# Results of Proficiency Test
# Biodiesel B100 (100% FAME)
# October 2021

**Organized by:** Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

**Author:** ing. G.A. Oosterlaken-Buijs
**Correctors:** ing. R.J. Starink & ing. A.S. Noordman-de Neef
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# 1 INTRODUCTION

Since 2008 the Institute for Interlaboratory Studies (iis) organizes proficiency scheme for the analysis of Fatty Acid Methyl Esters (FAME) used as Biodiesel B100 twice a year. During the annual proficiency testing program of 2021/2022, it was decided to continue with the round robin for the analysis of Biodiesel B100 in accordance with the latest version of ASTM D6751 and EN14214+A2.

In this interlaboratory study registered for participation:
- 60 laboratories in 29 different countries for regular analyzes in Biodiesel B100 iis21G07
- 19 laboratories in 10 different countries on the Cetane Number analyzes iis21G07CN
- 33 laboratories in 17 different countries on the Metal analyzes iis21G07M
- 43 laboratories in 23 different countries on the Total Contamination analyzes iis21G07TC

In total 66 laboratories in 31 different countries registered for participation in one or more proficiency tests. See appendix 2 for a list of number of participants per country. In this report the results of the Biodiesel B100 proficiency test are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

# 2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organizer of this proficiency test (PT). Sample analyzes for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC17025 accredited laboratory.
In this proficiency test the participants received, depending on the registration, from one up to four different samples of Biodiesel B100, see table below.

| Sample ID | PT ID | Quantity | Purpose |
|---|---|---|---|
| #21205 | iis21G07 | 1x 1L + 1x 0.5L | Regular analyzes |
| #21206 | iis21G07CN | 2x 1L | Cetane Number & DCN |
| #21207 | iis21G07M | 1x 100mL | Metals analyzes |
| #21208 | iis21G07TC | 1x 1L | Total Contamination |

Table 1: Biodiesel B100 samples used in PT iis21G07

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

## 2.1 ACCREDITATION

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

## 2.2 PROTOCOL

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

## 2.3 CONFIDENTIALITY STATEMENT

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

## 2.4 SAMPLES

For the sample for the regular analyzes in Biodiesel B100 a batch of approximately 200 liters of Rapeseed Methyl Ester (RME) was obtained from a third party. After homogenization 104 amber glass bottles of 1L and 104 amber glass bottles of 0.5L were filled and labelled #21205.
The homogeneity of the subsamples was checked by the determination of Density at 15°C in accordance with ASTM D4052 on 8 stratified randomly selected subsamples.

| | Density at 15°C in kg/m$^3$ |
|---|---|
| sample #21205-1 | 883.54 |
| sample #21205-2 | 883.59 |
| sample #21205-3 | 883.55 |
| sample #21205-4 | 883.56 |
| sample #21205-5 | 883.57 |
| sample #21205-6 | 883.54 |
| sample #21205-7 | 883.54 |
| sample #21205-8 | 883.55 |

Table 2: homogeneity test results of subsamples #21205

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

| | Density at 15°C in kg/m$^3$ |
|---|---|
| r (observed) | 0.05 |
| reference test method | ISO12185:96 |
| 0.3 x R (reference test method) | 0.15 |

Table 3: evaluation of the repeatability of subsamples #21205

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

For the sample for the Cetane Number and DCN analyzes in Biodiesel B100 a batch of approximately 90 liters of Rapeseed Methyl Ester (RME) was obtained from a third party. After homogenization 85 amber glass bottles of 1L were filled and labelled #21206.
The homogeneity of the subsamples was checked by the determination of Density at 15°C in accordance with ASTM D4052 on 8 stratified randomly selected subsamples.

| | Density at 15°C in kg/m$^3$ |
|---|---|
| sample #21206-1 | 883.69 |
| sample #21206-2 | 883.68 |
| sample #21206-3 | 883.67 |
| sample #21206-4 | 883.68 |
| sample #21206-5 | 883.68 |
| sample #21206-6 | 883.67 |
| sample #21206-7 | 883.67 |
| sample #21206-8 | 883.68 |

Table 4: homogeneity test results of subsamples #21206

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

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

Table 5: evaluation of the repeatability of subsamples #21206

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

For the sample for the analyzes of Metals in Biodiesel B100 PT a batch of approximately 7 kg of Rapeseed Methyl Ester (RME) was taken and spiked with Phosphorus, Sodium, Potassium and Calcium. After homogenization 68 PE bottles of 100mL were filled and labelled #21207.
The homogeneity of the subsamples was checked by determination of Phosphorus in accordance with EN14107 and Sodium in accordance with EN14538 on 8 stratified randomly selected subsamples.

| | Phosphorus in mg/kg | Sodium in mg/kg |
|---|---|---|
| sample #21207-1 | 17.3 | 9.4 |
| sample #21207-2 | 17.3 | 9.8 |
| sample #21207-3 | 17.2 | 9.8 |
| sample #21207-4 | 17.1 | 9.8 |
| sample #21207-5 | 17.1 | 10.0 |
| sample #21207-6 | 17.0 | 9.7 |
| sample #21207-7 | 17.0 | 9.6 |
| sample #21207-8 | 16.8 | 9.7 |

Table 6: homogeneity test results of subsamples #21207

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

| | Phosphorus in mg/kg | Sodium in mg/kg |
|---|---|---|
| r (observed) | 0.47 | 0.49 |
| reference test method | EN14107:03 | EN14108:03 |
| 0.3 x R (reference test method) | 0.99 | 1.17 |

Table 7: evaluation of the repeatabilities of subsamples #21207

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

For the sample for Total Contamination determination in Biodiesel B100 a batch of approximately 140 liters of Biodiesel B100 was obtained from a third party. A defined volume of freshly prepared and well shaken dust suspension of Arizona Dust material in a lubricating oil was added to a 1L empty bottle by means of a calibrated pipette. The addition was checked by weighing the bottle before and after the addition. In total 82 bottles were prepared and subsequently filled with 1L Biodiesel B100. Finally, the subsamples were labelled #21208. After homogenization, a random sample was taken to check the Total Contamination.

Depending on the registration of the participant the appropriate set of PT samples was sent on September 29, 2021. An SDS was added to the sample package.

### 2.5 STABILITY OF THE SAMPLES

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

## 2.6 ANALYZES

The requested analyses for the Biodiesel B100 samples are in accordance with the requirements of EN14214:12+A2:19 and/or ASTM D6751:20a.

| Parameter | EN14214:12+A2:19 | Parameter | ASTM D6751:20a |
|---|---|---|---|
| Acid Value | EN14104 | Acid Number | ASTM D664 |
| Calorific Value | DIN51900 | | |
| | | Carb. Res. 100% FAME | ASTM D4530 |
| CFPP | EN116 | | |
| Cloud Point | EN23015 | Cloud Point | ASTM D2500 |
| Copper Strip Corrosion | ISO2160 | Copper Strip Corrosion | ASTM D130 |
| Density at 15°C | ISO12185 | | |
| | | Distillation | ASTM D1160 |
| Flash Point (Recc) | ISO3679 | | |
| Flash Point (PMcc) | ISO2719 | Flash Point | ASTM D93 |
| Iodine Value | EN14111 | | |
| Kin. Viscosity at 40°C | ISO3104 | Kin. Viscosity at 40°C | ASTM D445 |
| Oxidation Stability | EN14112 | Oxidation Stability | EN15751 |
| Sulfated Ash | ISO3987 | Sulfated Ash | ASTM D874 |
| Sulfur | ISO20846 | Sulfur | ASTM D5453 |
| Water | ISO12937 | | |
| | | Water and Sediment | ASTM D2709 |
| Cetane Number | EN5165 | Cetane Number | ASTM D613 |
| | | Derived Cetane Number | ASTM D7668 |
| Calcium + Magnesium | EN14538 | Calcium + Magnesium | EN14538 |
| Phosphorus | EN14107 | Phosphorus | ASTM D4951 |
| Potassium + Sodium | EN14108/14109 | Potassium + Sodium | EN14538 |
| Polyunsaturated esters | EN15779 | | |
| Methanol | EN14110 | Methanol | EN14110 |
| mono-, di-, tri-Glycerides | EN14105 | Monoglyceride content | ASTM D6584 |
| Free + Total Glycerol | EN14105 | Free + Total Glycerol | ASTM D6584 |
| Total ester content | EN14103 | | |
| Linolenic Acid | EN14103 | | |
| Total Contamination | EN12662 | | |
| | | Cold Soak Filterability | ASTM D7501 |

Table 8: requirements and test methods acc. to specifications EN14214:12+A2:19 and/or ASTM D6751:20a.

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 evaluations.

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 (when applicable) that will be used during the evaluation. The detailed report form and the letter of instructions are both made available on the data entry portal www.kpmd.co.uk/sgs-iis/. The participating laboratories are also requested to confirm the sample receipt on this data entry portal. The letter of instructions can also be downloaded from the iis website www.iisnl.com.

## 3 RESULTS

During five weeks after sample dispatch, the test results of the individual laboratories were gathered via the data entry portal www.kpmd.co.uk/sgs-iis/. The reported test results are tabulated per determination in appendix 1 of this report. The laboratories are presented by their code numbers.

Directly after the deadline, a reminder was sent to those laboratories that had not reported test results at that moment. Shortly after the deadline, the available test results were screened for suspect data. A test result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the reported test results (no reanalyzes). Additional or corrected test results are used for data analysis and the original test results are placed under 'Remarks' in the 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.

The assigned value is determined by consensus based on the test results of the group of participants after rejection of the statistical outliers and/or suspect data.

According to ISO13528 all (original received or corrected) results per determination were submitted to outlier tests. In the iis procedure for proficiency tests, outliers are detected prior to calculation of the mean, standard deviation and reproducibility. For small data sets, Dixon (up to 20 test results) or Grubbs (up to 40 test results) outlier tests can be used. For larger data sets (above 20 test results) Rosner's outlier test can be used. 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 (dotted line) was projected over the Kernel Density Graph (smooth line) for reference. The Gauss curve is calculated from the consensus value and the corresponding standard deviation.

### 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 (derived from e.g. ISO or ASTM test methods), the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the variation in this interlaboratory study.

The target standard deviation was calculated from the literature reproducibility by division with 2.8. In case no literature reproducibility was available, other target values were used, like Horwitz or an estimated reproducibility based on former iis proficiency tests.

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. Therefore, 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

Some problems were encountered with the dispatch of the samples due to COVID-19 pandemic. Therefore, the reporting time on the data entry portal was extended with one week.
In the Biodiesel B100 regular round one participant reported the test results after the extended reporting date and three other participants did not report any test results at all.
In the Cetane Number and DCN PT the reporting participants did report in time but six participants did not report any test results at all.
In the Metals in Biodiesel B100 PT one participant reported the test results after the extended reporting date and six other participants did not report any test results at all.
In the Total Contamination PT two participants reported the test results after the extended reporting date and seven other participants did not report any test results at all.
Not all participants were able to report all analyzes requested.

In total 63 participants reported in total 962 numerical test results. Observed were 31 outlying test results, which is 3.2%. In proficiency tests outlier percentages of 3% - 7.5% are quite normal.

Not all 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 reported test results are discussed per sample and per test. The test methods which were used by the various 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 original data in appendix 1. The abbreviations, used in these tables,

are explained in appendix 3.
In the iis PT reports ASTM test methods are referred to with a number (e.g. D874) and an added designation for the year that the test method was adopted or revised (e.g. D874:13a). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D874:13a(2018)). In the test results tables of appendix 1 only the method number (sub) and year of adoption or revision (e.g. D874:13a) will be used.

**sample #21205**

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

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

Cloud Point: 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 ASTM D2500:17a and EN14214:12+A2:19.

CFPP: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of EN116:15 or EN14214:12+A2:19.

Carbon Residue on 100% sample: This determination was not problematic. The majority of the participants agreed on a test result near or below the application range of ASTM D4530:15(2020) or ISO10370:14. Therefore, no z-scores were calculated.

Copper Corrosion: This determination was not problematic. All reporting participants agreed on a test result of 1(1a/1b).

Density at 15°C: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ISO12185:96.

Flash Point PMcc: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of ASTM D93-C:20 and ISO2719-C:16.

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

Iodine Value: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of EN14111:03.

Kinematic Viscosity at 40°C: The determination may be problematic depending on the test method used. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ISO3104-A:20 but it is in agreement with the requirements of ASTM D445:21e1.
When evaluated separately over the test results of ISO3104-A the calculated reproducibility after rejection of the statistical outlier is still not in agreement with the requirements of ISO3104-A:20.

Oxidation Stability: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of EN15751:14 and is in agreement with the requirements of EN14112:20.

Pour Point: This determination was not problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO3016:19.

Sulfated Ash: This determination was not problematic. All reporting participants agreed on a test result near or below the application range of ASTM D874:13a(2018). Therefore, no z-scores were calculated.

Sulfur: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ISO20846:19 and is in full agreement with the requirements of ASTM D5453:19a.

Water: This determination was not problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO12937:00 and ASTM D6304-A:20.

Water and Sediment: This determination was not problematic. All reporting participants agreed on a test result near or below the application limit of ASTM D2709:16. Therefore, no z-scores were calculated.

Calorific Value Gross: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of D240:19.

Distillation at 10 mmHg: Only three participants submitted a test result for Distillation at 10mmHg. This determination was problematic for 80% and 90% recovered and was very problematic for 95% recovered. No statistical outliers were observed. The calculated reproducibilities are not in agreement with the requirements of ASTM D1160:18. No z-scores were calculated for 95% recovered.

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

Monoglycerides: 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 EN14105:21.

Diglycerides: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN14105:21.

Triglycerides: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of EN14105:21.

Free Glycerol: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN14105:21.

Total Glycerol: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of EN14105:21.

Total Ester content (FAME): This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of EN14103:20 and in agreement with EN14103:11.

Linolenic Acid Methyl Ester: This determination was very problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not at all in agreement with the requirements of EN14103:20 and is not in agreement with the less strict requirements EN14103:11.

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

**sample #21206**

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

ASTM D613:18ae1, nor with the requirements of EN14214:12+A2:19 and ISO5165:20.

DCN (D7668): This determination may be very problematic for the parameter Derived Cetane Number. No statistical outliers were observed. It was decided not to calculate z-scores for Derived Cetane Number due to the large difference between the calculated and the reference reproducibility.
Only two participants reported a test result for the parameters Ignition Delay and Combustion Delay. Therefore, no z-scores were calculated.

**sample #21207**

Sum Ca + Mg: 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 EN141538:06.

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

Potassium: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN14109:03.

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

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

**sample #21208**

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. 13) about this issue. In short, for FAME blends (B100) either EN12662:1998 or EN12662:2008 should be used and not EN12662:14. Also, the latest version of EN14214:12+A2:19 (February 2019) states that EN12662 version 2008 should be used or EN12662:1998 as alternative. The method EN12662:14 is not mentioned anymore in the specification (see also iis memo 1903, lit 14). It was therefore decided to exclude the test results which were determined according EN12662:14.

Total Contamination: This determination was very problematic. Two outliers were observed and nine other test results were excluded. The calculated reproducibility after rejection of the suspect data is still not in agreement with the requirements of EN12662:98 (or EN12662:08).

## 4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

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

| Parameter | unit | n | average | 2.8 * sd | R(lit) |
|---|---|---|---|---|---|
| Acid Value | mg KOH/g | 30 | 0.46 | 0.06 | 0.06 |
| Total Acid Number | mg KOH/g | 16 | 0.45 | 0.08 | 0.13 |
| Cloud Point | °C | 42 | -5.0 | 2.0 | 5 |
| Cold Filter Plugging Point | °C | 50 | -15.8 | 2.5 | 3.9 |
| Carbon Residue on 100% sample | %M/M | 19 | <0.1 | n.e. | n.e. |
| Copper Corrosion 3hrs at 50°C | | 40 | 1 (1a/1b) | n.a. | n.a. |
| Density at 15°C | kg/m$^3$ | 56 | 883.5 | 0.3 | 0.5 |
| Flash Point PMcc | °C | 38 | 153.3 | 20.9 | 14.7 |
| Flash Point recc | °C | 9 | 171.0 | 12.8 | 15.0 |
| Iodine Value | g $I_2$/100g | 30 | 113.4 | 4.6 | 5 |
| Kinematic Viscosity at 40°C | mm$^2$/s | 44 | 4.470 | 0.045 | 0.037 |
| Oxidation Stab. Induction period | hours | 35 | 4.2 | 1.1 | 1.2 |
| Pour Point | °C | 25 | -37.2 | 6.2 | 9 |
| Sulfated Ash | %M/M | 27 | <0.005 | n.e. | n.e. |
| Sulfur | mg/kg | 44 | 2.1 | 1.0 | 1.4 |
| Water | mg/kg | 49 | 379 | 54 | 134 |
| Water and Sediment | %V/V | 10 | <0.05 | n.e. | n.e. |
| Calorific Value Gross | MJ/kg | 5 | 40.1 | 0.9 | 0.4 |
| 80% recovered, as AET | °C | 3 | 352.3 | 5.8 | 4.6 |
| 90% recovered, as AET | °C | 3 | 355.0 | 9.7 | 4.6 |
| 95% recovered, as AET | °C | 3 | 359.0 | 20.2 | (4.6) |
| Methanol | %M/M | 27 | 0.042 | 0.024 | 0.012 |
| Monoglycerides | %M/M | 32 | 0.342 | 0.151 | 0.129 |
| Diglycerides | %M/M | 31 | 0.097 | 0.041 | 0.047 |
| Triglycerides | %M/M | 31 | 0.050 | 0.032 | 0.068 |
| Free Glycerol | %M/M | 25 | 0.002 | 0.003 | 0.006 |
| Total Glycerol | %M/M | 32 | 0.112 | 0.057 | 0.033 |
| Total Ester content (FAME) | %M/M | 35 | 98.02 | 2.48 | 2.45 |
| Linolenic Acid Methyl Ester | %M/M | 33 | 9.69 | 0.79 | 0.25 |
| Polyunsaturated Methyl Esters | %M/M | 18 | 0.26 | 0.40 | 0.27 |

Table 9: reproducibilities of tests on sample #21205

For results between brackets no z-scores are calculated

| Parameter | unit | n | average | 2.8 * sd | R(lit) |
|---|---|---|---|---|---|
| Cetane Number | | 9 | 56.0 | 6.7 | 4.8 |
| Derived Cetane Number | | 5 | 57.3 | 4.2 | (1.7) |
| Ignition Delay | | 2 | n.e. | n.e. | n.e. |
| Combustion Delay | | 2 | n.e. | n.e. | n.e. |

Table 10: reproducibilities of tests on sample #21206

For results between brackets no z-scores are calculated

| Parameter | unit | n | average | 2.8 * sd | R(lit) |
|---|---|---|---|---|---|
| Sum Calcium and Magnesium | mg/kg | 21 | 5.9 | 3.2 | 2.1 |
| Phosphorus | mg/kg | 21 | 13.5 | 5.8 | 2.6 |
| Potassium | mg/kg | 18 | 6.6 | 2.6 | 3.8 |
| Sodium | mg/kg | 22 | 7.8 | 4.5 | 3.4 |
| Sum Potassium and Sodium | mg/kg | 17 | 14.3 | 3.4 | 3.7 |

Table 11: reproducibilities of tests on sample #21207

| Parameter | unit | n | average | 2.8 * sd | R(lit) |
|---|---|---|---|---|---|
| Total Contamination | mg/kg | 24 | 15.8 | 11.4 | 4.8 |

Table 12: reproducibilities of tests on sample #21208

Without further statistical calculations, it can be concluded that for many tests there is a good compliance of the group of participants with the reference test methods. The problematic tests have been discussed in paragraph 4.1.

### 4.3 COMPARISON OF THE PROFICIENCY TEST OF OCTOBER 2021 WITH PREVIOUS PTS

| | October 2021 | April 2021 | October 2020 | April 2020 | October 2019 |
|---|---|---|---|---|---|
| Type of FAME | Rapeseed | Rapeseed | Rapeseed | Rapeseed | Soybean |
| Number of reporting laboratories | 63 | 67 | 63 | 47 | 67 |
| Number of test results | 962 | 1108 | 1080 | 737 | 1389 |
| Number of statistical outliers | 31 | 45 | 42 | 37 | 40 |
| Percentage statistical outliers | 3.2% | 4.1% | 3.9% | 5.0% | 2.9% |

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 to the requirements of the reference test methods. The conclusions are given in the following table.

| Parameter | October 2021 | April 2021 | October 2020 | April 2020 | October 2019 |
|---|---|---|---|---|---|
| Acid Value | +/- | - | + | +/- | +/- |
| Total Acid Number | + | + | + | + | +/- |
| Cloud Point | ++ | + | + | + | + |

| Parameter | October 2021 | April 2021 | October 2020 | April 2020 | October 2019 |
|---|---|---|---|---|---|
| Cold Filter Plugging Point | + | + | + | + | + |
| Carbon Residue on100% sample | n.e. | n.e. | n.e. | n.e. | n.e. |
| Density at 15°C | + | + | ++ | + | ++ |
| Flash Point PMcc | - | - | + | +/- | + |
| Flash Point recc. | + | + | +/- | - | + |
| Iodine Value | +/- | - | + | + | - |
| Kinematic Viscosity at 40°C | - | +/- | + | +/- | + |
| Oxidation Stab. Induction period | +/- | + | + | + | + |
| Pour Point | + | + | ++ | + | + |
| Sulfated Ash | n.e. | n.e. | n.e. | n.e. | n.e. |
| Sulfur | + | + | +/- | +/- | +/- |
| Water | ++ | + | + | + | + |
| Calorific Value Gross | -- | -- | (--) | + | (--) |
| Distillation at 10 mmHg | -- | - | n.e. | +/- | + |
| Methanol | - | +/- | - | - | - |
| Monoglycerides | - | + | +/- | + | + |
| Diglycerides | + | - | - | - | + |
| Triglycerides | ++ | + | + | ++ | + |
| Free Glycerol | ++ | + | ++ | + | + |
| Total Glycerol | - | + | - | +/- | +/- |
| Total Ester content (FAME) | +/- | + | + | + | + |
| Linolenic Acid Methyl Ester | -- | +/- | + | +/- | +/- |
| Polyunsaturated Methyl Esters | - | n.e. | - | n.e. | n.e. |
| Cetane Number | - | n.a. | + | n.a. | - |
| Derived Cetane Number | (--) | n.a. | -- | n.a. | -- |
| Sum of Calcium and Magnesium | - | + | +/- | - | + |
| Phosphorus | -- | - | - | - | - |
| Potassium | + | + | + | + | + |
| Sodium | - | - | - | -- | + |
| Sum of Potassium and Sodium | +/- | - | - | - | - |
| Total Contamination | -- | -- | -- | - | -- |

Table 14: comparison determinations against the reference test methods of all samples

Results between brackets should be used with due care

The following performance categories were used:

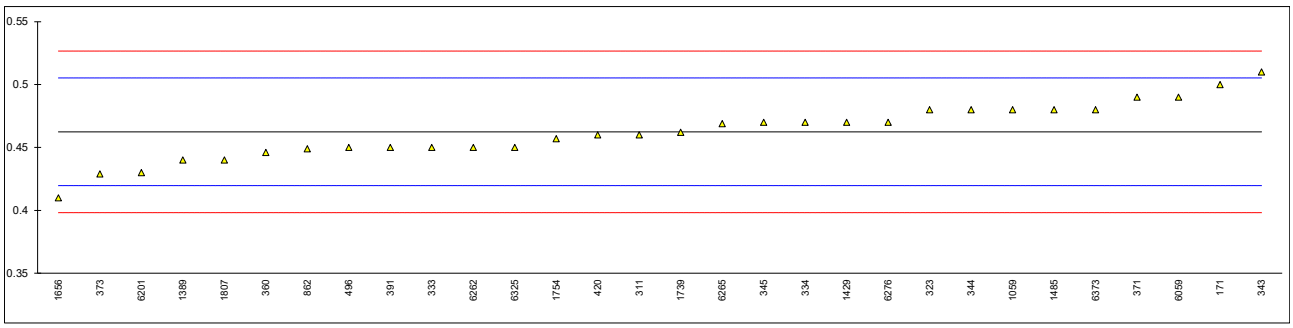
- ++ : group performed much better than the reference test method
- + : group performed better than the reference test method
- +/- : group performance equals the reference test method
- - : group performed worse than the reference test method
- -- : group performed much worse than the reference test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

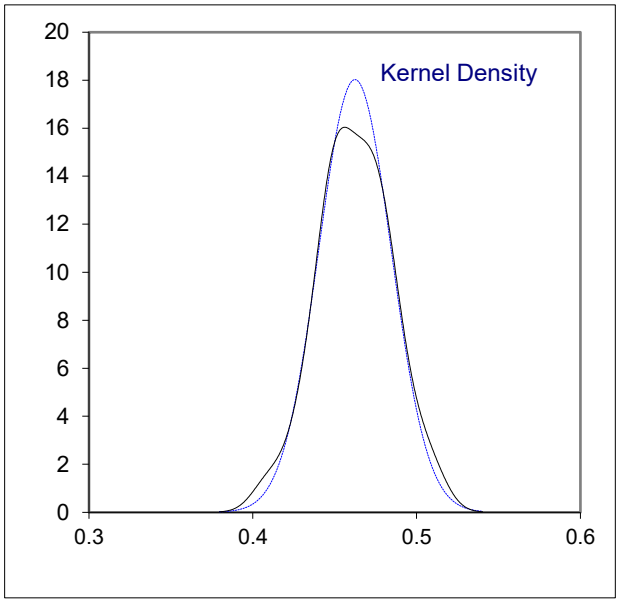
**APPENDIX 1**

Determination of Acid Value on sample #21205; results in mg KOH/g

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | EN14104 | 0.50 | | 1.75 | |
| 311 | EN14104 | 0.46 | | -0.11 | |
| 312 | | ----- | | ----- | |
| 323 | EN14104 | 0.48 | | 0.82 | |
| 328 | | ----- | | ----- | |
| 333 | EN14104 | 0.45 | | -0.58 | |
| 334 | EN14104 | 0.47 | | 0.35 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14104 | 0.51 | C | 2.22 | first reported 0.53 |
| 344 | EN14104 | 0.48 | | 0.82 | |
| 345 | EN14104 | 0.47 | | 0.35 | |
| 360 | EN14104 | 0.446 | | -0.77 | |
| 370 | | ----- | | ----- | |
| 371 | EN14104 | 0.49 | | 1.29 | |
| 373 | EN14104 | 0.429 | | -1.56 | |
| 381 | | ----- | | ----- | |
| 391 | EN14104 | 0.45 | | -0.58 | |
| 398 | | ----- | | ----- | |
| 420 | EN14104 | 0.46 | | -0.11 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14104 | 0.45 | | -0.58 | |
| 511 | | ----- | | ----- | |
| 663 | | ----- | | ----- | |
| 824 | | ----- | | ----- | |
| 862 | EN14104 | 0.449 | | -0.63 | |
| 1059 | EN14104 | 0.48 | | 0.82 | |
| 1199 | | ----- | | ----- | |
| 1227 | | ----- | | ----- | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | EN14104 | 0.44 | | -1.05 | |
| 1397 | | ----- | | ----- | |
| 1407 | | ----- | | ----- | |
| 1429 | EN14104 | 0.47 | | 0.35 | |
| 1459 | | ----- | | ----- | |
| 1485 | EN14104 | 0.480 | | 0.82 | |
| 1510 | | ----- | | ----- | |
| 1544 | | ----- | | ----- | |
| 1554 | | ----- | | ----- | |
| 1586 | | ----- | | ----- | |
| 1656 | EN14104 | 0.41 | | -2.45 | |
| 1706 | | ----- | | ----- | |
| 1739 | EN14104 | 0.462 | | -0.02 | |
| 1754 | EN14104 | 0.457 | | -0.25 | |
| 1807 | EN14104 | 0.44 | C | -1.05 | first reported 0.54 |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | EN14104 | 0.49 | | 1.29 | |
| 6201 | EN14104 | 0.43 | | -1.51 | |
| 6259 | | ----- | | ----- | |
| 6262 | EN14104 | 0.45 | | -0.58 | |
| 6265 | EN14104 | 0.4690 | | 0.31 | |
| 6275 | | ----- | | ----- | |
| 6276 | EN14104 | 0.47 | | 0.35 | |
| 6325 | EN14104 | 0.45 | | -0.58 | |
| 6373 | | 0.48 | | 0.82 | |
| 6406 | | ----- | | ----- | |

| | |
|---|---|
| normality | OK |
| n | 30 |
| outliers | 0 |
| mean (n) | 0.4624 |
| st.dev. (n) | 0.02213 |
| R(calc.) | 0.0620 |
| st.dev.(EN14104:03) | 0.02143 |
| R(EN14104:03) | 0.06 |
| compare | |
| R(EN14214:12+A2:19) | 0.06 |

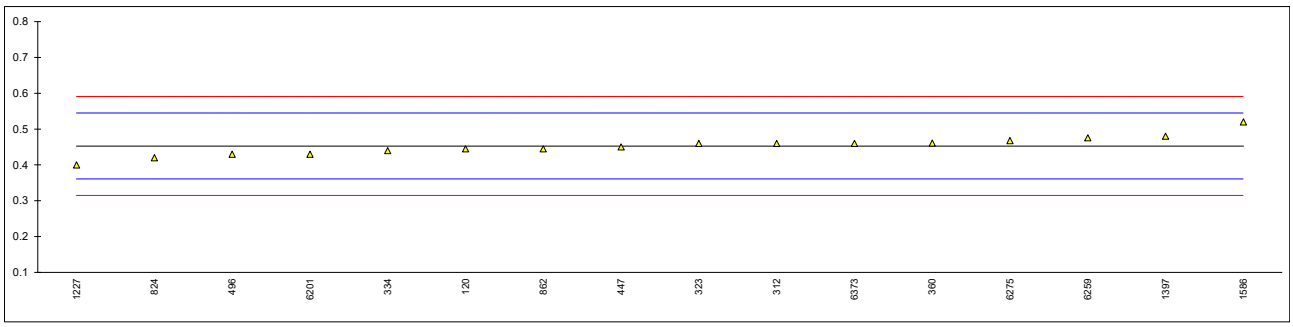

0.55
0.5
0.45
0.4
0.35
1656
373
6201
1389
1807
360
862
496
391
333
6262
6325
1754
420
311
1739
6265
345
334
1429
6276
323
344
1059
1485
6373
371
6059
171
343

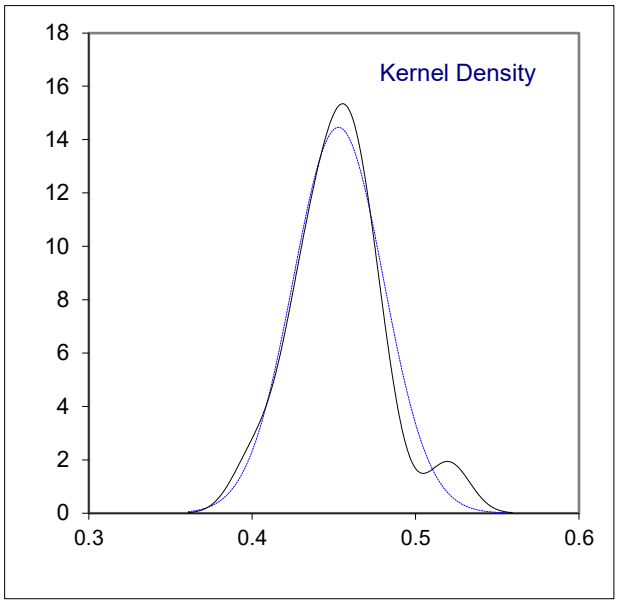

Kernel Density
20
18
16
14
12
10
8
6
4
2
0
0.3
0.4
0.5
0.6

## Determination of Total Acid Number on sample #21205; results in mg KOH/g

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D664-B | 0.445 | | -0.17 | |
| 171 | | ----- | | ----- | |
| 311 | | ----- | | ----- | |
| 312 | D974 | 0.46 | | 0.16 | |
| 323 | D664-B | 0.46 | | 0.16 | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | D664-B | 0.44 | | -0.28 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | | ----- | | ----- | |
| 344 | | ----- | | ----- | |
| 345 | | ----- | | ----- | |
| 360 | D664-B | 0.461 | | 0.18 | |
| 370 | | ----- | | ----- | |
| 371 | | ----- | | ----- | |
| 373 | | ----- | | ----- | |
| 381 | | ----- | | ----- | |
| 391 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 420 | | ----- | | ----- | |
| 447 | D974 | 0.45 | | -0.06 | |
| 467 | | ----- | | ----- | |
| 496 | D664-B | 0.43 | | -0.49 | |
| 511 | | ----- | | ----- | |
| 663 | | ----- | | ----- | |
| 824 | D664-B | 0.42 | | -0.71 | |
| 862 | D664-B | 0.445 | | -0.17 | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1227 | D664-B | 0.4 | | -1.15 | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | | ----- | | ----- | |
| 1397 | D664-B | 0.48 | C | 0.59 | first reported 0.04 |
| 1407 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1459 | | ----- | | ----- | |
| 1485 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1544 | | ----- | | ----- | |
| 1554 | | ----- | | ----- | |
| 1586 | D664-B | 0.52 | | 1.46 | |
| 1656 | | ----- | | ----- | |
| 1706 | | ----- | | ----- | |
| 1739 | | ----- | | ----- | |
| 1754 | | ----- | | ----- | |
| 1807 | | ----- | | ----- | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | | ----- | | ----- | |
| 6201 | D664-B | 0.43 | | -0.49 | |
| 6259 | D664-B | 0.4756 | | 0.50 | |
| 6262 | | ----- | | ----- | |
| 6265 | | ----- | | ----- | |
| 6275 | D974 | 0.468 | | 0.33 | |
| 6276 | | ----- | | ----- | |
| 6325 | | ----- | | ----- | |
| 6373 | | 0.46 | | 0.16 | |
| 6406 | | ----- | | ----- | |

| | |
|---|---|
| normality | suspect |
| n | 16 |
| outliers | 0 |
| mean (n) | 0.4528 |
| st.dev. (n) | 0.02760 |
| R(calc.) | 0.0773 |
| st.dev.(D664-B:18e2) | 0.04604 |
| R(D664-B:18e2) | 0.1289 |

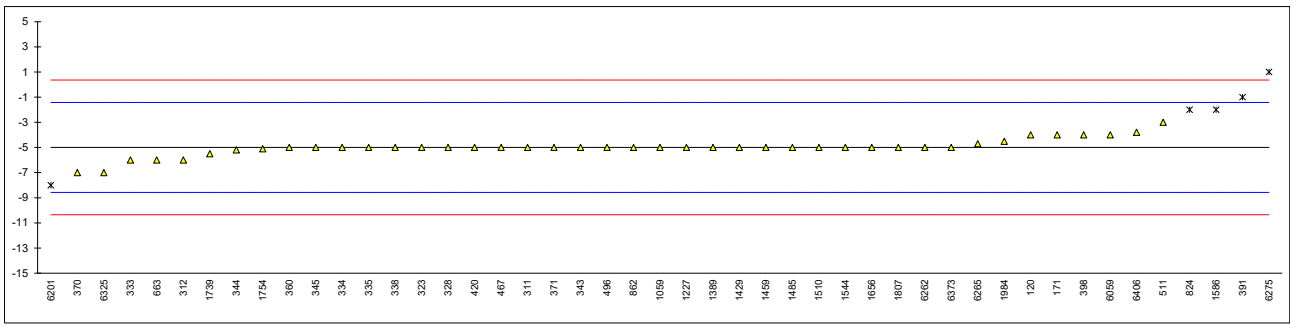

0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
1227
824
496
6201
334
120
862
447
323
312
6373
360
6275
6259
1397
1586

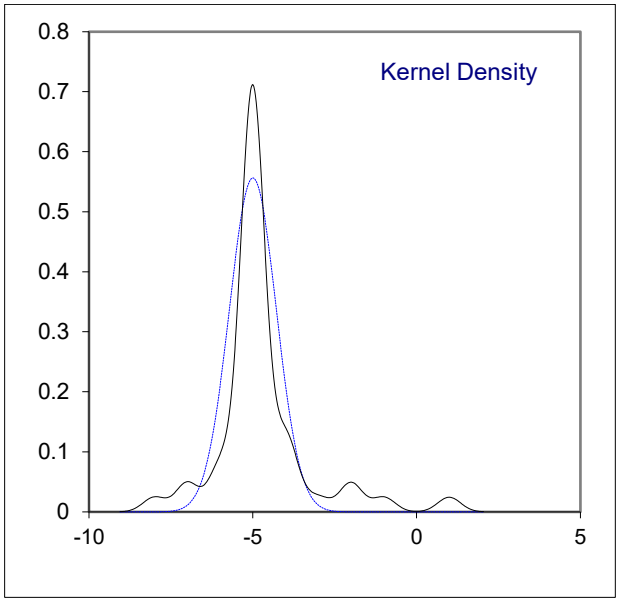

Kernel Density
18
16
14
12
10
8
6
4
2
0
0.3
0.4
0.5
0.6

## Determination of Cloud Point on sample #21205; results in °C

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D2500 | -4.0 | | 0.56 | |
| 171 | D2500 | -4 | | 0.56 | |
| 311 | D2500 | -5 | | 0.00 | |
| 312 | EN23015 | -6 | | -0.56 | |
| 323 | D2500 | -5 | | 0.00 | |
| 328 | D2500 | -5 | | 0.00 | |
| 333 | EN23015 | -6 | | -0.56 | |
| 334 | D2500 | -5 | | 0.00 | |
| 335 | D2500 | -5 | | 0.00 | |
| 338 | ISO3015 | -5 | | 0.00 | |
| 343 | D2500 | -5 | | 0.00 | |
| 344 | D2500 | -5.2 | | -0.11 | |
| 345 | D5771 | -5 | | 0.00 | |
| 360 | ISO3015 | -5 | | 0.00 | |
| 370 | ISO3015 | -7 | | -1.12 | |
| 371 | ISO3015 | -5 | | 0.00 | |
| 373 | | ----- | | ----- | |
| 381 | | ----- | | ----- | |
| 391 | D2500 | -1 | R(0.01) | 2.24 | |
| 398 | D2500 | -4 | | 0.56 | |
| 420 | ISO3015 | -5 | | 0.00 | |
| 447 | | ----- | | ----- | |
| 467 | D2500 | -5 | | 0.00 | |
| 496 | D2500 | -5 | | 0.00 | |
| 511 | D2500 | -3 | | 1.12 | |
| 663 | D2500 | -6 | | -0.56 | |
| 824 | D2500 | -2 | R(0.01) | 1.68 | |
| 862 | D2500 | -5 | | 0.00 | |
| 1059 | ISO3015 | -5 | | 0.00 | |
| 1199 | | ----- | | ----- | |
| 1227 | D2500 | -5 | | 0.00 | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | D2500 | -5 | | 0.00 | |
| 1397 | | ----- | | ----- | |
| 1407 | | ----- | | ----- | |
| 1429 | D2500 | -5.0 | | 0.00 | |
| 1459 | EN23015 | -5.0 | | 0.00 | |
| 1485 | D2500 | -5.0 | | 0.00 | |
| 1510 | D2500 | -5 | | 0.00 | |
| 1544 | ISO3015 | -5.0 | | 0.00 | |
| 1554 | | ----- | | ----- | |
| 1586 | D2500 | -2 | R(0.01) | 1.68 | |
| 1656 | D2500 | -5 | | 0.00 | |
| 1706 | | ----- | | ----- | |
| 1739 | EN23015 | -5.5 | | -0.28 | |
| 1754 | ISO3015 | -5.1 | | -0.06 | |
| 1807 | D2500 | -5 | | 0.00 | |
| 1826 | | ----- | | ----- | |
| 1984 | ISO3015 | -4.5 | | 0.28 | |
| 6059 | D2500 | -4 | | 0.56 | |
| 6201 | D2500 | -8 | R(0.01) | -1.68 | |
| 6259 | | ----- | | ----- | |
| 6262 | D2500 | -5 | | 0.00 | |
| 6265 | ISO3015 | -4.7 | | 0.17 | |
| 6275 | D2500 | 1 | R(0.01) | 3.36 | |
| 6276 | | ----- | | ----- | |
| 6325 | D2500 | -7 | | -1.12 | |
| 6373 | | -5 | | 0.00 | |
| 6406 | D5771 | -3.8 | | 0.67 | |

| | |
|---|---|
| normality | not OK |
| n | 42 |
| outliers | 5 |
| mean (n) | -5.00 |
| st.dev. (n) | 0.717 |
| R(calc.) | 2.01 |
| st.dev.(D2500:17a) | 1.786 |
| R(D2500:17a) | 5 |
| compare | |
| R(EN14214:12+A2:19) | 4 |

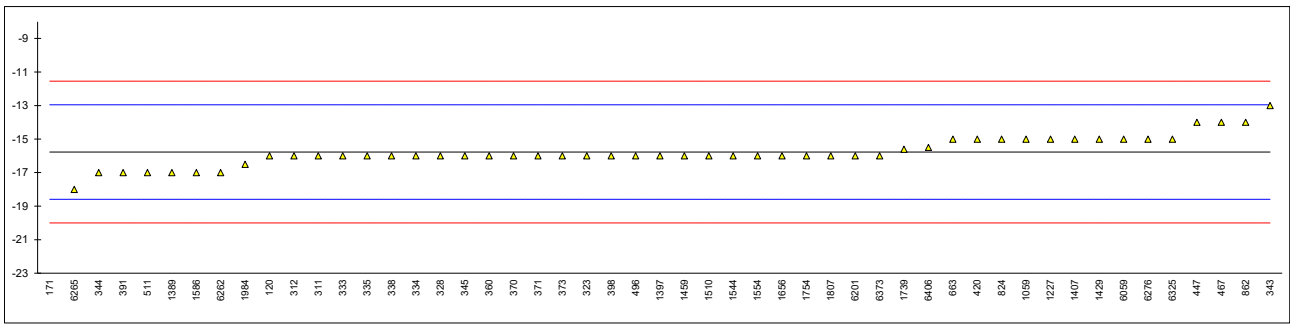

5
3
1
-1
-3
-5
-7
-9
-11
-13
-15
6201 370 6325 333 663 312 1739 344 1754 360 345 334 335 338 323 328 420 467 311 371 343 496 862 1059 1227 1389 1429 1459 1485 1510 1544 1656 1807 6262 6373 6265 1984 120 171 398 6059 6406 511 824 1586 391 6275

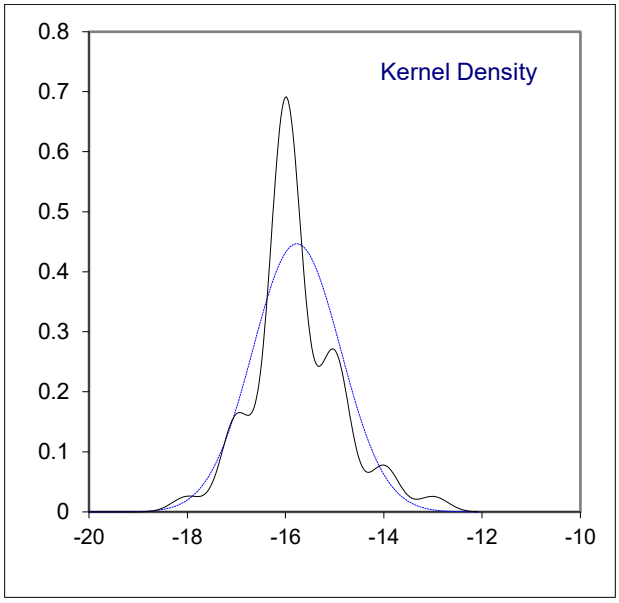

Kernel Density
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-10
-5
0
5

## Determination of Cold Filter Plugging Point (CFPP) on sample #21205; results in °C

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D6371 | -16.0 | | -0.16 | |
| 171 | D6371 | -25 | R(0.01) | -6.55 | |
| 311 | EN116 | -16 | | -0.16 | |
| 312 | EN116 | -16 | | -0.16 | |
| 323 | EN116 | -16 | | -0.16 | |
| 328 | EN116 | -16 | | -0.16 | |
| 333 | EN116 | -16 | | -0.16 | |
| 334 | EN116 | -16 | | -0.16 | |
| 335 | EN116 | -16 | | -0.16 | |
| 338 | EN116 | -16 | | -0.16 | |
| 343 | EN116 | -13 | | 1.97 | |
| 344 | EN116 | -17 | | -0.87 | |
| 345 | EN116 | -16 | | -0.16 | |
| 360 | EN116 | -16 | | -0.16 | |
| 370 | EN116 | -16 | | -0.16 | |
| 371 | EN116 | -16 | | -0.16 | |
| 373 | EN116 | -16 | | -0.16 | |
| 381 | | ----- | | ----- | |
| 391 | EN116 | -17 | | -0.87 | |
| 398 | EN116 | -16 | | -0.16 | |
| 420 | EN116 | -15 | | 0.55 | |
| 447 | IP309 | -14 | | 1.26 | |
| 467 | EN116 | -14 | | 1.26 | |
| 496 | EN116 | -16 | | -0.16 | |
| 511 | D6371 | -17 | | -0.87 | |
| 663 | EN116 | -15 | | 0.55 | |
| 824 | EN116 | -15 | | 0.55 | |
| 862 | EN116 | -14 | | 1.26 | |
| 1059 | EN116 | -15 | | 0.55 | |
| 1199 | | ----- | | ----- | |
| 1227 | EN116 | -15 | | 0.55 | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | EN116 | -17 | | -0.87 | |
| 1397 | EN116 | -16 | | -0.16 | |
| 1407 | EN116 | -15 | | 0.55 | |
| 1429 | EN116 | -15.0 | | 0.55 | |
| 1459 | EN116 | -16.0 | | -0.16 | |
| 1485 | | ----- | | ----- | |
| 1510 | EN116 | -16 | | -0.16 | |
| 1544 | EN116 | -16.0 | | -0.16 | |
| 1554 | EN116 | -16 | | -0.16 | |
| 1586 | EN116 | -17 | | -0.87 | |
| 1656 | IP309 | -16 | | -0.16 | |
| 1706 | | ----- | | ----- | |
| 1739 | EN116 | -15.6 | | 0.12 | |
| 1754 | EN116 | -16.0 | | -0.16 | |
| 1807 | D6371 | -16 | | -0.16 | |
| 1826 | | ----- | | ----- | |
| 1984 | EN116 | -16.5 | | -0.52 | |
| 6059 | EN116 | -15 | | 0.55 | |
| 6201 | EN116 | -16 | | -0.16 | |
| 6259 | | ----- | | ----- | |
| 6262 | EN116 | -17 | | -0.87 | |
| 6265 | EN116 | -18 | | -1.58 | |
| 6275 | | ----- | | ----- | |
| 6276 | EN116 | -15 | | 0.55 | |
| 6325 | EN116 | -15 | | 0.55 | |
| 6373 | | -16 | | -0.16 | |
| 6406 | EN116 | -15.5 | | 0.19 | |

| | |
|---|---|
| normality | suspect |
| n | 50 |
| outliers | 1 |
| mean (n) | -15.77 |
| st.dev. (n) | 0.893 |
| R(calc.) | 2.50 |
| st.dev.(EN116:15) | 1.409 |
| R(EN116:15) | 3.95 |
| compare | |
| R(EN14214:12+A2:19) | 3.95 |


-9
-11
-13
-15
-17
-19
-21
-23
171 6265 344 391 511 1389 1586 6262 1984 120 312 311 333 335 338 334 328 345 360 370 371 373 323 398 496 1397 1459 1510 1544 1554 1656 1754 1807 6201 6373 1739 6406 663 420 824 1059 1227 1407 1429 6059 6276 6325 447 467 862 343


Kernel Density
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-20
-18
-16
-14
-12
-10

## Determination of Carbon Residue on 100% sample on sample #21205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D4530 | 0.01 | | ----- | |
| 171 | D4530 | <0.10 | | ----- | |
| 311 | | ----- | | ----- | |
| 312 | | ----- | | ----- | |
| 323 | D4530 | <0.10 | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | D4530 | 0.03 | | ----- | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | | ----- | | ----- | |
| 344 | | ----- | | ----- | |
| 345 | | ----- | | ----- | |
| 360 | ISO10370 | 0.007 | | ----- | |
| 370 | ISO10370 | 0.01 | | ----- | |
| 371 | | ----- | | ----- | |
| 373 | | ----- | | ----- | |
| 381 | | ----- | | ----- | |
| 391 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 420 | ISO6615 | 0.01 | | ----- | |
| 447 | EN10370 | 0.008 | | ----- | |
| 467 | D4530 | 0.01 | | ----- | |
| 496 | D4530 | <0,1 | | ----- | |
| 511 | | ----- | | ----- | |
| 663 | | ----- | | ----- | |
| 824 | ISO10370 | 0.007 | | ----- | |
| 862 | D4530 | <0.1 | | ----- | |
| 1059 | ISO10370 | <0,01 | | ----- | |
| 1199 | | ----- | | ----- | |
| 1227 | D4530 | 0.01 | | ----- | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | | ----- | | ----- | |
| 1397 | | ----- | | ----- | |
| 1407 | ISO10370 | 0.026 | | ----- | |
| 1429 | | ----- | | ----- | |
| 1459 | | ----- | | ----- | |
| 1485 | | ----- | | ----- | |
| 1510 | D4530 | 0.01 | | ----- | |
| 1544 | ISO10370 | 0.0068 | | ----- | |
| 1554 | | ----- | | ----- | |
| 1586 | D189 | 0.02 | | ----- | |
| 1656 | EN10370 | 0.02 | | ----- | |
| 1706 | | ----- | | ----- | |
| 1739 | | ----- | | ----- | |
| 1754 | | ----- | | ----- | |
| 1807 | | ----- | | ----- | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | D4530 | 0.0 | | ----- | |
| 6201 | D4530 | 0.02 | | ----- | |
| 6259 | | ----- | | ----- | |
| 6262 | D4530 | <0.01 | | ----- | |
| 6265 | | ----- | | ----- | |
| 6275 | D189 | 0.0046 | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | | ----- | | ----- | |
| 6373 | | 0 | | ----- | |
| 6406 | | ----- | | ----- | |
| | n | 19 | | | |
| | mean (n) | <0.10 | | | application range ASTM D4530:15: 0.1 – 30 %M/M<br>application range ISO10370:14: 0.10 – 30.0 %M/M |

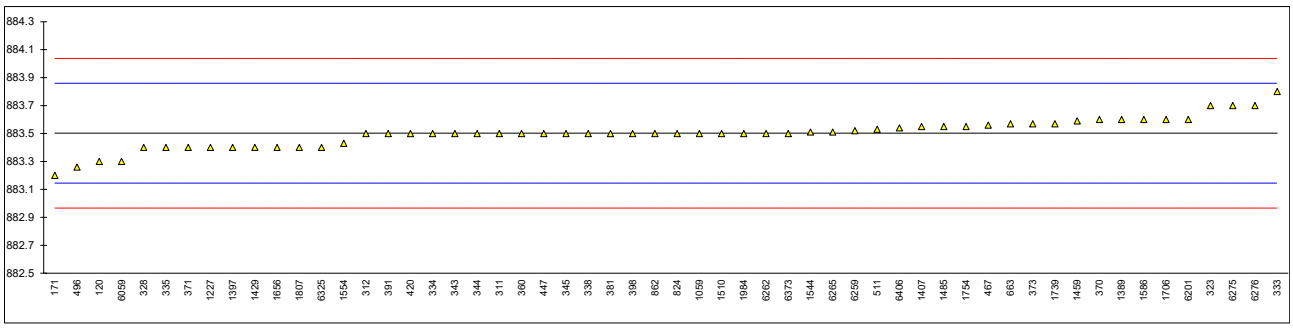
## Determination of Copper Corrosion 3 hrs at 50°C on sample #21205

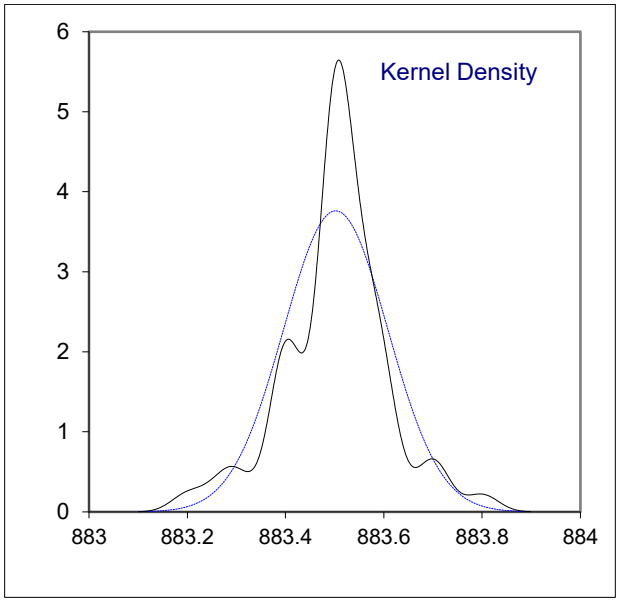
| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D130 | 1A | | ----- | |
| 171 | D130 | 1a | | ----- | |
| 311 | D130 | 1A | | ----- | |
| 312 | ISO2160 | 1a | | ----- | |
| 323 | D130 | 1A | | ----- | |
| 328 | D130 | 1 | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | D130 | 1 | | ----- | |
| 335 | D130 | 1b | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | ISO2160 | 1a | | ----- | |
| 344 | D130 | 1a | | ----- | |
| 345 | ISO2160 | 1a | | ----- | |
| 360 | ISO2160 | 1A | | ----- | |
| 370 | ISO2160 | 1A | | ----- | |
| 371 | ISO2160 | 1A | | ----- | |
| 373 | | ----- | | ----- | |
| 381 | | ----- | | ----- | |
| 391 | | ----- | | ----- | |
| 398 | D130 | 1a | | ----- | |
| 420 | ISO2160 | class1 | | ----- | |
| 447 | IP154 | 1a | | ----- | |
| 467 | ISO2160 | 1a | | ----- | |
| 496 | ISO2160 | 1a | | ----- | |
| 511 | D130 | 1A | | ----- | |
| 663 | D130 | 1a | | ----- | |
| 824 | D130 | 1a | | ----- | |
| 862 | D130 | 1a | | ----- | |
| 1059 | ISO2160 | 1a | | ----- | |
| 1199 | | ----- | | ----- | |
| 1227 | D130 | 1A | | ----- | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | | ----- | | ----- | |
| 1397 | ISO2160 | 1 | | ----- | |
| 1407 | | ----- | | ----- | |
| 1429 | D130 | 1a | | ----- | |
| 1459 | | ----- | | ----- | |
| 1485 | | ----- | | ----- | |
| 1510 | D130 | 1A | | ----- | |
| 1544 | ISO2160 | 1a | | ----- | |
| 1554 | ISO2160 | 1 a | | ----- | |
| 1586 | D130 | 1b | | ----- | |
| 1656 | D130 | 1 | | ----- | |
| 1706 | | ----- | | ----- | |
| 1739 | ISO2160 | 1a | | ----- | |
| 1754 | ISO2160 | 1A | | ----- | |
| 1807 | D130 | 1a | | ----- | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | | ----- | | ----- | |
| 6201 | ISO2160 | 1a | | ----- | |
| 6259 | | ----- | | ----- | |
| 6262 | D130 | 1A | | ----- | |
| 6265 | | ----- | | ----- | |
| 6275 | D130 | 1A | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | | ----- | | ----- | |
| 6373 | | 1A | | ----- | |
| 6406 | ISO2160 | 1A | | ----- | |
| | n | 40 | | | |
| | mean (n) | 1 (1a/1b) | | | |

## Determination of Density at 15°C on sample #21205; results in kg/m$^3$

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D4052 | 883.3 | | -1.13 | |
| 171 | D4052 | 883.2 | | -1.69 | |
| 311 | D4052 | 883.5 | | -0.01 | |
| 312 | ISO12185 | 883.5 | C | -0.01 | first reported 882.9 |
| 323 | ISO12185 | 883.7 | | 1.11 | |
| 328 | ISO12185 | 883.4 | | -0.57 | |
| 333 | ISO12185 | 883.8 | | 1.67 | |
| 334 | ISO12185 | 883.5 | | -0.01 | |
| 335 | ISO12185 | 883.4 | | -0.57 | |
| 338 | ISO12185 | 883.5 | | -0.01 | |
| 343 | ISO12185 | 883.5 | | -0.01 | |
| 344 | D4052 | 883.5 | | -0.01 | |
| 345 | ISO12185 | 883.5 | | -0.01 | |
| 360 | D4052 | 883.5 | | -0.01 | |
| 370 | ISO12185 | 883.6 | | 0.55 | |
| 371 | ISO12185 | 883.4 | | -0.57 | |
| 373 | ISO12185 | 883.57 | | 0.38 | |
| 381 | ISO12185 | 883.5 | | -0.01 | |
| 391 | ISO12185 | 883.5 | | -0.01 | |
| 398 | ISO12185 | 883.5 | | -0.01 | |
| 420 | ISO12185 | 883.5 | | -0.01 | |
| 447 | IP365 | 883.5 | | -0.01 | |
| 467 | ISO12185 | 883.56 | | 0.32 | |
| 496 | ISO12185 | 883.26 | | -1.36 | |
| 511 | D4052 | 883.53 | | 0.16 | |
| 663 | D4052 | 883.57 | | 0.38 | |
| 824 | ISO12185 | 883.5 | | -0.01 | |
| 862 | ISO12185 | 883.5 | | -0.01 | |
| 1059 | ISO12185 | 883.5 | | -0.01 | |
| 1199 | | ----- | | ----- | |
| 1227 | D4052 | 883.4 | | -0.57 | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | ISO12185 | 883.6 | | 0.55 | |
| 1397 | ISO12185 | 883.4 | | -0.57 | |
| 1407 | ISO12185 | 883.55 | | 0.27 | |
| 1429 | ISO12185 | 883.4 | | -0.57 | |
| 1459 | ISO12185 | 883.59 | | 0.49 | |
| 1485 | ISO12185 | 883.55 | | 0.27 | |
| 1510 | D4052 | 883.5 | | -0.01 | |
| 1544 | ISO3675 | 883.51 | | 0.04 | |
| 1554 | ISO12185 | 883.43 | | -0.40 | |
| 1586 | D4052 | 883.6 | | 0.55 | |
| 1656 | ISO12185 | 883.4 | | -0.57 | |
| 1706 | ISO12185 | 883.6 | | 0.55 | |
| 1739 | ISO3675 | 883.57 | | 0.38 | |
| 1754 | ISO12185 | 883.55 | | 0.27 | |
| 1807 | ISO12185 | 883.4 | | -0.57 | |
| 1826 | | ----- | | ----- | |
| 1984 | ISO12185 | 883.5 | | -0.01 | |
| 6059 | ISO12185 | 883.3 | | -1.13 | |
| 6201 | D4052 | 883.6 | | 0.55 | |
| 6259 | D4052 | 883.52 | | 0.10 | |
| 6262 | ISO12185 | 883.5 | | -0.01 | |
| 6265 | ISO12185 | 883.51 | | 0.04 | |
| 6275 | D1298 | 883.7 | | 1.11 | |
| 6276 | ISO12185 | 883.7 | | 1.11 | |
| 6325 | ISO12185 | 883.4 | | -0.57 | |
| 6373 | | 883.5 | | -0.01 | |
| 6406 | ISO12185 | 883.54 | | 0.21 | |

| | |
|---|---|
| normality | suspect |
| n | 56 |
| outliers | 0 |
| mean (n) | 883.50 |
| st.dev. (n) | 0.106 |
| R(calc.) | 0.30 |
| st.dev.(ISO12185:96) | 0.179 |
| R(ISO12185:96) | 0.5 |

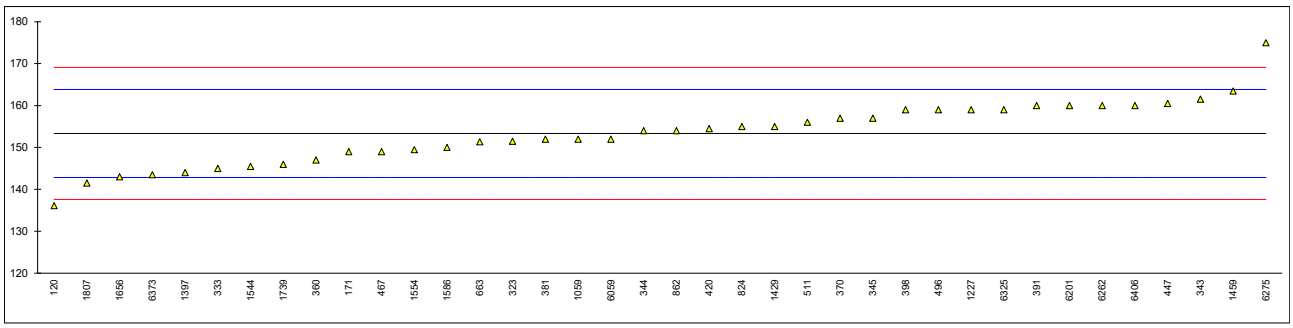

884.3
884.1
883.9
883.7
883.5
883.3
883.1
882.9
882.7
882.5
171 496 120 6059 328 335 371 1227 1397 1429 1656 1807 6325 1554 312 391 420 334 343 344 311 360 447 345 338 381 398 862 824 1059 1510 1984 6262 6373 1544 6265 6259 511 6406 1407 1485 1754 467 663 373 1739 1459 370 1389 1586 1706 6201 323 6275 6276 333

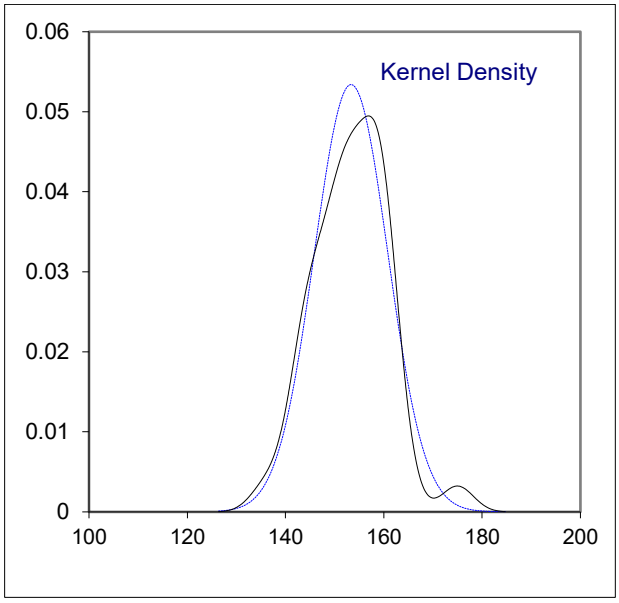

Kernel Density
6
5
4
3
2
1
0
883
883.2
883.4
883.6
883.8
884

## Determination of Flash Point PMcc on sample #21205; results in °C

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D93-C | 136.1 | | -3.28 | |
| 171 | D93-C | 149.0 | | -0.83 | |
| 311 | | ----- | | ----- | |
| 312 | | ----- | | ----- | |
| 323 | D93-C | 151.5 | | -0.35 | |
| 328 | | ----- | | ----- | |
| 333 | D93-C | 145.0 | | -1.59 | |
| 334 | | ----- | | ----- | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | ISO2719-A | 161.5 | | 1.55 | |
| 344 | D93-C | 154 | | 0.13 | |
| 345 | ISO2719-C | 157 | | 0.70 | |
| 360 | ISO2719-C | 147.0 | | -1.21 | |
| 370 | D93-C | 157.0 | | 0.70 | |
| 371 | | ----- | | ----- | |
| 373 | | ----- | | ----- | |
| 381 | D93-C | 152 | | -0.26 | |
| 391 | D93-C | 160 | | 1.27 | |
| 398 | D93-C | 159 | | 1.08 | |
| 420 | ISO2719-C | 154.5 | | 0.22 | |
| 447 | D93-C | 160.5 | | 1.36 | |
| 467 | ISO2719-C | 149.0 | | -0.83 | |
| 496 | D93-C | 159 | | 1.08 | |
| 511 | D93-C | 156 | | 0.51 | |
| 663 | D93-C | 151.35 | | -0.38 | |
| 824 | D93-C | 155 | | 0.32 | |
| 862 | D93-C | 154.0 | | 0.13 | |
| 1059 | ISO2719-C | 152.0 | | -0.26 | |
| 1199 | | ----- | | ----- | |
| 1227 | D93-C | 159 | | 1.08 | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | | ----- | | ----- | |
| 1397 | ISO2719-C | 144 | | -1.78 | |
| 1407 | | ----- | | ----- | |
| 1429 | D93-C | 155.0 | | 0.32 | |
| 1459 | ISO2719-A | 163.5 | | 1.94 | |
| 1485 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1544 | D93-C | 145.5 | | -1.49 | |
| 1554 | ISO2719-C | 149.5 | | -0.73 | |
| 1586 | D93-C | 150.0 | C | -0.64 | first reported 190.0 |
| 1656 | D93-C | 143.0 | | -1.97 | |
| 1706 | | ----- | | ----- | |
| 1739 | ISO2719-C | 146.0 | | -1.40 | |
| 1754 | | ----- | | ----- | |
| 1807 | D93-C | 141.5 | | -2.26 | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | D93-C | 152 | | -0.26 | |
| 6201 | D93-C | 160.0 | | 1.27 | |
| 6259 | | ----- | | ----- | |
| 6262 | D93-A | 160.0 | | 1.27 | |
| 6265 | | ----- | | ----- | |
| 6275 | D93-A | 175 | | 4.13 | |
| 6276 | | ----- | | ----- | |
| 6325 | ISO2719-C | 159.0 | | 1.08 | |
| 6373 | | 143.5 | | -1.87 | |
| 6406 | ISO2719-C | 160.0 | | 1.27 | |

| | |
|---|---|
| normality | OK |
| n | 38 |
| outliers | 0 |
| mean (n) | 153.34 |
| st.dev. (n) | 7.475 |
| R(calc.) | 20.93 |
| st.dev.(D93-C:20) | 5.250 |
| R(D93-C:20) | 14.7 |
| compare | |
| R(ISO2719-C:16) | 14.7 |

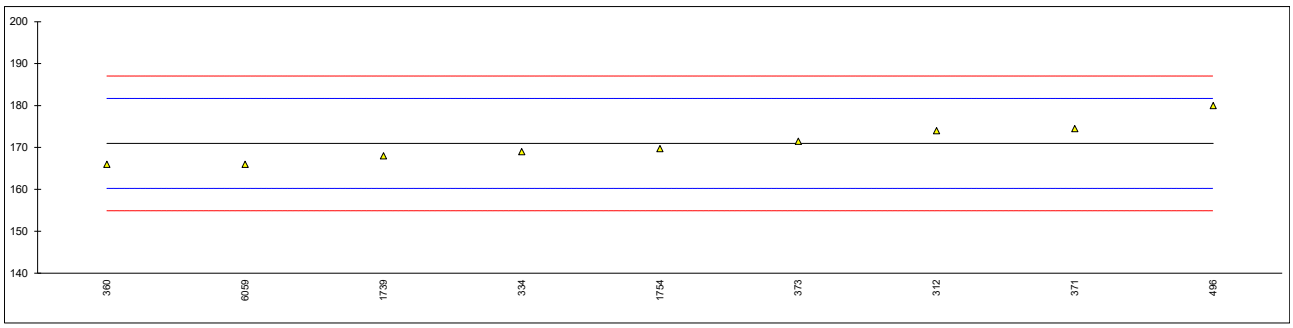

180
170
160
150
140
130
120
120
1807
1656
6373
1397
333
1544
1739
360
171
467
1554
1586
663
323
381
1059
6059
344
862
420
824
1429
511
370
345
398
496
1227
6325
391
6201
6262
6406
447
343
1459
6275

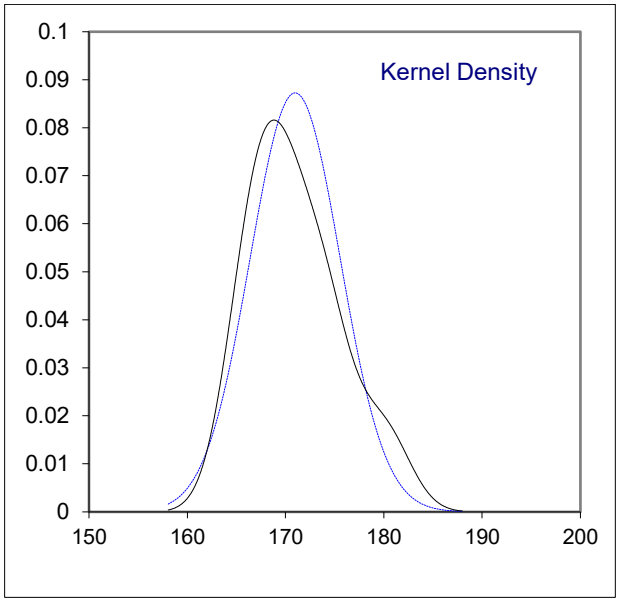

Kernel Density
0.06
0.05
0.04
0.03
0.02
0.01
0
100
120
140
160
180
200

## Determination of Flash Point recc on sample #21205; results in °C

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | | ----- | | ----- | |
| 311 | | ----- | | ----- | |
| 312 | ISO3679 | 174 | | 0.57 | |
| 323 | | ----- | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | ISO3679 | 169.0 | | -0.37 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | | ----- | | ----- | |
| 344 | | ----- | | ----- | |
| 345 | | ----- | | ----- | |
| 360 | ISO3679 | 166.0 | | -0.93 | |
| 370 | | ----- | | ----- | |
| 371 | ISO3679 | 174.5 | | 0.66 | |
| 373 | ISO3679 | 171.5 | | 0.10 | |
| 381 | | ----- | | ----- | |
| 391 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 420 | | ----- | | ----- | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | ISO3679 | 180 | | 1.69 | |
| 511 | | ----- | | ----- | |
| 663 | | ----- | | ----- | |
| 824 | | ----- | | ----- | |
| 862 | | ----- | | ----- | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1227 | | ----- | | ----- | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | | ----- | | ----- | |
| 1397 | | ----- | | ----- | |
| 1407 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1459 | | ----- | | ----- | |
| 1485 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1544 | | ----- | | ----- | |
| 1554 | | ----- | | ----- | |
| 1586 | | ----- | | ----- | |
| 1656 | | ----- | | ----- | |
| 1706 | | ----- | | ----- | |
| 1739 | ISO3679 | 167.99 | | -0.56 | |
| 1754 | ISO3679 | 169.72 | | -0.23 | |
| 1807 | | ----- | | ----- | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | ISO3679 | 166 | | -0.93 | |
| 6201 | | ----- | | ----- | |
| 6259 | | ----- | | ----- | |
| 6262 | | ----- | | ----- | |
| 6265 | | ----- | | ----- | |
| 6275 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | | ----- | | ----- | |
| 6373 | | ----- | | ----- | |
| 6406 | | ----- | | ----- | |

| | |
|---|---|
| normality | OK |
| n | 9 |
| outliers | 0 |
| mean (n) | 170.97 |
| st.dev. (n) | 4.572 |
| R(calc.) | 12.80 |
| st.dev.(ISO3679:15) | 5.357 |
| R(ISO3679:15) | 15.0 |

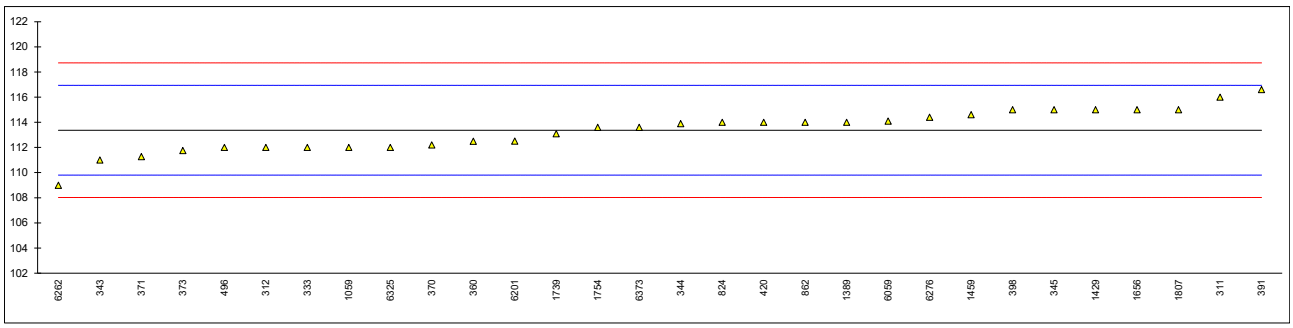

200
190
180
170
160
150
140
360
6059
1739
334
1754
373
312
371
496

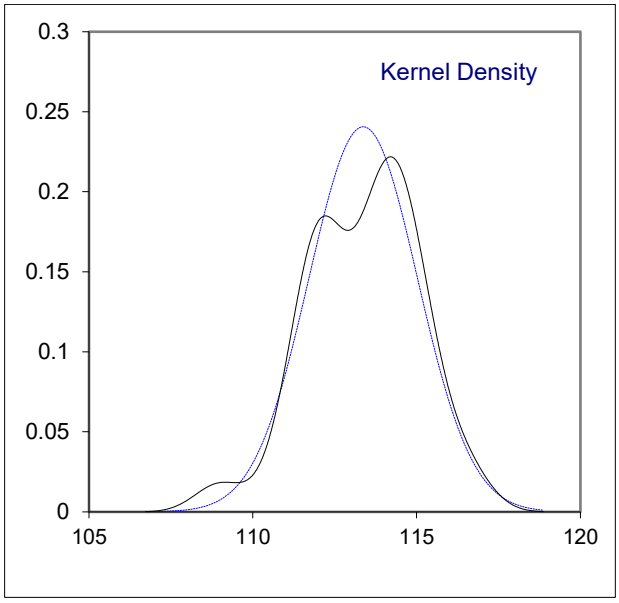

Kernel Density
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
150
160
170
180
190
200

## Determination of Iodine Value on sample #21205; results in g $I_2$/100g

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | | ----- | | ----- | |
| 311 | EN14111 | 116 | | 1.47 | |
| 312 | EN14111 | 112 | | -0.77 | |
| 323 | | ----- | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | EN14111 | 112 | | -0.77 | |
| 334 | | ----- | | ----- | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14111 | 111 | | -1.33 | |
| 344 | EN14111 | 113.9 | | 0.30 | |
| 345 | EN14111 | 115 | | 0.91 | |
| 360 | EN14111 | 112.5 | | -0.49 | |
| 370 | ISO3961 | 112.2 | | -0.66 | |
| 371 | EN14111 | 111.28 | | -1.17 | |
| 373 | EN14111 | 111.76 | | -0.90 | |
| 381 | | ----- | | ----- | |
| 391 | EN14111 | 116.6 | | 1.81 | |
| 398 | EN14111 | 115 | | 0.91 | |
| 420 | EN14111 | 114 | | 0.35 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14111 | 112 | | -0.77 | |
| 511 | | ----- | | ----- | |
| 663 | | ----- | | ----- | |
| 824 | EN14111 | 114 | | 0.35 | |
| 862 | EN14111 | 114 | | 0.35 | |
| 1059 | EN14111 | 112 | | -0.77 | |
| 1199 | | ----- | | ----- | |
| 1227 | | ----- | | ----- | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | EN14111 | 114 | | 0.35 | |
| 1397 | | ----- | | ----- | |
| 1407 | | ----- | | ----- | |
| 1429 | EN14111 | 115 | | 0.91 | |
| 1459 | EN16300 | 114.6 | | 0.69 | |
| 1485 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1544 | | ----- | | ----- | |
| 1554 | | ----- | | ----- | |
| 1586 | | ----- | | ----- | |
| 1656 | EN14111 | 115 | | 0.91 | |
| 1706 | | ----- | | ----- | |
| 1739 | EN14111 | 113.1 | | -0.15 | |
| 1754 | EN14111 | 113.6 | | 0.13 | |
| 1807 | EN16300 | 115 | | 0.91 | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | EN14111 | 114.1 | | 0.41 | |
| 6201 | EN16300 | 112.51 | | -0.48 | |
| 6259 | | ----- | | ----- | |
| 6262 | EN16300 | 109 | | -2.45 | |
| 6265 | | ----- | | ----- | |
| 6275 | | ----- | | ----- | |
| 6276 | EN14111 | 114.4 | | 0.58 | |
| 6325 | EN14111 | 112 | | -0.77 | |
| 6373 | | 113.6 | | 0.13 | |
| 6406 | | ----- | | ----- | |

| | |
|---|---|
| normality | OK |
| n | 30 |
| outliers | 0 |
| mean (n) | 113.37 |
| st.dev. (n) | 1.658 |
| R(calc.) | 4.64 |
| st.dev.(EN14111:03) | 1.786 |
| R(EN14111:03) | 5 |

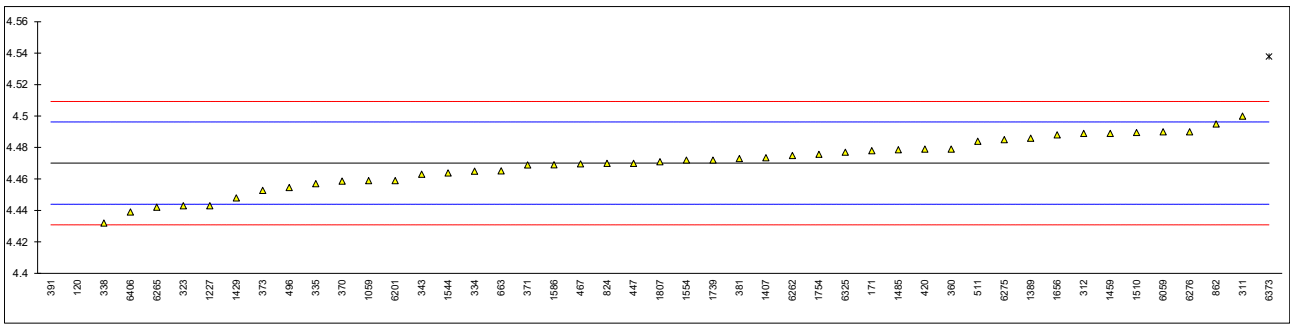

122
120
118
116
114
112
110
108
106
104
102
6262
343
371
373
496
312
333
1059
6325
370
360
6201
1739
1754
6373
344
824
420
862
1389
6059
6276
1459
398
345
1429
1656
1807
311
391

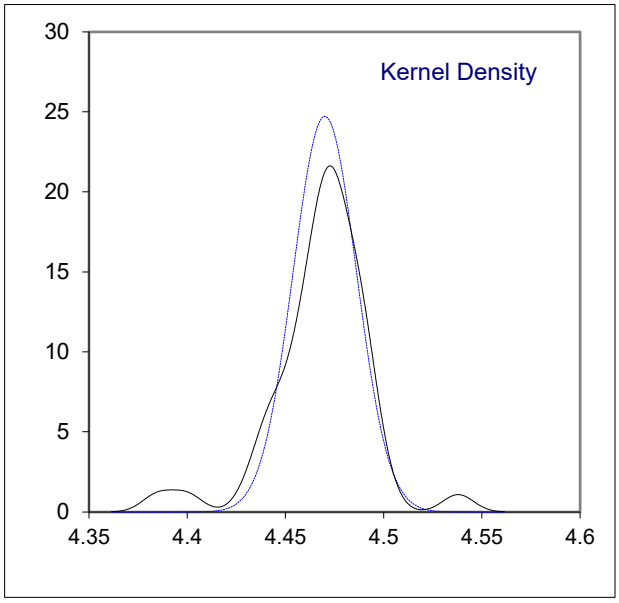

Kernel Density
0.3
0.25
0.2
0.15
0.1
0.05
0
105
110
115
120

## Determination of Kinematic Viscosity at 40°C on sample #21205; results in $mm^2/s$

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D445 | 4.39995 | R(0.01) | -5.36 | |
| 171 | D445 | 4.478 | | 0.61 | |
| 311 | ISO3104 | 4.500 | | 2.29 | |
| 312 | ISO3104 | 4.489 | | 1.45 | |
| 323 | ISO3104 | 4.443 | | -2.07 | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | ISO3104 | 4.465 | | -0.39 | |
| 335 | ISO3104 | 4.457 | | -1.00 | |
| 338 | ISO3104 | 4.432 | | -2.91 | |
| 343 | ISO3104 | 4.463 | | -0.54 | |
| 344 | | ----- | | ----- | |
| 345 | | ----- | | ----- | |
| 360 | D445 | 4.479 | | 0.68 | |
| 370 | ISO3104 | 4.4587 | | -0.87 | |
| 371 | ISO3104 | 4.4689 | | -0.09 | |
| 373 | ISO3104 | 4.4528 | | -1.32 | |
| 381 | D445 | 4.473 | | 0.23 | |
| 391 | ISO3104 | 4.385 | R(0.01) | -6.50 | |
| 398 | | ----- | | ----- | |
| 420 | ISO3104 | 4.479 | | 0.68 | |
| 447 | IP71 | 4.470 | | 0.00 | |
| 467 | ISO3104 | 4.4696 | | -0.03 | |
| 496 | ISO3104 | 4.4545 | | -1.19 | |
| 511 | D445 | 4.484 | | 1.07 | |
| 663 | D445 | 4.4652 | | -0.37 | |
| 824 | ISO3104 | 4.470 | | 0.00 | |
| 862 | ISO3104 | 4.495 | | 1.91 | |
| 1059 | ISO3104 | 4.459 | | -0.84 | |
| 1199 | | ----- | | ----- | |
| 1227 | D445 | 4.443 | | -2.07 | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | ISO3104 | 4.486 | | 1.22 | |
| 1397 | | ----- | | ----- | |
| 1407 | In house | 4.4735 | | 0.26 | |
| 1429 | D445 | 4.448 | | -1.69 | |
| 1459 | D7042 | 4.489 | | 1.45 | |
| 1485 | D445 | 4.4786 | | 0.65 | |
| 1510 | IP71 | 4.4895 | | 1.49 | |
| 1544 | ISO3104 | 4.4639 | | -0.47 | |
| 1554 | ISO3104 | 4.472 | | 0.15 | |
| 1586 | D445 | 4.469 | | -0.08 | |
| 1656 | ISO3104 | 4.488 | C | 1.37 | first reported 4.519 |
| 1706 | | ----- | | ----- | |
| 1739 | ISO3104 | 4.4720 | | 0.15 | |
| 1754 | ISO3104 | 4.4757 | | 0.43 | |
| 1807 | ISO3104 | 4.471 | | 0.07 | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | ISO3104 | 4.49 | C | 1.53 | first reported 4.55 |
| 6201 | ISO3104 | 4.459 | | -0.84 | |
| 6259 | | ----- | | ----- | |
| 6262 | ISO3104 | 4.475 | | 0.38 | |
| 6265 | ISO3104 | 4.4420 | | -2.14 | |
| 6275 | D445 | 4.485 | | 1.14 | |
| 6276 | EN16896 | 4.490 | | 1.53 | |
| 6325 | ISO3104 | 4.477 | | 0.53 | |
| 6373 | | 4.5379 | R(0.01) | 5.19 | |
| 6406 | ISO3104 | 4.439 | | -2.37 | |

| | | ISO3104-A only | D445 only |
|---|---|---|---|
| normality | OK | OK | OK |
| n | 44 | 29 | 10 |
| outliers | 3 | 1 | 1 |
| mean (n) | 4.4700 | 4.4678 | 4.4703 |
| st.dev. (n) | 0.01614 | 0.01694 | 0.01447 |
| R(calc.) | 0.0452 | 0.0474 | 0.0405 |
| st.dev.(ISO3104-A:20) | 0.01308 | 0.01307 | -- |
| R(ISO3104-A:20) | 0.0366 | 0.0366 | -- |
| compare | | | |
| R(D445:21e1) | 0.1001 | -- | 0.1001 |

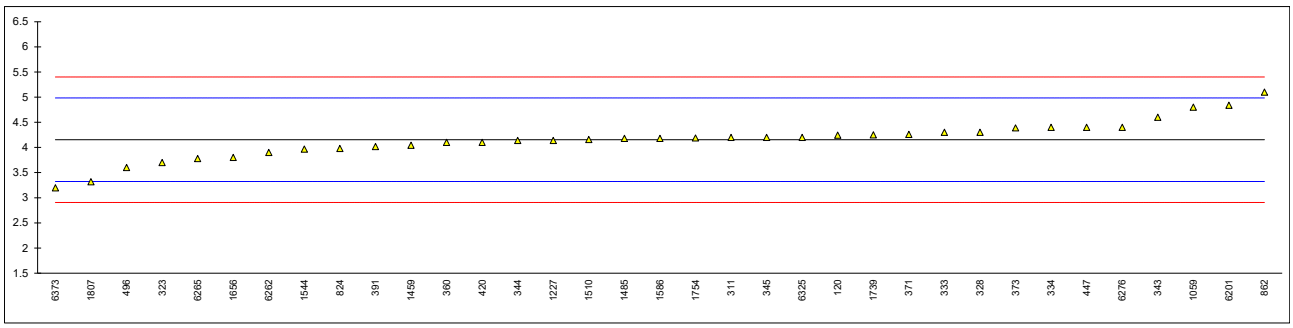

4.56
4.54
4.52
4.5
4.48
4.46
4.44
4.42
4.4
391 120 338 6406 6265 323 1227 1429 373 496 335 370 1059 6201 343 1544 334 663 371 1586 467 824 447 1807 1554 1739 381 1407 6262 1754 6325 171 1485 420 360 511 6275 1389 1656 312 1459 1510 6059 6276 862 311 6373

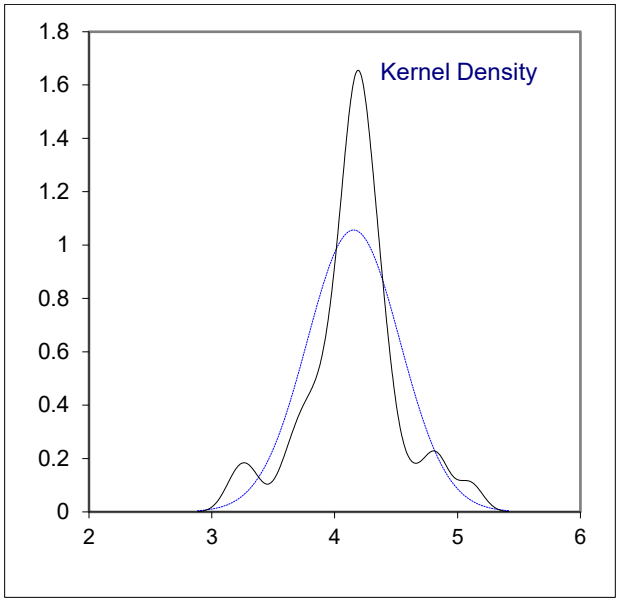

Kernel Density
30
25
20
15
10
5
0
4.35
4.4
4.45
4.5
4.55
4.6

Determination of Oxidation Stability Induction period on sample #21205; results in hours

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | EN15751 | 4.245 | | 0.22 | |
| 171 | | ----- | | ----- | |
| 311 | EN15751 | 4.2 | | 0.11 | |
| 312 | | ----- | | ----- | |
| 323 | EN15751 | 3.7 | | -1.09 | |
| 328 | EN15751 | 4.3 | | 0.35 | |
| 333 | EN14112 | 4.3 | | 0.35 | |
| 334 | EN15751 | 4.4 | | 0.59 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN15751 | 4.6 | | 1.07 | |
| 344 | EN14112 | 4.14 | | -0.03 | |
| 345 | EN15751 | 4.2 | | 0.11 | |
| 360 | EN14112 | 4.10 | | -0.13 | |
| 370 | | ----- | | ----- | |
| 371 | EN14112 | 4.26 | | 0.26 | |
| 373 | EN14112 | 4.39 | | 0.57 | |
| 381 | | ----- | | ----- | |
| 391 | EN14112 | 4.02 | | -0.32 | |
| 398 | | ----- | | ----- | |
| 420 | EN15751 | 4.1 | | -0.13 | |
| 447 | EN15751 | 4.4 | | 0.59 | |
| 467 | | ----- | | ----- | |
| 496 | EN15751 | 3.6 | | -1.33 | |
| 511 | | ----- | | ----- | |
| 663 | | ----- | | ----- | |
| 824 | EN15751 | 3.98 | | -0.42 | |
| 862 | EN15751 | 5.1 | | 2.28 | |
| 1059 | EN15751 | 4.8 | | 1.55 | |
| 1199 | EN14112 | <4.4 | | ----- | |
| 1227 | EN15751 | 4.14 | | -0.03 | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | | ----- | | ----- | |
| 1397 | | ----- | | ----- | |
| 1407 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1459 | EN15751 | 4.045 | | -0.26 | |
| 1485 | EN14112 | 4.18 | | 0.06 | |
| 1510 | EN15751 | 4.16 | | 0.01 | |
| 1544 | EN14112 | 3.97 | | -0.44 | |
| 1554 | | ----- | | ----- | |
| 1586 | EN15751 | 4.18 | | 0.06 | |
| 1656 | EN14112 | 3.8 | | -0.85 | |
| 1706 | | ----- | | ----- | |
| 1739 | EN14112 | 4.25 | | 0.23 | |
| 1754 | EN14112 | 4.19 | | 0.09 | |
| 1807 | EN15751 | 3.32 | | -2.01 | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | | ----- | | ----- | |
| 6201 | EN15751 | 4.84 | | 1.65 | |
| 6259 | | ----- | | ----- | |
| 6262 | EN14112 | 3.9 | | -0.61 | |
| 6265 | EN14112 | 3.78 | | -0.90 | |
| 6275 | | ----- | | ----- | |
| 6276 | EN15751 | 4.4 | | 0.59 | |
| 6325 | EN15751 | 4.2 | | 0.11 | |
| 6373 | | 3.2 | | -2.30 | |
| 6406 | | ----- | | ----- | |

| | |
|---|---|
| normality | suspect |
| n | 35 |
| outliers | 0 |
| mean (n) | 4.154 |
| st.dev. (n) | 0.3776 |
| R(calc.) | 1.057 |
| st.dev.(EN15751:14) | 0.4155 |
| R(EN15751:14) | 1.164 |
| compare | |
| R(EN14112:20) | 1.310 |

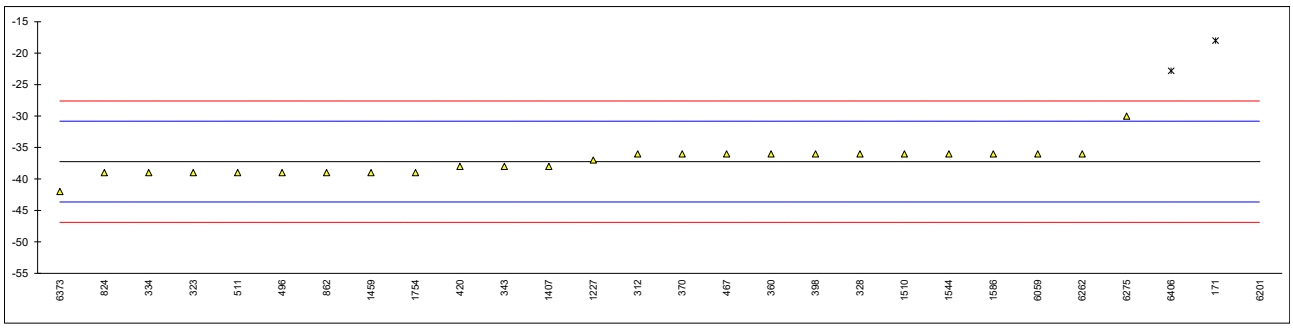

6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
6373
1807
496
323
6265
1656
6262
1544
824
391
1459
360
420
344
1227
1510
1485
1586
1754
311
345
6325
120
1739
371
333
328
373
334
447
6276
343
1059
6201
862

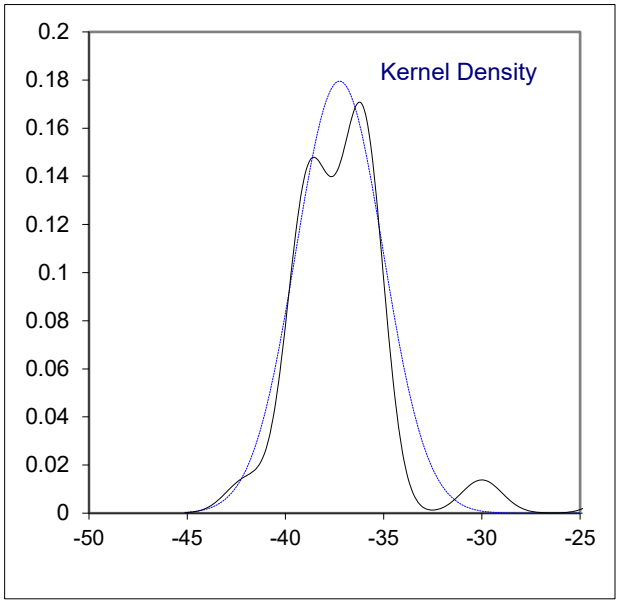

Kernel Density
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
2
3
4
5
6

## Determination of Pour Point on sample #21205; results in °C

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D97 | <-33 | | ----- | |
| 171 | D97 | -18 | R(0.01) | 5.99 | |
| 311 | | ----- | | ----- | |
| 312 | ISO3016 | -36 | | 0.39 | |
| 323 | ISO3016 | -39 | | -0.55 | |
| 328 | ISO3016 | -36 | | 0.39 | |
| 333 | | ----- | | ----- | |
| 334 | ISO3016 | -39 | | -0.55 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | ISO3016 | -38 | | -0.24 | |
| 344 | | ----- | | ----- | |
| 345 | | ----- | | ----- | |
| 360 | ISO3016 | -36 | | 0.39 | |
| 370 | ISO3016 | -36 | | 0.39 | |
| 371 | | ----- | | ----- | |
| 373 | | ----- | | ----- | |
| 381 | | ----- | | ----- | |
| 391 | ISO3016 | <-36 | C | ----- | first reported -21 |
| 398 | ISO3016 | -36 | C | 0.39 | first reported -24 |
| 420 | ISO3016 | -38 | C | -0.24 | first reported -22 |
| 447 | | ----- | | ----- | |
| 467 | ISO3016 | -36 | | 0.39 | |
| 496 | ISO3016 | -39 | | -0.55 | |
| 511 | D97 | -39 | | -0.55 | |
| 663 | D97 | <-36 | | ----- | |
| 824 | ISO3016 | -39 | | -0.55 | |
| 862 | ISO3016 | -39 | | -0.55 | |
| 1059 | ISO3016 | <-36 | | ----- | |
| 1199 | | ----- | | ----- | |
| 1227 | D5950 | -37 | | 0.07 | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | | ----- | | ----- | |
| 1397 | | ----- | | ----- | |
| 1407 | ISO3016 | -38 | | -0.24 | |
| 1429 | D97 | <-30.0 | | ----- | |
| 1459 | In house | -39.0 | | -0.55 | |
| 1485 | | ----- | | ----- | |
| 1510 | D5950 | -36 | | 0.39 | |
| 1544 | ISO3016 | -36.0 | | 0.39 | |
| 1554 | | ----- | | ----- | |
| 1586 | D97 | -36 | | 0.39 | |
| 1656 | | ----- | | ----- | |
| 1706 | | ----- | | ----- | |
| 1739 | | ----- | | ----- | |
| 1754 | ISO3016 | -39.0 | | -0.55 | |
| 1807 | | ----- | | ----- | |
| 1826 | | ----- | | ----- | |
| 1984 | NFT 60-105 | <-21 | | ----- | |
| 6059 | D97 | -36 | | 0.39 | |
| 6201 | ISO3016 | -12 | R(0.01) | 7.85 | |
| 6259 | | ----- | | ----- | |
| 6262 | D97 | -36 | | 0.39 | |
| 6265 | | ----- | | ----- | |
| 6275 | D97 | -30 | | 2.25 | |
| 6276 | | ----- | | ----- | |
| 6325 | ISO3016 | <-21 | | ----- | |
| 6373 | | -42 | | -1.48 | |
| 6406 | D5950 | -22.8 | R(0.01) | 4.49 | |

| | |
|---|---|
| normality | not OK |
| n | 25 |
| outliers | 3 |
| mean (n) | -37.2 |
| st.dev. (n) | 2.22 |
| R(calc.) | 6.2 |
| st.dev.(ISO3016:19) | 3.21 |
| R(ISO3016:19) | 9 |


-15
-20
-25
-30
-35
-40
-45
-50
-55
6373
824
334
323
511
496
862
1459
1754
420
343
1407
1227
312
370
467
360
398
328
1510
1544
1586
6059
6262
6275
6406
171
6201


Kernel Density
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
-50
-45
-40
-35
-30
-25

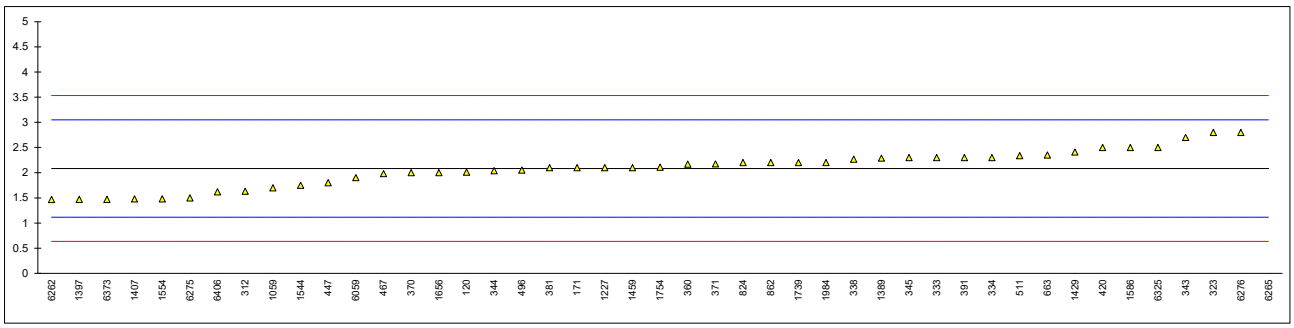
## Determination of Sulfated Ash on sample #21205; results in %M/M

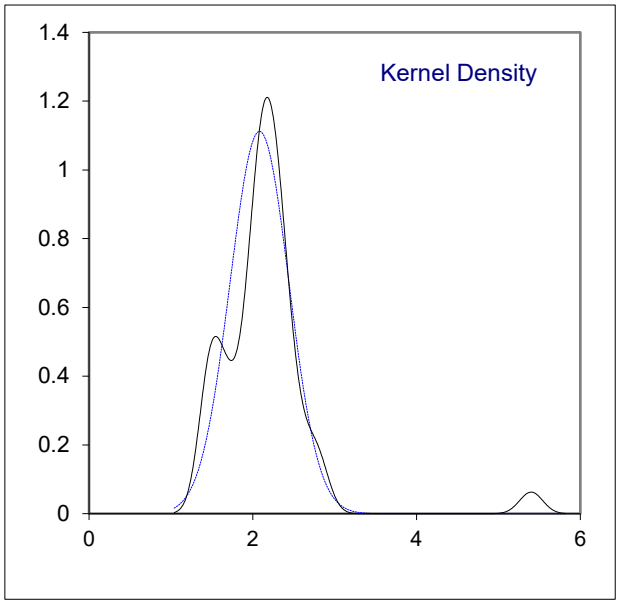
| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | D874 | <0.005 | | ----- | |
| 311 | | ----- | | ----- | |
| 312 | | ----- | | ----- | |
| 323 | D874 | 0.001 | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | | ----- | | ----- | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | ISO3987 | 0.003 | | ----- | |
| 344 | D874 | <0.05 | | ----- | |
| 345 | ISO3987 | <0.005 | | ----- | |
| 360 | ISO3987 | 0.0024 | | ----- | |
| 370 | ISO3987 | less than 0.001 | | ----- | |
| 371 | ISO3987 | <0.005 | | ----- | |
| 373 | | ----- | | ----- | |
| 381 | | ----- | | ----- | |
| 391 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 420 | ISO3987 | <0,005 | | ----- | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | D874 | 0.000 | | ----- | |
| 511 | D874 | <0.005 | | ----- | |
| 663 | | ----- | | ----- | |
| 824 | D874 | 0.005 | | ----- | |
| 862 | D874 | <0.005 | | ----- | |
| 1059 | ISO3987 | <0,005 | | ----- | |
| 1199 | | ----- | | ----- | |
| 1227 | | ----- | | ----- | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | | ----- | | ----- | |
| 1397 | | ----- | | ----- | |
| 1407 | | ----- | | ----- | |
| 1429 | D874 | <0.001 | | ----- | |
| 1459 | ISO3987 | 0.003 | | ----- | |
| 1485 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1544 | | ----- | | ----- | |
| 1554 | | ----- | | ----- | |
| 1586 | D874 | 0.0030 | | ----- | |
| 1656 | ISO3987 | <0.01 | | ----- | |
| 1706 | | ----- | | ----- | |
| 1739 | ISO3987 | 0.0001 | | ----- | |
| 1754 | ISO3987 | 0.0024 | | ----- | |
| 1807 | ISO3987 | <0,005 | | ----- | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | ISO3987 | 0.004 | | ----- | |
| 6201 | ISO3987 | <0,005 | | ----- | |
| 6259 | | ----- | | ----- | |
| 6262 | D874 | <0.005 | | ----- | |
| 6265 | | ----- | | ----- | |
| 6275 | D874 | 0.0023 | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | ISO3987 | 0.001 | | ----- | |
| 6373 | | 0.0002 | | ----- | |
| 6406 | | ----- | | ----- | |
| | n | 27 | | | |
| | mean (n) | <0.005 | | | application range ASTM D874:13a >0.005%M/M |

## Determination of Sulfur on sample #21205; results in mg/kg

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D5453 | 2.01 | | -0.15 | |
| 171 | D5453 | 2.1 | | 0.03 | |
| 311 | ISO20846 | <3 | | ----- | |
| 312 | D5453 | 1.63 | | -0.94 | |
| 323 | ISO20846 | 2.8 | | 1.48 | |
| 328 | ISO20846 | <3 | | ----- | |
| 333 | D5453 | 2.3 | | 0.45 | |
| 334 | ISO20846 | 2.3 | | 0.45 | |
| 335 | ISO20846 | <3 | | ----- | |
| 338 | ISO20846 | 2.27 | | 0.39 | |
| 343 | ISO20846 | 2.7 | | 1.28 | |
| 344 | D5453 | 2.04 | | -0.09 | |
| 345 | ISO20846 | 2.3 | | 0.45 | |
| 360 | ISO20846 | 2.17 | | 0.18 | |
| 370 | ISO20846 | 2.0 | | -0.17 | |
| 371 | ISO20846 | 2.175 | | 0.19 | |
| 373 | | ----- | | ----- | |
| 381 | ISO20846 | 2.1 | | 0.03 | |
| 391 | ISO20846 | 2.3 | | 0.45 | |
| 398 | | ----- | | ----- | |
| 420 | ISO20846 | 2.5 | | 0.86 | |
| 447 | IP490 | 1.8 | | -0.59 | |
| 467 | ISO20846 | 1.98 | | -0.21 | |
| 496 | ISO20846 | 2.05 | | -0.07 | |
| 511 | D5453 | 2.34 | | 0.53 | |
| 663 | D5453 | 2.35 | | 0.55 | |
| 824 | ISO20846 | 2.2 | | 0.24 | |
| 862 | ISO20846 | 2.2 | | 0.24 | |
| 1059 | ISO20846 | 1.7 | | -0.79 | |
| 1199 | ISO20884 | <5.0 | | ----- | |
| 1227 | D5453 | 2.1 | | 0.03 | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | ISO20846 | 2.29 | | 0.43 | |
| 1397 | ISO20846 | 1.47 | | -1.27 | |
| 1407 | ISO13032 | 1.48 | | -1.25 | |
| 1429 | IP490 | 2.41 | | 0.68 | |
| 1459 | ISO20884 | 2.1 | | 0.03 | |
| 1485 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1544 | ISO20846 | 1.75 | | -0.69 | |
| 1554 | ISO20846 | 1.48 | | -1.25 | |
| 1586 | ISO13032 | 2.50 | | 0.86 | |
| 1656 | ISO20846 | 2.0 | | -0.17 | |
| 1706 | | ----- | | ----- | |
| 1739 | ISO13032 | 2.2 | | 0.24 | |
| 1754 | ISO20846 | 2.11 | | 0.06 | |
| 1807 | ISO20846 | <3 | | ----- | |
| 1826 | | ----- | | ----- | |
| 1984 | ISO20846 | 2.2 | | 0.24 | |
| 6059 | ISO20846 | 1.9 | | -0.38 | |
| 6201 | ISO20846 | <3 | | ----- | |
| 6259 | | ----- | | ----- | |
| 6262 | ISO20846 | 1.466 | | -1.28 | |
| 6265 | ISO13032 | 5.4 | R(0.01) | 6.86 | |
| 6275 | D5185 | 1.50 | | -1.21 | |
| 6276 | ISO20846 | 2.8 | | 1.48 | |
| 6325 | ISO20846 | 2.5 | | 0.86 | |
| 6373 | | 1.47 | | -1.27 | |
| 6406 | ISO20846 | 1.62 | | -0.96 | |

| | | | |
|---|---|---|---|
| normality | OK | | |
| n | 44 | | |
| outliers | 1 | | |
| mean (n) | 2.083 | | |
| st.dev. (n) | 0.359 | | |
| R(calc.) | 1.005 | | |
| st.dev.(ISO20846:19) | 0.4833 | | |
| R(ISO20846:19) | 1.353 | | application range 3 – 500 mg/kg |
| compare | | | |
| R(D5453:19a) | 1.005 | | application range 1 – 8000 mg/kg |

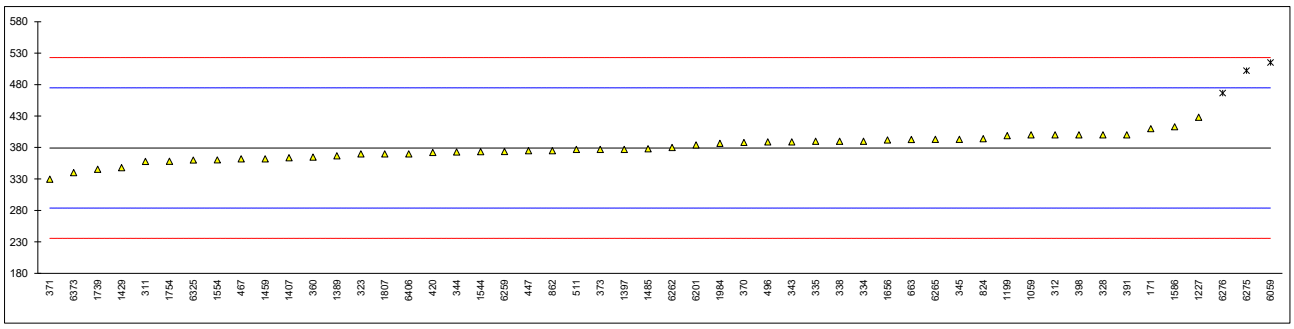

5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
6262 1397 6373 1407 1554 6275 6406 312 1059 1544 447 6059 467 370 1656 120 344 496 381 171 1227 1459 1754 360 371 824 862 1739 1984 338 1389 345 333 391 334 511 663 1429 420 1586 6325 343 323 6276 6265

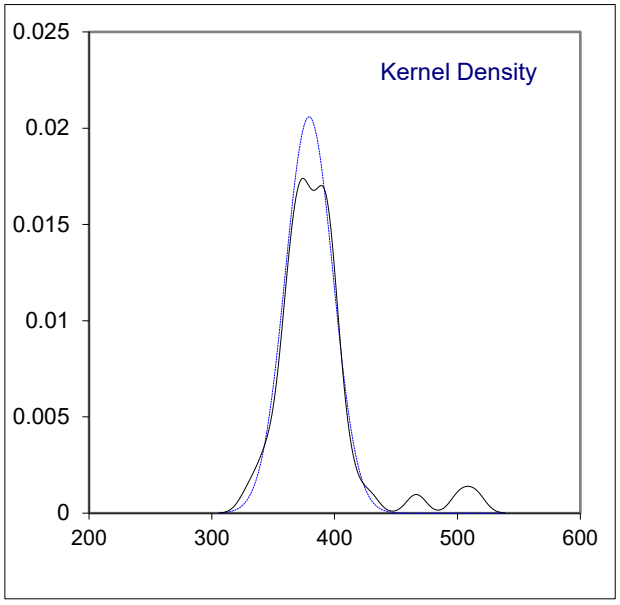

Kernel Density
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
2
4
6

Determination of Water on sample #21205; results in mg/kg

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | D6304-A | 410 | | 0.64 | |
| 311 | ISO12937 | 358 | | -0.44 | |
| 312 | ISO12937 | 400 | | 0.43 | |
| 323 | ISO12937 | 370 | | -0.19 | |
| 328 | ISO12937 | 400 | | 0.43 | |
| 333 | | ----- | | ----- | |
| 334 | ISO12937 | 390 | | 0.23 | |
| 335 | ISO12937 | 390 | | 0.23 | |
| 338 | ISO12937 | 390 | | 0.23 | |
| 343 | ISO12937 | 389 | | 0.20 | |
| 344 | ISO12937 | 373 | | -0.13 | |
| 345 | ISO12937 | 393 | | 0.29 | |
| 360 | ISO12937 | 364.9 | | -0.30 | |
| 370 | ISO12937 | 388 | | 0.18 | |
| 371 | ISO12937 | 329.7 | | -1.04 | |
| 373 | ISO12937 | 377 | | -0.05 | |
| 381 | | ----- | | ----- | |
| 391 | ISO12937 | 400 | | 0.43 | |
| 398 | ISO12937 | 400 | | 0.43 | |
| 420 | ISO12937 | 372 | | -0.15 | |
| 447 | IP438 | 375 | | -0.09 | |
| 467 | ISO12937 | 362 | | -0.36 | |
| 496 | ISO12937 | 389 | | 0.20 | |
| 511 | D6304-A | 377 | | -0.05 | |
| 663 | ISO12937 | 392.8 | | 0.28 | |
| 824 | ISO12937 | 394 | | 0.31 | |
| 862 | ISO12937 | 375 | | -0.09 | |
| 1059 | ISO12937 | 400 | | 0.43 | |
| 1199 | ISO12937 | 399 | | 0.41 | |
| 1227 | D6304-A | 428 | | 1.02 | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | ISO12937 | 367 | | -0.26 | |
| 1397 | ISO12937 | 377 | | -0.05 | |
| 1407 | ISO12937 | 363.8 | | -0.32 | |
| 1429 | ISO12937 | 348 | | -0.65 | |
| 1459 | ISO12937 | 362 | | -0.36 | |
| 1485 | ISO12937 | 378.0 | | -0.03 | |
| 1510 | | ----- | | ----- | |
| 1544 | ISO12937 | 373.4 | | -0.12 | |
| 1554 | ISO12937 | 360.22 | | -0.40 | |
| 1586 | ISO12937 | 413 | | 0.71 | |
| 1656 | ISO12937 | 392 | | 0.27 | |
| 1706 | | ----- | | ----- | |
| 1739 | ISO12937 | 345.5 | | -0.71 | |
| 1754 | ISO12937 | 358.1 | | -0.44 | |
| 1807 | ISO12937 | 370 | | -0.19 | |
| 1826 | | ----- | | ----- | |
| 1984 | ISO12937 | 386.7 | | 0.16 | |
| 6059 | ISO12937 | 515 | R(0.01) | 2.84 | |
| 6201 | ISO12937 | 384 | | 0.10 | |
| 6259 | ISO12937 | 373.73 | | -0.11 | |
| 6262 | ISO12937 | 380 | | 0.02 | |
| 6265 | In house | 392.9 | | 0.29 | |
| 6275 | D6304-A | 502.1 | R(0.01) | 2.57 | |
| 6276 | ISO12937 | 466.5 | R(0.01) | 1.82 | |
| 6325 | ISO12937 | 360 | | -0.40 | |
| 6373 | | 340 | | -0.82 | |
| 6406 | ISO12937 | 370 | | -0.19 | |

| | |
|---|---|
| normality | OK |
| n | 49 |
| outliers | 3 |
| mean (n) | 379.22 |
| st.dev. (n) | 19.383 |
| R(calc.) | 54.27 |
| st.dev.(ISO12937:00) | 47.828 |
| R(ISO12937:00) | 133.92 |
| compare | |
| R(D6304-A:20) | 154.14 |


580
530
480
430
380
330
280
230
180
371 6373 1739 1429 311 1754 6325 1554 467 1459 1407 360 1389 323 1807 6406 420 344 1544 6259 447 862 511 373 1397 1485 6262 6201 1984 370 496 343 335 338 334 1656 663 6265 345 824 1199 1059 312 398 328 391 171 1586 1227 6276 6275 6059


Kernel Density
0.025
0.02
0.015
0.01
0.005
0
200
300
400
500
600

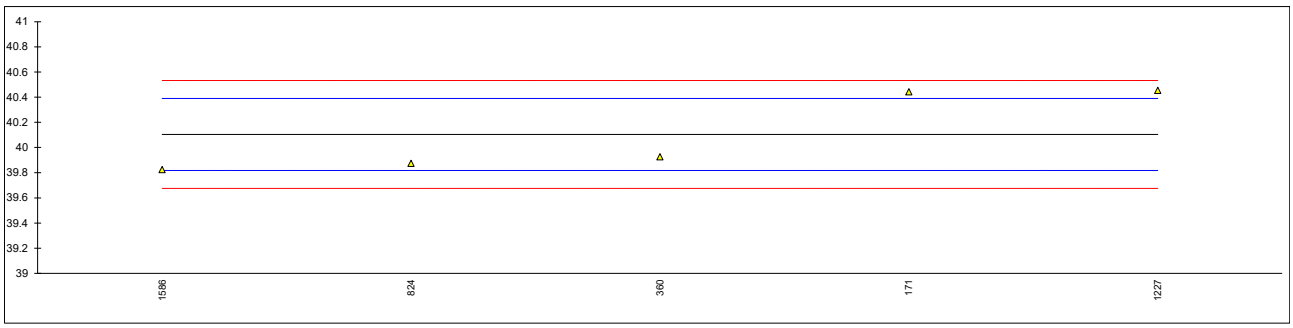
Determination of Water and Sediment on sample #21205; results in %V/V

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D2709 | 0 | | ----- | |
| 171 | D2709 | <0.01 | | ----- | |
| 311 | | ----- | | ----- | |
| 312 | | ----- | | ----- | |
| 323 | D2709 | <0.05 | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | | ----- | | ----- | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | | ----- | | ----- | |
| 344 | | ----- | | ----- | |
| 345 | | ----- | | ----- | |
| 360 | | ----- | | ----- | |
| 370 | | ----- | | ----- | |
| 371 | | ----- | | ----- | |
| 373 | | ----- | | ----- | |
| 381 | | ----- | | ----- | |
| 391 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 420 | | ----- | | ----- | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | | ----- | | ----- | |
| 511 | D2709 | <0.005 | | ----- | |
| 663 | | ----- | | ----- | |
| 824 | D2709 | 0 | | ----- | |
| 862 | D2709 | <0.05 | | ----- | |
| 1059 | D2709 | <0,05 | | ----- | |
| 1199 | | ----- | | ----- | |
| 1227 | | ----- | | ----- | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | | ----- | | ----- | |
| 1397 | | ----- | | ----- | |
| 1407 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1459 | | ----- | | ----- | |
| 1485 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1544 | | ----- | | ----- | |
| 1554 | | ----- | | ----- | |
| 1586 | D2709 | 0.05 | | ----- | |
| 1656 | | ----- | | ----- | |
| 1706 | | ----- | | ----- | |
| 1739 | | ----- | | ----- | |
| 1754 | | ----- | | ----- | |
| 1807 | | ----- | | ----- | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | D2709 | 0.000 | | ----- | |
| 6201 | D2709 | <0,01 | | ----- | |
| 6259 | | ----- | | ----- | |
| 6262 | | ----- | | ----- | |
| 6265 | | ----- | | ----- | |
| 6275 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | | ----- | | ----- | |
| 6373 | | ----- | | ----- | |
| 6406 | | ----- | | ----- | |
| | n | 10 | | | |
| | mean (n) | <0.05 | | | |

Determination of Calorific Value Gross at constant volume ($H_{o,v}$) on sample #21205; results in MJ/kg

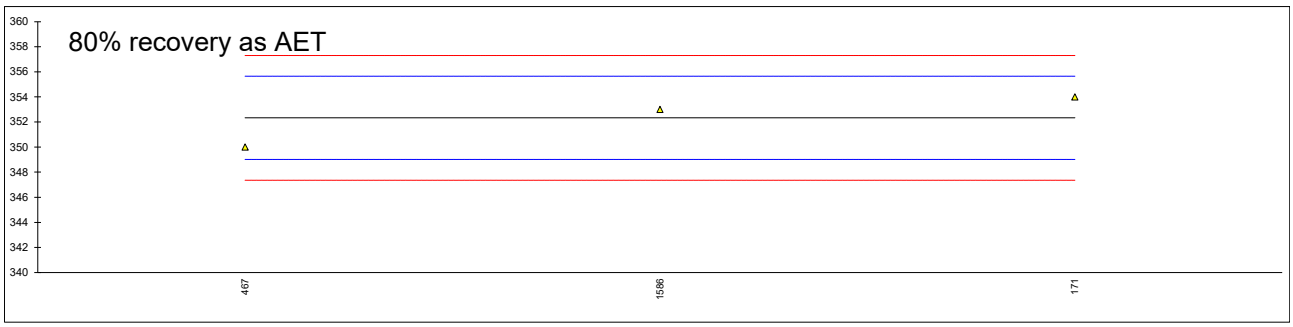
| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | D240 | 40.442 | | 2.36 | |
| 311 | | ----- | | ----- | |
| 312 | | ----- | | ----- | |
| 323 | | ----- | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | | ----- | | ----- | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | | ----- | | ----- | |
| 344 | | ----- | | ----- | |
| 345 | | ----- | | ----- | |
| 360 | D240 | 39.926 | | -1.25 | |
| 370 | | ----- | | ----- | |
| 371 | | ----- | | ----- | |
| 373 | | ----- | | ----- | |
| 381 | | ----- | | ----- | |
| 391 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 420 | | ----- | | ----- | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | | ----- | | ----- | |
| 511 | | ----- | | ----- | |
| 663 | | ----- | | ----- | |
| 824 | D240 | 39.875 | | -1.61 | |
| 862 | | ----- | | ----- | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1227 | D4809 | 40.454 | | 2.45 | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | | ----- | | ----- | |
| 1397 | | ----- | | ----- | |
| 1407 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1459 | | ----- | | ----- | |
| 1485 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1544 | | ----- | | ----- | |
| 1554 | | ----- | | ----- | |
| 1586 | D240 | 39.825 | | -1.96 | |
| 1656 | | ----- | | ----- | |
| 1706 | | ----- | | ----- | |
| 1739 | | ----- | | ----- | |
| 1754 | | ----- | | ----- | |
| 1807 | | ----- | | ----- | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | | ----- | | ----- | |
| 6201 | | ----- | | ----- | |
| 6259 | | ----- | | ----- | |
| 6262 | | ----- | | ----- | |
| 6265 | | ----- | | ----- | |
| 6275 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | | ----- | | ----- | |
| 6373 | | ----- | | ----- | |
| 6406 | | ----- | | ----- | |

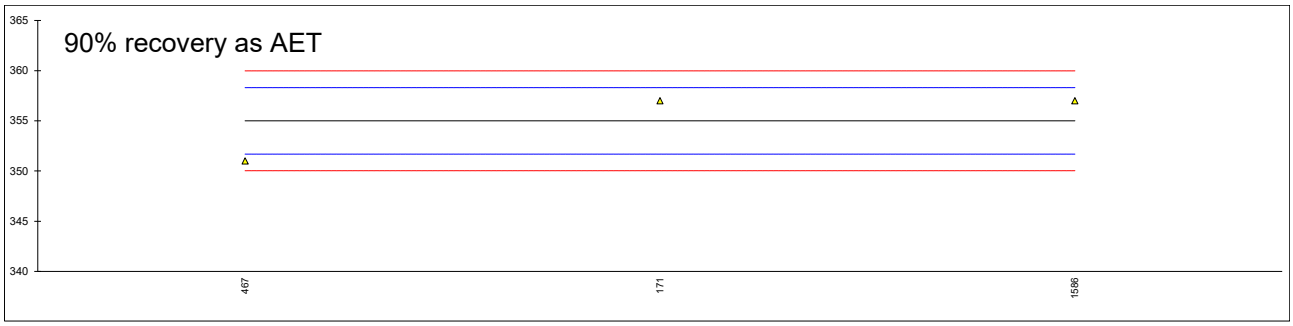
| | |
|---|---|
| normality | unknown |
| n | 5 |
| outliers | 0 |
| mean (n) | 40.104 |
| st.dev. (n) | 0.3157 |
| R(calc.) | 0.884 |
| st.dev.(D240:19) | 0.1429 |
| R(D240:19) | 0.400 |


41
40.8
40.6
40.4
40.2
40
39.8
39.6
39.4
39.2
39
1586
824
360
171
1227

Determination of Distillation at 10 mmHg, % recovered as AET on sample #21205; results in °C

| lab | method | 80%rec. | mark | z(targ) | 90%rec. | mark | z(targ) | 95%rec. | mark | z(targ) |
|---|---|---|---|---|---|---|---|---|---|---|
| 120 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 171 | D1160 | 354 | | 1.01 | 357 | | 1.21 | 365 | | ----- |
| 311 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 312 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 323 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 328 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 333 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 334 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 335 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 338 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 343 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 344 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 345 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 360 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 370 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 371 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 373 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 381 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 391 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 398 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 420 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 447 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 467 | D1160 | 350 | | -1.41 | 351 | | -2.41 | 351 | | ----- |
| 496 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 511 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 663 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 824 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 862 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1059 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1199 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1227 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1272 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1299 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1389 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1397 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1407 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1429 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1459 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1485 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1510 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1544 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1554 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1586 | D1160 | 353 | | 0.40 | 357 | | 1.21 | 361 | | ----- |
| 1656 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1706 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1739 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1754 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1807 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1826 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1984 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6059 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6201 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6259 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6262 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6265 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6275 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6276 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6325 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6373 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6406 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| | normality | unknown | | | unknown | | | unknown | | |
| | n | 3 | | | 3 | | | 3 | | |
| | outliers | 0 | | | 0 | | | 0 | | |
| | mean (n) | 352.33 | | | 355.00 | | | 359.00 | | |
| | st.dev. (n) | 2.082 | | | 3.464 | | | 7.211 | | |
| | R(calc.) | 5.83 | | | 9.70 | | | 20.19 | | |
| | st.dev.(D1160:18) | 1.657 | | | 1.657 | | | (1.657) | | |
| | R(D1160:18) | 4.64 | | | 4.64 | | | (4.64) | | |

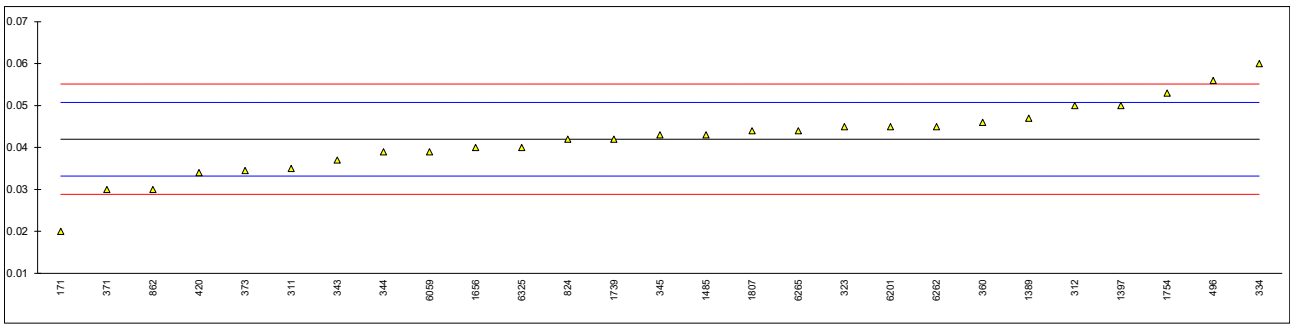

80% recovery as AET
360
358
356
354
352
350
348
346
344
342
340
467
1586
171

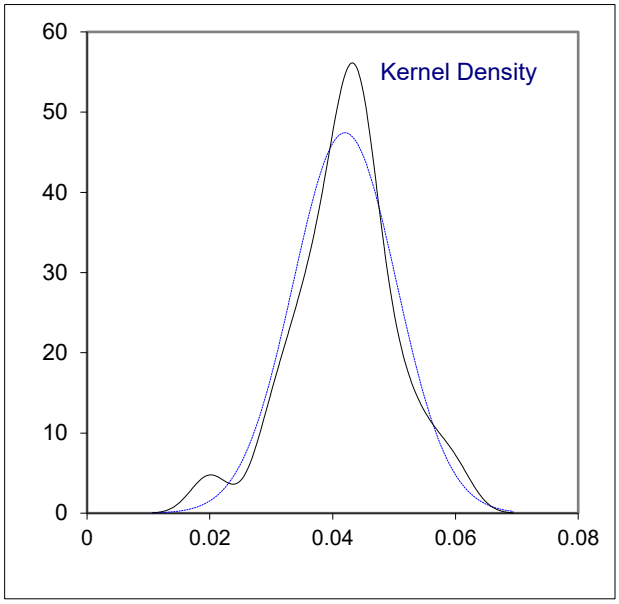

90% recovery as AET
365
360
355
350
345
340
467
171
1586

## Determination of Methanol on sample #21205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | EN14110 | 0.02 | | -5.01 | |
| 311 | EN14110 | 0.035 | | -1.59 | |
| 312 | EN14110 | 0.05 | | 1.83 | |
| 323 | EN14110 | 0.045 | | 0.69 | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | EN14110 | 0.06 | | 4.11 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14110 | 0.037 | | -1.14 | |
| 344 | EN14110 | 0.039 | | -0.68 | |
| 345 | EN14110 | 0.043 | | 0.23 | |
| 360 | EN14110 | 0.046 | | 0.92 | |
| 370 | | ----- | | ----- | |
| 371 | EN14110 | 0.03 | | -2.73 | |
| 373 | EN14110 | 0.0345 | | -1.71 | |
| 381 | | ----- | | ----- | |
| 391 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 420 | EN14110 | 0.034 | | -1.82 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14110 | 0.056 | | 3.20 | |
| 511 | | ----- | | ----- | |
| 663 | | ----- | | ----- | |
| 824 | EN14110 | 0.042 | | 0.00 | |
| 862 | EN14110 | 0.03 | | -2.73 | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1227 | | ----- | | ----- | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | EN14110 | 0.047 | | 1.14 | |
| 1397 | EN14110 | 0.05 | | 1.83 | |
| 1407 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1459 | | ----- | | ----- | |
| 1485 | EN14110 | 0.043 | | 0.23 | |
| 1510 | | ----- | | ----- | |
| 1544 | | ----- | | ----- | |
| 1554 | | ----- | | ----- | |
| 1586 | | ----- | | ----- | |
| 1656 | EN14110 | 0.04 | C | -0.45 | first reported 0.4 |
| 1706 | | ----- | | ----- | |
| 1739 | EN14110 | 0.042 | | 0.00 | |
| 1754 | EN14110 | 0.053 | | 2.51 | |
| 1807 | EN14110 | 0.044 | | 0.46 | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | EN14110 | 0.039 | | -0.68 | |
| 6201 | EN14110 | 0.045 | | 0.69 | |
| 6259 | | ----- | | ----- | |
| 6262 | EN14110 | 0.045 | | 0.69 | |
| 6265 | EN14110 | 0.044 | | 0.46 | |
| 6275 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | EN14110 | 0.04 | | -0.45 | |
| 6373 | | ----- | | ----- | |
| 6406 | | ----- | | ----- | |

| | |
|---|---|
| normality | suspect |
| n | 27 |
| outliers | 0 |
| mean (n) | 0.0420 |
| st.dev. (n) | 0.00841 |
| R(calc.) | 0.0235 |
| st.dev.(EN14110:19) | 0.00438 |
| R(EN14110:19) | 0.0123 |

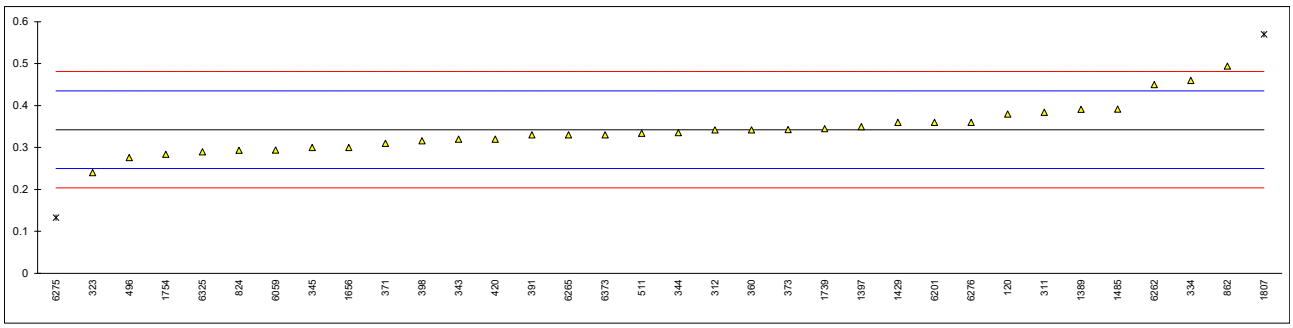

0.07
0.06
0.05
0.04
0.03
0.02
0.01
171
371
862
420
373
311
343
344
6059
1656
6325
824
1739
345
1485
1807
6265
323
6201
6262
360
1389
312
1397
1754
496
334

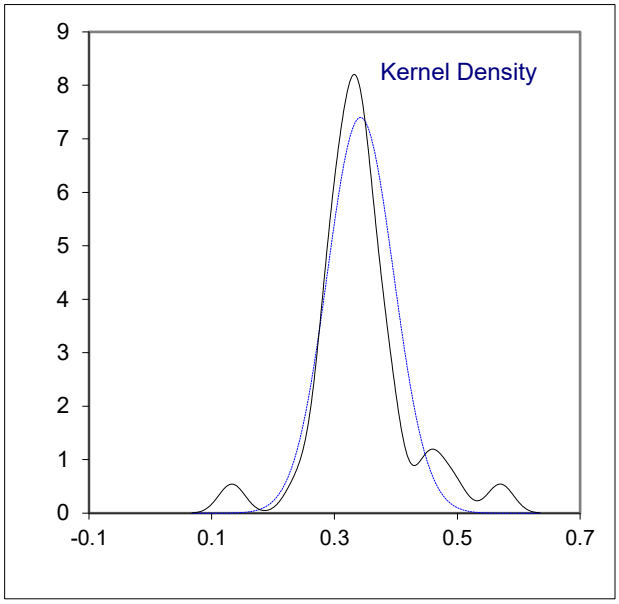

Kernel Density
60
50
40
30
20
10
0
0
0.02
0.04
0.06
0.08

## Determination of Monoglycerides on sample #21205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D6584 | 0.38 | | 0.81 | |
| 171 | | ----- | | ----- | |
| 311 | EN14105 | 0.384 | | 0.90 | |
| 312 | EN14105 | 0.342 | | -0.01 | |
| 323 | EN14105 | 0.24 | | -2.22 | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | EN14105 | 0.46 | | 2.55 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14105 | 0.32 | | -0.48 | |
| 344 | EN14105 | 0.3354 | | -0.15 | |
| 345 | EN14105 | 0.30 | | -0.92 | |
| 360 | EN14105 | 0.342 | | -0.01 | |
| 370 | | ----- | | ----- | |
| 371 | EN14105 | 0.31 | C | -0.70 | first reported 0.18 |
| 373 | EN14105 | 0.3428 | | 0.01 | |
| 381 | | ----- | | ----- | |
| 391 | EN14105 | 0.33 | | -0.27 | |
| 398 | EN14105 | 0.316 | | -0.57 | |
| 420 | EN14105 | 0.32 | | -0.48 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14105 | 0.276 | | -1.44 | |
| 511 | D6584 | 0.334 | | -0.18 | |
| 663 | | ----- | | ----- | |
| 824 | D6584 | 0.2934 | | -1.06 | |
| 862 | EN14105 | 0.494 | | 3.28 | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1227 | | ----- | | ----- | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | EN14105 | 0.391 | | 1.05 | |
| 1397 | EN14105 | 0.35 | | 0.17 | |
| 1407 | | ----- | | ----- | |
| 1429 | EN14105 | 0.36 | | 0.38 | |
| 1459 | | ----- | | ----- | |
| 1485 | EN14105 | 0.392 | | 1.07 | |
| 1510 | | ----- | | ----- | |
| 1544 | | ----- | | ----- | |
| 1554 | | ----- | | ----- | |
| 1586 | | ----- | | ----- | |
| 1656 | EN14105 | 0.30 | | -0.92 | |
| 1706 | | ----- | | ----- | |
| 1739 | EN14105 | 0.345 | | 0.06 | |
| 1754 | EN14105 | 0.284 | | -1.26 | |
| 1807 | EN14105 | 0.57 | C,R(0.05) | 4.93 | first reported 0.73 |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | EN14105 | 0.294 | | -1.05 | |
| 6201 | EN14105 | 0.36 | | 0.38 | |
| 6259 | | ----- | | ----- | |
| 6262 | EN14105 | 0.45 | | 2.33 | |
| 6265 | EN14105 | 0.33 | | -0.27 | |
| 6275 | D6584 | 0.133 | R(0.05) | -4.53 | |
| 6276 | EN14105 | 0.36 | | 0.38 | |
| 6325 | EN14105 | 0.29 | | -1.13 | |
| 6373 | | 0.33 | | -0.27 | |
| 6406 | | ----- | | ----- | |

| | |
|---|---|
| normality | not OK |
| n | 32 |
| outliers | 2 |
| mean (n) | 0.3424 |
| st.dev. (n) | 0.05390 |
| R(calc.) | 0.1509 |
| st.dev.(EN14105:21) | 0.04619 |
| R(EN14105:21) | 0.1293 |

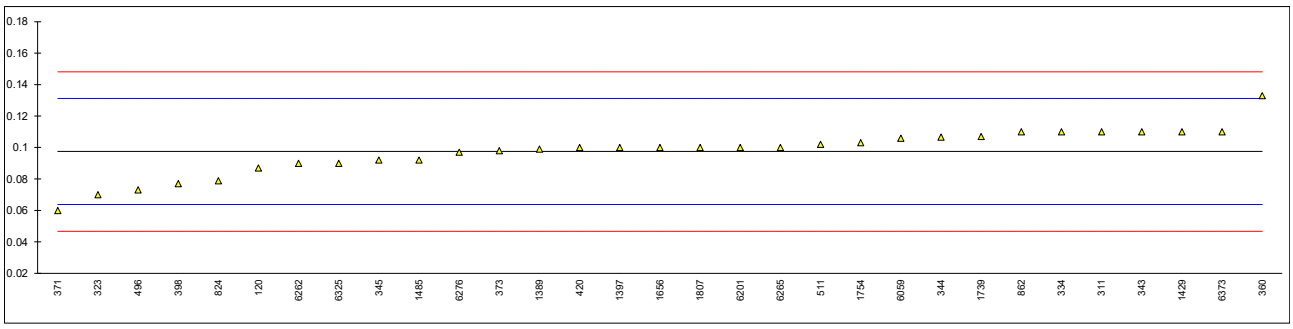

0.6
0.5
0.4
0.3
0.2
0.1
0
6275
323
496
1754
6325
824
6059
345
1656
371
398
343
420
391
6265
6373
511
344
312
360
373
1739
1397
1429
6201
6276
120
311
1389
1485
6262
334
862
1807

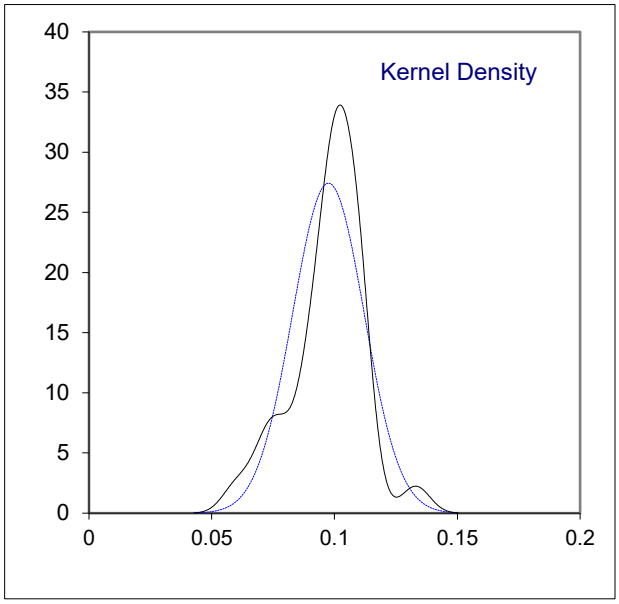

Kernel Density
9
8
7
6
5
4
3
2
1
0
-0.1
0.1
0.3
0.5
0.7

## Determination of Diglycerides on sample #21205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D6584 | 0.087 | | -0.62 | |
| 171 | | ----- | | ----- | |
| 311 | EN14105 | 0.110 | | 0.74 | |
| 312 | EN14105 | <0.10 | | ----- | |
| 323 | EN14105 | 0.07 | | -1.63 | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | EN14105 | 0.11 | | 0.74 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14105 | 0.11 | | 0.74 | |
| 344 | EN14105 | 0.1066 | | 0.54 | |
| 345 | EN14105 | 0.092 | | -0.32 | |
| 360 | EN14105 | 0.133 | | 2.10 | |
| 370 | | ----- | | ----- | |
| 371 | EN14105 | 0.06 | | -2.22 | |
| 373 | EN14105 | 0.098 | | 0.03 | |
| 381 | | ----- | | ----- | |
| 391 | | ----- | | ----- | |
| 398 | EN14105 | 0.077 | | -1.21 | |
| 420 | EN14105 | 0.10 | | 0.15 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14105 | 0.073 | | -1.45 | |
| 511 | D6584 | 0.102 | | 0.27 | |
| 663 | | ----- | | ----- | |
| 824 | D6584 | 0.0789 | | -1.10 | |
| 862 | EN14105 | 0.110 | | 0.74 | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1227 | | ----- | | ----- | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | EN14105 | 0.099 | | 0.09 | |
| 1397 | EN14105 | 0.10 | | 0.15 | |
| 1407 | | ----- | | ----- | |
| 1429 | EN14105 | 0.11 | | 0.74 | |
| 1459 | | ----- | | ----- | |
| 1485 | EN14105 | 0.092 | | -0.32 | |
| 1510 | | ----- | | ----- | |
| 1544 | | ----- | | ----- | |
| 1554 | | ----- | | ----- | |
| 1586 | | ----- | | ----- | |
| 1656 | EN14105 | 0.10 | | 0.15 | |
| 1706 | | ----- | | ----- | |
| 1739 | EN14105 | 0.107 | | 0.56 | |
| 1754 | EN14105 | 0.103 | | 0.33 | |
| 1807 | EN14105 | 0.10 | | 0.15 | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | EN14105 | 0.106 | | 0.51 | |
| 6201 | EN14105 | 0.10 | | 0.15 | |
| 6259 | | ----- | | ----- | |
| 6262 | EN14105 | 0.09 | | -0.44 | |
| 6265 | EN14105 | 0.1 | | 0.15 | |
| 6275 | | ----- | | ----- | |
| 6276 | EN14105 | 0.097 | | -0.03 | |
| 6325 | EN14105 | 0.09 | | -0.44 | |
| 6373 | | 0.11 | | 0.74 | |
| 6406 | | ----- | | ----- | |

| | |
|---|---|
| normality | suspect |
| n | 31 |
| outliers | 0 |
| mean (n) | 0.0975 |
| st.dev. (n) | 0.01454 |
| R(calc.) | 0.0407 |
| st.dev.(EN14105:21) | 0.01688 |
| R(EN14105:21) | 0.0473 |

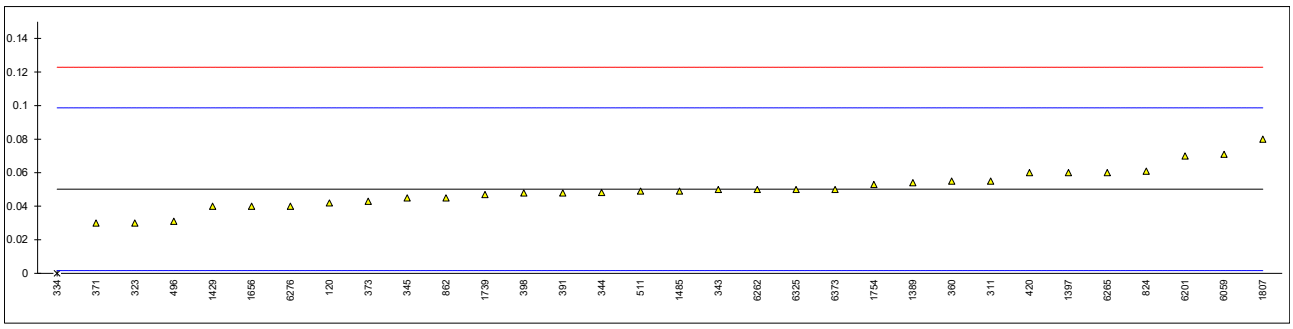

0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
371
323
496
398
824
120
6262
6325
345
1485
6276
373
1389
420
1397
1656
1807
6201
6265
511
1754
6059
344
1739
862
334
311
343
1429
6373
360

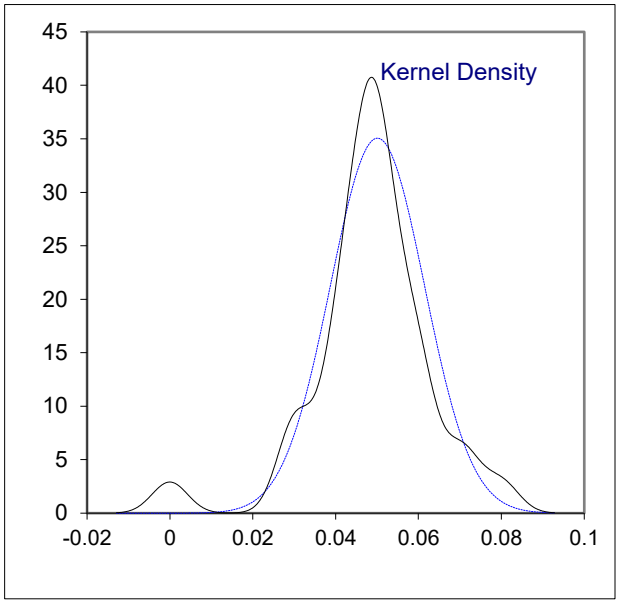

Kernel Density
40
35
30
25
20
15
10
5
0
0
0.05
0.1
0.15
0.2

## Determination of Triglycerides on sample #21205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D6584 | 0.042 | | -0.34 | |
| 171 | | ----- | | ----- | |
| 311 | EN14105 | 0.055 | | 0.20 | |
| 312 | EN14105 | <0.10 | | ----- | |
| 323 | EN14105 | 0.03 | | -0.83 | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | EN14105 | 0.00 | R(0.01) | -2.07 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14105 | 0.05 | | -0.01 | |
| 344 | EN14105 | 0.0482 | | -0.08 | |
| 345 | EN14105 | 0.045 | | -0.21 | |
| 360 | EN14105 | 0.055 | | 0.20 | |
| 370 | | ----- | | ----- | |
| 371 | EN14105 | 0.03 | | -0.83 | |
| 373 | EN14105 | 0.0429 | | -0.30 | |
| 381 | | ----- | | ----- | |
| 391 | EN14105 | 0.048 | | -0.09 | |
| 398 | EN14105 | 0.048 | | -0.09 | |
| 420 | EN14105 | 0.06 | | 0.41 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14105 | 0.031 | | -0.79 | |
| 511 | D6584 | 0.049 | | -0.05 | |
| 663 | | ----- | | ----- | |
| 824 | D6584 | 0.0609 | | 0.44 | |
| 862 | EN14105 | 0.045 | | -0.21 | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1227 | | ----- | | ----- | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | EN14105 | 0.054 | | 0.16 | |
| 1397 | EN14105 | 0.06 | | 0.41 | |
| 1407 | | ----- | | ----- | |
| 1429 | EN14105 | 0.04 | | -0.42 | |
| 1459 | | ----- | | ----- | |
| 1485 | EN14105 | 0.049 | | -0.05 | |
| 1510 | | ----- | | ----- | |
| 1544 | | ----- | | ----- | |
| 1554 | | ----- | | ----- | |
| 1586 | | ----- | | ----- | |
| 1656 | EN14105 | 0.04 | | -0.42 | |
| 1706 | | ----- | | ----- | |
| 1739 | EN14105 | 0.047 | | -0.13 | |
| 1754 | EN14105 | 0.053 | | 0.12 | |
| 1807 | EN14105 | 0.08 | C | 1.23 | first reported 0.24 |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | EN14105 | 0.071 | | 0.86 | |
| 6201 | EN14105 | 0.07 | | 0.82 | |
| 6259 | | ----- | | ----- | |
| 6262 | EN14105 | 0.05 | C | -0.01 | first reported 0.17 |
| 6265 | EN14105 | 0.06 | | 0.41 | |
| 6275 | | ----- | | ----- | |
| 6276 | EN14105 | 0.04 | | -0.42 | |
| 6325 | EN14105 | 0.05 | | -0.01 | |
| 6373 | | 0.05 | | -0.01 | |
| 6406 | | ----- | | ----- | |

| | |
|---|---|
| normality | OK |
| n | 31 |
| outliers | 1 |
| mean (n) | 0.0501 |
| st.dev. (n) | 0.01138 |
| R(calc.) | 0.0319 |
| st.dev.(EN14105:21) | 0.02426 |
| R(EN14105:21) | 0.0679 |

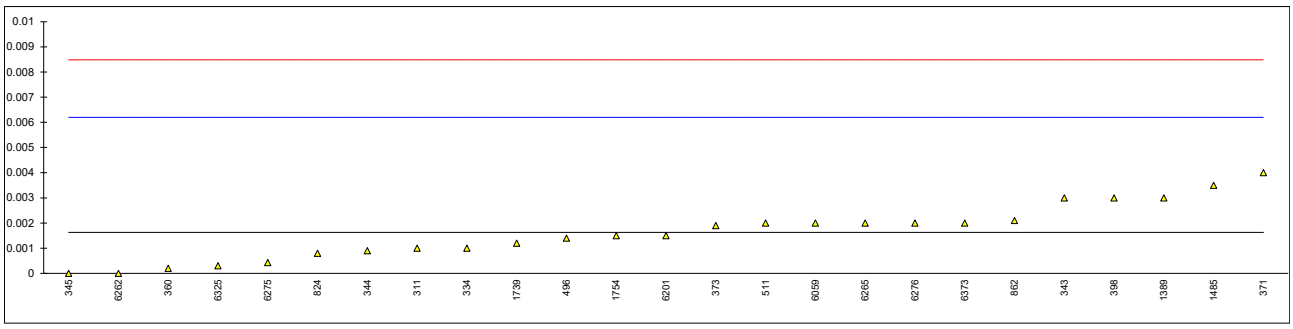

0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
334
371
323
496
1429
1656
6276
120
373
345
862
1739
398
391
344
511
1485
343
6262
6325
6373
1754
1389
360
311
420
1397
6265
824
6201
6059
1807

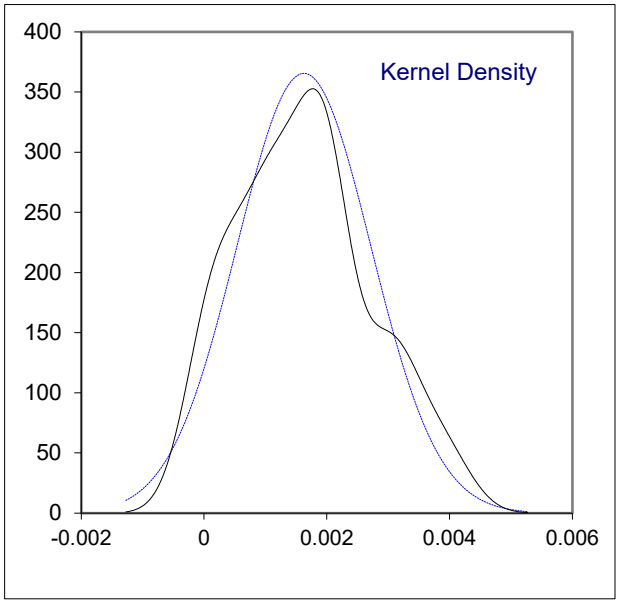

Kernel Density
45
40
35
30
25
20
15
10
5
0
-0.02
0
0.02
0.04
0.06
0.08
0.1

## Determination of Free Glycerol on sample #21205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D6584 | <0.005 | | ----- | |
| 171 | | ----- | | ----- | |
| 311 | EN14105 | 0.001 | | -0.28 | |
| 312 | EN14105 | <0.001 | | ----- | |
| 323 | EN14105 | <0.001 | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | EN14105 | 0.001 | | -0.28 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14105 | 0.003 | | 0.60 | |
| 344 | EN14105 | 0.0009 | | -0.32 | |
| 345 | EN14105 | 0 | | -0.71 | |
| 360 | EN14105 | 0.0002 | | -0.63 | |
| 370 | | ----- | | ----- | |
| 371 | EN14105 | 0.004 | C | 1.04 | first reported 0.007 |
| 373 | EN14105 | 0.0019 | | 0.12 | |
| 381 | | ----- | | ----- | |
| 391 | EN14105 | <0.003 | | ----- | |
| 398 | EN14105 | 0.003 | | 0.60 | |
| 420 | EN14105 | <0,005 | | ----- | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14105 | 0.0014 | | -0.10 | |
| 511 | D6584 | 0.002 | | 0.16 | |
| 663 | | ----- | | ----- | |
| 824 | D6584 | 0.0008 | | -0.36 | |
| 862 | EN14105 | 0.0021 | | 0.21 | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1227 | | ----- | | ----- | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | EN14105 | 0.003 | | 0.60 | |
| 1397 | EN14105 | <0,005 | | ----- | |
| 1407 | | ----- | | ----- | |
| 1429 | EN14105 | <0.01 | | ----- | |
| 1459 | | ----- | | ----- | |
| 1485 | EN14105 | 0.0035 | | 0.82 | |
| 1510 | | ----- | | ----- | |
| 1544 | | ----- | | ----- | |
| 1554 | | ----- | | ----- | |
| 1586 | | ----- | | ----- | |
| 1656 | EN14105 | <0.01 | | ----- | |
| 1706 | | ----- | | ----- | |
| 1739 | EN14105 | 0.0012 | | -0.19 | |
| 1754 | EN14105 | 0.0015 | | -0.06 | |
| 1807 | EN14105 | <0.001 | | ----- | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | EN14105 | 0.002 | | 0.16 | |
| 6201 | EN14105 | 0.0015 | | -0.06 | |
| 6259 | | ----- | | ----- | |
| 6262 | EN14105 | 0.000 | | -0.71 | |
| 6265 | EN14105 | 0.002 | | 0.16 | |
| 6275 | D6584 | 0.00043 | | -0.52 | |
| 6276 | EN14105 | 0.002 | | 0.16 | |
| 6325 | EN14105 | 0.0003 | | -0.58 | |
| 6373 | | 0.002 | | 0.16 | |
| 6406 | | ----- | | ----- | |

| | |
|---|---|
| normality | OK |
| n | 25 |
| outliers | 0 |
| mean (n) | 0.0016 |
| st.dev. (n) | 0.00109 |
| R(calc.) | 0.0031 |
| st.dev.(EN14105:21) | 0.00229 |
| R(EN14105:21) | 0.0064 |

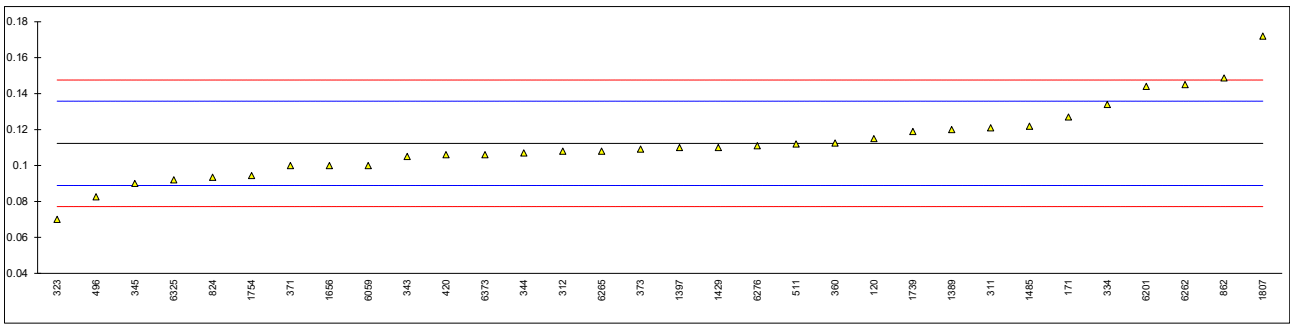

0.01
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
345
6262
360
6325
6275
824
344
311
334
1739
496
1754
6201
373
511
6059
6265
6276
6373
862
343
398
1389
1485
371

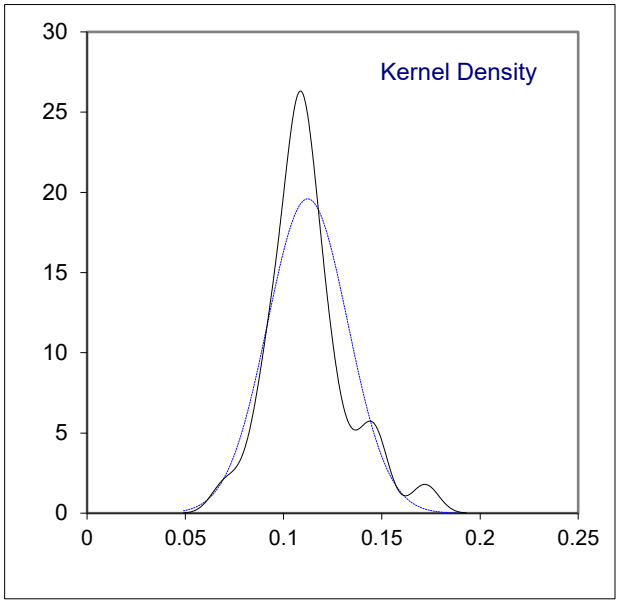

Kernel Density
400
350
300
250
200
150
100
50
0
-0.002
0
0.002
0.004
0.006

## Determination of Total Glycerol on sample #21205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D6584 | 0.115 | | 0.23 | |
| 171 | EN14105 | 0.127 | | 1.25 | |
| 311 | EN14105 | 0.121 | | 0.74 | |
| 312 | EN14105 | 0.108 | | -0.37 | |
| 323 | EN14105 | 0.070 | | -3.61 | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | EN14105 | 0.134 | | 1.85 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14105 | 0.105 | | -0.62 | |
| 344 | EN14105 | 0.1070 | | -0.45 | |
| 345 | EN14105 | 0.09 | | -1.90 | |
| 360 | EN14105 | 0.1125 | | 0.01 | |
| 370 | | ----- | | ----- | |
| 371 | EN14105 | 0.100 | C | -1.05 | first reported 0.065 |
| 373 | EN14105 | 0.1091 | | -0.28 | |
| 381 | | ----- | | ----- | |
| 391 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 420 | EN14105 | 0.106 | | -0.54 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14105 | 0.0826 | | -2.53 | |
| 511 | D6584 | 0.112 | | -0.03 | |
| 663 | | ----- | | ----- | |
| 824 | D6584 | 0.09345 | | -1.61 | |
| 862 | EN14105 | 0.1487 | | 3.10 | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1227 | | ----- | | ----- | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | EN14105 | 0.12 | | 0.65 | |
| 1397 | EN14105 | 0.110 | | -0.20 | |
| 1407 | | ----- | | ----- | |
| 1429 | EN14105 | 0.11 | | -0.20 | |
| 1459 | | ----- | | ----- | |
| 1485 | EN14105 | 0.1219 | | 0.82 | |
| 1510 | | ----- | | ----- | |
| 1544 | | ----- | | ----- | |
| 1554 | | ----- | | ----- | |
| 1586 | | ----- | | ----- | |
| 1656 | EN14105 | 0.10 | | -1.05 | |
| 1706 | | ----- | | ----- | |
| 1739 | EN14105 | 0.1189 | | 0.56 | |
| 1754 | EN14105 | 0.0944 | | -1.53 | |
| 1807 | EN14105 | 0.172 | C | 5.08 | first reported 0.226 |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | EN14105 | 0.100 | | -1.05 | |
| 6201 | EN14105 | 0.144 | | 2.70 | |
| 6259 | | ----- | | ----- | |
| 6262 | EN14105 | 0.145 | | 2.78 | |
| 6265 | EN14105 | 0.108 | | -0.37 | |
| 6275 | | ----- | | ----- | |
| 6276 | EN14105 | 0.111 | | -0.11 | |
| 6325 | EN14105 | 0.092 | | -1.73 | |
| 6373 | | 0.106 | | -0.54 | |
| 6406 | | ----- | | ----- | |

| | |
|---|---|
| normality | suspect |
| n | 32 |
| outliers | 0 |
| mean (n) | 0.1123 |
| st.dev. (n) | 0.02037 |
| R(calc.) | 0.0570 |
| st.dev.(EN14105:21) | 0.01174 |
| R(EN14105:21) | 0.0329 |

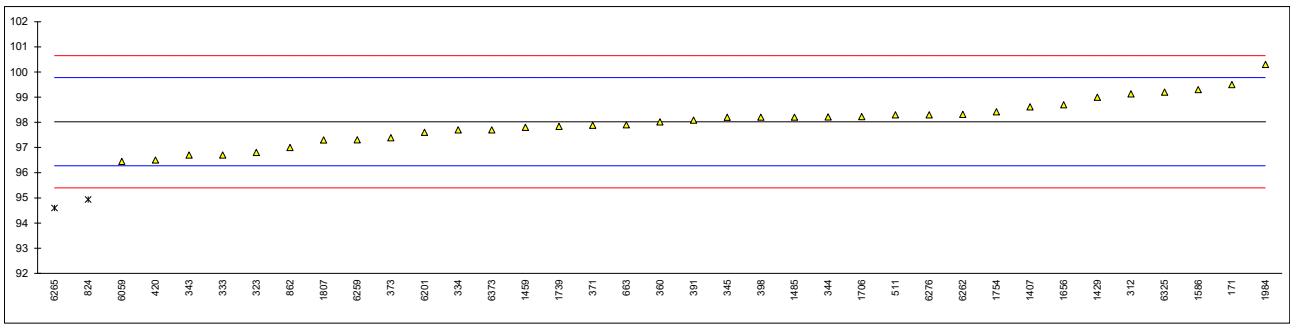

0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
323 496 345 6325 824 1754 371 1656 6059 343 420 6373 344 312 6265 373 1397 1429 6276 511 360 120 1739 1389 311 1485 171 334 6201 6262 862 1807

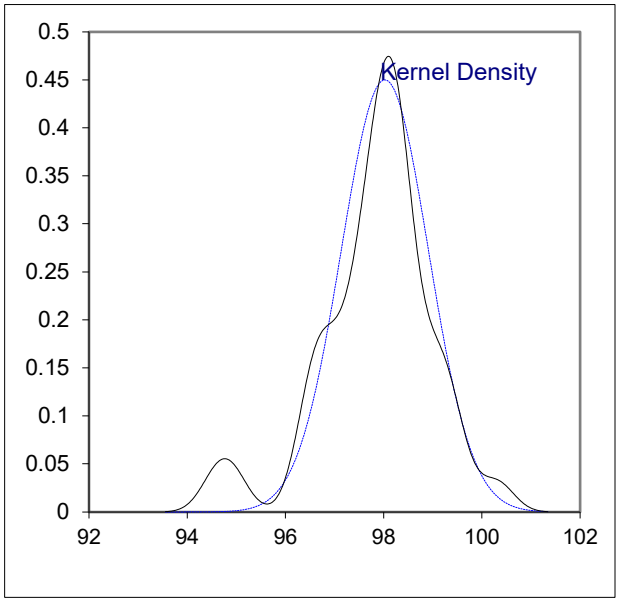

Kernel Density
30
25
20
15
10
5
0
0
0.05
0.1
0.15
0.2
0.25

Determination of Total Ester content (FAME) on sample #21205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | EN14103:2020 | 99.5 | | 1.69 | |
| 311 | | ----- | | ----- | |
| 312 | EN14103:2011 | 99.13 | | 1.26 | |
| 323 | EN14103:2020 | 96.8 | | -1.40 | |
| 328 | | ----- | | ----- | |
| 333 | EN14103:2020 | 96.7 | | -1.51 | |
| 334 | EN14103:2011 | 97.7 | | -0.37 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14103:2020 | 96.7 | | -1.51 | |
| 344 | EN14103:2011 | 98.22 | | 0.22 | |
| 345 | EN14103:2020 | 98.2 | | 0.20 | |
| 360 | EN14103:2020 | 98.02 | | 0.00 | |
| 370 | | ----- | | ----- | |
| 371 | EN14103:2011 | 97.884 | | -0.16 | |
| 373 | EN14103:2020 | 97.39 | | -0.72 | |
| 381 | | ----- | | ----- | |
| 391 | EN14103:2020 | 98.09 | | 0.08 | |
| 398 | EN14103:2020 | 98.21 | | 0.21 | |
| 420 | EN14103:2020 | 96.5 | | -1.74 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | | ----- | | ----- | |
| 511 | EN14103:2011 | 98.3 | | 0.32 | |
| 663 | EN14103:2020 | 97.9 | | -0.14 | |
| 824 | EN14103:2020 | 94.93 | R(0.05) | -3.54 | |
| 862 | EN14103:2011 | 97.0 | | -1.17 | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1227 | | ----- | | ----- | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | | ----- | | ----- | |
| 1397 | | ----- | | ----- | |
| 1407 | In house | 98.62 | | 0.68 | |
| 1429 | EN14103:2011 | 99.0 | | 1.12 | |
| 1459 | EN14103:2020 | 97.8 | | -0.26 | |
| 1485 | EN14103:2011 | 98.21 | | 0.21 | |
| 1510 | | ----- | | ----- | |
| 1544 | | ----- | | ----- | |
| 1554 | | ----- | | ----- | |
| 1586 | EN14103:2011 | 99.3 | | 1.46 | |
| 1656 | EN14103:2011 | 98.7 | | 0.77 | |
| 1706 | EN14103:2011 | 98.228 | | 0.23 | |
| 1739 | EN14103:2011 | 97.84 | | -0.21 | |
| 1754 | EN14103:2020 | 98.42 | | 0.45 | |
| 1807 | EN14103:2011 | 97.3 | | -0.83 | |
| 1826 | | ----- | | ----- | |
| 1984 | EN14103:2020 | 100.3 | | 2.60 | |
| 6059 | EN14103:2020 | 96.45 | | -1.80 | |
| 6201 | EN14103:2020 | 97.61 | | -0.47 | |
| 6259 | EN14103:2020 | 97.31 | | -0.82 | |
| 6262 | EN14103:2011 | 98.3178 | | 0.34 | |
| 6265 | EN14103:2011 | 94.6 | R(0.05) | -3.91 | |
| 6275 | | ----- | | ----- | |
| 6276 | EN14103:2011 | 98.3 | | 0.32 | |
| 6325 | EN14103:2020 | 99.2 | | 1.34 | |
| 6373 | | 97.7 | | -0.37 | |
| 6406 | | ----- | | ----- | |

| | |
|---|---|
| normality | OK |
| n | 35 |
| outliers | 2 |
| mean (n) | 98.0243 |
| st.dev. (n) | 0.88662 |
| R(calc.) | 2.4825 |
| st.dev.(EN14103:20) | 0.87500 |
| R(EN14103:20) | 2.45 |
| compare | |
| R(EN14103:11) | 4.16 |

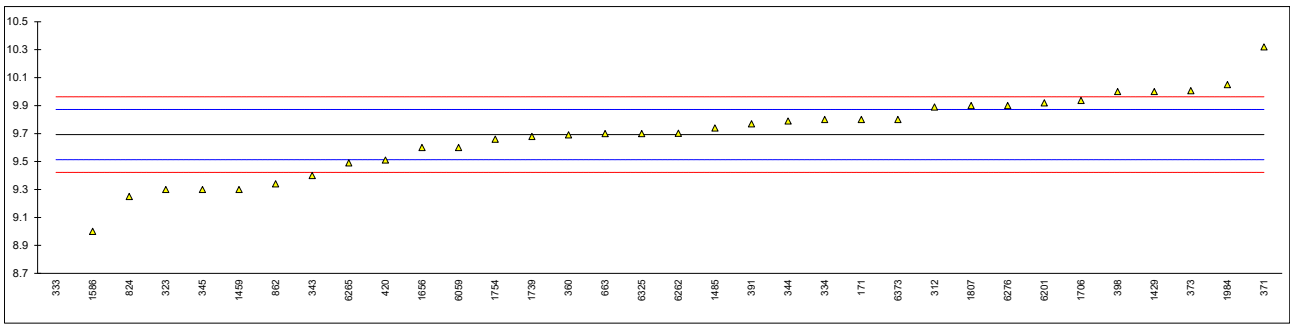

102
101
100
99
98
97
96
95
94
93
92
6265
824
6059
420
343
333
323
862
1807
6259
373
6201
334
6373
1459
1739
371
663
360
391
345
398
1485
344
1706
511
6276
6262
1754
1407
1656
1429
312
6325
1586
171
1984

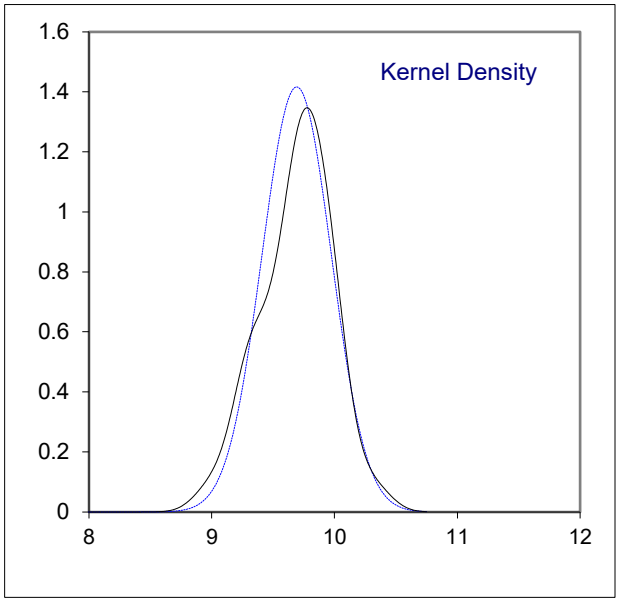

Kernel Density
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
92
94
96
98
100
102

## Determination of Linolenic Acid Methyl Ester on sample #21205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | EN14103:2020 | 9.8 | | 1.20 | |
| 311 | | ----- | | ----- | |
| 312 | EN14103:2011 | 9.89 | | 2.20 | |
| 323 | EN14103:2020 | 9.3 | | -4.36 | |
| 328 | | ----- | | ----- | |
| 333 | EN14103:2020 | 6.9 | R(0.01) | -31.05 | |
| 334 | EN14103:2011 | 9.8 | | 1.20 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14103:2020 | 9.4 | | -3.25 | |
| 344 | EN14103:2011 | 9.79 | | 1.09 | |
| 345 | EN14103:2020 | 9.3 | | -4.36 | |
| 360 | EN14103:2020 | 9.69 | | -0.03 | |
| 370 | | ----- | | ----- | |
| 371 | EN14103:2020 | 10.32 | | 6.98 | |
| 373 | EN14103:2020 | 10.007 | | 3.50 | |
| 381 | | ----- | | ----- | |
| 391 | EN14103:2020 | 9.77 | | 0.86 | |
| 398 | EN14103:2020 | 10.00 | | 3.42 | |
| 420 | EN14103:2020 | 9.51 | | -2.03 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | | ----- | | ----- | |
| 511 | | ----- | | ----- | |
| 663 | EN14103:2020 | 9.7 | | 0.09 | |
| 824 | EN14103:2020 | 9.25 | | -4.92 | |
| 862 | EN14103:2011 | 9.34 | | -3.92 | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1227 | | ----- | | ----- | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | | ----- | | ----- | |
| 1397 | | ----- | | ----- | |
| 1407 | | ----- | | ----- | |
| 1429 | EN14103:2011 | 10.0 | | 3.42 | |
| 1459 | EN14103:2020 | 9.3 | | -4.36 | |
| 1485 | EN14103:2011 | 9.74 | | 0.53 | |
| 1510 | | ----- | | ----- | |
| 1544 | | ----- | | ----- | |
| 1554 | | ----- | | ----- | |
| 1586 | EN14103:2011 | 9.0 | | -7.70 | |
| 1656 | EN14103:2011 | 9.6 | | -1.03 | |
| 1706 | EN14103:2011 | 9.937 | | 2.72 | |
| 1739 | EN14103:2011 | 9.68 | | -0.14 | |
| 1754 | EN14103:2020 | 9.66 | | -0.36 | |
| 1807 | EN14103:2011 | 9.9 | C | 2.31 | first reported <0.1 |
| 1826 | | ----- | | ----- | |
| 1984 | EN14103:2020 | 10.05 | | 3.98 | |
| 6059 | EN14103:2020 | 9.60 | | -1.03 | |
| 6201 | EN14103:2020 | 9.92 | | 2.53 | |
| 6259 | | ----- | | ----- | |
| 6262 | EN14103:2011 | 9.7024 | | 0.11 | |
| 6265 | EN14103:2011 | 9.49 | | -2.25 | |
| 6275 | | ----- | | ----- | |
| 6276 | EN14103:2011 | 9.9 | | 2.31 | |
| 6325 | EN14103:2020 | 9.7 | | 0.09 | |
| 6373 | | 9.8 | | 1.20 | |
| 6406 | | ----- | | ----- | |

| | |
|---|---|
| normality | OK |
| n | 33 |
| outliers | 1 |
| mean (n) | 9.6923 |
| st.dev. (n) | 0.28167 |
| R(calc.) | 0.7887 |
| st.dev.(EN14103:20) | 0.08993 |
| R(EN14103:20) | 0.2518 |
| compare | |
| R(EN14103:11) | 0.6634 |

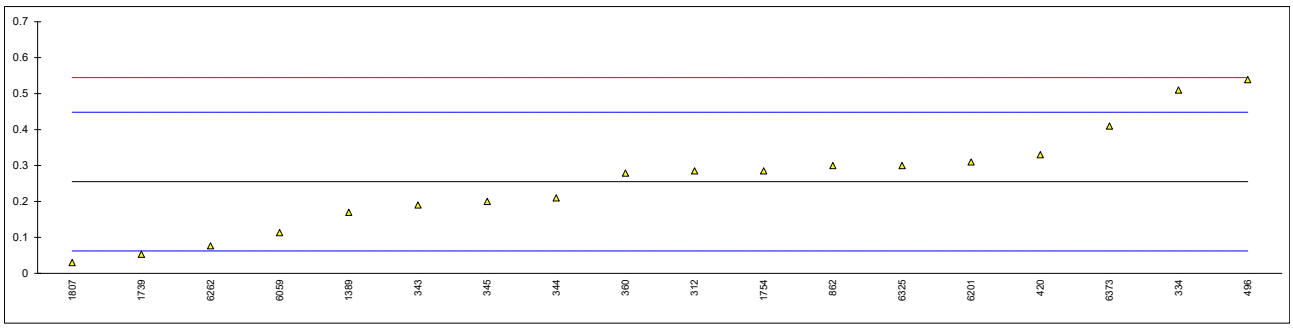

10.5
10.3
10.1
9.9
9.7
9.5
9.3
9.1
8.9
8.7
333
1586
824
323
345
1459
862
343
6265
420
1656
6059
1754
1739
360
663
6325
6262
1485
391
344
334
171
6373
312
1807
6276
6201
1706
398
1429
373
1984
371

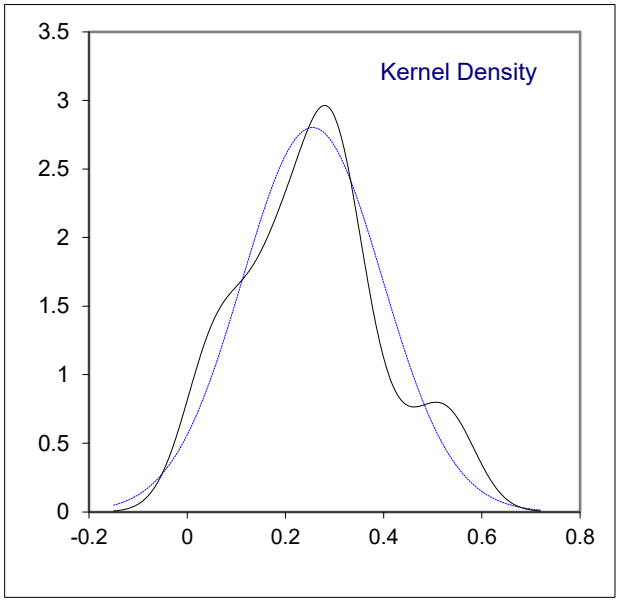

Kernel Density
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
8
9
10
11
12

Determination of Polyunsaturated (multiple double bonds) Methyl Esters on sample #21205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | EN15779 | <0.30 | | ----- | |
| 311 | | ----- | | ----- | |
| 312 | EN15779 | 0.285 | | 0.31 | |
| 323 | | ----- | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | EN15779 | <0.6 | | ----- | |
| 334 | EN15779 | 0.51 | C | 2.64 | first reported 0.58 |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN15779 | 0.19 | | -0.67 | |
| 344 | EN15779 | 0.21 | | -0.47 | |
| 345 | EN15779 | 0.20 | | -0.57 | |
| 360 | EN15779 | 0.279 | | 0.25 | |
| 370 | | ----- | | ----- | |
| 371 | | ----- | | ----- | |
| 373 | EN15779 | <0,6 | | ----- | |
| 381 | | ----- | | ----- | |
| 391 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 420 | EN15779 | 0.33 | | 0.78 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN15779 | 0.539 | | 2.94 | |
| 511 | | ----- | | ----- | |
| 663 | | ----- | | ----- | |
| 824 | | ----- | | ----- | |
| 862 | EN15779 | 0.30 | | 0.47 | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1227 | | ----- | | ----- | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1389 | EN15779 | 0.17 | | -0.88 | |
| 1397 | | ----- | | ----- | |
| 1407 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1459 | | ----- | | ----- | |
| 1485 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1544 | | ----- | | ----- | |
| 1554 | | ----- | | ----- | |
| 1586 | | ----- | | ----- | |
| 1656 | | ----- | | ----- | |
| 1706 | | ----- | | ----- | |
| 1739 | EN15779 | 0.053 | | -2.10 | |
| 1754 | EN15779 | 0.285 | | 0.31 | |
| 1807 | EN15779 | 0.03 | | -2.33 | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 6059 | EN15779 | 0.113 | | -1.47 | |
| 6201 | EN15779 | 0.31 | | 0.57 | |
| 6259 | | ----- | | ----- | |
| 6262 | EN15779 | 0.0764 | | -1.85 | |
| 6265 | | ----- | | ----- | |
| 6275 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | EN15779 | 0.30 | | 0.47 | |
| 6373 | | 0.41 | | 1.61 | |
| 6406 | | ----- | | ----- | |

| | |
|---|---|
| normality | OK |
| n | 18 |
| outliers | 0 |
| mean (n) | 0.2550 |
| st.dev. (n) | 0.14241 |
| R(calc.) | 0.3987 |
| st.dev.(EN15779:09+A1:13) | 0.09643 |
| R(EN15779:09+A1:13) | 0.27 |

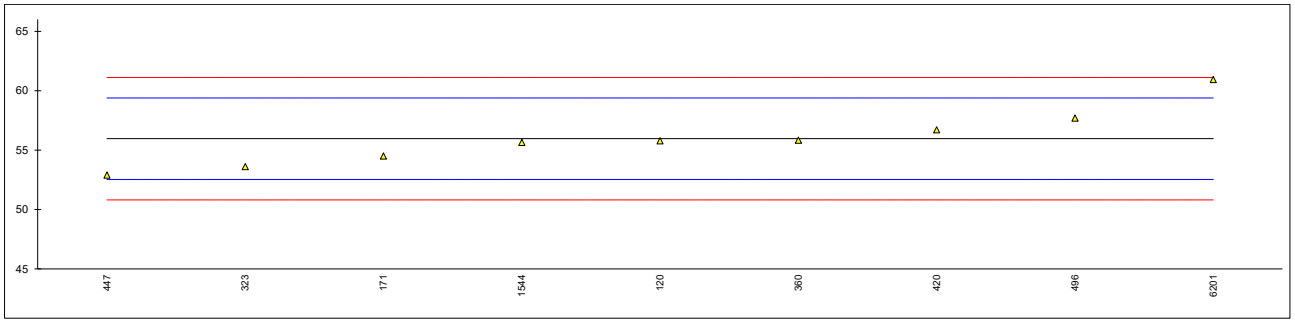

0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1807
1739
6262
6059
1389
343
345
344
360
312
1754
862
6325
6201
420
6373
334
496

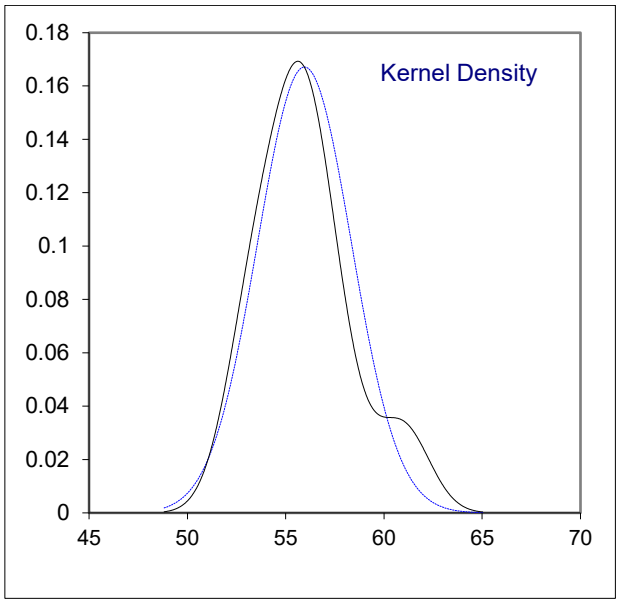

Kernel Density
3.5
3
2.5
2
1.5
1
0.5
0
-0.2
0
0.2
0.4
0.6
0.8

## Determination of Cetane Number of sample #21206

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D613 | 55.786 | | -0.10 | |
| 171 | D613 | 54.5 | | -0.85 | |
| 311 | | ----- | | ----- | |
| 323 | D613 | 53.6 | | -1.37 | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 343 | | ----- | | ----- | |
| 360 | ISO5165 | 55.83 | | -0.07 | |
| 420 | ISO5165 | 56.7 | | 0.43 | |
| 447 | D613 | 52.9 | | -1.78 | |
| 496 | D613 | 57.7 | | 1.02 | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1544 | D613 | 55.65 | | -0.18 | |
| 1754 | | ----- | | ----- | |
| 1807 | | ----- | | ----- | |
| 6201 | EN17155 | 60.94 | | 2.91 | |
| 6262 | | ----- | | ----- | |
| 6373 | | ----- | | ----- | |

| | |
|---|---|
| normality | not OK |
| n | 9 |
| outliers | 0 |
| mean (n) | 55.956 |
| st.dev. (n) | 2.3870 |
| R(calc.) | 6.684 |
| st.dev.(D613:18ae1) | 1.7143 |
| R(D613:18ae1) | 4.8 |
| compare | |
| R(EN14214:12+A2:19) | 5.0 |
| R(ISO5165:20) | 4.8 |



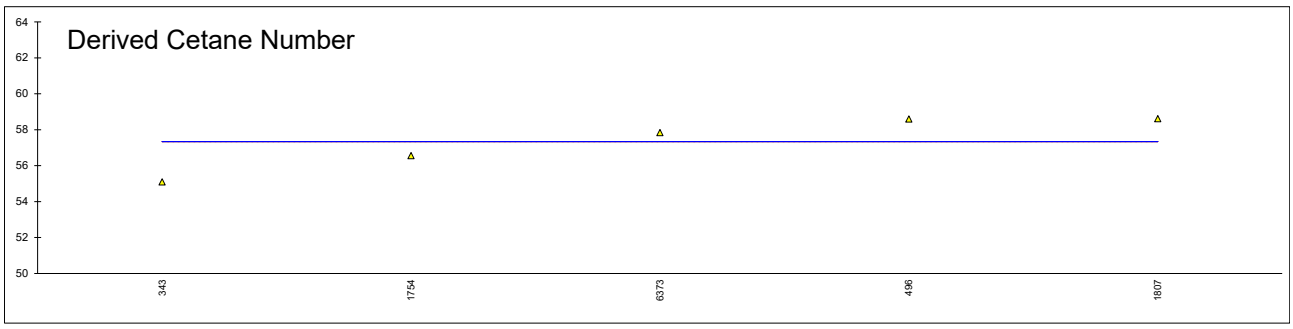



## Determination of Derived Cetane Number of sample #21206

| lab | Method | DCN | mark | z(targ) | ID | mark | z(targ) | CD | mark | z(targ) | W.T. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 120 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 171 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 311 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 323 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 328 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 333 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 343 | D7668 | 55.1 | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 360 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 420 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 447 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 496 | D7668 | 58.60 | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 1272 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 1299 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 1544 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 1754 | D7668 | 56.56 | | ----- | 3.013 | | ----- | 4.225 | | ----- | 609.72 |
| 1807 | EN17155 | 58.62 | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 6201 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 6262 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 6373 | | 57.84 | | ----- | 2.86 | | ----- | 4.14 | | ----- | 595.81 |

| | |
|---|---|
| normality | unknown |
| n | 5 |
| outliers | 0 |
| mean (n) | 57.344 |
| st.dev. (n) | 1.5085 |
| R(calc.) | 4.224 |
| st.dev.(D7668:17) | (0.6010) |
| R(D7668:17) | (1.683) |

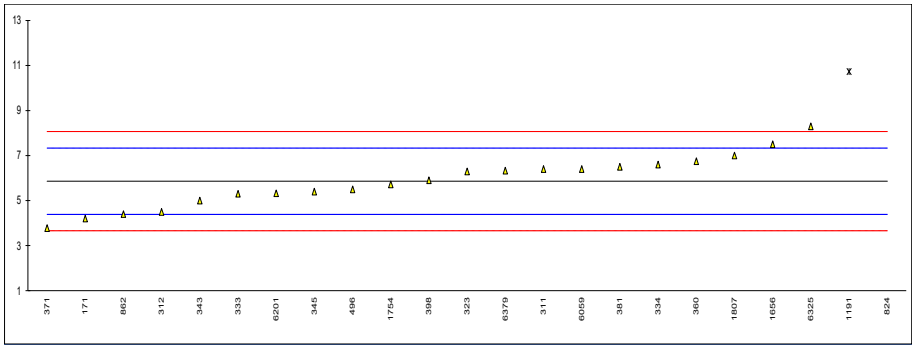
W.T. = Chamber Wall Temperature

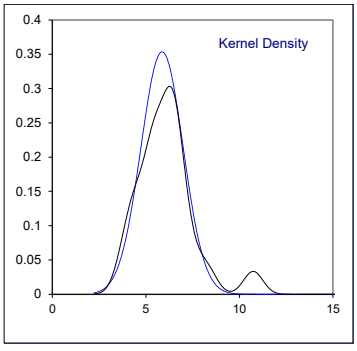


Determination of sum of Calcium and Magnesium (as Ca + Mg) on sample #21207; results in mg/kg

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 171 | EN14538 | 4.2 | C | -2.26 | first reported 10.2 |
| 311 | EN14538 | 6.4 | | 0.73 | |
| 312 | EN14538 | 4.5 | | -1.85 | |
| 323 | EN14538 | 6.3 | | 0.60 | |
| 333 | EN14538 | 5.3 | | -0.76 | |
| 334 | EN14538 | 6.6 | | 1.00 | |
| 343 | EN14538 | 5.0 | | -1.17 | |
| 345 | EN14538 | 5.4 | | -0.63 | |
| 360 | EN14538 | 6.75 | | 1.21 | |
| 371 | EN14538 | 3.78 | | -2.83 | |
| 381 | EN14538 | 6.5 | | 0.87 | |
| 391 | | ----- | | ----- | |
| 398 | EN14538 | 5.9 | | 0.05 | |
| 467 | | ----- | | ----- | |
| 496 | EN14538 | 5.50 | | -0.49 | |
| 663 | | ----- | | ----- | |
| 824 | EN14538 | 16.96 | R(0.01) | 15.09 | |
| 862 | EN14538 | 4.4 | | -1.99 | |
| 1191 | D8110 | 10.7341 | R(0.01) | 6.62 | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1656 | EN14538 | 7.5 | | 2.23 | |
| 1754 | EN14538 | 5.72 | | -0.19 | |
| 1807 | EN14538 | 7.0 | | 1.55 | |
| 6059 | EN14538 | 6.4 | | 0.73 | |
| 6201 | EN14538 | 5.323 | | -0.73 | |
| 6262 | | ----- | W | ----- | first reported 3.2 |
| 6265 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | EN14538 | 8.3 | | 3.31 | |
| 6373 | | ----- | W | ----- | first reported 3.7 |
| 6379 | D8110 | 6.335 | | 0.64 | |

| | |
|---|---|
| normality | OK |
| n | 21 |
| outliers | 2 |
| mean (n) | 5.862 |
| st.dev. (n) | 1.1283 |
| R(calc.) | 3.159 |
| st.dev.(EN14538:06) | 0.7355 |
| R(EN14538:06) | 2.059 |

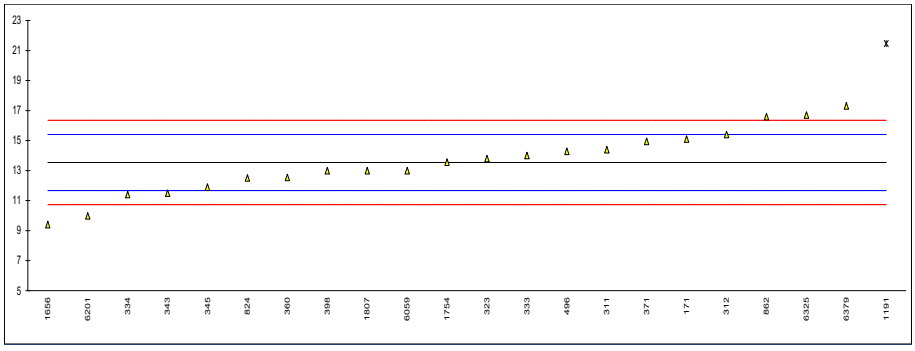


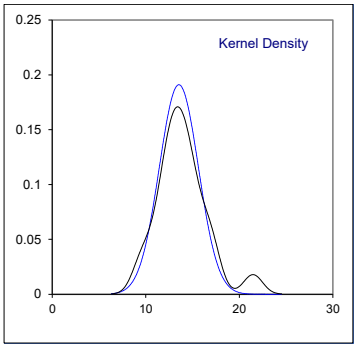



## Determination of Phosphorus as P on sample #21207; results in mg/kg

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 171 | D4951 | 15.1 | | 1.66 | |
| 311 | EN14107 | 14.4 | | 0.92 | |
| 312 | EN14107 | 15.4 | | 1.98 | |
| 323 | EN14107 | 13.8 | | 0.28 | |
| 333 | EN14107 | 14.0 | | 0.49 | |
| 334 | EN14107 | 11.4 | C | -2.28 | first reported <4 |
| 343 | EN14107 | 11.5 | | -2.18 | |
| 345 | EN14107 | 11.9 | | -1.75 | |
| 360 | EN14107 | 12.54 | | -1.07 | |
| 371 | EN14107 | 14.95 | | 1.50 | |
| 381 | | ----- | | ----- | |
| 391 | | ----- | | ----- | |
| 398 | EN14107 | 13.0 | | -0.58 | |
| 467 | | ----- | | ----- | |
| 496 | EN14107 | 14.29 | | 0.80 | |
| 663 | | ----- | | ----- | |
| 824 | EN14107 | 12.51 | | -1.10 | |
| 862 | EN14107 | 16.6 | | 3.26 | |
| 1191 | D8110 | 21.4683 | R(0.05) | 8.46 | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1656 | EN14107 | 9.4 | | -4.42 | |
| 1754 | EN14107 | 13.56 | | 0.02 | |
| 1807 | EN16294 | 13 | | -0.58 | |
| 6059 | EN14107 | 13.0 | | -0.58 | |
| 6201 | EN14107 | 9.978 | | -3.80 | |
| 6262 | | ----- | W | ----- | first reported 0.9 |
| 6265 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | EN14107 | 16.7 | | 3.37 | |
| 6373 | | ----- | W | ----- | first reported 4.4 |
| 6379 | D8110 | 17.313 | | 4.02 | |

| | |
|---|---|
| normality | OK |
| n | 21 |
| outliers | 1 |
| mean (n) | 13.540 |
| st.dev. (n) | 2.0886 |
| R(calc.) | 5.848 |
| st.dev.(EN14107:03) | 0.9374 |
| R(EN14107:03) | 2.625 |

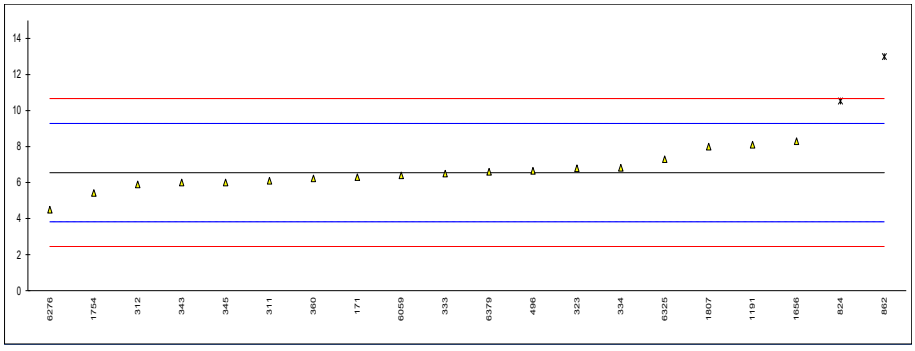


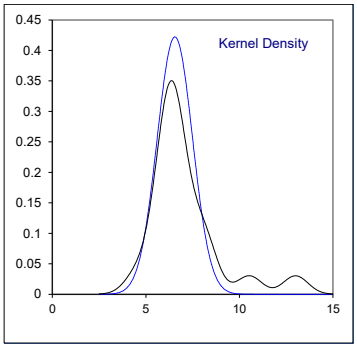



## Determination of Potassium as K on sample #21207; results in mg/kg

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 171 | EN14109 | 6.3 | | -0.18 | |
| 311 | EN14538 | 6.1 | | -0.33 | |
| 312 | EN14538 | 5.9 | | -0.48 | |
| 323 | EN14538 | 6.8 | | 0.18 | |
| 333 | EN14538 | 6.5 | | -0.04 | |
| 334 | EN14538 | 6.82 | | 0.20 | |
| 343 | EN14538 | 6 | | -0.40 | |
| 345 | EN14538 | 6.0 | | -0.40 | |
| 360 | EN14538 | 6.23 | | -0.24 | |
| 371 | | ----- | | ----- | |
| 381 | | ----- | | ----- | |
| 391 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14538 | 6.66 | | 0.08 | |
| 663 | | ----- | | ----- | |
| 824 | EN14538 | 10.53 | R(0.05) | 2.91 | |
| 862 | EN14109 | 13.0 | R(0.01) | 4.71 | |
| 1191 | D8110 | 8.1000 | | 1.13 | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1656 | EN14109 | 8.3 | | 1.28 | |
| 1754 | EN14538 | 5.42 | | -0.83 | |
| 1807 | EN14538 | 8 | | 1.06 | |
| 6059 | EN14538 | 6.4 | | -0.11 | |
| 6201 | | ----- | | ----- | |
| 6262 | | ----- | W | ----- | first reported 0.2 |
| 6265 | | ----- | | ----- | |
| 6276 | In house | 4.50 | | -1.50 | |
| 6325 | EN14538 | 7.3 | | 0.55 | |
| 6373 | | ----- | W | ----- | first reported 4.5 |
| 6379 | D8110 | 6.604 | | 0.04 | |

| | |
|---|---|
| normality | OK |
| n | 18 |
| outliers | 2 |
| mean (n) | 6.552 |
| st.dev. (n) | 0.9449 |
| R(calc.) | 2.646 |
| st.dev.(EN14109:03) | 1.3681 |
| R(EN14109:03) | 3.831 |

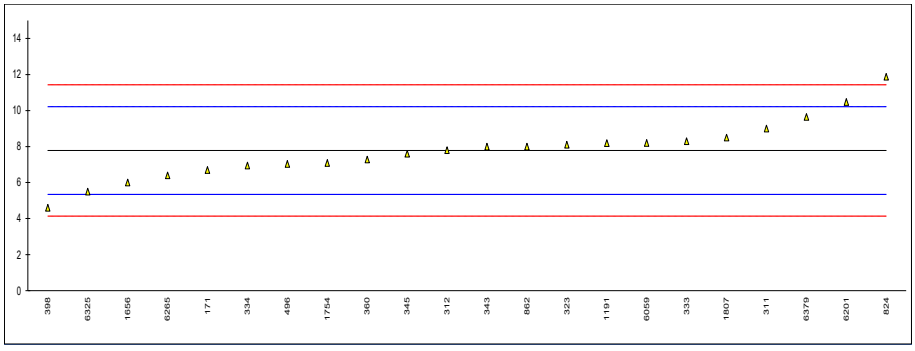


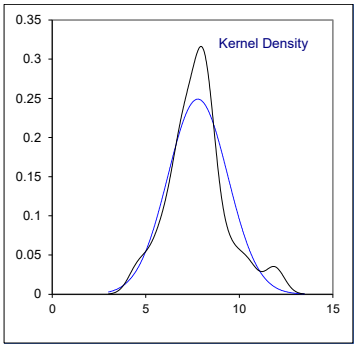



## Determination of Sodium as Na on sample #21207; results in mg/kg

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 171 | EN14108 | 6.7 | | -0.89 | |
| 311 | EN14538 | 9.0 | | 1.00 | |
| 312 | EN14538 | 7.8 | | 0.01 | |
| 323 | EN14538 | 8.1 | | 0.26 | |
| 333 | EN14538 | 8.3 | | 0.42 | |
| 334 | EN14538 | 6.95 | | -0.69 | |
| 343 | EN14538 | 8 | | 0.18 | |
| 345 | EN14538 | 7.6 | | -0.15 | |
| 360 | EN14538 | 7.28 | | -0.42 | |
| 371 | | ----- | | ----- | |
| 381 | | ----- | | ----- | |
| 391 | | ----- | | ----- | |
| 398 | EN14108 | 4.6 | | -2.62 | |
| 467 | | ----- | | ----- | |
| 496 | EN14538 | 7.04 | | -0.61 | |
| 663 | | ----- | | ----- | |
| 824 | EN14538 | 11.88 | | 3.37 | |
| 862 | EN14108 | 8.0 | | 0.18 | |
| 1191 | D8110 | 8.1912 | | 0.33 | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1656 | EN14108 | 6.0 | | -1.47 | |
| 1754 | EN14538 | 7.09 | | -0.57 | |
| 1807 | EN14538 | 8.5 | | 0.59 | |
| 6059 | EN14538 | 8.2 | | 0.34 | |
| 6201 | EN14538 | 10.475 | | 2.21 | |
| 6262 | | ----- | W | ----- | first reported 1.0 |
| 6265 | In house | 6.4 | | -1.14 | |
| 6276 | | ----- | | ----- | |
| 6325 | EN14538 | 5.5 | | -1.88 | |
| 6373 | | ----- | W | ----- | first reported 4.7 |
| 6379 | D8110 | 9.649 | | 1.53 | |

| | |
|---|---|
| normality | suspect |
| n | 22 |
| outliers | 0 |
| mean (n) | 7.784 |
| st.dev. (n) | 1.6026 |
| R(calc.) | 4.487 |
| st.dev.(EN14108:03) | 1.2151 |
| R(EN14108:03) | 3.402 |

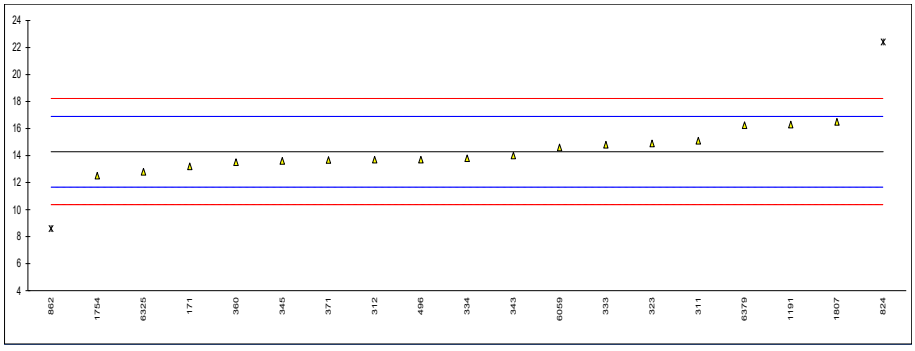


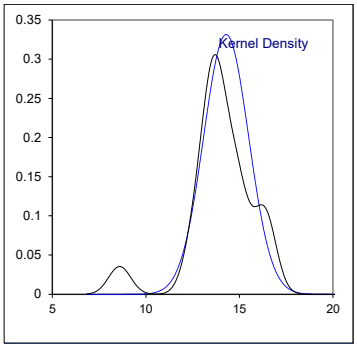



Determination of Sum of Potassium and Sodium (as K + Na) on sample #21207; results in mg/kg

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 171 | EN14538 | 13.2 | | -0.83 | |
| 311 | EN14538 | 15.1 | | 0.62 | |
| 312 | EN14538 | 13.7 | | -0.45 | |
| 323 | EN14538 | 14.9 | | 0.46 | |
| 333 | EN14538 | 14.8 | | 0.39 | |
| 334 | EN14538 | 13.8 | | -0.37 | |
| 343 | EN14538 | 14 | | -0.22 | |
| 345 | EN14538 | 13.6 | | -0.53 | |
| 360 | EN14538 | 13.51 | | -0.60 | |
| 371 | EN14538 | 13.68 | | -0.47 | |
| 381 | | ----- | | ----- | |
| 391 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14538 | 13.70 | | -0.45 | |
| 663 | | ----- | | ----- | |
| 824 | EN14538 | 22.41 | G(0.01) | 6.19 | |
| 862 | EN14538 | 8.6 | E,G(0.01) | -4.34 | calculation difference, iis calculated 21 |
| 1191 | D8110 | 16.2912 | | 1.53 | |
| 1272 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1656 | | ----- | | ----- | |
| 1754 | EN14538 | 12.51 | | -1.36 | |
| 1807 | EN14538 | 16.5 | | 1.69 | |
| 6059 | EN14538 | 14.6 | | 0.24 | |
| 6201 | | ----- | | ----- | |
| 6262 | | ----- | W | ----- | first reported 1.2 |
| 6265 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | EN14538 | 12.8 | | -1.14 | |
| 6373 | | ----- | W | ----- | first reported 9.2 |
| 6379 | D8110 | 16.253 | | 1.50 | |

| | |
|---|---|
| normality | OK |
| n | 17 |
| outliers | 2 |
| mean (n) | 14.291 |
| st.dev. (n) | 1.2036 |
| R(calc.) | 3.370 |
| st.dev.(EN14538:06) | 1.3109 |
| R(EN14538:06) | 3.671 |



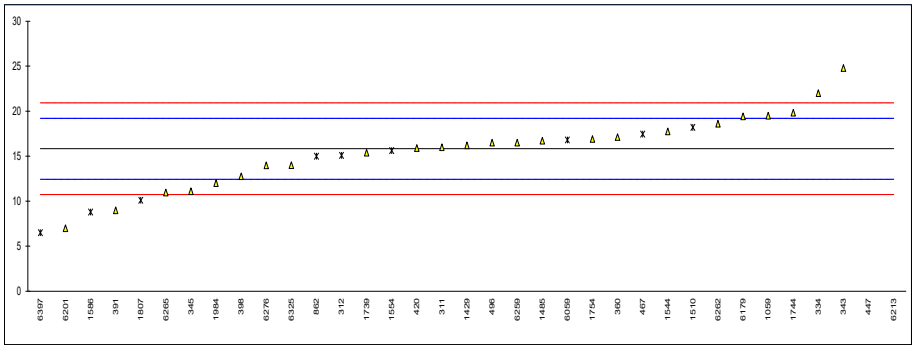



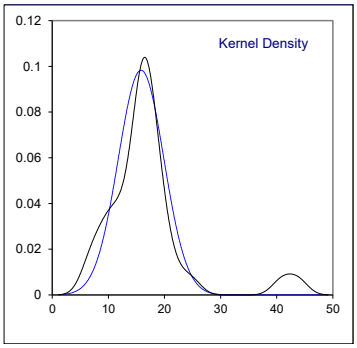
## Determination of Total Contamination (EN12662) on sample #21208; results in mg/kg

| lab | method | value | mark | z(targ) | Complete | Volume filt. mL | Stopped minutes | remarks |
|---|---|---|---|---|---|---|---|---|
| 171 | | ----- | | ----- | | ----- | ----- | |
| 311 | EN12662:2008 | 16.0 | | 0.10 | Yes | 800 | ----- | |
| 312 | EN12662:2014 | 15.1 | ex | -0.43 | Yes | 300 | ----- | |
| 323 | | ----- | | ----- | | ----- | ----- | |
| 334 | EN12662:2008 | 22 | | 3.64 | Yes | 300 | ----- | |
| 343 | EN12662:1998 | 24.8 | | 5.29 | | ----- | ----- | |
| 345 | EN12662:1998 | 11.1 | | -2.79 | Yes | 300 | ----- | |
| 360 | EN12662:1998 | 17.13 | | 0.76 | Yes | 300 | ----- | |
| 371 | | ----- | | ----- | | ----- | ----- | |
| 391 | EN12662:2008 | 9.0 | | -4.03 | Yes | ----- | ----- | |
| 398 | EN12662:2008 | 12.76 | | -1.81 | Yes | 400 | ----- | |
| 420 | EN12662:1998 | 15.9 | | 0.04 | | ----- | ----- | |
| 447 | EN12662:1998 | 40.9 | R(0.01) | 14.78 | Yes | ----- | ----- | |
| 467 | EN12662:2014 | 17.46 | ex | 0.96 | Yes | 339 | ----- | |
| 496 | EN12662:1998 | 16.50 | | 0.39 | Yes | ----- | ----- | |
| 663 | | ----- | | ----- | | ----- | ----- | |
| 862 | EN12662:2014 | 15.0 | ex | -0.49 | Yes | ----- | ----- | |
| 1059 | EN12662:1998 | 19.5 | | 2.16 | Yes | ----- | ----- | |
| 1272 | | ----- | | ----- | | ----- | ----- | |
| 1299 | | ----- | | ----- | | ----- | ----- | |
| 1397 | | ----- | W | ----- | Yes | ----- | ----- | first reported 48.9 |
| 1429 | EN12662:1998 | 16.2 | | 0.22 | Yes | ----- | ----- | |
| 1485 | EN12662:1998 | 16.72 | | 0.52 | Yes | ----- | ----- | |
| 1510 | EN12662:2014 | 18.2 | ex | 1.40 | Yes | 379 | ----- | |
| 1544 | EN12662:1998 | 17.75 | | 1.13 | Yes | 300 | ----- | |
| 1554 | EN12662:2014 | 15.62 | ex | -0.13 | Yes | ----- | ----- | |
| 1586 | EN12662:2014 | 8.8 | ex | -4.15 | Yes | 300 | ----- | |
| 1739 | EN12662:1998 | 15.4 | | -0.26 | Yes | ----- | ----- | |
| 1744 | EN12662:2008 | 19.84 | | 2.36 | | 635 | 45 | |
| 1754 | EN12662:2008 | 16.91 | | 0.63 | | 800 | ----- | |
| 1807 | EN12662:2014 | 10.1 | ex | -3.38 | | ----- | ----- | |
| 1984 | EN12662:1998 | 12.0 | | -2.26 | | ----- | ----- | |
| 6059 | EN12662:2014 | 16.8 | ex | 0.57 | Yes | ----- | ----- | reported: weigth of sample 691.79 |
| 6179 | EN12662:2008 | 19.43 | C | 2.12 | | ----- | ----- | first reported 29.43 |
| 6201 | EN12662:2008 | 7 | | -5.21 | Yes | 287 | ----- | |
| 6213 | EN12662:1998 | 43.78 | R(0.01) | 16.47 | Yes | ----- | ----- | |
| 6259 | EN12662:2008 | 16.5 | | 0.39 | | ----- | ----- | |
| 6262 | EN12662:1998 | 18.6 | | 1.63 | Yes | 300 | ----- | |
| 6265 | EN12662:2008 | 10.97 | | -2.87 | Yes | 375 | ----- | |
| 6276 | EN12662:1998 | 13.98 | | -1.09 | | ----- | ----- | |
| 6325 | EN12662:1998 | 14 | | -1.08 | | ----- | ----- | |
| 6373 | | ----- | | ----- | | ----- | ----- | |
| 6397 | EN12662:2014 | 6.5 | ex | -5.50 | Yes | 300 | ----- | |

| | |
|---|---|
| normality | OK |
| n | 24 |
| outliers | 2 + 9ex |
| mean (n) | 15.833 |
| st.dev. (n) | 4.0581 |
| R(calc.) | 11.363 |
| st.dev.(EN12662:08) | 1.6964 |
| R(EN12662:08) | 4.750 |
| compare | |
| R(EN12662:98) | 4.750 |

ex = excluded from statistical analysis. Test result has been excluded because EN12662:2014 is not applicable to FAME (B100) according to CEN/TC 19 Committee, instead either method EN12662:1998 or EN12662:2008 should be used. See also iis memo 1903.



## APPENDIX 2

### Number of participants per country

1 lab in ARGENTINA
1 lab in AUSTRIA
3 labs in BELGIUM
4 labs in BULGARIA
1 lab in CHINA, People's Republic
3 labs in COLOMBIA
1 lab in CROATIA
1 lab in CZECH REPUBLIC
2 labs in FINLAND
7 labs in FRANCE
1 lab in GERMANY
2 labs in GREECE
1 lab in HONG KONG
1 lab in INDONESIA
2 labs in ITALY
1 lab in KOREA, Republic of
1 lab in LATVIA
2 labs in LITHUANIA
1 lab in MALAYSIA
1 lab in MALTA
6 labs in NETHERLANDS
1 lab in PERU
1 lab in POLAND
1 lab in PORTUGAL
2 labs in SERBIA
1 lab in SLOVENIA
7 labs in SPAIN
1 lab in SWEDEN
1 lab in THAILAND
5 labs in UNITED KINGDOM
3 labs in UNITED STATES OF AMERICA

## APPENDIX 3

### Abbreviations

| | |
|---|---|
| C | = final test result after checking of first reported suspect test result |
| D(0.01) | = outlier in Dixon's outlier test |
| D(0.05) | = straggler in Dixon's outlier test |
| G(0.01) | = outlier in Grubbs' outlier test |
| G(0.05) | = straggler in Grubbs' outlier test |
| DG(0.01) | = outlier in Double Grubbs' outlier test |
| DG(0.05) | = straggler in Double Grubbs' outlier test |
| R(0.01) | = outlier in Rosner's outlier test |
| R(0.05) | = straggler in Rosner's outlier test |
| E | = calculation difference between reported test result and result calculated by iis |
| 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 |
| f+? | = possibly a false positive test result? |
| f-? | = possibly a false negative test result? |
| SDS | = Safety Data Sheet |

### Literature


1 iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, June 2018
2 ISO5725:86
3 ISO5725 parts 1-6:94
4 ISO13528:05
5 M. Thompson and R. Wood, J. AOAC Int, 76, 926, (1993)
6 W.J. Youden and E.H. Steiner, Statistical Manual of the AOAC, (1975)
7 P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
8 J.N. Miller, Analyst, 118, 455, (1993)
9 Analytical Methods Committee, Technical Brief, No 4, January 2001
10 P.J. Lowthian and M. Thompson, The Royal Society of Chemistry, Analyst, 127, 1359-1364, (2002)
11 W. Horwitz and R. Albert, J. AOAC Int, 79.3, 589-621, (1996)
12 Bernard Rosner, Percentage Points for a Generalized ESD Many-Outlier Procedure, Technometrics, 25(2), 165-172, (1983)
13 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).
14 iis memo 1903, Biodiesel B100 (100% FAME) for Total Contamination EN12662