Institute for
Interlaboratory Studies

# Results of Proficiency Test
# Biodiesel B100 (100% FAME)
# November 2022


Organized by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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**CONTENTS**

# 1 INTRODUCTION

Since 2008 the Institute for Interlaboratory Studies (iis) organizes a 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 2022/2023 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:
- 62 laboratories in 29 countries for regular analyzes in Biodiesel B100 iis22G07
- 17 laboratories in 10 countries on the Cetane Number analyzes iis22G07CN
- 30 laboratories in 19 countries on the Metal analyzes iis22G07M
- 39 laboratories in 24 countries on the Total Contamination analyzes iis22G07TC

In total 65 laboratories in 29 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 tests 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 |
|---|---|---|---|
| #22205 | iis22G07 | 1x 1 L + 1x 0.5 L | Regular analyzes |
| #22206 | iis22G07CN | 2x 1 L | Cetane Number (DCN) |
| #22207 | iis22G07M | 1x 100 mL | Metal analyzes |
| #22208 | iis22G07TC | 1x 1 L | Total Contamination |

Table 1: Biodiesel B100 samples used in PT iis22G07

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 preparation of 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 90 amber glass bottles of 1 L and 90 amber glass bottles of 0.5 L were filled and labelled #22205.
The homogeneity of the subsamples was checked by the determination of Density at 15 °C in accordance with ISO12185 on 8 stratified randomly selected subsamples.

| | Density at 15 °C in kg/m$^3$ |
|---|---|
| sample #22205-1 | 883.51 |
| sample #22205-2 | 883.50 |
| sample #22205-3 | 883.51 |
| sample #22205-4 | 883.53 |
| sample #22205-5 | 883.51 |
| sample #22205-6 | 883.51 |
| sample #22205-7 | 883.51 |
| sample #22205-8 | 883.51 |

Table 2: homogeneity test results of subsamples #22205

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 3: evaluation of the repeatability of subsamples #22205

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 preparation of 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 65 amber glass bottles of 1 L were filled and labelled #22206.
The homogeneity of the subsamples was checked by the determination of Density at 15 °C in accordance with ISO12185 on 8 stratified randomly selected subsamples.

| | Density at 15 °C in kg/m$^3$ |
|---|---|
| sample #22206-1 | 884.08 |
| sample #22206-2 | 884.11 |
| sample #22206-3 | 884.10 |
| sample #22206-4 | 883.55 D(0.01) |
| sample #22206-5 | 884.10 |
| sample #22206-6 | 884.10 |
| sample #22206-7 | 884.12 |
| sample #22206-8 | 884.11 |

Table 4: homogeneity test results of subsamples #22206

Subsample 4 is a Dixon outlier and therefore excluded from statistical evaluation of the homogeneity.

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) | 0.04 |
| reference test method | ISO12185:96 |
| 0.3 x R (reference test method) | 0.15 |

Table 5: evaluation of the repeatability of subsamples #22206

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 preparation of the sample for the analyzes of Metals in Biodiesel B100 a batch of approximately 7 L of Rapeseed Methyl Ester (RME) was taken and spiked with Phosphorus, Sodium, Potassium and Calcium. After homogenization 55 PE bottles of 100 mL were filled and labelled #22207.
The homogeneity of the subsamples was checked by determination of Sodium and Potassium in accordance with EN14538 and Phosphorus in accordance with EN14107 on 8 stratified randomly selected subsamples.

| | Phosphorus in mg/kg | Sodium in mg/kg | Potassium in mg/kg |
|---|---|---|---|
| sample #22207-1 | 10.64 | 11.07 | 8.41 |
| sample #22207-2 | 10.50 | 10.71 | 8.10 |
| sample #22207-3 | 10.66 | 11.16 | 8.36 |
| sample #22207-4 | 10.25 | 11.18 | 8.38 |
| sample #22207-5 | 10.47 | 10.86 | 8.37 |
| sample #22207-6 | 10.25 | 11.27 | 8.40 |
| sample #22207-7 | 10.41 | 11.07 | 8.43 |
| sample #22207-8 | 10.64 | 11.19 | 8.43 |

Table 6: homogeneity test results of subsamples #22207

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 | Potassium in mg/kg |
|---|---|---|---|
| r (observed) | 0.47 | 0.53 | 0.30 |
| reference test method | EN14107:03 | EN14108:03 | EN14108:03 |
| 0.3 x R (reference test method) | 0.61 | 1.28 | 1.07 |

Table 7: evaluation of the repeatabilities of subsamples #22207

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 preparation of the sample for Total Contamination determination in Biodiesel B100 a batch of approximately 200 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 1 L empty bottle by means of a calibrated pipette. The addition was checked by weighing the bottle before and after the addition. In total 60 bottles were prepared and subsequently filled with 1 L Biodiesel B100. Finally, the subsamples were labelled #22208. 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 October 5, 2022. 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 analyzes 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 | Total 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 (PMcc) | 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 | EN14109/EN14108 | Potassium + Sodium | EN14538 |
| Polyunsat. methyl ester | EN15779 | | |
| Methanol | EN14110 | Methanol | EN14110 |
| Mono-, Di-, Triglycerides | EN14105 | Monoglyceride content | ASTM D6584 |
| Free + Total Glycerol | EN14105 | Free + Total Glycerol | ASTM D6584 |
| Total ester content (FAME) | EN14103 | | |
| Linolenic acid methyl ester | 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

In this proficiency test no problems were encountered with the dispatch of the samples.
In the Biodiesel B100 regular round two participants reported test results after the final reporting date and two other participants did not report any test results.
In the Cetane Number and DCN PT two participants reported test results after the final reporting date and four other participants did not report any test results.
In the Metals in Biodiesel B100 PT one participant reported test results after the final reporting date and seven other participants did not report any test results.
In the Total Contamination PT two participants reported test results after the final reporting date and two other participants did not report any test results.
Not all participants were able to report all analyzes requested.

In total 63 participants reported 948 numerical test results. Observed were 23 outlying test results, which is 2.4%. 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). When a method has been reapproved an “R” will be added and the year of approval (e.g. D874:13aR18).

**sample #22205**

Acid Value: 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 EN14104:21 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. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D2500:17a and EN14214:12+A2:19.

CFPP: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN116:15 and 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 D4530:15R20 or ISO10370:14. Therefore, no z-scores are 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. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO12185:96.

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

Kinematic Viscosity at 40 °C: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of ISO3104-A:20 and D445:21e2.

Oxidation Stability: 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 EN15751:14 and EN14112:20.

Pour Point: This determination was not problematic. Four 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 D874:13aR18. Therefore, no z-scores are calculated.

Sulfur: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility 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. No statistical outliers were observed. The calculated reproducibility 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 are calculated.

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

Distillation at 10 mmHg: Only three participants submitted a test result for Distillation at 10mmHg. Therefore, no z-scores are calculated.

Methanol: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of EN14110:19.

Monoglycerides: 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 EN14105:20.

Diglycerides: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of EN14105:20.

Triglycerides: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN14105:20.

Free Glycerol: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of EN14105:20.

Total Glycerol: This determination was problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the outliers is not in agreement with the requirements of EN14105:20.

Total Ester content (FAME): This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN14103:20.

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

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 #22206**

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 was problematic. No statistical outliers were observed but two test results were excluded. However, the variation of the reported test results is too large. Therefore, no z-scores are calculated. Only three participants reported a test result for the parameters Ignition Delay and Combustion Delay. Therefore, no z-scores are calculated.

**sample #22207**

Sum Ca + Mg: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of EN141538:06.

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

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

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

Sum K + Na: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of EN14538:06.

**sample #22208**

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. No outliers were observed but five test results were excluded. The group is divided bimodal. Therefore, no z-scores are calculated.

### 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 reference methods are presented in the next tables.

| Parameter | unit | n | average | 2.8 * sd | R(lit) |
|---|---|---|---|---|---|
| Acid Value | mg KOH/g | 34 | 0.49 | 0.05 | 0.06 |
| Total Acid Number | mg KOH/g | 22 | 0.47 | 0.07 | 0.13 |
| Cloud Point | °C | 48 | -4.9 | 2.7 | 5 |
| Cold Filter Plugging Point | °C | 48 | -15.8 | 2.4 | 3.9 |
| Carbon Residue on 100% sample | %M/M | 23 | <0.1 | n.e. | n.e. |
| Copper Corrosion 3 hrs at 50 °C | | 41 | 1 (1a/1b) | n.a. | n.a. |
| Density at 15 °C | kg/m$^3$ | 55 | 883.5 | 0.2 | 0.5 |
| Flash Point PMcc | °C | 36 | 149.1 | 16.2 | 14.7 |

| Parameter | unit | n | average | 2.8 * sd | R(lit) |
|---|---|---|---|---|---|
| Flash Point recc | °C | 13 | 172.0 | 13.9 | 15.0 |
| Iodine Value | g $I_2$/100g | 35 | 113.8 | 5.8 | 5 |
| Kinematic Viscosity at 40 °C | $mm^2/s$ | 45 | 4.469 | 0.040 | 0.037 |
| Oxidation Stab. Induction period | hours | 37 | 4.3 | 0.9 | 1.2 |
| Pour Point | °C | 26 | -38.0 | 3.6 | 9 |
| Sulfated Ash | %M/M | 27 | <0.005 | n.e. | n.e. |
| Sulfur | mg/kg | 44 | 2.2 | 1.0 | 1.4 |
| Water | mg/kg | 53 | 384 | 76 | 135 |
| Water and Sediment | %V/V | 5 | <0.01 | n.e. | n.e. |
| Calorific Value Gross | MJ/kg | 7 | 39.9 | 0.3 | 0.4 |
| 80% recovered, as AET | °C | 3 | 352.0 | 5.6 | (4.6) |
| 90% recovered, as AET | °C | 3 | 354.3 | 4.3 | (4.6) |
| 95% recovered, as AET | °C | 3 | 358.0 | 7.4 | (4.6) |
| Methanol | %M/M | 29 | 0.041 | 0.018 | 0.012 |
| Monoglycerides | %M/M | 29 | 0.339 | 0.113 | 0.129 |
| Diglycerides | %M/M | 29 | 0.105 | 0.054 | 0.049 |
| Triglycerides | %M/M | 25 | 0.056 | 0.036 | 0.070 |
| Free Glycerol | %M/M | 22 | 0.002 | 0.004 | 0.006 |
| Total Glycerol | %M/M | 28 | 0.107 | 0.039 | 0.032 |
| Total Ester content (FAME) | %M/M | 36 | 97.68 | 3.08 | 4.16 |
| Linolenic Acid Methyl Ester | %M/M | 34 | 9.67 | 0.59 | 0.66 |
| Polyunsaturated Methyl Esters | %M/M | 12 | 0.23 | 0.39 | 0.27 |

Table 9: reproducibilities of tests on sample #22205

For results between brackets no z-scores are calculated

| Parameter | unit | n | average | 2.8 * sd | R(lit) |
|---|---|---|---|---|---|
| Cetane Number | | 8 | 54.5 | 6.5 | 4.8 |
| Derived Cetane Number | | 5 | 57.7 | 6.3 | (1.7) |
| Ignition Delay | | 3 | n.e. | n.e. | n.e. |
| Combustion Delay | | 3 | n.e. | n.e. | n.e. |

Table 10: reproducibilities of tests on sample #22206

For results between brackets no z-scores are calculated

| Parameter | unit | n | average | 2.8 * sd | R(lit) |
|---|---|---|---|---|---|
| Sum Calcium and Magnesium | mg/kg | 19 | 15.6 | 5.8 | 3.5 |
| Phosphorus | mg/kg | 17 | 10.1 | 4.3 | 2.0 |
| Potassium | mg/kg | 17 | 6.9 | 2.7 | 4.0 |
| Sodium | mg/kg | 17 | 7.8 | 3.7 | 3.4 |
| Sum Potassium and Sodium | mg/kg | 17 | 14.7 | 6.2 | 3.8 |

Table 11: reproducibilities of tests on sample #22207

| Parameter | unit | n | average | 2.8 * sd | R(lit) |
|---|---|---|---|---|---|
| Total Contamination | mg/kg | 31 | 10.0 | 11.6 | (3.0) |

Table 12: reproducibility of test on sample #22208

For results between brackets no z-scores are calculated

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 NOVEMBER 2022 WITH PREVIOUS PTS

| | November 2022 | April 2022 | October 2021 | April 2021 | October 2020 |
|---|---|---|---|---|---|
| Type of FAME | Rapeseed | Rapeseed | Rapeseed | Rapeseed | Rapeseed |
| Number of reporting laboratories | 63 | 61 | 63 | 67 | 63 |
| Number of test results | 948 | 892 | 962 | 1108 | 1080 |
| Number of statistical outliers | 23 | 38 | 31 | 45 | 42 |
| Percentage statistical outliers | 2.4% | 4.3% | 3.2% | 4.1% | 3.9% |

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 | November 2022 | April 2022 | October 2021 | April 2021 | October 2020 |
|---|---|---|---|---|---|
| Acid Value | + | + | +/- | - | + |
| Total Acid Number | + | ++ | + | + | + |
| Cloud Point | + | + | ++ | + | + |
| 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 | + | + | ++ | + | + |
| Water and Sediment | n.e. | n.e. | n.e. | n.e. | n.e. |
| Calorific Value Gross | + | - | -- | -- | (--) |
| Distillation at 10 mmHg | n.e. | - | -- | - | n.e. |

| Parameter | November 2022 | April 2022 | October 2021 | April 2021 | October 2020 |
|---|---|---|---|---|---|
| Methanol | - | - | - | +/- | - |
| Monoglycerides | + | + | - | + | +/- |
| Diglycerides | - | +/- | + | - | - |
| Triglycerides | + | ++ | ++ | + | + |
| Free Glycerol | + | + | ++ | + | ++ |
| Total Glycerol | - | + | - | + | - |
| Total Ester content (FAME) | + | + | +/- | + | + |
| Linolenic Acid Methyl Ester | + | +/- | -- | +/- | + |
| Polyunsaturated Methyl Esters | - | -- | - | 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 of determinations to the reference test methods.

For results between brackets no z-scores are calculated.

The following performance categories were used:

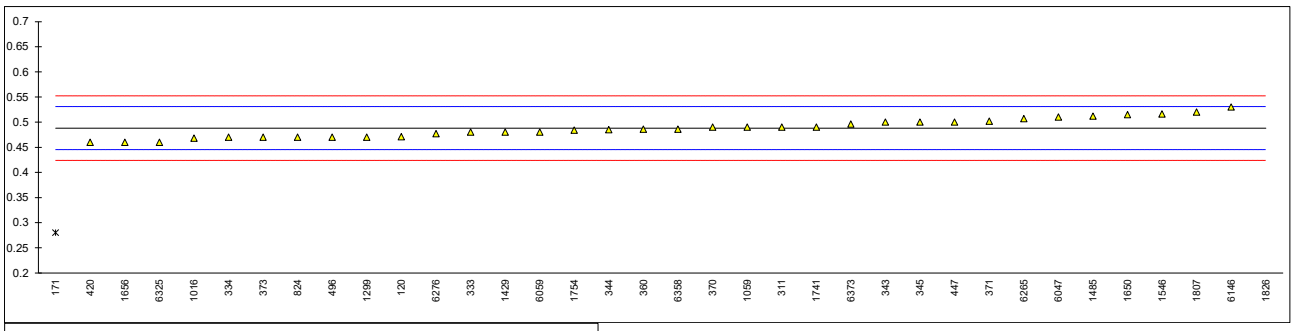
- ++ : group performed much better than the reference test method
- + : group performed better than the reference test method
- +/- : group performance equals the reference test method
- - : group performed worse than the reference test method
- -- : group performed much worse than the reference test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

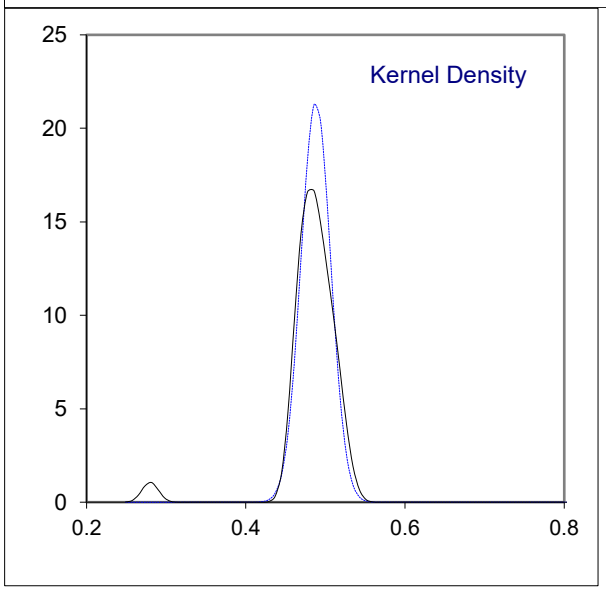
**APPENDIX 1**

Determination of Acid Value on sample #22205; results in mg KOH/g

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | EN14104 | 0.471 | | -0.80 | |
| 171 | EN14104 | 0.28 | R(0.01) | -9.71 | |
| 300 | | ----- | | ----- | |
| 311 | EN14104 | 0.49 | | 0.09 | |
| 312 | | ----- | | ----- | |
| 323 | | ----- | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | EN14104 | 0.48 | | -0.38 | |
| 334 | EN14104 | 0.47 | | -0.84 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14104 | 0.50 | | 0.56 | |
| 344 | EN14104 | 0.485 | | -0.14 | |
| 345 | EN14104 | 0.50 | | 0.56 | |
| 360 | EN14104 | 0.486 | | -0.10 | |
| 370 | EN14104 | 0.49 | | 0.09 | |
| 371 | EN14104 | 0.502 | | 0.65 | |
| 373 | EN14104 | 0.47 | | -0.84 | |
| 381 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 420 | EN14104 | 0.46 | | -1.31 | |
| 447 | EN14104 | 0.50 | | 0.56 | |
| 467 | | ----- | | ----- | |
| 496 | EN14104 | 0.47 | | -0.84 | |
| 663 | | ----- | | ----- | |
| 824 | EN14104 | 0.47 | | -0.84 | |
| 862 | | ----- | | ----- | |
| 1016 | EN14104 | 0.4681 | | -0.93 | |
| 1059 | EN14104 | 0.49 | | 0.09 | |
| 1199 | | ----- | | ----- | |
| 1299 | EN14104 | 0.47 | | -0.84 | |
| 1397 | | ----- | | ----- | |
| 1406 | | ----- | | ----- | |
| 1429 | EN14104 | 0.48 | C | -0.38 | first reported 0.26 |
| 1443 | | ----- | | ----- | |
| 1459 | | ----- | | ----- | |
| 1485 | EN14104 | 0.512 | | 1.12 | |
| 1491 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1546 | EN14104 | 0.516 | | 1.30 | |
| 1586 | | ----- | | ----- | |
| 1650 | EN14104 | 0.515 | | 1.26 | |
| 1656 | EN14104 | 0.46 | C | -1.31 | first reported 0.22 |
| 1741 | EN14104 | 0.49 | | 0.09 | |
| 1754 | EN14104 | 0.484 | | -0.19 | |
| 1807 | EN14104 | 0.52 | | 1.49 | |
| 1826 | EN14104 | 2.3 | R(0.01) | 84.56 | |
| 1984 | | ----- | | ----- | |
| 1989 | | ----- | | ----- | |
| 6047 | EN14104 | 0.51 | C | 1.02 | first reported 0.28 |
| 6059 | EN14104 | 0.48 | | -0.38 | |
| 6146 | EN14104 | 0.53 | | 1.96 | |
| 6259 | | ----- | | ----- | |
| 6265 | EN14104 | 0.507 | | 0.88 | |
| 6276 | EN14104 | 0.4770 | | -0.52 | |
| 6325 | EN14104 | 0.46 | | -1.31 | |
| 6358 | EN14104 | 0.4860 | | -0.10 | |
| 6373 | EN14104 | 0.496 | | 0.37 | |
| 6444 | | ----- | | ----- | |
| 6446 | | ----- | | ----- | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |

| | | |
|---|---|---|
| | normality | OK |
| | n | 34 |
| | outliers | 2 |
| | mean (n) | 0.4881 |
| | st.dev. (n) | 0.01861 |
| | R(calc.) | 0.0521 |
| | st.dev.(EN14104:21) | 0.02143 |
| | R(EN14104:21) | 0.06 |
| Compare | | |
| | R(EN14214:12+A2:19) | 0.06 |

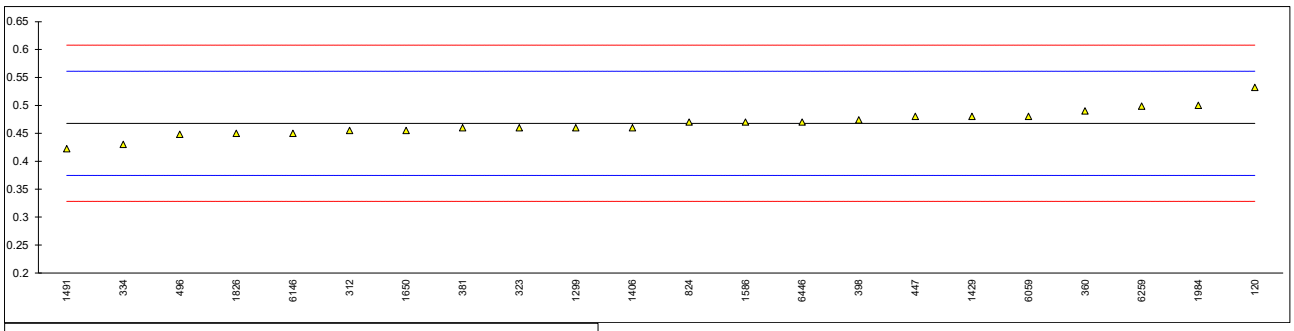

0.7
0.65
0.6
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
*
171
420
1656
6325
1016
334
373
824
496
1299
120
6276
333
1429
6059
1754
344
360
6358
370
1059
311
1741
6373
343
345
447
371
6265
6047
1485
1650
1546
1807
6146
1826

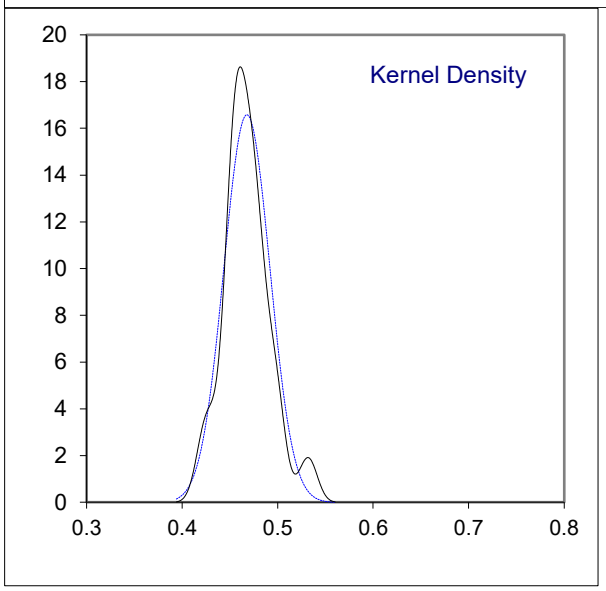

Kernel Density
25
20
15
10
5
0
0.2
0.4
0.6
0.8

## Determination of Total Acid Number on sample #22205; results in mg KOH/g

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D664-B | 0.532 | | 1.37 | |
| 171 | | ----- | | ----- | |
| 300 | | ----- | | ----- | |
| 311 | | ----- | | ----- | |
| 312 | D974 | 0.455 | | -0.28 | |
| 323 | D664-B | 0.46 | | -0.17 | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | D664-B | 0.43 | | -0.81 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | | ----- | | ----- | |
| 344 | | ----- | | ----- | |
| 345 | | ----- | | ----- | |
| 360 | D664-B | 0.490 | | 0.47 | |
| 370 | | ----- | | ----- | |
| 371 | | ----- | | ----- | |
| 373 | | ----- | | ----- | |
| 381 | D664-B | 0.46 | | -0.17 | |
| 398 | D664-B | 0.474 | | 0.13 | |
| 420 | | ----- | | ----- | |
| 447 | D974 | 0.48 | | 0.26 | |
| 467 | | ----- | | ----- | |
| 496 | D664-B | 0.448 | | -0.43 | |
| 663 | | ----- | | ----- | |
| 824 | D664-B | 0.47 | | 0.04 | |
| 862 | | ----- | | ----- | |
| 1016 | | ----- | | ----- | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1299 | D664-B | 0.46 | | -0.17 | |
| 1397 | | ----- | | ----- | |
| 1406 | D664-B | 0.46 | | -0.17 | |
| 1429 | D974 | 0.48 | | 0.26 | |
| 1443 | | ----- | | ----- | |
| 1459 | | ----- | | ----- | |
| 1485 | | ----- | | ----- | |
| 1491 | D664-B | 0.4226 | | -0.97 | |
| 1510 | | ----- | | ----- | |
| 1546 | | ----- | | ----- | |
| 1586 | D664-B | 0.47 | | 0.04 | |
| 1650 | D664-B | 0.455 | | -0.28 | |
| 1656 | | ----- | | ----- | |
| 1741 | | ----- | | ----- | |
| 1754 | | ----- | | ----- | |
| 1807 | | ----- | | ----- | |
| 1826 | D664-B | 0.45 | | -0.38 | |
| 1984 | ISO6618 | 0.5 | | 0.69 | |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | D664-B | 0.48 | | 0.26 | |
| 6146 | D664-B | 0.45 | | -0.38 | |
| 6259 | D664-B | 0.4985 | | 0.65 | |
| 6265 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | | ----- | | ----- | |
| 6358 | | ----- | | ----- | |
| 6373 | | ----- | | ----- | |
| 6444 | | ----- | | ----- | |
| 6446 | D974 | 0.47 | | 0.04 | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |

| | |
|---|---|
| normality | suspect |
| n | 22 |
| outliers | 0 |
| mean (n) | 0.4680 |
| st.dev. (n) | 0.02406 |
| R(calc.) | 0.0674 |
| st.dev.(D664-B:18e2) | 0.04666 |
| R(D664-B:18e2) | 0.1306 |

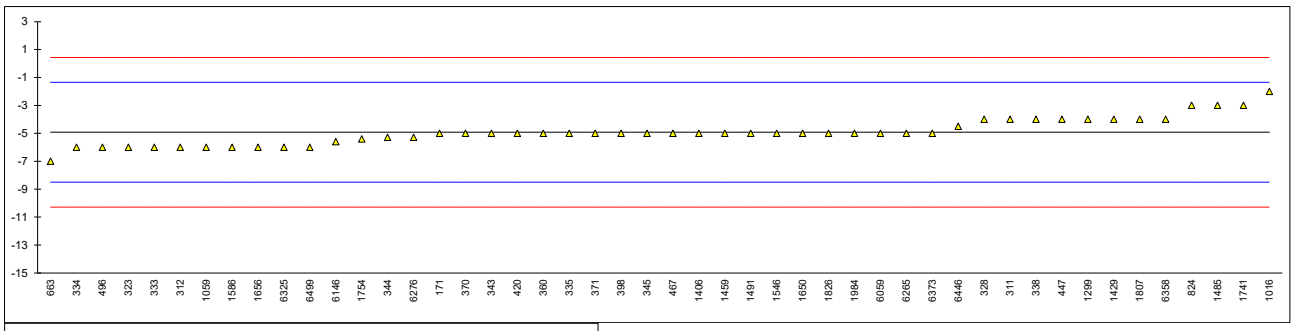

0.65
0.6
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
1491
334
496
1826
6146
312
1650
381
323
1299
1406
824
1586
6446
398
447
1429
6059
360
6259
1984
120

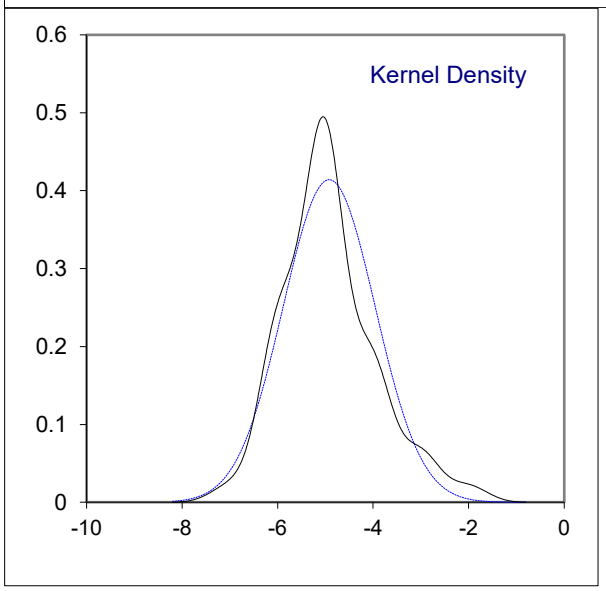

Kernel Density
20
18
16
14
12
10
8
6
4
2
0
0.3
0.4
0.5
0.6
0.7
0.8

## Determination of Cloud Point on sample #22205; results in °C

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | D2500 | -5 | | -0.05 | |
| 300 | | ----- | | ----- | |
| 311 | D2500 | -4 | | 0.51 | |
| 312 | EN23015 | -6 | | -0.61 | |
| 323 | D2500 | -6 | | -0.61 | |
| 328 | D2500 | -4 | | 0.51 | |
| 333 | EN23015 | -6 | | -0.61 | |
| 334 | D2500 | -6 | | -0.61 | |
| 335 | ISO3015 | -5 | | -0.05 | |
| 338 | ISO3015 | -4 | | 0.51 | |
| 343 | D2500 | -5 | | -0.05 | |
| 344 | D5771 | -5.3 | | -0.21 | |
| 345 | D5771 | -5 | | -0.05 | |
| 360 | D2500 | -5 | | -0.05 | |
| 370 | ISO3015 | -5 | | -0.05 | |
| 371 | ISO3015 | -5 | | -0.05 | |
| 373 | | ----- | | ----- | |
| 381 | | ----- | | ----- | |
| 398 | EN23015 | -5 | | -0.05 | |
| 420 | ISO3015 | -5 | | -0.05 | |
| 447 | IP219 | -4 | | 0.51 | |
| 467 | D2500 | -5 | | -0.05 | |
| 496 | D2500 | -6 | | -0.61 | |
| 663 | D2500 | -7 | | -1.17 | |
| 824 | D2500 | -3 | | 1.07 | |
| 862 | | ----- | | ----- | |
| 1016 | ISO3015 | -2.0 | | 1.63 | |
| 1059 | ISO3015 | -6 | | -0.61 | |
| 1199 | | ----- | | ----- | |
| 1299 | D2500 | -4 | | 0.51 | |
| 1397 | | ----- | | ----- | |
| 1406 | D2500 | -5 | | -0.05 | |
| 1429 | D2500 | -4.0 | | 0.51 | |
| 1443 | | ----- | | ----- | |
| 1459 | EN23015 | -5.0 | | -0.05 | |
| 1485 | D2500 | -3.0 | | 1.07 | |
| 1491 | ISO3015 | -5 | | -0.05 | |
| 1510 | | ----- | | ----- | |
| 1546 | ISO3015 | -5 | | -0.05 | |
| 1586 | D2500 | -6 | | -0.61 | |
| 1650 | D5771 | -5.0 | | -0.05 | |
| 1656 | D2500 | -6 | | -0.61 | |
| 1741 | ISO3015 | -3 | | 1.07 | |
| 1754 | ISO3015 | -5.4 | | -0.27 | |
| 1807 | D2500 | -4 | | 0.51 | |
| 1826 | D2500 | -5 | | -0.05 | |
| 1984 | ISO3015 | -5 | | -0.05 | |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | D2500 | -5 | | -0.05 | |
| 6146 | ISO3015 | -5.6 | | -0.38 | |
| 6259 | | ----- | | ----- | |
| 6265 | ISO3015 | -5 | | -0.05 | |
| 6276 | ISO22995 | -5.3 | | -0.21 | |
| 6325 | D2500 | -6 | | -0.61 | |
| 6358 | ISO3015 | -4.0 | | 0.51 | |
| 6373 | D2500 | -5 | | -0.05 | |
| 6444 | | ----- | | ----- | |
| 6446 | D2500 | -4.5 | | 0.23 | |
| 6447 | | ----- | | ----- | |
| 6499 | D2500 | -6.0 | | -0.61 | |

| | | |
|---|---|---|
| | normality | suspect |
| | n | 48 |
| | outliers | 0 |
| | mean (n) | -4.92 |
| | st.dev. (n) | 0.964 |
| | R(calc.) | 2.70 |
| | st.dev.(D2500:17a) | 1.786 |
| | R(D2500:17a) | 5 |
| Compare | | |
| | R(EN14214:12+A2:19) | 4 |

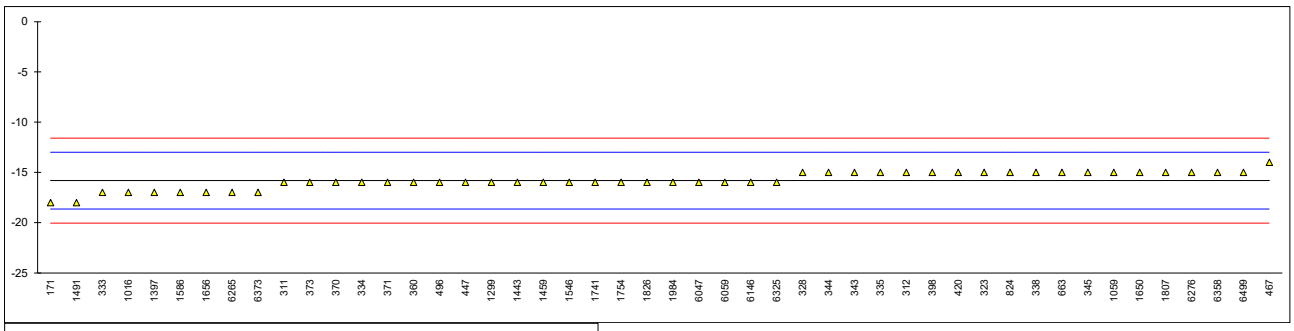

3
1
-1
-3
-5
-7
-9
-11
-13
-15
663 334 496 323 333 312 1059 1586 1656 6325 6499 6146 1754 344 6276 171 370 343 420 360 335 371 398 345 467 1406 1459 1491 1546 1650 1826 1984 6059 6265 6373 6446 328 311 338 447 1299 1429 1807 6358 824 1485 1741 1016

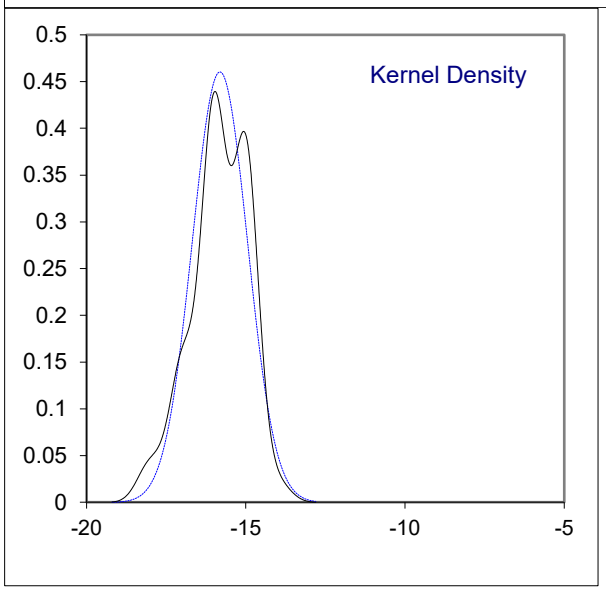

Kernel Density
0.6
0.5
0.4
0.3
0.2
0.1
0
-10
-8
-6
-4
-2
0

Determination of Cold Filter Plugging Point (CFPP) on sample #22205; results in °C

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | D6371 | -18 | | -1.55 | |
| 300 | | ----- | | ----- | |
| 311 | EN116 | -16 | | -0.13 | |
| 312 | EN116 | -15 | | 0.58 | |
| 323 | EN116 | -15 | | 0.58 | |
| 328 | EN116 | -15 | | 0.58 | |
| 333 | EN116 | -17 | | -0.84 | |
| 334 | EN116 | -16 | | -0.13 | |
| 335 | EN116 | -15 | | 0.58 | |
| 338 | EN116 | -15 | | 0.58 | |
| 343 | EN116 | -15 | | 0.58 | |
| 344 | EN116 | -15 | | 0.58 | |
| 345 | EN116 | -15 | | 0.58 | |
| 360 | EN116 | -16 | | -0.13 | |
| 370 | EN116 | -16 | | -0.13 | |
| 371 | EN116 | -16 | | -0.13 | |
| 373 | EN116 | -16 | | -0.13 | |
| 381 | | ----- | | ----- | |
| 398 | EN116 | -15 | | 0.58 | |
| 420 | EN116 | -15 | | 0.58 | |
| 447 | IP309 | -16 | | -0.13 | |
| 467 | EN116 | -14 | | 1.29 | |
| 496 | EN116 | -16 | | -0.13 | |
| 663 | EN116 | -15 | | 0.58 | |
| 824 | EN116 | -15 | | 0.58 | |
| 862 | | ----- | | ----- | |
| 1016 | EN116 | -17.0 | | -0.84 | |
| 1059 | EN116 | -15 | | 0.58 | |
| 1199 | | ----- | | ----- | |
| 1299 | EN116 | -16 | | -0.13 | |
| 1397 | EN116 | -17 | | -0.84 | |
| 1406 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1443 | EN116 | -16 | | -0.13 | |
| 1459 | EN116 | -16.0 | | -0.13 | |
| 1485 | | ----- | | ----- | |
| 1491 | EN116 | -18 | | -1.55 | |
| 1510 | | ----- | | ----- | |
| 1546 | EN116 | -16 | | -0.13 | |
| 1586 | EN116 | -17 | | -0.84 | |
| 1650 | EN116 | -15.0 | | 0.58 | |
| 1656 | EN116 | -17 | | -0.84 | |
| 1741 | EN116 | -16 | | -0.13 | |
| 1754 | EN116 | -16 | | -0.13 | |
| 1807 | EN116 | -15 | | 0.58 | |
| 1826 | EN116 | -16 | | -0.13 | |
| 1984 | EN116 | -16 | | -0.13 | |
| 1989 | | ----- | | ----- | |
| 6047 | EN116 | -16 | | -0.13 | |
| 6059 | EN116 | -16 | | -0.13 | |
| 6146 | EN116 | -16 | | -0.13 | |
| 6259 | | ----- | | ----- | |
| 6265 | EN116 | -17 | | -0.84 | |
| 6276 | EN116 | -15 | | 0.58 | |
| 6325 | EN116 | -16 | | -0.13 | |
| 6358 | EN116 | -15.0 | | 0.58 | |
| 6373 | EN116 | -17 | | -0.84 | |
| 6444 | | ----- | | ----- | |
| 6446 | | ----- | | ----- | |
| 6447 | | ----- | | ----- | |
| 6499 | D6371 | -15 | | 0.58 | |

| | | |
|---|---|---|
| | normality | OK |
| | n | 48 |
| | outliers | 0 |
| | mean (n) | -15.81 |
| | st.dev. (n) | 0.867 |
| | R(calc.) | 2.43 |
| | st.dev.(EN116:15) | 1.410 |
| | R(EN116:15) | 3.95 |
| compare | | |
| | R(EN14214:12+A2:19) | 3.95 |


0
-5
-10
-15
-20
-25
171 1491 333 1016 1397 1586 1656 6265 6373 311 373 370 334 371 360 496 447 1299 1443 1459 1546 1741 1754 1826 1984 6047 6059 6146 6325 328 344 343 335 312 398 420 323 824 338 663 345 1059 1650 1807 6276 6358 6499 467


Kernel Density
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
-20
-15
-10
-5

## Determination of Carbon Residue on 100% sample on sample #22205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | D4530 | <0.10 | | ----- | |
| 300 | | ----- | | ----- | |
| 311 | | ----- | | ----- | |
| 312 | | ----- | | ----- | |
| 323 | D4530 | < 0.10 | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | D4530 | <0.10 | | ----- | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | | ----- | | ----- | |
| 344 | | ----- | | ----- | |
| 345 | | ----- | | ----- | |
| 360 | D4530 | 0.008 | | ----- | |
| 370 | EN10370 | 0.01 | | ----- | |
| 371 | | ----- | | ----- | |
| 373 | | ----- | | ----- | |
| 381 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 420 | ISO6615 | 0.01 | | ----- | |
| 447 | ISO10370 | <0.10 | | ----- | |
| 467 | D4530 | 0.01 | | ----- | |
| 496 | D4530 | 0.0133 | | ----- | |
| 663 | D4530 | 0.01 | | ----- | |
| 824 | D4530 | 0.007 | | ----- | |
| 862 | | ----- | | ----- | |
| 1016 | ISO10370 | 0.00 | | ----- | |
| 1059 | ISO10370 | 0.02 | | ----- | |
| 1199 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1397 | | ----- | | ----- | |
| 1406 | D4530 | 0.01 | | ----- | |
| 1429 | D4530 | <0.01 | | ----- | |
| 1443 | | ----- | | ----- | |
| 1459 | | ----- | | ----- | |
| 1485 | | ----- | | ----- | |
| 1491 | ISO10370 | <0.05 | | ----- | |
| 1510 | | ----- | | ----- | |
| 1546 | | ----- | | ----- | |
| 1586 | D189 | <0.10 | | ----- | |
| 1650 | | ----- | | ----- | |
| 1656 | EN10370 | <0.01 | | ----- | |
| 1741 | ISO10370 | <0,01 | | ----- | |
| 1754 | | ----- | | ----- | |
| 1807 | | ----- | | ----- | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | D4530 | 0.0 | | ----- | |
| 6146 | ISO10370 | 0.004 | | ----- | |
| 6259 | | ----- | | ----- | |
| 6265 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | | ----- | | ----- | |
| 6358 | ISO10370 | <0,01 | | ----- | |
| 6373 | | ----- | | ----- | |
| 6444 | | ----- | | ----- | |
| 6446 | D4530 | 0.007 | | ----- | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |
| | n | 23 | | | |
| | mean (n) | <0.10 | | | Application range ASTM D4530:15R20: 0.1 – 30%M/M<br>Application range ISO10370:14: 0.10 – 30.0%M/M |

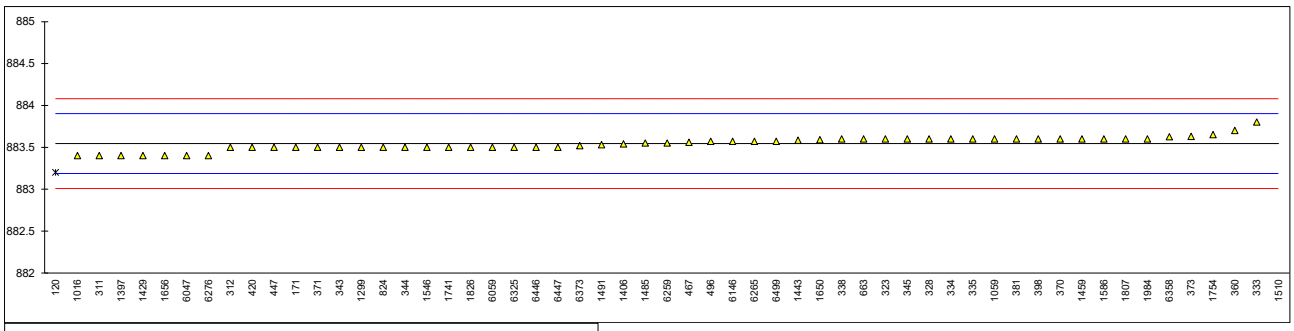
## Determination of Copper Corrosion 3 hrs at 50 °C on sample #22205

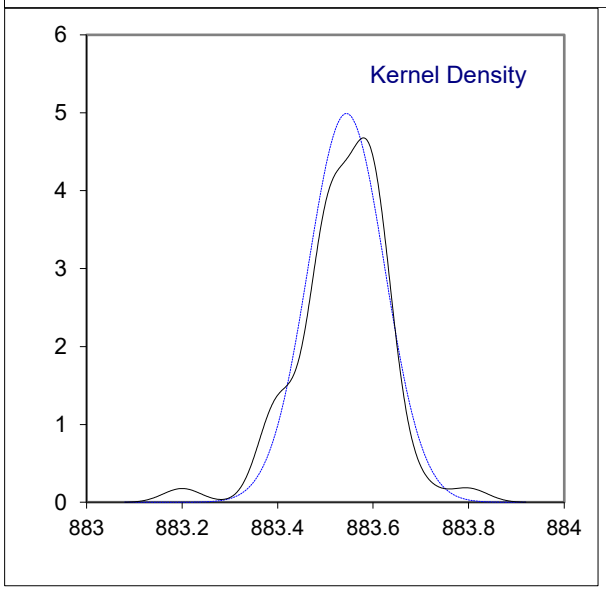
| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | D130 | 1a | | ----- | |
| 300 | | ----- | | ----- | |
| 311 | D130 | 1A | | ----- | |
| 312 | ISO2160 | 1a | | ----- | |
| 323 | D130 | 1A | | ----- | |
| 328 | D130 | 1 | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | D130 | 1a | | ----- | |
| 335 | D130 | 1a | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | ISO2160 | 1a | | ----- | |
| 344 | D130 | 1a | | ----- | |
| 345 | ISO2160 | 1a | | ----- | |
| 360 | D130 | 1A | | ----- | |
| 370 | ISO2160 | 1A | | ----- | |
| 371 | ISO2160 | 1a | | ----- | |
| 373 | | ----- | | ----- | |
| 381 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 420 | ISO2160 | 1a | | ----- | |
| 447 | IP154 | 1a | | ----- | |
| 467 | ISO2160 | 1a | | ----- | |
| 496 | ISO2160 | 1a | | ----- | |
| 663 | D130 | 1a | | ----- | |
| 824 | D130 | 1a | | ----- | |
| 862 | | ----- | | ----- | |
| 1016 | ISO2160 | 1A | | ----- | |
| 1059 | ISO2160 | 1a | | ----- | |
| 1199 | | ----- | | ----- | |
| 1299 | D130 | 1A | | ----- | |
| 1397 | ISO2160 | 1 | | ----- | |
| 1406 | | ----- | | ----- | |
| 1429 | D130 | 1A | | ----- | |
| 1443 | ISO2160 | 1a | | ----- | |
| 1459 | | ----- | | ----- | |
| 1485 | | ----- | | ----- | |
| 1491 | ISO2160 | 1a | | ----- | |
| 1510 | | ----- | | ----- | |
| 1546 | ISO2160 | 1 | | ----- | |
| 1586 | IP154 | 1B | | ----- | |
| 1650 | D130 | 1a | | ----- | |
| 1656 | ISO2160 | 1 | | ----- | |
| 1741 | ISO2160 | Class1 | | ----- | |
| 1754 | ISO2160 | 1 | | ----- | |
| 1807 | D130 | 1a | | ----- | |
| 1826 | D130 | 1a | | ----- | |
| 1984 | ISO2160 | 1a | | ----- | |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | D130 | 1a | | ----- | |
| 6146 | ISO2160 | 1a | | ----- | |
| 6259 | | ----- | | ----- | |
| 6265 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | D130 | 1A | | ----- | |
| 6358 | ISO2160 | 1a | | ----- | |
| 6373 | D130 | 1a | | ----- | |
| 6444 | | ----- | | ----- | |
| 6446 | D130 | 1A | | ----- | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |
| | n | 41 | | | |
| | mean (n) | 1 (1a/1b) | | | |

## Determination of Density at 15 °C on sample #22205; results in kg/m$^3$

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D4052 | 883.2 | R(0.01) | -1.93 | |
| 171 | D4052 | 883.5 | | -0.25 | |
| 300 | | ----- | | ----- | |
| 311 | D1298 | 883.4 | | -0.81 | |
| 312 | ISO12185 | 883.5 | | -0.25 | |
| 323 | ISO12185 | 883.6 | | 0.31 | |
| 328 | ISO12185 | 883.6 | | 0.31 | |
| 333 | ISO12185 | 883.8 | | 1.43 | |
| 334 | ISO12185 | 883.6 | | 0.31 | |
| 335 | ISO12185 | 883.6 | | 0.31 | |
| 338 | ISO12185 | 883.6 | | 0.31 | |
| 343 | ISO12185 | 883.5 | | -0.25 | |
| 344 | D4052 | 883.5 | | -0.25 | |
| 345 | ISO12185 | 883.6 | | 0.31 | |
| 360 | ISO12185 | 883.7 | | 0.87 | |
| 370 | ISO12185 | 883.6 | | 0.31 | |
| 371 | ISO12185 | 883.5 | | -0.25 | |
| 373 | ISO12185 | 883.63 | | 0.48 | |
| 381 | ISO12185 | 883.6 | | 0.31 | |
| 398 | ISO12185 | 883.6 | | 0.31 | |
| 420 | ISO12185 | 883.5 | | -0.25 | |
| 447 | IP365 | 883.5 | | -0.25 | |
| 467 | ISO12185 | 883.56 | | 0.09 | |
| 496 | ISO12185 | 883.57 | | 0.14 | |
| 663 | D4052 | 883.6 | | 0.31 | |
| 824 | ISO12185 | 883.5 | | -0.25 | |
| 862 | | ----- | | ----- | |
| 1016 | ISO12185 | 883.4 | | -0.81 | |
| 1059 | ISO12185 | 883.6 | | 0.31 | |
| 1199 | | ----- | | ----- | |
| 1299 | D4052 | 883.5 | | -0.25 | |
| 1397 | ISO12185 | 883.4 | | -0.81 | |
| 1406 | ISO12185 | 883.54 | C | -0.02 | first reported 833.54 |
| 1429 | ISO12185 | 883.4 | | -0.81 | |
| 1443 | ISO12185 | 883.582 | | 0.21 | |
| 1459 | ISO12185 | 883.60 | | 0.31 | |
| 1485 | ISO12185 | 883.55 | | 0.03 | |
| 1491 | ISO12185 | 883.53 | | -0.08 | |
| 1510 | IP365 | 999.5 | R(0.01) | 649.35 | |
| 1546 | ISO12185 | 883.5 | C | -0.25 | first reported 882.8 |
| 1586 | ISO12185 | 883.6 | | 0.31 | |
| 1650 | ISO12185 | 883.59 | | 0.26 | |
| 1656 | ISO12185 | 883.4 | | -0.81 | |
| 1741 | ISO12185 | 883.5 | | -0.25 | |
| 1754 | ISO12185 | 883.65 | | 0.59 | |
| 1807 | D4052 | 883.6 | | 0.31 | |
| 1826 | ISO12185 | 883.5 | | -0.25 | |
| 1984 | ISO12185 | 883.6 | | 0.31 | |
| 1989 | | ----- | | ----- | |
| 6047 | ISO12185 | 883.4 | C | -0.81 | first reported 882.7 |
| 6059 | ISO12185 | 883.5 | | -0.25 | |
| 6146 | ISO12185 | 883.57 | | 0.14 | |
| 6259 | D4052 | 883.55 | | 0.03 | |
| 6265 | ISO12185 | 883.57 | | 0.14 | |
| 6276 | ISO12185 | 883.4 | | -0.81 | |
| 6325 | ISO12185 | 883.5 | | -0.25 | |
| 6358 | ISO12185 | 883.624 | | 0.45 | |
| 6373 | ISO12185 | 883.52 | | -0.14 | |
| 6444 | | ----- | | ----- | |
| 6446 | D4052 | 883.5 | | -0.25 | |
| 6447 | D4052 | 883.5 | | -0.25 | |
| 6499 | D4052 | 883.57 | | 0.14 | |

| | |
|---|---|
| normality | suspect |
| n | 55 |
| outliers | 2 |
| mean (n) | 883.54 |
| st.dev. (n) | 0.080 |
| R(calc.) | 0.22 |
| st.dev.(ISO12185:96) | 0.179 |
| R(ISO12185:96) | 0.5 |

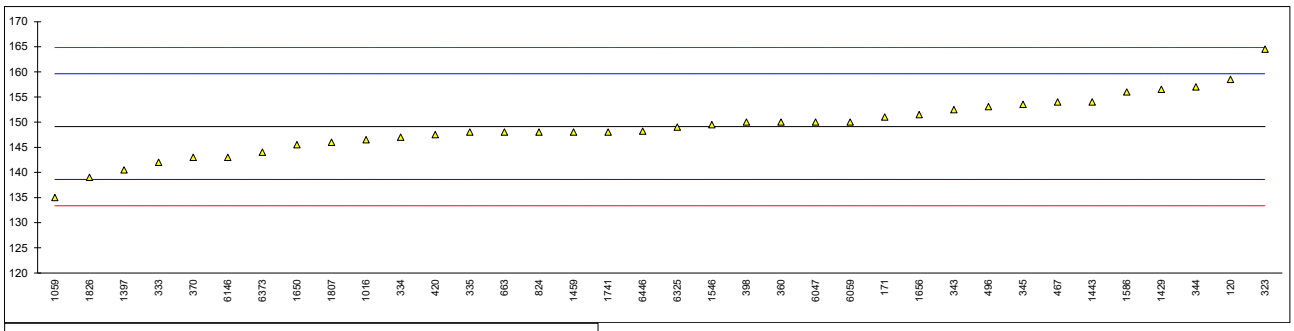

885
884.5
884
883.5
883
882.5
882
120 1016 311 1397 1429 1656 6047 6276 312 420 447 171 371 343 1299 824 344 1546 1741 1826 6059 6325 6446 6447 6373 1491 1406 1485 6259 467 496 6146 6265 6499 1443 1650 338 663 323 345 328 334 335 1059 381 398 370 1459 1586 1807 1984 6358 373 1754 360 333 1510

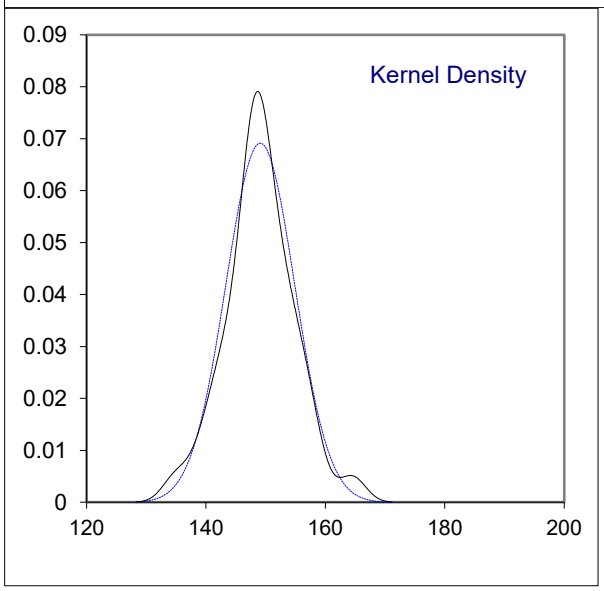

Kernel Density
6
5
4
3
2
1
0
883
883.2
883.4
883.6
883.8
884

## Determination of Flash Point PMcc on sample #22205; results in °C

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D93-C | 158.5 | | 1.79 | |
| 171 | D93-C | 151.0 | | 0.36 | |
| 300 | | ----- | | ----- | |
| 311 | | ----- | | ----- | |
| 312 | | ----- | | ----- | |
| 323 | D93-C | 164.5 | | 2.93 | |
| 328 | | ----- | | ----- | |
| 333 | D93-C | 142 | | -1.35 | |
| 334 | D93-C | 147.0 | | -0.40 | |
| 335 | D93-C | 148.0 | | -0.21 | |
| 338 | | ----- | | ----- | |
| 343 | ISO2719-C | 152.5 | | 0.65 | |
| 344 | D93-C | 157 | | 1.50 | |
| 345 | ISO2719 | 153.5 | | 0.84 | |
| 360 | D93-C | 150.0 | | 0.17 | |
| 370 | D93-C | 143.0 | | -1.16 | |
| 371 | | ----- | | ----- | |
| 373 | | ----- | | ----- | |
| 381 | | ----- | | ----- | |
| 398 | D93-A | 150 | | 0.17 | |
| 420 | ISO2719-C | 147.5 | | -0.31 | |
| 447 | | ----- | | ----- | |
| 467 | D93-C | 154.0 | | 0.93 | |
| 496 | D93-C | 153.1 | | 0.76 | |
| 663 | D93-C | 148.0 | | -0.21 | |
| 824 | D93-C | 148 | | -0.21 | |
| 862 | | ----- | | ----- | |
| 1016 | D93-C | 146.5 | | -0.50 | |
| 1059 | ISO2719-C | 135.0 | | -2.69 | |
| 1199 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1397 | D93-C | 140.5 | | -1.64 | |
| 1406 | | ----- | | ----- | |
| 1429 | D93-C | 156.5 | | 1.41 | |
| 1443 | ISO2719-C | 154.0 | | 0.93 | |
| 1459 | ISO2719-C | 148.0 | | -0.21 | |
| 1485 | | ----- | | ----- | |
| 1491 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1546 | ISO2719-C | 149.5 | | 0.08 | |
| 1586 | D93-C | 156.0 | | 1.31 | |
| 1650 | D93-C | 145.5 | | -0.69 | |
| 1656 | D93-C | 151.5 | | 0.46 | |
| 1741 | ISO2719-C | 148 | | -0.21 | |
| 1754 | | ----- | | ----- | |
| 1807 | D93-C | 146.0 | | -0.59 | |
| 1826 | D93-C | 139 | | -1.92 | |
| 1984 | | ----- | | ----- | |
| 1989 | | ----- | | ----- | |
| 6047 | ISO2719-C | 150.0 | | 0.17 | |
| 6059 | D93-C | 150 | | 0.17 | |
| 6146 | D93-C | 143 | | -1.16 | |
| 6259 | | ----- | | ----- | |
| 6265 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | ISO2719-A | 149.0 | | -0.02 | |
| 6358 | | ----- | | ----- | |
| 6373 | D93-C | 144.0 | | -0.97 | |
| 6444 | | ----- | | ----- | |
| 6446 | D93-C | 148.2 | | -0.17 | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |

| | | |
|---|---|---|
| | normality | OK |
| | n | 36 |
| | outliers | 0 |
| | mean (n) | 149.11 |
| | st.dev. (n) | 5.774 |
| | R(calc.) | 16.17 |
| | st.dev.(D93-C:20) | 5.250 |
| | R(D93-C:20) | 14.7 |
| compare | | |
| | R(ISO2719-C:16) | 14.7 |

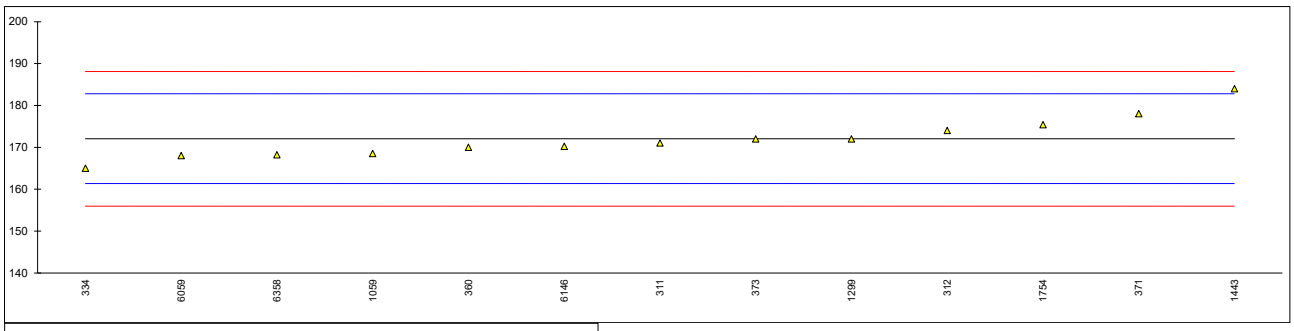

170
165
160
155
150
145
140
135
130
125
120
1059
1826
1397
333
370
6146
6373
1650
1807
1016
334
420
335
663
824
1459
1741
6446
6325
1546
398
360
6047
6059
171
1656
343
496
345
467
1443
1586
1429
344
120
323

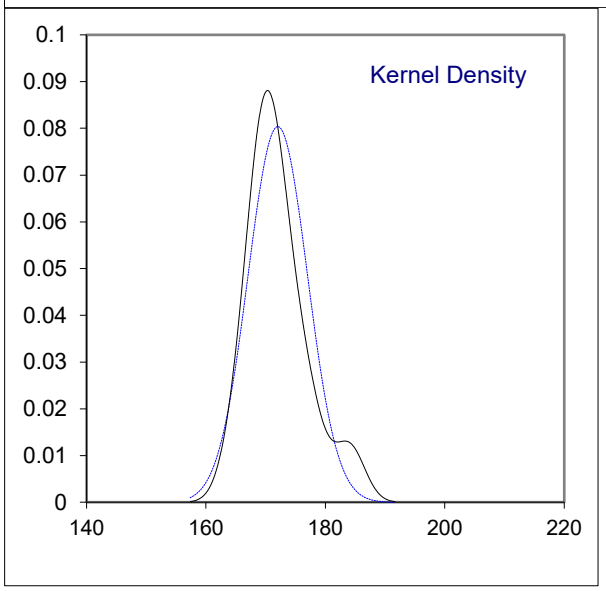

Kernel Density
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
120
140
160
180
200

## Determination of Flash Point recc on sample #22205; results in °C

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | | ----- | | ----- | |
| 300 | | ----- | | ----- | |
| 311 | ISO3679 | 171.0 | | -0.19 | |
| 312 | ISO3679 | 174.0 | | 0.37 | |
| 323 | | ----- | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | ISO3679 | 165 | | -1.31 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | | ----- | | ----- | |
| 344 | | ----- | | ----- | |
| 345 | | ----- | | ----- | |
| 360 | ISO3679 | 170.0 | | -0.38 | |
| 370 | | ----- | | ----- | |
| 371 | ISO3679 | 178.0 | | 1.12 | |
| 373 | ISO3679 | 172 | | 0.00 | |
| 381 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 420 | | ----- | | ----- | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | | ----- | | ----- | |
| 663 | | ----- | | ----- | |
| 824 | | ----- | | ----- | |
| 862 | | ----- | | ----- | |
| 1016 | | ----- | | ----- | |
| 1059 | ISO3679 | 168.5 | | -0.66 | |
| 1199 | | ----- | | ----- | |
| 1299 | ISO3679 | 172.0 | | 0.00 | |
| 1397 | | ----- | | ----- | |
| 1406 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1443 | ISO3679 | 184.0 | | 2.24 | |
| 1459 | | ----- | | ----- | |
| 1485 | | ----- | | ----- | |
| 1491 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1546 | | ----- | | ----- | |
| 1586 | | ----- | | ----- | |
| 1650 | | ----- | | ----- | |
| 1656 | | ----- | | ----- | |
| 1741 | | ----- | | ----- | |
| 1754 | ISO3679 | 175.4 | | 0.63 | |
| 1807 | | ----- | | ----- | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | ISO3679 | 168 | | -0.75 | |
| 6146 | ISO3679 | 170.2 | | -0.34 | |
| 6259 | | ----- | | ----- | |
| 6265 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | | ----- | | ----- | |
| 6358 | ISO3679 | 168.2 | | -0.71 | |
| 6373 | | ----- | | ----- | |
| 6444 | | ----- | | ----- | |
| 6446 | | ----- | | ----- | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |

| | |
|---|---|
| normality | not OK |
| n | 13 |
| outliers | 0 |
| mean (n) | 172.02 |
| st.dev. (n) | 4.962 |
| R(calc.) | 13.89 |
| st.dev.(ISO3679:15) | 5.357 |
| R(ISO3679:15) | 15.0 |

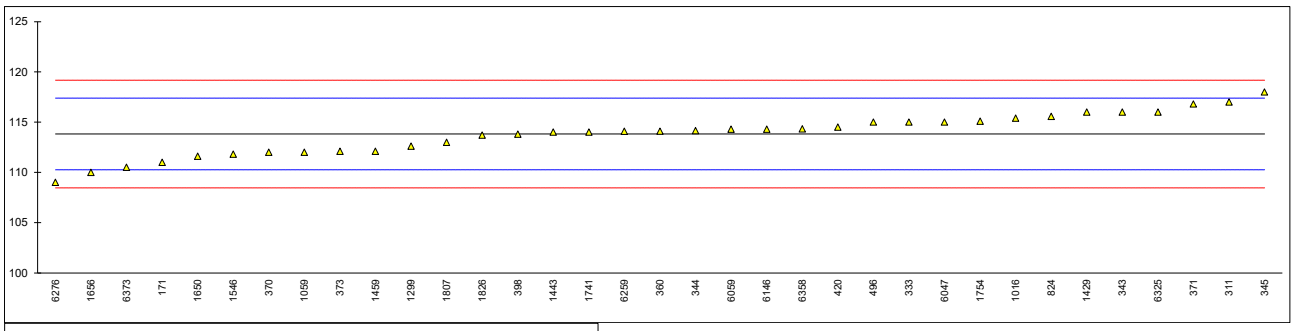

200
190
180
170
160
150
140
334
6059
6358
1059
360
6146
311
373
1299
312
1754
371
1443

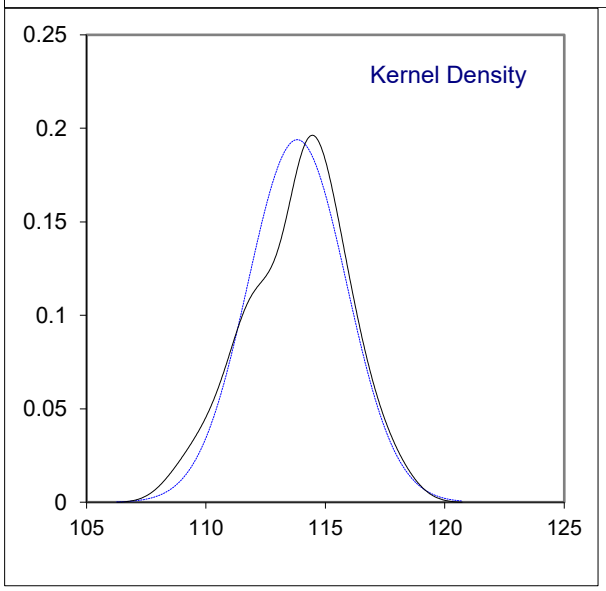

Kernel Density
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
140
160
180
200
220

## Determination of Iodine Value on sample #22205; results in g $I_2$/100g

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | EN14111 | 111 | | -1.58 | |
| 300 | | ----- | | ----- | |
| 311 | EN14111 | 117 | | 1.78 | |
| 312 | | ----- | | ----- | |
| 323 | | ----- | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | EN14111 | 115 | | 0.66 | |
| 334 | | ----- | | ----- | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14111 | 116 | | 1.22 | |
| 344 | EN14111 | 114.15 | | 0.18 | |
| 345 | EN14111 | 118 | | 2.34 | |
| 360 | EN14111 | 114.1 | | 0.15 | |
| 370 | EN14111 | 112 | | -1.02 | |
| 371 | EN14111 | 116.8 | | 1.67 | |
| 373 | EN14111 | 112.1 | | -0.97 | |
| 381 | | ----- | | ----- | |
| 398 | EN14111 | 113.8 | | -0.01 | |
| 420 | EN14111 | 114.5 | | 0.38 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14111 | 115 | | 0.66 | |
| 663 | | ----- | | ----- | |
| 824 | EN14111 | 115.56 | | 0.97 | |
| 862 | | ----- | | ----- | |
| 1016 | EN14111 | 115.39 | | 0.88 | |
| 1059 | EN14111 | 112 | | -1.02 | |
| 1199 | | ----- | | ----- | |
| 1299 | EN14111 | 112.6 | | -0.69 | |
| 1397 | | ----- | | ----- | |
| 1406 | | ----- | | ----- | |
| 1429 | EN14111 | 116 | | 1.22 | |
| 1443 | EN14111 | 114 | | 0.10 | |
| 1459 | EN16300 | 112.1 | | -0.97 | |
| 1485 | | ----- | | ----- | |
| 1491 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1546 | EN14111 | 111.81 | | -1.13 | |
| 1586 | | ----- | | ----- | |
| 1650 | EN14111 | 111.6 | | -1.25 | |
| 1656 | EN14111 | 110 | | -2.14 | |
| 1741 | EN14111 | 114 | C | 0.10 | first reported 106 |
| 1754 | EN14111 | 115.1 | | 0.71 | |
| 1807 | EN16300 | 113 | | -0.46 | |
| 1826 | EN14111 | 113.7 | | -0.07 | |
| 1984 | | ----- | | ----- | |
| 1989 | | ----- | | ----- | |
| 6047 | EN14111 | 115.0 | | 0.66 | |
| 6059 | EN14111 | 114.3 | | 0.27 | |
| 6146 | EN14111 | 114.3 | | 0.27 | |
| 6259 | EN14111 | 114.08 | | 0.14 | |
| 6265 | | ----- | | ----- | |
| 6276 | EN14111 | 109 | | -2.70 | |
| 6325 | EN14111 | 116 | | 1.22 | |
| 6358 | EN14111 | 114.33 | | 0.28 | |
| 6373 | EN14111 | 110.5 | | -1.86 | |
| 6444 | | ----- | | ----- | |
| 6446 | | ----- | | ----- | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |

| | |
|---|---|
| normality | OK |
| n | 35 |
| outliers | 0 |
| mean (n) | 113.82 |
| st.dev. (n) | 2.058 |
| R(calc.) | 5.76 |
| st.dev.(EN14111:03) | 1.786 |
| R(EN14111:03) | 5 |

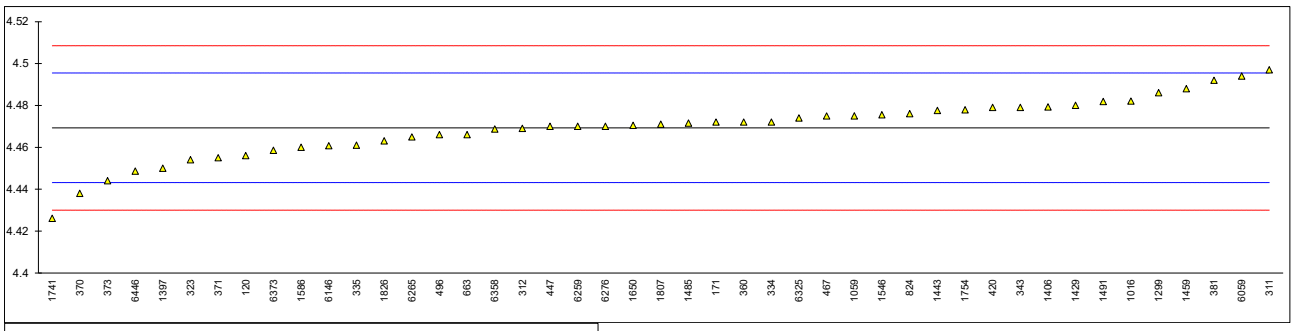

125
120
115
110
105
100
6276
1656
6373
171
1650
1546
370
1059
373
1459
1299
1807
1826
398
1443
1741
6259
360
344
6059
6146
6358
420
496
333
6047
1754
1016
824
1429
343
6325
371
311
345

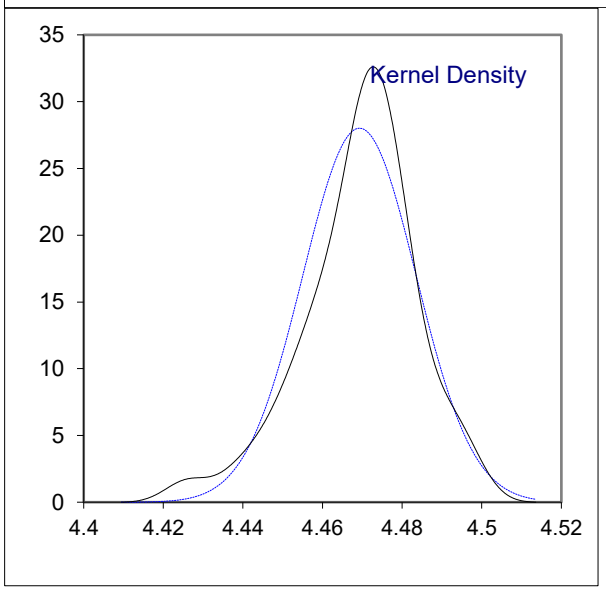

Kernel Density
0.25
0.2
0.15
0.1
0.05
0
105
110
115
120
125

## Determination of Kinematic Viscosity at 40 °C on sample #22205; results in $mm^2/s$

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D445 | 4.456 | | -1.01 | |
| 171 | D445 | 4.472 | | 0.21 | |
| 300 | | ----- | | ----- | |
| 311 | D445 | 4.497 | | 2.12 | |
| 312 | ISO3104-A | 4.469 | C | -0.02 | first reported 4.535 |
| 323 | ISO3104-B | 4.454 | | -1.17 | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | ISO3104-B | 4.472 | | 0.21 | |
| 335 | ISO3104-A | 4.461 | | -0.63 | |
| 338 | | ----- | | ----- | |
| 343 | ISO3104-A | 4.479 | | 0.74 | |
| 344 | | ----- | | ----- | |
| 345 | | ----- | | ----- | |
| 360 | ISO3104-B | 4.472 | | 0.21 | |
| 370 | ISO3104-A | 4.438 | | -2.39 | |
| 371 | ISO3104-A | 4.455 | | -1.09 | |
| 373 | ISO3104-A | 4.444 | | -1.93 | |
| 381 | D445 | 4.492 | | 1.74 | |
| 398 | | ----- | | ----- | |
| 420 | ISO3104-A | 4.479 | | 0.74 | |
| 447 | IP71 | 4.470 | | 0.06 | |
| 467 | ISO3104-A | 4.4749 | | 0.43 | |
| 496 | D445 | 4.466 | | -0.25 | |
| 663 | D445 | 4.466 | | -0.25 | |
| 824 | ISO3104-B | 4.476 | | 0.51 | |
| 862 | | ----- | | ----- | |
| 1016 | ISO3104-A | 4.482 | | 0.97 | |
| 1059 | ISO3104-A | 4.475 | | 0.44 | |
| 1199 | | ----- | | ----- | |
| 1299 | D445 | 4.486 | | 1.28 | |
| 1397 | D7042 | 4.450 | | -1.47 | |
| 1406 | D7042 | 4.4793 | | 0.77 | |
| 1429 | D445 | 4.480 | | 0.82 | |
| 1443 | ISO3104-A | 4.4775 | | 0.63 | |
| 1459 | D7042 | 4.488 | | 1.43 | |
| 1485 | D445 | 4.4715 | | 0.17 | |
| 1491 | D7042 | 4.4818 | | 0.96 | |
| 1510 | | ----- | | ----- | |
| 1546 | ISO3104-A | 4.4755 | | 0.48 | |
| 1586 | ISO3104-A | 4.460 | | -0.71 | |
| 1650 | D445 | 4.4704 | | 0.09 | |
| 1656 | | ----- | | ----- | |
| 1741 | ISO3104-A | 4.426 | C | -3.31 | first reported 4.620 |
| 1754 | ISO3104-A | 4.4779 | | 0.66 | |
| 1807 | ISO3104-A | 4.471 | | 0.13 | |
| 1826 | ISO3104-B | 4.463 | | -0.48 | |
| 1984 | | ----- | | ----- | |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | ISO3104-B | 4.494 | | 1.89 | |
| 6146 | ISO3104-B | 4.4607 | | -0.66 | |
| 6259 | D445 | 4.470 | | 0.06 | |
| 6265 | EN16896 | 4.4649 | | -0.33 | |
| 6276 | EN16896 | 4.470 | | 0.06 | |
| 6325 | D445 | 4.474 | | 0.36 | |
| 6358 | ISO3104-A | 4.46865 | | -0.05 | |
| 6373 | D445 | 4.4585 | | -0.82 | |
| 6444 | | ----- | | ----- | |
| 6446 | ISO3104-B | 4.4486 | | -1.58 | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |

| | | |
|---|---|---|
| | normality | suspect |
| | n | 45 |
| | outliers | 0 |
| | mean (n) | 4.4693 |
| | st.dev. (n) | 0.01424 |
| | R(calc.) | 0.0399 |
| | st.dev.(ISO3104-A:20) | 0.01307 |
| | R(ISO3104-A:20) | 0.0366 |
| compare | | |
| | R(D445:21e2) | 0.1001 |

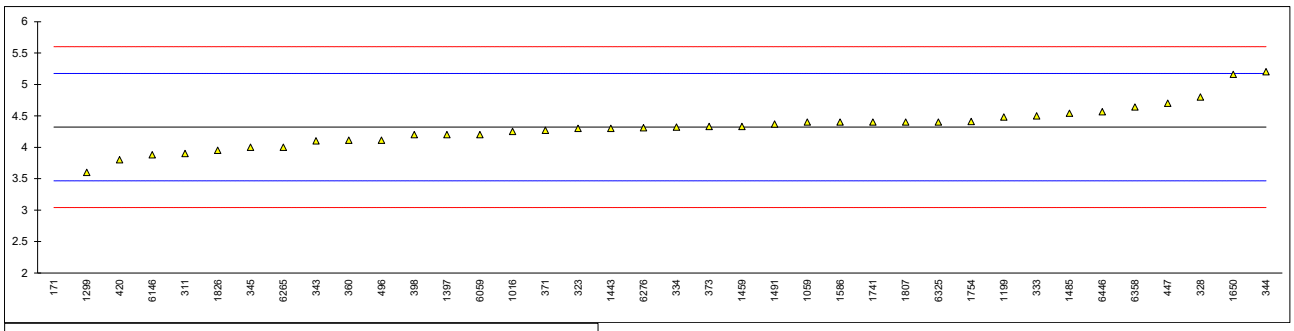

4.52
4.5
4.48
4.46
4.44
4.42
4.4
1741 370 373 6446 1397 323 371 120 6373 1586 6146 335 1826 6265 496 663 6358 312 447 6259 6276 1650 1807 1485 171 360 334 6325 467 1059 1546 824 1443 1754 420 343 1406 1429 1491 1016 1299 1459 381 6059 311

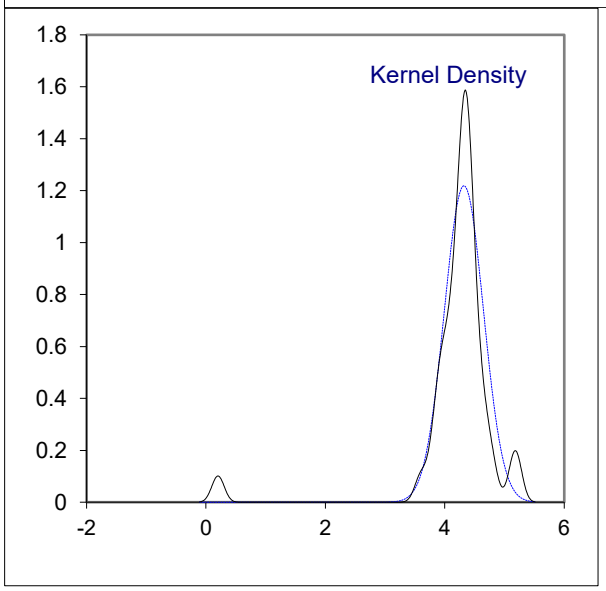

Kernel Density
35
30
25
20
15
10
5
0
4.4
4.42
4.44
4.46
4.48
4.5
4.52

## Determination of Oxidation Stability Induction period on sample #22205; results in hours

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | EN15751 | 0.2 | R(0.01) | -9.65 | |
| 300 | | ----- | | ----- | |
| 311 | EN15751 | 3.9 | | -0.98 | |
| 312 | | ----- | | ----- | |
| 323 | EN15751 | 4.3 | | -0.05 | |
| 328 | EN15751 | 4.8 | | 1.13 | |
| 333 | EN14112 | 4.5 | | 0.42 | |
| 334 | EN15751 | 4.32 | | 0.00 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN15751 | 4.1 | | -0.51 | |
| 344 | EN14112 | 5.2 | | 2.06 | |
| 345 | EN15751 | 4.0 | | -0.75 | |
| 360 | EN14112 | 4.11 | | -0.49 | |
| 370 | | ----- | | ----- | |
| 371 | EN14112 | 4.27 | | -0.12 | |
| 373 | EN14112 | 4.33 | | 0.02 | |
| 381 | | ----- | | ----- | |
| 398 | EN15751 | 4.2 | | -0.28 | |
| 420 | EN15751 | 3.8 | | -1.22 | |
| 447 | EN15751 | 4.7 | | 0.89 | |
| 467 | | ----- | | ----- | |
| 496 | EN15751 | 4.11 | | -0.49 | |
| 663 | | ----- | | ----- | |
| 824 | | ----- | | ----- | |
| 862 | | ----- | | ----- | |
| 1016 | EN15751 | 4.25 | | -0.16 | |
| 1059 | EN15751 | 4.4 | | 0.19 | |
| 1199 | EN14112 | 4.48 | | 0.38 | |
| 1299 | EN15751 | 3.6 | | -1.69 | |
| 1397 | EN15751 | 4.2 | | -0.28 | |
| 1406 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1443 | EN14112 | 4.3 | | -0.05 | |
| 1459 | EN15751 | 4.33 | | 0.02 | |
| 1485 | EN14112 | 4.54 | | 0.52 | |
| 1491 | EN14112 | 4.37 | | 0.12 | |
| 1510 | | ----- | | ----- | |
| 1546 | | ----- | | ----- | |
| 1586 | EN15751 | 4.40 | | 0.19 | |
| 1650 | EN14112 | 5.16 | | 1.97 | |
| 1656 | | ----- | | ----- | |
| 1741 | EN15751 | 4.4 | | 0.19 | |
| 1754 | EN14112 | 4.41 | | 0.21 | |
| 1807 | EN15751 | 4.4 | | 0.19 | |
| 1826 | EN15751 | 3.95 | | -0.87 | |
| 1984 | | ----- | | ----- | |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | EN15751 | 4.2 | | -0.28 | |
| 6146 | EN15751 | 3.88 | | -1.03 | |
| 6259 | | ----- | | ----- | |
| 6265 | EN15751 | 4.0 | | -0.75 | |
| 6276 | EN15751 | 4.31 | | -0.02 | |
| 6325 | EN15751 | 4.4 | | 0.19 | |
| 6358 | EN15751 | 4.64 | | 0.75 | |
| 6373 | | ----- | | ----- | |
| 6444 | | ----- | | ----- | |
| 6446 | EN15751 | 4.565 | | 0.57 | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |

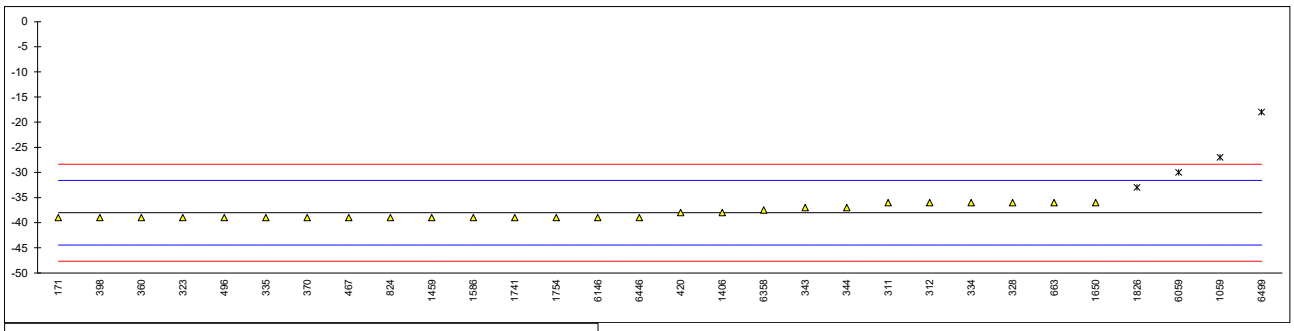
| | | |
|---|---|---|
| | normality | suspect |
| | n | 37 |
| | outliers | 1 |
| | mean (n) | 4.320 |
| | st.dev. (n) | 0.3272 |
| | R(calc.) | 0.916 |
| | st.dev.(EN15751:14) | 0.4268 |
| | R(EN15751:14) | 1.195 |
| compare | | |
| | R(EN14112:20) | 1.353 |

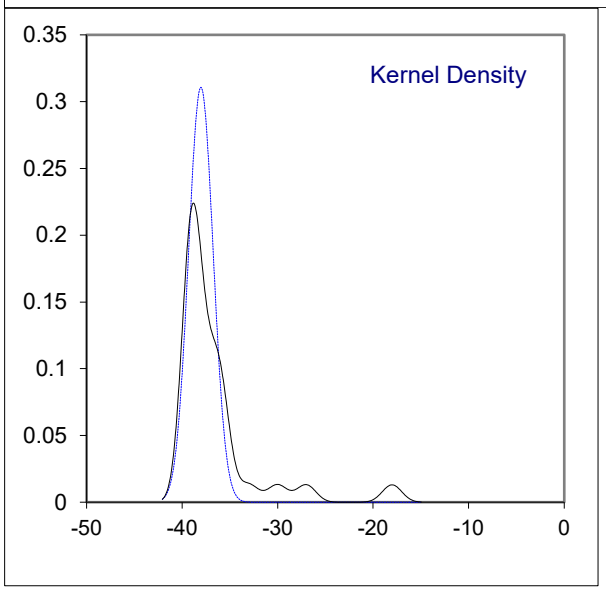

6
5.5
5
4.5
4
3.5
3
2.5
2
171
1299
420
6146
311
1826
345
6265
343
360
496
398
1397
6059
1016
371
323
1443
6276
334
373
1459
1491
1059
1586
1741
1807
6325
1754
1199
333
1485
6446
6358
447
328
1650
344


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

## Determination of Pour Point on sample #22205; results in °C

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | D5950 | -39 | | -0.31 | |
| 300 | | ----- | | ----- | |
| 311 | D97 | -36 | | 0.63 | |
| 312 | ISO3016 | -36 | | 0.63 | |
| 323 | ISO3016 | -39 | | -0.31 | |
| 328 | ISO3016 | -36 | | 0.63 | |
| 333 | | ----- | | ----- | |
| 334 | ISO3016 | -36 | | 0.63 | |
| 335 | NFT60105 | -39 | | -0.31 | |
| 338 | | ----- | | ----- | |
| 343 | ISO3016 | -37 | | 0.32 | |
| 344 | D5950 | -37 | | 0.32 | |
| 345 | | ----- | | ----- | |
| 360 | D97 | -39 | | -0.31 | |
| 370 | ISO3016 | -39 | | -0.31 | |
| 371 | | ----- | | ----- | |
| 373 | | ----- | | ----- | |
| 381 | | ----- | | ----- | |
| 398 | ISO3016 | -39 | | -0.31 | |
| 420 | ISO3016 | -38 | | 0.01 | |
| 447 | | ----- | | ----- | |
| 467 | ISO3016 | -39 | | -0.31 | |
| 496 | ISO3016 | -39 | | -0.31 | |
| 663 | D97 | -36 | | 0.63 | |
| 824 | ISO3016 | -39 | | -0.31 | |
| 862 | | ----- | | ----- | |
| 1016 | | ----- | | ----- | |
| 1059 | ISO3016 | -27 | R(0.01) | 3.43 | |
| 1199 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1397 | | ----- | | ----- | |
| 1406 | ISO3016 | -38 | | 0.01 | |
| 1429 | D97 | <-30 | | ----- | |
| 1443 | | ----- | | ----- | |
| 1459 | In house | -39.0 | | -0.31 | |
| 1485 | | ----- | | ----- | |
| 1491 | ISO3016 | <-21 | | ----- | |
| 1510 | | ----- | | ----- | |
| 1546 | | ----- | | ----- | |
| 1586 | ISO3016 | -39 | | -0.31 | |
| 1650 | D5950 | -36.0 | | 0.63 | |
| 1656 | | ----- | | ----- | |
| 1741 | ISO3016 | -39 | | -0.31 | |
| 1754 | ISO3016 | -39 | | -0.31 | |
| 1807 | | ----- | | ----- | |
| 1826 | ISO3016 | -33 | R(0.05) | 1.56 | |
| 1984 | NFT60105 | <-21 | | ----- | |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | D97 | -30 | C,R(0.01) | 2.49 | first reported -18 |
| 6146 | ISO3016 | -39 | | -0.31 | |
| 6259 | | ----- | | ----- | |
| 6265 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | D97 | <-24 | | ----- | |
| 6358 | ISO3016 | -37.5 | | 0.16 | |
| 6373 | | ----- | | ----- | |
| 6444 | | ----- | | ----- | |
| 6446 | D97 | -39 | | -0.31 | |
| 6447 | | ----- | | ----- | |
| 6499 | D6749 | -18.0 | R(0.01) | 6.23 | |
| | normality | OK | | | |
| | n | 26 | | | |
| | outliers | 4 | | | |
| | mean (n) | -38.0 | | | |
| | st.dev. (n) | 1.28 | | | |
| | R(calc.) | 3.6 | | | |
| | st.dev.(ISO3016:19) | 3.21 | | | |
| | R(ISO3016:19) | 9 | | | |


0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
171
398
360
323
496
335
370
467
824
1459
1586
1741
1754
6146
6446
420
1406
6358
343
344
311
312
334
328
663
1650
1826
6059
1059
6499


Kernel Density
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
-50
-40
-30
-20
-10
0

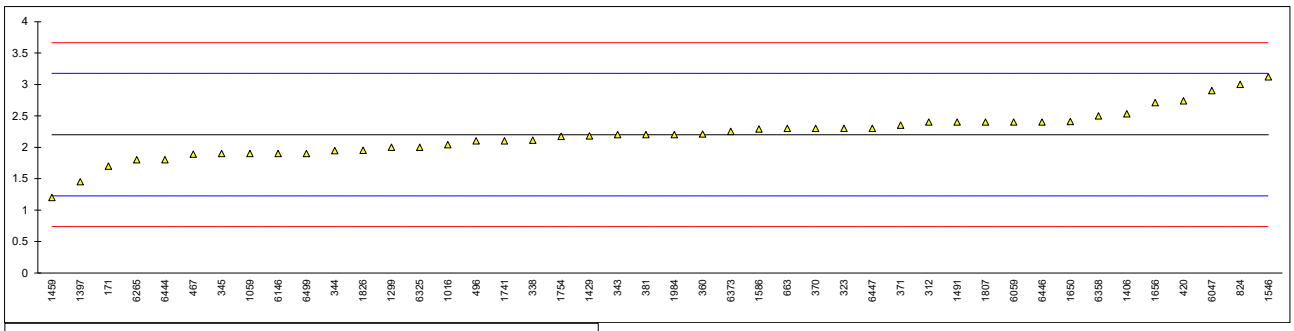
## Determination of Sulfated Ash on sample #22205; results in %M/M

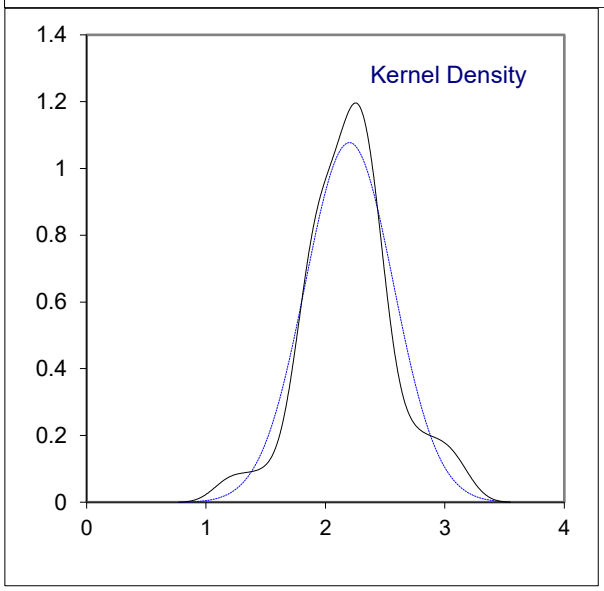
| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | D874 | <0.005 | | ----- | |
| 300 | | ----- | | ----- | |
| 311 | | ----- | | ----- | |
| 312 | | ----- | | ----- | |
| 323 | | ----- | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | | ----- | | ----- | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | ISO3987 | <0.005 | | ----- | |
| 344 | D874 | <0.01 | | ----- | |
| 345 | ISO3987 | <0.005 | | ----- | |
| 360 | D874 | 0.0005 | | ----- | |
| 370 | ISO3987 | <0.001 | | ----- | |
| 371 | ISO3987 | <0.005 | | ----- | |
| 373 | | ----- | | ----- | |
| 381 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 420 | ISO3987 | <0,005 | | ----- | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | | ----- | | ----- | |
| 663 | D874 | <0.005 | | ----- | |
| 824 | D874 | 0.0008 | | ----- | |
| 862 | | ----- | | ----- | |
| 1016 | ISO3987 | 0.0018 | | ----- | |
| 1059 | ISO3987 | <0,005 | | ----- | |
| 1199 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1397 | | ----- | | ----- | |
| 1406 | | ----- | | ----- | |
| 1429 | D874 | <0.001 | | ----- | |
| 1443 | ISO3987 | < 0,005 | | ----- | |
| 1459 | ISO3987 | 0.000 | | ----- | |
| 1485 | | ----- | | ----- | |
| 1491 | ISO3987 | <0.005 | | ----- | |
| 1510 | | ----- | | ----- | |
| 1546 | | ----- | | ----- | |
| 1586 | D874 | <0.005 | | ----- | |
| 1650 | D874 | 0.0006 | | ----- | |
| 1656 | ISO3987 | <0.01 | | ----- | |
| 1741 | ISO3987 | <0,01 | | ----- | |
| 1754 | ISO3987 | < 0,005 | | ----- | |
| 1807 | ISO3987 | 0.000 | C | ----- | first reported 0.009 |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | ISO3987 | 0.002 | | ----- | |
| 6146 | ISO3987 | 0.004 | | ----- | |
| 6259 | | ----- | | ----- | |
| 6265 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | ISO3987 | 0.001 | | ----- | |
| 6358 | ISO3987 | <0,005 | | ----- | |
| 6373 | ISO3987 | 0.00000 | | ----- | |
| 6444 | | ----- | | ----- | |
| 6446 | | ----- | | ----- | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |
| | n | 27 | | | |
| | mean (n) | <0.005 | | | Application range ASTM D874:13aR18 >0.005%M/M |

## Determination of Sulfur on sample #22205; results in mg/kg

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | D5453 | 1.7 | | -1.03 | |
| 300 | | ----- | | ----- | |
| 311 | ISO20846 | <3 | | ----- | |
| 312 | D5453 | 2.4 | | 0.41 | |
| 323 | ISO20846 | 2.3 | | 0.20 | |
| 328 | ISO20846 | <3 | | ----- | |
| 333 | ISO20846 | <3 | | ----- | |
| 334 | ISO20846 | <3 | | ----- | |
| 335 | ISO20846 | <3 | | ----- | |
| 338 | ISO20846 | 2.11 | | -0.19 | |
| 343 | ISO20846 | 2.2 | | 0.00 | |
| 344 | D5453 | 1.945 | | -0.52 | |
| 345 | ISO20846 | 1.9 | | -0.62 | |
| 360 | ISO20846 | 2.21 | | 0.02 | |
| 370 | ISO20846 | 2.3 | | 0.20 | |
| 371 | ISO20846 | 2.35 | | 0.31 | |
| 373 | | ----- | | ----- | |
| 381 | ISO20846 | 2.2 | | 0.00 | |
| 398 | ISO20846 | <3 | | ----- | |
| 420 | ISO20846 | 2.74 | | 1.10 | |
| 447 | IP490 | <3.0 | | ----- | |
| 467 | ISO20846 | 1.89 | | -0.64 | |
| 496 | ISO20846 | 2.1 | | -0.21 | |
| 663 | D5453 | 2.3 | | 0.20 | |
| 824 | ISO20846 | 3.0 | | 1.64 | |
| 862 | | ----- | | ----- | |
| 1016 | ISO20846 | 2.04 | | -0.33 | |
| 1059 | ISO20846 | 1.9 | | -0.62 | |
| 1199 | ISO20884 | <5.0 | | ----- | |
| 1299 | ISO20884 | 2.0 | | -0.41 | |
| 1397 | ISO20846 | 1.45 | | -1.54 | |
| 1406 | ISO20846 | 2.53 | | 0.67 | |
| 1429 | IP490 | 2.18 | | -0.04 | |
| 1443 | ISO20846 | < 3,0 | | ----- | |
| 1459 | ISO20884 | 1.2 | | -2.05 | |
| 1485 | | ----- | | ----- | |
| 1491 | ISO20846 | 2.4 | | 0.41 | |
| 1510 | | ----- | | ----- | |
| 1546 | ISO20846 | 3.12 | | 1.88 | |
| 1586 | ISO13032 | 2.29 | | 0.18 | |
| 1650 | ISO20846 | 2.41 | | 0.43 | |
| 1656 | ISO20846 | 2.71 | | 1.04 | |
| 1741 | ISO20846 | 2.1 | | -0.21 | |
| 1754 | ISO20846 | 2.173 | | -0.06 | |
| 1807 | ISO20846 | 2.4 | | 0.41 | |
| 1826 | ISO20846 | 1.95 | | -0.51 | |
| 1984 | ISO20846 | 2.2 | | 0.00 | |
| 1989 | | ----- | | ----- | |
| 6047 | ISO20846 | 2.9 | | 1.43 | |
| 6059 | ISO20846 | 2.4 | | 0.41 | |
| 6146 | ISO20846 | 1.9 | | -0.62 | |
| 6259 | | ----- | | ----- | |
| 6265 | ISO13032 | 1.8 | | -0.82 | |
| 6276 | | ----- | | ----- | |
| 6325 | ISO20846 | 2.0 | | -0.41 | |
| 6358 | ISO20846 | 2.50 | | 0.61 | |
| 6373 | ISO20846 | 2.25 | | 0.10 | |
| 6444 | D5453 | 1.8 | | -0.82 | |
| 6446 | D2622 | 2.4 | | 0.41 | |
| 6447 | D5453 | 2.3 | | 0.20 | |
| 6499 | D7220 | 1.9 | | -0.62 | |

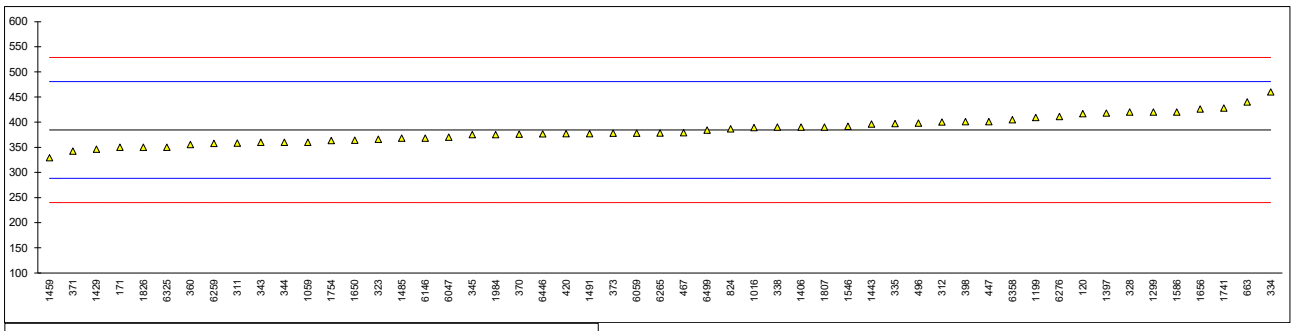
| | | |
|---|---|---|
| | normality | suspect |
| | n | 44 |
| | outliers | 0 |
| | mean (n) | 2.201 |
| | st.dev. (n) | 0.3703 |
| | R(calc.) | 1.037 |
| | st.dev.(ISO20846:19) | 0.4880 |
| | R(ISO20846:19) | 1.367 |
| compare | | |
| | R(D5453:19a) | 1.048 |

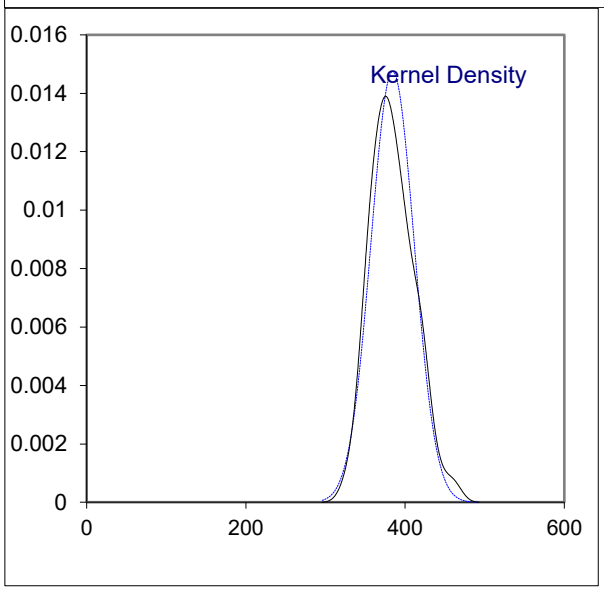

4
3.5
3
2.5
2
1.5
1
0.5
0
1459 1397 171 6265 6444 467 345 1059 6146 6499 344 1826 1299 6325 1016 496 1741 338 1754 1429 343 381 1984 360 6373 1586 663 370 323 6447 371 312 1491 1807 6059 6446 1650 6358 1406 1656 420 6047 824 1546


Kernel Density
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
1
2
3
4

## Determination of Water on sample #22205; results in mg/kg

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | E203 | 416.6 | | 0.67 | |
| 171 | D6304-A:20 | 350 | | -0.71 | |
| 300 | | ----- | | ----- | |
| 311 | ISO12937 | 358 | | -0.55 | |
| 312 | ISO12937 | 400 | | 0.32 | |
| 323 | ISO12937 | 366 | | -0.38 | |
| 328 | ISO12937 | 420 | | 0.74 | |
| 333 | | ----- | | ----- | |
| 334 | ISO12937 | 460 | | 1.57 | |
| 335 | ISO12937 | 397 | | 0.26 | |
| 338 | ISO12937 | 390 | | 0.12 | |
| 343 | ISO12937 | 360 | | -0.51 | |
| 344 | ISO12937 | 360 | | -0.51 | |
| 345 | ISO12937 | 375 | | -0.20 | |
| 360 | D6304-A:20 | 355.3 | | -0.60 | |
| 370 | ISO12937 | 376 | | -0.17 | |
| 371 | ISO12937 | 342.4 | | -0.87 | |
| 373 | ISO12937 | 378 | | -0.13 | |
| 381 | | ----- | | ----- | |
| 398 | ISO12937 | 401 | | 0.34 | |
| 420 | ISO12937 | 377 | | -0.15 | |
| 447 | IP438 | 401 | | 0.34 | |
| 467 | ISO12937 | 379.0 | | -0.11 | |
| 496 | ISO12937 | 398 | | 0.28 | |
| 663 | ISO12937 | 440 | C | 1.15 | first reported 535 |
| 824 | ISO12937 | 386.5 | | 0.04 | |
| 862 | | ----- | | ----- | |
| 1016 | ISO12937 | 389.06 | | 0.10 | |
| 1059 | ISO12937 | 360 | | -0.51 | |
| 1199 | ISO12937 | 409 | | 0.51 | |
| 1299 | ISO12937 | 420 | | 0.74 | |
| 1397 | ISO12937 | 418 | | 0.70 | |
| 1406 | ISO12937 | 390 | | 0.12 | |
| 1429 | IP438 | 346 | | -0.80 | |
| 1443 | ISO12937 | 396.19 | | 0.24 | |
| 1459 | ISO12937 | 329 | | -1.15 | |
| 1485 | ISO12937 | 368.0 | | -0.34 | |
| 1491 | ISO12937 | 377 | | -0.15 | |
| 1510 | | ----- | | ----- | |
| 1546 | ISO12937 | 391.5 | | 0.15 | |
| 1586 | ISO12937 | 420 | | 0.74 | |
| 1650 | ISO12937 | 363.8 | | -0.43 | |
| 1656 | ISO12937 | 426 | | 0.86 | |
| 1741 | ISO12937 | 428 | | 0.90 | |
| 1754 | ISO12937 | 363.12 | | -0.44 | |
| 1807 | ISO12937 | 390 | | 0.12 | |
| 1826 | ISO12937 | 350 | | -0.71 | |
| 1984 | ISO12937 | 375 | | -0.20 | |
| 1989 | | ----- | | ----- | |
| 6047 | ISO12937 | 370.0 | | -0.30 | |
| 6059 | ISO12937 | 378 | | -0.13 | |
| 6146 | ISO12937 | 368 | | -0.34 | |
| 6259 | ISO12937 | 357.39 | | -0.56 | |
| 6265 | ISO12937 | 378.3 | C | -0.13 | first reported 536.17 |
| 6276 | ISO12937 | 410.98 | | 0.55 | |
| 6325 | ISO12937 | 350 | | -0.71 | |
| 6358 | ISO12937 | 404.6 | | 0.42 | |
| 6373 | | ----- | | ----- | |
| 6444 | | ----- | | ----- | |
| 6446 | D6304-B:20 | 376.5 | | -0.16 | |
| 6447 | | ----- | | ----- | |
| 6499 | D6304-A:20 | 384 | | -0.01 | |
| | | | | | |
| | normality | OK | | | |
| | n | 53 | | | |
| | outliers | 0 | | | |
| | mean (n) | 384.42 | | | |
| | st.dev. (n) | 27.040 | | | |
| | R(calc.) | 75.71 | | | |
| | st.dev.(ISO12937:00) | 48.156 | | | |
| | R(ISO12937:00) | 134.83 | | | |
| compare | | | | | |
| | R(D6304-A:20) | 155.63 | | | |


600
550
500
450
400
350
300
250
200
150
100
1459 371 1429 171 1826 6325 360 6259 311 343 344 1059 1754 1650 323 1485 6146 6047 345 1984 370 6446 420 1491 373 6059 6265 467 6499 824 1016 338 1406 1807 1546 1443 335 496 312 398 447 6358 1199 6276 120 1397 328 1299 1586 1656 1741 663 334


Kernel Density
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
0
200
400
600

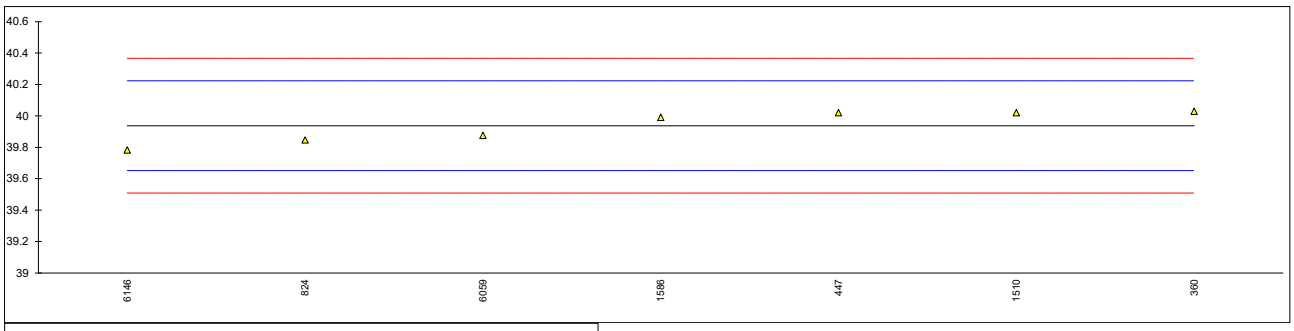
Determination of Water and Sediment on sample #22205; results in %V/V

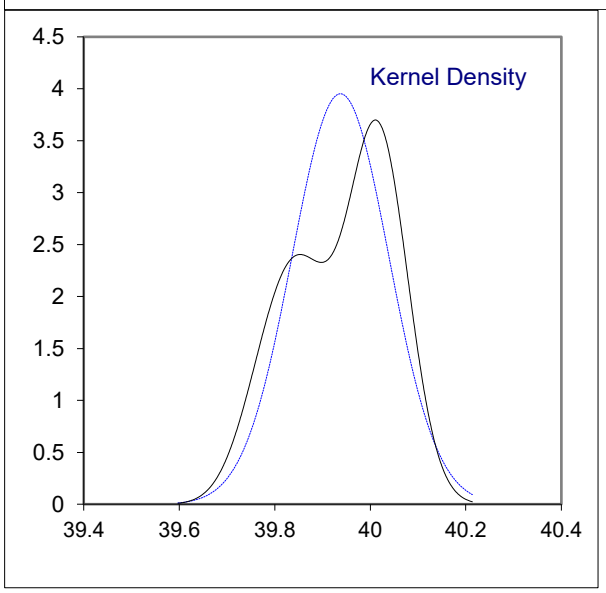
| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | D2709 | <0.01 | | ----- | |
| 300 | | ----- | | ----- | |
| 311 | | ----- | | ----- | |
| 312 | | ----- | | ----- | |
| 323 | D2709 | < 0.05 | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | | ----- | | ----- | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | | ----- | | ----- | |
| 344 | | ----- | | ----- | |
| 345 | | ----- | | ----- | |
| 360 | | ----- | | ----- | |
| 370 | | ----- | | ----- | |
| 371 | | ----- | | ----- | |
| 373 | | ----- | | ----- | |
| 381 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 420 | | ----- | | ----- | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | | ----- | | ----- | |
| 663 | D2709 | <0.01 | | ----- | |
| 824 | D2709 | <0.01 | | ----- | |
| 862 | | ----- | | ----- | |
| 1016 | | ----- | | ----- | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1397 | | ----- | | ----- | |
| 1406 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1443 | | ----- | | ----- | |
| 1459 | | ----- | | ----- | |
| 1485 | | ----- | | ----- | |
| 1491 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1546 | | ----- | | ----- | |
| 1586 | D2709 | <0.05 | | ----- | |
| 1650 | | ----- | | ----- | |
| 1656 | | ----- | | ----- | |
| 1741 | | ----- | | ----- | |
| 1754 | | ----- | | ----- | |
| 1807 | | ----- | | ----- | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | D2709 | 0.00 | | ----- | |
| 6146 | | ----- | | ----- | |
| 6259 | | ----- | | ----- | |
| 6265 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | D2709 | <0.05 | | ----- | |
| 6358 | D2709 | <0,01 | | ----- | |
| 6373 | | ----- | | ----- | |
| 6444 | | ----- | | ----- | |
| 6446 | | ----- | | ----- | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |
| | n | 5 | | | |
| | mean (n) | <0.01 | | | Application range ASTM D2709;16; >0.01%V/V |

Determination of Calorific Value Gross at constant volume ($H_{o,v}$) on sample #22205; results in MJ/kg

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | | ----- | | ----- | |
| 300 | | ----- | | ----- | |
| 311 | | ----- | | ----- | |
| 312 | | ----- | | ----- | |
| 323 | | ----- | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | | ----- | | ----- | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | | ----- | | ----- | |
| 344 | | ----- | | ----- | |
| 345 | | ----- | | ----- | |
| 360 | D240 | 40.029 | | 0.64 | |
| 370 | | ----- | | ----- | |
| 371 | | ----- | | ----- | |
| 373 | | ----- | | ----- | |
| 381 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 420 | | ----- | | ----- | |
| 447 | D240 | 40.020 | | 0.58 | |
| 467 | | ----- | | ----- | |
| 496 | | ----- | | ----- | |
| 663 | | ----- | | ----- | |
| 824 | D240 | 39.846 | | -0.64 | |
| 862 | | ----- | | ----- | |
| 1016 | | ----- | | ----- | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1397 | | ----- | | ----- | |
| 1406 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1443 | | ----- | | ----- | |
| 1459 | | ----- | | ----- | |
| 1485 | | ----- | | ----- | |
| 1491 | | ----- | | ----- | |
| 1510 | D240 | 40.02 | | 0.58 | |
| 1546 | | ----- | | ----- | |
| 1586 | D240 | 39.99 | | 0.37 | |
| 1650 | | ----- | | ----- | |
| 1656 | | ----- | | ----- | |
| 1741 | | ----- | | ----- | |
| 1754 | | ----- | | ----- | |
| 1807 | | ----- | | ----- | |
| 1826 | | ----- | | ----- | |
| 1984 | | ----- | | ----- | |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | D240 | 39.875 | | -0.44 | |
| 6146 | D240 | 39.782 | | -1.09 | |
| 6259 | | ----- | | ----- | |
| 6265 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | | ----- | | ----- | |
| 6358 | | ----- | | ----- | |
| 6373 | | ----- | | ----- | |
| 6444 | | ----- | | ----- | |
| 6446 | | ----- | | ----- | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |

| | |
|---|---|
| normality | unknown |
| n | 7 |
| outliers | 0 |
| mean (n) | 39.9374 |
| st.dev. (n) | 0.10099 |
| R(calc.) | 0.2828 |
| st.dev.(D240:19) | 0.14286 |
| R(D240:19) | 0.40 |


40.6
40.4
40.2
40
39.8
39.6
39.4
39.2
39
6146
824
6059
1586
447
1510
360


Kernel Density
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
39.4
39.6
39.8
40
40.2
40.4

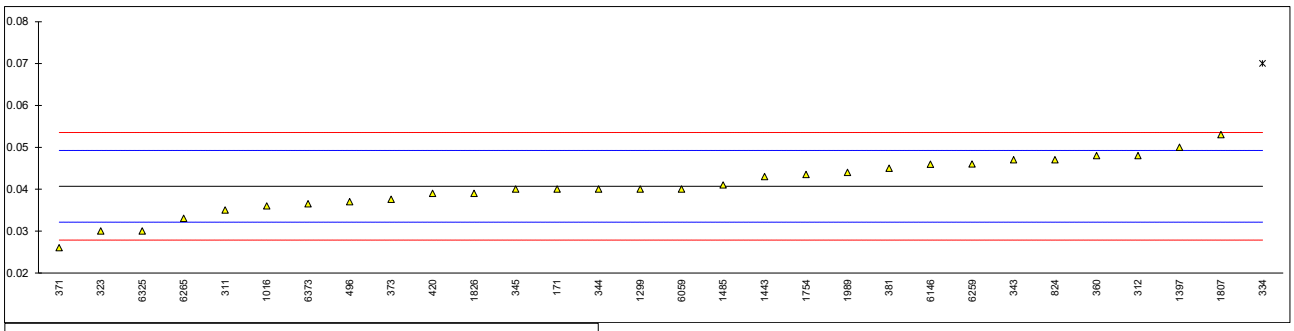
Determination of Distillation at 10 mmHg, % recovered as AET on sample #22205; results in °C

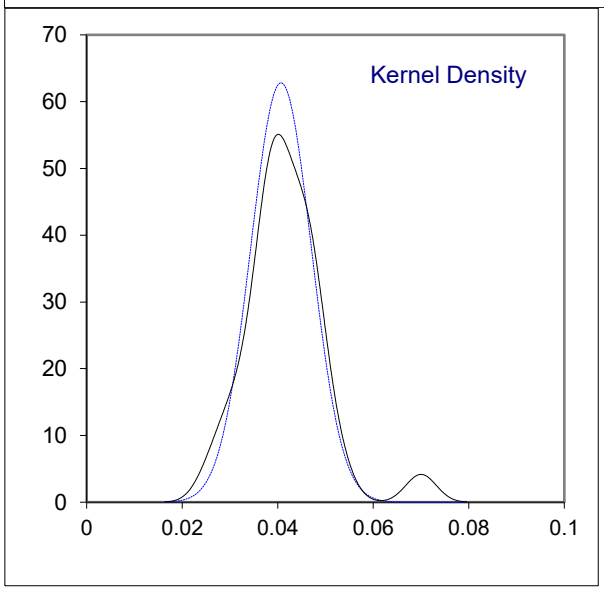
| lab | method | 80%rec. | mark | z(targ) | 90%rec. | mark | z(targ) | 95%rec. | mark | z(targ) |
|---|---|---|---|---|---|---|---|---|---|---|
| 120 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 171 | D1160 | 354 | | ----- | 356 | | ----- | 361 | | ----- |
| 300 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 311 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 312 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 323 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 328 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 333 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 334 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 335 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 338 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 343 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 344 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 345 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 360 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 370 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 371 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 373 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 381 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 398 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 420 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 447 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 467 | D1160 | 350 | | ----- | 353 | | ----- | 356 | | ----- |
| 496 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 663 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 824 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 862 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1016 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1059 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1199 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1299 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1397 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1406 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1429 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1443 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1459 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1485 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1491 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1510 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1546 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1586 | D1160 | 352 | | ----- | 354 | | ----- | 357 | | ----- |
| 1650 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1656 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1741 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1754 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1807 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1826 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1984 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 1989 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6047 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6059 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6146 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6259 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6265 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6276 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6325 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6358 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6373 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6444 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6446 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6447 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| 6499 | | ----- | | ----- | ----- | | ----- | ----- | | ----- |
| | normality | unknown | | | unknown | | | unknown | | |
| | n | 3 | | | 3 | | | 3 | | |
| | outliers | 0 | | | 0 | | | 0 | | |
| | mean (n) | 352.00 | | | 354.33 | | | 358.00 | | |
| | st.dev. (n) | 2.000 | | | 1.528 | | | 2.646 | | |
| | R(calc.) | 5.60 | | | 4.28 | | | 7.41 | | |
| | st.dev.(D1160:18) | (1.657) | | | (1.657) | | | (1.657) | | |
| | R(D1160:18) | (4.64) | | | (4.64) | | | (4.64) | | |

## Determination of Methanol on sample #22205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | EN14110 | 0.04 | | -0.17 | |
| 300 | | ----- | | ----- | |
| 311 | EN14110 | 0.035 | | -1.33 | |
| 312 | EN14110 | 0.048 | | 1.70 | |
| 323 | EN14110 | 0.03 | | -2.50 | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | EN14110 | 0.07 | R(0.01) | 6.84 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14110 | 0.047 | | 1.47 | |
| 344 | EN14110 | 0.040 | | -0.17 | |
| 345 | EN14110 | 0.04 | | -0.17 | |
| 360 | EN14110 | 0.048 | | 1.70 | |
| 370 | | ----- | | ----- | |
| 371 | EN14110 | 0.026 | | -3.43 | |
| 373 | EN14110 | 0.0376 | | -0.73 | |
| 381 | EN14110 | 0.045 | | 1.00 | |
| 398 | | ----- | | ----- | |
| 420 | EN14110 | 0.039 | | -0.40 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14110 | 0.037 | | -0.87 | |
| 663 | | ----- | | ----- | |
| 824 | EN14110 | 0.047 | | 1.47 | |
| 862 | | ----- | | ----- | |
| 1016 | EN14110 | 0.036 | | -1.10 | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1299 | EN14110 | 0.04 | | -0.17 | |
| 1397 | EN14110 | 0.05 | | 2.17 | |
| 1406 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1443 | EN14110 | 0.043 | | 0.54 | |
| 1459 | | ----- | | ----- | |
| 1485 | EN14110 | 0.041 | | 0.07 | |
| 1491 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1546 | | ----- | | ----- | |
| 1586 | | ----- | | ----- | |
| 1650 | | ----- | | ----- | |
| 1656 | | ----- | | ----- | |
| 1741 | | ----- | | ----- | |
| 1754 | EN14110 | 0.0435 | | 0.65 | |
| 1807 | EN14110 | 0.053 | | 2.87 | |
| 1826 | EN14110 | 0.039 | | -0.40 | |
| 1984 | | ----- | | ----- | |
| 1989 | EN14110 | 0.044 | | 0.77 | |
| 6047 | | ----- | | ----- | |
| 6059 | EN14110 | 0.040 | | -0.17 | |
| 6146 | EN14110 | 0.04591 | | 1.21 | |
| 6259 | EN14110 | 0.0460 | | 1.24 | |
| 6265 | EN14110 | 0.033 | | -1.80 | |
| 6276 | | ----- | | ----- | |
| 6325 | EN14110 | 0.03 | | -2.50 | |
| 6358 | | ----- | | ----- | |
| 6373 | EN14110 | 0.0365 | | -0.98 | |
| 6444 | | ----- | | ----- | |
| 6446 | | ----- | | ----- | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |

| | |
|---|---|
| normality | OK |
| n | 29 |
| outliers | 1 |
| mean (n) | 0.04071 |
| st.dev. (n) | 0.006352 |
| R(calc.) | 0.01779 |
| st.dev.(EN14110:19) | 0.004284 |
| R(EN14110:19) | 0.01200 |

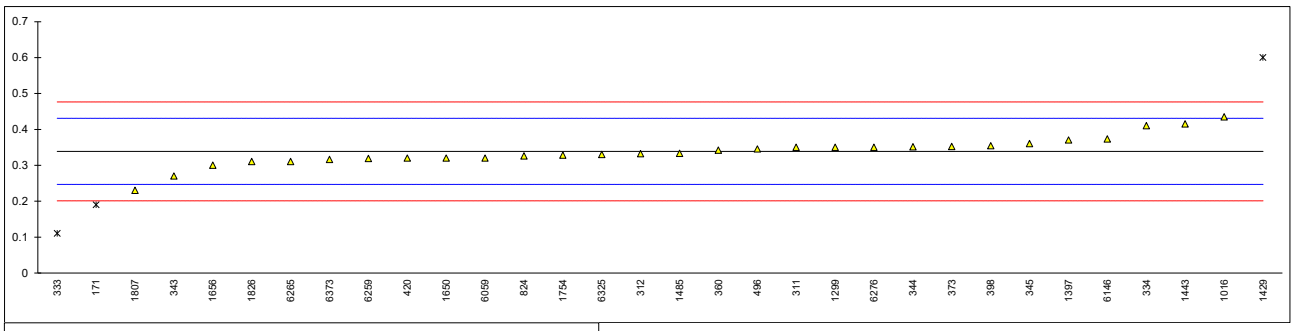

0.08
0.07
0.06
0.05
0.04
0.03
0.02
371
323
6325
6265
311
1016
6373
496
373
420
1826
345
171
344
1299
6059
1485
1443
1754
1989
381
6146
6259
343
824
360
312
1397
1807
334

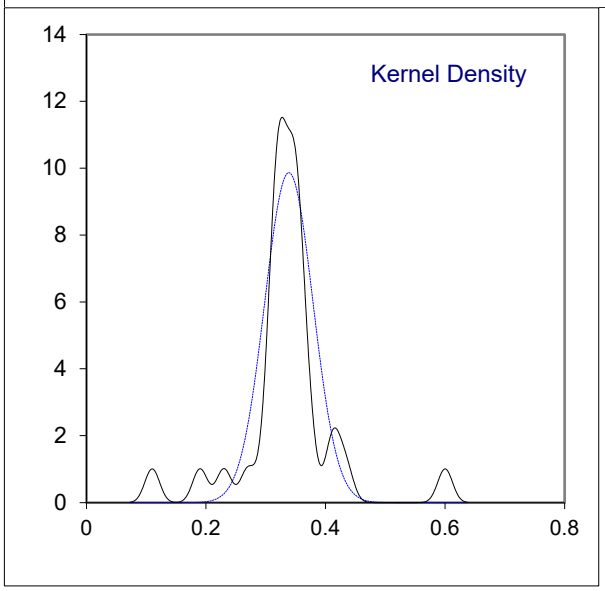

Kernel Density
70
60
50
40
30
20
10
0
0
0.02
0.04
0.06
0.08
0.1

## Determination of Monoglycerides on sample #22205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | EN14105 | 0.19 | R(0.05) | -3.24 | |
| 300 | | ----- | | ----- | |
| 311 | EN14105 | 0.35 | | 0.25 | |
| 312 | EN14105 | 0.332 | C | -0.14 | first reported 0.22 |
| 323 | | ----- | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | EN14105 | 0.11 | C,R(0.01) | -4.98 | first reported 0.52 |
| 334 | EN14105 | 0.41 | | 1.55 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14105 | 0.27 | | -1.49 | |
| 344 | EN14105 | 0.3512 | | 0.27 | |
| 345 | EN14105 | 0.36 | | 0.47 | |
| 360 | EN14105 | 0.342 | | 0.07 | |
| 370 | | ----- | | ----- | |
| 371 | | ----- | | ----- | |
| 373 | EN14105 | 0.352 | | 0.29 | |
| 381 | | ----- | | ----- | |
| 398 | EN14105 | 0.354 | | 0.33 | |
| 420 | EN14105 | 0.32 | | -0.41 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14105 | 0.345 | | 0.14 | |
| 663 | | ----- | | ----- | |
| 824 | D6584 | 0.3256 | | -0.28 | |
| 862 | | ----- | | ----- | |
| 1016 | EN14105 | 0.4345 | C | 2.09 | first reported 0.04345 |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1299 | EN14105 | 0.35 | | 0.25 | |
| 1397 | EN14105 | 0.37 | | 0.68 | |
| 1406 | | ----- | | ----- | |
| 1429 | EN14105 | 0.60 | R(0.01) | 5.69 | |
| 1443 | EN14105 | 0.415 | | 1.66 | |
| 1459 | | ----- | | ----- | |
| 1485 | EN14105 | 0.333 | | -0.12 | |
| 1491 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1546 | | ----- | | ----- | |
| 1586 | | ----- | | ----- | |
| 1650 | EN14105 | 0.32 | | -0.41 | |
| 1656 | EN14105 | 0.30 | | -0.84 | |
| 1741 | | ----- | | ----- | |
| 1754 | EN14105 | 0.328 | | -0.23 | |
| 1807 | EN14105 | 0.23 | | -2.36 | |
| 1826 | EN14105 | 0.31 | | -0.62 | |
| 1984 | | ----- | | ----- | |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | EN14105 | 0.320 | | -0.41 | |
| 6146 | EN14105 | 0.373 | | 0.75 | |
| 6259 | D6584 | 0.3187 | | -0.43 | |
| 6265 | EN14105 | 0.31 | | -0.62 | |
| 6276 | EN14105 | 0.35 | | 0.25 | |
| 6325 | EN14105 | 0.33 | | -0.19 | |
| 6358 | | ----- | | ----- | |
| 6373 | EN14105 | 0.316 | | -0.49 | |
| 6444 | | ----- | | ----- | |
| 6446 | | ----- | | ----- | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |

| | |
|---|---|
| normality | suspect |
| n | 29 |
| outliers | 3 |
| mean (n) | 0.33862 |
| st.dev. (n) | 0.040434 |
| R(calc.) | 0.11322 |
| st.dev.(EN14105:20) | 0.045936 |
| R(EN14105:20) | 0.12862 |

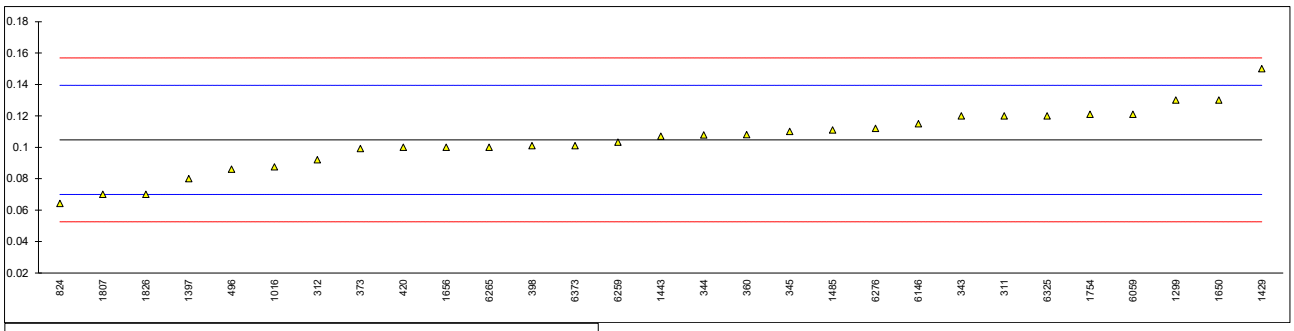

0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
333
171
1807
343
1656
1826
6265
6373
6259
420
1650
6059
824
1754
6325
312
1485
360
496
311
1299
6276
344
373
398
345
1397
6146
334
1443
1016
1429

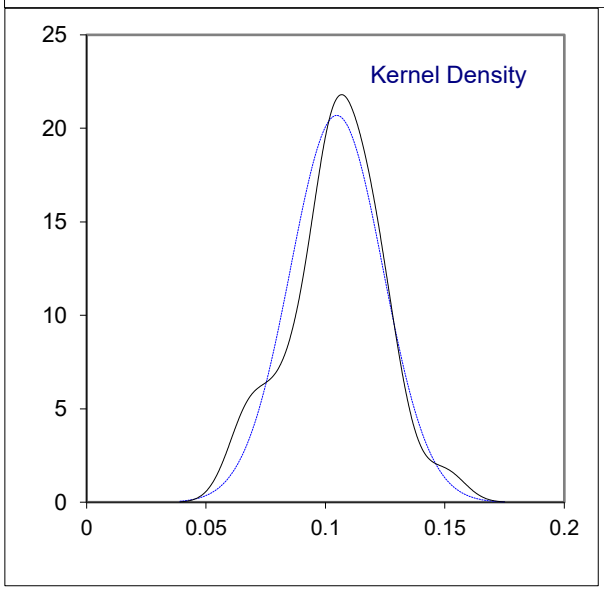

Kernel Density
14
12
10
8
6
4
2
0
0
0.2
0.4
0.6
0.8

## Determination of Diglycerides on sample #22205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | EN14105 | <0.10 | | ----- | |
| 300 | | ----- | | ----- | |
| 311 | EN14105 | 0.12 | | 0.88 | |
| 312 | EN14105 | 0.092 | C | -0.73 | first reported <0.10 |
| 323 | | ----- | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | EN14105 | <0.10 | | ----- | |
| 334 | EN14105 | <0.10 | | ----- | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14105 | 0.12 | | 0.88 | |
| 344 | EN14105 | 0.1078 | | 0.18 | |
| 345 | EN14105 | 0.11 | | 0.30 | |
| 360 | EN14105 | 0.108 | | 0.19 | |
| 370 | | ----- | | ----- | |
| 371 | | ----- | | ----- | |
| 373 | EN14105 | 0.0992 | | -0.32 | |
| 381 | | ----- | | ----- | |
| 398 | EN14105 | 0.101 | | -0.21 | |
| 420 | EN14105 | 0.10 | | -0.27 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14105 | 0.086 | | -1.08 | |
| 663 | | ----- | | ----- | |
| 824 | D6584 | 0.0642 | | -2.33 | |
| 862 | | ----- | | ----- | |
| 1016 | EN14105 | 0.0875 | | -0.99 | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1299 | EN14105 | 0.13 | | 1.46 | |
| 1397 | EN14105 | 0.08 | | -1.42 | |
| 1406 | | ----- | | ----- | |
| 1429 | EN14105 | 0.15 | | 2.61 | |
| 1443 | EN14105 | 0.107 | | 0.13 | |
| 1459 | | ----- | | ----- | |
| 1485 | EN14105 | 0.111 | | 0.36 | |
| 1491 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1546 | | ----- | | ----- | |
| 1586 | | ----- | | ----- | |
| 1650 | EN14105 | 0.13 | | 1.46 | |
| 1656 | EN14105 | 0.10 | | -0.27 | |
| 1741 | | ----- | | ----- | |
| 1754 | EN14105 | 0.121 | | 0.94 | |
| 1807 | EN14105 | 0.07 | | -2.00 | |
| 1826 | EN14105 | 0.07 | | -2.00 | |
| 1984 | | ----- | | ----- | |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | EN14105 | 0.121 | | 0.94 | |
| 6146 | EN14105 | 0.115 | | 0.59 | |
| 6259 | D6584 | 0.1033 | | -0.08 | |
| 6265 | EN14105 | 0.10 | | -0.27 | |
| 6276 | EN14105 | 0.112 | | 0.42 | |
| 6325 | EN14105 | 0.12 | | 0.88 | |
| 6358 | | ----- | | ----- | |
| 6373 | EN14105 | 0.101 | | -0.21 | |
| 6444 | | ----- | | ----- | |
| 6446 | | ----- | | ----- | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |

| | |
|---|---|
| normality | OK |
| n | 29 |
| outliers | 0 |
| mean (n) | 0.10472 |
| st.dev. (n) | 0.019282 |
| R(calc.) | 0.05399 |
| st.dev.(EN14105:20) | 0.017372 |
| R(EN14105:20) | 0.04864 |

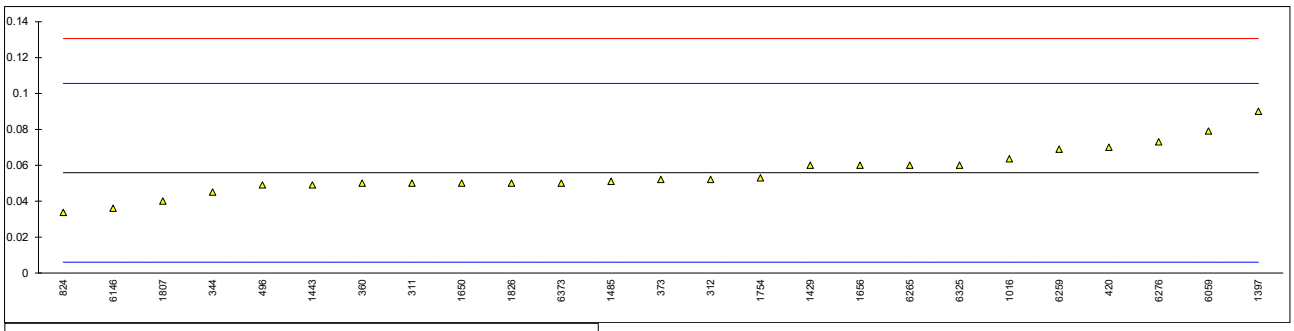

0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
824
1807
1826
1397
496
1016
312
373
420
1656
6265
398
6373
6259
1443
344
360
345
1485
6276
6146
343
311
6325
1754
6059
1299
1650
1429

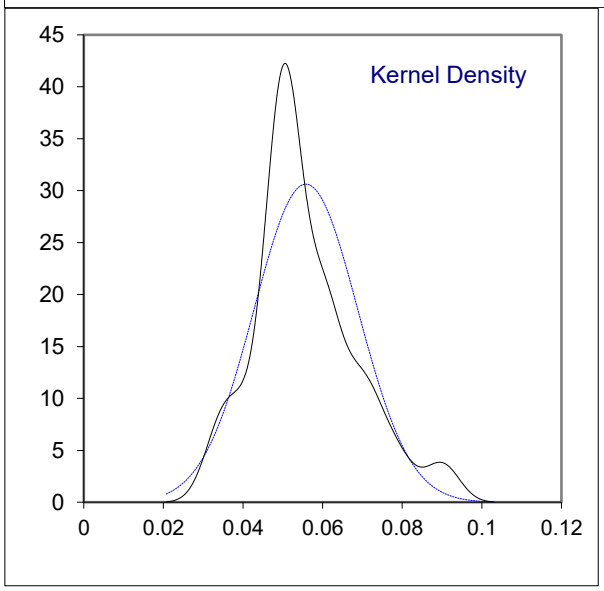

Kernel Density
25
20
15
10
5
0
0
0.05
0.1
0.15
0.2

## Determination of Triglycerides on sample #22205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | EN14105 | <0.10 | | ----- | |
| 300 | | ----- | | ----- | |
| 311 | EN14105 | 0.05 | | -0.23 | |
| 312 | EN14105 | 0.052 | C | -0.15 | first reported <0.10 |
| 323 | | ----- | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | EN14105 | <0.10 | | ----- | |
| 334 | EN14105 | <0.10 | | ----- | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14105 | <0.05 | | ----- | |
| 344 | EN14105 | 0.045 | | -0.43 | |
| 345 | EN14105 | <0.10 | | ----- | |
| 360 | EN14105 | 0.050 | | -0.23 | |
| 370 | | ----- | | ----- | |
| 371 | | ----- | | ----- | |
| 373 | EN14105 | 0.052 | | -0.15 | |
| 381 | | ----- | | ----- | |
| 398 | EN14105 | <0,10 | | ----- | |
| 420 | EN14105 | 0.07 | | 0.57 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14105 | 0.049 | | -0.27 | |
| 663 | | ----- | | ----- | |
| 824 | D6584 | 0.0337 | | -0.89 | |
| 862 | | ----- | | ----- | |
| 1016 | EN14105 | 0.0635 | | 0.31 | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1299 | EN14105 | <0.10 | | ----- | |
| 1397 | EN14105 | 0.09 | | 1.37 | |
| 1406 | | ----- | | ----- | |
| 1429 | EN14105 | 0.06 | | 0.17 | |
| 1443 | EN14105 | 0.049 | | -0.27 | |
| 1459 | | ----- | | ----- | |
| 1485 | EN14105 | 0.051 | | -0.19 | |
| 1491 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1546 | | ----- | | ----- | |
| 1586 | | ----- | | ----- | |
| 1650 | EN14105 | 0.05 | | -0.23 | |
| 1656 | EN14105 | 0.06 | | 0.17 | |
| 1741 | | ----- | | ----- | |
| 1754 | EN14105 | 0.053 | | -0.11 | |
| 1807 | EN14105 | 0.04 | | -0.63 | |
| 1826 | EN14105 | 0.05 | | -0.23 | |
| 1984 | | ----- | | ----- | |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | EN14105 | 0.079 | | 0.93 | |
| 6146 | EN14105 | 0.036 | | -0.80 | |
| 6259 | D6584 | 0.0689 | | 0.53 | |
| 6265 | EN14105 | 0.06 | | 0.17 | |
| 6276 | EN14105 | 0.073 | | 0.69 | |
| 6325 | EN14105 | 0.06 | | 0.17 | |
| 6358 | | ----- | | ----- | |
| 6373 | EN14105 | 0.05 | | -0.23 | |
| 6444 | | ----- | | ----- | |
| 6446 | | ----- | | ----- | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |

| | |
|---|---|
| normality | OK |
| n | 25 |
| outliers | 0 |
| mean (n) | 0.05580 |
| st.dev. (n) | 0.013029 |
| R(calc.) | 0.03648 |
| st.dev.(EN14105:20) | 0.024909 |
| R(EN14105:20) | 0.06975 |

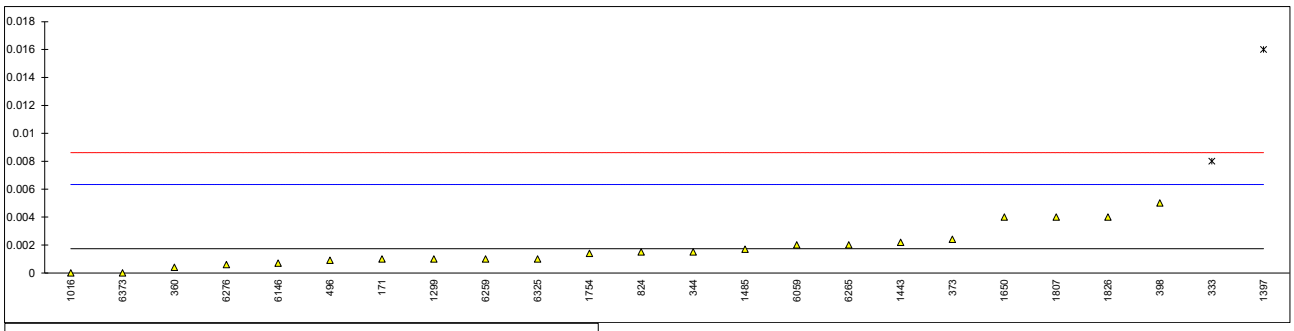

0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
824
6146
1807
344
496
1443
360
311
1650
1826
6373
1485
373
312
1754
1429
1656
6265
6325
1016
6259
420
6276
6059
1397

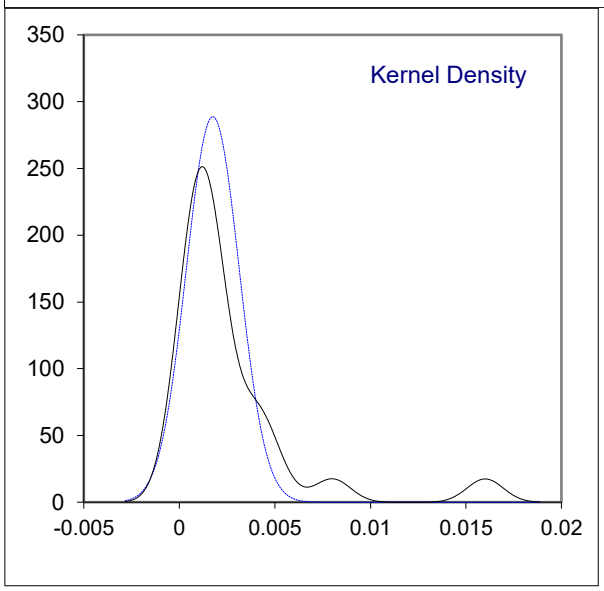

Kernel Density
45
40
35
30
25
20
15
10
5
0
0
0.02
0.04
0.06
0.08
0.1
0.12

## Determination of Free Glycerol on sample #22205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | EN14105 | 0.001 | | -0.32 | |
| 300 | | ----- | | ----- | |
| 311 | EN14105 | <0.01 | | ----- | |
| 312 | EN14105 | <0.001 | | ----- | |
| 323 | | ----- | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | EN14105 | 0.008 | C,R(0.01) | 2.73 | first reported 0.035 |
| 334 | EN14105 | <0.001 | | ----- | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14105 | <0.005 | | ----- | |
| 344 | EN14105 | 0.0015 | | -0.10 | |
| 345 | EN14105 | <0.001 | | ----- | |
| 360 | EN14105 | 0.0004 | | -0.58 | |
| 370 | | ----- | | ----- | |
| 371 | | ----- | | ----- | |
| 373 | EN14105 | 0.0024 | | 0.29 | |
| 381 | | ----- | | ----- | |
| 398 | EN14105 | 0.005 | | 1.42 | |
| 420 | EN14105 | <0,005 | | ----- | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14105 | 0.0009 | | -0.37 | |
| 663 | | ----- | | ----- | |
| 824 | D6584 | 0.0015 | | -0.10 | |
| 862 | | ----- | | ----- | |
| 1016 | EN14105 | 0.00 | | -0.76 | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1299 | EN14105 | 0.001 | | -0.32 | |
| 1397 | EN14105 | 0.016 | R(0.01) | 6.22 | |
| 1406 | | ----- | | ----- | |
| 1429 | EN14105 | <0.01 | | ----- | |
| 1443 | EN14105 | 0.00219 | | 0.20 | |
| 1459 | | ----- | | ----- | |
| 1485 | EN14105 | 0.0017 | | -0.02 | |
| 1491 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1546 | | ----- | | ----- | |
| 1586 | | ----- | | ----- | |
| 1650 | EN14105 | 0.004 | C | 0.99 | first reported 0.04 |
| 1656 | EN14105 | <0.01 | | ----- | |
| 1741 | | ----- | | ----- | |
| 1754 | EN14105 | 0.0014 | | -0.15 | |
| 1807 | EN14105 | 0.004 | | 0.99 | |
| 1826 | EN14105 | 0.004 | | 0.99 | |
| 1984 | | ----- | | ----- | |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | EN14105 | 0.002 | | 0.11 | |
| 6146 | EN14105 | 0.0007 | | -0.45 | |
| 6259 | D6584 | 0.001 | | -0.32 | |
| 6265 | EN14105 | 0.002 | | 0.11 | |
| 6276 | EN14105 | 0.0006 | | -0.50 | |
| 6325 | EN14105 | 0.001 | | -0.32 | |
| 6358 | | ----- | | ----- | |
| 6373 | EN14105 | 0 | | -0.76 | |
| 6444 | | ----- | | ----- | |
| 6446 | | ----- | | ----- | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |

| | |
|---|---|
| normality | suspect |
| n | 22 |
| outliers | 2 |
| mean (n) | 0.00174 |
| st.dev. (n) | 0.001382 |
| R(calc.) | 0.00387 |
| st.dev.(EN14105:20) | 0.002225 |
| R(EN14105:20) | 0.00642 |

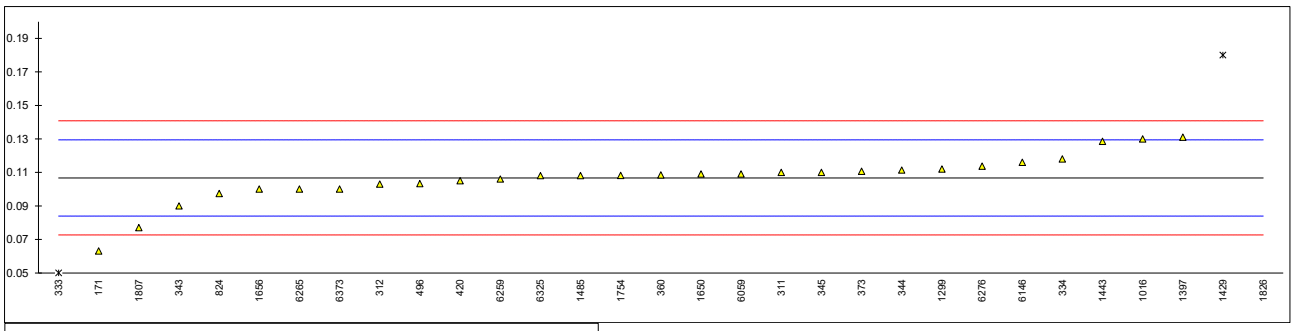

0.018
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
1016
6373
360
6276
6146
496
171
1299
6259
6325
1754
824
344
1485
6059
6265
1443
373
1650
1807
1826
398
333
1397

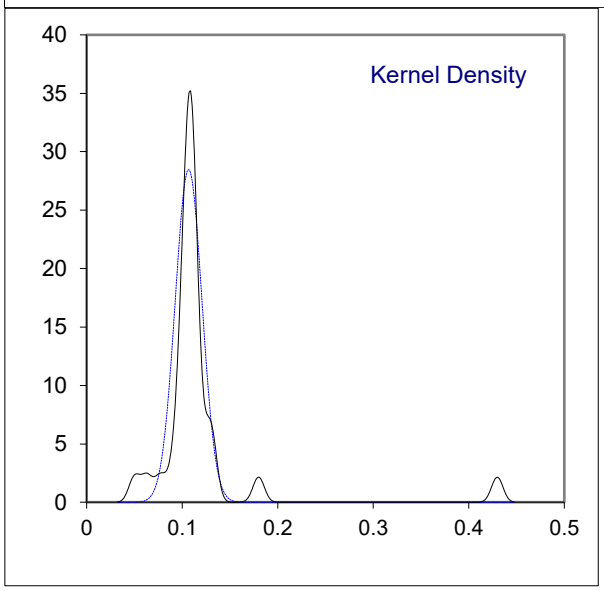

Kernel Density
350
300
250
200
150
100
50
0
-0.005
0
0.005
0.01
0.015
0.02

## Determination of Total Glycerol on sample #22205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | EN14105 | 0.063 | | -3.85 | |
| 300 | | ----- | | ----- | |
| 311 | EN14105 | 0.11 | | 0.29 | |
| 312 | EN14105 | 0.103 | C | -0.32 | first reported 0.103 |
| 323 | | ----- | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | EN14105 | 0.050 | C,R(0.01) | -4.99 | first reported 0.184 |
| 334 | EN14105 | 0.118 | | 1.00 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14105 | 0.09 | | -1.47 | |
| 344 | EN14105 | 0.1114 | | 0.42 | |
| 345 | EN14105 | 0.11 | | 0.29 | |
| 360 | EN14105 | 0.1085 | | 0.16 | |
| 370 | | ----- | | ----- | |
| 371 | | ----- | | ----- | |
| 373 | EN14105 | 0.1106 | | 0.35 | |
| 381 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 420 | EN14105 | 0.105 | | -0.15 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14105 | 0.1033 | | -0.30 | |
| 663 | | ----- | | ----- | |
| 824 | D6584 | 0.0974 | | -0.82 | |
| 862 | | ----- | | ----- | |
| 1016 | EN14105 | 0.13 | | 2.06 | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1299 | EN14105 | 0.112 | | 0.47 | |
| 1397 | EN14105 | 0.131 | | 2.14 | |
| 1406 | | ----- | | ----- | |
| 1429 | EN14105 | 0.18 | R(0.01) | 6.46 | |
| 1443 | EN14105 | 0.1285 | | 1.92 | |
| 1459 | | ----- | | ----- | |
| 1485 | EN14105 | 0.1081 | | 0.13 | |
| 1491 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1546 | | ----- | | ----- | |
| 1586 | | ----- | | ----- | |
| 1650 | EN14105 | 0.109 | | 0.21 | |
| 1656 | EN14105 | 0.10 | | -0.59 | |
| 1741 | | ----- | | ----- | |
| 1754 | EN14105 | 0.1082 | | 0.13 | |
| 1807 | EN14105 | 0.077 | | -2.61 | |
| 1826 | EN14105 | 0.43 | R(0.01) | 28.48 | |
| 1984 | | ----- | | ----- | |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | EN14105 | 0.109 | | 0.21 | |
| 6146 | EN14105 | 0.116 | | 0.82 | |
| 6259 | D6584 | 0.106 | | -0.06 | |
| 6265 | EN14105 | 0.100 | | -0.59 | |
| 6276 | EN14105 | 0.113721 | | 0.62 | |
| 6325 | EN14105 | 0.108 | | 0.12 | |
| 6358 | | ----- | | ----- | |
| 6373 | EN14105 | 0.100 | | -0.59 | |
| 6444 | | ----- | | ----- | |
| 6446 | | ----- | | ----- | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |

| | |
|---|---|
| normality | not OK |
| n | 28 |
| outliers | 3 |
| mean (n) | 0.10667 |
| st.dev. (n) | 0.014010 |
| R(calc.) | 0.03923 |
| st.dev.(EN14105:20) | 0.011353 |
| R(EN14105:20) | 0.03179 |

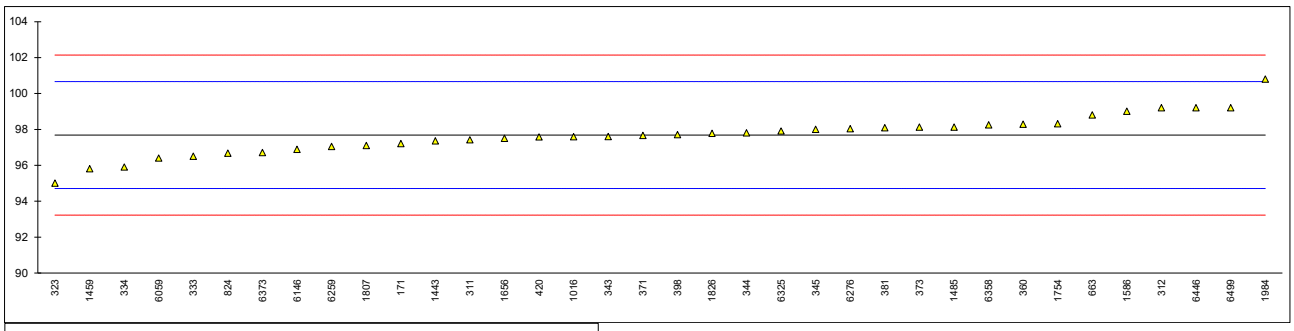

0.19
0.17
0.15
0.13
0.11
0.09
0.07
0.05
333
171
1807
343
824
1656
6265
6373
312
496
420
6259
6325
1485
1754
360
1650
6059
311
345
373
344
1299
6276
6146
334
1443
1016
1397
1429
1826

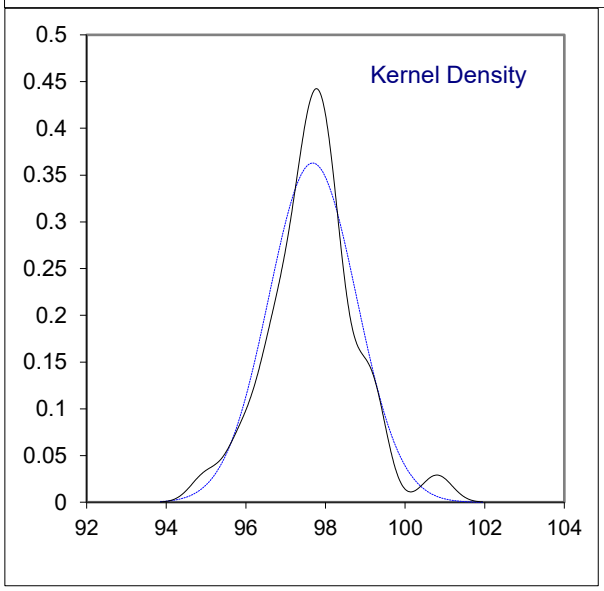

Kernel Density
40
35
30
25
20
15
10
5
0
0
0.1
0.2
0.3
0.4
0.5

Determination of Total Ester content (FAME) on sample #22205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | EN14103:2020 | 97.2 | | -0.32 | |
| 300 | | ----- | | ----- | |
| 311 | EN14103:2020 | 97.41 | | -0.18 | |
| 312 | EN14103:2011 | 99.2 | | 1.02 | |
| 323 | EN14105 | 95.0 | | -1.80 | |
| 328 | | ----- | | ----- | |
| 333 | EN14103:2011 | 96.5 | | -0.79 | |
| 334 | EN14103:2020 | 95.9 | | -1.20 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14103:2020 | 97.6 | | -0.05 | |
| 344 | EN14103:2020 | 97.80 | | 0.08 | |
| 345 | EN14103:2020 | 98.0 | | 0.22 | |
| 360 | EN14103:2020 | 98.28 | | 0.40 | |
| 370 | | ----- | | ----- | |
| 371 | EN14103:2020 | 97.66 | | -0.01 | |
| 373 | EN14103:2020 | 98.12 | | 0.30 | |
| 381 | EN14103:2020 | 98.09 | | 0.28 | |
| 398 | EN14103:2020 | 97.7 | | 0.01 | |
| 420 | EN14103:2020 | 97.57 | | -0.07 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | | ----- | | ----- | |
| 663 | EN14103:2020 | 98.8 | | 0.75 | |
| 824 | EN14103:2020 | 96.67 | | -0.68 | |
| 862 | | ----- | | ----- | |
| 1016 | EN14103:2020 | 97.59 | | -0.06 | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1299 | EN14103:2020 | >99.0 | | ----- | |
| 1397 | | ----- | | ----- | |
| 1406 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1443 | EN14103:2020 | 97.35 | | -0.22 | |
| 1459 | EN14103:2020 | 95.8 | | -1.26 | |
| 1485 | EN14103:2011 | 98.12 | | 0.30 | |
| 1491 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1546 | | ----- | | ----- | |
| 1586 | EN14103:2011 | 99.0 | | 0.89 | |
| 1650 | | ----- | | ----- | |
| 1656 | EN14103:2011 | 97.5 | | -0.12 | |
| 1741 | | ----- | | ----- | |
| 1754 | EN14103:2020 | 98.31 | | 0.42 | |
| 1807 | EN14103:2020 | 97.1 | | -0.39 | |
| 1826 | EN14103:2020 | 97.78 | | 0.07 | |
| 1984 | EN14103:2020 | 100.8 | | 2.10 | |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | EN14103:2020 | 96.4 | | -0.86 | |
| 6146 | EN14103:2020 | 96.88 | | -0.54 | |
| 6259 | EN14103:2020 | 97.04 | | -0.43 | |
| 6265 | | ----- | | ----- | |
| 6276 | EN14103:2011 | 98.03 | | 0.24 | |
| 6325 | EN14103:2011 | 97.9 | | 0.15 | |
| 6358 | EN14103:2011 | 98.25 | | 0.38 | |
| 6373 | EN14103:2011 | 96.7 | | -0.66 | |
| 6444 | | ----- | | ----- | |
| 6446 | EN14103:2020 | 99.2 | | 1.02 | |
| 6447 | | ----- | | ----- | |
| 6499 | D7806 | 99.2 | | 1.02 | |

| | |
|---|---|
| normality | suspect |
| n | 36 |
| outliers | 0 |
| mean (n) | 97.6792 |
| st.dev. (n) | 1.10002 |
| R(calc.) | 3.0801 |
| st.dev.(EN14103:20) | 1.48571 |
| R(EN14103:20) | 4.16 |

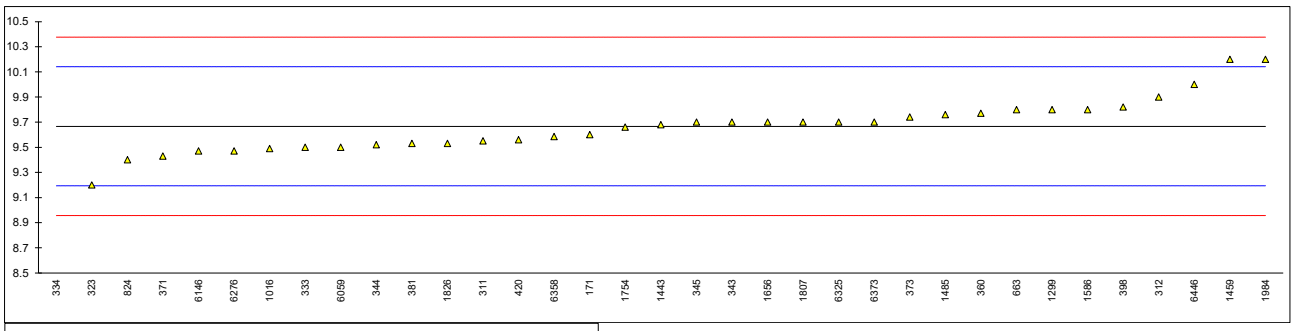

104
102
100
98
96
94
92
90
323
1459
334
6059
333
824
6373
6146
6259
1807
171
1443
311
1656
420
1016
343
371
398
1826
344
6325
345
6276
381
373
1485
6358
360
1754
663
1586
312
6446
6499
1984

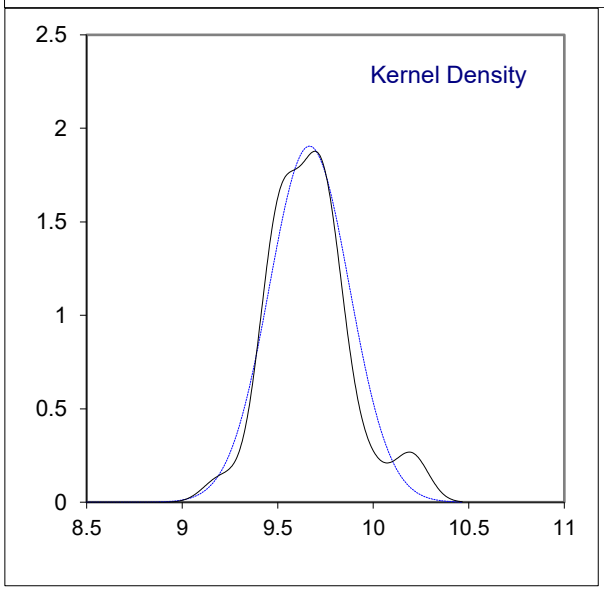

Kernel Density
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
92
94
96
98
100
102
104

Determination of Linolenic Acid Methyl Ester on sample #22205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | EN14103:2020 | 9.6 | | -0.28 | |
| 300 | | ----- | | ----- | |
| 311 | EN14103:2020 | 9.55 | | -0.49 | |
| 312 | EN14103:2011 | 9.9 | | 0.99 | |
| 323 | EN14105 | 9.2 | | -1.97 | |
| 328 | | ----- | | ----- | |
| 333 | EN14103:2011 | 9.5 | | -0.70 | |
| 334 | EN14103:2020 | 8.0 | R(0.01) | -7.04 | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN14103:2020 | 9.7 | | 0.14 | |
| 344 | EN14103:2020 | 9.52 | | -0.62 | |
| 345 | EN14103:2020 | 9.7 | | 0.14 | |
| 360 | EN14103:2020 | 9.77 | | 0.44 | |
| 370 | | ----- | | ----- | |
| 371 | EN14103:2020 | 9.43 | | -1.00 | |
| 373 | EN14103:2020 | 9.74 | | 0.31 | |
| 381 | EN14103:2020 | 9.53 | | -0.58 | |
| 398 | EN14103:2020 | 9.82 | | 0.65 | |
| 420 | EN14103:2020 | 9.56 | | -0.45 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | | ----- | | ----- | |
| 663 | EN14103:2020 | 9.8 | | 0.56 | |
| 824 | EN14103:2020 | 9.40 | | -1.13 | |
| 862 | | ----- | | ----- | |
| 1016 | EN14103:2020 | 9.49 | | -0.75 | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1299 | EN14103:2020 | 9.8 | | 0.56 | |
| 1397 | | ----- | | ----- | |
| 1406 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1443 | EN14103:2020 | 9.68 | | 0.06 | |
| 1459 | EN14103:2020 | 10.2 | | 2.25 | |
| 1485 | EN14103:2011 | 9.76 | | 0.39 | |
| 1491 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1546 | | ----- | | ----- | |
| 1586 | EN14103:2011 | 9.80 | | 0.56 | |
| 1650 | | ----- | | ----- | |
| 1656 | EN14103:2011 | 9.7 | | 0.14 | |
| 1741 | | ----- | | ----- | |
| 1754 | EN14103:2020 | 9.66 | | -0.03 | |
| 1807 | EN14103:2020 | 9.7 | | 0.14 | |
| 1826 | EN14103:2020 | 9.53 | | -0.58 | |
| 1984 | EN14103:2020 | 10.2 | C | 2.25 | first reported 20.85 |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | EN14103:2020 | 9.5 | | -0.70 | |
| 6146 | EN14103:2020 | 9.47 | | -0.83 | |
| 6259 | | ----- | | ----- | |
| 6265 | | ----- | | ----- | |
| 6276 | EN14103:2011 | 9.47 | | -0.83 | |
| 6325 | EN14103:2011 | 9.7 | | 0.14 | |
| 6358 | EN14103:2011 | 9.585 | | -0.34 | |
| 6373 | EN14103:2011 | 9.7 | | 0.14 | |
| 6444 | | ----- | | ----- | |
| 6446 | EN14103:2020 | 10 | | 1.41 | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |

| | |
|---|---|
| normality | suspect |
| n | 34 |
| outliers | 1 |
| mean (n) | 9.6666 |
| st.dev. (n) | 0.20940 |
| R(calc.) | 0.5863 |
| st.dev.(EN14103:20) | 0.23668 |
| R(EN14103:20) | 0.6627 |

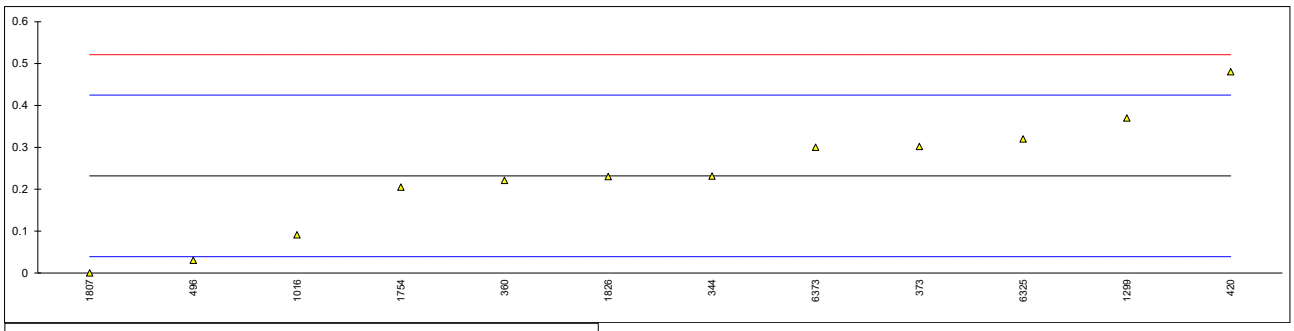

10.5
10.3
10.1
9.9
9.7
9.5
9.3
9.1
8.9
8.7
8.5
334 323 824 371 6146 6276 1016 333 6059 344 381 1826 311 420 6358 171 1754 1443 345 343 1656 1807 6325 6373 373 1485 360 663 1299 1586 398 312 6446 1459 1984

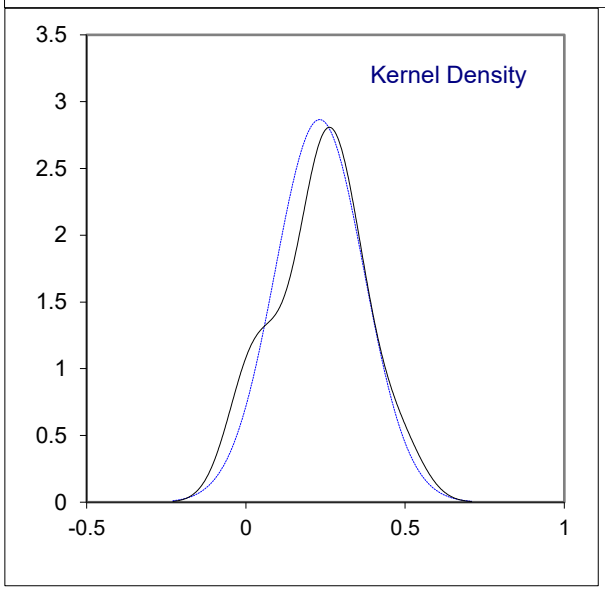

Kernel Density
2.5
2
1.5
1
0.5
0
8.5
9
9.5
10
10.5
11

Determination of Polyunsaturated (multiple double bonds) Methyl Esters on sample #22205; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | | ----- | | ----- | |
| 171 | EN15779 | <0.30 | | ----- | |
| 300 | | ----- | | ----- | |
| 311 | EN15779 | <0.6 | | ----- | |
| 312 | EN15779 | <0.6 | | ----- | |
| 323 | | ----- | | ----- | |
| 328 | | ----- | | ----- | |
| 333 | EN15779 | <0.6 | | ----- | |
| 334 | EN15779 | <0.6 | | ----- | |
| 335 | | ----- | | ----- | |
| 338 | | ----- | | ----- | |
| 343 | EN15779 | <0.30 | | ----- | |
| 344 | EN15779 | 0.2308 | | -0.01 | |
| 345 | EN15779 | <0.30 | | ----- | |
| 360 | EN15779 | 0.221 | | -0.11 | |
| 370 | | ----- | | ----- | |
| 371 | | ----- | | ----- | |
| 373 | EN15779 | 0.3016 | | 0.73 | |
| 381 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 420 | EN15779 | 0.48 | | 2.58 | |
| 447 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN15779 | 0.030 | | -2.09 | |
| 663 | | ----- | | ----- | |
| 824 | | ----- | | ----- | |
| 862 | | ----- | | ----- | |
| 1016 | EN15779 | 0.091 | | -1.46 | |
| 1059 | | ----- | | ----- | |
| 1199 | | ----- | | ----- | |
| 1299 | EN15779 | 0.37 | | 1.44 | |
| 1397 | | ----- | | ----- | |
| 1406 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1443 | | ----- | | ----- | |
| 1459 | | ----- | | ----- | |
| 1485 | | ----- | | ----- | |
| 1491 | | ----- | | ----- | |
| 1510 | | ----- | | ----- | |
| 1546 | | ----- | | ----- | |
| 1586 | | ----- | | ----- | |
| 1650 | | ----- | | ----- | |
| 1656 | | ----- | | ----- | |
| 1741 | | ----- | | ----- | |
| 1754 | EN15779 | 0.205 | | -0.28 | |
| 1807 | EN15779 | 0 | | -2.40 | |
| 1826 | EN15779 | 0.23 | | -0.02 | |
| 1984 | | ----- | | ----- | |
| 1989 | | ----- | | ----- | |
| 6047 | | ----- | | ----- | |
| 6059 | EN15779 | <0.5 | | ----- | |
| 6146 | | ----- | | ----- | |
| 6259 | | ----- | | ----- | |
| 6265 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6325 | EN15779 | 0.32 | | 0.92 | |
| 6358 | | ----- | | ----- | |
| 6373 | EN15779 | 0.3 | | 0.71 | |
| 6444 | | ----- | | ----- | |
| 6446 | | ----- | | ----- | |
| 6447 | | ----- | | ----- | |
| 6499 | | ----- | | ----- | |

| | |
|---|---|
| normality | OK |
| n | 12 |
| outliers | 0 |
| mean (n) | 0.2316 |
| st.dev. (n) | 0.13919 |
| R(calc.) | 0.3897 |
| st.dev.(EN15779:09+A1:13) | 0.09643 |
| R(EN15779:09+A1:13) | 0.27 |

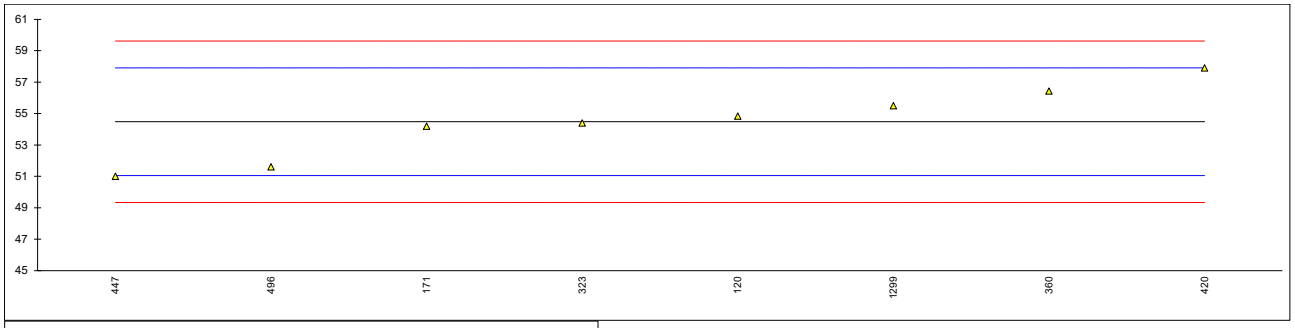

0.6
0.5
0.4
0.3
0.2
0.1
0
1807
496
1016
1754
360
1826
344
6373
373
6325
1299
420

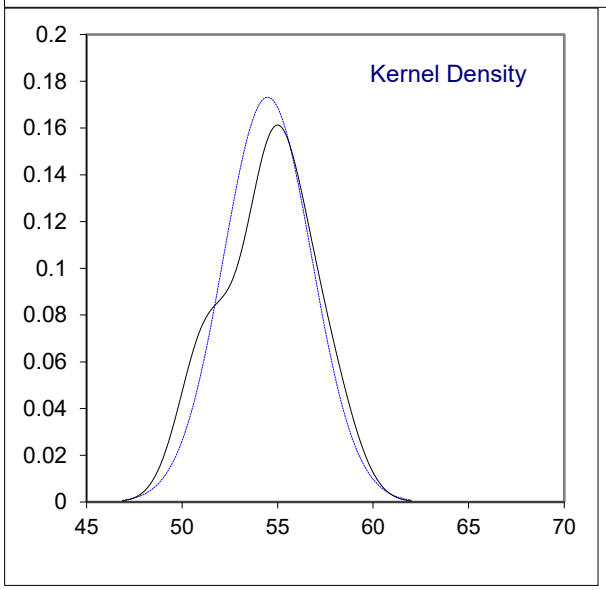

Kernel Density
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
0
0.5
1

## Determination of Cetane Number of sample #22206

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D613 | 54.83 | | 0.20 | |
| 171 | D613 | 54.2 | | -0.16 | |
| 323 | D613 | 54.4 | | -0.05 | |
| 328 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 343 | | ----- | | ----- | |
| 360 | D613 | 56.43 | | 1.14 | |
| 420 | ISO5165 | 57.9 | | 1.99 | |
| 447 | D613 | 51.0 | | -2.03 | |
| 496 | D613 | 51.6 | | -1.68 | |
| 1016 | | ----- | | ----- | |
| 1299 | D613 | 55.5 | | 0.59 | |
| 1741 | | ----- | | ----- | |
| 1754 | | ----- | | ----- | |
| 1807 | | ----- | | ----- | |
| 6373 | | ----- | | ----- | |
| 6446 | | ----- | | ----- | |

| | | |
|---|---|---|
| | normality | unknown |
| | n | 8 |
| | outliers | 0 |
| | mean (n) | 54.483 |
| | st.dev. (n) | 2.3038 |
| | R(calc.) | 6.451 |
| | st.dev.(D613:18ae1) | 1.7143 |
| | R(D613:18ae1) | 4.8 |
| compare | | |
| | R(EN14214:12+A2:19) | 5.0 |
| | R(ISO5165:20) | 4.8 |



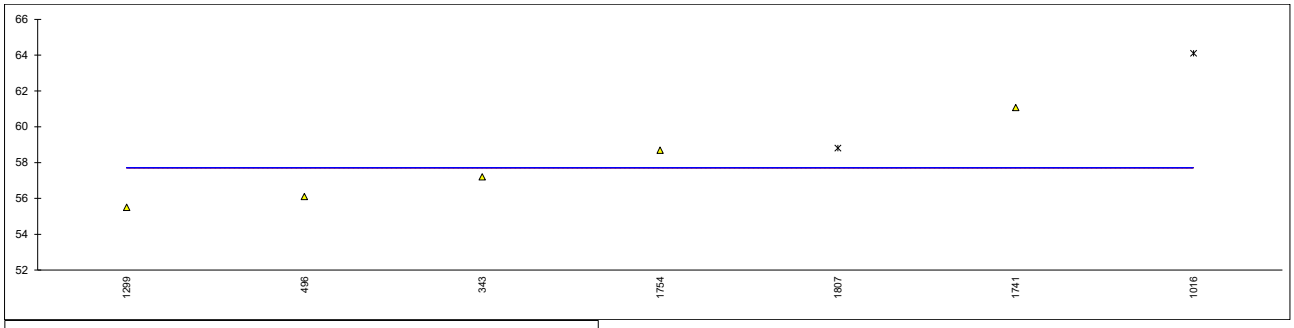



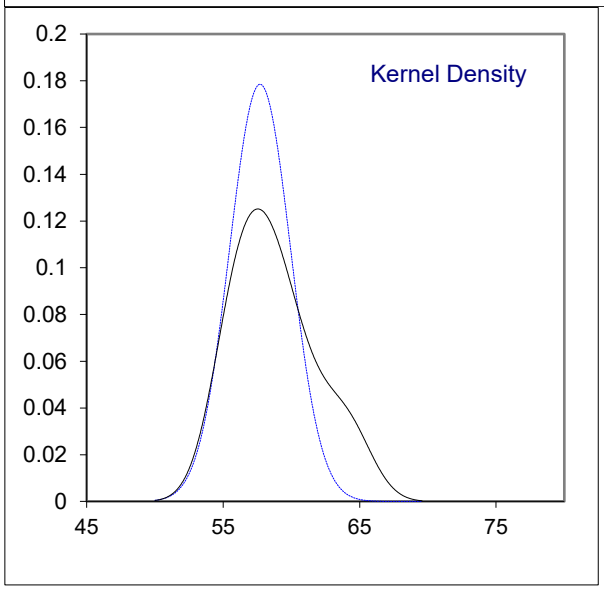
## Determination of Derived Cetane Number (DCN) of sample #22206

| lab | Method | DCN | mark | z(targ) | ID | mark | z(targ) | CD | mark | z(targ) | W.T. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 120 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 171 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 323 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 328 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 333 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 343 | D7668 | 57.2 | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 360 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 420 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 447 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 496 | D7668 | 56.1 | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 1016 | EN15195 | 64.1 | ex | ----- | 3.128 | | ----- | ----- | | ----- | ----- |
| 1299 | D7668 | 55.5 | | ----- | 3.10 | | ----- | 4.30 | | ----- | 592 |
| 1741 | EN16715 | 61.07 | | ----- | 2.649 | | ----- | 3.954 | | ----- | 603.54 |
| 1754 | D7668 | 58.69 | | ----- | 2.8872 | | ----- | 4.0958 | | ----- | 607.72 |
| 1807 | EN17155 | 58.8 | ex | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 6373 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |
| 6446 | | ----- | | ----- | ----- | | ----- | ----- | | ----- | ----- |

| | |
|---|---|
| normality | unknown |
| n | 5 |
| outliers | 0 + 2ex |
| mean (n) | 57.712 |
| st.dev. (n) | 2.2353 |
| R(calc.) | 6.259 |
| st.dev.(D7668:17) | (0.6071) |
| R(D7668:17) | (1.700) |

W.T. = Chamber Wall Temperature
Ex = test method is not compatible with D7668 / EN16175

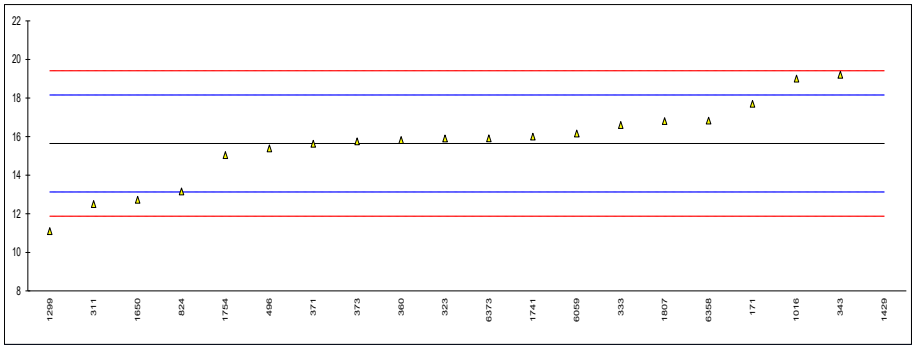


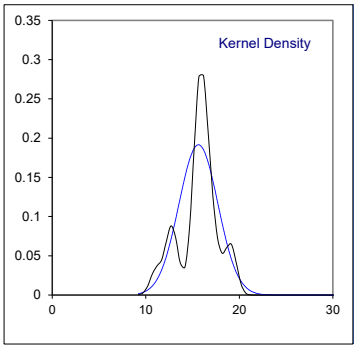



Determination of sum of Calcium and Magnesium (as Ca + Mg) on sample #22207; results in mg/kg

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 171 | EN14538 | 17.7 | | 1.64 | |
| 311 | EN14538 | 12.5 | | -2.50 | |
| 312 | | ----- | | ----- | |
| 323 | EN14538 | 15.9 | | 0.21 | |
| 333 | EN14538 | 16.6 | | 0.76 | |
| 334 | | ----- | | ----- | |
| 343 | EN14538 | 19.2 | | 2.83 | |
| 345 | | ----- | | ----- | |
| 360 | EN14538 | 15.82 | | 0.14 | |
| 371 | EN14538 | 15.62 | | -0.02 | |
| 373 | EN14538 | 15.748 | | 0.08 | |
| 398 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14538 | 15.39 | | -0.20 | |
| 663 | | ----- | | ----- | |
| 824 | EN14538 | 13.15 | | -1.98 | |
| 862 | | ----- | | ----- | |
| 1016 | EN14538 | 18.996 | | 2.67 | |
| 1299 | EN14538 | 11.1 | | -3.62 | |
| 1429 | EN14538 | 134.1 | C,R(0.01) | 94.32 | first reported 109.9 |
| 1650 | EN14538 | 12.72 | | -2.33 | |
| 1656 | | ----- | | ----- | |
| 1741 | EN14538 | 16 | | 0.29 | |
| 1754 | EN14538 | 15.04 | | -0.48 | |
| 1807 | EN14538 | 16.8 | | 0.92 | |
| 6059 | EN14538 | 16.16 | | 0.41 | |
| 6265 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6358 | EN14538 | 16.828 | | 0.94 | |
| 6373 | EN14538 | 15.913 | | 0.22 | |

| | |
|---|---|
| normality | OK |
| n | 19 |
| outliers | 1 |
| mean (n) | 15.641 |
| st.dev. (n) | 2.0825 |
| R(calc.) | 5.831 |
| st.dev.(EN14538:06) | 1.2559 |
| R(EN14538:06) | 3.517 |

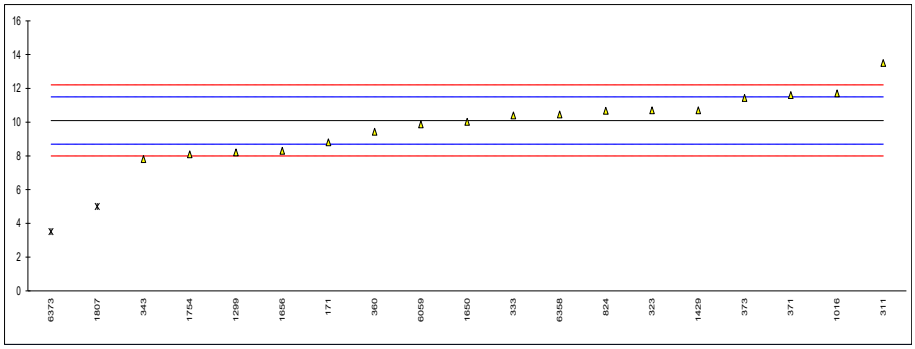


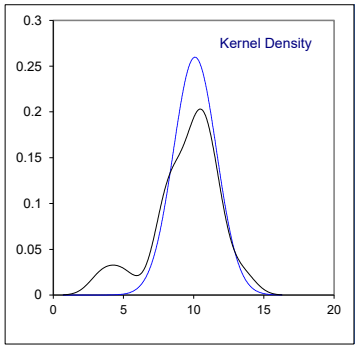



## Determination of Phosphorus as P on sample #22207; results in mg/kg

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 171 | D4951 | 8.8 | | -1.85 | |
| 311 | EN14107 | 13.5 | | 4.85 | |
| 312 | | ----- | | ----- | |
| 323 | EN14107 | 10.7 | | 0.86 | |
| 333 | EN14107 | 10.4 | | 0.43 | |
| 334 | | ----- | | ----- | |
| 343 | EN14107 | 7.8 | | -3.28 | |
| 345 | | ----- | | ----- | |
| 360 | EN14107 | 9.43 | | -0.95 | |
| 371 | EN14107 | 11.59 | | 2.13 | |
| 373 | EN14107 | 11.43 | | 1.90 | |
| 398 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14107 | <4 | | <-8.69 | Possibly a false negative test result? |
| 663 | | ----- | | ----- | |
| 824 | EN14107 | 10.67 | | 0.82 | |
| 862 | | ----- | | ----- | |
| 1016 | EN14538 | 11.705 | | 2.29 | |
| 1299 | EN14107 | 8.2 | | -2.71 | |
| 1429 | EN14107 | 10.7 | | 0.86 | |
| 1650 | EN14107 | 10.02 | | -0.11 | |
| 1656 | EN14107 | 8.3 | | -2.56 | |
| 1741 | | ----- | | ----- | |
| 1754 | EN14107 | 8.09 | | -2.86 | |
| 1807 | EN16294 | 5.0 | DG(0.05) | -7.27 | |
| 6059 | EN14107 | 9.863 | | -0.33 | |
| 6265 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6358 | EN14107 | 10.455 | | 0.51 | |
| 6373 | EN14107 | 3.507 | DG(0.05) | -9.40 | |

| | |
|---|---|
| normality | OK |
| n | 17 |
| outliers | 2 |
| mean (n) | 10.097 |
| st.dev. (n) | 1.5364 |
| R(calc.) | 4.302 |
| st.dev.(EN14107:03) | 0.7013 |
| R(EN14107:03) | 1.964 |

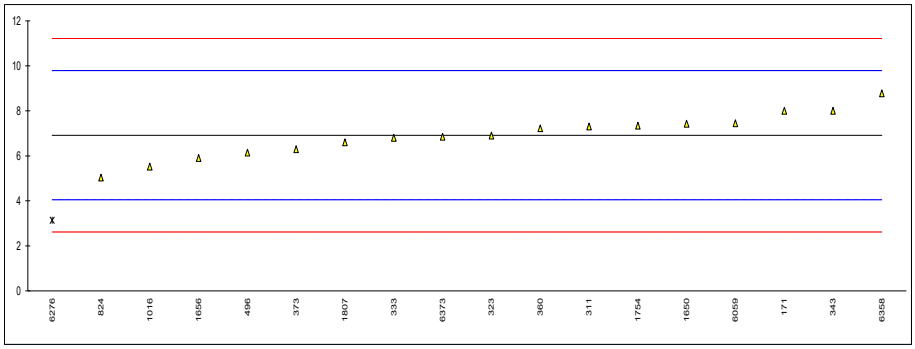


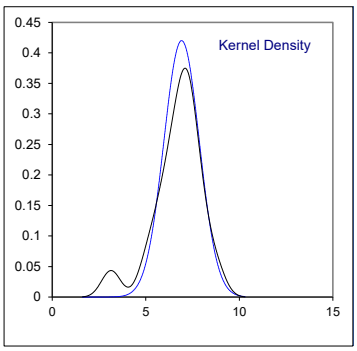



Determination of Potassium as K on sample #22207; results in mg/kg

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 171 | EN14109 | 8.0 | | 0.76 | |
| 311 | EN14109 | 7.3 | | 0.27 | |
| 312 | | ----- | | ----- | |
| 323 | EN14538 | 6.9 | | -0.01 | |
| 333 | EN14538 | 6.8 | | -0.08 | |
| 334 | | ----- | | ----- | |
| 343 | EN14538 | 8 | | 0.76 | |
| 345 | | ----- | | ----- | |
| 360 | EN14538 | 7.22 | | 0.21 | |
| 371 | | ----- | | ----- | |
| 373 | EN14538 | 6.294 | | -0.43 | |
| 398 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14538 | 6.145 | | -0.54 | |
| 663 | | ----- | | ----- | |
| 824 | EN14538 | 5.03 | | -1.31 | |
| 862 | | ----- | | ----- | |
| 1016 | EN14538 | 5.516 | | -0.98 | |
| 1299 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1650 | EN14109 | 7.43 | | 0.36 | |
| 1656 | EN14109 | 5.9 | | -0.71 | |
| 1741 | | ----- | | ----- | |
| 1754 | EN14538 | 7.34 | | 0.30 | |
| 1807 | EN14538 | 6.6 | | -0.22 | |
| 6059 | EN14538 | 7.450 | | 0.37 | |
| 6265 | | ----- | | ----- | |
| 6276 | In house | 3.14 | G(0.05) | -2.63 | |
| 6358 | EN14109 | 8.7747 | | 1.30 | |
| 6373 | EN14538 | 6.8485 | | -0.05 | |

| | |
|---|---|
| normality | OK |
| n | 17 |
| outliers | 1 |
| mean (n) | 6.915 |
| st.dev. (n) | 0.9494 |
| R(calc.) | 2.658 |
| st.dev.(EN14109:03) | 1.4335 |
| R(EN14109:03) | 4.014 |

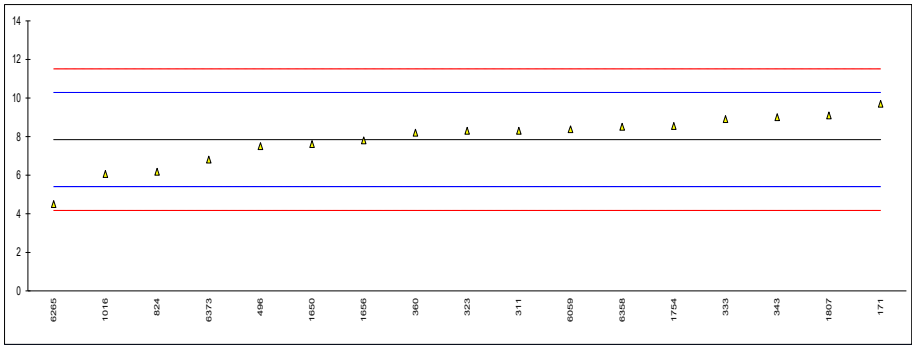


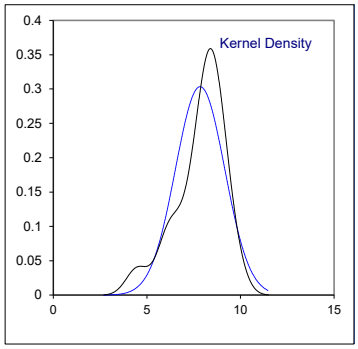



## Determination of Sodium as Na on sample #22207; results in mg/kg

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 171 | EN14108 | 9.7 | | 1.52 | |
| 311 | EN14108 | 8.3 | | 0.37 | |
| 312 | | ----- | | ----- | |
| 323 | EN14538 | 8.3 | | 0.37 | |
| 333 | EN14538 | 8.9 | | 0.86 | |
| 334 | | ----- | | ----- | |
| 343 | EN14538 | 9 | | 0.95 | |
| 345 | | ----- | | ----- | |
| 360 | EN14538 | 8.20 | | 0.29 | |
| 371 | | ----- | | ----- | |
| 373 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14538 | 7.505 | | -0.28 | |
| 663 | | ----- | | ----- | |
| 824 | EN14538 | 6.18 | | -1.36 | |
| 862 | | ----- | | ----- | |
| 1016 | EN14538 | 6.056 | | -1.47 | |
| 1299 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1650 | EN14108 | 7.61 | | -0.19 | |
| 1656 | EN14108 | 7.8 | | -0.04 | |
| 1741 | | ----- | | ----- | |
| 1754 | EN14538 | 8.55 | | 0.58 | |
| 1807 | EN14538 | 9.1 | | 1.03 | |
| 6059 | EN14538 | 8.373 | | 0.43 | |
| 6265 | In house | 4.5 | | -2.74 | |
| 6276 | | ----- | | ----- | |
| 6358 | EN14108 | 8.5056 | | 0.54 | |
| 6373 | EN14538 | 6.8005 | | -0.86 | |

| | |
|---|---|
| normality | suspect |
| n | 17 |
| outliers | 0 |
| mean (n) | 7.846 |
| st.dev. (n) | 1.3144 |
| R(calc.) | 3.680 |
| st.dev.(EN14108:03) | 1.2209 |
| R(EN14108:03) | 3.418 |

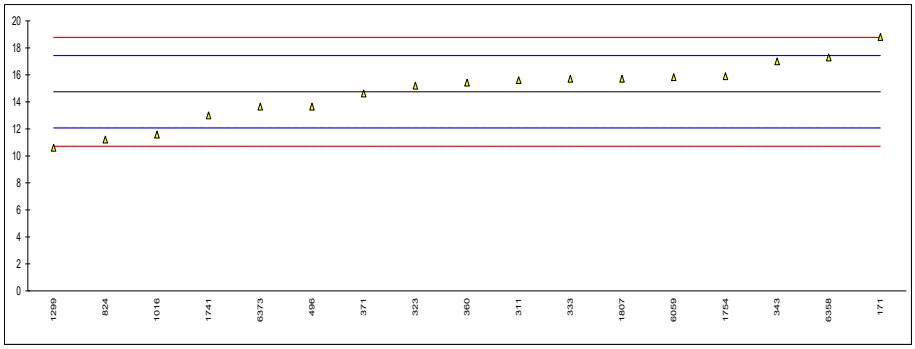


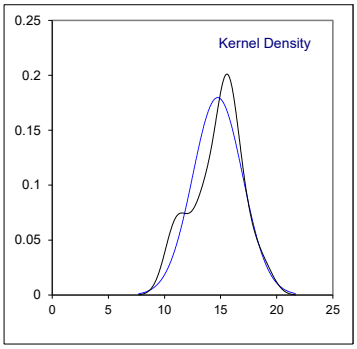



Determination of Sum of Potassium and Sodium (as K + Na) on sample #22207; results in mg/kg

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 171 | EN14538 | 18.8 | E | 3.02 | calculation difference, iis calculated 17.7 |
| 311 | EN14538 | 15.6 | | 0.64 | |
| 312 | | ----- | | ----- | |
| 323 | EN14538 | 15.2 | | 0.34 | |
| 333 | EN14538 | 15.7 | | 0.71 | |
| 334 | | ----- | | ----- | |
| 343 | EN14538 | 17 | | 1.68 | |
| 345 | | ----- | | ----- | |
| 360 | EN14538 | 15.42 | | 0.50 | |
| 371 | EN14538 | 14.61 | | -0.10 | |
| 373 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 467 | | ----- | | ----- | |
| 496 | EN14538 | 13.65 | | -0.82 | |
| 663 | | ----- | | ----- | |
| 824 | EN14538 | 11.21 | | -2.64 | |
| 862 | | ----- | | ----- | |
| 1016 | EN14538 | 11.572 | | -2.37 | |
| 1299 | EN14538 | 10.6 | | -3.09 | |
| 1429 | | ----- | | ----- | |
| 1650 | | ----- | | ----- | |
| 1656 | | ----- | | ----- | |
| 1741 | EN14538 | 13 | | -1.30 | |
| 1754 | EN14538 | 15.89 | | 0.85 | |
| 1807 | EN14538 | 15.7 | | 0.71 | |
| 6059 | EN14538 | 15.823 | | 0.80 | |
| 6265 | | ----- | | ----- | |
| 6276 | | ----- | | ----- | |
| 6358 | | 17.2803 | | 1.89 | |
| 6373 | EN14538 | 13.649 | | -0.82 | |

| | |
|---|---|
| normality | OK |
| n | 17 |
| outliers | 0 |
| mean (n) | 14.747 |
| st.dev. (n) | 2.2200 |
| R(calc.) | 6.216 |
| st.dev.(EN14538:06) | 1.3420 |
| R(EN14538:06) | 3.758 |



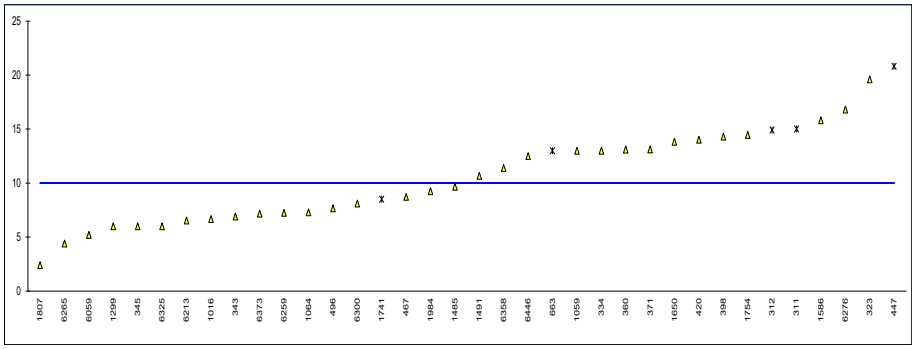



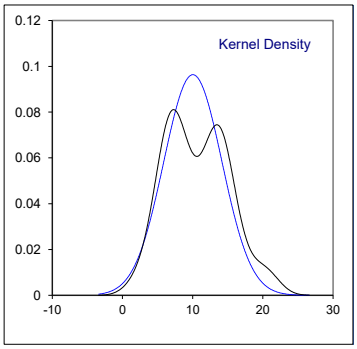
## Determination of Total Contamination (EN12662) on sample #22208; results in mg/kg

| lab | method | value | mark | z(targ) | complete | vol.fittered (mL) | stopped (min) | remarks |
|---|---|---|---|---|---|---|---|---|
| 171 | EN12662:2008 | <6.0 | | ----- | | ----- | ----- | |
| 311 | EN12662:2014 | 15 | ex | ----- | Yes | 300 | 10 | |
| 312 | EN12662:2014 | 14.9 | ex | ----- | Yes | 300 | ----- | |
| 323 | EN12662:2008 | 19.6 | | ----- | Yes | ----- | ----- | |
| 334 | EN12662:1998 | 13 | | ----- | | 300 | ----- | |
| 343 | EN12662:1998 | 6.9 | | ----- | | ----- | ----- | |
| 345 | EN12662:1998 | 6.0 | | ----- | | ----- | ----- | |
| 360 | EN12662:1998 | 13.10 | | ----- | Yes | 300 | ----- | |
| 371 | EN12662:2008 | 13.11 | | ----- | Yes | ----- | ----- | |
| 398 | EN12662:2008 | 14.3 | | ----- | Yes | ----- | ----- | |
| 420 | EN12662:1998 | 14.0 | | ----- | | ----- | ----- | |
| 447 | EN12662:2014 | 20.8 | ex | ----- | Yes | ----- | ----- | |
| 467 | EN12662:2008 | 8.71 | | ----- | Yes | 800 | ----- | |
| 496 | EN12662:1998 | 7.66 | | ----- | Yes | n | ----- | |
| 663 | EN12662:2014 | 13.0 | ex | ----- | | 300 | 12 | |
| 862 | | ----- | | ----- | | ----- | ----- | |
| 1016 | EN12662:1998 | 6.663 | | ----- | Yes | 300 | ----- | |
| 1059 | EN12662:1998 | 13.0 | | ----- | Yes | ----- | ----- | |
| 1064 | EN12662:1998 | 7.28 | | ----- | Yes | 300 | ----- | |
| 1299 | EN12662:1998 | 6.0 | | ----- | Yes | 300 | ----- | |
| 1397 | | ----- | | ----- | | ----- | ----- | |
| 1485 | EN12662:1998 | 9.66 | | ----- | Yes | ----- | ----- | |
| 1491 | EN12662:1998 | 10.67 | | ----- | Yes | 300 | ----- | |
| 1586 | EN12662:1998 | 15.8 | | ----- | Yes | 300 | ----- | |
| 1650 | EN12662:2008 | 13.82 | | ----- | Yes | 687.7 | ----- | |
| 1741 | EN12662:2014 | 8.5 | ex | ----- | Yes | 300 | 1 | |
| 1754 | EN12662:2008 | 14.46 | | ----- | | 800 | ----- | |
| 1807 | EN12662:2008 | 2.4 | | ----- | | 800 | ----- | |
| 1984 | EN12662:1998 | 9.25 | | ----- | | ----- | ----- | |
| 6059 | EN12662:2008 | 5.2 | | ----- | Yes | 800 | ----- | |
| 6213 | EN12662:2008 | 6.52 | | ----- | Yes | ----- | ----- | |
| 6259 | EN12662:2008 | 7.24 | | ----- | | ----- | ----- | |
| 6265 | EN12662:1998 | 4.39 | | ----- | Yes | 387 | < 5 | |
| 6276 | EN12662:1998 | 16.8 | | ----- | | ----- | ----- | |
| 6300 | EN12662:2008 | 8.1 | | ----- | Yes | ----- | ----- | |
| 6325 | EN12662:1998 | 6 | | ----- | | ----- | ----- | |
| 6358 | EN12662:2008 | 11.39 | | ----- | Yes | 800 | 3 | |
| 6373 | EN12662:1998 | 7.16 | | ----- | Yes | ----- | ----- | |
| 6446 | EN12662:2008 | 12.5 | | ----- | Yes | ----- | ----- | |

| | |
|---|---|
| normality | OK |
| n | 31 |
| outliers | 0 + 5ex |
| mean (n) | 10.022 |
| st.dev. (n) | 4.1415 |
| R(calc.) | 11.596 |
| st.dev.(EN12662:08) | (1.0738)) |
| R(EN12662:08) | (3.007) |

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
2 labs in BELGIUM
5 labs in BULGARIA
1 lab in CHINA, People's Republic
1 lab in COLOMBIA
1 lab in CROATIA
1 lab in CZECH REPUBLIC
1 lab in ESTONIA
7 labs in FRANCE
3 labs in GERMANY
2 labs in GREECE
1 lab in HONG KONG
1 lab in ITALY
1 lab in KOREA, Republic of
1 lab in LATVIA
2 labs in LITHUANIA
1 lab in MALAYSIA
1 lab in MALTA
8 labs in NETHERLANDS
1 lab in NORTH MACEDONIA, Republic of
3 labs in POLAND
2 labs in PORTUGAL
2 labs in SERBIA
1 lab in SLOVENIA
6 labs in SPAIN
1 lab in SWEDEN
1 lab in THAILAND
5 labs in UNITED KINGDOM
2 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