
mean (n)	28.423
st.dev. (n)	4.32819
R(calc.)	12.119
st.dev.(EN14538:06)	2.27492
R(EN14538:06)	6.370





Determination of Particulate Contamination on sample #18183; results in mg/L

lab	method	value	mark	z(targ)	Vol. filtered	Number of filtrations	remarks
120		-----		-----	-----	-----	
171	D7321	50.8		-----	-----	-----	
311		-----		-----	-----	-----	
312		-----		-----	-----	-----	
323		-----		-----	-----	-----	
334		-----		-----	-----	-----	
343		-----		-----	-----	-----	
345		-----		-----	-----	-----	
351		-----		-----	-----	-----	
360		-----		-----	-----	-----	
371		-----		-----	-----	-----	
391		-----		-----	-----	-----	
398		-----		-----	-----	-----	
420		-----		-----	-----	-----	
447		-----		-----	-----	-----	
496		-----		-----	-----	-----	
540		-----		-----	-----	-----	
603		-----		-----	-----	-----	
663		-----		-----	-----	-----	
862		-----		-----	-----	-----	
1016		-----		-----	-----	-----	
1033		-----		-----	-----	-----	
1059		-----		-----	-----	-----	
1064		-----		-----	-----	-----	
1107		-----		-----	-----	-----	
1124		-----		-----	-----	-----	
1134		-----		-----	-----	-----	
1135		-----		-----	-----	-----	
1161		-----		-----	-----	-----	
1167		-----		-----	-----	-----	
1201		-----		-----	-----	-----	
1299		-----		-----	-----	-----	
1316		-----		-----	-----	-----	
1339		-----		-----	-----	-----	
1397		-----		-----	-----	-----	
1429		-----		-----	-----	-----	
1457		-----		-----	-----	-----	
1485		-----		-----	-----	-----	
1491		-----		-----	-----	-----	
1494		-----		-----	-----	-----	
1510		-----		-----	-----	-----	
1564		-----		-----	-----	-----	
1586		-----		-----	-----	-----	
1721		-----		-----	-----	-----	
1739		-----		-----	-----	-----	
1744		-----		-----	-----	-----	
1754		-----		-----	-----	-----	
1769		-----		-----	-----	-----	
1792		-----		-----	-----	-----	
1807		-----		-----	-----	-----	
1971		-----		-----	-----	-----	
1976		-----		-----	-----	-----	
6057		-----		-----	-----	-----	
6069		-----		-----	-----	-----	
6179		-----		-----	-----	-----	
6201		-----		-----	-----	-----	
	n	1					
	mean (n)	n.a.					

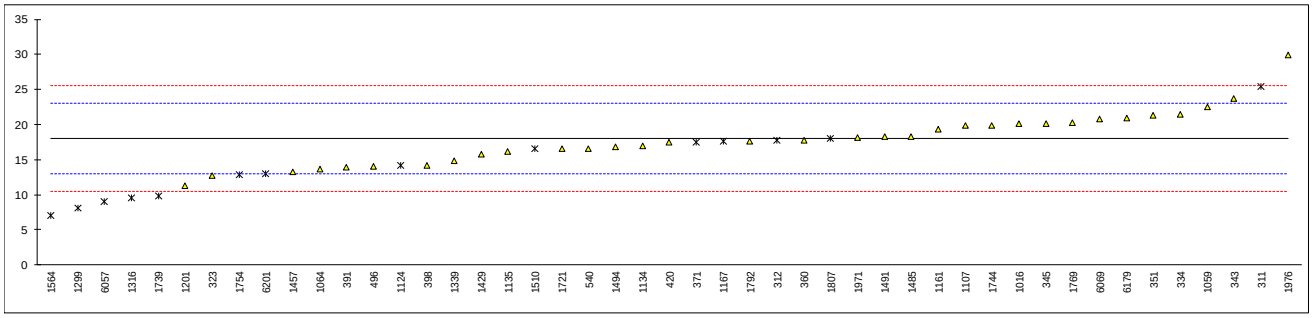
Determination of Total Contamination (EN12662) on sample #18183; results in mg/kg

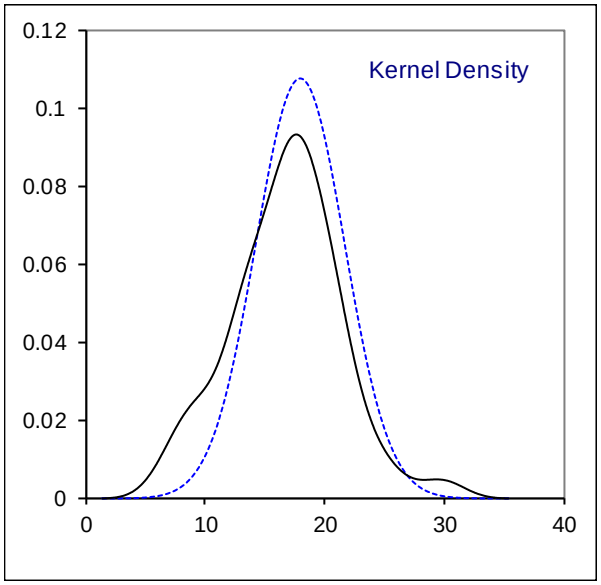
lab	method	value	mark	z(targ)	Incomplete	Vol.filtered	stopped	
120		-----		-----	-----	-----	-----	
171		-----		-----	-----	-----	-----	
311	EN12662:2014	25.4	ex	2.93	YES	300	-----	*) see §4.1
312	EN12662:2014	17.75	ex	-0.10	-----	-----	-----	*) see §4.1
323	EN12662:1998	12.7		-2.10	-----	400	-----	
334	EN12662:1998	21.4		1.35	NO	-----	-----	
343	EN12662:1998	23.7		2.26	NO	250	-----	
345	EN12662:1998	20.1		0.83	NO	400	-----	
351	EN12662:1998	21.3		1.31	NO	300.0	-----	
360	EN12662:1998	17.8		-0.08	NO	300	-----	
371	EN12662:2014	17.52	ex	-0.19	-----	-----	-----	*) see §4.1
391	EN12662:1998	13.9		-1.62	NO	489	-----	
398	EN12662:2008	14.24		-1.49	NO	800	-----	
420	EN12662:1998	17.5		-0.20	-----	240	-----	
447		-----		-----	-----	-----	-----	
496	EN12662:1998	14.0		-1.58	-----	-----	-----	
540	EN12662:1998	16.55		-0.57	NO	400	15	
603		-----		-----	-----	-----	-----	
663		-----		-----	-----	-----	-----	
862	EN12662:1998	<12		-----	-----	-----	-----	
1016	EN12662:1998	20.1		0.83	NO	300	-----	
1033		-----		-----	-----	-----	-----	
1059	EN12662:1998	22.5		1.79	NO	300	-----	
1064	EN12662:1998	13.61		-1.74	NO	300	-----	
1107	EN12662:1998	19.8		0.72	NO	-----	-----	
1124	EN12662:2014	14.23	ex	-1.49	NO	300	-----	*) see §4.1
1134	EN12662:1998	17.0		-0.39	-----	-----	-----	
1135	EN12662:1998	16.1		-0.75	NO	274	-----	
1161	EN12662:2008	19.3		0.52	-----	-----	-----	
1167	EN12662:2014	17.55	ex	-0.18	NO	300	6.5	*) see §4.1
1201	EN12662:1998	11.3		-2.65	NO	-----	-----	
1299	EN12662:1998	8.1	ex	-3.92	NO	300	-----	*) see §4.1
1316	EN12662:2014	9.5	ex	-3.36	NO	300	-----	*) see §4.1
1339	EN12662:1998	14.79		-1.27	NO	-----	-----	
1397		-----		-----	-----	-----	-----	
1429	EN12662:1998	15.8		-0.87	NO	250	-----	
1457	EN12662:1998	13.2		-1.90	NO	411	-----	
1485	EN12662:1998	18.24		0.10	NO	-----	-----	
1491	EN12662:1998	18.22		0.09	NO	300	-----	
1494	EN12662:2008	16.778		-0.48	NO	-----	-----	
1510	EN12662:2014	16.52	ex	-0.58	-----	-----	-----	*) see §4.1
1564	EN12662:2008	7	ex	-4.35	NO	-----	-----	*) see §4.1
1586		-----		-----	-----	-----	-----	
1721	EN12662:2008	16.54		-0.58	-----	800	5.0	
1739	EN12662:1998	9.8	ex	-3.25	NO	-----	-----	*) see §4.1
1744	EN12662:2008	19.85		0.74	NO	800	12	
1754	EN12662:2014	12.88	ex	-2.03	NO	300	-----	*) see §4.1
1769	EN12662:2008	20.22		0.88	NO	800	-----	
1792	EN12662:1998	17.67		-0.13	NO	-----	-----	
1807	EN12662:2014	18.0	ex	0.00	-----	-----	-----	*) see §4.1
1971	EN12662:2008	18.08		0.03	-----	-----	-----	
1976	EN12662:1998	29.85	C	4.70	NO	300	-----	
6057	EN12662:1998	9	ex	-3.56	NO	300	-----	*) see §4.1
6069	EN12662:2008	20.76		1.10	NO	-----	-----	
6179	EN12662:2008	20.860		1.14	-----	-----	-----	
6201	EN12662:2014	13	ex	-1.98	-----	300	-----	*) see §4.1

				Only 1998	Only 2008
	normality	suspect		suspect	OK
	n	33		24	9
	outliers	0 +14ex	Spike	0 + 3ex	0 +1ex
	mean (n)	17.993	18.1	17.797	18.514
	st.dev. (n)	3.7154		4.1554	2.2701
	R(calc.)	10.403	Recovery <99%	13.524	11.635
	st.dev.(EN14214:12+A1:14)	2.5246		1.9068	1.9836
	R(EN14214:12+A1:14)	7.069		-----	-----
Compare					
	R(EN12662:98 or 08)	5.398		5.339	5.554

Lab 1976 first reported 34.8

*) EN12662:2014 is not applicable to FAME (B100) according to CEN/TC 19 Committee, instead either method EN12662:1998 or 12662:2008 should be used.
Or the reported test result was below the expected lower value of 11.0 mg/kg (spike amount – reproducibility limit)


35
30
25
20
15
10
5
0
1564
1299
6057
1316
1739
1201
323
1754
6201
1457
1064
391
496
1124
398
1339
1429
1135
1510
1721
540
1494
1134
420
371
1167
1792
312
360
1807
1971
1491
1485
1161
1107
1744
1016
345
1769
6069
6179
351
334
1059
343
311
1976


Kernel Density
0.12
0.1
0.08
0.06
0.04
0.02
0
0
10
20
30
40

APPENDIX 2

Number of participants per country for sample #18180

2 labs in	ARGENTINA
1 lab in	AUSTRIA
3 labs in	BELGIUM
4 labs in	BULGARIA
2 labs in	CHINA, People's Republic
5 labs in	COLOMBIA
1 lab in	CROATIA
1 lab in	CZECH REPUBLIC
8 labs in	FRANCE
2 labs in	GERMANY
1 lab in	HONG KONG
2 labs in	ITALY
3 labs in	LATVIA
2 labs in	LITHUANIA
1 lab in	MALAYSIA
1 lab in	MALTA
7 labs in	NETHERLANDS
1 lab in	PERU
4 labs in	POLAND
5 labs in	PORTUGAL
1 lab in	SLOVAKIA
1 lab in	SLOVENIA
8 labs in	SPAIN
2 labs in	SWEDEN
1 lab in	THAILAND
3 labs in	TURKEY
7 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 = probably an error in calculations
U = test result probably reported in a different unit
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:

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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)